

# STIR/SHAKEN FAQ

FAQ

## FAQs about STIR/SHAKEN call authentication

### Q. What is STIR/SHAKEN?

- A. Secure Telephony Identity Revisited/Secure Handling of Asserted information using toKENS (STIR/SHAKEN) is a Federal Communications Commission (FCC)-mandated, carrier-based telecom industry solution that uses digital signatures to authenticate the origin of phone calls. Its purpose is to increase trust that the information on a caller ID display is the actual originating party.

### Q. What is the underlying problem and how does STIR/SHAKEN solve it?

- A. The volume of fraudulent, spam, spoofed and unwanted robocalls has eroded trust in voice calls to the point that, by some estimates, more than half of all calls are not being answered.

That's an untenable situation for businesses, customers and carriers alike.

STIR/SHAKEN addresses the problem by requiring carriers to "sign" calls they originate, preventing spoofed caller ID data and guaranteeing that the caller ID information that appears on phones is trustworthy. If users can trust the caller ID data, they can make better decisions about whether to pick up when the phone rings.

### Q. What does "STIR/SHAKEN" stand for?

- A. Secure Telephony Identity Revisited/Secure Handling of Asserted information using toKENS.

### Q. How does STIR/SHAKEN stop illegal robocalls?

- A. STIR/SHAKEN uses public key cryptography and digital certificates to authenticate phone calls, similar to the way that e-commerce websites secure their traffic. Originating carriers digitally sign their calls, and terminating carriers check to see that the signatures are authentic before completing the call.

### Q. Will STIR/SHAKEN allow legitimate robocalls, such as school closings, reverse 911 calls or utility outage advisories?

- A. As long as robocalls are signed and authenticated by their carriers, they will be completed.

### Q. When is STIR/SHAKEN scheduled to be deployed?

- A. Verizon will roll out STIR/SHAKEN solutions across its multiple product lines beginning in 4Q2020.

### Q. Will all carriers be required to use STIR/SHAKEN?

- A. Yes.

### Q. How will STIR/SHAKEN look to consumers?

- A. Consumers should not notice any functional change to their caller ID displays, other than the ability to better trust the data they see.

### Q. What is Verizon's role in the FCC mandate?

- A. Verizon sits on the board of the STIR/SHAKEN governance group, helping to establish policy and regulatory frameworks, to build standards and testing protocols, and to select certificate authorities. We are also investing in our network infrastructure to add capabilities to inbound and outbound calling.

### Q. Has any action already been taken to reduce robocalling and spoofing?

- A. Yes. Verizon has implemented STIR/SHAKEN in several products. Starting in 2019, Verizon SPAM Alert and Verizon Call Filter have identified suspected spam calls in caller ID displays. In addition, Verizon supports legislation including the federal Telephone Robocall Abuse Criminal Enforcement and Deterrence (TRACED) Act and the Stopping Bad Robocalls Act to strengthen enforcement against illegal robocallers.

**Q. Does STIR/SHAKEN mean that users will be able to trust the content of the calls they receive?**

- A. STIR/SHAKEN authenticates the originating phone number, ensures that the caller is authorized to use that number and validates that the call's recipient can call that number back. It does not guarantee that the callers themselves can be trusted. Authenticating the reliability of the caller—not just the calling number—may be a future feature of STIR/SHAKEN.

**Q. Who will manage the digital signature and encryption/decryption processes required to make STIR/SHAKEN work in the U.S. and Canada?**

- A. Governance policy administrators, telephone service providers and certificate authorities will be designated to fulfill those roles.

**Q. Will Verizon allow enterprises to self-attest STIR/SHAKEN tokens or will that be solely a carrier-based function?**

- A. There are no current plans to allow enterprises to self-attest; we will reevaluate the possibility as the market matures.

**Q. How will international calls be handled?**

- A. Although markets outside the U.S. are interested in implementing STIR/SHAKEN, there are no current plans for them to do so. International calls, therefore, would be either unsigned or carry a low attestation value.

**Q. What can originating callers do if their legitimate calls fail authentication?**

- A. Report erroneous call blocking, categorization errors and incorrect call tagging to [voicespamfeedback.com](mailto:voicespamfeedback.com) and [spamalert.verizon.com](mailto:spamalert.verizon.com).

**Q. Explain E.164 and why the formatting is needed?**

- A. The ATIS and IETF standards for STIR/SHAKEN dictate a process by which the originating service provider creates caller ID authentication information and by which the terminating service provider subsequently verifies it. The standards require that both the call's originating number and the call's destination number be used when creating and verifying the caller ID authentication information. These steps yield a credible validation of any Verizon-generated caller ID authentication information, as long as the two service providers' implementations of any reformatting of either the origination or destination numbers yield consistent results, or as long as the call's origination and destination numbers are unambiguous when received.

When a call presents a telephone number in an ambiguous format (e.g., 7-digit local dialing, 10-digit U.S. number, 10-digit non-U.S. number, etc.) in the SIP INVITE's "To" header (generally this is the same as the number in the INVITE's Request-URI), that ambiguity creates a risk. Specifically, this call might not receive a successful verification of the caller ID authentication information. That risk arises because the number used to create the caller ID authentication information might be reformatted (or not) independent of any reformatting done (or not) to the number in the SIP INVITE's To header. Further, the two (or more) previous potential reformatting steps are independent of any reformatting done (or not) to the number by the service provider executing the verification step. If the reformatting steps do not all yield an identical result, the verification result must be a failed validation for this caller ID. In contrast, had the number been unambiguous when presented, the service providers have no reason to attempt to reformat the To header number in the network. Therefore, the risk that the subsequent validation will fail can be significantly lower than for calls with ambiguous numbers.

As a result, Verizon strongly recommends that, where possible, Verizon's customers format the destination number they present in the SIP INVITE's Request-URI, header using an E.164 format, to remove ambiguity. E.164 format includes the country code ("1" for U.S. numbers) followed by the full national number. Verizon does not require a "+" prefix, commonly used with E.164 format; however "+" can be helpful, to further remove ambiguity and decrease the impact of reformatting elsewhere in the network. Customers who are able to follow this recommendation can improve the rate of successful verifications of caller ID authentication information for their calls.

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**Q. Can you give me examples of E.164 formatting?**

INVITE sip:+19727282284@pce10751.redacted.globalipcom.com SIP/2.0 Max-  
Forwards: 70  
Via: SIP/2.0/UDP101.10.1.101:5060;branch=z9hG4bK0-10000002-0001-1974291474  
Supported:  
Min-SE: 90  
Call-ID: 1-201022195150-60940501@10000002  
CSeq: 2029619502 INVITE  
From:  
<sip:2144381943@pbx.customer.com>;tag=3246-10000002-201022195150-940212  
412  
To: <sip:+19727282284@pce10751.redacted.globalipcom.com >  
Contact: <sip:2144381943@16.0.0.2:5060;transport=udp>  
Content-Type: application/sdp  
Accept: application/sdp, application/dtmf-relay  
Content-Length: 135

Other examples:

Not E.164	E.164 version
2125551234	+12125551234
5551234	+12125551234
123456789	+212123456789

**Learn more:**

<https://enterprise.verizon.com/products/customer-experience-services/transport-and-intelligent-routing/ip-contact-center/stir-shaken-caller-id-authentication/>