Using a Bluetooth Headset

You can use a Bluetooth headset for audio communication when an audio enabled application is used. See Chapter 3, Using Bluetooth for information on connecting a Bluetooth device to the mobile computer. Ensure that the mobile computer's volume is set appropriately before putting the headset on. When a Bluetooth headset is connected the speaker is muted.

> **NOTE**   If the mobile computer goes into suspend mode the Bluetooth connection is disabled and the mobile computer automatically switches to speakerphone mode.

Data Capture

The mobile computer has an integrated scanner or imager that collects data by scanning bar codes.

Laser Scanning

To scan bar codes with the mobile computer:

1. Ensure that the mobile computer is loaded with a scanning application.

2. If the mobile computer is equipped with a rotating head, adjust the head prior to scanning.

3. Aim the scan window at the bar code.

4. Press the scan button or trigger. Ensure the red scan beam covers the entire bar code. The Scan LED Indicators illuminate red to indicate that the laser is on. The Scan LED Indicators illuminate green and a beep sounds to indicate a successful decode.

Figure 2-25   *Laser Aiming*

Optimal scanning distance varies with bar code density and scanner optics.

- Hold the scanner farther away for larger symbols.

- Move the scanner closer for symbols with bars that are close together.

> **NOTE**   Scanning procedures depend on the application and mobile computer configuration. An application may use different scanning procedures from the one listed above.

Scan LED Indicators

The red/green Scan LED Indicators (located in the Indicator LED Bar and in the rotating turret) indicates the scan status. For the location of the Scan LED Indicators see, .

Table 2-4   *Scan LED Indicators*

LED Status	Indication
Off	Not scanning.
Solid Red	Laser enabled, scanning in process.
Solid Green	Successful decode.

Scanning Considerations

Scanning consists of; aim, scan and decode. Scanning performance can be optimized by considering the range and the scanning angle:

- Range

  Any scanning device decodes well over a particular working range (minimum and maximum distances from the bar code). This range varies according to bar code density and scanning device optics.

  Scanning within range brings quick and constant decodes; scanning too close or too far away prevents decodes. Move the scanner closer and further away to find the right working range for the bar codes being scanned. However, the situation is complicated by the availability of various integrated scanning modules. The best way to specify the appropriate working range per bar code density is through a chart called a decode zone for each scan module. A decode zone simply plots working range as a function of minimum element widths of bar code symbols.
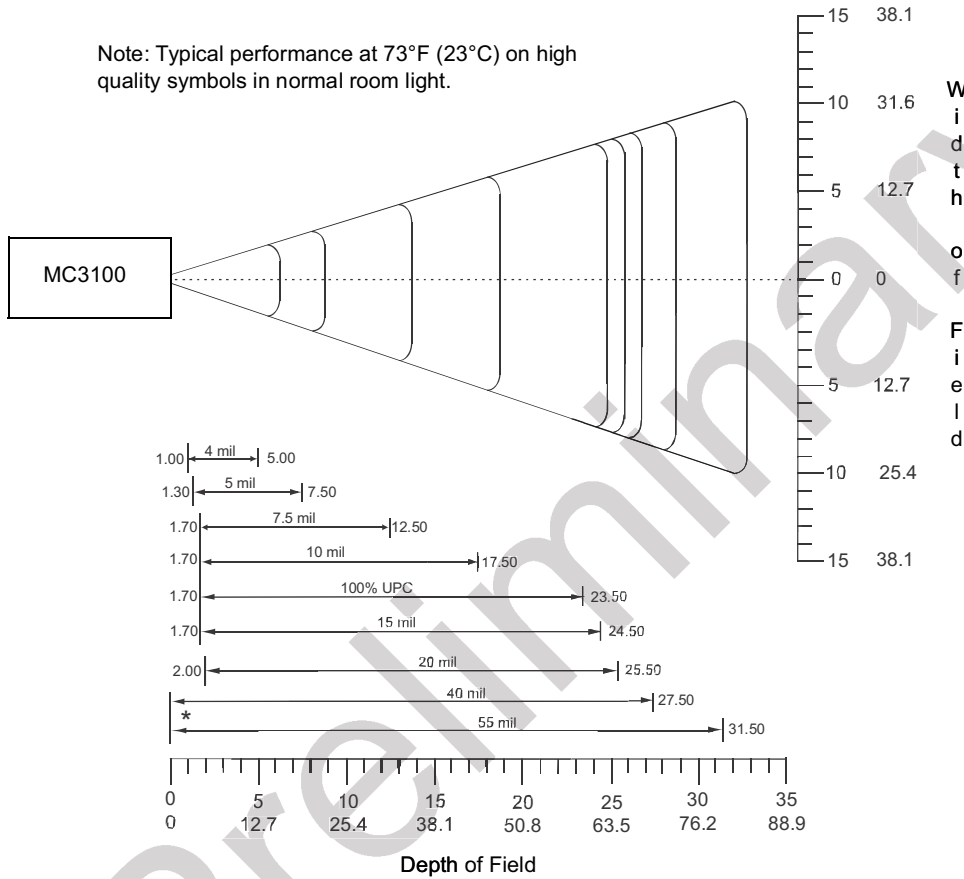
- Angle

  The scan angle is important for optimizing decode performance. When laser beams reflect directly back into the scanner from the bar code, this specular reflection can "blind" the scanner.

  To avoid this, scan the bar code so that the beam does not bounce directly back. But do not scan at too sharp an angle; the scanner needs to collect scattered reflections from the scan to make a successful decode. Practice quickly shows what tolerances to work within.

> **NOTE** Contact the Motorola Enterprise Mobility Support Center if chronic scanning difficulties develop. Decoding of properly printed bar codes should be quick and effortless.

Decode Zones

The decode zones for the laser scanners are shown in *Figure 2-26* and *Figure 2-27*. The figures shown are typical values. *Table 2-6* lists the typical distances for selected bar code densities. The minimum element width (or "symbol density") is the width in mils of the narrowest element (bar or space) in the symbol.

* Minimum distance determined by symbol length and scan angle.

Figure 2-26   *MC31XX Laser Scanner 35° Decode Zone*

Table 2-5 *Laser Scanner Decode Distances*

Symbol Density/ Bar Code Type/ W-N Ratio	Bar Code Content/ Contrast[Note 1]	35° Typical Working Ranges		47° Typical Working Ranges	
		Near	Far	Near	Far
4.0 mil Code 39; 2.5:1	ABCDEFGH 80% MRD	1.00 in 3.81 cm	5.00 in 13.97 cm	0.50 in 2.50 cm	5.00 in 13.97 cm
5.0 mil Code 39; 2.5:1	ABCDEFGH 80% MRD	1.30 in 4.57 cm	7.50 in 20.32 cm	0.75 in 3.18 cm	7.50 in 20.32 cm
7.5 mil Code 39; 2.5:1	ABCDEF 80% MRD	1.70 in 5.59 cm	12.50 in 33.02 cm	1.00 in 3.81 cm	12.50 in 33.02 cm
10 mil Code 39; 2.5:1	ABCDE 90% MRD	1.70 in 5.59 cm	17.50 in 45.72 cm	1.00 in 3.81 cm	17.50 in 45.72 cm
13 mil 100% UPC	12345678905 90% MRD	1.70 in 5.59 cm	23.50 in 60.96 cm	1.00 in 3.81 cm	23.50 in 60.96 cm
15 mil Code 39; 2.5:1	ABCD 80% MRD	1.70 in 5.59 cm	27.50 in 71.12 cm	1.00 in 3.81 cm	27.50 in 71.12 cm
20 mil Code 39; 2.2:1	123 80% MRD	2.00 in 6.35 cm	28.50 in 73.66 cm	1.25 in 4.45 cm	32.50 in 83.82 cm
40 mil Code 39; 2.2:1	AB 80% MRD	Note 4	32.50 in 83.82 cm	Note 4	35.50 in 91.44 cm
55 mil Code 39; 2.2:1	CD 80% MRD	Note 4	41.50 in 106.68 cm	Note 4	44.50 in 114.30 cm

Notes:
1. CONTRAST measured as Mean Reflective Difference (MRD) at 650 nm.
2. Near ranges on lower densities (not specified) are largely dependent upon the width of the bar code and the scan angle.
3. Working range specifications at ambient temperature (23°C), Photographic quality symbols. pitch=10°, roll=0°, skew=0°, ambient light < 150 ft.-candles.
4. Dependent on width of bar code.
5. Distances measured from front edge of device.

Imaging

MC31XX with an integrated imager have the following features:

- Omnidirectional (360°) reading of a variety of bar code symbologies, including the most popular linear, postal, PDF417, and 2D matrix code types.

- The ability to capture and download images to a host for a variety of imaging applications.

- Advanced intuitive laser aiming for easy point-and-shoot operation.

The imager uses digital camera technology to take a digital picture of a bar code, stores the resulting image in its memory, and executes state-of-the-art software decoding algorithms to extract the data from the image.

Operational Modes

MC31XX with an integrated imager support three modes of operation, listed below. Activate each mode pressing the **Scan** button.

- **Decode Mode**: In this mode, the MC31XX attempts to locate and decode enabled bar codes within its field of view. The imager remains in this mode as long as you hold the scan button, or until it decodes a bar code.

> *NOTE*   To enable Pick List Mode, download the Control Panel applet from the Support Central web site at http://www.motorola.com/enterprisemobility/support. Pick List can also be set in an application using a API command.

- **Pick List Mode**: This mode allows you to selectively decode a bar code when more than one bar code is in the MC31XX's field of view. To accomplish this, move the aiming crosshair center dot over the required bar code to decode only that bar code. This feature is ideal for pick lists containing multiple bar codes and manufacturing or transport labels containing more than one bar code type (either 1D or 2D).

- **Image Capture Mode**: Use this mode to capture an image within the MC31XX's field of view. This is useful for capturing signatures or images of items like damaged boxes.

Imager Scanning

1. Ensure that a scan-enabled application is loaded on the MC31XX.

2. Aim the exit window at the bar code.

3. Press the scan button.

   The red laser aiming pattern turns on to assist in aiming. Ensure the cross-hair is on top of the bar code.

   The Decode LED lights red to indicate that scanning is in process, then lights green and a beep sounds, by default, to indicate the bar code was decoded successfully. Note that when the MC31XX is in Pick List Mode, the imager does not decode the bar code until the crosshair center dot touches the bar code.
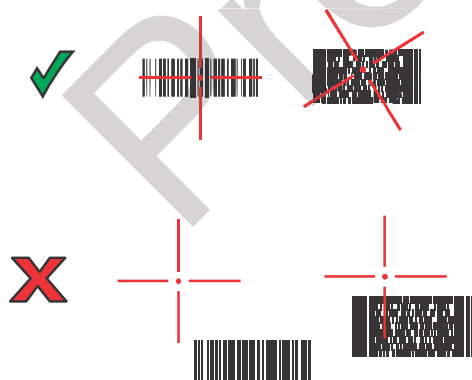

Figure 2-28   *Imager Aiming Pattern*

Figure 2-29 *Pick List Mode with Multiple Bar Codes*
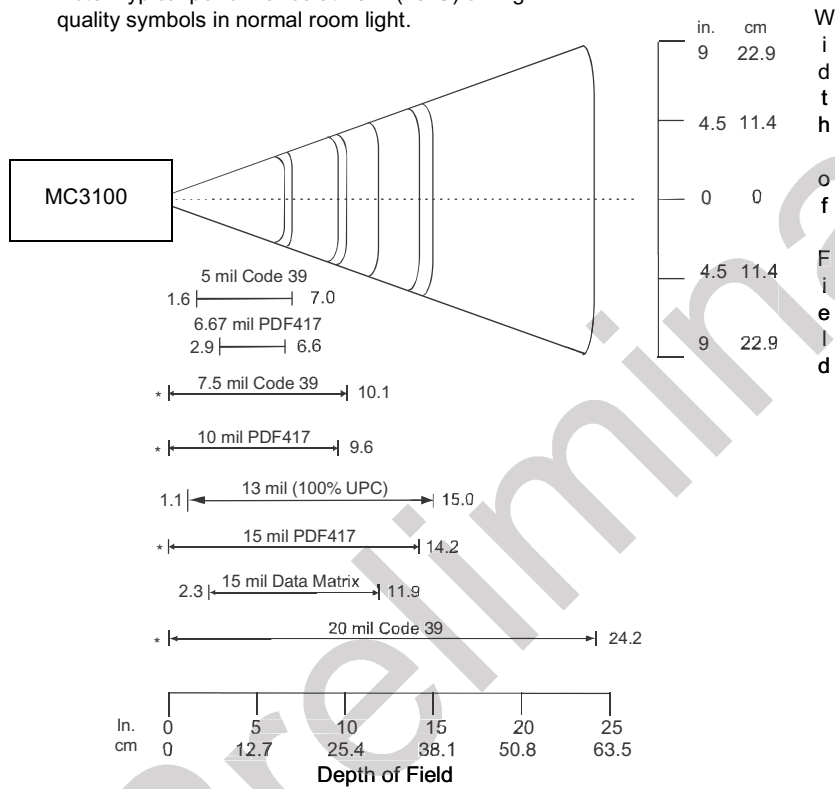
4. Release the scan button.

> **NOTE** Imager decoding usually occurs instantaneously. The MC31XX repeats the steps required to take a digital picture (image) of a poor or difficult bar code as long as the scan button remains pressed.

Imager Decode Ranges

The decode ranges provide the decode distances for bar codes of specified densities. *Figure 2-30* shows the imager decode ranges and *Table 2-6 on page 2-26* lists the scan ranges for the selected bar code densities. The minimum element width (or "symbol density") is the width in mils of the narrowest element (bar or space) in the symbol. The maximum usable length of a symbol at any given range is shown below.

Note: Typical performance at 73°F (23°C) on high quality symbols in normal room light.

	in.	cm
	9	22.9
	4.5	11.4
	0	0
	4.5	11.4
	9	22.9

MC3100

Width of Field

5 mil Code 39
1.6 — 7.0

6.67 mil PDF417
2.9 — 6.6

* — 7.5 mil Code 39 — 10.1

* — 10 mil PDF417 — 9.6

1.1 — 13 mil (100% UPC) — 15.0

* — 15 mil PDF417 — 14.2

2.3 — 15 mil Data Matrix — 11.9

* — 20 mil Code 39 — 24.2

In.	0	5	10	15	20	25
cm	0	12.7	25.4	38.1	50.8	63.5

Depth of Field

* Minimum distance determined by symbol length and scan angle.

Figure 2-30   *MC31XX Imager Decode Ranges*

Table 2-6 *MC31XX Imager Decode Distances*

Symbol Density/ Bar Code Type	Bar Code Content/ Contrast[Note 2]	Typical Working Ranges	
		Near	Far
5.0 mil Code 39	ABCDEFGH 80% MRD	1.6 in 4.06 cm	7.0 in 17.78 cm
6.67 mil PDF417	4 Col, 20 Rows 80% MRD	2.9 in 7.37 cm	6.6 in 16.76 cm
7.5 mil Code 39	ABCDEF 80% MRD	Note 1	10.1 in 25.65 cm
10 mil PDF417	3 Col, 17 Rows 80% MRD	Note 1	9.6 in 24.38 cm
13 mil UPC-A	012345678905 80% MRD	1.1 in 2.79 cm	15.0 in 38.10 cm
15 mil PDF417	80% MRD	Note 1	14.2 in 36.07 cm
15 mil Data Matrix	18 x 18 Modules 80% MRD	2.3 in 5.84 cm	11.9 in 30.23 cm
20 mil Code 39	123 80% MRD	Note 1	24.2 in 61.47 cm

Notes:
1. Near distances are field-of-view (FOV) limited.
2. Contrast is measured as Mean Reflective Difference (MRD) at 670 nm.
3. Working range specifications at temperature = 23°C, pitch=18°, roll=0°, skew=0°, photographic quality, ambient light ~30 ft.-c, humidity 45-70% RH.

Resetting the Mobile Computer

Windows CE Devices

If the mobile computer stops responding to input, reset it. There are two reset functions, warm boot and cold boot. A warm boot restarts the mobile computer by closing all running programs. All data that is not saved is lost.

A cold boot also restarts the mobile computer, but erases all stored records and entries from RAM. In addition it returns formats, preferences and other settings to the factory default settings.

Perform a warm boot first. If the mobile computer still does not respond, perform a cold boot.

Performing a Warm Boot

To perform a warm boot:

1. Press the **Power** button for five seconds.

2.   As the mobile computer initializes MC31XX **Sample Applications** window appears.

⚠ **CAUTION**   Files that remain open during a warm boot may not be retained.

Performing a Cold Boot

A cold boot restarts the mobile computer and erases all user stored records and entries from RAM. *Never perform a cold boot unless a warm boot does not solve the problem.*

⚠ **CAUTION**   Cold boot resets the mobile computer, to the default settings. All added applications and all stored data are removed. Do not cold boot without support desk approval.

To perform a cold boot:

1.   Simultaneously press and then release the **1**, **9** and **Power** keys. Do not hold down any other keys or buttons. As the mobile computer initializes, the splash window, *Figure 1-10 on page 1-10*, appears for about a minute.

2.   Calibrate the touch screen. See *Calibration Screen on page 1-10* to calibrate the mobile computer screen.

Windows Mobile 6.1 Devices

There are two reset functions, warm boot and cold boot.

•   A warm boot restarts the mobile computer and closes all running programs.

•   A cold boot also restarts the mobile computer and closes all running programs but also resets the Real-Time-Clock (RTC).

Data saved in flash memory or a memory card is not lost. Perform a warm boot first. This restarts the mobile computer and saves all *stored* records and entries. If the mobile computer still does not respond, perform a cold boot.

Performing a Warm Boot

To perform a warm boot:

1.   Press the **Power** button for five seconds.

2.   As the mobile computer initializes Today screen appears.

Performing a Cold Boot

A cold boot restarts the mobile computer. The operating system and all applications are restarted. File storage is preserved. The Real-Time-Clock (RTC) resets. *Only perform a cold boot if a warm boot does not solve the problem.*

1.   To perform a cold boot, simultaneously press and then release the **1**, **9** and **Power** keys. Do not hold down any other keys or buttons.

2.   As the mobile computer initializes, the splash window, *Figure 1-10 on page 1-10*, appears for about a minute.

Waking the Mobile Computer

The wakeup conditions define what actions wake up the mobile computer after it has gone into suspend mode. The mobile computer can go into suspend mode by either pressing the Power button or automatically by Control Panel time-out settings. These settings are configurable and the factory default settings are shown in *Table 2-7*.

Table 2-7   *Wakeup Default Settings*

Condition for Wakeup	Power Button	Automatic Time-out
AC power is applied.	No	Yes
Mobile computer is inserted into a cradle.	No	Yes
Mobile computer is removed from a cradle.	No	Yes
Mobile computer is connected to a serial device.	No	Yes
Mobile computer is connected to a USB device.	No	Yes
Mobile computer is disconnected from a USB device.	No	Yes
A key is pressed.	No	Yes
The scan triggered is pressed.	No	Yes
The screen is touched.	No	No
Bluetooth	Yes	Yes
On Motion	No	yes
USB Host	No	No
Wireless LAN activity is detected.	No	No

To access the Wakeup settings:

On Window CE 6.0 devices, tap **Start** > **Settings** > **Control Panel** > **Power** icon > **Wakeup** tab.

Figure 2-31   *Windows CE 6.0 Wakeup Tab*

On Windows Mobile 6.1 devices, tap **Start** > **Settings** > **System** tab > **Power** icon > **Wakeup** tab.

Figure 2-32   *Windows Mobile 6.1 Wakeup Tab*

Chapter 3 Using Bluetooth

Introduction

Bluetooth-equipped devices can communicate without wires, using frequency-hopping spread spectrum (FHSS) radio frequency (RF) to transmit and receive data in the 2.4 GHz Industry Scientific and Medical (ISM) band (802.15.1). Bluetooth wireless technology is specifically designed for short-range (30 feet/10 meters) communication and low power consumption.

MC31XXs with Bluetooth capabilities can exchange information (e.g., files, appointments, and tasks) with other Bluetooth enabled devices such as phones, printers, access points, and other mobile computers. To use the MC31XX as a modem, create a dial-up modem connection between a computer and MC31XX.

TheMC31XX with Bluetooth technology uses either the StoneStreet Bluetooth stack or the Microsoft Bluetooth stack. To write an application that uses the StoneStreet One Bluetooth stack APIs, refer to the Enterprise Mobility Developer Kit (EMDK) Help.

Adaptive Frequency Hopping

Adaptive Frequency Hopping (AFH) is a method of avoiding fixed frequency interferers, and can be used with Bluetooth voice. All devices in the piconet (Bluetooth network) must be AFH-capable in order for AFH to work. There is no AFH when connecting and discovering devices. Avoid making Bluetooth connections and discoveries during critical 802.11b communications. AFH for Bluetooth consists of four main sections:

- Channel Classification - A method of detecting an interference on a channel-by-channel basis, or pre-defined channel mask.

- Hop Sequence Modification - Avoids interference by selectively reducing the number of hopping channels.

- Channel Maintenance - A method for periodically re-evaluating the channels.

When AFH is enabled, the Bluetooth radio "hops around" (instead of through) the 802.11b high-rate channels. AFH coexistence allows Motorola mobile computers to operate in any infrastructure.

The Bluetooth radio in this MC31XX operates as a Class 2 device power class. The maximum output power is 2.5mW and the expected range is 32.8 feet (10 meters). A definition of ranges based on power class is difficult to obtain due to power and device differences, and whether one measures open space or closed office space.

> *NOTE* It is not recommended to perform Bluetooth wireless technology inquiry when high rate 802.11b operation is required.

Security

The current Bluetooth specification defines security at the link level. Application-level security is not specified. This allows application developers to define security mechanisms tailored to their specific need. Link-level security occurs between devices, not users, while application-level security can be implemented on a per-user basis. The Bluetooth specification defines security algorithms and procedures needed to authenticate devices, and if needed, encrypt the data flowing on the link between the devices. Device authentication is a mandatory feature of Bluetooth while link encryption is optional.

Pairing of Bluetooth devices is accomplished by creating an initialization key that is used to authenticate the devices and create a link key for them. Entering a common PIN number in the devices being paired generates the initialization key. The PIN number is never sent over the air. By default, the Bluetooth stack responds with no key when a key is requested (it is up to user to respond to the key request event). Authentication of Bluetooth devices is based-upon a challenge-response transaction. Bluetooth allows for a PIN number or passkey that is used to create other 128-bit keys used for security and encryption. The encryption key is derived from the link key used to authenticate the pairing devices. Also worthy of note is the limited range and fast frequency hopping of the Bluetooth radios that makes long-distance eavesdropping difficult.

Recommendations are:

- Perform pairing in a secure environment
- Keep PIN codes private and don't store the PIN codes in the mobile computer
- Implement application-level security.

The Microsoft stack supports Smart-pairing. For detailed information, refer to the Microsoft MSDN.

Bluetooth Configuration

By default, the MC31XX is configured to using the Microsoft stack. Refer to the MC31XX Integrator Guide, Appendix B, for information on switching between the Microsoft Bluetooth stack and the StoneStreet One Bluetooth stack.

If the MC31XX is configured to use the StoneStreet One Bluetooth stack, the Bluetooth icon appears at the bottom right corner of the Today screen. If the Microsoft Bluetooth stack is configured, the Bluetooth icon does not appear.

— Bluetooth Icon

Figure 3-1 *Bluetooth Icon*

Table 3-1 list the services supported by the StoneStreet One Bluetooth stack and the Microsoft Bluetooth stack.

Table 3-1 *Bluetooth Services*

Microsoft Bluetooth Stack	StoneStreet One Bluetooth Stack
OBEX Object Push Services	File Transfer Services
Hands-Free Audio Gateway Services	Dial-Up Networking Services
Serial Port Services	OBEX Object Push Services
Personal Area Networking Services	Headset Audio Gateway Services
PBAP Services	Hands-Free Audio Gateway Services
	Serial Port Services
	Personal Area Networking Services
	IrMC Services
	HID Client Services
	A2DP/AVRCP Services

Table 3-2 list the COM ports available for the StoneStreet One Bluetooth stack and the Microsoft Bluetooth stack.

Table 3-2 *COM Ports*

Microsoft Bluetooth Stack	StoneStreet One Bluetooth Stack
COM5	COM5
COM9	COM9
	COM11

Table 3-2   *COM Ports (Continued)*

Microsoft Bluetooth Stack	StoneStreet One Bluetooth Stack
	COM21
	COM22
	COM23

Bluetooth Power States

Cold Boot

Performing a cold boot on the MC31XX turns off Bluetooth after initialization (which takes a few moments). It is normal to see the **Bluetooth** icon appear and disappear, as well as a wait cursor, when initialization proceeds in all modes.

Warm Boot

Performing a warm boot on the MC31XX turns off Bluetooth.

Suspend

Suspending the MC31XX turns off Bluetooth.

> ✓ *NOTE* If there is an active Bluetooth connection between the MC31XX and another Bluetooth device, the MC31XX will not timeout. However, if the user presses the Power button on the MC31XX, the MC31XX will suspend and upon receiving data from a remote Bluetooth device, the MC31XX will wake from suspend mode. For example, Bluetooth scanner sending data to the MC31XX.

Resume

When the MC31XX resumes, Bluetooth turns on if it was on prior to suspend.

Using Microsoft Bluetooth Stack with Windows Mobile 6.1

The following sections provide information on using the Microsoft Bluetooth stack.

Turning the Bluetooth Radio Mode On and Off

Turn off the Bluetooth radio to save power or if entering an area with radio restrictions (e.g., an airplane). When the radio is off, other Bluetooth devices cannot see or connect to the MC31XX. Turn on the Bluetooth radio to exchange information with other Bluetooth devices (within range). Communicate only with Bluetooth radios in close proximity.

> **NOTE**   To achieve the best battery life turn off radios not in use.

Enabling Bluetooth

To enable Bluetooth:

1. Tap **Wireless Manager** and then tap the **Bluetooth** bar or

   Tap **Start** > **Setting** > **Connections** > **Bluetooth** icon > **Mode** tab.
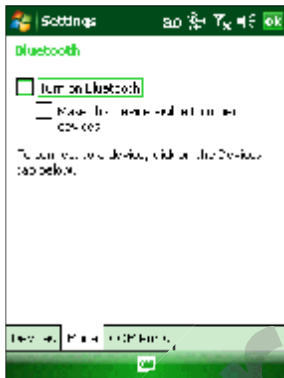

Figure 3-2 *Bluetooth Mode Tab*

2. Check the **Turn On Bluetooth** checkbox.

3. Tap **ok**.

Disabling Bluetooth

To disable Bluetooth:

1. Tap **Wireless Manager** and then tap the **Bluetooth** bar or

   Tap **Start** > **Setting** > **Connections** > **Bluetooth** icon > **Mode** tab.

2. Un-check the **Turn On Bluetooth** checkbox.

3. Tap **ok**.

Discovering Bluetooth Device(s)

The MC31XX can receive information from discovered devices without bonding. However, once bonded, the MC31XX and a bonded device exchange information automatically when you turn the Bluetooth radio on. See *Bonding with Discovered Device(s) on page 3-38* for more information.

To find Bluetooth devices in the area:

1. Ensure that Bluetooth is enabled on both devices.

2. Ensure that the Bluetooth device to discover is in discoverable and connectable modes.

3. Ensure that the two devices are within 30 feet (10 meters) of one another.

4. Tap **Start** > **Settings** > **Connections** tab > **Bluetooth** icon > **Devices** tab.

Figure 3-3   *Bluetooth - Devices Tab*

5. Tap **Add new device**. The MC31XX begins searching for discoverable Bluetooth devices in the area.

Figure 3-4   *Searching for Bluetooth Devices*

6. Select a device from the list.

Figure 3-5   *Select a Bluetooth Device*

7.   Tap **Next**. The **Enter Passcode** window appears.

> ✓   **NOTE**   If Smart-pairing is configured and the device is requesting one of the pre-defined PINs, the **Enter Passcode** window does not appear.

Figure 3-6   *Enter Passcode*

8.   Enter the Passcode on the other device. The device is added to the Bluetooth list.

Figure 3-7 *Bluetooth Connection Confirmation*

You are prompted to enter a passcode. If the device has a specific passcode, enter it in the Passcode field and tap Next. If the device does not have a specific passcode, enter one in the Passcode field and tap Next. The Bluetooth radio tries to connect with the device.

9. If you created a passcode, you will be prompted by the other device to enter the same passcode. Enter the created passcode to establish a paired connection. (If you entered a passcode from the device, you shouldn't have to do anything on the other device.)

10. When the connection is complete, a list of matching and supported services on the device appears.

11. Select the services you want to use and tap Finish. The services on the new devices have to be selected or else the pairing won't include those services, even though the devices are paired. If services are not selected, you will be continually reprompted for the passcode from the device.

12. The device appears in the list on the main window.

After the passcodes have been accepted on both sides, you have a trusted ("paired") connection.

Available Services

> **NOTE** Some devices might not require a PIN. This depends upon the device's authentication.

The MC31XX with Microsoft Bluetooth stack offers the following services:

- OBEX Object Push Services via Beam
- Hands-Free Audio Gateway Services
- Serial Port Services
- Personal Area Networking Services
- PBAP Services.

See the following sections for information on these services.

Object Push Services via Beam

> **NOTE** You can only send files to a remote device using the Beam function.

Use the OBEX Push Service to send files and contacts to another Bluetooth device. To transfer files between the MC31XX and another Bluetooth enabled device:

1. Ensure that Bluetooth is enabled and discoverable on both devices.

2. Ensure that the two devices are within 30 feet (10 meters) of one another.

3. Tap **Start** > **Programs** > **File Explorer.**

4. Navigate to the file to transfer.

5. Tap and hold on the filename until the pop-up menu appears.
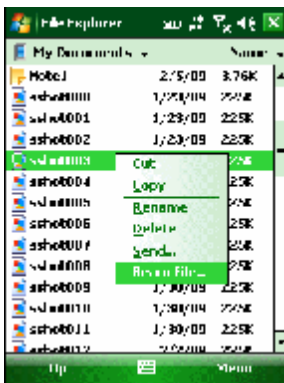

Figure 3-8   *File Explorer Window*

6. Select **Beam File**. The MC31XX searches for Bluetooth devices in the area.

7. Tap **Tap to send** next to the Bluetooth device to send the file to. The MC31XX communicates with the device and send the file. When completed, **Tap to send** changes to **Done**.

Figure 3-9   *Beam File Window*

To transfer a contact between the MC31XX and another Bluetooth enabled device:

1. Ensure that Bluetooth is enabled and discoverable on both devices.

2. Ensure that the two devices are within 30 feet (10 meters) of one another.

3. Tap **Start** > **Contacts**

4. Navigate to the contact to transfer.

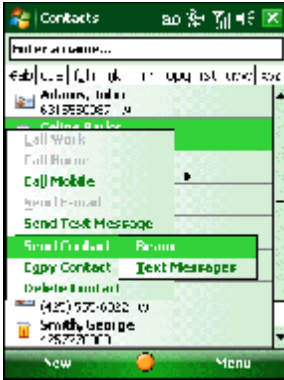5. Tap and hold on the contact until the pop-up menu appears.

Figure 3-10 *Contact Window*

6. Select **Send Contact** > **Beam**. The MC31XX searches for Bluetooth devices in the area.

7. Tap **Tap to send** next to the Bluetooth device to send the file to. The MC31XX communicates with the device and send the contact. When completed, **Tap to send** changes to **Done**.

Serial Port Services

Use the wireless Bluetooth serial port connection as you would a physical serial cable connection. Configure the application that will use the connection to the correct serial port.

To establish a serial port connection:

1. Ensure that Bluetooth is enabled and discoverable on both devices.

2. Ensure that the two devices are within 30 feet (10 meters) of one another.

3. Tap **Start** > **Settings** > **Connections** tab > **Bluetooth** icon > **Devices** tab.

4. Tap **Add new device**. The MC31XX begins searching for discoverable Bluetooth devices in the area.

5. Select a device from the list.

6. Tap **Next**. The **Enter Passcode** window appears.

    ✓   *NOTE*   If Smart-pairing is configured and the device is requesting one of the pre-defined PINs, the **Enter Passcode** window does not appear.

7. Enter the Passcode and the tap **Next**. The device is added to the Bluetooth list.

8. In the device list, tap the serial device. The **Partnership Settings** window displays.

9. Select the **Serial Port** checkbox.

10. Tap **Save**.

11. Tap **COM Ports** tab.

12. Tap **New Outgoing Port**. The add device window appears.

13. Select the serial device in the list and then tap **Next**.

14. Select a COM port from the drop-down list.

15. Tap **Finish**.

✓ *NOTE* No connection is made at this point. An application must open the selected COM port to trigger Microsoft Bluetooth stack to open the connection.

ActiveSync Using Serial Port Services

Use the wireless Bluetooth serial port connection for ActiveSync just as you would a physical serial cable connection. You must configure the application that will use the connection to the correct serial port.

To set up a Bluetooth ActiveSync connection:

Before setting up a Bluetooth ActiveSync connection, configure the Bluetooth function of your device.

✓ *NOTE* For additional security, disable network bridging on the computer (specifically, bridging to a Remote NDIS adapter) before connecting to the computer to pass though to the Internet or a network. For more information on network bridging, see **Windows Help** on your computer.

The instructions below are for computers that support the Windows XP SP2 or later version operating system.

1. Ensure that Bluetooth is enabled and discoverable on both devices.

2. Ensure that the two devices are within 30 feet (10 meters) of one another.

3. On the computer, click **Start** > **Settings** > **Control Panel**.

4. Double-click **Bluetooth Devices**.

5. On the **Options** tab, select the **Turn discovery on** and **Allow Bluetooth devices to connect to this computer** checkboxes.

Figure 3-11 *Computer Bluetooth Devices Window*

6. On the **COM Ports** tab, click **Add**.

7. Select the **Incoming (device initiates the connection)** option, then click **OK**.

Note the number of the COM port that was added.

8. Click **OK**.

9. Click **Start** > **All Programs** > **Microsoft ActiveSync**.
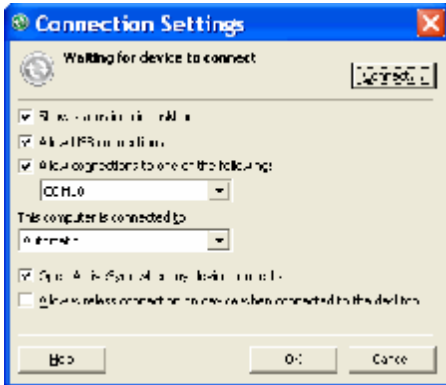
10. Click **File** > **Connection Settings**.

Figure 3-12 *ActiveSync Connection Settings*

11. On the **Allow connections to one of the following** drop-down list, select the COM port with the number you noted earlier.

12. On the MC31XX, tap **Start** > **Programs** > **ActiveSync**.

13. Tap **Menu** > **Connect via Bluetooth**.

Synchronization is automatically initiated. The **ActiveSync** icon appears on the lower right corner of the **Today** screen.

If an Authentication is required, the **Enter Passcode** screen appears, type an alphanumeric passkey (PIN code), then tap **Next**; enter the same passkey on the other device.

The passkey is recommended for enhanced security. Your passkey must be between 1 to 16 alphanumeric characters.

If you do not want to use a passkey, tap **Next**.

14. To disconnect the ActiveSync connection, tap the **ActiveSync** icon on the Today screen.

15. Tap **Disconnect**.

Phone Book Access Profile Services

Phone Book Access profile (PBAP) is used to synchronize contacts between a remote device and the MC31XX. To establish an PBAP synchronization:

1. Ensure that Bluetooth is enabled and discoverable on both devices.

2. Ensure that the two devices are within 30 feet (10 meters) of one another.

3. Tap **Start** > **Settings** > **Connection** tab > **Bluetooth** icon > **Devices** tab.

4. Tap **Add New Device**.The MC31XX searches for a Bluetooth device, such as a Car Kit.

5. Select a device from the list.

6. Tap **Next**. The **Enter Passcode** window appears.

   ✓ *NOTE* If Smart-pairing is configured and the device is requesting one of the pre-defined PINs, the **Enter Passcode** window does not appear.

7. Enter the Passcode and the tap **Next**. The device is added to the Bluetooth list.

8. A dialog box appears requesting if you want to transfer contacts to the car kit.

9. Select **Yes** or **No**.

10. If **Yes** is selected, contacts from the MC31XX are transferred to the car kit.

Using Microsoft Bluetooth Stack with Windows CE 6.0

The following sections provide information on using the Microsoft Bluetooth stack.

Turning the Bluetooth Radio Mode On and Off

Turn off the Bluetooth radio to save power or if entering an area with radio restrictions (e.g., an airplane). When the radio is off, other Bluetooth devices cannot see or connect to the MC31XX. Turn on the Bluetooth radio to exchange information with other Bluetooth devices (within range). Communicate only with Bluetooth radios in close proximity.

> **NOTE**   To achieve the best battery life turn off radios not in use.

Enabling Bluetooth

To enable Bluetooth:

1. Tap **Wireless Manager** and then tap the **Bluetooth** bar or

    Tap **Start** > **Setting** > **Connections** > **Bluetooth** icon > **Mode** tab.

Figure 3-13   *Bluetooth Mode Tab*

2. Check the **Turn On Bluetooth** checkbox.

3. Tap **ok**.

Disabling Bluetooth

To disable Bluetooth:

1. Tap **Wireless Manager** and then tap the **Bluetooth** bar or

    Tap **Start** > **Setting** > **Connections** > **Bluetooth** icon > **Mode** tab.

2. Un-check the **Turn On Bluetooth** checkbox.

3. Tap **ok**.

Discovering Bluetooth Device(s)

The MC31XX can receive information from discovered devices without bonding. However, once bonded, the MC31XX and a bonded device exchange information automatically when you turn the Bluetooth radio on. See *Bonding with Discovered Device(s) on page 3-38* for more information.

To find Bluetooth devices in the area:

1. Ensure that Bluetooth is enabled on both devices.

2. Ensure that the Bluetooth device to discover is in discoverable and connectable modes.

3. Ensure that the two devices are within 30 feet (10 meters) of one another.

4. Tap **Start** > **Settings** > **Control Panel** > **Bluetooth Device Properties** icon.

Figure 3-14 *Bluetooth Manager*

5. Tap **Scan Device**. The MC31XX begins searching for discoverable Bluetooth devices in the area.
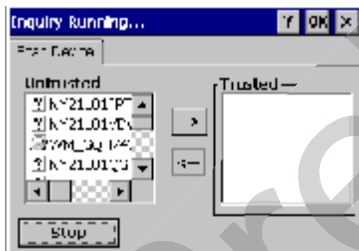

Figure 3-15 *Searching for Bluetooth Devices*

6. Select a device from the **Untrusted** list.

7. Tap **-->** button. A dialog box appears.

8. Tap **Yes**.

9. The **Bluetooth Enter PIN** window appears.

✓ *NOTE* If Smart-pairing is configured and the device is requesting one of the pre-defined PINs, the **Enter Passcode** window does not appear.

Figure 3-16 *Enter PIN*

10. Enter the PIN on the other device. The device is added to the **Trusted** list.

    You are prompted to enter a PIN. If the device has a specific PIN, enter it in the PIN field and tap Next. If the device does not have a specific passcode, enter one in the Passcode field and tap Next. The Bluetooth radio tries to connect with the device.

11. If you created a passcode, you will be prompted by the other device to enter the same passcode. Enter the created passcode to establish a paired connection. (If you entered a passcode from the device, you shouldn't have to do anything on the other device.)

12. When the connection is complete, a list of matching and supported services on the device appears.

13. Select the services you want to use and tap Finish. The services on the new devices have to be selected or else the pairing won't include those services, even though the devices are paired. If services are not selected, you will be continually reprompted for the passcode from the device.

14. The device appears in the list on the main window.

    After the passcodes have been accepted on both sides, you have a trusted ("paired") connection.

Available Services

> **NOTE** Some devices might not require a PIN. This depends upon the device's authentication.

The MC31XX with Microsoft Bluetooth stack offers the following services:

- OBEX Object Push Services via Beam
- Hands-Free Audio Gateway Services
- Serial Port Services
- Personal Area Networking Services
- PBAP Services.

See the following sections for information on these services.

Object Push Services via Beam

> **NOTE** You can only send files to a remote device using the Beam function.

Use the OBEX Push Service to send files and contacts to another Bluetooth device. To transfer files between the MC31XX and another Bluetooth enabled device:

1. Ensure that Bluetooth is enabled and discoverable on both devices.

2. Ensure that the two devices are within 30 feet (10 meters) of one another.

3. Tap **Start** > **Programs** > **File Explorer.**

4. Navigate to the file to transfer.

5. Tap and hold on the filename until the pop-up menu appears.
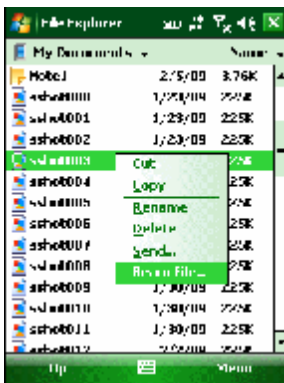

Figure 3-17   *File Explorer Window*

6. Select **Beam File**. The MC31XX searches for Bluetooth devices in the area.

7. Tap **Tap to send** next to the Bluetooth device to send the file to. The MC31XX communicates with the device and send the file. When completed, **Tap to send** changes to **Done**.

Figure 3-18   *Beam File Window*

To transfer a contact between the MC31XX and another Bluetooth enabled device:

1. Ensure that Bluetooth is enabled and discoverable on both devices.

2. Ensure that the two devices are within 30 feet (10 meters) of one another.

3. Tap **Start** > **Contacts**

4. Navigate to the contact to transfer.

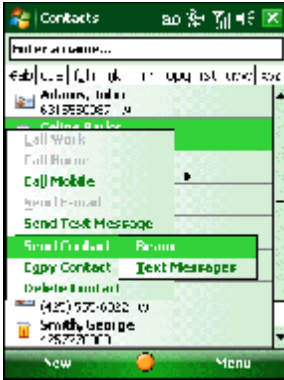5. Tap and hold on the contact until the pop-up menu appears.

Figure 3-19   *Contact Window*

6. Select **Send Contact** > **Beam**. The MC31XX searches for Bluetooth devices in the area.

7. Tap **Tap to send** next to the Bluetooth device to send the file to. The MC31XX communicates with the device and send the contact. When completed, **Tap to send** changes to **Done**.

Serial Port Services

Use the wireless Bluetooth serial port connection as you would a physical serial cable connection. Configure the application that will use the connection to the correct serial port.

To establish a serial port connection:

1. Ensure that Bluetooth is enabled and discoverable on both devices.

2. Ensure that the two devices are within 30 feet (10 meters) of one another.

3. Tap **Start** > **Settings** > **Connections** tab > **Bluetooth** icon > **Devices** tab.

4. Tap **Add new device**. The MC31XX begins searching for discoverable Bluetooth devices in the area.

5. Select a device from the list.

6. Tap **Next**. The **Enter Passcode** window appears.

    > **NOTE**   If Smart-pairing is configured and the device is requesting one of the pre-defined PINs, the **Enter Passcode** window does not appear.

7. Enter the Passcode and the tap **Next**. The device is added to the Bluetooth list.

8. In the device list, tap the serial device. The **Partnership Settings** window displays.

9. Select the **Serial Port** checkbox.

10. Tap **Save**.

11. Tap **COM Ports** tab.

12. Tap **New Outgoing Port**. The add device window appears.

13. Select the serial device in the list and then tap **Next**.

14. Select a COM port from the drop-down list.

15. Tap **Finish**.

✓ *NOTE* No connection is made at this point. An application must open the selected COM port to trigger Microsoft Bluetooth stack to open the connection.

ActiveSync Using Serial Port Services

Use the wireless Bluetooth serial port connection for ActiveSync just as you would a physical serial cable connection. You must configure the application that will use the connection to the correct serial port.
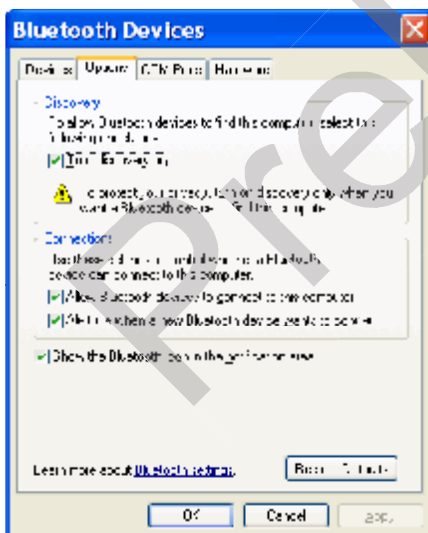
To set up a Bluetooth ActiveSync connection:

Before setting up a Bluetooth ActiveSync connection, configure the Bluetooth function of your device.

✓ *NOTE* For additional security, disable network bridging on the computer (specifically, bridging to a Remote NDIS adapter) before connecting to the computer to pass though to the Internet or a network. For more information on network bridging, see **Windows Help** on your computer.

The instructions below are for computers that support the Windows XP SP2 or later version operating system.

1. Ensure that Bluetooth is enabled and discoverable on both devices.

2. Ensure that the two devices are within 30 feet (10 meters) of one another.

3. On the computer, click **Start** > **Settings** > **Control Panel**.

4. Double-click **Bluetooth Devices**.

5. On the **Options** tab, select the **Turn discovery on** and **Allow Bluetooth devices to connect to this computer** checkboxes.
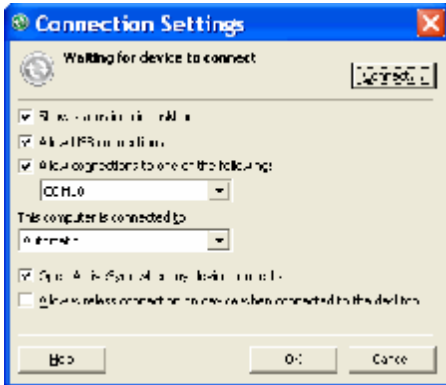

Figure 3-20 *Computer Bluetooth Devices Window*

6. On the **COM Ports** tab, click **Add**.

7. Select the **Incoming (device initiates the connection)** option, then click **OK**.

Note the number of the COM port that was added.

8. Click **OK**.

9. Click **Start** > **All Programs** > **Microsoft ActiveSync**.

10. Click **File** > **Connection Settings**.

Figure 3-21 *ActiveSync Connection Settings*

11. On the **Allow connections to one of the following** drop-down list, select the COM port with the number you noted earlier.

12. On the MC31XX, tap **Start** > **Programs** > **ActiveSync**.

13. Tap **Menu** > **Connect via Bluetooth**.

    Synchronization is automatically initiated. The **ActiveSync** icon appears on the lower right corner of the **Today** screen.

    If an Authentication is required, the **Enter Passcode** screen appears, type an alphanumeric passkey (PIN code), then tap **Next**; enter the same passkey on the other device.

    The passkey is recommended for enhanced security. Your passkey must be between 1 to 16 alphanumeric characters.

    If you do not want to use a passkey, tap **Next**.

14. To disconnect the ActiveSync connection, tap the **ActiveSync** icon on the Today screen.

15. Tap **Disconnect**.

Using Bluetooth StoneStreet One Bluetooth Stack

The following sections provide information on using the Stone Street One Bluetooth stack.

Turning the Bluetooth Radio Mode On and Off

Turn off the Bluetooth radio to save power or if entering an area with radio restrictions (e.g., an airplane). When the radio is off, other Bluetooth devices cannot see or connect to the MC31XX. Turn on the Bluetooth radio to exchange information with other Bluetooth devices (within range). Communicate only with Bluetooth radios in close proximity.

> **NOTE**   To achieve the best battery life turn off radios not in use.

Disabling Bluetooth

To disable Bluetooth, tap **Bluetooth** icon > **Disable Bluetooth**. The **Bluetooth** icon changes to indicate that Bluetooth is disabled.

Figure 3-22   *Disable Bluetooth*

Enabling Bluetooth

To enable Bluetooth, tap **Bluetooth** icon > **Enable Bluetooth**. The **Bluetooth** icon changes to indicate that Bluetooth is enabled.
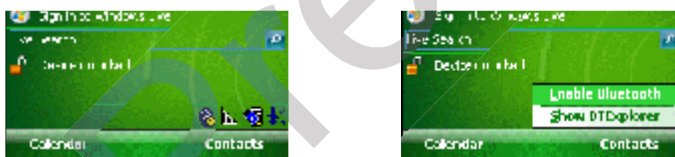

Figure 3-23   *Enable Bluetooth*

Modes

The BTExplorer application has two modes for managing Bluetooth connections: Wizard Mode and Explorer Mode. The Wizard Mode is for novice Bluetooth users and the Explorer Mode is for experienced Bluetooth users. To switch between modes, select **View** > **Wizard Mode** or **View** > **Explorer Mode**.

Wizard Mode

Wizard Mode provides a simple process for discovering and connecting to Bluetooth devices.

> **NOTE**   Switching between Wizard Mode and Explorer Mode closes all active connections.

Wizard Mode shows the devices and services in a simple Favorites view created by following the step-by-step wizard.

Explorer Mode

The **Explorer Mode** window is easy to navigate and provides greater control to users familiar with Bluetooth. The menu bar provides quick access to the options and tools used to connect to devices. To access Explorer Mode, tap **View** > **Explorer Mode**.

Figure 3-24   *Explorer Mode Window*

You can also use the "tap and hold" technique to view available options. Scroll bars and view options are similar to those on the Windows desktop. The tree structure lists the following sub-items:

- Local Device - This device

- Remote Device - Other Bluetooth devices
  - Trusted Devices - Bonded (paired) Bluetooth devices
  - Untrusted Devices - Discovered devices that are not bonded

- Favorites - Selected services that are set as *Favorite* for quick access.

> *NOTE*   Switching between Wizard Mode and Explorer Mode closes all active connections.

Discovering Bluetooth Device(s)

The MC31XX can receive information from discovered devices without bonding. However, once bonded, the MC31XX and a bonded device exchange information automatically when you turn the Bluetooth radio on. See *Bonding with Discovered Device(s) on page 3-38* for more information.

To find Bluetooth devices in the area:

1. Ensure that Bluetooth is enabled on both devices.

2. Ensure that the Bluetooth device to discover is in discoverable and connectable modes.

3. Ensure that the require profile is enabled on the MC31XX. See *Profiles Tab on page 3-51* for more information.

4. Ensure that the two devices are within 30 feet (10 meters) of one another.

5. Tap the **Bluetooth** icon and select **Show BTExplorer**. The **BTExplorer** window appears.

> ✓ **NOTE**   If favorite connections have already been created, the **Favorites** screen displays. If no favorite connections
> have been created, the **New Connection Wizard** screen displays.

6. Tap **Menu** > **New Connection**.The **New Connection Wizard** appears.
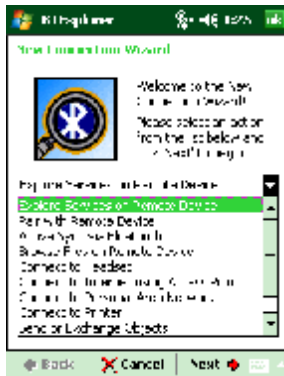

Figure 3-25   *BTExplorer Window*

7. Select **Explore Services on Remote Device** or another from the drop-down list and tap **Next**.

    The following actions are available in the drop-down list (actions may vary depending upon configurations):

    *   Explore Services on Remote Device

    *   Pair with a Remote Device

    *   Active Sync via Bluetooth

    *   Browse Files on Remote Device

    *   Connect to Headset

    *   Connect to Internet using Access Point

    *   Connect to Internet using Phone/Modem

    *   Connect to Personal Area Network

    *   Connect to Printer

    *   Send or Exchange Objects

    *   Associate Serial Port

    *   Connect to High-Quality Audio.

> ✓ **NOTE**   If a device discovery action has not been previously performed, a device discovery is automatically initiated. If
> a device discovery has previously been performed, the device discovery process is skipped, and the
> previously found list of devices displays. To start a new device discovery, tap and hold in the window and select
> **Discover Devices** from the pop-up menu.

8. **BTExplorer** searches for Bluetooth devices in the area.

Figure 3-26   *Discover Devices Dialog Box*

The discovered devices display in the **Select Remote Device** window.

Figure 3-27   *Select Remote Device Window*

9. Select a device from the list and tap **Next**. The MC31XX searches for services on the selected Bluetooth device.

Figure 3-28   *Device Services*

✓ **NOTE** If the MC31XX discovers a service but the service is not supported, the service icon is grayed-out.

10. Select a service from the list and press **Next**. The **Connection Favorite Options** window appears.

Figure 3-29 *Connection Favorite Options Window*

11. In the **Favorite Name** text box, enter a name for this service that will appear in the **Favorite** window.

12. Tap **Next**. The **Connection Summary** window appears.

13. Tap **Connect** to add the service to the **Favorite** window and connect to the service.

Figure 3-30 *Favorites Window*

Available Services

NOTE   Some devices might not require a PIN. This depends upon the device's authentication.

The MC31XX offers the following services:

- File Transfer Services
- Dial-Up Networking Services
- OBEX Object Push Services
- Headset Audio Gateway Services
- Hands-Free Audio Gateway Services
- Serial Port Services

- Personal Area Networking Services

- IrMC Services

- A2DP/AVRCP.

See the following sections for information on these services.

File Transfer Services

✓ **NOTE** Shared folders are a security risk.

To transfer files between the MC31XX and another Bluetooth enabled device:

1. MC31XXEnsure that OBEX File Transfer profile is enabled on the MC31XX. See *Profiles Tab on page 3-51* for more information.

✓ **NOTE** If favorite connections have already been created, the **Favorites** screen displays. If no favorite connections have been created, the **New Connection Wizard** screen displays.

2. Use the **Connection Wizard** to search for a Bluetooth device.

3. Select the device and tap **Next**. The **Select Remote Service** window appears.

4. Tap **Next**. The **Connection Favorite Options** window appears.

5. Tap **Next**. The **Connection Summary** window appears.

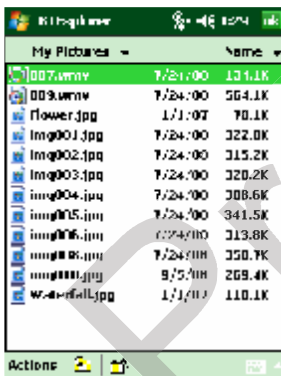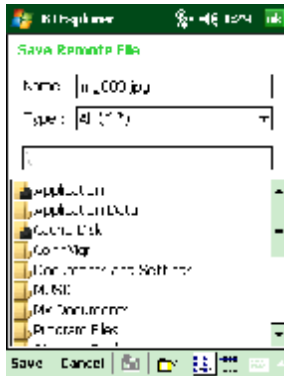6. Tap **Connect**. The remote device's accessible folders appear.

Figure 3-31   *File Transfer Window*

7. Double-tap the file to copy. The **Save Remote File** window appears.

Figure 3-32   *Save Remote File Window*

8. Tap and hold on the file. A pop-up menu appears.

9. Select the action to perform:

    • **New** - create a new file or folder on the remote device

    • **Delete** - delete the selected file on the remote device.

    • **Get File** - copy the file from the remote device to the MC31XX.

    • **Put File** - copy a file from the MC31XX to the remote device.

Creating a New File or Folder

To create a new folder or file on the remote device:

1. Tap and hold on the screen and select **New > Folder** or **New** > **File**. The **Create New Folder** or **Create New File** window appears.

2. Enter the name for the new folder or file.

3. Tap **OK** to create the new folder or file on the remote device.

Deleting a File

To delete a file from the remote device:

1. Tap and hold on the file to delete and select **Delete**.

2. In the **Delete Remote Device File** dialog box tap **Yes**.

Getting a File

To copy a file from a remote device:

1. Double-tap or tap and hold on the file and select **Get**. The **Save Remote File** window appears.

2. Navigate to the directory to save the file.

3. Tap **Save**. The file is transferred from the remote device to the MC31XX.

Copying a File

To copy a file to a remote device:

1. Tap **Action** > **Put**. The **Send Local File** window appears.

2. Navigate to the directory to save the file and select a file.

3. Tap **Open**. The file copies from the MC31XX to the remote device.

Connecting to the Internet Using an Access Point

This section explains how to access a Bluetooth-enabled LAN access point (AP) for a network connection. Use Internet Explorer to connect to a server.

1. Ensure the MC31XX is discoverable and connectable. See *Device Info Tab on page 3-40*.

2. Ensure that the **Personal Area Networking** profile is enabled on the MC31XX. See *Profiles Tab on page 3-51* for more information.

3. Use the **Connection Wizard** to search for a Bluetooth AP.

   ✓   *NOTE*   If favorite connections have already been created, the **Favorites** screen displays. If no favorite connections have been created, the **New Connection Wizard** screen displays.

4. Select the **Personal Area Network** or **Network Access** service and select **Connect** from the pop-up menu. The MC31XX connects with the access point.

5. Tap **Start** > **Internet Explorer**. The **Internet Explorer** window appears.

6. In the address field, enter an internet address and tap the **Enter** button. The web page loads.

   ✓   *NOTE*   Network Access profile is not supported.

Dial-Up Networking Services

Dial-up networking allows the user to connect a PC or laptop to the ~~MC95~~MC31XX and use the MC31XX as a modem to connect to an office network or ISP.

Before setting up dial-up networking, obtain dial-up information and other necessary settings (username, password and domain name, if required) for the office network or ISP. To create a new Bluetooth connection:

1. Ensure the MC31XX is discoverable and connectable. See *Device Info Tab on page 3-40*.

2. Ensure that the **Dial-Up Networking** profile is enabled on the MC31XX. See *Profiles Tab on page 3-51* for more information.

3. Tap **Menu** > **Settings** > **Services** tab.

4. Tap **Add** button.

5. Select **Dial-up networking Service**.

6. Tap **OK**. The **Edit Local Services** window appears.
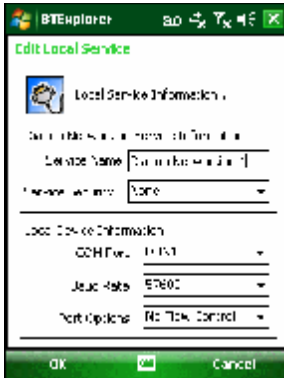
Figure 3-33 *Edit Local Service Window*

7. In the **Local COM Port** drop-down list, select **DUN1** for GSM configurations or **WMP9** for CDMA configurations.

8. Tap **OK** twice.

9. On the PC or laptop, set up Bluetooth according to the manufacturer's instructions.

10. On the PC or laptop Bluetooth software, search for the MC31XX and select the Dial-up Networking service.

11. Using dial-up software on the PC or laptop, connect to the MC31XX.

12. The MC31XX phone function dials the ISP number and connects to the ISP.

13. To verify, on the PC or laptop, launch Internet Explorer and open a web site.

Object Exchange Push Services

Object Exchange (OBEX) is a set of protocols that allows sharing objects such as Contacts or pictures using Bluetooth.

To exchange contact information with another Bluetooth enabled device:

1. Ensure the MC31XX is discoverable and connectable. See *Device Info Tab on page 3-40*.

2. Ensure that the **OBEX Object Push** profile is enabled on the MC31XX. See *Profiles Tab on page 3-51* for more information.

> **NOTE** If favorite connections have already been created, the **Favorites** screen displays. If no favorite connections have been created, the **New Connection Wizard** screen displays.

3. Use the **Connection Wizard** to search for a Bluetooth device.

4. Select the device and tap **Next**.

5. Select the **OBEX Object Push** service and select **Connect**. The **OBEX Object Push** window appears.

6. In the **Action** drop-down list, select one of the following options: **Send Contact Information**, **Swap Contact Information**, **Fetch Contact Information**, or **Send a Picture**.

Sending a Contact

To send a contact to another device:

> **NOTE** Prior to sending and receiving contacts, a default contact must be set up before attempting to send a contact.

1. Tap and hold on **OBEX Object Push** and select **Connect**. The **OBEX Object Push** window appears.

Figure 3-34 *OBEX Object Push Window*

2. In the **Action:** drop-down list, select **Send Contact Information**.

3. Tap ⋯ . The **Select Contact Entry** window appears.

Figure 3-35 *Select Contact Entry Window*

4. Select a contact to send to the other device.

5. Tap **OK**.

6. Tap **OK** to send the contact to the other device and display a confirmation dialog box on the other device to accept the contact. A **Send Contact** dialog appears.

7. Tap **Ok**.

Swapping Contacts

To swap contacts with another device:

> **NOTE** Prior to swapping contacts, a default contact must be set up before attempting to send a contact.
>
> Ensure that the ~~MC95~~MC31XX is connectable.

1. Tap and hold on **OBEX Object Push** and select **Connect**. The **OBEX Object Push** window appears.

Figure 3-36   *OBEX Object Push Window*

2. In the **Action:** drop-down list, select **Swap Contact Information**.

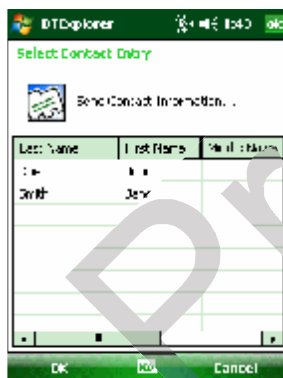3. Tap [...] . The **Select Contact Entry** window appears.

Figure 3-37   *Select Contact Entry Window*

4. Select a contact to send to the other device.

5. Tap **OK**.

6. Tap **OK** to swap contacts with the other device and display a confirmation dialog box on the other device to accept the contact.

7. Tap **Ok**.

Fetching a Contact

To fetch a contact from another device:

> **NOTE**   Prior to sending and receiving contacts, a default contact must be set up before attempting to send a contact.
>
> Ensure that the ~~MC95~~MC31XX is connectable.

1.   Tap and hold on **OBEX Object Push** and select **Connect**. The **OBEX Object Push** window appears.

Figure 3-38   *OBEX Object Push Window*

2.   In the **Action:** drop-down list, select **Fetch Contact information**.

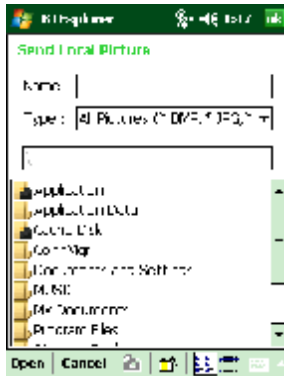3.   Tap **OK**. The contact on the other device is copied.

Sending a Picture

To send a picture to another device:

1.   Tap and hold on **OBEX Object Push** and select **Connect**. The **OBEX Object Push** window appears.

Figure 3-39   *OBEX Object Push Window*

2.   In the **Action:** drop-down list, select **Send A Picture**.

3.   Tap ⊡ . The **Send Local Picture** window appears.

Figure 3-40   *Send Local Picture Window*

4. Navigate to the picture to send to the other device.

5. Tap **Open**.

6. Tap **OK** to send the picture to the other device and display a confirmation dialog box on the other device to accept the picture. A **Send Picture** dialog appears.

7. Tap **Ok**.

Headset Services

To connect to a Bluetooth headset:

> *NOTE* Newer Bluetooth headsets are device dependant and remember the last device they connected to. If problems occur while connecting to the headset, place the headset in discovery mode. Refer to the headset user manual for more information.

1. Ensure the MC31XX is connectable (required when automatic re-connect is initiated). See *Device Info Tab on page 3-40*.

2. Ensure that the **Headset** profile is enabled on the MC31XX. See *Profiles Tab on page 3-51* for more information.

3. Use the **Connection Wizard** to search for a Bluetooth headset.

4. Select the device and tap **Next**.

5. Select the **Headset** service name and select **Connect**. The MC31XX connects to the headset. Refer to the headset user manual for instructions on communicating with a Bluetooth device.

> *NOTE* When using a Bluetooth headset with Headset Services, you cannot accept or end a call from the headset. You must accept or end a call on the MC31XX.

6. Press the communication button on the headset. This routes both system and WAN call audio to the headset.

7. When a call is received on the MC31XX, tap the **Accept** button to answer the call.

8. Press the communication button on the headset to route the audio back to the MC31XX.

Hands-free Services

To connect to a Bluetooth headset:

> *NOTE*   Newer Bluetooth headsets are device dependant and remember the last device they connected to. If problems occur while connecting to the headset, place the headset in discovery mode. Refer to the headset user manual for more information.
>
> Only WAN audio is routed to the headset. System audio is still emitted through the MC31XX speaker.
>
> You can accept calls and re-dial using the Hands-free profile.
>
> Hands-free profile does not support 3-way calling.

1. Ensure the MC31XX is connectable (required when automatic re-connect is initiated). See *Device Info Tab on page 3-40*.

2. Ensure that the **Hands Free** profile is enabled on the MC31XX. See *Profiles Tab on page 3-51* for more information.

3. Use the **Connection Wizard** to search for a Bluetooth hands-free headset.

4. Select the hand-free device and tap **Next**.

5. Select the **Hands-free** service name and select **Connect**. The MC31XX connects to the headset. Refer to the headset user manual for instructions on communicating with a Bluetooth device.

6. During an active connection, the MC31XX cannot go into suspend mode when the Power Button is pressed. A message appears notifying the user.

   Once the WAN call is disconnected (with Hands-free profile) the Power button is enabled.

Figure 3-41   *WWAN Bluetooth Audio Notification Dialog Box*

Serial Port Services

Use the wireless Bluetooth serial port connection as you would a physical serial cable connection. Configure the application that will use the connection to the correct serial port.

To establish a serial port connection:

1. MC31XXUse the **Connection Wizard** to search for a Bluetooth serial device.

2. Select the device and tap **Next**. The **Connection Favorite Options** window appears.

3. In the **Local COM Port:** drop-down list select a COM port.

4. Tap **Finish**.

ActiveSync Using Serial Port Services

✓ **NOTE** By default, COM ports COM5, COM9, COM11, COM21, COM22 and COM23 are Bluetooth virtual ports. If an application opens one of these ports, the Bluetooth driver activates and guides you through a Bluetooth connection.

Use the wireless Bluetooth serial port connection for ActiveSync just as you would a physical serial cable connection. You must configure the application that will use the connection to the correct serial port.
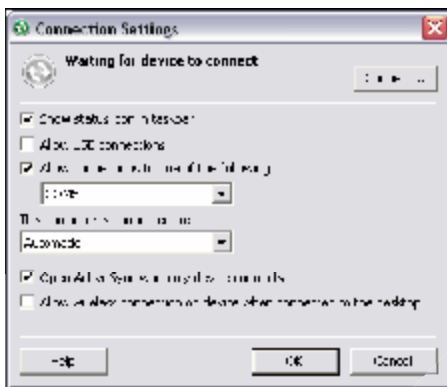

Figure 3-42   *ActiveSync Connection Settings Window on PC*

To establish an ActiveSync connection:

1. MC31XXEnsure that the **Sync** profile is enabled on the MC31XX. See *Profiles Tab on page 3-51* for more information.

2. Use the **Connection Wizard** to search for a Bluetooth device, such as a PC. In the drop-down list select **ActiveSync via Bluetooth**.

3. Select the device and tap **Next**. The **Connection Favorite Options** window appears.

4. Tap **Connect**. The **Remote Service Connection** window appears.

Figure 3-43   *Remote Service Connection Window*

5. In the **Service Type** drop-down list, select **Active Sync**.

6. Tap **OK**. The MC31XX connects the PC and an ActiveSync session begins.

7. Tap **Finish**. The Connection Favorite Options window appears.

8. To end the session, tap the ActiveSync icon in the **Favorite** window and select **Disconnect** from the pop-up window.

Personal Area Network Services

> **NOTE**   This profile supports Ad-hoc and PAN User. Network Access Profile is not supported.

Connect two or more Bluetooth devices to share files, collaborate, or play multi-player games. To establish a Personal Area Network connection:

1. ~~MC95~~MC31XXEnsure that the **Personal Area Networking** profile is enabled on the MC31XX. See *Profiles Tab on page 3-51* for more information.

2. Use the **Connection Wizard** to search for a Bluetooth device.

3. Select the device and tap **Next**. The **Connection Favorite Options** window appears.

4. Tap **Next**. The **Connection Summary** window appears.

5. Tap **Connect**. The MC31XX connects to the Bluetooth device.

IrMC Synchronization Services

IrMC Synchronization is used to synchronize PIM contacts between a remote device and the MC31XX. To establish an IrMC synchronization:

1. Ensure the MC31XX is connectable (required when automatic re-connect is initiated). See *Device Info Tab on page 3-40*.

2. Ensure that the **Sync** profile is enabled on the MC31XX. See *Profiles Tab on page 3-51* for more information.

3. Tap **Menu > Settings > Services** tab.

4. Tap **Add** button.

5. Select **IrMC Synchronization**.

6. Tap **OK**. The **Edit Local Services** window appears.

7. Tap **OK** twice.

8. Use the **Connection Wizard** to search for a Bluetooth device, such as a Car Kit.

9. Select the device and tap **Next**. The **Connection Favorite Options** window appears.

10. Tap and hold **IrMA Synchronization** and select **Connect** in the pop-up menu.

> **NOTE**   To automatically transfer contact with a Car Kit, ensure that the IrMC Synchronization service is enabled on the ~~MC95~~MC31XX.

A2DP/AVRCP Services

A2DP/AVRCP is used to connect to a high-quality stereo headset:

1. Ensure the ~~MC05~~MC31XX is connectable (required when automatic re-connect is initiated). See *Device Info Tab on page 3-40*.

2. Ensure that the remote Bluetooth device is in discoverable mode. See the devices user manual for instructions.

3. Ensure that the **A2DP/AVRCP** profile is enabled on the MC31XX. See *Profiles Tab on page 3-51* for more information.

4. Tap **Menu** > **Settings** > **Services** tab.

5. Tap **Add** button.

6. Select **Advanced Audio Distribution Services**.

7. Tap **OK**. The **Edit Local Services** window appears.

8. Tap **OK** twice.

9. Tap Menu > New Connection.

10. Select **Connect to High-Quality Audio** from the drop-down list.

11. Tap **Next**.

12. Select the device and tap **Next**.

13. Enter the PIN Code for the remote device and then tap **OK**. The **Connection Favorite Options** window appears.

14. Tap **Next**.

15. Tap **Connect**. The MC31XX connects to the high-quality audio headset.

For stereo headsets that can use hands-free services, connect to the hands-free service after connecting to the A2DP service:

1. Tap **Menu** > **New Connection**.

2. Select **Connect to Headset** from the drop-down list.

3. Tap **Next**.

4. Select the stereo headset and tap **Next**.

5. Select the **Hands-Free unit** service and then tap **Next**.

6. Tap **Next**.

7. Tap **Connect**.

Connect to a HID Device

The MC31XX can connect to an Human Interface Device (HID) device such as a Bluetooth keyboard:

1. Ensure the MC31XX is connectable (required when automatic re-connect is initiated). See *Device Info Tab on page 3-40*.

2. Ensure that the remote Bluetooth device is in discoverable mode. See the device user manual for instructions.

3. Ensure that the **HID Client** profile is enabled on the MC31XX. See *Profiles Tab on page 3-51* for more information.

4. Tap **Menu** > **New Connection**.

5. Select **Explore Services on Remote Device** from the drop-down list.

6. Tap **Next**.

7. Select the device and tap **Next**.

8. Select the service and tap **Next**.

9. The **Connection Favorite Options** window appears.

10. Tap **Next**.

11. Tap **Connect**. The MC31XX connects to the HID device.

Bonding with Discovered Device(s)

A bond is a relationship created between the MC31XX and another Bluetooth device in order to exchange information in a secure manner. Creating a bond involves entering the same PIN on the two devices. After creating a bond and turning on the Bluetooth radios, the devices recognize the bond and can exchange information without re-entering a PIN.

To bond with a discovered Bluetooth device:

> ✓ *NOTE* If favorite connections have already been created, the **Favorites** screen displays. If no favorite connections have been created, the **New Connection Wizard** screen displays.

1. Tap the **Bluetooth** icon and select **Show BTExplorer**. The **BTExplorer** window appears.

2. Tap **Menu** > **New Connection**. The **New Connection Wizard** window appears.

3. In the drop-down list, select **Pair with Remote Device**.

4. Tap **Next**. The **Select Remote Device** window appears.

> ✓ *NOTE* Devices discovered previously are listed to save time. To start a new device discovery, tap and hold on the list area and select **Discover Devices** from the pop-up menu.

Figure 3-44 *Select Remote Device Window*

5. Select a device from the list and tap **Next**. The **PIN Code Request** window appears.

Figure 3-**45**   *Connection Favorite Options Window*

6.   In the **PIN Code** field, enter the PIN code.

7.   Tap **OK**. The **Pairing Status** window displays.

Figure 3-**46**   *Pairing Status Window*

8.   Tap **Finish**. The devices are successfully paired. The device name moves to the **Trusted Devices** window.

Deleting a Bonded Device

To delete a device no longer needed:

1.   Tap the **Bluetooth** icon and select **Show BTExplorer**. The **BTExplorer** window appears.

2.   Tap **Menu** > **Trusted Devices**. The **Trusted Devices** window appears.

3.   Tap and hold on the device select **Delete Link Key** in the pop-up menu.

4.   A confirmation dialog appears. Tap **Yes**.

Accepting a Bond

When a remote device wants to bond with the MC31XX, enter a PIN when requested to grant permission.

1.   Ensure that the MC31XX is set to discoverable and connectable. See *Bluetooth Settings on page 3-40*. When prompted to bond with the remote device the **PIN Code Request** window appears.

Figure 3-47 *PIN Code Request Window*

2. In the **PIN Code:** text box, enter the same PIN entered on the device requesting the bond. The PIN must be between 1 and 16 characters.

3. In the **Device Name:** text box, edit the name of the device requesting the bond, if desired.

4. Tap **OK** to create the bond. The MC31XX can now exchange information with the other device.

Bluetooth Settings

Use the **BTExplorer Settings** window to configure the operation of the **BTExplorer** application. Tap **Menu** > **Settings**. The **BTExplorer Settings** window appears.

Device Info Tab

Use the **Device Info** tab to configure the MC31XX's Bluetooth connection modes.

Figure 3-48 *BTExplorer Settings - Device Info Tab*

Table 3-3 *Device Info Tab Data*

Item	Description
Device Name	Displays the name of the MC31XX.
Discoverable Mode	Select whether or not the MC31XX is discoverable by other Bluetooth devices.
Connectable Mode	Select whether or not the MC31XX is connectable by other Bluetooth devices.

Services Tab

NOTE   Ensure that the MC31XX is discoverable and connectable when remote devices use MC31XX services.

Use the **Services** tab to add or delete Bluetooth services.

Figure 3-49   *BTExplorer Settings - Services Tab*

To add a service:

1.   Tap **Add**. The **Add Local Service** window displays.

Figure 3-50   *Add Local Service Window*

2.   In the list, select a service to add.

3.   Tap **OK**. The **Edit Local Service** window displays for the selected service.

4.   Select the appropriate information and then tap **OK**. See the following sections for information on the available services.

Dial-Up Networking Service

Dial-up Networking allows other Bluetooth devices to access a dial-up modem.
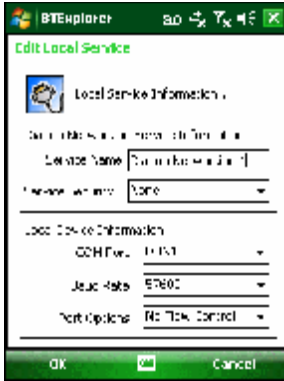
Figure 3-51   *BTExplorer Settings - Dial-up Networking Information*

Table 3-4   *Dial-up Networking Information Data*

Item	Description
Service Name	Displays the name of the service.
Service Security	Select the type of security from the drop-down list. Options are **None**, **Authenticate**, or **Authenticate/Encrypt**.
Local COM Port	Select the COM port.
Local Baud Rate	Select the communication baud rate.
Local Port Options	Select the port option.

File Transfer Service

File transfer allows other Bluetooth devices to browse files.
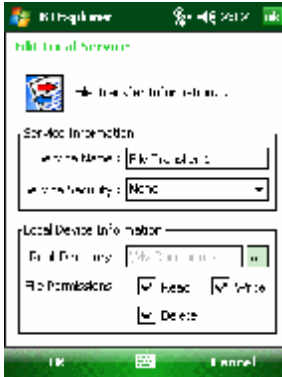
Figure 3-52   *BTExplorer Settings - File Transfer Information*

Table 3-5   *File Transfer Information Data*

Item	Description
Service Name	Displays the name of the service.
Service Security	Select the type of security from the drop-down list. Options are **None**, **Authenticate**, or **Authenticate/Encrypt**.
Root Directory	Select the directory that other Bluetooth devices can access.
File Permissions	Select the file permissions for the selected directory. Check the appropriate box to grant read access, write access, and delete access.

Hands-Free Audio Gateway Service

Hands-Free Service Audio Gateway allows connection to hands-free devices.

Figure 3-53   *BTExplorer Settings - Hands-Free Audio Gateway*

Table 3-6   *Hands-Free Audio Gateway Data*

item	Description
Service Name	Lists the name of the audio service.

Headset Audio Gateway Service

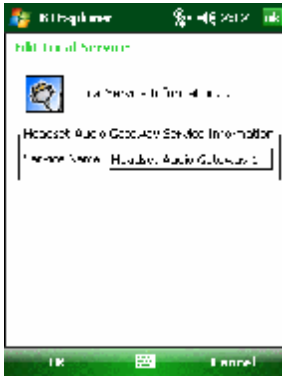Headset Service Audio Gateway allows connection to headset devices.

Figure 3-54   *BTExplorer Settings - Headset Audio Gateway*

Table 3-7   *Headset Audio Gateway Data*

Item	Description
Service Name	Lists the name of the audio service.

IrMC Synchronization Service

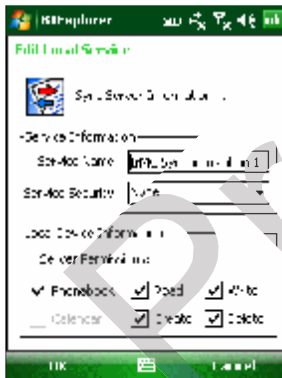The IrMC Synchronization service used to synchronize PIM contacts between a remote device and the MC31XX.

Figure 3-55   *BTExplorer Settings - IrMC Synchronization*

Table 3-8 *IrMC Synchronization Data*

Item	Description
Service Name	Displays the name of the service.
Service Security	Select the type of security from the drop-down list. Options are **None**, **Authenticate**, or **Authenticate/Encrypt**.
Phonebook	Select the **Phonebook** checkbox to allow synchronization with the MC31XX's contacts.
	Select **Read**, **Write**, **Create** and/or **Delete** to allow phonebook permissions.

OBEX Object Push Service

OBEX Object Push allows other Bluetooth devices to push contacts, business cards, pictures, appointments, and tasks to the MC31XX.
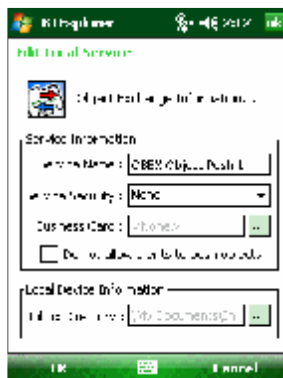
Figure 3-56 *BTExplorer Settings - OBEX Exchange Information*

Table 3-9 *OBEX Exchange Information Data*

Item	Description
Service Name	Displays the name of the service.
Service Security	Select the type of security from the drop-down list. Options are **None**, **Authenticate**, or **Authenticate/Encrypt**.
Do not allow clients to push objects	Disables clients from pushing objects to the MC31XX.
Inbox Directory	Select a directory where another Bluetooth device can store files.

Personal Area Networking Service

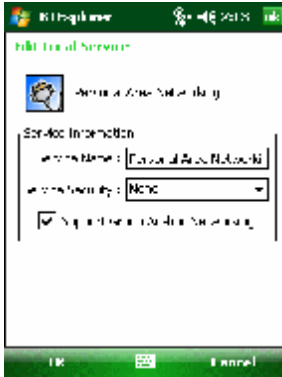Personal Area Networking hosts a Personal Area Network which allows communication with other Bluetooth devices.

Figure 3-57   *BTExplorer Settings - Personal Area Networking*

Table 3-10   *Personal Area Networking Data*

Item	Description
Service Name	Displays the name of the service.
Service Security	Select the type of security from the drop-down list. Options are **None**, **Authenticate**, or **Authenticate/Encrypt**.
Support Group Ad-Hoc Networking	Select to enable Ad-Hoc networking.

Serial Port Service

Serial port allows other Bluetooth devices to access COM ports.

Figure 3-58   *BTExplorer Settings - Serial Port Services*

Table 3-11   *Serial Port Services Data*

Item	Description
Service Name	Displays the name of the service.
Service Security	Select the type of security from the drop-down list. Options are **None**, **Authenticate**, or **Authenticate/Encrypt**.
Local COM Port	Select the COM port.
Local Baud Rate	Select the communication baud rate.
Local Port Options	Select the port option.

Advanced Audio Distribution Service

Advanced Audio Distribution hosts connects from Bluetooth devices supporting high-quality stereo audio.

Figure 3-59   *BTExplorer Settings - Advanced Audio Distribution*

Table 3-12   *Advanced Audio Distribution Data*

Item	Description
Service Name	Lists the name of the audio service.

Audio Video Remote Control Service

Audio Video Remote Control hosts connections from Bluetooth devices supporting audio remote-control functionality.

Figure 3-60   *BTExplorer Settings - Audio Video Remote Control*

Table 3-13   *Audio Video Remote Control Data*

Item	Description
Service Name	Lists the name of the audio service.

Security Tab

Security settings allows you to set global security policies for Bluetooth. Note that these settings are only active on local Services that are set to Authenticate or Authenticate/Encryption. You can set authentication on local Services under the Services tab.

To adjust the security settings for an individual service, select the **Services** tab first, then select the individual service, then **Properties**.

Figure 3-61   *BTExplorer Settings - Security Tab*

✓   ***NOTE***   To use PIN Code, select **Authenticate** or **Authenticate/Encrypt** from the Service Security drop-down list on each local service.

Table 3-14   *Security Tab Data*

Item	Description
Use PIN Code (Incoming Connection)	Select for automatic use of the PIN code entered in the **PIN Code** text box. It is recommended not to use this automatic PIN code feature. See *Security on page 3-2* for more information.
PIN Code	Enter the PIN code.
Encrypt Link On All Outgoing Connections	Select to enable or disable encryption on all outgoing connections to other Bluetooth devices.

Discovery Tab

Use the **Discovery** tab to set and modify discovered devices.

Figure 3-62   *BTExplorer Settings - Discovery Tab*

Table 3-15   *Discovery Tab Data*

Item	Description
Inquiry Length	Sets the amount of time the MC31XX takes to discover Bluetooth devices in the area.
Name Discovery Mode	Select either **Automatic** or **Manual** to automatically attempt to discover a Bluetooth device's name after finding the device.
Discovered Devices - Delete Devices	Deletes all discovered devices and link keys from memory.
Discovered Devices - Delete Linked Keys	Removes all pairing from remote Bluetooth devices, and makes them all un-trusted.

Virtual COM Port Tab

Virtual COM Port defines which COM ports BTExplorer attempts to use for virtual COM ports. Check the appropriate checkbox to use the port as a virtual COM port. When finished, choose **Apply** to enforce changes, or **Revert** to restore the original settings.

Figure 3-63   *BTExplorer Settings - Virtual COM Port Tab*

Table 3-16   *Virtual COM Port Tab Data*

Item	Description
COM5:Bluetooth	Enable or disable COM Port 5.
COM9:Bluetooth	Enable or disable COM Port 9.
COM11:Bluetooth	Enable or disable COM Port 11.
COM21:Bluetooth	Enable or disable COM Port 21.
COM22:Bluetooth	Enable or disable COM Port 22.
COM23:Bluetooth	Enable or disable COM Port 23.

HID Tab

Use the **HID** tab to select The Human Interface Device Profile programming interface defines the protocols and procedures to be used to implement HID capabilities.

Provides support for devices such as mice, joysticks, keyboards.

Figure 3-64   *BTExplorer Settings - HID Tab*

Table 3-17   *HID Tab Data*

Item	Description
Enable Key Repeat	Enables key repeat functionality.
Delay	To increase key repeat delay, drag the **Delay** slider to the right. To decrease key repeat delay, drag the **Delay** slider to the left.
Rate	To increase key repeat speed, drag the **Rate** slider to the left. To decrease key repeat speed, drag the **Rate** slider to the right.

Profiles Tab

Use the **Profile** tab to load or remove Bluetooth services profiles. If a profile is not used, it can be removed to save memory.
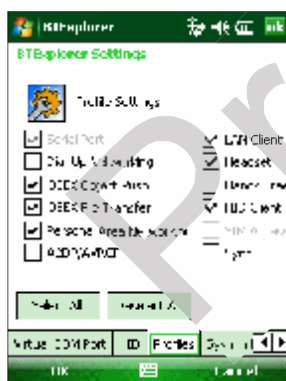

Figure 3-65   *BTExplorer Settings - Profile Tab*

1. Tap a check box next to the profile to load (activate).

    The Serial Port profile is always active and cannot be removed.

2. Tap **Select All** to select all profiles or tap **Deselect All** to deselect all profiles.

3. Tap **Apply** to activate the profiles and then **Close** to exit the application.

System Parameters Tab

Figure 3-66   *BTExplorer Settings - System Parameters Tab*

Table 3-18   *System Parameters Tab Data*

item	Description
Page Timeout	Sets the amount of time the MC31XX searches for a device before moving on the next device.
Link Supervision Timeout	Sets the amount of time that the MC31XX will wait for a device to come back into range after it has gone out of range. If the device does not come back into range by the set time, the MC31XX drops the connection.

Miscellaneous Tab

Figure 3-67   *BTExplorer Settings - Miscellaneous Tab*

Table 3-19   *Miscellaneous tab Data*

Item	Description
Highlight Connections	Select the connection type to highlight when connected. In the Wizard Mode, the only options are *Favorites* or *None*. In the Explorer Mode the options are **None**, **Tree View Only**, **List View Only**, or **Tree and List View**.
Apply Text Style	Select the text style to apply to the connection text.
Apply Text Color	Select the text color to apply to the connection text.

Preliminary

Chapter 4 Accessories

Introduction

The MC31XX accessories provide a variety of product support capabilities. Accessories include cradles, cables, spare battery chargers and SD cards. *Table 4-1* lists the MC31XX accessories.

Table 4-1 *MC31XX Accessories*

Accessory	Description
Single Slot Serial/USB Cradle	Charges the mobile computer main battery and a spare battery, and synchronizes the mobile computer with a host computer through either a serial or USB connection.
Four Slot Charge Only Cradle	Charges up to four mobile computers.
Four Slot Ethernet Cradle	Charges up to four mobile computers and provides Ethernet communications.
Four Slot Spare Battery Charger	Charges up to four mobile computer spare batteries.
Power Supply	Country specific and accessory specific, power supply.
USB Client Charge Cable	Provides USB client communication capabilities and charges the mobile computer.
RS232 Charge Cable	Provides RS232 communication capabilities and charges the mobile computer.
O'Neil Printer Cable	Provides printer specific communication capabilities (provided by O'Neil).
Zebra Printer Cable	Provides printer specific communication capabilities (provided by Zebra).
Monarch Printer Cable	Provides printer specific communication capabilities (provided by Monarch).
Single Slot Cradle RS232 Cable	Provides serial host communication capabilities and charges the mobile computer.
Single Slot Cradle USB Cable	Provides USB communication capabilities and charges the mobile computer.
MC31XX Universal Battery Charger Adapter (UBC)	Adapts the UBC for use with MC31XX batteries.

Table 4-1   *MC31XX Accessories (Continued)*

Accessory	Description
Stylus	Performs pen and mouse functions.
Fabric Holster	Provides a soft, clip on holder and a shoulder strap for the mobile computer.
Enterprise Mobility Developer Kit for C (EMDK for C)	A development tool used to create native C and C++ applications for all Motorola mobile computers running the Microsoft Windows CE operating system. Available at: http://www.motorola.com/enterprisemobility/support.
Device Configuration Package (DCP) for MC31XX	A development tool used to create and download hex images that represent flash partitions to the mobile computer. Available at: http://www.motorola.com/enterprisemobility/support.

Single Slot Serial/USB Cradle

⚠️ **CAUTION**   Ensure that you follow the guidelines for battery safety described in *Battery Safety Guidelines on page 5-2*.
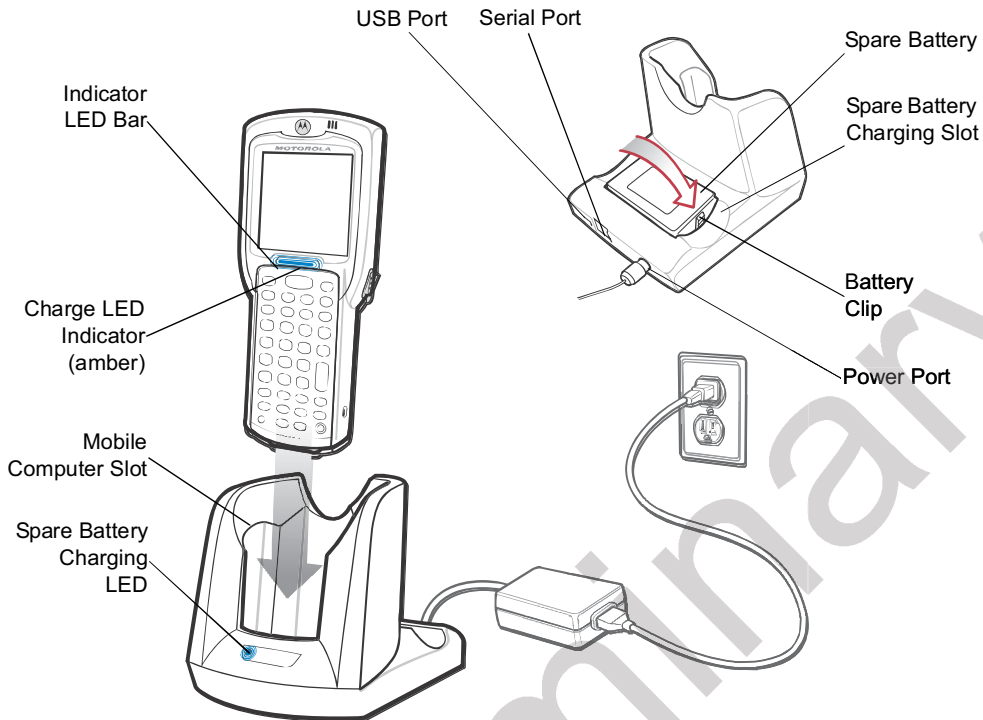
The Single Slot Serial/USB cradle:

- Provides 5.4VDC power for operating the mobile computer, charging the battery and charging a spare battery.

- Provides a serial port and a USB port for data communication between the mobile computer and a host computer or other serial devices (e.g., a printer).

- Synchronizes information between the mobile computer and a host computer. With customized or third party software, it can also synchronize the mobile computer with corporate databases.

- Provides serial connection through the serial pass-through port for communication with a serial device, such as a host computer. For communication setup procedures, refer to the *MC31XX Mobile Computer Integrator Guide*.

- Provides USB connection through the USB pass-through port for communication with a USB device, such as a host computer. For communication setup procedures, refer to the *MC31XX Mobile Computer Integrator Guide*.

Battery Charging

The Single Slot Serial/USB cradle can charge the mobile computer main battery and a spare battery simultaneously.

To charge the mobile computer:

1. Slide the mobile computer into the mobile computer slot. The mobile computer amber Charge LED Indicator, indicates the mobile computer battery charging status. The Standard Battery charges in less than four hours and the Extended Life Battery charges in less than six hours. See *Table 4-2* for charging status indications.

Figure 4-1 *Single Slot Serial/USB Cradle*

2. When charging is complete, remove the mobile computer from the mobile computer slot.

To charge the spare battery:

1. Insert the spare battery into the spare battery charging slot, bottom first, and pivot the top of the battery down onto the contact pins.

2. Gently press down on the battery to ensure proper contact.

3. The Spare Battery Charging LED (see *Figure 4-1 on page 4-4*) indicates the spare battery charging status. The Standard Battery charges in less than four hours and the Extended Life Battery charges in less than six hours. See *Table 4-2* for charging status indications.

4. When charging is complete, press the battery clip and lift the battery out of the slot.

LED Charge Indications

The Single Slot Serial/USB cradle uses the mobile computer amber Charge LED Indicator to indicate the battery charging status and the Spare Battery Charging LED to indicate spare battery charging status. See *Table 4-2* for charging status indications.