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December 12, 2022

Martin Dolly
PTSC Chair

Re: ATIS Letter Ballot PTSC-LB-278 Closing Letter

Dear Martin:

ATIS Letter Ballot PTSC-LB-278, entitled "PTSC-LB-278, *draft proposed ATIS Standard, VoIP Interconnection over the Public Internet (ATIS-1000100)*" closed on December 9, 2022. The results are as follows:

14	Approvals Comments: Peraton Labs, Sinch, Ericsson
1	Disapprovals Comments: Neustar
10	Abstentions No comments
4	Ballots not returned
29	<hr/> Voting members

The comments received will be addressed by the committee at an upcoming meeting. Should the resolution(s) be substantive in nature, a default letter ballot will be issued. If there are no substantive edits to the document, it will move to publication.

Sincerely,

[Original signed by A. Karditzas]

Anna Karditzas
Coordinator, Global Standards Development

Cc:

V. Shaikh, PTSC Vice Chair
J. Wohlgemuth

ATIS Letter Ballot Comment Submittal Form and Consideration Report

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Letter Ballot: **PTSC-LB-278 (PTSC-2022-00071R000)**

Company Name: Neustar						
TO BE COMPLETED BY COMMENTER				TO BE COMPLETED BY SUB/COMMITTEE		
Auto#	Page/ Section/Line #	Comment	Rationale/Suggested Solution	Type ¹	Res. ²	Discussion/Explanation/Note (if comment is modified, accepted/modified via a separate ballot comment, or not accepted)
1	Abstract	When referring to “public internet”, I suggest we use “public Internet” or just “Internet”	Use “public Internet” and perhaps thereafter just “Internet” throughout			
2	Line 3	Redundant use of “interconnect”	Change “an interconnect profile” to “a profile”			
3	Lines 8-9	Use commas for qualifier	Change “discovery – including” to “discovery,” and “exchanged” to “exchanged,”			
4	Lines 13 and 15	No need to capitalize “Interconnection” or “Robocalling”	Change to “interconnection” (throughout in text) and “robocalling”			
5	Line 49	No “STI Certificate” definition	Either add or just delete “See also STI Certificate”			

¹ Type of change: Insert **S** or **NS**: Substantive (**S**) (see [ATIS OP Section A.6](#)) or Non-Substantive (**NS**)

² Resolution (how was comment considered): Insert **A**, **AM**, **N**, **I**, or **W**: Accepted (**A**), Accepted as Modified (**AM**), Not Accepted (**N**), For Information/No Action/Noted (**I**), or Withdrawn (**W**).

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6	Line 55	“Certificate Authority”	Change to “Certification Authority” here and throughout			
7	Line 66	No need to capitalize “Interconnected”	Change “Interconnected” (throughout in text) to “interconnected”			
8	Lines 64-66	Normative text	Suggest changing “must” and “shall” here so all normative text is in clause 5. “must” and “shall” here can simply be changed to “need to”			
9	Line 99	“Interconnect” - inconsistency	Change “Interconnect” to “interconnection”			
10	Line 116	“bi-lateral” – inconsistency	Use “bilateral” throughout in text			
11	Line 119	“Non-Facilities-Based VoIP interconnect interface” – inconsistency	Use “non-facilities-based VoIP interconnection interface” throughout in text			
12	Line 123	“from the LERG”	If this document is restricted in geography, then OK, but should spell out. Else, change “from the LERG” to “from a recognized industry routing data source” or something similar			
13	Line 134	“end entity” – inconsistency	Use “end-entity” throughout			
14	Line 145	Missing period	Add as “5.1.1.1.”			
15	Lines 158-159	Awkward	Move “requirements” to after “(TCP)” so “(TCP) requirements”			
16	Line 170	Extraneous period (inconsistency per bullets below)	Remove period			
17	Line 181	Extraneous comma	Remove comma			
18	Line 204	“Error!”	Resolve missing reference source			

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19	Line 209	“IPSec” and “IPSEC” – inconsistencies	Use “IPsec” throughout text and tables			
20	Line 217	“agreed-to” – inconsistency	Use “agreed to” throughout text			
21	Line 221	“with regard to” – wordy	Change “with regard to” to “for”			
22	Lines 240-242	Wordy	Change second half to “used, with the highest possible encryption by both sides.”			
23	Line 254	“Clause” – inconsistency	Use “clause” throughout text			

Other Information (e.g., Tables, Figures):

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Letter Ballot: *PTSC LB-278, VoIP Interconnection over the Public Internet*

Company Name: Peraton Labs						
TO BE COMPLETED BY COMMENTER				TO BE COMPLETED BY SUB/COMMITTEE		
Auto#	Page/Section/Line #	Comment	Rationale/Suggested Solution	Type ¹	Res. ²	Discussion/Explanation/Note (if comment is modified, accepted/modified via a separate ballot comment, or not accepted)
1	3-7	-This Technical Report describes an interconnect 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.	Removed leading blank space. Spell out first use of acronyms.			
2	8-11	The report does not describe the Session Initiation Protocol (SIP) call control signaling interworking procedures between interconnected VoIP Service	Spell out first use of acronyms. Use acronyms after they are previously spelled out.			

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		<u>Providers</u> SPs. <u>The scope is limited to IP transport aspects only.</u>	Clarification of scope – limited to IP transport only.			
3	14-18	This report is <u>intended</u> to coexist with ATIS-1000063, <i>Joint ATIS/SIP Forum Technical Report – IP NNI Profile</i> , as well as <u>It expands</u> the <u>on</u> options available for carriers <u>SPs</u> to leverage the public internet for VoIP Interconnection <u>by describing a profile for “non-facilities-based VoIP Interconnection”</u> . The expansion of options that <u>leverage the public internet</u> can be agreed to on a bilateral basis <u>and will is expected to</u> accelerate adoption of VoIP interconnect as well as support for STIR-SHAKEN protocols to combat Robocalling.	Suggested edits for improved readability. “carriers” → “SPs” for terminology consistency Can’t guarantee acceleration of VoIP interconnect adoption with use of “will”			
4	27	Move RFC 3711 reference down one position	Ascending order of RFCs.			
5	59	Definition of CA	Clause 3.1 defines CA = “Certification Authority”. Clause 5.1.1.2 says CA = “Certificate Authority”. Both are commonly used but we should pick one.			
6	69-71	First, strong authentication mechanisms must be in place to ensure that Interconnected SPs can identify each other. Second, call signaling and media shall <u>must</u> be encrypted to protect them from eavesdropping or manipulation via man-in-the-middle attacks while traversing the open internet.	Avoid use of “shall” in Overview section.			
7	93-94	SIP signaling across the interconnection interface is protected by Transport Layer Security (TLS) with mutual authentication.	Acronym is defined in previous section.			
8	Figure 4.1	The Figure implies only TLS over TCP is allowed, without any supporting text statement. Is TLS over Stream Control Transmission protocol (SCTP) allowed via bi-lateral agreement?	If allowed, indicate TLS over SCTP is allowed via bilateral agreement.			

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9	101-103	<p>Error! Reference source not found. shows the reference architecture for the non-facilities-based VoIP Interconnection model when the peering partners choose the IPsec option. SP-1 and SP-2 each deploy an Session Border Controller (SBC) at their interconnect point to support SIP signaling and media on the non-facilities-based VoIP Interconnect interface.</p>	Acronym is defined in previous section.			
10	125-128	<p>Each VoIP SP shall provide to its interconnection partner information that identifies its subject traffic, such as a list of assigned Operating Company numbers (OCNs) or Location Routing Numbers (LRNs). The peering SP then updates its local routing database so that calls destined to the subject Telephone Numbers (TNs) obtained from the Local Exchange Routing Guide (LERG) are routed to the VoIP SP.</p>	Spell out first use of acronyms.			
11	128	<p>The originating SP shall portability_ correct the called TN before routing the call to the terminating interconnection service.</p>	Hyphenate “portability correct”.			
12	133-136	<p>Peering SPs shall exchange domain name information that can be resolved via Domain Name System (DNS) to identify the SIP signaling IP addresses:ports of the SBCs that terminate the Non-Facilities-Based interconnection interface. For example, the domain name could be in the form of a sub-domain such as “my-peering-interface.VoIP-SPa.com” that is resolvable via DNS SeRvice record (SRV) or A/AAAA records</p>	Spell out first use of acronyms.			
13	139-141	<p>The TLS certificate shall contain the same domain name that the VoIP SP shared with its peer SPs as described in clause Error! Reference source not found..1.</p>	Incorrect cross-reference.			

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14		VoIP SPs may choose to leverage public DNS to maintain active IP addresses that have been pre-established for interoperability.	Clarification.			
15	163	SPs shall support the requirements Transport Layer Security (TLS) ...	Acronym is defined in prior section.			
16	163-165	SPs shall support the requirements for TLS over the Transmission Control Protocol (TCP) to transport all SIP signaling messages exchanged over the non-facilities-based VoIP interconnection interface as specified in the following specifications .	Reflects acceptance of #15. Clarification.			
17	172-174	While support for TLS at the peering SIP signaling interface is mandatory for the TLS option, support for the SIPS URI scheme is not required.	Edit for improved readability. Correction of typo.			
18	183-185	An SP compliant with this specification shall identify the TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 cipher suite as its first choice, followed by any optional cipher suites that it supports in order of decreasing preference.	Clarification.			
19	187-188	An SP shall not advertise support for other transports (UDP or TCP), via configuration of DNS Naming Authority Pointer Record (NAPTR) and/or SRV resource records.	Spell out first use of acronyms.			
20	207-208	SPs shall support SIP signaling over UDP transport, encapsulated within tunnel-mode IPsec to provide encryption, authentication, and integrity services to the SIP signaling .	Clarification for improved readability.			
21	239-241	In addition, SPs may utilize modern codec technology that incorporates the use of adaptive bit-rate support and forward error correction techniques to tolerate the	Edits for improved readability. Typo correction.			

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		potential of -varying congestion levels encountered on the public internet.			
22	242-243	Absent a specific arrangement, SPs shall at a minimum support negotiation of G.711 μ -law at the NNI and <u>shall</u> provide any needed transcoding capability within its <u>their</u> networks.	Extension of “shall” for clarification. Edits for improved readability.		
23	246-248	SRTP may be supported by bilateral agreement, and if so, the following algorithms should be supported, with highest-strongest possible encryption supported by both sides preferred. Error! Reference source not found. lists algorithms from top to bottom in order of decreasing security. is listed bottom to top in order of increasing security.			

Other Information (e.g., Tables, Figures):

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Letter Ballot: **[PTSC-LB-278]**

Company Name: [Sinch]				TO BE COMPLETED BY COMMENTER			TO BE COMPLETED BY SUB/COMMITTEE		
Auto#	Page/Section/Line #	Comment	Rationale/Suggested Solution	Type ¹	Res. ²	Discussion/Explanation/Note (if comment is modified, accepted/modified via a separate ballot comment, or not accepted)			
1	6/5.1.1.1 /128-131	Peering SPs shall exchange domain name information that can be resolved via DNS to identify the SIP signaling IP addresses:ports of the SBCs that terminate the Non-Facilities-Based interconnection interface. For example, the domain name could be in the form of a sub-domain <u>fully-qualified domain name (FQDN)</u> such as “my-peering-interface.VoIP-SPa.com” that is resolvable via DNS SRV or A/AAAA records.	An FQDN is resolvable via SRV and/or A/AAAA records. A sub-domain may have additional levels of tags that would be needed to make a name resolvable.						
2	6/5.1.1.2 /134-138	Each SP shall obtain a TLS end entity certificate from a bilaterally agreed Certificate Authority (CA). The TLS certificate shall contain the <u>a domain name pattern (individual FQDN, multiple FQDNs, or name with a wildcard value (“*”) in the</u>	There are multiple Subject forms that can cover a particular domain name endpoint.						

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		<p><u>left-most tag) covering the same</u> domain name that the VoIP SP shared with its peer SPs as described in clause Error! Reference source not found. The domain name <u>pattern</u> shall be carried in either the Subject Alternate Name extension using the dNSName form [RFC 5280, <i>Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile</i>], or in the Common Name (CN=) attribute of the Subject field of the TLS certificate.</p>				
3						
4						

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Letter Ballot: [PTSC-LB-278]

Company Name: [Ericsson]				TO BE COMPLETED BY COMMENTER			TO BE COMPLETED BY SUB/COMMITTEE		
Auto#	Page/Section/Line #	Comment	Rationale/Suggested Solution	Type ¹	Res. ²	Discussion/Explanation/Note (if comment is modified, accepted/modified via a separate ballot comment, or not accepted)			
1	1/1.1/line 3	Remove extra space before the word “The” at the beginning of the line							
2	1/1.1/lines 3-7	Spell out first occurrence of acronyms	Change to: This Technical Report describes an interconnect profile for <u>Voice over Internet Protocol (VoIP)</u> Service Providers (<u>SPs</u>) who choose to interconnect over the public internet. It recommends mechanisms for establishing <u>Internet Protocol (IP)</u> connectivity, securing the signaling and media, and proposing bilateral agreements with respect to codec selection to address <u>Quality of Service (QoS)</u> impacts as well as resources for real-time media traversing the unmanaged public internet.						

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			The report does not describe the <u>Session Initiation Protocol (SIP)</u> interworking procedures between interconnected VoIP Service Providers <u>SPs</u> .			
3	1/1.1/ lines 8-9	Replace hyphen with commas	Change to: Furthermore, automation regarding network discovery, including points of interconnection and telephone number ranges exchanged, is out of scope of this document			
4	1/1.1/ line 15	For consistency with FCC conventions, change "STIR-SHAKEN" to STIR/SHAKEN" and make "Robocalling" lower case	Change to: for STIR-/SHAKEN protocols to combat Robocalling <u>robocalling</u>			
5	2/3.2/ line 55	Corrections/additions needed to acronym list	Change to: CA Certificate-Certification Authority NAPTR Naming Authority Pointer Record Add: <u>SIPS SIP Secure</u>			
6	4/4/ line 59	Re-use previously expanded acronym	Change to: VoIP Service Providers ("SPs") traditionally interconnect through . . .			
7	4/4/ line 71	Reword to improve clarity	Change to: bit-rate support and forward error correction techniques to tolerate the potential of varying congestion levels . . .			
8	5/4.1.2/ line 98	Re-use previously expanded acronym	Change to: SP-1 and SP-2 each deploy an Session Border Controller (SBC) at their . .			

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9	5/4.1.2/ line 101	Reword to improve clarity	Change to: by streaming within the same IPsec tunnel as <u>is</u> used for signaling or <u>by</u> using SRTP if outside the IPsec tunnel. . .			
10	6/5.1/ lines 122-123	Spell out first occurrence of acronyms	Change to: of assigned <u>Operating Company Numbers (OCNs)</u> or <u>Location Routing Numbers (LRNs)</u> . The peering SP then updates its local routing database so that calls destined to the subject <u>Telephone Numbers (TNs)</u> obtained from the <u>Local Exchange Routing Guide (LERG)</u> are routed to the VoIP SP.			
11	6/5.1/ line 123	Add hyphen	Change to: The originating SP shall portability <u>portability</u> -correct the . . .			
12	6/5.1.1.1/ line 128	Spell out first occurrence of acronym	Change to: Peering SPs shall exchange domain name information that can be resolved via <u>Domain Name System (DNS)</u> to identify the SIP signaling			
13	6/5.1.1.1/ line 131	Spell out first occurrence of acronym	Change to: via DNS <u>SeRVice record (SRV)</u> or A/AAAA records.			
14	6/5.1.1.2/ line 134	Spell out first occurrence of acronym	Change to: Each SP shall obtain a TLS end entity certificate from a bilaterally agreed Certificate-Certification Authority (CA).			
15	6/5.1.1.2/ lines 135-136	Reword to improve clarity	Change to: certificate shall contain the same domain name <u>as the one</u> that the VoIP SP shared with its peer SPs as described in clause 5.1.1. <u>1</u> .			

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16	6/5.2/ line 148	Reword to improve clarity	Change to: IPs <u>IP addresses</u> that have been pre-established for interoperability			
17	6/5.2.2/ line 152	Reference is to a document, not a section of the document	Change to: <u>Clause 6.0, Call Features, of</u> ATIS-1000063 Clause 6.0, Call Features, [Ref 1] describes . . .			
18	7/5.2.2.1/ line 158	Re-use previously expanded acronym and reword for clarity	Change to: SPs shall support the requirements <u>for</u> Transport Layer Security (TLS) over the Transmission Control Protocol (TCP)			
19	7/5.2.2.1/ line 168	Spell out first occurrence of acronyms	Change to: support for <u>the SIP Secure (SIPS) Uniform Resource Identifier (URI)</u> scheme is not required.			
20	7/5.2.2.1/ lines 181	Spell out first occurrence of acronym	Change to: An SP shall not advertise support for other transports (UDP or TCP), via configuration of DNS <u>Naming Authority Pointer (NAPTR)</u> . . .			
21	7/5.2.2.1/ line 197	Replace “section” with “clause”	Change to: as described in section <u>clause</u> 7.4 of RFC 5922 [Ref 11].			
22	8/5.2.2.2/ line 204	Align Table cross-reference with table numbering	Change to: Table 5-15.1 lists the minimum set of IPsec and Internet Key Exchange (IKE) [RFC 2409,			
23	8/5.2.3/ line 221	Reference is to a document, not a section of the document	Change to: <u>Clause 5.0, General Procedures of</u> ATIS-1000063 Clause 5.0, General Procedures [Ref 1], describes			

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24	8-9 /5.2.3.2/ lines 230-232	Reference is to a document, not a section of the document	Change to: The support of codecs as specified in <u>Clause 5.5.1 of ATIS-1000063</u> Clause 5.5.1 [Ref 1] applies to SP Non-Facilities-Based VoIP interconnections. <u>Clause 5.5.3 of ATIS-1000063</u> Clause 5.5.3 [Ref 1] applies to this profile . . .			
25	9/5.2.3.2/ line 234	Reword to improve clarity	Change to: adaptive bit-rate support and forward error correction techniques to tolerate the potential of varying congestion			
26	9/5.2.3.3/ lines 241-242	Reword to improve clarity	Change to: highest possible encryption supported by both sides preferred. Table 5.2 is <u>entries are listed in order of decreasing bottom to top in order of increasing</u> security.			
27	9/5.2.3.3/ lines 247-248	Add comma; spell out first occurrence of acronym	Change to: By bilateral agreement, NNI elements supporting SRTP may utilize <u>Datagram Transport Layer Security (DTLS)</u> -based SRTP key and cryptography . . .			

Other Information (e.g., Tables, Figures):