Battle Robocalls and Restore Trust in Caller ID

Phone scams, increasingly through illegal robocalls, target consumers who are duped out of an estimated $350 million per year. Fraudsters are cunning in the ways they deceive by spoofing, or changing, the caller ID to look like a neighbor, a local business, a trusted brand, or even a government entity. Subscribers have lost trust in this key communication channel and don’t answer if they’re not certain who is calling.

Regulatory Mandates

Regulators have asked communication service providers to do more to protect consumers. They cite STIR caller authentication standards and the SHAKEN framework as the most viable way to provide consumers with a measure of trust in the displayed caller name and number.

- November 2017: Federal Communications Commission (FCC) allows voice service providers to block fraudulent robocalls.
- May 2018: FCC accepts North American Numbering Council (NANC) recommendations that a Governance Authority and Policy Administrator be operational by May 2019 to oversee implementation for STIR/SHAKEN, with some providers capable of signing and validating STIR/SHAKEN calls.
Authenticate Callers to Stop Spoofing

Neustar Certified Caller is a complete STIR/SHAKEN solution that enables service providers to authenticate and verify the caller telephone identity. This added layer of trust gives subscribers confidence in knowing who is calling so they can make a better decision about answering.

Neustar is co-author of STIR standards and contributor to the SHAKEN framework. Certified Caller is compliant to the latest STIR/SHAKEN specifications and is the implementation that STIR/SHAKEN deployments are validated against in the ATIS Robocalling Testbed.

Certified Caller can be deployed in multiple environments and leverages the STIR/SHAKEN framework to automate the end-to-end process of:

- generating a private/public key pair for signing,
- requesting a STI token from a policy administrator,
- requesting a STI certificate from a certification authority,
- receiving and storing the signed public key certificate,
- signing originating phone calls, and
- verifying signed phone calls at termination by using the retrieved signed public key certificate.

If the signature and telephone identity are validated, a visual notification can be displayed to the called party – such as a modified Caller ID prefix of ‘V’ for Verified or an image of a check mark on mobile displays. If a call fails verification, a warning such as a ‘S’ for Spoofed may be displayed.

Key Features

- Future-proof Compliance: Compliant with the latest STIR/SHAKEN standards, even before they are published, with continuous implementation of new software capabilities.
- Robust All-in-One Solution: Inclusive of all required and emerging STIR/SHAKEN components including:
  - Secure Key Store (SKS)
  - Secure Telephone Identity – Authentication Service (STI-AS)
  - Verification Service (STI-VS)
  - Service Provider – Key Management Server (SP-KMS)
  - Secure Telephone Identity – Certificate Repository (STI-CR)
- Flexible Interfaces: Support for published REST API and SIP proxy interfaces to VoIP and IMS network elements. Pre-integrated with published Caller ID REST API for integration with all Neustar Caller Intelligence solutions, including Call Validation Treatment as defined in the SHAKEN framework
- Multiple Deployment Methods: Certified Caller software components are easily deployed and linearly scaled in service provider’s private cloud environment, including VMware and OpenStack. Neustar also supports a hosted, fully managed STIR/SHAKEN offering in its elastic cloud environment through dedicated or multi-tenant instances.
- Proven Support: Technical support is available 7x24 from our experienced Caller ID Client Support team online, or by phone or e-mail.

IETF STIR Standards:
- RFC 8224
- RFC 8225
- RFC 8226
- RFC 8443

ATIS SHAKEN Standards:
- ATIS-0300016
- ATIS-1000074-E
- ATIS-1000080-E
- ATIS-1000082
  (Technical Report)
- ATIS-1000084-E
- ATIS-1000085

3GPP standards:
- 3GPP TS 24.229
  (ISC and verstat)
Based on Industry Standards

Meeting the STIR/SHAKEN industry standards, Certified Caller leverages the latest developments in caller authentication. Caller ID Authentication is a means to authenticate the calling number, securely transport this information “on the wire” and verify it at the receiving end, along with a framework to implement this Caller ID network verification.

STIR: Secure Telephony Identity Revisited is a set of technical standards developed by the Internet Engineering Task Force (IETF) to provide a means to certify the identity of originating calls.

SHAKEN: Signature-based Handling of Asserted information using toKENs is a framework developed by the Alliance of Telecommunications Industry Solutions (ATIS) that is focused on the implementation of STIR within IP-based service provider networks.

HOW STIR/SHAKEN WORKS

1. Generates SIP INVITE
2. Validates association with calling party telephone number
3. Creates SIP identity header
4. Sends SIP INVITE + identity header
5. Sends identity header information
6. Retrieves designated Originating Network Service Provider public certificate
7. Performs multi-step verification, optionally with CVT
8. Sends verification result
9. Call is completed

ATIS Robocalling Testbed

The ATIS Robocalling Testbed is the industry interoperability test platform, exclusively hosted by Neustar, to verify implementations of the SHAKEN call authentication framework and help advance efforts to mitigate unwanted robocalls and caller ID spoofing. The virtual test environment removes obstacles and accelerates the validation of caller authentication standards in real world STIR/SHAKEN implementations.
Pioneer in Call Authentication

As the market leader in caller identity solutions, providing 90% of the Caller ID infrastructure in the U.S., Neustar is uniquely positioned to design, develop and deliver call authentication solutions:

- **STIR/SHAKEN Standards Leadership**: Neustar has an ongoing leadership role in defining industry standards as co-author on the IETF STIR standards and contributor to ATIS SHAKEN technical standard documents, as well as Canada’s Network Working Group (NTWG) on Caller ID authentication.

- **Reference Implementation for STIR/SHAKEN Interoperability Testing**: Neustar is the exclusive host of the ATIS Robocalling Testbed. Since February 2017, over one third of the 50+ registered participants have tested real-world STIR/SHAKEN implementations against Neustar’s reference STIR/SHAKEN implementation. This unique testing experience provides valuable insight for solution deployment and evolution.

- **Monetization Support**: Flexible interfaces and STIR/SHAKEN licensing, including enterprise-specific applications, provide opportunities for vendors and service providers to expand revenue-generating services.

- **Full Portfolio of Trusted Call Solutions**: Recognizing declining trust in calls and the impact on consumers and business, Neustar was first to market with a tested STIR/SHAKEN solution in July 2016. Neustar now offers a set of integrated, market-leading solutions for service providers and enterprises.

- **Identity Resolution is in Our DNA**: As a leading information services company, Neustar has expertise in advanced analytics and identity resolution and verification to enable trusted communications. Neustar can enhance and customize standards-based offerings with features that leverage unique data sets as part of its OneID platform.

- **Leading Customer Network of Carriers and Enterprises**: Neustar provides Caller Identification services to over 800 CSPs, and identity resolution solutions to over 7,000 leading brands and businesses.

Trusted Call Solutions

Neustar Certified Caller is integrated with other Neustar Trusted Call solutions to deliver better subscriber call experiences and support business communications.

- **Neustar Robocall Mitigation** combines behavioural analytics with caller and network intelligence to help accurately identify illegal robocalls and caller ID spoofing.

- **Neustar Caller Name Optimization** helps enterprises enable accurate and consistent caller identity and prevent wrongful blocking and spam-tagging for outbound calls.

- **Neustar Branded Call Display** enables enterprises to display customized text and multimedia for calls to mobile, including logos, e-business cards and messages.

To learn more, visit: [www.callerid.neustar](http://www.callerid.neustar)