# An Analysis of Linux.Ngioweb Botnet

blog.netlab.360.com/an-analysis-of-linux-ngioweb-botnet-en/

Alex.Turing June 21, 2019

21 June 2019 / Botnet

## Background

On May 27, 2019, Our Unknown Threat Detect System highlighted a suspicious ELF file, and till this day, the detection rate on VT is still only one with a very generic name. We determined that this is a Proxy Botnet, and it is a Linux version variant of the Win32.Ngioweb[1] malware. We named it Linux.Ngioweb. It shares a lot of code with Win32.Ngioweb, except that it has DGA features. We registered one of the DGA C2 domain names (enutofish-pronadimoful-multihitision.org) and was able to observe the Bot connections.

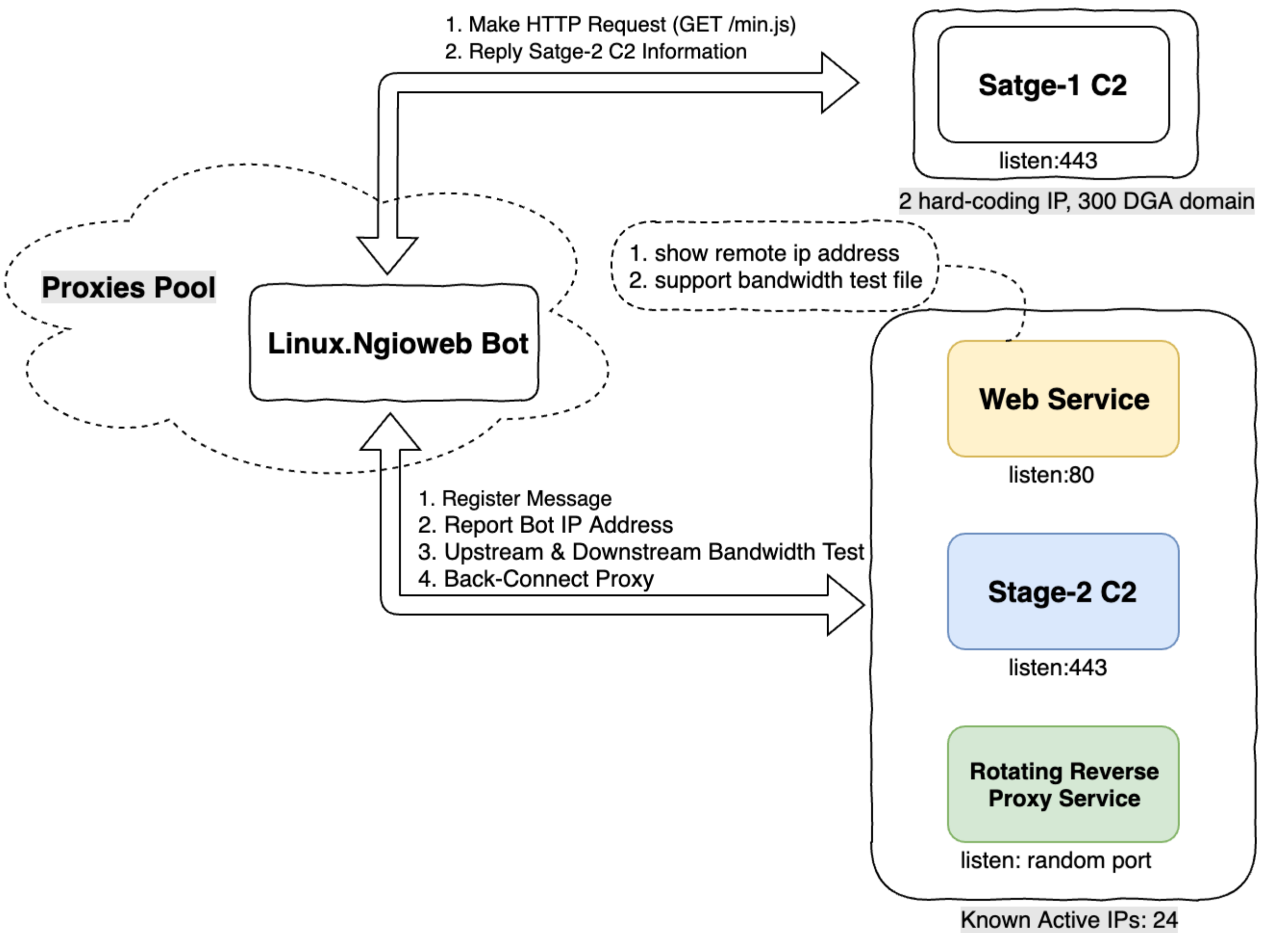
In addition, we have observed that Linux.Ngioweb malware has been implanted into a large number of WordPress Web servers.

Although the Bot program is loaded with the privilege of the user group corresponding to the Web container, it still works and runs as Rotating Proxy node[2].

We don't know why the attacker runs this proxy botnet, but it is possible that everything goes through the proxy is being recorded by the attacker.

## Overview of Linux.Ngioweb

The main functionality of the Linux.Ngioweb Bot sample is to implement Back-Connect Proxy[3].on the victim's machine. The attacker builds multiple Bots into a Proxies Pool and controls it through a two-tier C2 protocol, then provides a Rotating Proxy Service.




## Reverse engineering on Linux.Ngioweb

### Basic information

MD5: 827ecf99001fa66de513fe5281ce064d

> ELF 64-bit LSB executable, AMD x86-64, version 1 (SYSV), statically linked, stripped

### Anti-reverse engineering technique

- Uses a niche library named musl libc

| File | State | #func |
|---|---|---|
| muslibc x64 | Applied | 57 |

- Stores its functions in the function table in advance

```
mov     qword ptr [rbx+0C0h], offset connect
mov     qword ptr [rbx+0C8h], offset sys_listen
mov     qword ptr [rbx+0D0h], offset bind
mov     qword ptr [rbx+10h], offset sys_mremap
mov     qword ptr [rbx+8], offset sys_memalloc
mov     qword ptr [rbx+18h], offset sys_munmap
mov     qword ptr [rbx+20h], offset write
mov     qword ptr [rbx+28h], offset read
mov     qword ptr [rbx+30h], offset lseek
mov     qword ptr [rbx+38h], offset Wrap_Exit
mov     qword ptr [rbx+40h], offset getppid
mov     qword ptr [rbx+48h], offset getpid
mov     qword ptr [rbx+50h], offset sys_fork
```

- Uses Stack Strings Obfuscation

```
mov     [rsp+38h+var_1C], '-'
mov     [rsp+38h+var_1D], 'e'
mov     [rsp+38h+var_1E], 'n'
mov     [rsp+38h+var_1F], 'i'
mov     [rsp+38h+var_20], 'h'
mov     [rsp+38h+var_21], 'c'
mov     [rsp+38h+var_22], 'a'
mov     [rsp+38h+var_23], 'm'
mov     [rsp+38h+var_24], '/'
mov     [rsp+38h+var_25], 'c'
mov     [rsp+38h+var_26], 't'
mov     [rsp+38h+var_27], 'e'
mov     [rsp+38h+var_28], '/'
```

- Generates constant table used by CRC and AES

```
prepareCRC32(a2 + 12);
v34 = 's';
v33 = 's';
v32 = 'd';
v5 = 'e';
v4 = 'w';
v3 = 'q';
v35 = 0;
prepareAES((_BYTE *)(a2
```

- Uses a two-tier C2 protocol, where Stage-2 C2 is determined by the CONNECT instruction of Stage-1 C2

- Stage-2 C2 uses a two-layer encrypted communication protocol

## Stage-1 C2 protocol analysis

At this stage, the main behavior of the sample is to establish communication with Stage-1 C2, and proceed to the next step according to the instructions returned by C2.

Communication attempt

- Try to establish communication with the following hardcoded C2 IP every 60 seconds
  169.239.128.166:443
  185.244.149.73:443

- Try to establish communication with the domain name generated by DGA (Domain Generation Algorithm) every 73 seconds. When the number of DGA domain names reaches 300, the Seed will be reset. So the total number of DGA domain names is 300.

```
*((_DWORD *)a1 + 0xE) = GenerateDomain(*((_DWORD *
sub_405DAB((__int64)a1, FirstCC);
dgacount = (*((_DWORD *)a1 + 0xF) + 1) % 0x12Cu;
```

DGA implementation

```
uint64_t GenSeed(uint32_t& seed, uint32_t mod)
{
      uint32_t tmp = 0x41C64E6D * seed + 0x3039;
      seed = tmp;
      return tmp % mod;
}
string dga(uint32_t& seed)
{
      char* HeadBuf[] = { "un", "under", "re", "in", "im", "il", "ir", "en", "em",
                          "over", "mis", "dis", "pre", "post", "anti","inter",
                          "sub", "ultra", "non", "de","pro", "trans", "ex",
                          "macro", "micro", "mini","mono", "multi", "semi", "co" };

      char* BodyBufA[] = {"able","ant","ate","age","ance","ancy","an","ary",
                          "al","en","ency","er","etn", "ed", "ese","ern","ize",

"ify","ing","ish","ity","ion","ian","ism","ist","ic","ical",
                          "ible","ive","ite","ish","ian","or","ous","ure" };

      char* BodyBufB[] = {"dom","hood","less","like","ly","fy","ful","ness",
                          "ment","sion","ssion","ship","ty","th","tion","ward" };

      char* TailBuf[] = { ".net",".info",".com",".biz",".org",".name" };

      string BlockBufA = "aeiou";
      string BlockBufB = "bcdfghklmnprstvxz";
      string domain;
      uint32_t dashloop = GenSeed(seed, 3) + 1;
      while (dashloop--)
      {
              domain += HeadBuf[GenSeed(seed, 0x1e)];
              int flag = 0;
              int i = 0;
              if (BlockBufA.find(domain.back()) == string::npos)
                      flag = 1;
              int fillcnt = GenSeed(seed, 0x3) + 4;
              while (fillcnt > i)
              {

                      if (flag + i & 1)
                              domain += BlockBufA[GenSeed(seed, 0x5)];
                      else
                              domain += BlockBufB[GenSeed(seed, 0x11)];
                      i++;
              }
              if (BlockBufA.find(domain.back()) == string::npos)
                      domain += BodyBufA[GenSeed(seed, 0x23)];
              else
                      domain += BodyBufB[GenSeed(seed, 0x10)];
              if (dashloop != 0)
                      domain += "-";
      }
      return domain += TailBuf[GenSeed(seed, 0x6)];
}
```

Communication Protocol

This phase of communication is based on the HTTP protocol and the parameters are Base64 encoded.

Packets overview

```
GET /min.js?h=aWQ9ZGRiMGI0OWQxMGVjNDJjMyZ2PXg4Nl82NCZzdj01MDAzJnFsb2htemFsd2RlcHVwd2Y= HTTP/1.1
Host: 169.239.128.166
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:59.0) Gecko/20100101 Firefox/59.0
Accept: text/html
Connection: close

HTTP/1.1 200 OK
Server: openresty/1.15.8.1
Date: Tue, 18 Jun 2019 07:41:51 GMT
Content-Type: text/plain; charset=utf-8
Content-Length: 554
Connection: close

CONNECT 91.134.157.11:443
CERT 1
3A0CA4592F2A6DC3BC4E188A2E87A05738DBC8BC32D1A9C2F69D0B7D44EAC109A76D7B53C974CD27A45B562970FEA5F
94248244354F377014D893EADE0D77BC6D41681870C9D27245DB98EDDF246041AEB07A73CBFB3D0327EE5FA4B9491BF
38309E6014B2C1371733A351BFF4789A308D69467AFE43A5BCA1AC519A66D5DB039C92E47C39C7BD706CEFF64B8DA9EE
WAIT 30
```

Sent Packets decode

After decoded the parameter content by Base64, we get the following information.

```
id=ddb0b49d10ec42c3&v=x86_64&sv=5003&qlohmzalwdepupwf
```

- id=machine-id[0:15]

```
root@debian:~# cat /etc/machine-id
ddb0b49d10ec42c38b1093b8ce9ad12a
```

- v=x86_64, hardcoded, architecture
- sv=5003, hardcoded, version number
- &qlohmzalwdepupwf, random 16-byte data, the algorithm is as follows

```
for ( i = 0LL; i != a3; ++i )
{
  v7 = 0x41C64E6D * *a1 + 0x3039;
  *a1 = v7;
  *(_BYTE *)(a2 + i) = v5[v7 % v4];
}
```

- User-Agent, hardcoded

```
Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:59.0) Gecko/20100101 Firefox/59.0
```

Received Packets decode

```
CONNECT 91.134.157.11:443
CERT 1
3A0CA4592F2A6DC3BC4E188A2E87A05738DBC8BC32D1A9C2F69D0B7D44EAC109A76D7B53C974CD27A45B562970FEA5F0
94248244354F377014D893EADE0D77BC6D41681870C9D27245DB98EDDF246041AEB07A73CBFB3D0327EE5FA4B9491BF0
38309E6014B2C1371733A351BFF4789A308D69467AFE43A5BCA1AC519A66D5D8039C92E47C39C7BD706CEFF64B8DA9EE
WAIT 30
```

Command Supported

- WAIT
- CONNECT
- DISCONNECT
- CERT

### Stage-2 C2 protocol analysis

At this stage, the main action of the sample is to establish communication with the C2 of Stage-2 and enable the Back-Connect Proxy function. C2 of stage-2 is specified by the CONNECT command.

Communication Protocol

At this stage, the communication is combined by double-layer encryption. The inner layer is XOR and the outer layer is AES.

Packets overview

```
00000000  c1 d3 78 71 2d f6 5b bb  16 ca ff 8b ef 69 bb 26   ..xq-.[. .....i.&
00000010  3b 01 f0 22 70 09 38 dc  e7 06 89 de 2b 55 eb 8e   ;.."p.8. ....+U..
    00000000  c5 ad 4a bf 30 c2 3a 43  9b 6e 22 08 73 e0 b9 5d   ..J.0.:C .n".s..]
    00000010  3c e6 b7 f0 74 76 53 43  3a 79 0e 82 80 1a c3 84   <...tvSC :y......
    00000020  ba a4 85 05 4a 63 b1 d6  d1 94 ad 53 be 7a 9a 88   ....Jc.. ...S.z..
00000020  14 c1 7a 9c 70 f2 d6 c7  99 ed 38 c1 e4 2b 77 9f   ..z.p... ..8..+w.
00000030  3e 82 6c fd a1 3c f0 08  73 48 4c 5e b4 88 7c d7   >.l..<.. sHL^..|.
```

Encryption Algorithm

The XOR key is generated by a random algorithm:

```
v2 = 0x41C64E6D * *a1 + 0x3039;
*a1 = v2;
return v2 % a2;
```

The algorithm is:

```
    if ( buff )
    {
      while ( buff != end )
      {
        *buff++ ^= key;
        key = __ROR4__(key, 8);
      }
```

AES uses ECB mode, no padding. The key is:**qwerasdfzxcqwerasdftyuirfdsdsdss**

Packet Structure

The packet consists of two parts: “header” and “msg”.

“header” structure:

```
#le->little endian
#be->big endian
struct header
{
        uint32_le xorkey;
        uint32_be msgcrc32;
        uint32_be len;
        uint16_be msgcode
        uint16_be magic
};
```

“msg” consists of chunks, and the chunks supported by the sample are as follows:

| Chunk Type | Chunk Length | Description |
|---|---|---|
| 1 | 1 | BYTE |
| 2 | 2 | WORD big endian |
| 3 | 4 | DWORD big endian |
| 4 | 8 | QWORD big endian |
| 5 | N+4 | Bytes array.The first 4 bytes of chunk are the big endian-encoded length (N) of the array |

A “msg” can have one or more chunks, and different “msg”s are made up by different chunks .

The “msg” types uses by this sample are “recv” and “send”.

- recv

```
if ( v21 == 0x1010 )
{
  v44 = 2;
  v43 = 5;
  chunkcnt = 3LL;
  v42 = 4;
}
else if ( v21 == 0x1011 )
{
  v46 = 2;
  v45 = 5;
  chunkcnt = 5LL;
  v44 = 1;
  v43 = 1;
  v42 = 4;
}
else
{
  chunkcnt = 0LL;
  if ( v21 == 0x1012 )
  {
    v42 = 4;
    chunkcnt = 1LL;
  }
```

- send

```
mov     rdx, rbx
mov     esi, 10h
mov     rdi, rbp
call    GenPacket
```

```
mov     [rbx+11h], eax
mov     rdx, rbx
mov     esi, 11h
mov     rdi, rbp
call    GenPacket
```

```
mov     esi, 15h
mov     rdi, rbp
mov     byte ptr [rbx+19h
mov     [rbx+1Ah], r13b
call    GenPacket
```

```
mov     rcx, rdx
mov     edx, 16h
jmp     GenPacketWrap
```

```
mov     rcx, rdx
mov     edx, 14h
jmp     GenPacketWrap
```

See the table below for a summary of different “msg”s:

| msgcode | Driection | Description | Fromat |
|---|---|---|---|
| 0x1010 | recv | set channel id | 3 chunks:(QWORD ConnId, Array IPAddr,WORD Port) |
| 0x1011 | recv | start proxy request | 5 chunks:(QWORD RequestId, BYTE reason,BYTE AddrType,Array Addr, WORD port) |
| 0x1012 | recv | close connection | 1 chunk:(QWORD ConnId) |
| 0x10 | send | check-in | 1 chunk:(QWORD BotId) |
| 0x11 | send | set-channel ack | 1 chunk:(DWORD VersionId) |
| 0x14 | send | tcp server started | 5 chunks:(DWORD ConnectionId, QWORD RequestId, BYTE AddrType, Array Addr, WORD Port) |
| 0x15 | send | error | 2 chunks:(DWORD RequestId,BYTE reason ) |
| 0x16 | send | udp server started | 5 chunks:(DWORD ConnectionId, QWORD RequestId, BYTE AddrType, Array Addr, WORD Port) |

Sent packets sample analysis

- Raw data

```
packet[0:31]:
6c 52 8c 08 3e 80 a9 3c 00 00 00 10 00 10 fa 51
04 dd b0 b4 9d 10 ec 42 c3 00 00 00 00 00 00
header         --->packet[0:15]
       xorkey          --->0x088c526c
       msgcrc32        --->0x3e80a93c
       msglen          --->0x00000010
       msgcode         --->0x0010,check-in
       magic           --->0xfa51
msg            --->packet[16:31]
       1st chunk
               chunktype       --->0x4
               content         --->0xddb0b49d10ec42c3
```

- After XOR encryption

```
6c 52 8c 08 36 0c fb 50 08 8c 52 7c 08 9c a8 3d
0c 51 e2 d8 95 9c be 2e cb 8c 52 6c 08 8c 52 6c
```

- After AES encryption

```
c1 d3 78 71 2d f6 5b bb  16 ca ff 8b ef 69 bb 26
3b 01 f0 22 70 09 38 dc  e7 06 89 de 2b 55 eb 8e
```

Received packets sample analysis

- Raw data

```
c5 ad 4a bf 30 C2 3a 43 9b 6e 22 08 73 e0 b9 5d
3c e6 b7 f0 74 76 53 43 3a 79 0e 82 80 1a c3 84
ba a4 85 05 4a 63 b1 d6 d1 94 ad 53 be 7a 9a 88
```

- After AES decryption

```
59 8b e5 6d 4a ee bf ef 6d e5 8b 79 7d f5 71 08
69 b8 81 aa 92 ed 65 fb 29 e0 8b 59 6d e1 51 47
19 e1 89 d8 29 e5 8b 59 6d e5 8b 59 6d e5 8b 59
```

- After XOR decryption

```
packet[0:47]
  59 8b e5 6d 27 0b 34 b6 00 00 00 20 10 10 fa 51
  04 5d 0a f3 ff 08 ee a2 44 05 00 00 00 04 da 1e
  74 04 02 81 44 00 00 00 00 00 00 00 00 00 00 00

header                --->packet[0:15]
  xorkey              --->0x6de58b59
  msgcrc32    --->0x270b34b6
  msglen              --->0x00000020
  msgcode             --->0x1010,set channel id
  magic               --->0xfa51

msg                   --->packet[16:47]
  1st chunk
      chunktype       --->0x04
      content         --->0x5d0af3ff08eea244
  2nt chunk
      chunktype       --->0x05
      content         --->len:0x00000004 buf:0xda1e7404
  3rd chunk
      chunktype       --->0x02
      content         --->0x8144
```

## Stage-2 C2 association analysis

We obtained the following 6 Stage-2 C2 addresses by visiting the Stage-1 C2 URL (http://185.244.149.73:443/min.js).

```
5.135.58.119
5.135.58.121
5.135.58.123
5.135.58.124
91.134.157.11
193.70.73.115
```

We looked up this md5 (9017804333c820e3b4249130fc989e00) in our GraphicQuery platform and was able to find more IPs which host the same file, we then sent specific crafted packets to these IPs and was able to ID another 18 Stage-2 C2s.

```
5.135.35.160
5.196.194.209
51.254.57.83
54.36.244.84
54.36.244.85
54.36.244.91
91.121.36.212
91.121.236.219
92.222.151.63
145.239.108.241
163.172.201.184
163.172.202.116
178.33.101.176
178.33.101.177
178.33.101.178
178.33.101.182
188.165.5.123
188.165.163.20
```

We found that these Stage-2 C2 IP address are providing Socks5 proxy service by looking them up on free-socks.in

Show 100 entries Search: 91.134.157.11

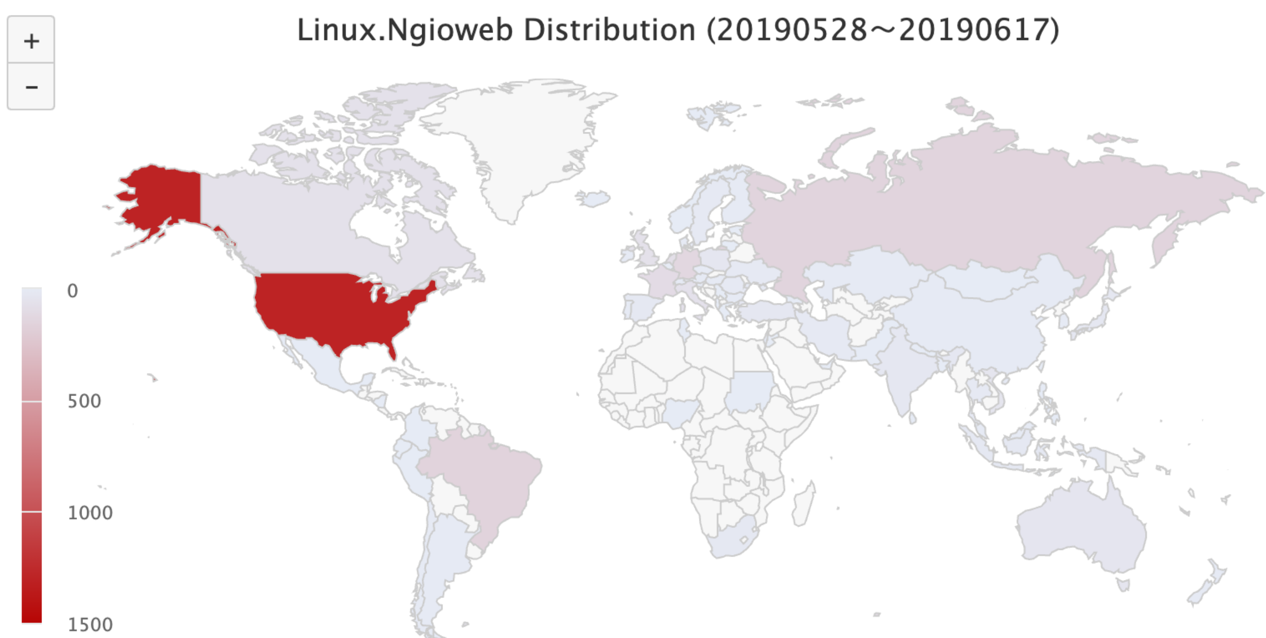
| | Proxy IP:Port | Proxy type | Location | Latency (sec) | Uptime | Last Check |
|---|---|---|---|---|---|---|
| | 91.134.157.11:50880 | SOCKS5 | United Kingdom (Ferndown) | 0.37482 | 100% (15/15) | 1 minutes ago |
| | 91.134.157.11:62012 | SOCKS5 | United States (Brea) | 0.68167 | 100% (74/74) | 4 minutes ago |
| | 91.134.157.11:18278 | SOCKS5 | Netherlands (Amsterdam) | 0.31568 | 100% (35/35) | 12 minutes ago |
| | 91.134.157.11:64380 | SOCKS5 | United States (Orlando) | 0.89383 | 100% (36/36) | 26 minutes ago |
| | 91.134.157.11:47067 | SOCKS5 | France (Roubaix) | 0.31012 | 100% (36/36) | 29 minutes ago |
| | 91.134.157.11:63862 | SOCKS5 | Germany (Ludwigshafen am Rhein) | 0.32031 | 97% (35/36) | 36 minutes ago |
| | 91.134.157.11:49475 | SOCKS5 | United States (Austin) | 0.97949 | 100% (6/6) | 43 minutes ago |

As we tested, all these Socks5 proxy IPs are properly functioning. Also, they accessed the C2 domain we own(enutofish-pronadimoful-multihitision.org) via the Stage-1 C2 protocol, so it can be said that they are all Linux.Ngioweb Bots.

```
root@localhost:~# curl --socks5 91.134.157.11:50880 ifconfig.me
31.170.123.49

root@localhost:~# curl --socks5 91.134.157.11:62012 ifconfig.me
208.113.197.88

root@localhost:~# curl --socks5 91.134.157.11:18278 ifconfig.me
45.58.190.100

root@localhost:~# curl --socks5 91.134.157.11:64380 ifconfig.me
72.29.64.29

root@localhost:~# curl --socks5 91.134.157.11:47067 ifconfig.me
54.38.101.17

root@localhost:~# curl --socks5 91.134.157.11:63862 ifconfig.me
88.99.212.97

root@localhost:~# curl --socks5 91.134.157.11:49475 ifconfig.me
23.91.65.240
```

## Infected IPs information

By listening on C2 domain (enutofish-pronadimoful-multihitision.org), we have observed a total of 2692 Bot IPs.




The following is a detailed list of countries/regions with number of infected IPs:

```
US 1306
BR 156
RU 152
DE 133
FR 102
SG 98
NL 80
GB 66
CA 66
IT 64
VN 42
AU 36
PL 31
TR 28
JP 26
IN 26
ZA 21
ID 19
ES 18
UA 15
```

By probing the infected IPs, we found out that almost all Bot IPs are web servers and have WordPress programs deployed. We did not look into how the attacker took control of these WordPress sites though.

We contacted some infected users and found multiple WebShells on their Web servers. These WebShells are highly obscured, but the techniques, encryption, and code share similar characters.
Combined with the accessing characteristics (such as time, order) the infected IPs made to the our sinkhole DGA domain, we speculate that the attacker will periodically issue commands to the WebShells on the victim websites, as well as running the Linux.Ngioweb program.

## Solutions and Suggestions

We recommend that readers do not use the Socks5 proxy service provided by these Stage-2 C2 IP.

We recommend that WordPress users back up the website article database (delete backdoor users such as wp.service.controller.*), reinstall the latest version of WordPress program, enhance user password complexity, enhance WebShell detection capabilities, and disable PHP commands to execute related functions;

### Contact us

Relevant security and law enforcement agencies are welcomed to contact netlab[at]360.cn for a list of infected IP addresses.

Readers are always welcomed to reach us on **twitter**, WeChat 360Netlab or email to netlab at 360 dot cn.

## IoC list

### Sample MD5

```
827ecf99001fa66de513fe5281ce064d
```

### Stage-1 C2 (Hardcoded IP)

```
169.239.128.166         South Africa            ASN 61138               Zappie Host 
LLC
185.244.149.73          Romania                 ASN 60117               Host Sailor 
Ltd.
```

### Stage-2 C2

```
163.172.201.184         France                  ASN 12876               Online S.a.s.
163.172.202.116         France                  ASN 12876               Online S.a.s.
5.135.35.160            France                  ASN 16276               OVH SAS
5.135.58.119            France                  ASN 16276               OVH SAS
5.135.58.121            France                  ASN 16276               OVH SAS
5.135.58.123            France                  ASN 16276               OVH SAS
5.135.58.124            France                  ASN 16276               OVH SAS
5.196.194.209           France                  ASN 16276               OVH SAS
51.254.57.83            France                  ASN 16276               OVH SAS
54.36.244.84            France                  ASN 16276               OVH SAS
54.36.244.85            France                  ASN 16276               OVH SAS
54.36.244.91            France                  ASN 16276               OVH SAS
91.121.36.212           France                  ASN 16276               OVH SAS
91.121.236.219          France                  ASN 16276               OVH SAS
91.134.157.11           France                  ASN 16276               OVH SAS
92.222.151.63           France                  ASN 16276               OVH SAS
145.239.108.241         Germany                 ASN 16276               OVH SAS
178.33.101.176          Ireland                 ASN 16276               OVH SAS
178.33.101.177          Ireland                 ASN 16276               OVH SAS
178.33.101.178          Ireland                 ASN 16276               OVH SAS
178.33.101.182          Ireland                 ASN 16276               OVH SAS
188.165.5.123           Ireland                 ASN 16276               OVH SAS
188.165.163.20          France                  ASN 16276               OVH SAS
193.70.73.115           France                  ASN 16276               OVH SAS
```

### Stage-1 C2 (DGA)

enutofish-pronadimoful-multihitision.org
exaraxexese-macrobacaward-exafosuness.net
nonafudazage.name
demigelike.net
emuvufehood.net
subolukobese.biz
inogepicor-prorarurument.biz
overahudulize-unazibezize-overuzozerish.org
imunolance-postodinenetn-antifipuketn.net
antizerolant-monogevudom.info
transavecaful-transinenation-transikaduhern.com
subogonance.info
inoxodusor-misehupukism.info
devikoviward-semibazegily-copaxugage.name
eniguzeless-inecimanable.net
subilebesion-irogipate.biz
colozosion-antigobunaful.name
inudiduty-dezaviness.org
irelizaring-enipulical-monovuxehossion.info
ilenudavous-monoxoxapal-semimihupution.info
ultrapadupize.biz
covategal-dezakedify-enebugassion.name
transivesudom-macropimuship.org
rezolezation-transapupirify-seminecation.name
macrolutoxous-overefimety.name
coxumumage-dexolalite.name
cotexafical-postirutuvian-emimimous.biz
copubuloness-misumusal-disokozian.com
nonecuzuking-enekopofen-imakozity.info
dezohipal-ultrazebebive.name
cosazalike-antifoxirer-subudikic.biz
underotutilism-monoceraretion-underosociful.name
overugiror.net
emuzixucize.biz
disicevament-desizigasion-recadihuful.biz
decehoward-microhikodely-overokerezant.com
microlasokadom-ultralarumous.info
minixecision-iruzaxuhood.net
profusonuty.info
multifipakency-conovofy-prorakikate.com
antiseramoment.info
postavutetn-emedarevous.biz
inolugoty-inidiverible.com
prodipamament.biz
overogobity-imivocurify-disovizution.biz
decozaness-antihazation-overetalovical.net
nonesolafy.com
unihatosancy.name
interiragocern-micropuxotion-transogorion.org
seminamatity-enogibely.name
inosebovion.net
exofifure-postirexument.info
transiririrenern-semizafunic-nonivubed.biz
enegizize-microtizobity.name
macrohuseded-multipazaseship.com

imefihured-macrohixuhood.org
microlulition-macrokiguxable.biz
multizesumefy-emebefion.biz
underebelassion-postizoziless.info
dezuvazen.name
decotusion-exexavihood-exevozebant.name
disuzepuly.info
inuviging-antizoluly.biz
multisotiren-ilazufist.org
predepussion.info
inidozadom.name
interikuhaful.info
cozuheming.biz
multiruxuth.org
monozogeced.org
mononoredom.info
postarubixage-monocinamety-overogefesal.com
prebekokian-misadepepive-transilogify.com
monohatodom-cohotiship.com
exebasusion.org
unahodoness-emevuzeward-emuzeduness.com
exemidexous-underiposapite-unegatature.name
interocugopist-misugexadic-ilobipegency.org
monokifomancy-misagefism-macrobepoth.com
antizekussion-minipusaral-copofuxoship.com
relutodom-comakitize.name
multikezusion.org
emopumical-enohecical.org
semitegopish.net
recepatission.info
inoluvary.com
seminitotuful.info
interanubing-emelulotal-transugotuzern.com
subefehity-iledutession.name
ultrapapiten.biz
transuvarusish-prozumoxety.info
transisigern.org
imirotiship-microhopulive-emotomeship.com
presefavution.info
enevifaking.org
misidogive-coxecovor-dexefoxan.name
overazadudom-deliromohood.com
emakanuward.com
emitohage-overasuhorure-antitipenoless.info
ultrasesebible.biz
multihadekite.name
iluvused-iravoxish.info
postobagoly-detovaward-unixohible.biz
underasusogen.com
imovaman-multimihivoship-imeduxian.biz
dedunuguhood.com
prevukition.info
underehugavish.org
misoxomelical-iluxubism.net
microcolacoful-postabitition.name

overurohely-overadolure-iruraluness.org
unurodable-dekipuhic-postuxufous.org
unitucihern-postadagen-imupuduth.org
imukokuship.org
prenubocetion-ultrahahohood.com
monofugition-underefogukic.org
irofetufy.com
irobigelike.org
presifament.biz
overetigution.info
enuvopan-imixesoward-irarupipary.biz
inorofizian.com
monopadecotion-multicecihood-imuzicasion.com
exofosehance-minimezazofy.org
monokacofudom-inuvinable.com
emisucosion-prohosexite-imorekusion.net
semiledoduly.info
multivapufy-promumuly-enonuben.net
subebodency.info
cofexasish-inodehed.net
unutexupify-conofubusion.com
misebonure-iluborize-rezericify.com
exunaxian.info
colanizity-postosecive-nonuresible.info
dedaliward-imipusen-inacaliver.com
refusovize.org
monokuvission-transodigical-semihehamussion.biz
transalavudom-multilavezuhood.net
exusizeward.net
unisimor.name
minipihagaship.com
recusigetion-transubeviful.info
multixizitufy-microtomuly-multixoleward.com
microxulodish-semibahoty.biz
macrokunith-proxobivive.net
preginaxodom.name
transimapeful-cotalision.com
prefinazuly.name
inucasazing-microhesunian-semidikokement.biz
disitirotion-transekarenate.org
unehihify-antimepavable-nonubovafy.net
misunotelike-nonugidant.info
enogosudom-macrogekabive.biz
postozokipetn-microdomobaly.biz
interunavission-ininibecist.org
microhinoler.org
prosihamish-noneguhaness.com
preberekous-microkagibant-imemahal.name
iletegifage.org
emikuraran.biz
overokigoty-ilecavish.net
nonikofucable-postelihuzism-rexecigism.net
imixifure.info
minirabupeness-nonitefuward.org
misasugegify-underazosuzish-exuvexezical.info

multipocihood-monomuhunible.org
nonohacutancy-postuxikitan-microseditoless.info
overasobament.info
overulurotion.biz
disepadely-disuzirovor.net
repetepian-irelucify.biz
enikobadom-postolixement.name
inunatogite-imoboraness.net
irimarefy.net
monohiloless-demodefy.com
previbetian-misunohigate.info
multivunuhance-inabiber.com
semicasinaty-ilibaholy.biz
transupovetn-monozeruduless.biz
debapesetn-underisaxufical-imukugamism.info
multibibetefy.com
exanonish.name
interanulish-imazekalike-unisukugate.info
inokevidage.org
monofipuly-underubihal.net
profobekify-subebobefy-exozufous.name
macrovetecuship-emebudemical-underaxakament.biz
demeficiward-retitisily-macromuvaward.org
monosumuly-ilenusuty-dedabaness.net
exapofaran-postulusadify.com
microhobament-postevofafity.com
rebezusaly-overidirity-ultrahiseness.org
unafacigage-transihicical-prebokity.info
interazution-irudegufy-antinefoly.biz
minizecidish-macrolafukish-depovased.biz
derirepous-cosideship-semibiseless.biz
overupazadity-irativorical.name
coseviness-nonikunant-macrorasihood.net
nonesocern-macrotocipity.info
interuzoputy.info
inicinic-misuluzan-ultrakuxuness.com
sububesebism-ultrabutath.com
misacireship.org
exuxuburan-miniravuhood-exosoxen.info
macrozigahood-monosulopancy.com
unegoping-detunusion-antimuruseful.biz
macrozixaward-semivanimoly-underekutoty.biz
ultratipuxian-inosilission-multiridith.net
microtonagament.info
cobemesion-redacocoful.name
disicogure-seminedasoly.biz
dekacify.net
emegamilike-imupogazance-ultrapanacesion.org
unocelibable-underelatucance.com
irodetolike-imisocatite-inecolafian.com
antikuzucen-irokarance-transitupikible.org
semiralety-macrorobinant-ultrapixutency.biz
transisomuless.name
ilebigument-macroripakesion.org
profebarable.org

nonixigefy-protisumiless.biz
corahicohood.com
pretuvution-disafatutical-irehopuvese.name
miniregath-anticesuty-postudagily.biz
coguvilaship-recakubodom.name
overipugoful-interizihing.org
imipadaness-iralikoward-semitolicoly.info
interupefity-semigiduly.info
macromosoriship.net
antigizepist.net
subuluhic-disomokate.net
irunucudor-macrogocudern-comoxizish.name
underedofobate.net
prolapuzern-progobutiful-dehifasion.org
irucasian-macrofevasion.net
unogoxeness-semixocapency.org
rehofocese.org
exebutian-interomifenism.org
subihefahood-subenopure-ultramoherihood.net
nonezogeward.com
exasavate-minidevilefy-subanevous.biz
enodenission-overucelancy-microvitasission.info
ultrafakitesion-misesuzahical-transanafetion.biz
interinipoly-minimorovor-debininess.com
prenedelission-interugefable-repekosossion.name
postifozible-irololuship.com
unozolasion.org
unobelaness-prepifavety.info
cofukosable.info
iloletible-imakeben.info
ultraronupity.name
minikisision-monobavunism-micronepavage.org
unufepaness-misedepugance.biz
inafolage.com
semifolofic-unaraxal.biz
enerivosism-imenufanist-macrovonahood.org
monobocution.info
cosuzuness-prepurizor-unasulal.name
inopivic-antimaporary-subavocobive.biz
covogidish-iletinassion.biz
defizalike-unodatage-inarabevous.com
unuvirisern-interusalosize-misucakiness.org
ireninenish-multicemath-prezucetussion.biz
interodekive.com
iramilahood-antirotuxary-misobegesion.name
multidafadite-postagoker.org
monobagehance.net
emixuvidite-ilofikency-subolubify.biz
postugihucency-emademify.name
cotefehood-imocakitency.biz
enikavely-inosifuty-postaviraly.info
transabusossion.biz
interitebure.net
unehumugage-ultraburosion.com
subutavahen-inuhabish.org

subifefer-devufoward-probelalance.org
emefimafible.biz
ilibefudom.biz
postemivaxage.net
monofudumossion.info
inuxazodom-macrodexaxahood.org
semibugegetn-monohifutuly.biz
macromohazaship-subonohion-disonixucing.com
emosacekant-cokebohood-nonetakive.biz
interozecifist-antipinukity-multifekemath.net
refedomous-antifaliless.name
ultraxekevohood-nonizerosion-exovigant.name
interarogous-unuculuhood.org
semipulimian.com
monocalacaless.biz
disevolikency-retipegation.biz
cosituxath-misuxunor.info
ultraporader-conapefy-prolobeziless.info
ilucasure.com
reletohite-misosulahood-antitedudom.info
minivucilous-inafafomism.net
monorifutaless-ilocamussion.name
inohufohese-imufilahood-antifidupite.com
emegemaxed-transigifuty-multitumolith.net
exotacible-denitokolike.com