How to setup and work with Matter Controller

https://docs.espressif.com/projects/esp-matter/en/latest/esp32/developing.html#matter-controller

esp-matter/examples/controller

https://github.com/espressif/esp-matter/tree/main/examples/controller

See:

- esp-matter_examples_controller.md
- sdkconfig.defaults

1. Build

The sdkconfig file sdkconfig.defaults.otbr is provided to enable the OTBR feature on the controller.

~~~
cd /root/esp-matter/examples/controller
idf.py -D SDKCONFIG_DEFAULTS="sdkconfig.defaults.otbr" set-target esp32s3 build
idf.py -p /dev/ttyACM0 erase-flash flash monitor
~~~

2. Init and Start the Thread network

Connect the controller to Wi-Fi network with the device console

~~~
matter esp wifi connect {ssid} {password}
matter esp wifi connect MIKE_WIFI_24 *********
matter esp wifi connect MIKE_REDMI_NOTE_13 *********
~~~

Initializing a new Thread network dataset and commit it as the active one

~~~
matter esp ot_cli dataset init new
matter esp ot_cli dataset commit active
~~~

Getting the operational dataset TLV-encoded string. The <dataset_tlvs> will be printed.

~~~
matter esp ot_cli dataset active -x
~~~

<dataset_tlvs>

0e080000000000010000000300000d4a0300001735060004001fffe002086918ac4cec261a970708fd716900bdecc34
1051061493dd6445a4897f8f07bbcf80022c2030f4f70656e5468726561642d646433340102dd340410abb2f35da1d8
108f9278de52b687e99f0c0402a0f7f8

OFFC:
0e080000000000010000000300000144a0300001435060004001fffe002080a9f6e962bfaf9880708fdded0b37370c3f6
0510b7078e7ab3c4c3624b10968aa9338f2e030f4f70656e5468726561642d613537300102a5700410f88938966f178
b3876174a63b8639a220c0402a0f7f8

Starting the Thread network

~~~

matter esp ot_cli ifconfig up

matter esp ot_cli thread start

~~~

3. Pair and Control

Pairing the Thread end-device

Syntax: matter esp controller pairing code-thread <nodeid> <dataset> <payload>

- <node_id> : randomly chosen value

- <payload> : matter QR code

~~~

matter esp controller pairing ble-thread 1234 <dataset_tlvs> 34970112332

~~~

Control the Thread end-device on the device console (On/Off cluster Toggle command)

~~~

matter esp controller invoke-cmd 1234 1 6 2

~~~

Example:

~~~

matter esp controller pairing code-thread 1234
0e080000000000010000000300000174a0300000f35060004001fffe002088fbedf39fa8516870708fd39593d4bdb6a43
0510ed823d77790b1f415530bbef3678ddb0030f4f70656e5468726561642d3131363601021166041062a21d4edaa2
62bb779fc2c9923516490c0402a0f7f8 34970112332

> chip-tool interactive start

>>> pairing code-thread 1234
0e080000000000010000000300000144a0300001435060004001fffe002080a9f6e962bfaf9880708fdded0b37370c3f6
0510b7078e7ab3c4c3624b10968aa9338f2e030f4f70656e5468726561642d613537300102a5700410f88938966f178
b3876174a63b8639a220c0402a0f7f8 34970112332

>>> pairing code-thread 2345
0e080000000000010000000300000144a0300001435060004001fffe002080a9f6e962bfaf9880708fdded0b37370c3f6
0510b7078e7ab3c4c3624b10968aa9338f2e030f4f70656e5468726561642d613537300102a5700410f88938966f178
b3876174a63b8639a220c0402a0f7f8 34970112332

> matter esp controller pairing code-wifi <node_id> <ssid> <passphrase> <setup_payload>

> matter esp controller read-attr 2345 1 6 0x000

I (4101984) chip[DIS]: Found an existing secure session to [1:0000000000000929]!

I (4101984) chip[DMG]: 0 data version filters provided, 0 not relevant, 0 encoded, 0 skipped due to lack of space
~~~

I (4101984) chip[EM]: <<< [E:7501i S:12492 M:165199384] (S) Msg TX from 000000000001B669 to 1:0000000000000929 [E808] [UDP:[FD8A:FD34:7273:1:C318:E218:ADA0:54E2]:5540] --- Type 0001:02 (IM:ReadRequest) (B:51)

I (4101984) chip[EM]: ??1 [E:7501i S:12492 M:165199384] (S) Msg Retransmission to 1:0000000000000929 in 1593ms [State:Idle II:800 AI:800 AT:4000]

Done

> I (4102054) chip[EM]: >>> [E:7501i S:12492 M:247029994 (Ack:165199384)] (S) Msg RX from 1:0000000000000929 [E808] to 000000000001B669 --- Type 0001:05 (IM:ReportData) (B:69)

I (4102064) chip[TOO]: Endpoint: 1 Cluster: 0x0000_0006 Attribute 0x0000_0000 DataVersion: 1171748968

~~~~~~~~~~~

I (4102064) chip[TOO]:   OnOff: TRUE

~~~~~~~~~~~

I (4102064) read_command: read done

I (4102064) chip[EM]: <<< [E:7501i S:12492 M:165199385 (Ack:247029994)] (S) Msg TX from 000000000001B669 to 1:0000000000000929 [E808] [UDP:[FD8A:FD34:7273:1:C318:E218:ADA0:54E2]:5540] --- Type 0000:10 (SecureChannel:StandaloneAck) (B:34)

OFFC#1: matter esp controller pairing code-thread 1234 0e080000000000010000000300001 44a0300001435060004001fffe002080a9f6e962bfaf9880708fdded0b37370c3f60510b7078e7ab3c4c3624b10968aa9338f2e030f4f70656e5468726561642d613537300102a5700410f88938966f178b3876174a63b8639a220c0402a0f7f8 34970112332

OFFC#2: matter esp controller pairing code-thread 2345 0e080000000000010000000300001 44a0300001435060004001fffe002080a9f6e962bfaf9880708fdded0b37370c3f60510b7078e7ab3c4c3624b10968aa9338f2e030f4f70656e5468726561642d613537300102a5700410f88938966f178b3876174a63b8639a220c0402a0f7f8 34970112332

OFFC#3: matter esp controller pairing code-thread 1 0e080000000000010000000300001 44a0300001435060004001fffe002080a9f6e962bfaf9880708fdded0b37370c3f60510b7078e7ab3c4c3624b10968aa9338f2e030f4f70656e5468726561642d613537300102a5700410f88938966f178b3876174a63b8639a220c0402a0f7f8 34970112332

matter esp controller pairing unpair 1234

matter esp controller read-attr 1234 1 6 0x004003

matter esp controller write-attr 1234 1 6 0x4003 "{\"0:U8\": 2}"

matter esp controller read-attr 1234 1 6 0x000

matter esp controller read-attr 2345 1 6 0x000

matter esp controller write-attr 1234 1 6 0x000 "{\"0:U8\": 0}"

matter esp controller write-attr 1234 1 6 0x000 "{\"0:bool\": \"false\"}"

~~~

matter esp controller pairing ble-thread 1515 0e080000000000010000000300001 74a0300000f35060004001fffe002088fbedf39fa8516870708fd39593d4bdb6a430510ed823d77790b1f415530bbef3678ddb0030f4f70656e5468726561642d313136360102116604 1062a21d4edaa262bb779fc2c9923516490c0402a0f7f8 20202021 3840
~~~

Thread End Device:

> matter esp ot_cli factoryreset

> matter esp ot_cli onboardingcodes none

matter onboardingcodes none