**ATIS-10000XX**

ATIS Standard on

**STIR/SHAKEN Metrics**

**Alliance for Telecommunications Industry Solutions**

Approved Month DD, YYYY

**Abstract**

This technical report provides templates and guidelines for reporting and sharing STIR/SHAKEN metrics and implementation information. The metrics and information can be used to show the progress of STIR/SHAKEN implementation as well as to facilitate information exchange between service providers, solution providers, and regulatory entities.

**Foreword**

The Alliance for Telecommunications Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers. The [**COMMITTEE NAME**] Committee [**INSERT MISSION**]. [**INSERT SCOPE**].

The mandatory requirements are designated by the word *shall* and recommendations by the word *should*. Where both a mandatory requirement and a recommendation are specified for the same criterion, the recommendation represents a goal currently identifiable as having distinct compatibility or performance advantages. The word *may* denotes a optional capability that could augment the standard. The standard is fully functional without the incorporation of this optional capability.

Suggestions for improvement of this document are welcome. They should be sent to the Alliance for Telecommunications Industry Solutions, [**COMMITTEE NAME**], 1200 G Street NW, Suite 500, Washington, DC 20005.

At the time of consensus on this document, [**COMMITTEE NAME**], which was responsible for its development, had the following leadership:

[**LEADERSHIP LIST**]

The **[SUBCOMMITTEE NAME]** Subcommittee was responsible for the development of this document.

**Revision History**

| **Date** | **Version** | **Description** | **Author** |
| --- | --- | --- | --- |
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# Scope & Purpose

## Scope

This document provides templates and guidelines of reporting and sharing STIR/SHAKEN signing and verification metrics as well as related implementation and operation information. It covers the metrics related to the calls that carry Identity headers of “shaken” PassPort Type (PPT) and focuses on the call scenarios covered by ATIS-1000074/1000080/1000084. Metrics of calls carrying Identity headers of other PPTs, such as DIV, RPH, RCD, and base PassPORT, will be included in the future updates of this document when the specifications are finalized and the mechanisms supporting them are implemented.

## Purpose

The templates and guidelines described in this document are meant to facilitate clear communication about the implementation status and progress regarding STIR/SHAKEN between concerned parties, such as service providers, solution providers, and regulatory entities. Metrics of overall network can be used for filing reports to regulatory entities to show the progress of implementation while more granular data, such as those by services/service/platforms and by peering carries, can be used for sharing operation information among industry participants to monitor and facilitate smooth STIR/SHAKEN operations in production.

# Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this ATIS Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

Editor’s Note: the draft RFCs below will be changed to the normative RFC numbers when available from IETF.

[ATIS-1000074], *ATIS Standard on Signature-based Handling of Asserted information using toKENs (SHAKEN).*

[draft-ietf-stir-passport], *Persona Assertion Token.*[[1]](#footnote-1)

[draft-ietf-stir-rfc4474bis], *Authenticated Identity Management in the Session Initiation Protocol.*1

[draft-ietf-stir-rph], PASSporT Extension for Resource-Priority Authorization. 1

[IETF RFC 3325], *Private Extensions to SIP for Asserted Identity within Trusted Networks.*1

[IETF RFC 3261], *SIP: Session Initiation Protocol.*1

[IETF RFC 5280], *Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile.*1

[IETF RFC 3326], *The Reason Header Field for the Session Initiation Protocol (SIP).*1

[IETF RFC 4412], *Communications Resource Priority for the Session Initiation Protocol (SIP).* 1

# Definitions, Acronyms, & Abbreviations

For a list of common communications terms and definitions, please visit the *ATIS Telecom Glossary*, which is located at < <http://www.atis.org/glossary> >.

## Definitions

**NS/EP NGN Priority Services (NS/EP NGN-PS)** [ATIS-1000057] are the evolution of legacy GETS and WPS to achieve service continuity in the packet-switched NGN, and to leverage the NGN to offer new features and priority multimedia services.

Note: NS/EP NGN-PS and NS/EP NGN-GETS are used interchangeable in ATIS standards.

## Acronyms & Abbreviations

|  |  |
| --- | --- |
| 3GPP | 3rd Generation Partnership Project |
| ATIS | Alliance for Telecommunications Industry Solutions |
| B2BUA | Back-to-Back User Agent |
| CRL | Certificate Revocation List |
| CSCF | Call Session Control Function |
| CVT | Call Validation Treatment |
| HTTPS | Hypertext Transfer Protocol Secure |
| IBCF | Interconnection Border Control Function |
| IETF | Internet Engineering Task Force |
| IMS | IP Multimedia Subsystem |
| IP | Internet Protocol |
| JSON | JavaScript Object Notation |
| JWS | JSON Web Signature |
| NNI | Network-to-Network Interface |
| OCSP | Online Certificate Status Protocol |
| PASSporT | Persona Assertion Token |
| PBX | Private Branch Exchange |
| PKI | Public Key Infrastructure |
| SHAKEN | Signature-based Handling of Asserted information using toKENs |
| SIP | Session Initiation Protocol |
| SKS | Secure Key Store |
| SPID | Service Provider Identifier |
| STI | Secure Telephone Identity |
| STI-AS | Secure Telephone Identity Authentication Service |
| STI-CA | Secure Telephone Identity Certification Authority |
| STI-CR | Secure Telephone Identity Certificate Repository |
| STI-VS | Secure Telephone Identity Verification Service |
| STIR | Secure Telephone Identity Revisited |
| TLS | Transport Layer Security |
| TN | Telephone Number |
| TrGW | Transition Gateway |
| UA | User Agent |
| URI | Uniform Resource Identifier |
| UUID | Universally Unique Identifier |
| VoIP | Voice over Internet Protocol |

# Use of Certificates

* Are you using self-signed root certificates?
* Are you getting your end-user certificates from an STI-PA approved CA?
* How often do you refresh your certificates?
* Do you implement CRL?
  + End-entity/intermediate certificates
  + CA root certificates
* Do you implement security policies for accessing your CR?
  + Enumerate security policies

# Metrics

## Editor’s Note: need to take into account analog access to an IP soft switch.

**Editor’s Note: add metrics on verification.**

**Editor’s Note: change terminology from “signing” to “authenticated”.**

## Signing Metrics

This section provides a set of Metrics and information recommended to be compiled and shared in the industry to show the status and progress of STIR/SHAKEN signing services.

### Percentage of Outbound Calls Singed

There may be situations that certain origination calls are signed but the Identity headers are removed before being delivered to peering networks. These situations most likely are transient in nature during the ramp-up of STIR/SHAKEN implementation while some service providers are not ready to process calls with Identity headers. Service providers may want to call out the discrepancies between the amount of calls that are signed with Identity headers and the amount of calls sent with Identity headers.

#### Networkwide Outbound Call Signing Percentage by Attestation Levels

* Percentage of outbound calls signed with Attestation A
* Percentage of outbound calls signed with Attestation B
* Percentage of outbound calls signed with Attestation C
* Percentage of calls not signed

#### Percentages by Service Platforms and by Attestation Levels

* Residential
* Commercial - SMB
* Commercial – Advance Voice
* Wholesale (Passthrough and C Attestation Level)

### Percentage of Transit Calls Signed

* Transit calls that have been signed by upstream carriers
* Transit calls that have not been signed by upstream carriers and are signed with C Attestation

### Percentage by Carriers

### Call Types Not Signed

* Do you sign retargeted calls?
* Do you sign international calls?
  + Originated outside of US
  + Destined to international numbers, NANPA or non-NANPA
* Do you sign 911/NSEP calls?
* Do you sign OS/DA calls?
* Do you sign toll-free calls?
* Any other call types?

Text in the original baseline:

When will you be signing calls?

* For VoLTE origination?
* For Fixed Broadband
* For IP Enterprise
* For IP Wholesale Gateways
* For IP International Gateways

Will you be exchanging CERTs manually with other carriers prior to establishment of the GA/PA/CA? If yes, please explain.

Do you plan on supporting the automated GA/PA/CA infrastructure when available?

Will you support both the manual and automated CERT infrastructures during transition? How long do you believe that transition will be?

Do you pass post Sheaken verification information to your CVT?

When will support signaling Verstat to end points? Does this differ by technology, if yes explain?

## Verification Metrics

This section provides a set of Metrics and information recommended to be compiled and shared in the industry to show the status and progress of STIR/SHAKEN signing services.

### Networkwide Percentage of Termination Calls Verified by Attestation Levels and Verification Results

* Attestation A
* Attestation B
* Attestation C
* No TN Validation
* TN Validation Failed

### Percentages by Service Platforms

Comcast examples:

* Residential
* Commercial - SMB
* Commercial – Advance Voice

### Percentages by Carriers

# Call Validation Treatment

Ultimately, the net effects of STIR/SHAKEN to the end users are how it would affect the ways calls are treated and presented to them.

* How do you handle validation errors? Including no Identity headers?
  + Have you implemented Reason header in provisional and/or final responses?
  + Do you plan to reject calls based on validation errors?
  + Are the error metrics collected and monitored?
* How does the validation results affect labeling and presentation of your inbound calls?
  + Direct indicators of call validation?
  + Analytics influenced by validation results? And how?
  + Does Call Type affect CVT?
  + Any other approaches and considerations?

Text in the original baseline:

Will you give Full Attestation for VoLTE origination calls? If no, explain.

Will you give Full Attestation for Fixed Broadband origination calls? If no, explain.

Will you give another Attestation other than Gateway for incoming calls on International gateways?

For incoming calls on wholesale gateways, what is your criteria for giving Partial versus Gateway Attestation?

For incoming calls from enterprise’s, what is your criteria for giving Full versus Partial Attestation?

# Operation Considerations

## Ramp-up Process of End-to-end Signing and Verification

Coordination of end-to-end signing and verification will become a very tedious and high-overhead operation practice while all service providers go through their ramp-up processes of a variety of service platforms and peering interfaces. It is recommended to take a “sign whenever you can and verify whenever you are ready” approach for end-to-end interop. Service providers should be allowed to send all calls with Identity headers whenever they are able to do so. It is up to the intermediate and termination service providers to decide whether or not they are capable of processing, either passing through or verifying, the calls. Regardless of whether or not the Identity headers can be processed, calls should not fail. This approach of opening up the end-to-end STIR/SHAKEN asynchronously without affecting call completion is commonly referred to as Do-No-Harm (DNH) and typically is implemented by header manipulation at the peering SBCs.

## STIR/SHAKEN Service Outage Handling

In general, when STIR/SHAKEN servers fail, call processing should proceed and call completion and quality should not be affected from network operation perspectives. However, when STIR/SHAKEN validation results affect how the calls are presented to end users, either by direct indication or as input to analytics, call completion will be affected by how the calls are presented and perceived by end users. Outages could happen at different scales. Most of the outages should be handled by typical operation procedures of detection, alerting, and resolution. However, service providers should be prepare to disable STIR/SHAKEN and CVT if there is a large-scale outage, such as ones triggered by natural disasters, as they could negatively impact the network resources and adversely affect the call treatment and completion.

# Example Metrics and Guidelines

To be provided after data elements are agreed upon.

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1. Available from the Internet Engineering Task Force (IETF) at: < <https://www.ietf.org/> >. [↑](#footnote-ref-1)