Fun With Thread Local Sto

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You Can Call Me Al

Thread Local Storage callbacks were discovered in 2000.
However, widespread use didn't occur until 2004.
Now, it should be the first place to look for code, since it runs before the main entrypoint.
And that can make all the difference...

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So the main file does nothing. If we assume that the structure is normal, then we could check the thread local storage table. Just in case.

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Empty!

So the search moves to the callbacks, of which there is only one, but it looks peculiar. It's not a virtual address.

The One and Only

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DA View-A

Imported TLS callbac

We know that the TLS callback array can be altered at runtime. We know that the TLS callbacks can point outside of the image. Now we are looking at a new way to achieve that. Imports are resolved before TLS callbacks are called. So TLS callbacks can be imported addresses! Let's check the import table.

The Search Goes On

So the search moves to TLS3.DLL, and the mysterious function called 'a'.

'A' function

CM IDA - tis3.dll

File Edit Search View Debug Options Window Jump =[]]= DA View-A CODE:00401000 File Name C:\Users\Peter\z\tls3.dll Portable executable for 80386 (PE) CODE:00401000 Format CODE:00401000 Imagebase : 400000 CODE:00401000 Section 1. (virtual address 00001000) Virtual size : 00001000 (Section size in file : 00000200 (Offset to raw data for section: 00000600 Flags 60000020: Text Executable Readable Alignment : default CODE:00401000 4096.) CODE:00401000 CODE:00401000 CODE:00401000 CODE:00401000 Alignment : default CODE:00401000 Exported entry 1. a CODE:00401000 CODE:00401000 CODE:00401000 Segment type: Pure code CODE:00401000 Segment permissions: Read/Execute segment para public 'CODE' use32 CODE:00401000 CODE assume cs:CODÉ CODE:00401000 torg 401000h CODE:00401000 CODE:00401000 assume es:_reloc, ss:_reloc, ds:CODE, fs:nothing, gs:nothing CODE:00401000 CODE:00401000 CODE:00401000 CODE:00401000 CODE:00401000 public a CODE:00401000 proc near ; DATA XREF: HEADER:pe_headerto a CODE:00401000 CODE:00401000 ; uType push push offset Caption CODE:00401002 "demo CODE:00401007 push offset Text CODE:0040100C hWnd push CODE:0040100E call j_MessageBoxA CODE:0040100E analysis failed CODE:0040100E CODE:00401013 CODE:00401013 CODE:00401013 CODE:00401013 CODE:00401013 ; BOOL ___stdcall start(HINSTANCE hinstDLL,DWORD fdwReason,LPVOID lpReserved) CODE:00401013 public start CODE:00401013 start ; DATA XREF: HEADER:pe_headerto proc near al, 1 CODE:00401013 mov ; DllEntryPoint CODE:00401015 CODE:00401015 start retn endp ODE:00401015

The 'Aha' Moment

So that's how it's done. If we let it run...

Surprise!





The code runs.



Just a little something to add to the workload.