

EXPERIMENT -07 CONFIGURING NETWORK SERVER FOR CONNECTING GATEWAY AND END NODE

Aim: To configure the Network server and end device for transferring data on the network

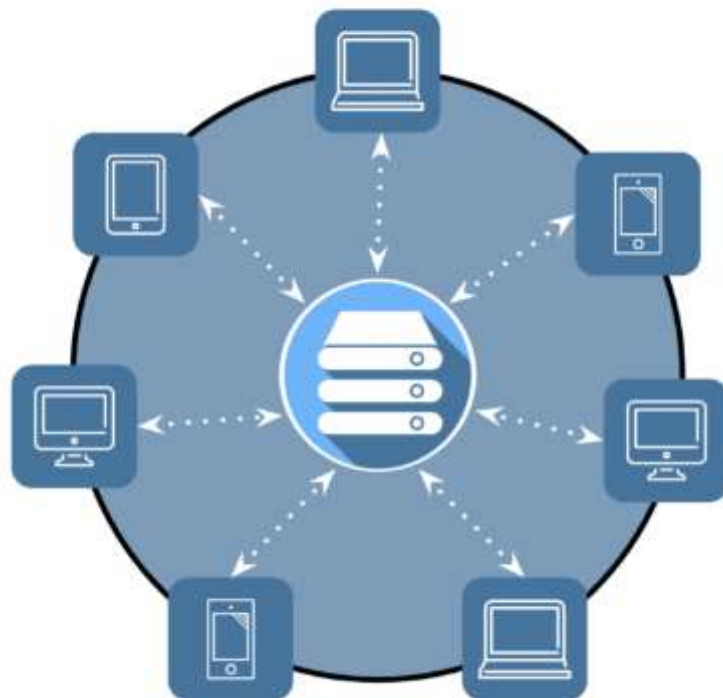
Components required: end node stm 32 development kit , dragino LPS8, network server

Theory :

When working with sensitive applications or files, saving progress on your local device is a start, but what if you lose access to your device? Network servers address this problem by hosting the files and programs most pertinent to the network and enabling access for consistent, real-time use.

As a result, personnel or network clients can instantly access important data or tools while also facilitating collaboration between users. Multiple users can make changes to the same program or document for continued development over the course of a project. Via a secure login, remote users

Network Server



can connect to the home network.

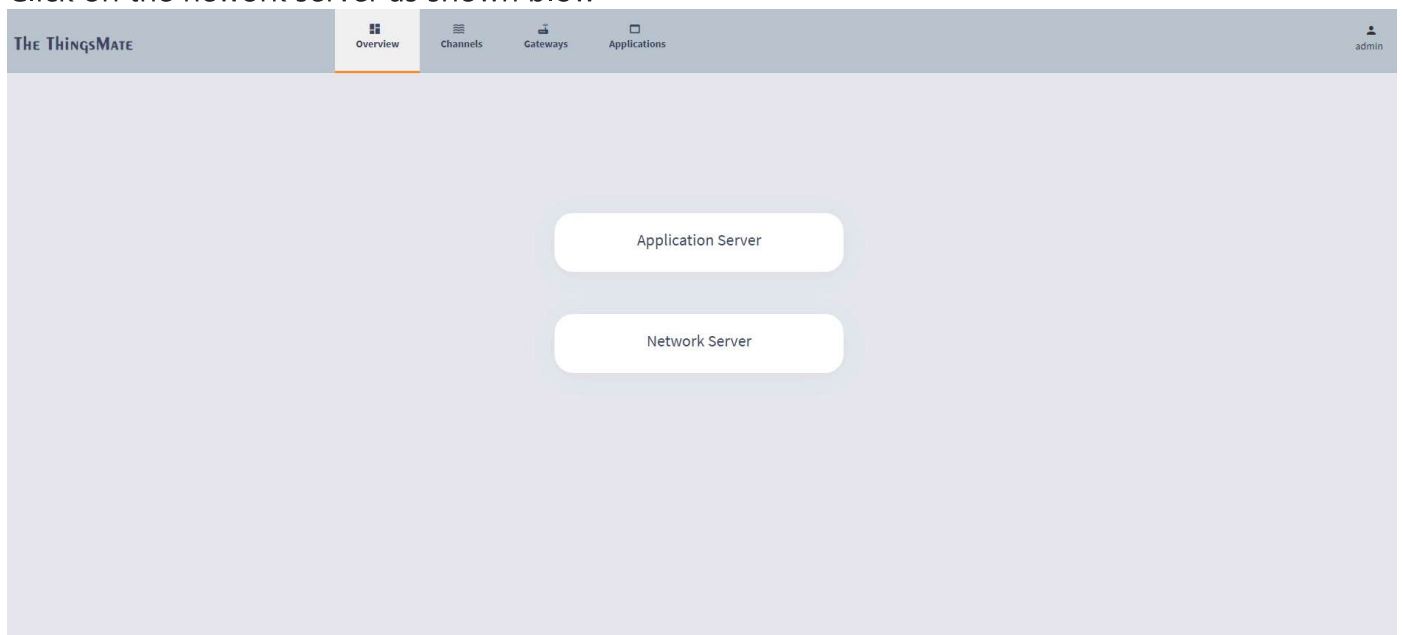
In the above graphic, the circle represents an organization network where a network server facilitates collaboration and file sharing between network clients (devices).

The role of a network server, then, is to provide users with a set of services and access to resources on the network. These features include:

Permissioned access and log-ins for network users Gateway access to the Internet for an organization Centralized location for network resources Shared access to devices on the network like a printer or a scanner Hosts multi-user apps like email servers, web applications, or CRM

Procedure :

1. login to the network server using login link <https://iot.saveetha.in/>
2. Click on the nework server as shown blow



3. click on the add gateway

Overview

Channels

Gateways

Applications

Owned gateways

All (Admin)

Deleted (Admin)

Search by ID

+ Add gateway

ID: ▾	Name ▾	Gateway EUI ▾	Status
a8404121a4804555	IoT-Lab-Indoor	A8 40 41 21 A4 80 45 55	Disconnected •
a8404121a4806666	lab	A8 40 41 21 A4 80 66 66	Disconnected •
a84041234556ab21	training-00001	A8 40 41 23 45 56 A8 21	Disconnected •
anishiot	anishiotdemo	55 55 66 66 77 77 88 88	Disconnected •
anishkumar	anish123	A8 40 41 21 9A 80 41 50	Disconnected •
dlos8-1e970	IoT Lab	A8 40 41 FF FF 21 E9 70	Disconnected •
dlos8-38eb4	CSE BLOCK	A8 40 41 FF FF 23 8E B4	Connected •
dlos8-3a500	EEE-BLOCK	A8 40 41 FF FF 23 A5 00	Connected •
indoor-iot-lab	iot-lab-1	A8 40 41 21 E7 74 43 35	Disconnected •

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

Gateway Server address

The address of the Gateway Server to connect to

Require authenticated connection

☐ Enabled

Controls whether this gateway may only connect if it uses an authenticated Basic Station or MQTT connection

Gateway status

LoRaWAN options

Frequency plan *

Select... | v

Schedule downlink late

☐ Enabled

Enable server-side buffer of downlink messages

Enforce duty cycle

☒ Enabled

Recommended for all gateways in order to respect spectrum regulations

Schedule any time delay *

530 milliseconds | v

Configure gateway delay (minimum: 130ms, default: 530ms)

Gateway updates

Automatic updates

☐ Enabled

Gateway can be updated automatically

Channel

Stable

Channel for gateway automatic updates

4. click on the lora options , lora - frequency plan

5. click on channel s and create a new channel after which you can add a new end device

Channels > Jaba > End devices

End devices (3)

Search by ID

+ Add end device

ID: ▾	Name ▾	DevEUI	JoinEUI	Last activity
eui-1234567890123456		12 34 56 78 90 12 34 56	90 74 34 55 56 77 88 99	105 days ago •
eui-1234567894352414	LED BLINK	12 34 56 78 94 35 24 14	00 00 00 00 00 00 00 00	Never •
eui-a840414d9184d881		A8 40 41 40 91 84 08 81	A8 40 41 00 00 00 01 01	106 days ago •

6. add the attributes in the end device as shown below

Add End device

Frequency plan *

Select... | v

LoRaWAN version *

Select... | v

Regional Parameters version *

Select... | v

[Show advanced activation, LoRaWAN class and cluster settings](#) v

DevEUI *

.. .. .

AppEUI *

.. .. . Fill with zeros

AppKey *

.. .. . Generate

End device ID *

my-new-device

This value is automatically prefilled using the DevEUI

After registration

☒ View registered end device

☐ Register another end device of this type

Register end device

7.using AT commands configure end device in serial port utility AT Commands to set initially (Mandatory) AT+FDR // To do factory data reset AT+NJM=1 // To set OTAA mode AT+ADR=1 // To enable the ADR AT+TDC=600000 // To set the default sampling interval as 10 minutes (Should not give below 5 minutes) AT+CLASS=C // To set class C AT+DEUI=XX XX XX XX XX XX XX // To set Device EUI key AT+APPEUI=XX XX XX XX XX XX XX XX XX // To set APP EUI key AT+APPEUI=XX XX XX XX XX XX XX XX XX XX XX XX XX XX XX // To set APP Key ATZ // To take effective action on below settings (As like saving)

OUTPUT

SOIL MOISTURE SENSOR

ID:eui-3535353535353535

↑ 7 ↓ 6 • Last activity 33 days ago

- Overview
- Live data
- Messaging
- Location
- Payload formatters
- General settings

General information

End device ID	eui-3535353535353535
Description	IOT LAB SOIL MOISTURE SENSOR
Created at	May 2, 2023 18:00:29

Activation information

AppEUI	00 00 00 00 00 00 00 00
DevEUI	35 35 35 35 35 35 35 35
Root key ID	n/a
AppKey
NwkKey	n/a

Session information

Device address	00 81 88 CA
NwkSKey
SNwkSIntKey

Live data

21:52:02	Stream reconnected	The stream connection has been re-established
21:51:56	Network error	The stream connection was lost due to a network error
21:46:55	Stream reconnected	The stream connection has been re-established
21:46:50	Network error	The stream connection was lost due to a network error

Location



Overview

Live data

Location

General settings

Gateways > prabha

prabha

ID:swetha

↑ 0 ↓ 0 • Last activity 18 seconds ago

General information

Gateway ID	swetha
Gateway EUI	A8 48 41 21 9A 00 41 50
Gateway description	None
Created at	May 8, 2024 09:05:48
Last updated at	May 8, 2024 09:05:48
Gateway Server address	iot.saveetha.in

LoRaWAN information

Frequency plan	IN_865_867
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Global configuration

Live data

09:08:24	Receive gateway status	Metrics: { ackr: 0, rxfw: 0, rxin: 0, ... }
09:07:54	Receive gateway status	Metrics: { ackr: 0, rxfw: 0, rxin: 0, ... }
09:07:24	Receive gateway status	Metrics: { ackr: 0, rxfw: 0, rxin: 1, ... }
09:06:54	Receive gateway status	Metrics: { ackr: 0, rxfw: 0, rxin: 0, ... }
09:06:53	Connect gateway	

Location



Results:

The Network server and end device for transferring data on the network has been accomplished.