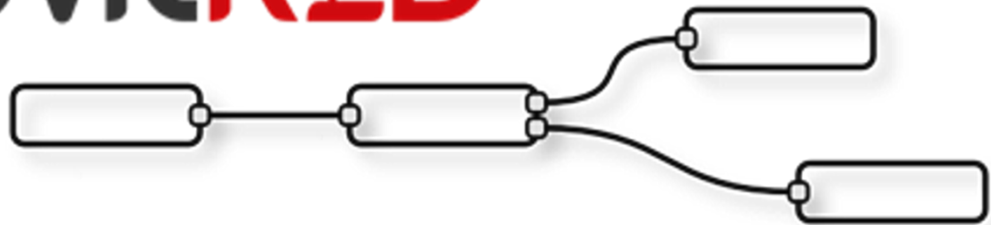


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LuvitRED



EXOSITE

Connecting to Exosite using LuvitRED

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1 Introduction

This document explains how to send and receive data to and from Exosite using LuvitRED.

This document was written using CloudGate firmware version 2.59.0 and LuvitRED version 2.7.5. Although older versions of firmware and LuvitRED might work in the same way, we strongly recommend to upgrade to the above mentioned versions or newer in order to ensure the same results.

For this explanation we are using a free account on the Exosite platform (<https://portals.exosite.com>).

2 Configuring the Exosite platform.

2.1 Creating a new generic device

1. Start by logging into your Exosite account.
2. On the left hand side click on Devices:

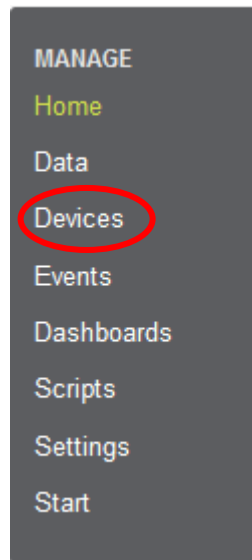


Figure 1: Exosite: Devices.

3. Click on + Add Device:

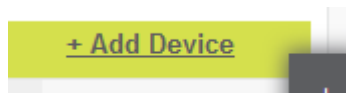


Figure 2: Exosite: Add Device.

4. Select the option to create a generic device then click on Continue:

A dialog box titled "Device Setup" with a yellow header bar. It has four tabs: STEP, SETUP TYPE, DEVICE SETUP, and CONFIRM. The "SETUP TYPE" tab is active. On the left, there is a text area with the question "How do I know which device type to choose?" and a note about choosing a generic device type. On the right, there are three radio button options: "Select a supported device below." (with a dropdown menu showing "Arduino plus Internet Shield Compatible Device"), "I want to create a generic device." (which is selected), and "I want to add an unlisted device." At the bottom are "QUIT" and "CONTINUE" buttons.

Figure 3: Exosite: New generic device.

- Select the Timezone and write the device location then click on Continue:

Device Setup

STEP: SETUP TYPE **DEVICE SETUP** CONFIRM

What is the "Device Type"?

Exosite's platform is able to talk to many types of devices. The device type tells the platform what protocol to use to communicate with your device.

What if my "Device Type" isn't shown?

It may be that your device uses the same communications protocol as one of the listed device's. If not, please contact us about adding support for your device type!

Why do I need to enter the device's location?

The device location is used by the platform to label data from the device when location is a pertinent variable - for example, on a map.

Device Type: generic

Device Timezone: (GMT-05:00) Central Time US & Canada

Device Location: Office

Assigns a geographic location to your device. Use decimal degrees for a GPS location (eg. 44.979205, -93.291628).

Device Specific Limits (optional)

Inherit Custom

Data Sources: ☒ ☐ (available: 100)

Events: ☒ ☐ (available: 100)

Daily Emails: ☒ ☐

Daily SMS: ☒ ☐

QUIT CONTINUE

Figure 4: Exosite: Device setup 1.

- Finally, set the device name and click on Submit:

Device Setup

STEP: SETUP TYPE DEVICE SETUP **CONFIRM**

How should I name my device?

Each device in your Exosite Portals account should have a unique name.

Device names can only use letters (upper or lower case), numbers, spaces and underscores.

New Device Name: CloudGate

QUIT SUBMIT

Device Type : generic

Device Timezone : America/Chicago

Device Location : Office

Limitation of Data Sources: Inherit

Limitation of Events: Inherit

Limitation of Daily Emails: Inherit

Limitation of Daily SMS: Inherit

Figure 5: Exosite: Device setup 2.

- A new device is created:

Devices				
Name	Alias	Type	Unique ID	Location
CloudGate		generic		Office

Figure 6: Exosite: Device created.

- Click on the newly created device and take note of the CIK number created:

Device Information

Device Update

Name: CloudGate

Alias: ?

Type: generic

Timezone: (GMT-05:00) Central Time US & Can

Location: ? Office

Storage: 0 B

Active Time: ? 5 minutes

ID:

CIK: ? d944d94b04514d159ddb9f72c84e317e4b902a1a

Figure 7: Exosite: Device's CIK number.

2.2 Creating data items.

- Click on the new device created on section 2.1
- Once inside the device's configuration click on + Add Data:

Device Information

Device Update

Name: CloudGate

Data List

+ Add Data

Name	Alias	Last Value
------	-------	------------

Figure 8: Exosite: Add Data.

- Provide a Source Name, Source Format (integer), Unit (if needed) and Alias (very important) to the new data item and click on Submit:

Data Setup

STEP: ORIGIN CONFIGURATION CONFIRM

What are Data Source Formats?
Some devices report different types of data. For example, string data vs. integer data. The Data Source Format field allows you to specify what type of data is being reported.

How can I tell what to use for "Alias"?
Every device data stream is reported by the unique

Data Source Name: Random1

Data Source Format: integer

Unit:

Alias: ? rand1

Data Source Calculation: NA using

QUIT SUBMIT

Figure 9: Exosite: Data setup.

OPTION

4. Create two more data items, one called Random2 (Format: float, Alias: rand2) and Command (Format: integer, Alias: command) by following the previous 2 steps.
5. The final result should be a list of three data items on our device:

Device Information

Device Update

Name: CloudGate

Alias:

Type: generic

Data List

+ Add Data

Name	Alias	Last Value
Command	command	none
Random1	rand1	none
Random2	rand2	none

Figure 10: Exosite: Device's data items.

3 LuvitRED configuration.

Go to the web interface of the CloudGate and then to the "Plugin" tab and sub-tab called "LuvitRED"

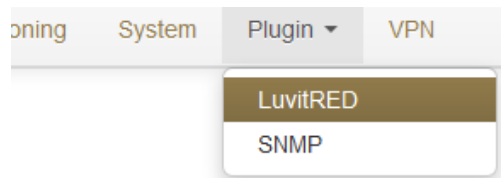


Figure 11: Plugin tab, LuvitRED.

NOTE: Do not focus on the SNMP (Simple Network Management Protocol) sub-tab. This tab is not going to be used on this document.

Under the "Advanced Editor" of LuvitRED, there are two nodes that are related to Exosite (See Figure 12):

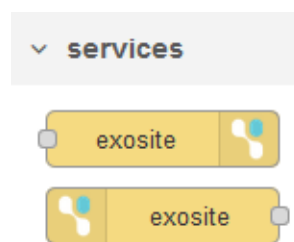


Figure 12: Exosite nodes.

3.1 Sending data to the Exosite platform.

1. Drag and drop an exosite out node:

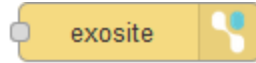


Figure 13: Exosite out node.

2. Configure the exosite out node in the following way:

A dialog box titled "Edit exosite out node". It contains several fields: "Device" with a dropdown menu showing "Add new exosite cik..." and a pencil icon; "Property" with a checked checkbox and a text field containing "msg.payload"; "Alias" with an empty text field; "Enable queueing when no connection ?" with an unchecked checkbox; and "Name" with a text field containing "Name". At the bottom right are "Ok" and "Cancel" buttons.

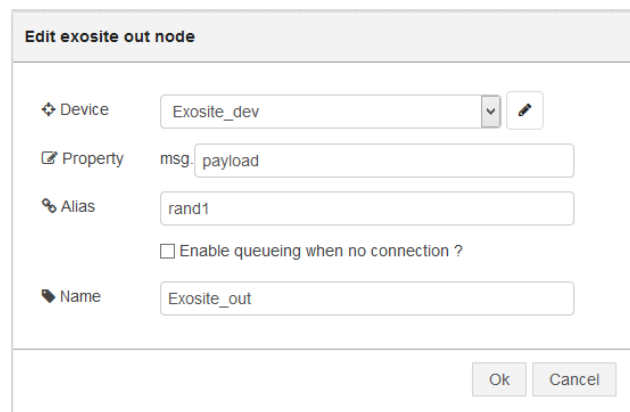
Figure 14: Default Exosite out node.

- a. Add a **new** Device by clicking on the pencil icon and configure it for the CIK noted on the previous section, make sure the "Use https ?" checkbox is selected and the "Name" is changed. Click on "Add":

A dialog box titled "Edit exosite cik config node". It contains several fields: "Provision" with a dropdown menu showing "Manual entry of CIK"; "CIK" with a text field containing a long alphanumeric string; "Use https ?" with a checked checkbox; "Clear CIKs" with a text field containing "type clear here and push trash" and a trash icon; and "Name" with a text field containing "Exosite_dev". At the bottom left is a yellow box saying "1 node uses this config". At the bottom right are "Delete", "Update", and "Cancel" buttons.

Figure 15: Adding Device's CIK.

- b. On the node configuration write the Alias of the first data item we created for the device (rand1) and change the name of the node. Click on "OK" when finished:



Edit exosite out node

Device: Exosite_dev

Property: msg.payload

Alias: rand1

☐ Enable queueing when no connection ?

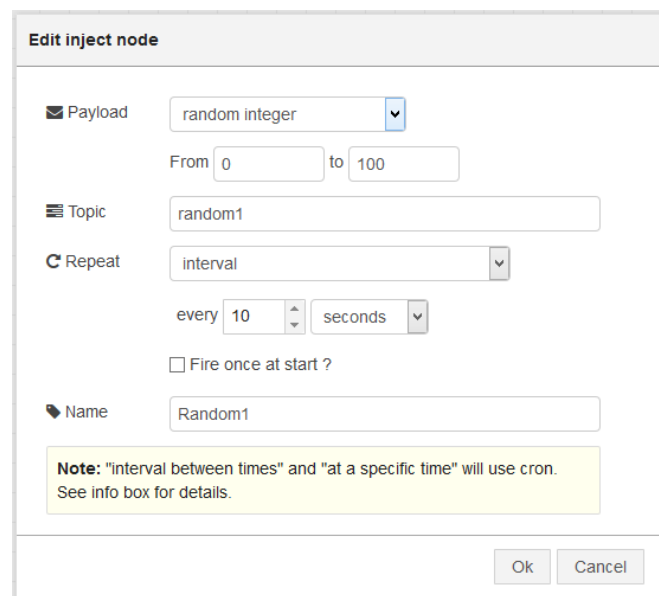
Name: Exosite_out

Ok Cancel

Figure 16: Final node configuration.

This node is now configured to send data to the Random1 data item on our server. Now we need to actually send data.

1. Drag and drop an inject node and configure it so that it outputs a random integer (0-100) every 10 seconds (give the node a name):



Edit inject node

Payload: random integer

From: 0 to 100

Topic: random1

Repeat: interval

every 10 seconds

☐ Fire once at start ?

Name: Random1

Note: "interval between times" and "at a specific time" will use cron. See info box for details.

Ok Cancel

Figure 17: Inject node configuration.

2. Let's connect the nodes together in the following way:



Figure 18: Final Configuration.

3. Click on "Deploy"

OPTION

If we now go back to our device on the Exosite platform, we should be able to see that the Random1 data item is being updated with the values that our CloudGate is sending:

Data List + Add Data		
Name	Alias	Last Value
Command	command	none
Random1	rand1	93
Random2	rand2	none

Figure 19: Exosite: Random1 data item updated.

Sending data for the second data item (Random2) is as simple as copying the current configuration and changing the following:

1. Alias on the exosite out node:

The screenshot shows a configuration panel with a 'Property' field set to 'msg.payload' and an 'Alias' field set to 'rand2'. There is also a checkbox for 'Enable queuing when no connection?' which is currently unchecked.

Figure 20: Changing the Alias on the second Exosite out node.

2. The type of data on the inject node from "random integer" to "random number" (keeping in mind that the Random2 data item is a **float**):

The screenshot shows a configuration panel with a 'Payload' dropdown menu set to 'random number'. Below it, there are fields for 'From' (0) and 'to' (100).

Figure 21: Changing the type of data on the inject node.

3. We are also changing the node names in order to keep a visual difference between both. The final configuration should look like this after Deploying it:

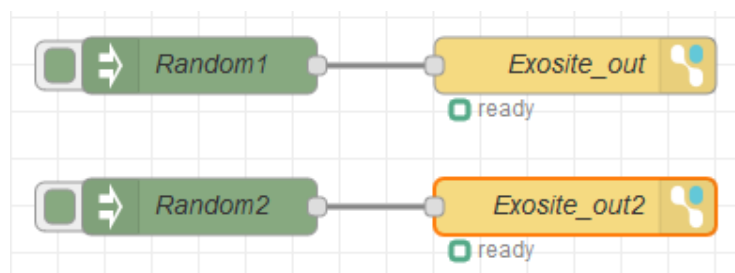


Figure 22: Two data items to Exosite.

OPTION

If we now go back to the device on the Exosite platform, we should see that the second data item called Random2 is also being updated:

Data List + Add Data		
Name	Alias	Last Value
Command	command	none
Random1	rand1	78
Random2	rand2	48.230310632036

Figure 23: Exosite: Random1 and Random2 updated.

Of course, this is simple because we are working with a reduced amount of data items, but if we need to post data for a hundred data items, this solution is not the best. The Exosite out node can send information for multiple data items as long as this information is provided to the node as a table in which case the keys of the table need to be the alias of the data item we want to update (See Figure 24):

Posts data to Exosite One Platform via HTTP API.

Expects a table of information or a value in the selected field. If the field is a string, boolean or number then it will be posted to the selected alias. If the field is a table then the keys will be used as the aliases to post to. In this case the keys must have string, boolean or number values otherwise they will be ignored.

Example input:

```
msg.payload = {
  ['alias1'] = 20.00,
  ['alias2'] = -1.57079
}
```

Figure 24: Information tab of the Exosite out node.

Let's adapt the configuration we already have so that we can post data for both data items using one single exosite out node:

1. Let's delete the exosite out node called "Exosite_out2" shown on Figure 22.
2. Open the remaining exosite out node and delete the Alias (Remember: the Alias is now going to be provided as the key of the table):

Figure 25: exosite out node with no Alias.

- Now, let's open both inject nodes and change their topics to rand1 and rand2 accordingly:

Figure 26: Random1 and Random2 inject nodes with new topics.

NOTE: The idea behind doing this is that now we can use a combine node to combine the messages coming from both nodes into one message and using their topics as keys.

OPTION

4. Drag and drop a combine node and configure it the following way:

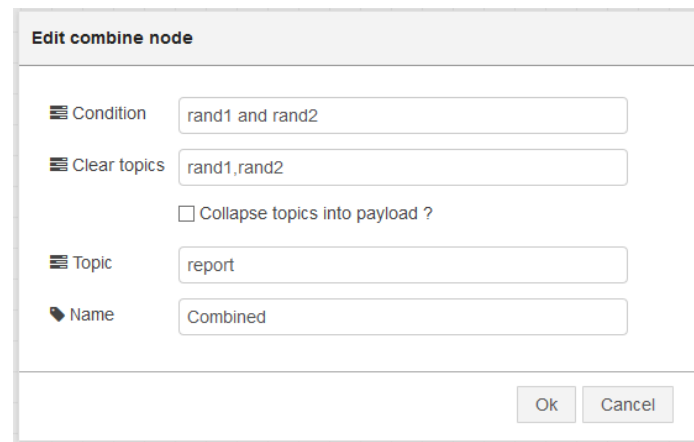


Figure 27: Combine node.

NOTE: This configuration does the following:

- The condition is to wait for both rand1 and rand2 topics to arrive.
 - After they arrive, you clear the topics, so that the node waits for two new values to come.
 - It changes the final topic to "report"
5. Drag and drop a debug node (This is just to show the format of the data after the combine node under the debug tab).
 6. Let's connect the nodes together in the following way and click on "Deploy":

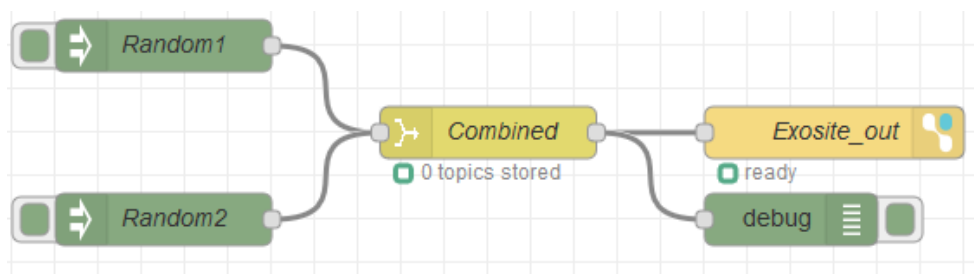


Figure 28: Configuration using combine and one exosite out node.

OPTION

On the debug tab, we should be able to see the table created by the combine node containing both rand1 and rand2 values:

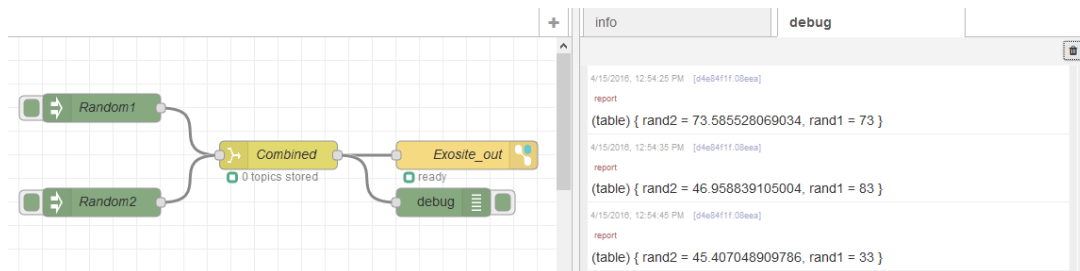


Figure 29: Table of data shown under debug tab.

On the Exosite platform we should see the values being updated:

Data List			+ Add Data
Name	Alias	Last Value	
Command	command	none	
Random1	rand1	33	
Random2	rand2	45.407048909786	

Figure 30: Exosite: Values updated.

3.2 Receiving data from the Exosite platform.

We have been successful in sending data from our device to the Exosite platform, but how about sending data from the Exosite platform to the device? We are going to use the third data item called **Command** for this.

1. Drag and drop an exosite in node:

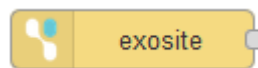


Figure 31: Exosite in node.

2. Configure the exosite in node in the following way:

A dialog box titled 'Edit exosite in node'. It contains several configuration fields: 'Device' with a dropdown menu showing 'Add new exosite cik...' and an edit icon; 'Alias' with an empty text field; 'Poll type' with a dropdown menu showing 'Long polling'; 'Timeout' with a text field '60' and the unit 'seconds'; 'Topic' with a text field 'Topic'; and 'Name' with a text field 'Name'. At the bottom right, there are 'Ok' and 'Cancel' buttons.

Figure 32: Default Exosite in node.

- a. Select the already configured Exosite Device. If no device is already configured, please follow the steps explained on section 3.1. Change the Alias to **command** and change the name of the node:

A dialog box titled 'Edit exosite in node' showing the configuration after changes. The 'Device' dropdown now shows 'Exosite_dev'. The 'Alias' text field now contains 'command'. The 'Name' text field now contains 'Exosite_in'. All other fields ('Poll type', 'Timeout', 'Topic') remain the same as in Figure 32. The 'Ok' and 'Cancel' buttons are at the bottom right.

Figure 33: Exosite in node configuration.

OPTION

3. Drag and drop a debug node and connect both nodes as shown on :

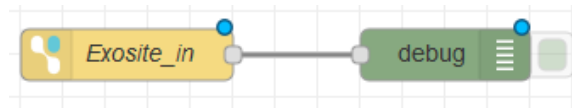


Figure 34: Final configuration.

4. Click on "Deploy"

Now, let's push some data from the Exosite platform:

1. Click on the **Command** data item.
2. On the right hand side there is a Write Data section. Enter a number (e.g. 1000) and then click on Update:

The image shows a 'Write Data' section with a yellow header. Below the header is a text input field labeled 'Data value:' containing the number '1000'. To the right of the input field is a grey button labeled 'UPDATE'.

Figure 35: Exosite: Entering data to the Command data item.

The new data should be shown on the Debug tab in LuvitRED:

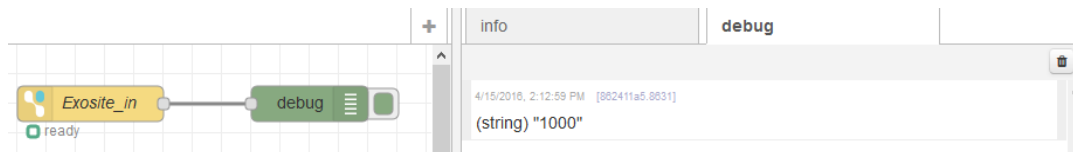


Figure 36: Data coming from Exosite.

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