Sample: f8c4c9

Sample

SHA256: `f8c4c946eaedcfa8bbb722970211c2c4a458f6483dafb5d5a7fd83b3daa441cd`

The sample is a 32 bit Windows Portable Executable (PE) that attempts to execute a request towards an encrypted URI via a XOR Cipher.

Task

Extract embedded strings from the sample

Static Analysis

Running floss and pestudio yielded the following results:

Notable Strings

```
f1DM
KERNEL32.DLL
urlmon.dll
GetSystemDefaultLocaleName
ExitProcess
lstrlenW
URLDownloadToFileW
http://NQLW     BM
 '@H
```

Imports

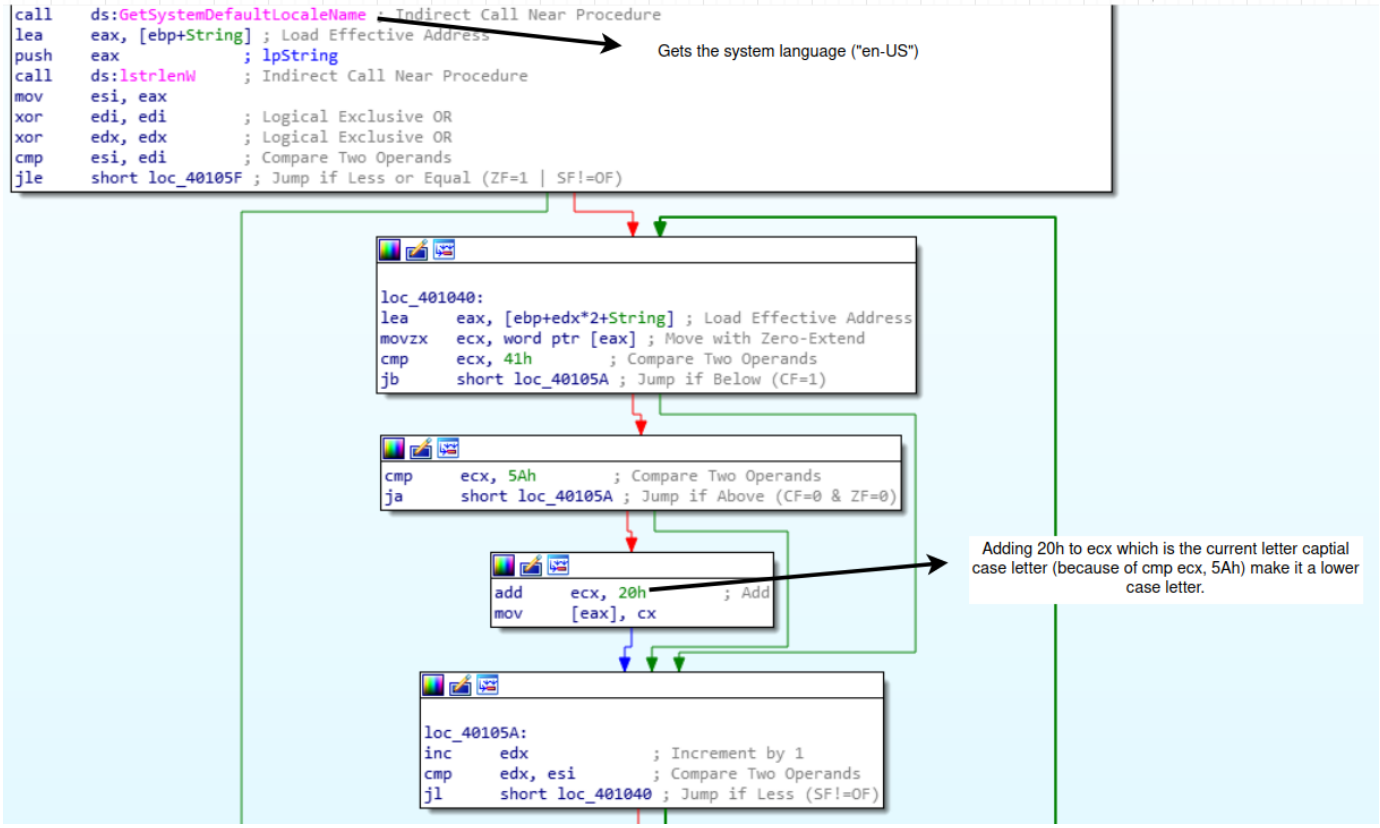
```
URLDownloadToFileW
```

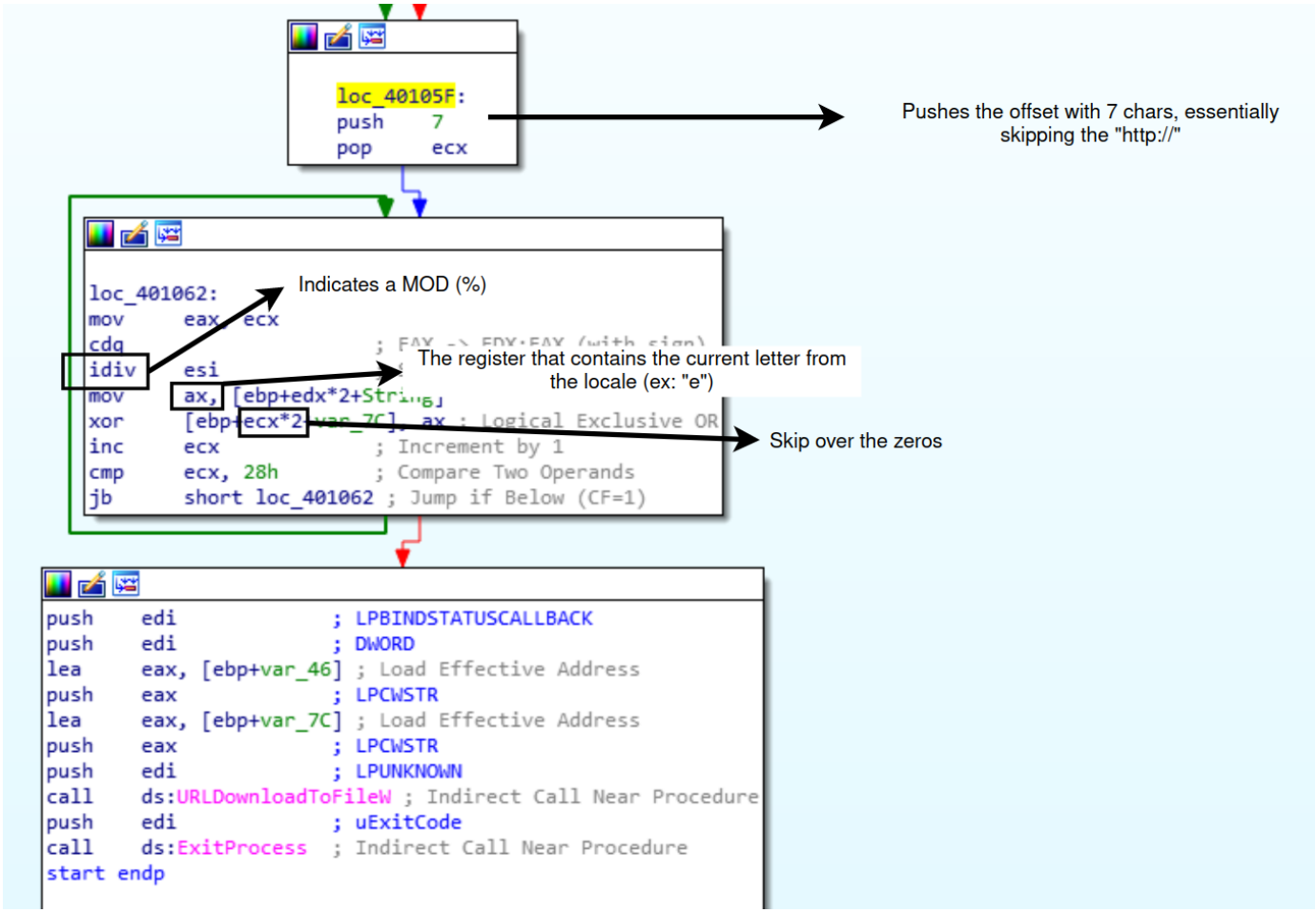
Libs

```
KERNEL32.DLL
urlmon.dll
```

Dynamic Analysis

I've run the sample with IDA in a debug mode setting a breakpoint at the entry of the program.
From the image, we can see that the XOR Cipher is most likely to be the System's Locale.





After numerous tries to get the "key" to get the URI I gave up, the results didn't make any sense to me. I wrote a simple python script that should have got me the URI but it outputs gibberish.

```
encoded_url =
b'\x68\x74\x74\x70\x3a\x2f\x2f\x4e\x51\x4c\x57\x09\x42\x4d\x0f\x04\x5f\x5a\x
```

```
4d\x03\x17\x0b\x2d\x3c\x07\x31\x4f\x02\x06\x03\x07\x41\x06\x20\x27\x40\x48\x
1b\x07'

sys_lang = "en-us"

for i in range(7, len(encoded_url)):
    print(chr(encoded_url[i] ^ ord(sys_lang[i % len(sys_lang)])), end="")
```

I though that I would successfully bruteforce the key by creating a script but after about 20-30 min of running I gave up.

The strings that I got follows:

```
c$?2go8|a1w8preItT!/spb/+UT%&6r%
c$?2go8|a1w8pre Isb_bwufilsSB.ent
bwufi
```

I also put Fiddler to check any outgoing connections that could get me the decoded URI however none appeared.

Tools

- procmon
- Fiddler
- Inetsim
- Wireshark
- IDA Freeware
- Cutter
- floss
- pestudio
- VirtualBox
    - FLARE VM (Win10 Enterprise for Malware Analysis)
    - REMnux