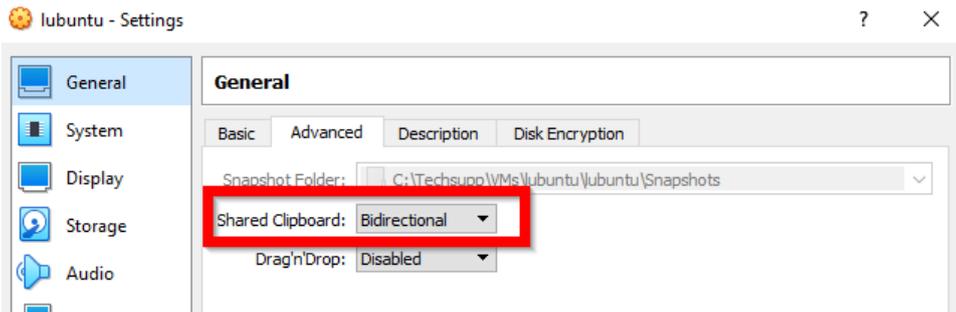


How to configure Multitech Gateways for the TheThingsNetworkv3

If you already have the VM / Unix environment setup then scroll down onto page 3, "This is where we start to do the configuration changes"

Set up a VM with VirtualBox and UNix. Ensure you have the Guest Additions installed so that you can copy between different OSs.

On the VM, Machine menu, settings, ensure that the shared clipboard is enabled.



Type in

Sudo snap install ttn-lw-stack

```
sc0014@scott-virtualbox: ~  
File Actions Edit View Help  
sc0014@scott-virtualbox: ~  
sc0014@scott-virtualbox:~$ sudo snap install ttn-lw-stack  
[sudo] password for sc0014:  
Download snap "core" (10859) from channel "stable" 34% 4.34MB/s 15.9s
```

A prompt will appear asking if you should make it available to the system. Just press Enter.

Some more software will download.

You will then get a success message that the software has installed.

Then type in

```
sudo snap alias ttn-lw-stack.ttn-lw-cli ttn-lw-cli
```

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Make sure everything is up to date and patch up and then try this command

```
sudo ttn-lw-cli use eu1.cloud.thethings.network --fetch-ca --user -overwrite
```

Then do a

```
Sudo ttn-lw-cli login
```

It will fail, but you just need to copy the browser link into your browser. This will then create an access token.

How to configure Multitech Gateways for the TheThingsNetworkv3

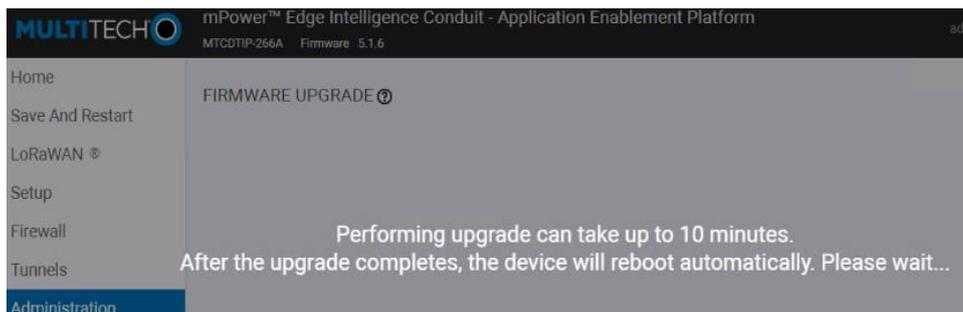
This is where we start to do the configuration changes.

We just need to prep the gateway.

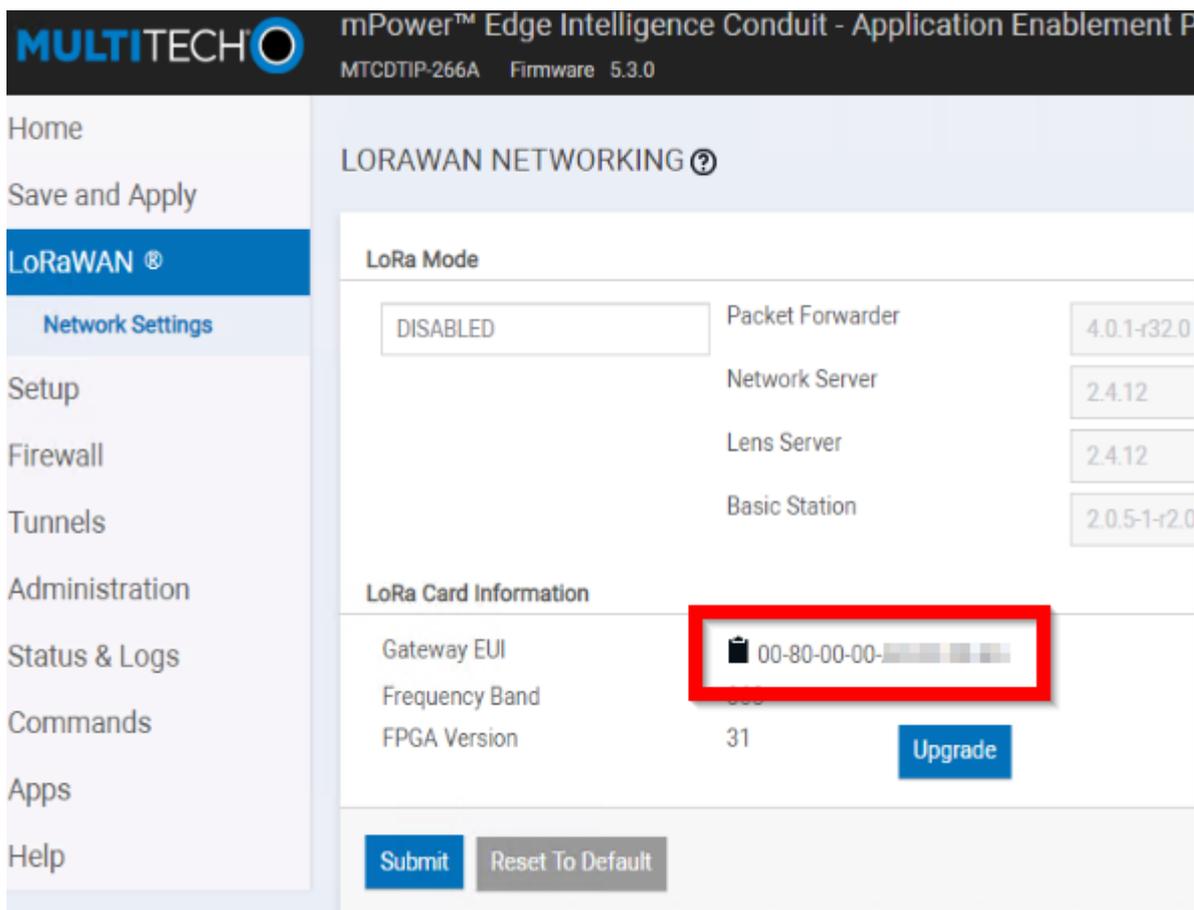
On the Multitech Gateway management page, go to Administration, Firmware Upgrade, choose the Firmware Upgrade File that you have already downloaded, version 5.3.

Available on this link: <http://www.multitech.net/developer/downloads/>

Apply it and this will happen.



It will eventually come back. Log back in again, go to the LoraWAN menu and copy the Gateway EUI details



How to configure Multitech Gateways for the TheThingsNetworkv3

In this example, we are working on the gc-ccbc-llanefydd. Note the gateway EUI from the above red box has been transposed into the gateway EUI box below.

Add gateway

General settings

Owner *

Gateway ID *

Gateway EUI ⓘ

Gateway name

Gateway description

Optional gateway description; can also be used to save notes about the gateway

Enter a gateway name – similar to the unique naming structure that you have used for the gateway

Gateway name

The gateway server address is

eu1.cloud.thethings.network

The gateway status is public

How to configure Multitech Gateways for the TheThingsNetworkv3

The frequency plan is Europe 863-870Mhz (SF9 for RX2 – recommended)

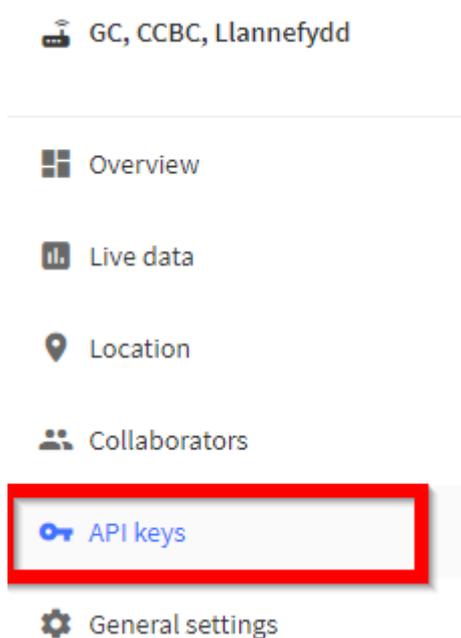
Do not Enable the Schedule Downlink late – the Basics LoraWAN uploader (the new one) has buffering built in.

Enforce the Duty Cycle

Leave the time delay as default, 530 milliseconds.

Don't enable Automatic Updates – this is for TTN branded gateways.

Then click create gateway. This obviously only exists logically to receive data but now we need to setup security authentication.



On the menu, select API keys. We will be creating two API keys.

Click the Add API key button on the top right.

You will have to type in the name for the API key. We are going to end up with a lot of API keys, so it is essential that the following naming convention is used.

How to configure Multitech Gateways for the TheThingsNetworkv3

This worked example is called

API-LNS-GC-CCBC-Llanefydd

API	LNS	GC	CCBC	Llanefydd	<unused in this example>
Tells us what it is	Tells us what the API type is (it will be LNS or CUPs)	This then starts to breakdown...	... the name of the gateway...	... that you have applied and therefore....	... which API key relates to which gateway.

You can see below the permissions that need to be selected. These permissions are for LNS. CUPs settings will be different.

Name

API-LNS-GC-CCBC-Llanefydd

Rights *

Grant all current and future rights

Grant individual rights

Select all

Delete gateway

View gateway information

Link as Gateway to a Gateway Server for traffic exchange, i.e. write uplink and read downlink

View gateway location

Retrieve secrets associated with a gateway

View and edit gateway API keys

Edit basic gateway settings

View and edit gateway collaborators

View gateway status

Write downlink gateway traffic

Read gateway traffic

Store secrets for a gateway

Save changes

When done, click the Create API key.

The API key will only appear **AT THIS TIME**. If you miss it, you can easily recreate a new key – but you have to store this key now. We store them in KeePass.

How to configure Multitech Gateways for the TheThingsNetworkv3

We need to create another new API key, this time for CUPs

Add API key

Name

Rights *

- Grant all current and future rights
- Grant individual rights
- Select all
 - Delete gateway
 - View gateway information
 - Link as Gateway to a Gateway Server for traffic exchange, i.e. write uplink and read downlink
 - View gateway location
 - Retrieve secrets associated with a gateway
 - View and edit gateway API keys
 - Edit basic gateway settings
 - View and edit gateway collaborators
 - View gateway status
 - Write downlink gateway traffic
 - Read gateway traffic
 - Store secrets for a gateway

Create API key

Again, click Create API key and safely store the details that come out straight away. Then click I have copied the key.

We now have the API keys which means we can go back to the gateway itself and use the keys to authenticate back to the TTN.

How to configure Multitech Gateways for the TheThingsNetworkv3

Go to the Multitech Gateway's configuration page. Go to LoraWAN, change it to Basic Station.

Change credentials to CUPS.

Change the URI to

<https://eu1.cloud.thethings.network:443>

LORAWAN NETWORKING ⓘ

LoRa Mode

BASIC STATION	Packet Forwarder	4.0.1-r32.0	DISABLED
	Network Server	2.4.12	DISABLED
	Lens Server	2.4.12	DISABLED
	Basic Station	2.0.5-1-r2.0	STOPPED

LoRa Card Information

Gateway EUI	00-80-00-00-A0-00-5D-E9
Frequency Band	868
FPGA Version	31

Upgrade

Basic Station Configuration

Station Card 1

Credentials	CUPS
URI	https://eu1.cloud.thethings.network:443

Change the server certificate to the contents located on this file

<https://letsencrypt.org/certs/isrgrootx1.pem>

which is linked to from the TTN documentation.

<https://www.thethingsindustries.com/docs/reference/root-certificates/>

And the gateway key, you need to paste in your CUPS API key but you need to proceed it with Authorization:<space>

Thus

Authorization: NNSXS.ThisIsAMadeUpCUPSAPIKey

How to configure Multitech Gateways for the TheThingsNetworkv3

When you have done that. Click Save at the bottom the window. After a short wait, (5 – 8 seconds) that the Save and Apply button on the top left of the browser will become active. You now need to press that button.

This will then enable the Basic Station service and you should see it change to Running and turn green.



Now – you need to get ready with your Linux

Now review the following four lines

```
$ export GTW_ID="your-gateway-id"
$ export LNS_KEY="your-lns-api-key"
$ export SECRET=$(echo -n $LNS_KEY | xxd -ps -u -c 8192)
$ ttn-lw-cli gateways update $GTW_ID --lbs-lns-secret.value $SECRET
```

So – I've typed in

```
export GTW_ID="gc-ccbc-llannefydd"
export LNS_KEY="NNSXS.ThisIsAMadeUpLNSKey "
export SECRET=$(echo -n $LNS_KEY | xxd -ps -u -c 8192)
sudo ttn-lw-cli gateways update $GTW_ID --lbs-lns-secret.value $SECRET
```

```
sc0014@scott-virtualbox:~$ export GTW_ID="gc-ccbc-llannefydd"
sc0014@scott-virtualbox:~$ export LNS_KEY="NNSXS.ThisIsAMadeUpLNSKey "
sc0014@scott-virtualbox:~$ export SECRET=$(echo -n $LNS_KEY | xxd -ps -u -c 8192)
sc0014@scott-virtualbox:~$ sudo ttn-lw-cli gateways update $GTW_ID --lbs-lns-secret.value $SECRET
```

How to configure Multitech Gateways for the TheThingsNetworkv3

And I got this result

```
{
  "ids": {
    "gateway_id": "gc-ccbc-llanefydd"
  },
  "created_at": "2021-03-10T13:46:29.024Z",
  "updated_at": "2021-03-10T14:11:08.389Z",
  "version_ids": {

  },
  "lbs_ins_secret": {
    "key_id": "is/gateway-secrets-encryption-key",
    "value": "vsR5Xg+SomeExtraNumbersThatWereHereButCouldBeSensitive/x"
  }
}
```

Wait a couple of minutes, and the Multitech gateway should appear live on the stack! If it doesn't - reboot the gateway.