

# ACTIVATE RdP

## Link

<https://www.youtube.com/watch?v=qCuVBD2dmTA&list=PLnMKNibPkDnFzux3PHKUEi14ftDn9Cbm7&index=9>

## Description

In this paperwork, we will configure the RdP, to protect our board to be read the memory.

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## Prerequisites

# Security Features by STM32 Series

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STM32 Series	Security Features																
	96-Bit Unique ID	FLASH WRP	FLASH PCROP	FLASH RDP	Unique entry point	Secure mem/HDP	MPU	Firewall	Trustzone	OTFDEC	Tamper	TRNG	CRYPT AES	HASH	PKA	CryptoLib	Arm Cortex®
STM32 F0	Available on all devices	Available on all devices		Available on all devices							Available on all devices						M0
STM32 F1	Available on all devices	Available on all devices		Available on all devices			Available on all devices				Available on all devices						M3
STM32 F2	Available on all devices	Available on all devices		Available on all devices			Available on all devices				Available on all devices	Depends on device part number	Depends on device part number	Depends on device part number			M3
STM32 F3	Available on all devices	Available on all devices		Available on all devices			Available on all devices				Available on all devices						M4
STM32 F4	Available on all devices	Available on all devices	Depends on device part number	Available on all devices			Available on all devices				Available on all devices	Depends on device part number	Depends on device part number	Depends on device part number			M4
STM32 F7	Available on all devices	Available on all devices	Depends on device part number	Available on all devices			Available on all devices				Available on all devices	Depends on device part number	Depends on device part number	Depends on device part number			M7
STM32 L0	Available on all devices	Available on all devices		Available on all devices			Available on all devices	Available on all devices			Available on all devices		Depends on device part number				M0+
STM32 L1	Available on all devices	Available on all devices		Available on all devices			Available on all devices				Available on all devices						M3
STM32 L4	Available on all devices	Available on all devices		Available on all devices			Available on all devices	Available on all devices			Available on all devices		Depends on device part number	Depends on device part number			M4
STM32 L5	Available on all devices	Available on all devices		Available on all devices			Available on all devices		Available on all devices	Available on all devices	Available on all devices				Available on all devices		M33
STM32 H7	Available on all devices	Available on all devices		Available on all devices	Depends on device part number	Depends on device part number	Available on all devices				Available on all devices	Depends on device part number	Depends on device part number	Depends on device part number			M7/M4
STM32 G0	Available on all devices	Available on all devices		Available on all devices		Depends on device part number	Available on all devices				Available on all devices	Depends on device part number	Depends on device part number				M0+
STM32 G4	Available on all devices	Available on all devices		Available on all devices		Depends on device part number	Available on all devices				Available on all devices	Depends on device part number	Depends on device part number				M4
STM32 WB	Available on all devices	Available on all devices		Available on all devices			Available on all devices				Available on all devices				Available on all devices		M4/M0+

Available on all devices

Depends on device part number

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## STM32 Board

ST-Link cable

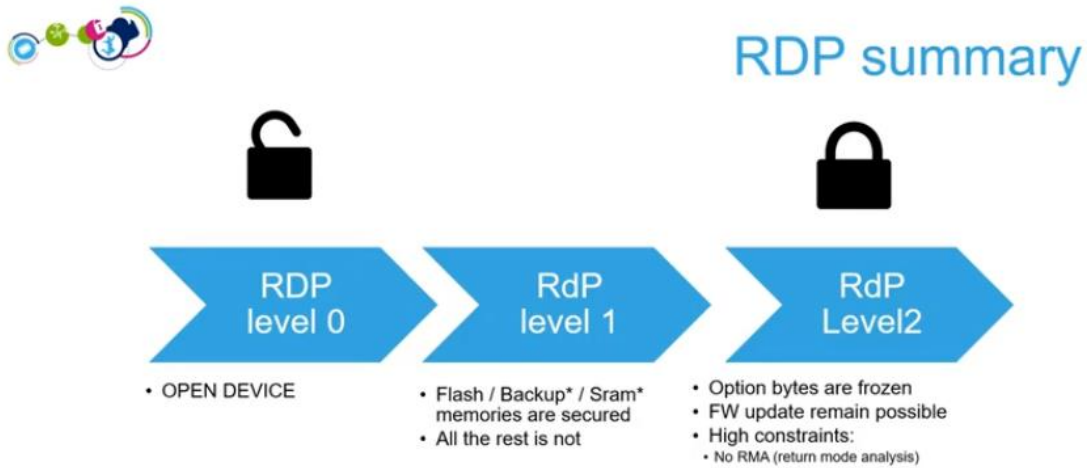
STM32CubeProgrammer

STM32CubeMX

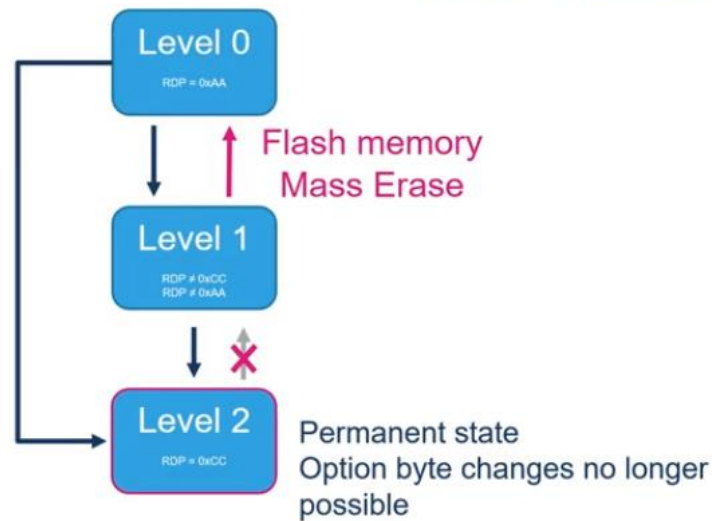
STM32CubeIDE

## Walkthrough

### Step 1 : Understand different RDP Levels



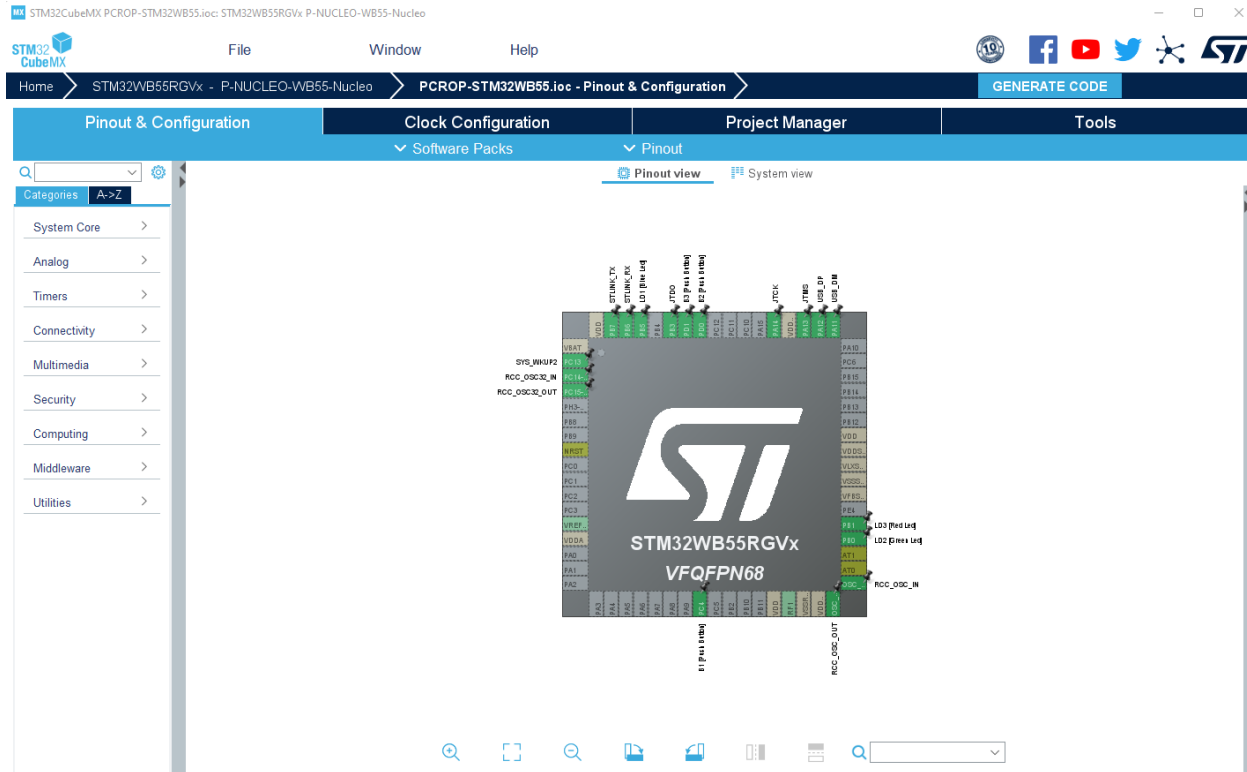
### RDP transition



## Step 2 : Run STM32CubeMX and generate the code

Launch STM32CubeMX and select the right board depending on the one you are using. In my case I use the WB55 Nucleo board. Then you can generate the code of your project.

Don't forget to select the correct IDE (in my case STM32CubeIDE).



### Step 3 : Write a code to test.

To test our RdP functions, I will simply write a small code that is making a LED blink in our main.c file.

```

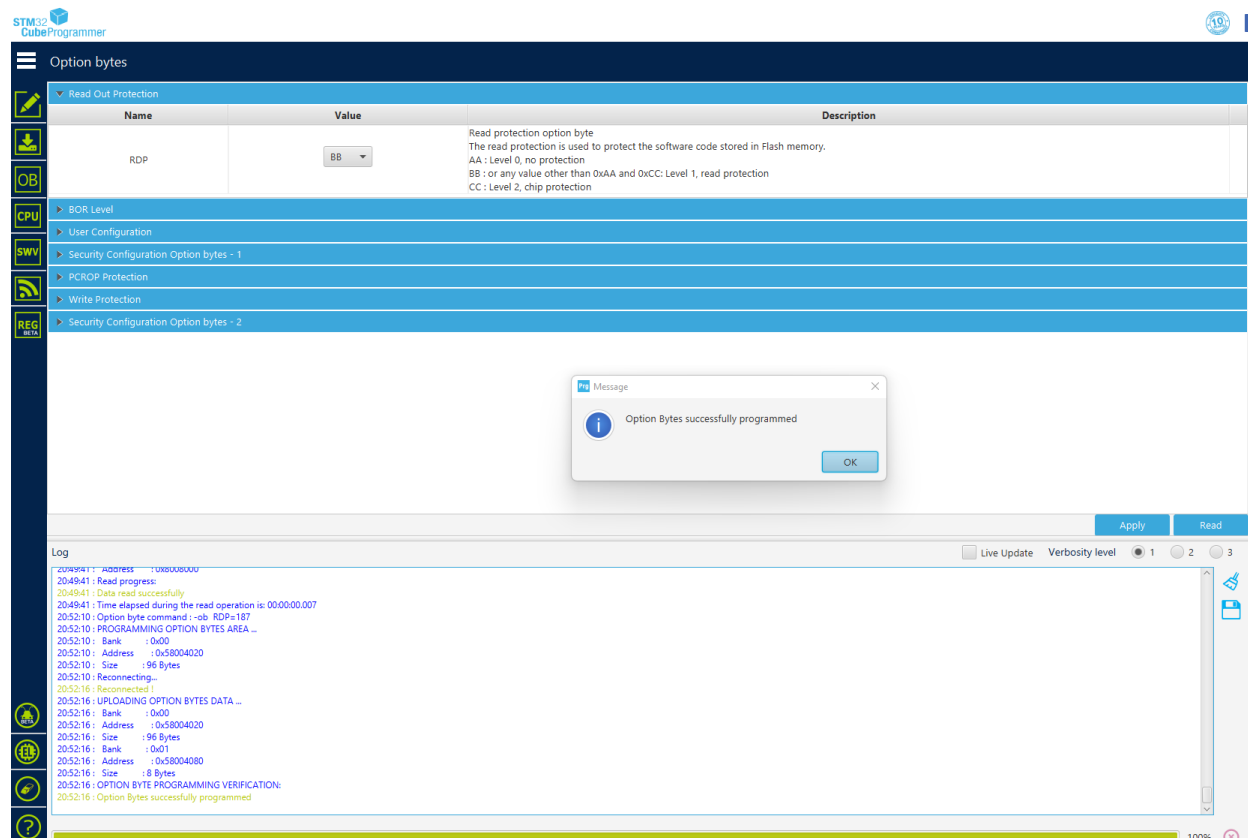
main.c startup_stm32wb55rgvx.s
63 /* USER CODE END 0 */
64
65 /**
66  * @brief The application entry point.
67  * @retval int
68  */
69 int main(void)
70 {
71     /* USER CODE BEGIN 1 */
72
73     /* USER CODE END 1 */
74
75     /* MCU Configuration-----*/
76
77     /* Reset of all peripherals, Initializes the Flash interface and the Systick. */
78     HAL_Init();
79
80     /* USER CODE BEGIN Init */
81
82     /* USER CODE END Init */
83
84     /* Configure the system clock */
85     SystemClock_Config();
86
87     /* USER CODE BEGIN SysInit */
88
89     /* USER CODE END SysInit */
90
91     /* Initialize all configured peripherals */
92     MX_GPIO_Init();
93     MX_USART1_UART_Init();
94     MX_USB_PCD_Init();
95     /* USER CODE BEGIN 2 */
96
97     /* USER CODE END 2 */
98
99     /* Infinite loop */
100    /* USER CODE BEGIN WHILE */
101    while (1)
102    {
103        /* USER CODE END WHILE */
104
105        /* USER CODE BEGIN 3 */
106        HAL_GPIO_TogglePin(LD2_GPIO_Port, LD2_Pin);
107        HAL_Delay(250);
108    }
109    /* USER CODE END 3 */
110 }

```

Once the code is done, just compile and run the code.

## Step 4 : Activate RdP Level 1

Just launch your STM32Programmer and connect to your ST-Link Cable. When connected go to the OB section and Read Out Protection. You will be able to change your read protection. By default you should be in “AA” which is the default mode. Just switch it to “BB” and click on the apply button.



The screenshot displays the STM32CubeProgrammer application. On the left sidebar, the 'OB' (Option Bytes) icon is selected. The main window shows the 'Option bytes' configuration. Under the 'Read Out Protection' section, the 'RDP' value is set to 'BB'. A message dialog box is open in the center, stating 'Option Bytes successfully programmed'. At the bottom, the 'Log' window shows the following details:

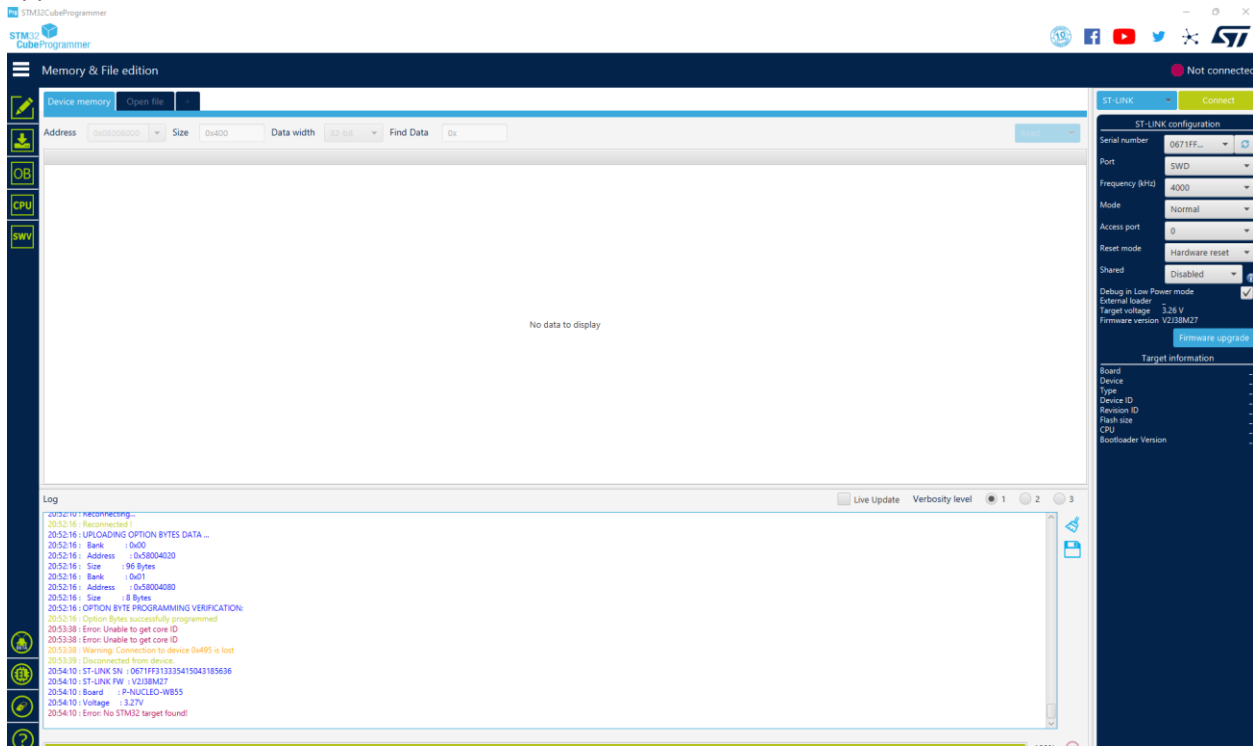
```

20:49:11 : Address : 0x00000000
20:49:11 : Read progress
20:49:41 : Data read successfully
20:49:41 : Time elapsed during the read operation is: 00:00:00.007
20:52:10 : Option byte command : -ob RDP=187
20:52:10 : PROGRAMMING OPTION BYTES AREA ...
20:52:10 : Bank : 0x00
20:52:10 : Address : 0x8004020
20:52:10 : Size : 96 Bytes
20:52:10 : Reconnecting...
20:52:16 : Reconnected !
20:52:16 : UPLOADING OPTION BYTES DATA ...
20:52:16 : Bank : 0x00
20:52:16 : Address : 0x8004020
20:52:16 : Size : 96 Bytes
20:52:16 : Bank : 0x01
20:52:16 : Address : 0x8004080
20:52:16 : Size : 8 Bytes
20:52:16 : OPTION BYTE PROGRAMMING VERIFICATION:
20:52:16 : Option Bytes successfully programmed
  
```

your led should stop blinking. Just unplug and plug back your cable to your computer. If the Led is not blinking back, press the reset button of your board.

## Step 4 : Check the memory

Normally if you have done things correctly you should not be able to check your memory with the application.



To put back your device normally, just go to the OB section and put “AA” back. Warning the flash memory will be reset.