ATIS-1000078.v002

National Security / Emergency Preparedness Priority Service Session Initiation Protocol Resource-Priority Header (SIP RPH) Signing and Verification using PASSporTs

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Is an ATIS & SIP Forum Joint Standard developed by the **ATIS/SIP Forum IP-NNI Task Force** under the **ATIS Packet Technologies and Systems Committee (PTSC)** and the **Technical Working Group (TWG)** under the **SIP Forum**.

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ATIS Standard on

National Security / Emergency Preparedness Priority Service Session Initiation Protocol Resource-Priority Header (SIP RPH) Signing and Verification using PASSporTs

Alliance for Telecommunications Industry Solutions

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Abstract

This standard defines how the extension to the IETF Personal Assertion Token (PASSporT) [IETF RFC 8443, *PASSporT Extension for Resource-Priority Authorization*] and the associated Secure Telephone Identity Revisited (STIR) mechanisms are used to sign the Session Initiation Protocol Resource-Priority Header (SIP RPH) field of National Security / Emergency Preparedness (NS/EP) Priority Services calls (i.e., calls containing the “ets” and/or “wps” namespace parameter values) and convey assertions of authorization for Resource-Priority. Specifically, this standard provides a mechanism for an originating service provider to cryptographically sign the SIP RPH field of an authorized NS/EP Priority Service call and allow a receiving service provider to verify the validity of the authorization for Resource-Priority and act on the information with confidence (i.e., verifying that the RPH information has not been spoofed or compromised).

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 SIP Forum is an IP communications industry association that engages in numerous activities that promote and advance SIP-based technology, such as the development of industry recommendations, the SIPit, SIPconnect-IT, and RTCWeb-it interoperability testing events, special workshops, educational seminars, and general promotion of SIP in the industry. The SIP Forum is also the producer of the annual SIP Network Operators Conference (SIPNOC), focused on the technical requirements of the service provider community. One of the Forum's notable technical activities is the development of the SIPconnect Technical Recommendation – a standards-based SIP trunking recommendation for direct IP peering and interoperability between IP Private Branch Exchanges (PBXs) and SIP-based service provider networks. Other important Forum initiatives include work in Video Relay Service (VRS) interoperability, security, Network-to-Network Interoperability (NNI), and SIP and IPv6.

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

The **ATIS/SIP Forum IP-NNI Task Force** under the **ATIS Packet Technologies and Systems Committee (PTSC)** and the **SIP Forum Technical Working Group (TWG)** was responsible for the development of this document.

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1 Scope & Purpose

1.1 Scope

IETF RFC 4412, *Communications Resource Priority for the Session Initiation Protocol (SIP)* [Ref 4], specifies use of the Session Initiation Protocol 'Resource-Priority' Header (SIP RPH) field for communicating Resource-Priority. As specified in IETF RFC 4412 [Ref 4], the SIP RPH field may be used by SIP user agents, including Public Switched Telephone Network (PSTN) gateways and terminals, and SIP proxy servers to influence prioritization afforded to communications sessions, including PSTN calls.

The SIP RPH “ets” and “wps” namespace parameters are defined and used to support National Security / Emergency Preparedness (NS/EP) Priority Service calls which include Wireless Priority Service (WPS), Government Emergency Telecommunication Service (GETS) and Next Generation Network Priority Services (NGN-PS) calls in IP-based networks. However, the SIP RPH field could be spoofed and abused by unauthorized entities impacting NS/EP Priority Service communications. For example, NS/EP Service Providers receiving SIP RPHs across IP Network-to-Network Interconnections (IPNNIs) have difficulty determining whether the SIP RPH was populated by an authorized NS/EP Service Provider, or whether it was spoofed or inserted by an unauthorized entity.

This ATIS standard describes a framework leveraging the Signature-based Handling of Asserted information using toKENs (SHAKEN) framework specified in ATIS-1000074, *Signature-based Handling of Asserted information using toKENs (SHAKEN)* [Ref 2], to cryptographically sign and verify the SIP RPH field of NS/EP Priority Service calls using the “rph” Personal Assertion Token (PASSporT) extension defined in IETF RFC 8443, *PASSporT Extension for Resource-Priority Authorization* [Ref 8] and the associated Secure Telephone Identity (STI) protocols. There are some cross relationships between Caller ID signing and verification using a “shaken” PASSporT and SIP RPH signing and verification using the “rph” PASSporT extension defined in IETF RFC 8443 [Ref 8]. However, Caller ID signing and verification using SHAKEN is not an NS/EP Priority Service requirement per se; it is only discussed in this standard to highlight cross relationships.

This ATIS standard is intended to provide a framework and guidance on how to use the “rph” PASSporT extension defined in IETF RFC 8443 [Ref 8] and the associated STI protocols to cryptographically sign and verify the SIP RPH field in support of a trust mechanism for NS/EP Priority Service calls crossing IPNNI boundaries.

The scope of this ATIS standard is limited to cryptographic signing and verification of the SIP RPH field of NS/EP Priority Service calls with the “ets” and “wps” namespace parameters, using the “rph” PASSporT extension defined in IETF RFC 8443 [Ref 8] and the associated STI protocols. The scope of this standard does not include cryptographic signing and verification of the attestation of the Caller ID of NS/EP Priority Service calls. The procedures to sign and verify attestations of the Caller ID in an NS/EP Priority Service call using “shaken” PASSporTs are specified in ATIS-1000074 [Ref 2].

This standard is primarily developed for adoption by U.S. voice service providers. It is not precluded from being used internationally. Other countries or foreign voice service providers may adopt this standard and it may be implemented through bilateral agreements with business partners in the U.S. pursuant to their business agreements.