ATIS-1000097

Technical Report on Alternatives for Call Authentication for Non-IP Traffic

TECHNICAL REPORT

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Abstract

The SHAKEN framework enables a SHAKEN-authorized VoIP Service Provider to deliver a cryptographically protected assertion that the calling user is authorized to use the calling telephone number to a called user via SIP signaling. This Technical Report considers scenarios where SIP connectivity is not available end-to-end (i.e., “non-IP” scenarios) and identifies and assesses potential approaches to determine and convey that the calling user is authorized to use the calling telephone number.

Foreword

The Alliance for Telecommunications Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers. The Packet Technologies and Systems Committee (PTSC) develops and recommends standards and technical reports related to services, architectures, and signaling, in addition to related subjects under consideration in other North American and international standards bodies. PTSC coordinates and develops standards and technical reports relevant to telecommunications networks in the U.S., reviews and prepares contributions on such matters for submission to U.S. International Telecommunication Union Telecommunication Sector (ITU-T) and U.S. ITU Radiocommunication Sector (ITU-R) Study Groups or other standards organizations, and reviews for acceptability or per contra the positions of other countries in related standards development and takes or recommends appropriate actions.

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 an 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, 1200 G Street NW, Suite 500, Washington, DC 20005.

The **Non-IP Call Authentication Task Force** under the **ATIS Packet Technologies and Systems Committee (PTSC)** was responsible for the development of this document.

At the time it approved this technical report, the PTSC had the following leadership:

M. Dolly, PTSC Chair

V. Shaikh, PTSC Vice Chair

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1 Scope, Purpose, & Application

1.1 Scope

ATIS-1000074.v002, *ATIS Standard on Signature-based Handling of Asserted information using toKENs (SHAKEN)*, defines a call authentication approach for Session Initiation Protocol (SIP) traffic but does not address non-Internet Protocol (IP) traffic. This Technical Report is limited to call authentication approaches that have been proposed for non-IP scenarios.

1.2 Purpose

The current SHAKEN framework provides a set of tools that enable verification of the calling party's authorization to use a calling telephone number for a call. The SHAKEN protocol specification [Ref 1] describes an authentication approach that can be invoked by the Originating Service Provider (OSP) to authenticate itself as the service provider responsible for the call origination and to "attest" to the legitimacy of the calling telephone number associated with a call. A cryptographic signature across the call parameters protects the integrity of the SIP parameters and the OSP call markings.

In this framework, the OSP's Secure Telephone Identity Authentication Service (STI-AS) creates a Personal ASSertion Token (PASSporT) and inserts this PASSporT in the SIP Identity header per RFC 8224, *Authenticated Identity Management in the Session Initiation Protocol*. The SIP INVITE is then routed over the network-to-network interface (NNI) through the standard inter-domain routing configuration.

SHAKEN requires that the call have SIP end-to-end, but this is not always the case in today's Public Switched Telephone Network (PSTN). For the purposes of this Technical Report, any scenario that does not have SIP end-to-end is considered a "non-IP" scenario.

This Technical Report identifies non-IP call authentication scenarios and provides a framework to evaluate potential approaches that could provide call authentication even when the call is not SIP end-to-end.

2 References

The following standards contain provisions which, through reference in this text, constitute provisions of this Technical Report. 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.

[Ref 1] ATIS-1000074.v002, *ATIS Standard on Signature-based Handling of Asserted information using toKENs (SHAKEN).*[1]

[Ref 2] ATIS-1000095, *Extending STIR/SHAKEN over TDM.*[1]

[Ref 3] ATIS-1000096, *Out-of-Band PASSporT Transmission Involving TDM Networks.*[1]

[Ref 4] ATIS-1000098, *Session Initiation Protocol (SIP) Resource-Priority Header (RPH) and Priority Header Signing in Support of Emergency Calling*.[1]

[1] This document is available from the Alliance for Telecommunications Industry Solutions (ATIS) at: < https://www.atis.org/ >.