



ConnectPort[®] X5 R Family

Getting Started Guide

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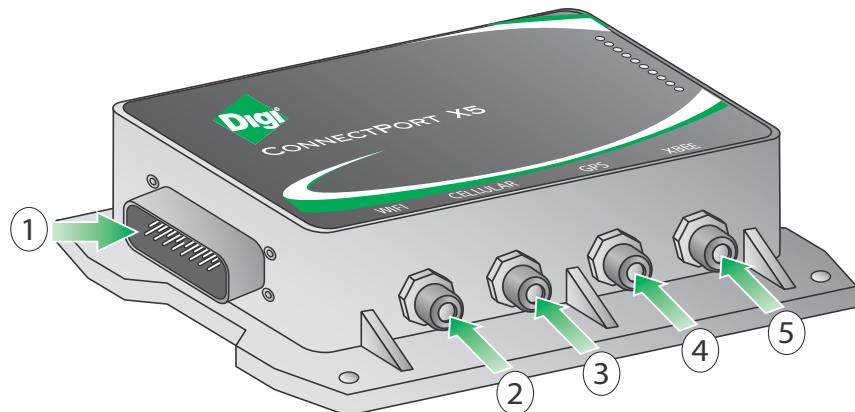
Chapter 1: Introduction

Throughout this guide you will:

1. Configure the various interfaces of the ConnectPort X5 R via the device's Web Interface.
2. Create an iDigi® Device Cloud™ account and add your ConnectPort X5 R to your iDigi device inventory.
3. Download and install the Digi ESP™ for Python Integrated Development Environment (IDE), which will allow you to run your first Python sample program on your ConnectPort X5 R.
4. Verify the connection between your ConnectPort X5 R and the iDigi Device Cloud via the device's cellular interface.
5. Use the Digi ESP for Python IDE to build, download, and run your first Python sample project on your ConnectPort X5 R. This sample program will upload the GPS position information of the ConnectPort X5 R to the iDigi Device Cloud.
6. View the uploaded GPS data from the ConnectPort X5 R using iDigi Manager Pro™.

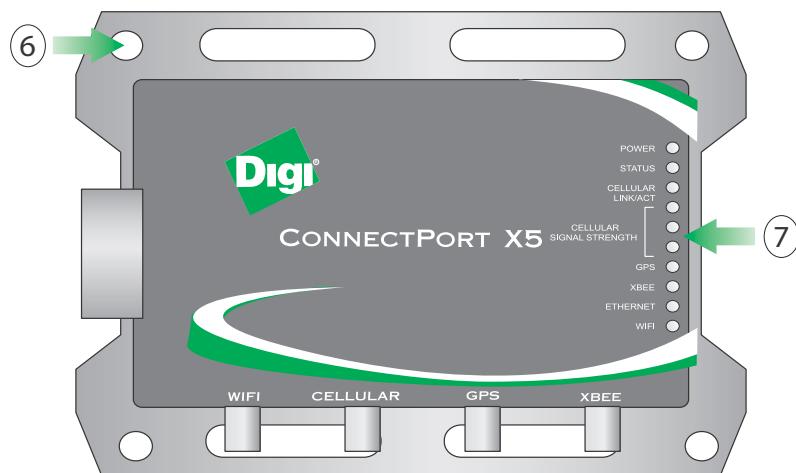
ConnectPort X5 R CDMA Product Features

Side View



1. Wiring harness connector
2. WiFi antenna connector
3. Cellular antenna connector
4. GPS antenna connector
5. XBee antenna connector

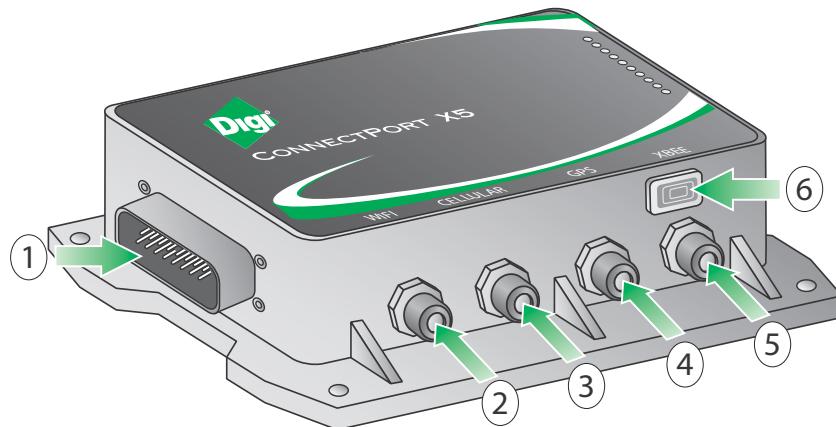
Top View



6. Mounting holes
7. LED status indicators

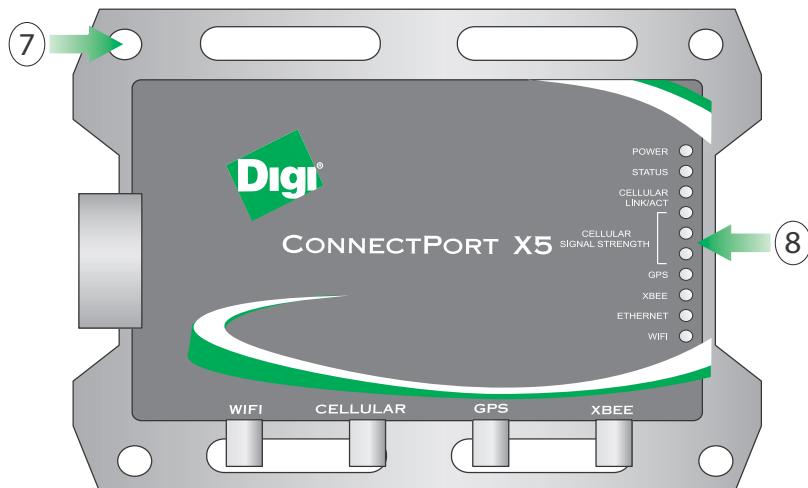
ConnectPort X5 R GPRS Product Features

Side View



1. Wiring harness connector
2. WiFi antenna connector
3. Cellular antenna connector
4. GPS antenna connector
5. XBee antenna connector
6. SIM Card Cover (if removed, SIM slot is revealed)

Top View



7. Mounting holes
8. LED status indicators

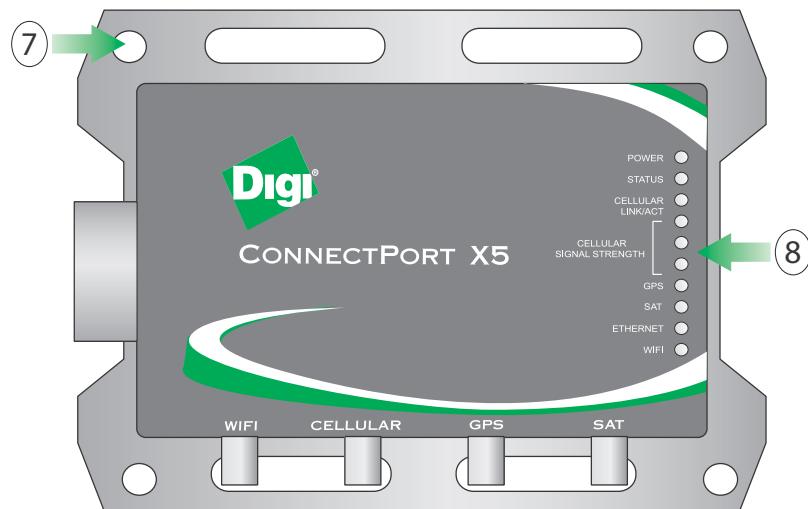
ConnectPort X5 R Iridium Product Features

Side View



1. Wiring harness connector
2. WiFi antenna connector
3. Cellular antenna connector
4. GPS antenna connector
5. SAT (satellite) antenna connector
6. SIM Card Cover (if removed, SIM slot is revealed)

Top View



7. Mounting holes
8. LED status indicators

LEDs



1. Power LED
2. Status LED
3. Cellular Link/ACT LED
4. Cellular Signal Strength LED
5. GPS LED
6. XBEE LED (ConnectPort X5 R CDMA and GPRS gateways)
SAT LED (ConnectPort X5 R Iridium gateways)
7. Ethernet LED
8. WiFi LED

The following table displays LED functionality for the ConnectPort X5 R Family of gateways.

LED	Color and Light Pattern	Description
POWER	Off	Device is off
	Solid blue	Device is on
STATUS	Solid amber	Hardware is initializing
	1-1-1 blinking amber	Firmware is initializing
	1-5-1 blinking amber	Device configuration has been restored to its factory defaults
	Off	Device is powered on and ready for operation
CELLULAR LINK	Solid green	Connected to the cellular network
CELLULAR ACTIVITY	Blinking green	Cellular traffic/activity
CELLULAR SIGNAL STRENGTH	Solid green	Relative signal strength indicator (RSSI), shown as a number of LEDs - 1 LED: Weak cellular signal - 2 LEDs: Good cellular signal - 3 LEDs: Strong cellular signal
GPS	Off	No GPS satellites in range
	Blinking green	GPS satellites detected, acquiring lock <i>Note: If the antenna is not connected to the ConnectPort X5 R device, the GPS device can indicate “phantom” satellites. This will cause the device to behave as if many satellites are visible to it, though it will never establish a satellite lock. This behavior is visible as continuous, fast blinking.</i>
	Solid green	A GPS satellite lock has been acquired
SAT (ConnectPort X5 R Iridium only)	Solid green	Iridium Satellite link is up
	Blinking green	Iridium Satellite traffic/activity
XBEE (ConnectPort X5 R GPRS and CDMA only)	Solid green	XBee link is up
	Blinking green	XBee traffic/activity
ETHERNET	Solid green	Ethernet link is up
	Blinking green	Ethernet traffic/activity
WIFI	Solid green	WiFi link is up
	Blinking green	WiFi traffic/activity

Digi Information

Contact Information

For more information about your Digi products, or for customer service and technical support, contact Digi International.

To contact Digi International by	Use
Mail	Digi International World Headquarters 11001 Bren Road East Minnetonka, MN 55343
Phone	1-877-434-4439 or 1-952-912-3456
Web	www.digi.com/support

Chapter 2: Ethernet & Cellular Configuration

By default, the Ethernet interface of the ConnectPort X5 R is configured as a DHCP Server with a static IP Address of 192.168.1.1.

Connecting to the Web Interface Home Page

1. Connect one end of the provided Ethernet cable to your PC, and the other end to the ConnectPort X5 R Ethernet port (ensure that your PC is configured to obtain its IP address via DHCP).
2. Open the Web Interface of the ConnectPort X5 R by navigating to the 192.168.1.1 address in a web browser on the PC. You will see a screen similar to the following (this is the device's Home page):



ConnectPort X5 R Configuration and Management

Home
Configuration
Network
Mobile
XBee Network
Serial Ports
Alarms
System
iDigi
Users
Position
Applications
Python
RealPort
Management
Serial Ports
Connections
Event Logging
Network Services
Administration
File Management
X.509 Certificate/Key Management

Help

Home

Getting Started

Tutorial Not sure what to do next? This Tutorial can help.

System Summary

Model:	ConnectPort X5 R ZB WiFi CDMA
Ethernet MAC Address:	00:04:F3:02:7D:15
WiFi MAC Address:	00:04:F3:02:84:C4
Ethernet IP Address:	10.21.6.111
WiFi IP Address:	169.254.49.42
Mobile IP Address:	Not Connected
Description:	Ken's X5 Sprint
Contact:	Ken
Location:	Ken's Office
Device ID:	00000000-00000000-0004F3FF-FF027D15

NOTE: ConnectPort X5 R Iridium units will not have an XBee Network link displayed within their Web Interface Home page because these units do not support XBee.

Configuring Ethernet Settings

To configure your device's Ethernet settings open the Ethernet Network Configuration page by clicking on **Configuration > Network** from the left-hand menu.

The screenshot shows the 'Network Configuration' page with the 'Ethernet IP Settings' section selected. It includes fields for IP Address (10.21.6.111), Subnet Mask (255.255.255.0), and Default Gateway (10.21.6.1). A checkbox for 'Enable AutoIP address assignment' is checked. A note at the bottom states: "Changes to DHCP, IP address, and Subnet Mask may affect your browser connection." An 'Apply' button is visible, and a sidebar on the right lists various network settings options.

Network Configuration

▼ Ethernet IP Settings

Obtain an IP address automatically using DHCP *
 Use the following IP address:

* IP Address:
* Subnet Mask:
Default Gateway:

Enable AutoIP address assignment

* Changes to DHCP, IP address, and Subnet Mask may affect your browser connection.

Apply

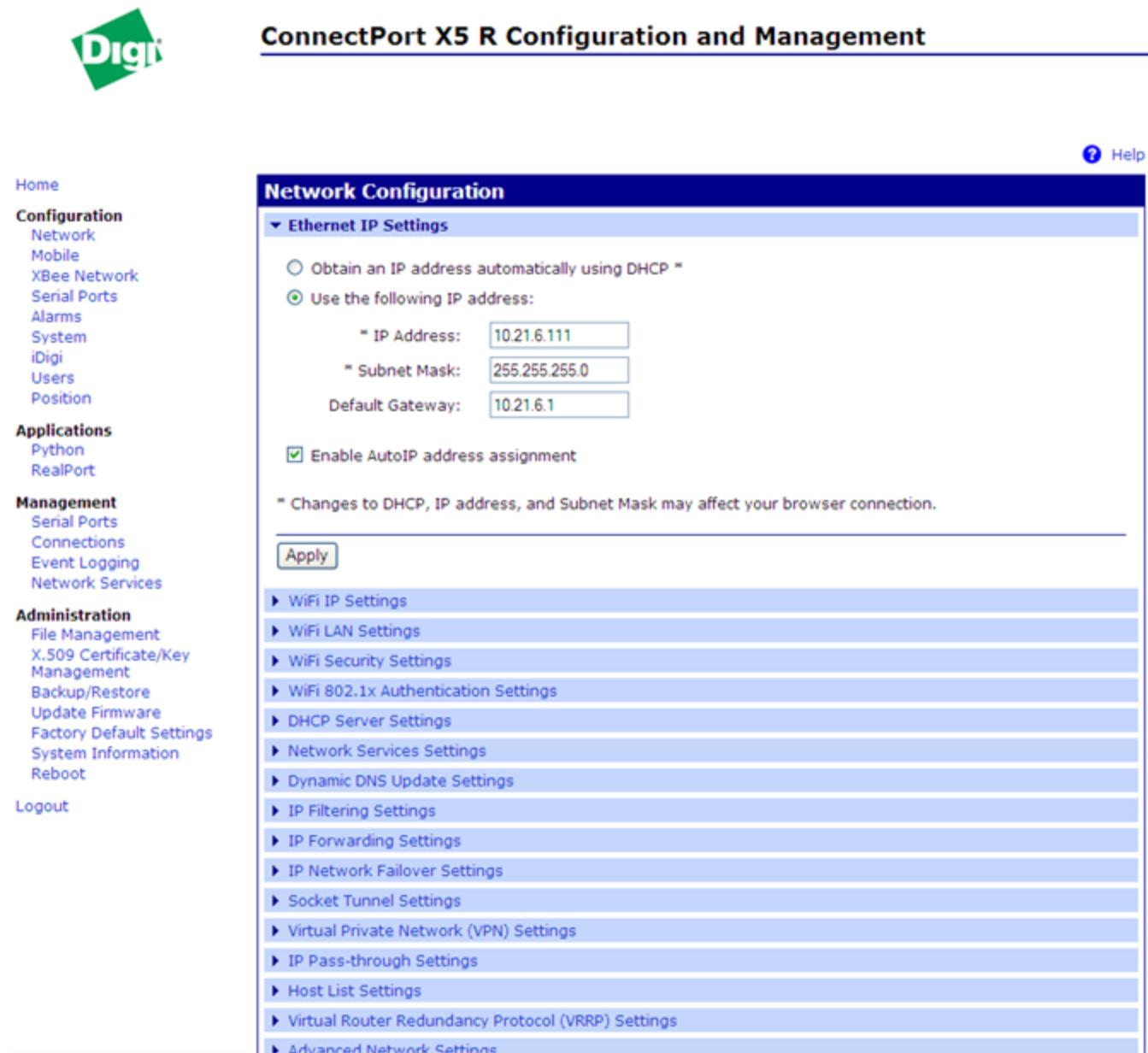
► WiFi IP Settings
► WiFi LAN Settings
► WiFi Security Settings
► WiFi 802.1x Authentication Settings
► DHCP Server Settings
► Network Services Settings
► Dynamic DNS Update Settings
► IP Filtering Settings
► IP Forwarding Settings
► IP Network Failover Settings
► Socket Tunnel Settings
► Virtual Private Network (VPN) Settings
► IP Pass-through Settings
► Host List Settings
► Virtual Router Redundancy Protocol (VRRP) Settings
► Advanced Network Settings

Within the Network Configuration page various Ethernet parameters can be configured depending on your type of installation. Basic settings can be configured in the Ethernet IP Settings page.

Configuring the Ethernet Interface

To configure your device's Ethernet interface settings perform the following steps:

1. Click on **Configuration > Network** from the left-hand menu. You should see the Network Configuration screen (with the Ethernet IP Settings page displayed by default) as shown:



The screenshot shows the Digi ConnectPort X5 R Configuration and Management interface. The left sidebar contains navigation links for Home, Configuration (Network, Mobile, XBee Network, Serial Ports, Alarms, System, iDigi, Users, Position), Applications (Python, RealPort), Management (Serial Ports, Connections, Event Logging, Network Services), Administration (File Management, X.509 Certificate/Key Management, Backup/Restore, Update Firmware, Factory Default Settings, System Information, Reboot), and Logout.

The main content area is titled "Network Configuration" and displays the "Ethernet IP Settings" section. It includes fields for IP Address (10.21.6.111), Subnet Mask (255.255.255.0), and Default Gateway (10.21.6.1). A checkbox for "Enable AutoIP address assignment" is checked. A note at the bottom states: "Changes to DHCP, IP address, and Subnet Mask may affect your browser connection." An "Apply" button is present.

A sidebar on the right lists other configuration options under "WiFi IP Settings": WiFi LAN Settings, WiFi Security Settings, WiFi 802.1x Authentication Settings, DHCP Server Settings, Network Services Settings, Dynamic DNS Update Settings, IP Filtering Settings, IP Forwarding Settings, IP Network Failover Settings, Socket Tunnel Settings, Virtual Private Network (VPN) Settings, IP Pass-through Settings, Host List Settings, Virtual Router Redundancy Protocol (VRRP) Settings, and Advanced Network Settings.

2. Click the **DHCP Server Settings** link and open the DHCP Server Settings page.

3. To disable the DHCP Server, un-check the "Enable Dynamic Host Configuration Protocol (DHCP) Server" entry. Click **Apply** when finished.

DHCP Server Settings

Note: For the DHCP server to operate, the ConnectPort X5 R must be configured to use a static IP address. (See the [IP Settings](#) page in the Network Configuration area.) Please review additional notes below.

Enable Dynamic Host Configuration Protocol (DHCP) Server

Scope Name:

* IP Addresses: to

Lease Duration: days hrs mins

Wait specified delay before sending DHCP offer reply
Delay: ms

Check that an IP address is not in use before offering it
 Send the DHCP Server IP address as a DNS Proxy Server

Send a default gateway in the client lease (DHCP Option 3: Routers on Subnet):

IP address of scope interface (default)
 Configured IP address of default gateway for scope interface
 This gateway IP address:
 Do not send a default gateway

Static Lease Reservations **

Enable	IP Address	MAC Address
No reservations currently configured		
<input checked="" type="checkbox"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="00:00:00:00:00:00"/> <input type="button" value="Add"/>

[Remove All](#)

Address Exclusions ***

Enable	Start Address	End Address
No exclusions currently configured		
<input checked="" type="checkbox"/>	<input type="text" value="0.0.0.0"/> to <input type="text" value="0.0.0.0"/>	<input type="button" value="Add"/>

4. Return to the Ethernet IP Settings page by clicking the Ethernet IP Settings link.

Ethernet IP Settings

Obtain an IP address automatically using DHCP *

Use the following IP address:

* IP Address:

* Subnet Mask:

Default Gateway:

Enable AutoIP address assignment

* Changes to DHCP, IP address, and Subnet Mask may affect your browser connection.

Apply

5. Configure the ConnectPort X5 R with either a static IP address, or have it get its IP address from a DHCP Server, whichever method is appropriate. Click **Apply** when finished.
6. Disconnect the ConnectPort X5 R from your PC and then connect it to the Ethernet network (if the PC needs to be reconfigured with a static IP address, do this prior to moving the PC to the Ethernet network as well).

Configuring the Cellular Interface

Configuring the ConnectPort X5 R cellular interfaces will vary depending on whether the ConnectPort X5 R supports the GSM/Edge or CDMA cellular network.

This section provides examples of how to configure the ConnectPort X5 R cellular interface for three of the popular cellular networks: AT&T, Verizon and Sprint.

After following the example for your specific cellular provider (for Verizon users see page 18 and for Sprint users see page 21), go to the “Verifying the Cellular Connection Status” section on page 24.

GSM/Edge Cellular Configuration Example (AT&T)

To configure a GSM/Edge ConnectPort X5 R cellular interface perform the following steps:

1. Click on **Configuration > Mobile** from the left-hand menu.
2. Configure the Mobile Service Provider Settings by selecting the Service Provider and Service Plan/APN, and entering the Customer Plan Name appropriate for your environment as shown.

The screenshot shows the 'Mobile Settings' configuration screen. It includes a 'Mobile Service Provider Settings' section with dropdown menus for 'Service Provider' (set to 'AT&T/Cingular Wireless (Blue Network)') and 'Service Plan / APN' (set to 'Custom APN'), and a text input field for 'Custom Plan Name' (set to 'I2GOLD'). Below this is a 'Mobile Connection Settings' section with a checked checkbox for 'Re-establish connection when no data is received for a period of time.' and an 'Inactivity timeout' field set to '3600 seconds'. At the bottom are 'Apply' and 'Set to Defaults' buttons.

Mobile Settings

Select the service provider, service plan, and connection settings used in connecting to the mobile network.

These settings are provided by and can be retrieved from the service provider.

Mobile Service Provider Settings

Service Provider: AT&T/Cingular Wireless (Blue Network) ▾

Service Plan / APN: Custom APN ▾

Custom Plan Name: I2GOLD

Mobile Connection Settings

Re-establish connection when no data is received for a period of time.

Inactivity timeout: 3600 seconds

Apply **Set to Defaults**

3. Click **Apply** when finished.

Your mobile configuration is complete. Proceed to the “Verifying the Cellular Connection Status” section on page 24.

CDMA Cellular Configuration Example (Verizon)

NOTE: This example assumes that the ESN/MEID# for the ConnectPort X5 R has been activated with your cellular provider. You can find the ESN/MEID# on the side of your unit.

To configure a CDMA ConnectPort X5 R cellular interface perform the following steps:

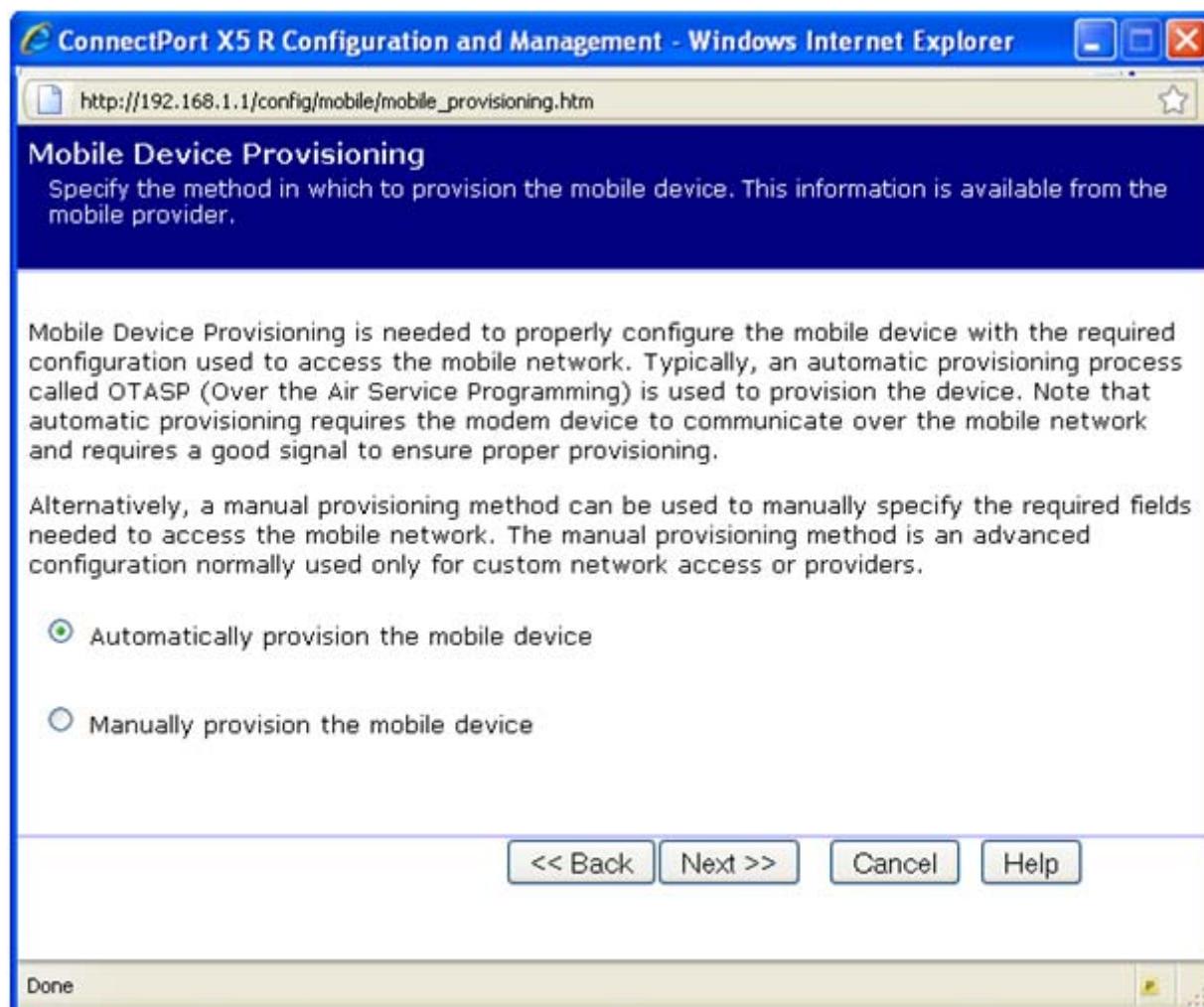
1. Click on **Configuration > Mobile** from the left-hand menu and select **Verizon Wireless** from the Service Provider drop-down menu. You should see a screen similar to the following:

The screenshot shows the 'Mobile Configuration' interface. The 'Mobile Settings' section is active, displaying configuration for a mobile service provider. The 'Service Provider' dropdown is set to 'Verizon Wireless'. The 'Mobile IP mode' dropdown is set to 'Mobile IP Preferred'. A red 'Caution' message states: 'This device needs to be provisioned.' Below it, a 'Provision Device' button is visible. Under 'Mobile Connection Settings', there is a checked checkbox for 'Re-establish connection when no data is received for a period of time.' The 'Inactivity timeout' is set to '3600 seconds'. At the bottom, there are 'Apply' and 'Set to Defaults' buttons, and a sidebar with links to 'GPS Settings', 'Advanced Settings', 'SureLink Settings', and 'Short Message Service (SMS) Settings'.

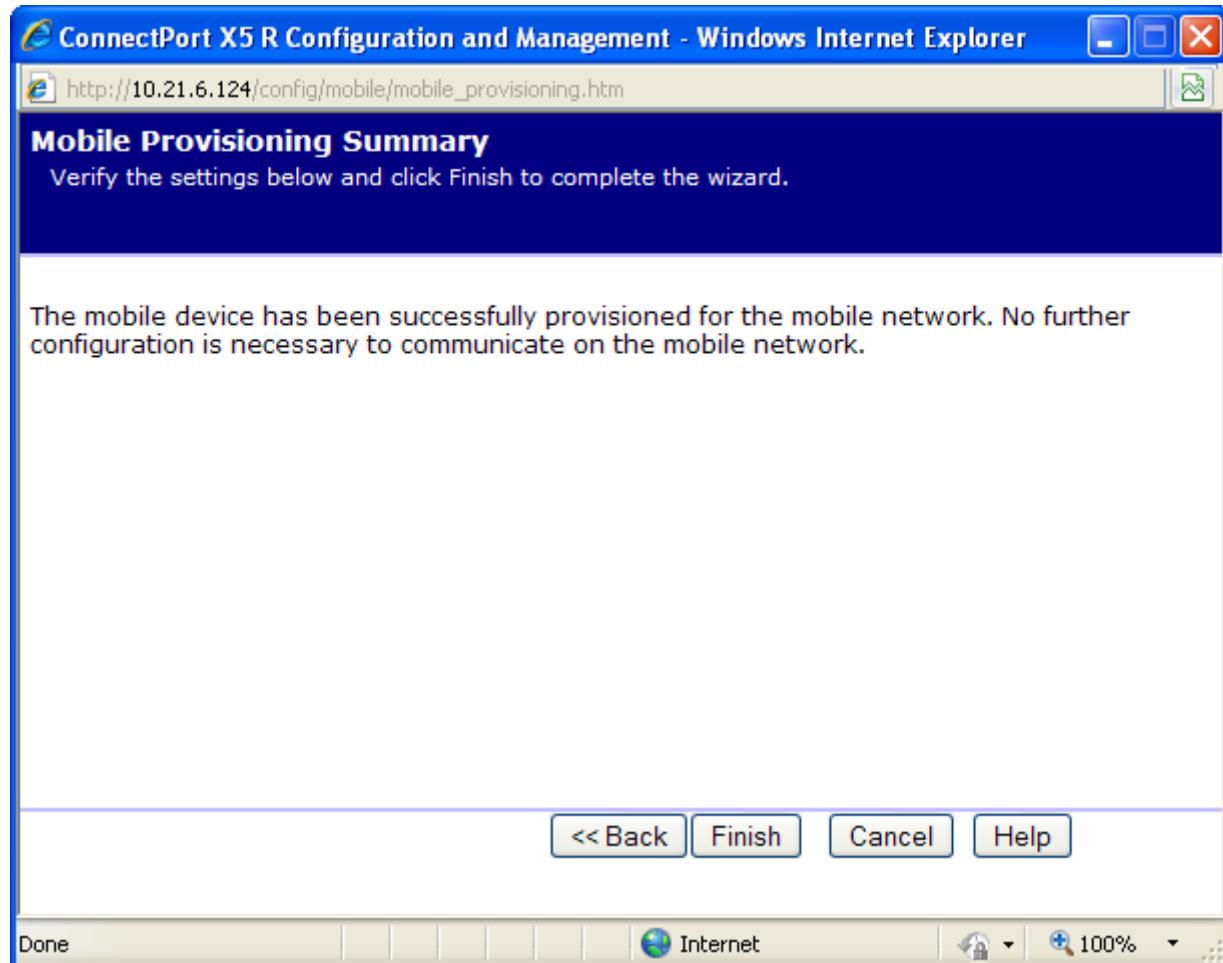
2. After selecting a Service Provider, the unit needs to go through its provisioning process. Click the **Provision Device** button, and then follow the steps displayed within the Mobile Device Provisioning dialog screens.

NOTE: The default options within the Mobile Device Provisioning dialog screens will be correct for most installations.

3. When the following screen is displayed, select the **Automatically provision the mobile device** option.



4. Continue to go through the mobile provisioning process until you see the following screen. This screen will indicate that the mobile provisioning process completed successfully.



5. Click **Finish** to return to the Mobile Configuration page.
6. Click **Apply** on the Mobile Configuration page when finished.

Your Mobile configuration is complete. Proceed to the “Verifying the Cellular Connection Status” section on page 24.

CDMA Cellular Configuration Example (Sprint)

NOTE: This example assumes that the ESN/MEID# for the ConnectPort X5 R has been activated with your cellular provider. You can find the ESN/MEID# on the side of your unit.

To configure a CDMA ConnectPort X5 R cellular interface perform the following steps:

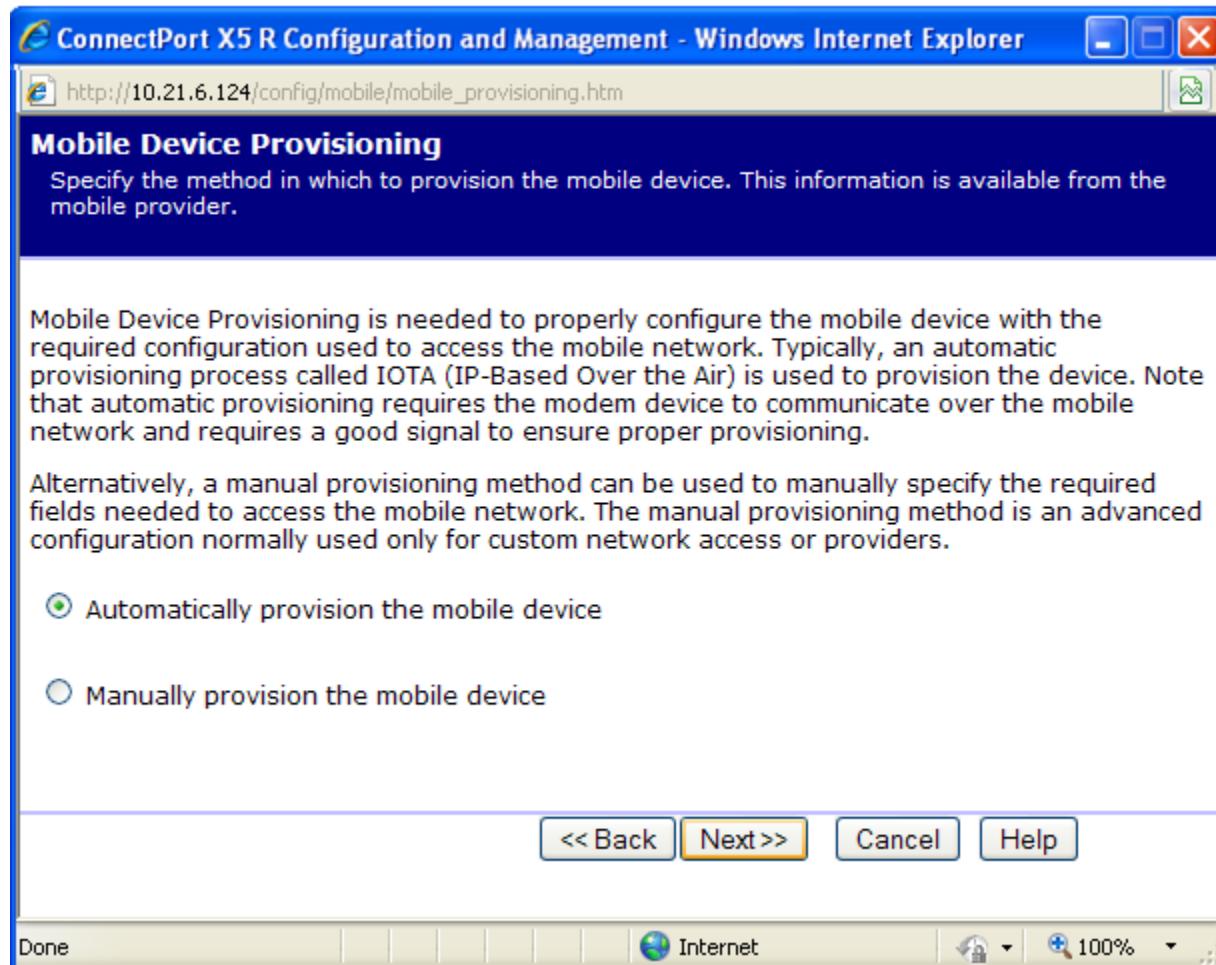
1. Click on **Configuration > Mobile** from the left-hand menu and select **Sprint PCS** from the Service Provider drop-down menu. You should see a screen similar to the following:

The screenshot shows the 'Mobile Configuration' interface. The 'Mobile Settings' section is active, displaying settings for Sprint PCS. It includes a dropdown for 'Service Provider' set to 'Sprint PCS', a button to 'Provision Device', and an 'Update' button for the 'Preferred Roaming List (PRL)'. Below this is the 'Mobile Connection Settings' section, which contains a checked checkbox for 'Re-establish connection when no data is received for a period of time' and an 'Inactivity timeout' field set to '3600 seconds'. At the bottom are 'Apply' and 'Set to Defaults' buttons, along with links to 'SureLink Settings' and 'Short Message Service (SMS) Settings'.

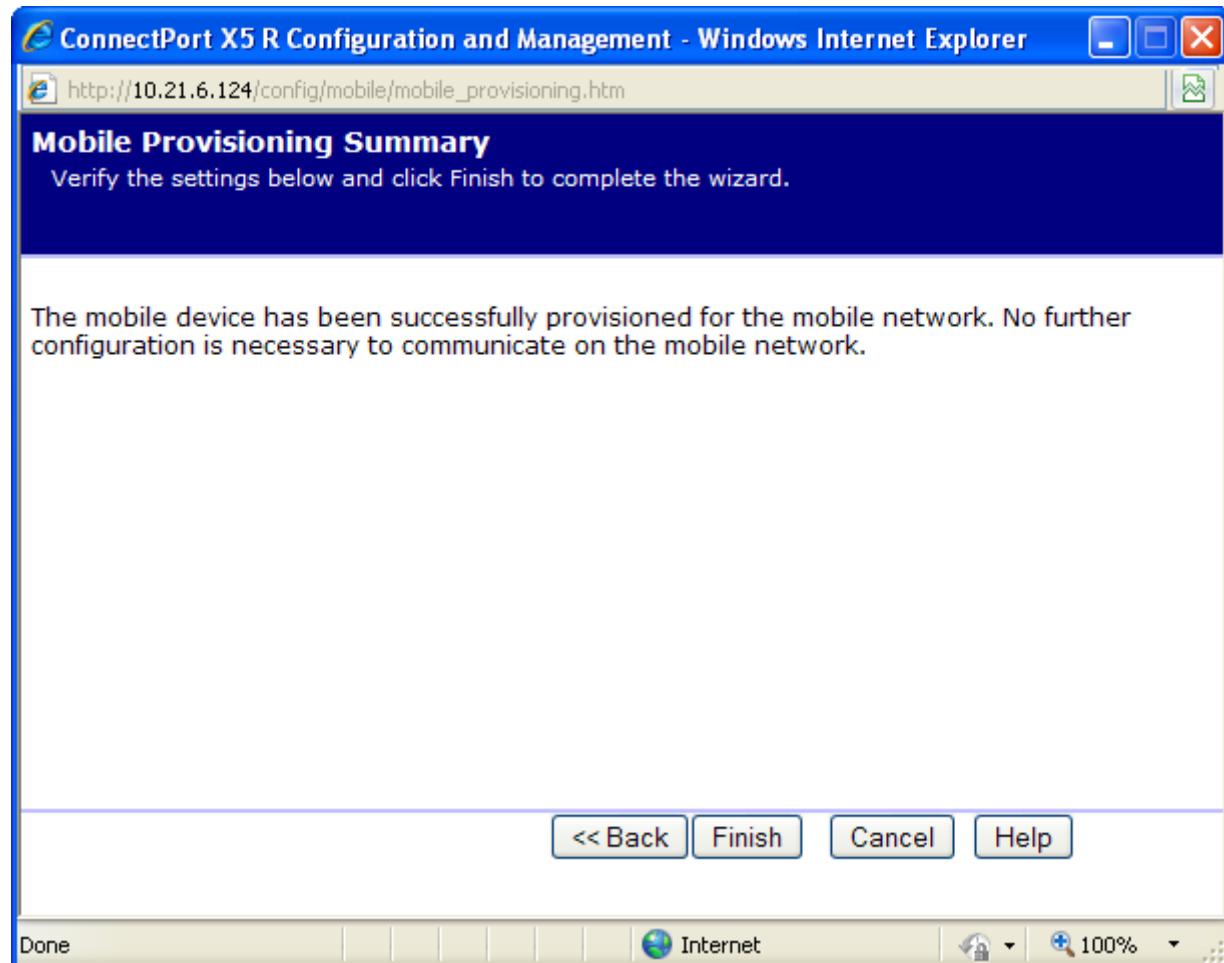
2. After selecting a Service Provider, the unit needs to go through its provisioning process. Click the **Provision Device** button, and then follow the steps displayed within the Mobile Device Provisioning dialog screens.

NOTE: The default options within the Mobile Device Provisioning dialog screens will be correct for most installations.

3. When the following screen is displayed, select the **Automatically provision the mobile device** option.



4. Continue to go through the mobile provisioning process until you see the following screen. This screen will indicate that the mobile provisioning process completed successfully.



5. Click **Finish** to return to the Mobile Configuration page.

6. Click **Apply** on the Mobile Configuration page when finished.

Your Mobile configuration is complete. Proceed to the “Verifying the Cellular Connection Status” section on the next page.

Verifying the Cellular Connection Status

Once the correct cellular configuration has been applied, the ConnectPort X5 R will begin to establish its cellular connection. You can verify the connection status by navigating to the **Administration > System Information > Mobile** page.

System Information

- ▶ General
- ▶ Serial
- ▶ Network
- ▼ Mobile

The following information and statistics can be used to manage and monitor your mobile connection. This information may also be helpful in troubleshooting problems with the mobile network.

SIM Information

Slot	IMSI and ICCID	Phone Number	Status	PIN Status	Active
1	310410265385546 89014104232653855469	19522212376	Primary	Ready	
2	IMSI: N/A ICCID: N/A	N/A	Not configured	N/A	

Mobile Connection

Registration Status: Registered (Home Network)
 Location Area Code: 0xD6EF (55023)
 Cell ID: 0x969E (38558)

Signal Strength: (-88 dBm)

Mobile Statistics

IP Address:	166.130.120.49
Primary DNS Address:	209.183.33.23
Secondary DNS Address:	209.183.33.23
Data Received:	30222 bytes
Data Sent:	42331 bytes
Idle Resets:	26
Inactivity Timer:	3600 seconds (receiving) 0 seconds (sending)

Mobile Information

NOTE: In the above example, the ConnectPort X5 R is connected to the cellular network and has obtained the 166.130.120.49 address for its cellular interface.



You have completed Ethernet and Cellular configuration of your ConnectPort X5 R.

Chapter 3: WiFi Configuration

Configuring the WiFi Interface

To configure the ConnectPort X5 R WiFi interface perform the following steps:

1. Click on **Configuration > Network** from the left-hand menu. You should see the Network Configuration screen (with the Ethernet IP Settings page displayed by default) as shown:

The screenshot shows the 'Network Configuration' page with the 'Ethernet IP Settings' tab selected. Under 'IP Address' settings, 'Use the following IP address' is chosen, with fields for IP Address (10.21.6.111), Subnet Mask (255.255.255.0), and Default Gateway (10.21.6.1). A checked checkbox for 'Enable AutoIP address assignment' is also present. A note at the bottom states: '* Changes to DHCP, IP address, and Subnet Mask may affect your browser connection.' Below the main form, a sidebar lists other configuration tabs: WiFi IP Settings, WiFi LAN Settings, WiFi Security Settings, WiFi 802.1x Authentication Settings, DHCP Server Settings, Network Services Settings, Dynamic DNS Update Settings, IP Filtering Settings, and IP Forwarding Settings. An 'Apply' button is located above the sidebar.

Network Configuration

▼ Ethernet IP Settings

Obtain an IP address automatically using DHCP *

Use the following IP address:

* IP Address:

* Subnet Mask:

Default Gateway:

Enable AutoIP address assignment

* Changes to DHCP, IP address, and Subnet Mask may affect your browser connection.

Apply

► WiFi IP Settings

► WiFi LAN Settings

► WiFi Security Settings

► WiFi 802.1x Authentication Settings

► DHCP Server Settings

► Network Services Settings

► Dynamic DNS Update Settings

► IP Filtering Settings

► IP Forwarding Settings

Within the Network Configuration page WiFi IP, LAN, and Security settings can be configured depending on your type of installation.

WiFi IP Settings Page

2. Open this page by clicking on the WiFi IP Settings link (**Configuration > Network > WiFi IP Settings**).

▼ WiFi IP Settings

Obtain an IP address automatically using DHCP *

Use the following IP address:

* IP Address:

* Subnet Mask:

Default Gateway:

Enable AutoIP address assignment

* Changes to DHCP, IP address, and Subnet Mask may affect your browser connection.

Apply

The WiFi IP Settings page allows you to set your ConnectPort X5 R to obtain an IP address on the WiFi network automatically (using DHCP) or enter in your own IP address.

3. Configure your WiFi IP settings as desired. Click **Apply** when finished.

WiFi LAN Settings Page

4. Open this page by clicking on the WiFi LAN Settings link (**Configuration > Network > WiFi LAN Settings**).

▼ WiFi LAN Settings

Network name: (SSID)

Connect to any available WiFi network
 Connect to access point (infrastructure) networks only
 Connect to peer-to-peer (ad-hoc) networks only

Country:

Band:

Channel:

Transmit power: dBm

Enable Short Preamble
 Enable 802.11d multi domain capability
 Enable Antenna Diversity

The WiFi LAN Settings page allows you to set your connection type and name your network. The above example configures the ConnectPort X5 R to connect to the "TRENDnet" WiFi network, using Channel 1.

5. Configure your WiFi LAN settings as desired. Click **Apply** when finished.

WiFi Security Settings Page

6. Open this page by clicking on the WiFi Security Settings link (**Configuration > Network > WiFi Security Settings**).

▼ WiFi Security Settings

Network Authentication

Use any available authentication method
 Use the following selected method(s):

Open System
 Shared Key
 WEP with 802.1x authentication
 WPA with pre-shared key (WPA-PSK)
 WPA with 802.1x authentication
 Cisco LEAP
 EAP-FAST

Data Encryption

Use any available encryption method
 Use the following selected method(s):

Open System (no encryption)
 WEP
 TKIP
 CCMP

WEP Keys

Transmit key: 1 2 3 4

Encryption Keys:

1:
2:
3:
4:

WPA PSK

Enter a passphrase when WPA-PSK authentication is enabled. Note: the passphrase will need to be re-entered whenever the Network SSID is changed.

Passphrase:

The WiFi Security Settings page allows you to set Network Authentication, Data Encryption, WEP Key, WPA PSK, and Username/Password information for your network. The above example configures the ConnectPort X5 R to use WPA-PSK authentication using TKIP encryption with a WPA PSK passphrase.

7. Configure your WiFi security settings as desired. Click **Apply** when finished.

DHCP Server Settings Page

8. If the ConnectPort X5 R is to act as a DHCP Server on the WiFi network, open this page by clicking on the DHCP Server Settings link (**Configuration > Network > DHCP Server Settings**).
9. The ConnectPort X5 R can act as a DHCP Server on either its WiFi or Ethernet interface. To enable the DHCP Server on the WiFi network, check the "Enable Dynamic Host Configuration Protocol (DHCP) Server" entry and select the "wln0" Scope name. Configure the other parameters as appropriate. Click **Apply** when finished.

DHCP Server Settings

Note: For the DHCP server to operate, the ConnectPort X4 must be configured to use a static IP address. (See the [IP Settings](#) page in the Network Configuration area.) Please review additional notes below.

Enable Dynamic Host Configuration Protocol (DHCP) Server

Scope Name:

* IP Addresses: to

Lease Duration: days hrs mins

Wait specified delay before sending DHCP offer reply

Delay: ms

Check that an IP address is not in use before offering it

Send the DHCP Server IP address as a DNS Proxy Server

Send a default gateway in the client lease (DHCP Option 3: Routers on Subnet):

IP address of scope interface (default)

Configured IP address of default gateway for scope interface

This gateway IP address:

Do not send a default gateway

Static Lease Reservations **

Enable	IP Address	MAC Address
<input checked="" type="checkbox"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="00:00:00:00:00:00"/>
<input type="button" value="Add"/>		

[Remove All](#)

Address Exclusions ***

Enable	Start Address	End Address
<input checked="" type="checkbox"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>
<input type="button" value="Add"/>		

[Remove All](#)

For DHCP server status and lease management, use the [DHCP Server Management](#) page in the Network Services Management area.

* The IP address pool must specify addresses that are in the subnetwork of the ConnectPort X4. The DHCP server will not operate if this configuration does not meet this requirement.

Verifying the WiFi Connection Status

You can verify the WiFi connection status by navigating to the **Administration > System Information > Mobile** page. You should see a screen similar to the following displaying the settings and statistics for the WiFi network.

System Information

- ▶ General
- ▶ Serial
- ▶ Network
- ▼ WiFi LAN

Active Settings

Status:	Authenticated with Network
Network Name:	TRENDnet
Network ID:	00:14:d1:cb:49:f4

Channel:	1
Transmit Rate:	54 Mbps
Signal Strength:	100 % (-26 dBm) 
Authentication:	WPA with pre-shared key (WPA-PSK)
Encryption:	TKIP

Transmit Statistics

Bytes transmitted:	1940505	Directed frames transmitted:	5494
Broadcast frames transmitted:	2	RTS frames transmitted:	0
Retries:	1670	Exceeded retry limit:	16
Broadcast errors:	0	Not associated:	3

Receive Statistics

Bytes received:	100499528	Directed frames received:	33
Broadcast frames received:	839043	RTS frames received:	0
Retries:	0	No buffers:	0
Invalid frames:	5460	Duplicate frames:	0
Exceeded lifetime limit:	0	Decryption errors:	7118
Too large:	0	Hardware overruns:	0

Refresh

- ▶ IP Network Failover
- ▶ iDigi
- ▶ Position
- ▶ XBee Network
- ▶ Diagnostics



You have completed WiFi configuration of your ConnectPort X5 R.

Chapter 4: Configuring the Gateway Priority

With all the interfaces configured, the ConnectPort X5 R could conceivably reach the Internet via multiple interfaces (Ethernet, Cellular, or WiFi). Configuring the ConnectPort X5 Gateway Priority List determines the priority for each of its network interfaces. By default the ConnectPort X5 R gives the Mobile (Cellular) interface the highest priority.

The ConnectPort X5 R IP Gateway Priority List and the DNS Priority List are configurable via the **Configuration > Network > Advanced Network Settings** page as displayed below.:

Advanced Network Settings

The following settings are advanced settings used to fine tune the network connection and network interfaces. The default settings will typically work in most situations.

IP Settings

Host Name:

Static Primary DNS:

Static Secondary DNS:

DNS Priority:

Gateway Priority:

See also [IP Network Failover Settings](#) for default gateway management.

If you wish to change the DNS Server or IP Gateway Priority order, click on the desired entry and use the arrow keys to raise, or lowers its priority in the list of entries. Click **Apply** when finished.



You have configured the IP Gateway Priority of your ConnectPort X5 R.

Chapter 5: Viewing Status Information

Viewing IP Address Information

The ConnectPort X5 R Home page will display the IP address for the Ethernet, Cellular and WiFi networks.

Viewing Ethernet Statistics

To view information about the Ethernet Link as well as Ethernet and IP statistics, navigate to the **Administration > System Information > Network** page.

Verifying the GPS Connection Status

You can check the GPS connection status by navigating to the **Administration > System Information > Position** page.

▼ Position

The following position information has been gathered from attached NMEA-0183 compliant GPS receivers, or statically configured position parameters.

Latitude:	33.743790
Longitude:	-118.025108
Altitude:	5.800000 meters
Speed:	0.000000 knots
Track Angle:	193.199997
Fix Time:	16:04:36.00
Fix Date:	07/19/11
Satellites in View:	5
Fix Quality:	GPS Fix
HDOP:	1.0

Refresh



You have verified the GPS connection status of your ConnectPort X5 R.

Chapter 6: iDigi

What is iDigi?

The iDigi Device Cloud is the embedded industry's first ready-to-use cloud computing platform for device networking and management. It provides secure application messaging, data storage and device management for networks comprised of wired, cellular and satellite-connected devices.

What is Cloud Computing?

Cloud computing offers a flexible new approach to delivering IT services. In the most basic sense, “The Cloud” is resources (hardware, software, infrastructure and device networks) that can be accessed through the Internet. The benefits of cloud computing are similar to a public utility model: only buy what you need, when you need it, with the ability to quickly scale resources on-demand as resource utilization grows.

What is a Device Network?

Sometimes referred to as Machine-to-Machine (M2M), device networks enable both wired and wireless systems to communicate with other devices and applications. A device (such as a sensor or meter) captures an event (such as temperature, tank level, etc) which is relayed through a network aggregation layer (wired, wireless or both) and infrastructure to an application (software program) that translates the captured event into meaningful information (for example, tanks need to be emptied or refilled).

What is iDigi Manager Pro?

iDigi Manager Pro is the Software as a Service (SaaS) component of the iDigi Device Cloud. It is a web-based graphical user interface for management and control of remote devices. iDigi Manager Pro will be discussed in more detail on page 35.

For more information about iDigi visit the iDigi web site at www.idigi.com, or see the iDigi User's Guide.

Create an iDigi Device Cloud Account

The features provided by iDigi are made available by signing up for a free iDigi Device Cloud account. The iDigi Device Cloud account is a full production environment, designed and tested to provide a robust solution for large-scale device network deployments. Offering commercial-grade availability, on-demand scaling, active monitoring and a best-of-breed security policy, the iDigi Device Cloud supports dynamic device networks with role-based access control and a host of management tools. When you create your free iDigi Device Cloud account, you have access to iDigi Manager Pro with a limit of 5 iDigi-registered devices, 30 iDigi SMS Messages per month (billing period), and unlimited iDigi Web Services. When you are ready to expand your device network and add your 6th device, you will be prompted to upgrade your iDigi account.

To create your free iDigi Device Cloud account on the US cloud navigate to <https://www.idigi.com> and click **SIGN UP NOW FOR FREE**, then follow the steps for creating your account.

If you need help creating an account, follow the steps outlined in the iDigi Account Creation Guide available online at: <http://ftp1.digi.com/support/documentation/html/90002178/>

NOTE: If you already have an iDigi user account, login with your user credentials and skip ahead to the “Add your ConnectPort X5 R to your iDigi Inventory” section on page 35.

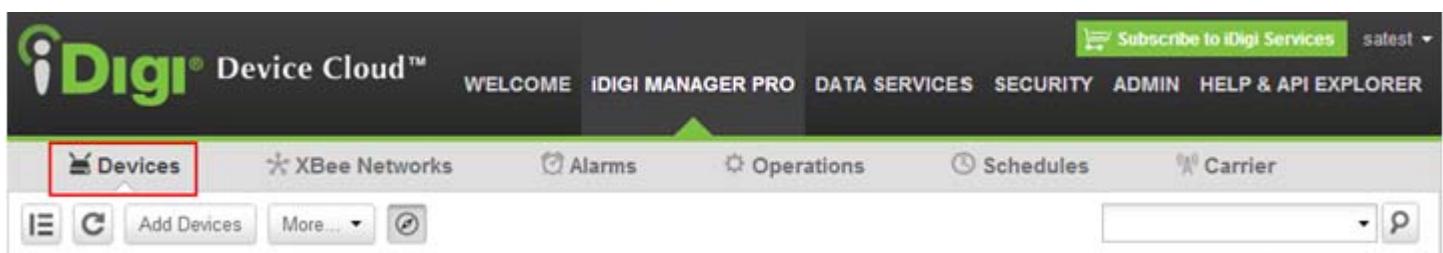


Add your ConnectPort X5 R to your iDigi Inventory

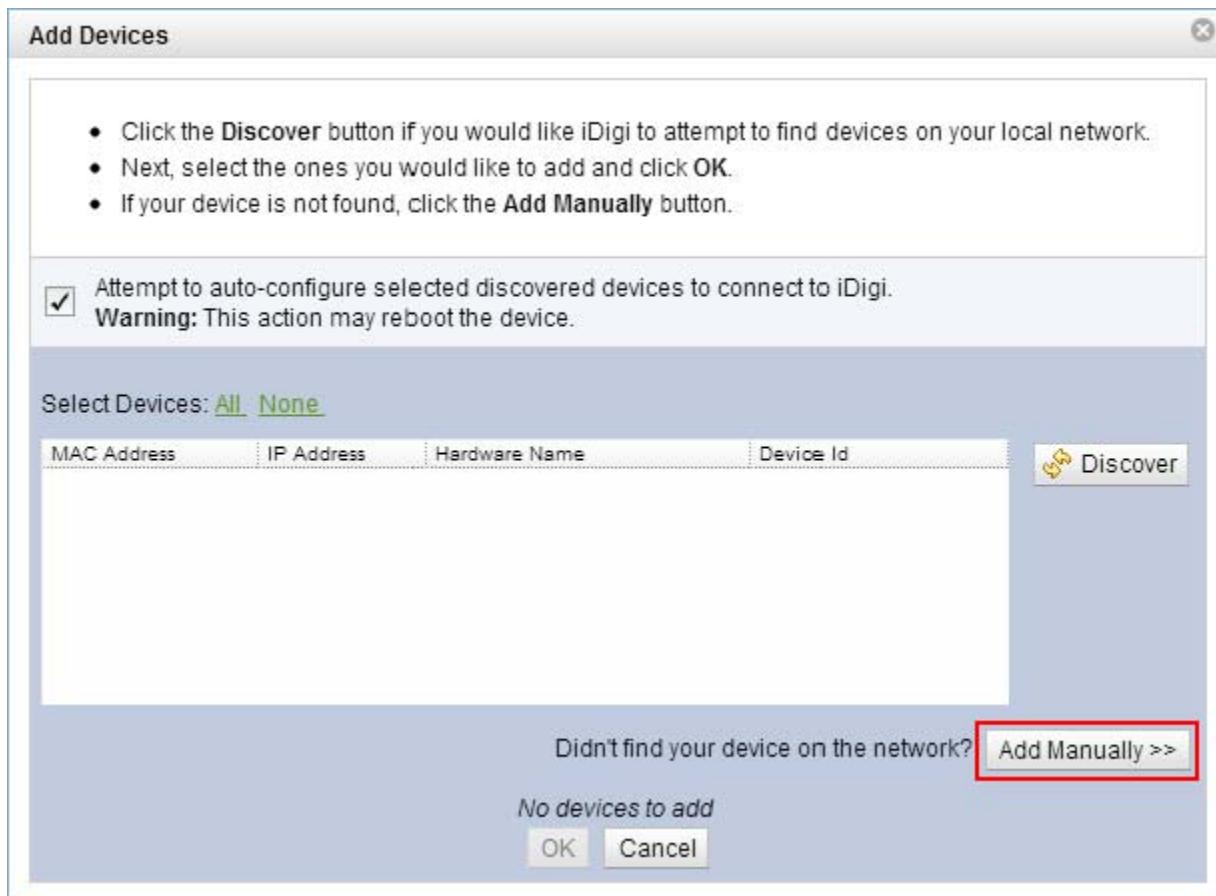
iDigi Manager Pro is a web based device management application that allows a user to manage their inventory of iDigi devices. iDigi Manager Pro delivers capabilities that empower IT, network operations and customer support organizations to conquer the challenges of managing the vast array of equipment in their device networks.

To add your ConnectPort X5 R to your iDigi device inventory, perform the following steps:

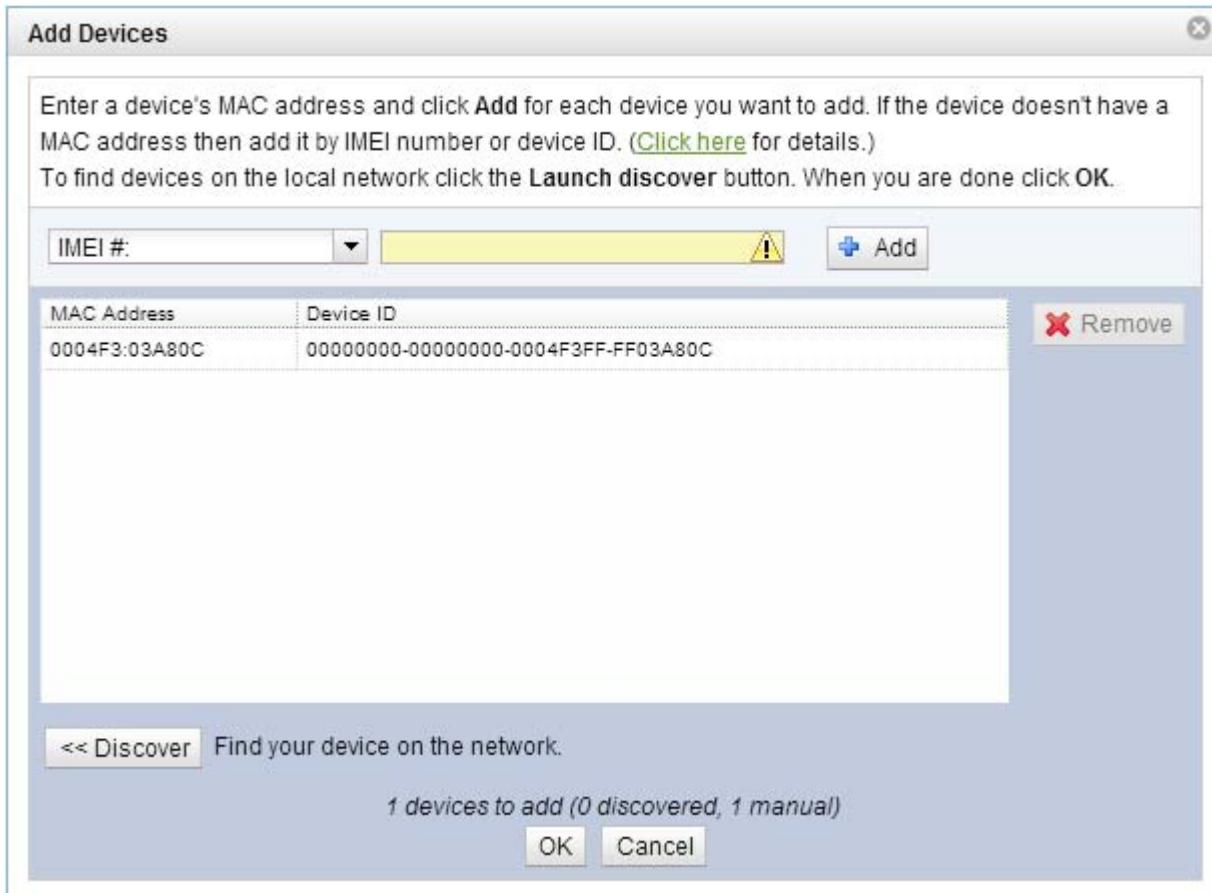
1. Open the Devices page by clicking the **Devices** menu from within the iDigi Manager Pro tab.
2. Click the **Add Devices**  button in the toolbar to open the Add Devices applet.



3. The Add Devices applet (shown below) is used to discover the iDigi devices on your network. Since the ConnectPort X5 R is connected via a USB cable, it needs to be added to your iDigi device inventory manually. Click the **Add Manually** button to begin adding your device manually.



4. Using the drop-down menu select the **IMEI #** option then enter the Modem Serial Number (IMEI or MEID) of the device (which can be found on the label on the bottom of the device) into the field.
5. Once the IMEI number has been entered click **Add**. Your device will appear within the window. Click **OK** to exit the Add Devices applet.



6. Ensure that your device is displayed in the devices list on the Devices Page. Notice that the device is ‘Disconnected’ (as indicated by the red ‘Disconnected’ icon). Later in this guide you will configure the ConnectPort X5 R to properly establish both a cellular and iDigi connection which will change the device’s state to ‘Connected’ (as indicated by a green ‘Connected’ icon).

MAC Address	Device ID	IP Address	Device Type	Description	Firmware Level	User Meta Data	Tags
0004F3:03A80C	0004F3FF-FF03A80C	10.9.16.35	ConnectPort X5 R		2.14.2.3		

Chapter 7: Digi ESP for Python

Digi ESP for Python Overview

Built on the open Eclipse framework, Digi ESP for Python provides an easy-to-use and professional Python development environment with graphical user interface.

Digi ESP for Python offers a wide variety of state-of-the-art development tool features that make embedded development easier and faster than ever before. These include intelligent editor coding aids (syntax highlighting, auto-indent/bracket-matching, code completion assistance), on-the-fly template insertion, and simple single-click initiation of project build processes and debug sessions. This development environment also includes extensive documentation, tutorials, and code samples to help you get started developing custom applications for your product.

For example, applications can be created to:

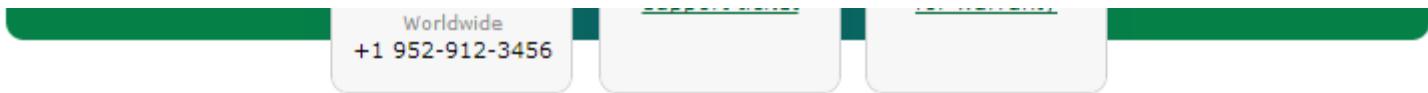
- Aggregate data on the ConnectPort X5 R throughout the day, then upload to iDigi once a day.
- Develop a driver for a custom protocol to talk to a device connected to the ConnectPort X5 R.
- Translate data, for example, from raw serial into an XML format that can be consumed by other systems, such as iDigi.

Download and Install Digi ESP for Python

1. Navigate to <http://www.digi.com/connectportx5> and click on the **Download Digi ESP for Python** link.
2. A new page will be displayed, within this page click the Download Digi ESP for Python button.

Download Digi ESP for Python ▾

3. The various download options for the Digi ESP for Python framework will be displayed. Based on your operating system, click the link to download Digi ESP for Python.



Product Status: [Active](#)

Support Status: [Web, Email, Phone](#)

[Expand all](#) | [Close all](#)

Drivers

Digi ESP for Python and iDigi Dia

[How to install Digi ESP for Python](#) [Subscribe](#)

The Digi ESP for Python contains the latest version of iDigi Dia software. Version 2.1.1.2 of the ESP for Python does not support either the ConnectPort X3 and X-Trak 3 products. For these products continue to use the 1.4.0 version.

[CodeWarrior™ for Microcontrollers - version 10.2](#) [Subscribe](#)

[Digi ESP for Python - Windows XP/Vista/Windows 7 installer ver. 2.1.1](#) [Subscribe](#)

Version 2.1.1 of the ESP for Python does not support either the ConnectPort X3 or the X-Trak 3 products. For these products continue to use the 1.4.0 version.

[Digi ESP for Python - Mac OS X \(10.6\) installer ver. 2.1.1](#) [Subscribe](#)

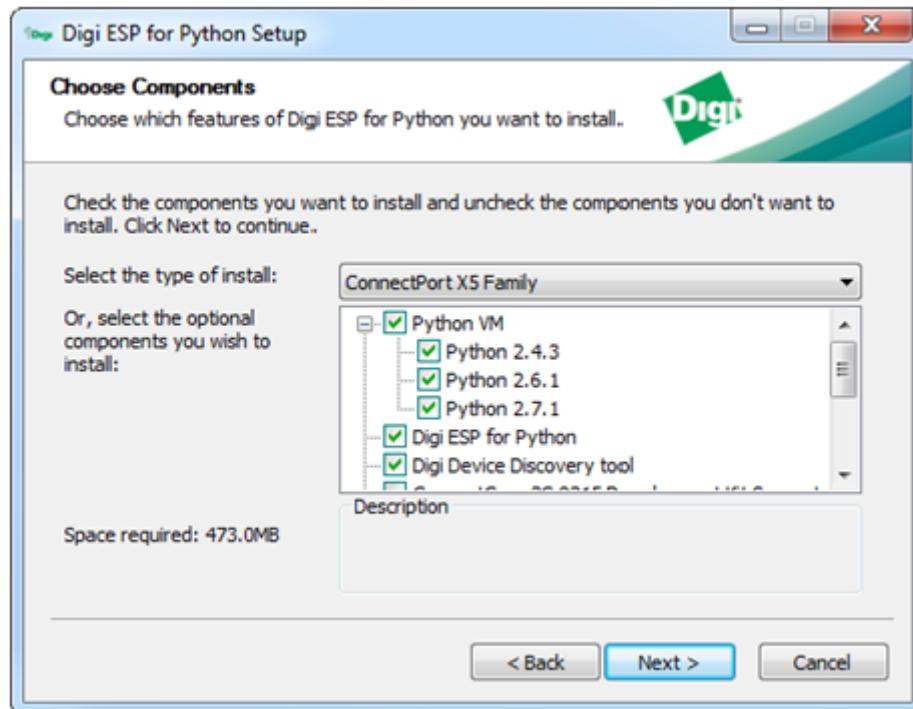
Version 2.1.1 of the ESP for Python does not support either the ConnectPort X3 or the X-Trak 3 products. For these products continue to use the 1.4.0 version.

[Digi ESP for Python ver. 2.1.1 release notes](#) [Subscribe](#)

Version 2.1.1 of the ESP for Python does not support either the ConnectPort X3 or the X-Trak 3 products. For these products continue to use the 1.4.0 version.

4. Once the Digi ESP for Python framework has been downloaded, run the Digi ESP for Python framework installation wizard. Follow the steps in the wizard until the **Choose Components** dialog is displayed.

- When the Choose Components dialog is displayed, select the **ConnectPort X5 Family** installation from the drop-down menu.



- Follow the installation until arriving at the **Completing the Digi ESP for Python Setup Wizard** dialog. Uncheck both options, then click **Finish**.

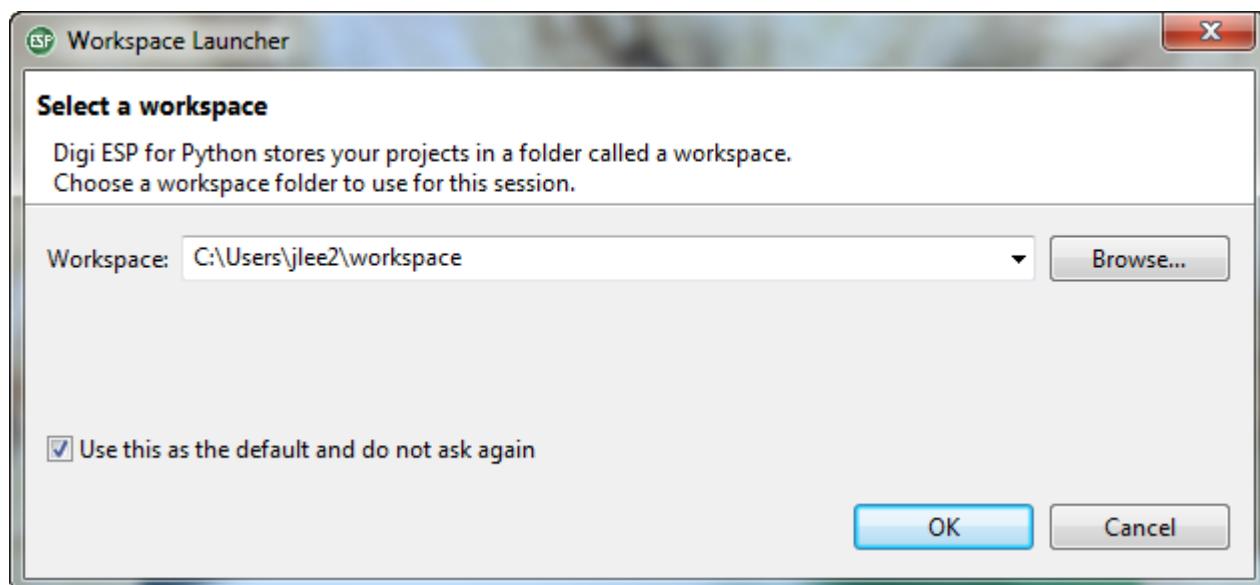


Using Digi ESP for Python

The Digi ESP for Python IDE provides sample Python programs that can easily be downloaded to your ConnectPort X5 R. This section will guide you through the steps required to run your first sample project.

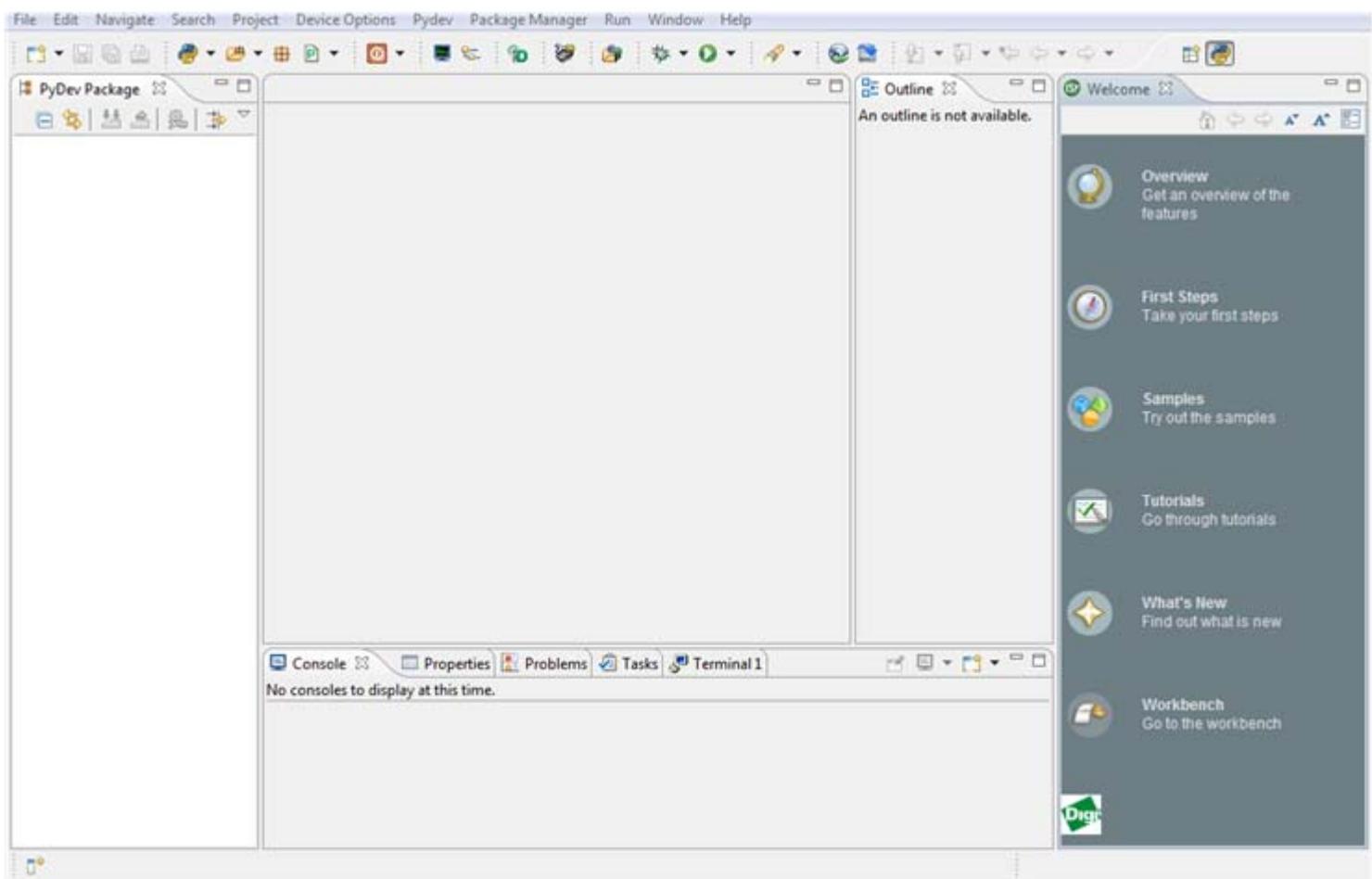
1. If it is not already open, launch Digi ESP for Python (**Start > Digi > iDigi > Digi ESP for Python**).
2. The first time you open Digi ESP for Python you will be prompted to select a workspace directory. Use the default workspace directory (or click the **Browse** button and navigate to your desired alternate workspace location), check the "Use this as the default and do not ask again" box, and click **OK**.

NOTE: Note: The Digi ESP for Python framework 'workspace' is the directory where projects and configurations will be stored. The default location for this directory is a sub-folder called **workspace** on the user home directory, for example, **C:/Documents and Settings/[username]/workspace**.

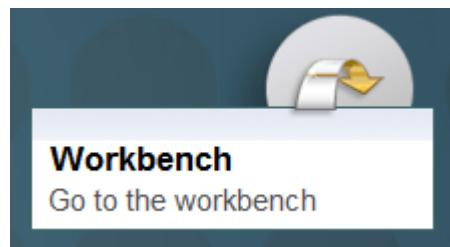


3. If you are using Digi ESP for Python 2.0 or newer, the first time you run Digi ESP for Python the Workbench is displayed.

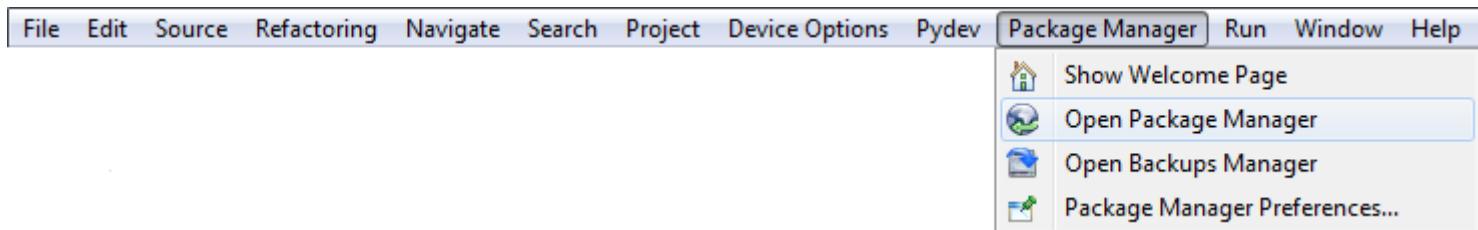
NOTE: Before the Workbench is displayed, the Welcome page is displayed for just a moment and is then displayed along the right side of the Workbench screen. Throughout this getting started experience the Welcome page will be minimized. When minimized the Restore button appears in the lower-left corner of the screen . If needed, click this button in order to maximize the Welcome screen, or select **Help > Welcome** from the main menu.



If you are using an earlier version of Digi ESP for Python, the first time you run Digi ESP for Python the Welcome screen is displayed. To open the Workbench from the Welcome page, click the **Workbench** icon.



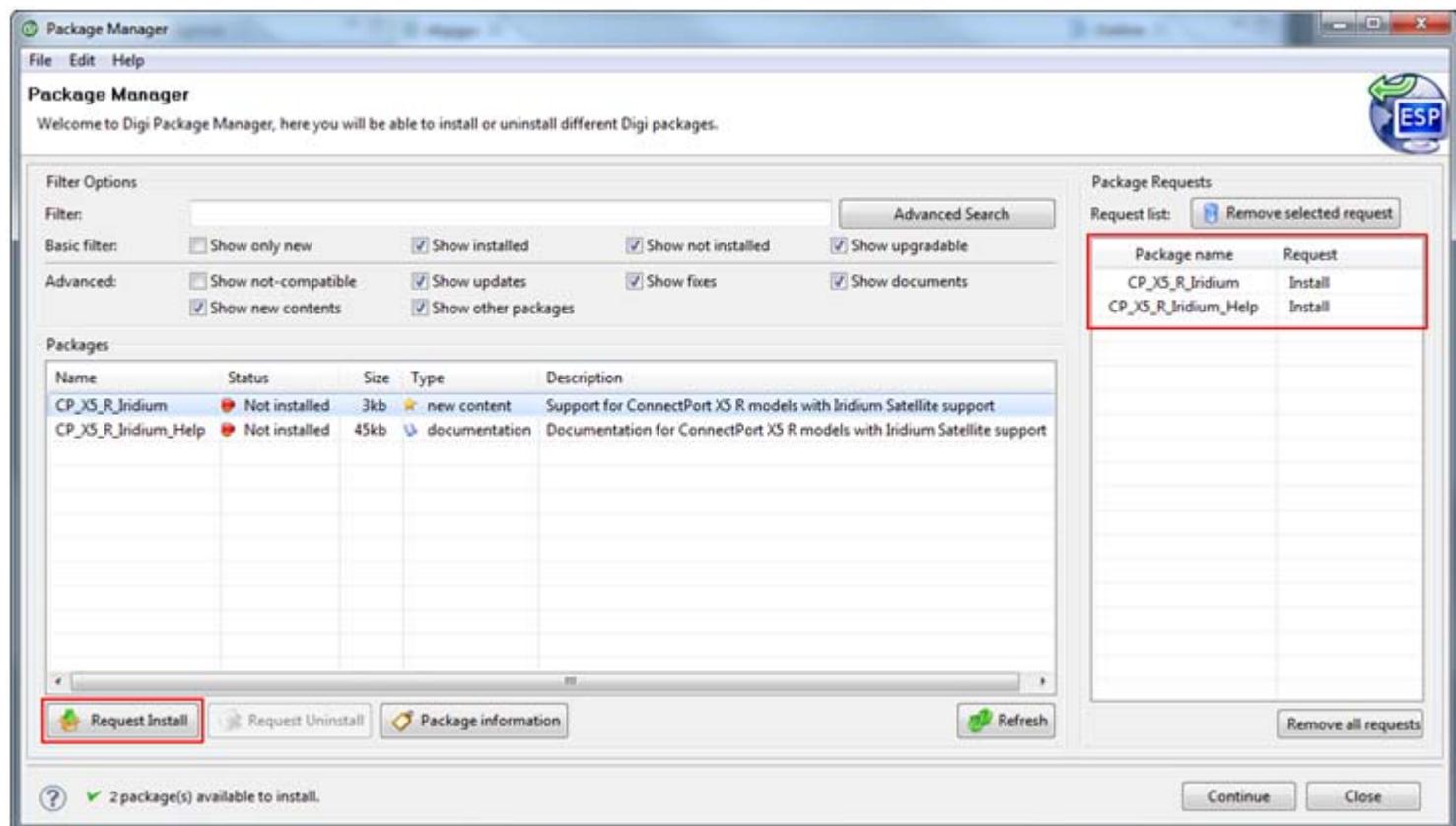
4. You will need to run the Digi ESP for Python **Package Manager**. Package Manager allows Digi ESP for Python to check the Package Manager Update Server for updates and enhancements. These updates will keep your Digi ESP for Python environment current. To open Package Manager, navigate to **Package Manager > Open Package Manager** from the Workbench page's main menu.



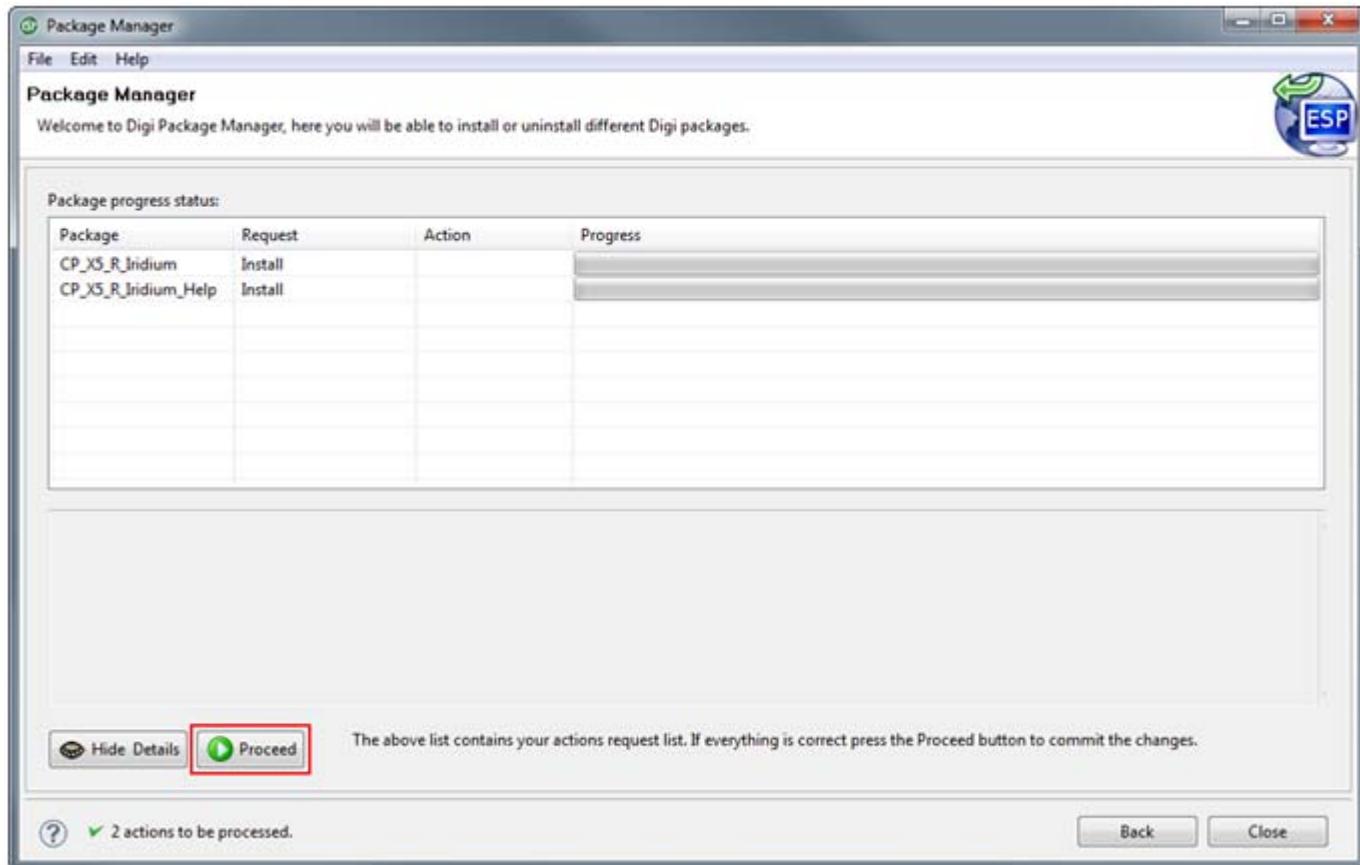
5. If Package Manager discovers any available updates, a dialog box similar to the one below will be displayed. If updates are available for your product, they should be installed. The dialog below is an example of what you would see if packages were available for a new product like the ConnectPort X5 R Iridium model. Locate your ConnectPort X5 R package in the list and click to select it. Once selected, click the **Request Install** button. Repeat as needed for any additional packages.

NOTE: If no packages need to be installed, skip this step and proceed with Step 8 on page 44.

6. All requested installs will be displayed within the **Package Request List Panel**, click the **Continue** button to proceed with the installation of your package(s).



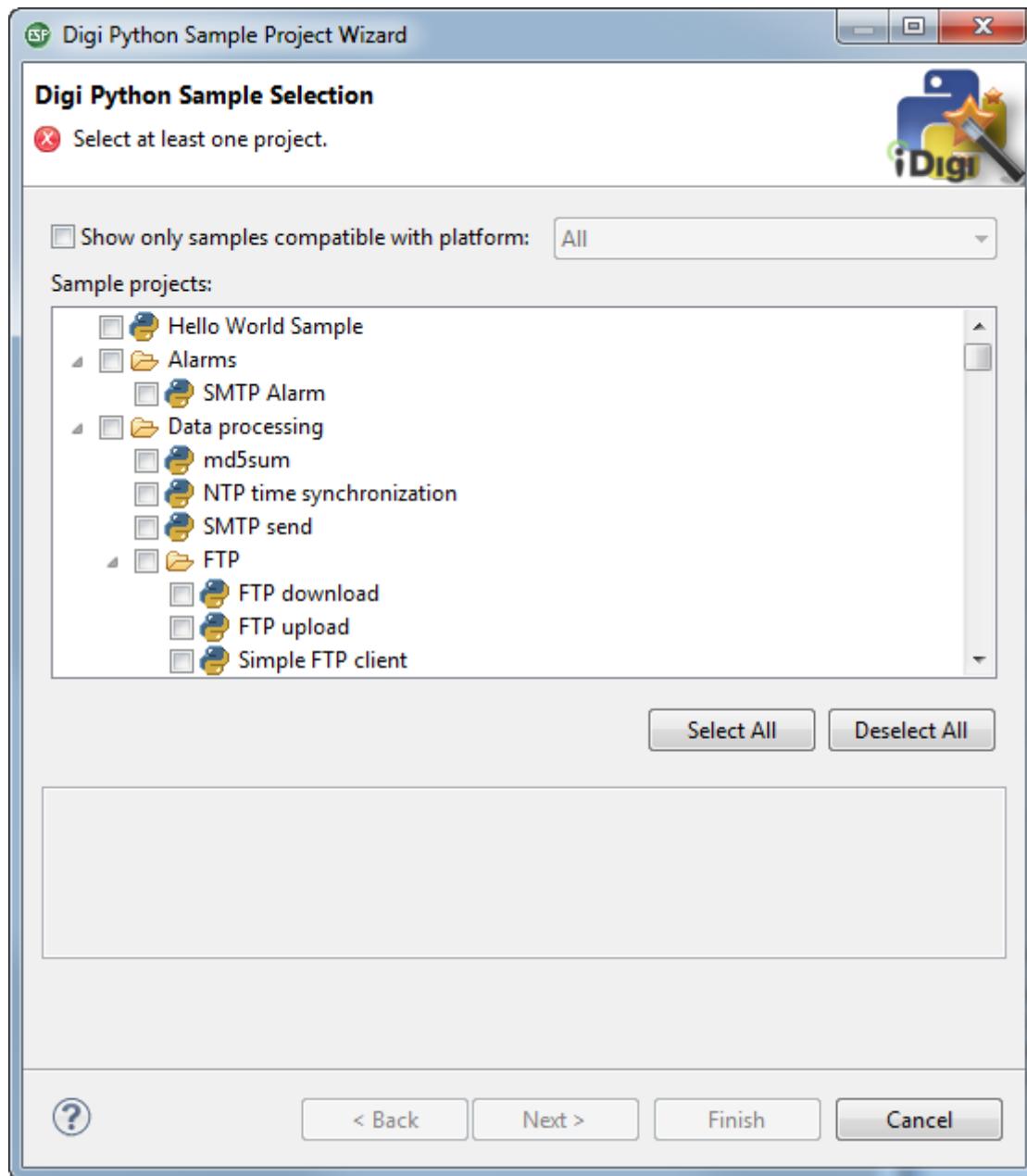
7. Verify that all packages to be installed are displayed in the installation panel, then click the **Proceed** button. Once all packages are installed a dialog box will appear, click **OK**.



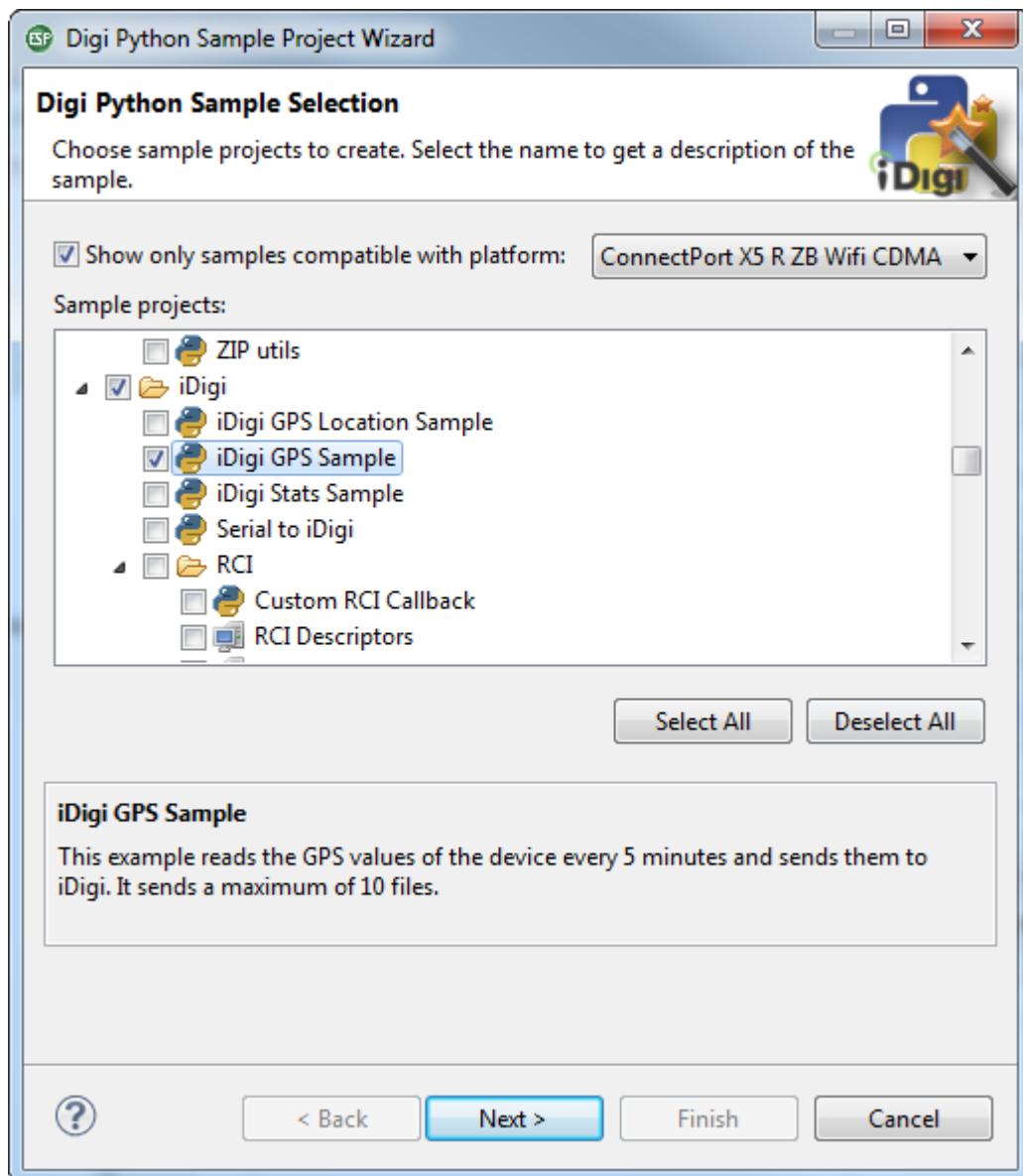
Once all packages have been successfully installed, Digi ESP for Python may need to restart. If new packages were installed and Digi ESP for Python was restarted, make sure that the **Workbench** is displayed (as described in Step 3 on page 41).

NOTE: If at any point you close Digi ESP for Python, it can be reopened by double-clicking on the Digi ESP for Python icon from your computer's desktop, or by navigating to **Start > Digi > iDigi > Digi ESP for Python**.

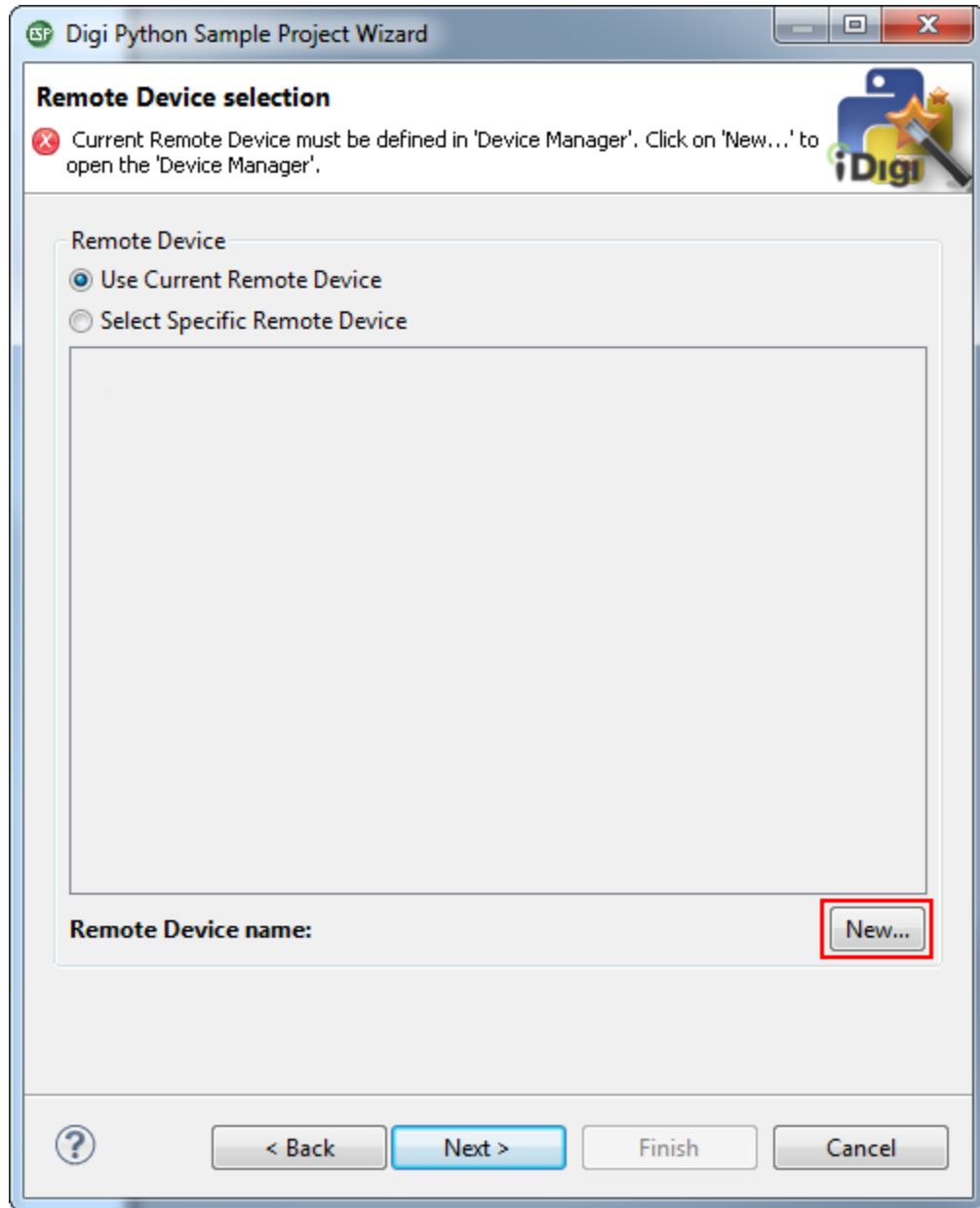
8. From the Workbench's main menu select **File > New > Digi Python Application Sample Project** to open the Digi Python Application Sample Project Wizard. The Sample Selection wizard page will be displayed (as shown below).



9. Click to enable the ‘Show only samples compatible with platform:’ checkbox, then select your ConnectPort X5 R gateway from the drop-down menu. For the example used in this Chapter, the **ConnectPort X5 R ZB Wifi CDMA** gateway is selected.
10. Locate the **iDigi GPS Sample** within the sample projects list, then click its checkbox to enable the sample project. Click **Next** when finished.

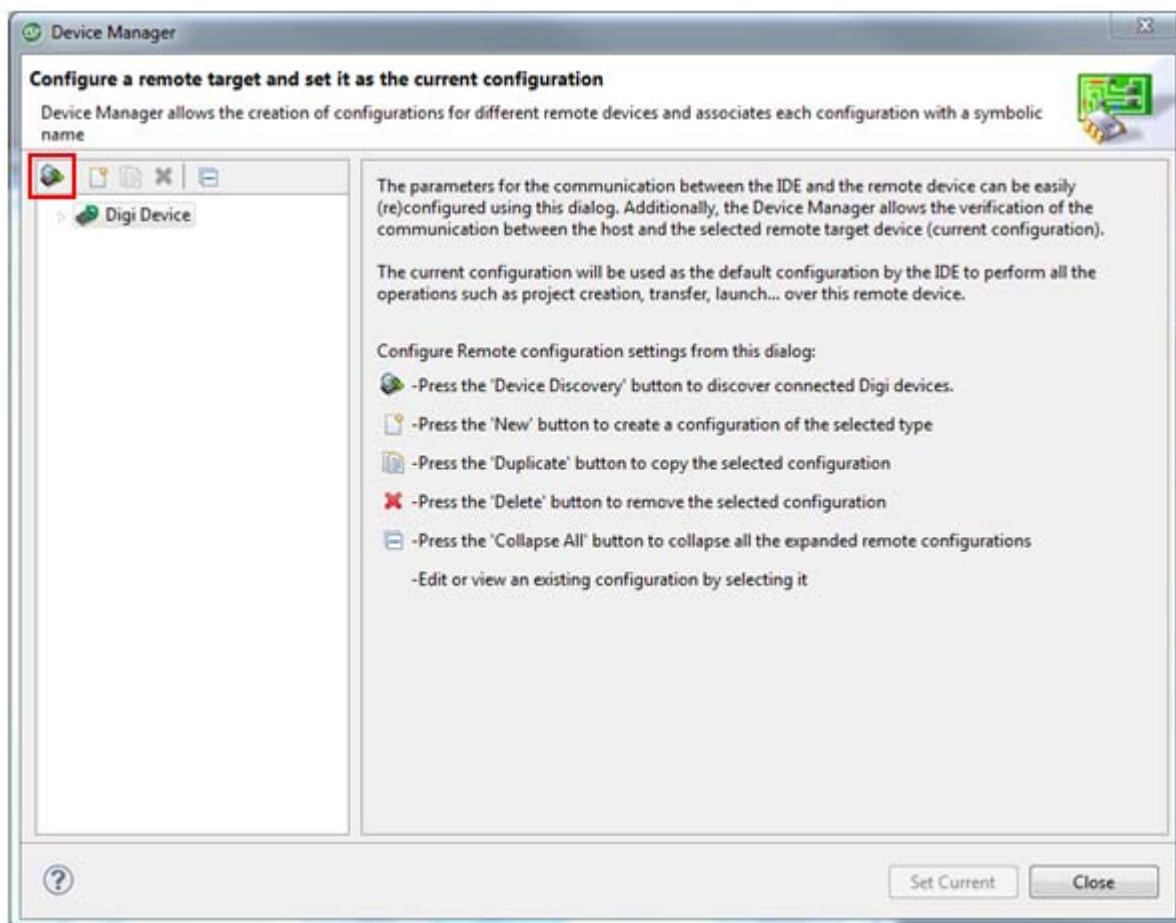


11. Within the Remote Device Selection wizard page, ensure that **Use Current Remote Device** is selected and then click the **New...** button to create a new remote configuration.

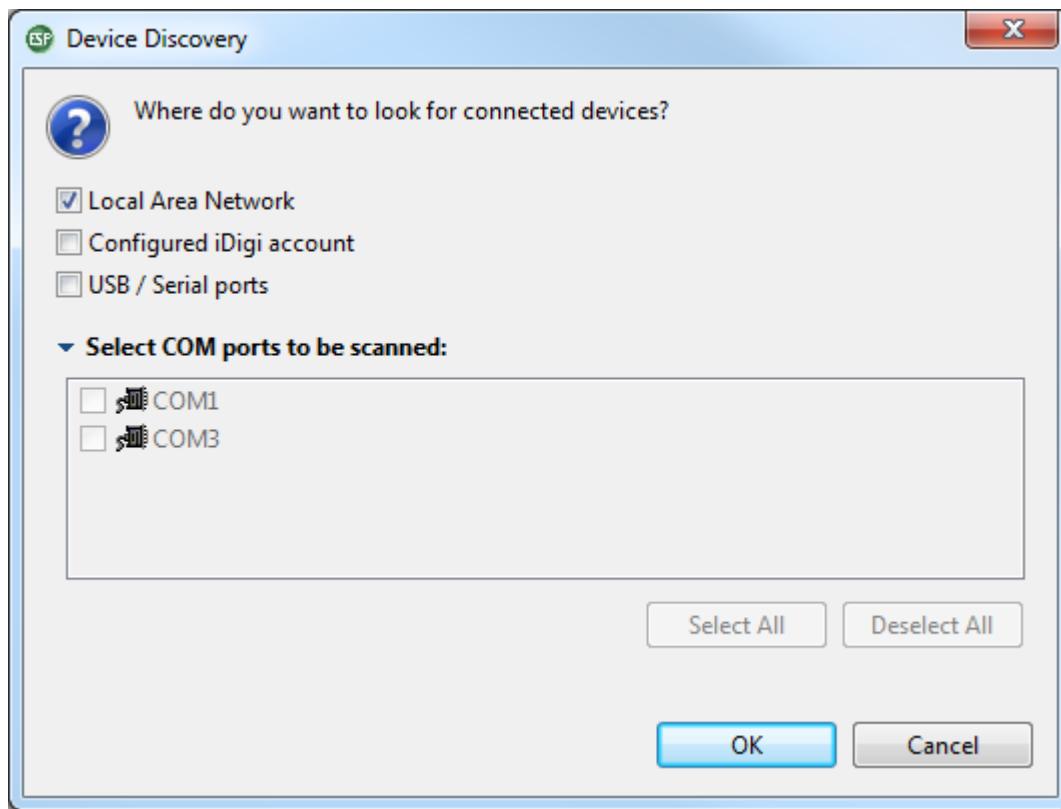


12. After clicking the New... button, the Device Manager wizard dialog will open. Initially, there are no Remote Configurations listed in the Device Manager. Click the **Device Discovery** button (highlighted below) to begin the process of creating a new configuration.

NOTE: The left side of the dialog lists the Remote Configurations that exist in the Workbench.



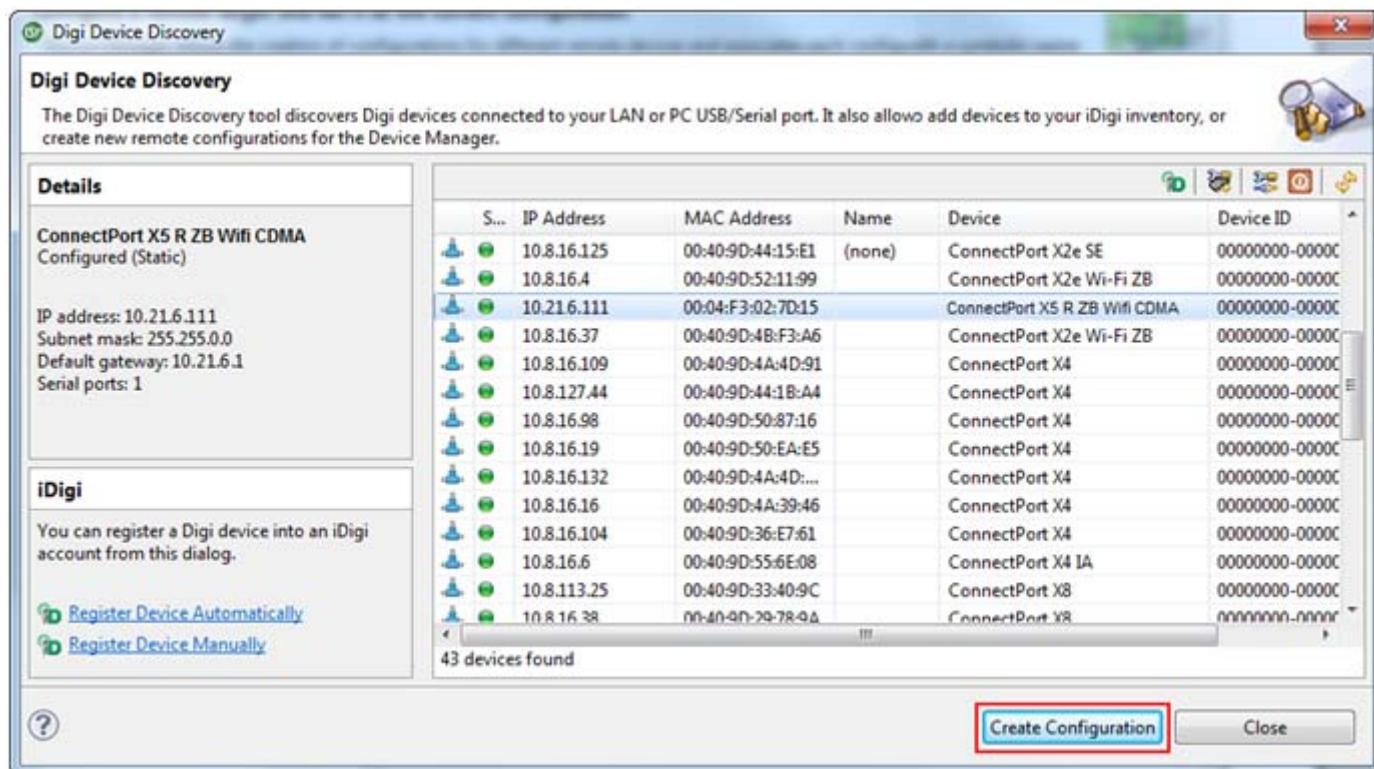
13. A dialog will ask you to identify a location where the Digi ESP for Python framework should look for devices. Select **Local Are Network** and click **OK** when finished.



14. A progress dialog is displayed, indicating that the Digi Device Discovery utility is searching for devices. When the search is finished the **Digi Device Discovery** dialog is displayed listing all the Digi devices discovered on your local network.

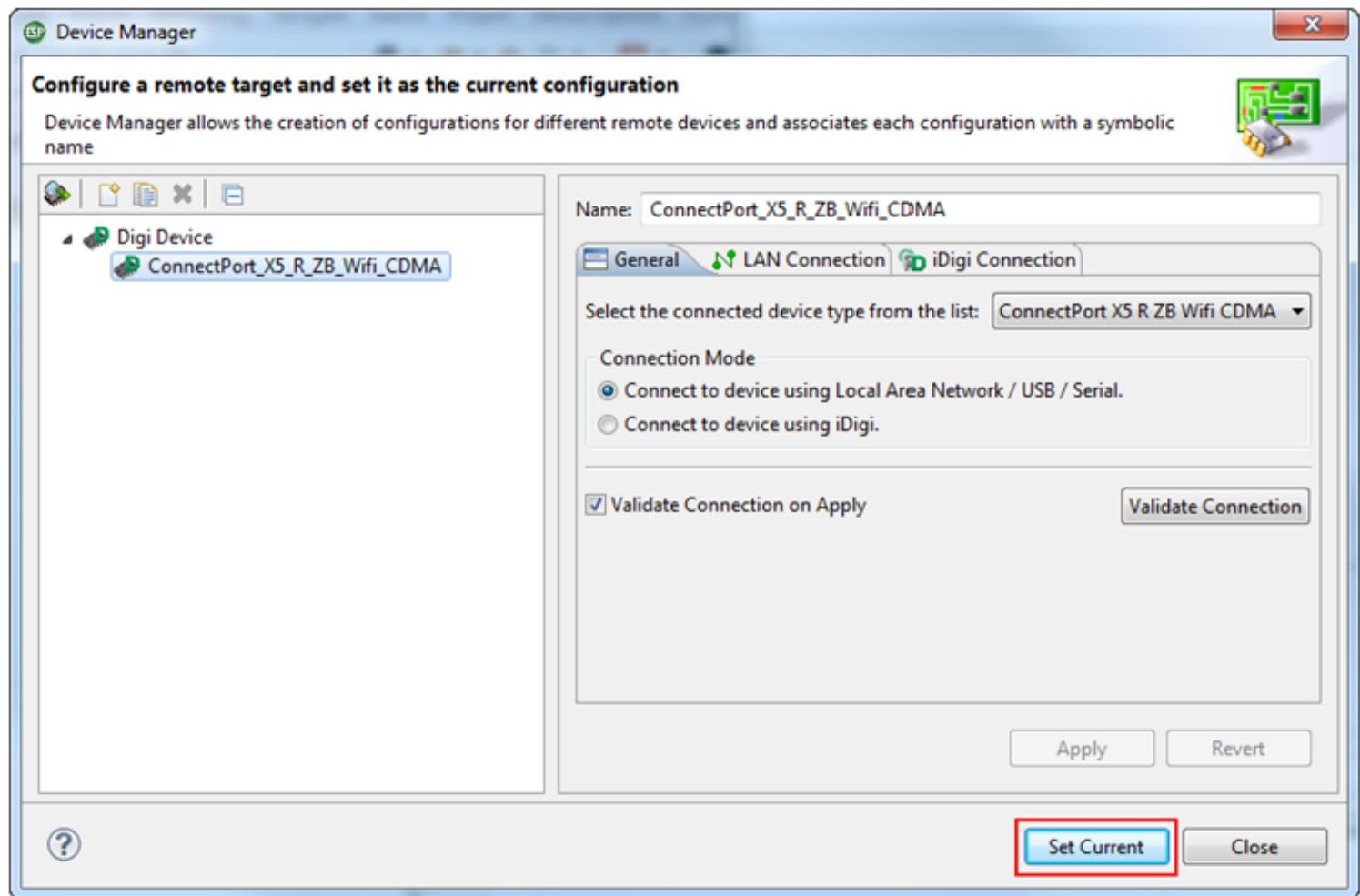
NOTE: The image below is for reference purposes. You will have fewer (possibly only one) device(s) in your device list.

15. Click on your device to select it from the list, and then click the **Create Configuration** button.



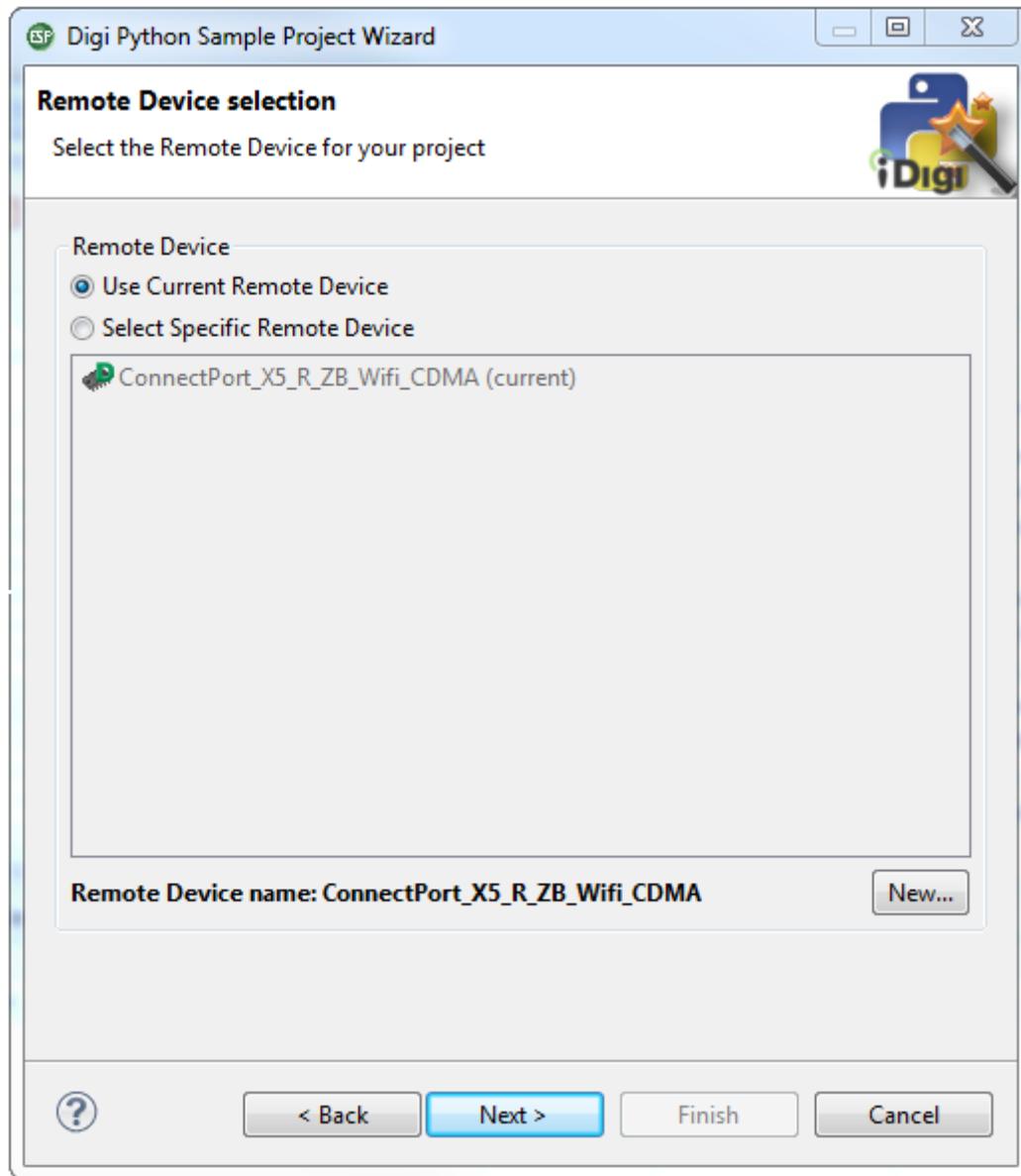
16. Ensure that your ConnectPort X5 R gateway is displayed in the ‘Select the connected device type from the list:’ drop-down menu. For the example used in this guide, the **ConnectPort X5 R ZB Wifi CDMA** gateway should be displayed.

NOTE: The name of your ConnectPort X5 R gateway should be automatically populated in this drop-down list. Only change the ‘Select the connected device type from the list:’ value if your specific ConnectPort X5 R gateway is not displayed.

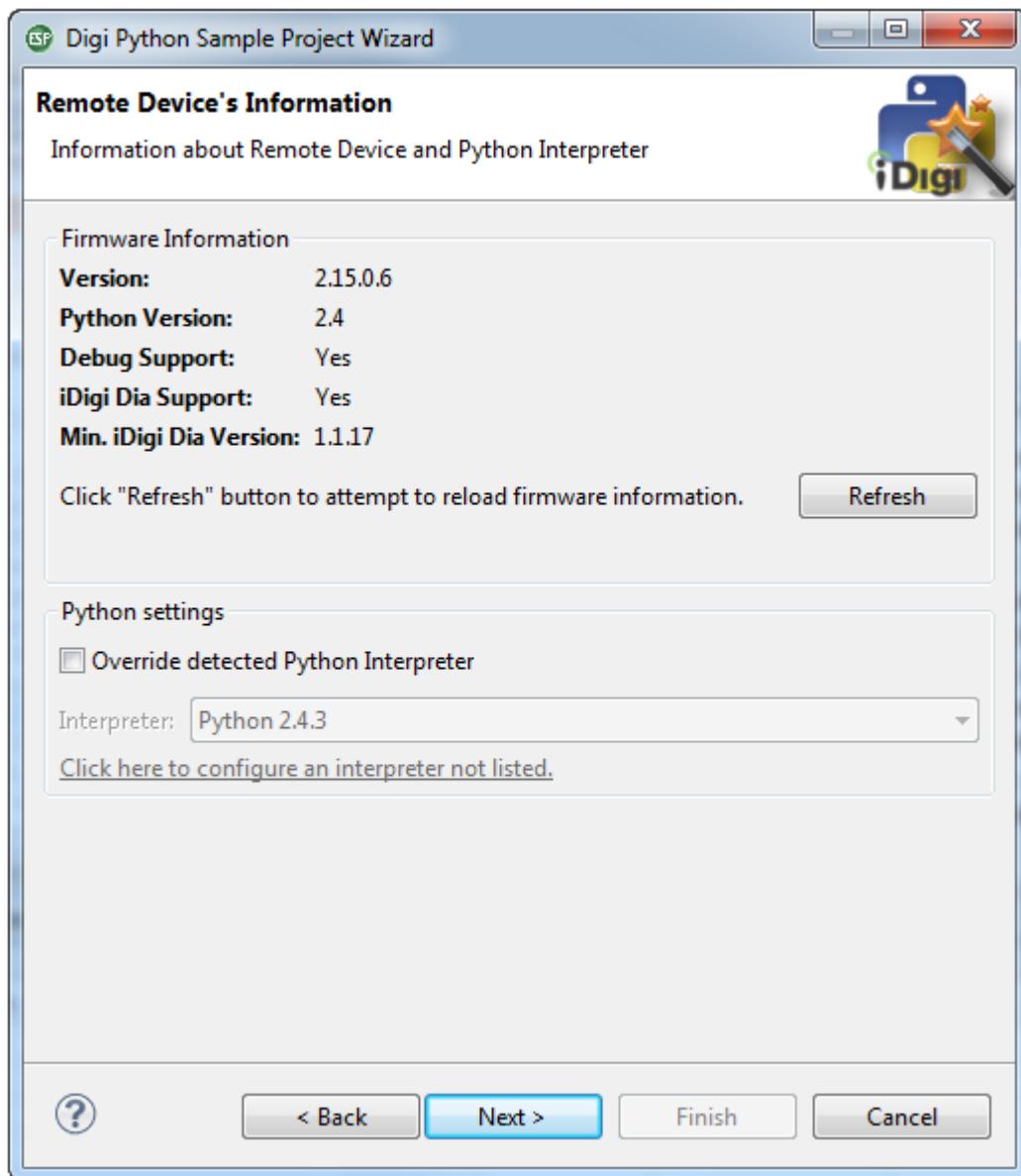


17. Click the **Set Current** button to make this configuration the current one, which means that the Digi ESP for Python framework will use it to perform several operations that require interaction with the remote device (reboot, transfer files, etc.).

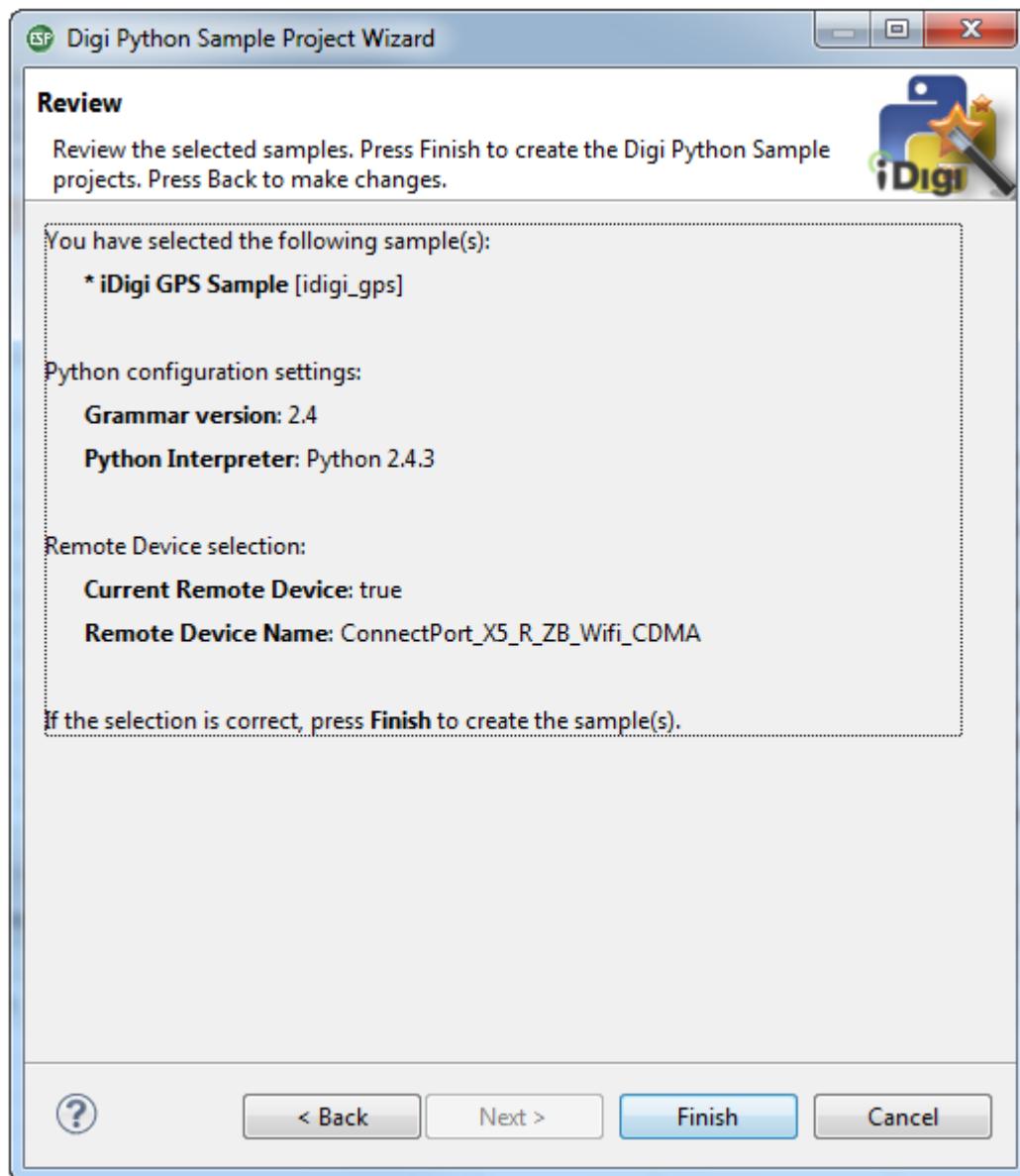
18. After clicking the Set Current button you will be redirected back to the Digi Python Application Sample Project Wizard. Make sure that **Use Current Remote Device** is selected, and click **Next**.



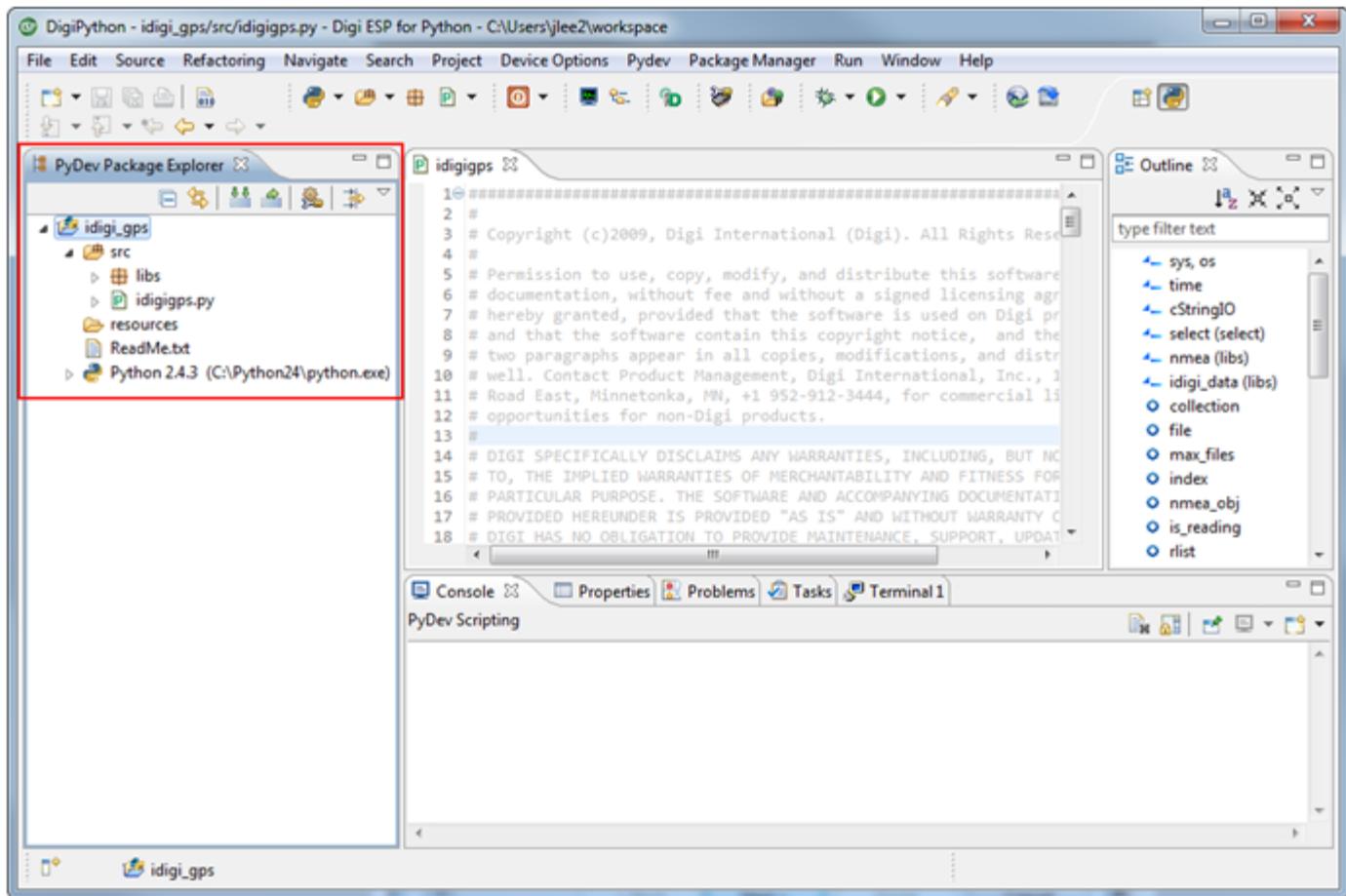
- When the Remote Device's Information wizard page is displayed, click **Next**.



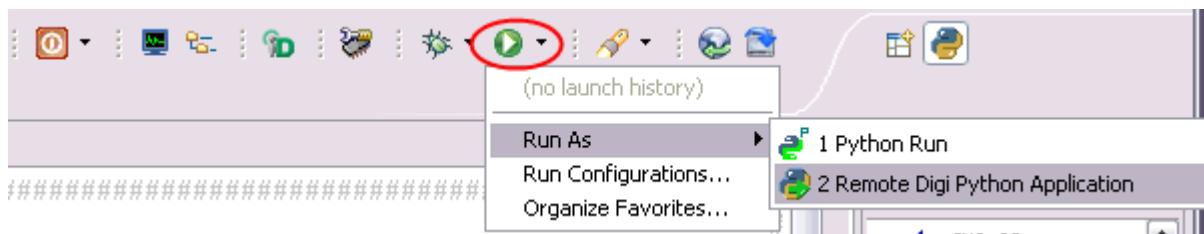
20. When the Review wizard page is displayed, click **Finish**.



Once the wizard closes your selected project, **idigi_gps**, will be displayed in your Digi ESP for Python workbench's workspace.



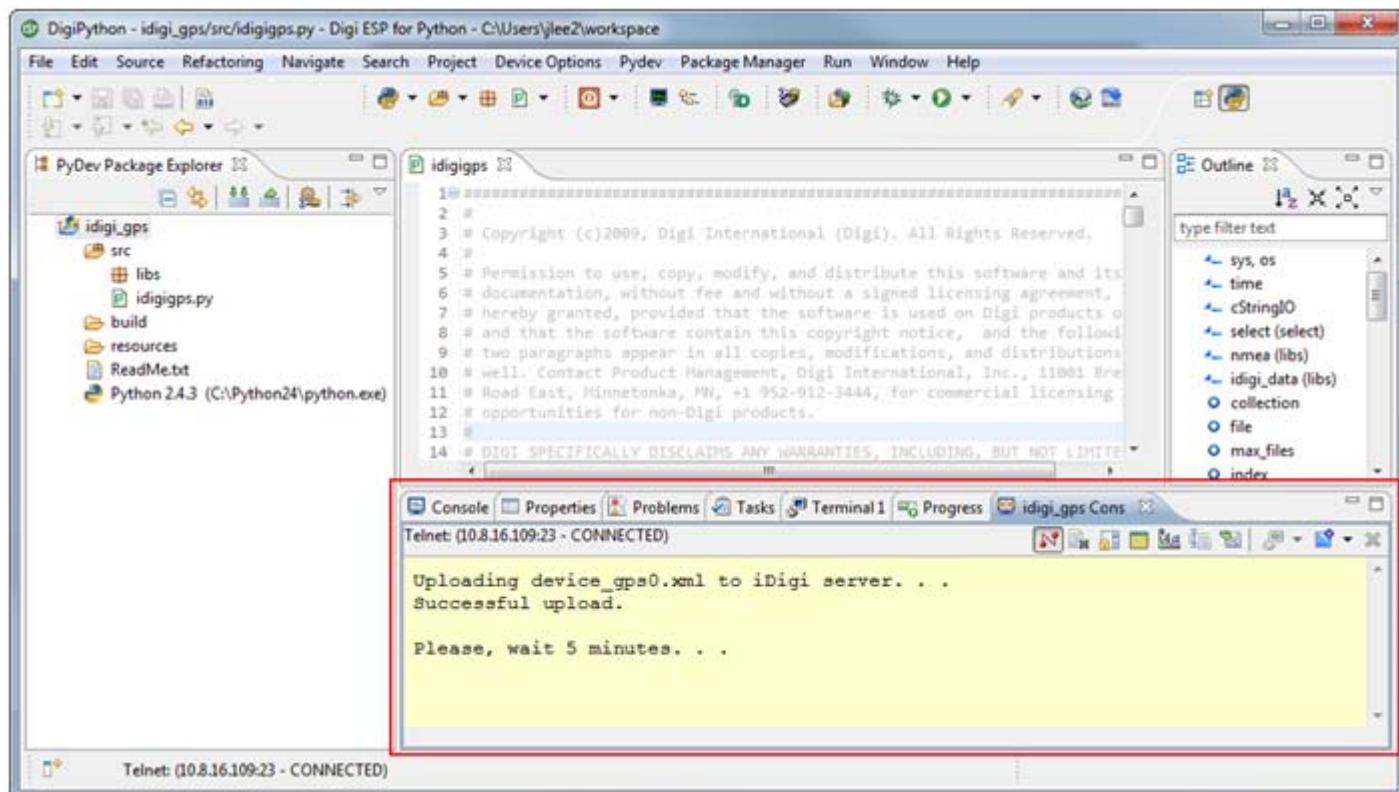
21. You are now ready to run your sample project. Using the **Run As** button's drop-down menu (shown below) go to **Run As > Remote Digi Python Application**.



The Source View region of the Workbench screen (highlighted below) will display status messages as the project builds, downloads files to your ConnectPort X5 R, reboots your ConnectPort X5 R (in order to start the application), and finally starts sending GPS application data to your ConnectPort X5 R.

A total of 10 GPS data messages will be sent, one every 5 minutes for a total of 50 minutes. You will view this GPS data in the next chapter of this document.

For ConnectPort X5 R Iridium users, see “Appendix A: Iridium (Satellite) Setup and Sample Program” on page 58 for an Iridium specific example using Digi ESP for Python.



Chapter 8: Viewing Uploaded Data on iDigi

Each of the 10 data messages sent from your ConnectPort X5 R to the iDigi Device Cloud can be viewed in their entirety using iDigi. This section will guide you through the steps required to view your uploaded GPS data.

1. Login to your iDigi Device Cloud account.
2. Open the Files page by clicking the **Data Services** tab.

NOTE: The Data Services page contains menus for the Files page and the Data Streams page. The Files page is displayed by default after selecting the Data Services tab.

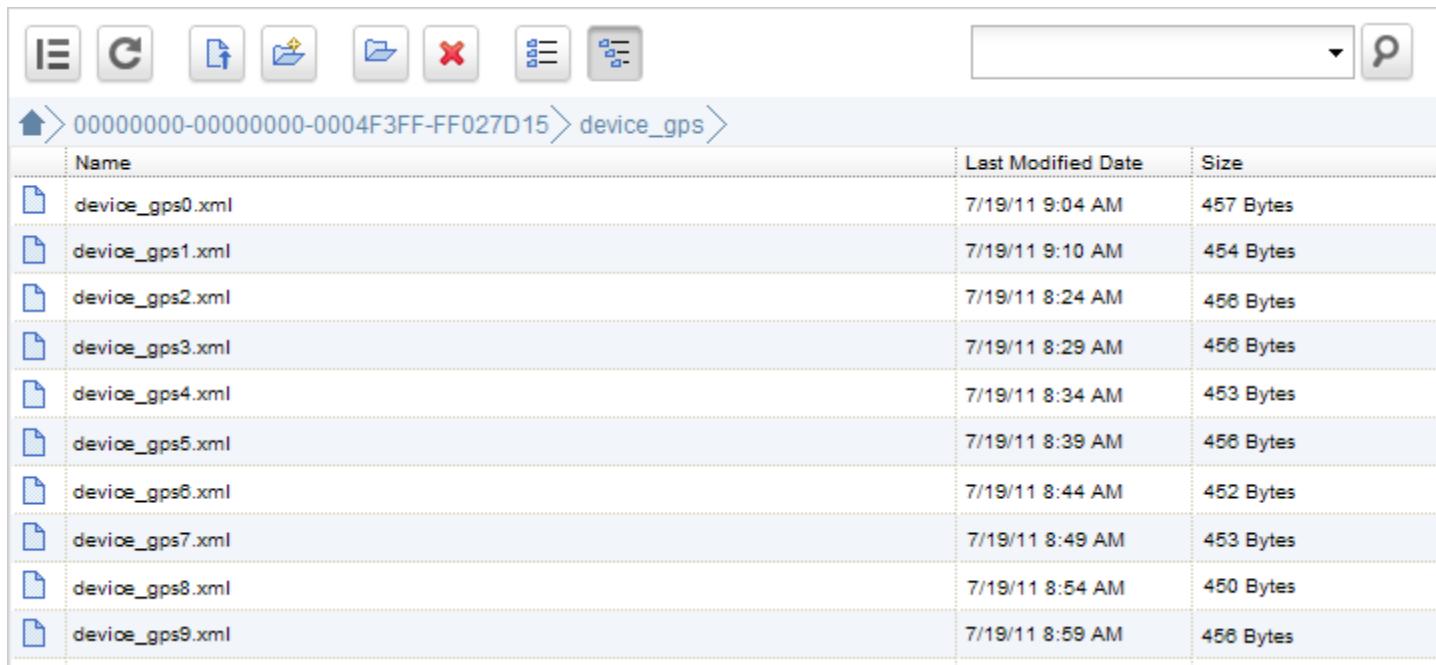
The screenshot shows the iDigi Device Cloud interface. At the top, there is a navigation bar with the iDigi logo, 'WELCOME', 'iDIGI MANAGER PRO', 'DATA SERVICES' (which is highlighted in blue), 'SECURITY', 'ADMIN', and 'HELP & API EXPLORER'. To the right of the navigation bar is a green button for 'Subscribe to iDigi Services' and a dropdown menu for 'satest'. Below the navigation bar, there are two tabs: 'Files' (which is selected and highlighted with a red box) and 'Data Streams'. Under the 'Files' tab, there are several icons for file operations like upload, download, and delete. Below these icons, a breadcrumb navigation shows a path: '00000000-00000000-0004F3FF-FF027D15'. A table below the breadcrumb lists a single file named 'device_gps'. The table has columns for Name, Last Modified, and Size. The 'Last Modified' column shows '7/1/11 2:23 PM'. The 'Size' column is empty.

Name	Last Modified	Size
device_gps	7/1/11 2:23 PM	

A data folder containing your GPS data will be displayed. The name of the folder is the full iDigi Device ID of your ConnectPort X5 R.

3. Double-click on the data file to open it, then double-click on the **device_gps** data file to open its individual data messages.

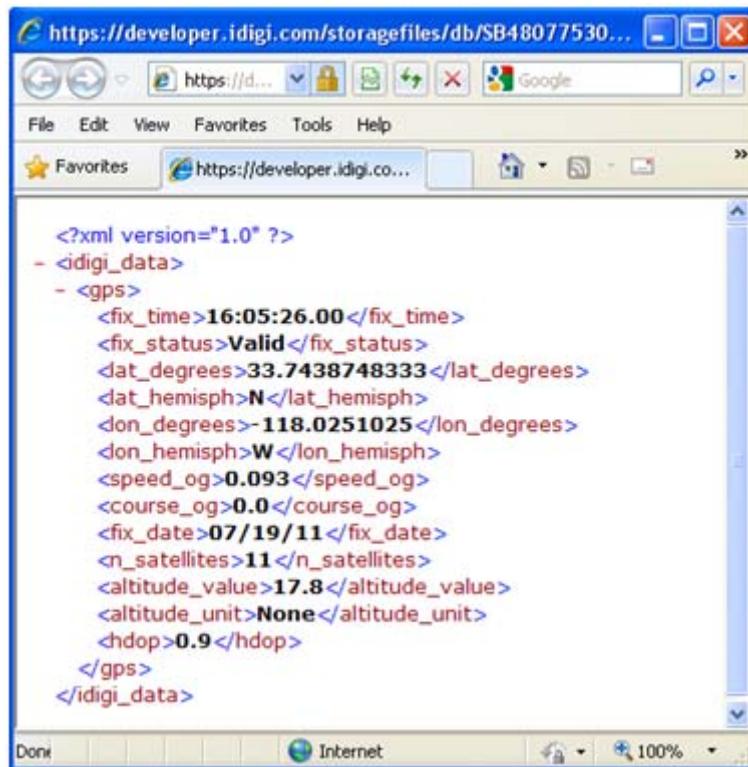
4. 10 data entries are displayed, indicating that your sample program ran for an entire 50 minute session.



The screenshot shows a file browser interface with various icons at the top. Below the icons, there is a breadcrumb navigation path: a folder icon followed by '00000000-00000000-0004F3FF-FF027D15' and then 'device_gps'. A dropdown arrow is located to the right of the folder name. Below the path is a table with three columns: 'Name', 'Last Modified Date', and 'Size'. The table contains 10 rows, each representing a file named 'device_gpsX.xml' where X is a digit from 0 to 9. The last modified date for all files is '7/19/11' and the size is '456 Bytes' except for 'device_gps1.xml' which is '454 Bytes'.

Name	Last Modified Date	Size
device_gps0.xml	7/19/11 9:04 AM	457 Bytes
device_gps1.xml	7/19/11 9:10 AM	454 Bytes
device_gps2.xml	7/19/11 8:24 AM	456 Bytes
device_gps3.xml	7/19/11 8:29 AM	456 Bytes
device_gps4.xml	7/19/11 8:34 AM	453 Bytes
device_gps5.xml	7/19/11 8:39 AM	456 Bytes
device_gps6.xml	7/19/11 8:44 AM	452 Bytes
device_gps7.xml	7/19/11 8:49 AM	453 Bytes
device_gps8.xml	7/19/11 8:54 AM	450 Bytes
device_gps9.xml	7/19/11 8:59 AM	456 Bytes

5. Double-click on one of the files to display its contents; for example the GPS positioning information from the ConnectPort X5 R.



The screenshot shows a web browser window with the URL 'https://developer.idigi.com/storagefiles/db/SB48077530...'. The page content is an XML document with the following structure and data:

```

<?xml version="1.0" ?>
- <idigi_data>
  - <gps>
    <fix_time>16:05:26.00</fix_time>
    <fix_status>Valid</fix_status>
    <lat_degrees>33.7438748333</lat_degrees>
    <lat_hemisph>N</lat_hemisph>
    <lon_degrees>-118.0251025</lon_degrees>
    <lon_hemisph>W</lon_hemisph>
    <speed_og>0.093</speed_og>
    <course_og>0.0</course_og>
    <fix_date>07/19/11</fix_date>
    <n_satellites>11</n_satellites>
    <altitude_value>17.8</altitude_value>
    <altitude_unit>None</altitude_unit>
    <hdop>0.9</hdop>
  </gps>
</idigi_data>

```

This is the end of the Digi ESP for Python Application Sample Project demonstration. You can rerun the sample program at any time by repeating Step 16 of Chapter 8, and its subsequent steps. To stop a running Python Program, simply click the  Reboot Target button.

Appendix A. Iridium (Satellite) Setup and Sample Program

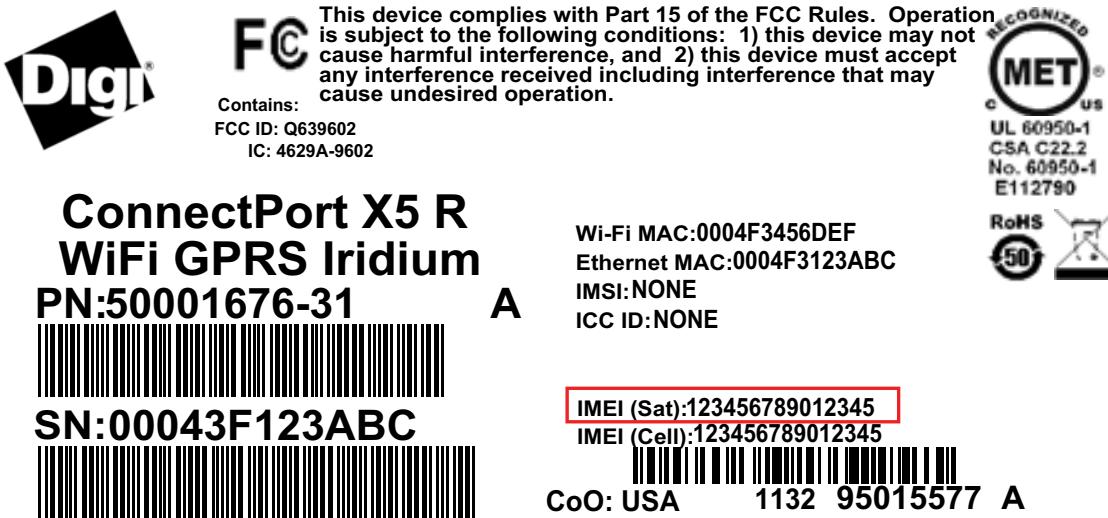
NOTE: The information within this Appendix is for ConnectPort X5 R Iridium users only.

Creating an Iridium User Account

Prior to using the ConnectPort X5 R Iridium's satellite network interface you must first create a user account with Iridium. To do so send an email to *Satellite.Setup@digi.com* with the following information:

- Your name, contact information, and whether you are a new user.
- The product model name you are using ("ConnectPort X5 R WiFi GPRS Iridium" in this case).
- The **IMEI (SAT)**: number of your ConnectPort X5 R Iridium. This number can be found on the product label on the side of your gateway (as shown).

Once your account is activated proceed with the next section of this Appendix.



Verifying the Iridium User Account

To verify that your Iridium user account was configured correctly:

1. Navigate to <https://spnet3.iridium.com/> and login using your Iridium user credentials.



The Iridium Home Page will be displayed.

A screenshot of the Iridium SPNet3 home page. The page has a 'User menu' on the left with links to Search, Contracts, Reports, Tools, My Account, and Contact Us. It also shows a 'Login' section with session details: user: kurte@digi.com, session started at: 14:59:41, account: SBD DEMO - Digi, account #: 300077, and a Logout link. The main content area is titled 'Search Manager :: Basic Search' and contains a 'Search For Contract' form with a search bar, a 'Search' button, a 'Clear' button, and a 'Advanced Search' link. Below the form, it says '0 contract(s) found'. There is a table with columns: Contract ID, Type, Date Created, Status, and Action. At the bottom, there is copyright information: 'Iridium SPNet3', '© Copyright 2011, Iridium Satellite Inc', and 'Ver: 3.8.3 - Env: Production'.

2. Enter your ConnectPort X5 R Iridium IMEI (SAT) number (see the image on page 58 for location) of your device into the Search field, then click the **Search** button.

User menu

- Search
- Contracts
- Reports
- Tools
- My Account
- Contact Us

Search For Contract

Search [Advanced Search](#)

Search Manager :: Results

Iridium SPNet3
© Copyright 2011, Iridium Satellite Inc
Ver: 3.8.3 - Env: Production

3. Your Iridium contract information will be displayed. Click on the **Contract ID** number (SUB-XXXXXXXXXX).

User menu

- Search
- Contracts
- Reports
- Tools
- My Account
- Contact Us

Search For Contract

Search [Advanced Search](#)

Search Manager :: Results

1 contract(s) found

Contract ID	Type	Date Created	Status	Action
SUB-1136595804	SBO	July 28, 2011 19:59	ACTIVE	<input type="button" value="Suspend"/> <input type="button" value="Deactivate"/>

Login

user: kurte@digi.com
session started at: 14:59:41
account: SBD DEMO - Digi
account #: 300077
Logout

Iridium SPNet3
© Copyright 2011, Iridium Satellite Inc
Ver: 3.8.3 - Env: Production

This will display detailed information about your contract. Verify that the information you configured in the “Creating an Iridium User Account” section is correct. Your IMEI (SAT) number should be displayed, and the Delivery Details section should have the following items configured:

Method = Email

Destination = the email address you provided when you created your Iridium user account

Ring Alerts = checked

The screenshot shows the SBD Contract Manager :: Edit interface. On the left, there's a sidebar with a logo and links for User menu (Search, Contracts, Reports, Tools, My Account, Contact Us), Login (user: kurte@digi.com, session started at: 14:59:41, account: SBD DEMO - Digi, account #: 300077), and Logout.

Plan Details

- Contract ID: SUB-1136595804
- Create Date: July 28, 2011 19:59
- Status: ACTIVE
- Service Provider: SBD DEMO - Digi
- Marketing Code: Other
- Demo/Trial: Demo (4 available)
- Service Plan: SBD 0
- * IMEI: 300234010154270
- LRIT: [progress bar]
- Ring Alerts:

Delivery Details

Method	Destination	Include Geo Data
Email	demo@abc.com	<input type="checkbox"/>
Direct IP		<input type="checkbox"/>

(Direct IP format: address:port)

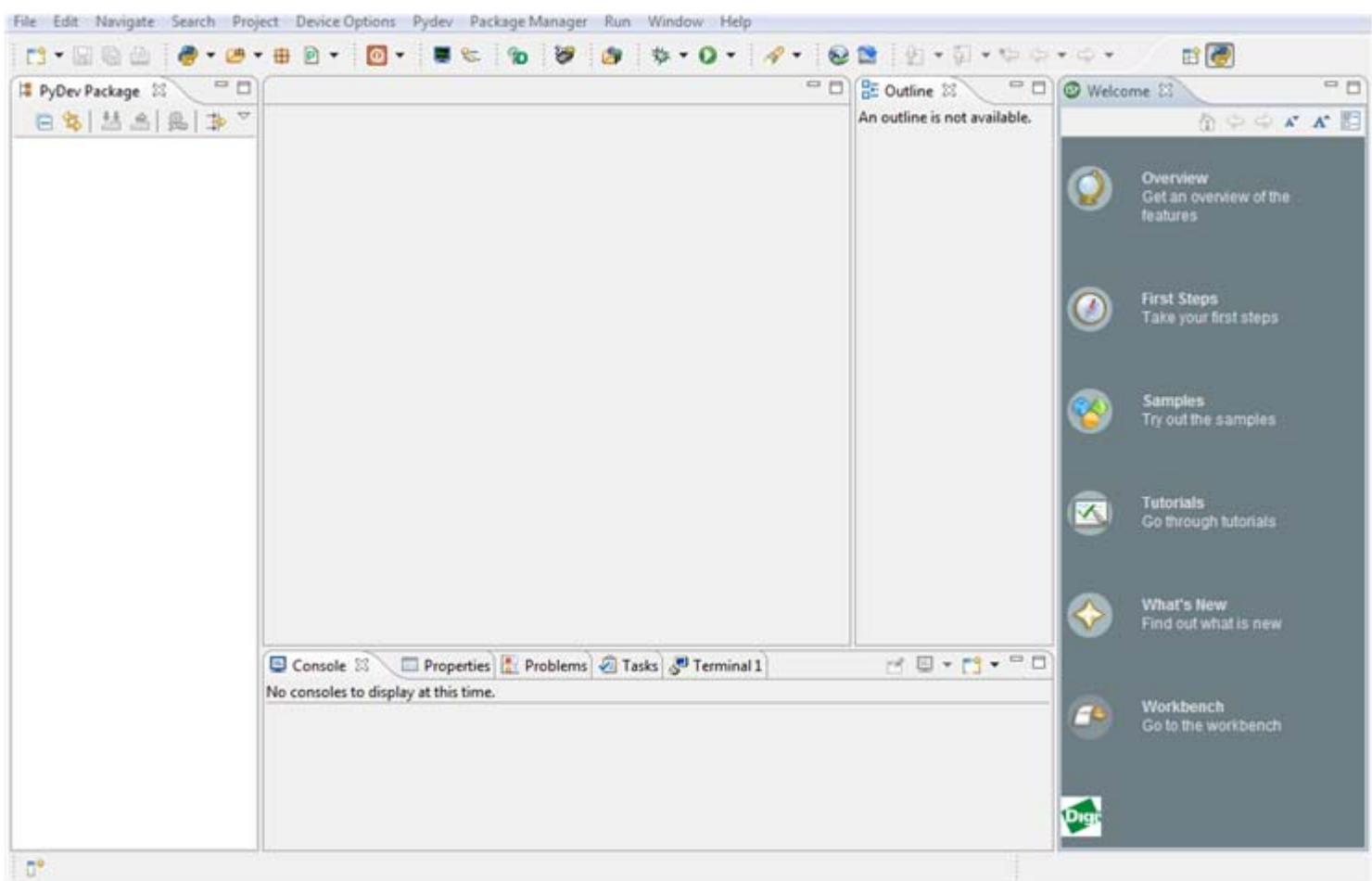
+ MT Filter Details **Update Account** **Cancel**

Digi ESP for Python - Iridium Sample Program

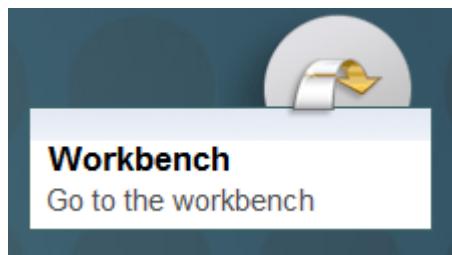
The Digi ESP for Python IDE provides a Python Iridium sample program that can easily be downloaded to your ConnectPort X5 R Iridium. This section will guide you through the steps required to run this sample project.

1. If it is not already open, launch Digi ESP for Python (**Start > Digi > iDigi > Digi ESP for Python**).
2. If you are using Digi ESP for Python 2.0 or newer, the first time you run Digi ESP for Python the Workbench is displayed.

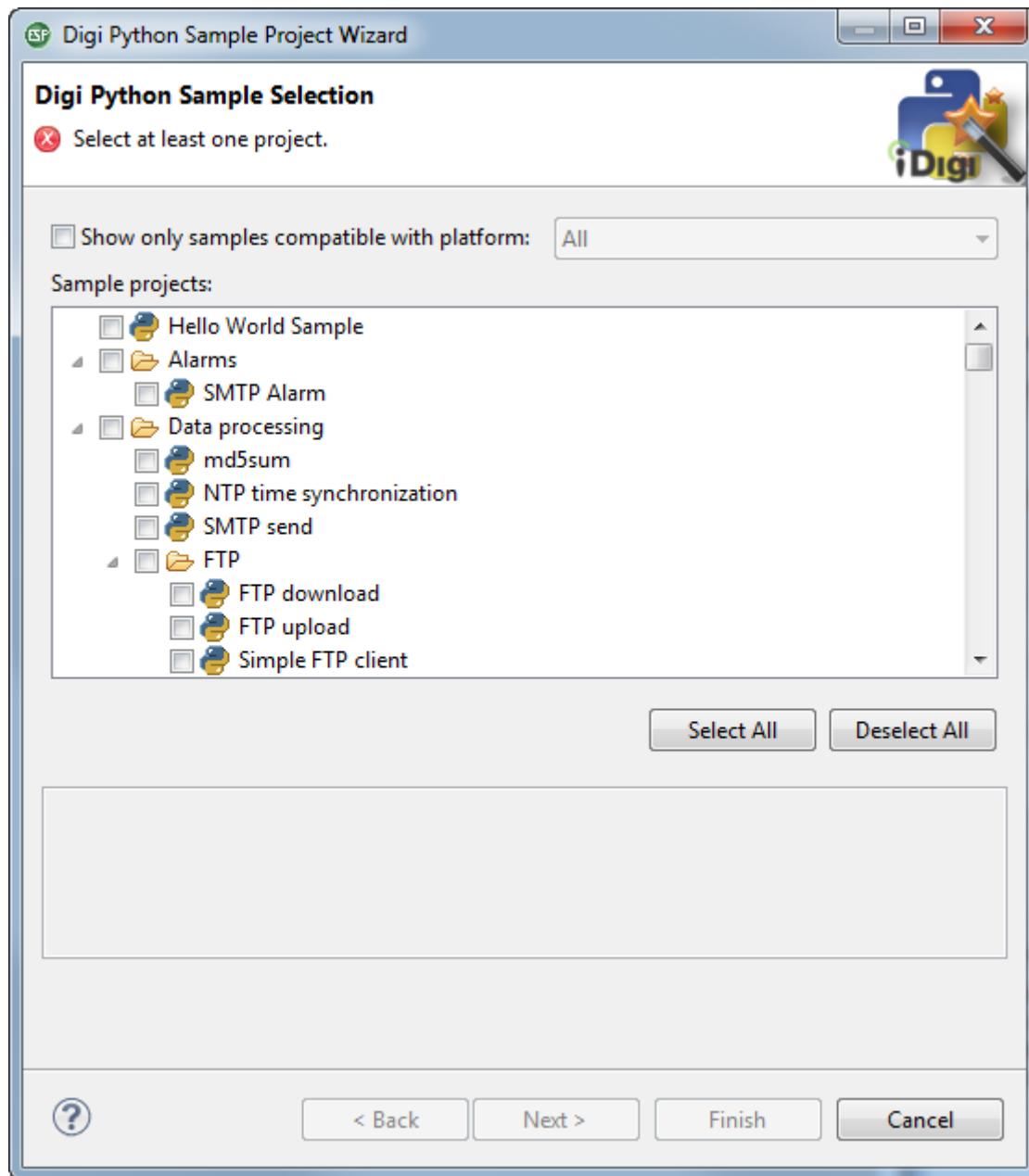
NOTE: Before the Workbench is displayed, the Welcome page is displayed for just a moment and is then displayed along the right side of the Workbench screen. Throughout this getting started experience the Welcome page will be minimized. When minimized the Restore button appears in the lower-left corner of the screen . If needed, click this button in order to maximize the Welcome screen, or select **Help > Welcome** from the main menu.



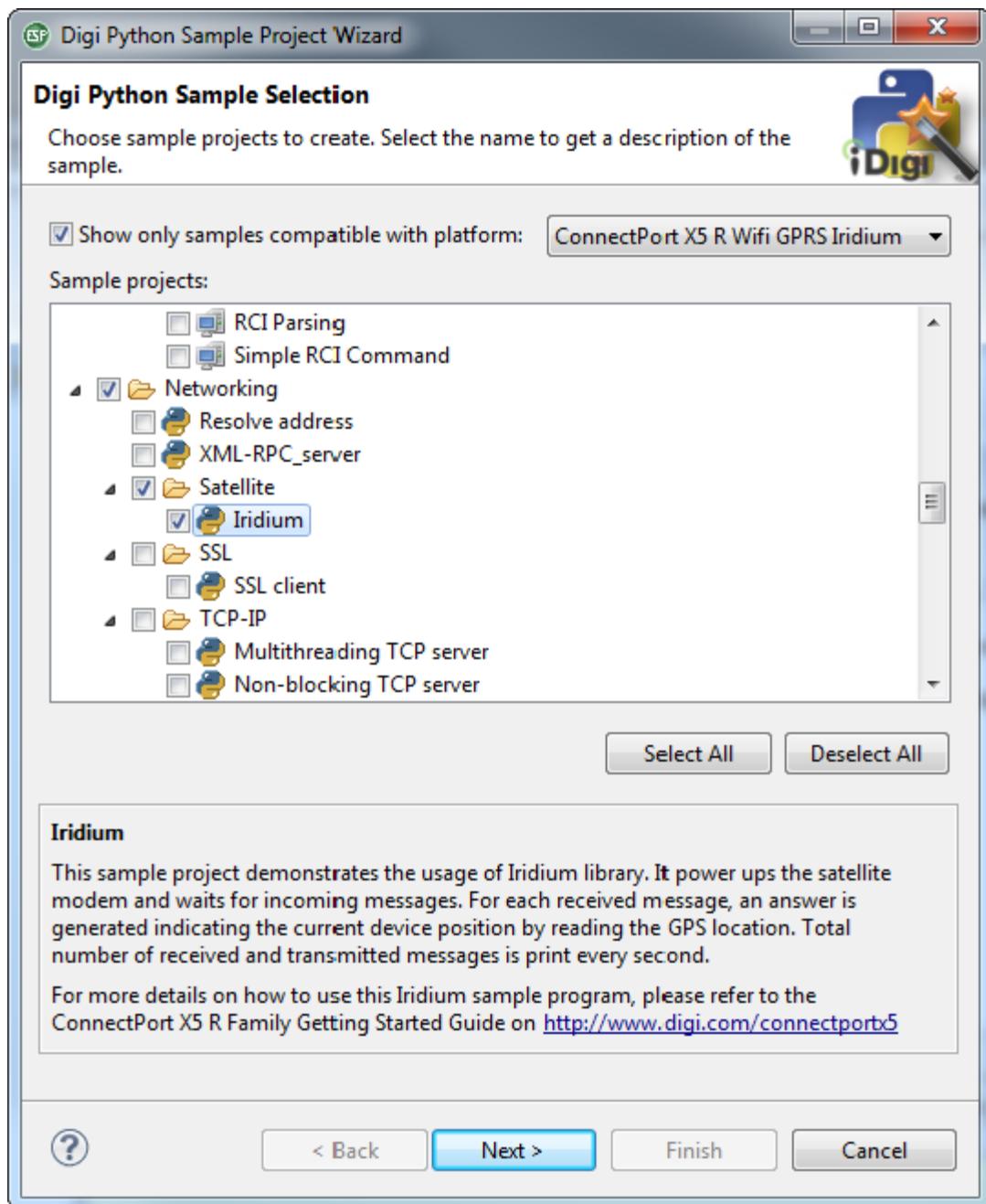
If you are using an earlier version of Digi ESP for Python, the first time you run Digi ESP for Python the Welcome screen is displayed. To open the Workbench from the Welcome page, click the **Workbench** icon (shown on the next page).



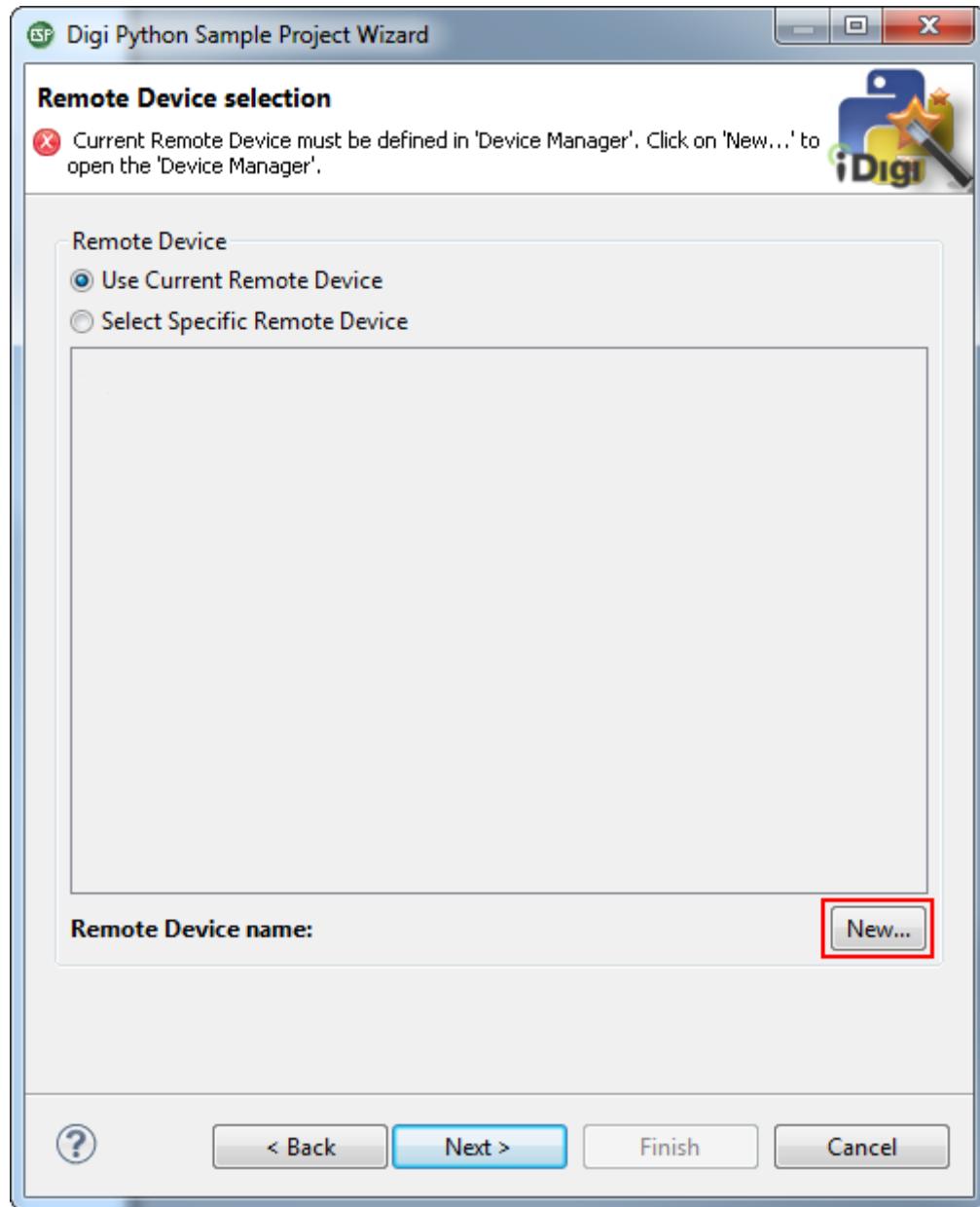
3. From the Workbench's main menu select **File > New > Digi Python Application Sample Project** to open the Digi Python Application Sample Project Wizard. The Sample Selection wizard page will be displayed (as shown below).



4. Click to enable the ‘Show only samples compatible with platform:’ checkbox, then select **ConnectPort X5 R Wifi GPRS Iridium** from the drop-down menu.
5. Locate the **Iridium** sample within the sample projects list, then click its checkbox to enable the sample project. Click **Next** when finished.

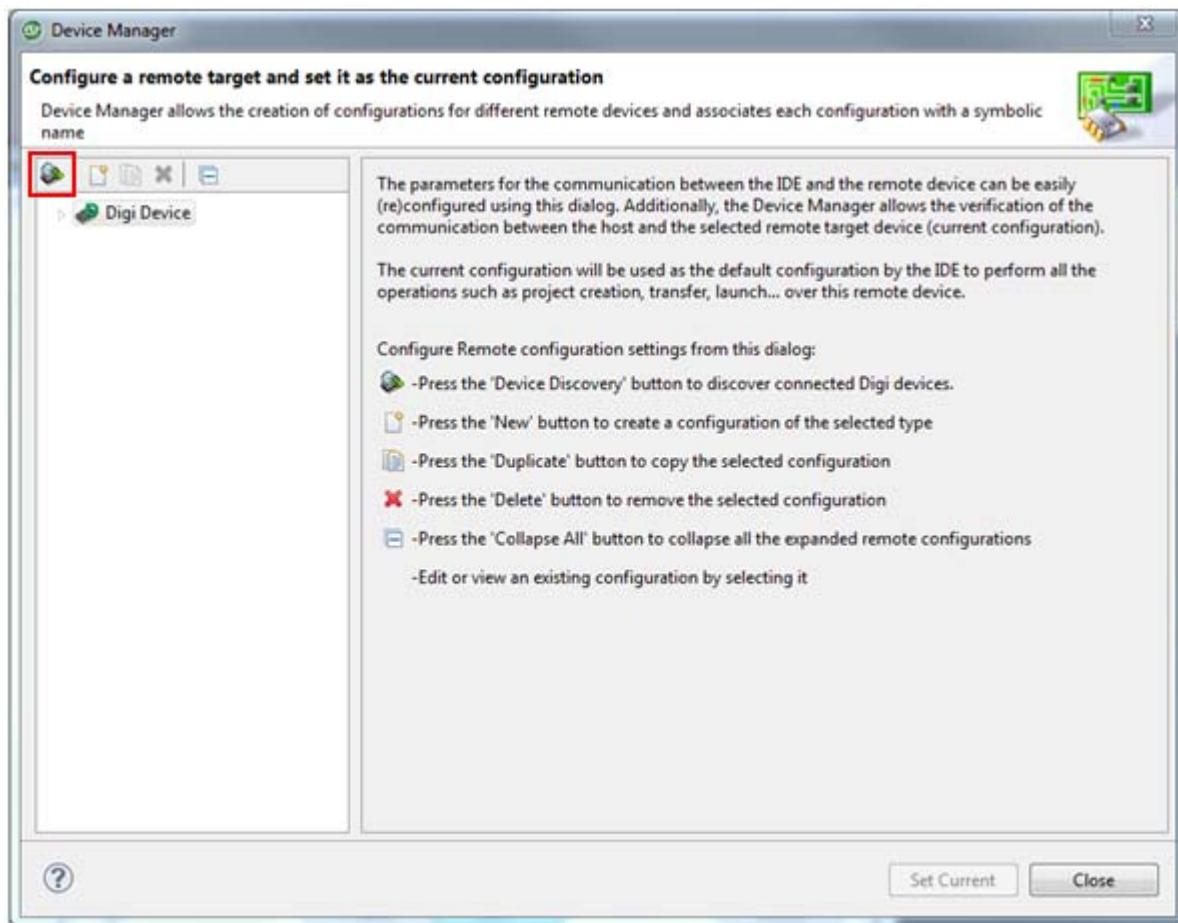


6. Within the Remote Device Selection wizard page, ensure that **Use Current Remote Device** is selected and then click the **New...** button to create a new remote configuration.

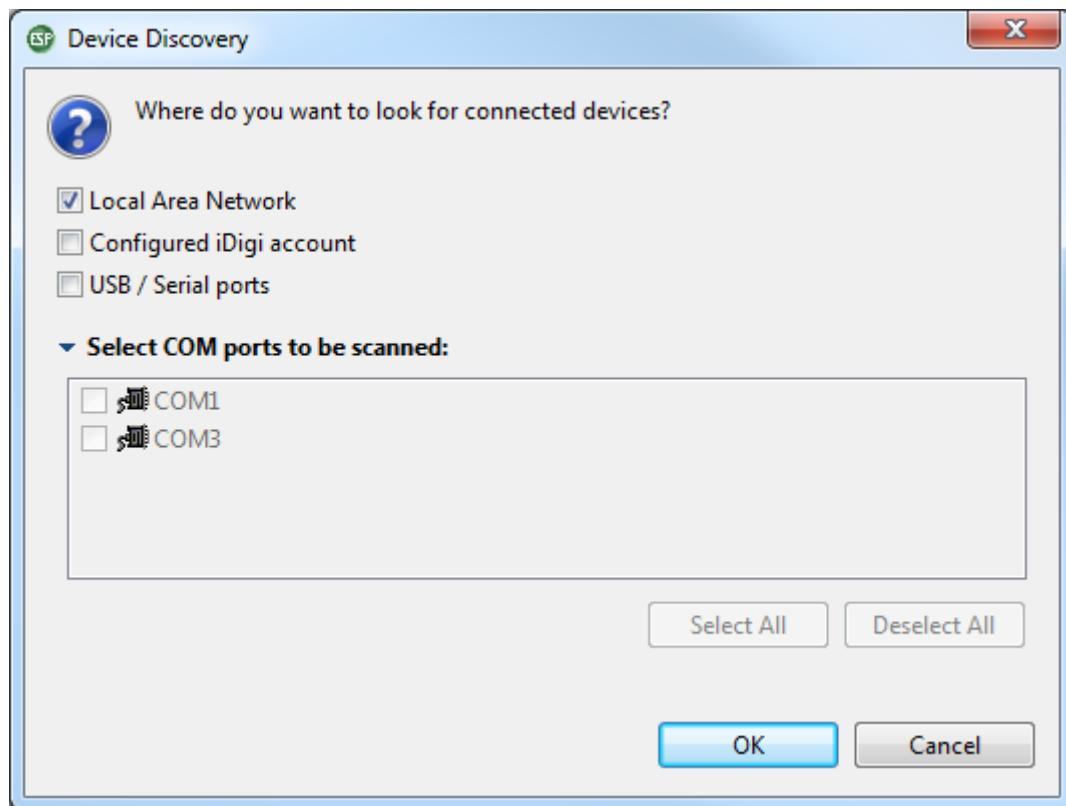


7. After clicking the New... button, the Device Manager wizard dialog will open. Initially, there are no Remote Configurations listed in the Device Manager. Click the **Device Discovery** button (highlighted below) to begin the process of creating a new configuration.

NOTE: The left side of the dialog lists the Remote Configurations that exist in the Workbench.



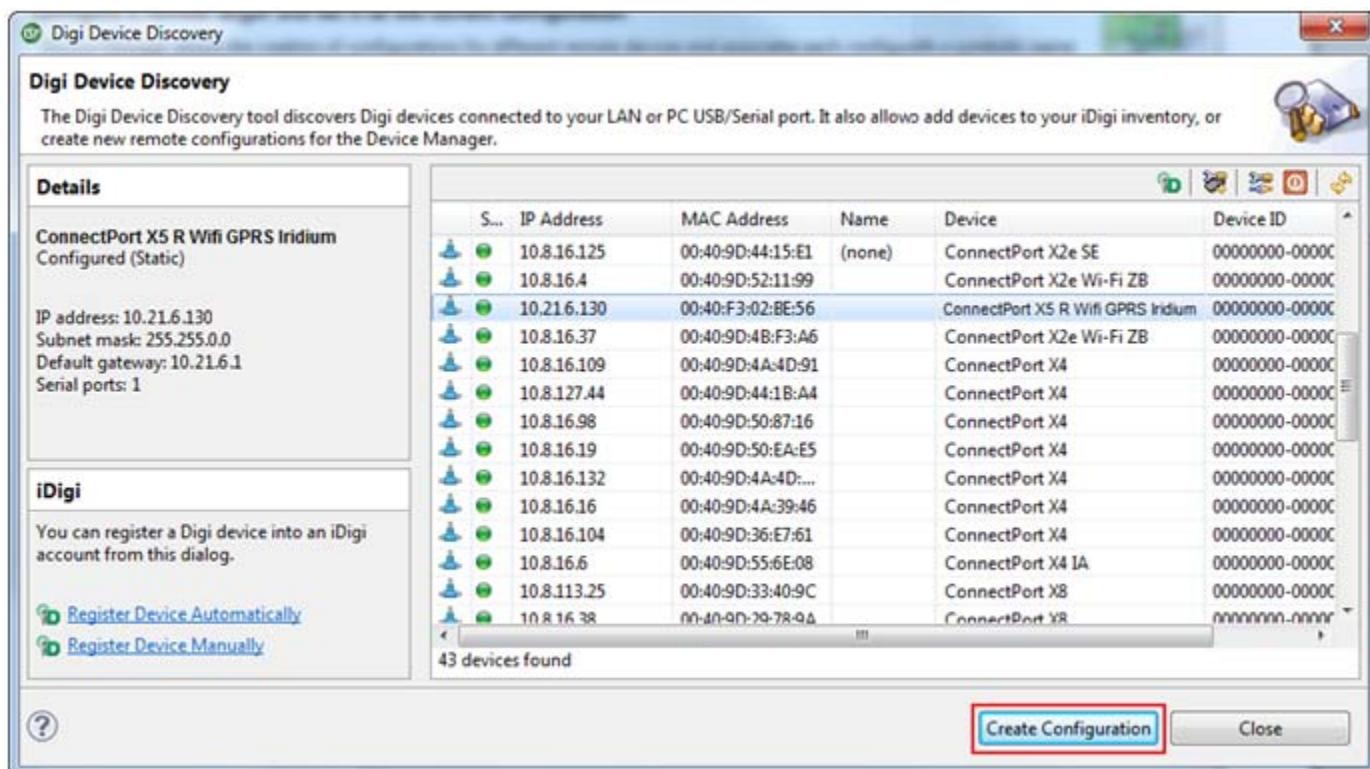
8. A dialog will ask you to identify a location where the Digi ESP for Python framework should look for devices. Select **Local Are Network** and click **OK** when finished.



9. A progress dialog is displayed, indicating that the Digi Device Discovery utility is searching for devices. When the search is finished the **Digi Device Discovery** dialog is displayed listing all the Digi devices discovered on your local network.

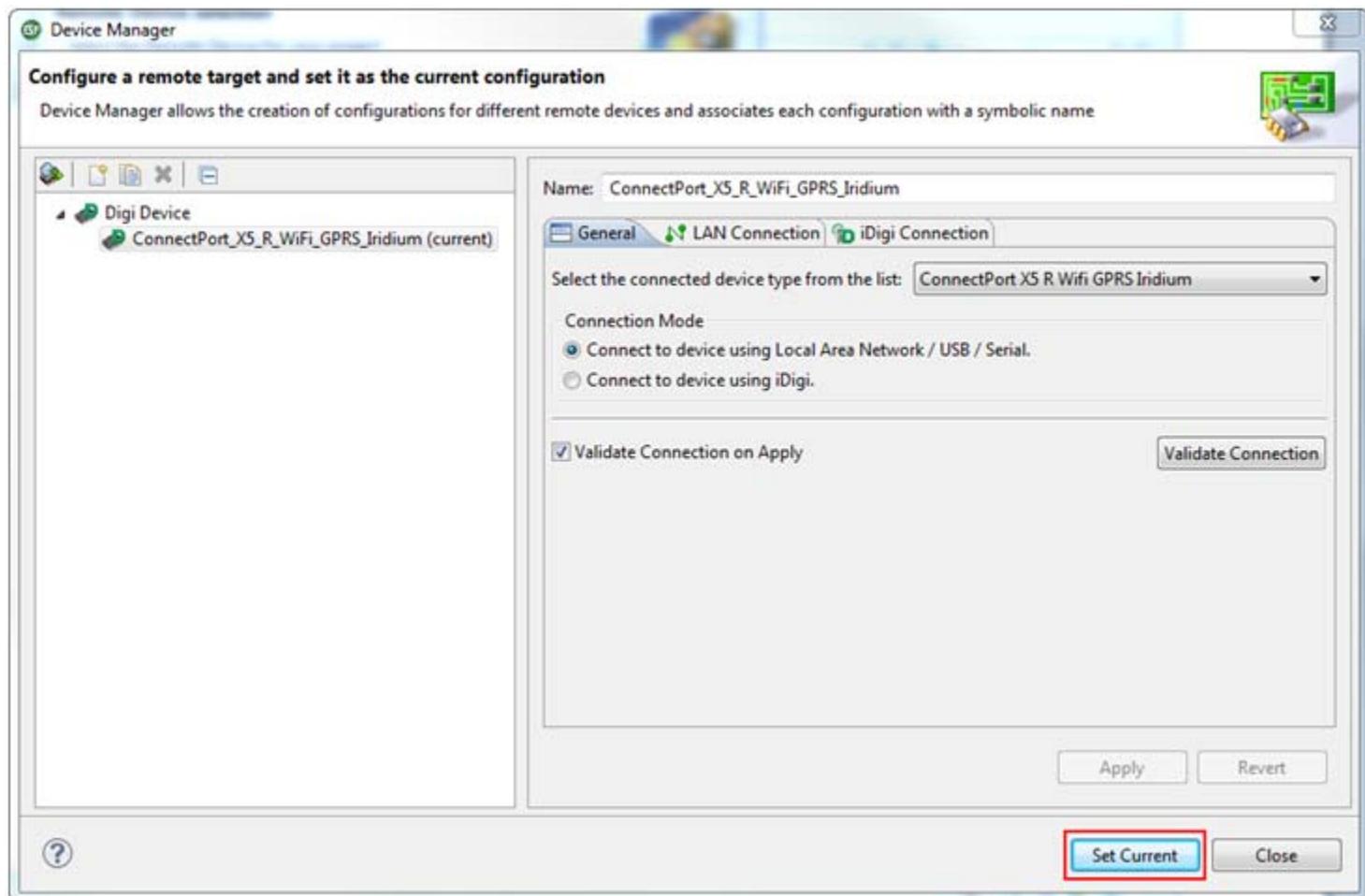
NOTE: The image below is for reference purposes. You will have fewer (possibly only one) device(s) in your device list.

10. Click on your device to select it from the list, and then click the **Create Configuration** button.



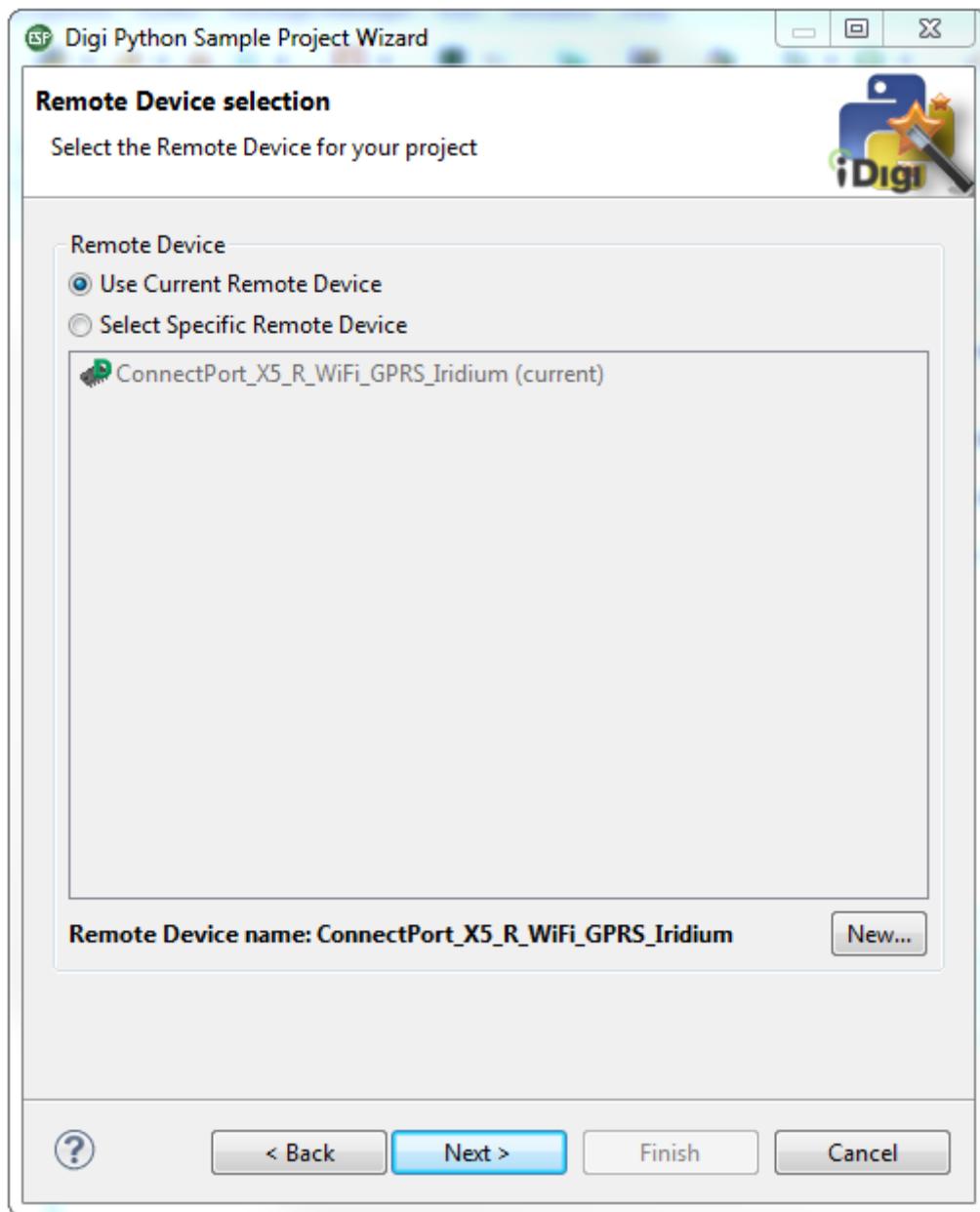
11. Ensure that **ConnectPort X5 R Wifi GPRS Iridium** is displayed in the ‘Select the connected device type from the list:’ drop-down menu.

NOTE: The name of your ConnectPort X5 R gateway should be automatically populated in this drop-down list. Only change the ‘Select the connected device type from the list:’ value if your specific ConnectPort X5 R gateway is not displayed.

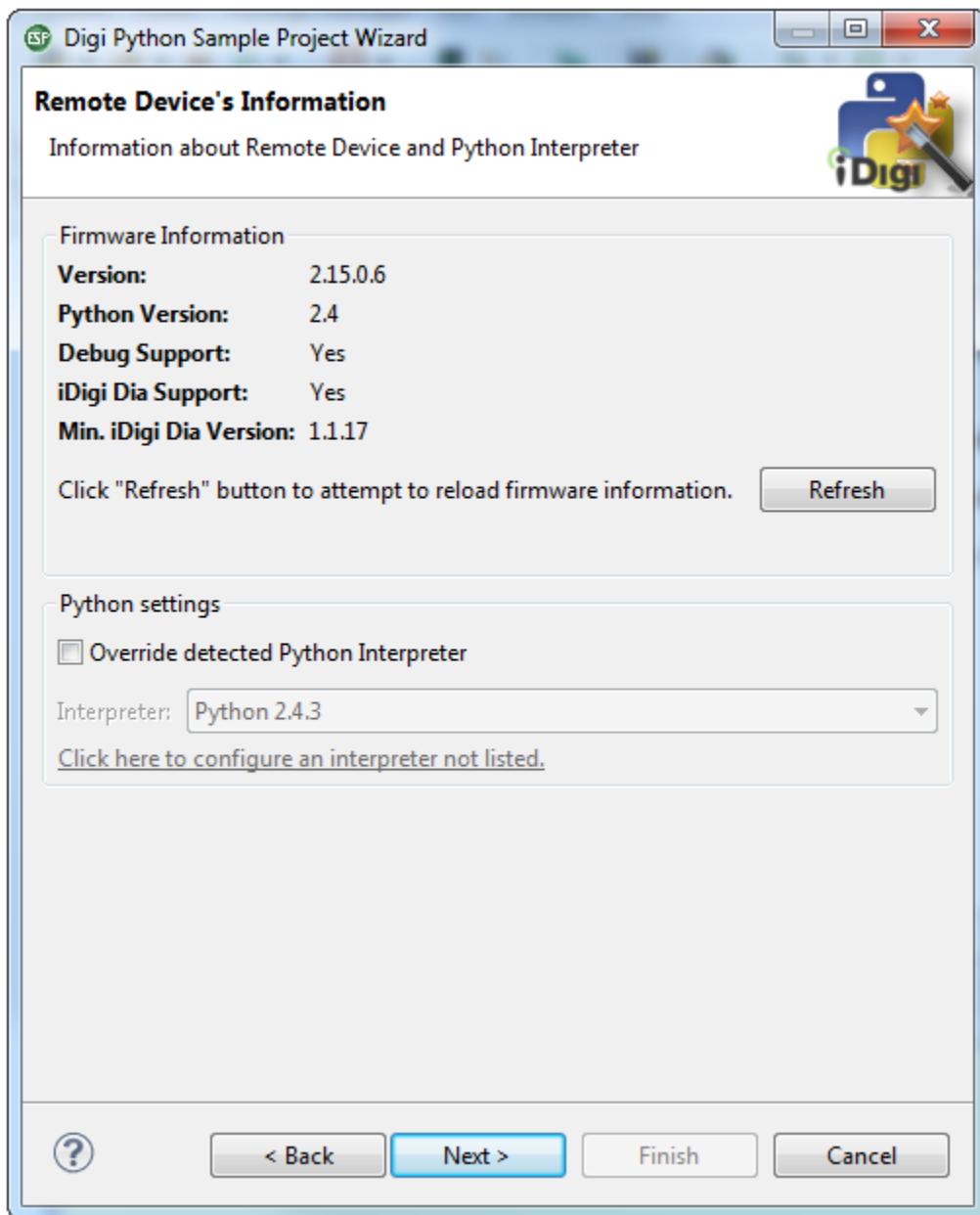


12. Click the **Set Current** button to make this configuration the current one, which means that the Digi ESP for Python framework will use it to perform several operations that require interaction with the remote device (reboot, transfer files, etc.).

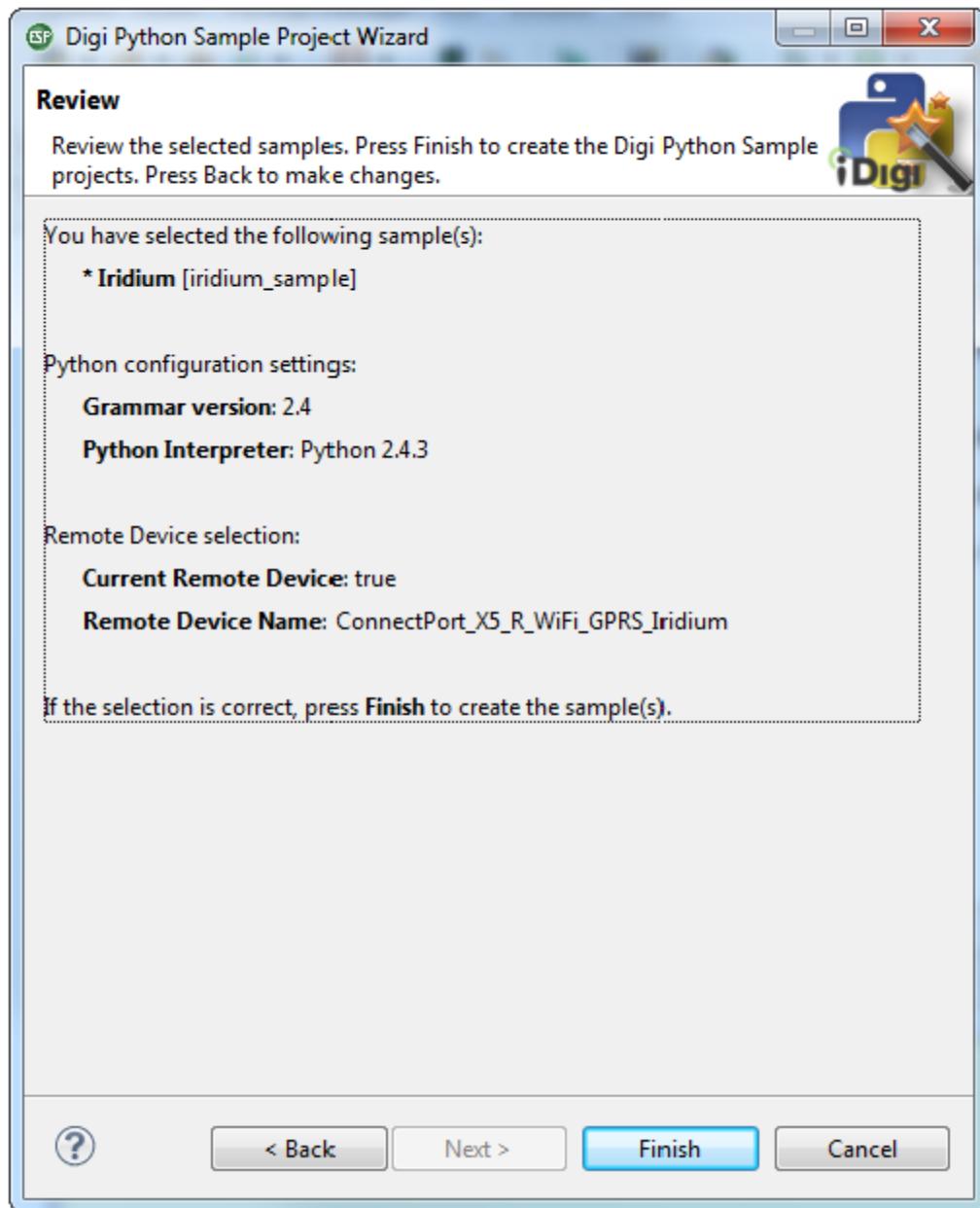
13. After clicking the Set Current button you will be redirected back to the Digi Python Application Sample Project Wizard. Click the **Select Specific Remote Device** radio button then select your device from the list (if applicable) to ensure that your ConnectPort X5 R Iridium is selected. Click **Next** to proceed.



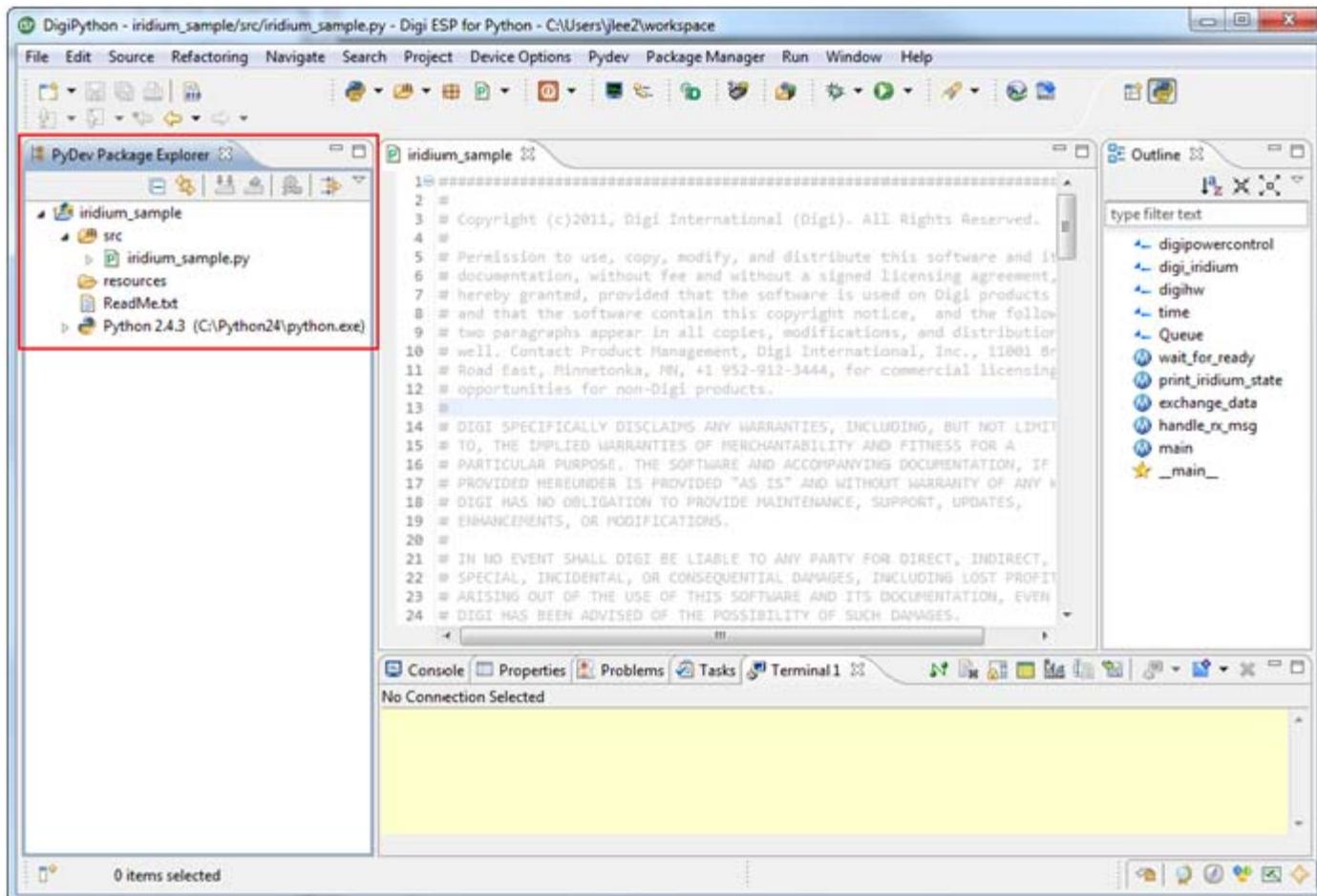
14. When the Remote Device's Information wizard page is displayed, click **Next**.



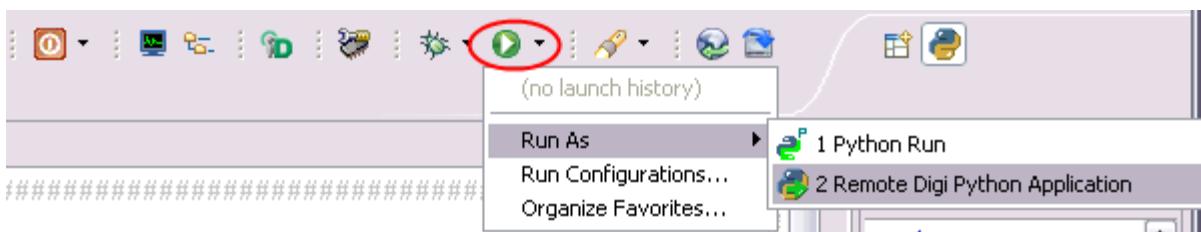
15. When the Review wizard page is displayed, click **Finish**.



Once the wizard closes your selected project, **iridium_sample**, will be displayed in your Digi ESP for Python workbench's workspace.



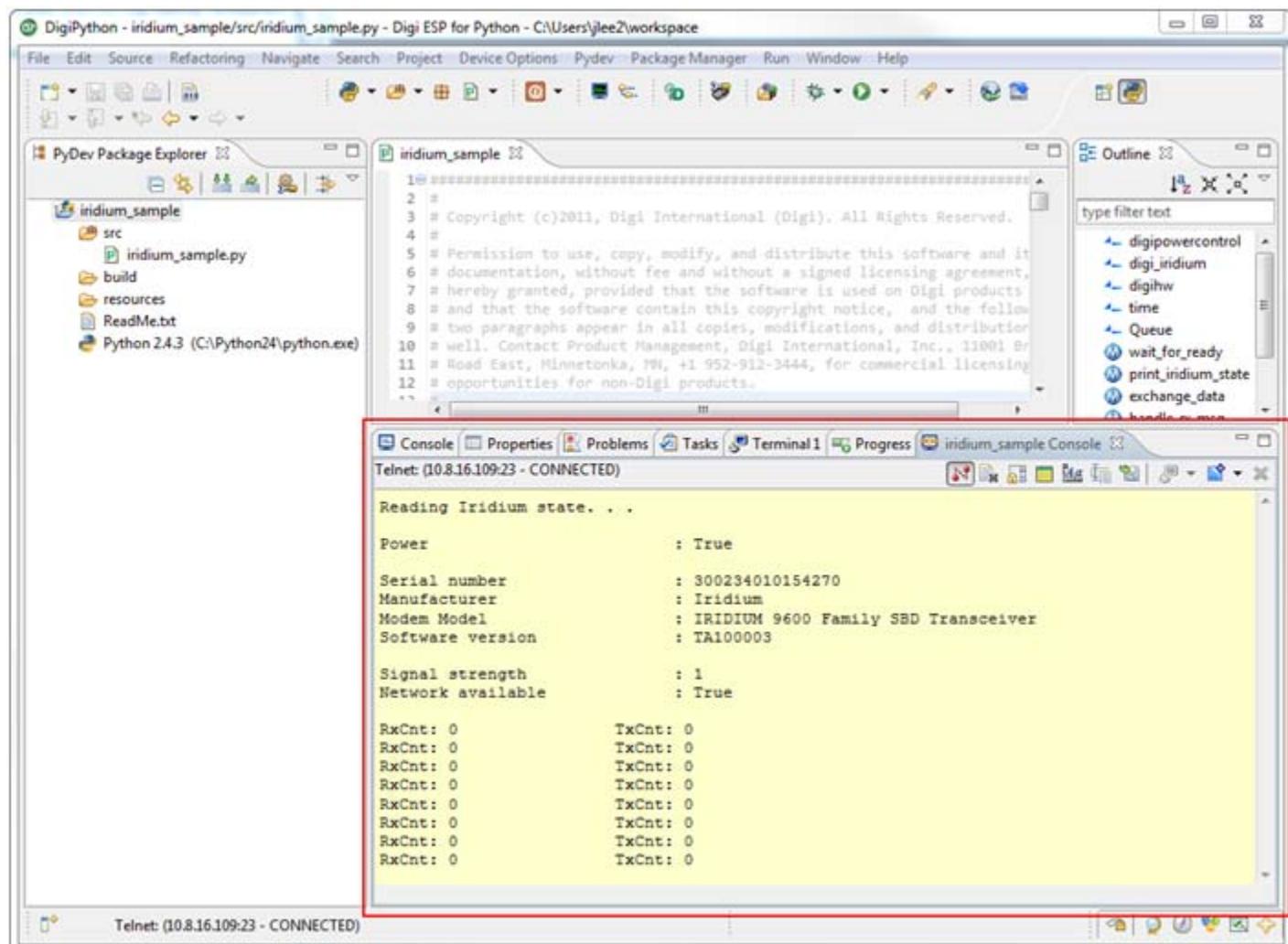
16. You are now ready to run your sample project. Using the **Run As** button's drop-down menu (shown below) go to **Run As > Remote Digi Python Application**.



The Sample Console region of the Workbench screen (highlighted below) will display status messages as the sample project builds and is launched on your device.

This sample program will turn on the Iridium satellite modem, and wait for the modem to obtain a good satellite signal. Once a this signal is obtained, it will send out a "Hello World!" message to the Iridium network. This message will ultimately arrive as an email in your inbox.

After sending this message, the sample program will display Receive and Transmit counters waiting for you to send it a message. In order to send this message you will need to return to the Iridium website.



17. Navigate to <https://spnet3.iridium.com/> and login using your Iridium user credentials (see page 59 for login page image).

18. Navigate to the **Tools > SBD Messenger** page. Enter your ConnectPort X5 R Iridium IMEI (SAT) number into the **IMEI** field and the word “Hello” into the **SBD Message** field, then click the **Send** button.

The screenshot shows the Iridium SPNet3 interface. On the left, there's a sidebar with a "User menu" containing links for Search, Contracts, Reports, Tools (with SBD Messenger and SBD Replace), My Account, and Contact Us. Below that is a "Login" section with session information: user: kurte@digi.com, session started at: 14:59:41, account: SBD DEMO - Digi, account #: 300077, and Logout links. The main area is titled "SBD Message Manager". It has a "Send To Device" form with fields for "IMEI" (300234010154270) and "SBD Message" (Hello). A note says "5 of 270 Characters Used". At the bottom are "Send" and "Cancel" buttons. A footer at the bottom of the page reads: Iridium SPNet3, © Copyright 2011, Iridium Satellite Inc, Ver: 3.8.3 - Env: Production.

19. After clicking the Send button you should see a screen similar to the following:

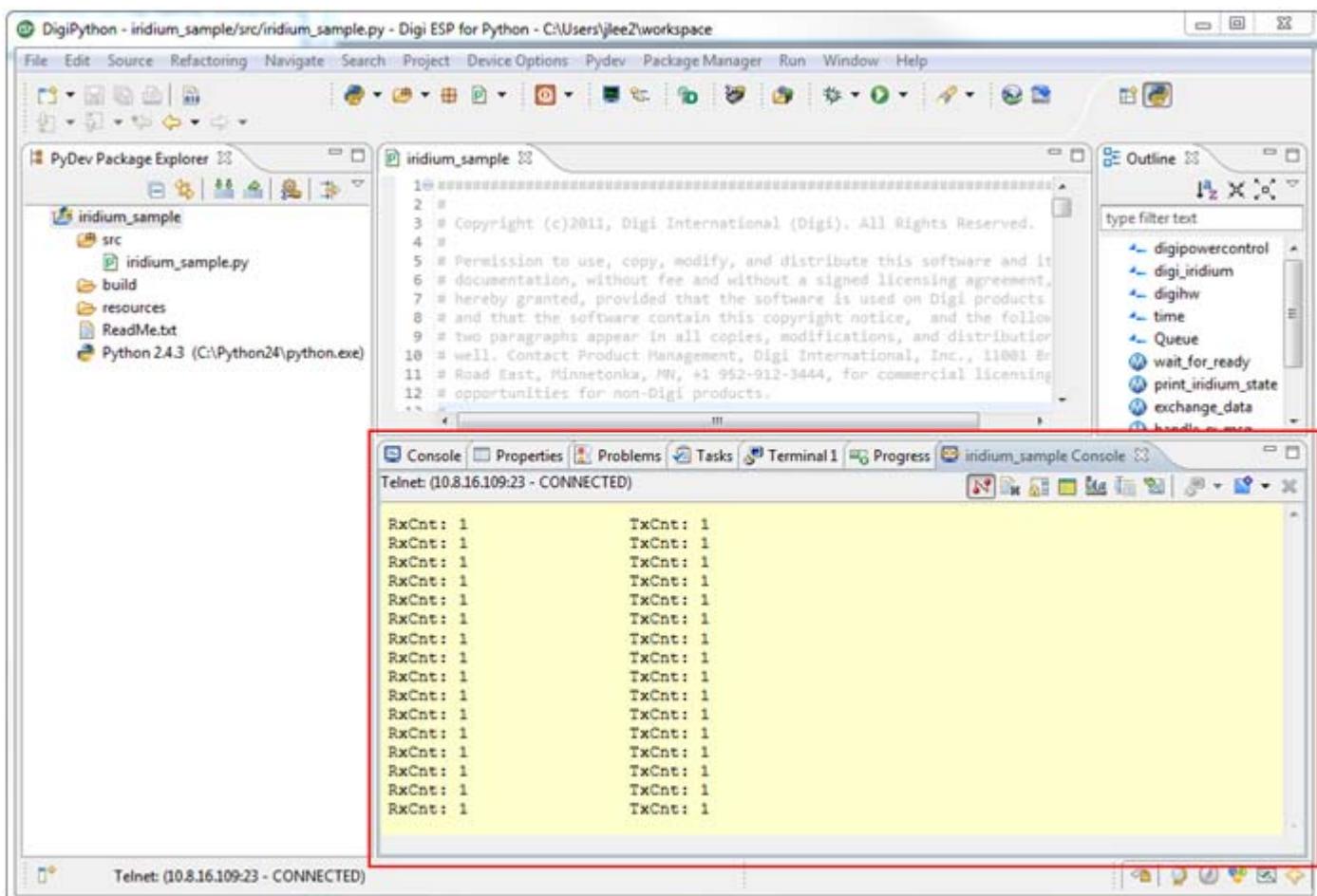
This screenshot shows the same Iridium SPNet3 interface as the previous one, but with a success message displayed in a green box: "Success! Message (Hello) Sent to IMEI (300234010154270)". The rest of the interface is identical to the previous screenshot, including the User menu, Login info, and the "Send To Device" form.

20. Return to Digi ESP for Python and observe the activity within the **iridium_sample_Console** window (highlighted below). It may take about a minute for a messages to arrive on the ConnectPort X5 R Iridium, so please be patient.

Once a message has been received the **RxCnt** (received message count) will increment and the ConnectPort X5 R Iridium will try to echo this message and the unit's GPS coordinates back to you. If the ConnectPort X5 R Iridium is unable to successfully send this message upstream to the Iridium network, you will see an error message in the Console window and the **TxCnt** (transmit message count) will not increment.

Repeat Steps 18 and 19 (on the previous page) to send another message to the ConnectPort X5 R.

If the ConnectPort X5 R Iridium is successful in sending this message you will receive an email with an attachment named something similar to the following: 300234010154270_000001.sbd (IMEI (SAT) number of the device_message number.sbd), that contains data similar to the following: Hello (33.743766784667969, -118.02503204345703, 6.4000000953674316, 1334.0).



This is the end of the Digi ESP for Python Application Iridium Sample Project demonstration. You can rerun the sample program at any time by repeating Step 16 of this Appendix, and its subsequent steps. To stop a running Python Program, simply click the  **Reboot Target** button.