[Malware] Lazarus group's Brambul worm of the former Wannacry - 2

26 Feb 2020 | 0 Comments | 악성코드, 라자루스, 북한, 워너크라이, 웜, malware, wannacry, lazarus, worm, north korea, english

Analysis

Continued from [Malware] Lazarus group’s Brambul worm of the former Wannacry - 1

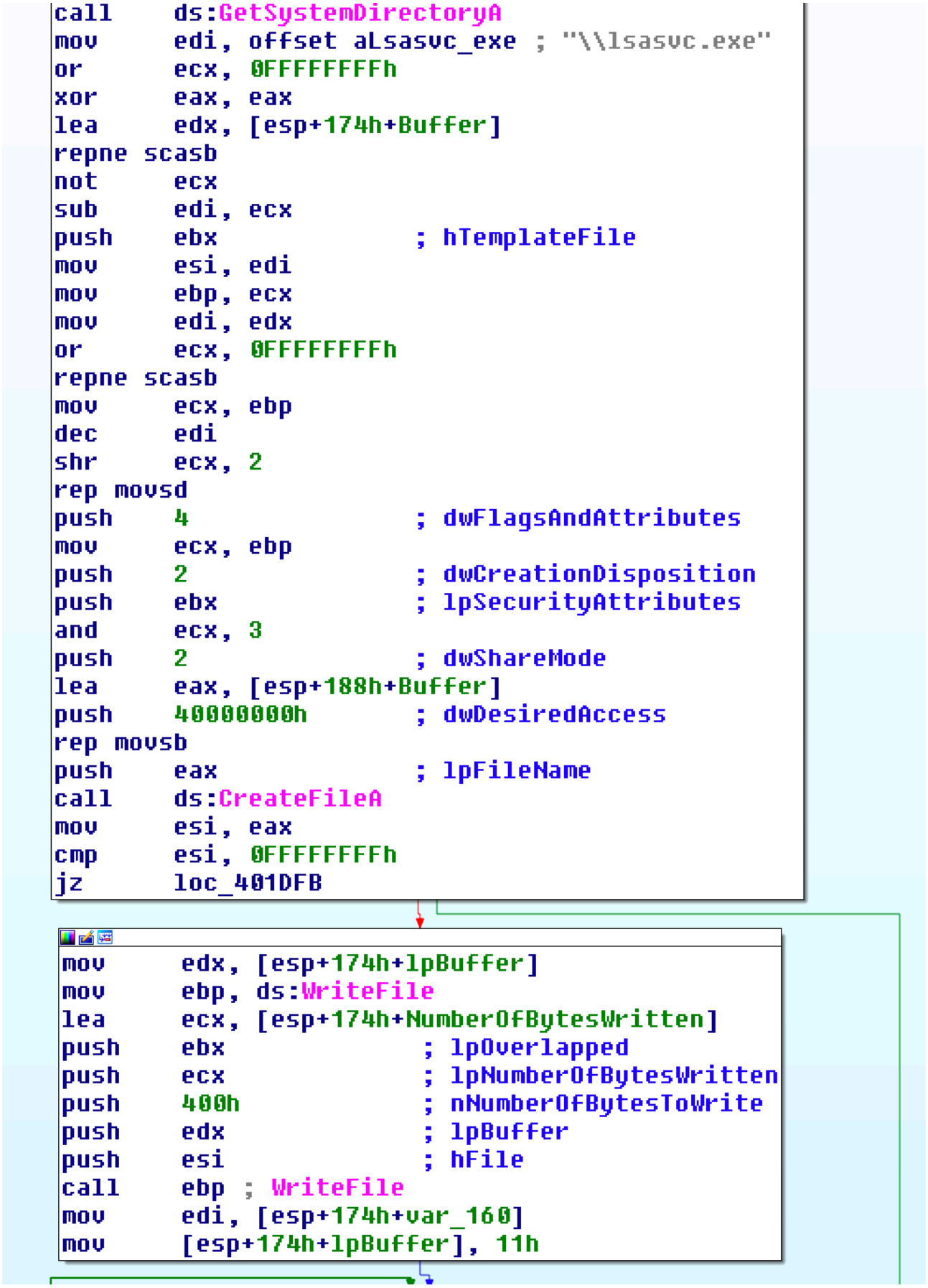
Second routine

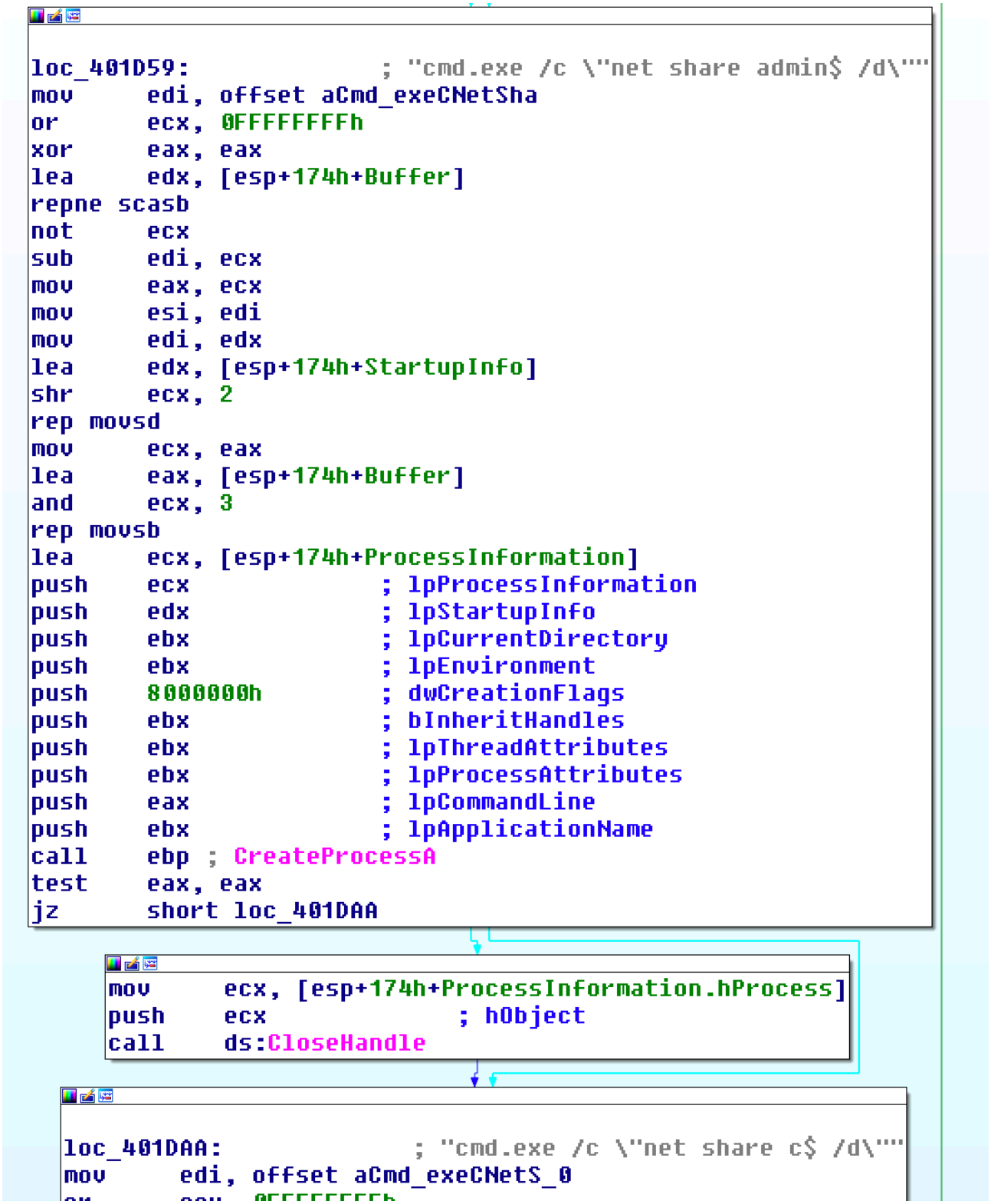
As soon as the second routine starts, three subroutines are called: sub_401ba0, sub_401b30, and sub_401040.


loc_40276D:
test eax, eax
jnz loc_4028B5
threadex
call sub_401BA0
call sub_401B30
call sub_401040
mov edi, offset aSubject ; "Subject: "
or ecx, 0FFFFFFFFh
xor eax, eax
lea edx, [esp+5A0h+Buffer]
repne scasb
not ecx
sub edi, ecx
mov eax, ecx
mov esi, edi
mov edi, edx
lea edx, [esp+5A0h+Buffer]
shr ecx, 2
rep movsd
mov ecx, eax
xor eax, eax
and ecx, 3
rep movsb
mov edi, offset Dest
or ecx, 0FFFFFFFFh
repne scasb
not ecx
sub edi, ecx
mov esi, edi
mov ebx, ecx
mov edi, edx
or ecx, 0FFFFFFFFh
repne scasb
mov ecx, ebx
dec edi
shr ecx, 2
rep movsd
mov ecx, ebx
and ecx, 3
rep movsb
call ds:GetVersion
mov [esp+5A0h+pcbBuffer], eax
and eax, 0FFFFh
cmp eax, 6
jg short loc_402817

sub_401ba0

Create the lsasvc.exe file and run the process. Afterwards, access the shared folder as admin like the first routine.





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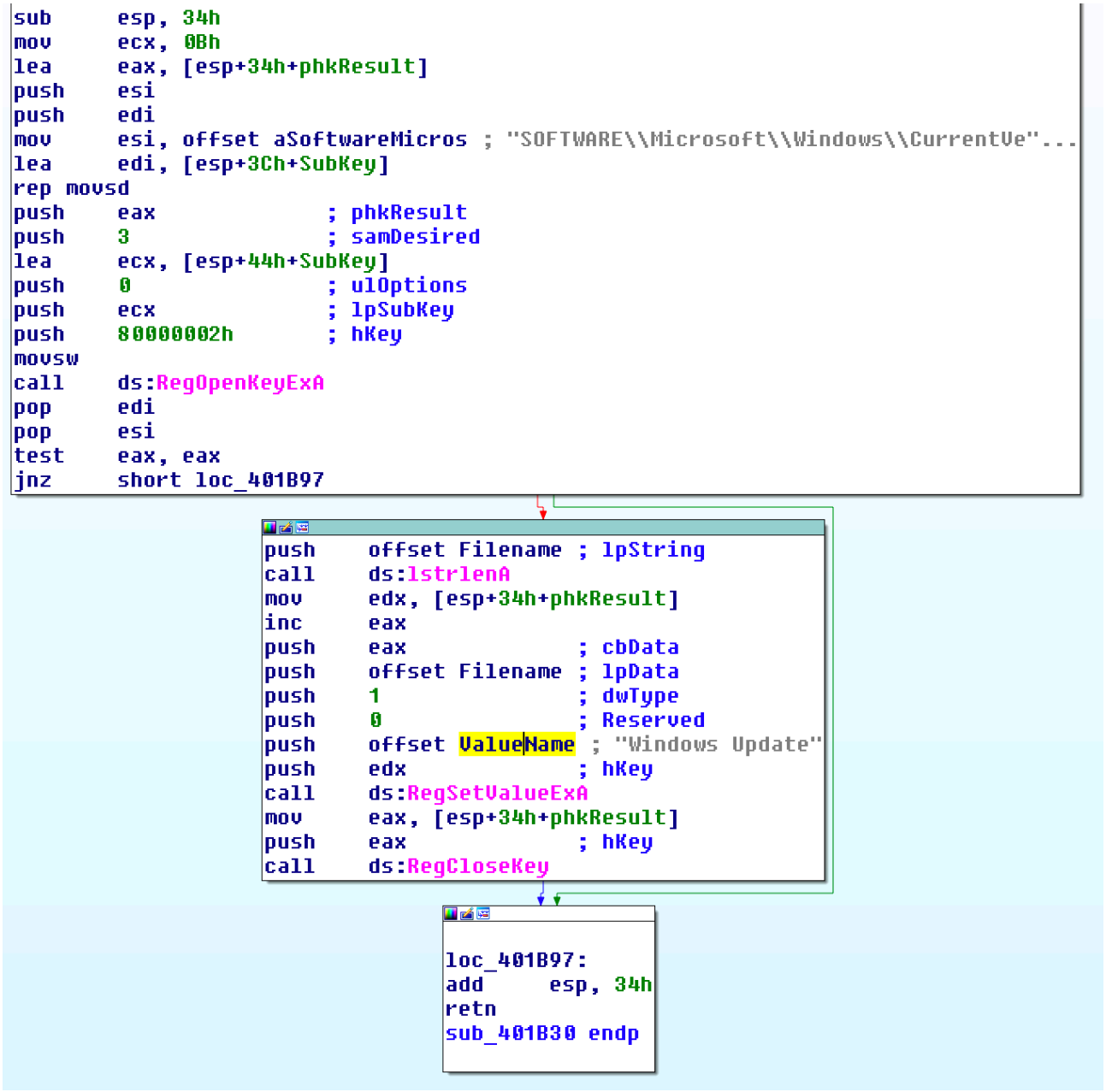
sub_401b30

By adding a value named “WindowsUpdate” to the registry “Software \ Microsoft \ Windows \ CurrentVersion \ Run” path, the process will automatically run each time the computer is turned on.



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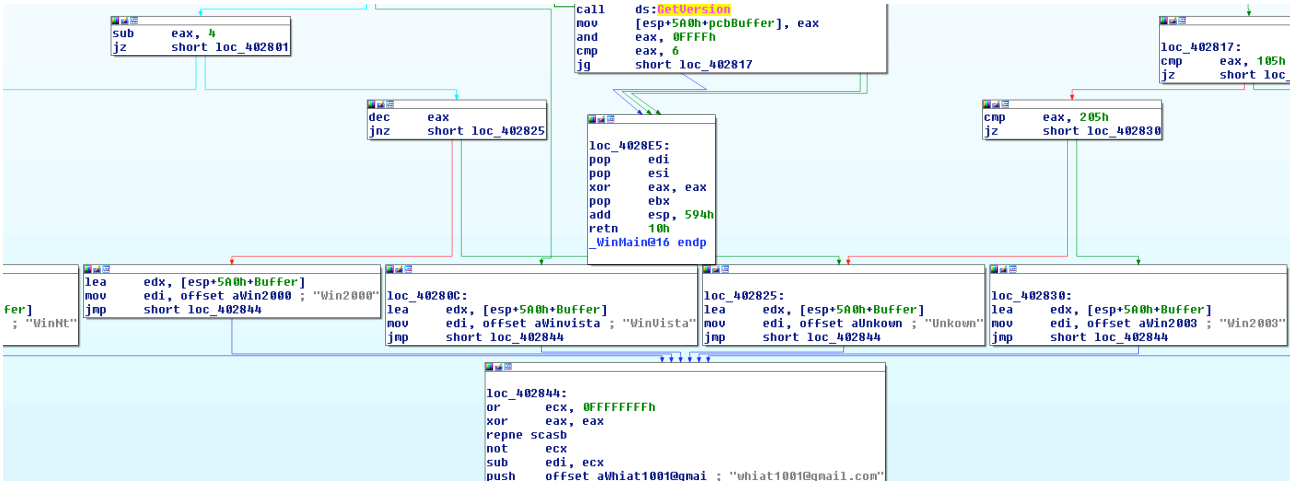
sub_401040

Similar to what it did at the beginning of the program run, the gethostname function gets the user's name.

```
if ( gethostname(&name, 260) )
{
  result = 0;
}
else
{
  v1 = gethostbyname(&name);
  v2 = v1;
  if ( v1 )
  {
    v3 = v1->h_addr_list;
    if ( *v3 )
    {
      v4 = 0;
      do
      {
        if ( strlen(Dest) >= 0xF4 )
          break;
        sprintf(
          v0,
          Format,
          (unsigned __int8)*v3[v4],
          (unsigned __int8)v3[v4][1],
          (unsigned __int8)v3[v4][2],
          (unsigned __int8)v3[v4][3]);
        v3 = v2->h_addr_list;
        ++v4;
        v0 = &Dest[strlen(Dest)];
      }
      while ( v3[v4] );
    }
  }
  result = 1;
}
return result;
```

After the three subroutines are executed, the GetVersion function is used to get the version of the operating system. I could see that it was classified as “WinNt”, “Win2000”, “WinVista”, “Win2003”, “WinXp”, and “Unkonwn”.



After that, it push the string whiat1001@gmail.com onto the stack and call the sub_401430 subroutine to send the data using the SMTP protocol. The sending account and mail server are the same as whiat1001 and gmail.com, but after pretending the sender account to johnS203@yahoo.com, the process ends. In sub_401430 we could see the strings related to SMTP and mail headers.

```
.data:004083B4 aFromMicrosoftP db 'From: "Microsoft" <provider@microsoft.com>',0Dh,0Ah,0
.data:004083B4                                         ; DATA XREF: sub_401430+47D↑o
.data:004083E1                 align 4
.data:004083E4 aData           db 'DATA',0Dh,0Ah,0     ; DATA XREF: sub_401430+3CF↑o
.data:004083EB                 align 4
.data:004083EC aRcptTo         db 'RCPT TO:<',0        ; DATA XREF: sub_401430+2DE↑o
.data:004083F6                 align 4
.data:004083F8 aMailFrom       db 'MAIL FROM:<',0      ; DATA XREF: sub_401430+19D↑o
.data:00408404 asc_408404      db '>',0Dh,0Ah,0        ; DATA XREF: sub_401430+106↑o
.data:00408404                                         ; sub_401430+1EC↑o ...
.data:00408408 aHelo           db 'HELO <',0           ; DATA XREF: sub_401430+B9↑o
.data:0040840F                 align 10h
.data:00408410 ; char a209_85_223_33[]
.data:00408410 a209_85_223_33  db '209.85.223.33',0    ; DATA XREF: sub_401430+7A↑o
.data:0040841E                 align 10h
.data:00408420 ; char a209_85_210_24[]
.data:00408420 a209_85_210_24  db '209.85.210.24',0    ; DATA XREF: sub_401430+64↑o
.data:0040842E                 align 10h
.data:00408430 ; char a209_85_223_27[]
.data:00408430 a209_85_223_27  db '209.85.223.27',0    ; DATA XREF: sub_401430+4E↑o
.data:0040843E                 align 10h
```

Behavior result

1. SMB, IPC ,SCM Database access attempt with random IPs for self-copy and distribution
2. Send mail using the SMTP protocol, pretending whiat1001@gmail.com as johnS203@yahoo.com
3. Access shared folder as admin
4. Create the Windows Genuine Logon Manager (wglmgr) service
5. Create the Microsoft Windows Genuine Updater (wgudtr) service
6. Create crss.exe executable
7. Create and run lsasvc.exe
8. Add “WindowsUpdate” Value to the registry “Software \ Microsoft \ Windows \ CurrentVersion \ Run” path

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[악성코드] WannaCry 이전 북한 Lazarus 그룹의 웜 Brambul - 1

WannaCry와 Brambul의 관계

WannaCry는 2017년 5월에 대유행한 북한 Lazarus 그룹의 랜섬웨어입니다. 이 랜섬웨어를 통해 공격자들은 약 15만 달러를 벌었고, 이 공격에 따른 피해는 약 수십억 달러로 추정되고 있습니다. WannaCry의 특징 중 하나는 웜과 유사하게 자기 자신을 복제하여 접근가능한 네트워크에 배포하며 SMB 취약점과 이메일을 통해 주로 배포됩니다.

[악성코드] WannaCry 이전 북한 Lazarus 그룹의 웜 Brambul - 2

분석
