Canadian Radio-television and Telecommunications Commission
Conseil de la radiodiffusion et des télécommunications canadiennes

Telecom Decision CRTC 2022-265

PDF version

Ottawa, 26 September 2022

Public record: 8621-C12-01/08

CISC Emergency Services Working Group – Consensus report ESRE0074b – Proposal to Manage Multi-line Telephone Systems in the Canadian Enhanced 9-1-1 or Next-Generation 9-1-1 Environment

Summary

The Commission **approves**, with one modification, the recommendations set out in the CRTC Interconnection Steering Committee's Emergency Services Working Group's consensus report ESRE0074b related to the management of multi-line telephone systems in the context of 9-1-1 services.

Background

1. Canadians currently have access to either basic 9-1-1 (B9-1-1) service or enhanced 9-1-1 (E9-1-1) service through traditional wireline, wireless, and local voice over Internet Protocol telephony services wherever a 9-1-1 call centre, also known as a public safety answering point (PSAP), has been established.[1]

2. Multi-line telephone systems (MLTS) are telephone central exchange systems used by entities that require access to telephone lines for a large number of users, such as government agencies, banks, hotels, hospitals, and schools. They may be network-based, hosted by a telecommunications service provider (TSP), or they may be premises-based, using either analog or digital Internet Protocol technology.

3. PSAPs face a variety of issues with emergency calls that originate from MLTS. This can be due to the fact that most MLTS require a caller to dial an additional digit to obtain an outside line (i.e., dialing 8 or 9 before the telephone number), or to the fact that most MLTS do not send crucial information such as the caller's telephone number and location to the PSAP along with an emergency call.

[1] B9-1-1 service enables callers to be connected to PSAP 9-1-1 call takers, who dispatch the appropriate emergency responders. E9-1-1 service includes B9-1-1 service but also automatically provides PSAP 9-1-1 communicators with ancillary information, such as the telephone number and location of the caller.

4. MLTS can impact 9-1-1 service in the following ways:

    - denying or delaying connection to 9-1-1 service;
    - delaying response due to incorrect routing of a call to the wrong PSAP; or
    - providing incorrect or no location data, which can affect the routing of calls and the quality of location data available to 9-1-1 telecommunicators.

5. In May 2017, the Emergency Services Working Group (ESWG) of the CRTC Interconnection Steering Committee (CISC) issued an assessment report (ESRE0074) *Proposals to Best Manage Multi-Line Telephone Systems (MLTS) in a Canadian Enhanced 9-1-1 (E9-1-1) Environment.* In that report, the ESWG outlined numerous challenges with MLTS and made recommendations to the Commission.

6. In response, the Commission issued Telecom Decision 2019-330, in which it determined, among other things, that further assessment was required to determine appropriate next steps to address MLTS issues in the Canadian 9-1-1 environment. Consequently, the Commission directed the ESWG to submit a report outlining any lessons or recommendations that can be applied to MLTS 9-1-1 calling in Canada based on a revised assessment of changes in the MLTS environment.

The report

7. On 8 July 2021, the ESWG submitted to the Commission, for its approval, the following assessment report (the report):

    - *Proposal to Manage Multi-Line Telephone Systems (MLTS) in the Canadian Enhanced 9-1-1 (E9-1-1) or Next Generation 9-1-1 Environment* (ESRE0074b)

8. The report can be found in the “Reports” section of the ESWG page, which is available in the CISC section of the Commission’s website at www.crtc.gc.ca

9. In the report, the ESWG considered its view of the Commission's authority with regard to MLTS, looked at legislation regarding MLTS recently implemented in the United States, and made recommendations that address MLTS issues and aim to foster the adoption of best practices in order to resolve issues associated with MLTS and 9-1-1 in Canada.

10. The report focuses on four of the challenges for 9-1-1 callers and PSAPs that the use of MLTS creates:

    - ensuring callers can dial 9-1-1 from behind an MLTS switch or service without dialing a prefix or access code;
    - controlling means for placing untraceable 9-1-1 calls to primary PSAPs to limit the incidence of harassing, annoying, obscene, threatening, and false calls;
    - reducing the number of 9-1-1 calls where automatic number identification (ANI) is invalid; and
    - improving the availability and accuracy of location information.

11. Regardless of how MLTS are deployed, the four challenges above affect PSAP operations by

    - affecting a PSAP's ability to determine the exact location of an emergency to provide timely assistance; and
    - creating additional workflows for 9-1-1 telecommunicators to be able to fill gaps in information.

12. The ESWG also considered issues related to the Commission's authority to regulate the use of MLTS. While the Commission is able to prescribe measures to be implemented by 9-1-1 service providers that provide network-based MLTS, it does not have authority over system and equipment manufacturers that offer MLTS services.

13. In that regard, the report describes legislation in the United States regarding MLTS and considers input from various industry stakeholders to examine what changes would carry over from the United States to the Canadian MLTS market. Specifically, the ESWG identified the following provisions that could be implemented within the Canadian 9-1-1 environment:

    - that MLTS be configured to allow direct initiation of a 9-1-1 call without dialing an additional digit, code, or prefix;
    - that MLTS be configured to notify the operator's designated central point of contact when someone initiates a 9-1-1 call using an MLTS;[2]
    - that MLTS be configured to notify on-site personnel that a 9-1-1 call was made; and
    - that a dispatchable location requirement be established for MLTS 9-1-1 calls.

---

[2] A central point of contact could be, for example, the front desk of a commercial building operating an MLTS.

14. However, the ESWG noted that direct regulation of MLTS by the Commission is not feasible because Canada, unlike the United States, does not have federal or provincial legislation applicable to MLTS, since it is not a telecommunications service. Therefore the ESWG considered that the Commission must rely on the policies and practices of individual MLTS providers.

15. In that regard, the ESWG submitted that the Commission is in a position to act as an authoritative source for a suggested list of best practices related to the deployment and operation of MLTS.

16. Consequently, the ESWG recommended

    A. that the Commission publish and maintain on its website the ESWG-recommended list of best practices included in the appendix to this decision, summarized as follows:

        i. that TSPs continue to provide location services and allow MLTS providers access to local 9-1-1 systems;

        ii. that MLTS providers

            - facilitate easier access to 9-1-1 through practices such as direct dialing and routing to PSAPs, and
            - work to provide ANI or equivalent information to PSAPs and facilitate the ability of PSAPs to perform call-backs on calls placed from MLTS;

    B. that the Commission encourage TSPs and MLTS owners, operators, providers, and/or resellers to adopt and implement the applicable best practices set out in the appendix to this decision;

    C. that the Commission direct TSPs to inform MLTS owners, operators, providers, and/or resellers of the best practices information associated with MLTS and 9-1-1 services included in the appendix to this decision, and to update service agreements, as appropriate, to facilitate access to those best practices for MLTS owners, operators, providers, and/or resellers; and

    D. that the Commission encourage 9-1-1 stakeholders such as governing authorities, PSAPs, and others to inform MLTS owners, operators, providers, and/or resellers of the best practices associated with MLTS and 9-1-1 services as published on the Commission's website.

Commission's analysis

17. The Commission is of the view that there was appropriate stakeholder representation in the development of the report and its recommendations; that in creating the report, the ESWG conducted a comprehensive review to assess the steps being taken in the United States with regards to MLTS; and that the impact of the problems afflicting

MLTS related to 9-1-1 calls is documented objectively and their detrimental effects sufficiently highlighted.

18. The Commission notes that there is a close similarity between the MLTS environments in Canada and the United States, with vendors offering similar products in both countries. Since the submission of ESRE0074, various corrective actions have been adopted in the United States to remedy persistent challenges. The Commission is of the view that it is logical to assume that such legislation in the United States may benefit the MLTS market in Canada.

19. Regarding recommendation A, the Commission acknowledges that, as the source of TSP obligations and best practices regarding the delivery of all telecommunication services in Canada, it is well positioned to act as an authoritative source for a list of best practices regarding MLTS in the 9-1-1 context.

20. Regarding recommendation B, the Commission is of the view that encouraging TSPs and MLTS providers to adopt and implement applicable best practices is within its mandate and would serve to bolster the adoption of those best practices by MLTS providers.

21. Regarding recommendation C, the Commission considers that obligating TSPs to (i) inform MLTS providers of the best practices associated with MLTS and 9-1-1 services, and (ii) update their service agreements to facilitate MLTS providers' access to those best practices would be beneficial, because it would help increase awareness and adoption of those best practices among MLTS providers entering or operating in the Canadian market. However, the Commission notes that recommendation C, as written, seems to require TSPs to do this only once. It should be modified to ensure that TSPs inform MLTS providers of best practices beginning on the date of this decision and on an ongoing basis thereafter.

22. Regarding recommendation D, the Commission considers that encouraging 9-1-1 stakeholders to inform MLTS providers of the best practices associated with MLTS and 9-1-1 services as published on the Commission's website would act as another method to foster adoption of best practices by MLTS providers.

23. Accordingly, the Commission **approves** the recommendations in the report, with the modification to recommendation C as specified above, as good first steps toward ensuring safer use of MLTS equipment for Canadians.

Next steps

24. The Commission is of the view that, because of the significant number of people who reside or work where MLTS are deployed, simply encouraging the adoption of MLTS best practices may not be sufficient to meet the Commission's objectives (i) to increase the safety of Canadians by giving them the best access to emergency services through world-class telecommunications networks; and (ii) to use standards-based solutions that allow for flexibility and to strive for national consistency in their application.

25. Therefore, the Commission intends to issue a notice of consultation in the near future to gather and assess the views of Canadians and industry stakeholders, including carriers and resellers, on further steps the Commission can take to address MLTS issues in the Canadian 9-1-1 environment.

Conclusion

26. In light of all of the above, the Commission **approves** the recommendations in the report, with one modification, to be implemented by **27 March 2023**, and

    1) **directs** TSPs to

        a. inform MLTS owners, operators, providers, and/or resellers to whom they provide services of the best practices information associated with MLTS and 9-1-1 services, beginning on **27 March 2023** and on an ongoing basis thereafter, including a link to that information on the Commission's website, and

        b. to update service agreements with the same information to facilitate access to those best practices for MLTS owners, operators, providers, and/or resellers;

    2) encourages

        a. TSPs and MLTS owners, operators, providers, and/or resellers to adopt and implement the applicable best practices found in the appendix to this decision, and

        b. 9-1-1 stakeholders such as governing authorities, PSAPs, and others to inform MLTS owners, operators, providers, and/or resellers of the best practices associated with MLTS and 9-1-1 services as published on the Commission's website; and

    3) will publish on its website the most current version of the best practices shown in the appendix to this decision.

Policy Directions

27. The 2006 Policy Direction[3] requires that the Commission, in implementing the telecommunications policy objectives set out in section 7 of the *Telecommunications Act* (the Act), rely on market forces to the maximum extent feasible as the means of achieving the policy objectives. Further, when relying on regulation, the Commission should use measures that are efficient and proportionate to their purpose and that interfere with the operation of competitive market forces to the minimum extent necessary to meet the policy objectives.

---

[3] *Order Issuing a Direction to the CRTC on Implementing the Canadian Telecommunications Policy Objectives*, SOR/2006-355, 14 December 2006

28. Additionally, the 2019 Policy Direction[4] provides that when the Commission exercises its powers and performs its duties under the Act, it should consider how its decisions can promote competition, affordability, consumer interests, and innovation. Moreover, the Commission should, in its decisions, demonstrate its compliance with the 2019 Policy Direction and should specify how those decisions can, as applicable, promote competition, affordability, consumer interests, and innovation.

29. In accordance with subparagraph 1(b)(i) of the 2006 Policy Direction, the Commission considers that approval of the report and the recommendations it contains will advance the policy objectives set out in paragraphs 7(g) and 7(h) of the Act.[5] The report's recommendations, as modified in this decision, represent a competitively neutral and symmetrical approach to processing emergency calls from Canadians connected to the public switched telephone network (PSTN) via MLTS, affecting all facilities-based TSPs.

30. The report addresses technical matters relating to improving the processing of calls for emergency services from the estimated many thousands of Canadians who use MLTS to connect to the public switched telephone network, and improving location accuracy for such calls.[6] The Commission considers that by (i) publishing best practices with regards to MLTS and 9-1-1 services, (ii) directing TSPs to inform MLTS owners of the availability of that information and to update service agreements, as appropriate, in order to facilitate access to best practices, and (iii) encouraging TSPs and MLTS owners to adopt and implement best practices, the Commission will better ensure the proper functioning of those systems and thereby promote consumer interests. The approval of the recommendations in the report also promotes innovation, because the Commission is exercising leadership in a coordinated nationwide approach to improving the delivery of 9-1-1 services for calls that originate from MLTS, to the benefit first and foremost of all Canadians.

Secretary General

Related documents

- *Review of the reseller registration obligation* – Telecom Regulatory Policy CRTC 2019-354, 24 October 2019

---

[4] *Order Issuing a Direction to the CRTC on Implementing the Canadian Telecommunications Policy Objectives to Promote Competition, Affordability, Consumer Interests and Innovation*, SOR/2019-227, 17 June 2019

[5] The policy objectives cited are: 7(g) to stimulate research and development in Canada in the field of telecommunications and to encourage innovation in the provision of telecommunications services; and 7(h) to respond to the economic and social requirements of users of telecommunications services.

[6] This estimate is based on the statement in Federal Communications Commission Report and Order FCC 19-76, 2 August 2019, paragraph 5: "MLTS serve millions of employees, residents, and guests of businesses and educational facilities, including corporate parks, hotels, college campuses, and planned community developments."

- *CISC Emergency Services Working Group – Non-consensus report ESRE0074 on how to best manage multi-line telephone systems in a Canadian Enhanced 9-1-1 environment* – Telecom Decision CRTC 2019-330, 23 September 2019

Appendix to Telecom Decision CRTC 2022-265

Multi-line Telephone System Best Practices

The Emergency Services Working Group (ESWG) of the CRTC Interconnection Steering Committee has undertaken extensive research regarding the applicable laws and practices regarding multi-line telephone systems (MLTS) in Canada and the United States, and created a list of best practices regarding the use of MLTS for 9-1-1 services. Because Canada does not have legislation governing MLTS similar to that of the United States, the MLTS configuration practices that the list provides are very important for Canadian MLTS owners, operators, providers, and/or resellers. These best practices ensure that 9-1-1 calls are received locally with accurate location information. The list is stakeholder specific and will be updated as required.

For telecommunications service providers (TSPs)

1. The ESWG recognizes that some 9-1-1 network providers offer private switch-automatic location information (PS-ALI) or equivalent service solutions, including equivalent next generation 9-1-1 (NG9-1-1) service to manage customer name and address information, and encourages those entities that do so, to continue to do so.
2. TSPs and applicable resellers should provide services that enable MLTS providers, resellers, owners, and operators to access local 9-1-1 systems in alignment with all MLTS best practices.

For MLTS owners, operators, providers and/or resellers

1. Accessing 9-1-1 Services

    1.1. Dialing (without requiring any prefix or code) to 9-1-1 from any MLTS should be implemented as part of the provisioning of the service, where technically feasible.

    1.2. In cases where the MLTS dial plan uses a dialing prefix, or dialing prefixes, for regular calls (e.g., local, domestic long distance, and international long distance), the dial plan should be set up to reach 9-1-1 with or without the existing dialing prefix.

    1.3. MLTS calls should be routed directly to the PSAP without being directed to a central internal answering position such as a security desk, receptionist, or operator.

2. Caller Location Information and 9-1-1 Call Routing

    2.1. MLTS owners, operators, providers, and/or resellers should work with their TSPs to assign a unique automatic number identification (ANI) for identifying the

location of each fixed endpoint or group of co-located devices used to contact 9-1-1. This could be accomplished through an automated or manual process leveraging the existing ANI/ALI procedures of the incumbent local exchange carrier (or NG9-1-1 equivalent).

2.2. MLTS owners, operators, providers, and/or resellers should work with their TSPs to ensure that sufficient location details are made available to public safety answering points (PSAPs) and the 9-1-1 system to assist in quickly ascertaining an accurate location and enable direct routing of 9-1-1 calls from fixed endpoints.

2.3. MLTS owners, operators, providers, and/or resellers should configure systems where possible to

2.3.1. provide an ANI assigned to an accurate location when the location of the caller is known, or

2.3.2. provide the default location associated to the local MLTS, or

2.3.3. default to the nomadic voice over Internet Protocol 9-1-1 call processing if the location is not fixed or cannot be determined.

2.4. The phone number provided to the PSAP should be dialable from outside the MLTS, allowing the PSAP to call the endpoint back if necessary.

3. Awareness and Notification

3.1. When someone connected to an MLTS dials 9-1-1, notifications should be issued to on-site or off-site personnel with the relevant information, including who called, when they called, and from where they called. Notification should occur in parallel and without interrupting or altering the call path to 9-1-1.

3.2. Notifications should be issued to on-site personnel trained in providing direction to first responders so that they get to the site of the emergency quickly.

4. MLTS Implementation

4.1. MLTS owners, operators, providers, and/or resellers should include end user educational materials explaining risks and benefits, so that they can ask appropriate questions and make informed decisions on deployment. These include

4.1.1. The risks and benefits of provisioning accurate location information for use when 9-1-1 is dialled, and

4.1.2. any risks associated with requirements for prefix dialing.

4.2. MLTS owners, operators, providers, and/or resellers should accurately program and test MLTS to deliver and display information required by the appropriate PSAP, including ANI and dispatchable location.

4.3. MLTS owners, operators, providers, and/or resellers should install and maintain systems with the same level of 9-1-1 service that other users connected directly to the public switched telephone network (PSTN) receive. The following information should be included with the 9 1-1 call:

4.3.1. an appropriate callback number to reach the calling party such as a direct inward dialing (DID) number or internal extension, or front desk, in the event a DID number or internal extension is not accessible

4.3.2. specific accurate location of the 9-1-1 caller; and

4.3.3. additional information about the caller's location (such as building name or number, floor, section or room number) to better direct responders to the caller's specific location.

5. Plan for the Future

5.1. The ESWG recommends that MLTS owners, operators, providers, and/or resellers begin planning for NG9-1-1 by discussing plans with their MLTS vendors to make additional data available to PSAPs. These discussions should take into consideration that the framework and timelines for additional data (provision, transmission, and access) in Canada are currently in the planning stages.

The ESWG submits that these recommendations and best practices should be implemented by all parties as soon as it is practical and appropriate to do so.