

DevZone Lab 4603 Simulating Devices in Watson IoT Platform

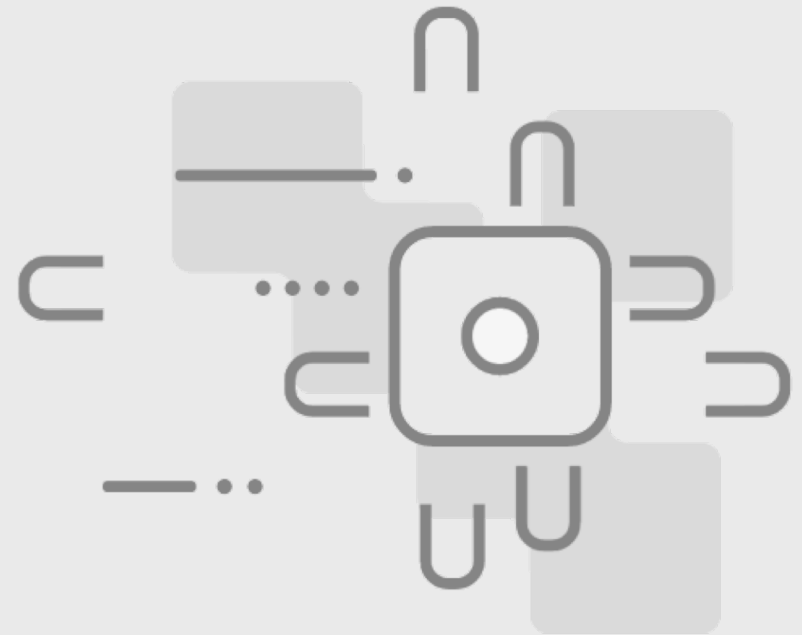
think 2018



Simulating Devices in Watson IoT Platform

In this lab you will learn how to simulate devices connecting to the Watson Internet of Things Platform

Using simulated devices, you can quickly get started with the Watson IoT Platform, explore the IoT service model in IBM Cloud, and use IoT Platform APIs to retrieve device data, and test your IoT applications without using any physical devices

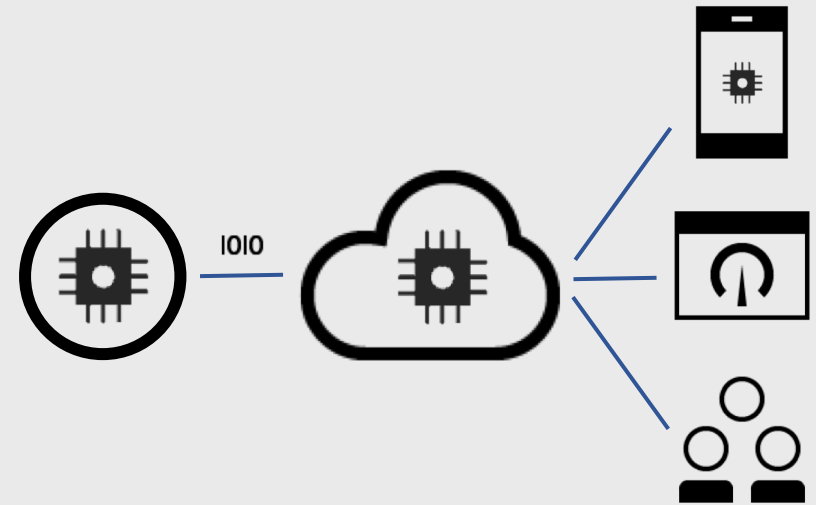


What is the Watson IoT Platform?

The IBM Watson Internet of Things Platform is a fully managed, cloud-hosted service available in IBM Cloud

Devices connect and start sending data securely to the IBM Watson IoT Platform service using the light-weight standardized MQTT messaging protocol

From there, applications can access real-time device data, and devices can be managed using secure APIs or the IoT Platform dashboard



What is a Device Types and Devices?

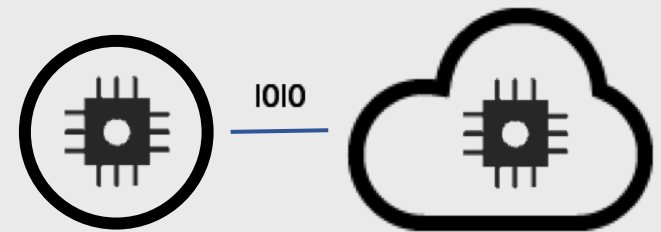
In this Lab you will create a new Device Type and simulate a Device of this type. You will define the data messages the simulated device will send to the IoT platform

Devices are things, like smart physical sensors and actuators, that connect to the IoT platform over internet

Devices of the same brand, make or model are of a *Device Type*

Devices *Register and Connect* to the IoT platform and send data messages as *Events*

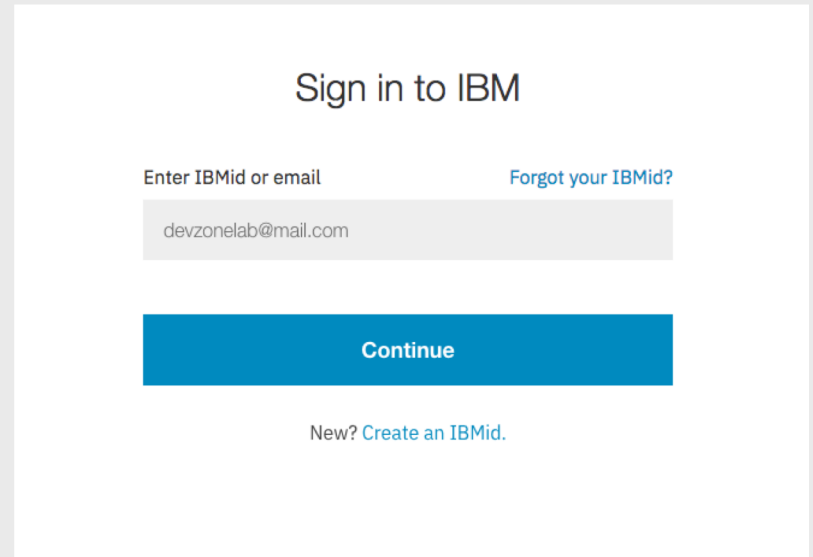
Events contain message data payload, formatted in *JSON*



Log into IBM Cloud and the Watson IoT Platform

Lets first log into IBM Cloud

1. Open a browser window on your workstation
2. Go to <http://bluemix.net>
3. Log in as
User: -
Password: -

A screenshot of the IBM Sign in page. The page has a white background. At the top, it says "Sign in to IBM". Below that, there is a label "Enter IBMid or email" and a link "Forgot your IBMid?". A text input field contains the email address "devzonelab@mail.com". Below the input field is a large blue button with the text "Continue". At the bottom, there is a link "New? Create an IBMid.".

Sign in to IBM

Enter IBMid or email [Forgot your IBMid?](#)

devzonelab@mail.com

Continue

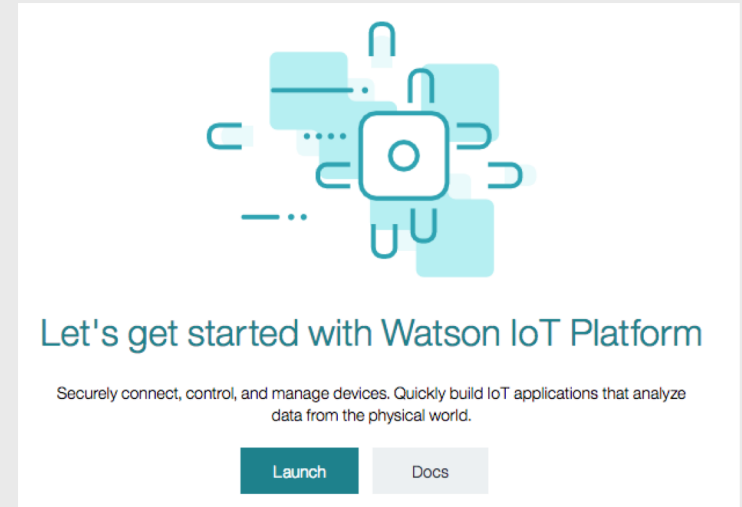
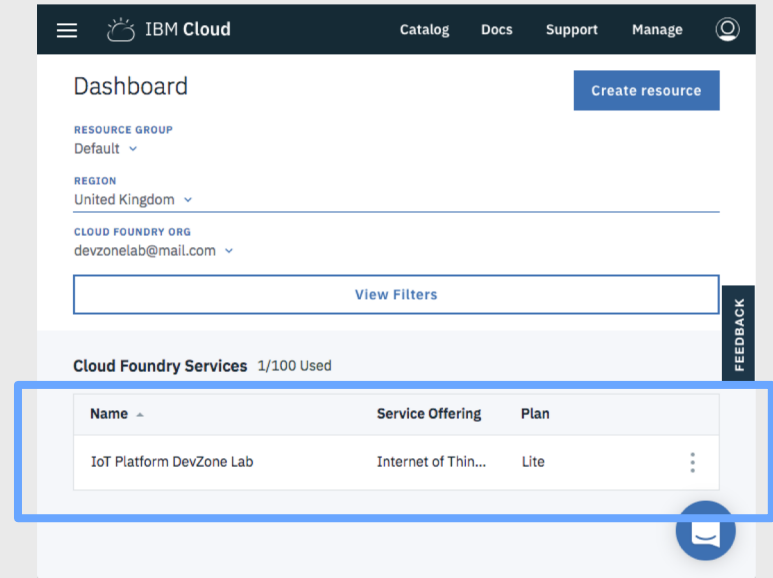
New? [Create an IBMid.](#)

Note: You have to log out from IBM cloud if you are logged in as another user

Locate the Internet of Things Platform

The IBM Cloud Dashboard is loaded

1. In the list of Services, click and open [IoT Platform DevZone Lab](#) Internet of Things Platform service
2. In the Watson IoT Platform service page, click [Launch](#) to open the IoT platform web interface



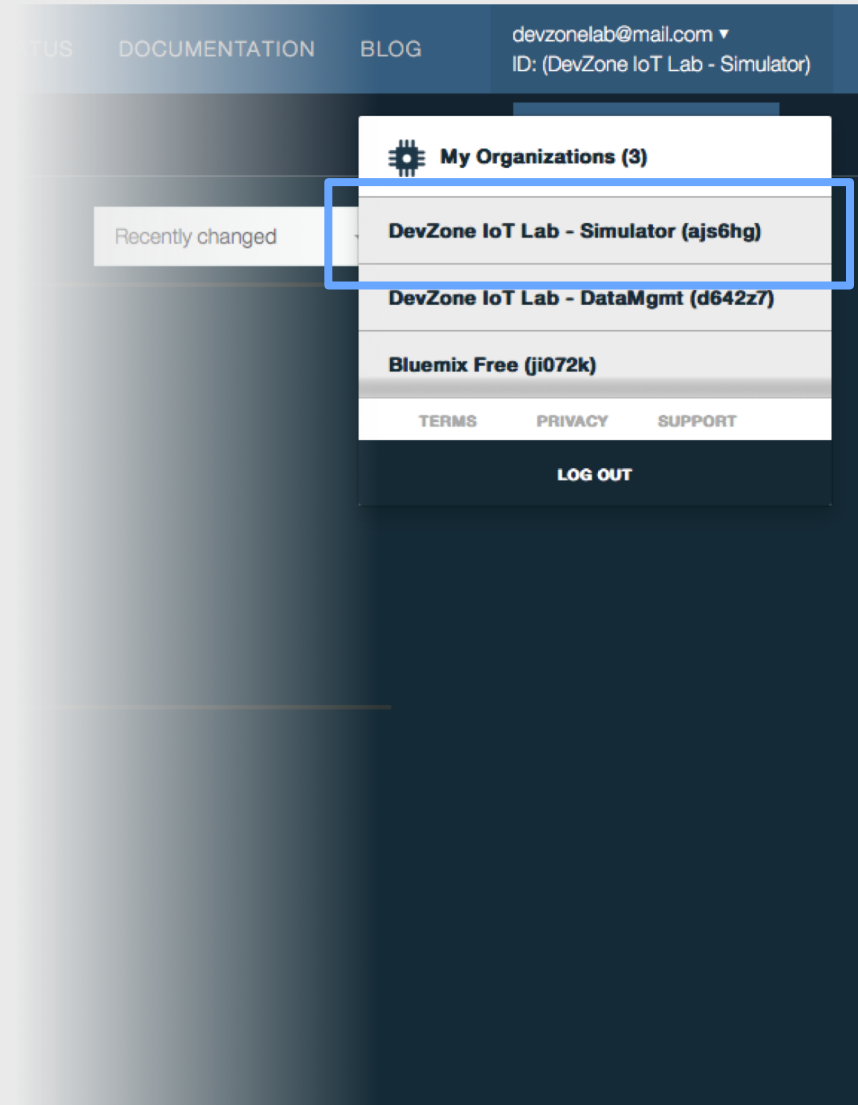
Locate the Internet of Things Platform Organization

The IoT Platform is loaded

The devzonelab user is configured for multiple Think DevZones labs

In this lab we will use the the IoT organization with id [ajs6hg](#)

From the menu, in the top right part of the screen, choose [DevZone IoT Lab – Simulator \(ajs6hg\)](#)



4 simple steps

We are now ready to start simulating devices

1

Turn on Simulation

Use Settings to activate
the Device Simulator

2

Create a Device Type

Create a new type
of devices to simulate

3

Configure a Message

Configure a JSON message to
be sent by simulated devices

4

Start Simulation

Ready-set-go!
Turn on simulation

4 simple steps > Turn on Simulation

Lets start the simulator

Turn on Simulation

1. Go to Settings

2. Scroll down to Experimental Features

3. Flip the switch to turn on the simulator

IBM Watson IoT Platform

BOARDS

DEVICES

MEMBERS

APPS

USAGE

RULES

SETTINGS

EXTENSIONS

IBM Watson IoT Platform

QUICKSTART

SERVICE STATUS

DOCUMENTATION

BLOG

devzonelab@mail.com

ID: (j072k)

PLATFORM

About

Identity

Experimental Features

Last Event Cache

DATA AND DEVICES

Custom Device

Management Packages

SECURITY

Connection Security

CA Certificates

Messaging Server

Certificates

Experimental Features

Experimental features let you test the latest and greatest Watson IoT Platform features in your local environment before they are available for general consumption. Be aware that experimental features might introduce unexpected behavior.

Activate Experimental Features

Current Features

The Weather Company visualization

Custom Cards

Advanced Security: Policies drill down reporting

Redesigned API keys, roles, and application bindings pages

Advanced Security: New Dashboard cards for overall policy compliance and violations

Activate Device Simulator

Last Event Cache

The last event cache (LEC) stores information about the last event a connected device sent to the platform. For more information, see the last event cache documentation

Activate Last Event Cache

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4 simple steps > Turn on Simulation

Turn on Simulation

A simulator tile is now shown at the bottom of the screen. This is the simulator window.

Before we use the simulator we need to create a device type of devices to simulate

IBM Watson IoT Platform

QUICKSTART SERVICE STATUS DOCUMENTATION BLOG devzonelab@mail.com ID: (j1072k)

PLATFORM

- About
- Identity**
 - Experimental Features
 - Last Event Cache

DATA AND DEVICES

- Custom Device
- Management Packages

SECURITY

- Connection Security
- CA Certificates
- Messaging Server
- Certificates

Experimental Features

Experimental features let you test the latest and greatest Watson IoT Platform features in your local environment before they are available for general consumption. Be aware that experimental features might introduce unexpected behavior.

Activate Experimental Features ☐

Current Features

- "The Weather Company" visualization
- Custom Cards
- Advanced Security: Policies drill down reporting
- Redesign API keys, roles, and application bindings pages
- Advanced Security: New Dashboard cards for overall policy compliance and violations

Activate Device Simulator ☒

Last Event Cache

The last event cache (LEC) stores information about the last event a connected device sent to the platform. For more information, see the last event cache [documentation](#).

Activate Last Event Cache ☐

0 Simulations running

4 simple steps > Create a Device Type

Lets create a new Device Type

Create a Device Type

1. Go to Devices
2. Choose the Device Type tab
3. Click button + Add Device Type

IBM Watson IoT Platform


QUICKSTART SERVICE STATUS DOCUMENTATION BLOG devzonelab@mail.com ID: (j1072k)

Browse Diagnose Action **Device Types** Manage Schemas

+ Add Device Type

Device Types

This table lists all device types that are defined. You can filter the list and search for the name and description. You can modify and configure existing device types and add new device types.

<input type="checkbox"/>	Name ↕	Description ↕	Number of Devices	
				
You don't have any device types created.				
Add Device Type				

0 Simulations running

4 simple steps > Create a Device Type

Create a Device Type

1. Enter a unique device type name

We recommend that you use YOUR name to make it unique, e.g. John-DeviceType

2. Click Next , and then click Done on the next page

IBM Watson IoT Platform

QUICKSTART SERVICE STATUS DOCUMENTATION BLOG devzonelab@mail.com ID: (j1072k)

Browse Diagnose Action **Device Types** Manage Schemas

Add Type Identity Device Information

Select Type

Device types group devices that have similar characteristics, such as model number, firmware version, or location. Give the device type a unique name and a description that identifies characteristics that are shared by devices of this type.

Type ☐ Device Or ☐ Gateway

Name

Description

Cancel Next

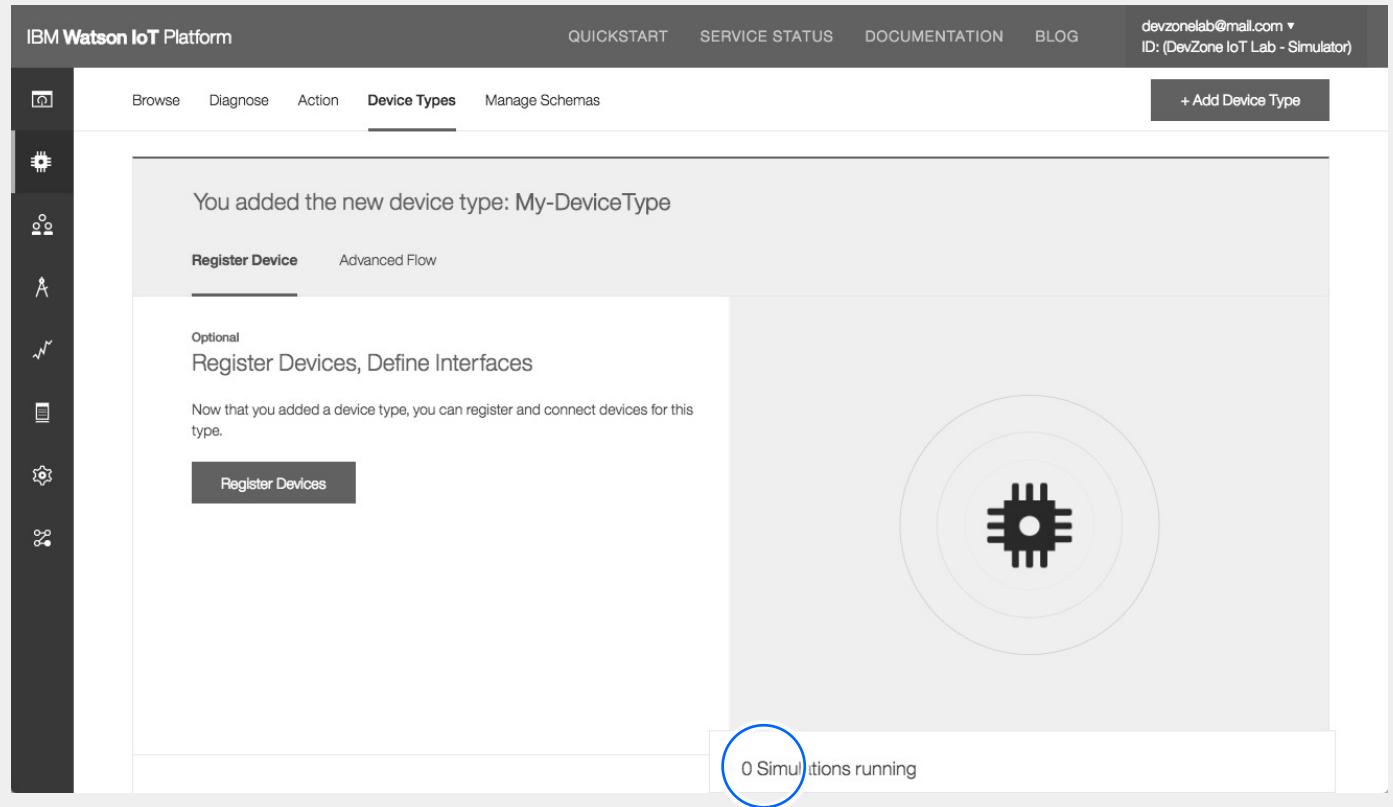
0 Simulations running

4 simple steps > Create a Device Type

Create a Device Type

You have now created
your first Device Type

Open the simulator
by clicking on the tile
'0 Simulations running'



4 simple steps > Create a Device Type

Create a Device Type

Click the button
'+ Add First Simulation'

The screenshot shows the IBM Watson IoT Platform interface. The top navigation bar includes links for QUICKSTART, SERVICE STATUS, DOCUMENTATION, and BLOG, along with a user profile dropdown for devzonelab@mail.com. The main navigation bar shows tabs for Browse, Diagnose, Action, Device Types (selected), and Manage Schemas. A '+ Add Device Type' button is visible in the top right. The 'Device Types' section displays a message: 'You added the new device type: My-DeviceType'. Below this, there are tabs for 'Register Device' (selected) and 'Advanced Flow'. The 'Register Device' tab shows an 'Optional' section titled 'Register Devices, Define Interfaces' with a 'Register Devices' button. A modal window titled 'Simulations' is open, showing an 'Import/Export' dropdown and a text description: 'Simulating devices and data in the Platform allows you to use the Platform as if you had Devices actually sending data. There is the option of simulating entire devices, or just simulating data for a device already registered in the Platform.' The '+ Add First Simulation' button in this modal is circled in blue. At the bottom of the modal, there are 'Cancel' and 'Next' buttons.

4 simple steps > Create a Device Type

Create a Device Type

Select YOUR device type
in the Device Type
drop-down list

Note: There may be many
device types in the list from
previous lab attendees

The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes links for QUICKSTART, SERVICE STATUS, DOCUMENTATION, and BLOG, along with a user profile for devzonalab@mail.com. The main navigation menu on the left includes icons for various platform functions. The 'Device Types' tab is active, showing a confirmation message: 'You added the new device type: My-DeviceType'. Below this, there is a 'Register Device' button and a section titled 'Optional Register Devices, Define Interfaces' with a 'Register Devices' button. A 'Simulations' modal is open, displaying a dropdown menu for selecting a device type. The option 'My-DeviceType' is selected and highlighted with a blue circle. The modal also contains text explaining the simulation feature and an 'Import/Export' link.

4 simple steps > Configure a Message

Lets configure a Device Message

Configure a Message

We are now ready to configure a JSON message to be sent by simulated devices

The simulator provides a sample payload message containing

- A random number
- X and Y coordinates

Click Save to confirm

IBM Watson IoT Platform

QUICKSTART SERVICE STATUS DOCUMENTATION BLOG devzonelab@mail.com ID: (j1072k)

Browse Diagnose Action **Device Types** Manage Schemas + Add Device Type

You added the new device type: My-DeviceType

Register Device Advanced Flow

Optional Register Devices, Define Interfaces

Now that you added a device type, you can register and connect devices for this type.

Register Devices

Device Type: My-DeviceType

Events 1 + Event Type

Event Type Name event_1 Send

Schedule

Payload

```
{
  "randomNumber": random(0, 100),
  "sampleObject": {
    "xcord": 32.514,
    "ycord": 151.521
  }
}
```

Cancel Save

4 simple steps > Start Simulation

Lets create a new simulated device and start simulation

Start Simulation

We are now ready to create a simulated device and start the simulator

1. Expand the Device Type section
2. Click on the button 1 x New Device

The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes 'QUICKSTART', 'SERVICE STATUS', 'DOCUMENTATION', 'BLOG', and a user profile 'devzonelab@mail.com' with ID '(j1072k)'. The main navigation menu on the left includes icons for 'Browse', 'Diagnose', 'Action', 'Device Types', and 'Manage Schemas'. The 'Device Types' section is active, showing a message 'You added the new device type: My-DeviceType' and a 'Register Device' button. A 'Simulations' panel is open on the right, showing '0/50 Simulations Running' and a '+ New Type' button. The 'Device Type' dropdown is expanded, showing 'My-DeviceType' with '1 Event Type'. Below this, there are buttons for '1 x New Device' and 'Use Registered Device'. The 'New Device' button is circled in blue. The bottom of the panel shows '0 event sent' and '0 bytes sent'.

4 simple steps > Start Simulation

Start Simulation

Note:

- A new device is added taking the name of the device type with _1 appended
- Simulation of the new device is activated
- Messages are being sent to the IoT platform

The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes 'QUICKSTART', 'SERVICE STATUS', 'DOCUMENTATION', 'BLOG', and a user profile 'devzonelab@mail.com' with ID '(j1072k)'. The main navigation menu on the left includes 'Browse', 'Diagnose', 'Action', 'Device Types', and 'Manage Schemas'. The 'Device Types' tab is active, showing a 'Register Device' flow with the message 'You added the new device type: My-DeviceType'. Below this, it says 'Optional Register Devices, Define Interfaces' and 'Now that you added a device type, you can register and connect devices for this type.' with a 'Register Devices' button. On the right, a 'Simulations' panel shows '1/50 Simulations Running' and a '+ New Type' button. Under 'Device Type', 'My-DeviceType' is expanded, showing '1 Event Type' and a list of devices. The first device is 'S My-DeviceType_1', which is circled in blue. Below it are buttons for '1 x New Device' and 'Use Registered Device'. At the bottom of the simulation panel, it shows '2 events sent' and '146 byte sent', with the latter circled in blue. A 'Cancel' button and a 'Next' button are visible at the bottom right.

4 simple steps > Start Simulation

Start Simulation

To view device data in the IoT platform

1. Go to Devices
2. Choose the Browse tab
3. Select YOUR simulated device in the list

The screenshot displays the IBM Watson IoT Platform interface. On the left, a dark sidebar contains a menu with options: BOARDS, DEVICES (highlighted with a blue circle), MEMBERS, APPS, USAGE, RULES, SECURITY, SETTINGS, and EXTENSIONS. The main content area shows the 'Browse Devices' page. At the top of this page, there are tabs: 'Browse' (highlighted with a blue circle), 'Diagnose', 'Action', 'Device Types', and 'Manage Schemas'. Below the tabs, a table lists devices. The first row is 'My-DeviceType_1', which is highlighted with a blue circle. Other rows include 'My-DeviceType_10', 'My-DeviceType_11', 'My-DeviceType_2_2', 'My-DeviceType_3', 'My-DeviceType_4', and 'My-DeviceType_5'. At the bottom right of the table, it says '0 Simulations running'.

IBM Watson IoT Platform

QUICKSTART SERVICE STATUS DOCUMENTATION BLOG devzonelab@mail.com ID: (j072k)

Browse Diagnose Action Device Types Manage Schemas + Add Device

Browse Devices

This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.

<input type="checkbox"/>	Device ID	Device Type
11 results		
<input type="checkbox"/>	My-DeviceType_1	My-DeviceType
<input checked="" type="checkbox"/>	My-DeviceType_10	My-DeviceType
<input type="checkbox"/>	My-DeviceType_11	My-DeviceType
<input checked="" type="checkbox"/>	My-DeviceType_2_2	My-DeviceType
<input type="checkbox"/>	My-DeviceType_3	My-DeviceType
<input checked="" type="checkbox"/>	My-DeviceType_4	My-DeviceType
<input type="checkbox"/>	My-DeviceType_5	

0 Simulations running

4 simple steps > Start Simulation

Start Simulation

To view device data in the IoT platform

To view the messages received by the device

1. Click on the simulated device in the list to open the device details
2. Choose the Recent Events tab
3. View the events received

The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes links for QUICKSTART, SERVICE STATUS, DOCUMENTATION, and BLOG, along with a user profile for devzone1ab@mail.com. The main navigation menu on the left includes options like Browse, Diagnose, Action, Device Types, and Manage Schemas. The 'Browse' tab is active, showing a list of devices. A device named 'My-DeviceType_1' is selected, and its details are shown. The 'Recent Events' tab is active, displaying a table of events. The table has columns for Event, Value, Format, and Last Received. The events are listed as 'event_1' with various JSON values and a format of 'json', all received 'a few seconds ago'. A status bar at the bottom indicates '11 Simulations running'.

IBM Watson IoT Platform

QUICKSTART SERVICE STATUS DOCUMENTATION BLOG devzone1ab@mail.com ID: (j072k)

Browse Diagnose Action Device Types Manage Schemas + Add Device

Device ID Device Type Class ID Date Added

11 results

My-DeviceType_1 My-DeviceType Device 23 Feb 2018 10:28

Identity Device Information Recent Events State Logs

Showing Raw Data | The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
event_1	{"randomNumber":62,"sampleObject":{"x...	json	a few seconds ago
event_1	{"randomNumber":56,"sampleObject":{"x...	json	a few seconds ago
event_1	{"randomNumber":21,"sampleObject":{"xc...	json	a few seconds ago
event_1	{"randomNumber":19,"sampleObject":{"x...	json	a few seconds ago

11 Simulations running

4 simple steps > Start Simulation

Start Simulation

To view device data in the IoT platform

In the list of events

1. Click on one of the events
2. View the event payload details

The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes links for QUICKSTART, SERVICE STATUS, DOCUMENTATION, and BLOG, along with a user profile for devzone1ab@mail.com. The main content area is divided into sections for Browse, Diagnose, Action, Device Types, and Manage Schemas. A modal window titled 'Event Payload' is open, showing details for an event named 'event_1' received on 23 Feb 2018 at 11:59. The event payload is a JSON object:

```
{  "randomNumber": 56,  "sampleObject": {    "xcord": 32.514,    "ycord": 151.521  }}
```

. The background interface shows a list of events for 'My-DeviceType_1', with 'event_1' selected and circled. A status bar at the bottom indicates '11 Simulations running'.

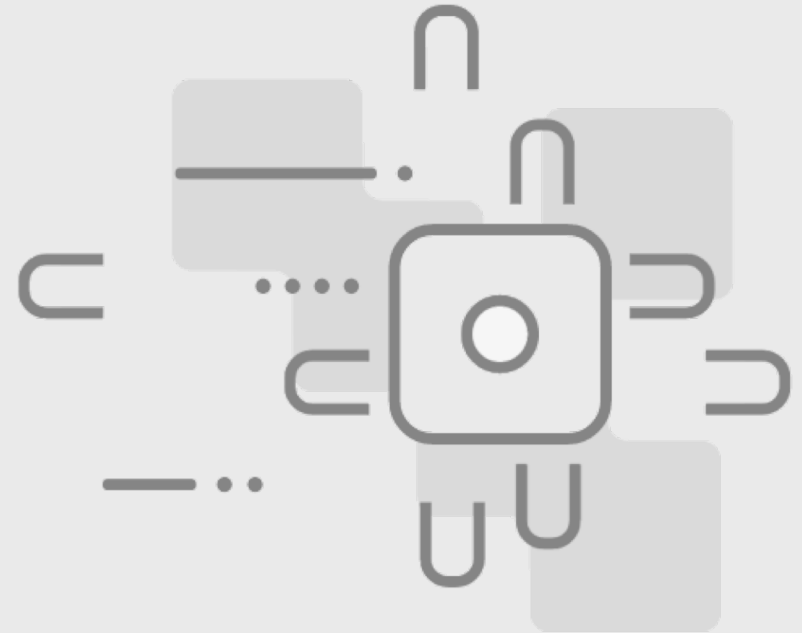
Simulating Devices in Watson IoT Platform

You have now completed this lab

In this lab you have explored how to quickly get started with the IoT Platform by using simulated devices

You have

- Enabled the simulator
- Created a device type
- Configured a message
- Creates a simulated device
- Viewed simulated data received by the IoT Platform



Stop Simulation

Stop Simulation

After completing the lab we ask that you

1. Return to the simulator and turn off simulation
2. Close your browser window
3. Log out of IBM Cloud

The screenshot shows the IBM Watson IoT Platform interface. The main page is titled 'Browse Devices' and contains a table of devices. A modal window titled 'Simulations' is open, showing a list of 11 devices with their simulation status. The '11 Devices' list includes 'My-DeviceType_1' through 'My-DeviceType_11'. The 'My-DeviceType_11' device is highlighted, and its simulation status is shown as 'Off' (indicated by a red circle around the toggle switch). The modal also shows '187 events sent' and '13.63 KB sent'.

IBM Watson IoT Platform

QUICKSTART SERVICE STATUS DOCUMENTATION BLOG devzone1ab@mail.com ID: (j072k)

Browse Diagnose Action Device Types Manage Schemas + Add Device

Browse Devices

This table shows a summary of all devices that have been added. It can be filtered, organized by different criteria. To get started, you can add devices by using the Add Device button, or by using the Import/Export button.

	Device ID	Device Type	Class
	My-DeviceType_1	My-DeviceType	Device
	My-DeviceType_10	My-DeviceType	Device
	My-DeviceType_11	My-DeviceType	Device
	My-DeviceType_2	My-DeviceType	Device
	My-DeviceType_3	My-DeviceType	Device
	My-DeviceType_4	My-DeviceType	Device
	My-DeviceType_5	My-DeviceType	Device

Simulations

0/50 Simulations Running + New Type

Device Type My-DeviceType 1 Event Type

11 Devices

- S My-DeviceType_11
- S My-DeviceType_2
- S My-DeviceType_3
- S My-DeviceType_4
- S My-DeviceType_5
- S My-DeviceType_6
- S My-DeviceType_7

187 events sent 13.63 KB sent

23 Feb 2018 11:56

Simulating Devices in Watson IoT Platform

Learn more about the IoT Platform

- Create your own free IBM Cloud account and explore IoT
- www.ibm.com/iot
- developer.ibm.com/iotplatform/

