

Quick Start Guide for Pre-Installed Demo with Renesas RX65N Cloud Kit



Note: The steps described in this document were correct at the time of this document was created and may have changed at the time of reading.

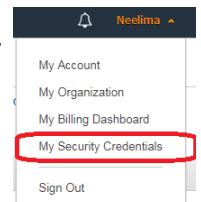
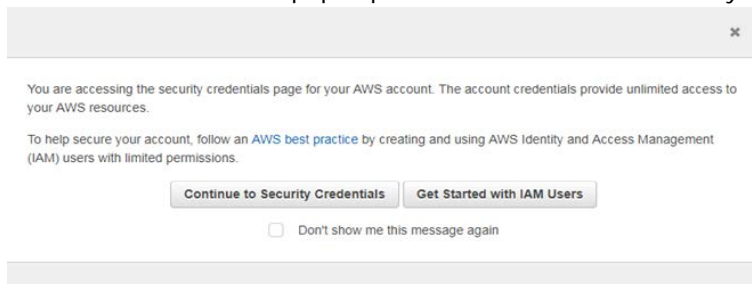
This document describes how to install and run the AWS cloud connectivity demo on Renesas RX65N Cloud Kit and visualize the sensor data on the web dashboard.

What you need to get started:

1. Prepare Renesas RX65N Cloud Kit (www.renesas.com/rx65n-cloud)
2. Register AWS account (<https://aws.amazon.com>)
3. Register Renesas web dashboard account (<https://cloud.renesasrx.com/accounts/register#>)
4. Write the sample program if your board is re-flashed from the default (<https://www.renesas.com/search/keyword-search.html#q=R01QS0035EU>)
5. Prepare Wi-Fi Internet access environment

1. Register AWS Account

1. Create an AWS account by going to portal: <https://portal.aws.amazon.com/billing/signup#/start>
2. After login, go to your account name in upper right-hand corner and click on "My Security Credentials".
3. If the below window pops up, click on "Continue to Security Credentials".



4. Click on "Access keys (access key ID and secret access key)".

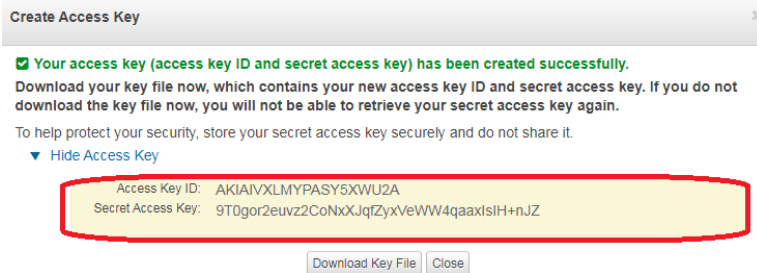
Your Security Credentials

Use this page to manage the credentials for your AWS account. To manage credentials for AWS Identity and Access Management (IAM) users, use the IAM Console.

To learn more about the types of AWS credentials and how they're used, see [AWS Security Credentials](#) in AWS General Reference.

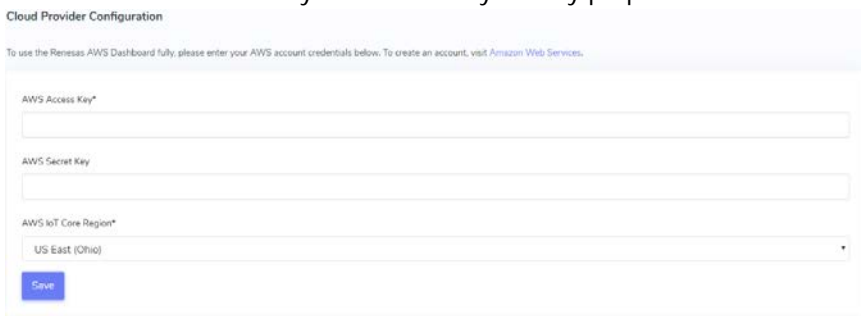


5. Click on "Create New Access Key" and "Download Key File". Make a note of the "Access Key ID" and "Secret Access Key". This information will be required in Step 7.

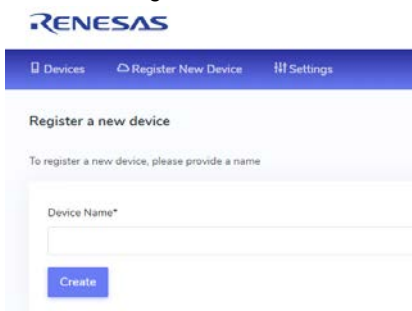


2. Register Web Dashboard Account and Create an IoT Thing

6. Create a web dashboard account at <https://cloud.renesasrx.com>
7. After login, go to "Setting" and enter the cloud provider configuration by entering the "AWS Access Key" and "AWS Secret Key" noted in the Step 5. Make sure to select "AWS IoT Core Region" same as AWS account. Click "Save". This will provision the dashboard for the AWS access. We do not use access key and secret key for any purpose other than sending and receiving data on this Dashboard.



8. Click on "Register a new device" and Enter any name under "Device Name" and then click "Create".



9. A new window will pop up with the device name and security credentials. Make a note of all the data or save the webpage for later reference. Don't close this window until kit is provisioned for the credentials as this information is available only once.

Your device is ready to use. However, you need to transfer some information to the device using a serial port.

Note: This is the only time the device credentials below will be available to you. If you cannot provision the device right away, please save this page for later use.

1. Plug in all 3 USB cables of the TB-RX65N unit to your computer.
2. Using an application, such as TerraTerm or PuTTY, connect to the COM port that just appeared. Stick to the default 9600 baud rate.
3. Follow the instructions on screen. You will need to provide a WiFi access point name and password/key.
4. When asked for an **device name**, copy and paste this value:

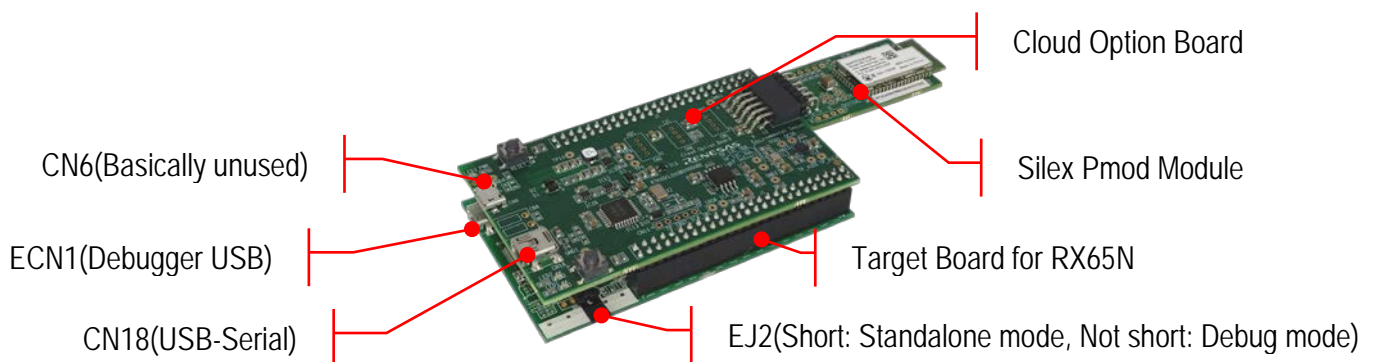
```
Test
```

5. When asked for an **endpoint address**, copy and paste this value:

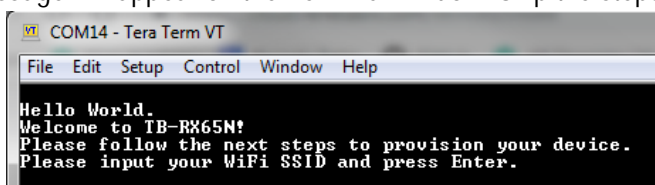
```
a2q0we6j71lr6g.iot.us-east-2.amazonaws.com
```

3. Provision the Kit for the AWS Credentials

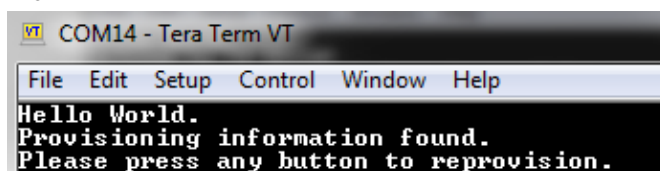
10. Connect the cloud kit as below. Make sure Silex Pmod module is connected to Cloud Option Board PMOD connector CN5.



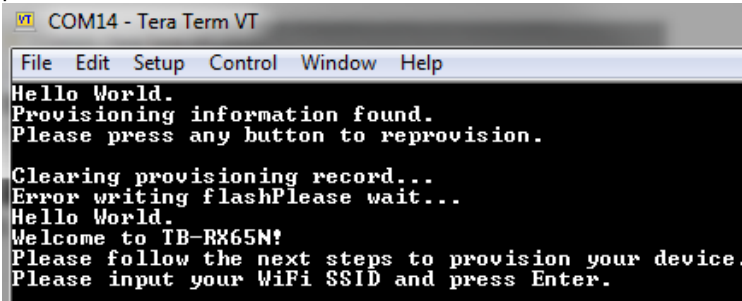
11. Connect USB cable from CN18 to the PC.
12. Open Terminal program like "Tera Term" and configure it for serial connection as 115k baud rate, 8-bit data, no parity. Make sure to assign the COM port assigned to the kit.
13. Ensure link is fitted to EJ2 on the Target Board for RX65N for non-debugger operation.
14. Power up the kit by connecting USB cables to TB board connector ECN1.
15. If the board is pre-programmed with the demo code and has no Wi-Fi and AWS credential pre-stored, the following message will appear on the Terminal window. Skip the steps 16 and 17 and follow the steps thereafter.



16. If the board is provisioned already with the Wi-Fi and AWS credential, the below message will be shown on the terminal.



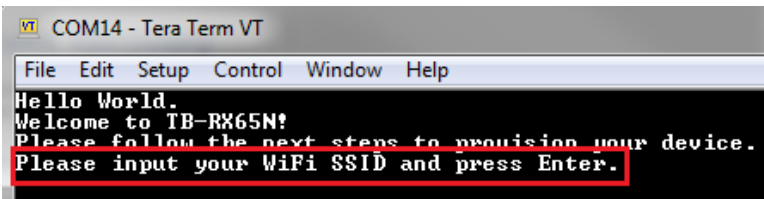
17. If unsure about provisioning data, click any key to program the new provisioning data. Otherwise, if the kit is provisioned with the correct data, then wait for the kit to connect to AWS and skip the steps 18 to 23.



```
COM14 - Tera Term VT
File Edit Setup Control Window Help
Hello World.
Provisioning information found.
Please press any button to reprovision.

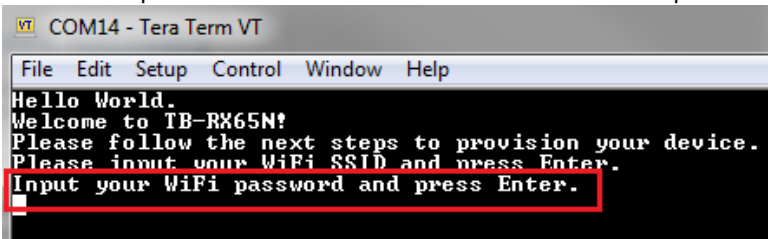
Clearing provisioning record...
Error writing flashPlease wait...
Hello World.
Welcome to IB-RX65N!
Please follow the next steps to provision your device.
Please input your WiFi SSID and press Enter.
```

18. Enter Wi-Fi SSID and click enter.



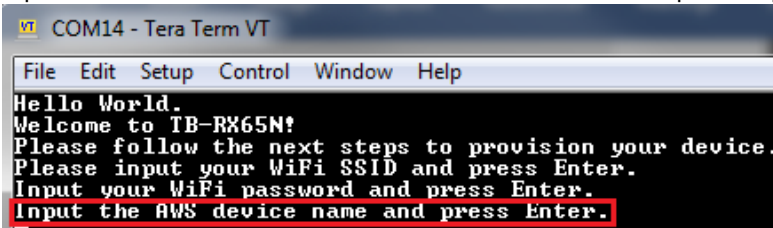
```
COM14 - Tera Term VT
File Edit Setup Control Window Help
Hello World.
Welcome to IB-RX65N!
Please follow the next steps to provision your device.
Please input your WiFi SSID and press Enter.
```

19. Enter Wi-Fi password for the Wi-Fi network chosen in the previous step.



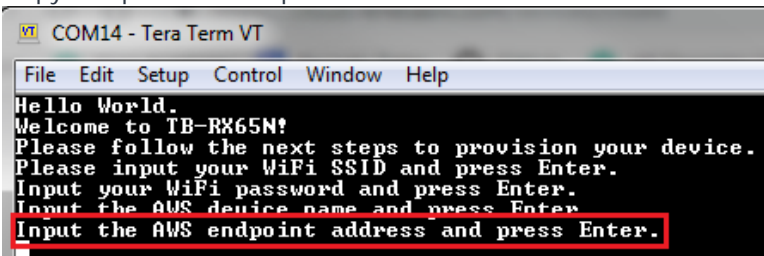
```
COM14 - Tera Term VT
File Edit Setup Control Window Help
Hello World.
Welcome to IB-RX65N!
Please follow the next steps to provision your device.
Please input your WiFi SSID and press Enter.
Input your WiFi password and press Enter.
```

20. Input the device name created in the dashboard in the Step 8 and press enter.



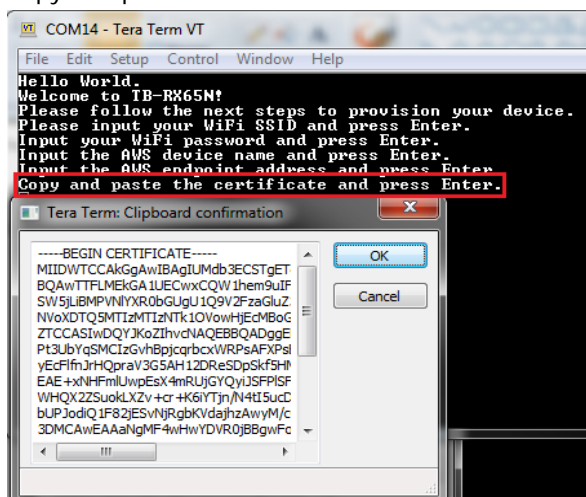
```
COM14 - Tera Term VT
File Edit Setup Control Window Help
Hello World.
Welcome to IB-RX65N!
Please follow the next steps to provision your device.
Please input your WiFi SSID and press Enter.
Input your WiFi password and press Enter.
Input the AWS device name and press Enter.
```

21. Copy and paste the endpoint address from credential window of the dashboard and press enter.



```
COM14 - Tera Term VT
File Edit Setup Control Window Help
Hello World.
Welcome to IB-RX65N!
Please follow the next steps to provision your device.
Please input your WiFi SSID and press Enter.
Input your WiFi password and press Enter.
Input the AWS device name and press Enter.
Input the AWS endpoint address and press Enter.
```

22. Copy and paste the certificate from credential window from the dashboard and press enter.

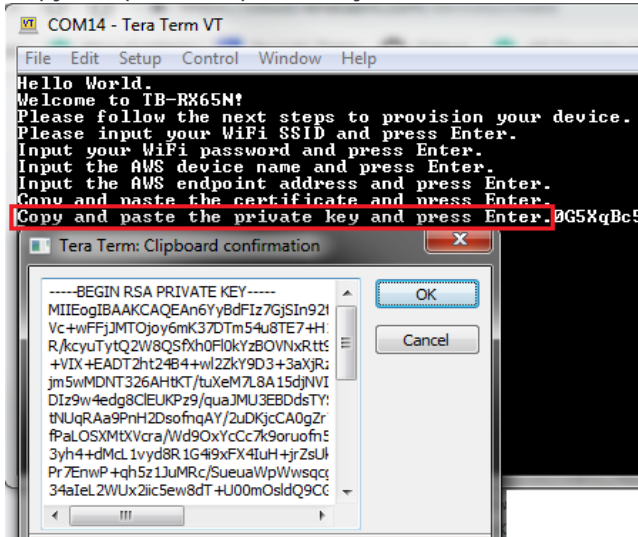


```
COM14 - Tera Term VT
File Edit Setup Control Window Help
Hello World.
Welcome to IB-RX65N!
Please follow the next steps to provision your device.
Please input your WiFi SSID and press Enter.
Input your WiFi password and press Enter.
Input the AWS device name and press Enter.
Input the AWS endpoint address and press Enter.
Copy and paste the certificate and press Enter.
```

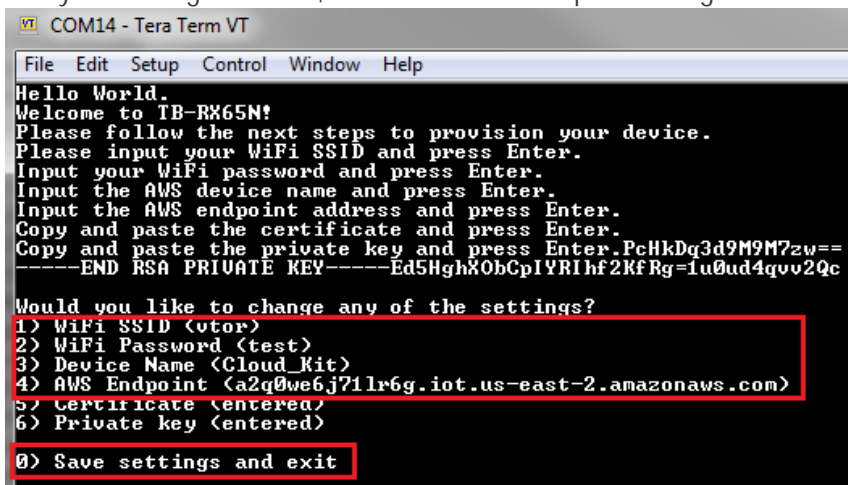
Tera Term: Clipboard confirmation

```
-----BEGIN CERTIFICATE-----
MIIDWTCCKAgGgAwIBAgIUdb3ECSTgET
BQAwwTFLMEKGA1UECwwvQWV1dG91ZS51
SW51bWVudG91ZS51bWVudG91ZS51bW
NvXDTQSMITzMTIzNTk1OVowHjEjMCBg
ZTCASwIDQYJKoZIhvcNAQEBBQADggE
P3U3bYqSMCIzGwhBqicrbcxWRPsAFXP
yE-FifnJrHQpraV3G5AH12DRreSDpSkF
EAE+xxNHfmlUwpEsX4mRUjGYQy1JSPIS
WHQX2ZSuokLXZv+cr+K6VTjn/N4HSu
bUPJodiQ1F82JESvNjRgkVdajhzAwYm/c
3DMCAwEAAnGmF4wHwYDVR0JBGwiiFc
```

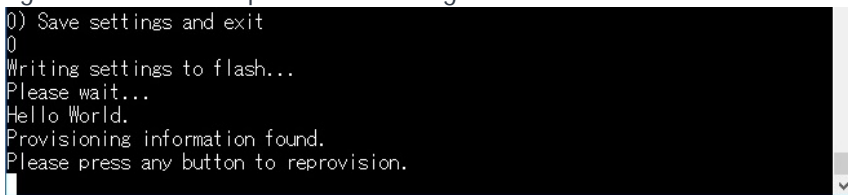
23. Copy and paste the private key from the dashboard and press enter.



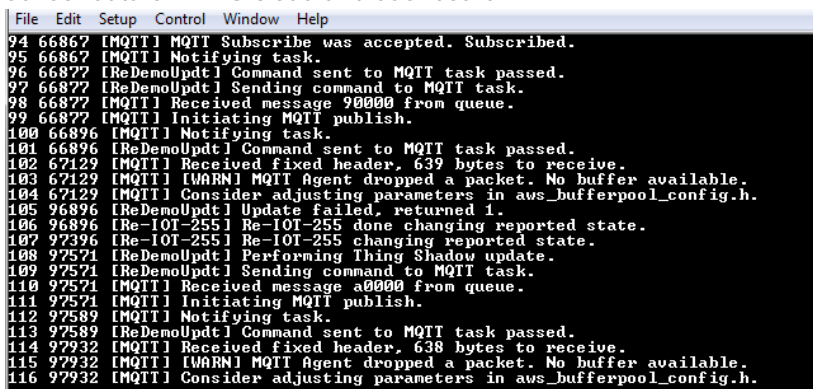
24. Verify the setting. If correct, enter "0" to write the provisioning data in Flash.



25. Wait about 1 minute without inputting anything from the keyboard. If you enter something from the keyboard here, the SSID and password entered 1) to 6) will be cleared and you will need to enter it again. After a reset or when the power is turned on again, it will try to connect to the cloud with the SSID and password entered previously. If you change the SSID or password, you can reset it by pressing any key at the step of "Please press any button to reprovision". If communication does not start in about 1 minute, press RESET_SW and wait again or check the input information again.

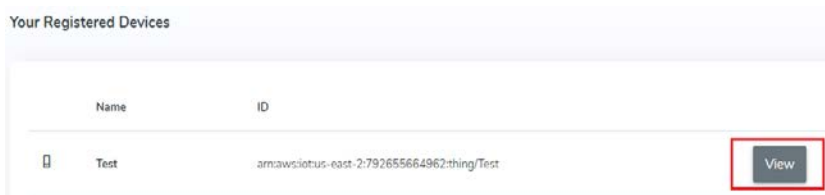


26. If provisioning information is correct then the kit will be connected to AWS now, and will be ready to post the sensor data on AWS cloud and dashboard.

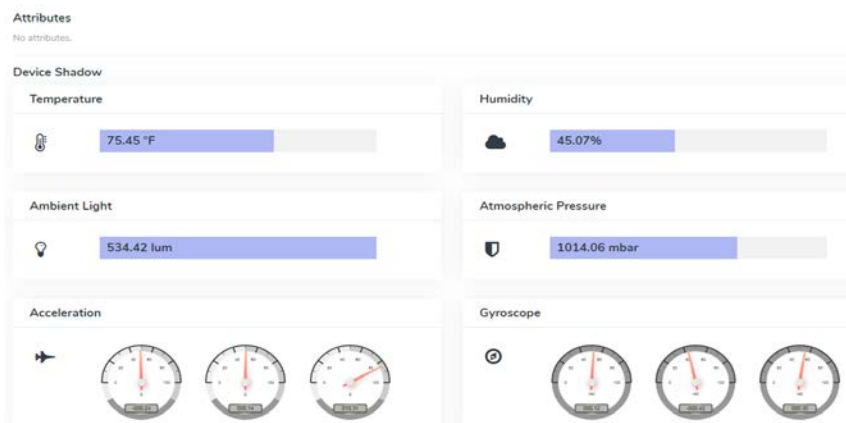


4. Visualize Sensor Data on the dashboard

27. Go back to Dashboard and close the credential window.
28. Click on "Device". Click "View" button to see the sensor dashboard.

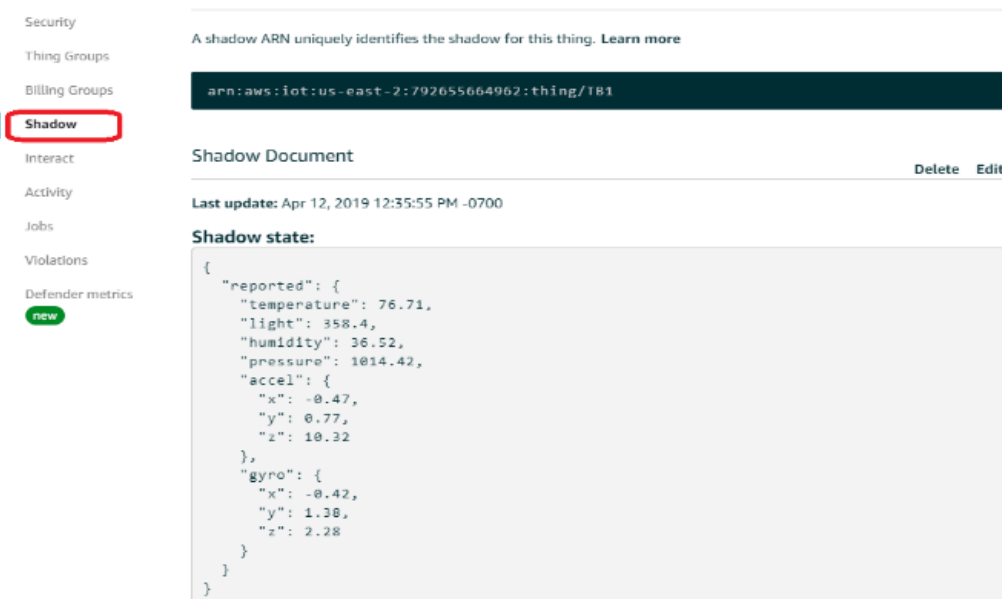


29. The dashboard will open and show the sensor's value. The sensor value will be updated every 30 seconds.



5. Monitor Sensor data on AWS Console

30. Go back to AWS account. Click on "Services->IoT Core->Manage->Things".
31. Click on the Things name (Referred as device name) created in the dashboard (step 8).
32. Click on Shadow to monitor sensor data.



The screenshot shows the AWS IoT console interface. On the left sidebar, "Shadow" is highlighted with a red box. The main content area displays the "Shadow Document" for a device. It includes the shadow ARN: `arn:aws:iot:us-east-2:792655664962:thing/181`. Below this, it shows the "Shadow state" as a JSON object:

```
{
  "reported": {
    "temperature": 76.71,
    "light": 358.4,
    "humidity": 36.52,
    "pressure": 1014.42,
    "accel": {
      "x": -0.47,
      "y": 0.77,
      "z": 10.32
    },
    "gyro": {
      "x": -0.42,
      "y": 1.38,
      "z": 2.28
    }
  }
}
```