# Commonly Known Tools Used by Lazarus - JPCERT/CC Eyes

By 朝長 秀誠 (Shusei Tomonaga)

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- Lazarus

It is widely known that attackers use Windows commands and tools that are commonly known and used after intruding their target network. Lazarus attack group, a.k.a. Hidden Cobra, also uses such tools to collect information and spread the infection. This blog post describes the tools they use.

## Lateral movement

These three tools are used for lateral movement. AdFind collects the information of clients and users from Active Directory. It has been observed that other attack groups also used the tool [1]. SMBMap is used to have their malware infect other hosts. (Also check out our previous blog post on Lazarus.) It has also been observed that Responder-Windows was used to collect information in the network.

| Name | Description | Reference |
|---|---|---|
| AdFind | Command line tool to collect information from Active Directory | http://www.joeware.net/freetools/tools/adfind/ |
| SMBMap | Tool to list accessible shared SMB resources and access those files | https://github.com/ShawnDEvans/smbmap |
| Responder-Windows | Tool to lead clients with spoof LLMNR, NBT-NS, and WPAD | https://github.com/lgandx/Responder-Windows |

## Stealing sensitive data

These three tools are used for information theft. Tools for such a purpose are used only in certain cases because malware itself usually has similar functions. Tools for collecting account information from browsers and email clients are particularly used. Attackers often archives collected files in RAR before exfiltration, and so does Lazarus attack group using WinRAR. As we mentioned in our previous blog post, the malware can archive files in zlib and send them. It means that files are not always sent in RAR.

| Name | Description | Reference |
|---|---|---|
| XenArmor Email Password Recovery Pro | Tool to extract credentials from email clients and services | https://xenarmor.com/email-password-recovery-pro-software/ |

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|---|---|---|
| XenArmor Browser Password Recovery Pro | Tool to extract credentials from web browsers | https://xenarmor.com/browser-password-recovery-pro-software/ |
| WinRAR | RAR archiver | https://www.rarlab.com/ |

### Other tools

These following tools are used for other purposes. Attackers sometimes create backdoors in the infected network using RDP, TeamViewer, VNC, and other applications. It is confirmed that Lazarus has used VNC and a common Microsoft tool ProcDump before. ProcDump is sometimes used when attackers attempt to extract user credentials from the LSASS process dump. Windows' counterpart of common Linux tools such as tcpdump and wget are also used.

| Name | Description | Reference |
|---|---|---|
| TightVNC Viewer | VNC client | https://www.tightvnc.com/download.php |
| ProcDump | Common Microsoft's tool to get process memory dump | https://docs.microsoft.com/en-us/sysinternals/downloads/procdump |
| tcpdump | Packet capturing tool | https://www.tcpdump.org/ |
| wget | Downloader | |

### In closing

This blog post described tools used by Lazarus group. Although their malware contains many functions as we already covered in other blog posts, they still supplement it with tools which are widely available and commonly known. It should be noted that anti-virus software may not detect such tools.
The hash values of the tools covered in this blog post are listed in Appendix A.

Shusei Tomonaga
(Translated by Takumi Nakano)

#### Reference

[1] Cybereason: Dropping Anchor: From a TrickBot Infection to the Discovery of the Anchor Malware
https://www.cybereason.com/blog/dropping-anchor-from-a-trickbot-infection-to-the-discovery-of-the-anchor-malware

#### Appendix A: Hash value

Be careful when using these hash values as IoC. The list contains tools that are commonly used for non-malicious purposes.

**AdFind**

- CFD201EDE3EBC0DEB0031983B2BDA9FC54E24D244063ED323B0E421A535CFF92
- B1102ED4BCA6DAE6F2F498ADE2F73F76AF527FA803F0E0B46E100D4CF5150682
- CFD201EDE3EBC0DEB0031983B2BDA9FC54E24D244063ED323B0E421A535CFF92

**SMBMap**

- 65DDF061178AD68E85A2426CAF9CB85DC9ACC2E00564B8BCB645C8B515200B67
- da4ad44e8185e561354d29c153c0804c11798f26915274f678db0a51c42fe656

**Responder-Windows**

- 7DCCC776C464A593036C597706016B2C8355D09F9539B28E13A3C4FFCDA13DE3
- 47D121087C05568FE90A25EF921F9E35D40BC6BEC969E33E75337FC9B580F0E8

**XenArmor Email Password Recovery Pro**

- 85703EFD4BA5B691D6B052402C2E5DEC95F4CEC5E8EA31351AF8523864FFC096

**XenArmor Browser Password Recovery Pro**

- 4B7DE800CCAEDEE8A0EDD63D4273A20844B20A35969C32AD1AC645E7B0398220

**Winrar**

- CF0121CD61990FD3F436BDA2B2AFF035A2621797D12FD02190EE0F9B2B52A75D
- EA139458B4E88736A3D48E81569178FD5C11156990B6A90E2D35F41B1AD9BAC1

**TightVNC Viewer**

- A7AD23EE318852F76884B1B1F332AD5A8B592D0F55310C8F2CE1A97AD7C9DB15
- 30B234E74F9ABE72EEFDE585C39300C3FC745B7E6D0410B0B068C270C16C5C39

**Tcpdump**

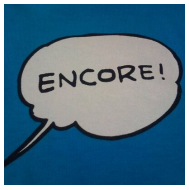
- 2CD844C7A4F3C51CB7216E9AD31D82569212F7EB3E077C9A448C1A0C28BE971B
- 1E0480E0E81D5AF360518DFF65923B31EA21621F5DA0ED82A7D80F50798B6059

**Procdump**

- 5D1660A53AAF824739D82F703ED580004980D377BDC2834F1041D512E4305D07
- F4C8369E4DE1F12CC5A71EB5586B38FC78A9D8DB2B189B8C25EF17A572D4D6B7

**Wget**

- C0E27B7F6698327FF63B03FCCC0E45EFF1DC69A571C1C3F6C934EF7273B1562F
- CF02B7614FEA863672CCBED7701E5B5A8FAD8ED1D0FAA2F9EA03B9CC9BA2A3BA




朝長 秀誠 (Shusei Tomonaga)

Since December 2012, he has been engaged in malware analysis and forensics investigation, and is especially involved in analyzing incidents of targeted attacks. Prior to joining JPCERT/CC, he was engaged in security monitoring and analysis operations at a foreign-affiliated IT vendor. He presented at CODE BLUE, BsidesLV, BlackHat USA Arsenal, Botconf, PacSec and FIRST Conference. JSAC organizer.

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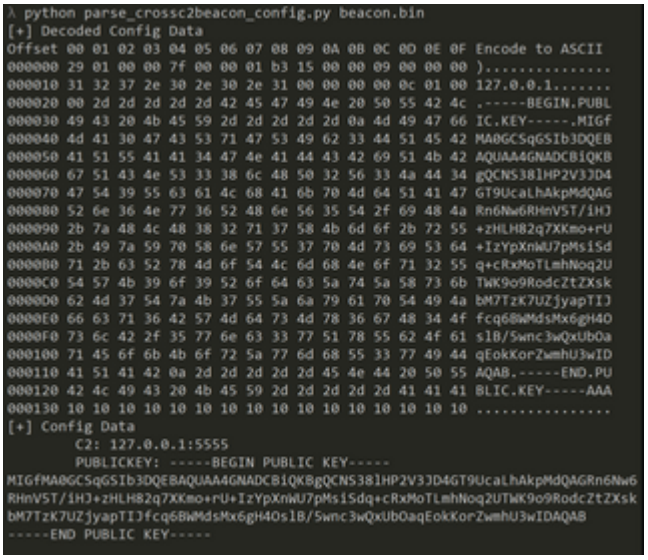
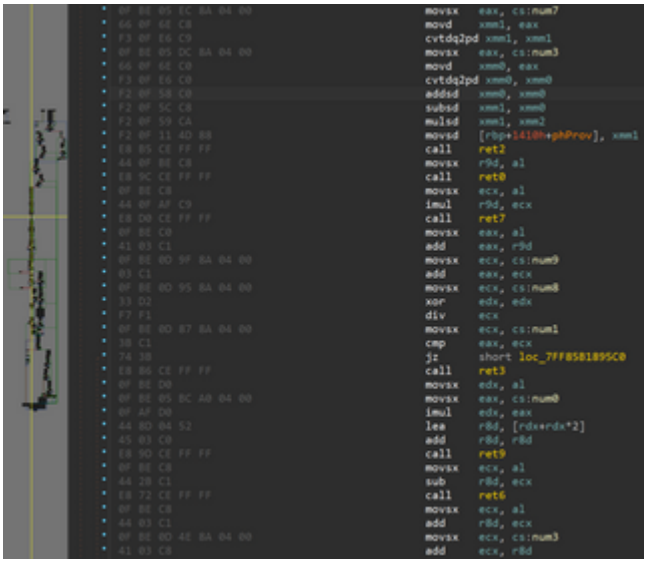
- Update on Attacks by Threat Group APT-C-60




- [CrossC2 Expanding Cobalt Strike Beacon to Cross-Platform Attacks]



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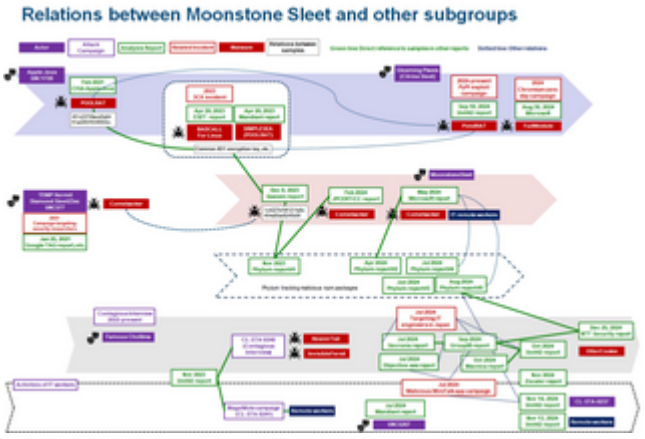


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