



SIPNOC 2025:

**Update on STIR/SHAKEN
and the IP-NNI Task Force,
Telecom Standards and
Eco-System Updates**

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ATIS/SIP Forum IPNNI Joint Task Force

ATIS (Alliance for Telecommunications Industry Solutions) is the standards body where U.S. carriers come together to define technical frameworks.

SIP Forum is the global industry group dedicated to VoIP and SIP, the signaling protocol that underpins nearly all modern VoIP and the extended use for interoperable communications services.

IPNNI stands for *IP Network-to-Network Interconnection*. The Joint Task Force was initially started with a focus on standardizing how carriers in the US connect SIP-based VoIP networks to each other.

STIR/SHAKEN is primarily focused on Caller ID authentication over IP telephony networks from one network to another.

Spoofed Calls vs. Robocalls – What's the Difference?

Spoofed Calls

- **Legitimate Use:** An **Outbound Call center** represents many customers so “spoofs” appropriate number of call-back number specific to that customer
- **Harmful Use:** The *Truth in Caller ID Act* prohibits spoofing or deliberately falsifying the telephone number (TN) and/or name relayed as the caller ID information to disguise the identity of the caller **for harmful or fraudulent purposes.**

Much of enterprise calling today is technically **legitimate spoofing** – the Responsible Provider over the telephone number is not always the same as the originating provider used to place call on PSTN.

Robocalls

- A robocall is a phone call that **uses a computerized autodialer** to deliver a pre-recorded message, as if from a robot.
- **Legitimate uses:** school closings, emergency alerts, flight cancellations.
- **Harmful uses:** illegal telemarketing, debt scams, political spam.

Fraud campaigns have shifted from **mass robocalls** (easily detected/blocked) to **smaller, targeted attacks.**
Impersonation is the key problem

Historical Context and STIR/SHAKEN

Telecom History – 150 years (next year)

- 1876 – First telephone call
- 1900s – Manual switchboards and early regulation
- 1960s – SS7 signaling & digital switching (TDM era)
- 1980s–90s – Caller ID introduced; mobile adoption
- 2000s – VoIP and SIP transform networks, disruptive force, clear proliferation of beneficial and valuable services and innovation ...

but without clear policies, security, and enforcement that also enables illegitimate robocalling practices at scale



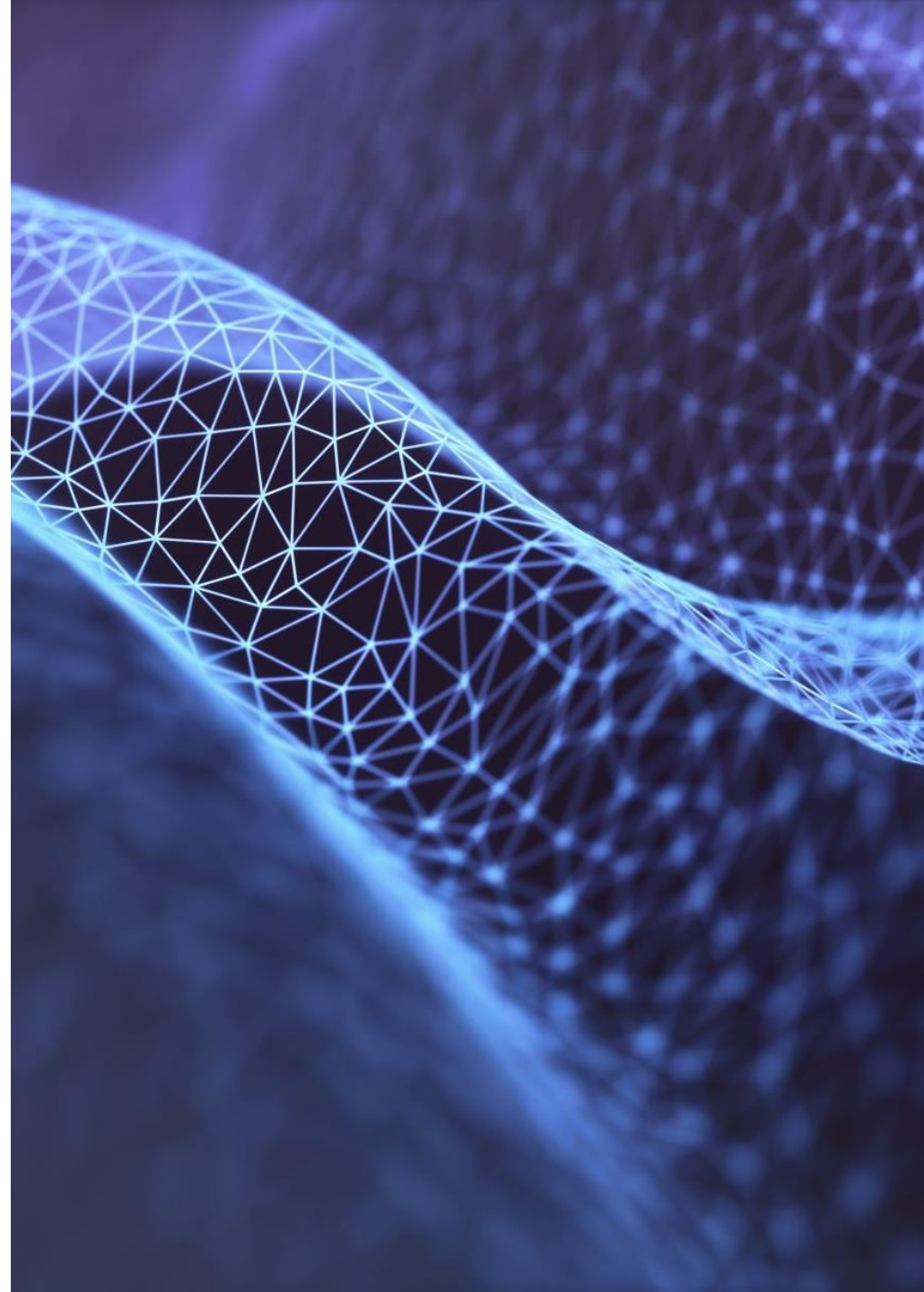
Historical Context and STIR/SHAKEN

Timeline:

- **2012** – Robocalls acknowledged as major consumer trust threat – FTC Workshop on Robocalling and CallerID Spoofing
- **2013** – IETF begins STIR framework for investigating protocols for call authentication.
- **2015** – ATIS IPNNI refocuses on Robocalling/Spoofing in US, SHAKEN is established.
- **2016** – FCC Robocall Strike Force introduces Do Not Originate and use of STIR/SHAKEN authentication.
- **2017** – FCC mandates adoption of STIR/SHAKEN. Core ATIS SHAKEN specs finalized 074, 080, 084
- **2018** – NANC CATA recommends industry governance, STI-GA formed; industry testbeds validate protocols.
- **2019** – TRACED Act passes; Canada launches CST-GA.
- **2020** – ATIS publishes U.S.–Canada cross-border STIR/SHAKEN spec.
- **2021** – U.S. large carriers deploy STIR/SHAKEN.
- **2022–23** – Expansion: smaller providers, gateway providers, KYUP & Robocall Mitigation Database updates.
- **2024** – International adoption grows (France, Brazil)
- **2025** – All providers required to block based on DNO lists; international and non-IP authentication in focus.

ATIS/SIP Forum IPNNI Joint Task Force

- Published: Update to **ATIS-1000092.v002** - Delegate certificates usage
- Published: **ATIS-1000094.v002** - Rich Call Data Updates
- Published: **ATIS-1000087.v002** Cross-border update
- Published: **ATIS-1000101** - Messaging Landscape Document – Assessing Messaging Space to provide industry guidance around potential use of STIR/SHAKEN or other authentication techniques – considering path forward
- IPNNI SIP Profile document to update and align it with STIR/SHAKEN updates



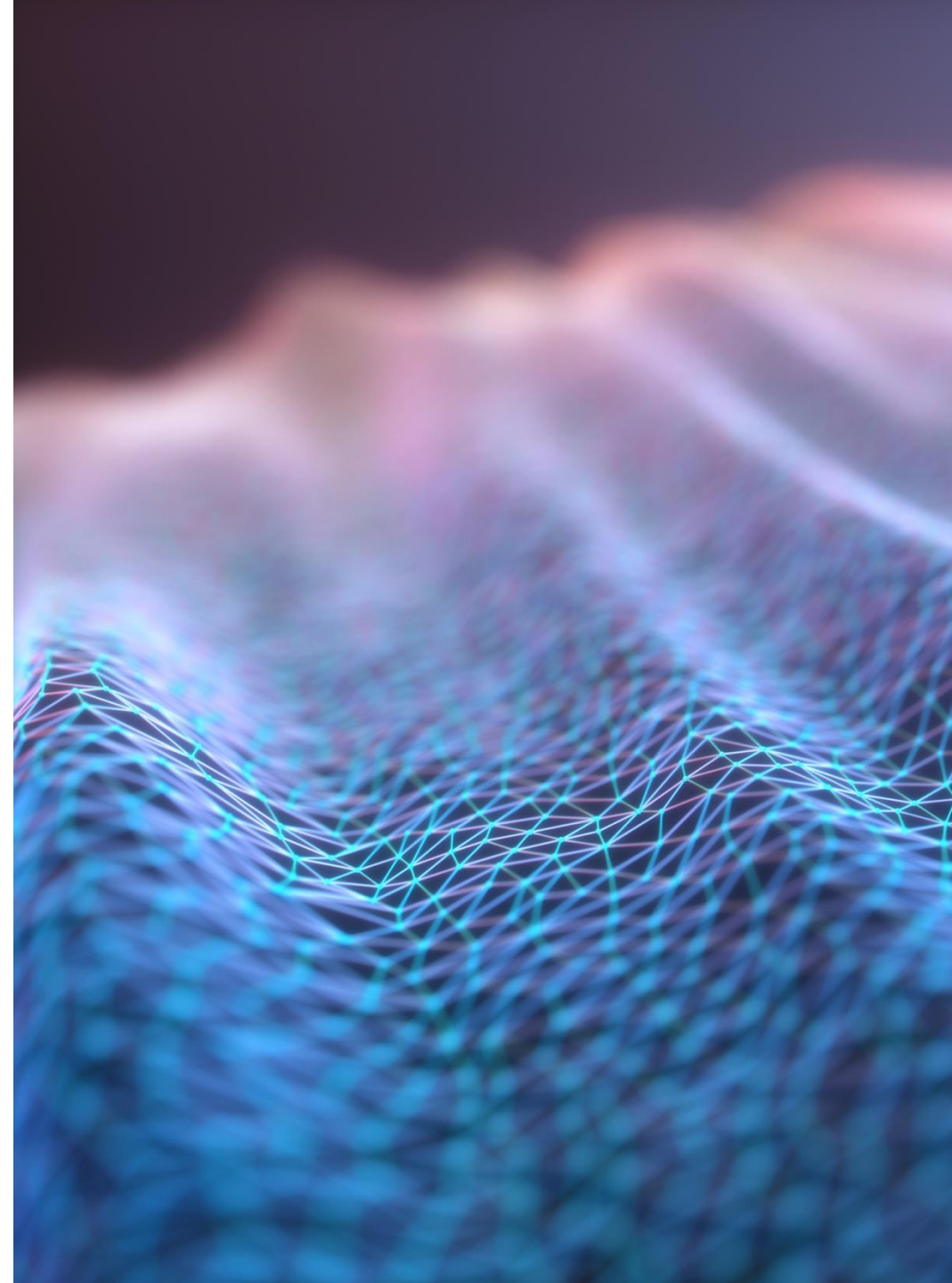
ATIS PTSC NIPCA – Non-IP Call Authentication (OOB SHAKEN)

ATIS-1000106 - Viability of Non-IP Call Authentication Standards

ATIS-1000097.v003 - Alternatives for Call Authentication for Non-IP Traffic

The above discuss the following published alternatives for OOB SHAKEN:

- **ATIS-1000095** - Extending STIR/SHAKEN over TDM
- **ATIS-1000096** - Out-of-Band PASSporT Transmission Involving TDM Networks
- **ATIS-1000105** - Out-of-Band PASSporT Transmission Between Service Providers that Interconnect using TDM



IETF STIR Working Group



Published:

RFC 9795 - Personal Assertion Token (PASSporT) Extension for Rich Call Data

RFC 9796 - SIP Call-Info Parameters for Rich Call Data

Nearing Publication:

draft-ietf-stir-certificates-shortlived-03 - Short-Lived Certificates for Secure Telephone Identity

draft-ietf-stir-certificates-ocsp-11 - OCSP Usage for Secure Telephone Identity Certificates

draft-ietf-stir-rfc4916-update-07 - Connected Identity for STIR

draft-ietf-stir-servprovider-oob-08 - Out-of-Band STIR for Service Providers

Upcoming:

draft-wendt-stir-certificate-transparency-06 – STI Certificate Transparency

draft-wendt-stir-vesper-05 – VESPER – Framework for Verifiable STI Personas – additional Vesper documents in queue

draft-barnes-stir-8588bis-00 – SHAKEN update to align with ATIS-1000074.v003



NANC CATA (RIP)

Latest NANC CATA reports released December 2024

Report on Regulatory Treatment of International Cellular Roaming Traffic (of US TNs)

- Examined U.S. numbers when roaming abroad.
- Recommended accelerating the transition to **VoLTE roaming** to enable authentication internationally.
- Encouraged the FCC to act against international providers abusing U.S. numbering, including potential **removal from the Robocall Mitigation Database**.

Report on Direct Access by Interconnected VoIP Providers to Numbering Resources

- Reviewed how interconnected VoIP providers obtain and manage telephone numbers.
- Found gaps in visibility for **resold numbers and wholesale transactions**.
- Recommended improved **number utilization reporting (NRUF)** and stronger oversight of intermediate number administration.

International/Cross-border STIR/SHAKEN

- Cross-boarder initiatives for using certificates for call authentication
 - STIR/SHAKEN alignment
 - ATIS-1000087.v002 - Mechanism for Initial Cross-Border Signature-based Handling of Asserted information using toKENs (SHAKEN)
 - ITU-T SG-11 and SG-2 cooperation for support for use of certificates for interconnection and CLI security



Where are we headed?

- 3rd Party Vetting / KYC
- RCD Platforms
- AI – good/bad/both?





Trusting the Call/Message: Who is responsible?

- Building Trust Through Authentication as a Baseline
 - How businesses and consumers can be vetted for authenticity
 - The role of KYC in fraud prevention and call authentication
 - How do we implement consistently and at scale?

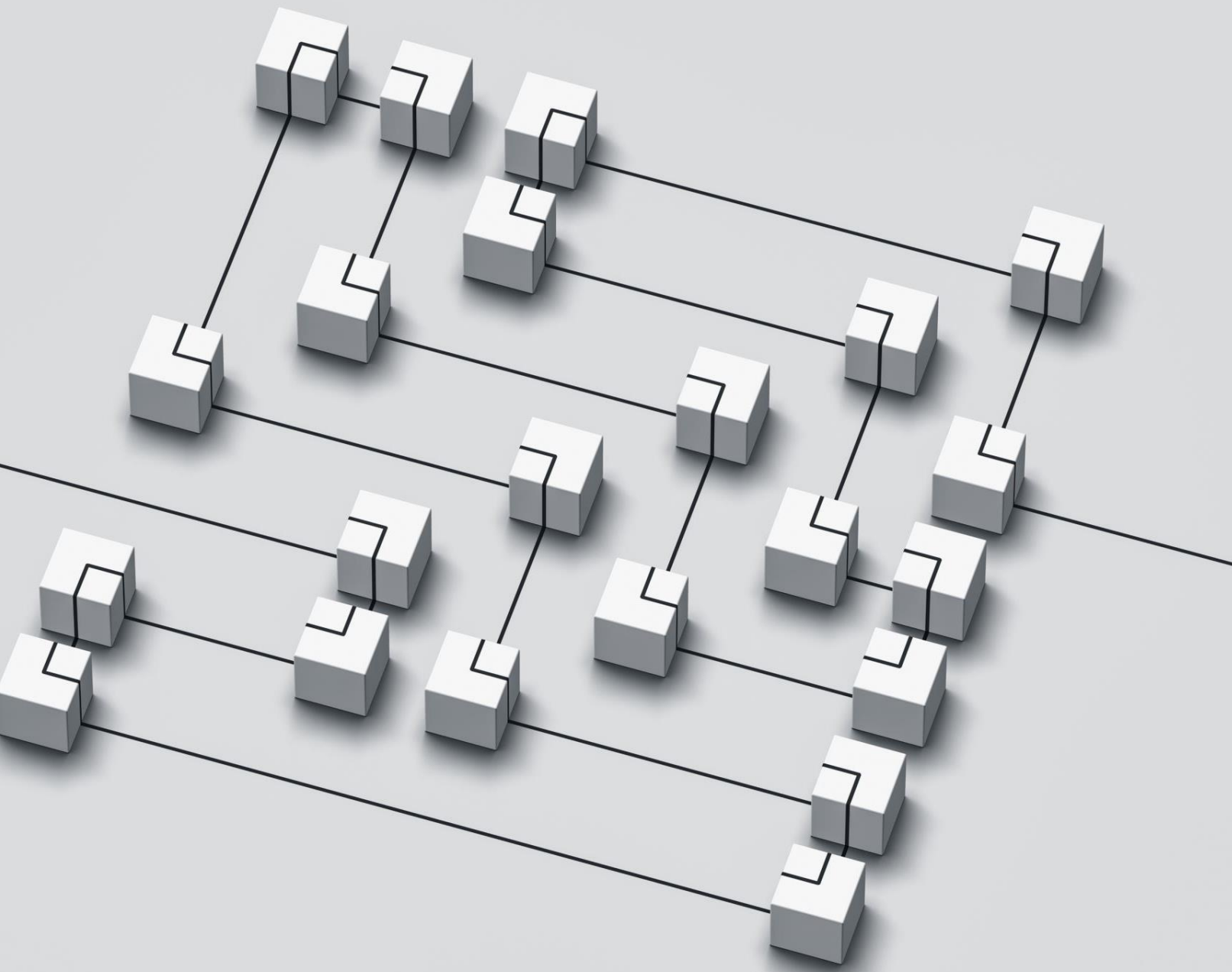
Rich Communications

How do we achieve true
interoperable
trusted
communications?

As an industry that depends on
competition and cooperation

What is the value we are
providing?





AI and Deepfakes

- The growing threat of AI and deepfake voice manipulation
- Potential impact on robocalling and phishing attacks
- Industry continuing to evaluate need/effectiveness for AI-driven detection tools and stronger identity verification

AI as feature

- It's undeniable AI is part of our future and already being adopted for good
- **Disruptions:**
 - *Started with VoIP*
 - *Added APIs and programmable voice and messaging*
 - *AI is the logical next frontier?*
- How do we embrace that as an industry, how do standards and interoperability play a part?
- Authentication is an important security layer to make sure we have the right foundation of trust
- VCON is one technology that is considering how to properly address storage and use of customer conversations including the use of AI with privacy and consent at forefront
- What else do we need to consider as an industry?





SIPNOC Challenge

- Make next year's **semiquincentennial** of telecommunications the start of a true turning point
- Focus on **trust and cooperation** to enable positive **value** for telecommunications services
- Focus on interoperable **Rich Communications**
- Focus on how AI might be the next **disruptive and innovative** path toward **enhancing** the voice and messaging channels
- Contribute **early and often** to the standards and industry collaboration!!