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2021 10 28

To: Mr. Claude Doucet  
Secretary General  
Canadian Radio-television and  
Telecommunications Commission  
Ottawa, Ontario  
K1A 0N2

Subject: **Urgent and Expedited request for a Commission direction deferring the effective start date for the application of the STIR/SHAKEN condition from CETD 2021-123 to NG9-1-1 voice calls pending the development of milestones to be determined by the CISC ESWG and the CISC NTWG as may be approved by the Commission**

Dear Mr. Doucet,

## 1.0 **INTRODUCTION**

1. The Emergency Services Working Group (ESWG) and the Network Working Group (NTWG) CRTC Interconnection Steering Committee (CISC) Committees, supported by Bell, SaskTel and TELUS, hereby jointly request the Commission's deferral, on an urgent and expedited basis, of the application of the STIR/SHAKEN Condition<sup>1</sup> to certain 9-1-1 voice calls as set out below. In short:

- (a) The STIR/SHAKEN Condition is set to come into force on 30 November 2021 and applies to all Internet Protocol (IP)-based voice calls;
- (b) No specific exemption for STIR/SHAKEN currently applies to 9-1-1 Emergency Calls and Emergency Callbacks;
- (c) Next-generation 9-1-1 (NG9-1-1) service providers are expected to begin carrying live NG9-1-1 traffic, consisting of IP-based voice calls, as early as January 2022; and
- (d) In the absence of specific standards with respect to the application of the STIR/SHAKEN framework to emergency 9-1-1 calls, there is a risk that the application of STIR/SHAKEN to 9-1-1 calls could result in the misidentification of 9-1-1 calls as spoofed or misidentified calls, thereby creating confusion for the public safety answering point (PSAP) answering the call, or worse, a risk that legitimate 9-1-1 calls could be dropped.

2. Given the potential for misidentified or dropped 9-1-1 calls, we respectfully request that the Commission defer the application of the STIR/SHAKEN Condition to all 9-1-1 calling from end-users to PSAPs as well as Callbacks from PSAPs to end-users until standards are developed and finalized and adopted by the vendor community in both the telecommunications and emergency communications fields.

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<sup>1</sup> In Compliance and Enforcement and Telecom Decision CRTC 2021-123, *STIR/SHAKEN implementation for Internet Protocol-based voice call* (CETD 2021-123), at paragraph 22, the Commission directed as follows: "... pursuant to sections 24 and 24.1 of the Act, the Commission directs that, as a condition of offering and providing telecommunications services, TSPs must implement STIR/SHAKEN in order to authenticate and validate IP-based voice calls", effective 30 November 2021 (hereinafter, the STIR/SHAKEN Condition).

## 2.0 BACKGROUND

3. In CETNC 2019-404<sup>2</sup>, the Commission called for comments on its proposal to require Canadian carriers and telecommunications service providers (TSPs) providing voice services to implement an authentication and verification protocol. The referenced authentication protocol is the Secure Telephony Identity Revisited/Signature-based Handling of Asserted information using toKENs framework (STIR/SHAKEN). In CETNC 2019-404, the Commission sought comments on its proposal to apply the STIR/SHAKEN framework to IP-based voice calls as a condition of offering and providing telecommunications services pursuant to sections 24 and 24.1 of the *Telecommunications Act*.

4. On 8 October 2020, at the ESWG monthly working group call, concerns were raised about the application of the STIR/SHAKEN framework to Emergency Calls and Emergency Callbacks. With Commission Staff present, the NTWG Chair and some NTWG members in attendance took part in the discussion. The NTWG brought the issue back to its working group for further discussion and action. It was agreed on this call that the ESWG Chair would file a letter with the Secretary General to raise these issues with the Commission.

5. On 15 December 2020, the ESWG filed the aforementioned agreed upon letter with the Commission. The ESWG's 15 December 2020 letter requested the Commission's guidance regarding the potential application of the STIR/SHAKEN authentication framework to Emergency Calls by members of the public to PSAPs and Emergency Callbacks from PSAPs back to members of the public having placed such 9-1-1 calls. The application of the STIR/SHAKEN framework was then "potential" because the Commission's consideration of what would ultimately become the STIR/SHAKEN Condition was still pending. Nevertheless, the ESWG's 15 December 2020 letter noted that "there are special considerations related to (i) unique signaling characteristics and (ii) unique architectural characteristics of emergency calling that must be taken into account, especially with the upcoming launch of the all IP-based next-generation 9-1-1 (NG9-1-1) service in Canada." The ESWG also expressed concerns about the lack of technical standards for applying the STIR/SHAKEN framework to NG9-1-1 calling and stated that the absence of such standards could "lead to varied interpretations as to whether or not Emergency Calls and Emergency Callbacks are in scope, leading to varied implementations, which would leave the PSAPs with uneven support of verification status from originating network providers."

6. On 18 May 2021, Commission Staff (rather than the Commission) responded to the concerns raised in the ESWG's 15 December 2020 letter. Commission Staff's 18 May 2021 response letter:

- Noted the Commission had issued CETD 2021-123 on 6 April 2021;
- Clarified that the STIR/SHAKEN Condition obliges Canadian TSPs to apply the STIR/SHAKEN protocol only to voice calls, and only when such voice calls are transmitted over the Internet protocol (IP) portion of their networks rather than over their the non-IP portions of their networks;
- Confirmed the Commission had not yet directed that any particular technical standards, from either the Internet Engineering Task Force (IETF) or the Alliance for Telecommunications Industry Standards (ATIS), be adopted and that the EITF standard for STIR/SHAKEN Emergency calls was then in only the draft stage;
- Noted it was the responsibility of TSPs participating in the NTWG's TIF 37 and TIF 40 working groups to closely monitor the evolution and development of the relevant STIR/SHAKEN standards; and

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<sup>2</sup> Compliance and Enforcement and Telecom Notice of Consultation CRTC 2019-404, *Call for comments – Authentication/verification measures for caller identification for IP-based voice calls – Implementation of STIR/SHAKEN framework*.

- Expressed the expectation that TSPs would continue to "extend" the STIR/SHAKEN framework to include "other capabilities", including the handling of emergency calls, and stated that developments would be monitored by Commission Staff through the TSPs' semi-annual STIR/SHAKEN implementation status reports.
- 7. On 25 May 2021, the CISC approved report NTRE070 from the NTWG TIF 40 working group, entitled "Framework for STIR/SHAKEN in Canada". Report NTRE070 aligned with Commission Staff's expectation, expressed in its 18 May 2021 letter, by having monitored and reported upon the evolution of the relevant STIR/SHAKEN standards. Report NTRE070 identified that emergency services were not yet supported by standards (let alone vendors' equipment) and therefore expressed the conclusion that emergency services could not be part of the initial implementation of STIR/SHAKEN.<sup>3 4</sup>
- 8. It bears re-emphasizing that Commission Staff's 18 May 2021 response letter fell short of the Commission guidance sought by the ESWG about how TSPs and NG9-1-1 service providers should implement and apply the STIR/SHAKEN framework to NG9-1-1 voice calls from the public to PSAPs and Callbacks to the public from PSAPs, in the absence of agreed-upon standards (or indeed in the absence of lab and field-tested equipment).
- 9. This lack of Commission guidance took on even greater operational significance on 14 June 2021, with the Commission's issuance of Decision 2021-199<sup>5</sup>. Decision 2021-199 directed NG9-1-1 network providers to establish their NG9-1-1 networks, complete all NG9-1-1 production onboarding activities and be ready to provide NG9-1-1 voice services, wherever PSAPs have been established in a particular region. Decision 2021-199 also directed all TSPs to make the necessary changes to support NG9-1-1 voice services and complete all production onboarding and testing. The Commission established 1 March 2022 as the deadline for TSPs and NG9-1-1 network providers to implement these directives. Decision 2021-199 establishes 4 March 2025 as the deadline for NG9-1-1 network providers to decommission their existing 9-1-1 network components that will not form part of their NG9-1-1 networks.
- 10. Once the STIR/SHAKEN Condition became applicable to NG9-1-1 voice calling, on 14 June 2021, in effect a regulatory void crystalized. That void calls into question how the STIR/SHAKEN framework applies, starting on its 30 November 2021 coming into force date, to NG9-1-1 voice calls as TSPs operationalize NG9-1-1 calling to meet the 1 March 2022 implementation deadline, given the evolving and still-incomplete technical standards (and absence of lab and field tested equipment) to apply STIR/SHAKEN to NG9-1-1 and E9-1-1 voice calling. NG9-1-1 service providers are anticipated to start carrying live NG9-1-1 traffic as early as January 2022 to meet this deadline.
- 11. Since the 14 June 2021 issuance of Decision 2021-199, further discussions have occurred and emails have been exchanged between the ESWG and Commission Staff.
- 12. On 17 September 2021, the ESWG again wrote to the Commission. The key request raised in the ESWG's 17 September 2021 letter was for a statement, from the Commission, "clearly indicat[ing] that, until such time standards are fully developed and implemented STIR/SHAKEN procedures should not be applied to Emergency Calling and Emergency

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<sup>3</sup> Please see Report NTRE070, at paragraphs 15, 19 and 20. The Executive Summary of Report NTRE070 stated: "This means the industry could initially deploy STIR/SHAKEN in support of simple point-to-point SIP calls by mid-2021 but not the updated, new and emerging standards".

<sup>4</sup> Subsequently, the NTWG's TIF 40 working group issued guidelines for the first phase of STIR/SHAKEN, with the issuance of Report NTRE072, entitled "STIR/SHAKEN Guidelines Version 1.0", which was approved by the CISC Steering Committee on 27 August 2021. Like Report NTRE070, Report NTRE072 also identified (at line 515) emergency services as unsupported.

<sup>5</sup> Telecom Decision CRTC 2021-199, *Establishment of new deadlines for Canada's transition to next-generation 9-1-1*.

Callbacks." ESWG's 17 September 2021 letter was prompted by the fact that, contrary to the recommendations of the industry in Reports NTRE070 (dated 26 February 2021) and NTRE072 (dated 20 May 2021), Commission Staff had indicated its expectation that the STIR/SHAKEN Condition would apply to NG9-1-1 calls, without providing any of the previously requested regulatory guidance as to how this should be accomplished in the absence of comprehensive and finalized technical standards and fully lab and field-tested equipment and software from vendors. In the following paragraphs we briefly review the currently evolving and incomplete status of technical standards for the application of the STIR/SHAKEN framework to NG9-1-1 calling and the risks associated with these nascent and incomplete standards.

13. The key point emerging from this summary, which omits descriptions of each of the many emails and telephone calls exchanged between the relevant committees and Commission staff throughout this period, is to demonstrate the consistent and persistent communication of the ESWG's and NTWG's concerns, since 8 October 2020, regarding the application of the STIR/SHAKEN framework to Emergency Calls and Emergency Callbacks, in the absence of complete and uniform technical standards. The summary demonstrates that the issues raised in this letter are far from "last minute" concerns, having been raised repeatedly over the past 12 months, both via the ESWG and NTWG CISC Committees, in multiple letters and Reports.

14. Indeed, with the STIR/SHAKEN Condition now due to come into force in approximately one month, on 30 November 2021, TSPs and 9-1-1 network providers have an urgent need to know how to navigate this regulatory void. It is submitted that the most efficient and reasonable way of doing so, at least for the time being, is for the Commission to direct that the 30 November 2021 coming into force date for the STIR/SHAKEN Condition be deferred for certain categories of NG9-1-1 and legacy enhanced 9-1-1 (E9-1-1) calling, pending the attainment of certain milestones to be established by the CISC and approved by the Commission.

### **3.0 THE RISKS OF APPLYING THE STIR/SHAKEN CONDITION TO NG9-1-1 CALLS TO AND FROM PSAPS IN THE ABSENCE OF AGREED UPON STANDARDS**

15. At the time the ESWG's 15 December 2020 letter was filed with the Commission, the standards work related to the application of STIR/SHAKEN framework to inbound and outbound calls to and from PSAPs were still very much in exploration mode.

16. On 6 April 2021, ATIS published Technical Report ATIS-0700048 - *Study of SHAKEN Impacts on 9-1-1 Calls and Callback Calls*,<sup>6</sup> which studies the impacts of applying STIR/SHAKEN Caller Identity authentication and verification, as well as Resource-Priority header and SIP Priority header signing to 9-1-1 and Callback calls from the viewpoint of TSPs. This Technical Report highlights technical and standards gaps in ATIS and 3GPP standards as they apply to NG9-1-1 calls.

17. The National Emergency Number Association (NENA) is the standards organization for emergency services in North America. On 7 October 2021, NENA published ANSI-accredited NENA-STA-010.3a<sup>7</sup>, also known as NENA i3 version 3 (NENA i3). The Commission approved NENA i3 as the reference standard for the establishment of NG9-1-1 in Canada in Decision 2015-531<sup>8</sup>. The recently published NENA i3 incorporates the foundational elements to support the application of STIR/SHAKEN procedures on received Emergency Calls and originated

<sup>6</sup> See ATIS abstract available online at: <https://www.google.com/url?esrc=s&q=&rct=j&sa=U&url=https://www.techstreet.com/products/preview/2218795&ved=2ahUKEwidnrVJ0N7zAhWjl2oFHa3vBxEQFnoECAAQAg&usq=AOvVaw3p8HcqGaefBHTVvZfmGy9f>

<sup>7</sup> See: ANSI Approves NENA's i3 Standard for Next Generation 9-1-1, online at: <https://www.nena.org/news/582667/ANSI-Approves-NENAs-i3-Standard-for-Next-Generation-9-1-1.htm>

<sup>8</sup> Telecom Decision CRTC 2015-531, *CISC Emergency Services Working Group – Consensus report regarding a Next-Generation 9-1-1 network architecture standard for Canada*.

Emergency Callbacks from the viewpoint of NG9-1-1 network providers. However, the standard clearly indicates that "further work outside of NENA is required" to fully support these capabilities. As standards work matures outside of NENA, these will be incorporated in a future revision of NENA i3. No date has been set for this update yet.

18. In addition, it remains unclear how and when PSAP standards will support STIR/SHAKEN on Emergency Calls and Emergency Callbacks. No such standards have been published to date by NENA.

19. At this time, some of the standards gaps have been resolved with the recent publication of new and updated standards, but not all are completed. Please see the attached Appendix for the list of new and updated standards and their status with respect to applying the STIR/SHAKEN framework to Emergency Calls and Emergency Callbacks.

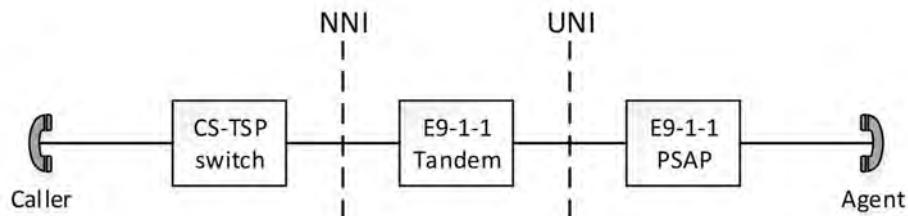
20. While standards work is well underway, there are still gaps that need to be filled prior to applying the STIR/SHAKEN framework to Emergency Calls and Emergency Callbacks in a consistent standards-based fashion end-to-end. Further, the vendor communities will require time to develop their products and services to incorporate new standards. The typical lead-time required is between 18 and 24 months following the publication and adoption of a technical standard.

21. It is important to consider the various use cases where the lack of universal standards could result in NG9-1-1 and legacy E9-1-1 call failures. Before doing so, it is helpful to provide a brief description explaining the 9-1-1 calling model that helps to place these use cases in context.

22. Legacy E9-1-1 architecture was designed to ensure 9-1-1 calls are setup and processed as fast as possible. A key difference between the 9-1-1 calling model and peer-to-peer calling is that 9-1-1 calls originating from TSPs are sent directly to the E9-1-1 network through dedicated facilities. There is no transit network, no Local Number Portability (LNP) "dip", no SS7 trigger and no Advanced Intelligent Network (AIN) trigger.

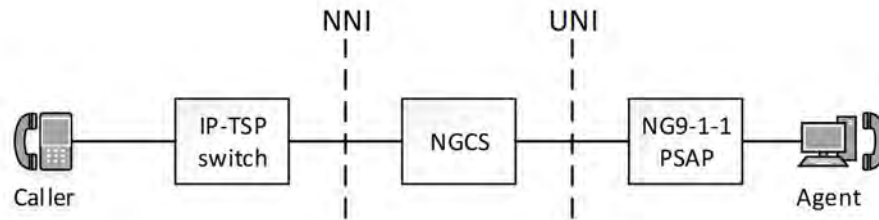
23. While peer-to-peer call processing at the TSP is usually based on the destination number, 9-1-1 calls are routed to the E9-1-1 tandem switch based on the origination of the call (i.e., the NPA-NXX) and for wireless networks, based on the location of the cellular tower that picked up the call (converted into an Emergency Service Routing Digit, or ESRD). The E9-1-1 tandem switch then selectively routes the 9-1-1 call to the designated PSAP serving the caller.

24. This three-tier approach (i.e., TSP to E9-1-1 network to PSAP) limits delays in call processing end-to-end. It is illustrated in Figure 1 below.



**Figure 1 – Three-Tier 9-1-1 Calling Model in Legacy E9-1-1**

25. This model has been retained with NG9-1-1 in Canada, as illustrated by Figure 2.



**Figure 2** – Three-Tier 9-1-1 Calling Model in Modern NG9-1-1

26. 9-1-1 calling differs from peer-to-peer calling in another key aspect. In normal circumstances, 9-1-1 calls are processed and routed to the closest PSAP serving the physical location of the caller. In Figures 1 and 2, the Caller making the 9-1-1 call and the responding PSAP would typically be in the same municipality. The emergency responders, police, fire and ambulance (not shown above), would also be local to the caller. This type of call processing requires special software in the 9-1-1 network, as it differs from normal peer-to-peer call processing. In the wireless world, where international and domestic roaming is available, Emergency Calls made in a wireless visited network never leave the visited network and are instead processed and routed to the local 9-1-1 network without going back to the home network.

27. Another distinguishing feature of E9-1-1 that makes it different from peer-to-peer is that "911" is not a globally routable telephone number; it is a national variant that cannot be expressed in an ITU-T Recommendation E.164 format. This becomes relevant when applying the STIR/SHAKEN framework to IP-based 9-1-1 calls. According to the standards, the impossibility to convert to E.164 prevents the codification of the destination number. In practical terms, this means a dialed call consisting of the three digits "911" cannot be verified at the Secure Telephone Identity – Verification Service (STI-VS) because it cannot currently be coded by the Secure Telephone Identity – Authentication Service (STI-AS).

28. With NG9-1-1 calling, evolving but not yet final standards stipulate that "911" dialed calls be presented to the NG9-1-1 network with a service Universal Resource Name (URN) of 'urn:service:sos', rather than in their native dialed number form. Until recently, this form of a destination was not allowed in STIR/SHAKEN. Certain standards remain under development, while none of the published finalized standards has been implemented by vendors yet.

29. NG9-1-1 networks in turn, differ significantly from their predecessor E9-1-1 networks. The latter are based on telephony standards and platforms, and as such, use telephone numbers as a primary means to process E9-1-1 calls. In sharp contrast, NG9-1-1 is based on IP standards and the NG9-1-1 networks are fully IP-based. NG9-1-1 networks do not use telephone numbers to process 9-1-1 calls. In fact, NG9-1-1 networks do not understand telephone numbers and merely use them to provide NG9-1-1 PSAPs with a means to reach back to the caller. This key difference called for changes and additions to standards so that the singular characteristics of NG9-1-1 calling are supported in relation to STIR/SHAKEN.

30. There is further uncertainty when it comes to PSAP Callbacks. A PSAP Callback is an outbound call originated by an agent at the PSAP to a caller that previously made a 9-1-1 call into that PSAP. PSAP Callbacks are necessary when the 9-1-1 caller is disconnected before the agent was able to collect and record all the relevant information needed to properly process the Emergency Call.

31. In the case of interactions between legacy public switched telephone network (PSTN) wireline networks and E9-1-1 networks, features are available to the E9-1-1 PSAP to maintain the connection with a caller that disconnected and to re-invite the caller back into the call. These

are known as PSAP Call Control features. These features seldom resulted in premature call disconnection. However, with the advent of wireless, which does not support PSAP Call Control Features, the number of calls being prematurely dropped increased exponentially as the number of wireless devices increased<sup>9</sup> due to pocket dials, loss of signal, etc. Emergency Callback became an important capability to PSAPs largely because of wireless.

32. The key point is that with legacy E9-1-1, all PSAP-originated Callbacks are handled as regular outbound calls through the PSTN. Most TSPs process these calls as normal peer-to-peer calls, without any special treatment or priority. These Callbacks are subject to user-defined features, such as voicemail and call-forward, sometimes preventing the PSAP agent from reaching the caller in a timely manner. In contrast, NG9-1-1 allows a PSAP callback to be directly routed to the IP-capable originating network that serves the 9-1-1 caller through the NG9-1-1 IP network-to-network interface (NG9-1-1 IP-NNI) established to deliver calls to the ESInet/NG9-1-1 Core Services (NGCS). These calls can be tagged as "psap-callback"<sup>10</sup>, which, once the standards are in place, will allow a TSP to apply special treatment to such calls. Wireless service providers (WSPs) operating IP-capable networks noted that Callbacks over the NG9-1-1 IP-NNI would not be possible before Q2 2023<sup>11</sup>. Once the standards are finalized STIR/SHAKEN will allow NG9-1-1 Callbacks to have the "psap-callback" tag signed so that it cannot be abused.

33. NG9-1-1 PSAPs' call interfaces are not assigned telephone numbers. It is therefore unclear to what extent, if any, PSAP Callbacks are capable of being assigned STIR/SHAKEN authentication. Standards work is required to define this.

34. STIR/SHAKEN is rooted in IP communications standards. One of its foundational standards is the IETF RFC 3261 - *SIP: Session Initiation Protocol*. SIP is a very powerful and flexible signalling protocol that became mainstream for IP-based communications in the last decade or so, displacing its predecessor, ITU-T H.323.

35. SIP functions hop-by-hop, meaning that SIP messages are read, inspected and processed every step of the way between call origination and call destination.

36. Experience in the field demonstrates that the SIP standards are not always implemented by vendors to the same level, which created, and continues to create, interoperability issues. Even if all implementations can claim to be SIP-compliant, there are cross-sections of SIP that are not necessarily supported by different vendors. These interoperability issues have led to numerous impacts to the SIP-based calls, some minor but some leading to failing calls.

37. It is impossible to predict precisely what would happen if non-standard solutions are implemented, but calls would inevitably be impacted at one or more points on the path. Following are some examples of situations that may arise and the potential outcomes.

38. As mentioned above, 9-1-1 calls originating from an IP Multimedia Subsystem (IMS) IP-capable network and destined to an NG9-1-1 network are presented as 'urn:service:sos' rather than via the usual dialled digits.<sup>12</sup> However, the ATIS-1000074E standard, on which current vendor implementations are based, only supports dialed digits. The two standards are therefore incompatible and will remain so until ATIS reconciles them and vendors implement the revised standard(s). As noted above, this process typically takes between 18 to 24 months to complete and deliver a General Availability (GA) product to market. In the meantime, if an IMS IP-capable TSP were to apply the STIR/SHAKEN framework to an emergency 9-1-1 call, in conformity with

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<sup>9</sup> More than 75 per cent of emergency 9-1-1 calls are now made from wireless devices in Canada.

<sup>10</sup> Defined in the IETF standard RFC 7090.

<sup>11</sup> See Contribution ESCO0689b to the ESWG.

<sup>12</sup> See ATIS-0700015.v004 standard, entitled "ATIS Standard for Implementation of 3GPP Common IMS Emergency Procedures for IMS Origination and ESInet/Legacy Selective Router Termination."

the STIR/SHAKEN Condition starting on 30 November 2021, the call could fail (e.g., be dropped) or be passed to a PSAP with an indication that a telephone number could not be verified (i.e., a "false negative", which would defeat the purpose of applying STIR/SHAKEN to 9-1-1 calls).

39. Another problematic use case relates to the size of the signalling message. Experience in the field acquired through testing demonstrates that some PSAPs' NG9-1-1 implementations were sensitive to the size (in bytes) of the SIP messages, and test calls were dropped as a result.<sup>13</sup> STIR/SHAKEN adds more information which would make those SIP messages even larger. Depending on the capacity of the NG9-1-1 PSAP implementations, the addition of STIR/SHAKEN certificates may lead to dropped NG9-1-1 calls. PSAPs will require time to accommodate the larger messages.

40. TSPs and NG9-1-1 network providers cannot risk applying the STIR/SHAKEN framework to calls originating from their end-users to PSAPs and Callbacks from PSAPs back to end-users, until all of the relevant standards are finalized and the vendor community has operationalized fully tested software and equipment in conformity with these standards.

#### **4.0 THE APPLICATION OF THE STIR/SHAKEN CONDITION SHOULD BE INDEFINITELY DEFERRED FOR CALLS TO LEGACY E9-1-1 NETWORKS**

41. The absence of STIR/SHAKEN standards applicable to Emergency Calls described above holds true for both legacy E9-1-1 networks and NG9-1-1 networks. However, the planned migration from legacy E9-1-1 to NG9-1-1 is an additional reason to defer the application of the STIR/SHAKEN Condition to legacy E9-1-1 networks.

42. In Decision 2021-199, the Commission required that incumbent local exchange carriers (ILECs) decommission their current 9-1-1 network components by 4 March 2025, or sooner. In order to achieve this due date, emergency calling traffic must be migrated to NG9-1-1, leaving a declining demand for legacy E9-1-1. The application of the STIR/SHAKEN framework to legacy E9-1-1 networks would therefore only serve to divert finite TSP and PSAP resources from the ultimate objective of operationalizing the advanced and growing NG9-1-1 platform to what will shortly become an obsolete legacy E9-1-1 platform. Given that it could take one to two years before standards for applying STIR/SHAKEN to legacy platforms may be finalized and incorporated into vendor products, if at all, any resources diverted toward attempting to apply the STIR/SHAKEN framework to legacy E9-1-1 services would have been largely wasted.

43. In any event, it is uncertain whether Decision 2021-123, with its focus on IP calls, would ever apply to E9-1-1 calls, because E9-1-1 networks are time-division multiplexing (TDM)-based. Even if a STIR/SHAKEN authentication certificate was added to an IP 9-1-1 call before it was sent to the E9-1-1 network, it would be lost when the call was converted to TDM and would be unavailable to the PSAP. For this reason, and due to the potential for wasted resources, described above, the application of the STIR/SHAKEN Condition to legacy E9-1-1 networks should be indefinitely deferred.

#### **5.0 REQUEST**

44. For all of the foregoing reasons, the undersigned CISC Chairs, with the support of the 9-1-1 service providers hereby request the following directions from the Commission:

<sup>13</sup> NG9-1-1 messages are longer than those for peer-to-peer calls because NG9-1-1 calls often carry the location of the call in the body of the SIP call setup message.



- a) In light of the absence of technical standards to minimize the potential for dropped or misidentified emergency 9-1-1 calls resulting from the application of the STIR/SHAKEN Condition, the Commission defers the application of the STIR/SHAKEN Condition to all 9-1-1 calling from end-users to PSAPs and Callbacks from PSAPs to end-users. Such deferral applies indefinitely with respect to E9-1-1 networks and according to the following milestones with respect to NG9-1-1 networks:
- (i) The Commission will task the relevant CISC Committees to continue to monitor the standards work related to the application of the STIR/SHAKEN framework to NG9-1-1 calls and Callbacks, as well as the adoption of such standards by the vendor community, in both the telecommunications and emergency communications fields;
  - (ii) The relevant CISC Committees will report to the Commission semi-annually on the matters listed in paragraph (a)(i) in a form to be determined by the Commission, and file such reports coincident with the semi-annual reporting dates prescribed by the Commission in CETD 2021-123<sup>14</sup> for TSPs to provide their STIR/SHAKEN implementation status reports (e.g., on 31 May and 30 November); and
  - (iii) The Commission's deferral of the application of the STIR/SHAKEN Condition applies until such time as the relevant CISC Committees report and recommend the application of the STIR/SHAKEN framework to NG9-1-1 calling as may be approved by and subject to such conditions as the Commission considers appropriate.

45. The undersigned appreciate the Commission's urgent attention to this matter given the fast-approaching 30 November 2021 coming into force date of the STIR/SHAKEN Condition. We would be pleased to respond to any follow up questions or requests for clarification.



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Attachment

c.c. Steven Harroun, CRTC  
Alain Garneau, CRTC  
Étienne Robelin, CRTC ESWG Contact  
James Ndirangu, CRTC NTWG Contact

<sup>14</sup> See CETD 2021-123, paragraph 23.

## RELEVANT STANDARDS

Following is a list of recent standards relevant to the application of the STIR/SHAKEN Framework to Emergency Calls and Emergency Callbacks. This list is for illustrative purposes and is not meant to be exhaustive.

Standard	Title	Organization	Status for STIR/SHAKEN	Publication
ATIS-0700048*	Study of SHAKEN Impacts on 9-1-1 Calls and Callback Calls	ATIS	Published	April 2021
RFC 9027	Assertion Values for Resource Priority Header and SIP Priority Header Claims in Support of Emergency Services Networks	IETF	Published	June 2021
ATIS-0700015.v005	ATIS Standard for Implementation of 3rd Generation Partnership Project (3GPP) Common IMS Emergency Procedures for IMS Origination and ESN/Net/Legacy Selective Router Termination	ATIS	Published	June 2021
ATIS-1000074.v002	Signature-based Handling of Asserted information using toKENs (SHAKEN)	ATIS	Published	July 2021
ATIS-1000098	Session Initiation Protocol (SIP) Resource-Priority Header (RPH) Signing and Priority Header Signing in Support of Emergency Calling	ATIS	Published	July 2021
ATIS-0500044	Overview and Operational Considerations Related to the Application of Information Spoofing Mitigation Techniques to 9-1-1 and Callback Calls in an End-State NG9-1-1 Environment	ATIS	Published	August 2021
NENA-STA-010.3a	NENA i3 Standard for Next Generation 9-1-1	NENA	Published	October 2021
TS 24.229 (Release 17)	Technical Specification Group Core Network and Terminals; IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3	3GPP	Work in progress	Unknown
TS 23.167 (Release 17)	Technical Specification Group Services and System Aspects; IP Multimedia Subsystem (IMS) emergency sessions	3GPP	Work in progress	Unknown
NENA-STA-010.x	NENA i3 Standard for Next Generation 9-1-1	NENA	Not started	Unknown
NENA-STA-023.x	NG9-1-1 PSAP Specifications for the NENA i3 Solution	NENA	Not started	Unknown
Unknown	Unknown	CableLabs**	Not started	Unknown

\* This document is not a standard but a Technical Report.

\*\* CableLabs is the standards organization for cable networks, including PacketCable™. It is unclear at this time whether standards work would be required in this organization to support STIR/SHAKEN.