

Summary

This document explains how each of the various Digi products running ZNet 2.5 can be upgraded to the ZB protocol which supports the latest ZigBee standard, the ZigBee PRO Feature Set. XBee products and ConnectPort X gateways running the ZNet 2.5 protocol do not support over-the-air firmware upgrades, so please follow the instructions below.

For assistance, please contact Digi RF Support:

- 866-765-9885 (U.S. and Canada) or
- +1-801-765-9885
- www.digi.com/support

XBee OEM Modules Section

These instructions pertain to any part number beginning "XB24-B..." or "XBP24-B..."

To upgrade your XBee ZNet 2.5 module to ZB, please do the following:

- 1. Ensure you have the latest version of X-CTU installed (<u>www.digi.com/xctu</u>).
- 2. Ensure you have the latest available versions of ZB firmware by doing the following:
 - a) Open X-CTU software to the "Modem Configuration" tab.
 - b) Click "Download new versions..." button and select 'Web.'
 - c) Click "Done" when the action is finished.
- 3. Open X-CTU software to the "PC Settings" tab.
- 4. Select the appropriate COM port and port settings (9600, 8, None, 1 are default), and choose Flow Control: Hardware.
- 5. If upgrading firmware on a module running API firmware, place a check in the "Enable API" checkbox.



- Go to the "Modem Configuration" tab and select either "XB24-ZB" or "XBP24-ZB" from the "Modem:" pull-down menu, depending on whether you have an XBee or XBee-PRO module, respectively.
- 7. Select the desired firmware type from the "Function Set" pull-down menu (Coordinator API or AT, Router API or AT, or End Device API or AT).
- 8. Select the desired firmware version from the "Version" pull-down menu (the version at the bottom of the list is the latest).
- 9. Place a check in the "Always update firmware" checkbox.
- 10. Click the "Write" button.

XBee Adapters and XBee Sensors

These instructions pertain to any part number beginning "XA-B14..." or "XS-B14..."

To upgrade your XBee ZNet 2.5 Adapter to ZB, please do the following:

- 1. Ensure you have the latest version of X-CTU installed (<u>www.digi.com/xctu</u>).
- 2. For USB connect the Adapter to the PC that has the X-CTU software installed, then proceed to step 3.
- 3. For 232, 485, AIO and DIO Adapters
 - a. Carefully open the Adapter case by inserting a flat screw driver blade into slots on each side of the enclosure and twisting.
 - b. Remove the blue XBee module from the Adapter board.
 - Place the XBee module on the RS-232 interface board that is connected to your PC.
 - d. Leave power disconnected.
- 4. Launch X-CTU.
- 5. Go to "PC Settings" tab and set



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- a. Baud = 9600
- b. Flow Control = HARDWARE
- c. Data Bits = 8
- d. Parity = NONE
- e. Stop Bits = 1

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PC Settings Range Test Terminal Modern Configur	ation	
Com Port Setup		
Select Com Port Communications Port (COM1)	Baud	9600
	Flow Control	
	Data Bits	8 🔳
	Parity	NONE 💌
	Stop Bits	1 💌
	Tes	t / Query
Host Setup User Com Ports Ethernet Com Ports		
API Enable API Liss second characters (ATAR = 2)		
ASCII Hex Command Character (CC) + 2B		
Guard Time Before (BT) 1000		
Guard Time After (AT)		
Modem Flash Update		
J No baud change		

- 6. Go to "Modem Configuration" tab.
 - a. Select Modem = XB24-ZB
 - b. Select Function Set = ZigBee Router AT



- c. Select Version = 2241
- d. Enable "always update firmware"

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PC Settings Range Test Terminal Modern Configuration
Modem Parameters and Firmware Parameter View Profile Versions
Read Write Restore Clear Screen Save Download new
Always update firmware Show Defaults Load versions
Modern: XBEE-PBD Eurotion Set
XBP24-ZB V ZIGBEE ROUTER AT V 2241 V
🖬 SC - Scan Channels
🚽 🖥 SD - Scan Duration 👘 👘
🖢 ZS - ZigBee Stack Profile
V Channel Verification
IN - Join Notification
 UP - Operating PAN ID D - Operating 16-bit PAN ID
C - Number of Remaining Children
🔤 DH - Destination Address High
🔤 🖥 DL - Destination Address Low
NI - Node Identifier
- NH - Maximum Hops
B H - Broadcast Hadius
AR - Many-to-Une Houte Broadcast Time
Careforms and the DIO7 line of the methods. Onlines includes CTC flow combed Divised
Input and Output, or RS-485 enable control.
COM1 9600 8-N-1 FLOW:HW

- 7. Click write.
- 8. When action required comes up:
 - a. Hold reset button.
 - b. Apply power.
 - c. Release reset.
- 9. Action required will close.



- 10. Install will complete.
- 11. If Adapter is a 485 Adapter, perform these steps, otherwise continue to next step.
 - a. In Modem Configuration Tab
 - b. Under Serial Interfacing: DZ = 7- RS-485 Enable High

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PC Settings Range Test Terminal Modem Configuration
Modem Parameters and Firmware Parameter View Profile Versions Read Write Restore Clear Screen Save Download new versions Always update firmware Show Defaults Load Versions
Madem: YPEE PD0 Function Set
XBP24-ZB ▼ ZIGBEE ROUTER AT
 RF Interfacing PL - Power Level PM - Power Mode Security EE - Encryption Enable EO - Encryption Options KY - Encryption Key Serial Interfacing BD - Baud Rate NB - Parity RO - Packetization Timeout (7) D7 - DIO7 Configuration RO - Packetization Timeout (7) D7 - DIO7 Configuration AT Command Options CT - AT Command Mode Timeout GT - Guard Times CC - Command Sequence Character Sleep Modes SP - Cyclic Sleep Period SN - Number of Cyclic Sleep Periods Configure options for the DIO7 line of the module. Options include: CTS flow control, Digital Input and Output, or RS-485 enable control.
COM1 9600 8-N-1 FLOW:HW

c. Under Addressing: DD = 20006



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PC Settings Range Test Terminal Modern Configuration
Modem Parameters and Firmware Parameter View Profile Versions
Read Write Restore Clear Screen Save Download new
Always update firmware Show Defaults Load versions
Modem: XBEE-PRO Function Set Version
XBP24-ZB 💌 ZIGBEE ROUTER AT 💽 2241 💌
🔤 🖬 OI - Operating 16-bit PAN ID 🗾
📄 🔚 NC - Number of Remaining Children
Addressing DH Destination Address High
DI - Destination Address Low
INI - Node Identifier
- NH - Maximum Hops
🔤 🗄 BH - Broadcast Radius
🚽 🖥 AR - Many-to-One Route Broadcast Time
20006 DD - Device Type Identifier 20006
NT - Node Discovery Backoff
NU - Node Discovery Uptions
Sn - Seial Number Fight
MY - 16-bit Network Address
NP - Maximum Number of RF Payload Bytes
🗄 💼 ZigBee Addressing
🖻 🔄 RF Interfacing
PL - Power Level
Set/read the device type identifier value. This can be used to differentiate multiple XBee-based products.
RANGE:0-0xFFFFFFFF
COM1 9600 8-N-1 FLOW:HW

- d. Click Write.
- 12. Replace module in Adapter board and reassemble the case.

XBee Wall Routers

These instructions pertain to any part number beginning "XR-B14..."



All XBee Wall Routers are sealed as part of their UL certification, and are therefore not field upgradeable. To accommodate this, Digi has instituted a no-cost Return Merchandise Authorization (RMA) procedure for customers wishing to upgrade from ZNet 2.5 to ZB Wall Routers. This program will remain in effect until 1 July, 2009. This will require customers to return their old ZNet 2.5 Wall Router(s) before replacement product will be shipped.

Shipping: Digi will pay for domestic ground shipping for all Wall Router ZNet 2.5 returns. Customers requiring international or expedited means of shipping will need to pay the added expense involved.

ConnectPort X Gateways with ZNet 2.5

These instructions pertain to any part number beginning "X2-B..." "X4-B..." and "X8-B..."

This method requires ConnectPort X gateways to have 2.8.1.x or later EOS firmware. To update the XBee radio firmware:

- Unzip the ZNet 2.5 to ZB Conversion Kit.zip file and then unzip the xbee_zb.zip file within it. This file can be found at: ftp://ftp1.digi.com/support/images/ZNet%202.5%20to%20ZB%20Conversion%20Kit.zip
- Access the CP-X's Web UI and navigate to Configuration > XBee Network > Firmware Update.



How to Upgrade Existing ZNet 2.5 Products to ZB (ZigBee PRO Feature Set)

Digit	ConnectPort X2 Configuration and Management	
	•) Heli
, and the second s	XBee Configuration	
onfiguration Network	Network View of the XBee Devices	
XBee Network System	▼ Firmware Update	
Remote Management Security	Select a file containing firmware for the gateway radio module.	
plications Python	Firmware files may end with a .ebl or .oem extension. Files ending with .zip or .ehx cannot be used on this pa	ge.
	The firmware version must be compatible with the gateway radio, and with other nodes on the network.	
Connections Event Logging	If the gateway is enabled, most radio settings will be preserved during the firmware update. Some settings, as encryption keys, may not be preserved and must be entered again.	such
ministration File Management	After the firmware is loaded successfully, the gateway radio will be restarted.	
Backup/Restore	Radio Type: XBee ZNet 2.5/ZB (0x1941)	
Jpdate Firmware Factory Default Settings	Firmware: 0x1147	
Reboot	Firmware File: Browse	
jout	Update	

 Click the browse button, and find the directory where you unzipped the xbee_zb.zip file, and select either XB24-ZB_2141.ebl for an XBee module, or XBP24-ZB_2141.ebl for an XBee-PRO module, depending on which type of module is in your CP-X gateway.



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	ConnectPort X2 C	Configuration and Mana	nagement
	hoose file		<u>? ×</u>
	Look in: 🗀 ebl_files		
Home Configuration Network XBee Network System Remote Managemen Security Applications Python Management Connections Event Logging		B24-ZB_2941.ebl (a) XBP24-ZB_2921.ebl BP24-ZB_2021.ebl (a) XBP24-ZB_2941.ebl BP24-ZB_2121.ebl (b) XBP24-ZB_2941.ebl BP24-ZB_2121.ebl (b) XBP24-ZB_2941.ebl BP24-ZB_2121.ebl (b) XBP24-ZB_2941.ebl BP24-ZB_2221.ebl (b) XBP24-ZB_2941.ebl BP24-ZB_2221.ebl (b) XBP24-ZB_2941.ebl BP24-ZB_2321.ebl (b) XBP24-ZB_2941.ebl BP24-ZB_2321.ebl (b) XBP24-ZB_2941.ebl BP24-ZB_2321.ebl (b) XBP24-ZB_2921.ebl BP24-ZB_2321.ebl (b) XBP24-ZB_2921.ebl BP24-ZB_2321.ebl (b) XBP24-ZB_2921.ebl BP24-ZB_2321.ebl (b) XBP24-ZB_2921.ebl BP24-ZB_2021.ebl (b) XBP24-ZB_2021.ebl BP24-ZB_2021.ebl (b) XBP24-ZB_2021.ebl	• .ehx cannot be used on this page. her nodes on the network. mware update. Some settings, such
Administration File Management Backup/Restore Update Firmware Factory Default Setti System Information Reboot Logout	My Network Places File game: XB24-ZB_ Files of type: All Files (* Firmware File: Update	2141.ebl	Open Cancel Browse
	Copyright © 1996-	2008 Digi International Inc. All rights reserve www.digi.com	ved.

4. Click the "Update" button and watch the progress indicator.



	ConnectPort X2 Configuration and Management
Home	XBee Configuration
Configuration	Network View of the XBee Devices
XBee Network	▼ Firmware Update
System Remote Management Security	Select a file containing firmware for the gateway radio module.
Applications Python	Firmware files may end with a .ebl or .oem extension. Files ending with .zip or .ehx cannot be used on this page.
Management Connections Event Logging	Ine firmware version must be compatible with the gateway radio, and with other nodes on the network. If the gateway is enabled, most radio settings will be preserved during the firmware update. Some settings, such as encryption keys, may not be preserved and must be entered again.
Administration	After the firmware is loaded successfully, the gateway radio will be restarted.
Backup/Restore Update Firmware Factory Default Settings	Radio Type: XBee ZNet 2.5/ZB (0x1941) Firmware: 0x1147
System Information Reboot	Firmware File: C:\Program Files\Digi\XCTU\update\xbee_zb\ebl_fil Browse
Logout	Update in progress. Please wait
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5. When the update is complete, you'll see status "Firmware update successful" at the top of the screen.



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	Firmware update successful		
Configuration	XBee Configuration		
XBee Network	Network View of the XBee Devices		
System Remote Management	▼ Firmware Update		
Security	Select a file containing firmware for the gateway radio module		
Applications Python	Firmware files may end with a .ebl or .oem extension. Files ending with .zip or .ehx cannot be used on this page.		
Management Connections	The firmware version must be compatible with the gateway radio, and with other nodes on the network.		
Event Logging	If the gateway is enabled, most radio settings will be preserved during the firmware update. Some settings, such		
Administration File Management Backup/Restore	as encryption keys, may not be preserved and must be entered again. After the firmware is loaded successfully, the gateway radio will be restarted.		
Update Firmware Factory Default Settings System Information Reboot	Radio Type: XBee ZNet 2.5/ZB (0x1941) Firmware: 0x2141		
Logout	Firmware File: Browse		
	Update		
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 Going back to Configuration > XBee Network, you should now see your ZB devices listed, provided the PAN ID and channel of the rf module in the CP-X matches the PAN ID and channel of the modules in your PAN.