ATIS-0700048

Study of SHAKEN Impacts on 9-1-1 Calls and Callback Calls

TECHNICAL REPORT

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ATIS-0700048

ATIS Technical Report on

Study of SHAKEN Impacts on 9-1-1 Calls and Callback Calls

Alliance for Telecommunications Industry Solutions

Approved April 16, 2021

Abstract

This Technical Report studies the impacts of applying STIR/SHAKEN Caller Identity authentication and verification, as well as Resource-Priority header and SIP Priority header signaling to 9-1-1 and callback calls.

Foreword

As a leading technology and solutions development organization, the Alliance for Telecommunications Industry Solutions (ATIS) brings together the top global information and communications technology (ICT) companies to advance the industry's most-pressing business priorities. ATIS serves the public through improved understanding between carriers, customers, and manufacturers.

This Technical Report was developed jointly between ESIF, PTSC, and WTSC.

The Emergency Services Interconnection Forum (ESIF) provides a forum to facilitate the identification and resolution of technical and/or operational issues related to the interconnection of wireline, wireless, cable, satellites, Internet and emergency services networks.

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. ITU-T and U.S. 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 Wireless Technologies and Systems Committee (WTSC) develops and recommends standards and technical reports related to wireless and/or mobile services and systems, including service descriptions and wireless technologies. WTSC develops and recommends positions on related subjects under consideration in other North American, regional, and international standards bodies.

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

At the time of initiation or issuance of the letter ballot for this document, the committee responsible for its development had the following leadership:

R. Muscat, ESIF Chair (Bexar Metro 911)
D. Morkunas, ESIF First Vice Chair (Intrado)
J. Torres, ESIF Second Vice Chair (Verizon Wireless)

M. Dolly, PTSC Chair (AT&T)
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M. Younge, WTSC Chair (T-Mobile)
D. Zelmer, WTSC Vice Chair (AT&T)

T. Reese, Technical Editor (Ericsson)

The **IMSESINET** Subcommittee was responsible for the development of this document.

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1 Scope, Purpose, & Application

1.1 Scope

The Scope of this Technical Report is an analysis of the impacts of applying Secure Telephone Identity Revisited (STIR), as specified in RFC 8224 *Authenticated Identity Management in the Session Initiation Protocol (SIP)* [Ref 1] and Signature-based Handling of Asserted Information Using toKENs (SHAKEN), as specified in ATIS-1000074-E [Ref 2], *Errata on ATIS Standard on Signature-based Handling of Asserted information using toKENs (SHAKEN).* to 9-1-1 calls and callback calls. This Technical Report will also analyze the impacts of applying Resource-Priority Header (RPH) and SIP Priority header signing and verification to 9-1-1 calls and callback calls.

1.2 Purpose

This Technical Report is a study that analyzes the impacts on IP Multimedia Subsystem (IMS) originating networks of applying STIR/SHAKEN Caller Identity authentication and verification, and RPH and SIP Priority header signing/verification to 9-1-1 calls and callback calls to prevent malicious spoofing of Caller Identity, RPH, and SIP Priority header information. In particular, this study focuses on the identification of impacts to ATIS-0700015, *ATIS Standard for Implementation of 3GPP Common IMS Emergency Procedures for IMS Origination and ESInet/Legacy Selective Router Termination* [Ref 3].

1.3 Application

This Technical Report applies to emergency (9-1-1) calls originated in, and callback calls received by, IMS networks in North America to assist in the detection and mitigation of Caller Identity, and where applicable, RPH and SIP Priority header spoofing. This technical report is based on the SHAKEN procedures specified in ATIS-1000074-E, *Errata on ATIS Standard on Signature-based Handling of Asserted information using toKENs (SHAKEN)* [Ref 2].

2 References

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

[Ref 1]: IETF RFC 8224, *Authenticated Identity Management in the Session Initiation Protocol (SIP).*[1]
[Ref 2]: ATIS-1000074-E, *Errata on ATIS Standard on Signature-based Handling of Asserted information using toKENs (SHAKEN).*[2]
[Ref 3]: ATIS-0700015, *ATIS Standard for Implementation of 3GPP Common IMS Emergency Procedures for IMS Origination and ESInet/Legacy Selective Router Termination.*[2]
[Ref 4]: ATIS-1000072, *Analysis of Mitigation Techniques for Calling Party Spoofing.*[2]
[Ref 5]: NENA-STA-010.3, NENA i3 Standard for NG9-1-1 (to be issued).[3]
[Ref 6]: IETF Internet Draft draft-ietf-stir-rph-emergency-services-04, *Assertion Values for a Resource Priority Header Claim and a SIP Priority Header Claim in Support of Emergency Services Networks.*[1]
[Ref 7]: IETF RFC 7090, *Public Safety Answering Point (PSAP) Callback.*[1]

[1] This document is available from the Internet Engineering Task Force (IETF) at: < http://www.ietf.org >.
[2] This document is available from the Alliance for Telecommunications Industry Solutions (ATIS) at: < www.atis.org >.
[3] This document is available from the National Emergency Number Association (NENA) at: < www.nena.org >.