Setting up IoT Edge on Linux ARM32v7/armhf Platform

8/17/2018

Introduction / Summary

As of August 2018, installation package from Microsoft for ARM32 is available for Raspbian (Raspberry Pi).

Goals

After completing this instruction, your will complete :

- Setting up Container Runtime
- Setting up IoT Edge Runtime
- Connecting to IoT Hub
- Running IoT Edge Agent Container
- Getting ready to deploy module(s)

Requirements/Prerequisites

- Device
  ARM32v7/armhf device such as Raspberry Pi 3 with Raspbian

Step 1 : Install the container runtime

Install Moby and Moby CLI using Curl. Connect to your IoT Edge device and open shell. You may connect to your IoT Edge device via one of following methods.

- Local console
- SSH
- Serial Console

Run following commands in the console

```
curl -L https://aka.ms/moby-engine-armhf-latest -o moby_engine.deb && sudo dpkg -i ./moby_engine.deb
curl -L https://aka.ms/moby-cli-armhf-latest -o moby_cli.deb && sudo dpkg -i ./moby_cli.deb
sudo apt-get install -f
```

Step 2 : Install the Azure IoT Edge Security Daemon

Run following commands in the console to install the Azure IoT Edge Security Daemon.

```
curl -L https://aka.ms/libiothsm-std-linux-armhf-latest -o libiothsm-std.deb && sudo dpkg -i ./libiothsm-std.deb
curl -L https://aka.ms/iotedged-linux-armhf-latest -o iotedge.deb && sudo dpkg -i ./iotedge.deb
sudo apt-get install -f
```

Step 3 : Configure the Azure IoT Edge

IoT Edge Runtime needs information for provisioning. You may use manual provisioning with Connection String or Automatic Provisioning with DPS.

Automatic Provisioning will be covered in a separate instruction so please use manual provisioning for this instruction.

Manual Provisioning

Edit /etc/iotedge/config.yaml file with a text editor and add **Connection String** for your IoT Edge device.

Example :

```
sudo nano /etc/iotedge/config.yaml

provisioning:
  source: "manual"
  device_connection_string: "HostName=aiholus.azure-devices.net;DeviceId=RP3-Raspbian;Sh....."

# Save and exit
# "CTRL+x"

# "Y" to save
# "Enter" to write to /etc/iotedge/config.yaml
```

Step 4 : Start IoT Edge daemon

Start the Azure IoT Edge Runtime

```
sudo systemctl restart iotedge
```

Step 5 : Verify successful installation

Verify the Azure IoT Edge Runtime is successfully started, using one or more of following commands.

```
# check status of the Azure IoT Edge Runtime
systemctl status iotedge


# check journal log
journalctl -u iotedge --no-pager --no-full


# check list of modules and status
sudo iotedge list
```

Example :

```
# list of iot edge modules
sudo iotedge list
NAME             STATUS         DESCRIPTION       CONFIG
edgeAgent        running        Up 16 hours       mcr.microsoft.com/azureiotedge-agent:1.0

# status of iotedge
linaro@linaro-alip:~$ sudo systemctl status iotedge

? iotedge.service - Azure IoT Edge daemon
   Loaded: loaded (/lib/systemd/system/iotedge.service; enabled; vendor preset: enabled)
   Active: active (running) since Fri 2018-08-10 01:27:31 UTC; 16h ago
     Docs: man:iotedged(8)
 Main PID: 17022 (iotedged)
    Tasks: 6 (limit: 4915)
   CGroup: /system.slice/iotedge.service
           mq17022 /usr/bin/iotedged -c /etc/iotedge/config.yaml


Aug 10 17:41:24 linaro-alip iotedged[17022]: 2018-08-10T17:41:24Z [INFO] - [work] - - - [2018-08-10 17:41:24.19169743
Aug 10 17:41:24 linaro-alip iotedged[17022]: 2018-08-10T17:41:24Z [INFO] - [mgmt] - - - [2018-08-10 17:41:24.20025759
Aug 10 17:41:29 linaro-alip iotedged[17022]: 2018-08-10T17:41:29Z [INFO] - [mgmt] - - - [2018-08-10 17:41:29.25075993
Aug 10 17:41:29 linaro-alip iotedged[17022]: 2018-08-10T17:41:29Z [INFO] - [work] - - - [2018-08-10 17:41:29.25508222
Aug 10 17:41:34 linaro-alip iotedged[17022]: 2018-08-10T17:41:34Z [INFO] - [work] - - - [2018-08-10 17:41:34.31203759
Aug 10 17:41:34 linaro-alip iotedged[17022]: 2018-08-10T17:41:34Z [INFO] - [mgmt] - - - [2018-08-10 17:41:34.31461165
Aug 10 17:41:39 linaro-alip iotedged[17022]: 2018-08-10T17:41:39Z [INFO] - [mgmt] - - - [2018-08-10 17:41:39.35155961
Aug 10 17:41:39 linaro-alip iotedged[17022]: 2018-08-10T17:41:39Z [INFO] - [work] - - - [2018-08-10 17:41:39.35594081
```

```
Aug 10 17:41:44 linaro-alip iotedged[17022]: 2018-08-10T17:41:44Z [INFO] - [mgmt] - - - [2018-08-10 17:41:44.4044294€
Aug 10 17:41:44 linaro-alip iotedged[17022]: 2018-08-10T17:41:44Z [INFO] - [work] - - - [2018-08-10 17:41:44.4056863€
```

Appendix

Tips : OptimizeForPerformance

If you are running on low resource devices such as Raspberry Pi, it is highly recommended that OptimizeForPerformance to false set to *false*.

Additional Resources

- Common issues and resolutions for Azure IoT Edge