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This guide will show you how to configure the CUPS connection for TTI.

1. Please download or install the "ttn-lw-cli" tool.

https://www.thethingsindustries.com/docs/getting-started/cli/installing-cli/

In this document, we install the ttn-lw-cli for linux.

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

i.e.

```
root@browan:/tmp# sudo snap install ttn-lw-stack
ttn-lw-stack 3.11.1 from The Things Network (rvolosatovs-ttn) installed
root@browan:/tmp#
root@browan:/tmp#
root@browan:/tmp# sudo snap alias ttn-lw-stack.ttn-lw-cli ttn-lw-cli
Added:
  - ttn-lw-stack.ttn-lw-cli as ttn-lw-cli
```

2. Create a Gateway and add API Key for CUPS.

https://www.thethingsindustries.com/docs/gateways/lora-basics-station/cups/

Gateways > 1C497BFFFECAAF8E > API keys > Add

Add API key

Name

CUPS_Test

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

Please copy newly created API key

You won't be able to view the key afterward

Granted rights

✓ View gateway information

✓ Retrieve secrets associated with a gateway

✓ Edit basic gateway settings

Your API key has been created successfully. Note: After closing this window, the value of the key secret will not be accessible anymore. Make sure to copy and store it in a safe place now.

API key

················

✓ I have copied the key

Save the API KEY for CUPS with this format.

Authorization: Bearer **<API KEY>**

i.e.

Authorization: Bearer MF2XI.55........................IZ3O4Q

3. Login TTI via ttn-lw-cli

- Create the configuration file:

```
cd /tmp
ttn-lw-cli use browan.eu1.cloud.thethings.industries --overwrite
```

Please replace the URL with your own host:
browan.eu1.cloud.thethings.industries
-> XXXXXX.eu1.cloud.thethings.industries

i.e.

```
root@browan:/tmp# cd /tmp
root@browan:/tmp# ttn-lw-cli use browan.eu1.cloud.thethings.industries --overwrite
  INFO Config file for browan.eu1.cloud.thethings.industries written in .ttn-lw-cli.yml
root@browan:/tmp#
```

- Execute the "login" command
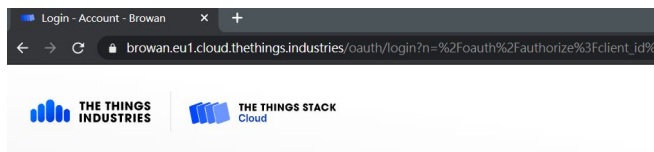
```
ttn-lw-cli login --callback=false
```

i.e.

```
root@browan:/tmp# ttn-lw-cli login --callback=false
 INFO Opening your browser on https://browan.eu1.cloud.thethings.industries/oauth/authorize?client_id=cli&redirect_ur
i=code&response_type=code
 WARN Could not open your browser, you'll have to go there yourself error=fork/exec /usr/bin/xdg-open: permission den
ied
 INFO After logging in and authorizing the CLI, we'll get an access token for future commands.
 INFO Please paste the authorization code and press enter
>
```
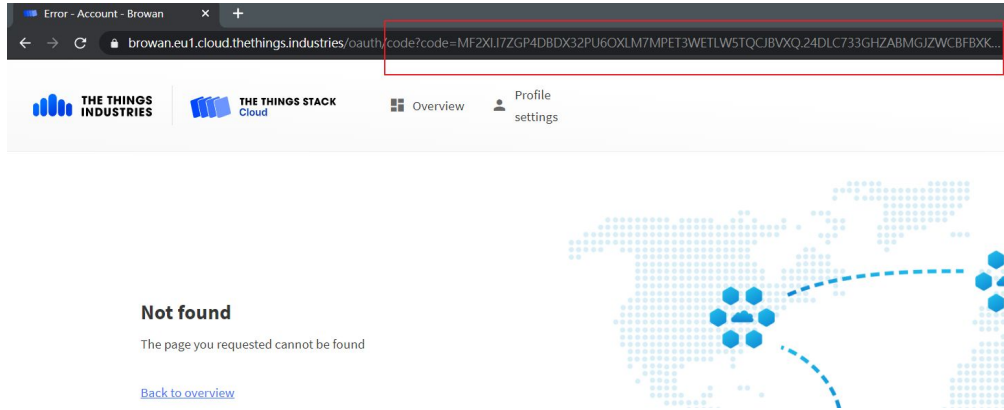
- Copy the oauth URL and paste to the browser to get the OAuth code.

```
https://browan.eu1.cloud.thethings.industries/oauth/authorize?client_id=
cli&redirect_uri=code&response_type=code
```

i.e.

```
root@browan:/tmp#
root@browan:/tmp#
root@browan:/tmp# ttn-lw-cli login --callback=false
 INFO Opening your browser on https://browan.eu1.cloud.thethings.industries/oauth/authorize?client_id=cli&redirect_ur
i=code&response_type=code
 WARN Could not open your browser, you'll have to go there yourself error=fork/exec /usr/bin/xdg-open: permission den
ied
 INFO After logging in and authorizing the CLI, we'll get an access token for future commands.
 INFO Please paste the authorization code and press enter
>
```

- Login TTI with your username and password.

- Copy the OAuth code from the returned URL.
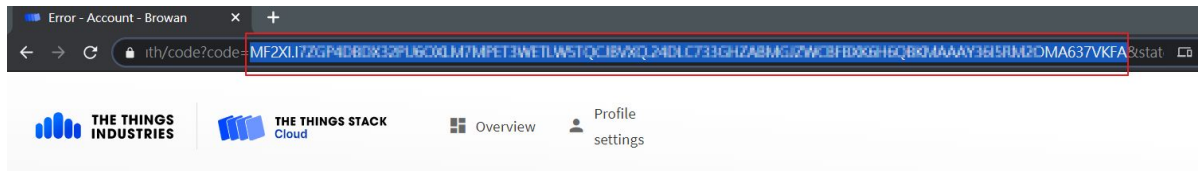
- Paste the OAuth code to ttn-lw-cli

You should get the successful login log:
 INFO Got OAuth access token

You could configure your gateway via ttn-lw-cli now.

4. Use the "ttn-lw-cli" to set up the lbs_lns_secret

```
$ 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
```

It should return the lbs_lns_secret information.

i.e.

NOTE: If you do not set up the lbs_lns_secret for the gateway_id, you'll get the 404 error during the connection establishment phase.

```
2021-02-25 08:11:50.096 [AIO:INFO] cups has no cert configured - running server auth and client auth with token
2021-02-25 08:11:50.384 [CUP:VERB] Retrieving update-info from CUPS https://browan.eu1.cloud.thethings.industries:443...
2021-02-25 08:11:51.648 [any:VERB] Failed to retrieve TCURI from CUPS: (404) Not Found
```

5. Now you could use the CUPS.TRUST and CUPS.KEY to establish the connection.

Connection Configuration

LNS Mode:	Normal Mode
Protocol:	HTTPS
Type:	Regular
Server Address:	browan.eu1.cloud.thethings
Server Port:	443
Trust:	Choose File No file chosen — UPLOAD
Trust Status:	Installed — DELETE
CRT:	Choose File No file chosen — UPLOAD
CRT Status:	Not Installed
Key:	Choose File No file chosen — UPLOAD
Key Status:	Installed — DELETE

Radio Configuration   Connection Configuration   Log

Log

```
basic constraints : CA=true
key usage         : Key Cert Sign, CRL Sign
2021-02-25 08:17:17.192 [AIO:INFO] cups has no cert configured - running server auth and client auth with token
2021-02-25 08:17:17.474 [CUP:VERB] Retrieving update-info from CUPS https://browan.eu1.cloud.thethings.industries:443...
2021-02-25 08:17:18.817 [CUP:INFO] TC URI updated: wss://browan.eu1.cloud.thethings.industries:8887
2021-02-25 08:17:18.817 [CUP:INFO] TC Credentials segment (965 bytes)
2021-02-25 08:17:18.817 [any:INFO] credComplete - trust_off=   0, trust_len= 846        30 82 03 4a  30 82 02 32
2021-02-25 08:17:18.817 [any:INFO] credComplete - cert_off = 846, cert_len =  0  82 35 35 10  00 00 00 00  41 75 74 68
2021-02-25 08:17:18.817 [any:INFO] credComplete - key_off = 850, key_len  = 115  00 00 00 00  41 75 74 68  6f 72 69 7a
2021-02-25 08:17:18.829 [CUP:INFO] TC credentials updated (965 bytes)
2021-02-25 08:17:18.830 [AIO:DEBU] [4] HTTP connection shutdown...
2021-02-25 08:17:18.831 [CUP:INFO] CUPS provided TC updates (uri) - restarting TC engine
2021-02-25 08:17:18.831 [CUP:INFO] Interaction with CUPS done - next regular check in 1d
2021-02-25 08:17:18.831 [TCE:INFO] Starting TC engine
2021-02-25 08:17:18.832 [any:INFO] /opt/basicstation/tc.trust:
cert. version   : 3
serial number   : 44:AF:B0:80:D6:A3:27:BA:89:30:39:86:2E:F8:40:6B
issuer name     : O=Digital Signature Trust Co., CN=DST Root CA X3
subject name    : O=Digital Signature Trust Co., CN=DST Root CA X3
issued  on      : 2000-09-30 21:12:19
expires on      : 2021-09-30 14:01:15
signed using    : RSA with SHA1
RSA key size    : 2048 bits
basic constraints : CA=true
key usage         : Key Cert Sign, CRL Sign
2021-02-25 08:17:18.832 [AIO:INFO] tc has no cert configured - running server auth and client auth with token
2021-02-25 08:17:19.138 [TCE:INFO] Connecting to INFOS: wss://browan.eu1.cloud.thethings.industries:8887
2021-02-25 08:17:20.823 [TCE:INFO] Infos: 1c49:7bff:fef3:cf46 muxs-::0 wss://browan.eu1.cloud.thethings.industries:8887/traffic/eui-1C497BFFFEF3CF46
2021-02-25 08:17:20.823 [AIO:DEBU] [4] ws_close reason=1000
2021-02-25 08:17:20.823 [AIO:ERRO] Recv failed: SSL - The peer notified us that the connection is going to be closed
2021-02-25 08:17:20.824 [AIO:DEBU] [4] WS connection shutdown...
2021-02-25 08:17:20.825 [any:INFO] /opt/basicstation/tc.trust:
cert. version   : 3
serial number   : 44:AF:B0:80:D6:A3:27:BA:89:30:39:86:2E:F8:40:6B
issuer name     : O=Digital Signature Trust Co., CN=DST Root CA X3
subject name    : O=Digital Signature Trust Co., CN=DST Root CA X3
issued  on      : 2000-09-30 21:12:19
```