



## Telecom Decision CRTC 2018-4

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### **CISC Emergency Services Working Group – Report regarding the impacts of wireless service providers' Wi-Fi calling services on 9-1-1 services**

*Effective and timely access to emergency services in Canada is critical to the health and safety of Canadians. Accordingly, consistent with the recommendations in a report by the Emergency Services Working Group (ESWG) of the CRTC Interconnection Steering Committee, the Commission sets out a number of directives for wireless service providers to follow with respect to services that enable customers to make Internet Protocol (IP)-based 9-1-1 voice calls over Wi-Fi networks.*

*In addition, the Commission requests that the ESWG continue its research into a standardized solution to determine the location of wireless 9-1-1 calls processed over Wi-Fi networks, and to provide its recommendations to the Commission as soon as possible.*

*Finally, the Commission encourages wireless device manufacturers to implement the best practice of having all Wi-Fi 9-1-1 calls made on their devices automatically default to a cellular network when one is available.*

### **Background**

1. In Telecom Decision 2003-53, the Commission mandated that all wireless service providers (WSPs) provide 9-1-1 services to their subscribers wherever the municipal, provincial, or territorial government has established a local specialized 9-1-1 call centre known as a public safety answering point (PSAP). The requirement includes the delivery of both the call itself and any accompanying ancillary information, such as the estimated geographic location of the caller and callback information.
2. In Telecom Decision 2005-21, the Commission set out obligations for providers of local voice over Internet Protocol (VoIP) services, which can be either fixed<sup>1</sup> or

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<sup>1</sup> Fixed VoIP calls can be made only from a fixed address, and service is normally provided over a private communication network (e.g. through a cable service provider at home) instead of over the Internet. Fixed VoIP service provides Enhanced 9-1-1 (E9-1-1) service equivalent to that provided by traditional wireline service, except where Basic 9-1-1 service is provided. E9-1-1 and Basic 9-1-1 services are described in footnote 5 below.

nomadic.<sup>2</sup> The obligations include a requirement for nomadic VoIP service providers to route 9-1-1 calls to a third-party operator. The operator determines, based on the caller's location, the appropriate PSAP to which the call should be routed, and delivers the call to that PSAP. In addition, local VoIP service providers are required to notify their customers of the limitations of calling 9-1-1 using their services, and to obtain the customers' acknowledgement that they understand these limitations.

3. For nomadic VoIP calls, the primary means of identifying the location of a 9-1-1 caller is by the third-party operator verbally asking for the caller's location. If the call is disconnected before the operator can verbally determine the caller's location, the operator must attempt to call back to determine the location. If the caller's location cannot be verbally determined, then the caller's registered address<sup>3</sup> is used to determine their location.
4. Since several WSPs have launched services that enable customers to make IP voice calls over Wi-Fi networks (WSP Wi-Fi calling services), it is essential that 9-1-1 obligations related to such services be clearly articulated by the Commission and understood by all stakeholders.
5. With this in mind, the CRTC Interconnection Steering Committee (CISC) Emergency Services Working Group (ESWG) initiated an examination of the impacts of WSP Wi-Fi calling services on 9-1-1 services, and provided a report (the Report)<sup>4</sup> with its recommendations to the Commission.

## The Report

6. In the Report, the ESWG defined WSP Wi-Fi calling service as a voice service offered by a WSP that enables a wireless end-user device, when connected to a Wi-Fi network, to make voice calls over an Internet connection using the native dialer of the device or applications that are integrated with the WSP network. To access the service, wireless subscribers must first register with their WSP. Third-party, over-the-top commercial Wi-Fi calling applications (not offered by WSPs) that can process 9-1-1 calls were excluded from the scope of the Report.
7. The ESWG's recommendations include new obligations for WSPs on how calls made using WSP Wi-Fi calling services should be treated, and how customers should be

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<sup>2</sup> Nomadic VoIP service is provided over the Internet and enables callers to access telephone services using any high-speed Internet connection from any location. Nomadic VoIP service provides Basic 9-1-1 service because there is no fixed address to provide to 9-1-1 operators. The mobility of this service makes it very hard for service providers and 9-1-1 operators to pinpoint the location of a 9-1-1 call.

<sup>3</sup> Nomadic VoIP customers register their contact information, including their address, when they initiate the service and are responsible for maintaining and updating it, if necessary. Carriers offering fixed and nomadic VoIP services must (i) contact customers each time they change their billing address to confirm their most likely physical address for emergency purposes, and (ii) ensure that customers are able to update their most likely physical address online.

<sup>4</sup> *Evaluate the Impacts of Wireless Service Providers Wi-Fi Calling Report*, ESRE0073, 11 January 2017

educated about the services. The ESWG also requested that the Commission encourage wireless device manufacturers to implement certain related best practices.

8. The ESWG made the following consensus recommendations for the Commission's review and approval:
- 9-1-1 calls initiated using WSP Wi-Fi calling services must default, where possible, to a cellular network and be treated as wireless Phase II Enhanced 9-1-1 (E9-1-1) calls<sup>5</sup> when a cellular network is available.<sup>6</sup> In situations where a cellular network is not available and a Wi-Fi network is available,<sup>7</sup> a 9-1-1 call may be treated as a nomadic VoIP 9-1-1 call.
  - These call treatments be mandated for current and future WSP Wi-Fi calling service deployments until a technically feasible dispatchable location<sup>8</sup> is available and implementation is possible following Commission approval.
  - As part of WSPs' initial and annual nomadic VoIP 9-1-1 notifications to their Wi-Fi voice customers, WSPs must advise what actions their customers should take when placing 9-1-1 calls using WSP Wi-Fi calling services so that they choose the option of making 9-1-1 calls over the cellular network when possible.
  - The best practice for wireless device manufacturers is to have all 9-1-1 calls made on wireless devices automatically default to a cellular network when one is available, and, if not available, select the Wi-Fi network to complete the call. Furthermore, wireless devices should not provide customers with the option of overriding these programmed features.

9. The ESWG noted that the iPhone operating system (iOS) on wireless devices manufactured by Apple Inc. is not programmed to direct a 9-1-1 call to a cellular

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<sup>5</sup> E9-1-1 service connects a 9-1-1 call to a PSAP and automatically provides the 9-1-1 operator with the telephone number and address or estimated location of the caller. Through Basic 9-1-1 service, a 9-1-1 call is connected to a PSAP. The caller must identify his or her location to the 9-1-1 operator, who then connects the call to the PSAP serving that area.

<sup>6</sup> "Available" in this context means that (i) there is a compatible physical network present, (ii) the network has capacity and is accessible, and (iii) the device is compatible with the network.

<sup>7</sup> "Available" in this context means that (i) a Wi-Fi network is available and the WSP-managed device can use it to make calls over a WSP Wi-Fi calling service, and (ii) the caller subscribes to a WSP Wi-Fi calling service.

<sup>8</sup> The definition of "dispatchable location" is under development as part of the ESWG task ESTF0086 – Assess the Technical and Operational Aspects for Delivering a Dispatchable Location from Originating Networks. The current version of the definition is as follows: dispatchable location is a location determined by a PSAP telecommunicator, typically aided by computer-aided dispatch (CAD) software that uses a map. This location is derived from the estimated location data delivered with the 9-1-1 call and any additional data retrieved once the call has reached the PSAP. Location is typically represented to the PSAP in a geodetic and/or civic format. This is in contrast to estimated location information, including the longitude and latitude, currently provided via Phase II E9-1-1.

network by default. Instead, when both cellular and Wi-Fi networks are available and the caller attempts to make a WSP Wi-Fi 9-1-1 call, these devices present the caller with the option of processing the call over either the cellular network or the Wi-Fi network. As a workaround, the ESWG recommended that notifications to these wireless service customers be revised to include language to encourage customers to select the cellular option, rather than Wi-Fi, to complete 9-1-1 calls.

10. The ESWG also included a list of PSAPs' concerns with regard to nomadic VoIP calls. It noted the following, among other issues: (i) an increase in the number of nomadic VoIP 9-1-1 calls that WSP Wi-Fi calling services will generate; (ii) the lack of location information provided with 9-1-1 calls made using WSP Wi-Fi calling services; and (iii) the concern that if a wireless Wi-Fi-capable handset selects a Wi-Fi network rather than a cellular network, the Text with 9-1-1-specific<sup>9</sup> class of service is not sent to the PSAP when the caller initiates a Text with 9-1-1 call. As a result, the caller has no way of knowing that the 9-1-1 call did not go through as expected, and the PSAP is unaware that a text messaging session is required.
11. WSPs clarified that to address the Text with 9-1-1 concerns, they must inform their Text with 9-1-1 and WSP Wi-Fi calling service users that the two services may not be compatible. They stated that the best practice for WSPs is to ensure that Text with 9-1-1 and WSP Wi-Fi calling services are not ordered or provisioned together.

### **Commission's analysis and determinations**

12. The Commission considers that there was appropriate stakeholder representation in the development of the recommendations included in the Report, and notes that PSAPs and WSPs provided several contributions. Moreover, there was consensus within the ESWG in developing the recommendations.
13. Notwithstanding the concerns raised by PSAPs in the Report, the Commission is of the view that having the ability to make 9-1-1 calls over Wi-Fi networks is preferable to not being able to call 9-1-1 at all when no cellular network is available.
14. The call treatment recommendations clearly describe how 9-1-1 calls made using WSP Wi-Fi calling services should be treated. The implementation of these recommendations will reduce the number of 9-1-1 calls that would otherwise be processed over Wi-Fi networks by having WSPs' handsets programmed to first default to cellular networks, when available.
15. The customer notification recommendations are appropriate since they enhance the existing customer notification process by requiring clear descriptions of the limitations of 9-1-1 calls initiated using Wi-Fi voice service offerings, and the steps for callers to take when given the option of making a 9-1-1 call over a Wi-Fi network.

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<sup>9</sup> This service provides PSAPs in Canada with the ability to communicate with a Deaf, deafened, hard-of-hearing, or speech-impaired person through their registered cellular phone during an emergency using text messaging.

16. Although WSPs recommended best practices to address Text with 9-1-1 and WSP Wi-Fi calling service compatibility concerns, the Commission is of the view that it would be appropriate for the proposed practices to instead be set out as obligations. This not only ensures that Text with 9-1-1 customers are informed about the incompatibility<sup>10</sup> of Text with 9-1-1 and WSP Wi-Fi calling services, but also puts in place the processes to ensure that WSPs do not provision them together.
17. The ESWG's recommendations regarding best practices for wireless device manufacturers are also appropriate. By ensuring that the best practices are made publicly available, device manufacturers and agencies that may have authority over or influence on device manufacturers will be made aware of the ESWG's findings pertaining to how wireless devices should be programmed to process wireless 9-1-1 calls made over Wi-Fi networks.
18. Although implementation timelines were not recommended in the Report, it is reasonable for the Commission to mandate the immediate implementation of the requirements set out below, since the WSPs that already offer WSP Wi-Fi calling services have indicated that they are following the processes described in the Report. Furthermore, WSPs that do not yet offer such services must implement the requirements below before launching their services.
19. In light of the above, the Commission **directs** WSPs to do the following until a technically feasible dispatchable location solution is available and implementation is possible following Commission approval:
  - ensure that 9-1-1 calls initiated using WSP Wi-Fi calling services default, where possible, to a cellular network and are treated as wireless Phase II E9-1-1 calls when a cellular network is available. If a cellular network is not available but a Wi-Fi network is available, 9-1-1 calls should be treated as nomadic VoIP 9-1-1 calls;
  - inform their customers of what actions to take when placing 9-1-1 calls using WSP Wi-Fi calling services, so that they are aware of the limitations of such services, and encourage them to choose the option of making 9-1-1 calls over the cellular network. This would take place as part of WSPs' initial and annual nomadic VoIP 9-1-1 notifications to their Wi-Fi calling service customers;
  - inform their Text with 9-1-1 and WSP Wi-Fi calling service users that the two services are not compatible; and

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<sup>10</sup> While the ESWG report stated that Text with 9-1-1 and WSP Wi-Fi calling services “may not be” compatible, they are in fact incompatible. The class of service specific to Text with 9-1-1 is not delivered to the PSAP when a 9-1-1 caller initiates a Text with 9-1-1 session over a Wi-Fi network. As a result, the PSAP operator is unaware that a text session is required and the caller is unaware that the call did not go through as expected.

- implement the appropriate internal processes to ensure that Text with 9-1-1 and WSP Wi-Fi calling services are not provisioned together.
20. In addition, the Commission requests that the ESWG continue its research into a standardized solution to report the location of wireless 9-1-1 calls processed over Wi-Fi networks, and provide its recommendations to the Commission as soon as possible.
21. The Commission also encourages wireless device manufacturers to implement the best practice of having all 9-1-1 calls made on wireless devices automatically default to a cellular network when one is available, and, if one is not available, select a Wi-Fi network to complete the call. Wireless devices should not provide the option for users to override these programmed features.

Secretary General

### **Related documents**

- *Emergency service obligations for local VoIP service providers*, Telecom Decision CRTC 2005-21, 4 April 2005
- *Conditions of service for wireless competitive local exchange carriers and for emergency services offered by wireless service providers*, Telecom Decision CRTC 2003-53, 12 August 2003, as amended by Telecom Decision CRTC 2003-53-1, 25 September 2003