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

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]

Background

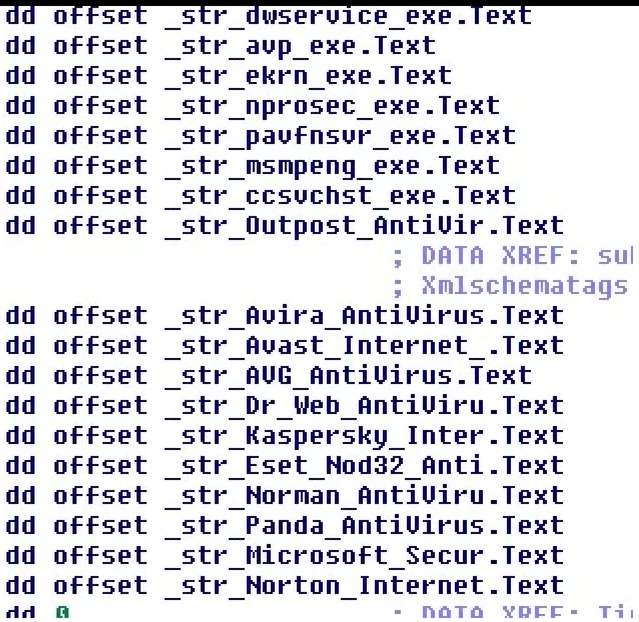
Sarwent appears to have been actively used since at least 2018 but not a lot has been publicly reported about it during that time period.

Research Insight

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_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: sul
                        ; 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].

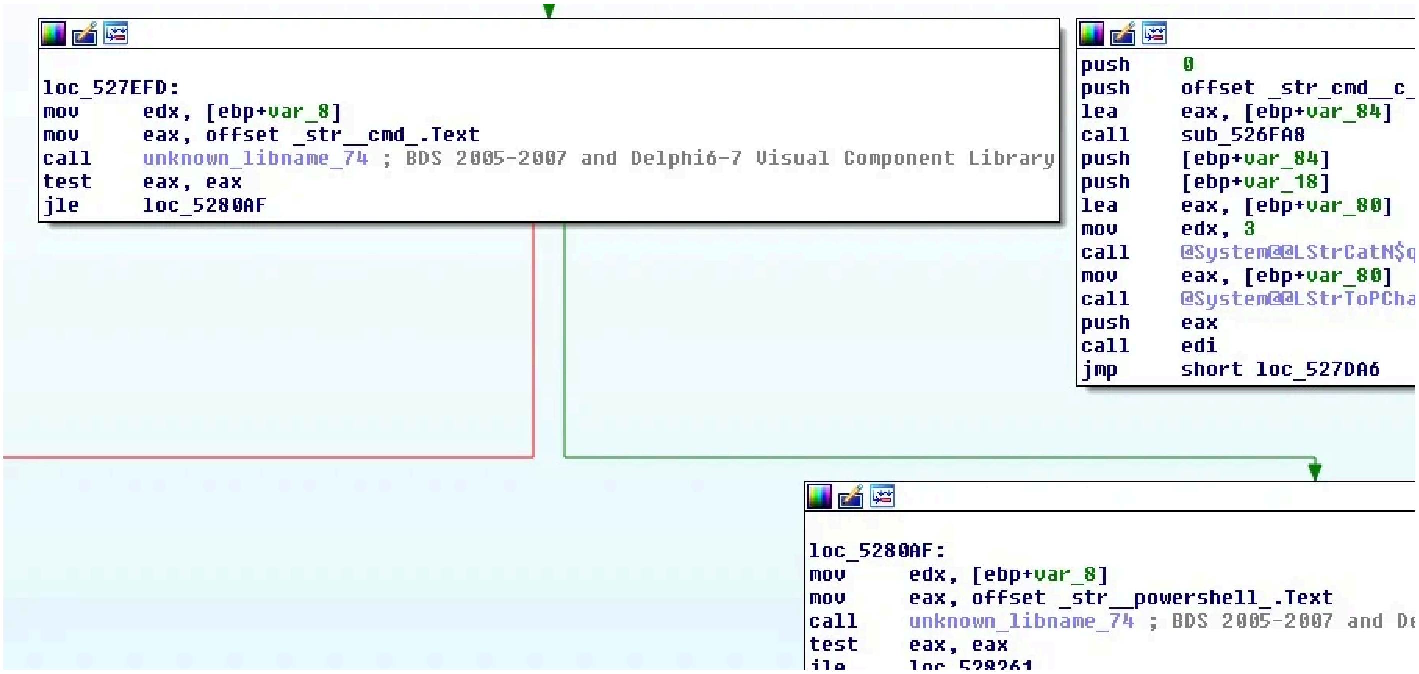
Figure 2: C2 checking update

Also, there has recently been the addition of a number of commands that would normally be seen in malware that focus more on backdoor or RAT like capabilities.

```
|cmd|
|powershell|
|rdp|
```

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.



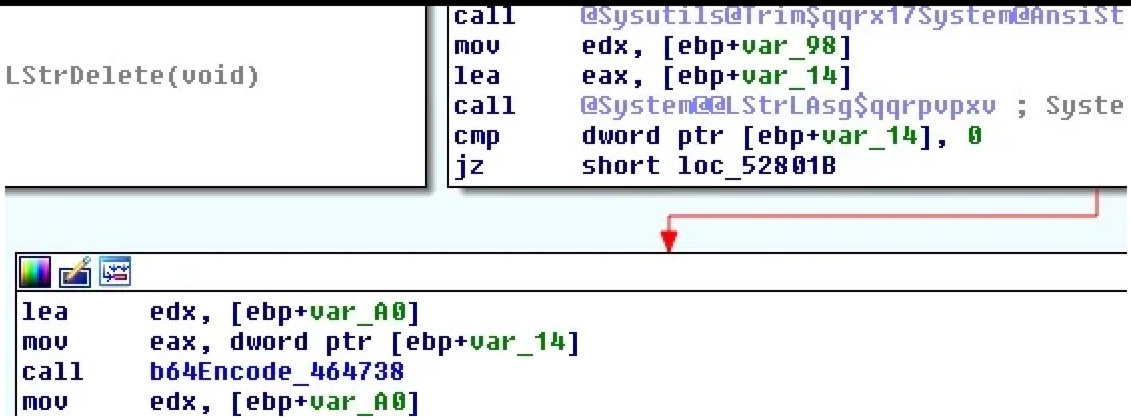
```
loc_527EFD:
mov     edx, [ebp+var_8]
mov     eax, offset _str__cmd_.Text
call    unknown_libname_74 ; BDS 2005-2007 and Delphi6-7 Visual Component Library
test    eax, eax
jle     loc_5280AF
```

```
push    0
push    offset _str_cmd__c_
lea     eax, [ebp+var_84]
call    sub_526FA8
push    [ebp+var_84]
push    [ebp+var_18]
lea     eax, [ebp+var_80]
mov     edx, 3
call    @System@@LStrCatN$q
mov     eax, [ebp+var_80]
call    @System@@LStrToPCha
push    eax
call    edi
jmp     short loc_527DA6
```

```
loc_5280AF:
mov     edx, [ebp+var_8]
mov     eax, offset _str__powershell_.Text
call    unknown_libname_74 ; BDS 2005-2007 and De
test    eax, eax
jle     loc_528261
```

Figure 3: Command line detonations

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



```
LStrDelete(void)
```

```
call    @Sysutils@Trim$qqrx17System@AnsiSt
mov     edx, [ebp+var_98]
lea     eax, [ebp+var_14]
call    @System@@LStrLAsg$qqrpvpxv ; Syste
cmp     dword ptr [ebp+var_14], 0
jz      short loc_52801B
```

```
lea     edx, [ebp+var_A0]
mov     eax, dword ptr [ebp+var_14]
call    b64Encode_464738
mov     edx, [ebp+var_A0]
```

Figure 4: Base64 encode command results

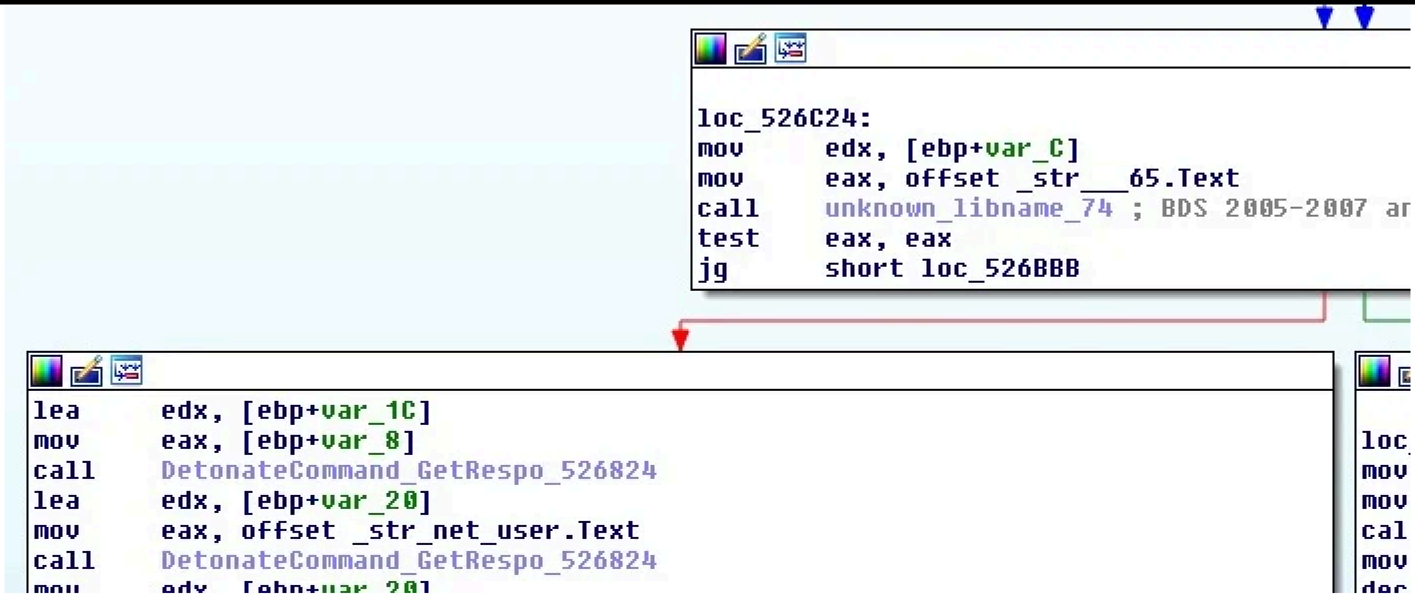
C2 routes for sending responses:

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

The ‘rdp’ command is a bit different; the code execution looks like it serves to tell the bot to perform a series of tasks:

- Add a new user
- List groups and users
- Punch hole in local firewall

Figure 5: Add new user



```
loc_526C24:
mov     edx, [ebp+var_C]
mov     eax, offset _str___65.Text
call    unknown_libname_74 ; BDS 2005-2007 ar
test    eax, eax
jg      short loc_526BBB
```

```
lea     edx, [ebp+var_1C]
mov     eax, [ebp+var_8]
call    DetonateCommand_GetRespo_526824
lea     edx, [ebp+var_20]
mov     eax, offset _str_net_user.Text
call    DetonateCommand_GetRespo_526824
mov     edx, [ebp+var_20]
```

```
loc
mov
mov
cal
mov
dec
```

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 *"
```

Suricata rules:

```
alert http $HOME_NET any → $EXTERNAL_NET any (msg:”Sarwent CMD response Post”; content:”POSt”; http_method; content:”/gate/cmd_exec”; http_uri; classtype:trojan-activity; sid:9000040; rev:1; metadata:author Jason Reaves;)

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;)
```

```
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; content:”fHJkcH”; startswith; http_server_body; flow:to_client, established; classtype:trojan-activity; sid:9000047; rev:1; metadata:author Jason Reaves;)
```

Indicators of Compromise

Download Location:

whatsmyhomeworthlondonontario[.]ca/wp-admin/version.exe

beurbn[.]com/install.exe

V2 samples

Hash:

3f7fb64ec24a5e9a8cfb6160fad37d33fed6547c

Domains

seoanalyticsproj.xyz

seoanalyticsproewj.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 terobolt.xyz

tebbolt.xyz

rubbolt.xyz

rubbot.xyz

treawot.xyz

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

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

MALWARE SARWENT TRICKBOT

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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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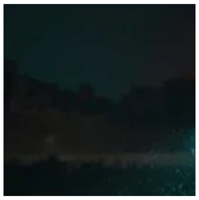

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