Pindrop®

Measuring STIR/SHAKEN Attestations vs. Pindrop® Technology for Contact Centers

REPORT

About Pindrop's VeriCall® Technology

Pindrop's VeriCall® Technology processes STIR/SHAKEN headers and incorporates its Attestation-related insights, when available, into its machine learning models to enhance call risk scoring.

Each carrier has the ability to determine which calls receive Attestation A, B, or C. Pindrop studies carrier-specific attestations to develop insights that can factor into our solution's risk analysis. VeriCall Technology scoring models can leverage this proprietary analysis when generating risk scores.

Implementing STIR/SHAKEN does not have to be a complex and dynamic challenge. At Pindrop, we have experience working with carriers to increase full attestation header availability in order to deliver their insights to our customers. We can help your organization leverage the information delivered within each carrier attestation.

Pindrop's team of data scientists and telephony experts regularly test the accuracy of VeriCall Technology scores. The validation performed uses machine learning, lab testing, and client feedback. Pindrop has analyzed the metadata of 5 billion calls and counting.

Summary of Key Findings

Pindrop reviewed the analyses conducted on SIP Header information by its VeriCall® Technology of approximately **262 million telephone calls** from April 2021 through June 2022, finding that:

- **65% of calls had no STIR/SHAKEN Attestation** (171 million calls in total)
- VeriCall Technology successfully provided **actionable intel on 124 million calls without an Attestation**, so step-down authentication could be applied
- Of the 90.5 million calls that received an Attestation A, nearly 98.5% were similarly given a low-risk assessment by VeriCall Technology. However, VeriCall Technology also identified a whopping **224,291 spoofed calls that received an Attestation A**
- Of the nearly 2 million calls that could not be validated by a carrier using STIR/SHAKEN attestation (Attestation C), the more nuanced analysis by **VeriCall Technology was able to score 617,975 (31%) as low-risk,** where step-down authentication could be applied

Introduction

Beginning on June 30, 2021, the FCC mandated that voice service providers implement STIR/SHAKEN requirements, including the issuance of Attestations to telephone calls that originate on their network. In April of 2021, several months prior to that June implementation deadline, Pindrop began tracking the Attestation data that was being delivered by certain carriers to our customers.

Our team analyzed data to assess whether STIR/SHAKEN Attestations provided useful insights beyond the enterprise-grade call risk scoring engine provided by VeriCall® Technology, an API-based caller-ID validation, spoof detection, and call risk assessment solution. The insights from this testing were used to help design model logic to enhance call risk scores using a call's Attestation information, if and when it is available.

Pindrop created this study to share our observations related to STIR/SHAKEN Attestation:

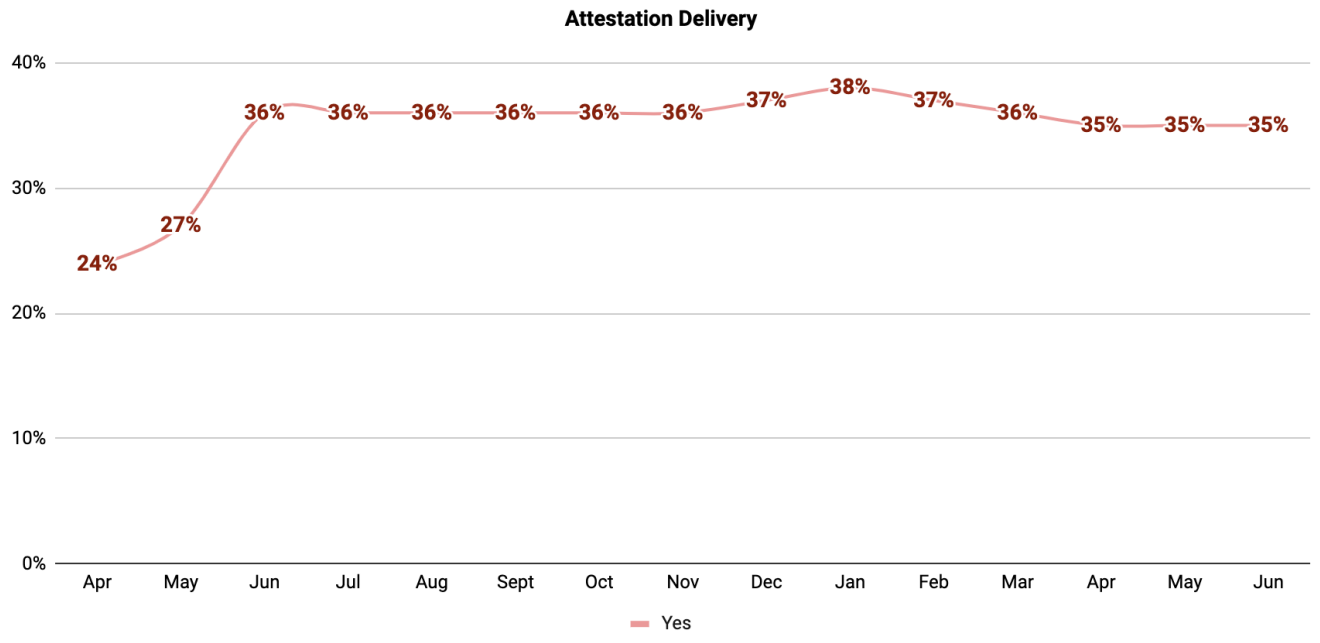
- **(Un)availability**
- **(In)efficacy for Contact Centers**
- **STIR/SHAKEN Attestation level benefits vs. VeriCall Technology scoring**

Attestation (Un)Availability

From April 2021 through June 2022, Pindrop reviewed the analyses conducted on SIP Header information by its VeriCall Technology of approximately 261 million telephone calls from over 600 originating carriers, including major voice service providers. Interestingly, more than one year past the FCC mandated deadline, Attestation availability has not improved and remains relatively low.

Figure 1 below shows that the rate of availability grew from approximately 24% in April 2021 (pre-mandated implementation) to about 36% as of the June 30, 2021 implementation deadline; however, through June of 2022, the rate of Attestations delivered has dipped slightly to 35% as a monthly average. The plateau was already concerning this time last year, which makes the continued lack of improvement all the more problematic for organizations who rely on it as the sole factor for authenticating calls.

Figure 1: Attestation Delivery



In total, over 171 million calls in our sample were delivered without an Attestation. In these cases, Pindrop's technology was able to provide our customers with actionable intelligence to support step down authentication for 124 million of the calls. In total, Pindrop's solution provided intelligence for step down authentication on 227 million calls (86.6% of all calls), nearly 2.5 times the number of calls possible if the customer were to have relied on Attestation A availability alone.

Attestation (In)Efficacy

One of the goals of implementing STIR/SHAKEN standards is to help voice service providers identify calls with spoofed caller ID information.[1]
It is not necessarily intended to stabilize or secure authentication in the contact center.

The Attestation framework is limited in its ability to assess call risk or provide meaningful guidance needed for the multitude of call types that reach a contact center.

Are all Attestation A calls safe to caller-ID match? Are all Attestation C calls too risky to authenticate without an agent? These questions are important when considering how to create a secure, and customer-friendly authentication process for your customers.

Unfortunately, the STIR/SHAKEN data that we reviewed did not provide clear answers to these questions on their own.

[1] FCC (June 30, 2021). STIR/SHAKEN Broadly Implemented Starting Today" [Press Release]. https://docs.fcc.gov/public/attachments/DOC-373714A1.pdf.

STIR/SHAKEN Attestations and VeriCall Technology Risk Scores

In order to help our customers augment and underpin the value of STIR/SHAKEN Attestations, Pindrop explored the relationship between Attestation ratings and VeriCall Technology risk scoring. By identifying correlations, our team can design a cooperative system that leverages the two differing methodologies and help strengthen the caller-ID validation process overall for our customers.

STIR/SHAKEN Attestation A designations are intended to affirm a call's legitimacy similar the way that VeriCall Technology's "Green" score is designed to validate a call as "Low-Risk." The difference lies in VeriCall Technology's superior ability to detect call spoofing in contact center applications.

Attestations C designations, however, are not intended to assess a call's "risk" at all. Functionally, Attestation C, and even Attestation B for that matter, is simply a determination by the carrier that a call cannot be validated as an Attestation A. While Pindrop has found a reasonable correlation between Attestation A calls and VeriCall Technology "Green" (i.e., "low risk") calls, the same correlation did not exist between Attestation C calls and VeriCall Technology "Red" (i.e., "high risk") calls. For the purposes of call authentication then, the absence of an Attestation A is not enough to recommend step-up or step-down authentication because a call may not get an Attestation A for a variety of reasons, some of which are not risk-related at all.

VeriCall Technology, on the other hand, is designed to identify and assess customer-specific risks to provide a business with actionable intelligence to step-up or step-down authentication, as appropriate. VeriCall Technology is capable of determining that a call is low-risk with or without Attestation, and even in many circumstances where a call received an Attestation C but is determined to be low risk.

Our analysis uncovered the following details:

ATTESTATION A

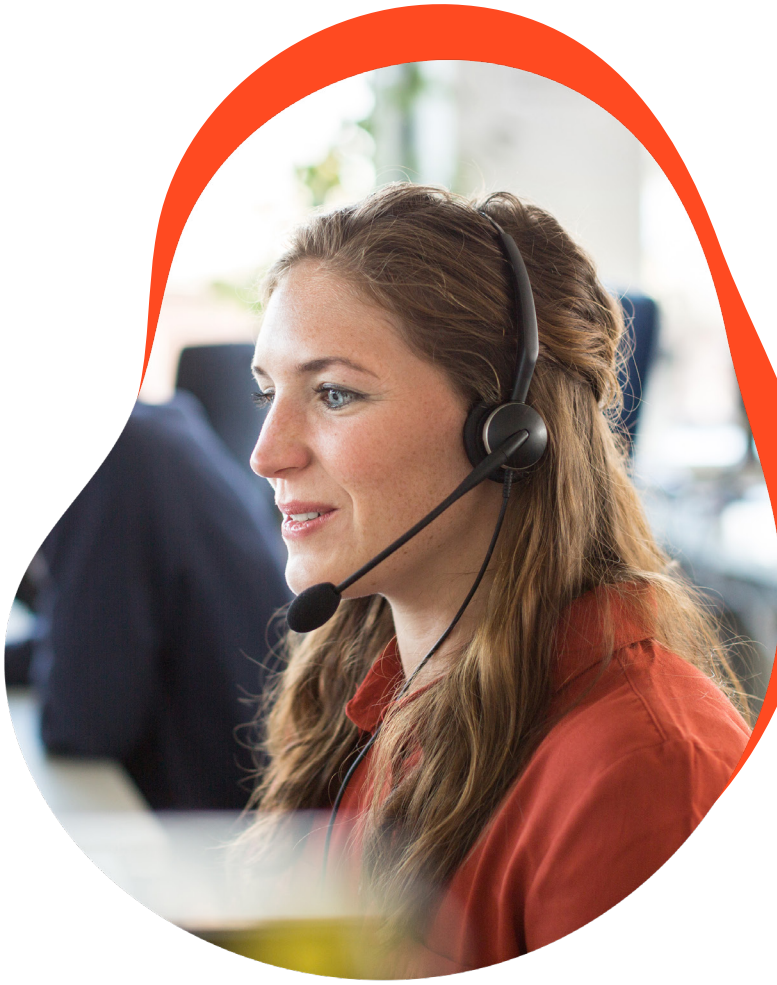
During the 15 month period, over 224,291 calls with a SIP Header that contained an Attestation A (which indicates that the caller ID was verified by the originating provider) still posed a spoofing risk. In other words, the carriers "signed" calls with Attestations A that were subsequently scored "Red" by VeriCall Technology because the call originated from a device that may not own the number showing on the caller ID. Calls can be scored Red for a variety of reasons, but commonly the designation is given to spoofed calls, or when a number has been recently ported. [2]

Our finding that some spoofed calls were delivered with an Attestation A raises concern about the efficacy of using STIR/SHAKEN attestations alone to authenticate in an ANI match process. Despite the presence of calls scored Red in the Attestation A group, the statistical variance between the two was relatively low when compared to the relationship between Attestation C calls and VeriCall Technology scoring.

ATTESTATION C

VeriCall Technology was able to authenticate a significant number of calls that did not receive an Attestation A score. Specifically, our comparison of Attestation C calls to VeriCall Technology scores in Figure 2 below revealed nearly 618,000 calls with a SIP header that could be scored "Green" for authentication. Without VeriCall Technology, those calls may not have presented an opportunity for passive step-down authentication, despite being qualified for it.

Regardless of the observations in the above comparisons, VeriCall Technology includes STIR/SHAKEN Attestation data in its machine learning models and risk assessment process. This integration allows the technology to extract new insights learned over time. Today, a call's Attestation data is treated as an additional data point by VeriCall Technology's scoring logic. Pindrop customers interested in utilizing STIR/SHAKEN Attestations can thus leverage potential Attestation-related insight while also maintaining the ability to reliably assess call risks with a high degree of accuracy when attestation data is not present.



[2] Spoofing allows the caller to change the number shown on a caller ID. Criminals can use spoofing to trick a business into assuming the call is coming from an existing customer. Number porting can allow a criminal to transfer an existing phone number to a different provider as part of an attempt to impersonate their victim or gain access to their information.

Innovation and Evolution

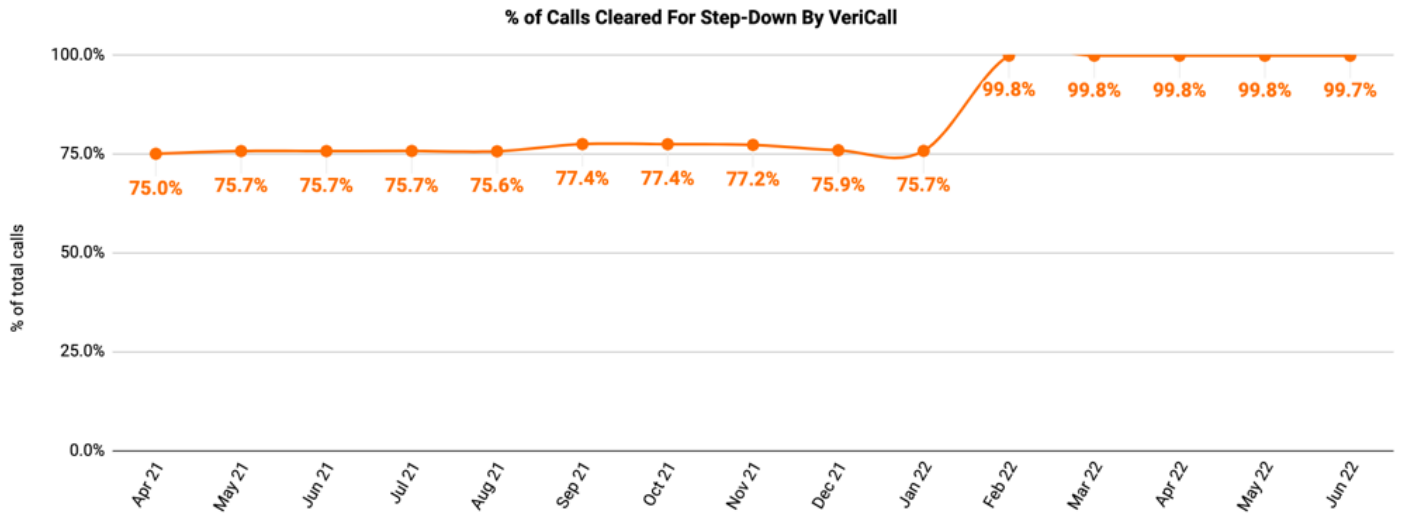
While availability and adoption of STIR/SHAKEN protocols in contact center environments remains stagnant, Pindrop has continued to invest in developing and providing easy access to advanced authentication technology.

In February of 2022, Pindrop expanded the capabilities of the VeriCall platform to include phone number risk assessment (via the Pindrop Intelligence Network scoring) to supplement VeriCall scoring logic. A number's PIN™ Risk Score is determined by machine learning analysis of a phone number's reputation, calling patterns, and carrier-related risks.

The expanded capabilities of the VeriCall platform enabled by the addition of the PIN Risk Score dramatically increased the percentage of calls that were cleared by our customers for step-down authentication from a monthly average of 75% before the integration to nearly 100% afterwards. From February and June of 2022, this improvement resulted in step-down authentication for nearly 30 million new callers.

Figure 2 below represents the monthly percentage of calls cleared by our customers for step-down authentication before and after the introduction of PIN Risk Score into VeriCall in February of 2022.

Figure 2: % of Calls Cleared for Step-Down By VeriCall



Conclusion

The vast majority of calls today do not contain STIR/Shaken Attestations. When Attestations are available, the analysis is not always reliable and often lacks the nuance necessary for effective and efficient call authentication in the contact center. These shortfalls may perhaps be attributable to the staggered, stagnant roll out of STIR/SHAKEN implementation and adoption and/or the fact that the framework was not necessarily created as an authentication solution for contact centers. VeriCall Technology, on the other hand, uses a methodology designed for enterprises that recognizes the nuances in call metadata to help determine risk and address the variety and complexity of factors associated with enterprise call traffic authentication, while also including the ability to ingest and make use of the insights delivered when Attestations are available.

Pindrop will continue to monitor Attestation data and communicate our observations in order to help address STIR/SHAKEN issues, answer questions, and assess implications of contact centers looking to meaningfully leverage STIR/SHAKEN Attestations in their call authentication process.

About Pindrop

In an increasingly digital world, Pindrop® lets people use their voice to seamlessly connect to, enter and unlock new experiences while safeguarding their privacy. Using its patented precise voice identification technology, Pindrop is leading the way to the future of voice by establishing the standard for identity, security, and intelligence for voice interactions. Protecting some of the world's biggest banks, insurers and retailers, Pindrop enables customers to quickly, conveniently and securely connect to the information and resources they need. Its precise voice identification technology recognizes unique identifiers within the human voice that enables its customers to prevent fraud and deliver exceptional customer experiences in call centers, obtain information from smart devices and even activate cars. A privately held company, Pindrop is venture-backed by Andreessen Horowitz, Citi Ventures, Felicis Ventures, CapitalG, GV, IVP, and Vitruvian Partners. Visit pindrop.com for more information.

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