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How to create a basic Bluetooth® Low Energy peripheral in 10 min : Click & Go

Workshop Team

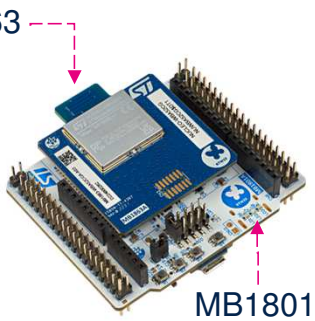
Prerequisites Refresh

SW prerequisites

- STM32CubeWBA MCU package (v1.2.0 as basis + optional patch)
- IDE: STM32CubeIDE (1.14.0)
- A serial terminal (e.g. TeraTerm)
- ST BLE ToolBox Smartphone application

HW prerequisites

- USB A to Micro-B Cable



ST BLE Toolbox

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Basic Peripheral in 10mn : Click & Go :

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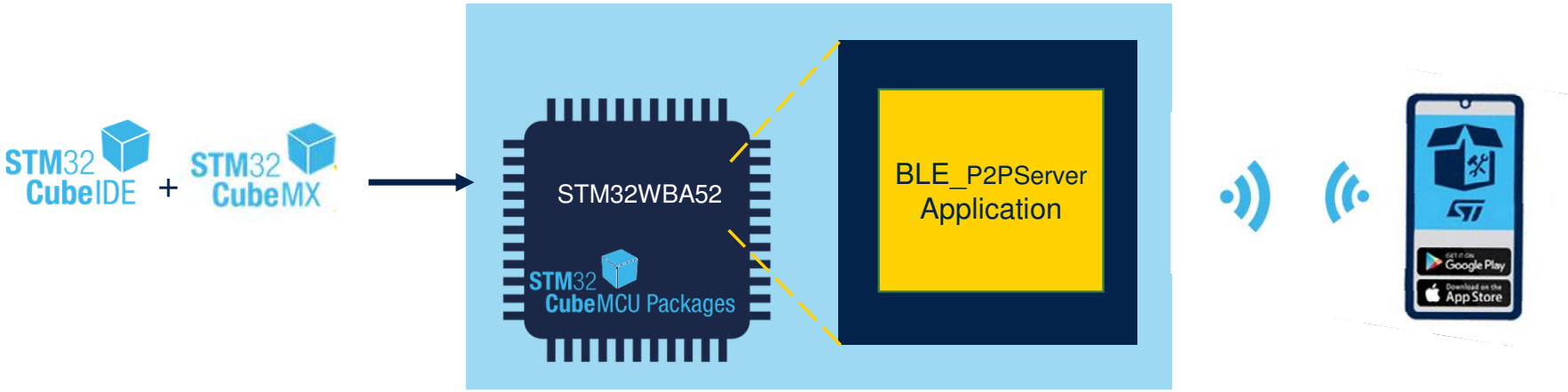
Purpose

- As a first exercise, Let's start from an existing project example BLE_P2PServer
- Purpose of this session is to modify this code example to customize advertising data (Local name).



BLE_P2PServer

- In the second part of the Hands on we will generate associated code, flash and test over Nucleo-WBA5x board

What is a P2P Server?

P2P is a Generic Attribute Profile (GATT) based on Bluetooth® Low Energy defined by STM with proprietary UUIDs 128bit

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GATT Client **GAP central**

GATT Server **GAP peripheral**

What is a P2P Server?

P2P is widely used for direct connection and defined connection between GATT Server and GATT Client

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GATT Client **GAP central**

Notification - SWITCH

Write - LED

GATT Server **GAP peripheral**

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What is a P2P Server?

We will be able to control LED from Mobile and to get notification of LED status from Nucleo-WBA52

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Notification - SWITCH

Write - LED

GATT Client **GAP central**

GATT Server **GAP peripheral**

STM32Cube capabilities

STM32 CubeIDE + STM32 CubeMX

STM32Cube allow to start design within 3 options

1	**Example application** complete application running over NUCLEO
2	**Board level** all the hardware is already configured (NUCLEO_WBA52)
3	**Chipset level** require to configure your HW (PCB) & your application

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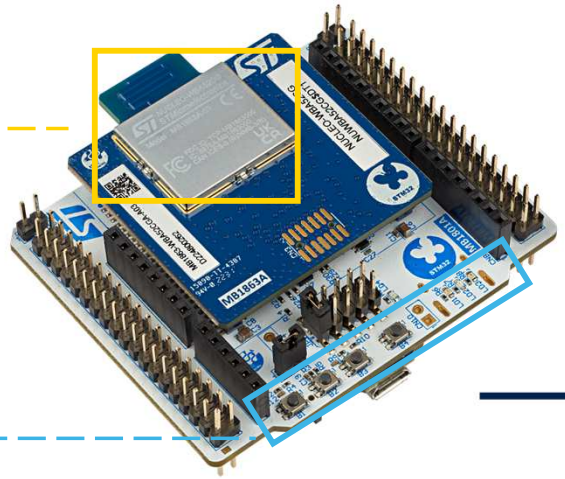
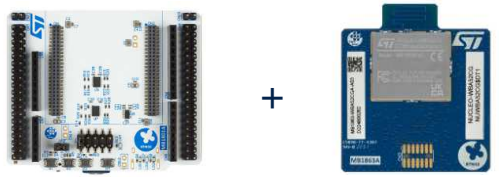
Connect the NUCLEO-WBA52CG to the PC

STM32WBA52CG

3 user LEDs
3 user buttons

STLINK-V3MODS
- Programming
- Debugging
- VCOM





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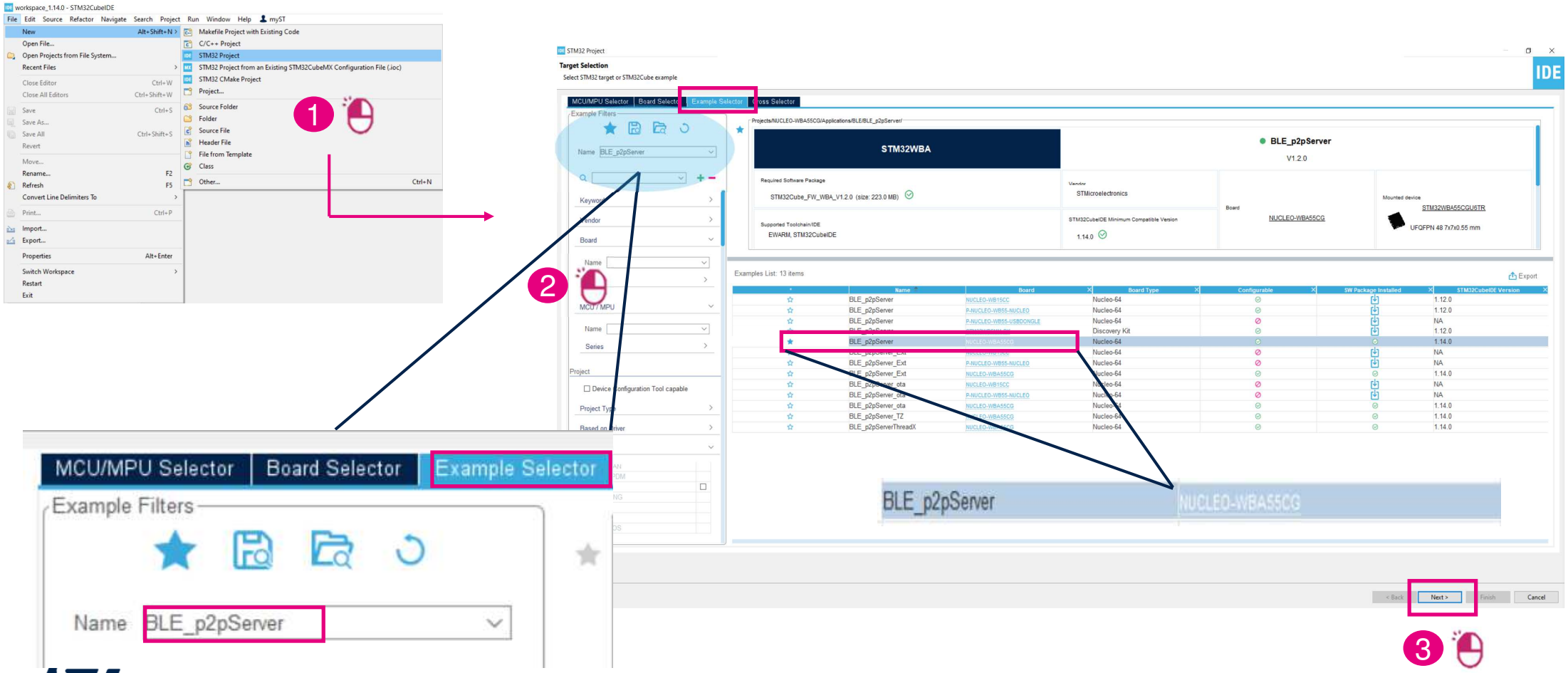
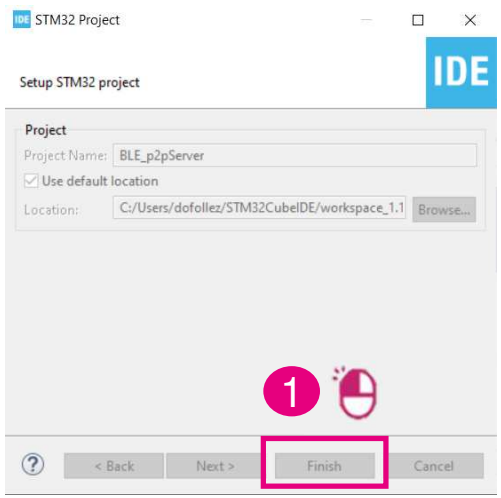
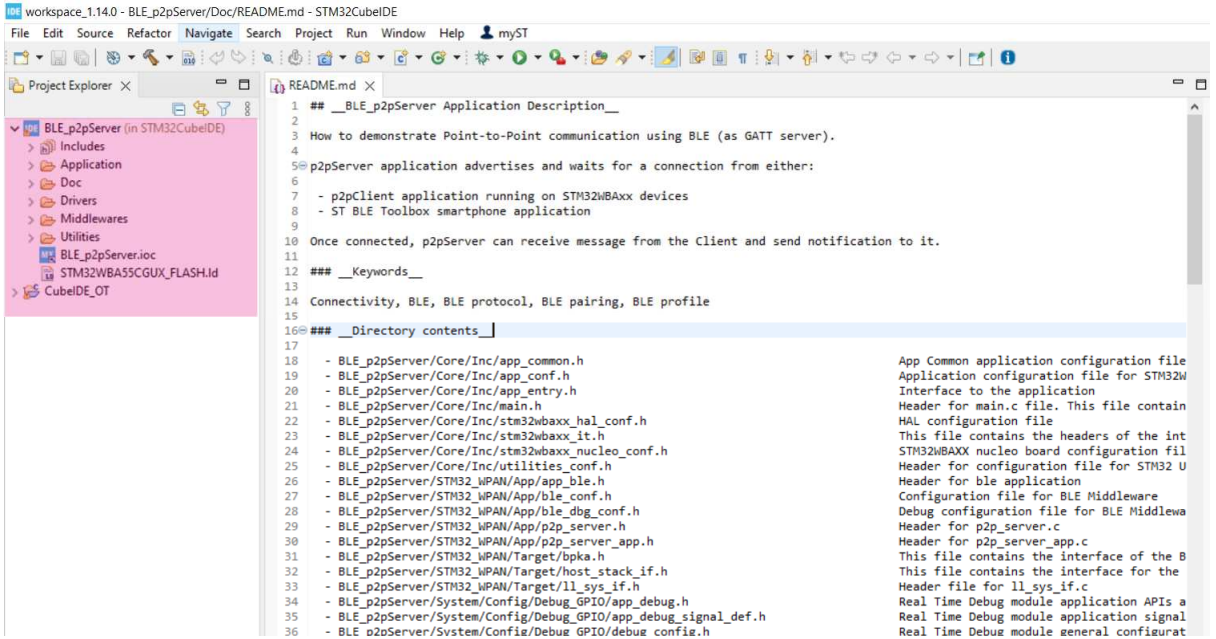
START STM32CubeIDE
Open BLE_P2PServer example



START STM32CubeIDE
Open BLE_P2PServer example





At this stage, Default BLE_P2PServer project source code is ready to be modified, built and flash using STM32CubeIDE

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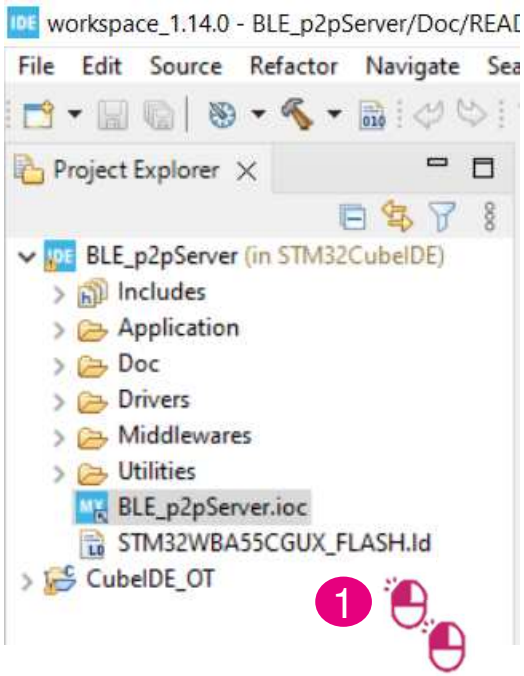
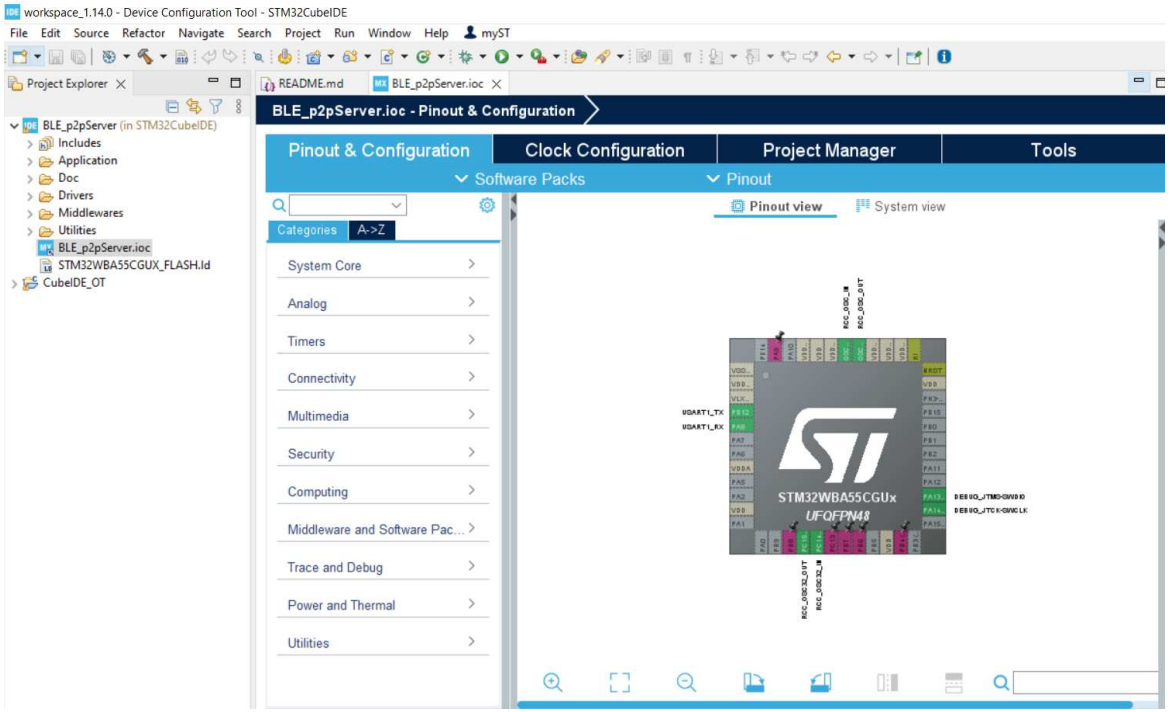
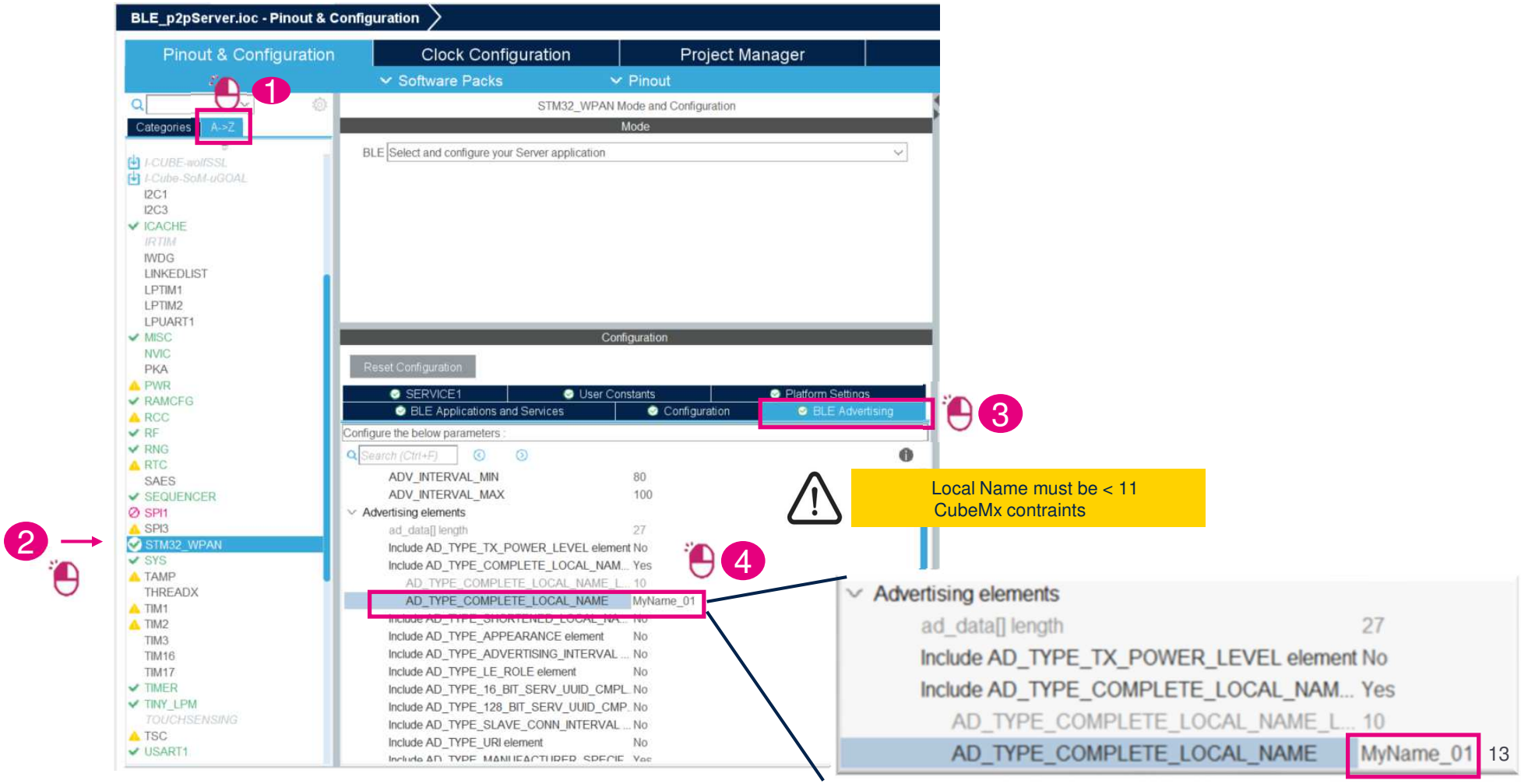
Let’s customize this BLE_p2pServer



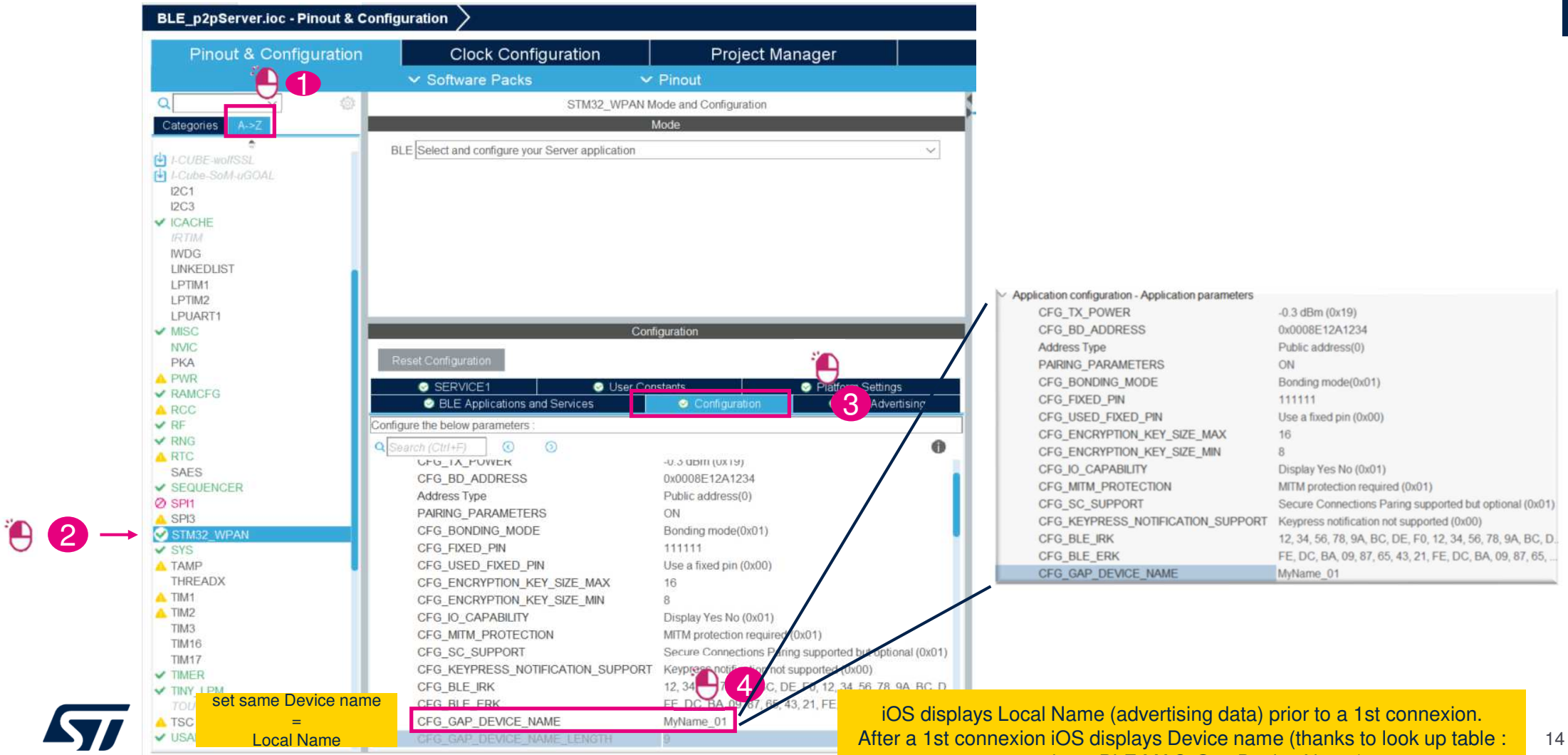


Double click on .ioc file to Open CubeMx graphical interface

Customize Local Name



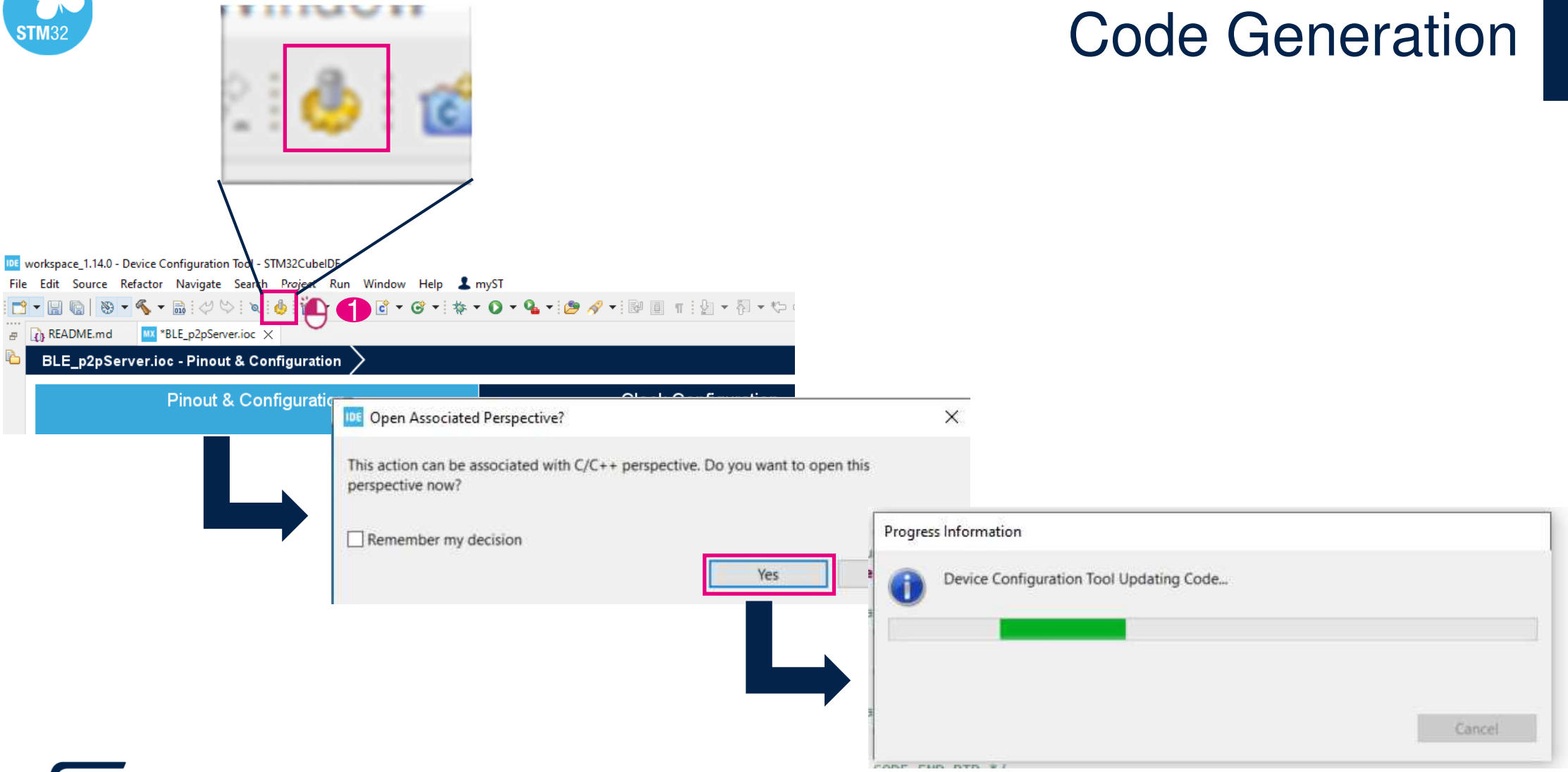
Customize Device Name



set same Device name
=
Local Name

iOS displays Local Name (advertising data) prior to a 1st connexion.
After a 1st connexion iOS displays Device name (thanks to look up table : associates BLE MAC @ & Device Name)

Code Generation



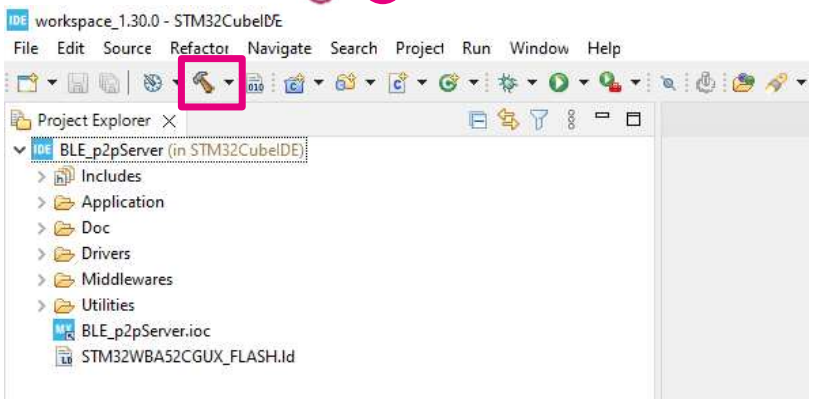
Slide 15

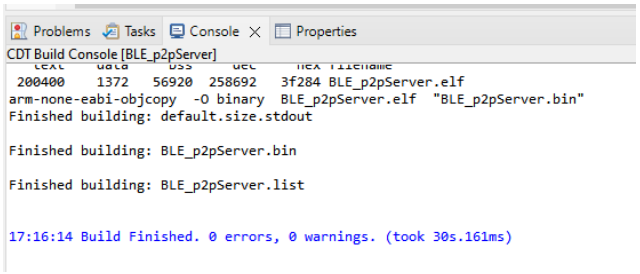
MM0 Put a small comment also on the first two tabs

Manuel MARCIAS; 2023-08-03T11:59:22.255

Build and flash modified project

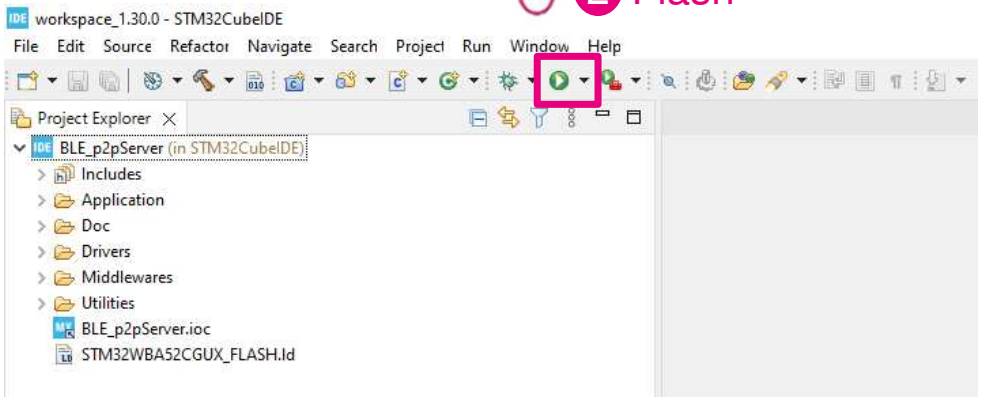
1 Build

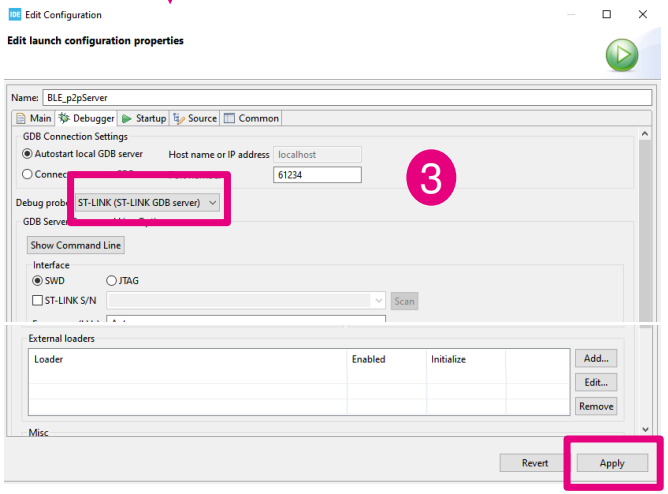


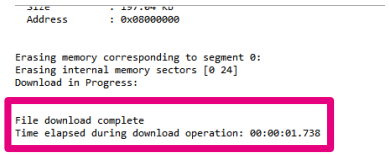


Plug the board

2 Flash







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Enjoy your first STM32WBA52 project running!

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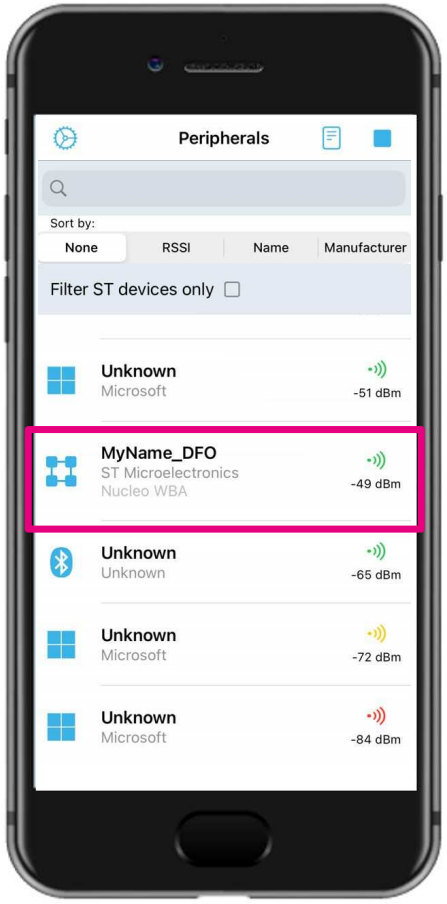
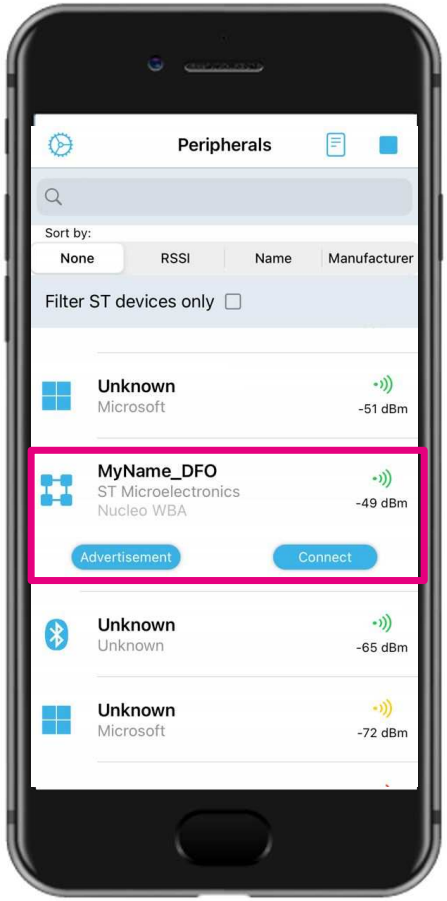
STBLE Toolbox

1



click on device

2



click on connect

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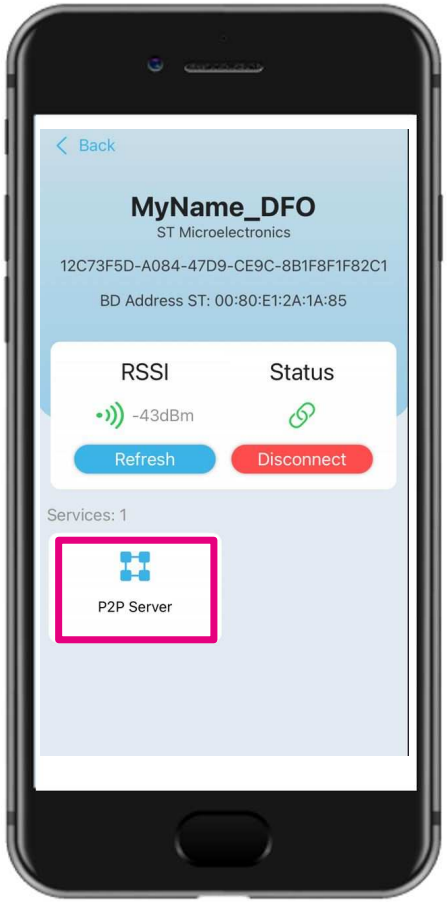
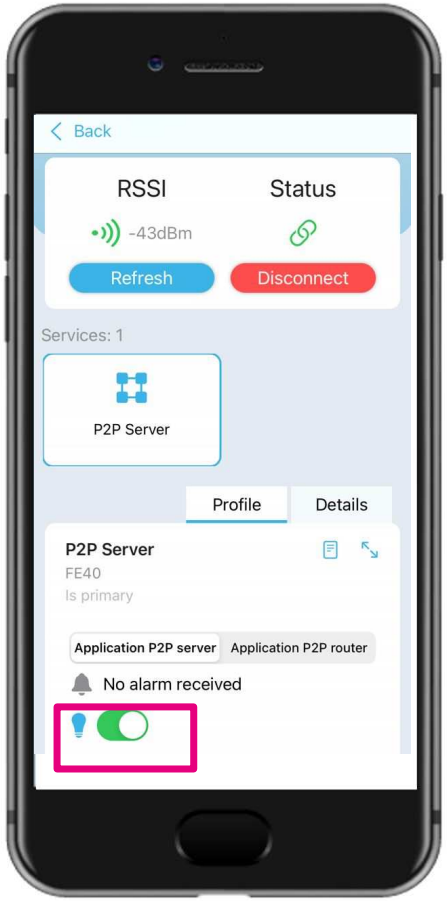
3



access to profile

4



control LED status on Nucleo

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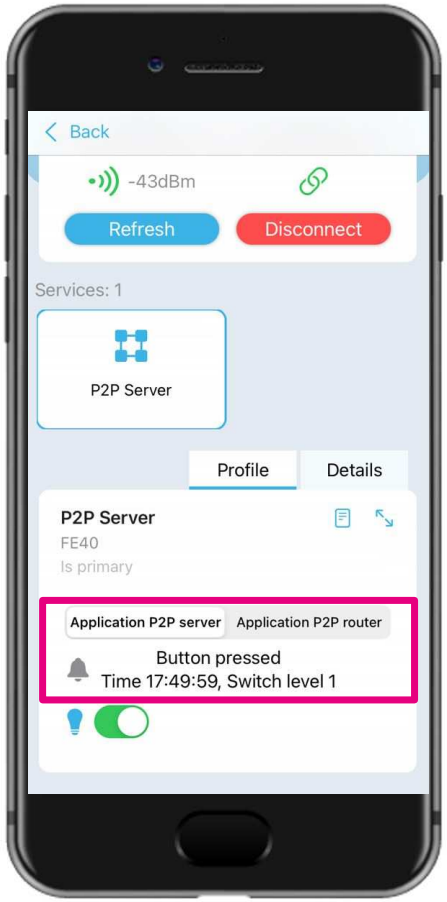
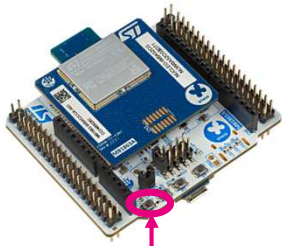
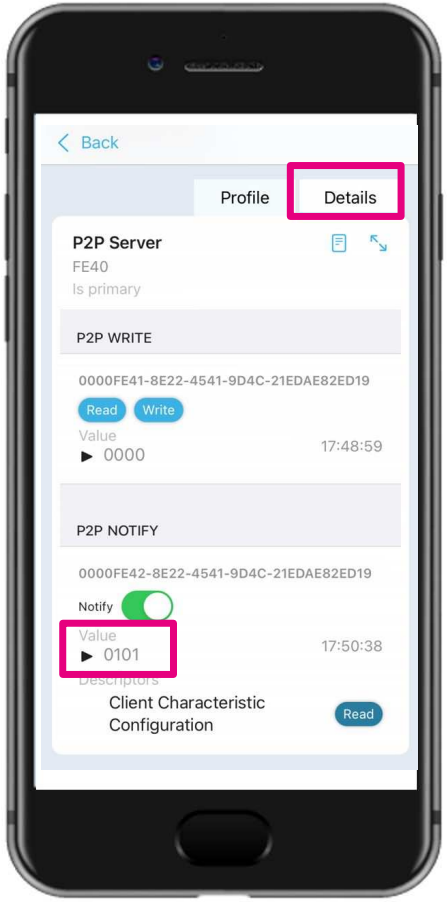
5





push button 1 and notify device

6



click on details to see bytes sent/received

What's next ?

STM32 CubeMX

start and build from turn-key server application

completed

start from chipset, initialize and configure BLE server application

#1 initialize your HW

#2 configure & understand BLE settings (Adv, service, characteristic)

#2 modify application code & build

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