# **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 (<u>www.renesas.com/rx65n-cloud</u>)
- 2. Register AWS account (https://aws.amazon.com)
- 3. Register Renesas web dashboard account (https://cloud.renesasrx.com/accounts/register#)
- 4. Wire the sample program if your board is re-flashed from the default(<u>www.renesas.com/rx65n-cloud</u>)
- 5. Prepare Wi-Fi Internet access environment

# 1. Register AWS Account

- 1. Create an AWS account by going to portal: <u>https://portal.aws.amazon.com/billing/signup#/start</u>
- 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".







#### Your Security Credentials

Use his page to manage the credentals for your AWS account. To manage credentals for AWS Identify and Access Management (MM) users, use the IAM Console. To learn more about the types of AWS credentals and how they're used, see AWS Security Credentals in AWS General Reference. Password Wu use an email address and password to sign in to secure pages on AWS, such as the AWS Management Console. AWS Forums, and AWS Support. For your protection, create a password that contains many characters, including numbers and punchuation. Store your pages on AWS, such as the AWS Management Console. AWS Forums, and AWS Support. For your protection, create a password that contains many characters, including numbers and punchuation. Store your pages on AWS, such as the AWS Management Console. AWS Forums, and AWS Support. For your protection, create a password that contains many characters, including numbers and punchuation. Store your protection your protection, create a password that contains many Click here to change the passwort, name, or email address for your root AWS account. • Multi-factor authentication (MFA) • Access keys (access key ID and secret access key) • CloudFront key pairs • X 509 certificate • Account; identifiers

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.

Create Aco	cess Key	3			
Your access key (access key ID and secret access key) has been created successfully. Download your key file now, which contains your new access key ID and secret access key. If you do not download the key file now, you will not be able to retrieve your secret access key again.					
To help pr Hide	otect your security, store your secret access key securely and do not share it.				
	Access Key ID: AKIAIVXLMYPASY5XWU2A Secret Access Key: 9T0gor2euvz2CoNxXJqfZyxVeWW4qaaxIsIH+nJZ	]			
	Download Key File				

# 2. Register Web Dashboard Account and Create an IoT Thing

- 6. Create a web dashboard account at https://cloud.renesasrx.com
- 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.

VS Access Key*	
VS Secret Key	
VS IoT Core Region*	
US East (Ohio)	2

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



 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.



#### 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 and Cloud option board CN6 to PC.
- 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.
  - Image: 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 TB-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 TB-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.



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



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

<u> </u>	OM14	- Tera Te	erm VT				_	
File	Edit	Setup	Control	Window	Help			
Hell Welc Plea Plea Inpu Inpu	o Wo ome ise f ise i it yo it th it th	rld. to TB- ollow nput y ur Wil e AWS e AWS	-RX65N! the nex your Wil i passo deuice endpoin	kt steps Fi SSID Word and Dame an Dame and Dame and	to pr and pr press d press ss and	rovision ress Ent s Enter s Enter l press	n your ( ter. Enter.	device.

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



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. 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.

94 66867 [MQTT] MQTT Subscribe was accepted. Subscribed. 95 66867 [MQTT] Notifying task. 96 66877 [ReDemoUpdt] Command sent to MQIT task passed. 97 66877 [ReDemoUpdt] Sending command to MQIT task. 98 66877 [MQTT] Received message 90000 from queue. 99 66877 [MQTT] Initiating MQIT publish. 100 66876 [MQTT] Notifying task.	
95 66867 [MQIT] Notifying task. 96 66877 [ReDemoUpdt] Command sent to MQIT task passed. 97 66877 [ReDemoUpdt] Sending command to MQIT task. 98 66877 [MQIT] Received message 90000 from queue. 99 66877 [MQIT] Initiating MQIT publish. 100 66896 [MQIT] Notifying task.	
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98 66877 [MQIT] Received message 90000 from queue. 99 66877 [MQIT] Initiating MQII publish. 100 66896 [MQIT] Notifying task.	
99 66877 [MQIT] Initiating MQIT publish. 100 66896 [MQIT] Notifying task.	
100 66896 [MQIT] Notifying task.	
101 66896 LReDemoUpdt1 Command sent to MQII task passed.	
102 67129 [MQIT] Received fixed header, 639 bytes to receive.	
103 67129 [MQIT] [WARN] MQIT Agent dropped a packet. No buffer available.	
104 67129 [Mull] Consider adjusting parameters in aws_bufferpool_config.h.	
105 96896 [ReDemoUpdt] Update failed, returned 1.	
105 96896 LRE-IVI-2551 Re-IVI-255 done changing reported state.	
107 97396 LRE-101-2551 Re-101-255 changing reported state.	
108 97571 [ReDemoupat] rerforming lining shadow update.	
149 97571 LREDEMOUPATI Senaing command to myli task.	
111 77571 [MQII] Received message about from queue.	
112 77571 (Mail) Initiating Mail publish.	
112 77507 [Ballamallydd] Cash.	
114 97922 [MOTT] Bacejusd fived beaden 632 butes to secure	
115 97932 (MOTI) RECEIVED TIME A Mediar, 0.50 bytes to receive.	
116 97932 [MOTT] Consider adjusting parameters in all huffermool config h	

# 4. Visualize Sensor Data on the dashboard

- 26. Go back to Dashboard and close the credential window.
- 27. Click on "Device". Click "View" button to see the sensor dashboard. Your Registered Devices

	Name	D	
0	Test	armawssiotsus-east-2:792655664962:thing/Test	View

28. The dashboard will open and show the sensor's value. The sensor value will be updated every minute.



### 5. Monitor Sensor data on AWS Console

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

Security	A shadow ARN uniquely identifies the shadow for this thing. Learn more		
Thing Groups	randon nor importy mentities the should for the time time.		
Billing Groups	arn:aws:iot:us-east-2:792655664962:thing/TB1		
Shadow			_
Interact	Shadow Document De	lete	Edit
Activity	Last update: Apr 12, 2019 12:35:55 PM -0700		
Jobs	Shadow state:		
Violations Defender metrics new	<pre>{     "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         }     } }</pre>		

#### 6. Next Step

After you have completed quick start procedure, review hardware detail of the kit. The hardware detail can be found in the user's manual of the Target Board for RX65N and Cloud Option Board user's manual.

#### 7. User Manuals

The user manuals for this kit is available at: <a href="https://www.renesas.com/rx65n-cloud">www.renesas.com/rx65n-cloud</a> RX65N Group User's Manuals (R01UH0590EJ0210) is available at: <a href="https://www.renesas.com/RX65N">https://www.renesas.com/RX65N</a>

#### 8. Support

 Online technical support and information is available at: <a href="https://en-support.renesas.com/dashboard">https://en-support.renesas.com/dashboard</a>

 Technical Contact Details:
 <a href="https://www.renesas.com/us/en/support/contact.html">https://www.renesas.com/dashboard</a>

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