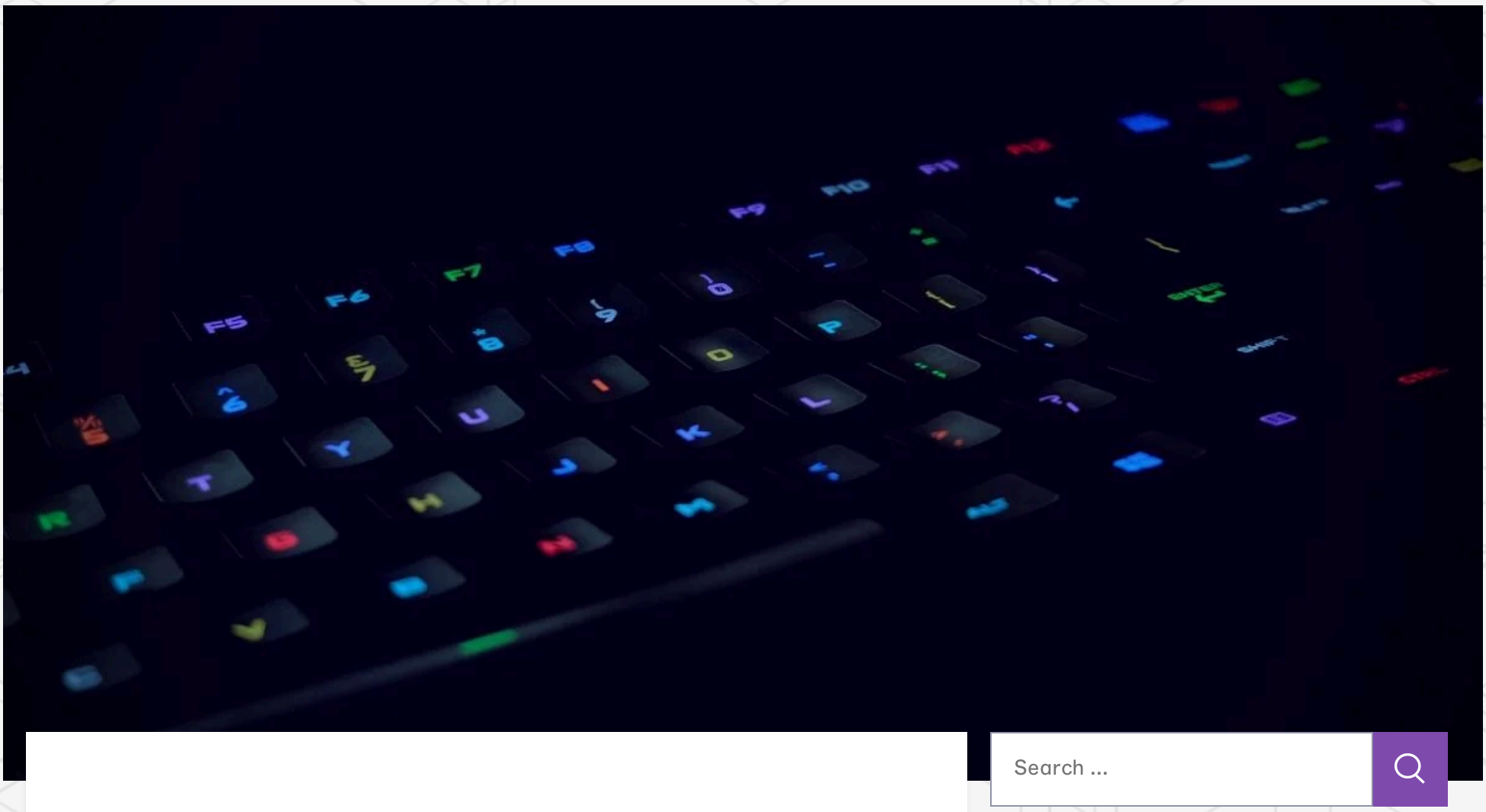


Sarwent has received little attention from researchers, but this backdoor malware is still being actively developed, with new commands and a focus on RDP.

Executive Summary

- Updates to Sarwent malware show a continued interest in backdoor functionality such as executing PowerShell commands.
- Updates also show a preference for using RDP
- Sarwent has been seen using the same binary signer as at least one TrickBot operator[1]

Sarwent functionality has historically revolved around being a loader, as shown by the limited number of original commands:

```
|download|
|update|
|vnc|
```

Some other functionality that has remained consistent is its AV(AntiVirus) checking.

```
dd offset _str_acs_exe.Text ; DATA XREF
                            ; Xmlschematags
dd offset _str_sched_exe.Text
dd offset _str_avastsvc_exe.Text
dd offset _str_avgsvc_exe.Text
dd offset _str_dwservice_exe.Text
dd offset _str_avp_exe.Text
dd offset _str_ekrn_exe.Text
dd offset _str_nprosec_exe.Text
dd offset _str_pavfnsvr_exe.Text
dd offset _str_msmpeng_exe.Text
dd offset _str_ccsvchst_exe.Text
dd offset _str_Outpost_AntiVir.Text
                            ; DATA XREF: su
                            ; Xmlschematags
dd offset _str_Avira_AntiVirus.Text
dd offset _str_Avast_Internet_.Text
dd offset _str_AVG_AntiVirus.Text
dd offset _str_Dr_Web_AntiViru.Text
dd offset _str_Kaspersky_Inter.Text
dd offset _str_Eset_Nod32_Anti.Text
dd offset _str_Norman_AntiViru.Text
dd offset _str_Panda_AntiVirus.Text
dd offset _str_Microsoft_Secur.Text
dd offset _str_Norton_Internet.Text
dd 0                        ; DATA XREF: Ti
```

Figure 1: AV checks

Recent updates include a minor change to their C2 URI structure[2].

```
mov     fs:[eax], esp
push    offset _str_http____0.Text
push    ds:dword_532484
push    offset _str__gate_connect?.Text
push    offset _str_hwid_.Text
push    ds:dword_534598
push    offset _str__os_.Text
lea     eax, [ebp+var_38]
call    GetWindowsVersionString_523620
mov     eax, [ebp+var_38] ; this
lea     edx, [ebp+var_34] ; System::AnsiString
call    @Httpapp@HTTPEncode$qqrx17System@AnsiString ; Httpapp::HTTPEncode(System::An
push    [ebp+var_34]

_str__gate_connect? dd 0FFFFFFFFh           ; _top
                    dd 14                   ; Len
                    db '/gate/connect?',0   ; Text
```

Figure 2: C2 checking update

Also, there has recently been the addition of a number of commands that would normally be seen in malware that focus

for monetization and RDP continues to be a focus as can be seen in the recent proliferation of services selling access to systems[3].

The ‘cmd’ and ‘powershell’ commands are simply commands to be detonated.

Figure 3: Command line detonations

The results are base64 encoded and sent back to the C2 through the matching URL route.

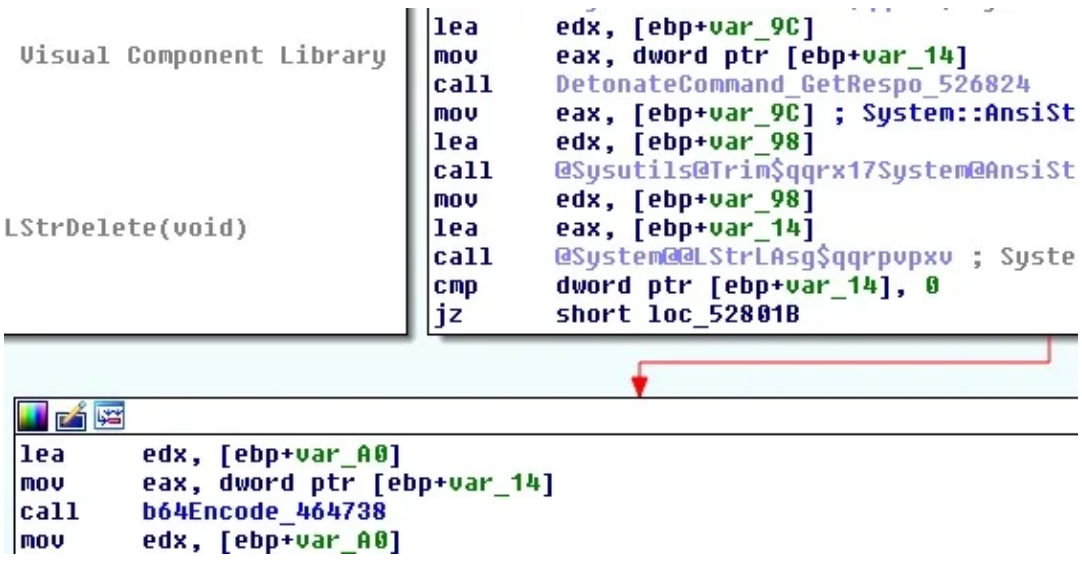


Figure 4: Base64 encode command results

C2 routes for sending responses:

```
/gate/cmd_exec
/gate/powershell_exec
```

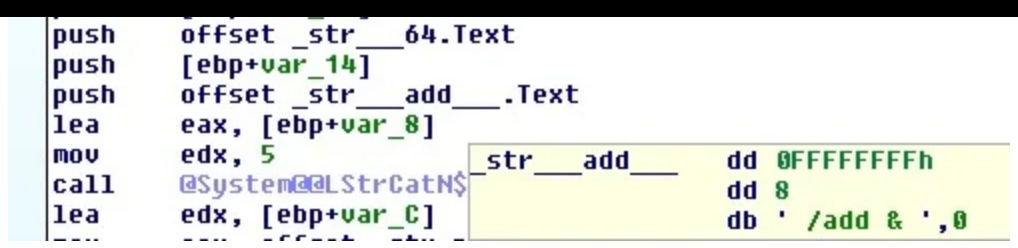


Figure 5: Add new user

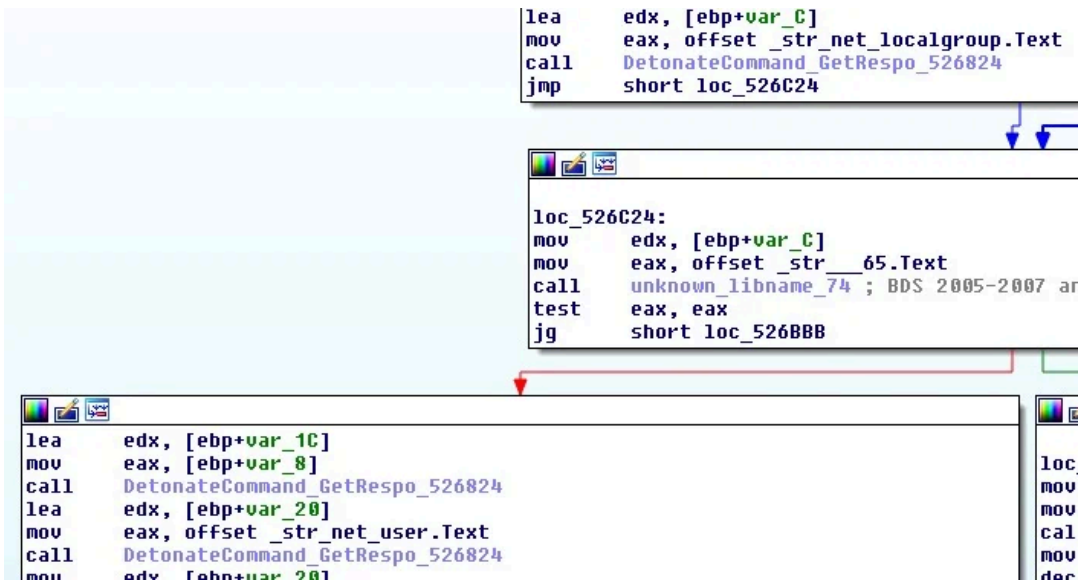


Figure 6: List network groups and users

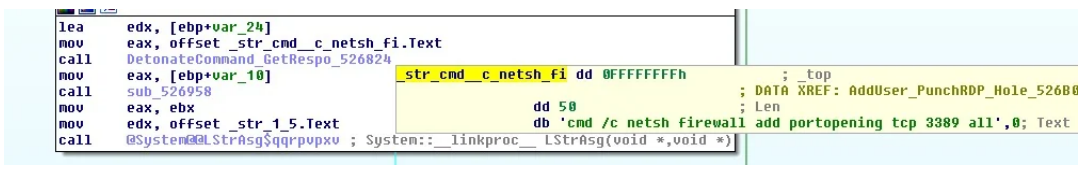


Figure 7: Allow firewall connections on RDP port

This command, then, is more related to setting up the system for RDP access at a later time.

Mitigation & Recommendations

Endpoint:

`CommadLine="cmd /c ping localhost & regsvr32 /s *"`

Network: A number of network rules already exist in Emerging Threats[4], so I decided to look at adding some Suricata rules that might not be currently covered.

Suricata rules:

```
alert http $HOME_NET any → $EXTERNAL_NET any
(msg:"Sarwent Powershell response Post"; content:"POST";
http_method; content:"/gate/powershell_exec"; http_uri;
classtype:trojan-activity; sid:9000041; rev:1; metadata:author
Jason Reaves;)

alert http $HOME_NET any → $EXTERNAL_NET any
(msg:"Sarwent RDP exec response"; content:"GET";
http_method; content:"/gate/rdp_exec?command="; http_uri;
content:"&status="; http_uri; classtype:trojan-activity;
sid:9000042; rev:1; metadata:author Jason Reaves;)

alert http $HOME_NET any → $EXTERNAL_NET any
(msg:"Sarwent update exe response"; content:"GET";
http_method; content:"/gate/update_exec?command=";
http_uri; content:"&status="; http_uri; classtype:trojan-
activity; sid:9000043; rev:1; metadata:author Jason Reaves;)

alert http $EXTERNAL_NET any → $HOME_NET any
(msg:"Sarwent update command"; content:"200";
http_stat_code; content:"fHVwZGF0ZX"; startswith;
http_server_body; flow:to_client, established; classtype:trojan-
activity; sid:9000044; rev:1; metadata:author Jason Reaves;)

alert http $EXTERNAL_NET any → $HOME_NET any
(msg:"Sarwent download command"; content:"200";
http_stat_code; content:"fGRvd25sb2Fkf"; startswith;
http_server_body; flow:to_client, established; classtype:trojan-
activity; sid:9000045; rev:1; metadata:author Jason Reaves;)

alert http $EXTERNAL_NET any → $HOME_NET any
(msg:"Sarwent powershell command"; content:"200";
http_stat_code; content:"fHBvd2Vyc2hlbGx8"; startswith;
http_server_body; flow:to_client, established; classtype:trojan-
activity; sid:9000046; rev:1; metadata:author Jason Reaves;)

alert http $EXTERNAL_NET any → $HOME_NET any
(msg:"Sarwent rdp command"; content:"200"; http_stat_code;
```

beurbn[.]com/install.exe

V2 samples

Hash:

3f7fb64ec24a5e9a8cfb6160fad37d33fed6547c

Domains

seoanalyticsproj.xyz

seoanalyticsproewj.xyz

seoanalyticsp34roj.xyz

seoanalyticsptyrroj.xyz

seoanalyticsprojrts.xyz

seoanalyticspro32frghyj.xyz

Hash:

ab57769dd4e4d4720eedaca31198fd7a68b7ff80

Domains

vertuozoff.xyz

vertuozoff.club

vertuozofff.xyz

vertuozofff.com

vertuozofff.club

vertuozoffff.club

Hash:

d297761f97b2ead98a96b374d5d9dac504a9a134

Domains

rabbot.xyz

terobolt.xyz

tebbolt.xyz

rubbolt.xyz

rubbot.xyz

treawot.xyz

Hash:

3eeddeadcc34b89fbdd77384b2b97daff4ccf8cc

Domains

Hash:

106f8c7ddbf265fc108a7501b6af292000dd5219

Domains

blognews-journal.com

startprojekt.pw

blognews-joural.com

blognews-joural.best

blognews-joural.info

startprojekt.pro

V1 Samples

Hash:

83b33392e045425e9330a7f009801b53e3ab472a

Domains

212.73.150.246

softfaremiks.icu

shopstoregame.icu

shopstoregamese.icu

Hash:

2979160112ea2de4f4e1b9224085efbbedafb593

Domains

shopstoregame.icu

softfaremiks.icu

shopstoregamese.icu shopstoregamese.com

shopstoregames.icu

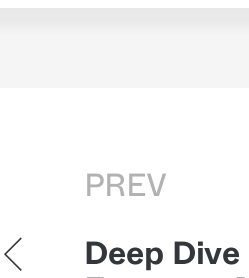
References

1: https://twitter.com/VK_Intel/status/1228833249536987138

2: https://twitter.com/James_inthe_box/status/1228788661006659584

3: https://twitter.com/VK_Intel/status/1242587625409609731

4: https://github.com/silence-is-best/c2db



JASON REAVES

Jason Reaves is a Principal Threat Researcher at SentinelLabs who specializes in malware reverse-engineering. He has spent the majority of his career tracking threats in the Crimeware domain, including reverse-engineering data structures and algorithms found in malware in order to create automated frameworks for harvesting configuration and botnet data. Previously, he worked as a software developer and unix administrator in the financial industry and also spent six years in the U.S. Army. Jason holds multiple certifications related to reverse-engineering and application exploitation and has published numerous papers on topics such as writing malware scripts pretending to be a bot, unpackers, configuration data harvesters and covert channel utilities. He enjoys long walks in IDA and staring at RFCs for hours.

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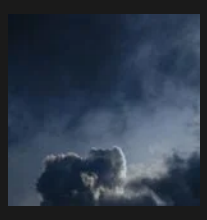

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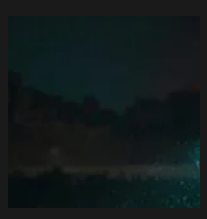

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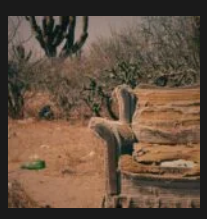

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