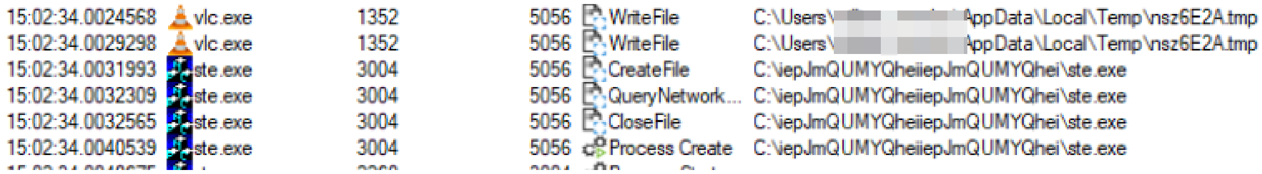
BazarLoader Adds Compromised Installers, ISO to Arrival and Delivery Vectors

trendmicro.com/en_us/research/21/k/bazarloader-adds-compromised-installers-iso-to-arrival-delivery-vectors.html

November 23, 2021

As the installers load, it drops and executes a BazarLoader executable. This is also one of the notable differences from recent BazarLoader arrival mechanisms wherein the malicious actors appeared to favor dynamic link libraries (DLL).



```
15:02:34.0024568  vlc.exe   1352   5056  WriteFile        C:\Users\[redacted]AppData\Local\Temp\nsz6E2A.tmp
15:02:34.0029298  vlc.exe   1352   5056  WriteFile        C:\Users\[redacted]AppData\Local\Temp\nsz6E2A.tmp
15:02:34.0031993  ste.exe   3004   5056  CreateFile       C:\iepJmQUMYQheiiepJmQUMYQhei\ste.exe
15:02:34.0032309  ste.exe   3004   5056  QueryNetwork...  C:\iepJmQUMYQheiiepJmQUMYQhei\ste.exe
15:02:34.0032565  ste.exe   3004   5056  CloseFile        C:\iepJmQUMYQheiiepJmQUMYQhei\ste.exe
15:02:34.0040539  ste.exe   3004   5056  Process Create   C:\iepJmQUMYQheiiepJmQUMYQhei\ste.exe
```

Figure 2. As the VLC installer executes, the bundle drops and executes ste.exe, a BazarLoader executable

Using Trend Micro Vision One, we tracked the installer creating a process, "vlc-3.0.16-win3..2.tmp," after executing ste.exe, which copies the latter executable to the disk and executes it. It then connects with the command and control (C&C) server and injects a copy of itself into a new suspended MS Edge process.

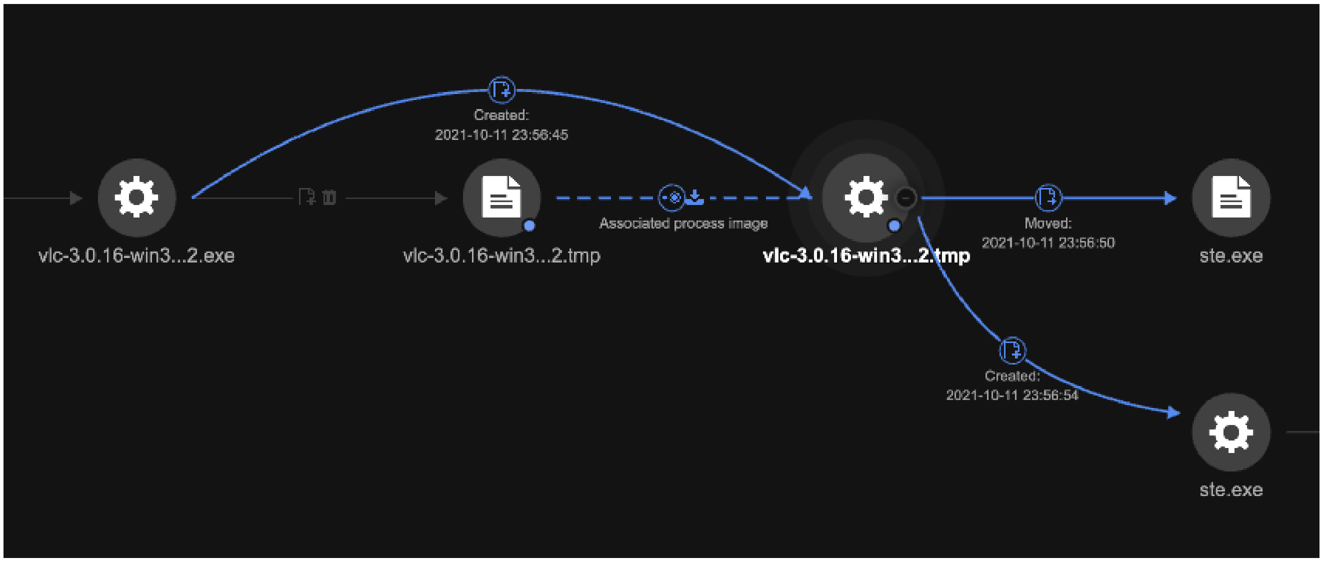


Figure 3. Tracking the BazarLoader executable's process

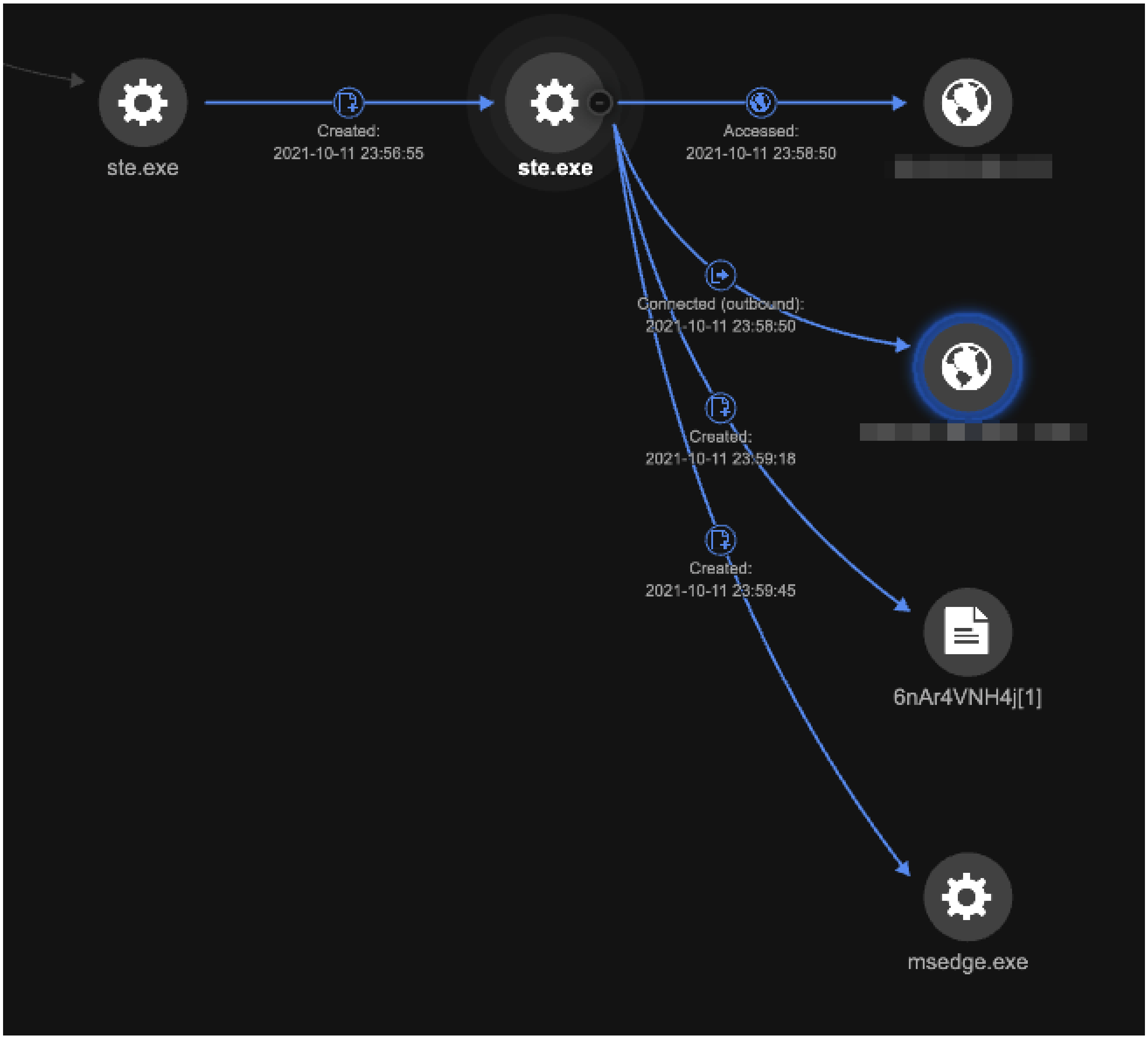
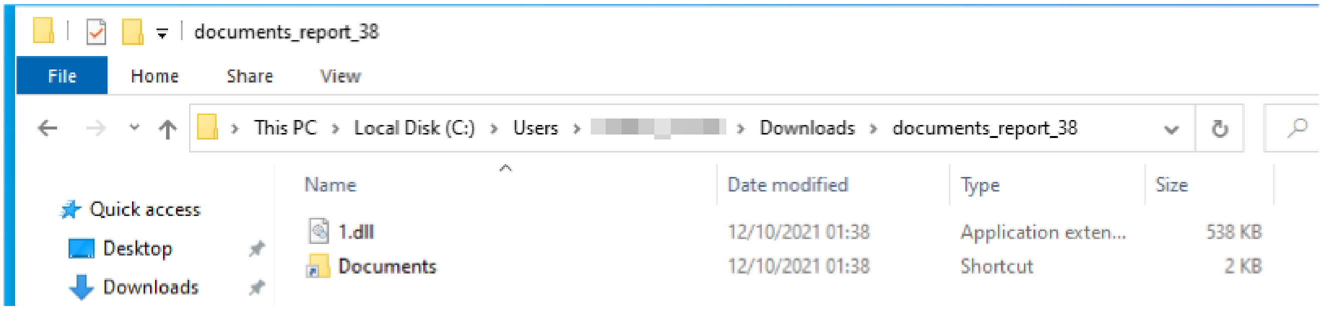


Figure 4. The ste.exe executable connects to the C&C server via MS Edge

Arrival via ISO file

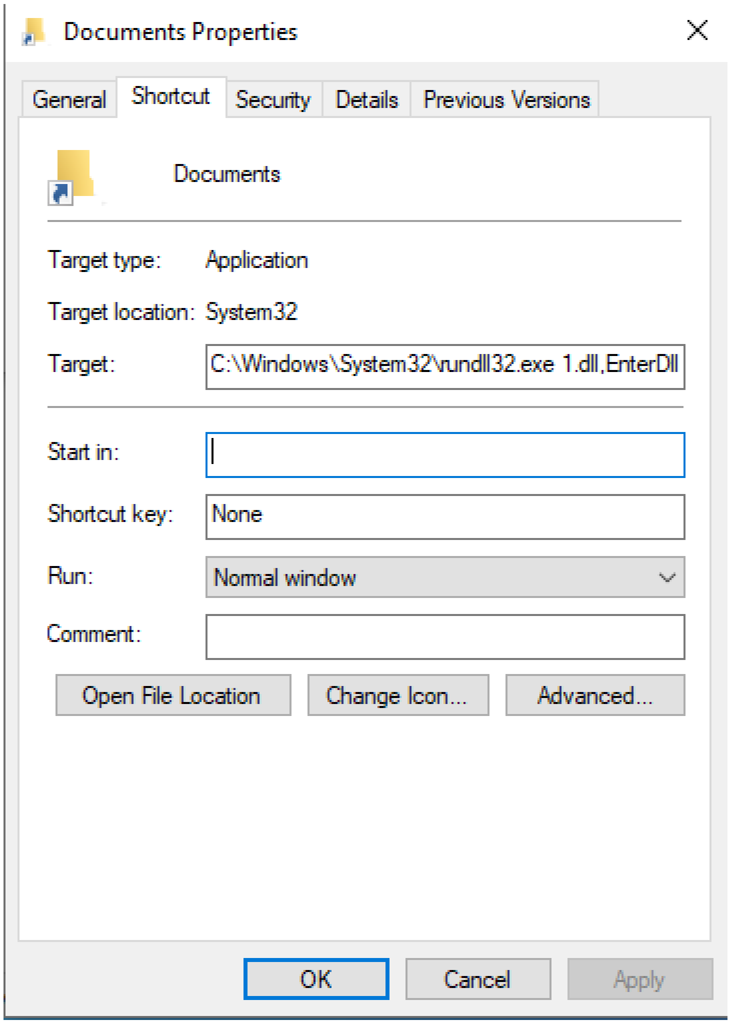
Meanwhile, we also found a delivery mechanism abusing ISO files, wherein DLL and LNK files contained inside execute the BazarLoader DLL in it. The LNK file uses a folder icon to deceive the user into double clicking the icon, enabling the file to run the enclosed BazarLoader DLL file.


documents_report_38
File
Home
Share
View
This PC > Local Disk (C:) > Users > [redacted] > Downloads > documents_report_38
Quick access
Desktop
Downloads

Name	Date modified	Type	Size
1.dll	12/10/2021 01:38	Application exten...	538 KB
Documents	12/10/2021 01:38	Shortcut	2 KB

Figure 5. LNK using a folder icon to trick users into double-clicking the BazarLoader DLL

It then calls the export function “EnterDLL,” a function that BazarLoader has used recently. Rundll32.exe loads the malicious DLL and communicates with the C&C server, then proceeds to spawn a suspended MS Edge process to inject itself into it.



Documents

Target type: Application

Target location: System32

Target: C:\Windows\System32\rundll32.exe 1.dll,EnterDll

Start in:

Shortcut key: None

Run: Normal window

Comment:

Figure 6. Observing EnterDll, an export function previously used by BazarLoader actors

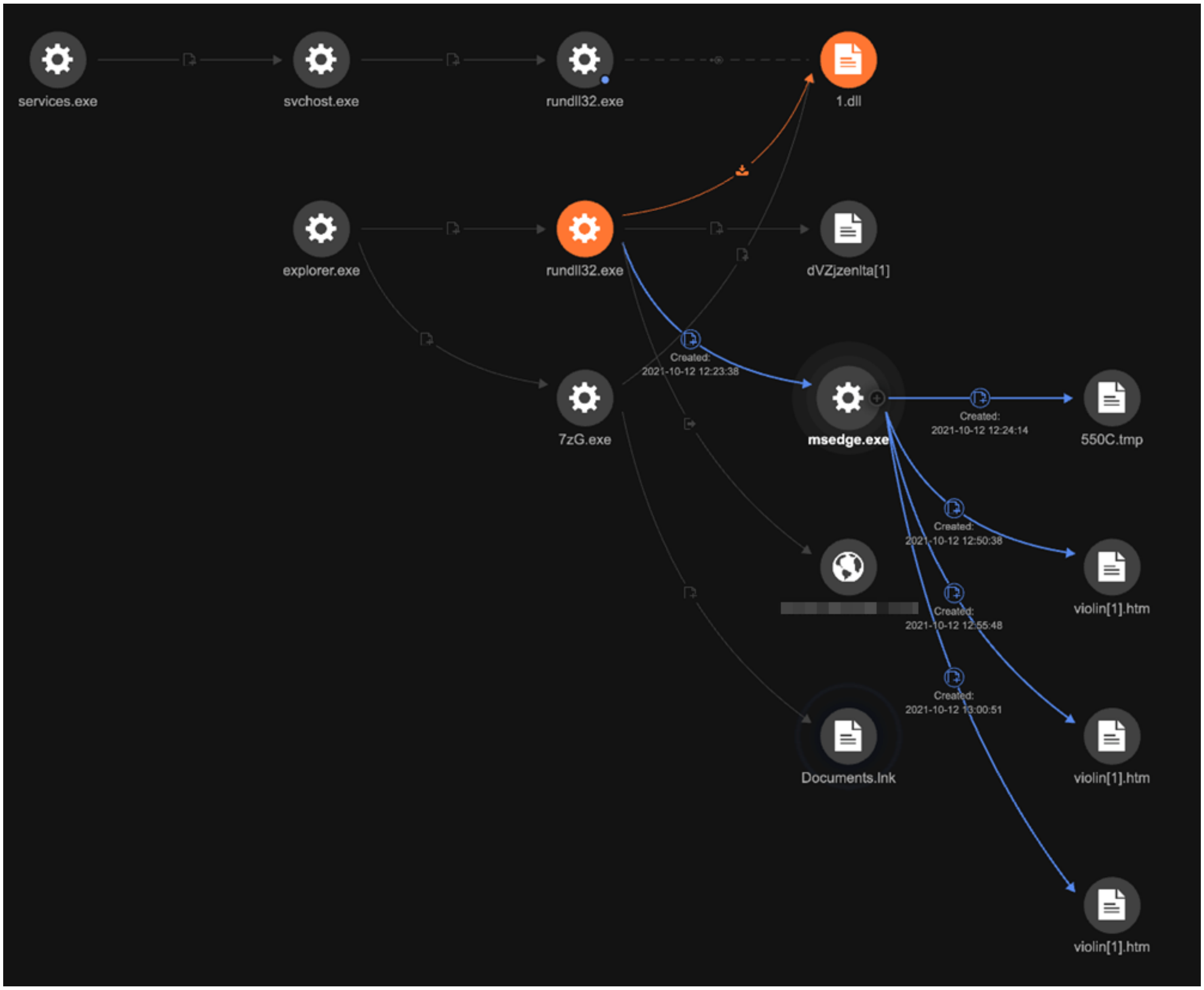


Figure 7. Tracking BazarLoader opening MS Edge and injecting itself to it

Conclusion

The number of arrival mechanism variations used in BazarLoader campaigns continue to increase as threat actors diversify their attack patterns to evade detection. However, both techniques are noteworthy and still work despite their lack of novelty due to singular detection technologies' limitations. For instance, while the use of compromised installers has been observed with other malware, the large file size can still challenge detection solutions — such as sandboxes — which may implement file size limits. On the other hand, LNK files serving as shortcuts will also likely be obfuscated for the additional layers created between the shortcut and the malicious files itself.

In addition, the deployment of BazarLoader malware for initial access is a known technique for modern ransomware such as Conti and Ryuk as service affiliates. Aside from these known ransomware families including more tools for entry into their arsenal, other malware groups and ransomware operators may pick up on the additional means, if they have not already done so.

Best practices

BazarLoader is an example of a versatile malware delivery mechanism that will likely find more ways to adapt to deceive more users. For details on all the other measures that BazarLoader uses to get into systems, read our technical brief here.

Here are some best practices to defend against this threat:

- Enable security solutions that allow for visibility in tracking processes of files, allowing security teams to detect malicious outgoing and incoming network communication and traffic.
- Download installers and updates only from their respective official websites and platforms.

Trend Micro solutions

BazarLoader will continue to evolve as an information stealer malware on its own, an initial access malware-as-a-service (MaaS) for other malware operators, and as an enabler for secondary payload delivery for even more disruptive attacks like modern ransomware. Security teams must make monitoring and tracking for known threats more visible based on known data and use multilayered solutions capable of pattern recognition and behavior monitoring for unknown threats.

Trend Micro Vision One™ helps detect and block suspicious activity, even those that might seem insignificant when monitored from only a single layer, through multilayered protection and behavior detection. It helps spot and block BazarLoader and its other components wherever it might be on the system. Trend Micro Apex One™ employs behavior analysis to protect systems against malicious scripts, injection, ransomware, and memory and browser attacks related to fileless threats from initial access, execution, and C&C communication. Trend Micro Worry-Free™ Business Security can protect users and businesses from BazarLoader by detecting malicious files and spammed messages, JavaScript droppers, and DLL loaders, as well as URLs associated with the threat.

Trend Micro Email Security delivers continuously updated protection to stop spam, malware, spear phishing, ransomware, and advanced targeted attacks before they reach the network. It protects Microsoft Exchange, Microsoft Office 365, Google Apps, and other hosted and on-premises email solutions. Trend Micro™ Deep Discovery™ provides detection, in-depth analysis, and proactive response to ransomware attacks through specialized engines, custom sandboxing, and seamless correlation across the entire attack life cycle such as tool ingress, exploits, C&C activities, and lateral movements. Trend Micro™ Deep Discovery™ Email Inspector and InterScan™ Web Security perform custom sandboxing and advanced analysis techniques to prevent malware from ever reaching end users, especially potentially vulnerable users working remotely. These effectively deter potential ransomware attacks that are delivered through malicious emails.

Cloud-specific security solutions such as Trend Micro™ Hybrid Cloud Security can help protect cloud-native systems and their various layers. Trend Micro Cloud One™ protects cloud-native systems by securing continuous-integration and continuous-delivery (CI/CD) pipelines and applications. It also helps identify and resolve security issues sooner and improves delivery time for DevOps teams.

Indicators of Compromise (IOCs)

Visit this page to view the full list of IOCs.