



**A Beginner's guide to send data
to Device Cloud from a ZigBee
Network**

1 Document History

Date	Version	Change Description	Author
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3 Introduction

3.1 Outline

A getting started guide for people to create basic setup for sending data from a ZigBee network to Etherios Device Cloud.

3.2 Audience

This guide has been written for users with a basic understanding of XBee modules, Digi ConnectPort gateways and Etherios Device Cloud.

This application note applies only to ZigBee or DigiMesh network of module(s) and Connect Port X2/X4/X2e gateway.

3.3 Assumptions

This document assumes that devices are set to their factory default configurations.

3.4 Scope

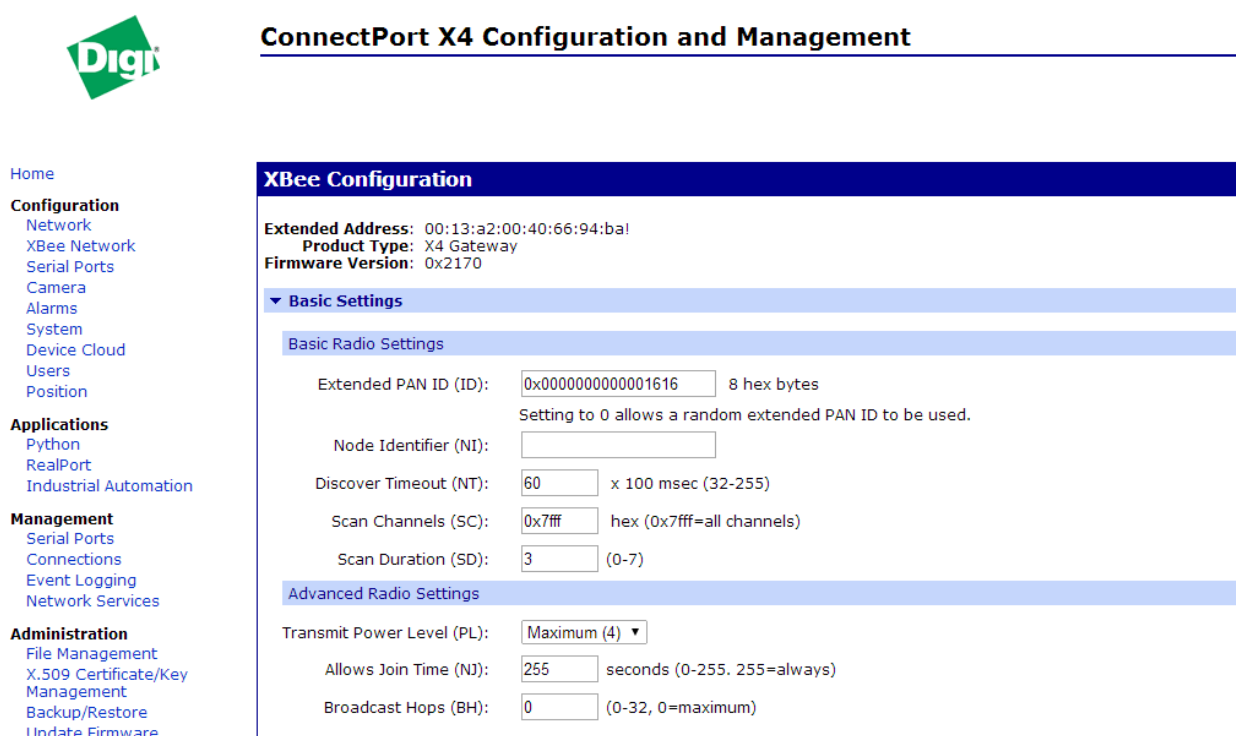
This document will cover aspects of setting up a network for data transmission to Device Cloud using a Python Script. It does not teach Python Programming.

4 Setting up network between XBee and gateway

4.1 Configuring gateway

Plug in your ConnectPort gateway to network and accessing its Web UI using appropriate IP address. You can find gateway using Digi's "Device Discovery" Tool (refer section 8).

In Gateway's Web UI, navigate to **XBee network->Configuration**. Select Coordinator from **Network View of XBee Devices**. Enter appropriate Extended PAN ID (ID) parameter and click "Apply" button at end.



Digi

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XBee Configuration

Extended Address: 00:13:a2:00:40:66:94:ba!
Product Type: X4 Gateway
Firmware Version: 0x2170

Basic Settings

Basic Radio Settings

Extended PAN ID (ID): 8 hex bytes
Setting to 0 allows a random extended PAN ID to be used.

Node Identifier (NI):

Discover Timeout (NT): x 100 msec (32-255)

Scan Channels (SC): hex (0x7fff=all channels)

Scan Duration (SD): (0-7)

Advanced Radio Settings

Transmit Power Level (PL):

Allows Join Time (NJ): seconds (0-255, 255=always)

Broadcast Hops (BH): (0-32, 0=maximum)

The above step will initiate a ZigBee network with the specified PAN ID.

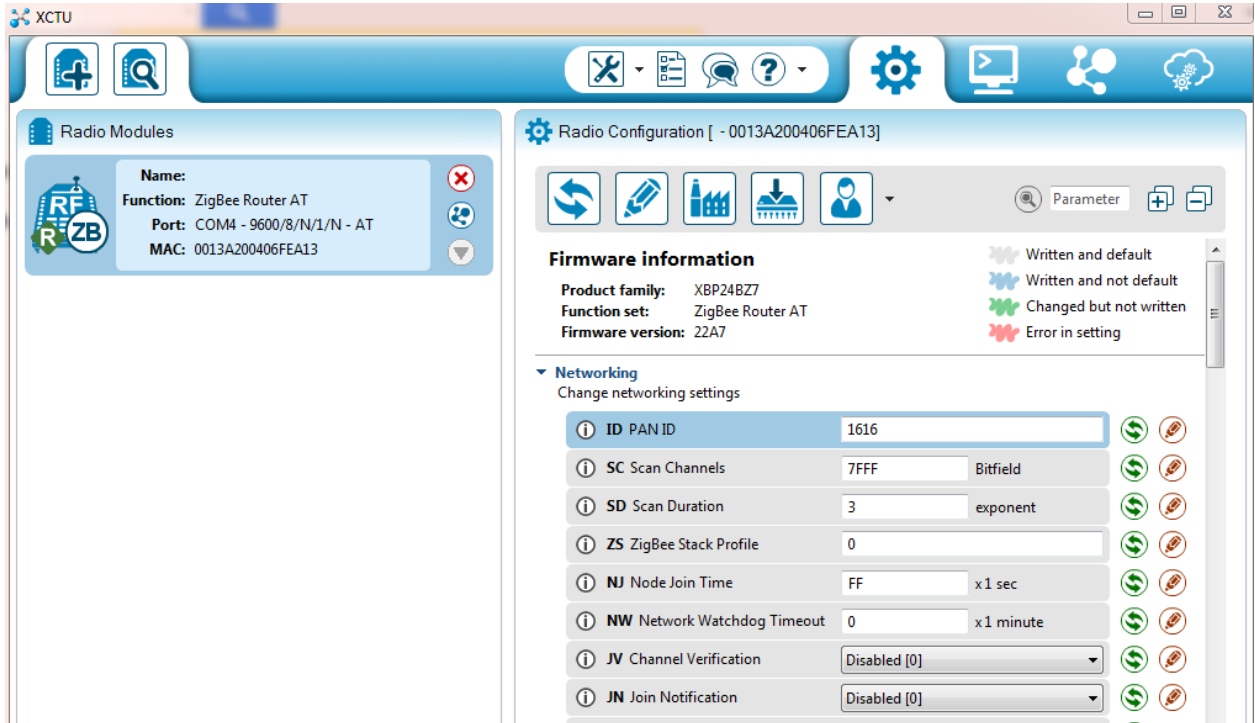
4.2 Configuring XBee module

Place XBee module on Digi's XBIB Dev board and connect to PC. Open XCTU and select appropriate COM port to load module's current configuration.

Make sure that module is not acting as Coordinator. If so, load modules with Router or End Device firmware (ZigBee Router AT recommended). There can be only one coordinator in a ZigBee network, which is Connect Port gateway in this case.

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Set the same PAN ID that you have used to create a ZigBee network. This is required to make sure that module will join network created by ConnectPort gateway. PAN ID can be set by providing appropriate value in white box next to its entry. Click "Write" button to save the modifications made.



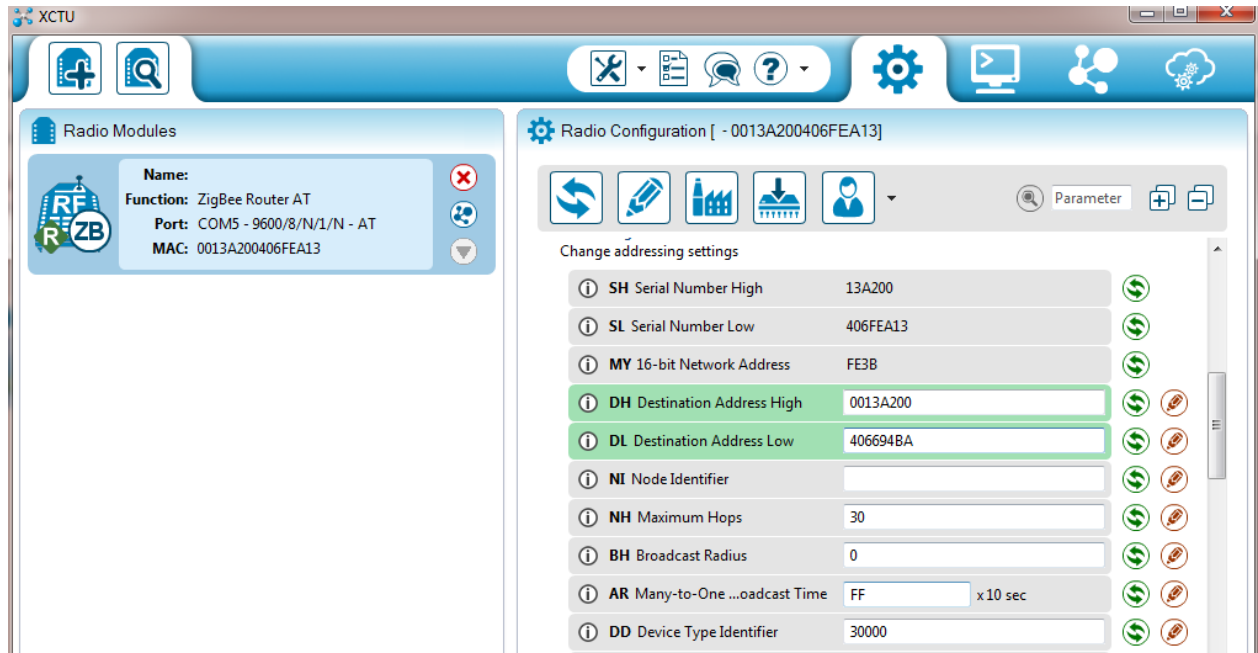
If both ConnectPort gateway and XBee module are in vicinity of each other, then module will connect to gateway's coordinator in few seconds.

You can verify it by observing "Association LED" (Red light) on XBIB interface board which will start blinking once module successfully joins a network.

Alternate method is to check Operation 16-bit PAN ID parameter on both devices. If they have same hex values, then you have successfully setup a network between ConnectPort gateway and XBee module.

How to set up destination address parameter?

Provide coordinator's mac address i.e. its **SH** and **SL** parameter to module's **DH** and **DL** parameter respectively. You can also provide coordinator's alias address i.e. 0x0000000000000000 (default value on Router AT firmware) as well to these fields. See below image for reference:



5 Connecting gateway to Device Cloud

Now we need to create a communication link between ConnectPort gateway and Etherios Device Cloud.

In ConnectPort gateway Web UI, navigate to "Device Cloud" under "Configuration". Provide appropriate URL as shown below and click "Apply".

For US Cloud: login.etherios.com

For UK Cloud: login.etherios.co.uk

Make sure you have an active account on Device Cloud. If not, then you can create a new one by visiting below provided web link:

<https://myaccount.etherios.com/>



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- Factory Default Settings
- System Information
- Reboot

Logout

Device Cloud Configuration

For more information about Device Cloud and how to remotely configure and manage this device, please visit www.etherios.com.

For more information on configuring the Device Cloud settings for this device, see the [Device Cloud Configuration Help](#).

Device Type: ConnectPort X4

Connection Settings

Device-Initiated Connection

Enable Device-Initiated Connection

Device Cloud Server Address:

Automatically reconnect to Device Cloud after being disconnected

Reconnect after: hrs mins secs

Server-Initiated Connection

Enable Server-Initiated Connection

Enable Device IP Address updates to the following server

Device Cloud Server Address:

Retry if the IP Address update fails

Retry after: hrs mins secs

Timed Connection

Enable Timed Connection

Device Cloud Server Address:

Connect every: hrs mins

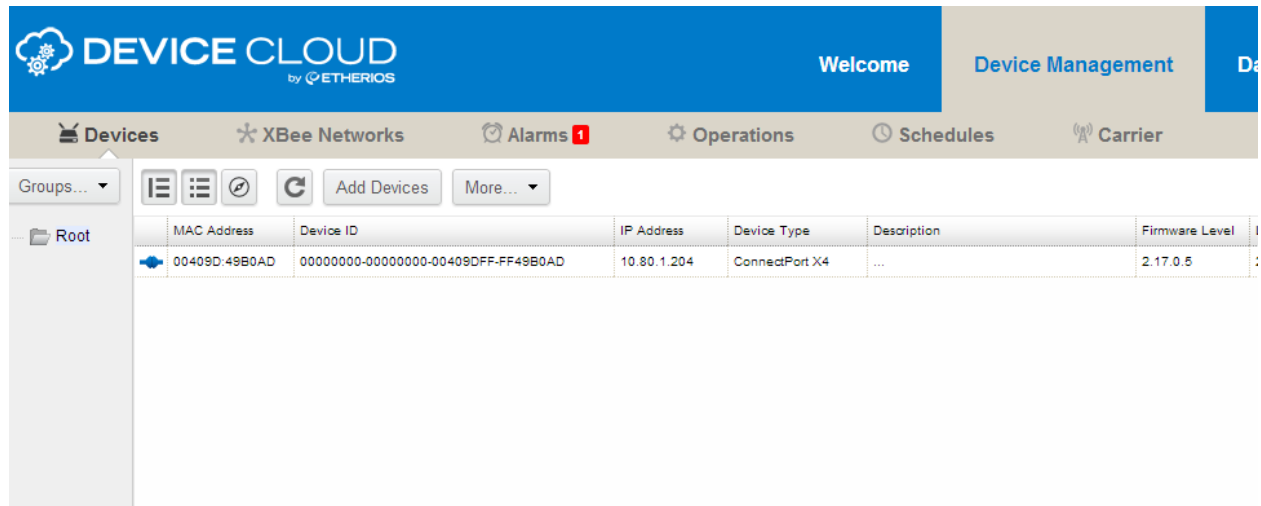
After boot, wait before first timed connection:

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Browse to respective cloud URL in browser and navigate to **Device Management**->**Device** tab present on top of window. Click Add devices button and follow the options to add your gateway to device cloud.

Visit below provided link to learn configuring and troubleshooting ConnectPort gateway for Connection to the Device Cloud:

<http://www.digi.com/support/kbase/kbaseresultdetl?id=3186>



Now gateway is added to Device Cloud.

If gateway is properly configured Device Cloud will show added device as **Connected** and a Connected blue symbol will appear, if not connected it will be in red color.

6 Running python script on gateway

You need a python script running on ConnectPort gateway that redirects all incoming data from XBee module(s) to Device Cloud it is connected to.

A python file for this purpose is available at below provided link:

http://www.digi.com/wiki/developer/index.php/XBee_to_Device_Cloud_-_DataPoint_Creation

This script encodes data in Base64 format to add security for uploaded information. Add that script onto ConnectPort gateway and enable auto-start.

To do so, open Web UI of ConnectPort gateway and navigate to Applications->Python. Upload above script to gateway by following steps.

Click on Choose File and point to the respective python script and click upload.



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Python Configuration

Python Files

Upload Files

Upload Python programs

Upload File: No file chosen

Warning: If you modify the Python files (archives or scripts), it is strongly recommended that

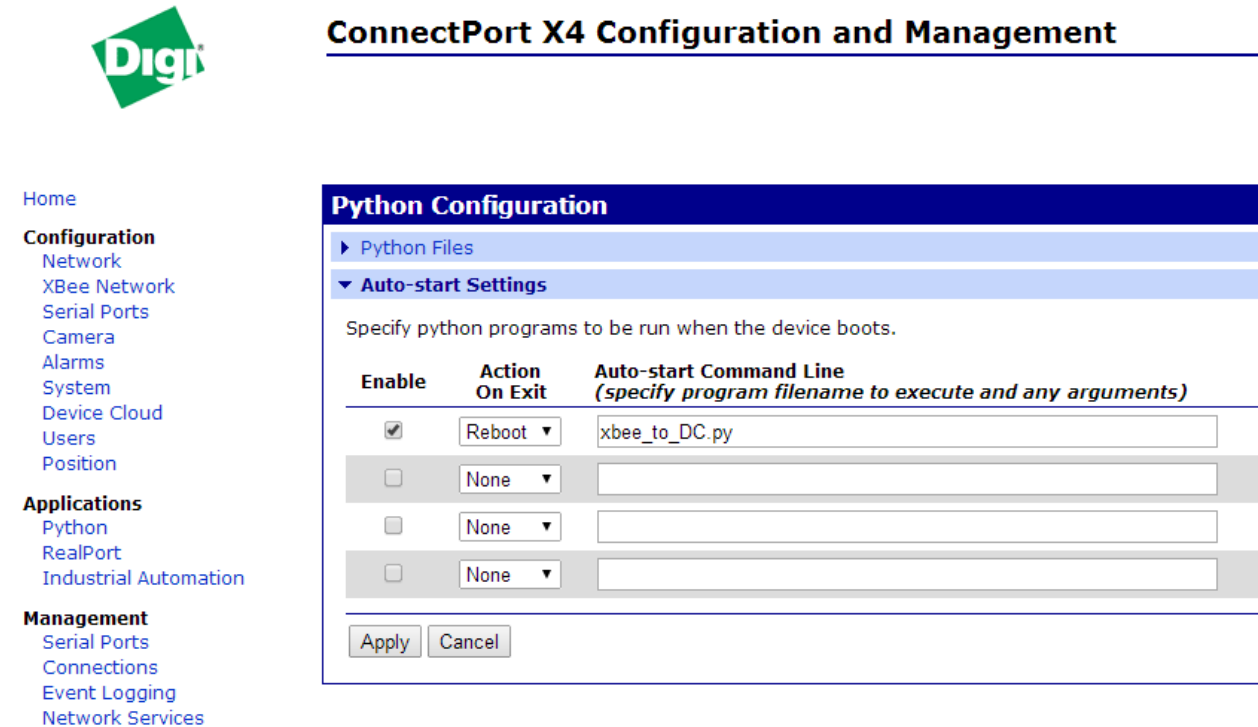
Manage Files

Action	File Name	Size
<input type="checkbox"/>	xbec_to_DC.py	3623 bytes
<input type="checkbox"/>	python.zip	290773 bytes

Auto-start Settings

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Now, click on the “Auto-start Settings” section. Here, specify script name to auto-start it after every gateway reboot. See below screenshot for reference:



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Python Configuration

Python Files

Auto-start Settings

Specify python programs to be run when the device boots.

Enable	Action On Exit	Auto-start Command Line (specify program filename to execute and any arguments)
<input checked="" type="checkbox"/>	Reboot	xbee_to_DC.py
<input type="checkbox"/>	None	
<input type="checkbox"/>	None	
<input type="checkbox"/>	None	

Apply Cancel

Click “Apply” and reboot gateway by navigating to “Administration” section.

You can use “Terminal” tab of XCTU connected with XBee module to transmit data from XBee module to XBee Coordinator sitting inside gateway.

If configured correctly, gateway will redirect all incoming data packets from Zigbee network to Device Cloud. In Device Cloud's Web UI, this data will be available under Data Services→Data Streams.

7 Conclusion

You have now successfully created a communication link between Device Cloud to ConnectPort gateway to XBee module and have successfully transmitted data from XBee module to Device Cloud.

8 Useful Software Links:

- Device Discovery Tool:
<http://www.digi.com/support/getasset?fn=40002265&tp=5>
- X-CTU : <http://www.digi.com/support/productdetail?pid=3352&type=utilities>