WIDCOMM

BTW Configuration & User's Guide

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Confidential and Proprietary Information

WIDCOMM

FCC Requirement

This equipment complies with Part 68 of the FCC Rules. On the bottom of this equipment is a label that contains, among other information, the FCC registration Number, Ringer Equivalence Number (REN) and USOC jack type for this equipment.You must, upon request, provide this information to your telephone company.

An FCC compliant telephone cord and modular jack is provided with this equipment. This equipment is designed to be connected to the telephone network or premise wiring use a compatible modular jack which is Part 68 compliant. See installation instructions for details.

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your telephone number is called. In most, but not all areas, the sum of the REN of all devices connected to on line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area. If your telephone equipment causes harm to the telephone network, the Telephone Company may discontinue your service temporarily. If possible, they will notify you in advance, but if advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact **MOBILE ACTION TECHNOLOGY INC.** for information on obtaining service or repairs. The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to stat tariffs.

This equipment complies with the FCC RF radiation exposure limits set forth for Uncontrolled environment. This device and its antenna must not be colocated or Operating in conjunction with any other antenna or transmitter.

FCC Compliance Statement:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.
Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

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1 Introduction

1.1 INTRODUCTION TO BLUETOOTH

The term "Bluetooth" refers to a worldwide standard for the wireless exchange of data between two devices.

In order to exchange data, two Bluetooth devices must establish a connection.

Before a connection is established, one device must request a connection with another. The second device accepts (or rejects) the connection.

The originator of the request is known as the client.

The device that accepts (or rejects) the request is known as the server.

Many Bluetooth devices can act as both client and server.

A client Bluetooth device runs a software program that requests a connection to another device as part of its normal operation. For example, the program may request a connection to a remote computer, a printer, or a modem.

Becoming a Bluetooth client normally requires an action by the device operator, such as an attempt to browse a remote computer, print a file, or dial out on a modem.

Every Bluetooth device that provides a service must be prepared to respond to a connection request. Bluetooth software is always running in the background on the server, ready to respond to connection requests.

1.2 INTRODUCTION TO BTW

BTW is the solution for the seamless integration of Bluetooth technology into personal computers.

For an overview of the features added in this release, see What's New.

Most Bluetooth-enabled devices have the capability to act as:

- A Bluetooth server—these devices provide one or more services, such as access to the Internet, to other Bluetooth devices.
- A Bluetooth client—these devices use the service(s) provided by Bluetooth servers.

Bluetooth devices that can act as both server and client can often do both at the same time.

BTW provides:

- Clients with the means:
  - To locate other Bluetooth devices in the immediate vicinity (inquiry)
  - Discover the services that those devices offer (discovery)
  - Connect to, use, and disconnect from those services.
- Servers with the means to include/exclude individual services in the list of services they provide to clients.
- Extensive security, including:
  - Authorization
  - Authentication
  - Encryption.

BTW supports

- Windows 2000.
- Windows 98SE (Second Edition).
- Windows Me (Millennium Edition)
- Windows XP Professional
- Windows XP Home Edition.

BTW functions the same way, regardless of the supported version of Windows on which it is running.

The services supported by BTW are:

- **Bluetooth Serial Port**—establishes a Bluetooth wireless connection between two devices. The connection may be used by applications as though a physical serial cable connected the devices.
- **Dial-up Networking**—allows a Bluetooth client to use a modem that is physically attached to the Bluetooth server.
- **Fax**—allows a Bluetooth client to wirelessly send a fax using a device that is physically attached to the Bluetooth server.
- **File Transfer**—establishes a Bluetooth wireless connection that allows your computer to perform file system operations on another Bluetooth-enabled device—browse, drag/drop, open, print, cut/copy, paste, delete, rename, etc.
- **Information Exchange**—establishes a Bluetooth wireless connection between two devices so that they can exchange personal information manager data such as business cards, calendar items, email messages, and notes.
- **Information Synchronization**—establishes a Bluetooth wireless connection between two devices and uses the connection to synchronize Personal Information Manager data between the two devices.
- **Network Access**—establishes a Bluetooth wireless connection between the client and a server that is physically connected to the Local Area Network. If the client has permission (user name and password for the LAN), the wireless connection can be used as if the client were hardwired to the LAN.

All Bluetooth servers do not necessarily provide all of these services. For example, a network gateway may only provide access to the Local Area Network (the Network Access service).

To determine the services provided by a Bluetooth device:

1. On the client, in the Folders pane of My Bluetooth Places, select Entire Bluetooth Neighborhood.
2. In the right pane of Entire Bluetooth Neighborhood, right-click anywhere *except on a device name* and select Refresh from the pop-up menu.

In the Folders pane of My Bluetooth Places, right-click a device and select Discover Available Services from the pop-up menu to update the available services list. The available services will be displayed in the right pane of My Bluetooth Places.

1.3 BLUETOOTH DEVICE IDENTITY

Every Bluetooth device has a unique 48-bit binary Bluetooth Device Address (BDA) burned into its Read-Only Memory (ROM). 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 Bluetooth 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.

1.4 ICONS USED FOR BLUETOOTH DEVICES AND SERVICES

Bluetooth icons provide at-a-glance feedback about a device or service's status by changing appearance.

Device icons are shown in Table 1 and Table 2.

Table 1:   Device icons for all operating systems **Except** *Windows XP*

Device Icons (except Windows XP, see below)			
Device Type	**Normal**	**Connected**	**Paired**
Cellular Telephone			
Desktop Computer			
Laptop Computer			
Modem			
Network Access Point			
Personal Digital Assistant			
Printer			
Unknown Devices			

Table 2:   Device icons for Windows XP

Windows XP Device Icons			
Device Type	**Normal**	**Connected**	**Paired**
Cellular Telephone			
Desktop Computer			
Laptop Computer			
Modem			
Network Access Point			
Personal Digital Assistant			
Printer			
Unknown Devices			

Service icons are shown in Table 3 and Table 4.

Table 3: Service icons for all operating systems __Except__ Windows XP

| Service Icons (except Windows XP, see below)		
Service Name	**Normal**	**Connected**
Bluetooth Serial Port		
Dial-up Networking		
Fax		
File Transfer		
Information Exchange		
Information Synchronization		
Network Access		
* Services may be unavailable because they are in use or because the necessary hardware is not installed.		

Table 4: Service icons for Windows XP

Windows XP Service Icons			
Service Type	**Normal**	**Connected**	**Unavailable***
Dial-up Networking			
Fax			
File Transfer			
Information Exchange			
Network Access			
Serial Port			
Information Synchronization			
Services may be unavailable because they are in use or because the necessary hardware is not installed.			

1.5 WHAT'S NEW

- A Connection Wizard now helps you set up new connections and places a shortcut to the new connection in My Bluetooth Places.
  - Extensive right-click context sensitive menu support throughout, including the ability to:
  - Access the Bluetooth Configuration Panel.
  - Create connection shortcuts.
  - Discover services.
  - Display connection status.
  - Display properties for connections, shortcuts to connections, local devices and services, remote devices and services.
  - Open and close connections.
  - Pair and un-pair devices.
  - Refresh lists of devices, services, and folder contents.
- Context sensitive What's This Help in the Bluetooth Configuration Panel.
- A Relative Signal Strength Indicator/Properties dialog box has been added for every connection. right-click the connection and select Status to display the dialog box.
- Enhanced Windows system tray functions that provide quick access to:
  - My Bluetooth Places; double-click the Bluetooth icon
  - Speedy connection establishment; Right-click the Bluetooth icon, select Services, and then the service you want. BTW shows you only the devices that offer that service.
  - The Connection Wizard.

2   Basic Operations

2.1   FIND BLUETOOTH DEVICES

"Search for Devices" looks for Bluetooth devices in the vicinity and displays the devices it finds in My Bluetooth Places.

To start the Search for Devices:

- In the Folders pane of My Bluetooth Devices, select (highlight) a device name
- Open the Bluetooth menu and select Search for Devices.

The Bluetooth menu is only visible when My Bluetooth Places is active.

BTW can be configured to automatically search for devices on a regular basis (Bluetooth Configuration Panel >Discovery tab).

One of the advantages of Bluetooth is the mobility the wireless connections allow. However, mobility means that devices may move in or out of connection range during the time between the automatic updates performed by BTW. To be certain that the displayed list of devices in the neighborhood is current, or if automatic periodic inquiry is not enabled, force an update of the device list using the technique above.

Some devices within connection range may not show up in the list of devices found because

- Your device is configured to report only specific types or classes of devices (Bluetooth Configuration Panel >Discovery tab, on your device).
- The unlisted device is configured to be non-discoverable (Bluetooth Configuration Panel > Accessibility tab, on the unlisted device).

2.2 **FIND A SERVICE**

The process of determining the services that a device provides is called Service Discovery.

To initiate a Service Discovery, in the Folders pane of My Bluetooth Places, right-click the device and select Discover Available Services from the pop-up menu.

The services supported by BTW are:

- **Bluetooth Serial Port**—establishes a Bluetooth wireless connection between two devices. The connection may be used by applications as though a physical serial cable connected the devices.

- **Dial-up Networking**—allows a Bluetooth client to use a modem that is physically attached to the Bluetooth server.

- **Fax**—allows a Bluetooth client to wirelessly send a fax using a device that is physically attached to the Bluetooth server.

- **File Transfer**—establishes a Bluetooth wireless connection that allows your computer to perform file system operations on another Bluetooth-enabled device—browse, drag/drop, open, print, cut/copy, paste, delete, rename, etc.

- **Information Exchange**—establishes a Bluetooth wireless connection between two devices so that they can exchange personal information manager data such as business cards, calendar items, email messages, and notes.

- **Information Synchronization**—establishes a Bluetooth wireless connection between two devices and uses the connection to synchronize Personal Information Manager data between the two devices.

- **Network Access**—establishes a Bluetooth wireless connection between the client and a server that is physically connected to the Local Area Network. If the client has permission (user name and password for the LAN), the wireless connection can be used as if the client were hardwired to the LAN.

All Bluetooth servers do not necessarily provide all of these services. For example, network gateways only provide access to the Local Area Network (the Network Access service).

2.3   DETERMINE A CONNECTION'S STATUS

The Bluetooth Connection Status dialog box displays information about the state of a connection and provides a means to disconnect an active connection.

To display the Connection Status dialog box

- In My Bluetooth Places, from the Folders pane, select (highlight) a device.
- In the right pane of My Bluetooth Places, right-click a service name and select Status from the pop-up menu.

The information provided is

- **Status**: Connected or Disconnected
- **Device Name**: the name of the device to which this computer is connected.
- **Duration**: the length of time this connection has been established, displayed in hours, minutes and seconds. Depending on the service, the connection may time out (automatically disconnect) after a specific period of inactivity.
- **Activity**: the number of bytes sent and received over the connection
- **Signal Strength**: a variable scale that ranges from Too Weak through Good to Too Strong.

To change the power transmission level of this computer: from the Bluetooth Configuration Panel, Hardware tab, click the Advanced button, and then change the setting in the Maximum Power Transmission drop-down list.

The controls in the Bluetooth Connection Status dialog box are

- **Properties** button: displays the Bluetooth Properties dialog box for this connection
- **Disconnect** button: closes this connection wherever applicable.
- **Stop** button: disables this service wherever applicable.
- **Close** button: closes the Bluetooth Connection Status dialog box.

2.4 **USING THE CONNECTION WIZARD**

The Connection Wizard walks you through the process of setting up a new Bluetooth connection with another device. The connection is not actually established; instead, a shortcut is placed in the right pane of My Bluetooth Places. To use the connection, double-click the shortcut.

2.4.1 **Setup a new connection**

1. Open the Connection Wizard: in the Windows system tray, right-click the Bluetooth icon, select Services from the pop-up menu, and then select Connection Wizard from the submenu.

2. On the first Connection Wizard screen:

    a) In the Select a Service drop-down menu, select the *type* of connection that will be established. (The specific service will be selected later, if necessary.)

    b) In the "Select a device that provides the service" drop-down menu, select the device that will provide the service. (To update the list of devices displayed, click the Search Devices… button.)

    c) Optional: select the "Require secure encrypted connection" option to enable Authentication and Encryption for this connection.

3. Click the Next button:

    *   If more than one service of the type selected in the Select a Service drop-down menu (above) exists on the selected device, for example, multiple Bluetooth Serial Ports, then the Select Bluetooth Service dialog box appears. Select the specific service to be used, and then click the OK button to close the Select Bluetooth Service dialog box.

    *   If only one service of the type selected in the Select a Service drop-down menu (above) exists on the selected device, the next Connection Wizard screen appears.

4. If "Require secure encrypted connection" was selected above, a security screen may appear:

    *   To establish a paired relationship with the remote device while using this wizard, enter your Personal Identification Number in the PIN Code field of the security screen, and then click the Next button.

    *   To establish the paired relationship with the remote device the first time this connection is used, leave the PIN Code field blank in the security screen, and click the Next button.
        *The Security screen **WILL NOT** appear if the devices have been paired.*

5. On the last Connection Wizard screen:

    *   The top of the screen provides basic information about the new connection—the name of the device that will provide the service and the name of the service that will be provided. If this information is NOT correct, click the Back button to return to the previous screen, and from that screen select the correct service and device.

    *   In the "Connection Name:" field, enter a descriptive name for the connection, for example, "BT Serial Connection to Joe's Desktop."

2.5   BLUETOOTH TRAY

The Bluetooth Tray resides in the Windows System Tray, which is normally located in the lower-right corner of the screen. Bluetooth Tray provides fast access to many routine Bluetooth operations.

From the Bluetooth Tray you can:

- **Access My Bluetooth Places**—double-click the Bluetooth icon.
- **Access the Bluetooth Configuration Panel**—right-click the Bluetooth icon, select Setup, and then select Configuration from the submenu.
- **Access the Bluetooth Security dialog box**—right-click the Bluetooth icon, select Setup, and then select Security from the submenu.
- **Access the Bluetooth Connection Wizard**—right-click the Bluetooth icon, select Services, and then select Connection Wizard from the submenu.
- **Exchange Business Cards with another Bluetooth Computer**—right-click the Bluetooth icon, select Services, and then select Business Card Exchange from the submenu.
- **Search for, and connect to, a specific service**—right-click the Bluetooth icon, select Services, and then select the desired service from the submenu. An additional submenu will appear that contains one or more options, including:
  - Find Devices…

    or
  - Other Devices… and one or more device names. The device name(s) will be present if this computer has used this service, and connected via this technique, at least once before. If a device name is present in the submenu, selecting that device will re-initialize the connection.

The services that can be searched for and connected to from the Bluetooth Tray are:

- Bluetooth Serial Port(s)
- Dial-up Networking
- Fax
- File Transfer
- Information Synchronization
- Network Access.

3   Client Applications

3.1   NETWORK ACCESS

The Network Access service permits a Bluetooth client to use a Local Area Network connection that is physically attached to another Bluetooth device (the server).

Possible Network Access servers include:

- Bluetooth-enabled computers that have an Ethernet connection.
- Stand-alone Bluetooth Network Access Points such as those in WIDCOMM's BlueGate series.

The Bluetooth server must be specifically configured to provide the Network Access service.

After a Bluetooth device is configured as a Network Access server it cannot act as a Network Access client without being re-configured.

3.1.1   Windows 2000, Server-side Setup

1. From the Windows Control Panel select Network and Dial-up Connections
2. Right-click the Local Area Connection icon and select Properties
3. In the Local Area Connection Properties dialog box on the Sharing tab, select Enable Internet Connection Sharing for this connection and click OK
4. Click the YES button in the confirmation dialog box to enable Internet connection sharing.

3.1.2   Windows XP, Server-side Setup

Have your Windows XP compact disc handy; you may need it during the setup process:

1. Click Start > Control Panel
2. Double-click Network Connections
3. Right-click Local Area Connection and select Properties from the popup menu
4. In the Local Area Connection Properties dialog box, click the Advanced tab
5. In the Internet Connection Sharing section of the dialog box, select "Allow other network users to connect through this computer's Internet connection" and then click OK.

3.1.3 Windows 98SE & Windows Me, Server-side Setup

Internet Protocol routing software is required on Windows 98SE and Windows Me servers; a downloadable trial version of WinRoute Lite is available on the Tiny Software, Inc. website—http://www.tinysoftware.com/.

3.1.3.1 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.
4. Select Specify an IP address
5. Enter an IP Address (suggested value—192.168.1.1) and a Subnet Mask (suggested value—255.255.255.0).
6. Click OK twice to close the dialog boxes.
7. Click YES to restart the computer.

3.1.3.2 Configure the routing software:

1. In the Windows system tray, right-click the WinRoute icon and select Administration.…
2. On the Settings tab, select "2nd network adapter".
3. From the Network adapter drop-down list choose any adapter other than the WIDCOMM adapter and click the Settings button.
4. On the DHCP tab, in the Adapter drop-down list, select the WIDCOMM Bluetooth Windows 9x Adapter.
5. Select Enable DHCP Server.
6. Fill in the client IP address range fields:
   a) From—210
   b) To—240
7. Click OK and then minimize (do not close) the WinRoute Administration configuration panel.

3.2   BLUETOOTH SERIAL PORT

The Bluetooth Serial Port service allows two Bluetooth devices to establish a wireless connection through virtual communications ports and then use that connection as if it were a hardwired serial cable between the devices.

To establish a Bluetooth serial port connection:

Connections are initiated from the client:

1. On the client, in the Folders pane of My Bluetooth Places, select Entire Bluetooth Neighborhood.

2. In the right pane of Entire Bluetooth Neighborhood, right-click anywhere *except on a device name* and select Refresh from the pop-up menu.

3. In the Folders pane of My Bluetooth Places, right-click the server you want to establish a connection with and select Discover Available Services from the pop-up menu to update the available services list. The available services will be displayed in the right pane of My Bluetooth Places.

4. In the right pane of My Bluetooth Places, double-click Bluetooth Serial Port. A dialog box appears that contains the communications port number assigned to this connection by the client. The application that will use this connection must be configured to send data to this port.

Depending on the security configuration, the dialog box that provides communications port information may not appear until after Authentication and Authorization have been accomplished.

The application on the server must be configured to use the correct communications port.

To determine the communications port being used by the service:

- On the server, in the Folders pane of My Bluetooth Places, right-click My Device and select Properties from the pop-up menu

- In the Bluetooth Configuration Panel, select the Local Services tab.

- Double-click the Bluetooth Serial Port service to display its Service Properties dialog box. The Service Properties dialog box shows the communications port the connection is using.

To close a Bluetooth serial port connection

Connections are normally closed from the client:

- On the client, in the Folders pane of My Bluetooth Places, select (highlight) the device that is providing the Bluetooth Serial Port service.

- In the right pane of My Bluetooth Places, right-click Bluetooth Serial Port and then select Disconnect Bluetooth Serial Port from the pop-up menu.

Though not recommended, connections can also be closed from the server:

- On the server, in the Folders pane of My Bluetooth Places, select (highlight) My Device

- In the right pane of My Bluetooth Places, right-click Bluetooth Serial Port and then select Stop to close the service. The service must be re-started before it will be available to remote devices (right-click Bluetooth Serial Port and select Start from the pop-up menu).

3.3 DIAL-UP NETWORKING

The Dial-up Networking service permits a Bluetooth client to use a modem that is physically connected to a different Bluetooth device (the server).

After the Bluetooth wireless connection is established the client can use the server's modem as if it were a local device on the client.

To establish a Dial-up Networking session

Connections are initiated from the client:

1. On the client, in the Folders pane of My Bluetooth Places, select Entire Bluetooth Neighborhood.
2. In the right pane of Entire Bluetooth Neighborhood, right-click anywhere *except on a device name* and select Refresh from the pop-up menu.
3. In the Folders pane of My Bluetooth Places, right-click the server that will provide the Dial-up Networking Service and select Discover Available Services from the pop-up menu to update the available services list. The available services will be displayed in the right pane of My Bluetooth Places.
4. In the right pane of My Bluetooth Places, double-click Dial-up Networking.
5. In the Connect To dialog box, fill in your user name, password, and the phone number to be dialed, and then click the Dial button. Select the Save password check box and the dialog box will not appear for subsequent connections to the same phone number.

You can now open a web browser and connect to the Internet.

To close a Dial-up Networking connection

1. On the client, in the Folders pane of My Bluetooth Places, select (highlight) the device that is providing the Dial-up Networking service.
2. In the right pane of My Bluetooth Places, right-click Dial-up Networking and then select Disconnect Dial-up Networking from the pop-up menu.

3.4 FAX

The Fax service allows a Bluetooth client to wirelessly send a fax using a device that is physically attached to a Bluetooth server.

To send a Fax

Connections are initiated from the client:

1. On the client, in the Folders pane of My Bluetooth Places, select Entire Bluetooth Neighborhood.
2. In the right pane of Entire Bluetooth Neighborhood, right-click anywhere *except on a device name* and select Refresh from the pop-up menu.
3. In the Folders pane of My Bluetooth Places, right-click the server that will provide the Fax service and select Discover Available Services from the pop-up menu to update the available services list. The available services will be displayed in the right pane of My Bluetooth Places.
4. In the right pane of My Bluetooth Places, double-click Fax.

After the Fax connection is established, open or create the document to be faxed and use the "Print" or "Send to Fax Recipient" option available in most applications.

The Fax connection closes automatically when the transmission is complete.

3.5   FILE TRANSFER

The File Transfer service allows one Bluetooth device to perform file operations on the default File Transfer directory (and the folders and files it contains) of another Bluetooth device.

To perform an operation on a folder or file

On the machine from which the File Transfer service will be used:

1. In the Folders pane of My Bluetooth Places, select Entire Bluetooth Neighborhood.
2. In the right pane of Entire Bluetooth Neighborhood, right-click anywhere *except on a device name* and select Refresh from the pop-up menu.
3. In the Folders pane of My Bluetooth Places, right-click the device you want to transfer files with and select Discover Available Services from the pop-up menu to update the available services list. The available services will be displayed in the right pane of My Bluetooth Places.
4. Still in the Folders pane of My Bluetooth Places, click the plus (+) sign in front of Public Folder to expand that folder. If there are additional folders inside the expanded folder then those additional folders may have to be expanded.

Folder contents are displayed in the right pane of My Bluetooth Places.

3.5.1   Types of File Transfer operations

In the right pane of My Bluetooth Places, right-click a folder item and select an option from the pop-up menu. A dialog box (the title varies, depending on the operation being carried out) appears and the status line (bottom of the dialog box) indicates the operational step that is being carried out.

The types of operations that can be accomplished are:

- Open:
    - Files—are opened in the application associated with them.
    - Folders—are expanded to show their contents.
- Print—sends the selected server file to the client's default printer.
- Send to:
    - 3.5" Floppy Drive—copies the selected item(s) from the server to the client's 3.5" floppy drive.
    - My Shared Folder—copies the selected item(s) from the server to the default File Transfer folder on the client.
- Cut—copies a folder and its contents, or individually selected files in a folder, to the Windows clipboard. When the clipboard contents are pasted to a new location, the originally selected file(s) on the server are deleted.
- Copy—copies a folder and its contents, or individually selected files in a folder, to the Windows clipboard.
- Delete—deletes selected file(s) and/or folder(s) on the server.
- Rename—allows you to change an empty folder's name.
- Properties—displays the file or folder's properties dialog box.

Other options may appear (depending on the context the menu appears in):

- Update—updates the contents of a folder
- New Folder—creates a new folder on the server
- Abort FTP Operation—aborts an in-process File Transfer operation.

3.6   INFORMATION EXCHANGE

The Information Exchange service provides a way to send and receive Microsoft Outlook items to and from another Bluetooth device, such as a Personal Digital Assistant or notebook computer.

The supported Outlook items are

- Business cards (*.vcf and *.vcd)
- Calendar entries (*.vcs)
- Notes (*.vnt)
- Messages (*.vmg)

There are three types of operations:

- Send—sends an object to another device.
- Receive—requests an object from another device.
- Exchange—sends a client object and receives a server object.

The default location of your business card and the location where received items are placed can be configured in the Bluetooth Configuration Panel.

To send, receive or exchange an object: on the client, in the Folders pane of My Bluetooth Places, right-click the Inbox icon of the remote device and select an option from the pop-up menu.

Business cards are sent, received or exchanged without further intervention.

To send Calendar Items, Notes, and Messages, navigate to the folder that contains the item you want to send, select the item, and then click Open.

3.7 INFORMATION SYNCHRONIZATION

The Information Synchronization service is used to synchronize information (e.g., a Personal Information Manager database) between a Bluetooth client and a Bluetooth server.

BTW supports synchronization with devices that support IrMC v1.1 and exchange the v2.1 vCard format.

The first time Information Synchronization is used with a new application it may take a few minutes to synchronize the database; the data from both devices must be merged, duplicate entries deleted, and then the updated database copied back to both devices.

Subsequent uses of Information Synchronization, for the same application, are much faster—only the changes that have been made since the databases were last synchronized must be exchanged.

Microsoft Outlook is the only Personal Information Manager supported in this release of BTW. Outlook permits duplicate entries, so all duplicates may not be exchanged in the synchronization process.

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 synchronization takes place.

To use Information Synchronization

1. On the client, in the Folders pane of My Bluetooth Places, select Entire Bluetooth Neighborhood.

2. In the right pane of Entire Bluetooth Neighborhood, right-click anywhere *except on a device name* and select Refresh from the pop-up menu.

3. In the Folders pane of My Bluetooth Places, right-click the server you want to synchronize with and select Discover Available Services from the pop-up menu to update the available services list. The available services will be displayed in the right pane of My Bluetooth Places.

4. In the right pane of My Bluetooth Places, double-click Information Synchronization.

A dialog box displays synchronization progress and, when the process is complete, indicates that synchronization has successfully completed.

The connection closes automatically when synchronization is complete.

4   Local Services

4.1   LOCAL SERVICES

Local Services are those services that a Bluetooth server is capable of providing.

The services provided by BTW are:

- Bluetooth Serial Port
- Dial-Up Networking
- Fax
- File Transfer
- Information Exchange
- Information Synchronization
- Network Access.

The names of all the services are displayed even though the server may not be capable of supporting all services. For example, when a server provides a service that is hardware-dependant, that server must be capable of local action, i.e., a Dial-up Networking server must have a working modem, a Fax server must have a functional fax modem, and a Network Access server must be physically connected to the Local Area Network.

All services start automatically by default when BTW is initialized.

Automatic start-up can be turned off for individual services (Bluetooth Configuration Panel, Local Services tab, double-click the service name). If a service is not configured to start automatically it can still be started manually (right-click the service and select Start from the pop-up menu).

To stop a local service: right-click the service and select Stop from the pop-up menu. Stopped services are not available for use by clients.

With Local Device selected, the Details view of Explorer provides basic information about each local service:

- Service—the name of the service
- Startup—Automatic or Manual
- Status:
    - Started(COM#)—the service is running and ready to use COM#
    - Not Started—the service is not running (not available to clients)
    - Connected(COM#)—the service is in use, the local port is COM#
- Device name if connected:
    - Empty field—the service is not connected
    - A device name and/or Bluetooth Device Address—identifies the device that is using the service.

To interrupt a connection from the server side:

- Right-click the local service and select Stop from the pop-up menu.
- Right-click the local service and select Start from the pop-up menu to re-start the service.

5   Configuration Panel

The Bluetooth Configuration Panel provides access to settings for Bluetooth services, hardware and security and for event notification.

To access the Bluetooth Configuration Panel

- From the Windows Control Panel, select Bluetooth Configuration

  or

- In the Windows System Tray, right-click the Bluetooth icon, select Setup and then Configuration from the submenu.

5.1   ACCESSIBILITY TAB

The Accessibility tab of the Bluetooth Configuration Panel lets you specify which remote devices may access this computer.

Security settings configured in the General, Local Services, and Client Applications tabs may also affect which devices have access to this computer.

To 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 to connect" (below) is selected, this option is not available.

To control the types of devices that are allowed to connect to this computer

From the Allow drop-down-menu, select:

- **All devices to connect**—all remote devices are permitted to connect to this computer.

- **No devices to connec**t—no remote devices are permitted to initiate a connection with this computer. However, this computer can still initiate connections (as a client) with remote Bluetooth devices.

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

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

5.1.1   Adding and Deleting Devices

To limit access to your computer to specific remote devices: from the Bluetooth Configuration Panel, Accessibility tab, in the Allow drop-down list box, select "Only devices listed below".

To add a device to the list of devices allowed to connect:

- From the Bluetooth Configuration Panel, Accessibility tab, click the Add Device button.

- In the Devices with access... dialog box select the device(s) and click OK. Multiple devices can be selected at the same time using SHIFT + click and/or CTRL + click.

To delete a device from the list of devices allowed to connect

- From the Bluetooth Configuration Panel, Accessibility tab

- In the list of devices allowed to connect, click the name of the device to be removed and then click the Delete button.

5.2 **DISCOVERY TAB**

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

To perform a periodic Search for Devices: when "Look for other Bluetooth devices" is selected, BTW automatically searches for devices every "X" minutes. X is an integer from 1 to 60. To change the time between auto inquiries, highlight the existing time and enter the new time.

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.

To determine the devices that will be reported

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

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.

To limit the type of remote devices reported:

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

When BTW is configured to report only specific devices, it reports ONLY those devices.

To report only specific devices

- From the Bluetooth Configuration Panel, on the Discovery tab, select "Report only selected Bluetooth devices" from the drop-down list and then click the Add Device button.
- In the Discoverable devices... dialog box, highlight the device to be discovered and click the OK button. Multiple devices can be selected at the same time using SHIFT + click and/or CTRL + Click.

To add a device to the list of devices to be discovered, that device must be within range of the Bluetooth radio; devices that are not within radio range will not appear in the list of devices in the Discoverable devices... dialog box.

To report only a specific class of device

1. From the Bluetooth Configuration Panel, on the Discovery tab, select "Report only selected Bluetooth devices" from the drop-down list and then click the Add Device button.
2. In the Discoverable devices... dialog box, select "Allow this computer to discover specific devices or types of devices within a class."
3. From the Class drop-down list, select a class of devices to be discovered.
4. Click the OK button.

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To report only a specific a type of device within a class

1. Configure BTW to report the class of device that the type of device belongs to (follow the steps in "Report only a specific class of device," above, but do **NOT** click the OK button).

2. In the Discoverable devices... dialog box, from the Type drop-down menu select the specific type of device to be reported.

3. Click the OK button.

To 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.

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

To 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."

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

5.3   GENERAL CONFIGURATION SETTINGS

The settings on the General tab of the Bluetooth Configuration Panel determine device properties and basic system security settings.

Identity section:

- **Computer Name-**enter a unique name to identify this computer to other Bluetooth devices in the vicinity; this field cannot be left blank.

- **Computer type-**select either Desktop or Laptop from the drop-down menu to help identify this computer to other Bluetooth devices in the vicinity.

Bluetooth Security Section:

- **High-**requires Bluetooth devices to authenticate (enter a Personal Identification Number (PIN)) before allowing a connection to be established. Your computer and the connected Bluetooth device will exchange data using encrypted links.

- **Medium-**the default setting—security is configured at the service-level. Service level security means that each individual service must have its security settings (Authentication, Authorization and Encryption) set independently.

If the security mode is "Medium" and service-level security is not configured, any Bluetooth device will be able to discover your computer and use it's services.

5.4   HARDWARE CONFIGURATION

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:
  - **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 status**: indicates that the device is operating properly or that there is a problem/conflict.
  - **Device Address**: the Bluetooth Device Address (BDA or BD_Addr) programmed into 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.*

5.4.1   Hardware Advanced Settings Dialog Box

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

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 the Apply button 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 the Yes button to reset the Bluetooth device now—*all open Bluetooth connections will be closed.*

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

5.5   **INFORMATION EXCHANGE CONFIGURATION SETTINGS**

The settings on the Information Exchange tab of the Bluetooth Configuration Panel configure:

- The highest-level directory on this computer that a remote device has permission to access (My Shared Directory)
- The path to your electronic business card (My Business Card)
- The path to the directory that will be used to save incoming (My Inbox Directory):
  - Business cards
  - Notes
  - Messages
  - Calendar items.

5.5.1   File Transfer

My Shared Directory: the directory configured in this section is the highest-level directory to which a remote Bluetooth computer has access. This directory and its sub directories are displayed in the remote device's My Bluetooth Places.

Click the Browse button and navigate to the directory that will be used as My Shared Directory.

5.5.2   Send Business Card

My Business Card: the path to the directory on this computer that contains your electronic business card.

Select the "Send Business Card on Request" option to allow remote devices to obtain your business card.

Click the Browse button and navigate to the directory that contains your business card.

5.5.3   Receive Business Card

My Inbox Directory: the path to the directory on this computer where inbound Personal Information Manager items such as Business cards, Notes, Calendar entries and Messages will be saved.

Select the types of items you wish to accept by placing a checkmark in the appropriate boxes, and then click the Browse button to navigate to the directory where they should be saved.

Select the "Save Object in Personal Information Manager" option to save incoming objects directly in the PIM. *When this option is selected, the path specified in "My Inbox Directory" is not used.*

5.6   LOCAL SERVICES TAB

The settings on the Local Services tab of the Bluetooth Configuration Panel determine the configuration of the services provided by your computer to remote devices. Each service can be configured individually for security, name, and other settings.

The Local Services tab also includes options to add and delete user-defined serial services.

BTW Local Service names are:

- Bluetooth Serial Port
- Dial-Up Networking
- Fax
- File Transfer
- Information Exchange
- Information Synchronization
- Network Access

5.6.1   Property settings which are common to all of the local services

Although each of these settings can be set individually for each service, all local services have settings for:

- Authentication
- Authorization
- Encryption
- Startup
- Service Name.

Some services have an additional setting that is specific to that service:

- Network Access—has an additional setting for the maximum number of connections allowed at any time.
- Dial-Up Networking—has an additional setting for selecting the modem that will be used by the service.
- Fax—has an additional setting for selecting the modem that will be used by the service.
- Bluetooth Serial Port—has an additional setting for selecting the communications that will be used by the service.

5.6.2 To add a user- defined Bluetooth Serial Port

Most applications that use a serial connection can also use the wireless Bluetooth Serial Port service to transfer data; the Bluetooth Serial Port is a replacement for the physical cable and is transparent to the application.

BTW has one pre-configured Bluetooth Serial Port, but additional Bluetooth Serial Ports can be added when needed.

To add an additional Bluetooth Serial Port

1. From the Bluetooth Configuration Panel, Local Services tab, click the Add Serial Service button.

2. In the Service Properties dialog box, modify the properties:
   a) Enter a unique name (less than 99 alphanumeric characters).
   b) Select the appropriate security settings.
   c) If you want the service to start automatically when BTW initializes, select Startup.
   d) From the COM Port drop-down menu select a communications port that is not assigned to any other service.

3. Click OK.

5.6.3 To remove a user-defined Bluetooth Serial Port

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

The Delete button is only available when the Bluetooth Serial Port service or a user-defined serial port service is selected.

To change a local service's properties: from the Bluetooth Configuration Panel, Local Services tab, double-click the service name.

Make the changes by selecting or clearing the appropriate boxes and click the OK button.

The service properties that may be changed are:

- **Startup**—when enabled, starts the service when BTW initializes. The default setting is enabled. If Startup is not enabled the service can still be started manually.

- **Authorization**—when enabled, requires confirmation by the server operator before a remote device is allowed to connect to this service. The default setting is disabled. Authentication (see below)—is automatically enabled when Authorization is enabled.

- **Encryption**—when enabled, encrypts data exchanged by the Bluetooth server and the Bluetooth client. The default setting is disabled. Encryption applies to the Bluetooth connection ONLY. Data transmitted to/from a modem, Local Area Network, etc., is NOT affected by this setting. Authentication is automatically enabled when Encryption is enabled.

- **Authentication**—when enabled, requires that the client and server exchange a passkey or Link Key before a connection is established. The default setting is disabled. Devices are paired automatically when authentication is complete.

- **Service Name**—Enter a service name (one to 99 alphanumeric characters) in this field. In most cases the default service name will serve. However, in environments where there is more than one device of the same type or one device provides more than one service of the same type (this is only possible for the Bluetooth Serial Port service), the service name can be customized.

5.7   NOTIFICATIONS TAB

The Notifications tab of the Bluetooth Configuration Panel lets you associate a sound (Windows *.wav file) with specific Bluetooth events.

Sounds can be associated on an individual basis, depending on security settings, with several events, including:

- When a PIN code is required (Authentication must be enabled)
- When a remote device attempts to access (Authorization for the related service must be enabled):
  - Files on this computer
  - A Bluetooth port
  - The Dial-up network service
  - The LAN Access service
  - The Fax service.
- When a remote device attempts to send (Authorization for the related service must be enabled):
  - Information items
  - Synchronization information.

To associate a sound with a Bluetooth event:

1. From the Bluetooth Configuration Panel, Notifications tab:
2. In the Notify column of the Events list, select the check box associated with the event.
3. In the Sound area of the Notifications tab, 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 the OK button to close the Bluetooth Configuration Panel.

The sound will not play, even though it has been assigned, unless the Notify check box is selected.

5.8   VERSION INFO CONFIGURATION

The Version Info tab of the Bluetooth Configuration Panel displays the name and version number of the software components of BTW.

There are no options to configure on this tab.

6   Security

6.1   INTRODUCTION

Each service that the server provides can be configured to require:

- Authorization—the server operator must acknowledge all connection attempts before a connection is established.
- Authentication—the server requires a Personal Identification Number (PIN, also referred to as a "passkey") code or a Link Key before a connection is established.
- Encryption—all data sent between the Bluetooth client and Bluetooth server is encrypted. The encryption key is based on the Authentication Link Key; Encryption requires that Authentication be enabled.

The default security setting for Authorization, Authentication and Encryption is disabled.

Devices can also be paired, a process that eliminates the need to enter a PIN code every time access is attempted.

6.2   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.

The local operator can open a dialog box that provides:

- The user-friendly name of the device attempting access
- A place for the local operator to enter a Bluetooth passkey.

The operator of the remote system must enter the identical passkey or access is denied.

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.

6.3   AUTHORIZATION

Authorization is yes-or-no security.

A visual and/or audio warning alerts the server operator that a remote device is attempting to connect.

The server operator responds by clicking the Bluetooth icon in the Windows system tray to open a dialog box that displays:

- The user-friendly name of the device attempting to connect
- The local service to which the remote device is attempting to connect.

The server operator may grant or deny access to the service by clicking an on-screen button.

If the server operator ignores the Authorization notification access will be denied after a preset timeout.

6.4   ENCRYPTION

Encrypting translates data 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.

Encryption in BTW is based on the same passkey or Link Key that is used for Authentication. If Authentication is not enabled the key is not available and encryption will not take place.

To use Encryption, Authentication must be enabled.

To enable Encryption for a service:

1. Right-click a service name and select Properties from the pop-up menu to display the Bluetooth Properties dialog box.

2. Select the Encryption option. If Authentication is not enabled it will be automatically turned on when Encryption is selected.

3. Click the OK button to close the dialog box and apply the change.

6.5   LEVELS OF SECURITY

Security for local services may be configured on an individual basis.

The configuration options are:

*   Startup-Automatic or Manual
*   Authorization
*   Authentication
*   Encryption

To access the security settings for a local service, in the Bluetooth Configuration Panel, from the Local Services tab, double-click the service name.

Bluetooth-enabled devices from different vendors may handle security in a slightly different manner. Refer to the user's guide for your Bluetooth device for additional information.

6.6   LINK KEY

A Link Key is a unique, internally generated, access code. Link Keys are generated automatically when devices are Paired or when Authentication is enabled.

Link Keys are created by combining

*   The Passkey
*   The Bluetooth Device Address
*   An internally generated random number.

6.7   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 when connecting.

The mate of a pair will always appear 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 powered up
- A service connection is interrupted or the service stopped
- One or both devices are rebooted.

When Authentication is enabled, devices are paired the first time they attempt to connect, after a successful passkey exchange.

To pair devices *before* attempting a connection:

1. In the Windows System Tray, right-click the Bluetooth icon, then Setup and select Security from the submenu.
2. The Bluetooth Security dialog box appears and BTW performs a device inquiry to update the list of devices in the area. After the inquiry is complete:
3. In the Found Devices pane of the dialog box, click the name of the device to be paired
4. Click the Execute Pairing button.
5. In the Bluetooth Passkey Request dialog box:
6. Enter the Bluetooth passkey
7. Click the OK button.

The check box on the main screen, when selected, permits all services to connect without Authorization.

When devices are paired, the configuration information is saved on both devices. Devices remain paired until the relationship is broken on both devices.

To break a paired device relationship

- In the Windows System Tray, right-click the Bluetooth icon, then Setup and select Security from the submenu.
- From the Bluetooth Security dialog box, in the Paired Devices list, select a device, click the Delete button and then click the Done button.

Pairing must be broken on both devices.

6.8   PASSKEY

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

In BTW, passkeys are used in the Authentication and Encryption process.

6.9 SECURITY REQUEST DIALOG BOX

A Bluetooth Authorization or Bluetooth Passkey Request dialog box may appear (depending on security settings) when a connection is attempted if either Authorization or Authentication is enabled. The method of notification depends on the version of Windows:

- Windows 2000, Windows Me, and Windows XP—a bubble message is displayed over the Bluetooth icon in the Windows System Tray
- Windows 98SE—The BTW icon in the Windows System Tray blinks.

Regardless of the version of Windows, click the Bluetooth icon in the Windows System Tray and then follow the on-screen instructions. The instructions vary, depending on the security configuration of the system.

If the security notification is ignored the connection request will fail after a preset timeout.

The dialog box provides

- Device Name: the user-friendly name of the device attempting to connect.
- Request to access: the service the remote device is attempting to access.
- Buttons for responding.
  - OK-allow the connection
  - Cancel-deny the connection
  - Advanced button (see below)
- A check box that, when enabled, grants (authorizes) the connecting device access to all of the services on this computer (click the See Also button, below, for more information).

6.10 SECURITY REQUEST DIALOG BOX, ADVANCED BUTTON

The check box on the main page of the Bluetooth Authorization and Bluetooth Passkey Request dialog boxes ("Check this box to ALWAYS allow this device to access ALL the services of your computer"), when enabled, grants permission (authorizes) the device attempting to connect to access all services on this computer when attempting to connect in the future.

To limit the services the connecting device may use:

- Click the Advanced button
- In the expanded dialog box, select the services that the connecting device is authorized to use. When a service is selected, that service will NOT require authorization in the future (no prompt will appear when a connection is attempted).
  Regardless of whether the main dialog box is for Authorization or Authentication, these options pertain to Authorization; they do not affect Authentication.
- Click the Authorize or Authenticate button.

7   Technical Support

WIDCOMM customers are issued a user name and password so that they may use on-line technical support. If you do not have a customer support user name and password contact mailto:customerservice@widcomm.com.

To contact WIDCOMM technical support

1. Go to the WIDCOMM home page on the World Wide Web and click Support.

2. On the Support page click the BTW entry that is appropriate for your version of BTW.

3. On the Technical Support page under BTW, click "Enter Password Protected Area."

4. Enter your technical support user name and password and click the Submit button.

5. Select from the options on the support page.

If you are filling out a bug report or requesting technical assistance, please provide as much information as possible on the form.

8 Troubleshooting

8.1 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.

8.2 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.

8.3 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 from the server.
- 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.

8.4 HOW DO I 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.

8.5 HOW DO I DETERMINE THE VERSION NUMBER OF THE BLUETOOTH SPECIFICATION THAT THE HOST CONTROLLER INTERFACE (HCI) COMPLIES WITH?

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.

8.6 HOW DO I DETERMINE THE VERSION NUMBER 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.

8.7   HOW DO I FIND INFORMATION ABOUT THE BLUETOOTH HARDWARE ATTACHED TO MY COMPUTER?

In the Bluetooth Configuration Panel, select the Hardware tab.

8.8   HOW DO I 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.

8.9   WHY DO I GET AN UNKNOWN PORT MESSAGE WHEN I ATTEMPT TO USE 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.

9   Glossary

BD Addr ....Bluetooth Device Address

BDA ....Bluetooth Device Address

Device Inquiry ......The process of searching for other Bluetooth devices.

DHCP ....Dynamic Host Control Protocol-when enabled, connecting devices are assigned an Internet Protocol (IP) address by the server.

FTP ....File Transfer Protocol

HCI ....Host Controller Interface

IrDA.......................Infrared Data Association

IrMC......................Infrared Mobile Communications

Link Key................An internally-generated unique security key that is exchanged by paired devices as proof of identity before a connection is established.

LMP.......................Link Manager Protocol--used by Bluetooth for internal communications.

Me ....Millennium Edition

PAD ....Personal Digital Assistant

Page Scan Mode ... A Bluetooth mode in which a server is actively listening (scanning) for a client to "page" it. The server then answers the page and attempts to set up a connection with the paging device (the client).

PIM........................Personal Information Manager--an application, such as Microsoft Outlook, that is used to manage contacts, keep track of phone numbers, etc.

PIN.........................Personal Identification Number, also referred to as a "passkey" or "password."

SE...........................Second Edition

Service Discovery . The process of determining the services that a Bluetooth server provides.

SysTray ....The Windows system tray-usually located in the lower-right corner of the screen.