



How to Save and Restore ESP8266 and ESP32 Firmware

by admin / January 31, 2020 / 2 Comments

We may want to save and later restore ESP8266 and ESP32 firmwares that came with them and were installed from the factory. It will come handy later on when we are troubleshooting the ESP development boards for possible defects.

We need the software Esptool to do this. Esptool is based on Python and so we need to first install Python.

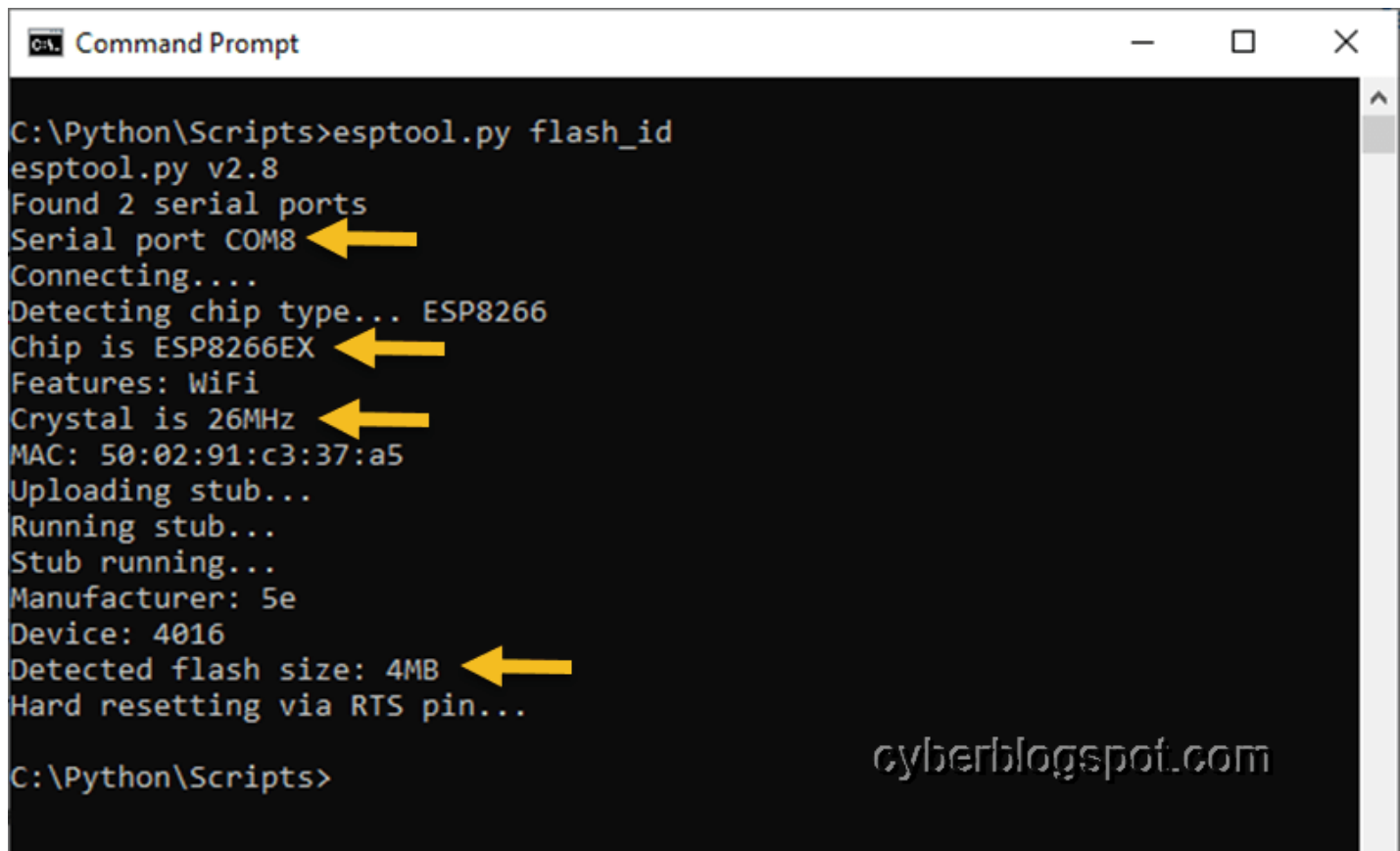
If you are using Windows and do not have Esptool installed yet, please see the article entitled [How to Install Esptool on Windows 10](#).

Gathering the Board's Info

To properly save and restore an ESP8266 or an ESP32 firmware, we must be sure on the size of the flash chip involved.

To gather the board's info, run the *flash_id* command.

```
1 esptool.py flash_id
```



```
C:\Python\Scripts>esptool.py flash_id
esptool.py v2.8
Found 2 serial ports
Serial port COM8
Connecting....
Detecting chip type... ESP8266
Chip is ESP8266EX
Features: WiFi
Crystal is 26MHz
MAC: 50:02:91:c3:37:a5
Uploading stub...
Running stub...
Stub running...
Manufacturer: 5e
Device: 4016
Detected flash size: 4MB
Hard resetting via RTS pin...

C:\Python\Scripts>
```

Notice that we did not specify the port where the development board is connected. Esptool was smart enough to scan the different ports. It found that the board is connected on **COM8**.

On the screenshot above, I highlighted the important information with an arrow. The most important info we need is the flash size, which, in this particular case, is **4MB**.

Save 1MByte or 8Mbit Flash

The command for saving the firmware of an ESP8266 or ESP32 chip with a 1MB (8Mbit) flash chip is as follows:

```
1 esptool.py --baud 115200 --port COM8 read_flash 0x0 0x100000 fw-backup-1M.bin
```

--baud 115200, the baud rate of the data transfer

--port COM8, the communications port where the board is connected

read_flash, the specific command

0x0, the starting address of the flash memory to read in hexadecimal

0x100000, the size of flash memory to read in hexadecimal (1048576 or 1MB decimal)

fw-backup-1M.bin, file name of the saved firmware

Save 4MByte or 32Mbit Flash

When saving the firmware of a development board with 4MB (32Mbit) of flash chip, we adjust the memory size parameter on the command. Hexadecimal 0x400000 is decimal 4194304 or 4MB.

```
1 esptool.py --baud 115200 --port COM8 read_flash 0x0 0x400000 fw-backup-4M.bin
```

Restore 1MByte or 8Mbit Flash

```
1 esptool.py --baud 115200 --port COM8 write_flash 0x0 fw-backup-1M.bin
```

Restore 4MByte or 32Mbit Flash

```
1 esptool.py --baud 115200 --port COM8 write_flash 0x0 fw-backup-4M.bin
```

Related Articles on How to Save and Restore ESP8266 and ESP32 Firmware

[How to Test NodeMCU V3 Using Esptool](#)

[How to Install Arduino IDE on Windows 10](#)

[How to Set up Arduino IDE for ESP8266 Programming](#)

[How to Install Esptool on Windows 10](#)

[NodeMCU V3 ESP8266 Pinout and Configuration](#)

[NodeMCU ESP-32S Pin Configuration](#)

[How to Use MCP4725 Module with Arduino](#)

[How to Use ADS1220 ADC Module with Arduino](#)

References on How to Save and Restore ESP8266 and ESP32 Firmware

[ESP8266 on Wikipedia](#)

[ESP32 on Wikipedia](#)

[Esptool Wiki](#)

2 thoughts on “How to Save and Restore ESP8266 and ESP32 Firmware”

PAUL

January 2, 2021 at 7:48 am

Super helpful! I was able to backup my esp32.

Thanks!

[Reply](#)

MARFI

January 2, 2022 at 8:01 pm

Awesome!

[Reply](#)

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