

Run Azure IoT Edge Runtime on reTerminal DM device running Debian 11 (ARM32v7)

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Introduction



reTerminal DM is a Panel PC, HMI, PLC, IIoT Gateway all-in-one device powered by Raspberry Pi CM4, with 10.1" IP65 front panel and rich industrial interfaces, and natively integrated with Node-RED and supports Raspberry Pi-based software ecosystem.

This document describes how to connect reTerminal DM device running Debian 11 (ARM32v7) with Azure IoT Edge Runtime pre-installed and Device Management. This multi-step process includes:

- Configuring Azure IoT Hub
- Registering your IoT device
- Build and Deploy client component to test device management capability

Step 1: Prerequisites

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

- [Create an Azure account](#)
- [Sign up to Azure Portal](#)
- [Setup your IoT hub](#)
- [Add the Edge Device](#)
- [Add the Edge Modules](#)

Step 2: Prepare your Device

1. Power on the device. Connect a 12~24V power supply to the 2-pin power terminal block connector.



2. Check the OS version, bit number and architecture.

```
$ lsb_release -irc
Distributor ID: Raspbian
Release:      11
Codename:    bullseye
$ getconf LONG_BIT
32
$ uname -m
armv7l
```

If your OS is older than Debian 11 (Bullseye) or LOG_BIT is 64, please install latest Raspberry Pi OS 32-bit. Refer to [Steps for Flashing Raspbian OS](#).

If `uname -m` is aarch64, your OS running 64-bit kernel. Please change to 32-bit kernel. Refer to [32-bit OS driver](#).

Step 3: Manual Test for Azure IoT Edge on device

3.1 Edge Runtime Enabled

1. [Register your device](#)
2. [View registered devices and retrieve provisioning information](#)

3. Install IoT Edge

```
$ curl https://packages.microsoft.com/config/debian/11/packages-microsoft-prod.deb > ./packages-microsoft-prod.deb
$ sudo apt install ./packages-microsoft-prod.deb
$ rm ./packages-microsoft-prod.deb
```

4. Install a container engine

```
$ sudo apt-get update
$ sudo apt-get install moby-engine
$ sudo vi /etc/docker/daemon.json
$ sudo systemctl restart docker
```

Set the default logging driver to the local logging driver as shown in the example below.

```
{
  "log-driver": "local"
}
```

5. Install the IoT Edge runtime

```
$ sudo apt-get update
$ sudo apt-get install aziot-edge defender-iot-micro-agent-edge
```

6. Provision the device with its cloud identity

```
$ sudo iotedge config mp --connection-string 'PRIMARY_CONNECTION_STRING'
$ sudo iotedge config apply
```

3.2 Check the iotedge daemon

Open the command prompt on your IoT Edge device , confirm that the Azure IoT edge Daemon is under running state

```
sudo iotedge system status
```

```

pi@raspberrypi:~$ sudo iotedge system status
System services:
  aziot-edged           Running
  aziot-identityd      Running
  aziot-keyd           Running
  aziot-certd          Running
  aziot-tpmd           Ready

Use 'iotedge system logs' to check for non-fatal errors.
Use 'iotedge check' to diagnose connectivity and configuration issues.

```

Open the command prompt on your IoT Edge device, confirm that the module deployed from the cloud is running on your IoT Edge device

```
$ sudo iotedge list
```

```

pi@raspberrypi:~$ sudo iotedge list
NAME                STATUS      DESCRIPTION      Config
SimulatedTemperatureSensor  running    Up 45 seconds    mcr.microsoft.com/azureiotedge-simulated-temperature-sensor:latest
edgeAgent            running    Up 4 minutes     mcr.microsoft.com/azureiotedge-agent:1.4
edgeHub              running    Up 32 seconds    mcr.microsoft.com/azureiotedge-hub:1.4
pi@raspberrypi:~$

```

On the device details page of the Azure, you should see the runtime modules - edgeAgent, edgeHub and SimulatedTemperatureSensor modules are under running status

The screenshot shows the Azure IoT Edge device details page for 'reterminaldm'. The 'IoT Edge runtime response' field is highlighted with a red box and shows '200 -- OK'. Below, the 'Modules' section is expanded to show a table of installed modules.

Name	Type	Specified in Deployment	Reported by Device	Runtime Status	Exit Code
EdgeAgent	IoT Edge System Module	✓ Yes	✓ Yes	running	NA
EdgeHub	IoT Edge System Module	✓ Yes	✓ Yes	running	NA
SimulatedTemperatureSensor	IoT Edge Custom Module	✓ Yes	✓ Yes	running	NA
DefenderIoTMicroAgent	Module Identity	NA	NA	NA	NA

Step 4: Additional information

- [reTerminal DM Getting Started](#)

Step 5: Additional Links

- [What is Azure IoT Edge](#)
- [Azure IoT Edge supported platforms](#)
- [Develop your own IoT Edge modules](#)