

Synergy Enterprise Cloud Toolbox for AE-CLOUD1 Quick Start Guide

Renesas Synergy™ Platform
Synergy Tools & Kits
Tools: Connectivity

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General Precautions

1. Precaution against Electrostatic Discharge (ESD)

A strong electrical field, when exposed to a CMOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop the generation of static electricity as much as possible, and quickly dissipate it when it occurs. Environmental control must be adequate. When it is dry, a humidifier should be used. This is recommended to avoid using insulators that can easily build up static electricity. Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work benches and floors must be grounded. The operator must also be grounded using a wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions must be taken for printed circuit boards with mounted semiconductor devices.

2. Processing at power-on

The state of the product is undefined at the time when power is supplied. The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the time when power is supplied. In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the time when power is supplied until the reset process is completed. In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the time when power is supplied until the power reaches the level at which resetting is specified.

3. Input of signal during power-off state

Do not input signals or an I/O pull-up power supply while the device is powered off. The current injection that results from input of such a signal or I/O pull-up power supply may cause malfunction and the abnormal current that passes in the device at this time may cause degradation of internal elements. Follow the guideline for input signal during power-off state as described in your product documentation.

4. Handling of unused pins

Handle unused pins in accordance with the directions given under handling of unused pins in the manual. The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of the LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible.

5. Clock signals

After applying a reset, only release the reset line after the operating clock signal becomes stable. When switching the clock signal during program execution, wait until the target clock signal is stabilized. When the clock signal is generated with an external resonator or from an external oscillator during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Additionally, when switching to a clock signal produced with an external resonator or by an external oscillator while program execution is in progress, wait until the target clock signal is stable.

6. Voltage application waveform at input pin

Waveform distortion due to input noise or a reflected wave may cause malfunction. If the input of the CMOS device stays in the area between V_{IL} (Max.) and V_{IH} (Min.) due to noise, for example, the device may malfunction. Take care to prevent chattering noise from entering the device when the input level is fixed, and also in the transition period when the input level passes through the area between V_{IL} (Max.) and V_{IH} (Min.).

7. Prohibition of access to reserved addresses

Access to reserved addresses is prohibited. The reserved addresses are provided for possible future expansion of functions. Do not access these addresses as the correct operation of the LSI is not guaranteed.

8. Differences between products

Before changing from one product to another, for example to a product with a different part number, confirm that the change will not lead to problems. The characteristics of a microprocessing unit or microcontroller unit products in the same group but having a different part number might differ in terms of internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

Renesas Synergy™ Platform

Synergy™ Enterprise Cloud Toolbox for AE-CLOUD1

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1. Introduction

This Quick Start Guide for AE-CLOUD1 demonstrates the Synergy™ Enterprise Cloud Toolbox application. This application project is downloadable from www.renesas.com/cloudtoolbox and includes the following items:

- Embedded code
- Dashboard code
- Quick Start Guide
- Application Note

The application can be used as a reference solution for users to quickly get started on the Synergy Software Package (SSP), Wi-Fi Framework, Ethernet connectivity, and cloud connectivity with different IoT Cloud Providers using the Renesas Synergy™ Enterprise Cloud Toolbox for AE-CLOUD1 Kit.

2. Prerequisites

As the reader of this quick start guide, you are assumed to have some experience with the IAR Embedded Workbench® for Renesas Synergy™ or Renesas Synergy e2 studio ISDE and SSP. The hardware and software requirements listed in the section 3 should be installed.

Note: The MCU board is not pre-programmed with firmware for the Synergy Enterprise Cloud Toolbox application project. To run the bat file and flash the MCU board, see the instructions in the Appendix — Downloading and running the Synergy Enterprise Cloud Toolbox.

You may also have the project software built and ready for flashing on the AE-CLOUD1 Development Kit (the Synergy device). For instructions on how to build and flash the software on the device, consult the *Application Note* provided with the Synergy Enterprise Cloud Toolbox. If you run into any problem while going through the instructions in this quick start guide, refer to the limitations listed in section 6.13 for guidance.

3. Requirements

- A PC running Microsoft® Windows® 7 or 10 with the following Renesas software installed:
 - e² studio ISDE v5.4.0.023
 - IAR Embedded Workbench® for Renesas Synergy™ (IAR EW for Synergy) v7.71.3
 - Synergy Standalone Configurator (SSC) v5.4.0.23
 - Synergy Software Package (SSP) v1.3.2
- AE-Cloud1 kit (part# YSAECLLOUD1):
 - Synergy MCU Board (part # YIOTFASTPROTOS5D9)
 - Wi-Fi Board (part# YSAEWIFI-1)
 - SEGGER J-Link® Lite for Renesas Synergy (part# YSJLINKLITE)
 - Two micro USB connector cables
- Ethernet Cable

Notes:

- After connecting the AE-CLOUD1 device to your computer, if it does not appear as a device, follow the instructions given on the Renesas Synergy Knowledge Base page for manually assigning the [SEGGER CDC UART driver to the “EL Composite Device” in Windows](#). The Vendor ID and Product ID should be set to 0x0000 as shown in Figure 1.
- On Windows 10, and in cases where RFP is installed on the system, see Figure 1. The figure shows the Vendor ID and Product ID fields of USBX Device Configuration in the IOT Kit Thread may have to be set to 0x0000.

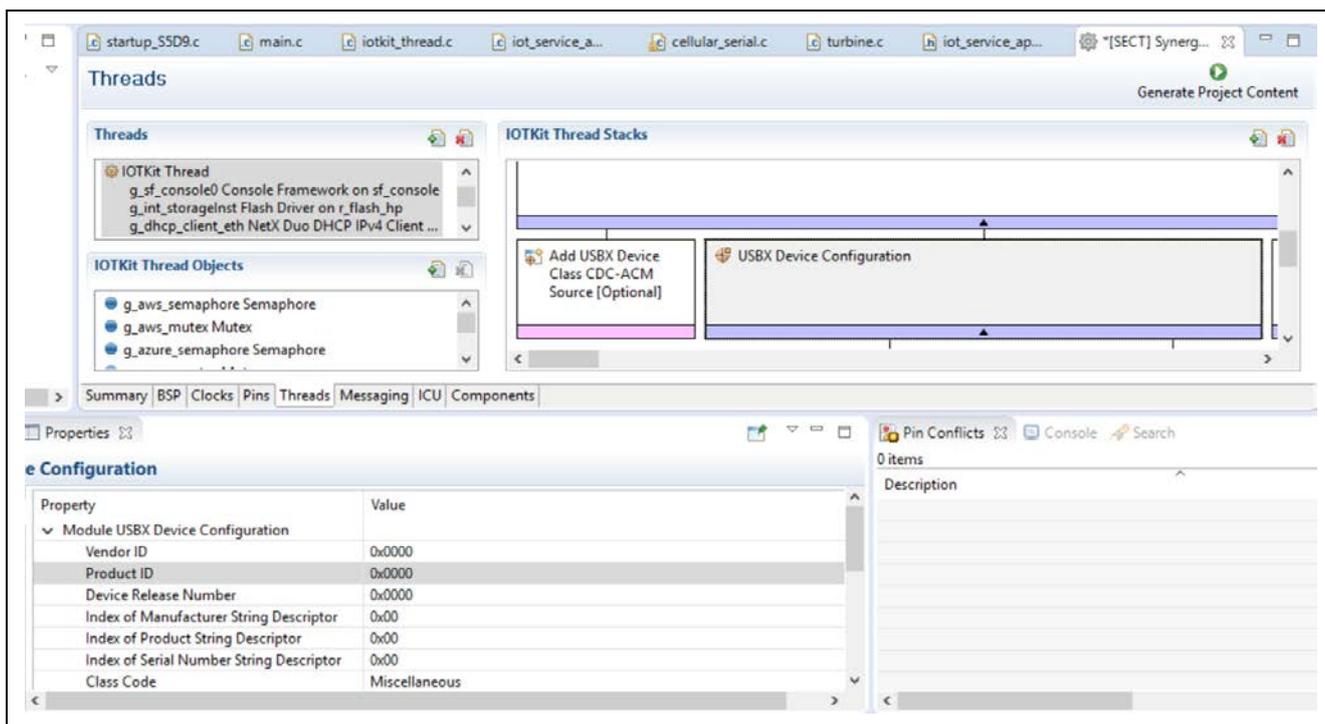


Figure 1 USBX Device Configuration for Windows 10

4. About the Demonstration

The demonstration application provides a reference design and implementation to get your S5D9 based platform quickly onto the cloud. The application uses NetX™ Secure and NetX™ MQTT to communicate with Amazon Web Solutions (AWS), Azure, and Google IoT Cloud Providers. The application showcases how to integrate functionality of the on-board sensors including accelerometer, barometric pressure sensor, temperature, and humidity sensor, and send this sensor data to the cloud over Ethernet or Wi-Fi network interfaces. How to send commands from the cloud to devices in order to turn an LED ON or OFF is also shown.

The major components of the embedded application are:

- NetX stack
- SSP
- Wi-Fi Framework
- Sensor framework
- Cloud APIs

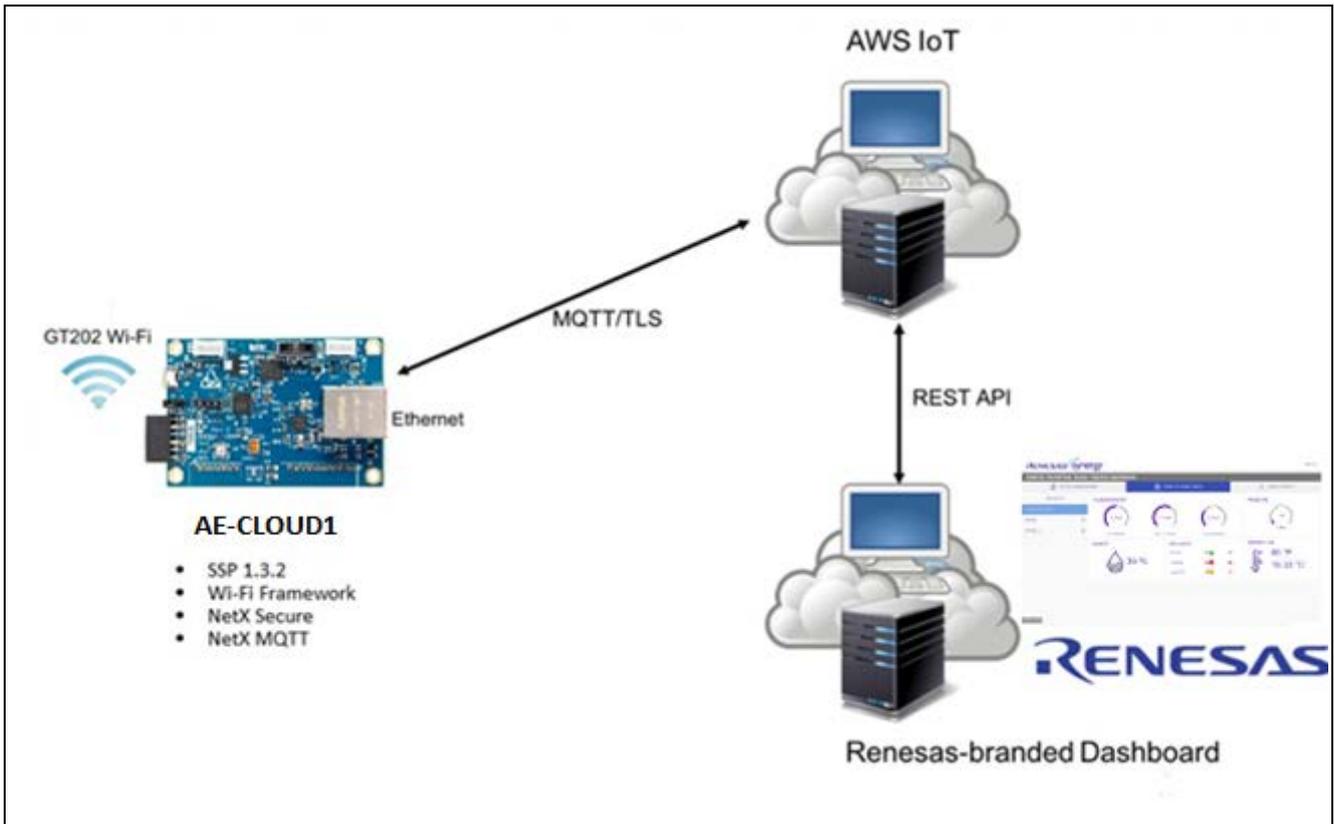


Figure 2 System overview

5. Setting up the Hardware

For connection details, see Figure 3.

- Connect the Wi-Fi module to PMOD.
- Connect the J-Link debugger to port J2.
- Set jumper J6 to 3V position.
- Connect a micro USB cable to port J9 for the serial console.

Note: The port J9 connector also supplies power to the AE-CLOUD1 board and this step should be performed after all the other modules and connectors are plugged in.

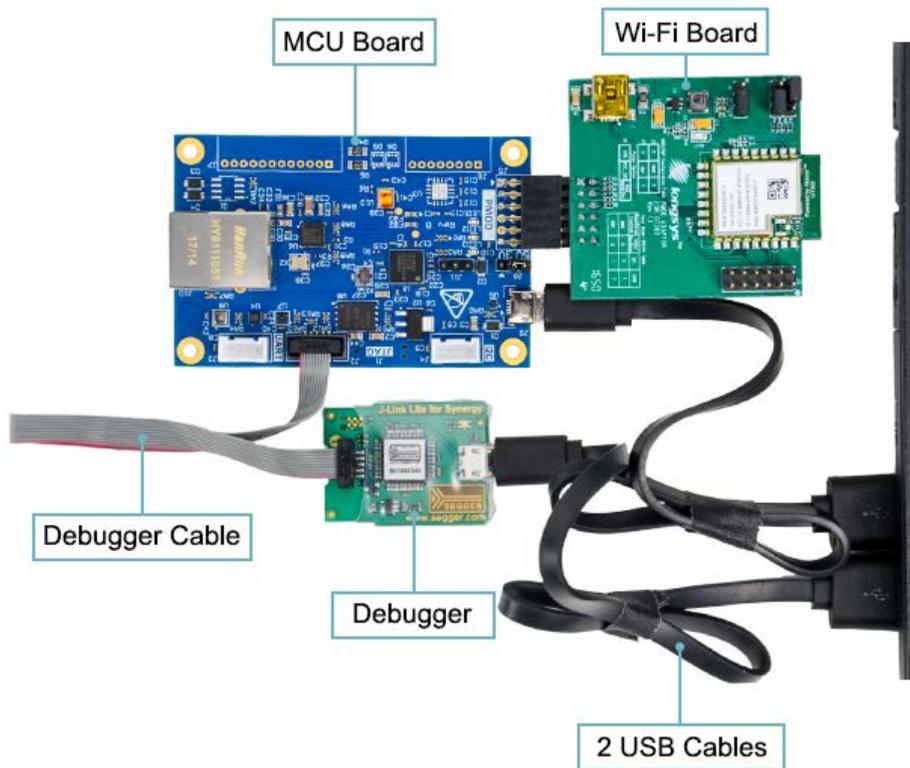


Figure 3 Device Connections and Setup

6. Setting up and executing the Demonstration

The main components of the demonstration are the Renesas Synergy™ Enterprise Cloud Toolbox Dashboard and the S5D9 Synergy MCU built on AE-CLOUD1 kit.

See *Synergy Enterprise Cloud Toolbox Application Note* for instructions to build and install (flash) the embedded application onto the AE-CLOUD1 device and run the Synergy Enterprise Cloud Toolbox Dashboard code. The setup and execution of the demonstration is explained in the following sections.

6.1 Setting up the AE-CLOUD1 Project

The MCU board is not pre-programmed with the firmware for the Synergy Enterprise Cloud Toolbox application project. For quick flashing of the firmware to the MCU board, refer to the Appendix for running the bat file to flash the MCU board. You can also refer the Application Note for instructions on building the project within the Synergy tools and flashing the MCU board that way.

To access the command console from the computer, install TeraTerm Pro (or equivalent serial terminal emulator) and open the terminal with the appropriate COM port configured. The default configuration for the terminal is **9600-8-N-1**. The application waits for a key to be pressed by the user before printing the banner on the serial console.

Press **Enter** to access the command prompt.

The following screen shows what the console window looks like on a terminal emulator when the device boots up, the application starts, and you press **Enter** to access the command prompt.

```

*****
*                               *
*           Synergy Enterprise Cloud Toolbox           *
*           Version 1.0.8-Released-2018/01/05         *
*                               *
*                               *
*****

Initializing sensors: done
Initializing data flash: done
>
    
```

Figure 4 Sensor Initialization and command prompt

Note: You can press **Enter** at any time to return to the Main Menu.

To see a list of available commands type: ?

```
>?
Help Menu
boot : Download Certificate and Keys
      Usage :
      boot
cell : Cell Provisioning info to be saved
      Usage:
      cell <APN> <Context ID> <PDP Type>
chks : Check TLS connection to server
      Usage:
      chks [aws|azure|google]
cwiz : Network Interface Configuration Wizard
ktid : Print Kit ID Number
ipcf : IP Address configuration
      Usage:
      ipcf dhcp
      ipcf static IP_ADDR MASK GW DNS
netif : Selection of network interface type
      Usage:
      netif <eth | wifi | cell>
      ping : Ping remote host
sens : Read and print current sensor data
stat : Print Network Interface configuration status
turb : Run Wind Turbine IoT demo
      Usage:
      turb start

user : User Information Provisioning
      Usage :
      user <email_id> <password>
vers : Print version information
wifi : Wifi Provisioning info to be saved
      Usage:
      wifi <SSID> <KEY> <Security Type>
```

Figure 5 Help menu for commands

Obtain the Unique Kit ID using the command: **ktid**

```
>ktid
*****
*                               Synergy Enterprise Cloud Toolbox                               *
*                               Version 1.0.8                                             *
*****

Initializing sensors: done
Initializing data flash: done
>
```

Figure 6 ktid command output to get unique Kit ID

Note: This unique Kit ID is the Serial Number used to register/add the device on the Synergy Enterprise Cloud Toolbox Dashboard (see section 6.5).

6.2 Setting up AE-CLOUD1 for Wi-Fi

Configure the Wi-Fi interface as an active interface using command: **cwiz**

```
>cwiz
Network Interface Selection:
 1. Ethernet
 2. Wi-Fi

Please Enter Your Choice(1-2):>2
WiFi Configuration
Enter the SSID associated with the Network
>Hawksnest
Enter the passphrase
>xxxxxxxxxxxxxx
Enter Security Type
 1. wep
 2. wpa
 3. wpa2
Please Enter Your Choice
>3

Entered Security Type: wpa2
Wifi settings saved in flash

Wi-Fi setup may take a few moments and may require a few retries.
Connecting to SSID "Hawksnest": connected.
```

Figure 7 Setting Wi-Fi interface as active interface

This cwiz command displays supported network interfaces. To activate the Wi-Fi interface, enter command **2**. Now enter the **SSID**, **passphrase**, and **security type** associated with the network at each prompt.

If the Wi-Fi network is not secure, then enter any value other than **1**, **2** or **3**. This Wi-Fi provisioning information from you is stored in internal flash for subsequent use.

```
Enter IP Address Configuration Mode
 1. Static
 2. DHCP
Please Enter Your Choice
>2
Stopping DHCP client.done
Waiting for IP address.done
Wi-Fi Configuration
=====
SSID       : Hawksnest
Key        : xxxxxxxxxxxxxx
Security   : WPA2
Interface Configuration
=====
Interface  : Wi-Fi
Mode       : DHCP
IP Address : 192.168.1.251
Netmask    : 255.255.255.0
Gateway    : 192.168.1.1
DHCP Server : 192.168.1.7
DNS Server  : 192.168.1.7
```

Figure 8 IP Configuration

To configure the IP address, you are given two options: **Static** and **DHCP**. In Figure 8 the user selected **DHCP**, and the screen shows the IP address assigned to the device.

Figure 9 shows an alternate method to set up Wi-Fi as the network interface, where you provision the Wi-Fi module for the first time on the network using the command `wifi <SSID><KEY><SECURITY TYPE>`.

```
SECT>wifi Hawksnest xxxxxxxxxxxx wpa2
Wifi settings saved in flash
SECT>
```

Figure 9 Setting Wi-Fi interface as the active interface

SSID is the SSID name, **KEY** is the password, and **SECURITY TYPE** is the security type of the Wi-Fi network that can be set to `wpa`, `wpa2`, `wep`, or `open`. The Wi-Fi provisioning information is stored in internal flash for subsequent use.

Set the Wi-Fi interface as active interface using the command: `netif wif`

```
SECT>netif wifi
Selected Network Interface : Wi-Fi

Wi-Fi setup may take a few moments and may require a few retries.

Connecting to SSID "Hawksnest": connected.

SECT>
```

Figure 10 Setting Wi-Fi interface as the active interface

This command reads the provisioning information stored in the internal flash from the previous step and tries to provision it automatically.

Configure the IP address using the command: `ipcf`.

```
SECT>ipcf dhcp
Stopping DHCP client.done
Waiting for IP address.done

Interface Configuration
=====
Interface   : Wi-Fi
Mode        : DHCP
IP Address  : 192.168.1.251
Netmask     : 255.255.255.0
Gateway     : 192.168.1.1
DHCP Server : 192.168.1.7
DNS Server  : 192.168.1.7
SECT>
```

Figure 11 IP Configuration

The command must be used with either `dhcp` or `static <IP> <MASK> <GW> <DNS>`, depending on whether the IP address is being obtained via DHCP or is statically assigned.

To continue with the demonstration setup, proceed to section 6.4.

6.3 Setting up AE-CLOUD1 for Ethernet

To use Ethernet as the network interface, enter the command: **cwiz**

```
>cwiz
Network Interface Selection:
 1. Ethernet
 2. Wi-Fi

Please Enter Your Choice(1-2):>1
Enter IP Address Configuration Mode
 1. Static
 2. DHCP
Please Enter Your Choice
>2
Entered IP Configuration Mode: DHCP
Stopping DHCP client.done
Waiting for IP address.done

Interface Configuration
=====
Interface   : Ethernet
Mode        : DHCP
IP Address  : 192.168.1.241
Netmask     : 255.255.255.0
Gateway     : 192.168.1.1
DHCP Server : 192.168.1.7
DNS Server  : 192.168.1.7
```

Figure 12 Setting Ethernet interface as the active interface and IP configuration

This cwiz command displays supported network interfaces. To activate the Ethernet interface, enter command **1**.

To configure the IP address you are given two options: **Static** and **DHCP**. Select the desired option to configure the IP address.

As an alternate method to configure Ethernet as the network interface, use the command: **netif eth**

```
SECT>netif eth
Selected Network Interface : Ethernet
SECT>
```

Figure 13 Setting Ethernet interface as the active interface

Configure the IP address using the command: **ipcf**

```
SECT>ipcf dhcp
Stopping DHCP client.done
Waiting for IP address.done

Interface Configuration
=====
Interface   : Ethernet
Mode        : DHCP
IP Address  : 192.168.1.241
Netmask     : 255.255.255.0
Gateway     : 192.168.1.1
DHCP Server : 192.168.1.7
DNS Server  : 192.168.1.7
SECT>
```

Figure 14 IP configuration

The command must be used with either DHCP or Static **<IP> <MASK> <GW> <DNS>**, depending on whether the IP address is being obtained via DHCP or is statically assigned.

Proceed to the following sections to sign up for the Synergy Enterprise Cloud Toolbox Dashboard and add a device to your dashboard.

6.4 Signing up for the Synergy Enterprise Cloud Toolbox Dashboard

The Synergy Enterprise Cloud Toolbox Dashboard is a hosted web application with the functionality to provision devices on AWS, Microsoft Azure, or Google IoT Cloud Providers.

The Dashboard GUI provides:

- User Sign up
- Adding MQTT enabled devices to either AWS, Azure, or Google IoT
- A remote monitoring view to monitor the real-time sensor information of the connected devices
- Updating the device state

Note: The URL of the Synergy Enterprise Cloud Toolbox Dashboard is: <https://cloud.renesassynergy.com>

Point your Internet browser to the Dashboard to display the Sign-in screen.

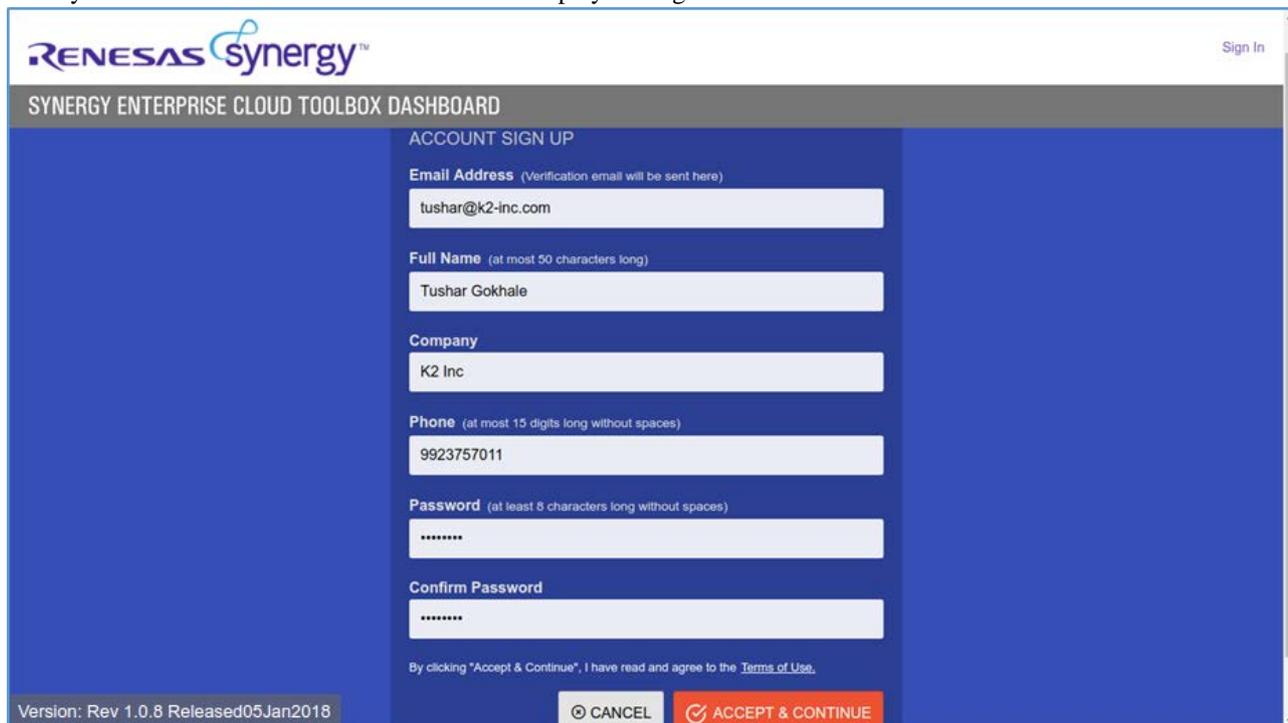


Figure 15 Sign up screen

Fill in the sign-up form and click on **Accept and Continue**. The hints given when you enter information in each field specify any constraints. For example, **Full Name** and **Company** information may contain spaces in between text, whereas space is not a valid input for **Phone** and **Password** fields. Characters allowed in passwords include uppercase and lowercase **letters**, **numbers**, and the following special characters:

^ \$ * . [] { } () ? - " ! @ # % & / \ , > < ' : ; | _ ~ `

Note: Spaces are not supported in both the user name and password fields.

An activation email will be sent to the email address you used during registration. Clicking the link given in the email will confirm and activate your account. You may then log in using the registered credentials.

6.5 Adding a Device to the Synergy Enterprise Cloud Toolbox Dashboard

After logging in, click **Add Device** from the **Device Management** view to display an **Add A Device** view.

The screenshot shows the 'ADD A DEVICE' form in the Synergy Enterprise Cloud Toolbox Dashboard. The dashboard header includes the Renesas Synergy logo, 'SYNERGY ENTERPRISE CLOUD TOOLBOX DASHBOARD', and navigation tabs for 'DEVICE MANAGEMENT', 'REMOTE MONITORING', and 'USER PROFILE'. The 'ADD A DEVICE' form contains the following fields and options:

- Name:** An alpha-numeric name for this device (20 chars max). Input field is empty.
- Serial Number:** A unique ID, which is retrieved via the CLI from the PK-S5D9 board. Input field is empty.
- Device Type:** A dropdown menu with 'WindTurbine' selected.
- IOT Provider:** A dropdown menu with 'Amazon Web Services' selected.
- Buttons:** 'CANCEL' and 'ADD' buttons are located at the bottom right of the form.

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Figure 16 Adding a device

The following steps show how to add a device:

1. Enter a user-friendly **Name** for the device (for example, South Wind Turbine).
2. Enter the device **Serial Number**.
The Serial Number is the Unique Kit ID obtained from the AE-CLOUD1 device in section 6.1.
3. Select the **IoT Provider** where the device is to be registered.

After a successful add operation, the device appears in the **Device Management** device-list. The device is added to the IoT Cloud Provider and becomes available for monitoring after the device has been provisioned (bootstrapped) with the Dashboard (see section 6.7).

The next step is to configure the device with the registered username (email) and password.

6.6 Configuring User Credentials for AE-CLOUD1

Switch to the device for the CLI and configure your email address and password, using the command **user <email_id> <password>**.

```
>user myname@mycompany123.com xxxxxxxx
Username saved successfully
Password saved successfully
>
```

Figure 17 User registration

Notes:

1. This command should be triggered after adding the device to the Synergy Enterprise Cloud Toolbox Dashboard.
2. The user credentials should be the same as the ones used during Synergy Enterprise Cloud Toolbox Dashboard - User-signup.

6.7 Provisioning for AE-CLOUD1

To provision the device with the connection credentials and details of the IoT Cloud Provider platform, do the following:

Execute the command: **boot**

```
>boot
Creating TLS session: done
Initializing certificates: done
Starting TLS session: done

Parsing Bootstrap Response:
IoT Service Provider: AWS
IoT Service provider stored successfully
Public Key stored successfully
Private Key stored successfully
Certificate stored successfully
MQTT endpoint stored successfully
Sending bootstrap confirmation to server...
Creating TLS session: done
Initializing certificates: done
Starting TLS session: done >
```

Figure 18 Device bootstrapping

The boot command triggers a request to the Dashboard REST API to pass the configured user credentials and device unique ID. The Dashboard authenticates the user and verifies that a device has been added to the users account. Based on the IoT platform the device was added, the Dashboard responds to the boot request by sending the connection's identifiers and authentication details.

Upon successful provisioning, the information received from the Dashboard is saved on the device's internal flash.

6.8 Starting the Wind Turbine model on AE-CLOUD1

```
>turb start
Starting turbine demo.
Press <Enter> to return to console prompt.
IoT Service Provider: AZURE
>
```

Figure 19 Start Wind Turbine model

To start the Wind Turbine model on the device, enter the command: **turb start**

The demonstration application starts sending the sensor data to the Synergy Enterprise Cloud Toolbox Dashboard.

After the demonstration has started, you can press the **Enter** key to return to the prompt.

Note: Once the Wind Turbine model has been started, if you want to change the network interface or the IoT cloud provider, the system **MUST** be power-cycled.

6.9 Remote Monitoring on the Synergy Enterprise Cloud Toolbox Dashboard

Switch to the Dashboard view in the browser. Navigate to the **Remote Monitoring** tab to view the real-time device status and the sensor data.

The LEDs associated with the controls are shown in the **LED LIGHTS** section of the user interface.

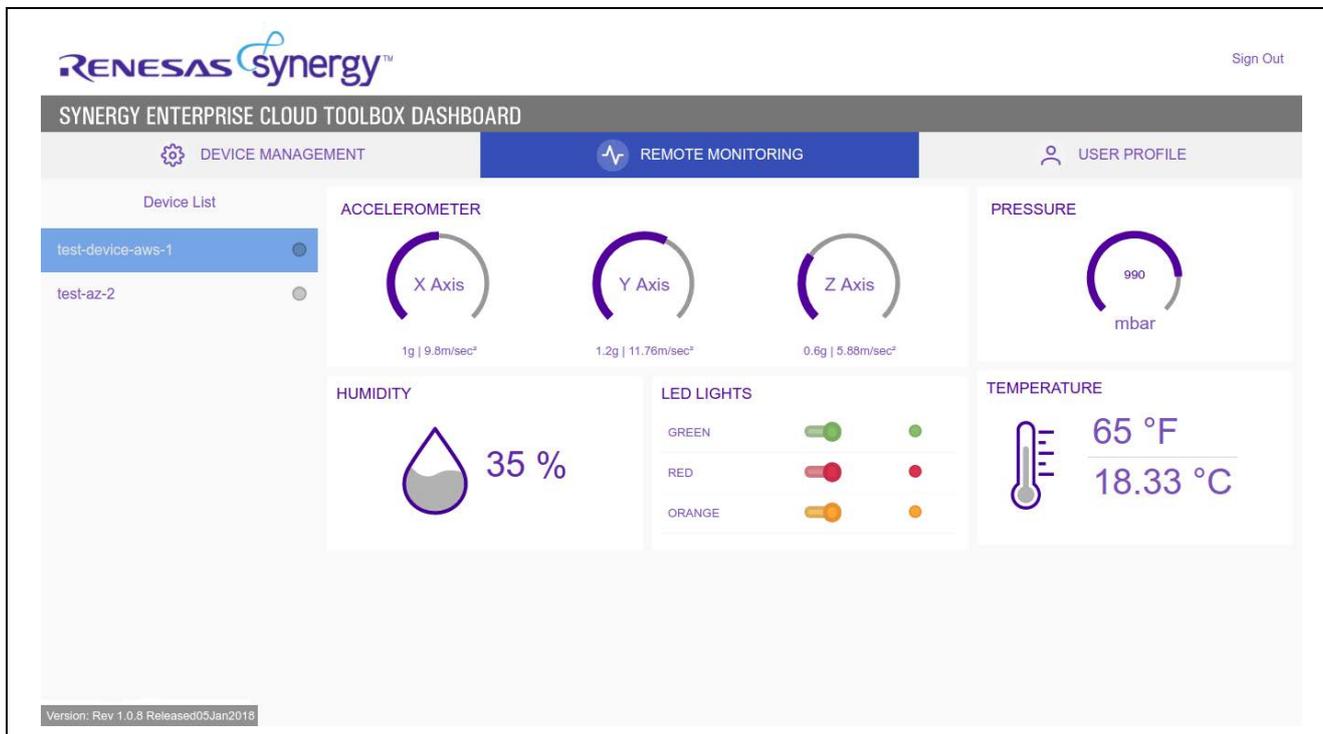


Figure 20 Remote Monitoring

The **Turbine** switch controls the **red** LED on the device, while the **Power** switch controls **green** LED, and the **Ammeter** controls the **yellow** LED.

Click the appropriate switches to update the state of the LEDs on the device.

6.10 Stimulating sensors on AE-CLOUD1

AE-CLOUD1 board comes equipped with various on board sensors. These sensors can be stimulated and the updated readings observed on the Dashboard:

- **Humidity sensor:** Blow warm air on the device for 20 seconds. Observe the humidity value change on the Dashboard.
- **Temperature:** Turn on the air conditioner and blow cold air towards the device for few minutes to observe the temperature value change on the Dashboard.
- **Pressure:** Run the test at different altitudes. For example, run the test on the ground or top floor of a high-rise building, to note the change in pressure on the Dashboard.
- **Accelerometer:** Without tilting the device, move it in any direction and observe the X, Y, and Z Axis value change based on the direction that you move the device towards.

6.11 Changing IoT cloud providers

Devices bootstrapped with the dashboard, can be switched between the supported IoT cloud providers.

In the following example, the device is provisioned for the Azure IoT platform. Use the following steps to change the IoT cloud provider to **AWS**:

1. Login to the Synergy Enterprise Cloud Toolbox Dashboard.
2. Navigate to **Device Management** view. Locate the device that must be switched to AWS, and click the **Delete** icon.

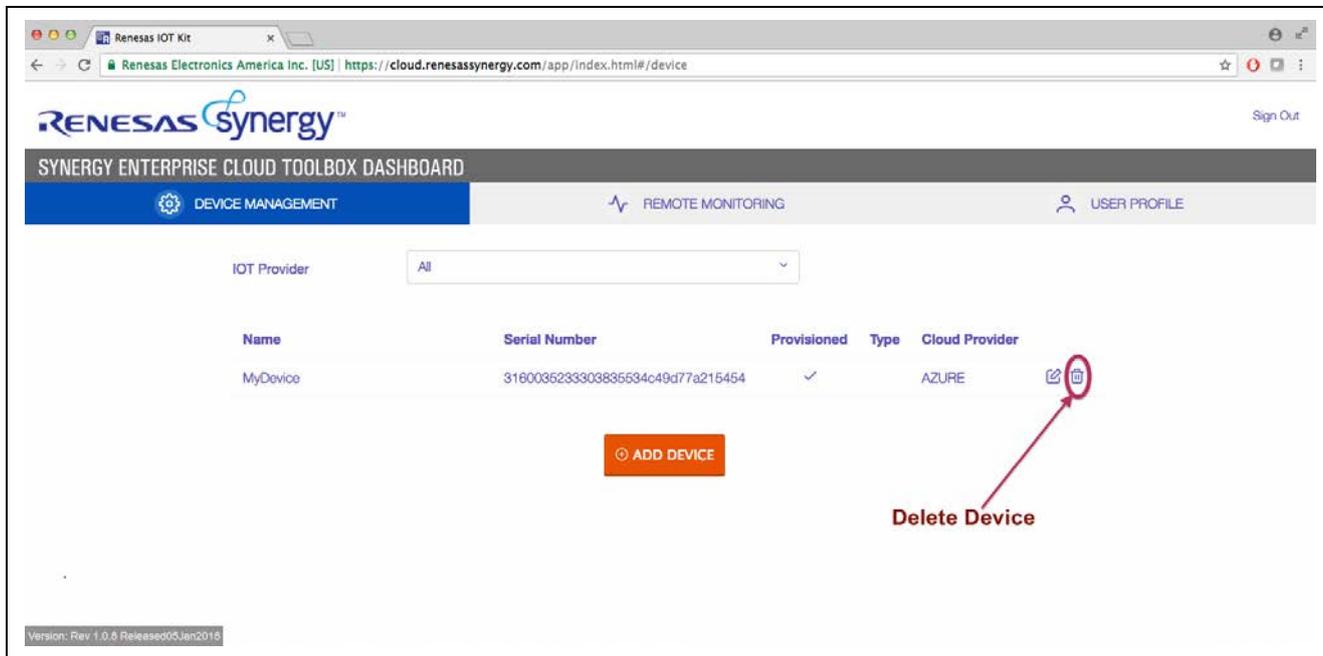


Figure 21 Deleting a device

3. Click on **OK** when asked to confirm the operation.
4. Power cycle the device.
5. Follow the steps to add a device (see section 6.5) and choose **AWS** as the IoT cloud provider.
6. Run the demonstration as instructed in section 6.2 or 6.3.

To switch a device provisioned for AWS to Azure, follow the same steps and choose **Azure** as the IoT cloud provider when you add the device.

Notes:

1. At a given time only a single IoT cloud provider connection can be active on the system (dashboard and device).
2. Provisioning is a one-time operation for the **Dashboard + Device-IoT Cloud Provider** combination. Once the device is provisioned for an IoT cloud provider, you do not need to re-provision unless the device is deleted and added back again via the dashboard.
3. Every time you switch IoT providers, the device needs to be power cycled. This step is due to a limitation in the MQTT client implementation. See the **MQTT-TLS workarounds** section of the *Application Note* for details.

6.12 Resetting the system from the Synergy Enterprise Cloud Toolbox Dashboard

The reset feature is available only to the admin user. Using the reset functionality, the admin user can delete all devices and users from the system.

Note: This is an **irreversible action**. To access the reset view, click the **Settings** icon on the UI's top-right corner. Clicking **Reset System**, on the reset view, resets the system (see Figure 22 and Figure 23).

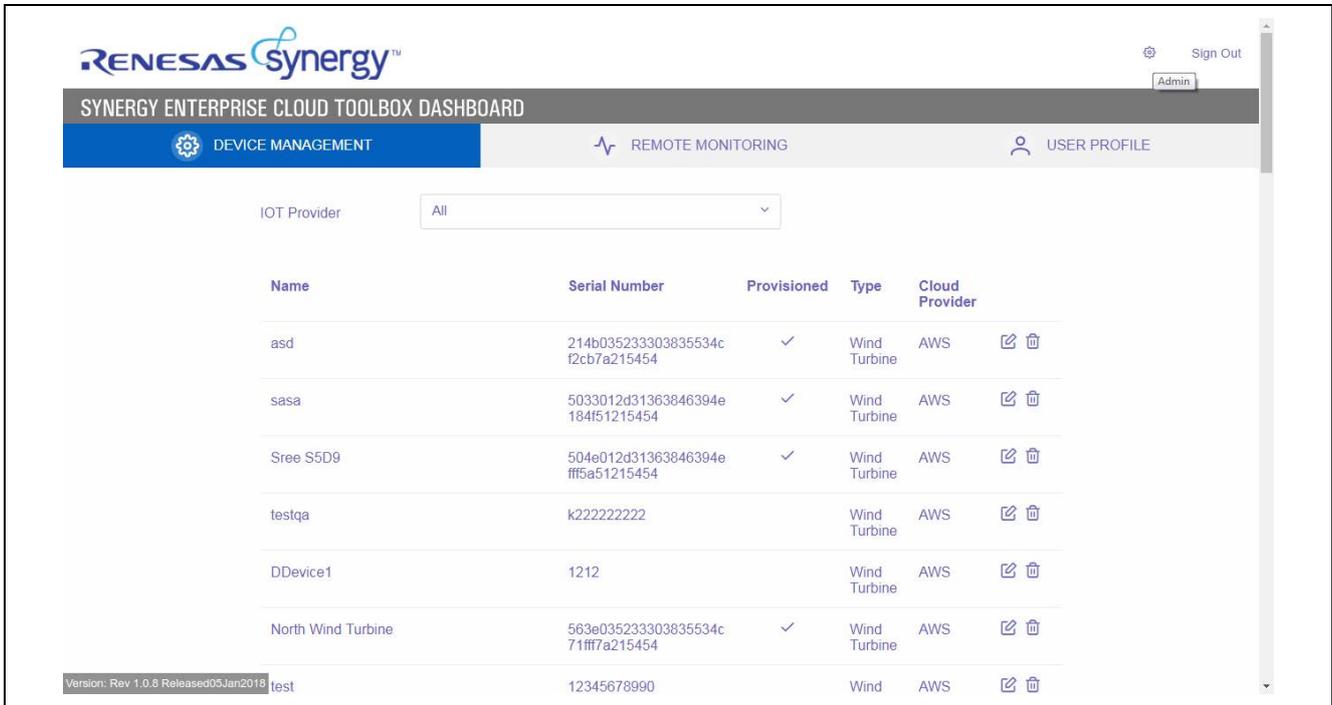


Figure 22 Device Management tab on the Dashboard

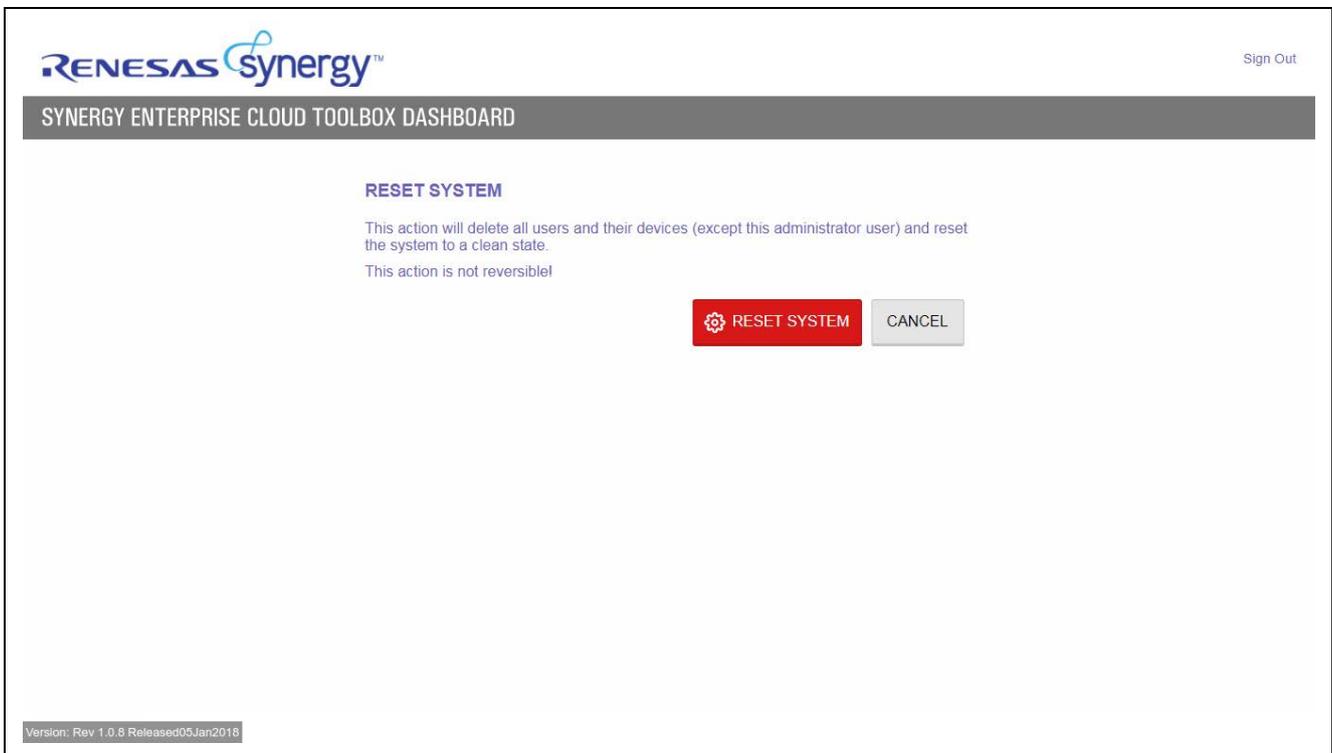


Figure 23 Reset System

6.13 Notes and Limitations

1. After a network interface has been selected, if you want to change it, the system **MUST** be power-cycled and a new network interface selected.
2. If certificate provisioning fails for a device, then you need to delete the device from the dashboard and add it back. In the case of a provisioning failure, see section 6.1.
3. If the boot command fails for a device, you must delete the device from the dashboard and add it back. In the case of a boot command failure, see 6.1 for instructions. The command could fail with the following errors:
 - A. Starting TLS session: Could not start TLS session (0x109).
 - B. Parsing Bootstrap Response: IoT Provider not found. Aborting.
 - C. The command gets stuck after starting the TLS session and the bootstrap does not begin.
4. After changing the LED status from Dashboard, it can take up to 10 seconds for the LED on the AE-CLOUD1 device to change.
5. Google-cloud IoT does not provide information regarding the connected state of the devices to its IoT platform. As a result, on the **Remote Monitoring** tab view, the icon indicating the connectivity status is gray, instead of green, for the device.
6. The Dashboard UI uses Server Sent Events (SSE).

SSE is part of the HTML5 standard. However, Microsoft (MSFT) does not support SSE in Internet Explorer (IE) and Edge. As an alternative, polling is used to get events from the server. Depending on the polling interval, the updates may appear to be delayed.

For details on SSE and the lack of support on MSFT browsers, visit https://en.wikipedia.org/wiki/Server-sent_events and <https://caniuse.com/#feat=eventsourcing>.
7. In some corporate Ethernet and Wi-Fi connections, the browser refresh rate could be slow and may need manual refreshing to receive updates. In certain cases, this error is indicated on the Dashboard with a warning on the status of communication between the device and the Dashboard.

To mitigate this issue, ensure that the Corporate Network allows the following ports to successfully run the Synergy Enterprise Cloud Toolbox:

 - TCP Ports: 80 (HTTP), 443 (HTTPS) and 8883 (MQTT over TLS)
 - UDP Ports: 123 (SNTP), 53 (DNS).

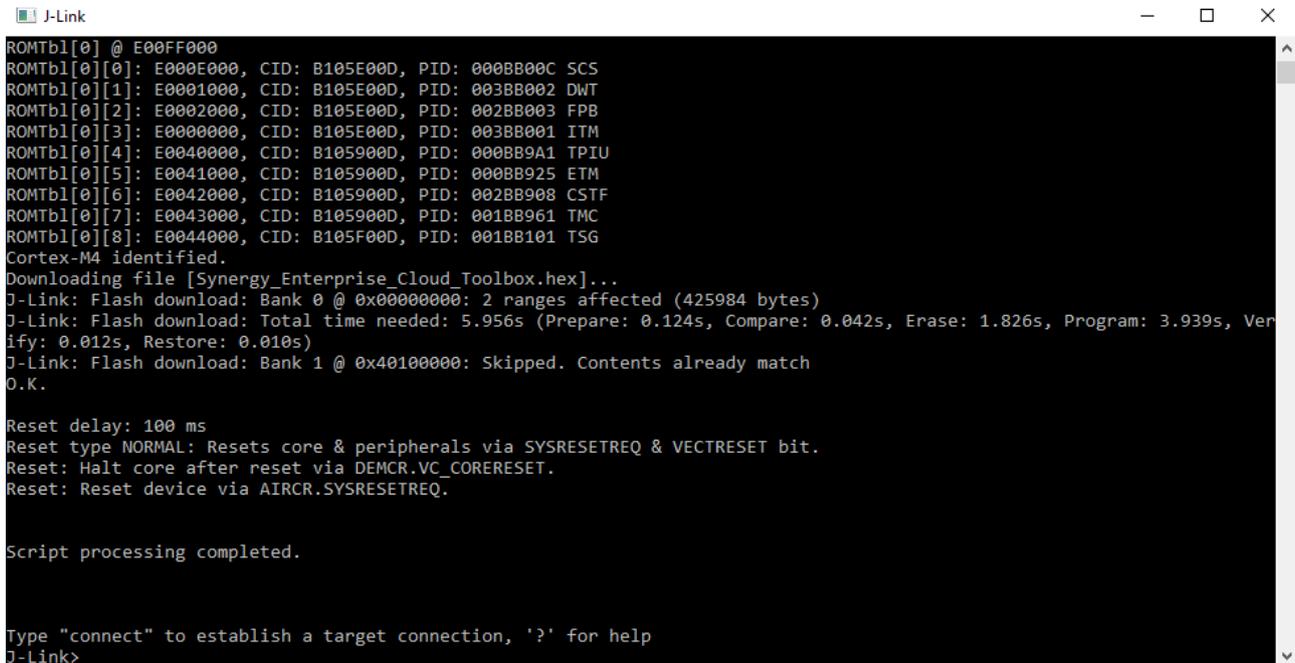
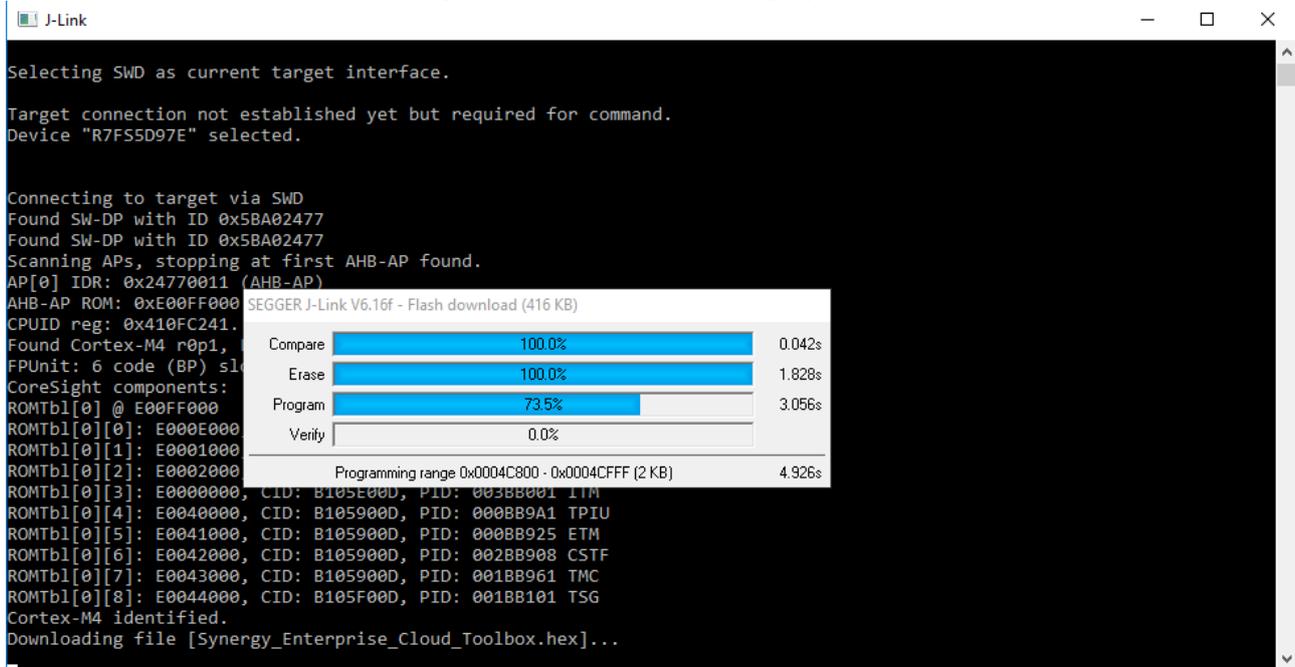
In cases when these solutions do not update the browsers, the firewall settings should be checked.
8. If the command line returns an **Unsupported Command** error, check the format and retype the command using the correct format.
9. Google-cloud IoT is not supported in Rev 1.0.
10. The Dashboard on Azure IoT for some kits does not get updated automatically and needs to be manually refreshed to see any changes.
11. If 'turb start' command on Google-cloud fails with an error "Unable to initialize IoT service Google," power cycle the device and retry the command.

Note: Google-cloud IoT is in Beta Launch stage. For more information, refer to the link <https://cloud.google.com/terms/launch-stages>

7. Appendix — Downloading and running the Synergy Enterprise Cloud Toolbox

Use the following steps to download and run the Synergy Enterprise Cloud Toolbox.

1. Install the driver to enable the J-Link Debugger connected to J2 to be recognized by Windows.
The driver can be downloaded at <https://www.segger.com/downloads/jlink>.
2. Extract **AE_Cloud1_bat.zip**.
3. Make sure all the hardware connections have been made as listed in section 5.
4. Run **s1.bat** file in the unzipped folder.
5. Make sure the download is complete as shown in the following figures.



For instructions on how to build and flash the software on the device using e² studio ISDE and IAR EW for Synergy, see the *Application Note* provided with the Synergy Enterprise Cloud Toolbox.

Website and Support

Support: <https://synergygallery.renesas.com/support>

Technical Contact Details:

- America: <https://www.renesas.com/en-us/support/contact.html>
- Europe: <https://www.renesas.com/en-eu/support/contact.html>
- Japan: <https://www.renesas.com/ja-jp/support/contact.html>

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Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Dec 18, 2017	—	Initial release
1.08	Jan 11, 2018	—	Changed FPK-S5D9 to AE-CLOUD1 and updated procedures

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