Connecting to an AWS IoT Core

AWS IoT Core Quick Start Guide for DXM1200

This guide provides directions for connecting Banner Engineering's DXM1200 to an AWS IoT Core instead of the Banner CDS.

This guide assumes you have access to an AWS account. If you have not yet done so, set up your AWS account and permissions. More information is available in the AWS documentation here: Set up your AWS account. The relevant sections are **Sign up for an AWS account**, **Create a user and grant permissions**, and **Open the AWS IoT Console**.

For more complete information about setting up your DXM1200 Wireless Controller, refer to the instruction manual (p/n 216539).

The DXM requires firmware version 3.3.4 or newer. To download the latest firmware, check the software section of the DXM page on www.bannerengineering.com and use the DXM Configuration Software under **Tools** > **Reprogram** to load the latest firmware.

Connect to the DXM

Follow these steps to connect the DXM to the configuration software.

1. Download, install, and launch the DXM Configuration Software. (must be version 4.10.26 or newer)
2. Apply power to the DXM Wireless Controller.
3. Connect either the USB cable or Ethernet cable between your computer and the DXM.

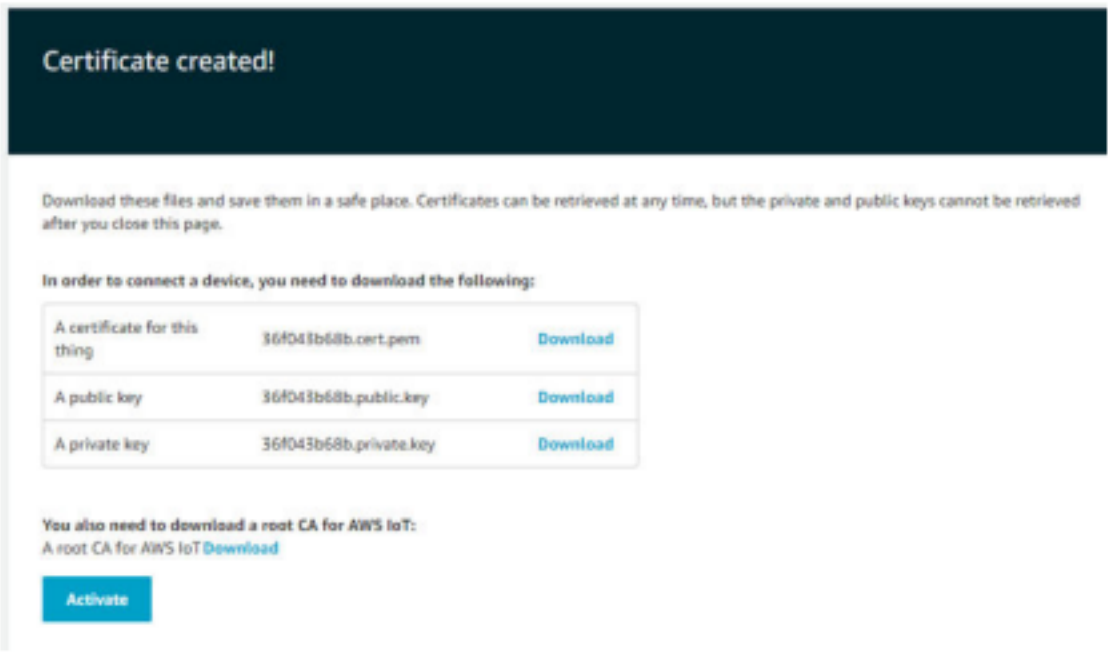
   Depending on the model of the DXM Wireless Controller, your USB and Ethernet ports may be found in different places on the device. Please refer to the manual for your DXM model for more information.
4. In the configuration software: Go to the **Connect to DXM** screen and connect the software to the DXM.
   - Serial (USB cable) – Choose the Comm Port from the drop-down list and click **Connect**. Use the refresh button if no comm port is showing up or working.
   - TCP/IP (Ethernet) – Enter the IP address of the DXM and click **Connect**. The computer and DXM must be on the same network. Either set the IP address of the computer to match the DXM in a static setup or set the DXM's IP address on the **Software Config** > **Ethernet** screen.

Create IoT Resources in AWS IoT Core

1. Go to the AWS IoT Console and create your IoT Resources in the cloud.

   You will need to create a Policy and a Thing with associated certificates and keys. Additional guidance for these steps can be found in the AWS IoT Documentation: Create IoT Resources.

Figure 1. Create your AWS IoT Core certificate

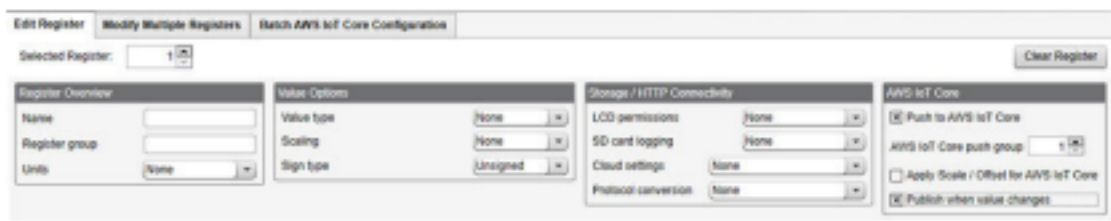


   a) On the left menu, go to **Secure** > **Policies** to create an AWS IoT Policy that allows your device to interact with AWS IoT.
   b) Go to **Manage** > **Things**. Click **Create** and then **Create a Single Thing**.
   c) Download the Certificate, Private Key, and Root CA for your thing. Verify your Certificate is Active.
2. Find your AWS IoT Endpoint.
   a) To find the endpoint, go to the AWS IoT console.
   b) In the navigation pane, select **Settings**.
   c) The endpoint can be found under **Device Data Endpoint**. It should look similar to this: xxxxxxxxxxxxxx-ats.iot.xxxxxxxxx.amazonaws.com.
   d) Copy your endpoint and paste it into a safe place for future steps.

Enter the AWS and Endpoint

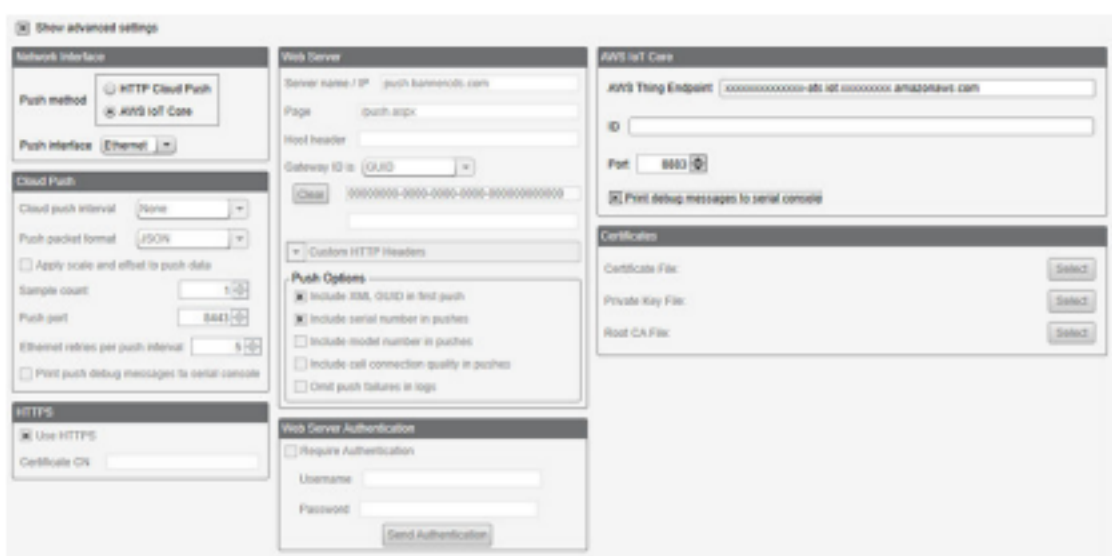
1. On the DXM Configuration Software: Go to the **Local Registers** screen.
2. Use the **Edit Register** tab or the **Batch AWS IoT Core Configuration** tab to verify your selected registers are configured to push to AWS IoT Core.

Figure 2. AWS IoT Core settings



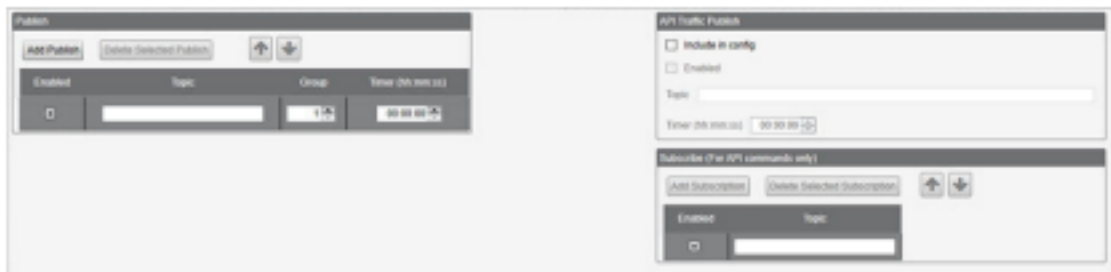
3. Go to the **Settings** > **Cloud Services** screen and verify the **Push method** is set to **AWS IoT Core**.

Figure 3. AWS Core parameters on the Settings > Cloud Services screen



4. In the **AWS IoT Core** section, enter your **AWS IoT Endpoint**.
5. Upload the **Certificates** and **Keys** that you downloaded from AWS (Create IoT Resources in AWS IoT Core on p. 1).
6. (Optional) Modify the **ID Name** for reference if you are using multiple DXM Controllers.
7. Go to the **Settings** > **AWS IoT Core** screen.

Figure 4. AWS IoT Core configuration screen



8. Create **Topic** names under **Subscribe** or **Publish** and adjust the **Groups** and **Times** as required.
9. Cellular Connection Only – If you are using a cellular connection instead of Ethernet, go to **Settings** > **Ethernet** and set your device's IP address to Static IP.
10. Save the XML configuration file.
11. Upload the XML configuration file to the DXM Controller.
    a) Go to the **DXM** menu.
    b) Click **Send Configuration to DXM**.
    The DXM Controller reboots after the files are uploaded. The system begins pushing data to AWS IoT Core instead of Banner Cloud Data Services (CDS).
12. Verify your data is connecting with AWS IoT Core.
    a) Go to the AWS IoT Core console and select **Test** in the navigation pane.
    b) Select **MQTT Test Client**.
    c) Under **Subscribe to a Topic**, enter the Publish Topics you created in the DXM Configuration Software.

The DXM Controller pushes data every five minutes via Ethernet and every 10 minutes via cellular. The manual data push on the DXM device screen is for HTTP only, so you will need to wait up to 10 minutes to validate the MQTT connection with AWS IoT Core. For addition information, refer to the:

- Online product page: https://www.bannerengineering.com/us/en/products/part.801553.html
- Instruction manual for the DXM1200 Wireless Controller (p/n 216539).