



**ATIS-1000100**

## **VoIP Interconnection over the Public Internet**

**TECHNICAL REPORT**



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**ATIS-1000100**

ATIS Technical Report on

# **VoIP Interconnection over the Public Internet**

**Alliance for Telecommunications Industry Solutions**

Approved December 12, 2022

## **Abstract**

This document describes a “non-facilities-based VoIP Interconnection” profile, where IP connectivity between VoIP Service Providers is established over the public Internet.

### Foreword

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The Alliance for Telecommunications Industry Solutions (ATIS) is a global standards development and technical planning organization that develops and promotes worldwide technical and operations standards for information, entertainment, and communications technologies. ATIS' diverse membership includes key stakeholders from the Information and Communications Technologies (ICT) industry – wireless and wireline service providers, equipment manufacturers, broadband providers, software developers, VoIP providers, consumer electronics companies, public safety agencies, and internet service providers. ATIS is also a founding partner and the North American Organizational Partner of the Third Generation Partnership Project (3GPP), the global collaborative effort that has developed the Long-Term Evolution (LTE) and LTE-Advanced wireless specifications.

ATIS' Packet Technologies and Systems Committee (PTSC) develops standards related to services, architectures, signaling, network interfaces, next generation carrier interconnect, cybersecurity, lawful intercept, and government emergency telecommunications service within next generation networks. As networks transition to all-IP, PTSC will evaluate the impact of this transition and develop solutions and recommendations where necessary to facilitate and reflect this evolution.

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.

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, and/or to the SIP Forum, 733 Turnpike Street, Suite 192, North Andover, MA, 01845.

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.

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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# VoIP Interconnection over the Public Internet

## 1 Executive Summary

### 1.1 Scope

This Technical Report describes a profile for Voice over IP (VoIP) Service Providers (SPs) who choose to interconnect over the public Internet. It recommends mechanisms for establishing Internet Protocol (IP) connectivity, securing the signaling and media, and proposing bilateral agreements with respect to codec selection to address Quality of Service (QoS) impacts as well as resources for real-time media traversing the unmanaged public Internet.

The report does not describe the Session Initiation Protocol (SIP) call control signaling interworking procedures between interconnected VoIP SPs. The scope is limited to IP transport aspects only. Furthermore, automation regarding network discovery, including points of interconnection and telephone number ranges exchanged, is out of scope of this document.

### 1.2 Purpose

This report is intended to coexist with ATIS-1000063, *Joint ATIS/SIP Forum Technical Report – IP NNI Profile*, and expand on options available for SPs to leverage the public Internet for VoIP interconnection. The expansion of options available with the “non-facilities-based VoIP Interconnection” model described in this document that can be agreed to on a bilateral basis facilitates adoption of VoIP interconnect as well as support for STIR/SHAKEN protocols to combat robocalling.

## 2 References

The following standards and documents 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 Technical Report are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

- [Ref 1] ATIS-1000063 *Joint ATIS/SIP Forum Technical Report – IP NNI Profile*.<sup>1</sup>
- [Ref 2] RFC 2409 *The Internet Key Exchange (IKE)*.<sup>2</sup>
- [Ref 3] RFC 3711 *Secure Real-time Transport Protocol*.<sup>2</sup>
- [Ref 4] RFC 4306 *Internet Key Exchange (IKEv2) Protocol*.<sup>2</sup>
- [Ref 5] RFC 4568 *SDP Security Descriptions*.<sup>2</sup>
- [Ref 6] RFC 4949 *Internet Security Glossary, Version 2*.<sup>2</sup>
- [Ref 7] RFC 5246 *The Transport Layer Security (TLS) Protocol, Version 1.2*.<sup>2</sup>
- [Ref 8] RFC 5280 *Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile*.<sup>2</sup>

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

<sup>2</sup> Available from the Internet Engineering Task Force (IETF) at: < <https://www.ietf.org/> >.