

Using Rules and Actions with IBM Watson IoT Platform Cloud Analytics

Overview

Skill Level: Beginner

With IBM Watson IoT Platform you can set up rules and actions that trigger from your IoT device data. The following recipe uses a simulated device to set cloud analytics rules and actions for three metrics: temperature, humidity and object temperature.

Ingredients

To follow this recipe you will require:

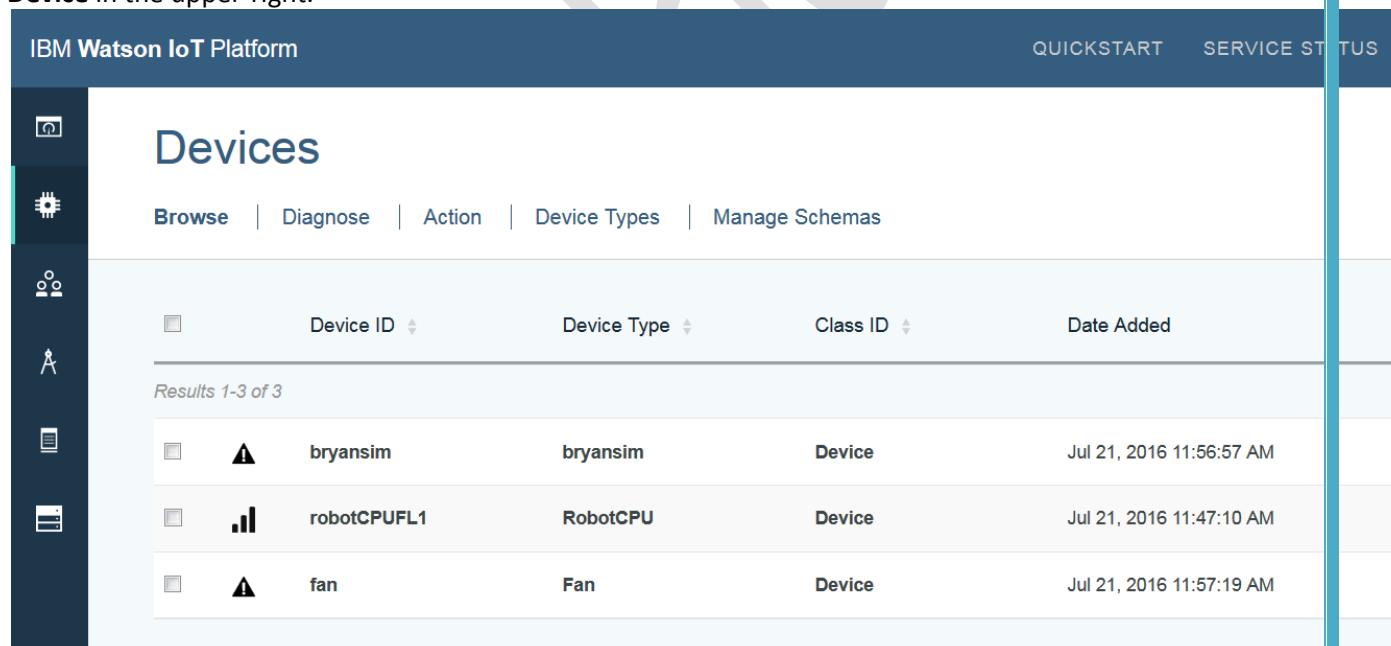
- An instance of Watson IoT Platform running in Bluemix.

Step-by-step

1. *Registering the iotsensor with Watson IoT Platform*

Before you can receive events and datapoints from the sensor, you must register it with Watson IoT Platform by following these steps. This step is only required the first time that you follow this recipe.

1. In your Watson IoT Platform dashboard, select **Devices** from the menu pane, then click **Add Device** in the upper-right.



IBM Watson IoT Platform

QUICKSTART SERVICE STATUS

Devices

Browse | Diagnose | Action | Device Types | Manage Schemas

	Device ID	Device Type	Class ID	Date Added
Results 1-3 of 3				
	bryansim	bryansim	Device	Jul 21, 2016 11:56:57 AM
	robotCPUFL1	RobotCPU	Device	Jul 21, 2016 11:47:10 AM
	fan	Fan	Device	Jul 21, 2016 11:57:19 AM

2. Click **Create device type**. Creating a device type will make it easier to find and identify the iotsensor device after connecting it.

3. Enter **iotsensor_device** as the device type name then click **Next** and then click **Create**.

Create Device Type

General Information ⓘ

Name iotsensor_device

The device type name is used to identify the device type uniquely, using a restricted set of characters to make it suitable for API use.

Description IoT sensors.

The device type description can be used for a more descriptive way of identifying the device type.

Back Next

4. Click **Next**.
5. Enter **iotsensor** as the device ID.
6. Click **Next**.
7. Provide an authentication token, or accept an automatically generated token. Providing a memorable authentication token may be useful for recalling it later, for example “MyDevice”.
8. Verify that the summary information shown is correct and then click **Add**.
9. In the device information page, copy and save the following device information
 - Organization ID
 - Device Type
 - Device ID
 - Authentication method
 - Authentication token

Device iotsensor

Device

Refresh

Your Device Credentials



You have registered your device to the organization. To get it connected, you need to add these credentials to your device. Once you've added these, you should see the messages sent from your device in the 'Sensor Information' section on this page.

Organization ID	[REDACTED]
Device Type	iotsensor_device
Device ID	iotsensor
Authentication Method	token
Authentication Token	[REDACTED]

Authentication tokens are non-recoverable. If you misplace this token, you will need to re-register the device to generate a new authentication token.

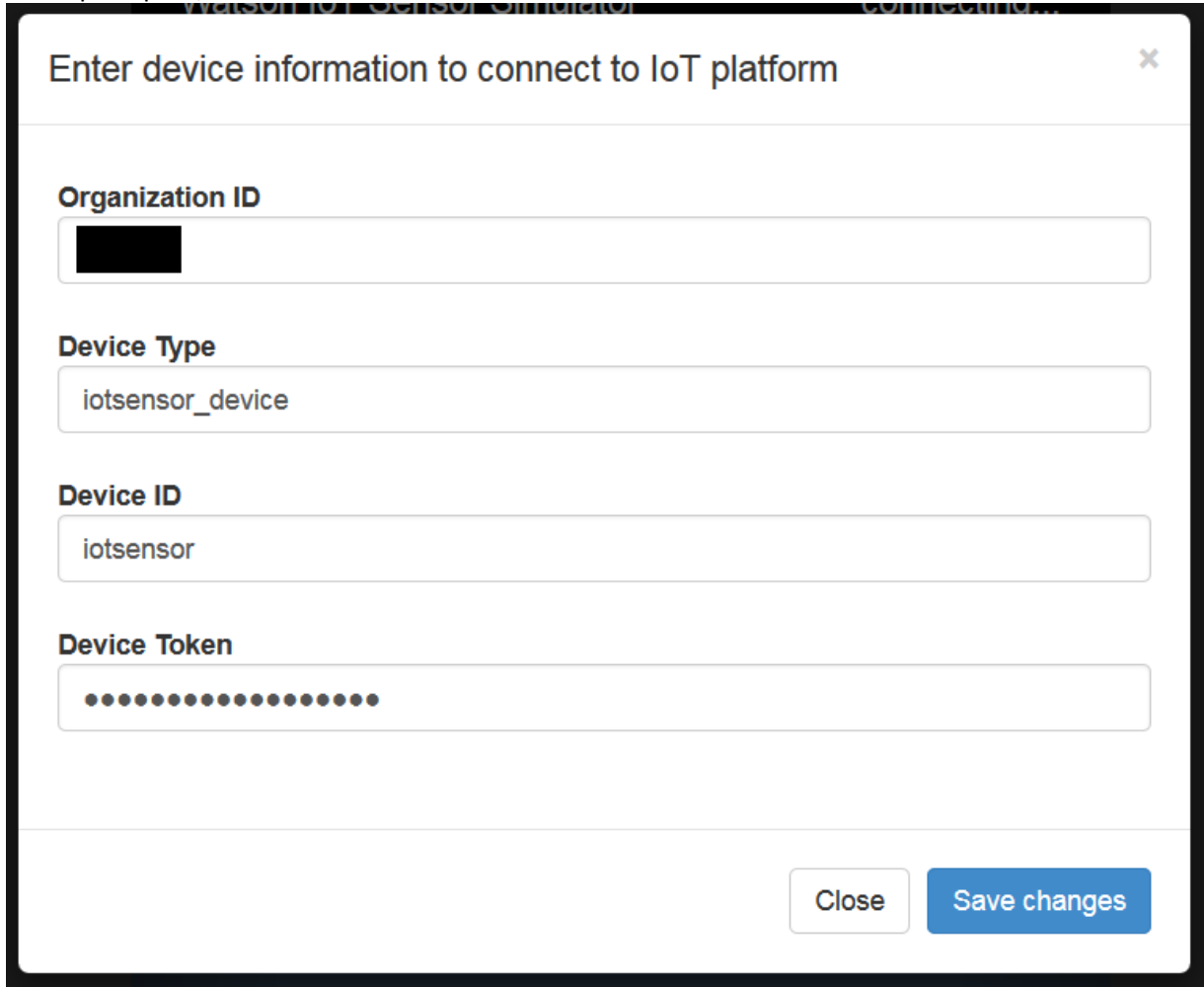
[Find out how to add these credentials to your device ↗](#)

2. Connect the iotsensor to the Watson IoT Platform

This step connects the iotsensor to the registered device in your Watson IoT Platform organization.

1. Go to: <http://watson-iot-sensor-simulator.mybluemix.net/>

- When prompted, enter the device information to connect to Watson IoT Platform.



The screenshot shows a modal dialog box titled "Enter device information to connect to IoT platform" with a close button (X) in the top right corner. The dialog contains four input fields, each with a label above it: "Organization ID" (with a blacked-out value), "Device Type" (with the value "iotsensor_device"), "Device ID" (with the value "iotsensor"), and "Device Token" (with a masked value represented by dots). At the bottom right of the dialog are two buttons: "Close" and "Save changes".

- Verify that the connecting message changes to the name of your device, i.e. iotsensor. The device is now connected to Watson IoT Platform.

4. In the Device browse dashboard, click your device and verify that data is being received.

Device iotsensor

Device Refresh

Connection Information ⓘ

Device ID	iotsensor
Device Type	iotsensor_device
Date Added	Friday, July 22, 2016
Added By	[REDACTED]
Connection State	Connected on Friday, July 22, 2016 at 11:31:56 AM from [REDACTED] with a secure connection Refresh

Recent Events ⓘ

Event	Format	Time Received
iotsensor	json	Jul 22, 2016 11:35:06 AM
iotsensor	json	Jul 22, 2016 11:35:08 AM
iotsensor	json	Jul 22, 2016 11:35:10 AM
iotsensor	json	Jul 22, 2016 11:35:12 AM
iotsensor	json	Jul 22, 2016 11:35:14 AM
iotsensor	json	Jul 22, 2016 11:35:16 AM
iotsensor	json	Jul 22, 2016 11:35:18 AM
iotsensor	json	Jul 22, 2016 11:35:20 AM
iotsensor	json	Jul 22, 2016 11:35:22 AM
iotsensor	json	Jul 22, 2016 11:35:24 AM

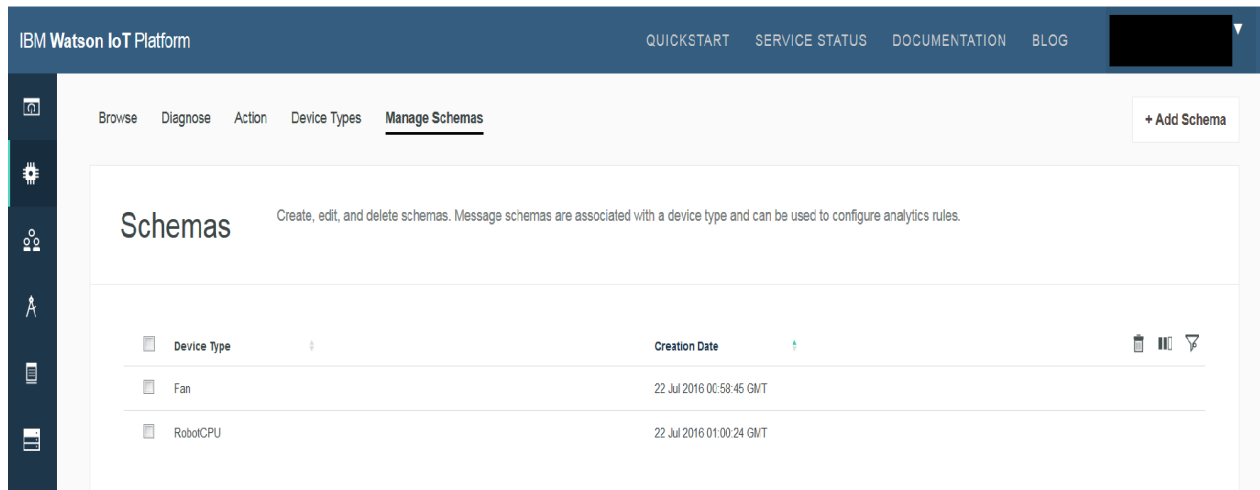
3. *Optional step: Create a board and some cards*

At this point, you can create a board and some cards from your Watson IoT Platform dashboard. Boards and cards can be used to keep track of device data, for example the temperature, humidity and object temperature data being sent by the iotsensor. To set up a new board follow these steps.

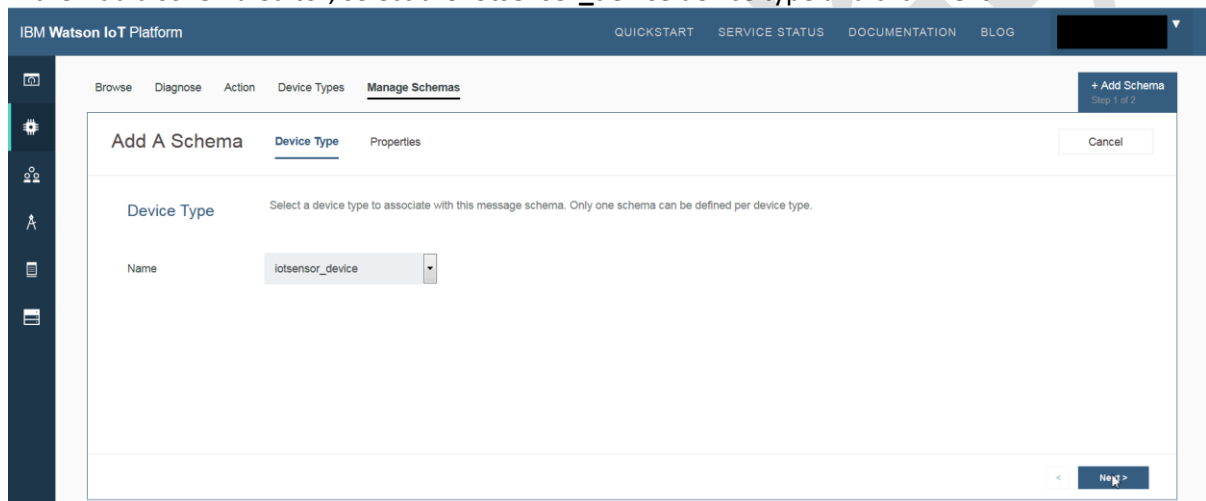
1. In your Watson IoT Platform dashboard click **Create New Board** in the upper right.
2. Give the board a name and description.
3. Click **Next** then **Create**.
4. Click on the board you have just created.
5. Click **Add New Card** in the upper right.
6. Select the style of visualization, and select the iotsensor as the data source.
4. *Create an iotsensor_device Schema*

To be able to create rules that are triggered based on the datapoints from your device properties, you must first map these properties in a device type schema.

1. In the Watson IoT Platform dashboard, select **Devices** from the menu pane, then select **Manage Schemas**.



2. Click **Add Schema**.
3. In the **Add a schema** editor, select the **iotsensor_device** device type and click **Next**.



4. Click **Add property**.

5. Selected the **From Connected** tab.

Manual Virtual Property From Connected X

Add multiple properties from connected devices

Select one or more properties to add to the schema. These properties can later be edited to set attributes, such as name and data unit.

Important: Each property must be unique for a schema.

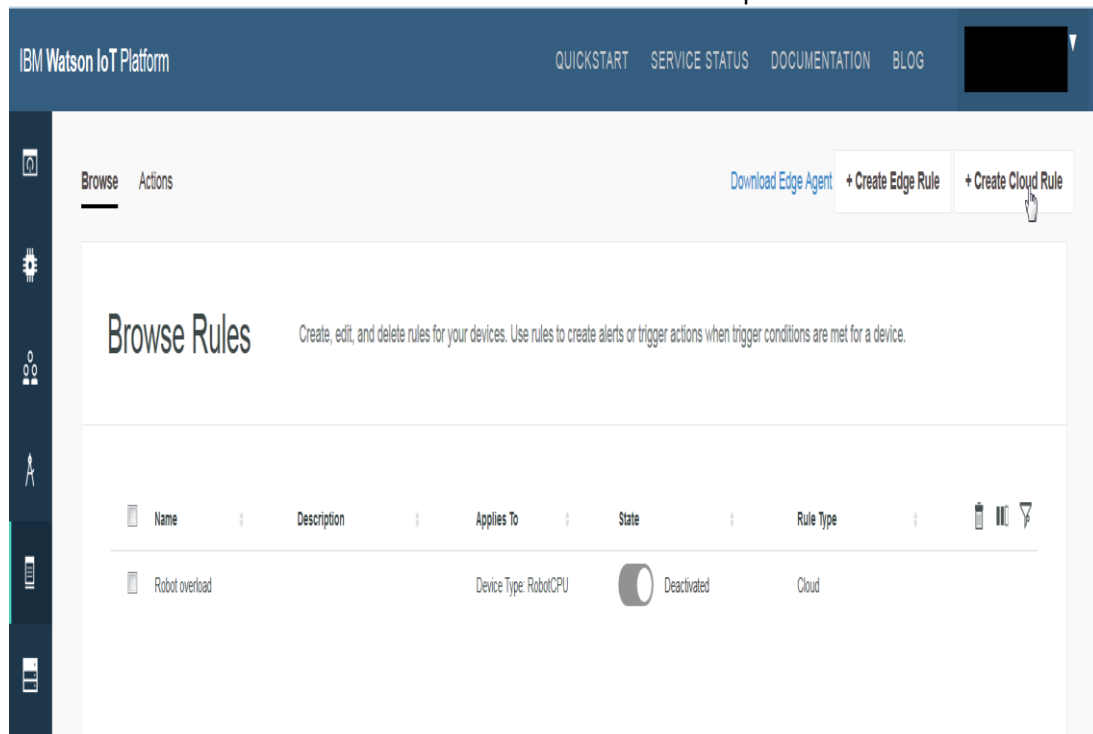
<input checked="" type="checkbox"/> Property	Type
<input checked="" type="checkbox"/> d.name	string
<input checked="" type="checkbox"/> d.temperature	float
<input checked="" type="checkbox"/> d.humidity	float
<input checked="" type="checkbox"/> d.objectTemp	float

Cancel OK

6. Select the following properties:
- name
 - temperature
 - humidity
 - objectTemp
7. Click **OK** to save the schema.
5. *Create iotsensor rules and actions*

This step creates the rules and actions which will trigger based on data from the iotsensor.

1. In the Watson IoT Platform dashboard select **Rules** from the menu pane then click **Create Cloud**



Rule.

2. Click **Create A Rule**.
3. Name the rule **Temp too high**.
4. Select the **iotsensor_device** device type and then click **Next**.

Add New Cloud Rule

* **Name:** Temp too high

Description: The temperature exceeds 21 C.

* **Applies to:** iotsensor_device

Cancel Next

5. In the rule builder, click **New Condition** rule block to edit it.

6. Select the temperature property and enter **21** as the static value to compare to.

Temp too high

The temperature exceeds 21 C.

IF: Add one or more conditions. ⚙ Triggers

OR

+

temperature > 21

Set The Condition

* Property: temperature x

Operator: > >= < <= == !=

Compare with: ☒ Static value ☐ Property

* Value: 21

Cancel OK

7. Click **OK** to save the condition.
8. Click the **New Action** block.

9. In the **Set The Action** dialog, click **Add action**.

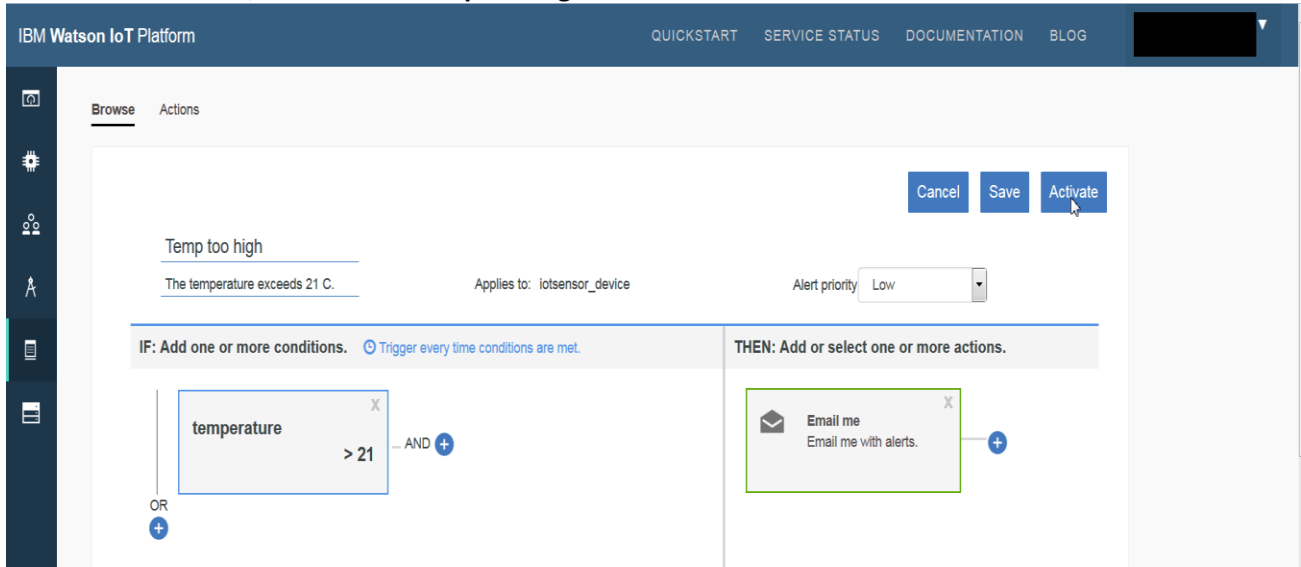
The screenshot shows a 'Create Action Dialog' window with a close button (X) in the top right corner. The dialog is divided into two main sections. On the left, there is a sidebar with two steps: '1 Action Type' (highlighted) and '2 Configure'. The main area on the right contains the following fields:

- A header text: 'Select the type of action that you want to create.'
- A 'Name' field with the value 'Email me'.
- A 'Description' field with the value 'Email me with alerts.'
- A 'Type' field with a dropdown menu showing 'Send email'.

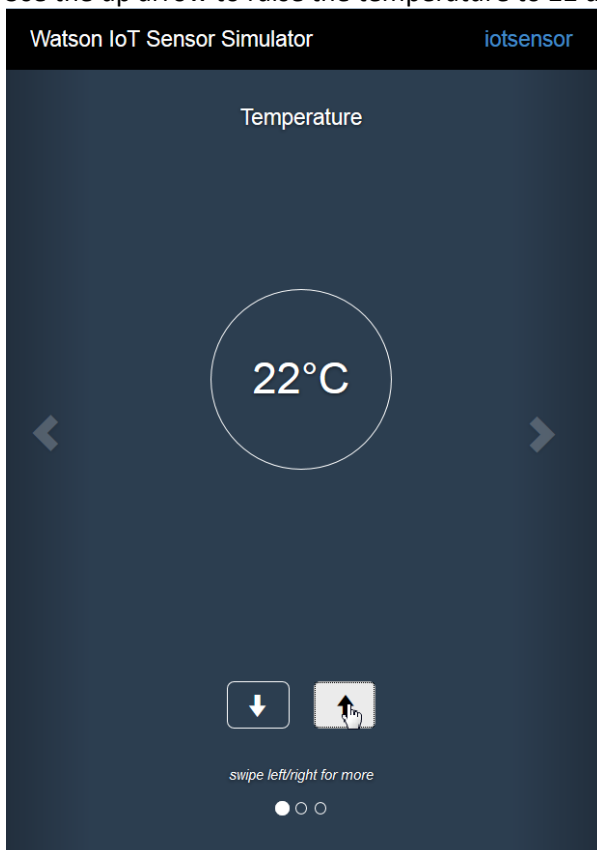
At the bottom right of the dialog, there are two buttons: a back button with a left arrow (<) and a 'Next >' button.

10. Add the email action and click **OK**.
6. *Activate the rule and send some data to test the rule*

1. In the **Rules** browser, activate the **Temp too high** rule.



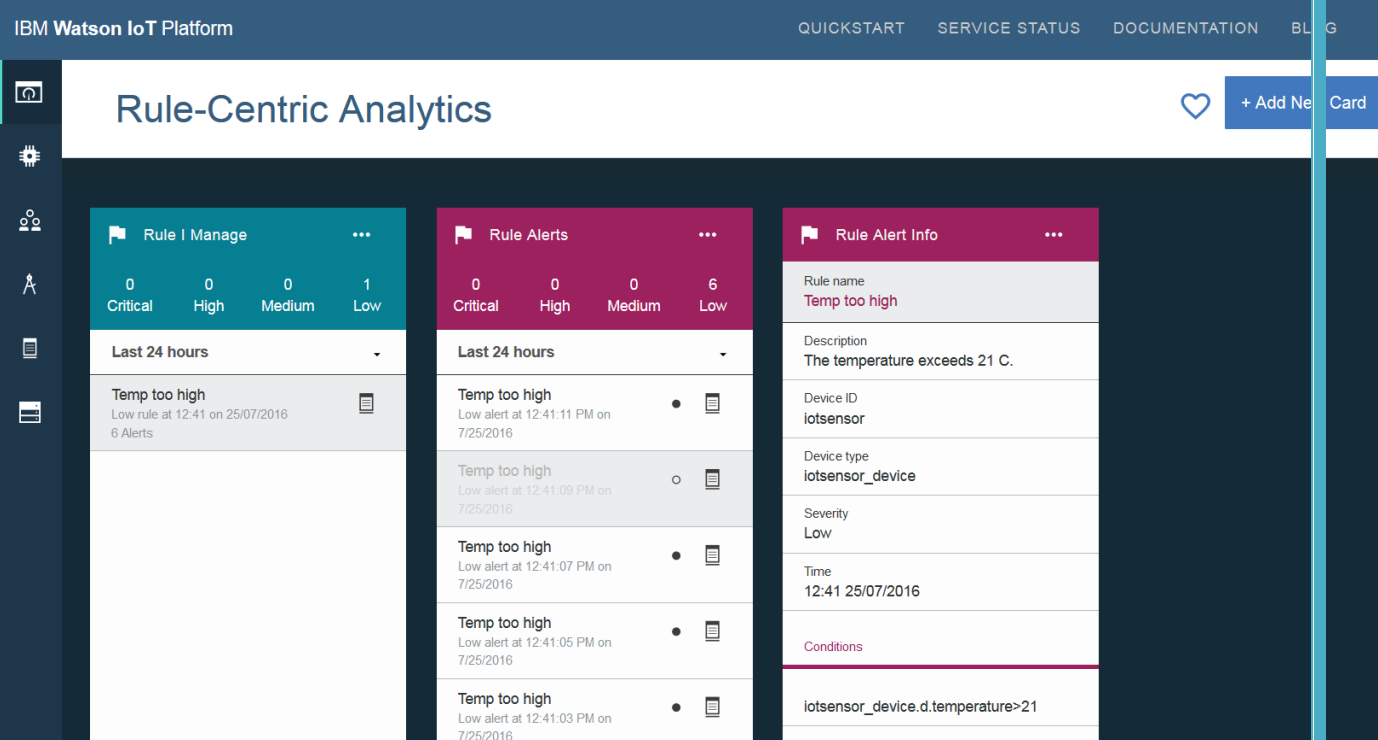
2. Open the iotsensor at <http://watson-iot-sensor-simulator.mybluemix.net/> Note: If you are starting a new session, you must reconnect by using the same credentials as in step 2.
3. Use the up arrow to raise the temperature to 22 degrees.



7. View the dashboard alert and the email alert

1. In the Watson IoT Platform dashboard select **Boards** from the menu pane, then select the **Rule-centric Analytics** card to open it.

- The rule is now included in the **Rules I Manage** card and alerts from this rule will appear in the **Rule Alerts** card.



IBM Watson IoT Platform

QUICKSTART SERVICE STATUS DOCUMENTATION BLOG

Rule-Centric Analytics

+ Add New Card

Rule I Manage

0	0	0	1
Critical	High	Medium	Low
Last 24 hours			
Temp too high			
Low rule at 12:41 on 25/07/2016			
6 Alerts			

Rule Alerts

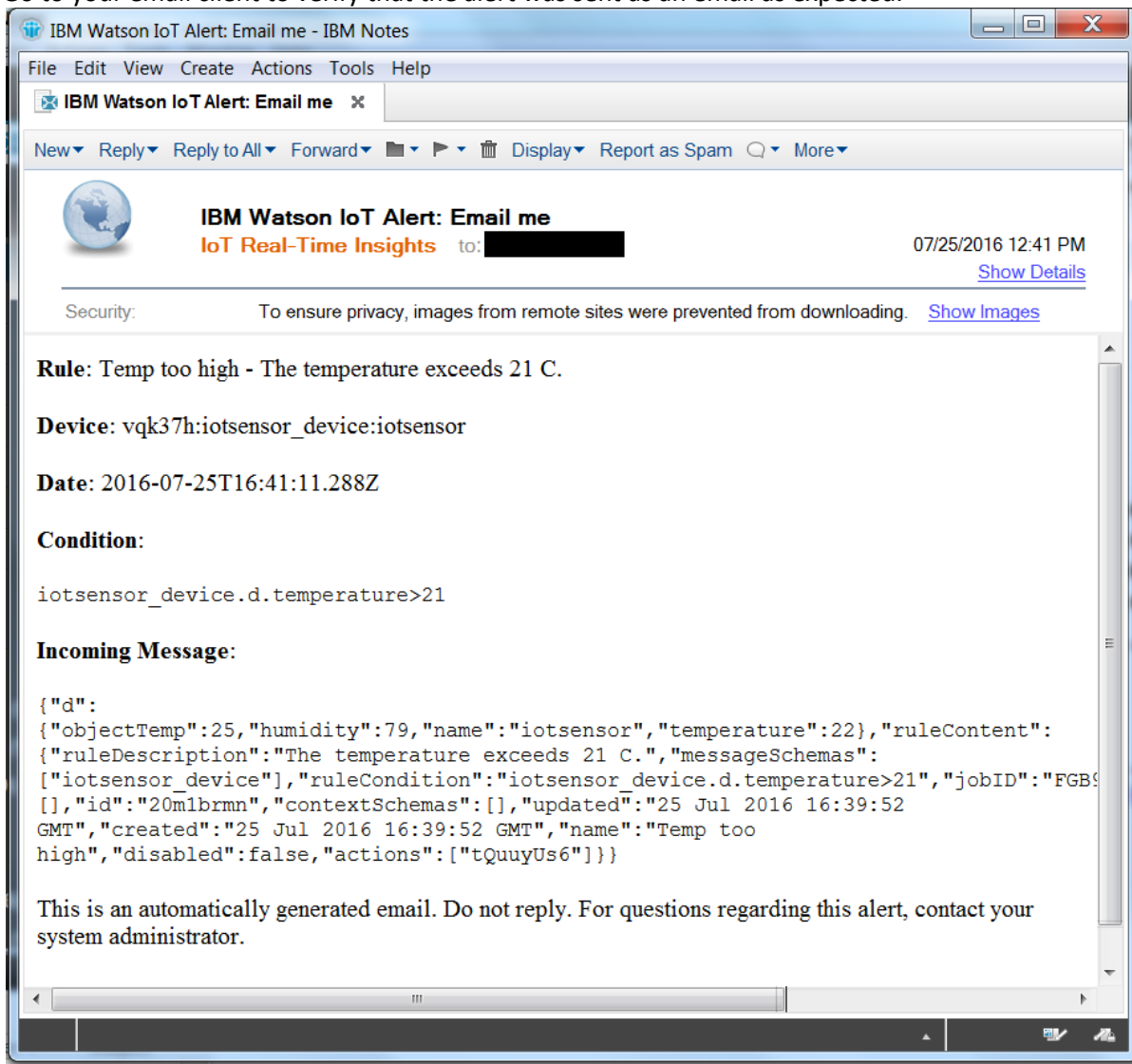
0	0	0	6
Critical	High	Medium	Low
Last 24 hours			
Temp too high			
Low alert at 12:41:11 PM on 7/25/2016			
Temp too high			
Low alert at 12:41:09 PM on 7/25/2016			
Temp too high			
Low alert at 12:41:07 PM on 7/25/2016			
Temp too high			
Low alert at 12:41:05 PM on 7/25/2016			
Temp too high			
Low alert at 12:41:03 PM on 7/25/2016			

Rule Alert Info

Rule name	Temp too high
Description	The temperature exceeds 21 C.
Device ID	iotsensor
Device type	iotsensor_device
Severity	Low
Time	12:41 25/07/2016
Conditions	iotsensor_device.d.temperature>21

- Select an alert instance to see the alert details, the triggering condition, the property datapoints at the time the rule was triggered, and the action that was taken.

4. Go to your email client to verify that the alert was sent as an email as expected.



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1. [Internet of Things & Other Hot Technology Academic Guides and Resources – Global Academic and Industry Collaboration Zone](#) [March 31, 2017](#)
[...] Rules and Actions exercise will teach you set up rules and actions using real-time insights based on trigger [...]
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