



2 Configuring the CN2

Use this chapter to understand how to configure the CN2. In this chapter, you will find these sections:

- How to Configure the CN2 Parameters
- Configuring the CN2 With the Setup Assistant
- Configuring the CN2 Locally With Intermec Setting
- Configuring the CN2 Remotely With Intermec Settings
- Customizing the Keypad

How to Configure the CN2 Parameters

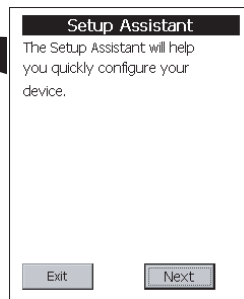
You can configure many parameters on the CN2, such as the bar code symbologies it decodes or the network settings. These characteristics are controlled by configuration parameters. The values you set for these configuration parameters determine how the computer operates.

There are several ways to configure the CN2:

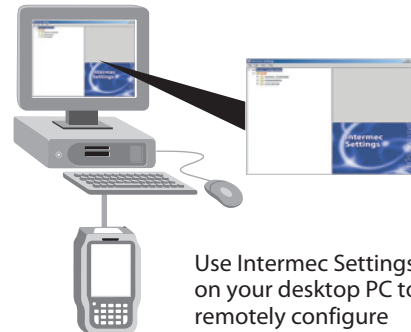
Use Setup Assistant



Use Setup Assistant to quickly enter network parameters.



Use Intermec Settings Remotely

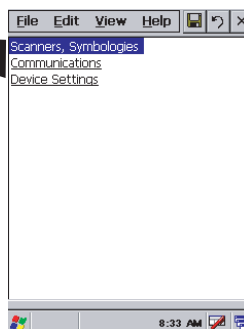


Use Intermec Settings on your desktop PC to remotely configure network parameters.

Use Intermec Settings Locally



Use Intermec Settings on the CN2 to set most parameters.



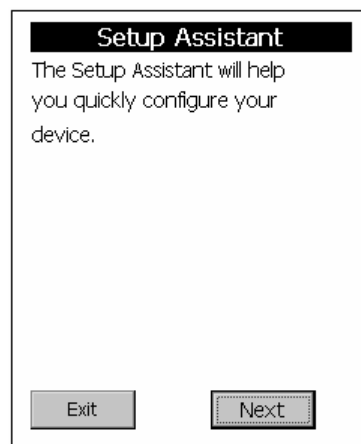
Configuring the CN2: The CN2 provides several ways for you to configure the communications, device, and imaging parameters.

Configuring the CN2 With the Setup Assistant

The Setup Assistant runs on the CN2 the first time you turn on the computer. Use the Setup Assistant to set or enable basic network parameters and connect your CN2 to the network. The Setup Assistant guides you through setting the following basic network parameters:

- Date and time
- 802.11b/g radio and SSID (Network name)
- 802.1x security
- DHCP server or IP address, subnet mask, and default router
- Primary and secondary DNS addresses
- Primary and secondary WINS addresses
- Device name

To set other parameters, use Intermec Settings or another configuration method.



The Setup Assistant Start Screen

After you complete the Setup Assistant, the CN2 should be communicating with your network. A **Network Connection** icon (📶, 📶, 📶 or 📶) appears on your taskbar. For more information on the network icons, see “Understanding the Screen Icons” on page 19.

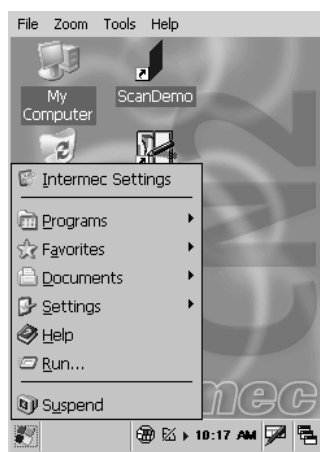
Configuring the CN2 Locally With Intermec Settings

Use Intermec Settings to configure the CN2 and view system information. You can access Intermec Settings while running any application.

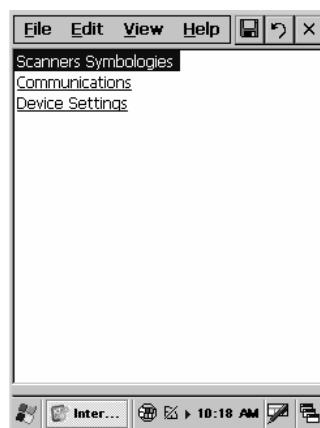
Opening Intermec Settings

To open Intermec Settings

- 1 Tap the **Start** icon. The **Start** menu appears.



- 2 Tap **Intermec Settings**. The Intermec Settings application appears.



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- 3 Make changes to the settings as necessary. For help, see the next section, “Navigating Through Intermec Settings.”
- 4 Save your changes. For help, see “Saving Your Settings” on page 39.
- 5 Exit Intermec Settings. For help, see “Exiting Intermec Settings” on page 39.

Navigating Through Intermec Settings

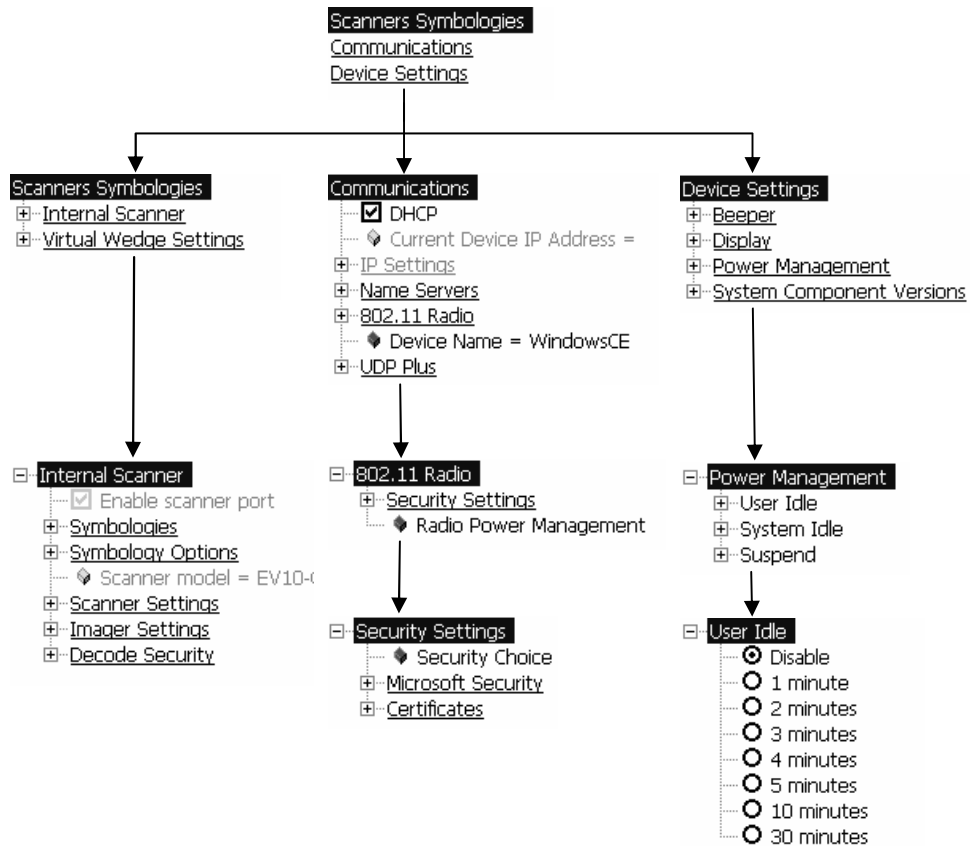
Use this table to understand how to navigate and enter information in Intermec Settings.

Navigating in Intermec Settings

Function	Choose a Method
Select or expand an option	<ul style="list-style-type: none">• Tap the option.• On the scroll keypad, press ▲ or ▼ to select an option.
Expand an option	<ul style="list-style-type: none">• Tap the option.• On the scroll keypad, press ▲ or ▼ to select the option, and then press ►.
Enter information	<ul style="list-style-type: none">• Tap in the text box. The soft keyboard appears. Tap the keyboard keys to enter information. Tap outside the box or tap Enter when you are finished.
Select text in a text box	<ul style="list-style-type: none">• Tap in the text box and drag the stylus over the text.
Save settings	<ul style="list-style-type: none">• Tap File > Save Settings.• Tap the Save icon in the upper right corner.

Use the following diagram to help find the commands you need to use to configure your CN2. These screens do not represent the exact information you will see on your CN2. They have been modified to show you how the information is structured.

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Intermec Settings Menus: Use this diagram to help navigate through the Intermec Settings application. This diagram should only be used as a guide; it does not accurately represent all of the information you will see on your screen.

Learning About the Configuration Commands in Intermec Settings


For detailed information on most of the commands available in Intermec Settings, see the *Intermec Computer Command Reference Manual* (P/N 073529).

A copy of this online manual is on the CD attached inside the front cover of this user's manual. You should check the Intermec web site at www.intermec.com to determine if a more recent version is available for download.

Saving Your Settings

You can save the changes you make in Intermec Settings at any time. After you save your changes, you can continue making changes or you can exit Intermec Settings.

To save your settings

- Tap the **Save** icon  at the top of the screen.
- Or,
- From the Main Menu, tap **File > Save Settings**.

Exiting Intermec Settings

When you are done modifying your device configuration and have saved your settings, you should exit Intermec Settings.

To exit Intermec Settings

- Tap the **X** in the upper right corner of the window.
- Or,
- From the Main Menu, tap **File > Exit**.

If you try to exit Intermec Settings without saving your changes, a message box appears asking if you want to save your configuration changes. Tap **Yes**.

Restoring the CN2 Default Settings

You can restore the CN2 to factory default settings.




Note: Restoring the CN2 to factory default settings resets all network parameters. As a result, you may lose network communications. This option should only be used by network administrators or by Intermec support personnel.

For a complete list of the default settings, see “Default Configuration” on page 120.

To restore default settings

- 1 Tap **Start > Intermec Settings**. The Intermec Settings application appears.

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- 2 Tap one of the menus:
 - **Scanners Symbologies**
 - **Communications**
 - **Device Settings**
- 3 Tap **Edit > Restore Item Defaults**.
- 4 Tap **Yes** to restore all default settings.
- 5 Repeats Steps 2, 3, and 4 for the other two menus.
- 6 Tap **Scanners Symbologies > Internal Scanner > Symbologies** and make sure every bar code symbology that you need is enabled.
- 7 Tap  to save your settings.
- 8 Tap **X** to exit Intermec Settings.



Note: You can also return the CN2 to its default software configuration by resetting the registry and clearing the object store. For instructions, see page 96.

Configuring the CN2 Remotely With Intermec Settings

You can use Intermec Settings remotely to configure your CN2. The remote version of Intermec Settings provides these features:

- Intermec Settings can configure CN2s one-to-one through an ActiveSync connection.
- Intermec Settings can run as a plug-in to the Wavelink Avalanche device management system. Avalanche automates device management within a network and lets you install, update, and manage the software and configurations of wireless and other devices.

The ActiveSync (one-to-one) version of Intermec Settings is available from the Intermec web site as part of the Intermec Developer's Library (IDL) download or from the IDL CD. For information on installing ActiveSync and establishing a partnership, see "Installing Applications Using ActiveSync" on page 85.

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For more help using Intermec Settings, see the online manual available from the Help menu in Intermec Settings.

Customizing the Keypad

You can customize how the numeric and scroll keypads operate:

- You can configure the CN2 to click when you press any key.
- You can configure the CN2 to click when a character is “emitted.” For example, to emit the lowercase b character, you press **2**.
- You can disable access to Task Manager by disabling the keypad shortcut, which is the only way to start Task Manager. To learn the shortcut for your keypad, see “Using Task Manager to Manage Multiple Active Tasks” on page 22.
- You can disable the **Power** button so users cannot turn off the CN2. This is useful if you have installed the CN2 in a kiosk environment.

There are three ways to customize the CN2 keypad:

- You can use the Control Panel on your CN2 to configure keyboard options. For help, see the next section, “Using the Control Panel to Customize the Keypad.”
- You can use a registry editing program to change the keypad registry entries. For help, see “Using a Registry Editing Program to Customize the Keypad” on page 43.
- You can write an application to change the keypad registry entries. For help, see “Writing an Application to Customize the Keypad” on page 44.

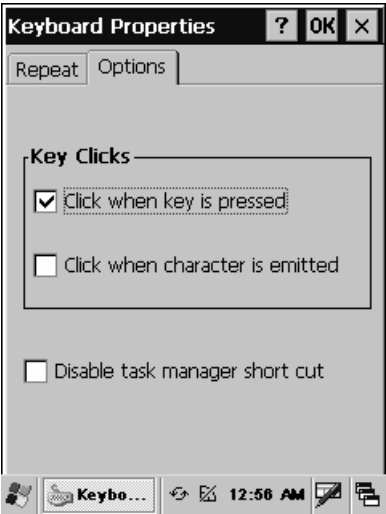
Using the Control Panel to Customize the Keypad

You can customize the keypad on a CN2 by making selections at the Keyboard Properties screen, which you access through the Control Panel.

This method is convenient for customizing one CN2. To customize many CN2s, follow the steps in “Writing an Application to Customize the Keypad” on page 44.

To customize the keypad

- 1 Go to **Start > Settings > Control Panel**.
- 2 Double-tap the **Keyboard** icon. The Keyboard Properties screen appears.
- 3 Tap the **Options** tab.



- 4 Check the box for each option you want to enable.

Summary of Options

Option	If You Check This Option
Click when key is pressed	You hear a keyclick every time you press a key.
Click when character is emitted	You hear a keyclick when a character is emitted. For example: <ul style="list-style-type: none">• You hear a keyclick when you press 2 and a 2 character appears on the screen.• You hear a keyclick when you press 2 2 and a lowercase b character appears on the screen.
Disable task manager short cut	You cannot start Task Manager. You have disabled the keypad shortcut for starting Task Manager, as described in “Using the Task Manager to Manage Multiple Active Tasks” on page 22.

- 5 Click **OK** to save your changes and exit the Keyboard Properties screen.
- 6 Tap **X** to exit the Control Panel. The changes take effect immediately. You do not need to warm boot the CN2.

Using a Registry Editing Program to Customize the Keypad

You can use a registry editing program to display and change the keypad registry entries, which control how the CN2 keypad operates. The registry entries are described in the next table, “CN2 Keypad Registry Entries.”

You can run the Microsoft eMbedded Visual C++® Remote Registry Editor on your PC, using ActiveSync to connect to the CN2. Or you can download and run a third-party registry editing program on your CN2.

After you make your changes, you need to warm boot the CN2 for the changes to take effect. For help, see “Warm Booting the CN2” on page 104.

The CN2 keypad registry settings are located in HKEY_LOCAL_MACHINE\Drivers\Keypad.

CN2 Keypad Registry Entries

Registry Entry	Default	Description
ClickOnPress	1	When this registry entry is set to 1, a keyclick is generated when the user presses a key.
ClickOnChar	0	When this registry entry is set to 1, a keyclick is generated when the CN2 emits a character. For numeric keys, the behavior is the same as ClickOnPress. For alpha-mode, a keyclick is generated when the character is emitted. For example, you press □■ 2 2 to emit the b character and generate the keyclick.
DisableTaskMan	0	When this registry entry is set to 0, the user can start the Task Manager, as described in “Using the Task Manager to Manage Multiple Active Tasks” on page 22. When this registry entry is set to 1, the user cannot start the Task Manager.
IgnorePowerButton	0	When this registry entry is set to 1, the Power button is ignored. The user cannot turn off the CN2.

Writing an Application to Customize the Keypad

You can write an application to change the keypad registry entries, which are described in the previous table, “CN2 Keypad Registry Entries.” An application gives you a convenient way to customize multiple CN2s.

For help downloading and using the Intermec SDK, see “Developing a New Application” on page 82.

Make sure your application sets the named event *KeybdSettingsChangeEvent* after you change the registry entries, for the changes to take effect.



3 Adding the CN2 to the Network

Use this chapter to understand how to configure the CN2 to communicate in your network. In this chapter, you will find these sections:

- Configuring the CN2 for Your Network
- Configuring Network Security
- Viewing Wireless Network Information
- Allowing FTP File Transfers To and From the CN2
- Using the Modem Dock for Internet Access and E-mail

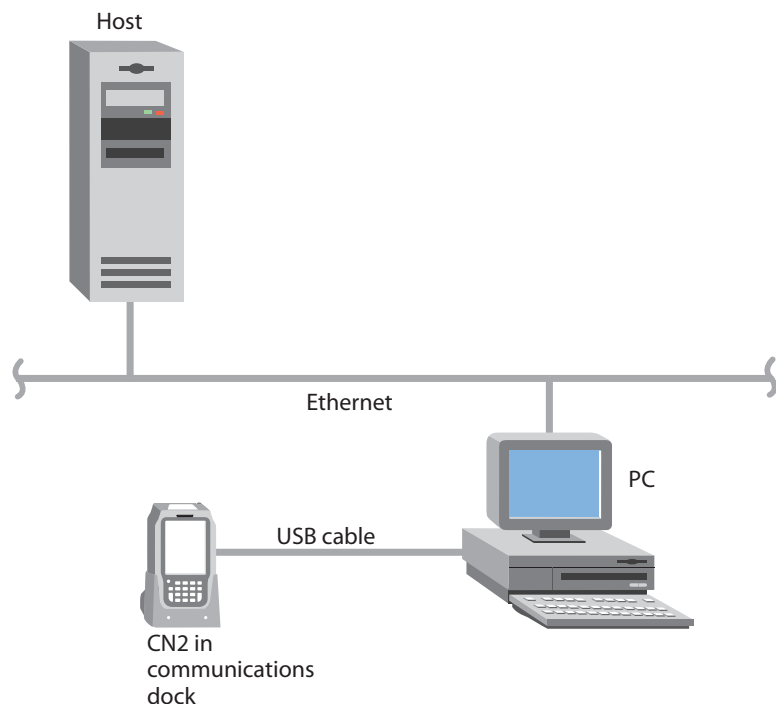
Configuring the CN2 For Your Network

The CN2 is a versatile handheld computer that you can easily add to your wired or wireless data collection network. You can connect your CN2 to your network using:

- USB communications.
- 802.11b/g radio communications.

Configuring USB Communications

You can place the CN2 in the modem dock (P/N 075499) or the communications dock (P/N 225-696-001) to transfer data to, and receive data from, another device using USB communications. The USB cable, communications dock, and modem dock are sold separately. For more information on accessories and how to order them, see page 115.



CN2 Using USB Communications

To use USB communications with your CN2

- 1 Connect the communications dock to the USB port of the other device using an appropriate USB cable.
- 2 Make sure that your USB device is configured for USB communications.
- 3 Insert the CN2 into the communications dock.
- 4 Turn on the CN2.

For more information about the communications dock, see the instructions that ship with the communications dock.

Configuring 802.11b/g Radio Communications



Caution

Make sure all components with antennas are at least 30 cm (1 ft) apart when power is applied. Failure to comply could result in equipment damage.

Attention: Assurez-vous que la distance entre tous les éléments avec antennes soit d'au moins 30 centimètres (un pied) avant de faire la connexion avec l'alimentation électrique, faute de quoi vous risquez d'endommager votre installation.

Vorsicht: Sicherstellen, dass alle Komponenten mit Antennen mindestens 30 cm (1 ft) voneinander entfernt sind, wenn die Stromversorgung eingeschaltet wird. Andernfalls könnte es zu Geräteschäden kommen.

The wireless CN2 has an internal 802.11b/g radio to transfer data using wireless communications. This section of the manual assumes that you have already set up your wireless communications network including your access points. If you are using a UDP Plus network, you also need to have your Intermec Application Server communicating with a host computer.

Your CN2 supports these network protocols:

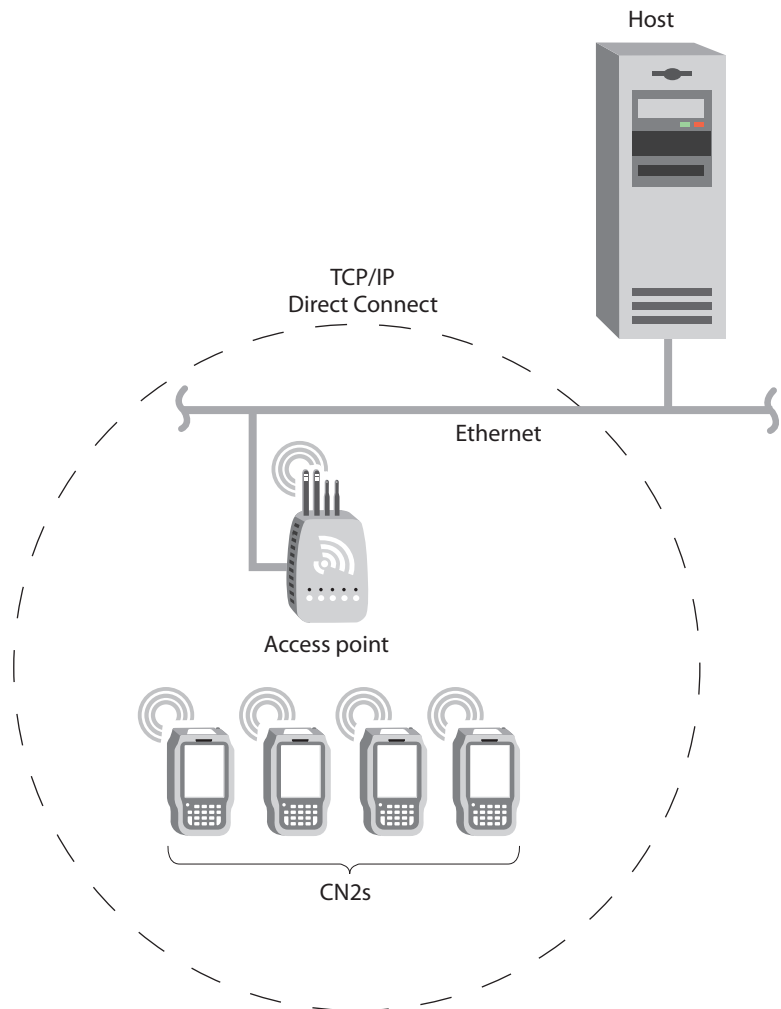
- TCP/IP
- UDP Plus

The next sections explain the parameters you need to configure for the CN2 to work in your wireless network.

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Configuring the Network Parameters for a TCP/IP Network

In a TCP/IP network, the CN2 communicates with a host computer directly using TCP/IP. The access point acts as a bridge to allow communications between the wired network and the wireless network.



CN2s in a TCP/IP Direct Connect Network

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To use wireless communications in a TCP/IP network

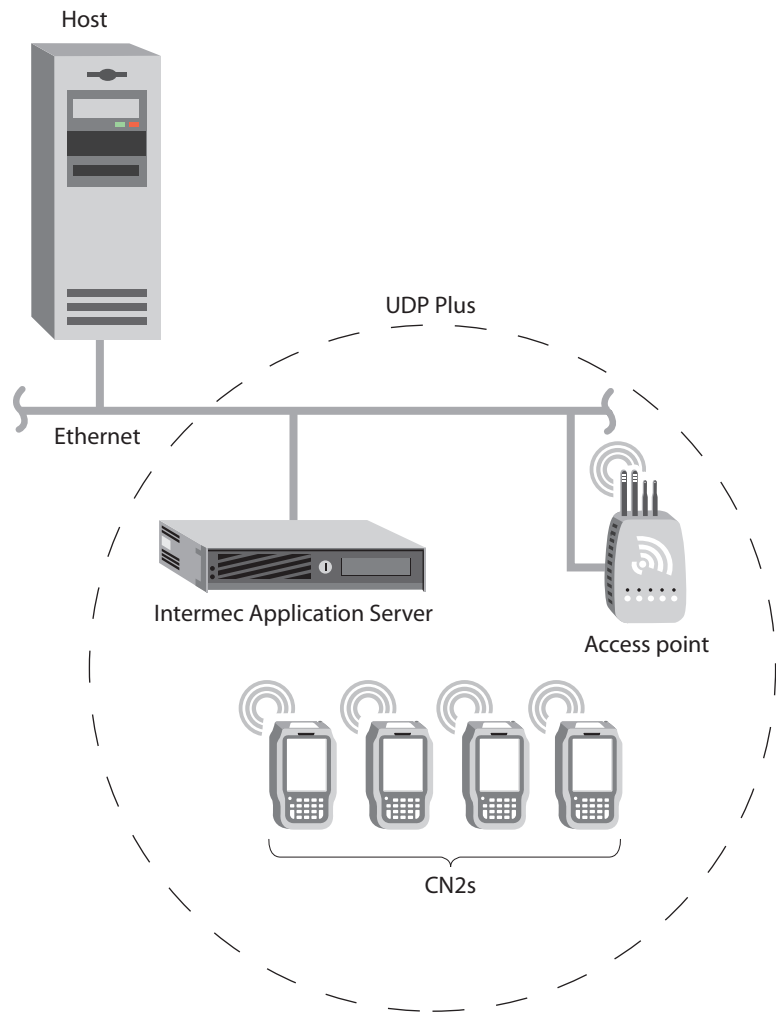
- 1** Configure these network parameters on each CN2 in the network:
 - Infrastructure mode (set to Infrastructure by default)
 - Network name (SSID)
 - Host IP address
 - IP settings (if not using DHCP)
- 2** Configure security. For help, see “Configuring Network Security” on page 51.

The easiest way to configure the network parameters on the CN2 is to use Intermec Settings. For help, see “Configuring the CN2 Locally With Intermec Settings” on page 36.

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Configuring the Network Parameters for a UDP Plus Network

In a UDP Plus network, the CN2 communicates with a host computer through the Intermec Application Server.



CN2s in a UDP Plus Network

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The Intermec Application Server translates UDP Plus packets on the wireless network into TCP/IP packets on the wired network and vice versa. The access point acts as a bridge to allow communications between the wired network and the wireless network.

To use wireless communications in a UDP Plus network

- 1** Configure these network parameters on each CN2 in the network:
 - Network name (SSID)
 - Controller IP address
 - IP settings (if not using DHCP)
 - Controller port (set to 5555)
- 2** Configure the security. For help, see “Configuring Network Security” on page 51.

The easiest way to configure the network parameters on the CN2 is to use Intermec Settings. For help, see “Configuring the CN2 Locally With Intermec Settings” on page 36.

Configuring Network Security

The CN2 provides three types of security for your wireless network:

- Wi-Fi Protected Access (WPA)
- 802.1x
- WEP

This section explains how to configure security on your wireless CN2. If you choose not to use security, see “Disabling Security” on page 68. Intermec always recommends that you implement security.

You must use either Funk Security or Microsoft Security software to implement your security solution. For details, see the next section, “Choosing Between Funk Security and Microsoft Security Software.”

Chapter 3 — Adding the CN2 to the Network



Note: If you are using 802.1x security, this section assumes that your authentication server and authenticators are properly configured. For more information on the different types of security, see the *MobileLAN™ secure 802.1x Security Solution Installation Guide* (P/N 073134) available at www.intermec.com.

Choosing Between Funk Security and Microsoft Security Software

Before you can implement a security solution on the CN2, you need to choose between Funk Security and Microsoft Security software.

Both offer the same features, except Funk Security (the default) also offers these features:

- CCX v1.0 compliance
- Ability to use LEAP and TTLS authentication on your CN2
- Up to four profiles, which are sets of configuration settings

If you choose Funk Security (the default), you are assigned Profile 1, which specifies a Network Name of INTERMEC and contains no security settings. You should consider configuring security in Profile 1 or selecting another profile. For help, see the next section, “Selecting and Defining Profiles for Funk Security.”

If you choose Microsoft Security, you need to select Microsoft Security. For help, see “Choosing Microsoft Security Software” on page 53.



Note: Your choice does not depend on your authentication server. For example, you can choose Funk Security if you use Microsoft Active Directory® to issue certificates.



Selecting and Defining Profiles for Funk Security

You can define up to four profiles for your Funk security. Different profiles let your CN2 communicate in different networks without having to change all of your security settings. For example, you may want to set up one profile for the manufacturing floor and one for the warehouse.

By default, the active profile is Profile 1.

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To select a profile for Funk security

- 1 Tap the **Start** icon. The Start menu appears.
- 2 Tap **Intermec Settings**. The Intermec Settings application appears.
- 3 Tap **Communications > 802.11 Radio > Security Settings > Funk Security**.
- 4 (Optional) Give your profiles meaningful names:
 - a Select **Profile 1**, **Profile2**, **Profile 3**, or **Profile 4**. The profile expands.
 - b Select **Profile Label** and a text box appears.
 - c Select the text in the box and use the input panel to type in your meaningful name.
 - d Tap the **Save** icon  at the top of the screen.
- 5 (Optional) Configure the security settings for each profile you need.
- 6 (Optional) Select one profile as the active profile by tapping **Active Profile** and choosing the profile name from the drop-down menu.
- 7 Tap the **Save** icon  at the top of the screen to save your settings.
- 8 Tap the **X** at the top of the screen to exit Intermec Settings.


Choosing Microsoft Security Software

The default security choice is Funk Security. If you want to use Microsoft Security, you need to choose it as your security choice.

To choose to Microsoft Security

- 1 Tap **Start > Intermec Settings > Communications > 802.11 Radio > Security Settings**.
- 2 For **Security Choice**, choose **Microsoft Security**.
- 3 Tap anywhere outside the **Security Choice** box, and an alert box appears telling you that you must save your settings and warm boot the CN2 for your new security choice to take effect. Tap **OK** to close the alert box.

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- 4 Tap the **Save** icon  at the top of the screen to save your settings.
- 5 Tap the **X** at the top of the screen to exit Intermec Settings.
- 6 Warm boot the CN2. For help, see “Warm Booting the CN2” on page 104.



Note: You must warm boot the CN2 after you change your security choice.

Using WPA Security

Wi-Fi Protected Access (WPA) is a strongly enhanced, interoperable Wi-Fi security that addresses many of the vulnerabilities of Wired Equivalent Privacy (WEP). Instead of WEP, WPA uses Temporal Key Integrity Protocol (TKIP) for its data encryption method.

Currently, WPA satisfies some of the requirements in the IEEE 802.11i draft standard. When the standard is finalized, WPA will maintain forward compatibility.

WPA runs in 802.1x (Enterprise) mode or PSK (Pre-Shared Key) mode:

- In Enterprise mode, WPA provides user authentication using 802.1x and the Extensible Authentication Protocol (EAP). That is, an authentication server (such as a RADIUS server) must authenticate each device before the device can communicate with the wireless network.
- In PSK mode, WPA provides user authentication using a shared key between the authenticator and the CN2. WPA-PSK is a good solution for small offices or home offices that do not want to use an authentication server.

To use WPA security, you need:

- an authentication server (Enterprise mode only).



Note: You can also use a MobileLAN access WA2X product as an authentication server. For help, see the *MobileLANaccess WA2X System Manual* (P/N 073915).

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- user and root certificates (if you plan to use TLS for authentication).
- an access point with an 802.11b/g radio that supports WPA.
- a CN2 with the 802.11b/g radio and the 802.1x/WPA security option.

Configuring WPA Security With Funk Security

Use these procedures to set WPA-802.1x and WPA-PSK security on your CN2 with Funk security.

To enable WPA-802.1x security on your CN2 with Funk security

- 1 Make sure you have configured the communications and radio parameters on your CN2.
- 2 Make sure you have selected Funk as your security choice, as described in “Choosing Between Funk Security and Microsoft Security Software” on page 52.
- 3 If you plan to use TLS for authentication, load a user and root certificate on your CN2. For help, see “Loading Certificates” on page 65.
- 4 Open Intermec Settings.
- 5 Tap **Communications > 802.11 Radio > Security Settings > Funk Security > Profile**.
- 6 For **Association**, choose **WPA** and tap the **Save** icon in the upper right corner of the screen. **Encryption** is set to **TKIP** by default.
- 7 For **Authentication**, choose **TTLS**, **PEAP**, or **TLS** and tap **Save**.

If you choose TTLS or PEAP:

- a Select **User name**, select the text in the text box, use the input panel to type your user name, and tap **Save**.
- b For **Password prompt**, make sure that **Enter password now** is selected.



Note: You can use **Prompt for password** to troubleshoot your connection to the network if you have problems.

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- c Select **User Password**, select the text in the text box, use the input panel to type your user password, and tap **Save**.
- d For **Validate Server Certificate**, choose **Enabled** and tap **Save**.



Note: You must have the date on the CN2 set correctly when you enable **Validate Server Certificate**.

If you choose TLS:

- a For **Validate Server Certificate**, choose **Enabled** and tap **Save**.
- b You must enter a **User Name** and **Subject Name**. You can also enter a **Server Common Name** if you want to increase your level of security.

8 Exit Intermec Settings.

To enable WPA-PSK security on your CN2 with Funk security

- 1 Make sure you have configured the communications and radio parameters on your CN2.
- 2 Make sure you have selected Funk as your security choice, as described in “Choosing Between Funk Security and Microsoft Security Software” on page 52.
- 3 Open Intermec Settings.
- 4 Tap **Communications > 802.11 Radio > Security Settings > Funk Security > Profile**.
- 5 For **Association**, choose **WPA** and tap **Save**.
- 6 For **Authentication**, choose **None** and tap **Save**.
- 7 For **Pre-Shared Key**, enter the pre-shared key or the passphrase.

The pre-shared key must be a value of 32 hex pairs preceded by 0x for a total of 66 characters. The value must match the key value on the access point. The passphrase must be from 8 to 63 characters. After you enter a passphrase, the CN2 internally converts it to a pre-shared key.

This value must match the passphrase on the authenticator.

8 Exit Intermec Settings.

Configuring WPA Security With Microsoft Security

Use these procedures to set WPA-802.1x and WPA-PSK security on your CN2 with Microsoft security. These procedures assume that you have selected Microsoft Security software as your security choice, as described in “Choosing Between Funk Security and Microsoft Security Software” on page 52.

To enable WPA-802.1x security on your CN2 with Microsoft security

- 1 Make sure you have configured the communications and radio parameters on your CN2.
- 2 If you plan to use TLS for authentication, load a user and root certificate on your CN2. For help, see “Loading Certificates” on page 65.
- 3 Open Intermec Settings.
- 4 Tap **Communications > 802.11 Radio > Security Settings > Microsoft Security**.
- 5 For Infrastructure Mode, choose **Infrastructure**.
- 6 For **Network Authentication**, choose **WPA** and tap the **Save** icon in the upper right corner of the screen. **Data Encryption** is set to **TKIP** by default.
- 7 For 802.1x Authentication, choose either **TLS** or **PEAP**.

If you choose TLS:

- a Tap **Properties** and tap **Run App**. The Authentication Settings box appears.

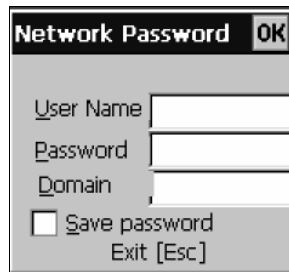


- b From the Authentication Settings box, tap **Select**.
- c Tap your certificate from the list and tap **Enter**.

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If you choose PEAP:

- a** Tap **Properties** and tap **Run App**. The Authentication Settings box appears.
- b** Tap the **Validate Server** check box.
- c** Tap **Enter**. After the radio starts to authenticate, the Network Password dialog box appears:

A screenshot of a 'Network Password' dialog box. It has a title bar with 'Network Password' and an 'OK' button. Inside, there are three text input fields labeled 'User Name', 'Password', and 'Domain'. Below these fields is a checkbox labeled 'Save password' which is currently unchecked. At the bottom of the dialog, there is text that reads 'Exit [Esc]'.

- d** Enter a **User Name** and **Password** and tap the **Save Password** check box.
 - e** (Optional) In the **Domain** field, enter the Active Directory domain associated with the user account.
 - f** Press **Enter**.
- 8** Exit Intermec Settings.

To enable WPA-PSK security on your CN2 With Microsoft security

- 1** Make sure you have configured the communications and radio parameters on your CN2.
- 2** If you plan to use TLS for authentication, load a user and root certificate on your CN2. For help, see “Loading Certificates” on page 65.
- 3** Open Intermec Settings.
- 4** Choose **Communications > 802.11 Radio > Security Settings > Microsoft Security**.
- 5** For **Infrastructure Mode**, choose **Infrastructure**.
- 6** For **Network Authentication**, choose **WPA-PSK** and tap the **Save** icon in the upper right corner of the screen. **Data Encryption** is set to **TKIP** by default.

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- 7 For **Pre-Shared Key**, enter the pre-shared key or the passphrase.

The pre-shared key must be a value of 32 hex pairs preceded by 0x for a total of 66 characters. The value must match the key value on the authenticator. The passphrase must be from 8 to 63 characters. After you enter a passphrase, the CN2 internally converts it to a pre-shared key.

This value must match the passphrase on the authenticator.

- 8 Exit Intermec Settings.

Using 802.1x Security

802.1x security provides centralized user authentication using an authentication server, authenticators (access points), and supplicants. These components communicate using an EAP authentication type, such as TLS (Transport Layer Security) or PEAP (Protected Extensible Authentication Protocol). 802.1x security provides data encryption using dynamic WEP key management.

To use 802.1x security, you need:

- an authentication server.



Note: You can also use a MobileLAN access WA2X product as an authentication server. For help, see the *MobileLANaccess WA2X System Manual* (P/N 073915).

- an access point with an 802.11b/g radio.
- a CN2 with an 802.11b/g radio and the 802.1x/WPA security option.
- user and root certificates (if you plan to use TLS for authentication).

These procedures assume that you have already selected either Microsoft Security or Funk Security software as your security choice, as described in “Choosing Between Funk Security and Microsoft Security Software” on page 52.

Configuring 802.1x Security With Funk Security

- 1 Make sure you have configured the communications and radio parameters on your CN2.
- 2 Make sure you have selected Funk as your security choice.
- 3 If you plan to use TLS for authentication, load a user and root certificate on your CN2. For help, see “Loading Certificates” on page 65.
- 4 Open Intermec Settings.
- 5 Choose **Communications > 802.11 Radio > Security Settings > Funk Security > Profile**.
- 6 For **Association**, tap **Open** and tap **Save**.
- 7 For **Encryption**, tap **WEP** and tap **Save**.
- 8 For **Authentication**, tap **TTLS**, **PEAP**, or **TLS** and tap **Save**.

If you choose TTLS or PEAP:

- a Select **User name**, type your user name, and then tap **Save**.
- b Select **Password prompt**, choose **Enter password now**, and then tap **Save**.



Note: You can use **Prompt for password** to troubleshoot your connection to the network if you have problems.

- c Select **User Password**, type a user password, and then tap **Save**.
- d For **Validate Server Certificate**, choose **Enabled** and tap **Save**.

If you choose TLS:

- a For **Validate Server Certificate**, choose **Enabled** and tap **Save**.
- b You can also enter a **User Name**, **Subject Name** and **Server Common Name** if you want to increase your level of security.

- 9 Exit Intermec Settings.

Configuring 802.1x Security With Microsoft Security

- 1 Make sure you have configured the communications and radio parameters on your CN2.
- 2 If you plan to use TLS for authentication, load a user and root certificate on your CN2. For help, see “Loading Certificates” on page 65.
- 3 Open Intermec Settings.
- 4 Choose **Communications > 802.11 Radio > Security Settings > Microsoft Security**.
- 5 For **Infrastructure Mode**, choose **Infrastructure**.
- 6 For **Network Authentication**, choose **Open**.
- 7 For **Data Encryption**, choose **WEP**.
- 8 For **802.1X Authentication**, choose **TLS** or **PEAP**, and tap **Save**.

If you choose TLS:

- a Select **Properties** and tap **Run App**. The Authentication Settings box appears.

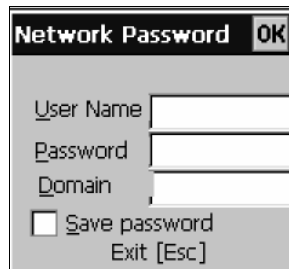


- b From the Authentication Settings box, tap **Select**.
- c Select your certificate from the list and tap **Save**.

If you choose PEAP:

- a Select **Properties** and tap **Run App**. The Authentication Settings box appears.
- b Select the **Validate Server** check box.
- c Press **Enter**. Once the radio starts to authenticate, the Network Password dialog box appears.

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- d** Enter a **User Name** and **Password** and select the **Save Password** check box.
- e** (Optional) In the **Domain** field, enter the domain.
- f** Press **Enter**.
- 9** For **Network Key Setting**, choose **Automatic**.
- 10** Exit Intermec Settings.

Using LEAP Security

Lightweight Extensible Authentication Protocol (LEAP), also known as Cisco-Wireless EAP, provides username/password-based authentication between a wireless client and a RADIUS server. In the 802.1x framework, traffic cannot pass through an Ethernet hub or wireless network access point until it successfully authenticates itself.

The station must identify itself and prove that it is an authorized user before it is actually allowed to use the LAN. LEAP also delivers a session key to the authenticated station, so that future frames can be encrypted with a key that is different than keys used by others' sessions.

To use LEAP security, you need:

- a RADIUS server.
- a Cisco access point with an 802.11b/g radio.



Note: LEAP security is not supported if you chose Microsoft Security software, as described in “Choosing Between Funk Security and Microsoft Security Software” on page 52.

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To enable LEAP security on your CN2

- 1 Make sure you have configured the communications and radio parameters on your CN2.
- 2 Make sure you have selected Funk as your security choice, as described in “Choosing Between Funk Security and Microsoft Security Software” on page 52.
- 3 Open Intermec Settings.
- 4 Tap **Communications > 802.11 Radio > Security Settings > Funk Security > Profile**.
- 5 For **Authentication**, select **LEAP** and then tap **Save**.
- 6 For **Association**, select **Open** or **Network EAP** and then tap **Save**.
- 7 For **Encryption**, select **WEP**, and then tap **Save**.
- 8 Select **User name**, type your user name, and then tap **Save**.
- 9 Select **Password** prompt, choose **Enter password now**, and then tap **Save**.



Note: You can use **Prompt for password** to troubleshoot your connection to the network if you have problems.

- 10 Select **User Password**, type a user password, and then tap **Save**.
- 11 Exit Intermec Settings.

Using Static WEP Security

The CN2 uses the Wired Equivalent Privacy (WEP) protocol to add security to your wireless network based on the 802.11b standard.

To use WEP security, you need:

- an access point with an 802.11b/g radio.
- a CN2 handheld computer with an 802.11b/g radio.

Configuring Static WEP Security With Funk Security

- 1 Make sure you have configured the communications and radio parameters on your CN2.

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- 2 Make sure you have chose Funk Security software as your security choice, as described in “Choosing Between Funk Security and Microsoft Security Software” on page 52.
- 3 Open Intermec Settings.
- 4 Tap **Communications > 802.11 Radio > Security Settings > Funk Security > Profile**.
- 5 For **Association**, choose **Open**, and then tap **Save**.
- 6 For **Encryption**, choose **WEP** and then tap **Save**.
- 7 For **Authentication**, choose **None** and then tap **Save**.
- 8 Select **WEP Key** and then define a value for each WEP key. You can define up to four WEP keys.

Enter an ASCII key or a hex key that is either 5 bytes or 13 bytes long depending on the type of WEP encryption you are using. Set a 5-byte value for 64-bit WEP or a 13-byte value for 128-bit WEP. Hex values must be preceded by 0x and contain 5 or 13 hex pairs.

- 9 Select **Network Key Index**, choose the WEP key you want to use for transmitting data.
- 10 Exit Intermec Settings.

Configuring Static WEP Security With Microsoft Security

- 1 Make sure you have configured the communications and radio parameters on your CN2.
- 2 Make sure you have selected Microsoft as your security choice, as described in “Choosing Between Funk Security and Microsoft Security Software” on page 52.
- 3 Open Intermec Settings.
- 4 Choose **Communications > 802.11 Radio > Security Settings > Microsoft Security**.
- 5 For **Network Authentication**, choose **Open**.
- 6 For **Data Encryption**, choose **WEP**.
- 7 For **Network Key Setting**, choose **Enter Key and Index**.

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- 8 For **Network Key Value**, enter an ASCII key or a hex key that is either 5 bytes or 13 bytes long depending on the type of WEP encryption you are using.

Set a 5-byte value for 64-bit WEP or a 13-byte value for 128-bit WEP. Hex values must be preceded by 0x and contain 5 or 13 hex pairs.

- 9 For **Network Key Index**, select the key you want to use for data transmission.
- 10 Exit Intermec Settings.

Loading Certificates

If you choose to use transport layer security (TLS) with WPA or 802.1x security, you need to have a unique client certificate on the CN2 and a trusted root certificate authority (CA) certificate. You can use a third-party CA to issue unique client certificates and a root certificate.

If you are using Active Directory® to issue certificates, you can use the Enroll Certificates application to load the certificates. If you are using a third-party CA, you can use the Import Root or User Certificates programs to load the certificates.



Note: Do not cold boot the CN2. Cold booting the computer resets the date and time. If you cold boot the CN2, you must immediately update the date and time or the installed certificates may be deemed invalid. For help setting the date and time, see Step 4 on page 106.

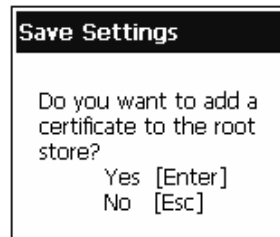
To load certificates on the CN2 if you are using Active Directory

- 1 Configure the network and radio settings for the CN2 to communicate with your certificate authority or establish an ActiveSync connection with the CA.
- 2 Tap **Start > Intermec Settings > Communications > 802.11 Radio > Security Settings > Certificates**.
- 3 Select **Enroll Certificates** and tap **Run App**.
- 4 From the Run Application box, tap **Yes**. The Enroll Certificates dialog box appears.

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- 5 Enter the **User Name**, **Password**, and **Server (IP address)** to log in to the CA server.
- 6 Tap **OK**. A dialog box appears asking if you want to load the root certificate.



- 7 Press **Enter** for yes. The Enrollment Tool message box appears telling you that the user certificate has been added.
- 8 Press **Enter** to close the Enrollment Tool message box.
- 9 Configure your CN2 for WPA or 802.1x security.

To load certificates on the CN2 if you are using a third-party CA

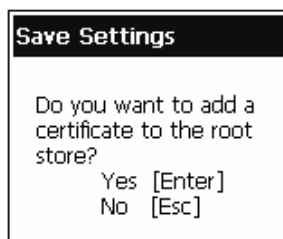


Note: You need to create the \temp\root and \temp\user folders on your CN2 before you can copy the certificate files to your handheld computer.

- 1 Copy your .cer file to the \temp\root folder on the CN2.
- 2 Copy your .der and .pvk files to the \temp\user folder on the CN2.
- 3 Tap **Start > Intermec Settings > Communications > 802.11 Radio > Security Settings > Certificates**.

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- 4 Select **Import Root Certificates** and tap **Run App** to load the .cer file. A dialog box appears asking if you want to add the certificate to the root store.



- 5 Tap **Enter** to add the certificate. A message box appears telling you that the root certificate has been imported.



- 6 Tap **OK** to close the Success message box.
- 7 Select **Import User Certificate** to load the .der and .pvk files. A message box appears telling you that the certificate has been imported.



- 8 Tap **OK** to close the Success message box.
- 9 Configure your CN2 for WPA or 802.1x security.

Disabling Security

If you choose not to use security with your wireless network, you can disable it on the CN2. Intermec recommends that you always set security in your network.

To disable security




- 1 Open Intermec Settings.
- 2 Tap **Communications > 802.11 Radio > Security Settings > Microsoft Security**.
- 3 For **Network Authentication**, choose **Open**.
- 4 For **Data Encryption**, choose **Disabled**.
- 5 Tap **Save**.
- 6 Exit Intermec Settings.

Viewing Wireless Network Information

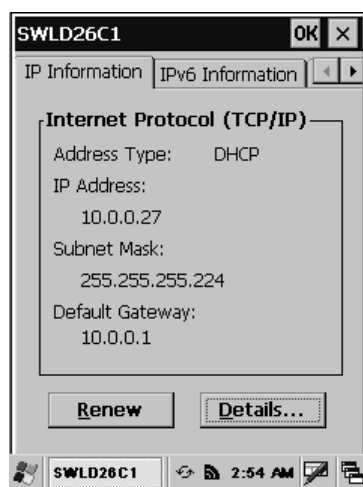
You can view wireless network information, such as current network parameters and network parameters and a list of available wireless networks.

This feature is available if you have Funk Security or Microsoft Security configured as your security choice, as described in “Choosing Between Funk Security and Microsoft Security Software” on page 52.

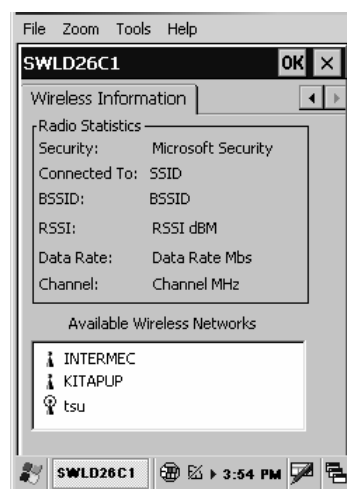
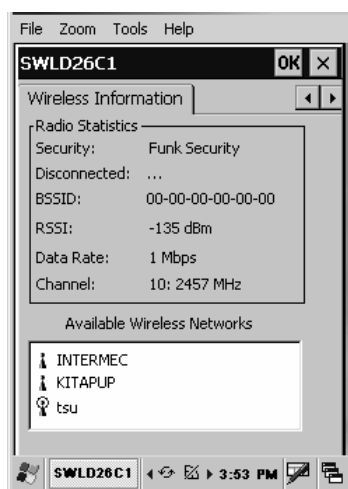
To view wireless network information

- 1 Configure and add your wireless CN2 to your network.
- 2 Double-tap the **Network Connection** icon ( or  or ) in the taskbar. The SWLD26C1 configuration screen appears.

Chapter 3 — Adding the CN2 to the Network



- 3 Tap the right arrow button (▶) twice and then tap the **Wireless Information** tab to bring the tab forward.



Wireless Network Information: This tab shows wireless network information for the CN2, including your security choice: Funk Security (the default) or Microsoft Security. This tab lets you view wireless network parameters and a list of available wireless networks. You cannot set parameters or select a network on this tab.

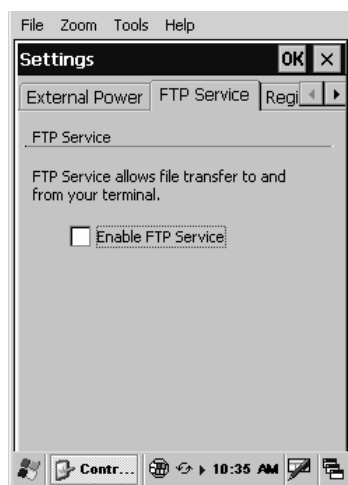
- 4 Tap **OK** to close the SWLD26C1 configuration screen.

Allowing FTP File Transfers To and From the CN2

If you want to use FTP (File Transfer Protocol) to transfer files to or from your CN2, you need to enable the FTP Service parameter through the Control Panel.

To allow FTP file transfers

- 1 Go to **Start > Settings > Control Panel**.
- 2 Double-tap the **Utilities** icon. The Settings screen appears.
- 3 Tap the **FTP Service** tab to bring the tab forward.



- 4 Tap the **Enable FTP Service** check box.
- 5 Tap **OK** to save your changes and exit the Settings screen.
- 6 Tap **X** to exit the Control Panel. The change takes effect immediately. You do not need to warm boot the CN2.

Using the Modem Dock for Internet Access and E-mail

If you have purchased the optional CN2 Modem Dock (P/N 075499), you can configure the CN2 to use the modem dock to connect to the Internet and to access e-mail.

If your Internet Service Provider (ISP) is providing your e-mail service, follow the steps in the next section, “Connecting to the Internet Through the Modem Dock,” before you follow the steps in “Setting Up an E-mail Account Through the Modem Dock” on page 78.

For details about installing and using the modem dock, see the *CN2 Modem Dock Quick Start Guide* (P/N 075481) which ships with the modem dock.

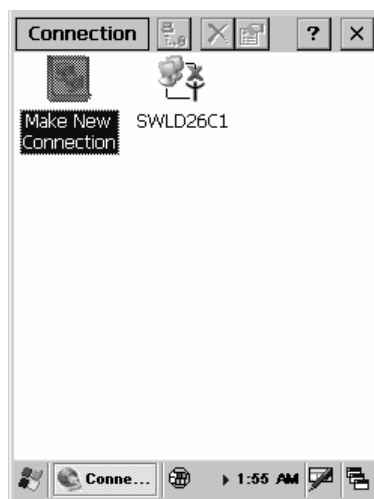
Connecting to the Internet Through the Modem Dock

You can connect to the Internet through the modem dock.

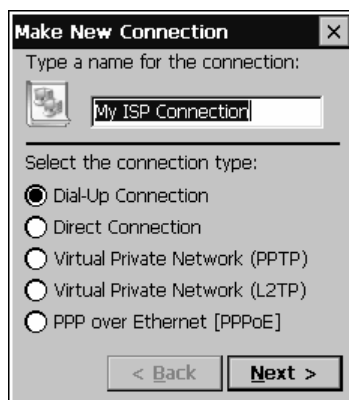
To configure a connection to your Internet service provider

- 1 Install the modem dock, as described in the *CN2 Modem Dock Quick Start Guide*.
- 2 Contact your ISP and obtain the following information:
 - ISP dial-up access phone number
 - User name
 - Password
- 3 Tap **Start > Settings > Network and Dial-up Connections**.

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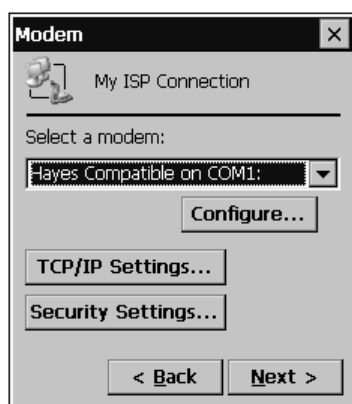


- 4 Double-tap **Make New Connection**.
- 5 In the **Type a name for the connection** field, enter a name for the connection, such as **My ISP Connection**.

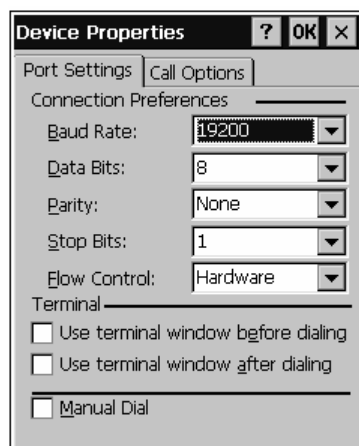


- 6 From the **Select the connection type** list, select **Dial-Up Connection** from the list of connection types.
- 7 Tap **Next**. The Modem screen appears.
- 8 From the **Select a modem** drop-down menu, choose **Hayes Compatible on COM1**.

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- 9 Tap **Configure**. The Device Properties screen appears.

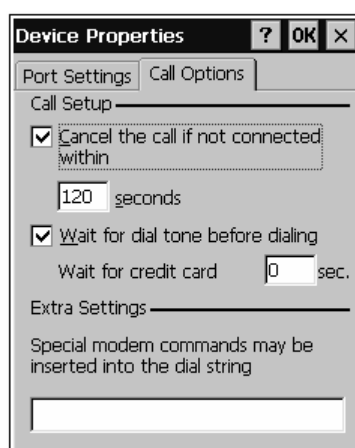


Connection Preferences: The connection preferences (such as **Baud Rate**) specify how the CN2 communicates with the modem dock.

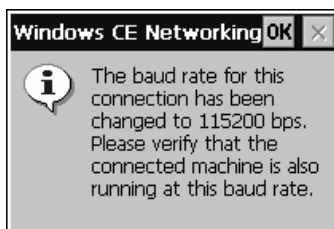
- 10 Set the **Baud Rate** to 115200 bps.

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- 11 (Optional) Tap the **Call Options** tab and make changes if necessary.



- 12 Tap **OK** at the top of the screen to return to the Modem screen.
- 13 If you changed the baud rate in Step 10, a message box appears. Tap **OK** to close the message box.



- 14 Tap **TCP/IP Settings** only if your ISP does not use a dynamically assigned IP address. When you are done making selections, tap **OK** at the top of the screen to return to the Modem screen.
- 15 Tap **Security Settings** to configure advanced security settings, if necessary. The Security Settings screen appears.

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When you are done making selections, tap **OK** at the top of the screen to return to the Modem screen.

- 16 Tap **Next** on the Modem screen.
- 17 Fill in the **Country/region code** field, the **Area code** field, and the **Phone Number** field with the information provided by your ISP.



Note: When you connect to the Internet for the first time, you can specify the exact numbers that the modem dials. For help, see the next procedure, “To connect to the Internet for the first time.”

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- 18 Check **Force long distance** if the modem needs to dial the country/region code, the area code, and the phone number. Or check **Force local** if the modem needs to dial only the phone number.
- 19 Tap **Finish**.
- 20 Perform the steps in the next procedure, “To connect to the Internet for the first time.”

To connect to the Internet for the first time

- 1 Tap **Start > Settings > Network and Dial-up Connections**.
- 2 Double-tap the icon for the connection you just configured. The Dial-Up Connection screen appears.



- 3 In the **User Name** field, enter the user name provided by your ISP.
- 4 In the **Password** field, enter the password provided by your ISP.
- 5 (Optional) Check the **Save password** check box if you do not want to enter the password every time you connect.
- 6 Tap **Dial Properties**. The Dialing Properties screen appears.

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- 7 By default, the CN2 assumes that you are dialing from work, on a phone system that requires you to enter a 9 before dialing. If you do not need to enter 9 before dialing, follow these steps:
 - a Choose **Home** from the **Location** drop-down list. The location setting has a dialing pattern that does not include a 9 before dialing.
 - b Make sure the **Area Code** and **Country/Region** are correct.
 - c (Optional) Tap **Edit**. The Edit Dialing Patterns screen appears. Make sure the dialing pattern is appropriate and tap **OK** to return to the Dialing Properties screen.
 - d Tap **OK** to return to the Dial-Up Connection screen.
- 8 Tap **Connect**. The modem dock connects to your ISP.

To connect to the Internet

- 1 Tap **Start > Settings > Network and Dial-up Connections**.
- 2 Double-tap the appropriate connection icon. The Dial-Up Connection screen appears.
- 3 Your user name automatically appears in the **User Name** field. Your password automatically appears in the **Password** field if you checked the **Save password** check box.
- 4 Tap **Connect**. The modem dock connects to your ISP.

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- 5 Tap **Hide** to minimize the Connected to *Name* screen, where *Name* is the name you configured for the connection.

To disconnect from the Internet

- Double-tap the **Connectivity** icon in the taskbar and then tap **Disconnect**.

Setting Up an E-mail Account Through the Modem Dock

You can send and receive e-mail messages using the modem dock and the Inbox application on your CN2. You need to set up a connection to an e-mail server.



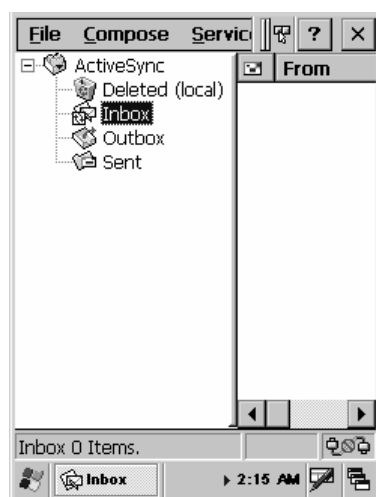
Note: The ISP or network must use a POP3 or IMAP4 e-mail server and an SMTP gateway.

You can use multiple e-mail services to receive your messages. For each e-mail service you intend to use, first set up and name the e-mail service. If you use the same service to connect to different mailboxes, set up and name each mailbox connection.

To configure your e-mail account

- 1 Contact your ISP and obtain the following information:
 - POP3 or IMAP4 host name
 - SMTP host name
 - User name
 - Password
- 2 Tap **Start** > **Programs** > **Inbox** to open the Inbox application.

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- 3 Tap **Service > Options**. The Options screen appears.
- 4 Drag the screen to the left to view the right side of the screen.
- 5 Tap **Add**. The Service name screen appears.
- 6 Select the appropriate service type from the **Service Type** drop-down menu, either **POP3** or **IMAP4**.
- 7 (Optional) Enter a meaningful name in the **Service Name** field. If you are setting up multiple e-mail services, each needs a unique name.
- 8 Tap **OK**.
- 9 In the **Connection** drop-down list, choose the appropriate connection. If you configured a connection to your ISP as described in the previous section, that connection appears in the list. You may want to choose that connection.
- 10 In the **POP3 Host** or **IMAP4 Host** field, enter the host name provided by your ISP.
- 11 In the **User ID** field, enter the user name provided by your ISP.
- 12 In the **Password** field, enter the password provided by your ISP.
- 13 If you do not want to type the password each time you connect, check the **Save Password** check box.

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- 14 Drag the screen to the left to view the right side of the screen.
- 15 If you want to be able to send e-mail from the CN2, in the **SMTP host for sending email** field, you must enter the SMTP host name provided by your ISP.



Note: The SMTP host name may be the same as your POP3 host name or IMAP4 host name.

- 16 (Optional) For help determining if you need to set the optional parameters like **Domain**, tap  to view the Inbox online help.
- 17 Tap **Next**. The POP3 Mail General Preferences screen appears.
- 18 Check or uncheck the check boxes to set your connection preferences. For help, tap  to view the Inbox online help.
- 19 Tap **Next**. The POP3 Mail Inbox Preferences screen appears.
- 20 By default, Inbox downloads only the message headers. If you want to download the entire e-mail message, select **Get full copy of message**.
- 21 Drag the screen to the left to view the right side of the screen.
- 22 (Optional) If you want to download attachments and meeting requests, check the appropriate check boxes.
- 23 Tap **Finish**.
- 24 (Optional) Tap the **Compose**, **Read**, **Delete**, and **Storage** tabs to further customize Inbox.
- 25 Tap **OK** to exit the **Options** screen.

To send and receive e-mail

- Tap **Start > Programs > Inbox**. For help, tap  to view the Inbox online help.



4 Developing and Installing Applications

Use this chapter to understand how to develop and install applications for the CN2. In this chapter, you will find these sections:

- Developing Applications for the CN2
- Installing Applications on the CN2
- Setting Up Applications to Persist Through a Cold Boot
- Launching Your Application Automatically

Developing Applications for the CN2

The CN2 runs applications programmed in Microsoft Embedded Visual C++. The CN2 can also run applications developed for the .NET Compact Framework using Microsoft C# and Visual Basic .NET.

Use this section to understand the hardware and software you need to perform these tasks:

- Developing a new application for the CN2
- Developing a web-based application for the CN2

Developing a New Application

To develop new applications to run on the CN2, use the Resource Kits available as a download from the Intermec Developer Library (IDL), which is located on the Intermec web site at www.intermec.com.

Each Resource Kit includes C++ and .NET components grouped by functionality:

- Data Collection Resource Kit
- Printing Resource Kit
- RFID Resource Kit
- Communications Resource Kit
- Bluetooth Resource Kit
- Device Resource Kit
- Mobile Gadgets Resource Kit
- Antares Migration Resource Kit (previously Intermec PSK)



Note: Not all Resource Kits (such as the Bluetooth Resource Kit) can be used with the CN2.

The IDL also includes a Resource Kit for each operating system. For the CN2, you need to download Resource Kit for the Microsoft CE .NET Operating System.

Chapter 4 — Developing and Installing Applications

You need these hardware and software components to use the Resource Kits:

- Pentium PC, 400 MHz or higher
- Windows 2000 (Service Pack 2 or later) or Windows XP (Home, Professional, or Server)
- For native C++ development, Microsoft eMbedded Visual C++ version 4.0 with eVC++ Service Pack 2
- For .NET Development and Compact Framework (C# and VB.NET), Microsoft Visual Studio .NET 2003
- 128MB RAM (196MB recommended)
- 360MB hard drive space for minimum installation (720MB for complete)
- CD-ROM drive compatible with multimedia PC specification
- VGA or higher-resolution monitor (Super VGA recommended)
- Microsoft Mouse or compatible pointing device

Developing a Web-Based Application

You can develop web-based data collection applications for use on the CN2. For help, see any HTML source book.

The CN2 contains Internet Explorer (IE) 6.0 for Windows CE for you to use. The Microsoft standard IE 6.0 is available from the desktop and provides all of the common elements you expect to find.

To open Microsoft Internet Explorer

- Double-tap **Internet Explorer** from the desktop. The Internet Explorer default window appears.

Installing Applications on the CN2

There are three approaches to installing applications on the CN2:

- You can package your application as a cabinet (.cab) file. Intermec recommends this approach.
- If you have a simple application, you may only need to deliver the .exe file.
- You can copy a directory structure that contains the application, supporting files, DLLs, images, and data files.

Intermec makes these recommendations:

- You should use .cab files to install your applications. The CN2 uses standard Windows CE .cab files and will install third-party .cab files. After the CN2 executes a .cab file, it deletes the .cab file.
- You should store your applications in a folder specific to your application under the \PROGRAM FILES folder. These applications are deleted during a cold boot.
- You should make sure that .cab files are saved after being executed and that applications are reinstalled during a cold boot by following the instructions in “Setting Up Applications to Persist Through a Cold Boot” on page 90.
- You should store your application data in one of these folders:

Where to Store Your Application Data Files

Folder	Description	Recommendation
SDMMC Disk	The SDMMC Disk folder shows the contents of the SD card. These files are not deleted during by a cold boot.	If your CN2 contains an optional SD card, Intermec recommends that you place application data files in this folder.
DiskOnChip	The DiskOnChip folder is an area of storage that is part of the CN2 flash memory. These files are not deleted during a cold boot.	If your CN2 does not contain an optional SD card, Intermec recommends that you place application data files in this folder.

Chapter 4 — Developing and Installing Applications

The following sections describe the three methods of installing files and applications on the CN2:

- To use ActiveSync, see the next section, “Installing Applications Using ActiveSync.”
- To use the SD card, see “Installing Applications Using the Optional SD Card” on page 89.
- To use Wavelink Avalanche, see “Installing Applications Using Wavelink Avalanche” on page 89.

Installing Applications Using ActiveSync

You can use ActiveSync to establish a connection between your PC and the CN2. ActiveSync allows you to transfer files, synchronize files, perform remote debugging, and other device management activities.



Note: ActiveSync is a free application available from the Microsoft web site.

To establish a partnership between your PC and the CN2, you need these items:

- USB interface cable (P/N 321-576-002)
- CN2 communications dock (P/N 225-696-001)
- ActiveSync version 3.7.1 or later

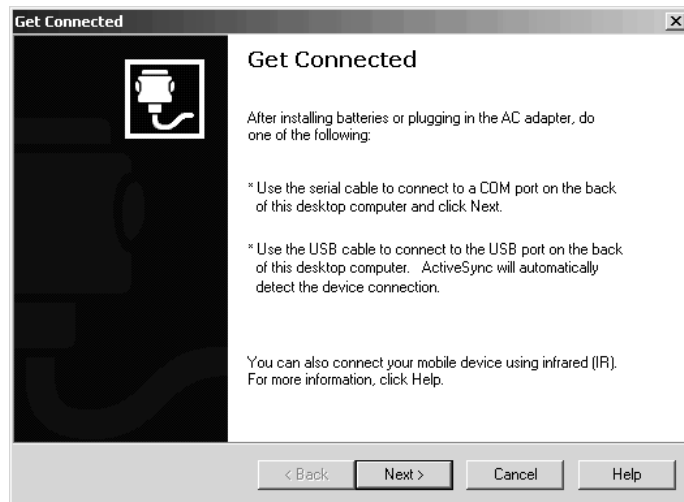
Installing ActiveSync and Establishing a Partnership

You can use a USB cable to establish your initial partnership between the CN2 and your PC.

To install ActiveSync and establish a partnership

- 1 Download ActiveSync from the Microsoft web site and follow the onscreen instructions for installing it on your PC. When the installation process is complete, the Get Connected dialog box appears.

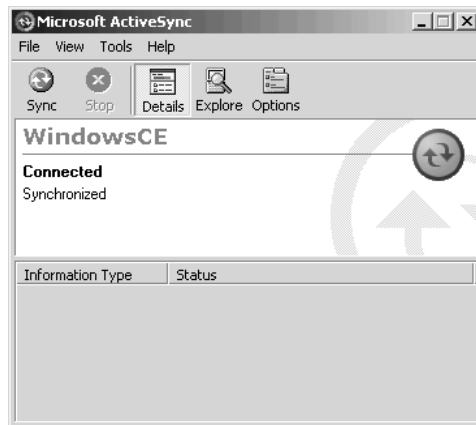
Chapter 4 — Developing and Installing Applications



- 2 Connect the CN2 to your PC with the CN2 communications dock and a USB cable.
- 3 Click **Next** in the Get Connected dialog box. ActiveSync detects a device on the USB port and prompts you to set up a new partnership.
- 4 In the Set Up a Partnership dialog box, click **Next**.
- 5 In the Select Number of Partnerships dialog box, select **Yes, I want to synchronize with only this computer**, and then click **Next**.
- 6 In the Select Synchronization Settings dialog box, check the items you want to synchronize and click **Next**.
- 7 In the Setup Complete dialog box, click **Finish**.

When the partnership has been established, the following screen appears on your PC showing the device name of your CN2 and the Connected status.

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The Microsoft ActiveSync Screen

An ActiveSync icon (↻) also appears on the CN2 status bar indicating that it has established an ActiveSync partnership with your PC.



Note: If ActiveSync does not establish a partnership on the first try, the Get Connected dialog box appears on your PC with the message “Your device was not detected.” Make sure all of your cables are securely connected and click **Next** on the Get Connected dialog box until your device is detected. You may need to remove the CN2 from the communications dock, and then insert it back into the communications dock to establish a partnership.

After the partnership is established, ActiveSync initiates all future connections. To connect to your PC using ActiveSync in the future, simply place a CN2 in the communications dock and turn on the CN2.

Using ActiveSync to Copy Files and Install Applications

You can use ActiveSync to copy files to the CN2 and to install applications. Use the following procedures to learn how to copy files and install applications on the CN2 using ActiveSync.

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To install an application on the CN2 using ActiveSync

- 1 Connect the CN2 to your PC using ActiveSync. For help, see the previous section, “Installing ActiveSync and Establishing a Partnership.”
- 2 On the Microsoft ActiveSync screen, click **Explore**. Windows Explorer opens the Mobile Device window of your CN2.



- 3 In Windows Explorer on your PC, browse to the file that you want to copy to your CN2.
- 4 Right-click the file and click **Copy**.
- 5 Place the cursor in the SDMMC Disk or DiskOnChip folder of your CN2, right-click, and click **Paste**.
- 6 The file is copied to the CN2 and you can see it using **My Computer** on the CN2.
- 7 Navigate to your application file and run it.

After your application is installed, you can run it from the Program files folder from My Computer.

Installing Applications Using the Optional SD Card

Using your SD card is the best method for you to install applications. For help inserting and removing the SD card, see “Increasing File Storage With the Optional SD Card” on page 26.

To install applications using the SD card

- 1 If you are using an SD card reader, remove the SD card from the CN2 and place it in the reader.
- 2 Copy your application file to the SD card.
If you are using ActiveSync or Wavelink Avalanche to copy the files to the SD card, place the application in the SDMMC Disk folder located in My Computer.
- 3 If you are using an SD card reader, insert the SD card back into the CN2.
- 4 Navigate to the SDMMC Disk folder and run your application.

After your application is installed, you can run it from the Program files folder from My Computer.

Installing Applications Using Wavelink Avalanche

You can use the Wavelink Avalanche device management system to install applications on all of your wireless CN2s.

The wireless CN2 ships with the Avalanche Enabler already loaded on it. The Avalanche Enabler is configured to activate automatically (typically on a warm boot).



Note: If you manually activate the Avalanche Enabler on the CN2, you may be prompted for a password when you exit the Avalanche Enabler. The default password is leave.

Each time the Avalanche Enabler is activated, the CN2 attempts to connect to the Avalanche Agent. When the CN2 connects to the Agent, the Agent determines whether an update is available and immediately starts the software upgrade, file transfer, or configuration update.

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To use Avalanche to remotely manage the CN2

- 1 Install software packages and updates for the CN2 using the Avalanche Management Console. For help using the console, see the online help.
- 2 Schedule the CN2 updates or manually initiate an update using the Avalanche Management Console.

For more information on using Wavelink Avalanche, contact your local Intermec representative or visit the Wavelink web site at www.wavelink.com.

Setting Up Applications to Persist Through a Cold Boot

If you install your applications as recommended in a folder in the \PROGRAM FILES folder, you have installed your applications into the object store. These applications are deleted during a cold boot.

To make sure your applications are reinstalled during the cold boot, you need to use .cab files to install applications and make sure the .cab files are copied to the \\DiskOnChip\Persistent Copy\CABFiles folder. On a cold boot, the .cab files are copied to the \CABFiles folder in the object store where they are executed and deleted. The original copy remains in the \\DiskOnChip\Persistent Copy\CABFiles folder to be installed on the next cold boot.

You can manually copy each .cab file to the \\DiskOnChip\Persistent Copy\CABFiles folder. Or you can customize the CN2 so that all .cab files are automatically copied after they are executed. You accomplish this by setting the PersistAfterInstall registry entry to 1.

There are two ways to edit registry entries:

- You can use a registry editing program. Run the Microsoft eMbedded Visual C++ Remote Registry Editor on your PC, using ActiveSync to connect to the CN2. Or download and run a third-party registry editing program on your CN2.
- You can write an application. An application gives you a convenient way to customize multiple CN2s. For help downloading and using Resource Kits, see “Developing a New Application” on page 82.

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The CN2 .cab file registry settings are located in
HKEY_LOCAL_MACHINE\Software\Intermec\ITCWCELoad.

CN2 .cab File Registry Entries

Registry Entry	Default	Description
CopyToLocation	\\DiskOnChip\Persistent Copy\CABFiles	<p>This registry entry specifies the location where .cab files are automatically saved after they are executed -- if PersistAfterInstall is set to 1.</p> <p>When this registry entry is set to the default, the .cab files are re-installed during a cold boot, as described on the previous page.</p> <p>When you set this registry entry to another location, the .cab files are not re-installed during a cold boot.</p>
PersistAfterInstall	0	<p>When this registry entry is set to the default, the .cab file is deleted after execution.</p> <p>When you set this registry entry to 1, the .cab file is saved to the location specified in the CopyToLocation registry entry.</p>

Launching Your Application Automatically

To launch your application automatically on the CN2 every time you perform a warm or cold boot, make sure your CAB file places a shortcut to your application in the \Windows\StartUp folder.

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5 Troubleshooting and Maintaining the CN2

Use this chapter to solve problems you may encounter while using the CN2. You will also find information on booting the computer, upgrading the CN2, and performing routine maintenance. In this chapter you will find these sections:

- Problems and Solutions
- Running Diagnostics
- Sending the CN2 to Intermec for Service
- Booting the CN2
- Upgrading the CN2
- Cleaning the Scanner Window and the Touch Screen

Problems and Solutions

These tables offer solutions to the problems you may encounter.

Problems While Operating the CN2

Problem	Solution
You press the Power key to turn on the CN2 and nothing happens.	Try these possible solutions in order: <ul style="list-style-type: none">• Make sure the battery door is installed correctly and completely closed.• Make sure you have a charged battery installed correctly. For help, see “Installing and Charging the Battery” on page 6.• The battery may be discharged. Replace the battery with a spare charged battery, or charge the battery and try again.• Warm boot the CN2. For help, see “Warm Booting the CN2” on page 104.
You press the Power key to turn off the CN2 and nothing happens.	To turn off (or suspend) the CN2, you need to hold the Power key for 2 to 3 seconds and then release it. If the CN2 is processing data, it may not turn off when you press the Power key. Wait until the CN2 finishes processing. If the CN2 appears to be locked up, warm boot the CN2. For help, see “Warm Booting the CN2” on page 104. If the CN2 does not respond to a warm boot, see “Cold Booting the CN2” on page 105.
The CN2 screen is not responding to the stylus.	Try these possible solutions in order: <ul style="list-style-type: none">• Recalibrate the screen. For help, see “Calibrating the Screen” on page 18.• Press and hold the Power key for 2 to 3 seconds, and then release it to turn off the CN2. Press the Power key again to turn on the CN2.

Chapter 5 — Troubleshooting and Maintaining the CN2

Problems While Operating the CN2 (continued)

Problem	Solution
You place the CN2 in the communications dock, and the Battery light turns on and is orange.	<ul style="list-style-type: none">• The temperature may not be within the charging range. Make sure that the temperature is from 0°C to 45°C (32°F to 113°F).• The battery may be damaged. Replace the battery.
The CN2 appears to be locked up and you cannot enter data.	<p>Try these possible solutions in order:</p> <ul style="list-style-type: none">• Wait at least 10 seconds and try again. If the CN2 is still connecting to the Intermec Application Server or the host, it ignores any input from the keypad or scanner.• Press and hold the Power key for 2 to 3 seconds, and then release it to turn off the CN2. Press the Power key again to turn on the CN2.• Warm boot the CN2. For help, see “Warm Booting the CN2” on page 104.• Cold boot the CN2. For help, see “Cold Booting the CN2” on page 105.• Try reloading the firmware. For help, see “Upgrading the CN2” on page 107.• If the CN2 will not boot or reset, contact your local Intermec service representative for help.
Nothing happens when you type on the USB keyboard attached to the CN2 modem dock.	<p>Try these possible solutions in order:</p> <ul style="list-style-type: none">• Make sure the USB keyboard is either a Dell Model SK-8115 or a Logitech Model Y-BF37.• Make sure all cables are securely connected, the CN2 is firmly seated in the dock, and you are running an application that accepts keyboard input.• If the modem dock is attached to an AC power source, make sure the USB Host Power parameter is set to On When Powered. If the modem dock is not attached to an AC power source, make sure the USB Host Power parameter is set to Always On. For help, see “Using the Optional USB Keyboard” on page 29.• Warm boot the CN2 and place it in the dock. For help, see “Warm Booting the CN2” on page 104.




Problems While Operating the CN2 (continued)

Problem	Solution
The CN2 exhibits unexpected behavior after you install or remove an application.	<p>You may need to reset the registry and clear the object store. Follow these steps:</p> <ol style="list-style-type: none">1 Tap Start > Control Panel.2 Double-tap the Utilities icon. The Settings window appears.3 Tap the right arrow button (▶) once and tap the Registry Reset tab. <div data-bbox="873 1016 1208 1461"></div> <ol style="list-style-type: none">4 Tap the Reset Registry button. The Confirm Reset message appears. <div data-bbox="876 1577 1088 1743"></div> <ol style="list-style-type: none">5 Tap Yes. The registry is reset and the CN2 cold boots. <p>Note: You can also use this procedure to return the CN2 to its default software configuration.</p>



Chapter 5 — Troubleshooting and Maintaining the CN2

Problems While Configuring Security



Problem	Solution
The CN2 does not appear to be authenticating and a Network Connection icon (  or ) does not appear on the status bar.	<p>The CN2 may not be communicating with your access point. Make sure the network name on the CN2 is the same as the network name (SSID) of the access point that you are trying to communicate with. The default network name is “INTERMEC.”</p> <p>The 802.1x security network may not be active. Make sure that the server software is properly loaded and configured on the server PC. For help, see the documentation that shipped with your server software.</p>
A Network Connection icon (shown above) appears in the status bar, but it disappears.	<p>The CN2 may not be communicating with the access point that you want it to communicate with. Make sure that the network name on the CN2 is the same as the network name of the access point that you are trying to communicate with. The default network name is “INTERMEC.”</p> <p>The access point that you are trying to communicate with may not be communicating with the server. Make sure your access point is turned on, properly configured, and has 802.1x security enabled.</p>
The CN2 indicates that it is not authenticated.	<p>Make sure that:</p> <ul style="list-style-type: none">• The User Name and Password parameters on your CN2 match the user name and password on your authentication server. You may need to re-enter the password on both your CN2 and the authentication server.• On your authentication server, the user and group are allowed and the group policy is allowed to log in to the server. For help, see the documentation for your authentication server software.• The IP address and secret key for your access point must match the IP address and secret key on your authentication server. You may need to re-enter the IP address and secret key on both your access point and authentication server.• The authentication server software is running on the server PC.

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Problems While Configuring Security (continued)


Problem	Solution
The CN2 indicates that it is authenticated, but it does not communicate with the host.	Make sure that the CN2 IP address, host IP address, subnet mask, and default router are properly configured for your network.
You receive a message saying, “The server certificate has expired or your system date is incorrect” after you cold boot the CN2.	The date and time on the CN2 are not saved through a cold boot. You need to re-enter the date and time and then save your changes. For help, see Step 4 on page 106.
You are setting up multiple access points in a network, with different SSIDs, and the connection fails.	The CN2 does not save WEP key values when you change the SSID. Re-enter the WEP key value after you change the SSID and save your changes. You should now be able to connect to the different access points.

Problems With Wireless Connectivity

Problem	Solution
A Network Connection icon ( or ) appears on the status bar, but the host computer is not receiving any data from the CN2.	<p>In a UDP Plus network, there may be a problem with the connection between the Intermec Application Server and the host computer. Check with your network administrator or see the user’s manual for the Intermec Application Server.</p> <p>In a TCP/IP network, there may be a problem with the connection between the access point and the host computer. Check with your network administrator or use your access point user’s manual.</p>
When you turn on the CN2 after it was suspended for a while (10-15 minutes or longer), it can no longer send or receive messages over the network.	<p>The CN2 may not be recognizing the network card. Turn off the CN2, and then turn it on again.</p> <p>The host may have deactivated or lost your current terminal emulation session. In a TCP/IP direct connect network, you need to turn off the “Keep Alive” message (if possible) from the host so that the TCP session is maintained while a CN2 is suspended.</p>

Chapter 5 — Troubleshooting and Maintaining the CN2

Problems With Wireless Connectivity (continued)

Problem	Solution
The CN2 is connected to the Intermec Application Server or host computer and you move to a new site to collect data. A Network Connection icon was visible but now the no network connection icon () is visible.	<p>You may have gone out of range of an access point.</p> <p>Try moving closer to an access point or to a different location to re-establish communications. Once you are in range again, the network connection icon appears again. Any data you collected while out of range is transmitted over the network.</p>
The no network connection icon (shown above) appears on the status bar.	<p>The no network connection icon appears in three situations:</p> <ul style="list-style-type: none">• The CN2 may not have an IP address. You must configure an IP address for the CN2 or make sure that DHCP assigned an address. Use Intermec Settings and select the radio tab to make sure an IP address has been assigned. For help, see “Configuring the CN2 Locally With Intermec Settings” on page 36.• The CN2 may not be connected to the access point. Try these possible solutions in order:<ul style="list-style-type: none">• Make sure the access point is turned on and operating.• Make sure you are not using the CN2 out of range of an access point. Try moving closer to an access point to re-establish communications.• Make sure the CN2 is configured correctly for your network. The radio parameters on the CN2 must match the values set for all access points the CN2 may communicate with. For help, see “Configuring 802.11b/g Radio Communications” on page 47.• If you have an 802.11b/g radio, the radio initialization process may have failed. Try resetting the CN2. For help, see “Booting the CN2” on page 104.• If you have tried these possible solutions and the no network connection icon still appears, you may have a defective radio card. For help, contact your local Intermec service representative.


Chapter 5 — Troubleshooting and Maintaining the CN2

Problems While Scanning Bar Codes

Problem	Solution
You cannot see a red beam of light from the scanner when you press the Scan button or one of the Side Scan buttons and aim the scanner at a bar code label.	<p>There are three possible problems:</p> <ul style="list-style-type: none">• You may be too far away from the bar code label. Try moving closer to the bar code label and scan it again.• You may be scanning the bar code label “straight on.” Change the scanning angle and try again.• The PSM files may not be correctly installed. For help, see “Upgrading the Persistent Storage Manager Files” on page 109. <p>You can test the effective range of the scanner. Move within 61 cm (2 ft) of a wall and test the scanner. You need to be within the scanning range to scan bar code labels. For help scanning bar codes, see “Scanning Bar Codes” on page 25.</p>
When you release the Scan button or Side Scan button, the Good Read light does not turn off.	<p>The Good Read light will remain on if you configure the CN2 to use continuous/edge triggering. If you configure the CN2 for level triggering and the Good Read light remains on, there may be a problem. Press the Scan button or one of the Side Scan buttons again without scanning a bar code label. If the light is still on, contact your local Intermec service representative.</p>
The scanner will not read the bar code label.	<p>Make sure you aim the scanner beam so it crosses the entire bar code label in one pass.</p> <p>The angle you are scanning the bar code label may not be working well, or you may be scanning the label “straight on.” Try scanning the bar code label again, but vary the scanning angle.</p> <p>The bar code label print quality may be poor or unreadable. To check the quality of the bar code label, try scanning a bar code label that you know will scan. Compare the two bar code labels to see if the bar code quality is too low. You may need to replace the label that you cannot scan.</p>

Chapter 5 — Troubleshooting and Maintaining the CN2

Problems While Scanning Bar Codes (continued)

Problem	Solution
The scanner will not read the bar code label (continued).	<p>Make sure the bar code symbology you are scanning is enabled. Use Intermec Settings to check the symbologies. If your bar code symbology is disabled, enable it and then try scanning the bar code label again.</p> <p> Note: If you restored the CN2 to factory default settings, some of the symbologies may have been disabled.</p> <p>Make sure that the application you are running on the computer is expecting input from a bar code. You may need to use the input panel to enter this information instead of scanning it.</p>
The scanner does not read the bar code labels quickly, or the scanning beam seems to be faint or obscured.	<p>The scanner window may be dirty. Clean the window with a solution of ammonia and water. Wipe dry. Do not allow abrasive material to touch the window.</p>
You scan a valid bar code label to enter data for your application. The data decoded by the CN2 does not match the data encoded in the bar code label.	<p>The computer may have decoded the bar code label in a symbology other than the label's actual symbology. Try scanning the bar code label again. Make sure you scan the entire label.</p> <p>To operate the computer quickly and efficiently, you should only enable the bar code symbologies that you are going to scan.</p>

Running Diagnostics

You can run Intermec Diagnostics to determine if there are any problems with your CN2. You can run Intermec Diagnostics at any time, even while running an application.

To run Intermec Diagnostics

- 1 Tap **Start** > **Settings** > **Control Panel**.
- 2 Double-tap the **Intermec Diagnostics** icon.



Intermec
Diagnostics

- 3 From the **Select test** drop-down list, choose which diagnostic test to run. There are two ways to choose a test:
 - You can tap the test.
 - You can type the number of the test on the numeric keypad or the USB keyboard.

For help deciding which tests to run, see the following table, “Summary of Intermec Diagnostics Tests.”

- 4 When you have finished running tests, press **ESC** to exit.



Note: You can exit Intermec Diagnostics at any time by pressing **ESC**. You may need to press **ESC** to exit the current test and then press **ESC** again to exit Intermec Diagnostics.

Summary of Intermec Diagnostic Tests

Test Name	Description	Tips
1. Backlight Test	Verifies that the backlight is working properly by turning it off, on, and testing each dim level.	<p>When you start the Backlight Power Control test, the backlight turns off.</p> <p>Tap near the top of the screen to turn the backlight on again so you can indicate if the test passed or failed.</p>

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Summary of Intermec Diagnostic Tests (continued)

Test Name	Description	Tips
2. Battery Information	Displays the charge levels for the main battery and the backup battery. Also indicates if AC power is detected.	Tap X to exit the test.
3. Display Test	Verifies that every pixel on the CN2 screen is working properly.	When each test action begins, a message explains what you should see on this test display. Press Enter or tap X to dismiss each message. Press Enter or tap the screen you finish examining each test display.
4. Hardware Configuration	Reads, verifies, and displays information about the hardware configuration. Also displays the version of the operating system (OS) running on your CN2.	You may be asked to provide this information if you contact Intermec Product Support. Tap X to exit the test.
5. Memory Information	Displays information about the RAM, which is divided into program memory and storage memory.	Tap X to exit the test.
6. Networking Test	Displays your IP address and validates your network connection.	Tap X to exit the test.
7. Audio Test	Verifies that the audio sounds are working correctly.	Tap X to exit the test.
8. Touch Screen Test	Verifies that the touch screen is working correctly.	A message directs you to draw on the screen with the stylus. Tap X to dismiss the message, and a white screen appears for you to draw on. When you finish drawing, press any key to exit. If the message appears again, tap X at the top of the screen to exit the test.
9. LED Test	Verifies that the LED is working correctly.	Tap X to exit the test.
10. Keypad Test	Verifies that each key is working correctly.	Tap X to exit the test.

Sending the CN2 to Intermec for Service

If you send the CN2 in for service, it is your responsibility to save the computer data and configuration. Intermec is responsible only for ensuring that the keypad and other hardware features match the original configuration when repairing or replacing your computer.

For help understanding your warranty and finding help, see “Global Services and Support” on page xi.

You may be asked for the version of the operating system running on your CN2. For help finding this information, see the Hardware Configuration test in the previous section, “Running Diagnostics.”

Booting the CN2

You seldom need to warm or cold boot the CN2. The CN2 uses the configuration currently saved in flash memory during the boot process.

You need to boot the CN2 when an application is locked up and will not respond, when you upgrade the firmware, or when you reflash the computer. The next instructions explain how you warm and cold boot the CN2.

Warm Booting the CN2

If your charged CN2 does not resume after pressing the **Power** key, or if the computer or an application is locked up, you may need to warm boot it.

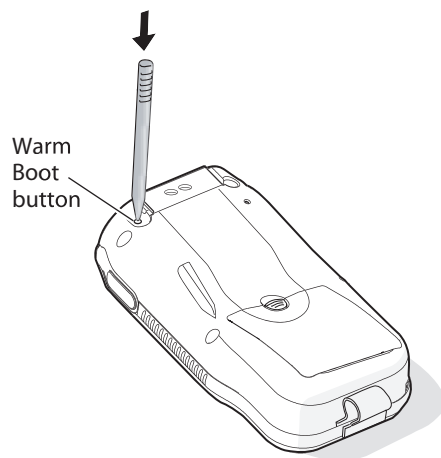
The following procedures explain the two ways to warm boot the CN2:

- Using the Warm Boot button
- Using the Power key

To warm boot the CN2 using the Warm Boot button

- Using the end of the stylus, press the **Warm Boot** button inside of the stylus holder.

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The screen goes blank immediately. The screen remains blank for a few seconds, the Refreshing the File System dialog box appears, and the CN2 warm boots.

To warm boot the CN2 using the Power key

- 1 Press and hold the **Power** key for approximately 10 seconds.



Note: After about 5 seconds, the backlight toggles (turns on or off). Keep holding the **Power** key for another 5 seconds until the backlight flashes.

- 2 Release the **Power** key. The screen remains blank for a few seconds, the Refreshing the File System dialog box appears, and the CN2 warm boots.

Cold Booting the CN2

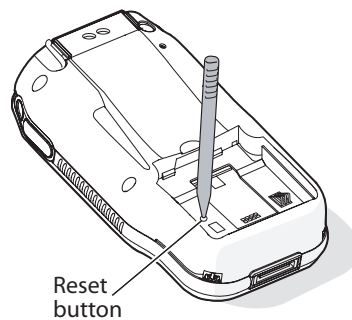
If the CN2 or application is locked up and does not respond to a warm boot, follow this procedure to perform a cold boot. When you perform a cold boot, all data in your RAM storage is deleted and applications installed in the object store are deleted.

To cold boot the CN2

- 1 Open the battery door and remove the battery. For help, see “Removing the Battery” on page 8.

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- 2 Using the end of the stylus, press the **Reset** button on the inside of the battery compartment.



Do not use force or a sharp object when pressing the Reset button. You may damage the Reset button.

Attention: N'employez pas la force ou un objet pointu quand appuyant sur le remettez à zéro le bouton. Vous pouvez endommager le remettez à zéro le bouton.

Vorsicht: Keine Gewalt anwenden oder scharfe Gegenstände verwenden, um die Rücksetztaste zu drücken. Das könnte die Rücksetztaste beschädigen.

- 3 Install the battery and battery door. After approximately 4 seconds, the CN2 starts the power on sequence.
- 4 The date and time settings are not saved through a cold boot. You need to reset the time and date:
 - a Tap **Start** > **Settings** > **Control Panel**.
 - b Double-tap the **Date/Time** icon.
 - c Set the date and time.
 - d Tap **OK** to save the new time and date.
 - e Tap **X** to exit Date/Time.
 - f Tap **X** to exit Control Panel.

Upgrading the CN2

When you upgrade your CN2, you are updating these two components:

- Operating system (OS)
- Persistent Storage Manager (PSM) files

Upgrading the Operating System

When you upgrade the operating system, you erase the current configuration and replace it with the new default configuration. You will need to set the network communications parameters on the CN2 to reestablish communications with the other devices in the wireless network.

To upgrade the OS, you need:

- an SD card formatted as FAT16.



Note: The CN2 currently supports SanDisk SD cards only. Intermec cannot guarantee that other SD cards will work with the CN2.

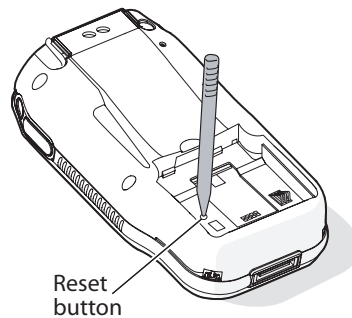
- an SD card reader.
- the latest upgrade ZIP file. This file is available from the Intermec web site at www.intermec.com. Go to **Service & Support > Downloads**. Make sure the file you select is for your language and that it has an SD at the end of the file name.

To upgrade the operating system

- 1 Download the latest upgrade ZIP file from the Intermec web site to your desktop PC.
- 2 Unzip the files on your desktop PC.
- 3 Place the SD card in the SD card reader.
- 4 Copy the nk.bin and eboot.bin files to your SD card. Place the files in the SDMMC Disk folder.
- 5 Open the battery door and remove the battery. For help, see “Removing the Battery” on page 8.

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- 6 Insert the SD card into the CN2. For help, see “Increasing File Storage With the Optional SD Card” on page 26.
- 7 Using the end of the stylus, press the **Reset** button on the inside of the battery compartment.



Caution

Do not use force or a sharp object when pressing the Reset button. You may damage the Reset button.

Attention: N'employez pas la force ou un objet pointu quand appuyant sur le remettez à zéro le bouton. Vous pouvez endommager le remettez à zéro le bouton.

Vorsicht: Keine Gewalt anwenden oder scharfe Gegenstände verwenden, um die Rücksetztaste zu drücken. Das könnte die Rücksetztaste beschädigen.

- 8 Hold down a key while you install the battery:
 - On the numeric keypad, hold down the **8** key while you install the battery. Do not release the **8** until the CN2 Bootloader Menu appears.
 - On the scroll keypad, hold down the **▼** key while you install the battery. Do not release the **▼** until the CN2 Bootloader Menu appears.
- 9 Install the battery door and place the CN2 in a communications dock.
- 10 Select **Update OS + Bootloader** from the menu:
 - On the numeric keypad, use the **8** key as a down arrow and the **2** key as an up arrow to select **Update OS + Bootloader** and then press **Enter**.

Chapter 5 — Troubleshooting and Maintaining the CN2



Note: The **8** and **2** keys on the numeric keypad will function as arrow keys only until the OS loads.

- On the scroll keypad, use the ▼ and ▲ keys to select **Update OS + Bootloader** and then press **Enter**.

Messages about the download status appear at the bottom of the screen. The “Need Reboot” message appears and **Cold Boot** is selected.

- 11 Press **Enter**. The CN2 cold boots and the Refreshing File System status box appears.
- 12 If the Confirm File Replace dialog box appears, tap **Yes To All**. The CN2 finishes rebooting, and your operating system is updated.

Upgrading the Persistent Storage Manager Files

To upgrade the Persistent Storage Manager (PSM) files for your CN2, you need:

- the device upgrade ZIP file containing the PSM files. This file is available from the Intermec web site at www.intermec.com. Go to **Service & Support > Downloads**.
- an SD card reader.

To upgrade the PSM files

- 1 Copy the device upgrade ZIP file to your PC, and unzip the PSM files. You should see these folders:
 - 2577
 - DOCIImage
- 2 Remove the SD card from the CN2 and place it in the SD card reader. For help, see “Increasing File Storage With the Optional SD Card” on page 26.
- 3 Copy the 2577 and DOCIImage folders to the SD card.
- 4 Install the SD card in your CN2.

Chapter 5 — Troubleshooting and Maintaining the CN2

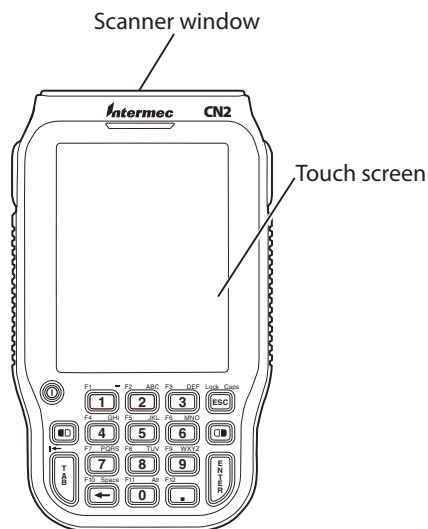
- 5 Cold boot your CN2. For help, see “Cold Booting the CN2” on page 105. A dialog box appears telling you that it is updating the PSM. When this process is complete, the CN2 cold boots again and installs the files.

After the CN2 cold boots, the Refreshing the File System dialog box appears. Your CN2 is loaded with the new PSM files.

- 6 Remove the SD card.

Cleaning the Scanner Window and the Touch Screen

To keep the computer in good working order, you may need to clean the scanner window and touch screen with a solution of ammonia and water.



Cleaning the CN2: You can clean the scanner window and the touch screen as often as needed for the environment in which you are using the computer. You can help keep the touch screen clean by using the stylus, instead of your fingertip, to tap the screen.

Chapter 5 — Troubleshooting and Maintaining the CN2



There are no user-serviceable parts inside the CN2. Opening the unit will void the warranty and may cause damage to the internal components.

Attention: Le CN2 ne contient pas de pièces réparables par l'utilisateur. Le fait d'ouvrir l'unité annule la garantie et peut endommager les pièces internes.

Vorsicht: Im Modell CN2 gibt es keine Teile, die vom Benutzer gewartet werden können. Wenn das Gerät geöffnet wird, macht das die Garantie nichtig und kann die internen Komponenten beschädigen.

To clean the scanner window and touch screen

- 1 Press and hold the **Power** key for 2 to 3 seconds, and then release it to turn off the CN2.
- 2 Dip a clean towel or rag in the ammonia solution and wring out the excess. Wipe off the scanner window and touch screen. Do not allow any abrasive material to touch these surfaces.
- 3 Wipe dry.

To clean the scanner window

- You can use the CN2 Screen Cleaner Kit (P/N 346-065-101) to clean the scanner window.

Chapter 5 — Troubleshooting and Maintaining the CN2



A Specifications and Accessories

Physical and Environmental Specifications

Use this section to find technical information about the CN2 and its available features and options.

Physical Dimensions

Length:	14.7 cm (5.8 in)
Width:	8.6 cm (3.4 in)
Thickness:	3.5 cm (1.4 in)
Weight:	370 g (11.9 oz)

Power and Electrical Specifications

Operating:	Rechargeable 2150 mAh lithium-ion battery
Backup:	Rechargeable NiMH 20 mAh battery
Electrical rating:	⎓ 3.7 V; 1.5 A peak

Temperature and Humidity Specifications

Operating:	0°C to 50°C (32°F to 122°F)
Storage:	-10°C to 50°C (14°F to 122°F)
Charging:	0°C to 45°C (32°F to 113°F)
Humidity:	5% to 95% relative humidity, non-condensing
Environmental rating:	IP64

Screen Specifications

- RGB 240 x 320 pixels
- 8.9 cm (3.52 in) diagonal square active area, ¼ VGA

Keypads

- 18-key numeric keypad
- 10-key scroll keypad

Appendix A — Specifications and Accessories

Bar Code Symbolologies

- Codabar
- Code 39
- Code 128
- Interleaved 2 of 5
- UPC/EAN
- MSI

1D Linear Imager Reading Distances

This table contains reading distance on the 1D line.

Symbology	Density (mm)	Density (mil)	Min (mm)	Max (mm)	Min (inch)	Max (inch)
Code 39	0.1	4	95	136	3.7	5.4
	0.3	12	45	240	1.8	9.4
	0.5	20	44	300	1.7	11.8
	1	39	120	400	4.7	15.7
EAN	0,33 mm/ 100% contrast	13 mils/ 100% contrast	45	240	1.8	9.4
	0,33 mm/ 25% contrast	13 mils/ 25% contrast	61	157	2.4	6.2

Accessories for the CN2

You can use these accessories (sold and ordered separately) with the CN2. To order accessories, contact your local Intermec sales representative.

CN2 Battery (P/N 074201)

Use the lithium-ion battery to provide main power to the computer.

CN2 Universal Power Supply (P/N 074246-002)

Use this power supply to provide power to the CN2 and charge its battery when it is in the CN2 communications dock or CN2 modem dock.

Appendix A — Specifications and Accessories

CN2 Universal Power Supply with Hirose Connector (P/N 074246-003)

Use this power supply to provide power to the CN2 and charge its battery. You connect this power supply directly to the Hirose connector on the CN2.

CN2 Car Charger (P/N 225-706-001)

Use this power supply to provide power to the CN2 and charge its battery while in the car. You connect one end of this power supply directly to the Hirose connector on the CN2, and connect the other end to the car lighter jack. The battery is fully charged in about 4 hours.



Caution

You must use only the Intermec power supply approved for use with the CN2. Using any other power supply will damage the CN2.

Attention: Vous devez utiliser seulement le bloc d'alimentation Intermec désigné pour le CN2. L'utilisation d'autre blocs d'alimentation endommagera le CN2.

Vorsicht: Mit dem Modell CN2 darf nur der dazu genehmigte Intermec-Netzteil verwendet werden. Die Verwendung eines anderen Netzteils wird das Modell CN2 beschädigen.

CN2 Communications Dock (P/N 225-696-001)

Use the communications dock to charge your battery, to provide power to your CN2, and to communicate through a USB connection.

CN2 Modem Dock (P/N 075499-001)

Use the modem dock to communicate through a modem connection, to communicate through a USB connection, to charge your battery, to provide power to the CN2, and to attach a USB keyboard to the CN2.

USB Type B Interface Cable (P/N 321-576-002)

Use the USB Type B interface cable with the communications dock and modem dock to transfer data and applications through a USB connection.

Appendix A — Specifications and Accessories

CN2 Two-Wire Phone Cord (P/N 074326)

Use the 2-wire phone cord with the modem dock.

CN2 Serial Adapter (P/N 074247)

Use the serial adapter to turn the 16-pin serial port (COM1) on the CN2 into a DB9 (9-pin) male serial connector that you can connect to a serial printer. For help connecting the serial adapter to another device, see the “Serial Port Settings” table on page 122.

CN2 Handstrap (P/N 075400)

Use the handstrap for a comfortable way to hold the CN2 for extended periods of time.

CN2 Holster (P/N 074490)

Use the holster for a convenient way to carry the CN2 when you are not using it.

CN2 Dust Cover (P/N 074103)

Use the dust cover to protect the CN2 keypad in dusty environments.

CN2 Screen Protector Kit (P/N 346-065-005)

Use the screen protector kit to attach a protective film directly to the CN2 touch screen. The kit contains 25 protective films.


CN2 Screen Cleaner Kit (P/N 346-065-101)

Use the screen cleaner kit to clean the CN2 touch screen.

CN2 Replacement Stylus Kit (P/N 075405)

Use this kit to replace your lost stylus. The kit contains 5 replacement styli.

Appendix A — Specifications and Accessories



B Default Configuration

Default Configuration

Use the following tables to see the default configuration settings of the CN2. If you restore the CN2 to factory default settings, it will use these values. The tables are organized according to the options in Intermec Settings.

Default Scanner Configuration

Symbology	Default Value
Codabar	Enabled
Code 39	Enabled
Code 128	Enabled
Interleaved 2 of 5	Enabled
MSI	Enabled
UPC/EAN	Enabled

Symbology Options	Default Value
Preamble	No characters (disabled)
Postamble	No characters (disabled)
Global Symbology ID	Disable

Virtual Wedge Settings	Default Value
Virtual Wedge	Enabled
Grid	No characters (disabled)

Appendix B — Default Configuration

Default Communications Configuration

Communications Settings	Default Value
DHCP	Enable
Current Device IP Address	127.0.0.1
Primary DNS	0.0.0.0
Secondary DNS	No characters (disabled)
Primary WINS	0.0.0.0
Secondary WINS	No characters (disabled)

802.11 Radio Settings	Default Value
Security Settings	
Security Choice	Funk Security
Active Profile	Profile 1
Profile 1	
Network Type	Infrastructure
Channel	3
Network name (SSID)	INTERMEC
Power Management	Enabled (PSP)
Authentication	None
Association	Open
Encryption	None
Network Key Index	Key 1
User Name	anonymous
Password prompt	Disabled
User Password	No characters (disabled)
Inner Authentication - TTLS	MS-Chapv2
Inner Authentication - PEAP	EAP/MS-Chapv2
Inner EAP	EAP/MD5
Validate Server Certificate	No
Mixed Cell	On
Logging	Off
Detect Rogue APs	Off
Radio Power Management	Disabled (CAM)
Device Name	WindowsCE

Appendix B — Default Configuration

UDP Plus Settings	Default Value
UDP Plus Activate	Disabled
Controller IP	0.0.0.0
Controller Port	5555
Ack Delay Upper Limit	5000 ms
Ack Delay Lower Limit	300 ms
Retries	7
Send Timer	20 sec
Receive Timer	45 sec

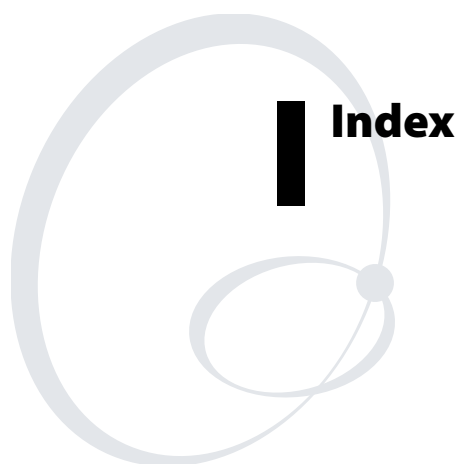


Note: The default Serial Port Settings are listed in the following table. An application can change these settings.

Serial Port Settings	Default Value
Baud Rate	115200
Data Bits	8
Parity	N
Stop Bit	1
Flow Control	None

Default Device Settings Configuration

Device Settings	Default Value
Beeper Volume	Very high
Backlight Timeout	1 minute
Power Management	
User Idle	1 minute
System Idle	1 minute
Suspend	1 minute



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⏏ *See* Caps Lock icon

■ *See* Green key

■ *See* Green mode

📶 *See* Network Connection icon

■ *See* Orange key

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