2021 STI-GA SHAKEN Report

1. Introduction and Background

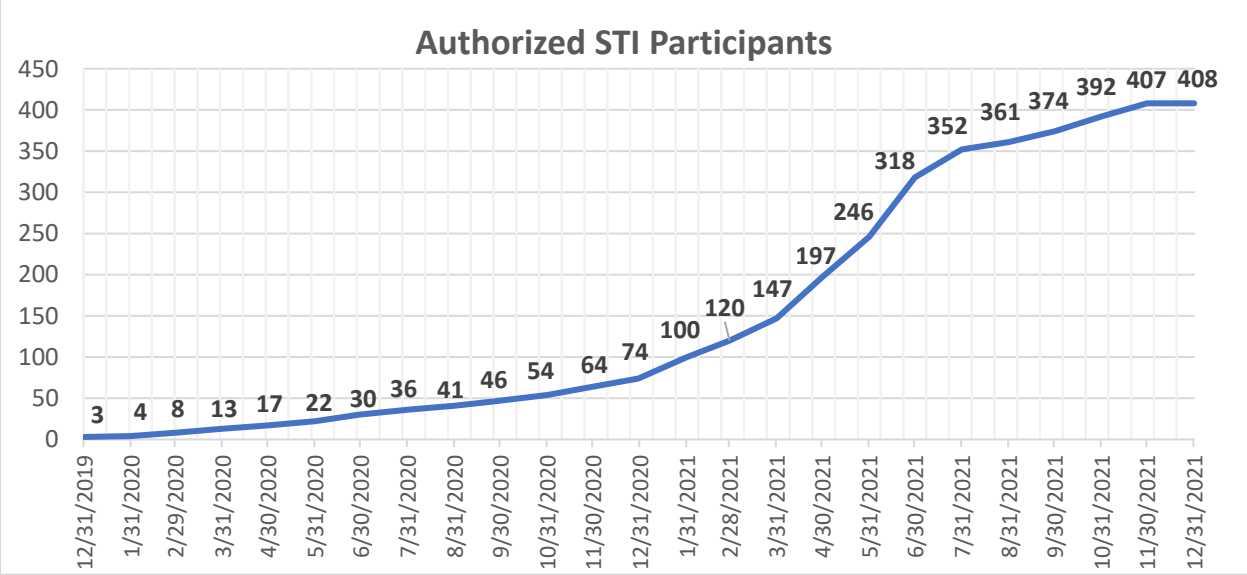
In 2018, the telecommunications industry, under the auspices of the Alliance for Telecommunications Industry Solutions (ATIS), established the Secure Handling of Asserted information using toKENs (SHAKEN) framework; and it organized the Secure Telephone Identity-Governance Authority (STI-GA) as the authority to govern and set policy for use of the framework. Soon thereafter, the STI-GA issued a request for proposal (RFP) for the STI-Policy Administrator (STI-PA), the role required to enforce the STI-GA policy and authorize entities to participate in the SHAKEN ecosystem.

In 2019, the STI-GA completed the RFP process and selected iconectiv as the STI-PA. Additionally, the STI-GA authorized the first four STI-Certification Authorities (STI-CAs) and met the Federal Communications Commission's (FCC's) December 2019 deadline to launch the SHAKEN framework. In 2020, the STI-GA continued its work to ensure the SHAKEN framework was both fully implemented and stable, and created the policies necessary to allow the ecosystem to grow and remain secure.

In 2021, the SHAKEN ecosystem experienced tremendous growth. The year began with 74 service providers (SPs) authorized by the STI-PA and ended with more than 400, more than a fivefold increase in STIR/SHAKEN participation within a single year. Ensuring the framework could grow without sacrificing its dependability and security was an important STI-GA goal.

2. SHAKEN Ecosystem Implementation

As of December 31, 2021, the STI-PA had authorized a total of 408 SPs. The full list of authorized SPs is posted on the STI-PA website. The chart below exhibits the tremendous pace of growth in the ecosystem during the first half of the year.



A greater number of SPs has allowed the STI-GA to share the costs of the Framework over more participants, generally making it less expensive for SPs to participate in the SHAKEN ecosystem.

The STI-GA Board added another STI-CA to the framework, bringing the total number to ten. Eight of the ten STI-CAs are public in that they serve the entire industry. The list of public STI-CAs is posted on the STI-PA website. The STI-GA continues to receive applications from prospective STI-CAs indicating the number will continue to grow in 2022.

3. STI-GA Policy

Policy Change Request (PCR): Responsible Organization (Resp Org) Access to Service Provider Code (SPC) tokens

Following finalization of the ATIS Standard on Toll-Free Numbers in the SHAKEN Framework, the STI-GA Board considered a PCR from Somos, the toll-free number administrator. This PCR sought to broaden the SPC token Access Policy to authorize Resp Orgs. A Resp Org is the entity that assigns a toll-free number (TFN) to a customer and is sometimes the only entity that can authenticate a customer's right to use a TFN. Independent Resp Orgs, unlike SPs, neither file a 499A form with the FCC; nor do they hold Operating Company Numbers (OCNs). As such, the STI-GA Board sought equivalent requirements more specific to Resp Orgs. Further changes were made to the SPC token Access Policy to allow for the provision of: 1) a Resp Org ID, a five-digit number, in place of an OCN; and 2) toll-free revenue data, instead of a 499A revenue figure, allowing the STI-PA to determine the appropriate fee level. Resp Org access to SPC tokens was allowed as of October 22, 2021, with the launch of new functionality in the STI-PA systems. Changes to the Revocation Policy were also made to accommodate the inclusion of Resp Orgs into the ecosystem discussed below.

PCR: Optional Use of Delegate Certificates

A second PCR requested the STI-GA Board support the industry's optional use of delegate certificates. A delegate certificate in the SHAKEN context is a digital certificate that allows a non-service provider (non-SP) entity to claim the right to use a specific telephone number, or a group of telephone numbers for outbound calls. A delegate certificate is not the same as an STI certificate and a terminating SP would not use one to validate a call. For example, when an originating SP receives a call from an enterprise, a delegate certificate may be attached to the call in which the enterprise claims the right to use the number shown in the caller ID. The enterprise might do this in an attempt to receive an A-level attestation for that call, even though the telephone number in the caller ID was not assigned to them by the originating SP. Without the delegate certificate claim, the originating SP may not know of the enterprise's right to use the telephone number and may give the call a B-level attestation. If the originating SP has chosen to allow delegate certificates, it may accept the delegate certificate claim as true and give the call level A, the highest level of attestation.

The STI-GA Board approved the necessary changes to the Certificate Policy and the Revocation Policy to allow for the optional use of delegate certificates.

SPC token Access Policy

In May, the STI-GA Board adopted a new SPC token Access Policy allowing SPs to qualify for SPC token Access if they had properly certified in the FCC's Robocall Mitigation Database (RMD). This decision broadened SPC token Access beyond those SPs having direct access to telephone numbers. Having a

current 499A form on file with the FCC and an OCN remained as additional requirements for token access.

The FCC required service providers to file their certifications in the RMD by June 30, 2021. The STI-GA's revised SPC token Access Policy further required service providers that had obtained an SPC token under the previous (direct access to TNs) policy to file in the RMD within 30 days of the FCC deadline, or risk having their token revoked. A list of twenty STI-PA authorized providers was initially found to be non-compliant with this STI-GA requirement. Through notices and direct coordination, each of the providers filed in the RMD and no SPC tokens were revoked.

Certificate Policy (CP) Updates

The Board decisions to allow for use of delegate certificates and Resp Org access to SPC tokens resulted in changes to the CP, the policy that guides STI-CAs in their assignment of the certificates SPs use to sign calls.

One of the most important changes was the issuance of intermediate certificates. An intermediate certificate allows its bearer to assign a lower level of certificate (a delegate certificate) to non-SP entities, such as enterprises. The delegate certificate carries limitations in that it can only be used to authenticate a subset of numbers and it cannot be used to sign a SHAKEN header or to directly provide a level of attestation in a SHAKEN header. The new CP makes the entity assigning such delegate certificates, the one holding the intermediate certificate, ultimately responsible for their use.

Another important change was the institution of an annual letter of attestation. Not to be confused with the level of attestation in a SHAKEN signed call header, the annual attestation is provided by authorized STI-CAs in February of each year. This attestation will provide information on any security issue experienced by an STI-CA during the previous year as well as any major system changes it has made. It is designed to protect the ongoing security of the SHAKEN framework.

The Certificate Policy is an evolving document, and while the Board strives to keep changes to a minimum, it must make edits from time to time to reflect policy decisions or to better protect the SHAKEN framework.

Revocation Policy

Updates to the Revocation Policy were necessary after the addition of Resp Orgs to the ecosystem and the approval of delegate certificate use. With the support of the STI-GA, the FCC issued an NPRM and ultimately an FCC order, establishing a process to hear appeals on STI-GA board decisions on SPC token revocation.[1] While this FCC decision did not change the Revocation Policy, it added another level of appeals for any entity having its SPC token revoked. The FCC Report & Order also largely validated the STI-GA's existing Revocation Policy in this Report & Order.

4. SHAKEN Framework Development

Change Order in Support of Policy Changes

On October 22, 2021, the STI-PA launched changes to its system to support the optional use of delegate certificates and the registration of toll-free Resp Orgs. Both changes were adopted as a result of

[1] See Call Authentication Trust Anchor, WC Docket No. 17-97, FCC Third Report & Order, Adopted August 5, 2021.

requests made through the Board's Policy Change Request process, which opens the ability for non-Board members to have proposed SHAKEN policy changes considered by the Board.

5. Outreach & Education

The primary means of outreach for the STI-GA is its website. This website is kept current with all STI-GA Board policies, including any new policy decisions, through the STI-GA Policy Decisions Binder. Any STI-GA issued media and industry advisories for important announcements are posted and maintained on the website.

The SHAKEN webinar series began in December 2020 and wrapped up with two webinars in January and February, 2021.

The January webinar described the structure of the ecosystem and provided an overview of the process of how service providers can select and work with an STI-CA. It gave service providers direction on the steps to take following registration in the ecosystem and advised them on the proper use and treatment of certificates to ensure the integrity and security of the SHAKEN ecosystem. Finally, it discussed what happens if a certificate is compromised, how that certificate is revoked and how other providers learn of the revocation.

In February 2021, the webinar series concluded with a discussion on how to use the STI certificates for signing calls. This third webinar included a discussion on following the SHAKEN standards in setting the level of attestation on a given call, as well as the role local policy can play in setting that attestation level. There was a discussion on how STIR/SHAKEN influences, but does not determine, what is displayed to the end user receiving a signed call. Finally, the subject of STI-GA revocation of an SP's certificate was discussed along with the best ways for SPs to avoid having their certificate revoked. In total, the three-webinar series had more than 684 registrants, 543 live attendees, and 980 replays thus far.

6. Governance

Funding

At the end of 2020, the Board took steps to ensure funding for the SHAKEN framework in 2021. Large carriers provided the bulk of the funding for 2020 because of the funding uncertaintity for the first year which resulted in a very low contribution factor for other participants. In 2021, the Board raised the contribution factor. This raise allowed the Board to ensure full funding of the SHAKEN framework in its first year operating entirely on industry STI-PA fee payments.

The Board-approved 2022 budget is at the same level as its 2021 budget. Due to the growing number of authorized service providers, however, the Board was able to come to agreement on a Funding Policy that substantially lowered 2022 payments for all but the smallest providers. The minimum payment remained at $825.

With the ecosystem still in a growth mode, the Board will need to adjust the Funding Policy to account for future changes. However, the financial status of the SHAKEN framework in its third year, is solid and fully stabilized.

STI-GA Continuity

In 2021, nine of the twelve Board Director seats were eligible for reappointment. In an industry show of support for the continued work and value of the SHAKEN governance structure, all nine of the Board members with expiring terms sought and were granted reappointment for a second three-year term.

Similarly, the Board first appointed ATIS as the STI-GA in 2018. In 2021, the Board extended the agreement with ATIS as the STI-GA through the end of 2022.

7. Conclusion

Since the launch of the SHAKEN framework in late 2018, the ecosystem has grown rapidly and is poised for continued growth. As more SPs and Resp Orgs participate in the SHAKEN ecosystem, a greater number of calls will be signed. Increasing the number of verified calls will benefit consumers because SPs will be better able to assess the right of a caller to use the TN that is displayed in the caller ID.