

Summary Report **Technical Security Review of VPN Solution** **Hot Spot Shield**

August 25th, 2023



1. Introduction

1.1. Engagement Overview

Pango Group ("Client" or "Pango") had requested that Aon ("Aon") perform a technical assessment of the Hot Spot Shield VPN solution under the Pango Group banner to validate adherence to the relevant data security and privacy claims (strictly as it relates to collection of information and logging) made within the product's Privacy Policy. Aon's assessment included both free and paid tiers of the VPN solution, and an evaluation of both client-side and server-side components of the VPN solution was conducted. Our assessment methodology included document and artifact reviews, including the review of a 2022 law enforcement transparency report, logging data from Aon conducted browsing activity on a development VPN node, technical interview inquiries with relevant Pango stakeholders, and hands-on client-side VPN product analysis using various testing tools.

1.2. VPN Product Overview

One (1) VPN Product (Hot Spot Shield) was included in the scope for this assessment. The VPN product uses three distinct VPN protocols, IPSec, openvpn, and a proprietary protocol "Hydra " which was developed internally by Pango.

The Hot Spot Shield VPN product has its own Privacy Policy, which outlines the information collected from its users and devices, how that information is used, who the information is shared with, and relevant data security and retention information surrounding that data. When users initially install the VPN client, they are prompt with a dialog box accepting the Privacy policy for the corresponding VPN product.

1.3. Limitations of Scope

Aon's Privacy Policy Review was limited to Pango Group's VPN product outlined in the engagement overview above. Our review was also focusing exclusively on the VPN product's adherence to data security and privacy claims (strictly as it related to collection of information and logging) made within the respective privacy policy. A review of the implemented security measures for the protection of Pango data, including any possible user data, in addition to any security best practices across the hosting environment was not included in the scope of this review.

1.4. Privacy Policy Statement Overview

Upon reviewing the Privacy Policy for the VPN product, Aon has consolidated the following core statements made throughout:

1. VPN browsing activity is not recorded in any way that can be associated back to a unique user identity.

2. Logging or recording of IP address, device identifier, or any other form of identifier in combination with users' VPN browsing activity is not conducted.

These distinct statements are the primary objective for analysis during this technical security review. While Pango acknowledges the collection of some user identifiable data, the Privacy Policy repeatedly states that it is not stored, correlated, or any way affiliated with users' browsing activity. Aon defines users' "identifiable data" and "browsing activity" as following:

Identifiable Data	Browsing Activity Data
<ul style="list-style-type: none"> • Account Information (Name, Username, Email Address, Password) 	<ul style="list-style-type: none"> • Usage Information (Pango Webpages or App Features Used, Browsing Session Time and Length)
<ul style="list-style-type: none"> • Billing & Payment Information 	<ul style="list-style-type: none"> • Diagnostic Information (Timestamps, Referring URLs, Approximate Location Information)
<ul style="list-style-type: none"> • Identity or Account Verification Information (Date of Birth, Social Security Number) 	<ul style="list-style-type: none"> • Bandwidth Information
<ul style="list-style-type: none"> • Device Information (Browser Types, Device Settings, Device Hash, Operating System Info, Internet Service Provider Name, Application Version Number) 	<ul style="list-style-type: none"> • Location of VPN Servers Utilized

Table 1: Definition Table

1.5. VPN Privacy Policy Review: Conclusion

The assessment report establishes a conclusion to the following two core statements extracted from the Hot Spot Shield VPN Privacy policy:

1. VPN browsing activity is not recorded in any way that can be associated back to a unique user identity.
2. Logging or recording of IP address, device identifier, or any other form of identifier in combination with user VPN browsing activity is not conducted.

To draw a conclusion, Aon reviewed the following artifacts and conducted interview sessions:

1. VPN Node Server Logs
2. VPN Node Server Cached/Volatile Logs
3. VPN Client Analysis & Log Review
4. 2022 Pango transparency Report
5. VPN Node Architecture Discussions

Aon was unable to identify any indication that users' browsing activity may be correlated or identified back to a unique user identity. Additionally, logging or recording of plaintext IP address was not identified throughout analysis.

Subsequently, Aon can reasonably conclude that Pango Group has fairly represented and designed/implemented the VPN product in scope for this assessment in alignment with the assertions made within the respective Privacy Policy.