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## Introduction

**About this document** This document describes how to configure the [TallyPoint RF-1](#) RFID edge reader with Azure IoT support. The TallyPoint RF-1 RFID reader is an intelligent UHF RFID reader running Ubuntu Core 18 for long term support and high security. The RF-1 supports four antennas and POE+ power. To configure Azure, the multi-step process includes:

- Configuring Azure IoT Hub
- Provisioning your devices on Azure Device Provisioning Service
- Configure Azure IoT on the TallyPoint RF-1

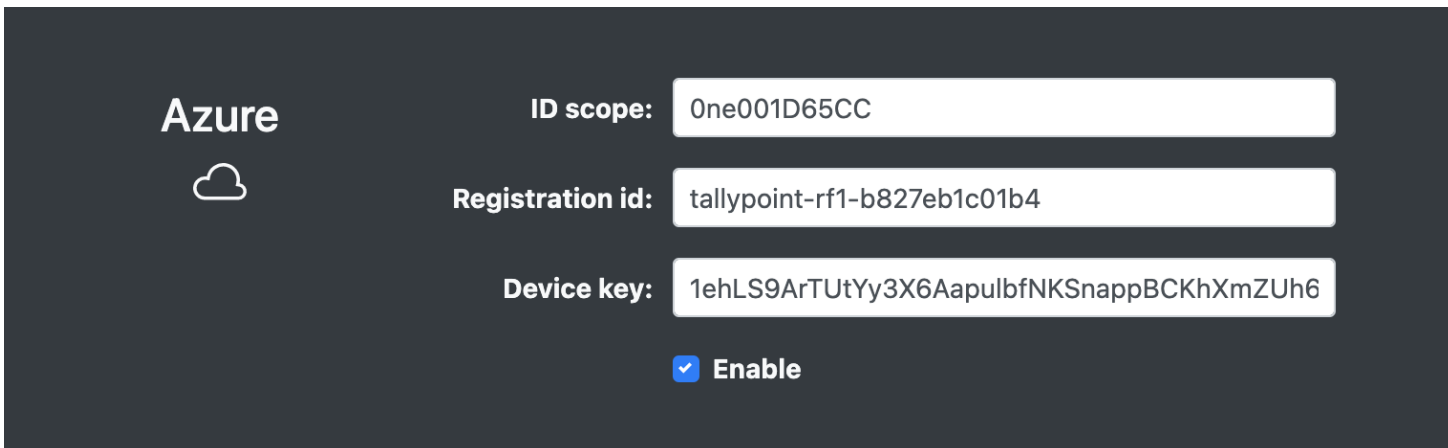
## Step 1: Prerequisites

You should have the following items ready before beginning the process:

- [Prepare your development environment](#)
- [Setup your IoT hub](#)
- [Provision your device over DPS](#)

## Step 2: Prepare your Device

- Follow the instructions to [set up your TallyPoint reader](#). Plug in Ethernet POE+, or Ethernet and DC power supply.
- Open the TallyPoint web user interface using a web browser. You can find the IP address of the reader using your network control panel (e.g. UniFi), or use the TallyPoint multicast-DNS capability where the name on the network is tallypoint-0a0b0c or tallypoint-0a0b0c.local, where 0a0b0c is the last 3 hexadecimal digits of the MAC address printed on your reader's label.
- Login to the reader using the default username of 'admin' and password of 'tallypoint-0a0b0c' (with your MAC address).
- Change the password from the Reader tab in the interface.
- On the Cloud tab, enter the ID Scope and derived Device Key [from your Azure portal](#). Click Save, then Restart. See screenshot below.
- The TallyPoint reader will now be provisioned in Azure.



**Azure**

ID scope: 0ne001D65CC

Registration id: tallypoint-rf1-b827eb1c01b4

Device key: 1ehLS9ArTUtYy3X6AapulbfNKSnappBCKhXmZUh6

Enable

## Step 3 : SDK Information

- The TallyPoint RF-1 comes pre-installed with binaries to support Azure IoT Hub and Device Provisioning Service. Azure may be configured using the web user interface, or configured at the factory with information that you provide. We do not require building with the SDK to use Azure.
- SDG Systems provides an optional SDK to build your own Azure support. The SDK communicates with the device driver and supports using Rust, C or Python for interfacing to the SDK. Contact SDG Systems for more information.

## Step 4: Integration with Azure IoT Explorer

- In IoT Explorer, the TallyPoint RF-1 supports the IoT Hub connection. It does not yet support Plug and Play (see below).

### 4.1 IoT Hub Connection

- To connect to the IoT hub, you will need to obtain the connection string from the Azure portal. After selecting "+ Add connection" you will paste the connection string from Azure. The connection string starts with HostName=. You can learn more at this [Microsoft Azure article](#).
- When your IoT Hub is connected to IoT Explorer, you can now select 'View devices in this hub' to see telemetry data and issue Direct Method commands. You should see device(s) such as the ones shown in the screenshot. Select a device for data exploration.

Azure IoT Explorer (preview) Notifications Settings

[Home](#) > tf-prod-hub > Devices

New Refresh Delete

Query by device ID... 🔍 ➔ ⚙️ Add query parameter

Device ID	Status	Connection state	Authenticatio...	Last status up...	IoT Plug and ...	Edge device
tallypoint-rf1-b827eb26534b	Enabled	Disconnected	Sas	--		
tallypoint-rf1-b827eb1c01b4	Enabled	Connected	Sas	--		

## 4.1 Telemetry Data

- In the device screen of IoT explorer, select Telemetry, then Start. As RFID tags are read, you will see events that show the tag EPC and other information. In addition, you will see device heartbeats.

Azure IoT Explorer (preview) Notifications

[Home](#) > tf-prod-hub > [Devices](#) > tallypoint-rf1-b827eb1c01b4 > Telemetry

- ☰
- 📄 Device identity
- 📄 Device twin
- 🗨️ **Telemetry**
- Direct method
- ✉️ Cloud-to-device message
- 🔗 Module identity
- 🔗 IoT Plug and Play compone...

Stop
  Show system properties
  Clear events
  Simulation device

### Telemetry ⓘ

Consumer group ⓘ \$Default

Use built-in event hub

Yes

Receiving events...

---

1:10:34 PM, 12/14/2020:

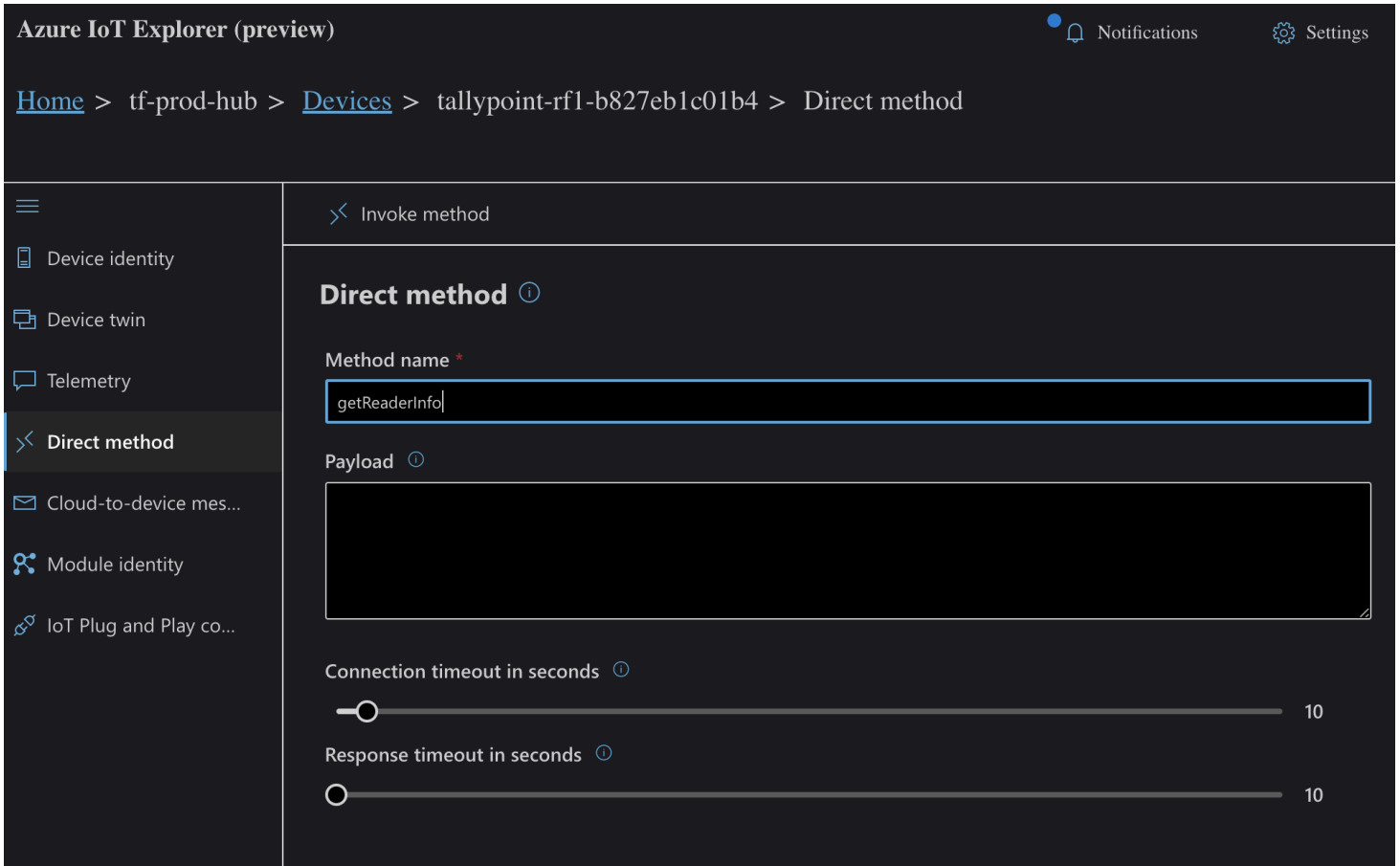
```

{
  "body": {
    "antenna": 0,
    "tag": "202011000710",
    "readCount": 1,
    "avgRssi": "-53.0",
    "firstReadTime": "2020-12-14T18:10:34+00:00",
    "lastReadTime": "2020-12-14T18:10:34+00:00",
    "type": "event",
    "direction": "NEAR",
    "time": "2020-12-14T18:10:34+00:00"
  },
  "enqueuedTime": "2020-12-14T18:10:34.316Z"
}

```

## 4.3 Direct Method Messages

- IoT Explorer can send Direct Method messages to the TallyFlow client application. You can send these Direct Method messages in IoT Explorer on a device screen.
- The TallyPoint reader currently supports the following Direct Method messages, all of these with no arguments:
  - getReaderInfo
  - getAntennaConfigs
  - getSettings
  - getVisibleTags



The screenshot shows the Azure IoT Explorer (preview) interface. The breadcrumb navigation is: Home > tf-prod-hub > Devices > tallypoint-rf1-b827eb1c01b4 > Direct method. The left sidebar contains navigation options: Device identity, Device twin, Telemetry, Direct method (selected), Cloud-to-device mes..., Module identity, and IoT Plug and Play co... The main content area is titled 'Invoke method' and 'Direct method'. It features a 'Method name' field with the value 'getReaderInfo' and a 'Payload' field. Below these are two sliders for 'Connection timeout in seconds' and 'Response timeout in seconds', both set to 10.

## Step 5: Additional Information

- The TallyPoint RF-1 does not currently support Azure IoT Central or IoT Plug and Play "out of the box". Please contact us for the latest features and roadmap questions.
- IoT Central and IoT Plug and Play are available to developers using the Microsoft SDKs.
- See our [Azure blogs](#) to learn more about our Azure support.

## Step 6 : Additional Links

Please refer to the links below for additional information for Azure IoT and Plug and Play:

- [Manage cloud device messaging with Azure-IoT-Explorer](#)
- [Azure SDK](#)
- [Configure to connect to IoT Hub](#)
- [How to use IoT Explorer to interact with the device](#)

