3.5.12 PIM Item Transfer

Overview

The Bluetooth PIM Item Transfer application allows this computer to send and receive Personal Information Manager items to-and-from a remote Bluetooth device. Item transfer can be accomplished several ways:

To send, receive or exchange business cards:

1. From Windows Explorer, My Bluetooth Places, right-click the PIM Item Transfer service on a remote device and select the appropriate option.
   or
   In the Windows system tray, right-click the Bluetooth icon, select Quick Connect > Business Card Exchange, select a device from the list, select the appropriate option from the shortcut menu, and then click OK.

2. From Windows Explorer, My Bluetooth Places, highlight the PIM Item Transfer service on a remote device, and then, from the Bluetooth menu on the Windows menu bar, select the appropriate action.
   In addition to the business card options listed above, you can also send Notes (*.vnt), Email (*.vmg) and Calendar (*.vcs) items from this menu.

3. From within a supported Personal Information Manager, select one or more items and then, from the PIM's File menu, select Send to Bluetooth.

Whether sent items are accepted by the remote device is determined by how the remote device's PIM Item Transfer service is configured.

Close a PIM Item Transfer Connection

This application closes the open connection automatically when its task is complete.

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Configure PIM Item Transfer

The Bluetooth Configuration Panel > Client Applications > PIM Item Transfer > General tab provides options to configure:

- The application name—to change it, highlight the existing name and enter the new name.
- Enable or disable secure connection. To enable secure connection, place a checkmark in the box.
- How your business card is handled when it is requested by a remote device. The Send My Business Card options are:

Choose a business card as needed-each time a remote device requests your business card you must select a card from your PIM. If you ignore the request the remote device will receive a timeout notice.

Always send the same business card-when this option is selected a dialog appears that allows you to set a default business card, which will be sent automatically when requests are received.

- Where to store received business cards. The Received Business Cards options are:
- Microsoft Outlook
- Outlook Express
- Lotus Notes

NOTE: The selected Received Business Cards option does not influence the settings on other PIM-related property pages.
For example, even if the PIM Item Transfer *service* business card option on this computer is configured to "Do Not Accept," the PIM Item Transfer *application* will still accept business cards that the application has specifically requested via its "Receive" or "Exchange" functions.

- Email attachments. The only option is include or do not include attachments with email that is sent or received on this computer using this service.

3.5.13 Printer

Overview

The Bluetooth Printer application allows this computer to use a Bluetooth printer.

Once a Bluetooth printer has been properly installed, it can be used from this computer in the same way as any other printer would be.

Configure

The Bluetooth Configuration Panel > Client Applications > Printer > General tab provides options to configure:

- The application name—to change it, highlight the existing name and enter the new name.
- Enable or disable secure connection. To enable secure connection, place a checkmark in the box.

Install a Bluetooth Printer

Option One:

1. Perform a search for devices and then, from Entire Bluetooth Neighborhood, right-click a Bluetooth printer, select Add Printer from the shortcut menu and follow the on-screen instructions.
2. When the wizard asks you to select a printer make and model, do so.
   If your printer is not in the list of options, click Have Disk..., insert the driver disk for the printer, and then navigate to the drive and directory that contains the driver initiation file (*.inf) for the printer.
3. To complete the installation, follow the on-screen instructions.

Option Two:

1. From the Windows Control Panel, select Printers > Add Printer > Next > Local printer > Next
2. On the Select the Printer Port screen of the wizard:
   a) Select Create a new port
   b) In the Type shortcut menu, select Bluetooth Printer Port, and then click Next
3. On the next screen, select the printer by name, and then click Connect.
4. Install the driver: when asked to select a printer make and model, do so.
   If your printer is not in the list of options, click Have Disk..., insert the driver disk for the printer, and then navigate to the drive and directory that contain the driver initiation file (*.inf) for the printer.
5. To complete the installation, follow the on-screen instructions.

Delete a printer:

Click Start > Settings > Printers, right-click the printer to be deleted, and then select Delete from the shortcut menu.

Or

In Entire Bluetooth Neighborhood, right-click an installed Bluetooth printer and select Delete Printer from the shortcut menu.

3.6 BLUETOOTH SERVICES

Common Configuration Settings

These properties can be set individually for each Bluetooth service:

- **Service Name**-the default name of each service can be changed.
- **Secure Connection**-requires that remote devices provide proof of identity and that all data be encrypted.
- **Startup Automatically**-starts the service automatically when Bluetooth is started.
- **Notifications**-provides visual and/or audio notification that a remote device is attempting to connect (or has connected) to a service on this computer.

3.6.1 Notifications

Overview

There are three types of notification:

- Authentication request, also called a PIN code request—this notification appears automatically in a balloon over the Windows system tray if a Personal Identification Code is required before a connection can proceed. An audio file can also be associated with the notification.

- Authorization request, also called a connection request—this type of notification can be visual, audio, or both. It notifies you of attempts to access a Bluetooth service on this computer; the connection will not proceed until you click the balloon that appears over the Windows system tray. If the notification balloon is ignored, the connection request will time out and fail.

- Notification only—this type of notification does not effect access in any way; it is solely for information purposes to let you know that a connection has been established.

Example

Both Authentication and Authorization request notifications are controlled by whether Secure Connection is enabled for an individual service.

An example of how notifications might work when a remote device attempts to access a service on this computer, if all notifications are enabled:

1. Authentication: a balloon notification (audio optional) appears to prompt for a PIN code. If the PIN code does not match the code entered on the remote device, the connection will not be allowed. Once the remote device has been authenticated this notification will not appear again, unless the paired relationship is broken and the devices must re-pair.

2. Authorization: a balloon notification appears and/or a sound file provides audio notification that a remote device is attempting to access a Bluetooth service on this computer. Click the balloon to proceed. A dialog box appears that offers the option of letting the connection proceed this time only or to always allow this particular remote device to use the service it is attempting to access.

3. Once a connection has been authorized, an additional visual and/or audio notification may appear (if enabled). This notification is for information only to inform the operator that a connection has been established.

After two devices are paired (step 1, above), the authentication notification will no longer appear when a connection is attempted.

If "Always allow…" is enabled during the authorization process (step 2, above), the authorization notification will not appear on future connection attempts.

Connection notification (step 3, above) only happens if it has been enabled on the Notifications tab of the individual service being accessed.

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Service Access Notification

"Notifications" lets you associate a sound (Windows *.wav file) and/or a visual indication with access attempts by remote devices.

A different notification sound can be associated with each local Bluetooth service.

Associate a sound with service access

From the Bluetooth Configuration Panel, Local Services tab:

1. Double-click a service name and then select the Notifications tab.
2. Check the desired options; visual and sound may both be selected for a single event.
3. Choose a sound; click the Browse button and navigate to the sound file (*.wav) to be used for notification.
   To preview the sound file, click the play (▶) button.
4. Click OK to close the service's property dialog box.

3.6.2 Audio Gateway

The Bluetooth Audio Gateway service allows this computer to use a remote Bluetooth device's microphone and speakers as this computer's input and output devices.

For example, if this computer has voice recognition capabilities, a Bluetooth headset might be used as the audio input device.

Hardware Requirements

- The Bluetooth radio on both this computer and the remote device must support audio.
- The remote device handles both audio input and output for this computer; therefore, this computer does not require a sound card, microphone, or speakers.

Configure the Audio Gateway Service

From the Windows system tray, right-click the Bluetooth icon, select Advanced Configuration > Local Services, and then double-click the Audio Gateway service.

Set the common configuration properties of the service, and then click OK.

3.6.3 Bluetooth Serial Port

The Bluetooth Serial Port service allows a remote Bluetooth device to establish a wireless serial connection with this computer. The wireless serial connection may be used by applications as though a physical serial cable connected the devices.

To establish a Bluetooth Serial Port connection

The connection must be initiated from the remote device by the Bluetooth Serial Port application.

Determine the communications port being used by this computer for the Bluetooth Serial Port

In the Windows system tray, right-click the Bluetooth icon, select Advanced Configuration, and then the Local Services tab. The COM port assigned to this service is the last item in the Bluetooth Serial Port service row. Configure the application on this computer that will use this service to send its data to this COM.

Add a Bluetooth Serial Port

The Bluetooth Serial Port service has one pre-configured Bluetooth Serial Port, but additional Bluetooth Serial Ports can be added as needed.

To add a port

1. From the Bluetooth Configuration Panel, Local Services tab, click Add Serial Service.
2. In the properties dialog box, modify the properties:
3. Enter a unique name (less than 99 alphanumeric characters).
4. Select secure connection, if desired.
5. Select Startup Automatically, if desired
6. From the COM Port shortcut menu select a communications port that is not assigned to any other service.
7. Click OK.

To remove a Bluetooth Serial Port

From the Bluetooth Configuration Panel, Local Services tab, select the port to be removed and then click Delete.

NOTE: The Delete button is only available when a Bluetooth Serial Port is selected.

3.6.4 Dial-up Networking Service

The Bluetooth Dial-up Networking service makes it possible for a remote Bluetooth device to use a modem that is physically connected to this computer. The remote device can then access the Internet or log on to a remote network.

Configure the Dial-up Networking service:

From the Windows system tray, right-click the Bluetooth icon, select Advanced Configuration > Local Services, and then double-click the Dial-up Networking service.

- Select the physical modem to be used from the Modems: shortcut menu.
- Set the common configuration properties of the service, and then click OK.

3.6.5 Fax Service

The Fax service allows a remote Bluetooth device to send a Fax via a modem that is physically attached to this computer.

Configure the Fax service:

From the Windows system tray, right-click the Bluetooth icon, select Advanced Configuration > Local Services, and then double-click the Fax service.

- Select the physical modem to be used from the Modems: shortcut menu.
- Set the common configuration properties of the service, and then click OK.

3.6.6 File Transfer Service

Overview

The File Transfer service allows this computer to perform file operations on the Bluetooth Exchange Folder (and the folders and files it contains) of a remote device.

Basic setup procedure

Right-click the Bluetooth icon and select Explore My Bluetooth Places.

Configure Windows Explorer so that the Folders pane is visible (View > Explorer Bar > Folders).

In the Folders pane, select Entire Bluetooth Neighborhood and then, on the menu bar, select Bluetooth > Search For Devices.

In the Folders pane, expand Entire Bluetooth Neighborhood to show the devices in the vicinity.

Copy to/from a remote device

In the Folders pane of Windows Explorer, from the Entire Bluetooth Neighborhood branch, select a device and expand that branch to view the Bluetooth Exchange Folder of the remote device.

> **NOTE:** "Public Folder" is not available, the remote device is not configured to allow remote file operations.

Use drag-and-drop to copy any file or folder contained in the Public Folder of the remote device to the desired folder on this computer.

You can also drag-and-drop files or folders from this computer to the Public Folder (and its sub-folders) of the remote device.

Other file operations

Right-click a file or folder in the remote device's Public Folder for a context sensitive menu. All potential menu options may not be available at all times.

Potential menu options include:

- Open—opens the selected file on this computer, using the default application for this type of file.
- Print—sends the selected file to this computer's default printer.
- Send To
  - 3 ½ floppy (A)—the 3 ½ inch floppy drive on this computer
  - Public Folder on My Device—the Public Folder on this computer.
- Rename—applies only to empty folders; file names and the names of folders that contain objects cannot be changed using this technique.
- Cut, Copy, Paste, Delete, Refresh, View & New—standard Windows functions.

3.6.7 Headset Service

The Bluetooth Headset Service allows this computer to provide audio input/output for remote Bluetooth devices.

For example, if the remote device is a Bluetooth telephone, this computer's microphone and speakers can be used as speakerphone input and output for that device.

NOTE: Windows 98 limitation—click here for more info.

Hardware Requirements

- This computer must have a sound card, microphone, and speakers installed.
- The Bluetooth radio on both on this computer and the remote device must support audio.

Configure the Headset Service

- From the Windows system tray, right-click the Bluetooth icon, select Advanced Configuration > Local Services, and then double-click the Headset service.
- Set the common configuration properties of the service, and then click OK.

3.6.8 Network Access

The Bluetooth Network Access service makes it possible for a remote Bluetooth device to access a Local Area Network that is physically attached to this computer or allows a remote device to become part of an ad hoc network provided by this computer.

After this computer has been configured to provide the Network Access service to other Bluetooth devices, it will not be able to use the Bluetooth Network Access service provided by another Bluetooth device without being re-configured. Put another way, this computer cannot be both a Bluetooth Network Access server and a Bluetooth Network Access client at the same time.

3.6.8.1 Setup for Windows 98SE & Windows Me

NOTE: Internet Protocol routing software is required on Windows 98SE and Windows Me servers.
Install and configure the routing software as instructed by the software's manufacturer.

Configure the server:

1. From the Windows Control Panel, double-click the Network icon.
2. On the Configuration tab, select TCP/IP-> Bluetooth LAN Access Server Driver (scroll down if necessary).
3. Click Properties and select the IP Address tab.
   a) Select Specify an IP address
   b) Enter an IP Address (suggested value—192.168.1.1)
   c) Enter a Subnet Mask (suggested value—255.255.255.0)
4. Click OK twice to close the dialog boxes and then click YES to restart the computer.

3.6.8.2 Setup for Windows 2000 and Windows XP

If Internet Connection sharing was previously enabled (before BTW was installed) it must be disabled and then re-enabled before the Bluetooth network adapter can use it. Click here for more information.

Configure for Network Access:

1. From the Windows system tray, right-click the Bluetooth icon and select Advanced Configuration from the shortcut menu.
2. In the Bluetooth configuration panel, select the Local Services tab, Network Access and then click Properties....
3. From the Network Access, General properties page, in the Type of service shortcut menu, select "Allow other devices to access the Internet/LAN via this computer," and then click Configure Connection Sharing.
4. Right-click Local Area Connection, select Properties and then select the Sharing tab.
5. Select Enable Internet Connection Sharing for this connection, click OK, and then click YES in the confirmation dialog box.

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3.6.8.3 Configure for Group Ad Hoc Networking:

1. From the Windows system tray, right-click the Bluetooth icon and select Advanced Configuration from the shortcut menu.

2. In the Bluetooth configuration panel, select the Local Services tab, Network Access and then click Properties....

3. From the Network Access, General properties page, in the Type of service shortcut menu, select "Allow other devices to create a private network with this computer."

4. Click OK.

3.6.9 PIM Item Transfer

Overview

The PIM Item Transfer service allows Personal Information Manager items to be transferred between this computer and a remote Bluetooth device.

Four data types are supported:

- Business Cards
- Calendar Items
- Email Messages
- Notes

Each data type can be saved in any of the supported and installed PIMs.

NOTE: PIMs which are not installed on this computer will not appear in the shortcut menus.

When the PIM that is associated with an individual data type is changed on the PIM Item Transfer page, that data type is also changed for the PIM Synchronization service.

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Configure

In addition to the configuration options common to all Bluetooth services, this service also has settings that determine:

- How business card requests are handled. The options are:
  - Never send my business card—ignore the request
  - Choose a business card as needed—when prompted, select a business card to be sent to the requester.
  - Always send the same business card—when a request is received always send the same business card. When this option is selected, a dialog box appears from within which an installed Personal Information Manager (if more than one is installed on this computer) and an existing business card can be selected.
  - Previously sent business cards—once a card is selected using the "Always send the same business card" option, above, that card will be added to the shortcut menu as an option.

NOTE: Previously sent business card additions to the menu are limited to ten, after which the oldest contact will be replaced.

- Where to store inbound data items, on an individual basis. Options include (not all options apply to all items):
  - Do Not Accept
  - Any of the installed PIMs on this computer
  - Save to Folder
- The Bluetooth Exchange Folder location—the directory on this computer where inbound items that are not to be saved in a PIM will be kept.

NOTE: This is also the folder where the File Transfer service stores inbound items. If this folder is reconfigured here, it will also be reconfigured in that service automatically.

- Whether to send/receive attachments with email. Check or clear this option, as appropriate.

Close a PIM Item Transfer connection

PIM Item Transfer connections close automatically when the data transfer is complete.

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Default Business Card Selection

When the "Always send the same business card" option is selected, a dialog box appears to allow the selection of a default business card.

The first time the dialog box appears it provides a way to choose the Personal Information Manager that stores the default business card. Click the down-arrow in the PIM shortcut menu and select the PIM to be used.

On subsequent appearances of this dialog box, the PIM selection option is not available.

Change the selected PIM

On the PIM Item Transfer properties page, "Received items" section, there is a Business Cards shortcut menu. When a PIM was selected during initial setup the selected item in this menu was set to the same PIM. To change the PIM used for the default business card, open this shortcut menu and select a new PIM.

NOTE: A new default business card must be selected from the database of the newly selected PIM.

Choose a default business card

1. In the Select a Bluetooth Business Card dialog box that appears when "Always send the same business card" is selected, highlight the card.

NOTE: Once a card is highlighted, if you "hover" the mouse pointer over that selection, a balloon appears with additional information about that contact.

2. Click OK to choose a highlighted business card and return to the PIM Item Transfer Properties page. The chosen contact now appears in, and is selected in, the "Business card requests" shortcut menu.

If the "Always send the same business card" option is selected again, and a different contact chosen, the properties page will display both contacts in the shortcut menu.

NOTE: In addition to the default menu options, the shortcut menu can hold up to ten contact names.

3.6.10 PIM Synchronization

The PIM Synchronization service can be used by a remote device to synchronize its Personal Information Manager (PIM) database with the PIM database of this computer..

Four data types are supported:

- Business cards
- Calendar items
- Email messages
- Notes.

Whether an individual item is accepted and where it is stored, when accepted, is configured in the PIM Item Transfer service. If that service is not configured to store a particular data type in Outlook, then that data type cannot be synchronized.

NOTE: Data types that will be synchronized must be saved in the PIM database (this is configured in the PIM Item Transfer service); otherwise, that data type will not be available for selection (it will be grayed out) in the PIM Synchronization configuration settings.

Microsoft Outlook permits duplicate entries, so all duplicates may not be exchanged in the synchronization process.

NOTE: Only Outlook's default contacts folder is synchronized. Items in sub-folders are not synchronized. Items that are moved from the default folder to a sub-folder will appear to have been deleted the next time synchronization takes place.

3.7 HARDWARE SETTINGS

The Hardware tab of the Bluetooth Configuration Panel provides basic information about the Bluetooth hardware installed on this computer and access to the Advanced Settings dialog box, if required:

- Devices:
  - **Name**: the name of the device, e.g., *WIDCOMM Bluetooth Device*
  - **Type**: the type of device, e.g., *USB*.
- Device Properties:
  - **Device status**: indicates that the device is operating properly or that there is a problem/conflict.
  - **Manufacturer**: the name of the company that manufactured the device selected in the Devices section of this dialog box.
  - **Firmware Revision**: the manufacturer's firmware version number.
  - **Device Address**: the Bluetooth Device Address (BDA or BD_Addr) assigned to this device when it was manufactured.
  - **HCI Version**: the version number of the Bluetooth Specification that the Host Controller Interface complies with.
  - **HCI Revision**: the revision number of the Bluetooth Specification that the Host Controller Interface complies with.
  - **LMP Version**: the version number of the Bluetooth Specification that the Link Manager Protocol complies with.
  - **LMP Sub Version**: the sub-version number of the Bluetooth Specification that the Link Manager Protocol complies with.
- The Advanced button: displays the Advanced Settings dialog box, which allows you to select the country code and transmission power settings. *This option is not available on all systems.*

3.7.1 Advanced Settings

When available, this dialog box is reached from the Hardware tab of the Bluetooth Configuration Panel.

NOTE: Depending on the country in which the hardware is sold and/or in which it will be used, the Advanced button may not be present.

From this dialog box you can set the:

- Country Code:
  - North America, Europe (except France), and Japan
  - France and China
- Maximum Transmission Power:
  - High
  - Medium
  - Low.

Click Apply to implement the changes. A dialog box appears with notification that the Bluetooth device attached to this computer must be reset before the change(s) will take effect.

Click Yes to reset the Bluetooth device now—all open Bluetooth connections will be closed.

Click No to save the changes—the changes will be applied the next time the Bluetooth device is reset or restarted.

3.8 ACCESSIBILITY SETTINGS

The Accessibility tab of the Bluetooth Configuration Panel lets you specify whether remote devices may access this computer, which remote devices have access, and whether an audio warning is played when a Personal Identification Number (PIN code) is required.

Allow other devices to discover this computer

Select "Let other Bluetooth devices discover this computer" to permit remote Bluetooth devices to find and report this computer.
If "Allow No devices" (below) is selected, this option is not available.

Control the types of devices that are allowed to connect to this computer

From the "Devices allowed to connect to this computer" shortcut-menu, select:

- **No devices**—no remote devices are permitted to initiate a connection with this computer. However, this computer can still initiate connections with remote Bluetooth devices.

- **All devices**—all remote devices are permitted to connect to this computer. Connections are subject to additional security restrictions, such as authentication and authorization, that may be required by the individual services provided by this computer.

- **Only paired devices**—only devices that have been paired with this computer are allowed to connect to it.

- **Only devices listed below**—only the listed devices are allowed to connect to this computer (see Accessibility, adding and deleting devices).

Choose an audio notification file

When Secure Connection is enabled for any of the Bluetooth Services on this computer a PIN code is required before that service can be accessed. To chose a notification sound that will play when a remote device attempts to access a service that requires a secure connection, click Select audio file... and select the sound (*.wav) file to be played.

Limit access to this computer to specific remote devices

From the Bluetooth Configuration Panel, Accessibility tab, in the Allow shortcut menu, select "Only devices listed below".

Add a device to the list

1. Click Add Device
2. In the Devices with access... dialog box select the desired device(s) and click OK.

NOTE: Multiple devices may be selected using SHIFT + click and/or CTRL + click.

Delete a device from the list

In the list of devices allowed to access this computer, select the device to be removed from the list, and then click Delete.

3.9 DISCOVERY SETTINGS

The settings on the Discovery tab of the Bluetooth Configuration Panel determine whether this computer looks for other Bluetooth devices automatically, how often it looks and what type of devices it looks for.

Periodic Search for Devices

When "Look for other Bluetooth devices" is selected, Bluetooth automatically searches for devices every X minutes. X is an whole number between 1 and 60. To change the time between auto inquiries, highlight the existing time and enter the new time.

NOTE: When My Bluetooth Places is first opened it performs an initial automatic search for devices even if "Look for other Bluetooth devices" is not enabled.

Determine the devices that will be reported

Bluetooth can screen out devices that you do not need access to.

The options are:

- Report all Bluetooth devices
- Report only selected Bluetooth devices (see Discovery, Adding Specific Devices and Discovery, Deleting Specific Devices).
- Select the desired option from the drop-down list.

Discover Specific Devices

The type of device(s) that this computer looks for and reports when it is searching for other Bluetooth devices can be limited.

Limit the remote devices reported

Bluetooth can report only specific devices, specific class(es) of device(s), or specific type(s) of device(s) within a class.

- Specific devices: an individual computer or Bluetooth cellular telephone are examples of specific devices.
- Specific class of device: "computer" is an example of a class of devices
- Specific type of device within a class: "laptop" is an example of a specific type of device within the "computer" class of devices.

The devices to be discovered can be mixed-and-matched; you can discover one or more specific devices, classes of devices and types of devices within a class at the same time.

Remove a device from the list of devices to be discovered

In the Bluetooth Configuration Panel, from the Discovery tab, select the device to be removed and click the Delete button.

NOTE: If "Report only selected Bluetooth devices" is not selected the Delete button will not be available.

Temporarily override the discovery of specific devices

In the Bluetooth Configuration Panel, from the Discovery tab, select "Report all Bluetooth devices." The specifically selected devices will be discovered along with all other devices.

To re-enable specific device discovery re-select "Report only selected Bluetooth devices."

NOTE: When all devices are deleted an error message will appear if "Report all Bluetooth devices" is not selected.

4   Security

4.1   AUTHENTICATION

Authentication is used to verify identity; it requires a passkey or link key from the remote device. When a remote device attempts access, a visual and/or audio warning notifies the local operator.

If the notification is ignored, access is denied after a preset timeout.

When devices are "paired," those devices automatically exchange a link key and Authentication is carried out without operator intervention.

4.2   AUTHORIZATION

Authorization is Yes-or-No security that requires operator intervention to avoid having the connection time out and fail.

Authorization is limited to:

- **Yes**, you may connect (click the balloon to proceed)
- **No**, you may not connect (ignore the balloon prompt and the connection will fail).

4.3   BLUETOOTH DEVICE IDENTITY

Every Bluetooth device has a unique Bluetooth Device Address (BDA) assigned to it during the manufacturing process. This address cannot be changed by the end-user.

A device's BDA is usually displayed in hexadecimal format; 00:D0:B7:03:2E:9F is a valid BDA.

Each Bluetooth device also has an operator-configurable, user-friendly name to help distinguish it from other devices. The user-friendly name may be up to 99 alphanumeric characters in length and may contain spaces. **My Personal Computer** is a valid user-friendly name.

4.4   ENCRYPTION

Encrypting data translates it into an unreadable format using a secret key or password. Decrypting the data requires the same key or password that was used to encrypt it.

4.5   LINK KEY

A unique, internally generated, access code based on a passkey, the Bluetooth Device Address and an internally generated random number. Link keys are generated automatically when devices Pair.

After a link key is generated, manual entry of the passkey is not required.

4.6 PAIRING DEVICES

Pairing allows you to avoid entering access information each time a connection is attempted. Paired devices share a unique link key, which they exchange each time they connect.

NOTE:	The mate of a pair always appears in My Bluetooth Places, even if the mate is not turned on or is out of connection range.

Paired devices remain paired even when

- One of the devices is not on
- A service connection is interrupted or the service stopped
- One or both devices are rebooted.

To Pair with another device

If Secure Connection is enabled, devices will pair automatically the first time they connect (a passkey must be successfully exchanged).

To pair with a device manually:

In the Folders pane of My Bluetooth Places, right-click a device, select Pair Device from the shortcut menu, and then follow the on-screen instructions.

Remove Pairing

In the Folders pane of My Bluetooth Places, right-click a paired device and select Unpair Device from the shortcut menu.

4.7 PASSKEY

An alphanumeric string up to 16 characters in length. Passkeys are also called Personal Identification Numbers, or PIN codes.

A passkey may be required if the Secure Connection option is enabled for a Bluetooth service or application.

4.8 SECURE CONNECTION

A passkey or link key is required each time a connection is attempted.

All data exchanged over the Bluetooth connection is encrypted.

Depending on other configuration options, authorization may also be required.

4.9 SECURITY REQUEST DIALOG BOX

A Bluetooth passkey request and/or Bluetooth Authorization request balloon may appear over the Windows system tray when a connection is attempted if Secure Connection is enabled.

Click the balloon to proceed.

5 Troubleshooting

5.1 CANNOT CONNECT TO A PAIRED DEVICE

Paired devices are always displayed in My Bluetooth Places, even if the remote device is out of range or not powered up.

Verify that the remote member of the pair is within radio range, and powered up, and then attempt the connection again.

5.2 CANNOT DISCOVER SERVICES ON AN UN-PAIRED REMOTE DEVICE

The remote device may not be powered up or may be out of range.

- Verify that the remote device is powered up.
- Verify that the remote device is in Connectable mode (Bluetooth Configuration Panel > Accessibility tab).
- Perform a Search for Devices to verify that the device is within range.

5.3 DIAL-UP NETWORKING SERVICE DOES NOT START

The Dial-up Networking service will not start unless a properly configured modem is attached to the server.

- Verify that the modem is usable as a local device on the computer to which it is attached.
  - In the Bluetooth Configuration Panel, Local Services tab, double-click the Dial-up Networking service:
  - Click the down arrow in the Modem field and select the modem that will be used to dial out
  - Click the OK button
  - Click the OK button to close the Bluetooth Configuration Panel.

5.4 DETERMINE THE BLUETOOTH DEVICE ADDRESS (BDA) OF MY HARDWARE DEVICE

In the Bluetooth Configuration Panel, on the Hardware tab, in the Devices section, select the device you want to determine the address of. In the Device Properties section of the dialog box, the fourth entry, Device Address, is the BDA of the selected Bluetooth device.

5.5 DETERMINE THE VERSION OF THE HOST CONTROLLER INTERFACE (HCI)

In the Bluetooth Configuration Panel, on the Hardware tab, in the Device Properties section, the fifth entry provides Bluetooth Specification compliance information for the Host Controller Interface.

The sixth entry contains the Specification Revision information for the Host Controller Interface, if appropriate.

5.6 DETERMINE THE VERSION OF THE LINK MANAGER PROTOCOL (LMP)

In the Bluetooth Configuration Panel, on the Hardware tab, in the Device Properties section, the seventh entry provides Link Manager Protocol version number information.

The eighth entry contains the Link Manager Protocol sub-version number information, if appropriate.

5.7 FIND INFORMATION ABOUT THE BLUETOOTH HARDWARE ATTACHED TO MY COMPUTER

In the Bluetooth Configuration Panel, select the Hardware tab.

5.8 INTERNET CONNECTION SHARING DOES NOT WORK

This occurs because Internet Connection Sharing was enabled when Bluetooth was installed (this is a Microsoft Windows behavior and is considered proper operation).

To resolve the "problem":

1. Disable Sharing for the Ethernet adapter:
   a) Windows Control Panel > Network and Dial-up Connections
   b) Right-click "Local Area Connection," select Properties, and then select the Sharing tab.
   c) Clear (uncheck) the box for "Enable Internet Connection Sharing for this connection" and click OK.
2. Re-enable Sharing for the Ethernet adapter; repeat Step 1.c.), and select (check) the sharing box.

If offered an option to select an adapter, select "Bluetooth network adapter." (This option will not appear unless more than one adapter is available.)

If asked to reboot the computer, do so.

5.9 TEST A NETWORK ACCESS CONNECTION

If the client is hardwired to the LAN, unplug the hardwired connection to ensure that the test checks the wireless connection rather than the hardwired connection.

If the server has access to the Internet, open a browser on the client and connect to the World Wide Web.

You may also Ping the server from the DOS prompt.

5.10 UNKNOWN PORT MESSAGE WHEN USING A BLUETOOTH SERIAL PORT

The "Unknown Port" error message usually means an attempt was made to connect a port that was in use.

Additional Bluetooth Serial Ports can be added if they are required.

5.11 BLUETOOTH HEADSET DOESN'T ALWAYS FUNCTION UNDER WIN 98

Windows 98 cannot convert audio files with the extension m3u (e.g., `myfile.m3u`) into the Pulse Code Modulation (PCM) audio format used by Bluetooth headsets; this is a limitation of Windows 98.

Other versions of Windows (2000, ME and XP) can translate m3u audio files into the PCM format.

Possible solutions are:

- Upgrade to a newer version of Windows
- Use an m3u-to-mp3 conversion utility to convert the file(s) into a format that is supported by Windows 98. (Conversion utilities are available as freeware or shareware on the Internet.)