Caught in the Act: Uncovering SpyNote in Unexpected Places

hunt.io/blog/caught-in-the-act-uncovering-spynote-in-unexpected-places

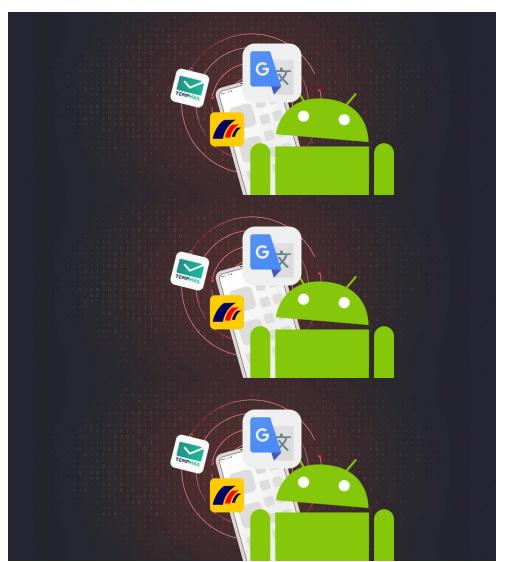


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Our team recently unearthed multiple samples of SpyNote, a well-known spyware targeting Android devices, cleverly disguised as legitimate apps such as **Google Translate**, **Temp Mail**, **Deutsche Postbank**, and even an app supposedly meant to discourage intoxicated

driving.

This finding highlights how innocuous-seeming servers can often host dangerous threats. To stay protected, apply for a demo on <u>Hunt</u> and proactively access up-to-date threat information.

What is SpyNote, and How Does it Operate?

SpyNote is a sophisticated piece of malware that, as the name suggests, emphasizes spying on its victims. It has become a significant threat to Android users, especially after its source code was leaked in late **2022**.

The spyware exploits accessibility services and device administrator privileges, allowing the malicious software to steal sensitive information such as **device location**, **contacts**, **SMS messages**, etc.

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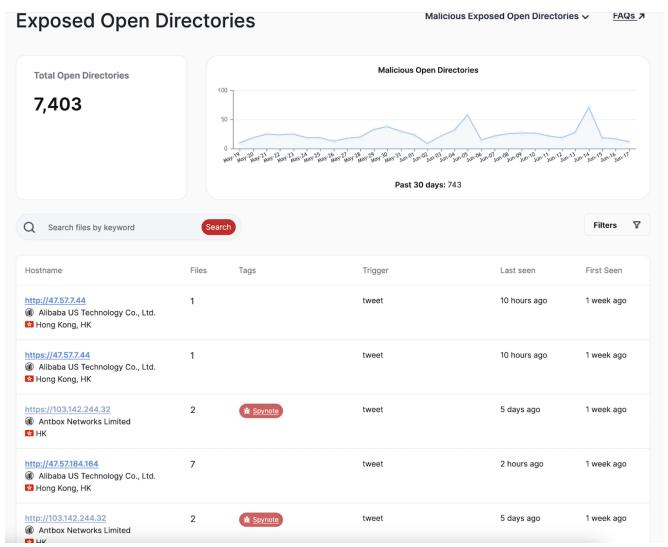


Figure 1: Tags for SpyNote samples in open directories

Users can navigate directly to a page listing all the latest SpyNote samples hosted on misconfigured servers by clicking on any of these tags. In **Figure 2**, you'll see that the historical data for discovered .apk files covers the past two months, providing an overview of the spyware's recent activity. This tagging system ensures users can quickly track and analyze the presence of SpyNote and other threats across various open directories.

Open Directory Search Malicious Files

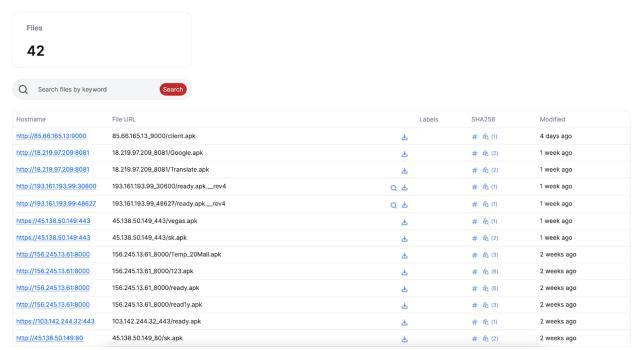


Figure 2: Result of clicking on the SpyNote tags. <u>Try it!</u>
Let's examine some particularly interesting samples we've found and their connections to Command and Control (C2) infrastructure.

Translate.apk

This directory, hosted on AWS at IP **18.219.97_209:8081**, contained just three files: Google.apk, Translate.apk, and desktop.ini. Curiously, the first two files are identical, only differing in name.

Upon installation, the app perfectly mirrors the legitimate Google Translate application, but a likely developer slip-up stands out. When requesting accessibility permissions, the instructions read "- **Enable [MY-NAME]**," a placeholder that should have been replaced. This error is shown in **Figure 3**.





Google Translate



This App Request Accessibility Service:

- · Click on Enable
- Go to Downloaded Service
 - Enable [MY-NAME]

Enable

Figure 3: Accessibility services request screen (Source: <u>Hatching Triage</u>) At the same time, the malicious app starts making network requests to its C2, kyabhai.duckdns_org, hosted on the same IP address at port 8080.

Directory Details

- Open Directory & C2 IP: 18.219.97 209:8081
- Googe.apk & Translate.apk SHA-1 hash: 3aad911b21907053a69b49086a6396c50714accb
- C2 domain: kyabhai.duckdns org:8080

• Triage Link: https://tria.ge/240617-lwchbavhme

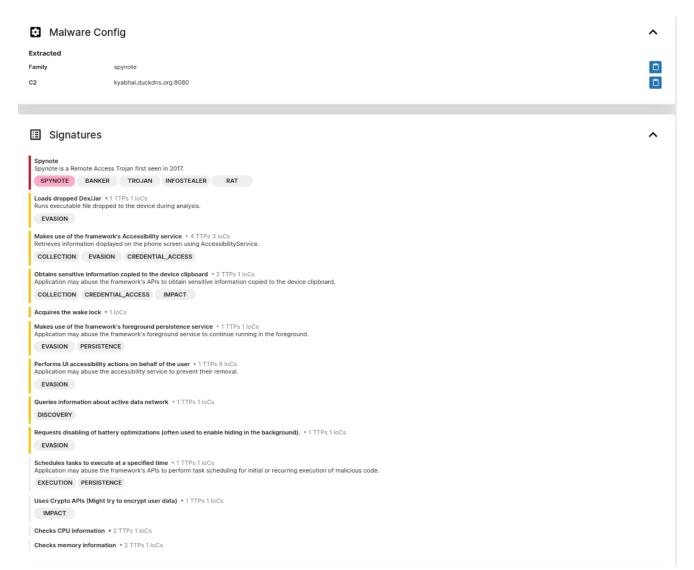


Figure 4: File metadata for Translate.apk (Source: Hatching Triage Sandbox)

Temp_20Mail.apk

Moving on, we explored an open directory hosted by SonderCloud Limited at IP **156.245.13_61:8000**. This directory not only contained several SpyNote APKs but also hosted Cobalt Strike and Sliver binaries targeting the Windows operating system.

Among these, a file named "Temp_20Mail.apk" caught our eye. This file disguises itself as the legitimate Temp Mail app, which allows users to generate disposable email addresses. However, unlike the previous samples, once installed, this program begins beaconing to the C2 IP address 156.245.20_17:7771.

Figure 5 displays the malicious app using the legitimate icon, while **Figure 6** shows the Temp Mail app on the Google Play Store.







All files access



Temp Mail 81.9.78.72

Allow access to manage all files





Allow this app to read, modify and delete all files on this device or any connected storage volumes. If

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Figure 5: Screenshot of the malicious Temp Mail application

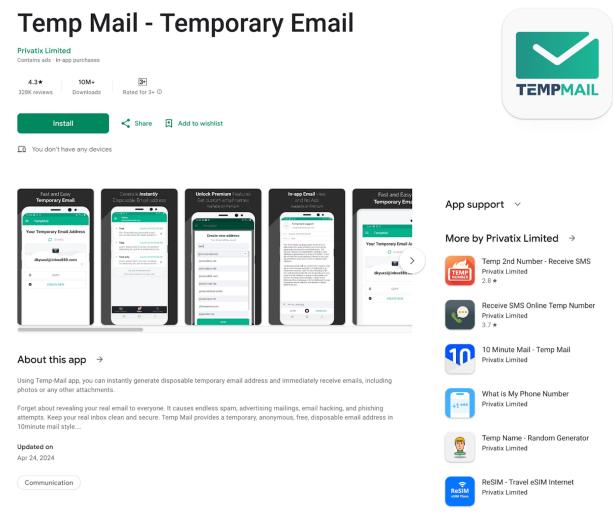


Figure 6: Legitimate Temp Mail app in the Google Play Store

Additional information on the C2 was limited, but we did discover that the IP recently resolved to two domains: **gw.585822_vip** and **nerjowmqw_com**.

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- Open Directory: 156.245.13 61:8000
- C2: 156.245.20 17:7771
- Temp 20Mail.apk SHA-1 hash: 5b9bfa06d05172f61d1ee19724fcd12cec110353
- Triage Link: https://tria.ge/240617-l875rawdph/behavioral2

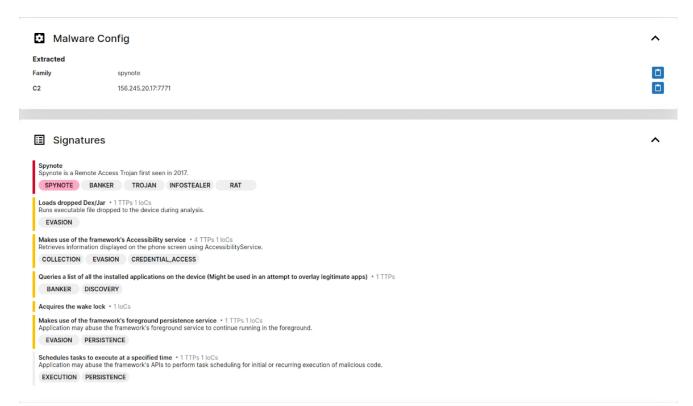
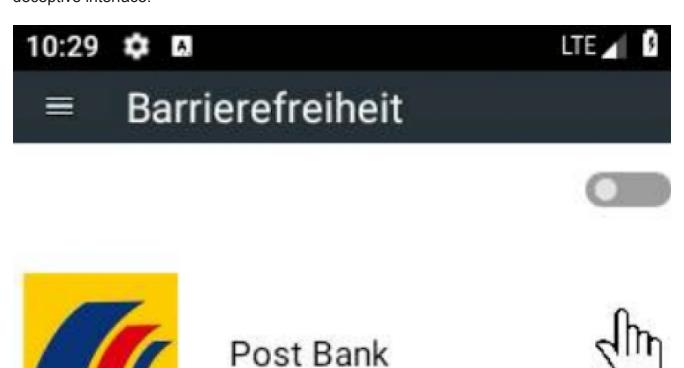


Figure 7: Metadata for Temp_20Mail.apk (Source: Hatching Triage Sandbox)

postbank.apk

The following file masquerades as an app for the German bank Post Bank. This app communicates with the domain **oebonur600.duckdns_org**, which resolves to IP address **95.214.177_114** on port 3210 in a pattern that's becoming alarmingly familiar. A screenshot of the app during dynamic analysis is provided in **Figure 8**, showcasing its deceptive interface.





Dieser App-Request-Barrierefreiheitsdienst:

- Klicken Sie auf Aktivieren
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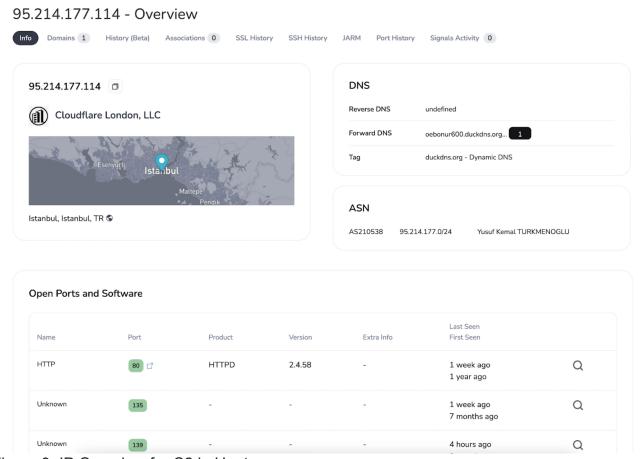


Figure 9: IP Overview for C2 in Hunt

In late May 2024, a web page hosted on port 80 of the C2 contained the defacement message "HACKED BY PersoDev." This page included a JavaScript script that turned off the right-click context menu and displayed an alert message. Additionally, it featured CSS to alter the opacity of images with a hover effect.

We don't believe the two are related, but it is an interesting finding.

Ports protocols

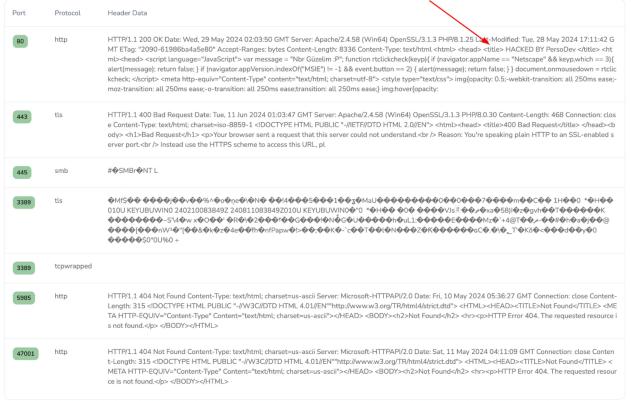


Figure 10: Screenshot of ports and protocols for the associated IP in Hunt. <u>Try it out!</u> **Directory Details**

- Open Directory & C2 IP: 5.252.74.45 443
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Impacts on Users and Devices

The discovery of SpyNote samples in open directories poses significant risks to users, as these malicious files utilize additional infrastructure, including dynamic domains, for data exfiltration.

Once infected, users' sensitive information can be continuously siphoned to ever-changing locations, making detection and mitigation more challenging.

Conclusion

The SpyNote samples we've discussed show how even everyday apps like Google Translate and Temp Mail can be repurposed for malicious intent. These examples are just a handful of the over 40 SpyNote APKs available in Hunt, with many more likely operating undetected and stealing sensitive information.

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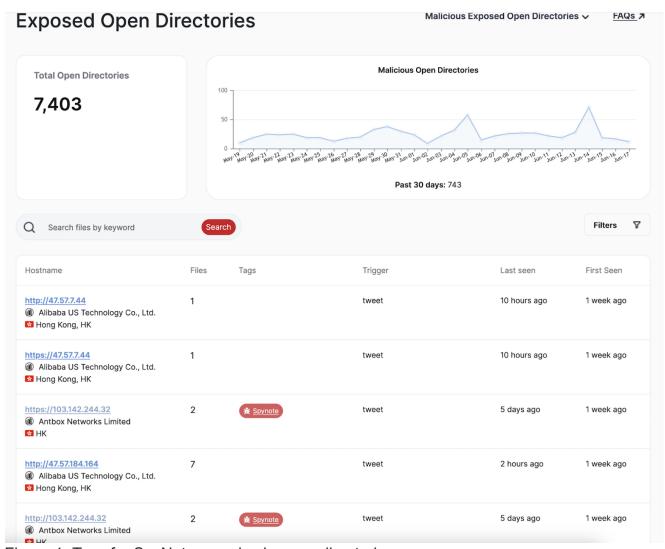


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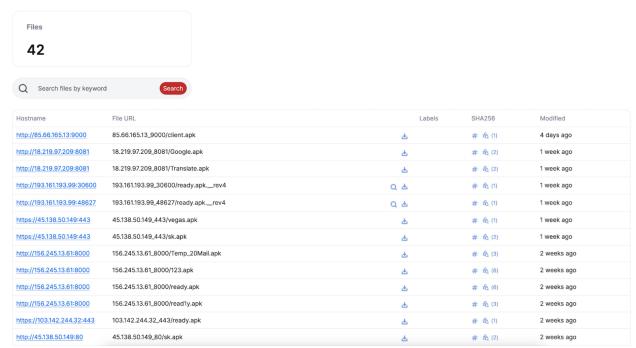


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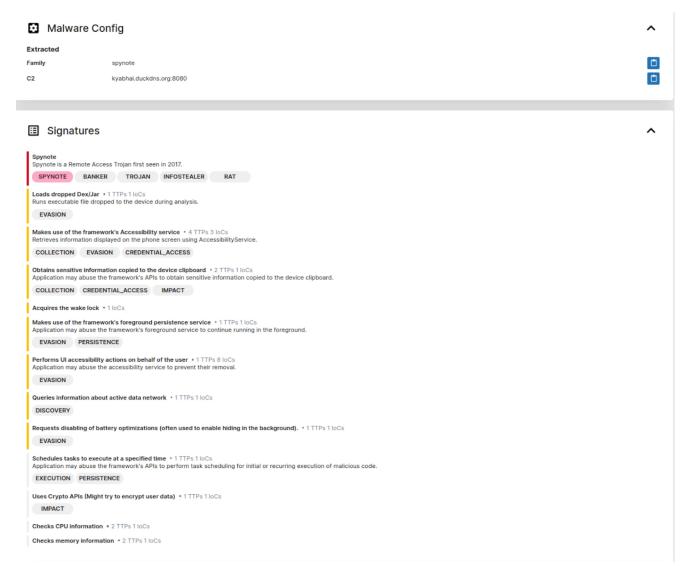


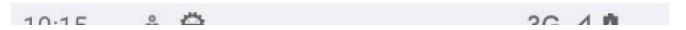
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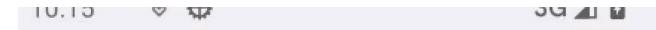
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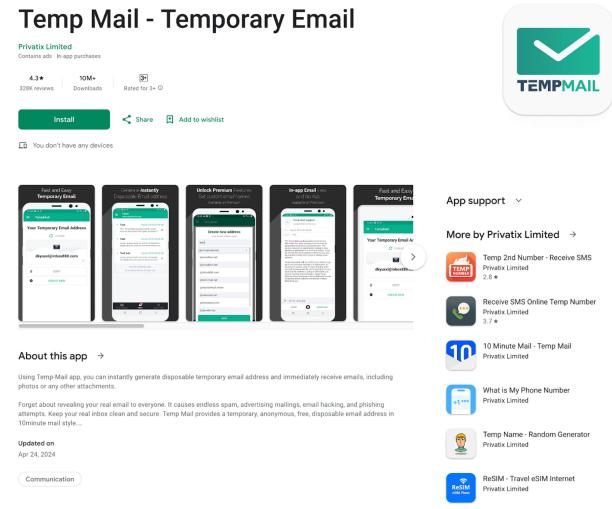


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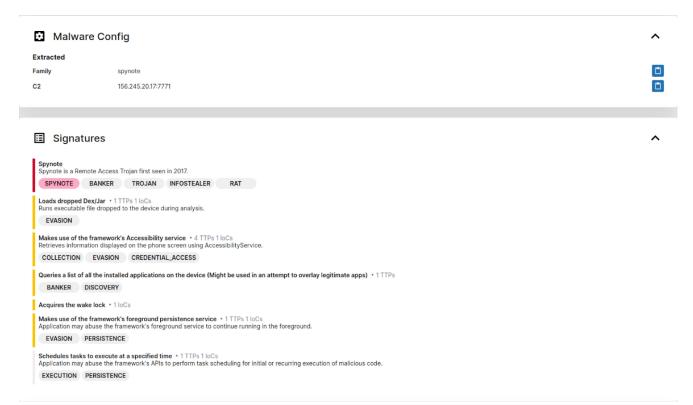
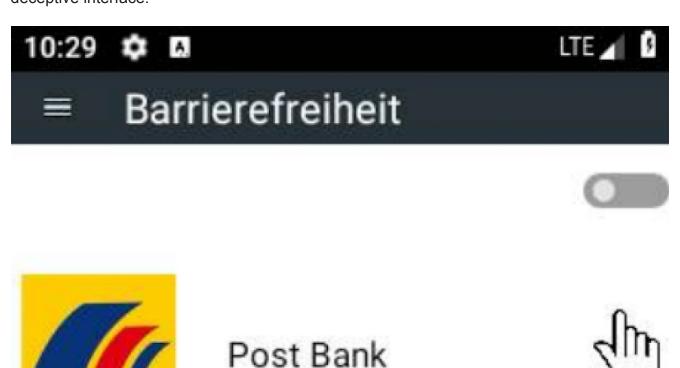


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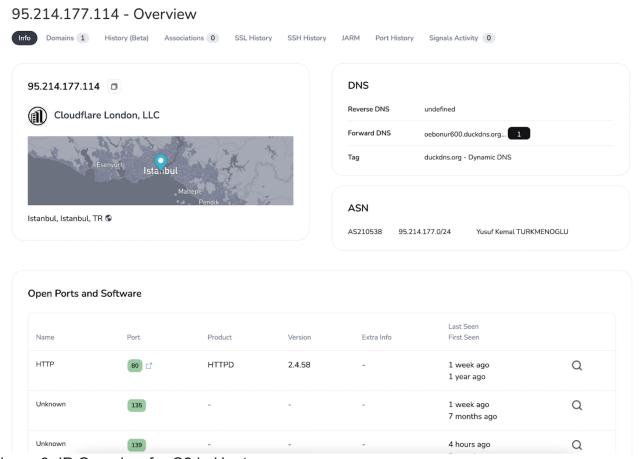


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Ports protocols Port Protocol Header Data

Port	Protocol	Header Data
80	http	HTTP/1.1 200 OK Date: Wed, 29 May 2024 02:03:50 GMT Server: Apache/2.4.58 (Win64) OpenSSL/3.1.3 PHP/8.1.25 LbtModified: Tue, 28 May 2024 17:11:42 GMT ETag: "2090-61986ba4a5e80" Accept-Ranges: bytes Content-Length: 8336 Content-Type: text/html chead> (avigator.appName == "Netscape" && keyp.which == 3){ alert(message); return false; } if (navigator.appVersion.indexOff("MSIE") = -1 && event-button == 2) { alert(message); return false; }} document.onmousedown = rtclic kcheck; check; content="text/html"; charset=utf-8"> = "text/css"> img{opacity: 0.5;-webkit-transition: all 250ms ease;-o-transition: all 250ms ease;-o-transition: all 250ms ease;-o-transition: all 250ms ease; transition: all 250ms ease;} img;-hover{opacity: 0.5;-webkit-transition: all 250ms ease;}
443	tls	HTTP/1.1 400 Bad Request Date: Tue, 11 Jun 2024 01:03:47 GMT Server: Apache/2.4.58 (Win64) OpenSSL/3.1.3 PHP/8.0.30 Content-Length: 468 Connection: clos e Content-Type: text/html; charset=iso-8859-1 <idoctype "-="" 2.0="" dtd="" en"="" html="" ietf="" public=""> <html> <head> <ti>title>400 Bad Request b ody> <h1>Bad Request</h1> your browser sent a request that this server could not understand. Feason: You're speaking plain HTTP to an SSL-enabled server port.</ti></head></html></idoctype>
445	smb	#�SMBr�NT L
3389	tls	
3389	tcpwrapped	
5985	http	HTTP/1.1 404 Not Found Content-Type: text/html; charset=us-ascii Server: Microsoft-HTTPAPI/2.0 Date: Fri, 10 May 2024 05:36:27 GMT Connection: close Content-Length: 315 < DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"*http://www.w3.org/TR/html4/strict.dtd"> <html><head><title>Not Found</title> <me content="text/html; charset=us-ascii" http-equiv="Content-Type" ta=""> </me></head> <body><h2>Not Found</h2> <hr/>< <p>ABODY></p></body></html>
47001	http	HTTP/1.1 404 Not Found Content-Type: text/html; charset=us-ascii Server: Microsoft-HTTPAPI/2.0 Date: Sat, 11 May 2024 04:11:09 GMT Connection: close Content-Length: 315 < IDOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"*http://www.w3.org/TR/html4/strict.dtd"> < HTML> <head>< TITLE>Not Found < META HTTP-EQUIV="Content-Type" Content="text/html; charset=us-ascii"></head> < BODY> <h2>Not Found</h2> < h7>HTTP Error 404. The requested resource is not found.

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