BLISTER malware campaign discovered | Elastic Blog

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Elastic Security uncovers BLISTER malware campaign

Key takeaways:

- Elastic Security uncovered a stealthy malware campaign that leverages valid code signing certificates to evade detection
- A novel malware loader, BLISTER was used to execute second stage malware payloads in-memory and maintain persistence
- The identified malware samples have very low or no detections on VirusTotal
- Elastic provided layered prevention coverage from this threat out of the box

Overview

The Elastic Security team identified a noteworthy cluster of malicious activity after reviewing our threat prevention telemetry. A valid code signing certificate is used to sign malware to help the attackers remain under the radar of the security community. We also discovered a novel malware

loader used in the campaign, which we've named BLISTER. The majority of the malware samples observed have very low, or no, detections in VirusTotal. The infection vector and goals of the attackers remain unknown at this time.

Elastic's layered approach to preventing attacks protects from this and similar threats.

In one prevented attack, our malicious behavior prevention triggered multiple high-confidence alerts for *Execution via Renamed Signed Binary Proxy*, *Windows Error Manager/Reporting Masquerading*, and *Suspicious PowerShell Execution via Windows Scripts*. Further, our memory threat prevention identified and stopped BLISTER from injecting its embedded payload to target processes.

Finally, we have additional coverage from our open source detection engine rules [1] [2]. To ensure coverage for the entire community, we are including YARA rules and IoCs to help defenders identify impacted systems.

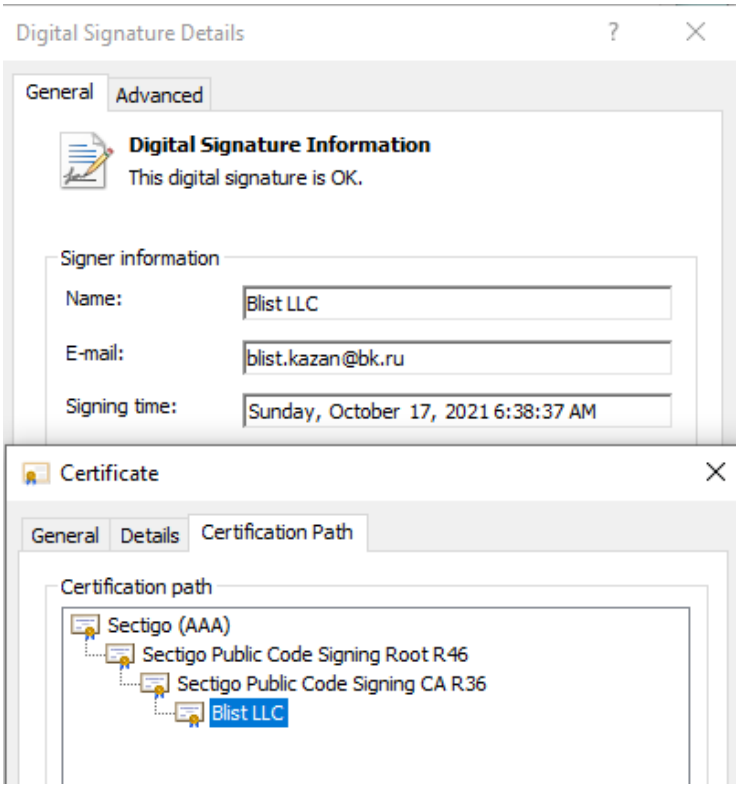
Details

Certificate abuse

A key aspect of this campaign is the use of a valid code signing certificate issued by Sectigo. Adversaries can either steal legitimate code-signing certificates or purchase them from a certificate authority directly or through front companies. Executables with valid code signing certificates are often scrutinized to a lesser degree than unsigned executables. Their use allows attackers to remain under the radar and evade detection for a longer period of time.

We responsibly disclosed the activity to Sectigo so they could take action and revoke the abused certificates. Below shows details about the compromised certificate. We have observed malware signed with this certificate as early as September 15, 2021.

Issuer: *Sectigo Public Code Signing CA R36*
Issued to: *Blist LLC*
Serial number: *2f4a25d52b16eb4c9dfe71ebbd8121bb*
Valid from: *Monday, August 23, 2021 4:00:00 PM*
Valid to: *Wednesday, August 24, 2022 3:59:59 PM*



BLISTER malware loader

Another interesting aspect of this campaign is what appears to be a novel malware loader with limited detections in VirusTotal. We refer to it as the BLISTER loader. The loader is spliced into legitimate libraries such as colorui.dll, likely to ensure the majority of the on-disk footprint has known-good code and metadata. The loader can be initially written to disk from simple dropper executables. One such dropper writes a signed BLISTER loader to *%temp%\Framwork\axsssig.dll* and executes it with *rundll32*. *LaunchColorCpl* is a common DLL export and entry point name used by BLISTER as seen in the command line parameters:

```
Rundll32.exe C:\Users\user\AppData\Local\Temp\Framwork\axsssig.dll,LaunchColorCpl
```

Once executed, BLISTER decodes bootstrapping code stored in the resource section with a simple 4-byte XOR routine shown below:

```
17173910    8BC6            mov eax,esi
17173912    83E0 03         and eax,3
17173915    8A4405 E8       mov al,byte ptr ss:[ebp+eax-18]
17173919    30041E          xor byte ptr ds:[esi+ebx],al
1717391C    46              inc esi
1717391D    81FE 507A0100   cmp esi,17A50
17173923    72 EB           jb file.17173910
```

The bootstrapping code is heavily obfuscated and initially sleeps for 10 minutes. This is likely an attempt to evade sandbox analysis. After the delay, it decrypts the embedded malware payload. We have observed CobaltStrike and BitRat as embedded malware payloads. Once decrypted, the embedded payload is loaded into the current process or injected into a newly spawned *WerFault.exe* process.

Finally, BLISTER establishes persistence by copying itself to the *C:\ProgramData* folder, along with a re-named local copy of *rundll32.exe*. A link is created in the current user's Startup folder to launch the malware at logon as a child of *explorer.exe.*

YARA

We have created a YARA rule to identify this BLISTER activity:

```
rule Windows_Trojan_Blister{
    meta:
        author = “Elastic Security”
        creation_date = "2021-12-20"
        last_modified = "2021-12-20"
        os = "Windows"
        category_type = "Trojan"
        family = "Blister"
        threat_name = "Windows.Trojan.Blister"
        reference_sample = "0a7778cf6f9a1bd894e89f282f2e40f9d6c9cd4b72be97328e681fe32a1b1a00"

    strings:
        $a1 = {8D 45 DC 89 5D EC 50 6A 04 8D 45 F0 50 8D 45 EC 50 6A FF FF D7}
        $a2 = {75 F7 39 4D FC 0F 85 F3 00 00 00 64 A1 30 00 00 00 53 57 89 75}
condition:
        any of them
}Read more
```

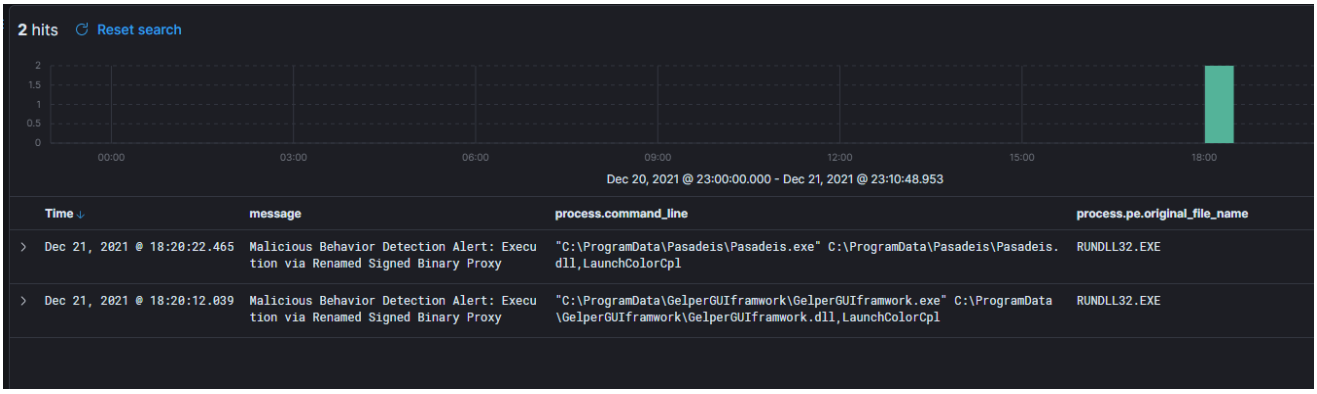
Defensive recommendations

Elastic Endpoint Alerts

Elastic Endpoint Security provides deep coverage for this threat by stopping the in-memory thread execution and preventing malicious behaviors.

Memory Threat Detection Alert: Shellcode Injection

Malicious Behavior Detection Alert: Execution via Renamed Signed Binary Proxy



Hunting queries

These queries can be used in Kibana's Security -> Timelines -> Create new timeline -> Correlation query editor. While these queries will identify this intrusion set, they can also identify other events of note that, once investigated, could lead to other malicious activities.

Proxy Execution via Renamed Rundll32

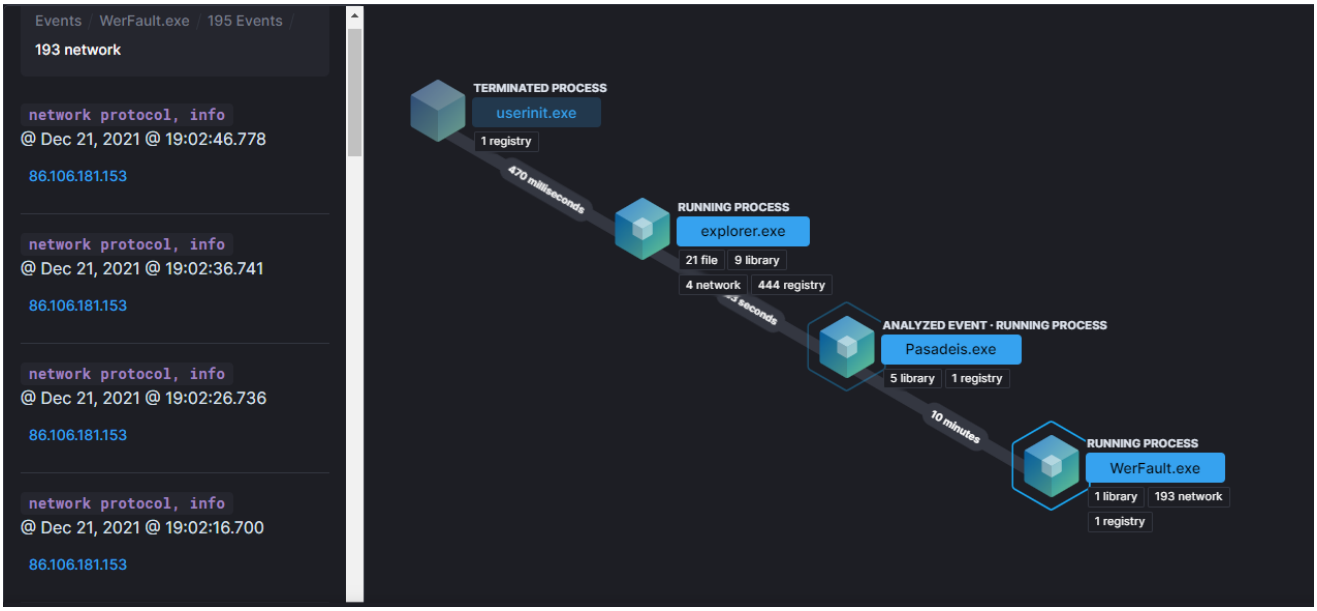
Hunt for renamed instances of *rundll32.exe*

```
process where event.action == "start" and
process.name != null and
(process.pe.original_file_name == "RUNDLL32.EXE" and not process.name : "RUNDLL32.EXE")
```

Masquerading as WerFault

Hunt for potential rogue instances of WerFault.exe (Windows Errors Reporting) in an attempt to masquerade as a legitimate system process that is often excluded from behavior-based detection as a known frequent false positive:

```
process where event.action == "start" and
  process.executable :
   ("?:\\Windows\\Syswow64\\WerFault.exe" ,"?:\\Windows\\System32\\WerFault.exe") and
   /*
     legit WerFault will have more than one argument in process.command_line
   */
  process.args_count == 1
```



Evasion via Masquerading as WerFault and Renamed Rundll32

Persistence via Registry Run Keys / Startup Folder

Malware creates a new run key for persistence:

```
registry where registry.data.strings != null and
 registry.path : (
  /* Machine Hive */      "HKLM\\Software\\Microsoft\\Windows\\CurrentVersion\\Run\\*",
"HKLM\\Software\\Microsoft\\Windows\\CurrentVersion\\Policies\\Explorer\\Run\\*",
"HKLM\\Software\\Microsoft\\Windows NT\\CurrentVersion\\Winlogon\\Shell\\*",

 /* Users Hive */
"HKEY_USERS\\*\\Software\\Microsoft\\Windows\\CurrentVersion\\Run\\*",
"HKEY_USERS\\*\\Software\\Microsoft\\Windows\\CurrentVersion\\Policies\\Explorer\\Run\\*",
"HKEY_USERS\\*\\Software\\Microsoft\\Windows NT\\CurrentVersion\\Winlogon\\Shell\\*"
     )
```

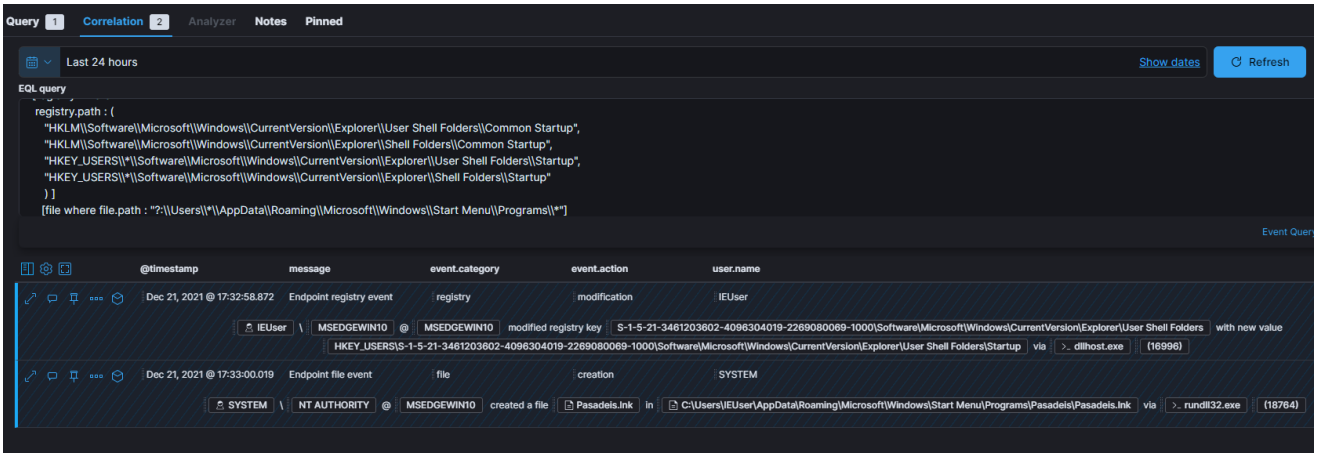
t message	Endpoint registry event
t process.entity_id	NWI3M2U1ZjAtNDExOC00NjA0LTk1ODMtMjYzODk5ZTQ0Y2FhLTI3NTE2LTEzMjg0NTcyNzgzLjMwOTQ1OTEwMA==
t process.executable	C:\Windows\SysWOW64\rundll32.exe
t process.Ext.ancestry	NWI3M2U1ZjAtNDExOC00NjA0LTk1ODMtMjYzODk5ZTQ0Y2FhLTUzNzYtMTMyODQ1NzE2NjguMTA0Njk4MzAw, NWI3M2U1ZjAtNDExOC00NjA0LTY2FhLTgxMzYtMTMyODQ1NzE1NjIuNjM3Njg4MDA=
t process.name	rundll32.exe
# process.pid	27516
t registry.data.strings	rundll32 C:\Users\IEUser\AppData\Local\Temp\tnt.\tnt.dll, LaunchColo
t registry.data.type	REG_SZ
t registry.hive	HKEY_USERS
t registry.key	S-1-5-21-3461203602-4096304019-2269080069-1000\Software\Microsoft\Windows\CurrentVersion\Run
t registry.path	HKEY_USERS\S-1-5-21-3461203602-4096304019-2269080069-1000\Software\Microsoft\Windows\CurrentVersion\Run\tnt.dll
t registry.value	tnt.dll

Persistence via Run key

Suspicious Startup Shell Folder Modification

Modify the default Startup value in the registry via COM (dllhost.exe) and then write a shortcut file for persistence in the new modified Startup folder:

```
sequence by host.id with maxspan=1m
 [registry where
  /* Modify User default Startup Folder */
  registry.path : (
     "HKLM\\Software\\Microsoft\\Windows\\CurrentVersion\\Explorer\\User Shell
Folders\\Common Startup",
     "HKLM\\Software\\Microsoft\\Windows\\CurrentVersion\\Explorer\\Shell Folders\\Common
Startup",
     "HKEY_USERS\\*\\Software\\Microsoft\\Windows\\CurrentVersion\\Explorer\\User Shell
Folders\\Startup",
     "HKEY_USERS\\*\\Software\\Microsoft\\Windows\\CurrentVersion\\Explorer\\Shell
Folders\\Startup"
     ) ]
  /* Write File to Modified Startup Folder */
    [file where event.type : ("creation", "change") and file.path :
"?:\\Users\\*\\AppData\\Roaming\\Microsoft\\Windows\\Start Menu\\Programs\\*"]Read more
```



Persistence via Modified Startup

Elastic Detection Engine Rules

The following existing public detection rules can also be used to detect some of the employed techniques:

Potential Windows Error Manager Masquerading

Windows Defender Exclusions Added via PowerShell

Startup or Run Key Registry Modification

Shortcut File Written or Modified for Persistence

Suspicious Startup Shell Folder Modification

MITRE ATT&CK

T1218.011 - Signed Binary Proxy Execution: Rundll32

T1055 - Process Injection

T1547.001 - Registry Run Keys / Startup Folder

T1036 - Masquerading

Summary

The BLISTER loader has several tricks which has allowed it to fly under the radar of the security community for months. This includes leveraging valid code signing certificates, infecting legitimate libraries to fool machine learning models, and executing payloads in-memory. However, the depth of protection offered with Elastic Security meant we were still able to identify and stop in-the-wild attacks.

Existing Elastic Security can access these capabilities within the product. If you're new to Elastic Security, take a look at our Quick Start guides (bite-sized training videos to get you started quickly) or our free fundamentals training courses. You can always get started with a free 14-day trial of Elastic Cloud.

Indicators

Indicator	Type	Note
F3503970C2B5D57687EC9E31BB232A76B624C838	SHA1	Code-signing certificate thumbprint
moduleloader.s3.eu-west-2.amazonaws[.]com discountshadesdirect[].com bimelectrical[.]com clippershipintl[.]com	Domain name	Malware c2
188.68.221[.]203 93.115.18[.]248 52.95.148[.]162 84.38.183[.]174 80.249.145[.]212 185.170.213[.]186	IP Address	Malware c2
ed6910fd51d6373065a2f1d3580ad645f443bf0badc398aa77185324b0284db8 cb949ebe87c55c0ba6cf0525161e2e6670c1ae186ab83ce46047446e9753a926 7b9091c41525f1721b12dcef601117737ea990cee17a8eecf81dcfb25ccb5a8f 84a67f191a93ee827c4829498d2cb1d27bdd9e47e136dc6652a5414dab440b74 cc31c124fc39025f5c3a410ed4108a56bb7c6e90b5819167a06800d02ef1f028 9472d4cb393256a62a466f6601014e5cb04a71f115499c320dc615245c7594d4 4fe551bcea5e07879ec84a7f1cea1036cfd0a3b03151403542cab6bd8541f8e5 1a10a07413115c254cb7a5c4f63ff525e64adfe8bb60acef946bb7656b7a2b3d 9bccc1862e3e5a6c89524f2d76144d121d0ee95b1b8ba5d0ffcaa23025318a60 8a414a40419e32282d33af3273ff73a596a7ac8738e9cdca6e7db0e41c1a7658 923b2f90749da76b997e1c7870ae3402aba875fdbdd64f79cbeba2f928884129 ed241c92f9bc969a160da2c4c0b006581fa54f9615646dd46467d24fe5526c7a 294c710f4074b37ade714c83b6b7bf722a46aef61c02ba6543de5d59edc97b60	sha256	Signed Droppers

df8142e5cf897af65972041024ebe74c7915df0e18c6364c5fb9b2943426ed1a 2d049f7658a8dccd930f7010b32ed1bc9a5cc0f8109b511ca2a77a2104301369 696f6274af4b9e8db4727269d43c83c350694bd1ef4bd5ccdc0806b1f014568a a34821b50aadee0dd85c382c43f44dae1e5fef0febf2f7aed6abf3f3e21f7994 7cd03b30cfeea07b5ea4c8976e6456cb65e09f6b8e7dcc68884379925681b1c4 81edf3a3b295b0189e54f79387e7df61250cc8eab4f1e8f42eb5042102df8f1f 44e5770751679f178f90ef7bd57e8e4ccfb6051767d8e906708c52184bf27f32 0a7778cf6f9a1bd894e89f282f2e40f9d6c9cd4b72be97328e681fe32a1b1a00 a486e836026e184f7d3f30eaa4308e2f0c381c070af1f525118a484a987827c1 359ffa33784cb357ddabc42be1dcb9854ddb113fd8d6caf3bf0391380f9d640a 863228efa55b54a8d03a87bb602a2e418856e0028ae409357454a6303b128224 d0f934fd5d63a1524616bc13b51ce274539a8ead9b072e7f7fe1a14bb8b927a6 c0f3b27ae4f7db457a86a38244225cca35aa0960eb6a685ed350e99a36c32b61 216cb4f2caeaf59f297f72f7f271b084637e5087d59411ac77ddd3b87e7a90aa 00eb2f75822abeb2e222d007bdec464bfbc3934b8be12983cc898b37c6ace081 25a0d6a839c4dc708dcdd1ef9395570cc86d54d4725b7daf56964017f66be3c1 3c7480998ade344b74e956f7d3a3f1a989aaf43446163a62f0a8ed34b0c010d0 5651e8a8e6f9c63c4c1162efadfcb4cdd9ad634c5e00a5ab03259fcdeaa225ac ba3a50930e7a144637faf88a98f2990a27532bfd20a93dc160eb2db4fbc17b58 fa885e9ea1293552cb45a89e740426fa9c313225ff77ad1980dfea83b6c4a91c bee3210360c5d0939c5d38b7b9f0c232cf9fbf93b46a19e53930a1606bda28a5 56ca9ea3f7870561ed3c6387daf495404ed3827f212472501d2541d5ccf8b941 c61d2ba1e001c137533cd7fb6b38fe71fee489d61dbcfea45c37c5ec1bcf845c 17ea84d547e97a030d2b02ac2eaa9763ffb4f96f6c54659533a23e17268aabab ca09d9cd2f3cfcc06b33eff91d55602cb33a66ab3fd4f540b9212fce5ddae54a 6c6f808f9b19e1fab1c1b83dc99386f0ceee8593ddfd461ac047eae812df8733	sha256	Unsigned BLISTER Loader DLL
afb77617a4ca637614c429440c78da438e190dd1ca24dc78483aa731d80832c2 516cac58a6bfec5b9c214b6bba0b724961148199d32fb42c01b12ac31f6a6099 8ae2c205220c95f0f7e1f67030a9027822cc18e941b669e2a52a5dbb5af74bc9 fe7357d48906b68f094a81d19cc0ff93f56cc40454ac5f00e2e2d9c8ccdbc388 af555d61becfcf0c13d4bc8ea7ab97dcdc6591f8c6bb892290898d28ebce1c5d 96bf7bd5f405d3b4c9a71bcd1060395f28f2466fdb91cafc6e261a31d41eb37a f5104d0ead2f178711b1e23db3c16846de7d1a3ac04dbe09bacebb847775d76d 8e22cf159345852be585bc5a8e9af476b00bc91cdda98fd6a3244219a90ac9d9 d54dfedda0efa36ed445d501845b61ab73c2102786be710ac19f697fc8d4ca5c	sha256	Signed BLISTER Loader DLL
Launcher V7.3.13.exe GuiFramwork.exe ffxivsetup.exe Predictor V8.21 - Copy.exe Predictor Release v5.9.rar PredictorGUI.exe Readhelper.exe dxpo8umrzrr1w6gm.exe Pers.exe razer.exe Amlidiag.exe Modern.exe iuyi.exe Cleandevicehelper.exe installer.exe	File name	Dropper Names

File name	BLISTER DLL Names
Holorui.dll	
Colorui.dll	
Pasade.dll	
Axsssig.dll	
Helper.CC.dll	
Heav.dll	
Pasadeis.dll	
Termmgr.dll	
TermService.dll	
rdpencom.dll	
libcef.dll	
tnt.dll	