

HostExplorer™

User's Guide



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Chapter 1

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Hummingbird HostExplorer™ is a comprehensive PC-to-host connectivity product that delivers mainframe data to the desktop without the overhead of legacy protocols. HostExplorer connects desktop computers to IBM mainframes and IBM-compatible systems, to IBM midrange systems (the AS/400 family), and to ASCII character systems using Telnet.

The terminal emulation components (Telnet, TN3270, TN5250, and TN3151) provide fast access to corporate data and run with Windows NT/95/98/2000/Me operating systems across corporate intranets and the Internet.

HostExplorer uses Kerberos, which provides the necessary network tools to secure information systems across an entire enterprise.

HostExplorer Applications

HostExplorer includes the following applications:



HostExplorer TN3270 Emulates IBM mainframe terminals (including 3179G, 3472G, 3278, and 3279 models), runs 3270 applications, and transfers files between a host machine and your PC using the IND\$FILE file transfer application.



HostExplorer TN5250 Emulates IBM AS/400 terminals and runs 5250 applications.



5250 File Transfer Wizard Lets you transfer files between a PC and an AS/400 host. If you transfer a file from the host to your PC, you can specify standard SQL statements to execute in the file. For more information, see “Transferring Files Using the 5250 File Transfer Wizard” on page 49.



FTP Lets you connect to a remote FTP server and transfer files between computers. FTP is only supported under TCP/IP transports. You cannot use this application with DECnet or IPX/SPX. A server implementation of the FTP protocol must run on the remote computer to allow for FTP communication. The remote computer is the FTP server (host); and the PC running the Hummingbird FTP application is the FTP client.



FTP for Windows Explorer A client implementation of the File Transfer Protocol. It lets you transfer both text (ASCII) and image (binary) files between your PC and a remote computer running a server implementation of FTP. You can also use it to perform file and directory management on your PC and a remote computer. For more information, see “Chapter 6: FTP for Windows Explorer” on page 59.



LPQ Returns the status of the print queue on either a UNIX system or another PC running any line-printer daemon.



LPR Lets you print PC files to any host on a TCP/IP network running LPD. The LPR window displays a separate window for each printer queue to which you are connected.



Macro & Profile Converter Lets you convert Wall Data RUMBA or Attachmate EXTRA! macros into Hummingbird Basic macros and Attachmate Extra! profiles into HostExplorer session profiles. For more information, see “Converting WallData Rumba Macros” on page 100 and “Converting Attachmate Extra! Macros and Profiles” on page 100.



PrintExplorer Emulates IBM mainframe LU1/LU3 printers with TN3270E-capable host systems and 3812 printers with TN5250E-capable host systems.



Telnet Emulates the DEC VT420 video terminal and includes support for VT52, VT100, VT101, VT102, VT220, VT320, VT420, ANSI, SCO ANSI, and IBM 3151.



WyseTerm Emulates Wyse-50 and Wyse-60 terminals.



Hummingbird Neighborhood An extension of Windows Explorer that lets you access and manipulate the profiles and folders associated with Hummingbird applications such as HostExplorer, 5250 File Transfer Wizard, and FTP for Windows Explorer. Hummingbird Neighborhood is fully embedded within Windows Explorer. For more information, see “Introducing Hummingbird Neighborhood” on page 3.

Introducing Hummingbird Neighborhood

Hummingbird Neighborhood, like Windows Network Neighborhood, is fully embedded within Windows Explorer. As an extension of Windows Explorer, you can use Hummingbird Neighborhood to access and manipulate the profiles and folders associated with Hummingbird applications, such as HostExplorer and FTP for Windows Explorer.

Hummingbird Neighborhood provides the following features:

Windows Support Hummingbird Neighborhood has the same look and feel of Windows Explorer and lets you copy and paste, drag-and-drop, delete, and open existing profiles. These features are especially useful when you use either FTP for Windows Explorer to drag and drop files between multiple FTP servers, or when you use HostExplorer to launch multiple remote host connections.

Shortcut Support Hummingbird Neighborhood lets you create shortcuts to remote FTP files, directories, or any other item within the Neighborhood.

Hummingbird Neighborhood Location Hummingbird Neighborhood lets you select My Computer or Desktop as the location for the Hummingbird Neighborhood icon. To make this selection, run `hntune.exe` from the product installation directory.

Setting Hummingbird Neighborhood Options

There are a number of options you can select to determine how Hummingbird Neighborhood performs. You can make these options specific to HostExplorer, FTP for Windows Explorer, or both.

To set the Hummingbird Neighborhood options:

- 1 Launch Windows Explorer.
- 2 In the left pane of the window, click Hummingbird Neighborhood.
- 3 On the View menu, click Hummingbird Neighborhood Options. The Hummingbird Neighborhood Options dialog box opens.
- 4 Click one of the following six tabs and configure the various options. Click OK when finished.

- **General**—Lets you select values for display and confirmation choices.
- **FTP General**—Lets you specify and select values for viewing files, anonymous FTP connections, and other general FTP operations.
- **FTP Transfer**—Lets you specify values for file name conversion and select the file transfer method.
- **FTP Cache**—Lets you set the size limit of the local cache and the length of time that cache items remain on your local PC.
- **HostExplorer**—Lets you select either the Quick Connect or Connect with Host Prompt option.
- **Sounds**—Lets you specify sound files to be played on completion of certain events.

Accessibility

Hummingbird products are accessible to all users. Wherever possible, our software was developed using Microsoft Windows interface standards and contains a comprehensive set of accessibility features.

Keyboard shortcuts All menus have an associated keyboard shortcut. To access any menu, press Alt and the underlined letter in the menu name as it appears on the interface. For example, to access the File menu in any Hummingbird application, press Alt+F; to access the Tools menu in HostExplorer, press Alt+L.

Once you have opened a menu, you can access a menu item by pressing the underlined letter in the menu item name, or you can use the arrow keys to navigate the menu list. For menu items with an associated keyboard shortcut, the shortcut is listed on the menu to the right of the item.

Directional arrows Use the directional arrows on the keyboard to navigate through menu items or to scroll vertically and horizontally. You can also use the directional arrows to navigate through multiple options. For example, if you have a series of radio buttons, you can use the arrow keys to navigate the possible selections.

Tab key sequence To navigate through a dialog box, press the Tab key. Selected items appear with a dotted border. You can also press Shift+Tab to go back to a previous selection within the dialog box.

Spacebar Press the Spacebar to toggle check boxes on and off or to select buttons in a dialog box.

Esc Press the Esc key to close a dialog box without implementing any new settings.

Enter Press the Enter key to select the highlighted item or to close a dialog box with the new settings. You can also press the Enter key to close all About boxes.

ToolTips ToolTips appear for all functional icons. This feature lets users use Screen Reviewers to make interface information available through synthesized speech or through a refreshable Braille display.

Microsoft Accessibility Options

Microsoft Windows environments contain accessibility options that let you change how you interact with the software. This feature can add sound, increase the magnification, and create sticky keys.

To access the Microsoft Windows Accessibility options, open Control Panel and click Accessibility.

If you installed the Microsoft Accessibility components for your Windows system, you can also find other Accessibility tools on the Start menu under Programs/Accessories/Accessibility.

To add the Accessibility components:

- 1 In Control Panel, double-click Add/Remove Programs.
- 2 On the Setup tab, select the Accessibility Options check box and click Apply.
- 3 Click OK.

Hummingbird Information Resources

Hummingbird provides the following sources of information regarding your product.

Documentation Resources

Your product documentation set consists of both print and online sources.

Manuals Hummingbird manuals contain conceptual information on your product; procedural information on installing and using the product and related applications; and some manuals contain programming reference, interface reference, and troubleshooting information.

All manuals are available in print and online. The online versions require Adobe Acrobat Reader 5.0 and are installed only if you do a Complete installation. Your Hummingbird product comes with the following manuals:

HostExplorer User's Guide

HostExplorer Deployment Wizard Administrator's Guide

HostExplorer Programmer's Guide (in .pdf format only)

Hummingbird Basic Language Programmer's Guide

Online Help The online Help is a comprehensive, context-sensitive collection of information regarding your Hummingbird product. It contains conceptual and reference information, and detailed, step-by-step procedures to assist you in completing your tasks.

Release Notes The release notes for each product contain descriptions of the new features and details on release-time issues. They are available in both print and HTML. The HTML version is automatically installed when you install the software. Read the release notes before installing your product.

Technical Support

You can contact the Hummingbird Technical Support department Monday to Friday between 8:00 a.m. and 8:00 p.m. Eastern Time.

Hummingbird Ltd. 1 Sparks Avenue, North York, Ontario, Canada M2H 2W1		
Technical Support:	Canada and the USA	International
	1-800-486-0095	+1-416-496-2200
General Enquiry:	1-877-FLY-HUMM	
Main:	+1-416-496-2200	
Fax:	+1-416-496-2207	
E-mail:	support@hummingbird.com	
FTP:	ftp.hummingbird.com	
Online Request Form:	www.hummingbird.com/support/nc/request.html	
Web Site:	www.hummingbird.com/about/contact.html	

Mailing Lists and User Groups

For tips, additional help, and contact with other Hummingbird users on all operating systems, subscribe to *Hummingbird Exposé Online* or join the user group dedicated to your Hummingbird product.

Subscribing to Hummingbird Exposé Online

Hummingbird Exposé Online is an electronic mailing list and online newsletter. It was created to facilitate the delivery of Hummingbird product-related information. It also provides tips, help, and interaction with Hummingbird users.

To subscribe to *Hummingbird Exposé Online*:

- 1 Open your web browser and type the following address:

<http://www.hummingbird.com/expose/about.html>

- 2 In the Subscribe section, type your full name, e-mail address, and language preference. Then click Subscribe.

Note: To discontinue your subscription, in the Unsubscribe section, type your e-mail address then click Unsubscribe.

To subscribe to the Mailing List or User Group:

- 1 Open your web browser and type the following address:
`http://www.hummingbird.com/support/usergroups.html`
- 2 On the User Groups and Mailing Lists page, click a product link.
- 3 On the Archives page, scroll down to the Subscription Instructions.
- 4 In the Online Subscriptions section, type the name you want to display on the User Group and your e-mail address.
- 5 Click Subscribe. The browser opens a confirmation page to tell you your subscription was successful. You can now post messages to the User group. See posting instructions in Joining a User Group below.

Note: To discontinue your subscription, in the Online Unsubscriptions section, type your e-mail address then click Unsubscribe.

To search the mailing list archives:

Go to the following web site:

`http://www.hummingbird.com/support/usergroups.html`

Joining a User Group through E-mail

The user group is an unmoderated electronic mailing list that facilitates discussion of product-related issues and UNIX issues to help users resolve common problems and to provide tips, help, and contact with other users.

To join a User Group:

- 1 Send an email to `listserv@hummingbird.com`. Leave the Subject line blank.
- 2 In the body of the e-mail message, type the following:

`subscribe hostexplorer-users Your Name`

To post a message to a User Group:

Create an e-mail and send it to the following address:

`hostexplorer-users@hummingbird.com`

Kerberos Security

Kerberos is a network authentication protocol that provides the necessary network tools to secure information systems across an enterprise. Based on client/server identification, Kerberos uses a key-distribution model and a secure password to restrict access to classified accounts.

For more information about Kerberos security, go to the following URL:

`http://web.mit.edu/kerberos/www/`

Chapter 2

Installing HostExplorer

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Overview

The Hummingbird Setup Wizard (beginning with version 7.0) supports Windows Installer technology. Setup Wizard is based on three standard, top-level user interfaces or modes: installation, administration, and advertisement. Each defines a different installation path and user interface flow.

The following sections in this chapter provide:

- an overview of the technology
- an outline of the installation requirements and preparations
- installation procedures and program maintenance
- advanced implementation scenarios
- a procedure for migrating user profiles from earlier versions

For more information, see see “Preserving User Profiles” on page 46.

Note: You cannot preserve user profiles for products before version 6.2.

For information about updating products (version 7.x or greater), see “Updating the Product” on page 47.

Windows Installer Technology

For more information about Windows Installer, see the documentation available in the MSDN online library at msdn.microsoft.com

The Windows Installer service is an operating system component that acts as a setup engine. The installer includes:

- an operating system-resident installation service
- a standard format for component management
- a management API (such as Hummingbird Setup Wizard) for applications and tools

Windows Installer copies files onto the hard disk, modifies the registry, creates shortcuts on the desktop, and displays dialog boxes that prompt for user input.

Windows Installer consists of a client-side installer service (`Msiexec.exe`) and a Microsoft Software Installation (`.msi`) package file. The installer uses information in the package file to install the Hummingbird product. `Msiexec.exe` is called by Hummingbird Setup Wizard and uses a dynamic-link library (`.dll`) to read the package files, apply transformation (`.mst`) files, and incorporate options supplied by Setup Wizard.

For more information, see "Multi-Language Support" on page 19.

Windows Installer changes the registered file type of .msi files so that double-clicking the file runs `Msiexec.exe` with the .msi file. Each .msi package file contains a relational database that stores instructions and data required to install (and uninstall) the program.

Note: Double-clicking an .msi file that requires language translation produces an error message (Error 2803). Instead, run Hummingbird Setup Wizard (`setup.exe`) and select the appropriate setup language in the user interface.

The installer eliminates the need to run a setup engine on each target computer. Since installations are run through this common engine, the operating system can keep track of installation databases.

The key benefits of this technology are:

- efficient management of shared resources
- consistent installation rules
- easy customization
- choice of what pieces of the application are installed
- the ability to diagnose and repair problems at run-time

These and other benefits are outlined below:

Consistent Installation and Setup Rules Windows Installer ensures all setup rules are implemented by the operating system. To follow those rules and avoid problems, a Hummingbird application describes itself in the standard Windows Installer format. The installer then performs the installation duties on behalf of the application.

Restores computer state if installation fails Windows Installer tracks changes made to the system during the installation process. If the installation fails, the installer restores the system to its initial state.

Prevents program conflicts Conflicts occur, for example, when an installation operation updates a dynamic-link library (.dll) file shared by an existing program (sometimes replacing a newer .dll with an older one), or when an uninstall operation deletes a .dll file shared by another program. This might cause the computer to stop responding. The installer enforces installation rules that help prevent such conflicts.

Diagnoses and repairs corrupted or damaged files Windows Installer can determine whether an installed program has missing or corrupted files. The installer repairs the program as necessary by replacing only those files.

Reliably uninstalls existing programs Windows Installer reliably uninstalls any program it previously installed. All the associated registry entries and program files are removed, except for those shared by other software.

Supports Hummingbird Sconfig Sconfig is an advanced system administration tool that lets administrators customize the Setup Wizard program.

For more information about Sconfig for Windows Installer, see the “System Administration—Sconfig and Jconfig” chapter in this manual.

Hummingbird Setup Wizard

Hummingbird Setup Wizard is the interface displayed by Windows Installer. Setup Wizard does the following:

- uses the Windows Installer service to maintain the applications and resources installed on the computer
- determines the correct path to specific components
- ensures that applications do not point to missing files

The Windows Installer service views all applications as three logical building blocks: products, features, and components. For more details about these terms, see the following sub-sections.

Products

A product represents a single Hummingbird product such as Exceed, NFS Maestro, or HostExplorer. Products consist of one or more features. Each product is described to the Windows Installer service in the form of a single package file (.msi) or installation database.

Products do not own any resources directly, but they do have globally-unique identifiers known as Product Codes. These enable the service to identify applications that are clients of a given component. Windows Installer service maintains a list of client products for each component. Product Codes let the service determine if a given product is already installed on a particular computer.

Features

Features are the individual pieces of an application that you can choose to install. Typically, they represent the functional features of an application. When you select Custom in the Setup Wizard program, the interface provides you with a tree that is composed of features (and sub-features). An example of a feature is X Server or Traceroute.

Components

A component is the smallest and most fundamental of the three logical building blocks. A component is a collection of files, registry keys, and other resources that are all installed or uninstalled together. When a given component is selected for installation or removal, all of the resources in that component are either installed or removed.

Components are invisible to the user; Hummingbird Setup Wizard manages whatever components make up a given Hummingbird application. Examples of components include single files, a group of related files, COM objects, registration, registry keys, shortcuts, resources, libraries grouped into a directory, or shared pieces of code.

Multi-Language Support

Hummingbird Setup Wizard can perform installation for the following languages:

Language	Transform File
German	1031.mst
English ¹	1033.mst
Spanish	1034.mst
French	1036.mst
Italian	1040.mst
Portuguese	2070.mst

¹ English (United States) is the default installation language. Some Hummingbird products are available only in English. For more information, see the table on page 20.

Each language has an associated .mst transform file. Depending on the language selected, Setup Wizard applies the appropriate .mst file to the original .msi (which initially does not contain any user interface).

You can by-pass Setup Wizard and apply a language transformation using the following command line syntax:

```
msiexec /i "path" TRANSFORMS=filename.mst
```

where *path* is the path to the .msi file, and *filename.mst* is the appropriate transform file listed in the table above. For example, the following applies an English transformation to Exceed:

```
msiexec /i "Hummingbird Exceed.msi" TRANSFORMS=1033.mst
```

For more information about Msiexec command line options, see the Windows Installer documentation in the MSDN online Library at msdn.microsoft.com or on CD-ROM via subscription.

The following are the multi-language support options for Hummingbird products:

Product	Support Language(s)
Exceed	German, English, Spanish, French, Italian, Portuguese
Exceed 3D	
Exceed XDK	
Exceed PowerSuite	
Hummingbird Connectivity Security Pack	
HostExplorer	
HostExplorer Deployment Wizard	
NFS Maestro Client	
NFS Maestro Server	
NFS Maestro Solo	
NFS Maestro Gateway	
Hummingbird Inetd	English only
Hummingbird FTP for Windows Explorer	

Preparing to Install

System and shared files currently in use cannot be updated. Close all applications before proceeding with the installation.

Note: Before installing on Windows NT/2000, it is recommended that you log on with Administrator authority. You also require write access to the Windows system directory and registry. If necessary, consult your system administrator.

Hummingbird connectivity products (version 7.0 and later) use Windows Installer. It is included with Windows 2000 and Windows Me. If Windows Installer is not present on your Windows 95, Windows 98, or Windows NT 4.0 operating system, then Hummingbird Setup Wizard installs and configures the service.

Note: The first time Hummingbird Setup Wizard installs and configures Windows Installer, you may be prompted to restart the machine. Installation continues after your system restarts.

If Windows Installer is present on the operating system, Setup Wizard checks the version. If necessary, Windows Installer is updated.

Installation Requirements

The following table outlines installation requirements for Hummingbird connectivity products:

Product	Operating System	Disk Space ¹	Other Requirements
HostExplorer	Windows 95 Windows 98 Windows Me Windows NT ² (service pack 4 or later) Windows 2000 ²	30 MB	

¹ Approximate free hard disk space required for a Complete installation of all program features.

² Administrator privileges are required to install some portions of the product.

Note: For some installation scenarios, Windows NT 4.0 requires Internet Explorer 4.01 or greater, and Windows Desktop Update (shel1132.dll version 4.72.3110.0). See “Advertised Product” on page 40.

You can preserve user profiles from version 6.2 of Hummingbird products. For more information, see “Preserving User Profiles” on page 46.

JRE consists of the Java Virtual Machine, the Java platform core classes, and supporting files.

Third Party Software

Certain third party software must be installed to run some Hummingbird products. The Sun Java Runtime Environment (JRE) is required to run Java programs.

For example, you must install JRE before installing the following product sub-features:

- Systems Administration—Jconfig (client)
- Systems Administration—Jconfig Daemon

Hummingbird Master Setup lets you install third party add-on(s) such as:

- Adobe Acrobat Reader
- Sun Java 2 Runtime Environment
- Microsoft SNA Server (for Windows NT/2000)
- IntranetWare for SAA Client

Choosing a Setup Type

For an illustration of setup types, see the dialog box on page 29.

Hummingbird Setup Wizard prompts you to choose either a Typical, Custom, or Complete setup type. For assistance with choosing a setup type, consult the following quick reference table:

Setup Type	Function	Recommended for:	More information:
Typical	<ul style="list-style-type: none"> • standard features • no feature or feature directory changes 	<ul style="list-style-type: none"> • new users 	<ul style="list-style-type: none"> • see “Typical” on page 30
Custom	<ul style="list-style-type: none"> • control over feature and directory changes 	<ul style="list-style-type: none"> • advanced users and system administrators • users with restricted disk space 	<ul style="list-style-type: none"> • see “Custom” on page 32
Complete	<ul style="list-style-type: none"> • everything is installed in default directories 	<ul style="list-style-type: none"> • users without disk space restrictions 	<ul style="list-style-type: none"> • see “Complete” on page 33

Note: All setup types allow you to change the destination folder (also known as the root home directory). However, this change affects all feature directories.

Hummingbird Sconfig

Sconfig is an advanced system administration tool that lets administrators customize the Setup Wizard program. For more information, see the “System Administration—Sconfig and Jconfig” chapter in this manual.

Installation Directories

Hummingbird Setup Wizard installs program-specific and user-specific files to the directories described below.

Installation	Description	Location/Type
Destination folder	Program files install into the destination folder (also known as the root home directory). It is recommended that you use the default directory: C:\Program Files\Hummingbird\Connectivity\Version\ However, you can specify a different directory.	Location: a remote network drive or a local hard drive. Can be a read-only directory.
User directory	User files install into the user directory. These files are configuration files or related files that your Hummingbird product can change.	There are two kinds of user directories and user files. For more information, see "Installed Files" below. Warning: Do <i>not</i> make a user directory read-only. Location: a remote network drive or a local hard drive.
	Current user: <Application Data>\Hummingbird\Connectivity\Version	
	All users: <Common Application Data>\Hummingbird\Connectivity\Version	

Setup Wizard supports the Uniform Naming Convention (UNC) so you can begin path specifications with \\ in place of the disk drive to specify a shared directory on a file server. For example:

\\machine_specification\share_name

where *machine_specification* is the name of the computer to which you are connecting, and *share_name* is the name of the shared directory. If you use UNC names to install to a Novell server, you must install the OS/2 support patch on the NetWare server as NetWare servers do not support UNC paths.

Installed Files

User files for Hummingbird connectivity products fall into two categories:

- per-machine
- per-user (current user and “All Users”)

Per-machine files are local so that key operating system components, such as device drivers and services, can reliably access them during login.

Per-machine files are those application or service files that, when changed, affect all users of the computer. An example is the `inetd.ini` file. If you change `inetd.ini` to stop the Telnet daemon from running, then regardless of which user is logged onto the computer, the Inetd service rejects Telnet connections.

Per-user files are all application or service files that, when changed, affect only the user who is making the change (that is, the currently logged in user). An example of a user-specific file is `exceed.cfg`. If you configure `exceed.cfg` with Xconfig to use a certain Display, then other users of the machine are not affected.

Note: Only the user who installs the product has access to those user files in the *current user* directory.

The following are the per-machine file locations:

Operating System	Per-Machine—File Location
Windows 95/98/Me	C:\Windows\System\Hummingbird\Connectivity\<Version>\
Windows NT 4.0	C:\Winnt\System32\Hummingbird\Connectivity\<Version>\
Windows 2000	

Current User versus “All Users”

For Windows NT/2000 platforms, Hummingbird Setup Wizard prompts you to choose between installing the product on the computer for the currently logged in user, or for all users. For the current user, shortcuts are created in the appropriate user profile folder, along with copies of all other user files. For all users (anyone who uses the computer), shortcuts are created in the “All Users” profile folder, along with copies of all other user files.

The following are the default locations for user files:

Operating System	Per-User Files—Default Location (Current User)
Windows 95/98/Me	C:\Windows\Application Data
Windows 95/98/Me (user profiles enabled)	C:\Windows\Profiles\%USERNAME%\Application Data
Windows NT 4.0	C:\Winnt\Profiles\%USERNAME%\Application Data
Windows 2000	C:\Documents and Settings\%USERNAME%\Application Data (hidden)

Operating System	Per-User Files—Default Location (All Users)
Windows 95/98/Me	C:\Windows\Application Data
Windows 95/98/Me (user profiles enabled)	C:\Windows\Profiles\All Users\Application Data
Windows NT 4.0	C:\Winnt\Profiles\All Users\Application Data
Windows 2000	C:\Documents and Settings\All Users\Application Data (hidden)

Installation and Maintenance

This section describes basic installation procedures and setup types:

- personal installation—such as one user installing on one computer
- setup types—typical, custom, complete
- administrative installation—systems administrators create an image of the product at a network location

For examples of how to implement these procedures, see “Typical Installation Scenarios” on page 39.

Personal Installation

Autorun launches the Hummingbird Master Setup application when you insert the CD into your drive. If Master Setup does not launch automatically, run `Msetup.exe` from the root directory of the CD.

To configure Windows Installer and prepare Setup Wizard:

- 1 In the Hummingbird Master Setup application window, you can select options to install third party add-ons, register online, or view release notes. Otherwise, click *Install Product*, then *Personal Installation*.
- 2 If you are prompted, select a setup language and click OK. English is the default.



Note: For certain products, English is the only supported language. For more information, see the table on page 20. When selected, the language applies to *all* subsequent users installing Hummingbird products on the PC.

- 3 Your Hummingbird product prepares Setup Wizard, checks the operating system, and checks the current Windows Installer version.
 - If necessary, the version is updated and the Setup Wizard continues.
 - If Windows Installer is not present on your operating system, Setup Wizard installs the service. Click Restart System to continue installing the product.



Setup Wizard reboots the computer. This is necessary only the first time Windows Installer is configured and installed on your Windows 95/98 or Windows NT operating system.

- 4 After configuring Windows Installer and preparing to install, Setup Wizard proceeds to the Welcome dialog box. Click Next.

Note: To quit installation, click Cancel in any Setup Wizard dialog box. Your computer is not affected if you do this before the Setup Wizard copies files. To review or change settings in a previous dialog, click Back.

The Next button is dimmed if the terms of the license agreement are not accepted.

- 5 Read the licensing agreement. If you select the option that indicates the terms are acceptable, then click Next.

Note: Failure to read or understand the License Agreement does not affect the terms and conditions of the agreement.

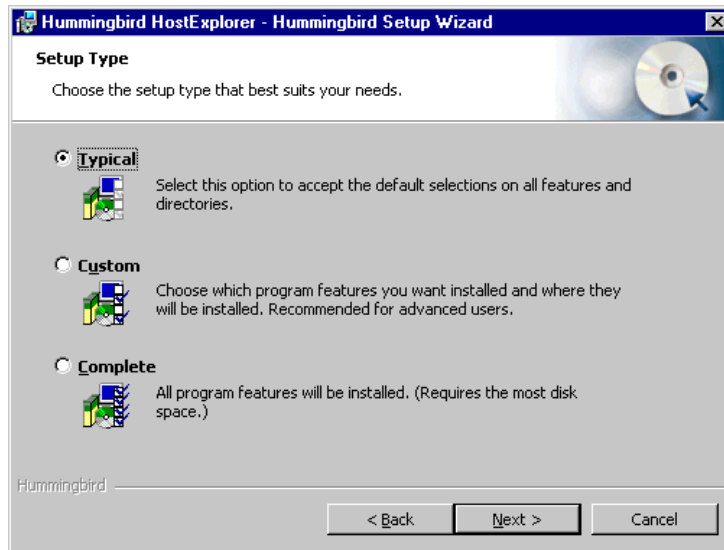
- 6 The Customer Information dialog box opens. Type the appropriate information, select an installation option (all users, current user), and click Next.

Destination Folder is the same as the home directory (a term familiar to users of version 6.2 and earlier products).

- 7 The Destination Folder dialog box opens. Accept the default installation folder for the product, or click **Change** to open a dialog box for browsing to an alternate location. Click **Next**.

Note: Some product features are not affected by changes to the destination folder.

- 8 The Setup Type dialog box opens. Select a setup type and click **Next**.



For more information, see “Typical” on page 30 and “Complete” on page 33.

For more information, see “Custom” on page 32.

- For Typical and Complete setup types, a dialog box opens and indicates Setup Wizard is ready to begin installation. Click **Install**.
- For Custom setup type, a Custom Setup dialog box opens. Customize the installed program features and click **Next**.
A dialog box indicates Setup Wizard is ready to begin installation. Click **Install**.

- 9 A dialog box opens and indicates installation is complete. Click **Finish**.

For information about product modification, repairs, or removal, see “Program Maintenance for Personal Installations” on page 34.

Setup Types

The following sections describe options that determine what product (program) features are installed.

Typical

Complete setup type includes all the features listed in the table on page 30.

Selecting this setup type means that standard features are installed to default destination folders. In contrast to the Complete option, only the essential features of the product are installed.

Typical setup type usually requires less disk space than the other types. The following table lists features installed and those not installed with this setup type:

Features (and Sub-Features)		Not installed with Typical
Accessories	Finger ¹	Command Line Utilities ³
	Host Editor ²	
	Hummingbird Basic ^{1, 3}	
	Launch Pad ¹	
	Network Time ¹	
	NSLookup ¹	
	Ping ¹	
	Remote Tools ¹	
	Tar ¹	
	TraceRoute ¹	
	Whois ¹	
HostExplorer	Command Line Utilities	FTP ^{1, 3}
	Hummingbird Neighborhood ^{2, 3} [FTP for Windows Explorer ^{2, 3} , HostExplorer Profile Type ² (3270, 5250, Telnet) ² , PrintExplorer ²]	HostExplorer Development Kit ^{1 2}
	LPQ ¹ LPR ^{2, 3} WyseTerm ¹	

Features (and Sub-Features)		Not installed with Typical
Hummingbird Inetd ^{2, 3}	Finger Daemon ^{2, 3} FTP Daemon ^{2, 3} LP Daemon ^{2, 3} Telnet Daemon ^{2, 3} Time Daemon ^{2, 3} Xstart Daemon ^{2, 3}	Bootp Daemon ^{2, 3} Trivial FTP Daemon ^{2, 3} Trivial Name Daemon ^{2, 3}
Online Documentation		Hummingbird Basic Language Programmer's Guide ¹ HostExplorer User's Guide ¹ HostExplorer Programming Guide
System Administration	Jconfig Daemon (Java Component) ³ Hummingbird Update ³ SOCKS Information ¹	Jconfig (Java Component) ^{1, 3} Sconfig ¹

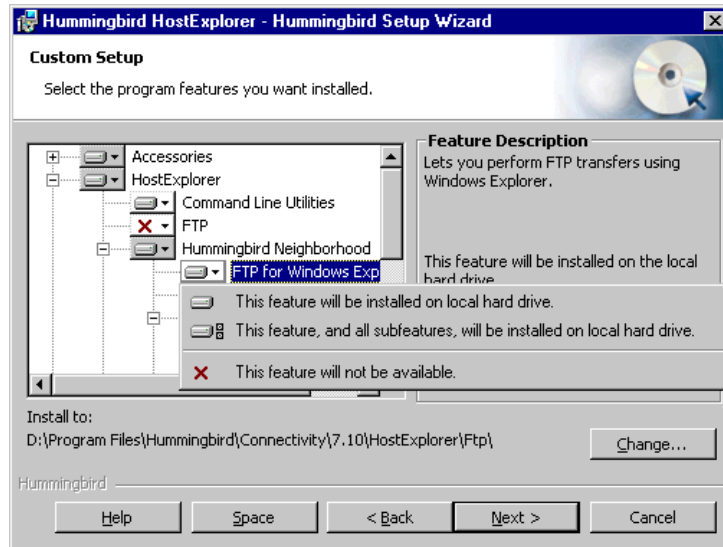
¹ The feature or sub-feature can be advertised.

² Installing the feature or sub-feature requires Administrator privileges.



³ You cannot run the feature from a network location.

Custom

This setup type lets you select the program features to install and where to install them. This setup type is recommended for advanced users and administrators. When you click Next in the Setup Type dialog box, the following dialog box opens:



You can view more information about features and perform the following customization:

- Expand a feature category by clicking the plus icon  to view a tree of features or sub-features. Similarly, click the minus icon  to collapse the feature tree.
- Click a feature icon to display a pop-up menu of icons and install options (see above). Click a pop-up menu icon. The icon in the feature tree changes according to your selection. Click Help to view a dialog box with tips.

- Click Change to open the Change Current Destination Folder dialog box and install the feature to a folder other than the default.

Note: For some product features (such as Hummingbird Inetd), the Change button is disabled and you cannot specify an installation folder.

- Click Space to open a dialog box listing all local drives (logical partitions) and mapped drives on the machine. It provides detailed information about available disk space.

Complete

The Complete option installs all features listed in the table on page 30.

This setup type requires the most disk space and installs all product features to the default destination folder:

`C:\Program Files\Hummingbird\Connectivity\<Version>\`

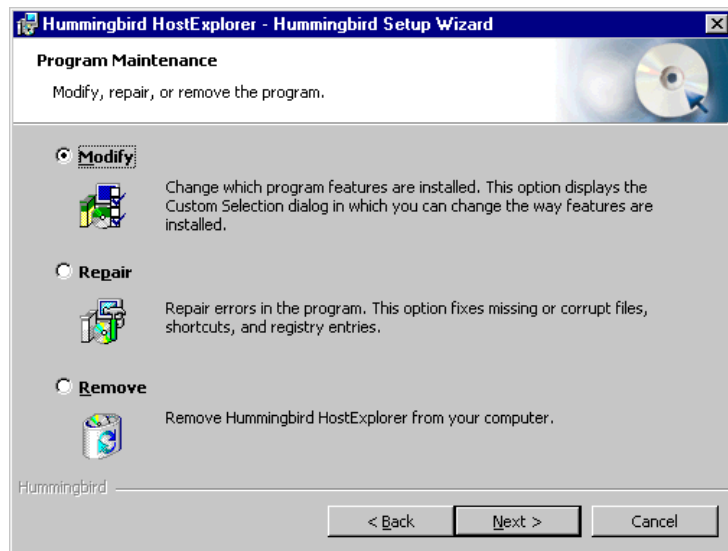
Click Change to open a browse dialog box and install the program to another destination directory.

Program Maintenance for Personal Installations

Program maintenance lets you modify, repair, or uninstall existing Hummingbird products and features (version 7.x).

To launch Hummingbird Setup Wizard in maintenance mode:

- 1 You can open Program Maintenance by running `Msetup.exe` from the product CD. Alternatively, double-click Add/Remove Programs in Control Panel, select the Hummingbird program, and click Add/Remove. The Welcome dialog box opens.
- 2 In the Welcome dialog box, click Next. The Program Maintenance dialog box opens.



For more information about maintenance options, see the following procedures.

To modify the install state of program features:

- 1 In the Program Maintenance dialog box, select Modify and click Next.
- 2 The Custom Setup dialog box opens. Expand the feature tree and change the install state, as necessary. Click Next.

For more information, see "Custom" on page 32.

- 3 Setup Wizard prompts when it is ready to modify the program. Click Install and the install state of program features changes according to your specifications.
- 4 Installation (modification) proceeds to completion. Click Finish to exit.

To repair a program:

- 1 In the Program Maintenance dialog box, select Repair and click Next.
- 2 The Ready to Repair the Program dialog box indicates Setup Wizard is ready. Click Install to repair errors such as missing or corrupt files, shortcuts, and registry entries.
- 3 Program repair proceeds to completion. Click Finish to exit.

To remove a program:

- 1 In the Program Maintenance dialog box, select Remove and click Next.
- 2 The Remove the Program dialog box indicates Setup Wizard is ready. Click Remove to uninstall the program.
- 3 Program removal proceeds to completion. Click Finish to exit.

Note: With Windows Installer, you can uninstall (remove) only one program (product) at a time. Ensure that all programs associated with the product you are uninstalling are closed.

Administrative Installation

Autorun launches the Hummingbird Master Setup application when you insert the CD into your drive. If Master Setup does not launch automatically, run `Msetup.exe` from the root directory of the CD.

Administrative installations let you create a centralized image of the product. This means that many users can install the product without the original CD media. There are two types of administrative installations:

Copy Image This installation creates a language-specific image at a network location, but in all other respects, this image is the same as the contents of the original CD. Running `Setup.exe` from a Copy Image is the same as a personal installation. For more information, see the procedure “Personal Installation”, from pages 27 to 29.

Shared Image This installation creates a language-specific image for running applications from the network. When an application is marked “Run from Network”, only the user and system files are installed to the local computer. All other files remain on the Shared Image server. Running `Setup.exe` from a Shared Image is called a workstation installation (see page 45). This is similar to a personal installation, except advertisement (see “Advertised Product” on page 40) is not available and features are set to run from the network.

All Hummingbird products support Administrative—Copy Image installation. Administrative—Shared Image installation is available for the following products:

- Exceed
- Exceed 3D
- Exceed XDK
- Exceed PowerSuite
- HostExplorer
- NFS Maestro Client
- NFS Maestro Solo

Note: An administrative installation only copies files. The product is not installed to the network location (server), nor does it make changes to the server. Only the network location folder is modified.

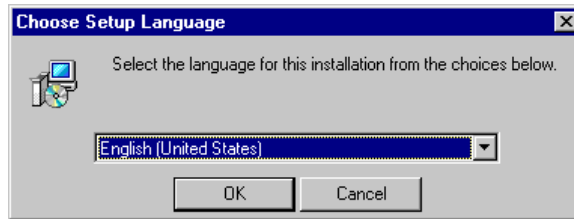
To run Setup Wizard in Administrative mode:

- 1 Run `Msetup` from the product CD. In the Hummingbird Master Setup application window, you can select options to install third party add-ons, register online, or view release notes. Otherwise, to run Setup Wizard, click *Install Product*, then click *Administrative Installation*.

Alternatively, from the product directory on the CD, run:

```
setup /a
```

- 2 Select a setup language and click OK. This language will apply to all installations from the copied image or shared image.



- 3 Your Hummingbird product prepares Setup Wizard, checks the operating system, and checks the current Windows Installer version.
 - If necessary, the version is updated and the Setup Wizard continues.
 - If Windows Installer is not present on your operating system, Setup Wizard installs the service. Click *Restart System* to continue installing the product.

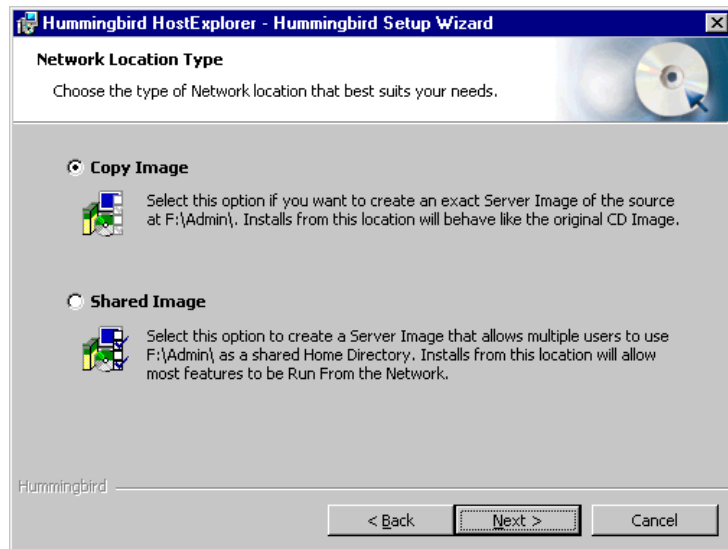


Setup Wizard reboots the computer. This is necessary only the first time Windows Installer is configured and installed on your Windows 95, Windows 98, or Windows NT 4.0 operating system.

- 4 After configuring Windows Installer and preparing to install, Setup Wizard proceeds to the Welcome dialog box. Click Next.

Note: To quit the installation, click Cancel in any Setup Wizard dialog box. Your computer is not affected if you do this before the Setup Wizard copies files. To review or change settings in a previous dialog, click Back.

- 5 The Network Location dialog box opens. Accept the default installation folder for the product or click Change to open a dialog box for browsing to an alternate network location.
- 6 Click Next and the Network Location Type dialog box opens. Select a network location type.



- 7 Click Next. The Ready to Install Network Image dialog box opens.
- 8 Click Install. Installation of the network image proceeds to completion.

Typical Installation Scenarios

This section describes installation scenarios. The conditions and parameters affecting implementation in your environment may vary from these examples.

Personal Installations

Administrators, or users who do not have Administrator privileges (Windows NT/2000), or “Any User” in Windows 95/98, are able to perform personal installations for HostExplorer. FTP for Windows Explorer, Hummingbird Inetd, and Hummingbird NFS Maestro Client Gateway require Administrator privileges for personal installations in Windows NT/2000. However, “Any User” in Windows 95/98 can install these products or features.

This type of installation applies to all Windows platforms, but not Windows NT 4.0 Server—Terminal Server Edition or Windows 2000 Advanced Server with Terminal Services enabled.

Personal—With Administrator Privileges

This scenario assumes:

- you are logged in to the PC as the (local) Administrator
- the product CD is available locally or on the network

To launch a personal installation as Administrator:

- 1 Launch Setup Wizard in installation mode by one of the following methods:
 - from the command line, run `Setup.exe` on the product CD or from a server image
 - from the product CD, run `Msetup.exe`
- 2 In the Customer Information dialog box under Install this application for, select one of the following options:
 - Anyone who uses this computer (all users)
 - Only for me (*username*)—applicable to the current user

For more information about creating a server image, see “Silent Installation” on page 41.

Note: These options are available only in Windows NT/2000, provided that you are logged in to the PC as Administrator.

- 3 If you are prompted, select a language for the installation. English is the default.

Note: For certain products, English is the only supported language. For more information, see the table on page 20. When selected, the language applies to *all* subsequent users installing Hummingbird products on the PC.

- 4 Dialog boxes provide information and prompt for input.
- 5 In the Setup Type dialog box, select Typical, Custom, or Complete. Installation proceeds to completion.

Installing onto a Terminal Server

For information about installing Host Explorer onto a Terminal Server, see the next chapter.

Advertised Product

Applies to all Windows platforms, but not Windows NT 4.0 Server—Terminal Server Edition or Windows 2000 Advanced Server with Terminal Services enabled. Windows NT 4.0 requires Internet Explorer 4.01 (SP1) or greater, and Windows Desktop Update (shell32.dll version 4.72.3110.0 or later).

Advertisement (install on demand or deferred installation) means all features of a product are available even if they are not installed on the computer. This scenario assumes:

- you are logged in to the PC as the (local) Administrator
- the product CD is available locally or on the network

Note: Not all product features can be advertised.

To advertise a product and all its features:

- 1 Launch Setup Wizard in advertisement mode by one of the following methods:
 - on the command line type `E:\setup /V/jm` for all users or `E:\setup /V/ju` for the current user—where `E:\` is the CD-ROM drive

- run `Msetup.exe` from the product CD

Note: For a deferred installation, the product CD must be in the drive and the drive must be accessible.

Shortcuts and registry entries exist on the computer, but files are not installed.

- 2 Select the **Complete** setup type.
- 3 A Hummingbird product icon is installed on the PC desktop, and in the Windows program group (on the Start menu), for each feature.

Note: Shortcuts for features requiring Administrator privilege will not launch correctly if the user does not have the required privileges to install the feature. For more information about these features, see the table on page 30.

Silent Installation

A silent installation runs in the background. This scenario assumes:

- you are logged in to the PC as the (local) Administrator
- the product CD is available locally or on the network

Note: This scenario describes a local installation.

To run a silent installation:

- 1 Launch Setup Wizard from the command line using the following syntax:

```
E:\setup /S /V/qn [/lnnnn]
```

where `E:\` is the CD-ROM drive. The following describes options:

Option	Description
<code>/S</code>	Specifies a silent installation.
Note: <code>s</code> is upper-case.	

Option	Description
/V/qn	/V passes parameters to Msiexec.exe. Note: There are no spaces between the /V and /qn options and that V is upper-case. If necessary, you can put quotes around a character string. For example: /V"parameter space"
/lnnnn	Overrides the default English language installation where nnnn is the transform file name. Note: For nnnn, type only the number but <i>not</i> the .mst extension.

2 Installation proceeds to completion.

Microsoft Systems Management Server (SMS)

An Administrator can use SMS to manage network computers, distribute software from a central location, and perform a variety of other system management tasks. The Administrator can install a package of products simultaneously on multiple computers.

Requirements:

You can get the latest service pack for SMS from the Microsoft web site.

- SMS version 2.0 with service pack 2 (or greater)
- SMS Client (installed on each client computer) supplied with SMS Server
- Windows Installer on the client computer

A package contains source files for the program and various details for directing the software distribution process.

To distribute a product using SMS, the Administrator must create a package definition file according to SMS instructions.

Warning! Do not confuse the package definition file extension (.pdf) with the Adobe file format (pdf—portable document format).

For convenience, Hummingbird provides a default package definition file for all products. There are three default scenarios in each package definition file:

- Typical

- Silent—Typical
- Silent—Complete

When a package is run through SMS, it prompts you to select one of these options (scenarios). Use the following command line parameters to apply modifications or create new package definition files:

Command Line Parameter	Description
/i	Installs or configures a product.
/q	Sets user interface level (silent).
INSTALLLEVEL=150	Does a complete install.
TRANSFORMS=nnnn.mst	Specifies the product language where <i>nnnn</i> is the transform file name.

For more information about Msiexec command line options, see the Windows Installer documentation available in the MSDN online library at msdn.microsoft.com

For example, a complete silent installation of a Hummingbird product in Italian would look like this:

```
msiexec /i "Hummingbird Product.msi" TRANSFORMS=1040.mst INSTALLLEVEL=150 /q
```

Refer to Microsoft documentation for command line parameters, switches, and other information required for Windows Installer and Systems Management Server.

Shared Installation

This type of installation applies to Windows NT/2000 platforms, but not Windows NT 4.0 Server—Terminal Server Edition or Windows 2000 Advanced Server with Terminal Services enabled.

This advanced installation creates a server image of the Hummingbird product and saves it to a network location.

Note: On Windows NT 4.0—Terminal Server Edition, shared installation is not possible. For more information, see “Installing onto a Terminal Server” on page 40.

To launch a shared installation:

- 1 Launch Setup Wizard in administration mode by one of the following methods:

- from the command line using the syntax:

`E:\setup /a`

where `E:\` is the CD-ROM drive.

- run `Msetup.exe` from the product CD. In the Hummingbird Master Setup application window, click *Install Product*, then *Administrative Installation*.

The `/a` flag launches the executable file in administrative mode.

The language will apply to all network installations from this server.

- 2 If you are prompted, select a language for the installation. English is the default.

Note: For certain products, English is the only supported language. For more information, see the table on page 20. Once selected, the language applies to *all* subsequent users installing Hummingbird products on the PC.

- 3 Click *Next* in the *Welcome* dialog box.
- 4 In the *Network Location* dialog box, type a path to an accessible network location (server) or click *Change* to open a browse dialog box. Click *Next*.
- 5 In the *Network Location Type* dialog box, select *Shared Image*. Click *Next*.
- 6 When Setup Wizard is ready, click *Install*.
- 7 All of the required files are installed to the specified network location.
- 8 Users wanting to use this product must perform a workstation installation.

Workstation Installation

This scenario requires an existing shared image installation. The product is installed to network workstations from the shared image located on a network server. Certain features are set to run from this network location.

Note: This type of installation will not start on Windows NT 4.0—Terminal Server Edition.

To launch a workstation installation:

Users can install products from the shared image in the context of either the Standard/Personal or Standard/Personal with Administrator Privileges scenarios.

- 1 Run `Setup.exe` from the network location.
- 2 For details about this part of the procedure, see “Personal Installation” beginning at step 3 on page 28.

Note: In the Custom Setup dialog box, the install state of certain features (and sub-features) are by default set to run from the network. For workstation installations that are cross-platform (for example, installing from a shared image on a Windows NT/2000 server to a 95/98 workstation), features that contain platform-specific components are set to run locally on the workstation, *not* from the server.

- 3 Installation proceeds to completion.

Hummingbird Sconfig

Sconfig (Setup configuration) lets you customize the installation of software on local and network machines. Use it to customize the folders installed by Setup Wizard, determine what is installed (as well as limit functionality or optimize disk space), and simplify user input. For more details, see the “System Administration—Sconfig and Jconfig” chapter in this manual.

Preserving User Profiles

Hummingbird Setup Wizard does not preserve user profiles for products before version 6.2. You must manually uninstall all such products *before* installing version 7.x.

Version 6.2 User Profiles

You can preserve user profiles for version 6.2 Hummingbird products. If you are upgrading the same (single) product from version 6.2 to version 7.1, Setup Wizard will back up user profiles and automatically uninstall the version 6.2 product.

User profiles for multiple version 6.2 products can be preserved, but the products are not automatically uninstalled. These must be uninstalled manually *before* installing version 7.1. For more information, see the following procedure.

General procedure:

- 1 After launching Hummingbird Setup Wizard, version 6.2 products are detected.
- 2 Setup Wizard reports that user files are saved for each product.
- 3 This part of the procedure varies depending on the number of products detected:

User files are stored in the current user's Application Data folder under MigBack.

Single product (upgrade):

- a) The product is uninstalled.
You are prompted to restart.
- b) Launch Setup Wizard again.

Multiple products:

- a) You are informed that these must be uninstalled manually. Setup Wizard exits.
- b) Uninstall the products.
- c) Launch Setup Wizard again.

- 4 If Setup Wizard does not detect any older product versions, you are prompted to click one of the following buttons:

Yes—to restore the version 6.2 profiles previously saved

No—to use the default 7.x profiles and settings

- 5 Installation of the version 7.x Hummingbird product proceeds to completion. Your version 6.2 profiles are available when you run the version 7.x product.

Version 7.0 User Profiles

Hummingbird version 7.1 products will automatically replace a previously installed 7.0 version of the same product. All settings are preserved in a backup location, and those settings that are applicable to the newly installed features of version 7.1 are migrated.

In cases where an upgrade is not possible, the version 7.1 product installs side-by-side with existing products.

Note: Some products do not support side-by-side installation.

If version 6.2 to 7.0 migration was disabled to allow side-by-side installation of a product, an upgrade from version 7.0 to 7.1 is possible, but the 7.0 settings are migrated instead of the 6.2 settings.

Updating the Product

WebUpdate options for your Hummingbird product are preset. For update options, right-click the Hummingbird product entry in the WebUpdate dialog box and select from the drop-down menu.

If necessary, you can modify connection settings for updating the product. Select **WebUpdate Settings** in the System Administration folder of the Hummingbird Connectivity program group. Make the appropriate changes in the WebUpdate dialog box as required.

Note: The WebUpdate application is not available if you performed a personal installation without Administrator privileges. Instead, an HTML file is created that links to a Web site for Hummingbird updates.

To update the product:

- 1 Click Update Hummingbird *Product* in the System Administration folder of the Hummingbird Connectivity program group.

Note: You can also select the Hummingbird product entry and click Check for Update in the WebUpdate dialog box.

- 2 If an update is available, you are prompted to install it. Click Yes.
- 3 The update is downloaded. Setup Wizard prepares the setup process.
- 4 You are informed when Setup Wizard is ready. Click Next.
- 5 Installation proceeds to completion.

Registering

Online registration is available by:

- running Msetup from the product CD, then clicking Register Online
- completing and registering the form at the following URL:

<http://www.hummingbird.com/register/>

Alternatively, complete the registration card provided in the product package and mail it to Hummingbird Ltd.

After registering, you and your organization are recognized as a licensed product owner with all rights and privileges. This makes you eligible to receive a wide range of customer services, such as a free subscription to our quarterly newsletter, Exposé Online, as well as notification of software upgrades and new products. If you and your organization move to a new location, complete and mail the change of address card included in the product package. This ensures you will continue receiving update notices and other important information.

Chapter 3

Installing onto a Terminal Server

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Overview

This chapter explains how to install and uninstall a Hummingbird product on Windows NT4 Terminal Server Edition, Windows 2000 Server, and Advanced Server with Terminal Services enabled.

The following procedure assumes:

- you are logged onto the Terminal Server as the Administrator
- the product CD is available locally or on the network

A Terminal Server installation is a two-stage process that consists of creating an administrative copy image of HostExplorer on the Terminal Server, and installing the Hummingbird product onto the Terminal Server from the newly-created copy.

Installing HostExplorer on a Terminal Server

Stage 1: Creating an Administrative Copy Image

You must apply the appropriate product-specific transform to Hummingbird HostExplorer 7.1 before the product can be installed on a machine with Terminal Server capabilities.

To create an Administrative Copy Image on the Terminal Server:

- 1 From the product directory on the CD, run the following command from a command prompt.

```
setup /a /v"TRANSFORMS=HostExtSE.mst"
```

Warning! When creating the Administrative Copy Image, you must apply the HostExtSE.mst Transform.

- 2 Select a setup language and click OK.

Note: The language you select during this setup process will be the language of the administrative image.

- 3 Your Hummingbird product prepares Setup Wizard, checks the operating system, and checks the current Windows Installer version.
 - If necessary, the version is updated and the Setup Wizard continues.
 - If Windows Installer is not present on your operating system, Setup Wizard installs the service. Click Restart System to continue installing the product.

Setup Wizard reboots the computer. This is necessary only the first time Windows Installer is configured and installed on your Windows NT 4.0 Terminal Server Edition operating system.

- 4 After configuring Windows Installer and preparing to install, Setup Wizard opens the Welcome dialog box. Click Next.

Note: To quit the installation, click Cancel in any Setup Wizard dialog box. Your computer is not affected if you do this before the Setup Wizard begins copying files. To review or change settings in a previous dialog, click Back.

- 5 The Network Location dialog box opens. Accept the default installation folder for the product or click Change to browse to an alternate network location. A folder with the default name Admin is created on the terminal server. The Administrative Copy Image will be placed in the Admin folder.

Note: Each user has private shortcuts, registry entries, and user files. User files are copied from the Admin folder. Each user must have at least read access to the Admin folder installation point.

- 6 Click Next. The Ready to Install Network Image dialog box opens.

- 7 Click Install. Installation of the Administrative Copy Image proceeds to completion.

Note: The Administrative Copy Image must be readable by all users who are granted permission to use HostExplorer.

Stage 2: Personal Installation

After creating an Administrative Copy Image, an administrator can install personal installations of HostExplorer onto the Terminal Server from this image.

To install HostExplorer onto the Terminal Server:

- 1 From the command line, change the directory to `C:\Admin` and run

`setup.exe`

where `C:\Admin` is the name of the drive and folder where the Administrative Copy Image is located.

Note: The *Admin* folder and its contents must remain available during the lifetime of HostExplorer on the terminal server. Multiple terminal servers can share the same *Admin* folder.

Warning! Installing from Add/Remove Programs should be avoided. When in installation mode, Windows Terminal Server Edition caches values written into the `HKEY_CURRENT_USER` registry hive. This defeats the purpose of the per-user installation and can cause problems with display assignment.

- 2 Click OK.
- 3 Setup Wizard opens the Welcome dialog box. Click Next.

- 4 Read the Licensing Agreement. If you select the option that indicates the terms are acceptable, then click Next.

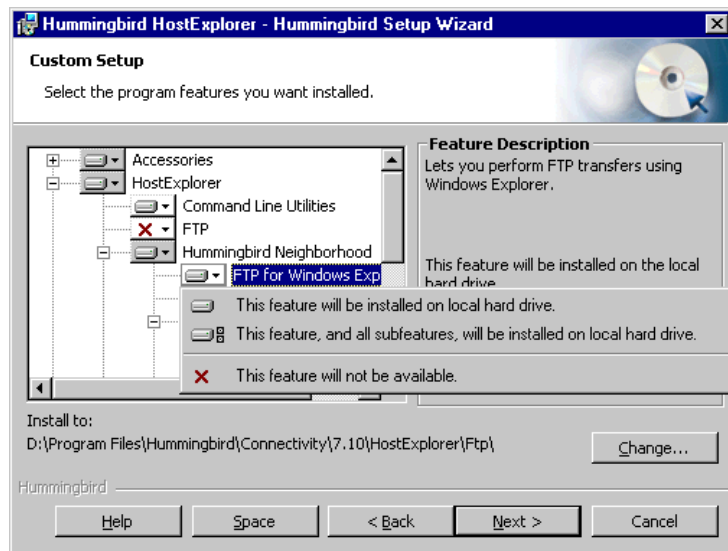
Note: Failure to read or understand the License Agreement does not affect the terms and conditions of the agreement.

- 5 The Customer Information dialog box opens. Type the appropriate information, select an installation option (All Users, Current User), and click Next.
- 6 The Destination Folder dialog box opens. Accept the default installation folder for the product or click Change to browse to an alternate location. Click Next.

Destination Folder is synonymous with home directory (the directory in which the product is installed).

Note: Some product features are not affected by changes to the destination folder.

- 7 The Setup Type dialog box opens. Select a setup type and click Next.



- For Typical and Complete setup types, a dialog box opens and indicates Setup Wizard is ready to begin installation. Click Install.
- For Custom setup type, a Custom Setup dialog box opens. Customize the installed program features and click Next.

A dialog box indicates Setup Wizard is ready to begin installation. Click Install.

Note: The Hummingbird product installed on each user's profile will use the setup type that the administrator chooses in the Setup Type dialog box.

You can perform this procedure later by using the Performance application in Xconfig.

For more information about setting up access permissions, see Hummingbird User Manager Help.

- 8 A dialog box opens and indicates installation is complete. Click Finish.

Upon completion of Stage 2, the per-user installation of the Hummingbird product is enabled and HostExplorer will be automatically installed into the appropriate user profile the next time each user logs on.

If users are granted product access permission through a Hummingbird Product User Group, HostExplorer will automatically be installed into the appropriate user profile the next time user group members log on. Alternatively, HostExplorer will automatically uninstall from profiles of users who are not user group members. `HostExplorer7_Users` is the default group name for HostExplorer users.

Uninstalling HostExplorer from a Terminal Server

Only administrators can remove Hummingbird HostExplorer from the Terminal Server using the Add/Remove Programs option. The Add/Remove Programs procedure removes the binary files from the Program files folder and prevents existing users from using HostExplorer. Existing personalized user settings and shortcuts will be removed automatically for each user when each user next logs on.

The following conditions must be met before disabling `UsrSetup` and removing the `UsrSetup` file from the machine:

- You are not planning to install Exceed, Exceed 3D, Exceed XDK, Exceed PowerSuite, or HostExplorer again.
- The Terminal Server personal installation has been uninstalled using the Add/Remove Programs options. After this uninstallation, when a user logs on, customized settings and user files are automatically uninstalled from his/her user profile. Only after this process is complete can you disable `UsrSetup` and remove the `UsrSetup` file.

Note: Disabling `UsrSetup` is an optional procedure.

If the above conditions have been met, you can disable `UsrSetup`.

To disable `UsrSetup`:

- 1 From the Terminal Server command line, run the following command:
`%WINDIR%\System32\Hummingbird\Connectivity\UsrSetup /unregserver`
- 2 Remove the `UsrSetup` file from the Terminal Server machine.

Chapter 4

Connecting to a Host Using Session Profiles

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For a full description of session profiles and what you can do with them, see "Managing Session Profiles" on page 63.

This chapter describes the different ways you can connect to a host with HostExplorer. It begins with a brief description of session profiles, which you must create before you can connect. The chapter then describes your various connection options.

Creating Session Profiles

A session profile is a file that contains information (host domain name or IP address and host terminal type) needed to connect to a host. Before connecting to a host, you simply create a session profile by entering this information. When you open HostExplorer, all session profiles are displayed in the Open Session dialog box.

Session profiles contain default settings that control session functionality and appearance. You can access and customize the default settings before or after you connect to a host.

You need to create a session profile before you can connect to a host.

To create a profile:

- 1 In the HostExplorer Open Session dialog box, open the folder where you want your profile to reside.
- 2 Click the Create New Profile icon.
- 3 In the Profile Name box, type a name for your profile. The profile name cannot contain any of the following characters:
`\ / : * ? " < > |`
- 4 In the Profile Type list, click the host operating system that you intend to contact.
- 5 In the Connect By list, choose a connection method.
- 6 In the Host Name box, type the host domain name or IP address.

After you have created a session profile, you can connect to the host to which it is configured. For more information, see the following section.

Establishing Connections

For more information about creating a session profile, see “Creating Session Profiles” on page 59. For more information about session profiles in general, see “Managing Session Profiles” on page 63.

In order to connect to a host successfully, you need to create a session profile first. After you have created a session profile, you can connect to a host in the following ways:

- From Hummingbird Neighborhood—All session profiles are listed inside Hummingbird Neighborhood; you can connect to a host by double-clicking one of these profiles.
- From the desktop—You can launch HostExplorer directly from the desktop and then choose a session profile to create a connection.
- From the command line—You can launch HostExplorer directly from a command line and then choose a session profile to create a connection.
- With a modem (for TN3151 and Telnet connections only)—You can launch HostExplorer and use a modem to establish a connection with a host.
- To available hosts—If there is a possibility of an unavailable host, you can specify multiple hosts to which HostExplorer attempts to connect until an available host is found.

Note: To automate a connection, you can create a shortcut. For more information, see “Creating Connection and Login Shortcuts” on page 85.

To connect to a host from Hummingbird Neighborhood:

- 1 On your desktop, double-click the Hummingbird Neighborhood icon to launch Hummingbird Neighborhood.
- 2 Locate the profile that is configured for the host to which you want to connect.
- 3 Double-click the profile.

When the host logon screen displays, you can log on and start working.

To connect to a host from the desktop:

- 1 On the desktop, double-click the HostExplorer icon.
- 2 In the Open Session dialog box, double-click the profile that is configured for the connection you want.

When the host logon screen displays, you can log on and start working.

To connect to a host from the command line:

- 1 On the Windows Start menu, click Run.
- 2 In the Open box, type the full path to the HostExplorer executable, enclosing it in quotation marks. For example, the default path is:

```
"C:\Program Files\Hummingbird\Connectivity\version\  
HostExplorer\HostEx32.exe"
```

where *version* is the version number of your Hummingbird product.

You can click Browse to browse for the executable.

- 3 Click OK.
- 4 In the Open Session dialog box, double-click the profile that is configured for the connection you want.

When the host logon screen opens, you can log on and start working.

To connect using a modem (TN3151 and Telnet only):

- 1 In the Open Session dialog box, right-click a profile and click Properties. The Session Profile dialog box opens.
- 2 Double-click Session and click Host.
- 3 In the Connect By list, click Modem.
- 4 In the Telephone Number box, type the telephone number of the host to which you want to connect.
- 5 Select the Use Area Code and Country Code check box.
- 6 In this area, select the country and type the area code.
- 7 In the Modem list, select the modem you want to use.

- 8 Configure any additional properties in the dialog box. For example, you can configure the line properties by clicking **Configure Line**.
- 9 Click **OK**.
- 10 In the **Open Session** dialog box, click **Connect**.

When the host logon screen opens, you can log on and start working.

Note: This procedure assumes that you have installed and configured a modem for the host that you want to call. For modem installation instructions, refer to the Microsoft Windows documentation.

To connect to an available host:

- 1 In the **Open Session** dialog box, right-click a profile and click **Properties**. The **Session Profile** dialog box opens.
- 2 Double-click **Session** and click **Host**.
- 3 In the **Host Name** box, type the name of each host, separated by a semicolon, and click **OK**.
- 4 In the **Open Session** dialog box, click **Connect**.

Note: HostExplorer attempts the connections according to the order of the host names entered.

Automating a Remote Host Connection

You can automate the steps to launch HostExplorer by creating a HostExplorer icon and adding it to your desktop.

To add an icon to the desktop:

- 1 In the **Open Session** dialog box, right-click a profile and click **Create Shortcut**.
- 2 In the **Browse for Folder** dialog box, browse to the desktop and click **OK**.

For information about automating connections with Quick-Keys, see "Working with Quick-Keys" on page 144.

To remove an icon from the desktop:

- 1 On the desktop, right-click the icon and click Delete.
- 2 Click Yes to confirm the deletion.

Disconnecting From a Host

You can disconnect from a host by clicking Disconnect on the File menu. Before disconnecting, you must log off the host system.

If the host system prematurely disconnects, you can use the default disconnect setting, Keep Session Window Open, to keep the session window open when the session is terminated. You can also change the disconnect options.

To change the disconnect action:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Session and click General.
- 3 In the Upon Disconnect from Host list, click one of the following options:
 - Close Session Window—Closes the session window when the connection is terminated.
 - Keep Session Window Open—Keeps the session window open.
 - Restart Session—Forces HostExplorer to re-connect to the host.
 - Show Open Session Dialog—Opens the Open Session dialog box. This option lets you reconnect to another session without having to re-launch the program. This option works only if the host terminates the only open window.

Managing Session Profiles

For information about creating profiles, see “Creating Session Profiles” on page 59.

After creating a session profile, you can perform the following actions:

- configure them
- save them
- move, copy, delete, or rename them

You can convert Attachmate Extra! profiles into HostExplorer profiles. For more information, see "Converting Attachmate EXTRA! Macros and Profiles" on page 153.

Configuring Session Profiles

You can access session profile settings either before or after you connect to a host. Session profile settings, located in the Session Profile dialog box, let you customize components of the session window and the functionality of HostExplorer features.

To access session profile settings before connecting:

- 1 In the Open Session dialog box, right-click a session profile and click Properties. The Session Profile dialog box opens.
- 2 Double-click a folder to access the settings you want to customize.

To access profile settings after connecting:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click a folder to access the settings you want to customize.

Saving Session Profiles

While connected to the host, you can update and save the most recent changes you made to the current session profile, or you can rename the profile to create a new one.

When you close a session, the default setting, Save Profile on Window Close (located in the Session Properties dialog box), saves any changes you made to the session profile. If you want to experiment with settings without the risk of saving them when you exit, you can remove the default save setting.

To save a session profile:

- 1 On the File menu, select Save Session Profile. The Save Profile dialog box opens.
- 2 Do one of the following:
 - To save the changes to the current session profile, click Save.
 - To save the settings as a new session profile, type a new name and click Save.

To change the save setting:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Session and click General.
- 3 Clear the Save Profile on Window Close option.

Note: After you remove this setting, you must click Save Session Profile on the File menu to save any changes when you close your session.

Editing Session Profiles

To select multiple items at once, hold down Shift or Ctrl while clicking profiles or folders.

After you have created session profiles, you can reorganize them in the following ways:

- create folders to contain them and move them
- copy them
- delete or rename them

To create a new folder to contain session profiles:

- 1 In the Open Session dialog box, right-click in an empty area of the pane and click New Folder. The new folder appears with a temporary name.
- 2 Type a name for the new folder and press Enter.

To move a session profile or folder:

- 1 In the Open Session dialog box, right-click the session profile or folder you want to move and click Cut.
- 2 Open the folder into which you want to move the session profile or folder.
- 3 Right-click in the pane and click Paste.

To copy a session profile or folder:

- 1 In the Open Session dialog box, right-click the session profile or folder you want to copy and click Copy.
- 2 Open the folder in which you want to place the session profile or folder.
- 3 Right-click in the pane and click Paste.

To delete a session profile or folder:

- 1 In the Open Session dialog box, right-click the session profile or folder you want to delete and click Delete.
- 2 Click Yes to confirm the deletion.

To rename a session profile or folder:

- 1 In the Open Session dialog box, right-click the session profile or folder you want to rename and click Rename.
- 2 Type the new name and press Enter.

Note: A profile name cannot contain any of the following characters: \ / : * ? " < > |

Closing a Session

When you close a session, you are terminating the connection with the host system. To ensure that you close any active processes on the host, it is recommended that you log off before closing your session.

To close a session:

- 1 Log off from the host (recommended).
- 2 On the File menu, click Close Session.
- 3 Click Yes to confirm the session termination.

Chapter 5

Editing in the Host Window

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This chapter describes how you can edit host data using copy, paste, cut, and some word-processing features; you can also customize the edit settings in the Edit Settings dialog box.

Some edit settings are specific to the terminal. For example, settings in the Edit folder are not available when you are connected to a UNIX host.

Before you edit host data, consider the following factors:

- Have you modified the mouse settings? Some functions are possible only with the default mouse settings.
- Is the location to which you want to copy the text protected or unprotected?
- What is the host operating system?

Cutting, Copying, and Pasting Text

You can use the cut, copy, and paste features for any unprotected area of the screen.

To cut, copy, and paste text:

- 1 In the host session window, select the block of text you want to cut or copy.
- 2 On the Edit menu, click either Cut or Copy.
- 3 Position your cursor in the unprotected area of the screen where you want to paste the text.
- 4 On the Edit menu, click Paste.

Dragging Text to a New Location

This feature is available only on mainframes and AS/400 systems, and functions only in an unprotected area of the screen.

In addition, the following procedure is possible if you have not modified the default mouse settings. To restore default settings, in the Mouse category of the Edit Settings dialog box, click Reset All.

To drag a block of text to a new location:

- 1 In an unprotected area of the host session window, select the block of text that you want to move.
- 2 Do one of the following:
 - To move the text, drag the selected rectangle to the new location.
 - To place a copy of the text at the new location, hold down the Ctrl key and drag the selected rectangle to the new location.

Enabling Auto Copy

When you enable Auto Copy, all text that you select is automatically copied and pasted to the Clipboard.

To enable Auto Copy:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Editing and click General.
- 3 Select the Auto Copy Selected Text option.
- 4 Click OK.

Using Entry Assist and Word Wrap

HostExplorer provides two editing features, Entry Assist and Word Wrap, that you can use to make your editing tasks more efficient.

Entry Assist

Entry Assist, available only in TN3250 and TN5250 sessions, provides word-processing features for editing text in memos, letters, and reports. With Entry Assist enabled, you can use Word Wrap, Tab Stops, and Margin options.

Entry Assist also provides a cursor position indicator in the Operator Information Area (OIA). As you move the cursor, its row and column position is indicated. For example, in a model 2 terminal, a value of 1/1 represents the upper left-hand corner, and a value of 24/80 represents the lower right-hand corner. When you enable End-of-line and Tab Stops, a horizontal arrow appears next to the DOC indicator. The DOC indicator appears in the lower-right corner of the OIA when you enable Entry Assist.

Word Wrap

With Word Wrap enabled, text at the right-hand margin wraps down to the next available line. In modes other than Insert mode, you must clear the next line before typing.

Word Wrap can work within preset margins or use the field width as the value for the left and right margins. This lets you use Word Wrap within different systems without resetting the margins.

To enable Entry Assist and Word Wrap:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Editing and click Entry Assist.
- 3 Select both options: Entry Assist Enabled and WordWrap Enabled.
- 4 To set tab stops, type a numeric value in the Tab Stops box. You can also click in any unprotected area of the screen and click Set.

Press Ctrl + E to toggle
Entry Assist on and off.
Press Ctrl + W to toggle
Word Wrap on and off.

Chapter 6

Customizing Terminal Peripherals

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This chapter describes how you can customize your hardware and window components.

You can simplify and automate repetitive tasks by customizing the mouse, toolbar, and keyboard. You can also enhance the session display by assigning color schemes and Windows bitmaps to the session window and terminal screen.

Customizing the Mouse

You can remap mouse buttons to perform different functions, choosing to save your changes to a profile or only to the current session. For example, you can configure the right-click action to perform any of the available functions listed in the Mouse category of the Terminal folder.

The following table shows the default mouse settings and their associated actions.

Mouse Setting	Action
Click	Moves the cursor to the pointer location.
Double-click	Selects the word at the current pointer location.
Shift + click	Expands the currently selected area. If an area of text is not selected, it selects the rectangular area between the cursor and the mouse pointer.
Right-click (mainframe and AS/400)	Moves the cursor to the pointer location and transmits the data. This option is useful in programs compliant with System Application Architecture (SAA).
Right-click (UNIX)	Pastes any Clipboard data to the current pointer location.

To remap a mouse button:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Terminal and click Mouse.

- 3 In the Mouse Action list, click an action.
- 4 In the Function Group list, click the group to which you want to add the new mouse action.
- 5 In the Function list, click the function that you want to map to the mouse action.
- 6 Click Set to apply the changes.

Note: Your changes apply only to the current session. To save changes for other sessions using the current profile, click Save Session Profile on the File menu. Then select a profile and click Save.

Customizing the Keyboard

To reset the currently mapped mode, click Clear Entry. To reset all modes for the current key, click Default. To reset all keys to their default values, click Reset All.

Using the graphical keyboard utility, you can remap keys to personalize your keyboard, then use the keyboard file while working on multiple hosts. You can map and assign the keys on your PC keyboard to different values, functions, Quick-Keys, and macros.

Keyboard mapping is useful if you require a key that does not exist on your keyboard or if you are more familiar with a terminal keyboard (such as a DEC VT220 keyboard) and want to remap your PC keyboard to its specifications.

To remap a key:

- 1 On the Options menu, click Keyboard Mapping. The Keyboard Map dialog box opens.
- 2 Select a mode for the new key. For example, if you want to remap a key in Shift mode, select Shift.
- 3 In the Function Group list, choose a function group.
- 4 In the Function list, drag a function to a key in the keyboard mapping area. This deletes the old key mapping and maps the new function. Values for the selected key are displayed in the Description area.

- 5 Click Save to open the Save Keymap dialog box.

Note: To restore the original keyboard mappings, click Reset All. To restore the mapping for only one key, click the key and click Default.

- 6 In the Save Keymap dialog box, enter a name for the keyboard file, and click Save.
- 7 In the Keyboard Map dialog box, click OK.

Reconfiguring an Existing Keyboard

You can use the default keyboard files as templates to create custom files. After modifying a default keyboard file, save the file with a new name so that the default keyboard is preserved.

To reconfigure an existing keyboard file:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Terminal and click Keyboard.
- 3 In the Keymap list, select Default.
- 4 Click Keyboard Mapping.
- 5 Make the necessary changes.
- 6 Click Save to open the Save Keymap dialog box.
- 7 Type a new name and click Save.

The new keyboard file now displays in the Keymap list.

To enable a new keyboard file:

- 1 On the Options menu, click Edit Session Profile.
- 2 Double-click Terminal and click Keyboard.

- 3 In the Keymap list, click the keyboard file you want.
- 4 Click OK. The current session then uses the selected keyboard file.

Note: To use this keyboard file with other sessions using the current profile, click Save Session Profile on the File menu. Then click the profile to which you want to save the keyboard file.

Customizing the Toolbar

The default toolbar contains buttons that execute menu commands. You can configure buttons on the default toolbar to simplify tasks by remapping them to execute different commands. You can also create and maintain several toolbars that are designed specifically for tasks in a session or designed generically for use in other sessions.

A toolbar button is defined by all of the following:

- the command line that is executed when you click it
- its graphic or icon
- its context-sensitive ToolTip

Button-Related Tasks

You can perform the following procedures to customize the buttons on a toolbar.

To add a new toolbar button:

- 1 On the Tools menu, click Toolbars. The Toolbars dialog box opens.
- 2 On the Toolbars tab, select the toolbar to which you want to add a button. The toolbar appears in the workspace.
- 3 Click the Functions tab and select a Function Group.

- 4 In the Function box, drag an individual function to the toolbar in the workspace. A button is created with that function assigned to it.

Note: To restore the default settings, click Reset.

- 5 Click OK.

To delete a toolbar button:

- 1 On the Tools menu, click Toolbars. The Toolbars dialog box opens.
- 2 In the host session window, right-click the toolbar button that you want to delete and click Delete Button.
- 3 Click OK.

To move a toolbar button:

- 1 On the Tools menu, click Toolbars. The Toolbars dialog box opens.
- 2 In the host session window, position the cursor over a button.
- 3 Drag the button to a new location.
- 4 Click OK.

To change the toolbar button caption:

- 1 On the Tools menu, click Toolbars. The Toolbars dialog box opens.
- 2 In the host session window, right-click the button that you want to change and click Edit Caption. The Edit Caption dialog box opens.
- 3 Type the new caption and click OK. The new caption is assigned to the toolbar button.
- 4 Click OK.

To change the image of a toolbar button to one supplied by HostExplorer:

- 1 On the toolbar, right-click the button that you want to change and click Customize. The Toolbars dialog box opens.
- 2 In the host session window, right-click the button, point to HostExplorer Images, and click one of the images in the display. The toolbar button image changes to the one that you selected.
- 3 Click OK to close the dialog box.

To change the image of a toolbar button to a customized one:

- 1 Create an image that you want to use for the toolbar button using a graphics illustration program such as Microsoft Paint. The graphic must have with the following properties:
 - format—bitmap
 - size—16 X 16 pixels
 - image color—16 color
 - background color—RGB (192, 192, 192)
- 2 Place the image in the HostEx\Toolbar directory where the user files are stored on your machine. For the appropriate directory path for your platform, refer to the list of default locations for user files in the section, “Current User versus “All Users”” on page 26.
- 3 In the host session window, open the Toolbars dialog box.
- 4 On the Options tab, click the browse button next to the User Customized Image File box. The Browse dialog box opens.
- 5 Browse to your image and click Open.
- 6 Click Apply and leave the Toolbars dialog box open.
- 7 In the host session window, right-click the button that you want to change.
- 8 Point to User Customized Images and click the image that you want to use. The toolbar button image changes to the one that you selected.
- 9 Click OK.

To change the display of a toolbar button:

- 1 On the Tools menu, click Toolbars. The Toolbars dialog box opens.
- 2 In the host session window, right-click the button that you want to change.
- 3 Point to Style and click one of the following items:
 - Default**—Displays only the toolbar button image. This is the default.
 - Image Only**—Displays only the toolbar button image.
 - Label Only**—Displays only the caption of the toolbar button.
 - Image and Label**—Displays both the image and the caption of the toolbar button.
- 4 Click OK to close the dialog box.

To increase the size of the toolbar buttons:

- 1 On the Tools menu, click Toolbars. The Toolbars dialog box opens.
- 2 On the Options tab, select the Large Icons option.
- 3 Click Apply.
- 4 Click OK to close the dialog box.

Toolbar-Related Tasks

For quick access to frequently used features, you can create new toolbars and map commands and characters to the toolbar buttons. You can also customize existing toolbars in various ways.

To create a toolbar:

- 1 On the Tools menu, click Toolbars. The Toolbars dialog box opens.
- 2 On the Toolbars tab, click New.
- 3 Type a name for the toolbar and click OK. The toolbar name is added to the Toolbars pane, and the toolbar itself appears in the workspace.
- 4 On the Functions tab, choose a function group. You can then drag individual functions onto the new toolbar to create buttons.
- 5 Repeat step 4 for each function that you want to add to the toolbar.

To insert a separator on a toolbar:

- 1 Right-click a button to the right of where you want the separator.
- 2 Click Insert Separator.

To move a toolbar:

- 1 Position the cursor either over a handle (the double separator lines on the extreme right and left of the toolbar) or over a blank area of the toolbar (not near a button).
- 2 Drag the toolbar to the location you want.

Note: The toolbar is attached by default to the top margin of the terminal screen. You can position the toolbar along any margin of the session window, anywhere within the terminal screen, or anywhere on the Windows desktop.

To turn off the ToolTips:

- 1 On the Tools menu, click Toolbars. The Toolbars dialog box opens.
- 2 On the Options tab, clear the Show ToolTips on Toolbars option.
- 3 Click Apply.
- 4 Click OK.

To hide a toolbar:

- 1 If the toolbar is anchored to the margin, drag it to the terminal screen.
- 2 Position the cursor over the title bar.
- 3 Right-click the title bar and click Hide.

To redisplay a toolbar:

- 1 On the Tools menu, click Toolbars. The Toolbars dialog box opens.
- 2 On the Toolbars tab, select the toolbar you want to reappear.
- 3 Click Apply.
- 4 Click OK.

Restoring Button and Toolbar Default Settings

If you want to undo any customization changes, you can restore both the button and toolbar settings to their original defaults.

To restore default settings:

- 1 On the Tools menu, click Toolbars. The Toolbars dialog box opens.
- 2 On the Toolbars tab, select the toolbar that you want to restore.
- 3 Click Reset.

Customizing the Session User Interface

There are several ways to customize the session window and terminal screen. You can design the window and screen peripherals to be specific to the current session or for generic use in other sessions.

Additionally, the Track menu provides quick access to frequently used session functions (menu options; action, editing and Quick-Keys; and unique characters). You can configure the Track menu to execute commands that are specific to a session.

To modify font attributes:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Display and click Fonts.
- 3 Click Select Font. The Session Font dialog box opens.
- 4 In the dialog box, assign the desired attributes. For best resolution, use bitmap fonts.
- 5 Click Apply.
- 6 Click OK.

To modify cursor attributes:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Display and click Cursor.
- 3 In the Cursor Type list, click an option to assign a shape to the cursor.
- 4 In the Cursor Mode list, click an option to assign either Blink or Solid mode.

To modify session component colors:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Color and click General.
- 3 In the Scheme list, click a color scheme.
- 4 Click Apply.

Note: These changes affect the session window, terminal screen, toolbar, and title bar. To implement these changes for future sessions, click Save Session Profile on the File menu. Then click the profile to which you want to save the changes.

To assign a Windows bitmap pattern between the session window and the terminal screen:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Display and click Workspace.
- 3 Select the Show Bitmap For Workspace's Background option.
- 4 In the Bitmap File box, browse to your Windows bitmap directory. For example:
C:\winnt
- 5 Select a bitmap.

6 Click Apply.

Note: The default color of the area between the session window and the terminal screen is grey. If the Windows bitmap pattern does not display after you make the changes, do the following: in the Font category of the Display folder, clear Force Exact Terminal Window Size.

To eliminate the border between the window and the screen:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Display and click Fonts.
- 3 Select the Force Exact Terminal Window Size option and click OK.

Note: By default, the color of the border between the session window and the terminal screen is gray. If you choose not to eliminate this border, the border increases when you enlarge the session window.

To specify text for the title bar:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Session and click Window Title.
- 3 In the Window Title box, type the desired Special Identifier variable(s).
- 4 Click OK.

Customizing the Track Menu

You can customize the Track menu in two steps: first, you map it to a mouse action, then you assign functions.

In the following procedure, you map the Track menu to appear when you right-click.

To map the Track menu to the mouse:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Terminal and click Mouse.
- 3 In the Mouse Action list, click Right Single Click.
- 4 In the Function Group list, click System Commands.
- 5 In the Function list, click Show-Track-Menu.
- 6 Click Set.

With the menu mapped to a mouse action, you can now use the following procedure to customize the menu.

To customize the Track menu:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Terminal and click Track Menu.
- 3 In the Function Group list, click an option.
- 4 In the Function list, click an option.
- 5 Click Append.

Changing the Language

When you change the language for a 3270 or 5250 session, HostExplorer automatically applies the correct keyboard ID, code page, and character set. You can have multiple sessions running using different languages.

To change the language:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Terminal and click Language.
- 3 In the Language list, select a language.
- 4 Click OK.

Customizing the UNIX Session User Interface

The UNIX host provides features that are unique to the UNIX environment. These features let you customize the session window and terminal screen in ways that are not possible on a mainframe or AS/400 host.

Scrollbar Buffer

The Scrollback buffer is a zone that lets you scroll through data that has scrolled off the terminal screen. Once enabled, you can search the scrollback zone for text strings. You can set a value between 1 and 9,999 as the number of lines maintained within the zone. To disable the Scrollback buffer, set the number to zero.

Compose Sequences

To view a list of the compose sequences, see the HostExplorer online Help.

A compose sequence is a combination of two keys pressed sequentially to create a special character not available on the keyboard. Using compose sequences, you can enter special characters on a UNIX terminal screen.

Compose sequences work only in Compose (CMP) mode. When you start Compose mode, the CMP indicator appears in the status line. Some compose sequences are available when you use both the ISO Latin-1 or DEC Supplemental UPS (User-Preferred Supplemental) character set; other compose sequences are available to specific character sets.

To search the Scrollback buffer:

- 1 On the Edit menu in a UNIX session, click Find.
- 2 Type the text for which you want to search.
- 3 Specify the search direction.
- 4 To search for text containing the same case, select Match Case.
- 5 Click Find Next.

Note: If the text string exists, the line containing the text moves to the top of the screen. If the text string is on the current screen, the line does not move.

The following procedures apply only to the Telnet terminal type.

To hide the Scrollback buffer:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Display and click General.
- 3 In the Lines Available in Scrollback box, change the value to 0.

To start Compose mode and create a character:

- 1 Press Alt+F8. This key combination displays the CMP indicator in the status line.
- 2 Press the two-key combination that defines the special character.

To change the character sets:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Terminal and click Character Set.
- 3 Select the User-Preferred Supplemental (UPS) character set you want to use.
- 4 Select the National Replacement Character (NRC) set you want to use.
- 5 Click OK.

To modify screen dimensions:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Display and click Screen Layout.
- 3 Do one of the following:
 - On the Default Screen Width menu, click a screen width.
 - Click Custom and type a value in the Columns box.
- 4 Type a value in the Row box and click OK.

To set tab stops:

- 1 On the Options menu, click Edit Session Profile.
- 2 Double-click Display and click Tab.
- 3 Click in the Tab Stop box.
- 4 Click the screen where you want to set a tab stop and click Set.

Chapter 7

Transferring Files

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This chapter describes how to transfer files between your PC and mainframe, AS/400, and UNIX systems.

- Mainframe transfers—To transfer mainframe data, use Telnet. HostExplorer uses proprietary protocols on top of the TN3270 connection. Transfers are initiated from within the session.
- AS/400 transfers—To transfer unstructured data, use FTP for Windows Explorer; these transfers are initiated from within Hummingbird Neighborhood. To transfer structured data, use the 5250 File Transfer Wizard; these transfers are initiated from within the wizard.
- UNIX transfers—To transfer UNIX data, use Telnet or FTP for Windows Explorer. For Telnet transfers, HostExplorer uses protocols such as Xmodem, Ymodem, Zmodem, and Kermit; these transfers are initiated from within the session. FTP for Windows Explorer transfers are initiated from within Hummingbird Neighborhood.

For mainframe and UNIX transfers, you can use either your hard drive or the Clipboard as the source or destination for the transferred data. If you use the Clipboard as the destination when you download host data, you can then paste the data directly to a Windows application.

This chapter also describes troubleshooting techniques for problems related to PC-to-host interactions in HostExplorer. You can use the following features for isolating problems:

- logging session activity using the Trace utility
- logging session activity using a command-line trace

Transferring Files to and from a Mainframe

The IND\$FILE protocol lets you transfer files between your PC and VM/CMS, TSO, MUSIC/SP, and CICS host systems.

To transfer files to a mainframe:

- 1 On the Transfer menu, click Send File to Host.
- 2 In the Source list, click either Disk or Clipboard, depending on where the data currently resides.

To stop a transfer, click Cancel in the file transfer dialog box.

- 3 In the Scheme list, select one of the available file-transfer schemes.
- 4 In the Local File Name box, type the name of the file you want to upload or browse to its location.
- 5 In the Host File Name box, type the name of the file you want to create on the host. This option varies according to the scheme (CICS, CMS, or TSO) you selected.
- 6 In the Minidisk box, specify the intended mainframe location for the file.
- 7 If you want to use a template to format the file, click Templates and specify a template; click OK when finished.
- 8 To start the transfer, click OK.

To receive files from a mainframe:

- 1 On the Transfer menu, click Receive File from Host.
- 2 In the Scheme list, select one of the available file-transfer schemes.
- 3 In the Host File Name box, type the name of the file you want to download from the host. This option varies according to the scheme you select.
- 4 In the Destination list, click either Disk or Clipboard as the download destination.
- 5 In the Local File Name box, type the name of the file you want to create or overwrite on your PC.
- 6 If you want to use a template to format the file, click the Templates button and specify a template; click OK when finished.
- 7 To start the transfer, click OK.

Transferring Files to and from AS/400

To transfer files between your PC and an AS/400 system, you can use either FTP For Windows Explorer for unstructured data or the 5250 File Transfer Wizard for structured data.

FTP For Windows Explorer is included with HostExplorer; it lets you connect to an FTP server and transfer the necessary files. For more information, see "Chapter 8: FTP for Windows Explorer" on page 105.

The 5250 File Transfer Wizard provides a series of dialog boxes that let you configure the settings for a file transfer profile; you can use the wizard to create a profile from scratch or create one based on an existing profile. When the profile is complete, the wizard begins the transfer. If you are transferring files from a host to your PC, you can also use the wizard to specify SQL statements for the transfer.

Transferring Files Using the 5250 File Transfer Wizard

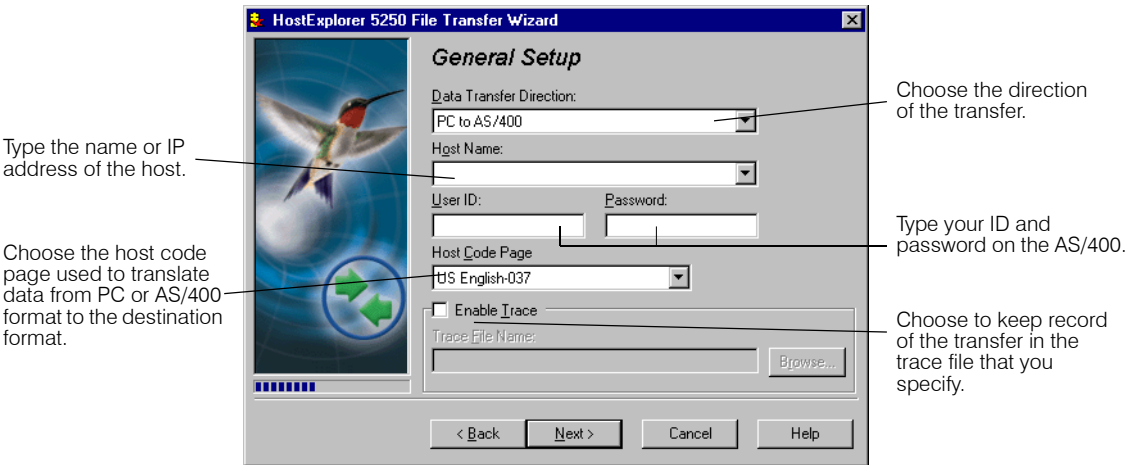
If you want to transfer files containing structured data to or from an AS/400 system, use the 5250 File Transfer Wizard. The options in the wizard depend on whether you transfer files to a host or from a host.

PC-to-AS/400 File Transfers Using the Wizard

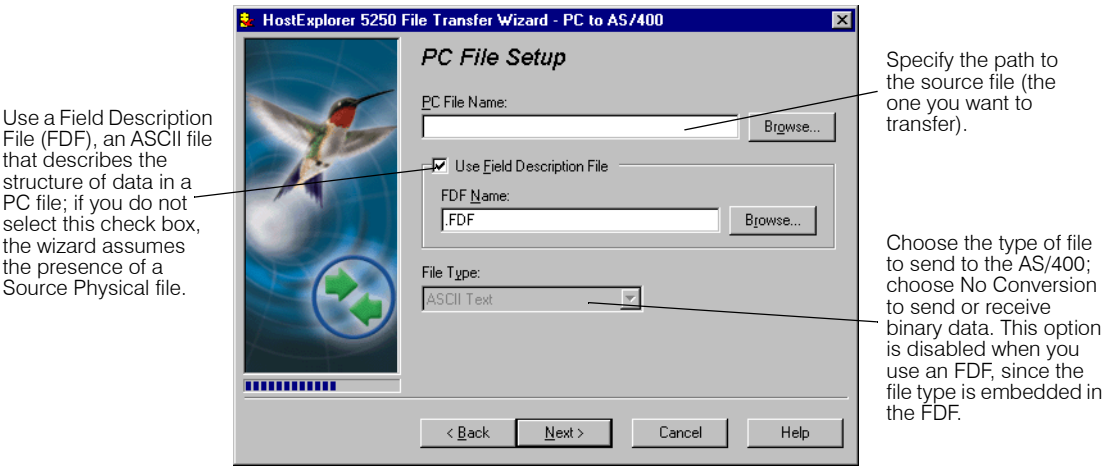
To launch the 5250 File Transfer Wizard, on the Windows Start menu, navigate to the HostExplorer program group, and click 5250 File Transfer.

The Welcome To 5250 File Transfer Wizard dialog box opens. In this dialog box, choose whether you want to create a new transfer profile or use an existing one. If you want to use an existing one, you can specify the name directly in the dialog box or browse to its location. Click Next when finished.

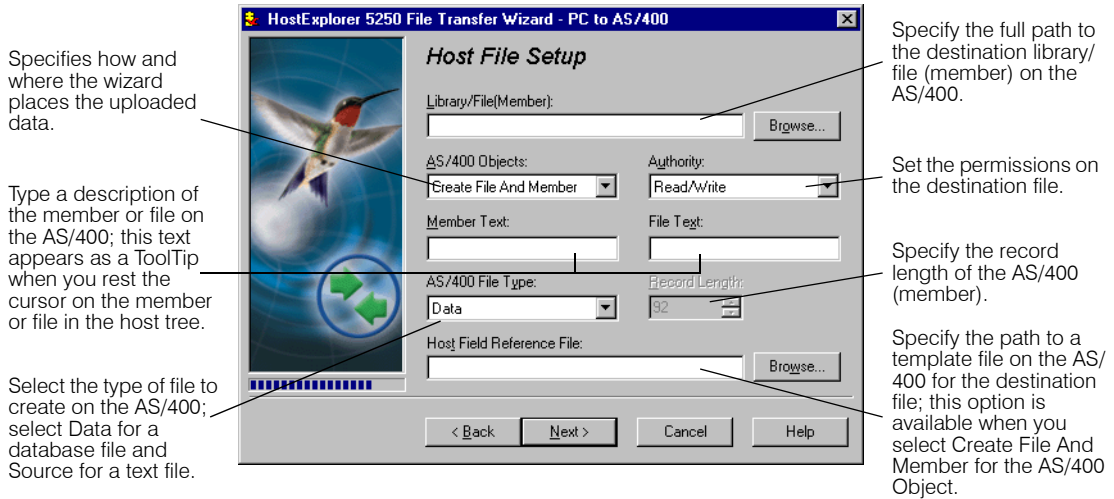
The General Setup dialog box appears, as shown below.



After you have configured the necessary options, click Next. The PC File Setup dialog box opens for PC-to-AS/400 transfers, as shown below.



After you have configured the necessary options, click Next. The Host File Setup dialog box opens for PC-to-AS/400 transfers, as shown below.



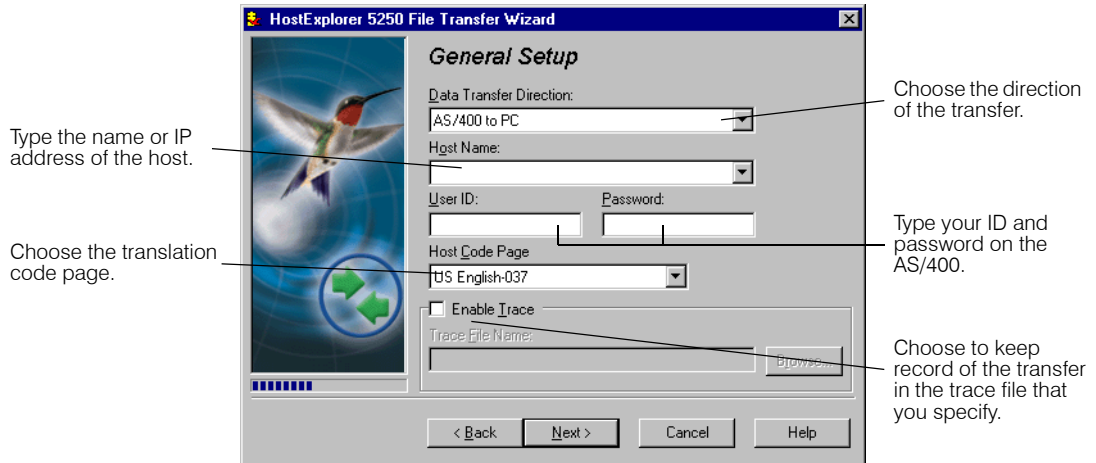
After you have configured the necessary options, click Next. The 5250 File Transfer Wizard Complete dialog box opens. Use this dialog box to save all of the settings from the wizard into a transfer profile (which you can reuse at a later time), or you can begin the transfer immediately.

AS/400-To-PC File Transfers Using the Wizard

On the Windows Start menu, navigate to the HostExplorer program group, and click 5250 File Transfer to launch the 5250 File Transfer Wizard.

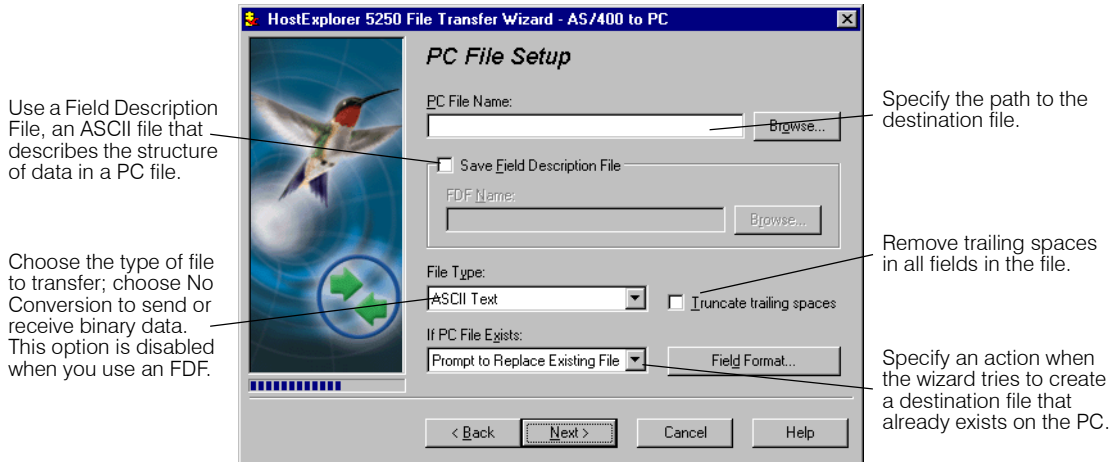
The Welcome To 5250 File Transfer Wizard dialog box opens. In this dialog box, choose whether you want to create a new transfer profile or use an existing one. If you want to use an existing one, you can specify the name directly in the dialog box or browse to its location. Click Next when finished.

The General Setup dialog box opens, as shown below.



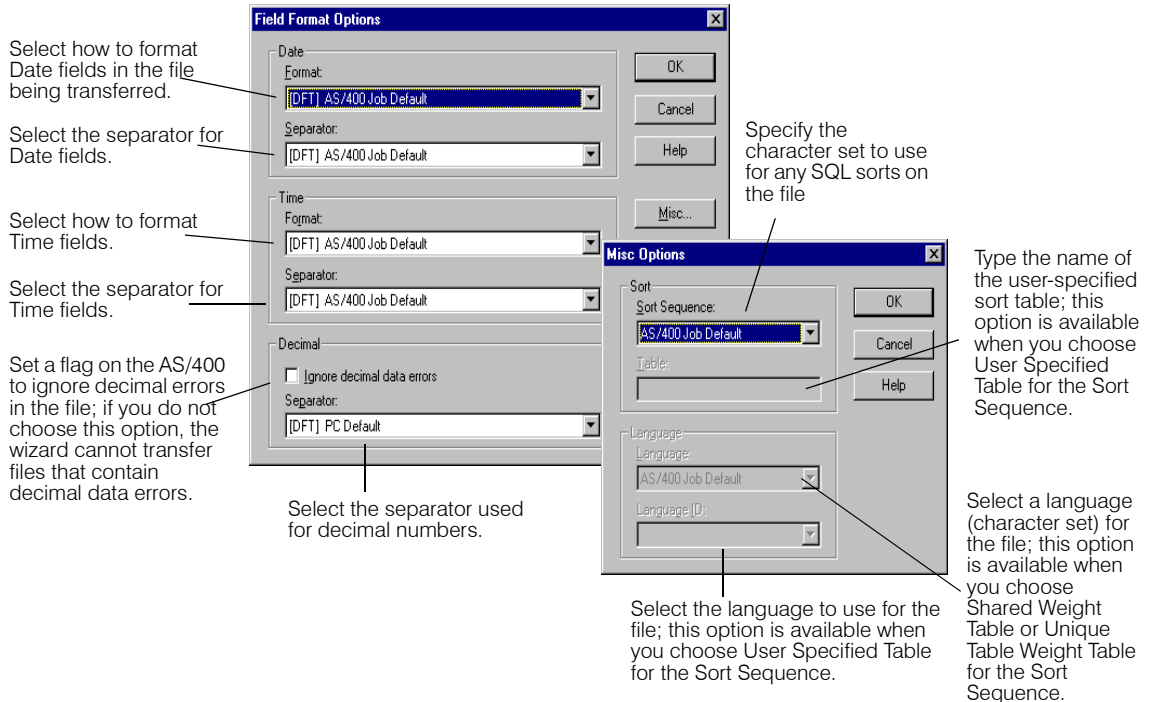
After you have configured the necessary options, click Next. The PC File Setup dialog box opens for AS/400-to-PC transfers, as shown below.

Note: Field Description Files are not mandatory for downloads from an AS/400 host to your PC. However, if you want to manipulate the downloaded data and then upload it back to the host, you need to use an FDF when you upload to preserve the structure.

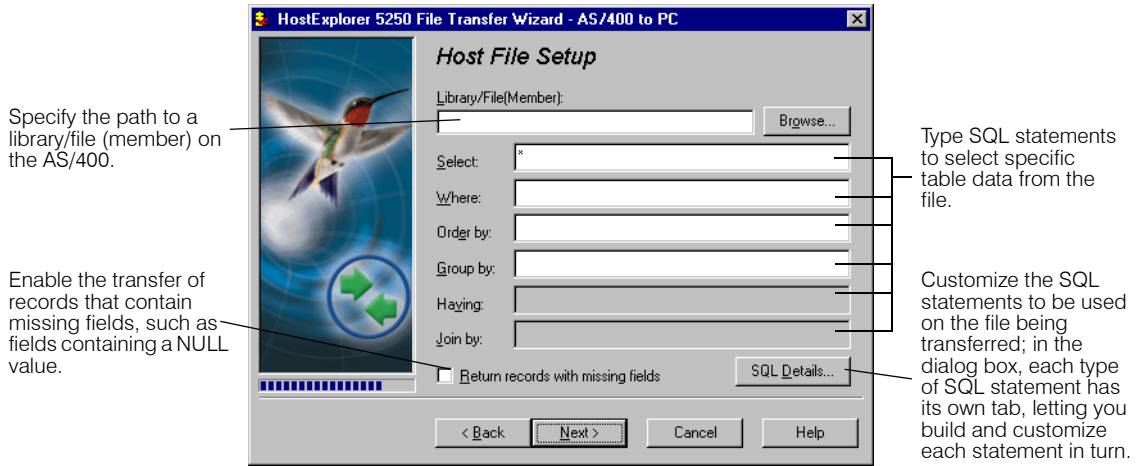


In the PC File Setup dialog box for an AS/400-to-PC transfer, you can click **Field Format** to open the Field Format Options dialog box. Use this dialog box to specify how to format any date, time, or decimal fields in the file being transferred.

You can also specify the character set and character sort sequence used in any SQL sorts on the file being transferred. To do this, click Misc in the Field Format Options dialog box.



After you have configured the necessary options in the PC File Setup dialog box for AS/400-to-PC transfers, click Next. The Host File Setup dialog box opens for AS/400-to-PC transfers, as shown below.



After you have configured the necessary options in the Host File Setup dialog box, click Next. The 5250 File Transfer Wizard Complete dialog box opens. Use this dialog box to save all of the settings from the wizard into a transfer profile (which you can reuse later), or you can begin the transfer.

Transferring Files to and from UNIX

To stop a transfer, click Cancel in the file transfer dialog box.

To transfer files between your PC and a UNIX host, the host computer must support Xmodem, Ymodem, Zmodem, or Kermit protocols. These protocols consist of a set of file transfer rules that your PC and the host system follow when transferring files.

Before you can transfer files between your PC and a UNIX host, you require the following information:

- Which transfer protocol does the host support?
- What transfer information does the host require?
- What command is required to initiate the host's transfer program? The command you use (SZ, RZ, SX, RX, Kermit) is system-specific.

Protocols

Zmodem The most efficient file-transfer protocol. It provides faster file transfers, auto-download capabilities, batch file transfers, and protection for 16-bit and 32-bit Cyclical Redundancy Check (CRC). It also allows both the sender and the receiver to initiate file transfers. Additionally, it provides security between program applications while eliminating file-transfer errors.

Xmodem Includes Xmodem-1K. File transfers with Xmodem require that each byte sent must remain unchanged and that the transfer must occur on a clear 8-bit channel. Data is transferred in 128-byte or 1024-byte (1K) packet sizes. Each packet is assigned a packet number and sent one at a time. Because packet sizes have fixed lengths, a file using padded bytes is rounded up to the next packet. For error detection, sent packets include Checksum or CRC bytes. Packets are sent in sequence, allowing the receiver to verify if a packet was sent or if it is out of order.

Ymodem Supports batch-file transfers and can send the file name and file size before the actual file data.

Kermit The least efficient file-transfer protocol. Use it when the receiver does not support X/Y/Zmodem software. Kermit sends batch files with the name and time stamp of each file in small packet sizes. The packets contain fields that mark their beginning, length, type, and sequence number.

To transfer files to a UNIX host:

- 1 On the UNIX host, initiate the host transfer program; for more information, see the documentation for your host's file transfer utility.
- 2 On the Transfer menu, click Send File to Host. The Upload Files dialog box opens.
- 3 Click Add Files and browse to the location of your files.
- 4 Select one or more files and click Open.
- 5 In the Protocol list in the Upload Files dialog box, click the supported protocol for the file transfer.
- 6 Click Options to view and/or modify any of the transfer options.
- 7 To start the transfer, click OK.

To receive files from a UNIX host:

- 1 On the UNIX host, initiate the host transfer program; for more information, see the documentation for your host's file transfer utility.
- 2 On the Transfer menu, click Receive File from Host. The Download Files dialog box opens.
- 3 In the Receive Path box, specify a path; click the browse button to locate a file.
- 4 In the Protocol list in the Download Files dialog box, click the supported protocol for the file transfer.
- 5 Click Options to view and/or modify any of the transfer options.
- 6 To start the transfer, click OK.

Logging Session Activity

If you encounter problems related to PC-to-host interactions, you can use either the Trace utility or a command-line trace to find a solution.

Creating a Trace

A trace is a diagnostic tool that logs PC-to-host interactions to the `Hostex.trc` file located in your Root directory (the directory in which the software is installed).

The trace utility captures all keystrokes, commands, and selections on menus and in dialog boxes, and it records all communication activity. After you have reproduced the steps that caused the problem, you can view and analyze the logged data.

To enable a trace, press `Ctrl+Shift+T`. This key combination starts recording events to the `Hostex.trc` file.

Note: If you modified default keyboard mappings, this procedure may not work. To reset the default settings, open the Keyboard Mapping dialog box, select the letter *T* on the keyboard and press Default.

To start a command line trace:

1 On the Windows Start menu, click Run.

2 Browse to the following location:

```
C:\Program Files\Hummingbird\Connectivity\version\  
HostExplorer\HostEx32.exe
```

where *version* is the version number of your Hummingbird product.

3 Add the following command line options:

```
-d -p
```

4 Add the profile name and folder extension separated by a dot. For example:

```
test.3270
```

The following is an example of the full command line syntax:

```
C:\Program Files\Hummingbird\Connectivity\version\  
HostExplorer\HostEx32.exe -d -p test.3270
```

where *version* is the version number of your Hummingbird product.

Chapter 8

FTP for Windows Explorer

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This chapter describes how to transfer files between your PC and an FTP server.

FTP for Windows Explorer is a client implementation of the File Transfer Protocol that lets you transfer both text (ASCII) and image (binary) files between local and network drives and FTP servers.

FTP for Windows Explorer includes the following features:

- Full integration with Windows Explorer
- Complete drag-and-drop and copy/paste features
- Support for Solaris, SunOS, AIX, Windows NT/2000, AS/400, VMS, VM/CMS, MVS, and VM/VPS
- Local caching of directory listings so that you can browse directories offline and improve overall performance
- Synchronization of files between a PC and a remote server
- Live editing so that you can automatically edit files through an associated application and save the changes back to the server
- Desktop shortcuts to remote files and folders
- Advanced scripting and support for OLE Automation

Creating and Managing FTP Profiles

To transfer files with FTP for Windows Explorer, you need an FTP profile. These profiles are necessary for a connection to a host; they contain such settings as user name, password, and host type.

You can create a new profile from scratch, or you can edit the settings of an existing one. If you no longer need a profile, you can delete it.

To create an FTP profile:

- 1 Launch Windows Explorer.
- 2 In the left pane of the window, click Hummingbird Neighborhood.
- 3 Double-click the New FTP Profile icon. The FTP Site Properties dialog box opens.

- 4 Click the **General** tab.
- 5 In the **Host Address** box, type the host address or IP address.
- 6 Type your user name, password, and initial directory in the appropriate text boxes.
- 7 In the **Account** box, type your account and click **OK**. You can select the **Anonymous** check box as an alternative to entering your account.

To edit, rename, or delete an FTP profile:

- 1 Launch Windows Explorer, expand the Hummingbird Neighborhood directory tree, and expand the FTP directory tree.
- 2 Right-click the FTP profile that you want to edit, rename, or delete and do one of the following:
 - To edit the settings of the profile, click **Properties** and make the desired changes.
 - To rename the profile, click **Rename** and type a new name.
 - To delete the profile, click **Delete**.

Connecting to an FTP Server

Connections to an FTP server require an FTP profile to supply the necessary parameters; if you have not yet created a profile, see “Creating and Managing FTP Profiles” on page 107.

After you have established a connection, you can choose a transfer mode depending on the type of file you want to transfer.

You can also select the profile and click **Connect** and **Disconnect** on the toolbar.

To connect to an FTP server:

- 1 Launch Windows Explorer, expand the Hummingbird Neighborhood directory tree, and expand the FTP directory tree.
- 2 Locate the FTP profile that you want to use to launch the connection.
- 3 Double-click the profile.

If the profile does not contain a valid IP address, user name, and password, FTP for Windows Explorer prompts you to supply the missing information.

To disconnect from an FTP server:

- 1 Launch Windows Explorer and expand the Hummingbird Neighborhood directory tree.
- 2 On the toolbar, click Connect and Disconnect.

Setting the FTP Transfer Mode

Before you begin to transfer files, you can specify one of the following three FTP transfer modes:

- ASCII—Transfers the files as ASCII text.
- Binary—Transfers the files in pure binary form.
- Auto Select—Lets FTP for Windows Explorer determine which of the above two modes is the best mode for the selected file.

To set the default transfer mode:

- 1 Launch Windows Explorer.
- 2 In the left pane of the window, click Hummingbird Neighborhood. The Hummingbird Neighborhood dialog box opens.
- 3 On the View menu, click Hummingbird Neighborhood Options.
- 4 Click the FTP Transfer tab.
- 5 In the File Transfer Mode list, select the desired transfer mode.
- 6 Click OK.

To override the default transfer mode for specific FTP profiles:

- 1 Launch Windows Explorer, expand the Hummingbird Neighborhood directory tree, and expand the FTP directory tree.
- 2 Right-click the desired FTP Profile and click Properties.
- 3 Click the Other tab.
- 4 Select the desired upload transfer mode for this profile.

- 5 Select the desired download transfer mode for this profile.
- 6 Click OK.

Tracing FTP Sessions

FTP for Windows Explorer provides a tracing feature that lets you monitor or debug an FTP server connection. You can specify a trace file through the Hummingbird Neighborhood options; all information about the FTP server connection is then copied to this trace file.

To select a trace file:

- 1 Launch Windows Explorer.
- 2 In the left pane of the window, click Hummingbird Neighborhood.
- 3 On the View menu, click Hummingbird Neighborhood Options. The Hummingbird Neighborhood dialog box opens.
- 4 Click the FTP General tab.
- 5 Browse to the trace file that you want to use and click Open.
- 6 Click OK.

To enable tracing:

- 1 Launch Windows Explorer and expand the Hummingbird Neighborhood directory tree.
- 2 Right-click an FTP profile and click Enable Tracing.
- 3 Establish an FTP server connection.

Uploading and Downloading Files

After you have connected to an FTP server, you can upload files to the server or download them from the server. You can upload or download files in two ways: by copying and pasting or by dragging and dropping. To stop the file transfer at any time, click Cancel in the Transfer dialog box. To view the details of the transfer, click Show Details.

For information on establishing an FTP connection, see “Connecting to an FTP Server” on page 108.

To upload a file:

- 1 Establish an FTP connection.
- 2 In the Exploring window, do one of the following:
 - Right-click the file(s) that you want to transfer and click **Copy**. Navigate to the remote folder location, right-click the folder, and click **Paste**.
 - Select and drag the file(s) to the desired location.

To download a file:

- 1 Establish an FTP connection.
- 2 In the Exploring window, do one of the following:
 - Right-click the file(s) that you want to transfer and click **Download**. Click the **Browse** button to navigate to the local folder location, and click **Save**.
 - Select and drag the file(s) to the desired location.

To transfer files between different servers:

- 1 Establish an FTP connection.
- 2 In the Exploring window, right-click the file(s) that you want to transfer and click **Copy**.
- 3 Right-click the new server destination and click **Paste**.

Viewing Files

FTP for Windows Explorer provides a **View** feature that lets you open a remote file for viewing; when you choose this option, FTP for Windows Explorer saves the file in a temporary directory on your PC and opens it. If there is no program associated with the file, FTP for Windows Explorer uses Notepad to display the file.

To view a file:

- 1 Establish an FTP connection.
- 2 In the Exploring window, right-click the file that you want to view and click View.

Renaming and Deleting Files

After you have established an FTP connection, you can rename or delete files.

To rename a file:

- 1 Establish an FTP connection.
- 2 In the Exploring window, right-click the file you want to rename and click Rename.
- 3 Type the new file name and click OK.

To delete a file:

- 1 Establish an FTP connection.
- 2 In the Exploring window, right-click the file you want to delete and click Delete.
- 3 Click Yes to confirm the file deletion

For information on establishing an FTP connection, see "Connecting to an FTP Server" on page 108.

Synchronizing Files

FTP for Windows Explorer lets you synchronize files and directories to and from a remote FTP site. This feature lets you maintain sets of local and remote files that must always have the same content; when changes are made to the master file, the mirror file is updated automatically. The files and directories to be synchronized must first be set up as synchronization items in the Hummingbird Neighborhood Wizard.

To set up synchronization items:

- 1 Launch Windows Explorer, expand the Hummingbird Neighborhood directory tree, and expand the FTP directory tree.
- 2 Select the FTP profile where the appropriate file or directory is located.
- 3 Right-click the file or directory and click Synchronize. The Edit Synchronization Item Properties dialog box opens.
- 4 In the Local Filename/Directory box, type the full path for the local file or directory, or click File or Directory to select the file or directory.
- 5 Set the Synchronization Direction by selecting one of the following options:
 - To PC—Sets the file on the remote server as the master file. When synchronized, the file on your PC changes to always mirror the remote file.
 - To Remote—Sets the file on your PC as the master file. When synchronized, the remote file on the server changes to always mirror the local file.
 - Not Set—Saves the settings but does not synchronize the files.
- 6 Click OK to close the dialog box.

The wizard displays information about the newly synchronized files and directories.

To synchronize files:

- 1 Establish an FTP connection. The Exploring window opens.
- 2 On the toolbar, click SynchWiz. The Hummingbird Neighborhood Synchronization Wizard dialog box opens.
- 3 In the Synchronization list, select the desired file.
- 4 Click Synchronize.
- 5 Click OK.

For information on establishing an FTP connection, see “Connecting to an FTP Server” on page 108.

Managing Directories for FTP

FTP for Windows Explorer lets you create, delete, and manipulate directories, just as you would individual files.

To create a directory:

- 1 Launch Windows Explorer and expand the Hummingbird Neighborhood directory tree.
- 2 Expand the FTP directory tree and open the appropriate FTP profile.
- 3 On the File menu, click New Folder.
- 4 In the text box, type the new folder name and click OK.
- 5 Click Yes to confirm the directory creation.

You can also click the New Folder button on the toolbar.

To delete a directory:

- 1 Launch Windows Explorer and expand the Hummingbird Neighborhood directory tree.
- 2 Expand the FTP directory tree.
- 3 Right-click the directory that you want to delete and click Delete.
- 4 Click Yes to verify the directory removal.

Adding a Directory to the Send To Menu

The “Send To” function in Windows Explorer provides a quick method of transferring files to designated directories (folders). You can add a Hummingbird Neighborhood FTP directory to the Send To menu.

To add a folder to the Send To menu:

- 1 Launch Windows Explorer and expand the Hummingbird Neighborhood directory tree.
- 2 Expand the FTP directory tree and open the appropriate FTP profile.
- 3 Right-click the appropriate folder and click Add To ‘Send To’ Menu.

FTP Directory Caching

FTP for Windows Explorer maintains a cache of FTP directories and file names on your local machine, so you can view the directory listing without establishing a server connection. FTP for Windows Explorer automatically updates the local cache when you make changes on the remote host that affect the file system. Only pointers to the files, not the contents of the files, are stored in the local cache.

FTP for Windows Explorer also lets you select how often the cache is cleared; this clear setting works regardless of whether you have made changes to the file system on the remote host. The setting is located on the FTP Cache tab in the Hummingbird Neighborhood dialog box (accessible when you click Hummingbird Neighborhood Options on the View menu).

Note: You can clear individual FTP server caches or the entire FTP cache. The cache is not automatically updated if the remote file system is changed; you can press F5 to refresh a directory.

To enable directory caching:

- 1 Launch Windows Explorer, expand the Hummingbird Neighborhood directory tree, and expand the FTP directory tree.
- 2 Right-click an FTP profile and click Properties. The FTP Site Properties dialog box opens.
- 3 Click the Advanced tab.
- 4 Select the Enable Directory Caching check box and click OK.

To clear an FTP server cache:

- 1 Launch Windows Explorer, expand the Hummingbird Neighborhood directory tree, and expand the FTP directory tree.
- 2 Right-click an FTP profile and click Delete Cache.

Note: When you delete an FTP server cache, FTP for Windows Explorer deletes the server directory that is stored locally on your machine.

To clear the entire cache:

- 1 Launch Windows Explorer.
- 2 In the left pane of the window, click Hummingbird Neighborhood.
- 3 On the View menu, click Hummingbird Neighborhood Options. The Hummingbird Neighborhood dialog box opens.
- 4 Click the FTP Cache tab.
- 5 Click Clear Cache and click OK.

Note: When you clear the entire FTP cache, FTP for Windows Explorer deletes the server directories that are stored locally on your machine for all of the FTP profiles.

OLE Automation

OLE Automation is a facility provided by Windows that permits the automation of tasks and the exchange of data between applications. When an object, such as an image file, is linked to a compound document, such as a spreadsheet, the document contains only a reference to the object. Any changes made to the contents of a linked object are seen in the compound document.

You can access and control FTP for Windows Explorer through OLE Automation. You can write OLE Automation clients using a variety of tools, such as Hummingbird Basic, Visual Basic, C++, and Java.

Note: The name of the automation object is `Hc1Ftp.Engine`.

Creating an OLE Script

You can code OLE Automation containers to implement all of the features and functions of FTP in another application that uses OLE features, such as Hummingbird Basic. You can work with FTP session objects to call functions, such as connecting to a host, transferring files from host to host, and so on. You can use any tool that supports OLE Automation control, such as Visual Basic and Visual C++.

To create an OLE Script:

- 1 Create the main FTP Engine object. All objects support a dual interface. This lets you fully use the FTP OLE features. For example:

```
Dim FtpEngine As Object  
Set FtpEngine = CreateObject ("HclFtp.Engine")
```

- 2 Retrieve an FTP Sessions collection. This lets you set such things as local drives, access permissions, and so on. For example:

```
Dim FtpSessions As Object  
Set FtpSessions = FtpEngine.Sessions
```

- 3 Create the FTP session object. For example:

```
Dim FtpSession1 As Object  
Set FtpSession1 = FtpSessions.NewSession
```

- 4 Set properties such as server name, user name, user account, and so on. For example:

```
FtpSession1.ServerName="ftp.com"
```

- 5 Call session methods such as Connect to Host, User Login, Get, and so on. For example:

```
FtpSession1.UserLogin
```


Chapter 9

Printing Host Data

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This chapter describes how to print and log host data. HostExplorer provides a number of printing features.

There are a number of ways you can print and log host data. Depending on the print option you have selected in the Output area of the Session Profile dialog box, you can do the following:

- Print mainframe data to your Windows network printer.
- Print data using the PrintExplorer component; to use PrintExplorer, the host must support the TN3270E or TN5250E protocols.
- Capture a screen and save the data to a file; depending on the host system, you can capture session activity panel by panel or as one long file.
- Print a VT Scrollback buffer.
- Print data using HostExplorer Print Services to any LAN printer on your enterprise network, provided that:
 - The host is a mainframe running MVS, VM, or DOS/VSE, or is an AS/400 system.
 - The host is running a version of TCP/IP that supports the TN3270E and TN5250E protocols.

For more information about printing using Host Explorer Print Services, see the HostExplorer Print Services documentation.

Printing a Screen

You can print the screen of any host to which you are connected.

To print a screen:

- 1 On the File menu of the session window, click Print Screen. The Print dialog box opens.
- 2 In the Name list, choose a printer.
- 3 Click OK.

Printing with PrintExplorer

For more information about the various PrintExplorer options, see the PrintExplorer Help.

PrintExplorer is an application that provides you with control over the printer and provides information about a current print job.

To print with PrintExplorer:

- 1 On the Options menu of a mainframe window, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Output and click PrintExplorer.
- 3 Click the Start PrintExplorer Session Automatically option.
- 4 If you want to close PrintExplorer when you terminate the session, click the Close PrintExplorer Session Automatically option.
- 5 In the Base Print Explorer Profile box, specify a profile; click the browse button to search for one.
- 6 In the Host Name box, type the host name or IP address.
- 7 In the Printer LU Settings list, choose a setting.
- 8 Click Start Printer Now.

PrintExplorer opens; you can then choose a specific printer and configure print settings.

Saving Data to a File

When you save host data to a file, the data is saved to a default directory and file name. Before you save a screen to a file, you can specify a different location and file name and choose one of the following save modes:

- Overwrite—Overwrites any existing data.
- Append—Adds the new data to the end of an existing file without overwriting any data.

To save data to a file:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Output and click Save File.
- 3 In the Save Options list, click Overwrite or Append.
- 4 In the Save As Options list, click Ascii or Ansi.
- 5 If desired, in the Default Save Filename box, type a new directory and file name.
- 6 Click OK to save the changes and exit the dialog box.
- 7 On the File menu, click Save Screen to Disk.

Printing the Scrollback Buffer Contents

If you are connected to a UNIX host, you can print the contents of the Scrollback Buffer.

To print the contents of the Scrollback Buffer:

- 1 In a UNIX screen, select the text you want to print. You can scroll vertically to select text outside the terminal screen.
- 2 On the File menu, click Print Screen.
- 3 Click Selection and click OK.

Printing a Keyboard Mapping List

If you want to customize the functions associated with the keyboard keys, you can print a list of the mappings for reference.

To print a keyboard mapping list:

- 1 On the Options menu, click Keyboard Mappings. The Keyboard Map dialog box opens.
- 2 In the lower-left area of the dialog box, click List Assigned Functions. The Current Keyboard Template dialog box opens.
- 3 Click Print and click OK.

Printing Using the LPR Application

You can access remote printing capabilities using the LPR (Line Printer Requester) application, which lets you print PC files on a host printer.

You can connect a remote printer directly to your PC as if it were a local printer. To provide remote host access to your PC printer, enable the LPD service in Inetd. This connection appears automatically in all your Windows applications each time you run your PC.

Setting up a Printer for LPR

Before you attempt to print, you must define your printer. How you define your printer depends on the location from which you are printing (PC or host) and the location of the destination printer (PC or host). If you do not define your printer properly, LPR cannot direct your file to the desired printer.

Defining a Printer

The Windows products provide remote printing capabilities through the Line Printer Requester (LPR) application. LPR is an application that allows you to print PC files to any UNIX or LPD host on a TCP/IP network running an LPD server program. The LPR window displays a separate window for each UNIX or other LPD host printer queue to which you are connected.

To define a printer:

- 1 On the Windows Start menu, navigate to the HostExplorer program group and click LPR. The LPR window opens.
- 2 On the Printer menu, click Add Remote Printer. The Add Remote Printer dialog box opens.

Add Remote Printer

Port name:

Remote Printer Definition

Host:

Queue Name:

User ID:

OK

Cancel

Help

Test Queue

Advanced

☒ Read Host's Queue

Timeout in seconds:

☒ Graceful Close

- 3 In the boxes provided, type the following information:
 - Host—The name or IP address of the host to which the printer is connected; for example, HP5SIMX.
 - Queue Name—The name of the queue listed in the host's /etc/printcap file. This field is required.
 - User ID—Your user name.

- 4 If desired, select one of the following Advanced features:
 - Read Host's Queue—Automatically displays any available queue state information (for example, printer problems, job list, queue problems) from the host in the printer's window. You can also use the Refresh command on the Printer menu or the F5 key to update the hosts queue.
 - Graceful Close—All data that is already queued for transmission will be sent, if possible, before information associated with the socket is released.
- 5 When finished, click OK.

Sending a Print Job for LPR

After you have correctly defined the printer for LPR, you can print files.

To print files to a printer:

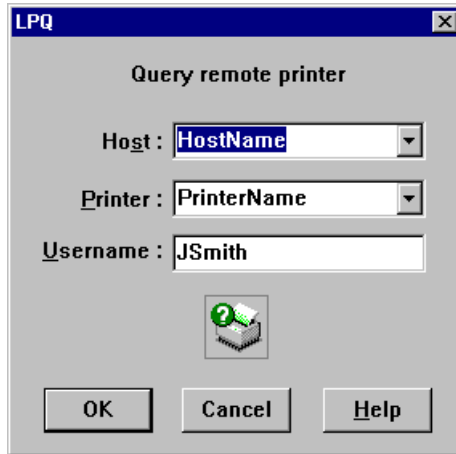
- 1 On the Windows Start menu, navigate to the HostExplorer program group and click LPR. The LPR window opens.
- 2 On the File menu, click Print.
- 3 Browse to the file you want to print and click OK. The system automatically checks the printer queue, then sends the job.

Checking a Printer Queue Using LPQ

Each time you send a print job, the system automatically checks the printer queue. You can check the queue without sending a print job, as described in the following procedure.

To check the printer queue:

- 1 On the Window Start menu, navigate to the HostExplorer program group and click LPQ.



- 2 In the boxes provided, type the following information:
 - Host—The name or the IP address of the host whose printer queue you wish to view.
 - Printer—The network name of the printer whose queue you wish to query. System Administrators sometimes name printers after the groups they service; for example, Documentation.
 - Username—The user name in the printer queue you wish to check.
- 3 Click OK.

LPQ connects to the host you specified and returns information on print jobs pending, spooling, and printing.

Removing or Modifying a Remote Printer

If a printer connection is no longer valid, you can remove it. If the printer information has changed, you can modify the printer properties. For details on how to remove or edit a printer connection, refer to the following procedures.

To remove a remote printer:

- 1 On the Windows Start menu, navigate to the HostExplorer program group and click LPR. The LPR window opens.
- 2 In the window, select the printer you want to remove.
- 3 On the Printer menu, click Remove Remote Printer.
- 4 Click Yes to confirm the deletion.

To edit the properties of a remote printer:

- 1 On the Start menu, navigate to the HostExplorer program group and click LPR. The LPR window opens.
- 2 On the Printer menu, click Edit Remote Printer Properties. The Edit Remote Printer Properties dialog box opens.
- 3 Edit the properties as desired. To test the printer, click Test Queue.
- 4 When you are satisfied with the information, click OK.

Chapter 10

Automating and Configuring a Session

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This chapter describes how to automate and configure a HostExplorer session. You can:

- create connection and login shortcuts
- create, run, and assign Quick-Keys
- create, edit, and run Quick Scripts
- create, edit, and run macros

Creating Connection and Login Shortcuts

You can create desktop icons and shortcuts to automate host connections at startup.

Warning! Automating logins may cause security problems.

Automating Connections

To automate connections, you can place profiles in a Startup folder and then create a HostExplorer shortcut that contains a `-*` switch as part of the target string. When you double-click the shortcut, all profiles located in the Startup folder start automatically.

Note: In version 7.x of HostExplorer, a Startup folder is no longer created by default when you install the software. For version 7.x, you can manually create a Startup folder and then place profiles in it for automatic startup. If you are migrating from an older version of HostExplorer to version 7.x, the old Startup folder is left intact.

To create a Startup folder:

- 1 In the Open Session dialog box, make sure that you are at the top level of Hummingbird Neighborhood (not within a sub-folder).
- 2 In the upper-right corner of the dialog box, click the Create New Profile Folder icon. A new folder appears in the main area of the dialog box with a default name.

- 3 For the folder name, type Startup.
- 4 Press Enter to save the name.

To designate profiles for automatic startup:

- 1 In the Open Session dialog box, right-click the existing profile(s) you want to designate for automatic startup and click Copy.
- 2 Open the Startup folder.
- 3 Right-click in the main area of dialog box and click Paste.
- 4 In Windows Explorer, navigate to the *home* directory for HostExplorer, where *home* refers to the directory in which the software is installed. For example:

```
C:\Program Files\Hummingbird\Connectivity\version\  
HostExplorer\
```

where *version* is the version number of your Hummingbird product.

- 5 Right-click the file HostEx32.exe, click Create Shortcut, and drag the resulting shortcut onto the desktop.
- 6 On the desktop, right-click the HostEx32.exe shortcut and click Properties. The Properties dialog box for shortcut opens.
- 7 On the Shortcut tab, add a -* switch to the end of the target string. For example:

```
"C:\Program Files\Hummingbird\Connectivity\version\  
HostExplorer\HostEx32.exe" -*
```

where *version* is the version number of your Hummingbird product.

- 8 Click OK.

When you double-click the shortcut on the desktop, all profiles located within the Startup folder start automatically. You can also place the shortcut in a different location if you want.

To add an icon to the desktop:

- 1 In the Open Session dialog box, right-click a profile.
- 2 Click Create Shortcut. The Browse for Folder dialog box opens.
- 3 Browse to the desktop and click OK.

To remove an icon from the desktop:

- 1 On the desktop, right-click the profile that you want to remove.
- 2 Click Delete.
- 3 Click Yes to confirm the deletion.

Running Quick-Keys, Quick Scripts, or Macros at Startup

You can create a Quick-Key, Quick Script, or macro to launch the login script automatically each time you open HostExplorer.

For more information about:

- Quick-Keys—See “Working with Quick-Keys” on page 144.
- Quick Scripts—See “Working with Quick Scripts” on page 146.
- macros—See “Working with Macros” on page 149.

To automatically run a Quick-Key, Quick Script, or macro at startup:

- 1 On the Options menu of a session window, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Session and click General.
- 3 In the Auto Start Quick-Key/Quick Script/Macro box, type the full path name of the Quick-Key, Quick Script, or macro that you want to use; click the browse button to search for one.

Note: If you click the browse button to search for Quick-Key or macro files, in the Files of Type list, select Hummingbird Basic Files; and to search for Quick Script files, select HostExplorer Quick Script Files.

- 4 Click OK when finished.
- 5 On the File menu, click Save Session Profile. The Save Profile dialog box opens.
- 6 Select the profile or type a new name.
- 7 Click Save.

Automating Your Login

You can automate your login to a host by creating a Quick-Key or Quick Script that contains the necessary information. The procedure for creating an automated login Quick-Key or Quick Script depends on the type of host to which you are connected.

Note: The procedure immediately below is for a 5250 connection; it may work for a 3270 connection as well, but it depends on the host operating system.

Creating an Auto-logon Quick-Key

To automate your login (5250 and, in some cases, 3270):

- 1 Connect to a host. For more information, see “Establishing Connections” on page 60.
- 2 On the Options menu, click Quick-Keys. The Quick-Key Editor dialog box opens.
- 3 In the Quick-Key Name box, type a name for the Quick-Key.
- 4 In the Assigned Quick-Key String box, type your login name (user ID), enclosed within quotation marks.
- 5 In the Function Group list, click Editing Keys.
- 6 In the Function list box, click Tab.
- 7 Click Append Function. This action adds the command to the Assigned Quick-Key String box.

- 8 Enter your password by doing one of the following:
 - If you have created and saved your password already in the General category of the Session folder, click System Commands on the Function Group list. In the Function list box, click Password. This action inserts an encrypted format of your password into the Assigned Quick-Key String box.
 - If you have not created and saved your password in the General category of the Session folder, type your password in the Assigned Quick-Key String box, enclosed with quotation marks.
- 9 In the Function Group list, click Action Keys.
- 10 In the Function list box, click Enter. Click Append Function when finished.

At this point, the Action Quick-Key String box should contain one of the following strings:

 - If you have entered your password in the General category of the Session folder:
`"user id" Tab Password Enter`
 - If you manually typed your password in the Append Quick-Key String box:
`"user id" Tab "password" Enter`
- 11 Click Set to implement the Quick-Key.
- 12 Click Save to save the Quick-Key to a session profile.

To automate your login (VT):

- 1 Connect to a host.
- 2 On the Options menu, click Quick-Keys. The Quick-Key Editor dialog box opens.
- 3 In the Quick-Key Name box, type a name for the Quick-Key.
- 4 In the Assigned Quick-Key String box, type your login name (user id), enclosed within quotation marks.
- 5 In the Function Group list, click Action Keys.

- 6 In the Function list box, click Return.
- 7 Click Append Function. This action adds the command to the Assigned Quick-Key String box.
- 8 In the Function Group list, click System Commands.
- 9 In the Function list box, click Pause. Click Append Function when finished.
- 10 Enter your password by doing one of the following:
 - If you have created and saved your password already in the General category of the Session folder, click System Commands on the Function Group list. In the Function list box, click Password. This action inserts an encrypted format of your password into the Assigned Quick-Key String box.
 - If you have not created and saved your password in the General category of the Session folder, type your password in the Assigned Quick-Key String box, enclosed with quotation marks.
- 11 In the Function Group list, click Action Keys.
- 12 In the Function list box, click Return. Click Append Function when finished.

At this point, the Action Quick-Key String box should contain one of the following strings:

- If you have entered your password in the General category of the Session folder:
`"user id" Return Pause Password Return`
 - If you manually typed your password in the Action Quick-Key String box:
`"user id" Return Pause "password" Return`
- 13 Click Set to implement the Quick-Key.
 - 14 Click Save to save the Quick-Key to a session profile.

Creating an Auto-logon Quick Script

To automate your login (5250 and, in some cases, 3270 and VT):

For more information on Quick Scripts, see “Working with Quick Scripts” on page 146.

- 1 In the host session window, on the Tools menu, point to Quick Script, and click Edit. HostExplorer Quick Script Editor opens.
- 2 Double-click the default header line “Untitled: Description of Quick Script”. The Quick Script Description dialog box opens.
- 3 Type a name and description for the new Quick Script file, and click OK.
- 4 On the Commands menu, click Declare Variable. The Declare Variable dialog box opens.
- 5 In the Variable Name box, type a name for the variable; for example, UserID.
- 6 In the Initial Value box, type your login name (user ID).
- 7 Click OK.
- 8 To declare a variable for your password, repeat steps 4 to 7.
- 9 On the Commands menu, click Send Variable to Screen. The Send Variable to Screen dialog box opens.
- 10 In the Variable Name list, select the variable name that you specified for your login name and click OK.
- 11 On the Commands menu, click Send Keystrokes. The Send Keystrokes dialog box opens.
- 12 In the Category list, select Editing Keys.
- 13 In the Mnemonic list, select Tab, and click Insert. The mnemonic appears in the Keystrokes box.
- 14 Click OK.
- 15 On the Commands menu, click Send Variable to Screen. The Send Variable to Screen dialog box opens.
- 16 In the Variable Name list, select the variable name that you specified for your password and click OK.

- 17 On the Commands menu, click Send Keystrokes. The Send Keystrokes dialog box opens.
- 18 In the Category list, select Action Keys.
- 19 In the Mnemonic list, select Tab, and click Insert. The mnemonic appears in the Keystrokes box.
- 20 Click OK.
- 21 On the toolbar, click Save.

Disabling Session Options

When configuring HostExplorer, you can customize and simplify the session window by disabling options that you are not using. You can disable the menu line, individual menu items, individual toolbar commands, the entire toolbar, or session options.

To disable the menu line:

- 1 On the Windows Start menu, click Run.
- 2 Click Browse.
- 3 In Files of type, select All Files.
- 4 Browse to the HostEx directory where the user files are stored on your machine. For the appropriate directory path for your platform, refer to the list of default locations for user files in the section, “Current User versus “All Users”” on page 26.
- 5 Open the hostex.ini file.
- 6 Add the following command to the section [Disable.Settings]. If the section does not exist, add it at the end of the file. For example:

```
[Disable.Settings]
Display Menu = Off
```

A disabled menu item remains visible in the user interface but is dimmed. You can remove it from sight entirely by adding a `Hide` parameter to the `disable` string.

To disable an individual menu item:

- 1 On the Windows Start menu, click Run.
- 2 Click Browse.
- 3 In Files of type, select All Files.
- 4 Browse to the `HostEx` directory where the user files are stored on your machine. For the appropriate directory path for your platform, refer to the list of default locations for user files in the section, “Current User versus “All Users”” on page 26.
- 5 Open the `hostex.ini` file.
- 6 Add the following command to the section `[Disable.Settings]`. If the section does not exist, add it at the end of the file. For example, if you want to disable the Open Session item in the File menu, add the following:

```
[Disable.Settings]
Start Sessions = Off
```
- 7 To completely hide the menu item, append "Hide" to the end of the entry. For example:

```
[Disable.Settings]
Start Sessions = Off, Hide
```

To disable toolbar commands:

- 1 On the Windows Start menu, click Run.
- 2 Click Browse.
- 3 In Files of type, select All Files.
- 4 Browse to the `HostEx` directory where the user files are stored on your machine. For the appropriate directory path for your platform, refer to the list of default locations for user files in the section, “Current User versus “All Users”” on page 26.
- 5 Open the `hostex.ini` file.
- 6 Add the following line to the section `[Disable.Settings]`. If the section does not exist, add it at the end of the file. For example:

```
[Disable.Settings]
Display Toolbar = Off
```

To disable the toolbar:

- 1 With the toolbar hidden, create and save a profile. To hide a toolbar, right-click it and click Hide. The toolbar must be detached from the main window for you to hide it.
- 2 On the Windows Start menu, click Run.
- 3 Click Browse.
- 4 In Files of type, select All Files.
- 5 Browse to the HostEx directory where the user files are stored on your machine. For the appropriate directory path for your platform, refer to the list of default locations for user files in the section, “Current User versus “All Users”” on page 26.
- 6 Open the `hostex.ini` file.
- 7 Add the following line to the section `[Disable.Settings]`. If the section does not exist, add it at the end of the file. For example:

```
[Disable.Settings]
Display Toolbar = Off, Hide
Category Term_Toolbar = Off
```

To disable a session profile category:

- 1 On the Windows Start menu, click Run.
- 2 Click Browse.
- 3 In Files of type, select All Files.
- 4 Browse to the HostEx directory where the user files are stored on your machine. For the appropriate directory path for your platform, refer to the list of default locations for user files in the section, “Current User versus “All Users”” on page 26.
- 5 Open the `hostex.ini` file.

- 6 Add the following line to the section [Disable.Settings]. If the section does not exist, add it at the end of the file. For example:

```
[Disable.Settings]
Category Session_General = Off
```

Note: For more information about which session options you can disable, see the Security Settings topics in the Reference section of the HostExplorer Help.

Working with Hotspots

Hotspots designate text strings or regions on the host screen. Text hotspots can contain intervening blanks, meaning they can consist of more than one word; they can occur anywhere on the screen and can contain a preceding and/or trailing blank. Region hotspots are rectangular areas you can define. HostExplorer lets you define hotspot schemes: you define a scheme and then add however many text or region hotspots you want to that scheme.

Assigning Hotspot Functions

When selected, these hotspots execute predefined functions. You can assign hotspots to any action, editing, or character key, and have them execute system commands, macros, Quick-Keys, and Quick Scripts. Hotspots are global functions and are not profile-specific.

After you have created a hotspot, you can click the hotspot text or region and watch as the predefined action is executed. For example, many electronic mail packages have the PF key legend at the bottom of the screen. The format is usually as follows: PF2:Read, PF3:End, and so on. In the Session Profile dialog box, if the Show Hotspots option in the General category of the Display folder is selected, you can click the PF2 text on the screen to execute the PF2 action automatically.

The following text strings are automatically recognized as hotspots with n representing any digit:

- Program Function Keys—PFn, PFnn, Fn, Fnn.
- Program Attention Keys—PAn, An.

For example, the PF1, PF2, F1, F12, PA1, PA2, A1 text strings are automatically recognized as hotspots.

Overlapping Hotspots

If hotspots overlap, you can define the order in which they are displayed. The hotspots nearest the top of the current hotspot scheme take precedence over those below. You can manipulate the order at any time.

Note: Hotspots that do not display because of overlapping cannot be executed.

To create a hotspot scheme:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Hotspots and click General.
- 3 Click New. The Save Scheme As dialog box opens.
- 4 In the Scheme Name box, type a name for the scheme and click OK.

To create a new hotspot:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Hotspots and click General.
- 3 Choose a scheme and click Add.

- 4 Choose a hotspot type (Text or Region) and do one of the following:
 - For a text hotspot, type the text you want to include in the hotspot in the Hotspot Text box. This text doubles as the name for the hotspot.
 - For a region hotspot, type the name you want for the hotspot in the Hotspot Name box.
- 5 Specify options for the hotspot.
- 6 Click Next.
- 7 Specify a function group, function, and ToolTip text.
- 8 Click Finish.

To edit a hotspot:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Hotspots and click General.
- 3 Select a scheme and select the hotspot you want to edit.
- 4 Click Edit.
- 5 Configure the settings on both tabs.
- 6 Click OK to save the settings and exit the dialog box.

To change the order of hotspots:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click Hotspots and click General.
- 3 Select a scheme and select the hotspot you want to move.
- 4 Click the Move Up or Move Down button to place the hotspot in the position you want.

To display a hotspot:

On the View menu, click Hotspots. This setting applies to both text and region hotspots.

To delete a hotspot:

- 1 On the Options menu, click Edit Session Profile. The Session Profile dialog box opens.
- 2 Double-click the Hotspots folder and click the General category.
- 3 In the Scheme list, select a scheme.
- 4 Select the hotspot that you want to remove and click Delete.

Working with Quick-Keys

For information about automatically running a Quick-Key on startup, see “Running Quick-Keys, Quick Scripts, or Macros at Startup” on page 133.

Quick-Keys are multi-functional, global shortcuts that can store text and commands. You can use Quick-Keys to execute a sequence of commands automatically.

You can create a Quick-Key using a combination of text, keys, and commands. Quick-Keys are global and system-wide. They are not profile-specific and do not affect the host.

Note: For more information on the available Quick-Keys, see the Quick-Key System Commands topic in the Reference section of the HostExplorer Help.

To create a Quick-Key:

- 1 On the Options menu, click Quick-Keys. The Quick-Key Editor dialog box opens.
- 2 In the Quick-Key Name box, type a name for the Quick-Key.
- 3 In the Function Group list, select a function group.

- 4 In the Function list box, select the individual function you want to apply to Quick-Key and click Append Function. The function displays in the Assigned Quick-Key String field.
- 5 Repeat step 4 until you have appended all the desired functions.
- 6 Click Set to implement the Quick-Key.
- 7 Click Save to save the Quick-Key to a session profile.

Note: When creating Quick-Keys, be sure to include a timing delay; this delay allows the Auto Start Quick-Key to run when host data is received from a new session. To add a delay, do the following: on the Function menu, click Pause and click Append Function.

To load a Quick-Key:

- 1 On the Options menu, click Quick-Keys. The Quick-Key Editor dialog box opens.
- 2 Click Load. The Load Quick-Key dialog box opens.
- 3 Click the Quick-Key you want to load and click OK.

To run a Quick-Key:

- 1 On the Options menu, click Quick-Keys.
- 2 On the Quick-Key list, click a Quick-Key.
- 3 Click Run.

For information on running a Quick-Key at startup, see “Running Quick-Keys, Quick Scripts, or Macros at Startup” on page 133.

Working with Quick Scripts

Unlike macros, which are statements based on the Hummingbird Basic programming language, Quick Scripts are made up of commands that can automate tedious tasks such as entering repetitive information into an order entry form, or entering your user name and password into a login screen. HostExplorer lets you assign these Quick Scripts to keyboard mappings, mouse actions, hotspots, toolbar buttons, and the track menu.

Note: For more information on the available Quick Script commands, see the Quick Script Commands topic in the Working with Quick Scripts section of the HostExplorer Help.

HostExplorer provides a Quick Script Editor which is used to create and modify Quick Scripts. Quick Script Editor has the following functions and capabilities:

- declares variables
- creates labels
- branches to other labels and functions
- views Quick Script details
- creates pop-up messages

Note: Quick Scripts are emulation-specific. For example, a VT Quick Script loads only when the Quick Script Editor is opened from a VT session.

For example, you can:

- Modify timeouts and delays to account for slower connections.
- Remove "Send Keystrokes" containing private information (for example, passwords) and replace with profiles variables such as "prompt dialogs".

You can also create an Auto-logon Quick Script. To use the Auto-logon feature, you must create an Auto-logon Quick Script to use with each session, except TN5250E with telnet negotiations. For more information, see “Creating an Auto-logon Quick Script” on page 137.

Sample files of Quick Scripts are available in the following directory where the program files are stored on your machine:

HostExplorer\SDK\Samples\QuickScripts

Creating and Running Quick Scripts

You can create a Quick Script to automate tedious and repetitive tasks.

To create a Quick Script:

- 1 In the host session window, on the Tools menu, point to Quick Script and click Edit. HostExplorer Quick Script Editor opens, displaying a new Quick Script with the default header line: “Untitled: Description of Quick Script”.
- 2 You can edit the header line by pressing the Enter key, or right-clicking the line and clicking Properties. The Quick Script Description dialog box opens.
- 3 Modify the file name and description of the Quick Script, and click OK.

To start a new Quick Script:

- 1 On the File menu, click New. Alternatively, you can click New on the toolbar. The Create a New Quick Script dialog box opens.
- 2 Complete the dialog box and click OK.

To run a Quick Script:

- 1 In the host session window, on the Tools menu, point to Quick Script and click Run. The Run Quick Script dialog box opens.
- 2 Select a Quick Script and click OK. Alternatively, click Browse to locate the Quick Script file. The selected Quick Script runs.

For information on using Quick Scripts to automate your login, see “Creating an Auto-logon Quick Script” on page 137.

For information on running a Quick Script at startup, see “Running Quick-Keys, Quick Scripts, or Macros at Startup” on page 133.

For information on Hummingbird Basic Workbench, refer to the Hummingbird Basic Workbench Help.

Converting Quick Scripts to Macros

In order for your Quick Script to be functional as a macro, you can convert it by saving it as an `.ebs` file. Rather than create the script in Hummingbird Basic, you can use Quick Script Editor to create the file. After you convert the file in Quick Script Editor, you can open and modify the macro in Hummingbird Basic Workbench (if necessary), and run it in the same way as any other HostExplorer macro.

To convert your Quick Script to a macro file:

- 1 Create a Quick Script file using the Quick Script Editor.
- 2 On the File menu, click Save As. The Save As dialog box opens.
- 3 In the Files of Type list, select HostExplorer Macro Files [`*.ebs`]. Alternatively, you can add the `.ebs` extension to the name of the file in the File Name box.
- 4 In the File Name box, type a name for the macro file.
- 5 Click Save.

Note: This action saves the Quick Script contents only as a macro file, not a Quick Script file.

You can also launch Hummingbird Basic Workbench on the Windows Start menu. The utility is located in the HostExplorer/Accessories program group.

- 6 If you need to modify the macro, on the Tools menu of the host session window, point to Macro, and click Edit. Hummingbird Basic Workbench opens.
- 7 On the File menu, click Open.
- 8 Navigate to the folder where you stored the converted macro file, and click Open.
- 9 Modify the macro as necessary.
- 10 Run the macro. For information on running macros, see the corresponding procedure in the section, “Working with Macros” on page 149.

Working with Macros

HostExplorer provides macro functionality that lets you automate various commands and actions.

Recording and Editing Macros

Using the Macro Recorder, you can record keystrokes, mouse actions, and other session events; you can also record a macro at startup to include operations that occur prior to a connection. Then, using the Macro Editor, you can edit the macro and enhance functionality, such as timeouts and delays, to accommodate slower connections.

Using Hummingbird Macro Basic Workbench, a Microsoft VBA-compatible Basic interpreter and compiler, you can write a macro using the Basic Script tool.

Migrating WinWrap to Hummingbird

In HostExplorer 6.0, the Basic Scripting Language changed from WinWrap Basic to Hummingbird Basic. Different coding conventions may require you to modify your existing scripts. Hummingbird Basic supports the BASIC commands with API function calls. You can use these calls to customize HostExplorer. The Hummingbird Basic Workbench can create, compile, and debug script files. The newly modified sample scripts in `filelist.ebs` and `sendrecv.ebs` illustrate the changes that have occurred since version 4.0.1 counterparts. The sample scripts now support TSO and CMS file transfers.

To record a macro:

- 1 On the Tools menu, point to Macro and click Start Recording.
- 2 Perform the steps that you want to record.
- 3 On the Tools menu, point to Macro and click Stop Recording. The Save Recorded Macro File dialog box opens.
- 4 Type a file name for the macro and click Save.

To run a macro:

For information on running a Quick Script at startup, see “Running Quick-Keys, Quick Scripts, or Macros at Startup” on page 133.

- 1 In the host session window, on the Tools menu, point to Macro and click Run. The Browse Macro Files dialog box opens.
- 2 Select a macro file and click Open.

Note: You can automatically run a macro when you launch HostExplorer.

The selected macro begins to run.

To edit a macro:

- 1 On the Tools menu, point to Macro and click Edit. Hummingbird Basic Workbench opens.
- 2 On the File menu, click Open.
- 3 Select the macro that you want to edit.
- 4 Make the necessary changes.
- 5 On the File menu, click Save and close the editor.

Note: You can also launch Hummingbird Basic Workbench on the Windows Start menu. This utility is located in the HostExplorer/Accessories program group.

Converting Older Macro Scripts

When you migrate older scripts, you can reduce conversion errors.

To migrate scripts:

For more information on connecting to a host, see “Establishing Connections” on page 60.

- 1 Launch HostExplorer and establish a remote host connection.
- 2 Locate the script that you want to convert and change the file extension of the script file from .wwb to .ebs, the default extension for Hummingbird Basic script files.

- 3 Explicitly declare all sub-procedures and function procedures using `Declare` statements. You must include any argument list on the declaration. For example:

```
Declare Sub ReturnToCMS

Declare Sub PressKeys( szKeyVals as String, bWaitForHost as Integer )
```

- 4 Use OLE automation to communicate with a session. Do this by declaring a new object that can access the session and use the `CreateObject` function to associate this object with `HostExplorer`.
- 5 Associate the new object with any object previously used to communicate with `HostExplorer`. For example, assume that your old script uses the `CurrentHost` method to access a session:

```
Dim Host as Object

Sub Main

    Set Host = CurrentHost
```

- 6 Modify the old script as follows:

```
Dim Host as Object

Dim HE as Object

Sub Main

    Set HE = CreateObject( "HostExplorer" )

    Set Host = HE.CurrentHost
```

- 7 Replace all occurrences of the word `Boolean` with the word `Integer`. `Boolean` is not a valid data type in Hummingbird Basic and the values -1 and 0 are used to represent `True` and `False`, respectively.
- 8 Replace all occurrences of the statement `Exit All` (which is not supported in Hummingbird Basic) with an `Exit Sub` or `Exit Function` statement (as appropriate) to force a return to the calling routine. Add an `Exit Sub` or `Exit Function` in each calling routine as necessary until control is returned to the `Main` sub-procedure. From there, you can exit the entire script using an `Exit Sub` statement.

- 9 Decrease the size of all dialog boxes. This action is necessary because the units of measure used to define the size of a dialog box in Hummingbird Basic differs from those used in WinWrap Basic.

Converting Wall Data RUMBA Macros

HostExplorer provides a utility that lets you convert Wall Data RUMBA macros (.rmc files) into Hummingbird Basic macro files. The utility keeps the original file intact and requests a destination folder for placing the converted file.

You can convert individual files or entire directories.

To convert Wall Data RUMBA macros:

- 1 On the Windows Start menu, navigate to the HostExplorer program group and click Macro & Profile Converter. The HostExplorer Profile/Macro Conversion Utility dialog box opens.
- 2 In the Conversion Type list, click Wall Data RUMBA Macros (*.RMC).
- 3 In the Files or Directory to Convert box, specify the file or directory you want to convert.
- 4 In the Destination Directory box, specify a destination directory in which to place the converted files.
- 5 If you are converting an entire directory and want the utility to include subfolders in that directory, select the Recursive Search option.
- 6 If you are converting an entire directory and want to be notified before each file is actually converted, select the Prompt Before Each Conversion option.
- 7 Click Convert to begin the conversion.

Converting Attachmate EXTRA! Macros and Profiles

HostExplorer provides a utility that lets you convert Attachmate EXTRA! macros (.ebm files) and profiles (.edp files). The utility converts .ebm files into Hummingbird Basic macro files, and it converts .edp files into standard HostExplorer session profiles (.hep files).

The utility keeps the original file intact and requests a destination folder for placing the converted file. You can convert individual files or entire directories.

To convert Attachmate EXTRA! Macros or Profiles:

- 1 On the Windows Start menu, navigate to the HostExplorer program group and click Macro & Profile Converter. The HostExplorer Profile/Macro Conversion Utility dialog box opens.
- 2 In the Conversion Type list, do one of the following:
 - To convert a macro, choose the Attachmate EXTRA! Macros (*.EBM) option.
 - To convert a profile, choose the Attachmate EXTRA! v6.x Profiles (*.EDP) option.
- 3 In the Files or Directory to Convert box, specify the file or directory you want to convert.
- 4 In the Destination Directory box, specify a destination directory in which to place the converted files.
- 5 If you are converting an entire directory and want the utility to include subfolders in that directory, select the Recursive Search option.
- 6 If you are converting an entire directory and want to be notified before each file is actually converted, select the Prompt Before Each Conversion option.
- 7 Click Convert to begin the conversion.

Chapter 11

Special Connections

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This chapter describes how you can establish communication with a 3270 mainframe using one of the following products:

- Microsoft SNA Server
- Novell NetWare for SAA

Microsoft SNA Server

You can establish communication with mainframes via Microsoft SNA Server using LU application (LUA), display, or printer logical units (LUs). Using configurable LUs in Microsoft SNA Server, you can run primary LU0, LU1, LU2, and LU3 sessions that emulate 3270 data stream.

Before you can access the host, you or your system administrator must configure Microsoft SNA Server connections on the link service, configure LUs, and assign them to users, groups, workstations, and printers. You must also install Microsoft SNA Server Client software on your workstation.

You can connect with an IBM mainframe via Microsoft SNA Server. This connection offers full support of Display and Printer Types, on single or multiple hosts and IND\$FILE transfers.

You can find out more about configuring a Microsoft SNA Server at the following web site:

www.microsoft.com/SNA/default.asp

Microsoft SNA Server System Requirements

To run Microsoft SNA Server, you require the following:

- Microsoft SNA Client software running on each client workstation. One client can run on either Windows 95 or Windows NT 4.0 or higher, while the other client must be configured to run under Windows NT.
- TCP/IP or MS Networking transport protocol installed on the SNA Server and on each client workstation.

Configuring the Microsoft SNA Server Connection

After you have installed the necessary software, you can configure a connection using the Microsoft SNA Server.

To configure a Microsoft SNA Server connection:

- 1 In the Open Session dialog box, right-click a profile and click Properties. The Session Profile dialog box opens.
- 2 Double-click Session and click Host.
- 3 In the Connect By list, click SNA Server.
- 4 In the LU or Pool Name box, type the logical unit (LU) or Pool Name.
- 5 Click OK.

Novell NetWare for SAA

You can establish communication with mainframes via Novell's NetWare for SAA Server using 3270/LUx logical units (LUs). Using configurable 3270/LUx LUs in NetWare for SAA server lets you run primary LU0, LU1, LU2, and LU3 sessions that emulate 3270 data stream.

Before you can access the host, you need to configure 3270/LUx LUs on the server using Novell Directory Services (NDS) configuration tools and assign them to users, groups, workstations, and printers. NDS configuration works only with NetWare for SAA server versions 2.2 or later, with the client running over a NetWare IPX/SPX stack. You must also install NetWare for SAA Client software on your workstation.

You can find out more about configuring Novell NetWare for SAA at the following web site:

<http://www-4.ibm.com/software/network/commserver/library/publications/nwsaa.html>

Novell NetWare for SAA System Requirements

To run Novell NetWare for SAA, you require the following:

- Client Service for NetWare and transport compatible with IPX/SPX (Internetwork Packet Exchange/Sequenced Packet Exchange).
- A LAN adapter that supports IPX (Internetwork Packet Exchange).
- Novell NetWare Client for Windows NT or Windows 95.

Configuring the Novell NetWare for SAA Server Connection

After you have installed the necessary software, you can configure a connection using the Novell NetWare for SAA Server.

To configure a Novell NetWare for SAA Server connection:

- 1 In the Open Session dialog box, right-click a profile and click Properties. The Session Profile dialog box opens.
- 2 Double-click the Session folder and click Host.
- 3 In the Connect By list, click NetWare for SAA.
- 4 In the Session Name (NDS) box, type the Session Name and click OK.

Chapter 12

System Administration—Sconfig and Jconfig

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Customizing Installations with Sconfig

For more information on Windows Installer, see the installation chapter.

Many users in an enterprise maintain different development needs and require customized software to meet those needs. For example, some users may require specific features of the Hummingbird product such as Telnet and FTP setting files to connect to frequently used hosts, while other users would not. Instead, these users may require specific font settings and features installed with their Hummingbird product.

Sconfig is an advanced system administration tool that helps users make the best use of their Hummingbird software in specific networked environments. With Sconfig, you can customize the Setup Wizard to create tailored installation packages of Hummingbird software for different users. You can:

- Customize the directories in which the product is installed.
- Tailor the list of applications or components to be installed. You can alter the list to limit the functionality available to users, or to optimize the use of disk space.
- Simplify user input during the installation by preselecting information, such as the properties of the software being installed.

Note: When installing the Hummingbird software on the administrator machine, you must choose Custom or Complete installation. The Sconfig utility does not install on a Typical installation.

You can use Sconfig to package customized installations that cater to each user by creating a Microsoft transform file (.mst). After creating a transform file, you can then include those applications (and subsequent components) that are useful for each user.

About Windows Installer Database Files

Microsoft Windows Installer uses Microsoft Software Installation package files (.msi) to install the Hummingbird product. A package file is a database file which contains information on product components and installation directories.

Sconfig uses the package files as a foundation for building customized installations. Using Sconfig, you can open any Hummingbird product package file, modify the settings, and save the customized settings in a Microsoft transform file.

Microsoft Transform Files

A Microsoft transform file makes changes to the elements of a package file. When a transform file is applied to a package file, it changes the behaviour of an installation.

Whenever Windows Installer needs to perform a customization or a configuration change, it applies the transform file to the package file to create and change the installation database. Like the package file, the transform file is a relational database with information about product components and installation directories, but the transform file contains only those changes that you want to apply to the installation package.

Instead of changing the package file, Sconfig stores all the customized settings in a transform file. You can then use Sconfig to open the transform file and make future customizations by applying your customized settings to an updated package file.

Working with Transform Files in Sconfig

Using a transform file, Sconfig lets you make modifications to an existing, preconfigured package file. When you run the Setup Configuration Wizard, you must first identify the package file that you want to customize. Then you can specify the transform file that you want to use.

Once you have specified the transform file you want to configure, Sconfig opens the Setup Configuration Wizard Customization dialog box. Here you can begin making alterations to the installation database.

When preparing for multiple custom installations, you need to create a separate transform file for each user. You can then apply each transform file to the Hummingbird product's package file, thus temporarily updating the package file and storing the changes in your customized transform file.

When opening Sconfig you must specify the transform and package files. You can work with a new package file or with a preconfigured one.

Note: Sconfig is not installed in a Typical installation. It installs only if you choose Custom or Complete.

To open Sconfig:

- 1 On the Start menu, navigate to the Hummingbird System Administration folder.
- 2 Click Sconfig to open the wizard. A short welcome screen appears.
- 3 Click Next to continue.
- 4 Specify the package file that you want to customize and click Next. You can choose a package file in one of the following ways:
 - Specify a package file (.msi) that you previously configured.
 - Browse for a new package file (.msi).
- 5 Specify the transform file that you want to create. You can specify a transform file in one of the following ways:
 - Specify a transform file (.mst) that you previously configured.
 - Browse for a new transform file (.mst) by clicking the Browse button.
 - Create a new one yourself. You can do this by clicking the Browse button.
- 6 Click Next to continue.

About Creating Transform Files in Sconfig

Once you have specified the package and transform files that you want to configure, you can open the installation database and make alterations to create a custom install. Sconfig opens the Setup Configuration Wizard Customization dialog box. In this dialog box you can make alterations to the transform file and create a custom install.

Sconfig lets you customize the following:

Product Directories The Directories option lets you customize product directories for the installation of the Hummingbird product. See “Customizing Product Directories” on page 167 for more information.

Product Features The Features option lets you select Hummingbird product features for a custom install. See “Selecting Features to Install” on page 168.

Files The Files option lets you select external custom program files for the Hummingbird product. See “Selecting Files to Install” on page 169 for more information.

Product Properties The Properties option lets you set custom properties to change the behavior of a custom installation package and set properties for Hummingbird product features. See “Setting Product Properties” on page 172 for more information.

Registry The Registry option lets you preset the Registry editor for any Windows operating system registry. The advantage of editing the registry before the installation saves time, especially when installing for multiple target machines. See “Setting the Registry” on page 176 for more information.

Custom Shortcuts The Shortcut option lets you create custom shortcuts on user machines for any Hummingbird product feature added to your installation database. See “Setting Shortcuts” on page 179 for more information.

Exceed Properties Available in Exceed, Exceed XDK, and Exceed PowerSuite installations, the Exceed Settings option lets you modify or remove properties.

NFS Properties Available only in NFS Maestro product and Exceed PowerSuite installations, the NFS Settings option lets you modify or remove properties for NFS Maestro.

Custom Font Directories and Servers Available in Exceed, Exceed XDK, and Exceed PowerSuite installations, the Custom Font Settings option lets you install customized font directories and servers to the Exceed Xconfig utility.

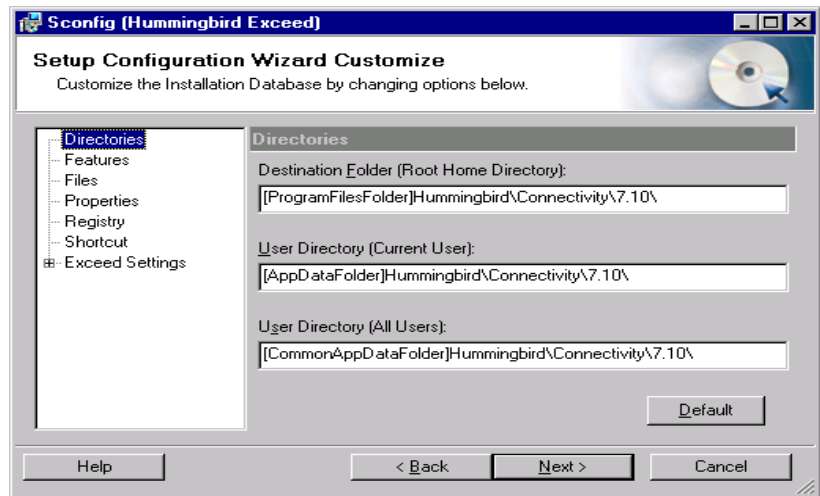
Custom Font Paths Available in Exceed, Exceed XDK, and Exceed PowerSuite installations, the Font Paths Settings option lets change the order in which font directories/servers are loaded by X Server.

When the dialog box opens, it defaults to the Directories dialog box. You can browse to the other options by clicking their names on the left panel of the Setup Configuration Wizard.

Customizing Product Directories

The Directories dialog box lets you to specify where your Hummingbird product will be installed. You can set the following directories:

- Destination
- Current User
- All Users



To customize directories:

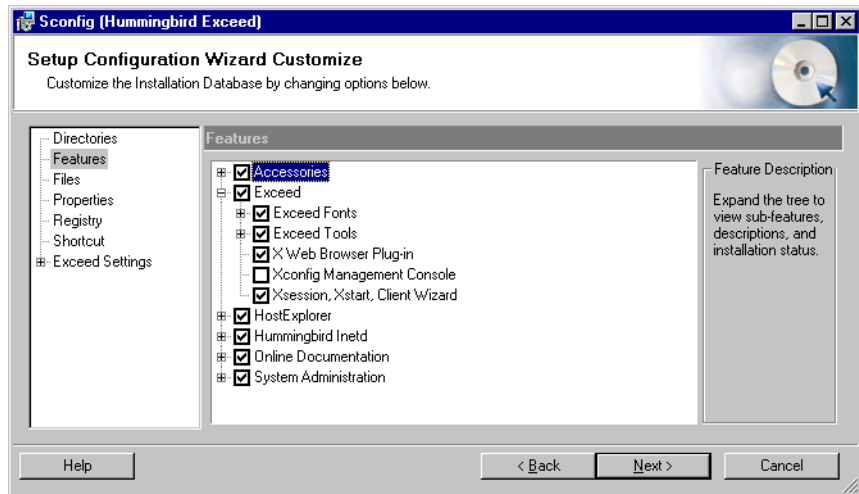
- 1 In the Destination Folder box, type the directory where all non-volatile files will be stored.
- 2 In the Current User box, type the directory where all volatile files will be stored for the current user.

- 3 In the All Users box, type the directory where all volatile files will be stored for all users.

Selecting Features to Install

To view the Features dialog box, click Features in the left panel of the Setup Customization Wizard. The Features dialog box lets you choose which Hummingbird product features to install. Selecting features is similar to customizing your product installation using Windows Installer. Choose features that cater to each user in your enterprise. Sconfig also lets you specify sub-features for each feature you specify.

Hummingbird product features can be added to, modified within, and removed from an installation database for different users in an enterprise. For quick access to these features on user machines, you can create shortcut icons for Hummingbird product features for users and groups. For more information see “Setting Shortcuts” on page 179.



Adding a Feature to an Installation Database

Recognizing features commonly used by specific users is necessary during a custom installation. Some use the Hummingbird product at an administrative level (system administrators). These users will find features that monitor trace operations and troubleshoot logs to be a very important component of their install, while users that use the product at strictly a user level may not.

To add a feature, in the Features dialog box, select the check box of the Hummingbird product feature(s) you want to add to the install.

Modifying a Feature in an Installation Database

The Features box provides you with the flexibility to modify features by changing the combination of sub-features that get installed for any particular Hummingbird feature. Modifications become necessary when application requirements for a particular user change. These changes must then be reapplied to the package file to reflect the update.

To modify a feature:

- 1 In the Features dialog box, expand the tree of the Hummingbird product feature(s) you want to modify.
- 2 Select or clear the check box of the sub-feature(s) you want to add or remove for that Hummingbird feature.
- 3 If you want to modify another feature, repeat steps 1-2.

Removing a Feature from the Installation Database

When users no longer require a feature, you can remove the product feature from the installation database. Removing a feature in Sconfig deletes it from the transform file. These changes must then be reapplied to the package file to reflect the update.

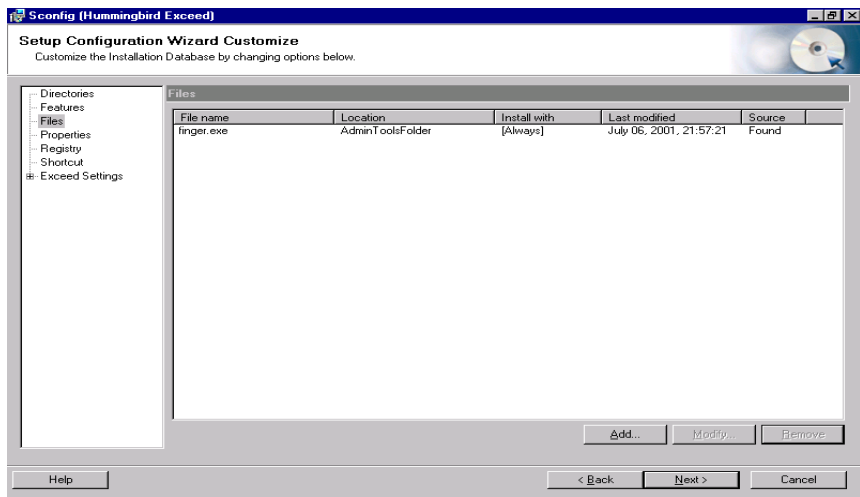
To remove a feature, in the Features dialog box, clear the check box of the Hummingbird product feature(s) you want to remove.

Selecting Files to Install

To view the Files dialog box, click Files in the left panel of the Setup Customization Wizard.

Sconfig lets you add, modify or remove external program files that do not come with your Hummingbird product. You can specify the destination path of a file on a user's computer and specify a feature to install with this file. The Files dialog box provides you with the opportunity to accessorize the installation database and optimize task efficiency amongst users while using the Hummingbird product.

Files can be added to, modified within, and removed from an installation database for different users in an enterprise.

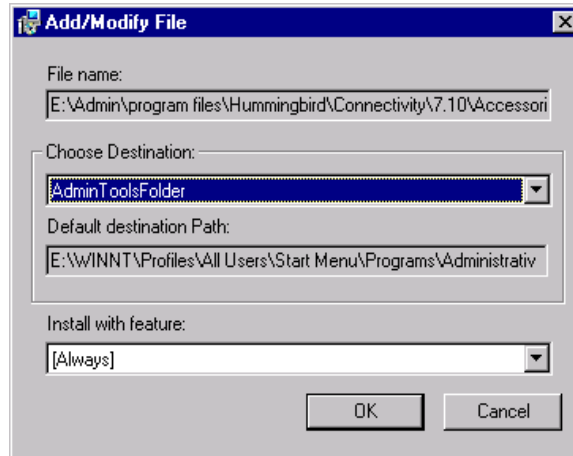


Adding a Custom File to an Installation Database

The Files box lets you add to the installation database, external program files that are frequently used by users. You can add mini program files such as email, drawing and graphics files, or other executable files that are used by users to carry out routine tasks.

To add a file:

- 1 In the Files dialog box, click Add. A standard Windows Open dialog box opens.



- 2 Select a file in the dialog box and click OK. The Add/Modify File dialog box opens.
- 3 From the drop-down list, select a destination path folder. This folder can be a Windows Systems folder or a Hummingbird folder, depending upon where you want to store the file.
- 4 From the Install With Feature drop-down list, select a feature or select Always to include this file with every install and click OK. The Files box appears listing the added file.
- 5 If you want to add another file, repeat steps 1-4.

Modifying a Custom File in an Installation Database

You can modify a file in the installation database. This option provides you with the flexibility to change the associated feature that gets installed with the file and specify a new destination path for the file. These changes must then be reapplied to the package file to reflect the update.

To modify a file:

- 1 In the Files dialog box, select a file and click Modify. The Add/Modify File dialog box opens.
- 2 If you want to change the destination folder in which your file gets stored, from the drop-down list, select a new destination path folder.
- 3 If you want to change the feature that the file gets installed with, from the Install with drop-down list, select a new feature and click OK. The Files dialog box appears listing the files in your installation database.

If you want to modify another file, repeat steps 1-3.

Removing a Custom File from an Installation Database

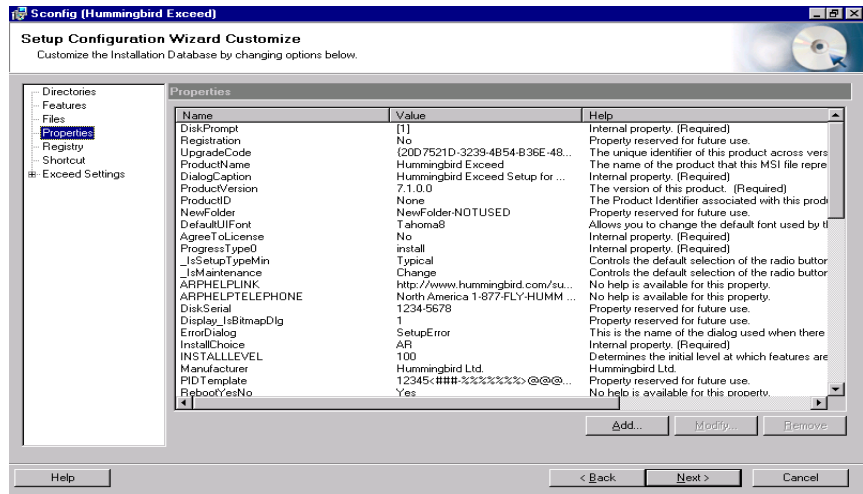
You can remove a file from the installation database when users no longer require that file with the installation of the Hummingbird product. Removing a file in Sconfig deletes it from the transform file. These changes must then be reapplied to the package file to reflect the update.

To remove a file, in the Files dialog box, select a file from the list and click Remove.

Setting Product Properties

To view the Properties dialog box, click Properties in the left panel of the Setup Customization Wizard. Sconfig lets you customize which Hummingbird product properties install. The Properties dialog box lists required properties that are needed for product functionality and optional properties. You can set properties that customize Hummingbird product features, that control user input, and that define the installation behavior of the product.

You can also set properties for Exceed and NFS Maestro Client. However, these properties become available only when installing the appropriate package files for each of these products. Hummingbird product properties can be added to, modified within, and removed from an installation database for different users in an enterprise.



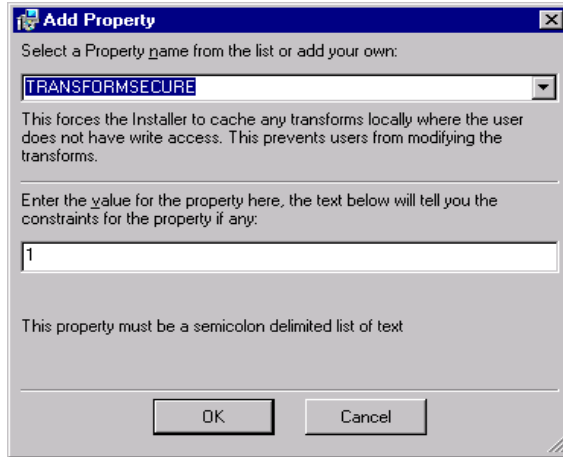
Adding a Custom Property to an Installation Database

You can add optional properties that customize Hummingbird product features, such as the COMPANYNAME property which includes the name of your organization in the product installation. You can also include properties that control user input during installation, such as the TransformSecure property which protects your transform files from user modification. Other optional properties define the installation behavior of the product, such as the ALLOWBROWSE property, which lets the product browse to the home directory during an install.

Set properties that make the best use of the Hummingbird software features and that facilitate a user's installation session.

To add a property:

- 1 In the Properties dialog box click Add. The Add Property dialog box opens.



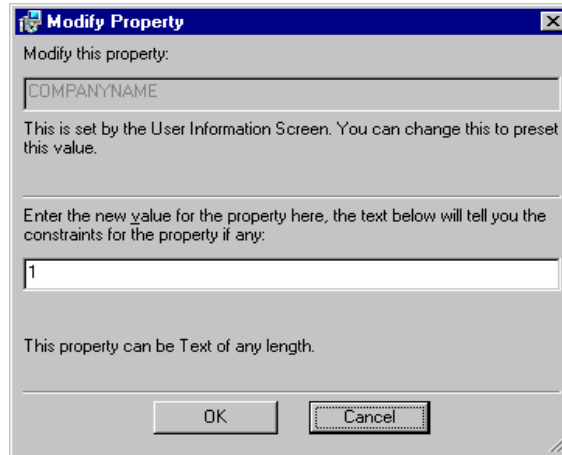
- 2 From the drop-down list, select a property. The bottom panel of the dialog box provides the validation information for the property.
- 3 In the box, type a value for the new property and click OK. The Properties box appears listing any new properties you've added to the installation database.
- 4 If you want to add more properties, repeat steps 1-3.

Modifying a Custom Property in an Installation Database

After you add custom properties to the installation database, Sconfig lets you modify these property settings as needed. Modifications to property values become necessary when requirements for features and files added to the installation database change among users, or when existing properties need to be updated to reflect the current install package.

To modify a property:

- 1 In the Properties dialog box, select a property.



- 2 Click Modify. The Modify Property dialog box opens. The bottom panel of the dialog box provides the validation information for the property.
- 3 In the box, type a new value for the property and click OK. The Property box appears listing your properties in the installation database.
- 4 If you want to modify other properties, repeat steps 1-3.

Removing a Custom Property from an Installation Database

You can clean the installation database of properties that are no longer in use. Properties can become obsolete when changes amongst users occur. Some scenarios that may require the removal of a property include changes made to:

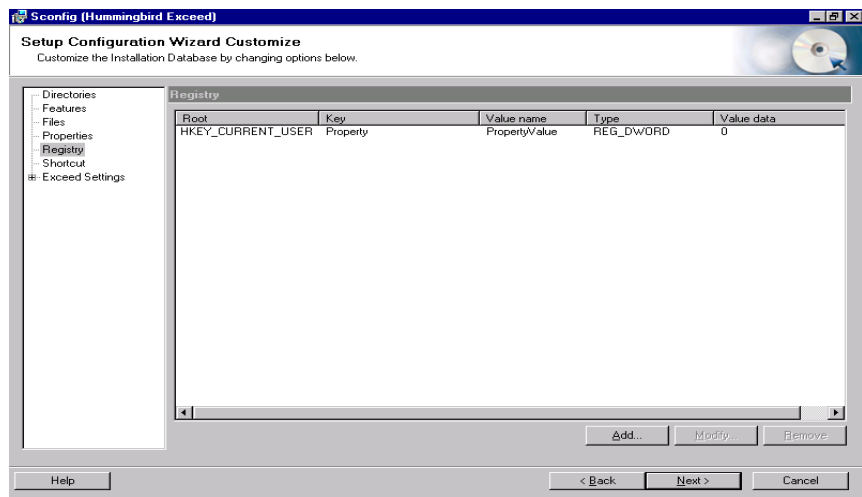
- feature requirements
- user privileges during an installation session
- user permissions for the software

To remove a property, in the Properties dialog box, select a property from the list and click Remove.

Setting the Registry

Click the Registry option in the left panel of the Setup Customization Wizard to view the Registry dialog box. You can use Sconfig to customize the general software settings of your Hummingbird product. After your Hummingbird product package file installs the custom components and files on the target machine, it can write the custom registry keys and values set in Sconfig to the system registry. You establish the keys and values your package file writes to the system registry by setting them up in your transform file in Sconfig.

Hummingbird or system registry keys can be added to, modified within, and removed from an installation database for different users in an enterprise.

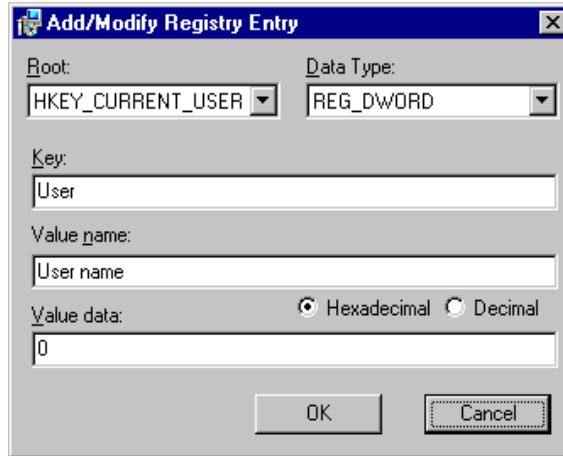


Adding a Custom Registry Key to an Installation Database

Sconfig lets you make necessary registry key additions to the system registry. Making additions to the installation database reduces administration time as additions are made once for all target machines that will use that customized install file.

To add a registry key:

- 1 In the Registry dialog box, click Add. The Add/Modify Registry Entry dialog box opens.



- 2 In the Root drop-down list, select a hive name.
- 3 In the Data Type drop-down list, select a data value type.
- 4 In the Key box, type the registry key name.
- 5 In the Value name box, type the registry value name.
- 6 In the Value data box, type the registry data value and click OK. The Registry dialog box appears listing your new keys.
- 7 If you want to add more registry keys, repeat steps 1-6.

Modifying a Custom Registry Key in an Installation Database

Make necessary registry modifications to the system registry from Sconfig. Making modifications from the installation database reduces administration time, as modifications are made once for all target machines that will use that customized install file.

To modify a registry key:

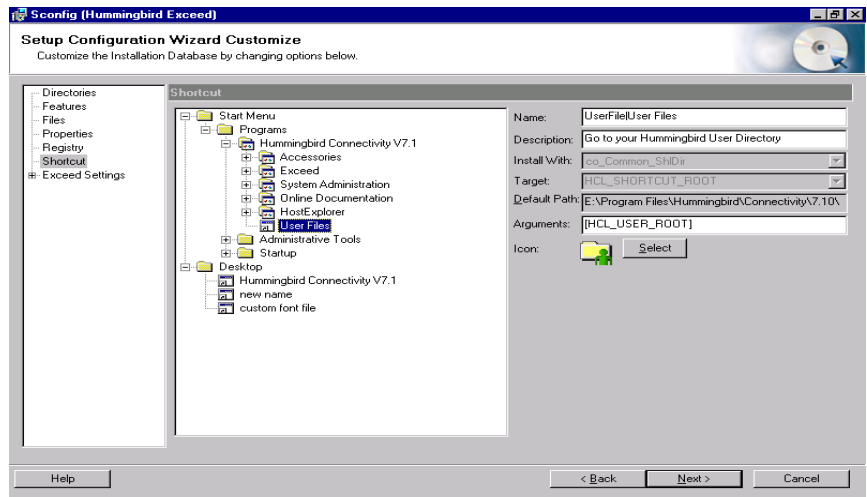
- 1 In the Registry dialog box, click Modify. The Add/Modify Registry Entry dialog box opens.
- 2 If you want to change the existing hive name of the registry key, from the Root drop-down list, select the new hive name.
- 3 If you want to change the existing value type of the registry key, from the Data Type drop-down list, select the new data value type.
- 4 If you want to change the existing name of the registry key, in the Key box, type the new name for the registry key.
- 5 If you want to change the existing registry value name, in the Value name box, type the new registry value name.
- 6 If you want to change the existing registry data for the key, in the Value data box, type the new registry data and click OK. The Registry box appears listing your registry keys in the installation database.
- 7 If you want to modify other registry keys, repeat steps 1-6.

Removing a Custom Registry Key from an Installation Database

To remove a registry key, in the Registry dialog box, select a registry key from the list and click Remove.

Setting Shortcuts

Click the Shortcuts option in the left panel of the Setup Customization Wizard to view the Shortcuts dialog box. This option enables quick access to commonly used Hummingbird components. While customizing your transform file in Sconfig, create custom shortcuts for Hummingbird product features for quick access on user machines.



To set a custom shortcut:

- 1 In the Shortcut tree of the Shortcut dialog box, select and right-click the folder to which you want to add a new shortcut. In the menu, click Add Shortcut Here.
- 2 In the Shortcut dialog box, into the Name text box, type the name of the shortcut that you want add. To rename a shortcut, select the name of the shortcut in the Name box and enter the new name. The name must appear in the format:

short name|long name

where the short name must be less than 8 characters long and followed by the character |, and the long name is the name of the shortcut as it appears on the Windows desktop. For example,

ExceedF|Exceed Finger

- 3 If you want to include a description for the shortcut, into the Description text box, type a description for the shortcut. This appears when you move your mouse pointer over the shortcut icon.
- 4 From the Install with drop-down list, select a component for which you want to provide a shortcut. The installer uses the installation state of this component to determine whether to create or delete the shortcut.
- 5 From the Target drop-down list, select a destination folder of the component for which you want to provide a shortcut.

Note: For advertised shortcuts, the file launched by the shortcut is the file associated with this feature. When you activate this shortcut, Windows Installer verifies that all components in the feature are installed before launching the file. For non-advertised shortcuts, the field should contain a property identifier enclosed by square brackets.

- 6 The Default Path text box displays the destination path of the component for which you want to create a shortcut.
- 7 If you want to provide any arguments for this shortcut, type them into the Arguments text box.
- 8 In the Icon area, click Select to launch the Change Icon dialog box. In this box, select an icon to associate with the shortcut and click OK.
- 9 If you want to create another shortcut, repeat steps 1-7.

Saving the .mst File

Once you have made your modifications to the Hummingbird product properties, go through the following steps to save your transform file:

- 1 In the Setup Configuration Wizard, click Next. The Sconfig Configuration Wizard Commit dialog box opens confirming that you are about to save your configurations to a transform file.
- 2 Click Next to create the transform file (.mst). This process is automatic and does not display on screen. The Sconfig Wizard Configuration Complete dialog box opens, stating that you have created your transform file.

- 3 Click Finish to exit Sconfig.

Sconfig saves your transform file in the same folder as the package file. This makes it easier for users to find when they want to access the file from the administrative installation point.

Applying the .mst File to an Install

After you have created an transform file, you can use it to customize Hummingbird product installation. To do this, you must tell the `setup.exe` where to find your transform file.

To change the `setup.exe`:

For more information on installing with an .mst file, see the Sconfig Help.

- 1 In Windows Explorer, browse to the folder that contains the `setup.ini` file of your Hummingbird product.
- 2 Open the `setup.ini` file.
- 3 On the line beginning with `CmdLine`, add the following text:

```
TRANSFORMS="full path to the .mst file"
```

For example, the `CmdLine` for Hummingbird YourProduct would look like this:

```
CmdLine=TRANSFORMS="c:\Hummingbird YourProduct.mst"
```

Where `YourProduct` is the Hummingbird Connectivity product you are customizing.

- 4 On the File menu, click Save then click Close.

The new `CmdLine` in the `setup.ini` file tells the setup program to incorporate the new transform file in the program install. When you run `setup.exe`, it uses both the original package file, and the transform file that you created using Sconfig.

Creating Multiple Custom Installations

Multiple custom installations are important for disparate users with different development needs. Users demand software that makes efficient use of both their time and disk space. Rather than having users sift through a large Hummingbird product installation, use the Sconfig utility to package custom installations for each user.

To create another .mst file:

- 1 Open Sconfig and browse to a new transform file (.mst).
- 2 Create and save the transform file (.mst) to the administration installation point.
- 3 If you want to create more transform files for custom installations, repeat steps 1-2.
- 4 To use your new transform file (.mst), launch the Setup Wizard by using the following command:

```
setup /v"TRANSFORMS=c:\YourTransform.mst"
```

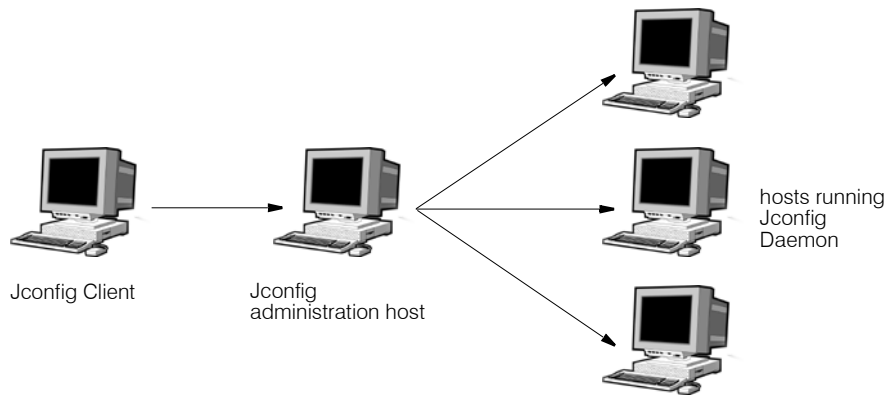
This way multiple transform files can exist in one source location, without repeated modifications to the `setup.ini` file.

Configuring Remote Hosts

Jconfig is a remote configuration tool that system administrators can use to configure the Hummingbird applications on any network host running a Jconfig Daemon. Jconfig offers a variety of configuration options. You can create application-specific profiles for users, install shortcuts on user desktops, monitor and log user activities, and send messages to user machines. As well, you can use Jconfig to configure remote PCs one at a time or to create script files that, when played, customize the configuration of multiple remote PCs. Jconfig can be used with many different Hummingbird products and applications: Exceed, HostExplorer, NFS Maestro, and HostExplorer Print Services.

How Remote Configuration Works

The Jconfig three-tier system allows you to connect to a remote PC and configure the services available on that machine. All remote connections are made from the Jconfig Client to the Jconfig administration host, then through the administration host to other hosts running a Jconfig Daemon.



Jconfig Client The Jconfig Client can be any Windows 2000/NT/98/95 machine from which you perform remote configuration tasks.

Jconfig administration host The Jconfig administration host is the machine through which you connect to other hosts. This machine also stores your Jconfig client configuration settings and the Jconfig host database. Your Jconfig administration host can be the same machine as your Jconfig Client, but you will still need to make the initial connection to the administration Daemon.

Note: You designate the administration host. You do not need to install a separate daemon for this host.

Jconfig hosts A Jconfig host is the remote PC running a Jconfig Daemon. You connect to this host through the administration host in order to configure the Hummingbird application on the remote PC.

Configurable Remote Services

When you connect to a remote host, you will see a list of configurable services for that host. The following list describes the services you can configure.

Note: The availability of each service depends on whether or not the corresponding application is installed on the host to which you are connected.

Message Service Send messages to remote hosts.

File Service Complete many of the Windows Explorer or File Manager tasks on a remote host. If connections are open to multiple remote hosts, you can perform file operations between hosts.

Environment Settings Service View and optionally append the list of environment settings to the Jconfig administration log file.

Editor Service Edit single text files on a remote host interactively.

System Information Service View and optionally log system information or remote Java information to the administration log file.

Exceed Configuration Service Change Exceed operating parameters as you would using the Xconfig application in Exceed. You can access the parameters stored in the default `exceed.cfg` configuration file, or in another configuration file. This service is available only when Exceed is installed.

Font Database Service Change the settings of the remote font database. You can add, modify, and delete font directories in the database, and extract fonts from it. This service is available only in Exceed.

Registry Service Add, modify, and delete items in the Windows Registry.

INI File Service View and modify entries in an `.ini` file, such as `win.ini`. You can add, modify, and delete sections or entries in the selected `.ini` file.

NFS Maestro Client Configuration Service Set configuration parameters that are common to all of the NFS Maestro client programs. This service is available only when NFS Maestro is installed.

For more details on the configurable services, see the Jconfig Help.

Install Service Install icons or shortcuts on the remote host desktop or menu.

Java Property File Service View and modify the parameters stored in a Java property file. You must select the desired Java property file.

Host Database Service Store host names along with their associated passwords. This database is also used to assign hosts to groups for configuration purposes. Use this database with the Jconfig scripting function, to apply scripts to selected groups of hosts.

Jconfig Daemon Settings Service Change operating parameters for the Jconfig Daemon to which you are connected. You can change the port on which Jconfig monitors service requests, some logging parameters, and the Jconfig Daemon password.

HostExplorer Settings Service Change the HostExplorer profile parameters as you would using the Options/Edit Session Profile menu item in HostExplorer. This service is available only when HostExplorer is installed.

HostExplorer Print Services Configure profiles for printing from a host computer to a specific LAN printer. This service is available only when HostExplorer Print Services is installed.

Xstart Service Force the host or application cache to refresh. This feature is available only in Exceed.

Gateway Service Configure NFS Gateway parameters as you would using the NFS Maestro Gateway Access application. This service is available only when NFS Maestro is installed.

Installing Jconfig

In order to use Jconfig, you must load it on the hosts in your network. The following section lists what parts of the Jconfig software to install on each tier and guides you through the installation process.

- Jconfig client—Install Jconfig client software.
- Jconfig administration host—Install a Jconfig Daemon.
- Jconfig hosts—Install a Jconfig Daemon.

To install Jconfig on a client:

- 1 Run Setup for your Hummingbird product.
- 2 When prompted for the type of installation, select Custom Installation and click Next.
- 3 When prompted to select the components, select Jconfig along with any other features you want to install. Continue with the rest of the installation.

To install Jconfig on an administration host and other remote hosts:

- 1 Run Setup for your Hummingbird product.
- 2 When prompted for the type of installation, select Custom Installation and click Next.
- 3 When prompted to select the components, select Jconfig Daemon along with any other features you want to install. Continue with the rest of the installation.

Running Jconfig in a Java-Enabled Browser

You can run Jconfig in two ways, from a Windows environment or from a Java-enabled web browser. If you want to run Jconfig in a browser, you need to make some additional configurations.

To run Jconfig from your browser:

Home—The directory in which the software is installed.

- 1 Set up a web server on your administration host to serve the `JconfigApplet.html` file. This file is found in the Hummingbird *home* directory. The web server should set the *home* directory to be either the root or virtual root so that all relative links and files will be valid.
- 2 Run a Jconfig Daemon on your web server.
- 3 Using a web browser, connect to the web server by typing the URL of the `JconfigApplet.html` file. The Jconfig applet currently uses Java Plug-In technology. This allows the applet to run using Sun Microsystems' Java 2 Runtime Environment, Standard Edition (JRE)

instead of the web browser's default virtual machine. The plug-in supports both Netscape Navigator TN (3.0 and later on Windows 95, 98, NT 4.0, and 2000) and Microsoft Internet Explorer (4.0 and later on Windows 95, 98, NT 4.0, and 2000).

Note: If you want to run in a language other than English, modify the language parameter in the JconfigApplet.html file to the language variable you want. You can choose from the following variables:

- en—English
- es—Spanish
- de—German
- pt—Portuguese
- it—Italian
- fr—French

Opening a Configuration Session

To configure a host, you first need to open a connection. Opening a connection to a host consists of two steps: connecting to the administration host and connecting from the administration host to the PC running the Jconfig Daemon. The following two procedures guide you through those connections.

To connect to the administration host:

- 1 Run the Jconfig Client application. The Administrator Connection dialog box opens.
- 2 In the Administrator Workstation box, type the name or IP address for the administration host.

- 3 In the Password box, type the password for the administration host and click OK.

Note: The passwords for initial connections to both the administration host and the other remote hosts are the IP addresses for the respective machines. We recommend changing connection passwords. For more information on how to change passwords for hosts, see “Changing the Default Password” on page 189.

To connect to a remote host:

- 1 On the Jconfig toolbar, Click Connect.
- 2 Select the type of connection you want to make and click Next. The following list describes the types of connections you can make.
 - Interactive—An Interactive connection lets you connect to a single remote host running a Jconfig Daemon and interactively perform configuration activities.
 - Script Driven—A Script Driven connection lets you use a script file to configure multiple remote PCs simultaneously. Before using this type of connection, you must have recorded (and compiled) a script as well as configured your host database.
 - Administrator Daemon—When you make an Administrator Daemon connection, the Administrator Daemon connects to itself to conduct an interactive configuration session. You can also use an administration connection to record a script for a script-driven multiple configuration, and to configure the administration host itself.
- 3 In the Workstation box, type the machine name (or IP address) of the host to which you are connecting. You can also browse to a machine in the host database.
- 4 In the Password box, type the password for the host to which you are connecting and click Finish.

Configuring the Jconfig Application Settings

After you have made a successful connection, you may want to customize the Jconfig applet settings. Use the Options tool and the Daemon Settings service to configure the Jconfig settings for remote hosts. You can do the following:

- replace default passwords
- customize how information from the administration host and other remote hosts is logged
- modify the list of available services
- create a database of hosts to which you frequently connect
- specify the web browser in which you want to display Help

Changing the Default Password

When Jconfig runs for the first time, it uses the IP address of the host to which you are connecting as the password for configuration activities. We strongly recommend that you change the default passwords. Use the Jconfig Daemon Settings service to do this.

To change the default password:

- 1 Connect to the remote host using Interactive Connection.
- 2 On the Jconfig Available Services pane, double-click the Jconfig folder.
- 3 Double-click Daemon Settings. The Daemon Settings Service appears.
- 4 On the General tab, select the Change Password check box.
- 5 In the New Password box, type the new password.
- 6 In the Confirmation box, retype the new password.
- 7 Click Apply Changes on the Daemon Settings Service toolbar to make the new password effective.

Configuring Jconfig Daemon Settings

You can also use the Daemon Settings service to configure other server options for the administration host and any other remote host running a Jconfig Daemon.

The connection port is the port that the Jconfig Daemon monitors for requests.

To access the Daemon Settings Service, double-click the Jconfig folder in the Available Services window. Then select the Daemon Settings service. Use the following tabs to configure the Jconfig Daemon options:

General Configure the connection port, change passwords, and display or hide the Jconfig Daemon window.

Note: You can also use The Password Wizard to change passwords for multiple hosts, a selected group of hosts, or all hosts in the Host Database service. Changes to passwords made in the Password Wizard take effect immediately. To get to the Password Wizard, click Password Wizard on the toolbar.

Logging Set where you want to log information from the Jconfig Daemon to which you are connected. You can define the name of the log file and set the log file to clear at startup.

Services Edit, add, or delete services from the Available Services list.

Configuring the Host Database

A host database file stores information for hosts to which you frequently connect. To specify the file you want to use as the host database, click Options on the Jconfig toolbar and specify the file name in the Workstation Database File Name box. You can then add host connections to the file using the Workstation Database service. If your network includes a large number of hosts, you can populate the host database using a script.

To add entries to the Host Database file:

- 1 Connect to the Remote host using an Interactive Connection.
- 2 On the Jconfig Available Services pane, double-click the Jconfig folder.
- 3 Double-click Workstation Database. The Workstation Database Service opens.
- 4 On the Workstation Database toolbar, click Add Entry. The Add Entry dialog box opens.
- 5 Type the name of the host group in the Group box.
- 6 Type the name of the new host in the Workstation box.

- 7 If you want to change the port number, click Port and type a new port number in the box.
- 8 Type the password for the new host in the Password and Confirmation boxes. Click OK.
- 9 On the Workstation Database toolbar, click Save Host Database to save the new entry and any other changes.

To use a script to populate the host database:

Write a Java program to use the class:

```
com.hcl.apps.rcfg.Services.WorkstationDb.Server.workstationDBCcreator
```

This class has the following public methods:

```
// --- Creates a workstation database with the file name
JCONFIG.HDB

workstationDBCcreator()

// --- Creates a workstation database with given file name
workstationDBCcreator(String fileName)

// --- Adds a new entry to the database without a password
public boolean addNewEntry (String group, String workstation,
String port)

// --- Adds a new entry to the database with a password
public boolean addNewEntry (String group, String workstation,
String port, String password)

// --- Saves the workstation database to disk
public void save() throws IOException

// --- Closes the workstation database file
public void close() throws IOException
```

Logging Administrative Information

To allow you to troubleshoot connections, Jconfig logs status information generated by the administration host to a file called `jconfig.log`. As well, many of the services available through Jconfig provide the option of logging information to this file. To view the log file, click **Log** on the Jconfig toolbar. You can also log information to a file other than the default file, `jconfig.log`. If you want to configure the administrative log settings, click **Options** on the Jconfig toolbar.

Opening Jconfig Help

The Jconfig HTML Help system allows you to view context-sensitive information about using Jconfig. If you are running Jconfig as an application instead of in a web browser, you need to specify the browser in which you want to open Jconfig Help. To specify a browser, click **Options** on the Jconfig toolbar, and type the full path of the web browser in the **Web Browser** section of the **Options** pane.

Configuring the Remote Services for a Host

Once you have connected to a remote host, you can configure the services available to that host. The main Jconfig display area for each remote host tab is divided into two panes. The left pane shows the list of configurable services for the host, and the right pane shows the configurable options for the service selected. To configure a service, double-click the service. The configuration options appear. For information on the configurable options for each service, see the Jconfig Help and the Help for the corresponding application.

Using Scripts to Configure Multiple Hosts

You can use the Jconfig scripting option to record a sequence of configuration activities in a script, which you can then run to perform the same activities on multiple remote hosts. Click **Script** on the Jconfig toolbar to view the Scripting Wizard. The following two procedures outline the basic steps for using configuration scripts and how to record a script using the Jconfig Scripting Wizard.

To use a script to configure multiple hosts:

- 1 **Create a Host Database file.** You need to create a Host Database file that contains the names and passwords of the PCs you want. To make it easier to configure similar PCs, you can group them.
- 2 **Record a Script.** You need to record a script that will perform the required configuration activities on the hosts. Perform the configuration steps on the administration host while running the Scripting Wizard.
- 3 **Compile the Script.** Use a Java compiler to perform this task. You must compile the file in conjunction with a file that contains the required classes. For example, if you have recorded a script with the file name `test.java`, and you are using the Sun Microsystems JDK Java compiler, type the following on the command line in the home directory:

Home—The directory in which the software is installed.

```
javac -classpath .\hccljconfig.jar <userdir>\test.java
```

See your Java compiler documentation for details about compiling the script file.

The compiler generates a file called `test.class`. This is the file that is used to perform the configuration of the remote hosts.

For more information on running scripts, see the Jconfig Help.

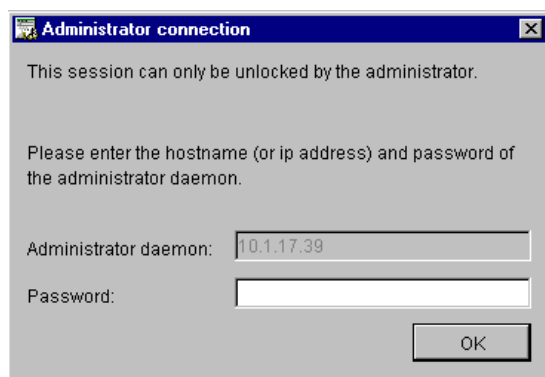
- 4 **Run the Script.** Go to the Connection Wizard and select the Script Driven option. Proceed through the subsequent steps for that process.

To record a script:

- 1 On the Jconfig toolbar, click Script. The Jconfig Scripting Wizard opens.
- 2 In the Script Class box, type the class name of the script and click Next.
- 3 If you do not want the changes to apply to the remote host while you record, clear the Apply Changes check box. Click Next. This option is selected by default.
- 4 Select any miscellaneous settings you require and click Finish.
- 5 After running the Wizard, you can start one or more Jconfig services and perform configuration activities. As configuration progresses, the script tool records your actions.
- 6 To stop recording, click Script on the Jconfig toolbar. A message appears confirming that the script was recorded.

Locking a Configuration Session

If you are going to leave your computer but do not wish to terminate the Jconfig application, you can lock the current configuration session so that only someone with the administration password can reopen the session. Click Lock Session on the Jconfig toolbar. The Administrator Connection dialog box opens. The session is locked as soon as this dialog box appears.



Chapter 13

System Administration—Inetd and Inetd Admin

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Introducing Inetd

Inetd is a super-daemon that lets you enable and disable various daemon services through a single application. It determines the network services to which your PC responds when a client makes an incoming network request. In Windows 95/98/Me environments, Inetd runs automatically when placed in the Startup folder. In Windows NT/2000 environments, Inetd is installed as a service.

Note: The Inetd daemon is installed in the Control Panel by Setup.

Instead of running separate server applications for each service, Inetd conserves workstation resources by continuously monitoring connection attempts in the background and starting the appropriate daemon upon receiving a network request. You can selectively enable or disable daemons to accommodate your local requirements. For example, you can use FTPd to distribute corporate files from a server. Clients would connect to the server and use FTP to download the files.

Inetd handles both TCP (Transmission Control Protocol) and UDP (User Datagram Protocol) servers. The Inetd daemon is based on asynchronous notification. It uses no CPU time and only a small amount of memory when waiting for incoming requests.

With Windows 95, you can restrict users' access to your drives/directories with the permissions you assign in the Inetd Admin application. With Windows NT, if there are TelnetAccess or FTPAccess groups in the user administration program, the NT user must be a member of these groups to access the machine using Telnet or FTP. No security check is performed if the group does not exist, and access is allowed for every NT user account.

TCP and UDP Servers

TCP Inetd simultaneously monitors connection requests on multiple ports. When it detects a request, it starts the appropriate daemon and screens the user.

UDP Inetd monitors the UDP port for packets. When it detects packets, it uses the port number to link the packet flow to an enabled daemon. The connection is refused if no daemon is enabled, or if permission is denied to the UDP user/password.

Maintaining System Security

Users that connect to your drives and directories using the Inetd services are restricted to file access based on the permission you assigned.

Security for Windows 95/98/Me

With Windows 95/98/Me, you assign permissions using the Inetd Admin application. Inetd Admin is an administration tool designed to control access to your files and resources.

When remote users on the network try to log onto your PC via the Inetd server programs, Inetd Admin screens them and determines the level of access. To allow anonymous FTP access to your PC via the FTP daemon, you must set up an anonymous user account in Inetd Admin.

Security for Windows NT/2000

Windows NT/2000 supports NTFS, FAT, and HPFS file systems. Of these, only NTFS file systems provide security at the file and directory level (access control).

Users that link NTFS drives and directories by means of the Inetd services are restricted to file access according to Windows NT/2000 permissions. Users that link FAT drives and directories using the Inetd services are not restricted in the exported file system. FAT file systems always use the same permissions for Owner, Group, and World (rwxrwxrwx).

To set NTFS file security:

- 1 Select one or more files in My Computer.
- 2 On the File menu, click Properties. The Properties dialog box opens.
- 3 Click the Sharing tab.

- 4 Click Permissions. The Access Through Share Permissions dialog box opens.
- 5 Specify the appropriate security options. See your Windows NT documentation for details on setting file security.

If you have enabled FTPd and/or Telnetd, there are some further security considerations. If you have local disk volumes other than NTFS volumes, consider the following when determining whether to allow remote users to have access to your local machine using FTP or Telnet:

FTP—transfers both text and binary (graphic) files between your PC and a remote computer running a server implementation of FTP. It can also perform file and directory management.

Telnet—provides a VT220/VT320/ANSI/ Wyse 50/Wyse 60 terminal emulation window on a PC, UNIX, or VMS host.

FTP Security Considerations (Windows NT/2000)

The FTP daemon (FTPD) lets you set read and write access to restrict users writing to FAT and HPFS volumes. For FTP users, you can set access to the NTFS file system using the access privileges granted to specific users or groups in the User Manager program (the native Windows security system).

Note: FTP can limit access to volumes. We recommend that you do not include FAT or HPFS disk volumes in the `~r` or `~w` parameters of FTPd. If there is an FTPAccess group in the user administration program, the NT user must be a member to access the machine using FTP. No check is performed if the group does not exist; access is then allowed for every NT user account.

Telnet Security Considerations (Windows NT/2000)

The server application, Telnetd, cannot restrict incoming users to a particular local disk volume. NTFS allows for file access control under Windows NT/2000, whereas FAT and HPFS file systems have no security. If you have a FAT or HPFS disk volume on your machine, and you enable Telnet access over the network, incoming users have unrestricted access to those disk volumes. This means they could potentially delete all files.

There are two solutions to this problem:

- Use only NTFS file systems on your computer.
- If you have FAT or HPFS disk volumes, do not enable Telnet access over the network.

Note: If there is a TelnetAccess group in the user administration program, the NT user must be a member of the group to successfully access the machine using Telnet. No check is performed if the group does not exist; access is then allowed for every NT user account.

Default Services

The following daemon services are provided with your software package:

TCP Services Daemon	Description
BOOTPd	Enables client workstations using Bootstrap Protocol to request their configuration information. For more information, see "BOOTPd (Windows NT/2000)" on page 201.
Fingerd	Lets a remote user query the state of your current configuration. For more information, see "Fingerd" on page 202.
FTPd	Enables users to transfer files between other computers and your computer. For more information, see "FTPd (File Transfer Protocol Daemon)" on page 202.
LPD	Lets other workstations send print files directly to your PC printer, or to a network print queue on the PC. For more information, see "LPD" on page 204.

TCP Services Daemon	Description
Telnetd	Lets Telnet clients make connections your PC. For more information, see “Telnetd” on page 205.
Xstartd	A local X client starter daemon that enables users to access X clients on your PC. For more information, see “Xstartd” on page 206.
UDP Services Daemon	Description
TFTPd	Lets users transfer files to and from your PC using the TFTP protocol. For more information, see “TFTPd” on page 208.
Timed	A time server that other workstations can use to synchronize their current date and time. For more information, see “Timed” on page 209.
Tnamed	A Trivial Name Server that accepts incoming Trivial Name requests for host name resolution. For more information, see “Tnamed” on page 209.

BOOTP (Windows NT/2000)

BOOTP enables client workstations using Bootstrap Protocol to request their configuration information. If a client machine is configured for BOOTP, each time it starts, a BOOTP request is broadcast over the network. The BOOTP request contains the MAC (Media Access Control) address of the machine (physical hardware address). When BOOTP is enabled, it responds to requests if the client’s MAC address is found in the `bootptab` configuration file. The possible responses are as follows:

Response	Description
Using UDP	BOOTP sends a BOOTP reply to the client on UDP port 67.
Using Hummingbird’s TCP/IP	BOOTP sends a BOOTP reply directly to the client machine.
Using another vendor’s TCP/IP	BOOTP sends a BOOTP reply as a broadcast response.

To use BOOTP you must fulfill the following requirements:

- You must enable BOOTP in Inetd on at least one machine in the network. It is best to enable BOOTP on several machines so that if one machine fails to respond, the configuration information is still available for other machines on the network.
- There must be a configuration file, BOOTPtab, in the home directory. You must use the same file on all machines running BOOTP.
- You must configure each of the client machines on the network for the BOOTP setting of the IP address instead of User Entered.

All incoming BOOTP requests are written to the `bootpd.log` file in the home directory.

Comparison to RARP An alternate protocol, Reverse Address Resolution Protocol (RARP), also lets a client determine its IP address when the MAC (Media Access Control) address is known. The difference between RARP and BOOTP is that RARP is hardware, link-level protocol instead of an IP/UDP protocol. This means that RARP can be implemented only on local hosts on the same subnet.

Fingerd

Fingerd enables remote users to query the state of your current configuration. If the remote user requests a long listing, Fingerd also displays the contents of the `plan.hcl` and `project.hcl` files from:

```
%System%\Hummingbird\Connectivity\version\Inetd
```

where *version* is the version number of your Hummingbird product.

The `plan.hcl` file typically contains your contact information (phone number, address, e-mail, and so on), while the Project file typically contains information on your function or current project.

FTPd (File Transfer Protocol Daemon)

FTPd handles incoming requests to transfer files between other computers and your own. Many Internet nodes contain files that are generally available through anonymous FTP.

Windows system
directory—
Windows 95/98/Me:
Windows\System,
Windows NT/2000:
Winnt\System32.

When an FTP transfer is requested, the program checks for a user ID, password, and access rights to read, create, delete and write on the various server drives, before forwarding the request to FTPd. FTP requires the services of the TCP protocol to move files. Do not select UDP in the Daemon Configuration dialog box for this service.

Optional Parameters Use the following syntax to specify the password files to be used to validate access:

`- p password_file`

where *password_file* is the full path and file name of the password file you are using. By default, the password file is called `password.hcl` in the system directory:

`%System%\Hummingbird\Connectivity\version\Inetd`

where *version* is the version number of your Hummingbird product.

To create a password file, use Inetd Admin.

The following optional parameters are available for FTPd in a Windows NT environment:

Parameter	Description
<code>-rdrives</code>	Limits FTP users to only read access on the listed drives.
<code>-wdrives</code>	Limits FTP users to only write access on the listed drives.
<code>-rwdrives</code>	Limits FTP users to read/write access on the listed drives.

The format for specifying drives is:

`-rwd:\`

This limits FTP users to read/write access on the listed drive.

Specifying options in the `ftpd.ini` file You can create an FTPd configuration file that specifies the following:

- Timeout period—Ensures that FTPd closes a connection after a period of client inactivity.
- Banner display—Displays a text banner when a user connects to your machine using FTP.

Inetd Admin—provides access to the password database that controls access to your PC from external users through passwords and user names.

To specify FTP configuration options:

- 1 Create a file named `ftpd.ini`.
- 2 To specify a timeout period, type the following in the file:

```
[Inactive]
TimeOut=n
```

where *n* is the maximum number of seconds of inactivity after which FTPd closes a connection. If *n* is less than or equal to 0, the timeout feature is disabled.

- 3 To display a banner, type the following in the file:

```
[Custom]
Banner=BannerText
```

where *BannerText* is the text banner you want to display.

LPD

LPD (Line Printer Daemon) lets other workstations send print files directly to your PC printer, or to a network print queue on your PC. Print options are not directly configurable under Inetd, but if you want to let users print host files to your PC printer, you must define your default printer. See your Windows documentation for information about setting up the default printer.

Depending upon the remote host from which you want to print, you may need to define an entry for the printer in the `/etc/printcap` file on the remote host, or create a printer queue with the appropriate host administration tools.

To configure the LPD program to use an existing printer, you must configure the remote host to send print jobs to a queue. The `printcap` file on the remote host links the local queue name (to which the local PC sends print requests) to the remote queue name (where the files are actually printed).

For example, a user sends a print job to the queue `hpjohn`, that is actually a printer called `hplaser` connected to the remote machine `john`. The remote host between these two PCs might have a `printcap` entry that links these two queue names like this:

```
HPJOHN|printer:\  
:in:ttl:rp=dos-hplaser:ih=JOHN
```

On the remote system the queue names for the PC are defined in the form *queueformat-printername*, where *queueformat* is one of the following:

- `dos(ff)`—If `xxx` is DOS, the file is printed without modification. If `xxx` ends in FF, a form feed is appended to the job if one is not already present.
- `unix(ff)`—If `xxx` is UNIX, linefeeds are converted to carriage returns and linefeeds. If `xxx` ends in FF, a form feed is appended to the job if one is not already present.
- `text (ff)`—If `xxx` is TEXT, the output is rendered. This is usually used for printing text files directly to PostScript printers. If `xxx` ends in FF, a form feed is appended to the job if one is not already present.

Note: Some systems have a limit on the number of characters in the remote queue name. Thus, if `unixff-printer-name` is too long, use shortened prefixes (D, DF, U, UF, and T). Also, some systems do not allow a dash character in the remote queue name. For these systems, use an underscore character instead.

Telnetd

Telnetd is a Telnet server that lets Telnet clients make connections to your PC. Users can connect using the Hummingbird Telnet client, a graphical VT100/320 terminal emulator application, or any VT100 Telnet client.

In a Windows NT/2000 environment, the user must have an account on the Windows NT system, and have appropriate permissions in the Windows NT security system. Users are restricted to the protection and access rights specified by the system administrator for each of the Windows machines, drives, directories, and files.

Note: If the user administration program has the group TelnetAccess, the user must be a member to successfully access your workstation. No check is performed if the group does not exist—access is then allowed for every user account.

Optional Parameters (Windows 95/98/Me) The following optional parameter is available for Telnetd:

`-p password_file`

where *password_file* is the full path and file name of the password file you are using. Use the specified password file to validate access. . By default, the password file is called `password.hcl`, located in the following directory:

`%System%\Hummingbird\Connectivity\<version>\Inetd`

where *version* is the version number of your Hummingbird product.

Note: The password file is empty until you modify it with Inetd Admin.

Xstartd

Xstartd is the local X client starter daemon. When Xstartd is enabled, other users can access X clients on your PC. They can connect to your PC and start X clients by using their Xstart application and the REXEC or RSH connection methods.

Note: RSH is available only for Windows 95/98/Me. You cannot use the RSH protocol with Windows NT/2000.

When using the REXEC protocol, Xstartd verifies the user name and password in Inetd Admin to ensure that access has been granted to the remote user. When the RSH protocol is used, RSH looks for the `rhosts` file in the `%System%\Hummingbird\Connectivity\<version>\Inetd` directory, where *version* is the version number of your Hummingbird product. Only the hosts and users listed in this file can log in using Xstartd.

REXEC When using the REXEC protocol, Xstartd verifies the user name and password in Inetd Admin to ensure that access has been granted to the remote user.

- In Windows 95/98/Me—Use Inetd Admin to verify user names and passwords. For REXEC, `-p password_file` specifies the password file to be used to validate access. By default, the password file is `password.hcl`, located in the following directory:

`%System%\HUMMINGBIRD\Connectivity\<version>\Inetd`

where *version* is the version number of your Hummingbird product.

- In Windows NT/2000—User names and Passwords are verified by the operating system itself. The user name used must belong to someone who uses that PC or to a fully qualified Domain user who is permitted to login to that PC.

RSH RSH is available on Windows 95/98/Me. The `RHOSTS` file determines which hosts are allowed to connect to the PC and is located in the following directory:

`%System%\HUMMINGBIRD\Connectivity\<version>\Inetd`

where `<version>` is the version number of your Hummingbird product.

The `RHOSTS` file consists of one or more lines in the following format:

hostname username

where *hostname* represents a hostname from which RSH is allowed, and *username* represents the user ID of a user on host *hostname* who is allowed to RSH to your PC.

Note: You must put a space between the hostname and username parameters.

You can use the plus character (+) in the hostname or username fields to represent any host and any user. For example, to let all users with the user ID of John Smith on any host to RSH to your PC, specify the following:

```
+ JohnSmith
```

To include a comment in the file, begin the comment line with the number or pound sign (#).

TFTPd

TFTPd lets you use your PC as a TFTP (Trivial File Transfer Protocol) server. The TFTP server lets users transfer files to and from your PC. Any TFTP client program can use the TFTP server, including the DOS TFTP client.

Warning! TFTP does not require a user name and password, so take great care when setting up this server.

One of the major applications for TFTP is to allow diskless workstations or PCs with BOOT PROMs to retrieve boot images from a Windows workstation in conjunction with the BOOTPdw server. To prevent unauthorized users from accessing your PC, we suggest creating a directory specifically for boot image files and making only that directory available to TFTP clients using the `-r` option.

Optional Parameters	Description
<code>-r directory</code>	Specify a read directory for clients. For example, <code>-rc:\bootptab</code>
<code>-w directory</code>	Specify a write directory for clients. For example, <code>-wc:\hcltcp</code>
<code>-o</code> or <code>-O</code>	Allow clients to overwrite existing files.

TFTPd has an inactive timeout feature that you can use to ensure that TFTPd closes a connection after a period of client inactivity.

To specify a timeout limit:

- 1 Create a file named `tftpd.ini`.
- 2 Type the following in the file:

```
[Inactive]
```

```
TimeOut=n
```

where *n* is the maximum number of seconds of inactivity after which TFTPd closes a connection. The minimum timeout is 10 seconds.

- 3 Save the file in the following directory:

```
%System%\Hummingbird\Connectivity\<version>\Inetd
```

where *version* is the version number of your Hummingbird product.

Timed

Timed is a time server that other workstations can use to synchronize their current dates and times. When a machine sends a time request to your PC, Timed returns the current time. This is the time value since Jan 1, 1970 GMT. You can set up workstations with the `hcltime` or `hctime32` program to synchronize the date and time across the network.

Tnamed

Tnamed is a Trivial Name Server that accepts incoming Trivial Name requests for host name resolution. It calls the local name resolution routine, `gethostbyname()`, then searches the main lookup paradigm specified on the machine.

Managing Services

Enabling and Disabling Services

You can enable and disable daemon services in the Hummingbird Inetd Configuration dialog box. Configuration information is stored in the file `inetd.ini`.

To enable a service, select the service in the Inetd Service list and click Enable. To disable a service, select the service in the Inetd Service list and click Disable. To save changes, click Save.

Configuring Services

To configure a Network Service:

- 1 In the Hummingbird Inetd Configuration dialog box, select the service that you want to configure and click Configure. The Daemon Configuration dialog box opens.
- 2 Verify that the Daemon Name box contains the name of the selected service and that the Program Filename box contains the file name for the service.
- 3 In the Optional Parameters box, type optional parameters associated with the selected service.
- 4 In the Port box, type a port number between 0 and 65535 to uniquely identify the service.
- 5 Select either the TCP or UDP protocol required for the server. If you select TCP, type the maximum number of servers that can be used for the service in the Maximum Servers box.
- 6 Click OK.
- 7 To save changes, click Save.

For more information about available parameters, see "Default Services" on page 200.

Adding and Deleting Services

Any of the existing servers can be configured to run on any port or run on more than one port at a time.

To add a service:

- 1 In the Hummingbird Inetd Configuration dialog box, click Add. The Daemon Configuration dialog box opens.
- 2 In the Daemon Name box, type the name of the service you want to add.
- 3 In the Program Filename box, type file name of the service.

- 4 In the Optional Parameters box, type any optional parameters associated with the service.
- 5 In the Port box, type a port number between 0 and 65535 to uniquely identify the service.
- 6 Select the protocol required for the server: either TCP or UDP. If you selected TCP, type the maximum number of servers that can be used for the service in the Maximum Servers box.
- 7 Click OK.
- 8 To save changes, click Save.

To remove any or all of the services from the list of available Inetd services, click Delete in the Hummingbird Inetd Configuration dialog box. To save the changes, click Save.

Note: To reload all network services back into the Setup menu, click Reload. To reload the original default settings, click Defaults.

Reloading Updated Configuration Information

After making changes to the Inetd configuration, such as enabling or disabling a service, you can load the updated configuration without exiting your configuration session. To reload the Inetd configuration file, click Reload in the Hummingbird Inetd Configuration dialog box.

Restoring Default Services

If your current Inetd configuration file is lost or corrupted, you can restore the default settings. To restore the settings, click Defaults in the Inetd Configuration dialog box. After you have restored the default settings, you can enable the services you require.

Logging Server Activity

With Windows 95/98/Me, you can record all server start and stop messages in a log file. To enable logging, select Connection Logging in the Hummingbird Inetd Configuration dialog box.

Inetd stores messages in the `inetd.log` file, located in the following directory:

```
%System%\Hummingbird\Connectivity\<version>\Inetd
```

where `<version>` is the version number of your Hummingbird product.

With Windows NT/2000, you can send all server start and stop messages to the Windows NT/2000 Event Viewer Log file. To enable logging, select Connection Logging in the Hummingbird Inetd Configuration dialog box.

Configuration Parameters

Destination Folder

Program files install into the home directory. During setup, you can specify a different home directory, other than the default. For more information, see the Installation chapter in this manual.

BOOTPD.LOG File

All BOOTP requests and responses are recorded in the `bootpd.log` file in the default `hclnfs` directory. Requests are time and date stamped to provide a chronological record of BOOTP events on the network. A sample segment from a `bootpd.log` file is as follows:

```
info(6)version 3.2
info(6)reading "c:\hcltcp\bootptab"
info(6)read 38 entries (38 hosts) from "c:\hcltcp\bootptab"
info(6)rcvd pkt from IP addr 0.0.0.0 AT Tue Aug 16 08:14:44 1995
info(6)request from Ethernet address 00:60:8C:E8:CE:55
info(6)found 185.75.64.10 (pete)
info(6)vendor magic field is 99.130.83.99
info(6)sending reply (with RFC1048 options)
info(6)setarp 185.75.64.10 - 00:60:8C:E8:CE:55
info(6)rcvd pkt from IP addr 0.0.0.0 AT Tue Aug 16 08:16:32 1995
info(6)request from Ethernet address 00:60:8C:E8:CE:77
```

```
info(6)found 185.75.64.12  (boby)
info(6)vendor magic field is 99.130.83.99
info(6)sending reply (with RFC1048 options)
info(6)setarp 185.75.64.12 - 00:60:8C:E8:CE:77
info(6)recvd pkt from IP addr 0.0.0.0 AT Tue Aug 16 08:17:57 1995
info(6)request from Ethernet address 00:60:8C:E8:CE:99
info(6)found 185.75.64.14  (roger)
info(6)vendor magic field is 99.130.83.99
info(6)sending reply (with RFC1048 options)
info(6)setarp 185.75.64.14 - 00:60:8C:E8:CE:99
```

You can include more detail in the log by inserting the `-d` option in the configuration for BOOTPDw. Up to four `-d` options (separated by spaces) can be inserted for increasing levels of detail. Specify the `-d` option(s) in the Optional Parameters box of the BOOTPD Daemon Configuration dialog box.

BOOTPTAB Configuration File

The `bootptab` file is an ASCII file that matches the client machine MAC address (physical hardware address) with other configuration information. The configuration information in the `bootptab` file can vary from simply the IP address for each machine, to a complete set of configuration information such as default gateway, Domain Name Server, subnet mask, Time Server, etc. All entries must be in the format:

```
xx=value
```

where `xx` is a two-letter designation for a parameter. The *value* is either a number or text entry depending upon the nature of the parameter.

The configuration information can appear in several forms as illustrated by the parameter definitions listed below:

bf	The name of the boot file.
bs	The size of boot requests.
da	The IP address of the server providing authentication (user name/verification) on your network.
df	The name of the dump file.
dl	The length of the DHCP lease.
dn	The domain name for your network. For example, <i>zyx.com</i> .
ds	The IP address of the domain name server for your network.
ef	The name of the file containing further options.
gw	The IP address of a gateway for your network.
ha	The unique MAC address from the network adapter card located inside your PCs and workstations. For PCs, this address is usually printed on a label on the network adapter card. You can also attach the PC to the network, configure it for BOOTP support, reboot it, and then examine the <i>bootpd.log</i> file for the entry that contains the MAC address.
hd	The name of the <i>home</i> directory.
hn	Resets the host name of the recipient.
ht	For almost all PC networks, the network type is Ethernet.
ip	The unique IP address assigned to this PC or workstation.
lg	The name of the machine that will receive log requests.
lp	The IP address of the server providing the printing control function (LPD protocol).
mw	The amount of time after which the boot request is ignored.
ns	The IP address of a Trivial Name Server.

nt	The IP address of a time server using the NTP (Network time Protocol).
ra	The reply address.
rl	The name of the RLP server.
rp	Leads to the root of the file system.
sa	The address of the machine used for booting.
sm	The four-octet, dotted, decimal, subnet mask as per the standard on subnetting, for example, 255.255.255.0. This field must precede the gateway (<i>gw=</i>) field, if used.
sw	The name of the swap server.
tc	The text string contained in this field must match a previously defined common configuration block, for example, <i>hcleth</i> . Any valid field can be contained in a common configuration block.
td	The name of the TFTP directory.
to	The time offset specified in seconds from Coordinated Universal Time (UTC). For example, EDT is 5 hours from 0000 UTC; therefore, <i>to=18000</i> ($5 \times 60 \times 60 = 18000$).
ts	The IP address of a server using TIME (Time Server Protocol).
vm	The value of the magic cookie is 99.130.83.99. Other BOOTP servers can use other values in this field, but the current release of <i>bootpd</i> requires 99.130.83.99.
yd	The Domain Name for the server providing NIS (Yellow Pages) service.
ys	The IP address of the server providing NIS (Yellow Pages) service.

See the following sub-sections for examples.

IP Address Only In this example, the only configuration item is the IP address corresponding to the MAC address. One entry line is required for each client machine in the network.

```
pete ht=ethernet:ha=00608ce8ce55:ip=185.75.64.10
barbg ht=ethernet:ha=00608ce8ce77:ip=185.75.64.12
roger ht=ethernet:ha=00608ce8ce99:ip=185.75.64.14
```

Multiple Parameters In this example, the subnet mask, default Gateway, Domain Name Server, Domain Name, and Time Server are returned to each client workstation.

```
pete:
ht=ethernet:ha=00608ce8ce55:ip=185.75.64.10:sm=255.255.255.0\
:gw=185.75.64.254:ds=185.75.64.5:dn=xyz.com:ts=185.75.64.5

barbg:
ht=ethernet:ha=00608ce8ce77:ip=185.75.64.12:sm=255.255.255.0\
:gw=185.75.64.254:ds=185.75.64.5:dn=xyz.com:ts=185.75.64.5

roger:
ht=ethernet:ha=00608ce8ce99:ip=185.75.64.14:sm=255.255.255.0\
:gw=185.75.64.254:ds=185.75.64.5:dn=xyz.com:ts=185.75.64.5
```

If you have many client machines and multiple configuration parameters, this form of entry can become cumbersome. Instead, you can define all of the common parameters just once and use a single entry for all the common parameters.

Multiple Parameters with a Common Parameter Block In this example, all of the common parameters are defined in the `hcleth:\` statement. The common parameters are then identified for each client by using a single entry, `tc=hcleth`. This format makes it easier to add new PCs and workstations to the `bootptab` file.

```
hcleth:\
ht=ethernet:sm=255.255.255.0:gw=185.75.64.254:ds=185.75.64.5\
dn=xyz.com:ts=185.75.64.5:vm=99.130.83.99:to=18000\
da=185.75.64.5

pete tc=hcleth:ha=00608ce8ce55:ip=185.75.64.10
barbg tc=hcleth:ha=00608ce8ce77:ip=185.75.64.12
roger tc=hcleth:ha=00608ce8ce99:ip=185.75.64.14
```


There can be multiple common configuration blocks, each with a unique name. The `tc=field` of the client entry can then point to the appropriate common configuration block.

Administering Daemon Security—Inetd Admin

All NFS Maestro and Exceed local daemons, including FTPd, Xstartd, Fingerd, and Lpd, are started in the Inetd application where they are listed as Setup options in the Inetd window. In NFS Maestro and Exceed, Inetd acts as the network super server daemon, enabling network services without their own stand-alone services.

When external users log into your daemons through Xstartd or FTPd programs, Inetd Admin plays a security role by screening them and regulating their activities.

Inetd Admin is available only for Windows 95/98/Me systems, and is installed in the System Administration folder of your application. Windows NT/2000 systems have security features equivalent to Inetd Admin.

Users and Passwords

Creating a User List

Inetd Admin is an administration tool that enables you to control access to the server daemons on your PC. You can assign a password for each remote user, specify the services the user can access (Telnet, Xstart, and FTP), and specify file access permissions.

Access information is stored in the Inetd password file so daemon servers can verify user information. By default, the password file is named `password.hcl`, and is saved in the following directory:

```
%System%\Hummingbird\Connectivity\<version>\Inetd
```

where `<version>` is the version number of your Hummingbird product.

Each password file entry contains a user name, an assigned password, setup information, and permissions.

You can use Inetd Admin for typical user access management tasks, including:

- creating new user entries
- assigning access rights to new users
- modifying user access rights
- changing user passwords
- deleting user access rights

Opening a Password File

Inetd stores access rights information in a password file. By default, the password file is named `password.hcl`, and is saved in the following directory:

```
%System%\Hummingbird\Connectivity\<version>\Inetd
```

where `<version>` is the version number of your Hummingbird product.

When you start Inetd Admin, you must specify the password file you want to open. To start Inetd Admin, click the Inetd Admin icon.

To open a password file:

- 1 Start Inetd Admin. The Open Password File dialog box opens.
- 2 Select the password file you want to open. The default password file is `password.hcl`. Click Open. The Username/Password Administration dialog box opens.

Assigning User Names and Passwords

The first time you use Inetd Admin, you need to create a list of remote users who are permitted to access your PC. After you create the list of user names and associated passwords, you can assign access permissions.

To assign user names and passwords:

- 1 In the Username/Password Administration dialog box, click Add. The Add Username dialog box opens.
- 2 In the Username box, type the user name for the new user.

Passwords are case-sensitive.

For more information, see “Specifying Access Rights” on page 219.

- 3 In the Password box, type a password for the new user. Retype the password in the Confirm Password box.
- 4 Click OK. The User Access Rights dialog box opens.
- 5 Specify the access rights for the user and click OK.
- 6 In the Username/Password Administration dialog box, click Save to save the changes to your password file.

Changing Passwords

If users forget their passwords, the system administrator can assign new ones.

To assign a new password:

- 1 In the Username/Password Administration dialog box, select the appropriate user and click Modify. The User Access Rights dialog box opens.
- 2 Click Change Password. The Change Password dialog box opens.
- 3 In the Password box, type a password for a new user. Retype the password in the Confirm Password box.
- 4 Click OK. Inetd assigns the new password.

Passwords are case-sensitive.

Managing Access

Specifying Access Rights

For each user, you can specify access rights on your PC. If you give the user access to the FTP service, you can also specify file access privileges for up to 10 directories.

To specify user access to your PC:

- 1 In the Username/Password Administration dialog box, select the appropriate user and click Modify. The User Access Rights dialog box opens.

- 2 In the Services Permitted section, select the check boxes for services you want the user to access:
 - Telnetd—The supplied Telnet daemon provides a VT320/VT100/VT52 terminal emulation window on a host.
 - FTPd—The File Transfer Protocol Daemon is a Windows server program that lets you handle incoming requests to transfer files between computers. When an FTP transfer is requested, the program checks for a user ID, a password, and access rights to read, create, delete and write on the various server drives, before forwarding the request to FTPd.
 - Xstartd—This remote execution server implements the REXEC and RSH protocol. This server allows other users on your network to run local X clients on your PC when the local PC is running Xstartd.
- 3 Set the environment variables for users:
 - Temp Directory—Specifies the temporary directory on your PC used to store temporary files. Set this temporary directory to full read/write access since many applications started using telnetd require temporary files. This directory must already exist on your PC.
 - Initial Directory—Specifies the directory that is opened first when the FTPd or telnetd daemon application starts. Users must have permission to access this directory. Otherwise, the connection is terminated.
 - COMSPEC Var—Specifies the default command shell that starts when users try to access your PC. The default COMSPEC variable is `c:\windows\command.com`, although other shells may be used when the DOS shell has been customized. For example, you can use `4dos.com`, `ndos.com`, or `pcdos.com`.

You must assign read and write permission to Telnet users in directories containing `command.com` or the command interpreter. Otherwise, the system cannot change the directory when users try to execute a remote command.
- 4 If you enabled access to FTP for a user, specify file access permissions in the Directory Permissions section.

Directory Permissions

To specify directory permissions:

- 1 In the User Access Rights dialog box, click Add. The Add Directory dialog box opens.
- 2 In the text box, type the directory name.

Note: Do not add a backslash (\) at the end of the name, because only the specified directory has the specified permissions. You can include all subdirectories by adding a backslash asterisk (*) to the directory name.

The conventions for specifying directories are as follows:

Directory	Interpretation by Directory Listings
c:\hcl	The C:\HCL directory only
c:\hcl*	The C:\HCL directory and all subdirectories
c:\hcl*	All subdirectories of C:\HCL starting with "A"
d:	The entire D: disk
c	The root directory of the C: disk
c:*	The entire C: disk
c:\	NOTHING (ends in backslash)

- 3 Specify file access permissions in the directory:
 - Read—The remote user can open files and search directories on your PC. Execute permission is also required to open directories.
 - Write—The remote user can edit files on your PC. Generally, users also need Create permission to write to files.
 - Create—The remote user can create new files and subdirectories on your PC. Generally, users also need Write permission to create files.

- **Delete**—The remote user can delete files and directories from your PC.
- **Modify**—The remote user can change file attributes on your PC.
- **Execute**—The remote user can run applications and open directories on your PC.

Note: The permissions you specify apply only to the selected directory. You must repeat this process for each directory listed.

4 Click OK.

Removing Access Rights

You can restrict a user's permissions on your PC by removing specific access rights. There are three types of rights you can remove:

- **Access to your PC**—You can remove all access to your PC by deleting the user from your password file.
- **Access to services**—You can disable access to services on your PC.
- **Access to directories**—If the user has access to the FTP service, you can restrict access to directories on your PC and to the file access privileges within those directories.

Note: If users attempt to access a service that is missing or disabled in Inetd, the connection is terminated. For more information, see Inetd Help.

To remove a user from the password file:

- 1 In the Username/Password Administration dialog box, select the user you want to remove and click **Delete**.
- 2 Click **Save** to save changes to the password file.

To remove access to a service:

- 1 In the Username/Password Administration dialog box, select the appropriate user and click Modify. The User Access Rights dialog box opens.
- 2 In the Services Permitted section, clear the check box for the service you want to disable. Click OK.
- 3 Click Save to save changes to the password file.

To remove directory or file access rights:

- 1 In the Username/Password Administration dialog box, select the appropriate user and click Modify. The User Access Rights dialog box opens.
- 2 In the Directory Permissions section, do either of the following:
 - Remove access to a directory by selecting the directory and clicking Delete.
 - Remove file access rights by selecting the appropriate directory and clearing the check boxes for rights you want to disable.
- 3 When you are finished, click OK.
- 4 In the Username/Password Administration dialog box, click Save to save changes to the password file.

Granting Anonymous FTP Access

To grant anonymous FTP access rights to users connecting to your PC through the FTPd daemon, you must add an anonymous FTP user to your password file. After this account is set up, any user can access your PC by typing the user name `anonymous`, and any password.

To create an anonymous account:

- 1 In the Username/Password Administration dialog box, click Add. The Add Username dialog box opens.
- 2 In the Username box, type `ftp`. The user name must be lower case.

- 3 In the Password box, type ftp. The password must be lower case. Retype the password in the Confirm Password box.
- 4 Click OK. The User Access Rights dialog box opens.
- 5 Assign access privileges for anonymous FTP connections.

Warning! Be extremely careful when assigning access rights for anonymous FTP. You should not allow anonymous users to delete files from your PC.

Appendix A

Connectivity Applications

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Accessories

To quickly locate the online help for an Accessory, open the application and click help from within the application.



Finger This application returns information about the users of a particular computer. You can display information about a specific user, or all users currently logged onto a particular computer.



Host Editor This application lets you edit and manage a list of IP addresses and associated machine names. This information is contained in the HOSTS file on your PC.



Hummingbird Basic This is a command language included with Hummingbird products. Hummingbird Basic can be used to create scripts for frequently performed tasks that you would like to automate. For details, refer to the *Hummingbird Basic Language Programmer's Guide*.



Launch Pad This application lets you launch applications and manage application windows. It includes a graphical menu-building facility that lets you customize your environment, and a Virtual Desktop that increases the size of the Windows display workspace.



Network Time This application lets you synchronize the time on your PC with the Network Time Server.



NSLookup This application finds and displays information about hosts in a domain.



Ping This is a diagnostic tool that lets you quickly check the integrity of a network communications path and your TCP/IP configuration. Ping sends Internet Control Message Protocol (ICMP) echo requests to specified machines and displays the response in graphical form.



Remote Tools This application is an integrated version of several UNIX commands—Remote Shell, Remote Exec, Remote Copy (RSH) and Remote Copy (REXEC). You can execute commands and copy files to or from other machines on the network using the RSH and REXEC protocols.



Tar This application lets you easily transfer entire directories and their contents to an Archive file, usually for backup purposes. You can create local and remote Archive files and restore them to your PC at any time.



Traceroute This application shows the route that packets take to the host. It lets you test, troubleshoot, and manage network connections and find the route used to connect to a specific host.



Whois This application lets you query the central user name directory service maintained by the InterNIC (Network Information Center) Registration Service for an entry name. The InterNIC Registration Services Host contains Internet information (Networks, ASNs, Domains, and POCs) for non-military users. For military information, use the Whois server at NIC.DDN.MIL or MILNET.

System Administration



Hummingbird Inetd Inetd is a super-daemon that lets you enable and disable various daemon services through a single application. It determines the network services to which your PC responds when a client makes a network request. In a Windows 95/98/2000 environment, Inetd runs automatically when placed in the Startup folder. The Startup folder is the usual location for Inetd. For more information, see “System Administration—Inetd and Inetd Admin”.



Jconfig Jconfig is a remote configuration tool that system administrators can use to configure the Hummingbird™ applications on any network host running a Jconfig Daemon. Jconfig offers a variety of configuration options. You can create application-specific profiles for users, install shortcuts on user desktops, monitor and log user activities, and send messages to user machines. As well, you can use Jconfig to configure remote PCs one at a time or to create script files that, when played, customize the configuration of multiple remote PCs. For more information, see “System Administration—Sconfig and Jconfig”.



Sconfig Sconfig is a wizard that lets you customize the installation of software on local and network machines. With Sconfig, you can configure the install in the following ways:

- Customize the folders installed by Setup.
- Tailor the list of applications or components to be installed. You can alter the list to limit the functionality available to users, or to optimize the use of disk space.

- Simplify user input during the installation by pre-selecting information such as the names of the directories where the software is installed.

Note: For more information, see “System Administration—Sconfig and Jconfig.”



SOCKS Information This link in the Start menu launches an HTML file that contains information on what SOCKS is, what it does, and how to use it.



Update Hummingbird Use this application to install the latest patch to your product. For more information, see your installation chapter.



Web Update Use this application to modify the connection settings for updating the product. This application is not available if you performed a personal installation without Administrator privileges. Instead, an HTML file is created that links to a Web site for Hummingbird updates.

Appendix B

Installation Troubleshooting

Installation Troubleshooting

The following are common installation issues and questions along with suggested solutions. For further assistance with troubleshooting issues, contact Hummingbird Technical Support.

Another instance of the Hummingbird Setup Wizard is running (Error 2803)

Solutions:

- If a product is not currently being installed, you can ignore this error message and run:

```
Setup /v"HCL_OVERRIDE_INSTANCE=1"
```

The message also appears if a non-privileged user tries to uninstall a product installed for “All Users” of the computer. In this case, the setup parameter does not work since only an Administrator of the computer can uninstall the product.

- This error message may display if installer is unable to remove a key created by the Setup Wizard. This may be because Setup Wizard encountered problems during a previous installation and the key was not removed.

Delete the following keys from the registry:

```
//HKEY_CURRENT_USER/Software/Hummingbird/Connectivity  
/<version>/installer/UserIni/InstallActive=1
```

```
//HKEY_USERS/biglongnumberhere/Software/Hummingbird/  
Connectivity/<version>/installer/UserIni/InstallActive=1
```

Problems repairing user files

If the user directory is accidentally deleted, the user file may not be repaired properly. In this case, if a program does not start, try removing the UserFiles registry key in HKEY_CURRENT_USER or HKEY_LOCAL_MACHINE depending on whether or not the product is installed for “All Users”.

The feature you are trying is on a network resource that is unavailable

Solutions:

- Click OK in the warning dialog box and try again.
- Enter an alternate path to the folder containing the installation package “Hummingbird NFS XXX.msi”. Run the install again, then choose repair.

Windows installer has found incompatible software on your system

If you install version 7.x software (Exceed or NFS Maestro) and older versions of Hummingbird software exist on your system (for example versions 6.2 or earlier), you get the above warning message. Windows Installer will try to remove the older software, but in some cases this is not possible. Try to manually remove the software.

When trying to uninstall, Setup Wizard asks for the location of an .msi file

Solution: To perform the uninstall, the installation CD should be in the drive.

Patch - Sourcedir not found (when trying to install patch)

This means the source files are unavailable. When installing a patch, you need to have the source from which you installed. The original product CD must be in the drive.

After installation the software does not work—services are not starting and/or files are missing

Solution: Ensure the Administrator account is used to perform the installation. For Windows NT/2000, installing HostExplorer and NFS Maestro Client requires Administrator privilege. Installing Exceed requires elevated privilege (that is, a user who is a member of the Administrator group).

When trying to install the product, a message says I must uninstall it

Solution: You have an old version of one or more products installed. You will require version 7.x to install all products.

Are there other command line options for Msiexec?

The following are command line options for Msiexec:

Option	Meaning
<i>/i Package ProductCode</i>	Installs or configures a product.
<i>/f Package ProductCode</i>	Repairs a product. For more information about various flags available for this option, see the MSDN Library.
<i>/a Package</i>	Administrative installation option. Installs a product on the network.
<i>/x Package ProductCode</i>	Uninstalls a product.
<i>/j</i>	Advertises a product. For more information about various flags available for this option, see the MSDN Library.
<i>/L Logfile</i>	Specifies path to log file and the flags indicate which information to log. For more information about various flags available for this option, see the MSDN Library.
<i>/m filename</i>	Generates an SMS status .mif file and must be used with the install (-i), remove (-x), administrative installation (-a), or reinstall (-f) options. For more information about this option, see the MSDN Library.
<i>/p PatchPackage</i>	Applies a patch. For more information about this option, see the MSDN Library.
<i>/q</i>	Sets user interface level. For more information about various flags available for this option, see the MSDN Library.

For more detailed information about Msiexec command line options, see the Windows Installer documentation in the MSDN online Library at msdn.microsoft.com or on CD-ROM via subscription.

Option	Meaning
/?	Displays copyright information for the Windows Installer.
/h	
/y <i>module</i>	Calls the system API DllRegisterServer to self-register modules. For more information about this option, see the MSDN Library.
/z <i>module</i>	Calls the system API DllUnRegisterServer to unregister modules. For more information about this option, see the MSDN Library.

How does one create an installation log file (installer error 1631)?

To generate a log file, users should run the following command:

```
setup /v"/I* C:\install_log.txt"
```

where C:\ is the path to plaintext file *install_log.txt*.

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