



Telecom Decision CRTC 2005-21

Ottawa, 4 April 2005

Emergency service obligations for local VoIP service providers

Reference: 8663-C12-200402892 and 8663-B2-200316101

In this Decision, the Commission renders certain determinations in the proceeding initiated by Regulatory framework for voice communication services using Internet Protocol, Telecom Public Notice CRTC 2004-2, 7 April 2004 (Public Notice 2004-2). The determinations set out in this Decision are limited to matters regarding the provision of 9-1-1 and Enhanced 9-1-1 (E9-1-1) service using local VoIP services, as defined in Public Notice 2004-2.

The Commission directs Canadian carriers, offering fixed (i.e., non-nomadic) local VoIP service, where the end-user is assigned an NPA-NXX native to any of the local exchanges within the region covered by the customer's serving Public Safety Answering Point (PSAP), to provide 9-1-1/E9-1-1 service, where it is available from the incumbent local exchange carrier (ILEC), within 90 days from the date of this Decision.

Cognizant of the technical and operational challenges associated with provisioning 9-1-1/E9-1-1 service with local VoIP services offered on a nomadic basis or with a telephone number that is not native to any of the exchanges within a customer's PSAP serving area, the Commission directs Canadian carriers offering these local VoIP service configurations to implement an interim solution, within 90 days from the date of this Decision, which provides a level of service functionally comparable to Basic 9-1-1.

In light of the public safety issues related to the limitations on 9-1-1/E9-1-1 service provided with local VoIP services, the Commission directs Canadian carriers to provide customer notification regarding any limitations, before service commencement and during service provision. Canadian carriers are also directed to obtain from their customers express consent to such limitations.

With respect to the funding of the provincial 9-1-1 networks, the Commission considers that the ILECs' current provincial 9-1-1 tariffs should apply to local VoIP service providers in the same manner as they apply to other carriers and resellers.

The Commission also directs Canadian carriers, as a condition of providing telecommunications services to local VoIP service providers, to include in their service contracts or other arrangements with these service providers, the requirement that the latter abide by all directions set out in this Decision.

Finally, the Commission requests that the CRTC Interconnection Steering Committee (CISC) address certain technical and operational issues, with respect to the provision of emergency services with local VoIP services, and sets out a timeline to guide the CISC process.

Background

1. In *Regulatory framework for voice communication services using Internet Protocol*, Telecom Public Notice CRTC 2004-2, 7 April 2004 (Public Notice 2004-2), the Commission provided its preliminary views on the appropriate regulatory framework applicable to voice communication services using Internet Protocol (IP). The Commission also initiated a public proceeding, inviting comments on its preliminary views, including its views on the requirements for the provision of 9-1-1 and Enhanced 9-1-1 (E9-1-1) service.
2. The Commission referred to voice communication services using IP that use telephone numbers, which conform to the North American Numbering Plan, and provide subscribers with universal access to and/or from the Public Switched Telephone Network (PSTN) as VoIP services. The Commission further referred to VoIP services that provide subscribers access to and/or from the PSTN along with the ability to make and/or receive calls that originate and terminate within an exchange or local calling area as defined in the incumbent local exchange carriers' (ILECs') tariffs as local VoIP services.
3. Given the magnitude of the public safety issues related to the provision of 9-1-1/E9-1-1 service with local VoIP services, the Commission considered it appropriate to address this matter separately and in advance of the other issues in the proceeding. Therefore, the Commission's determinations in this Decision are limited to issues regarding these emergency services. The Commission's determinations with respect to all other issues raised in the proceeding initiated by Public Notice 2004-2 will be set out in a forthcoming Decision.
4. In Public Notice 2004-2, the Commission acknowledged that certain providers of local VoIP services may not initially be able to provide 9-1-1/E9-1-1 service. Recognizing this possibility, the Commission expressed the following preliminary views:
 - all local VoIP service providers should specifically and clearly advise potential and existing subscribers of any 9-1-1/E9-1-1 service limitations associated with their local VoIP service, and a condition of service pursuant to section 24 of the *Telecommunications Act* should be imposed to that effect;
 - 9-1-1/E9-1-1 service delivery should become mandatory for all local VoIP service providers as soon as practicable; and
 - the CRTC Interconnection Steering Committee (CISC) would be the appropriate forum to address issues related to 9-1-1/E9-1-1 service delivery by local VoIP service providers.

Process

5. In Public Notice 2004-2, parties were invited to file comments on the Commission's preliminary views (or other matters they viewed as pertinent to the regulatory framework for local VoIP services) by 28 April 2004. The public oral consultation was originally scheduled for 19-20 May 2004, with reply comments to be filed by 28 May 2004. However, in response to concerns expressed by certain parties regarding the timeframe and nature of the proceeding, the process was revised.

6. As a result of these revisions, the deadline for parties to provide written comments was extended to 18 June 2004. As well, an interrogatory process was added. Interrogatories were filed by 16 July 2004, and responses to these interrogatories were filed by 11 August 2004. Requests for further responses to interrogatories were filed by 16 August 2004, and responses to requests for further responses were filed by 23 August 2004. The public oral consultation took place from 21 to 23 September 2004, and reply comments were received until 13 October 2004.
7. The following parties provided comments, reply comments and/or responses to interrogatories, with respect to the provision of 9-1-1/E9-1-1 service using local VoIP services: Aliant Telecom Inc., Bell Canada, Saskatchewan Telecommunications, and Société en commandite Télébec (collectively, the Companies¹); ARCH: A Legal Resource Centre for Persons with Disabilities (ARCH); Association des centres d'urgence 9-1-1 du Québec (ACUQ); AT&T Global Services Canada Co. (AT&T); Bell West Inc. (Bell West); the British Columbia Public Interest Advocacy Centre on behalf of British Columbia Old Age Pensioners' Organization, Council of Senior Citizens' Organizations of B.C., Federated Anti-Poverty Groups of B.C., Senior Citizens' Association of Canada, End Legislated Poverty and Tenant Rights Action Coalition (BCOAPO et al.); Call-Net Enterprises Inc. (Call-Net); the Canadian Association of Chiefs of Police (CACP); the Canadian Association of Internet Providers (CAIP); the Canadian Cable Telecommunications Association (CCTA) (formerly known as the Canadian Cable Television Association); the City of Calgary (Calgary); the Coalition for Competitive Telecommunications Pricing (CCTP); Cogeco Cable Canada Inc. (Cogeco); the Communications, Energy and Paperworkers Union of Canada (CEP); Comwave Telecom Inc. (Comwave); Cybersurf Corp. and its various affiliates and subsidiaries (Cybersurf); the Edmonton Police Service; Futureway Communications Inc., doing business as FCI Broadband; the Greater Vancouver Regional District, on behalf of itself and the other members of the British Columbia 9-1-1 Service Providers Association (GVRD); Microcell Solutions Inc., on behalf of itself and its affiliate Inukshuk Internet Inc. (Microcell²); the Ministry of Economic Development and Trade on behalf of the Government of Ontario (Ontario); MTS Allstream Inc. (MTS Allstream); Nortel Networks (Nortel); the Ontario 9-1-1 Advisory Board (OAB); Ontera (formerly known as O.N.Telcom); Primus Telecommunications Canada Inc. (Primus); the Public Interest Advocacy Centre on behalf of the Consumers' Association of Canada, the National Anti-Poverty Organization, and l'Union des Consommateurs (the Consumer Groups); pulver.com (Pulver); Quebecor Média Inc. (QMI) on behalf of Vidéotron Télécom ltée and Vidéotron ltée; Rogers Communications Inc. (Rogers); the Telecommunications Workers' Union (TWU); RipNET Limited (RipNET); TELUS Communications Inc. (TELUS), on behalf of itself and TELUS Communications (Québec) Inc.; l'Union des municipalités du Québec (UMQ); UTC Canada (UTC); Vonage Holdings Corp. and Vonage Canada Corp. (Vonage); WorldCom Canada Ltd., doing business as MCI Canada; Xit télécom inc., on behalf of itself and Télécommunications Xittel inc. (Xit); Yak Communications (Canada) Inc. (Yak); and the Yukon Government. In addition, two individuals submitted comments.

¹ Saskatchewan Telecommunications and Société en commandite Télébec each submitted supplementary comments, in addition to those filed by the Companies.

² Microcell's reply comments were submitted by Microcell Telecommunications Inc. on behalf of Microcell Solutions Inc., and Inukshuk Internet Inc.

Imposition of regulatory obligations

Position of parties

8. A number of parties supported the imposition of regulatory obligations, with respect to 9-1-1/E9-1-1 service, on local VoIP service providers, including: the ACUQ, BCOAPO et al., Calgary, the CACP, Call-Net, the CCTP, the CCTA, the CEP, the Companies, the Consumer Groups, the Edmonton Police Service, FCI Broadband, Microcell, MTS Allstream, Nortel, the OAB, Ontario, Primus, QMI, Rogers, TELUS, the TWU, the UMQ, the UTC and Xit.
9. The ACUQ, the Consumer Groups, the GVRD, the OAB and the UMQ indicated that the public had come to expect that 9-1-1 service would be available and that help would be provided quickly when needed. These parties, as well as BCOAPO et al. and the TWU, generally submitted that local VoIP service providers should be required to support 9-1-1/E9-1-1 service immediately, or stop providing local VoIP services until they are able to do so.
10. Calgary submitted that some consumers would view VoIP service as a substitute for traditional wireline service and that these consumers may assume that VoIP service would provide the same level of 9-1-1 service. The Consumer Groups expressed a similar view and further stated that public safety was non-negotiable.
11. The OAB submitted that the Commission had repeatedly ruled on the side of caution and public safety, with respect to 9-1-1 access issues, by mandating consumer safeguards. The OAB further submitted that much of the industry had shown little enthusiasm for investing in safe, solid solutions on a voluntary basis.
12. The ACUQ stated that it took 10 years of Commission intervention for wireless providers to provide Public Safety Answering Points (PSAPs) with the 9-1-1 caller's telephone number and the address of the cell site, and indicated that this was still a long way from the quality of information that was available from wireline telephones. The UMQ suggested that the Commission should provide greater guidance than it did in the wireless environment for the roll-out of 9-1-1/E9-1-1 service in the VoIP environment.
13. Comwave, MCI Canada, Pulver and Vonage opposed the imposition of regulatory obligations, with respect to 9-1-1/E9-1-1 service, indicating that market forces could determine the level of emergency services. Specifically, Pulver noted that the Commission had generally kept the Internet free from the regulatory obligations applied to traditional telecommunications services and networks.
14. Vonage argued that the natural development and deployment of VoIP services would lead to technological improvements and cost savings, which would eventually lead to 9-1-1/E9-1-1 services that were more reliable.

Commission's analysis and determinations

15. Since the inception of 9-1-1 service, three decades ago, the Canadian public has been educated to dial 9-1-1 in case of an emergency. As such, there is a general public expectation that where 9-1-1 service is available, an individual can dial 9-1-1 for access to trained emergency call agents who can provide the necessary information and assistance. The Commission considers that these expectations exist regardless of the type of technology (i.e., wireline or wireless) that callers use to dial 9-1-1.
16. The Commission notes that the Consumer Groups submitted that public safety is non-negotiable and that a number of other parties expressed similar views. With respect to protecting the public interest, the Commission considers that ensuring access to reliable 9-1-1/E9-1-1 service is of utmost importance.
17. The Commission is of the opinion that market forces alone would not likely ensure the timely roll-out of reliable 9-1-1/E9-1-1 service associated with local VoIP services.
18. Moreover, the Commission notes that imposing 9-1-1/E9-1-1 service obligations on service providers offering local VoIP services is consistent with the Commission's policy of extending emergency service obligations to telecommunications service providers (TSPs), such as local exchange carriers (LECs), wireless service providers (WSPs) and resellers, regardless of the technology by which the voice service is offered.
19. Accordingly, the Commission finds that it is in the public interest to impose 9-1-1/E9-1-1 service regulatory obligations on local VoIP service providers.

Regulation of 9-1-1/E9-1-1 service offered by local VoIP service providers

20. In this section, the Commission considers the challenges faced by local VoIP service providers in provisioning 9-1-1/E9-1-1 service, as well as the appropriateness of the interim solutions proposed by parties. However, in order to properly assess such matters, it is first necessary to consider how 9-1-1/E9-1-1 service is currently provided using traditional circuit-switched technology, and the related regulatory obligations.

Background - Basic 9-1-1/E9-1-1 service

21. Basic 9-1-1 service consists of routing 9-1-1 dialed calls to a designated PSAP, which is a specialized emergency call-answer centre for all 9-1-1 calls originating within a specific geographic area. A PSAP agent connects a 9-1-1 caller to the required emergency services agency (police, fire and/or ambulance). The PSAP agent typically sees the caller's telephone number, but not the caller's location information. Thus, Basic 9-1-1 service is only effective if the caller can communicate his/her location to the PSAP agent.

22. E9-1-1 service is currently the highest level of 9-1-1 service supported in the wireline market: it includes all of the capabilities provided by Basic 9-1-1 service, as well as certain additional features and capabilities, including Automatic Location Information (ALI) functionality, and call control features³.
23. ALI functionality ensures that a 9-1-1 caller's name, telephone number (listed or unlisted), address, type of service and other pertinent information is downloaded from an ILEC maintained database and automatically transferred to the PSAP along with each incoming 9-1-1 call. ALI functionality is an invaluable feature to PSAP agents in cases where 9-1-1 callers are unable to verbally indicate their location.
24. In *Bell Canada - Revenue requirements for 1993 and 1994*, Telecom Decision CRTC 93-12, 30 August 1993 (Decision 93-12), the Commission approved a province-wide wireline E9-1-1 service for Bell Canada. Since then, the Commission has approved a similar province-wide wireline E9-1-1 service for most of the other ILECs.
25. In *Local competition*, Telecom Decision CRTC 97-8, 1 May 1997, the Commission established a regulatory framework that resulted in competitive local exchange carriers (CLECs) and resellers having to provide 9-1-1 service to their subscribers and to ensure, to the extent technically feasible, that the appropriate end-user information was provided to the ALI database to the same extent as that provided by the ILEC.
26. In the wireless market, implementation of E9-1-1 service has posed certain technical challenges, as wireless E9-1-1 does not utilize traditional wireline constructs such as the ALI database, and necessitates implementation and upgrade of specific interconnection interfaces needed to support the transfer of location and other wireless caller information.
27. In *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 (Decision 2003-53), the Commission directed wireless CLECs to provide wireless E9-1-1 service in all areas where they operate as CLECs and where wireless E9-1-1 network access service is available from an ILEC. In communities where no 9-1-1 service is offered or where Basic 9-1-1 service is offered, the wireless CLEC must provide a level of 9-1-1 service that is functionally comparable to that provided by the ILEC. The Commission also directed WSPs to provide wireless E9-1-1 service where wireless E9-1-1 network access service is available from an ILEC.
28. In Decision 2003-53, the Commission also directed WSPs and wireless CLECs to maintain toll-free telephone access to and continuous staffing (i.e., 24 hours per day, seven days per week) of at least one of their operations centres, in order to promptly assist PSAP personnel seeking subscriber information in emergency situations.

³ Call control features provide the PSAP agent with control over the line on which a 9-1-1 call is placed. Although call control features differ among carriers, they generally include: *bureau hold*, which allows a PSAP agent to impose an end-to-end connection with a 9-1-1 caller's line, even if the caller attempts to disconnect the call by hanging up; *ringback calling party*, which allows a PSAP agent to ring the telephone of a 9-1-1 caller who has placed the telephone back on-hook or to apply a loud audible tone to an off-hook set; and *disconnect signal*, which provides an audible tone to the PSAP agent alerting him/her to the fact that the 9-1-1 caller has placed the telephone back on-hook.

Position of parties

Challenges in providing 9-1-1/E9-1-1 service

29. Nortel noted that the technology for E9-1-1 service was originally designed for the traditional circuit-switched network in which telephones remain at a fixed location, and further noted that VoIP eliminated geographic boundaries traditionally associated with voice networks. Nortel submitted that this had created some technical challenges for E9-1-1 service, including the ability to identify a caller's location when an emergency call was made from a telephone that does not remain fixed at a particular location. Vonage and Microcell expressed similar views with respect to the nomadic nature of VoIP and the subsequent challenges for providing emergency services.
30. The CCTA, MTS Allstream, and the OAB noted that for effective 9-1-1/E9-1-1 service delivery, the service provider must route the 9-1-1 call to the proper PSAP and the PSAP agent must receive automatic number identification (ANI) and ALI information in order to dispatch emergency response services, in the event that the caller cannot communicate location information.
31. MTS Allstream noted that the location of the customer and whether the customer's telephone number corresponded to one of the exchanges normally located within a PSAP's service boundary would determine whether a 9-1-1 call could be correctly routed to the appropriate PSAP. MTS Allstream described the different VoIP service configurations and their impact on the appropriate routing of 9-1-1/E9-1-1 calls as follows:
 - Local VoIP Call/Fixed Address where a VoIP customer places a call from a fixed location within an ILEC-defined exchange area and with a telephone number corresponding to that exchange. If the ALI database is populated with the customer's information and the ANI is provided to the PSAP, then the 9-1-1 service will operate in the same manner as it does today (i.e., with traditional wireline service).
 - Foreign Exchange (FX) VoIP Call/Fixed Address where a customer places a call from a fixed location outside of the PSAP boundary normally served by the customer's telephone number. The VoIP service provider utilizes an IP network or the Internet to carry the call from the customer's calling location to the exchange corresponding to the customer's telephone. In this scenario, conventional 9-1-1 service would not function correctly because the call would not be routed to the appropriate PSAP.
 - Nomadic VoIP Calls where the VoIP customer does not make calls from a fixed location. In this scenario, calls can be made from anywhere that the customer has access to a broadband Internet service and the appropriate software or hardware to use that service. 9-1-1 services would not work reliably under this scenario if the existing 9-1-1 platform is used because the call would not likely be routed to the correct PSAP. Moreover, the customer's address information in the ALI database would not match the location from which the call was made.

32. TELUS and Nortel each indicated that with certain fixed VoIP configurations, emergency calls could be routed to the correct PSAP with ANI/ALI information, if the correct ALI information was available, but that equivalent functionality did not exist with nomadic VoIP service and achievement of such functionality was dependent on the adoption of industry-wide standards.
33. The ACUQ, Calgary, the OAB and the UMQ expressed concerns with respect to the availability of accurate information in the ALI database for VoIP customers, and the possibility of incorrect emergency call routing.
34. Calgary submitted that if an emergency call was delivered to a PSAP in the wrong jurisdiction, there would be a delay as the PSAP agent determined the location of the caller, determined the correct jurisdiction, found a telephone number for that jurisdiction and transferred the call. Calgary noted that in some cases, PSAP agents resorted to Internet searches to find a PSAP telephone number for another jurisdiction. The OAB submitted that local VoIP service providers should be obligated to make their service 9-1-1 capable and give PSAP agents the tools they need to do their jobs.

Addressing the challenges

35. With the exception of FCI Broadband, the general consensus among TSPs was that the technical and operational issues associated with providing VoIP 9-1-1/E9-1-1 service would be best addressed by CISC. FCI Broadband strongly advocated that the Commission establish, in this proceeding, a clear and complete set of rules for VoIP service providers.
36. TELUS submitted that the issue of supporting 9-1-1/E9-1-1 for nomadic VoIP services would not likely be resolved with a made-in-Canada solution and that the National Emergency Number Association (NENA), in the United States, was also grappling with this issue.
37. The CCTP, MTS Allstream and Primus favoured an approach of meeting the emergency services obligation as soon as practicable, once a technological solution was available. Yak and Vonage indicated that the Commission should afford the industry flexibility in developing 9-1-1/E9-1-1 standards for VoIP services. By contrast, the ACUQ, BCOAPO et al., Calgary, FCI Broadband, the OAB and Ontario suggested that there should be an imposed deadline by which local VoIP service providers would be obligated to support 9-1-1/E9-1-1 service.
38. Microcell submitted that the pace of the development of 9-1-1/E9-1-1 solutions would not be controlled by VoIP service providers alone, but would also be dependent on the actions of other parties, most notably the ILECs as operators of the provincial E9-1-1 networks.
39. MTS Allstream submitted that CISC would benefit from a process that identified specific tasks and timelines for the delivery and implementation of 9-1-1/E9-1-1 solutions. MTS Allstream suggested that CISC first address the implementation of E9-1-1 solutions for Local / Fixed Address VoIP services, then address FX VoIP services, first tackling in-boundary FX and then out-of-boundary FX, and finally adopt a plan to develop and implement 9-1-1/E9-1-1 service for nomadic VoIP services. MTS Allstream suggested that, to the extent possible, the plan for nomadic applications should be consistent with the immediate, interim and indefinite phases to address 9-1-1 VoIP calling identified by the NENA VoIP Technical Committee and its working groups.

40. With respect to resolving the issue of 9-1-1/E9-1-1 operability, TELUS stated that a timeframe of 18 months from the date of the Commission's determinations in this proceeding would be reasonable, while admitting that picking a hard date for a resolution was difficult given the variables involved and the complexity of the issue.

Interim solutions

41. Comwave's interim solution for handling 9-1-1 calls placed on its VoIP service involved forwarding calls to a third-party emergency call centre. Comwave explained that the 9-1-1 call was delivered to the intermediary operator's computer screen along with ANI, as well as name and address, whereupon the operator immediately verbally verified the nature of the emergency and transferred the call to the appropriate PSAP. Comwave added that if the caller was unable to speak, the operator would dispatch the authorities to the address indicated. Comwave noted that it advised its subscribers that Comwave provides 9-1-1 service through a third party.
42. Call-Net stated that where a Call-Net VoIP subscriber's service address matched the NPA-NXX location, 9-1-1 calls would be handled using traditional routing methods. Call-Net stated that in other situations, 9-1-1 calls would be routed to an internal Canada-wide call centre established by Call-Net. In these cases, the 9-1-1 calls would be routed by Call-Net's internal call centre to the appropriate emergency organization associated with the subscriber's physical location. Call-Net noted that subscribers must advise Call-Net of any change in location and Call-Net would accordingly revise its internal 9-1-1 routing information.
43. Primus stated that it submitted the required 9-1-1-related information to its underlying LEC and that LEC then passed the information to the ILEC to populate the ALI database. Primus further stated that for their customers whose service addresses matched the NPA-NXX exchange, 9-1-1 calls would be routed to the right PSAP with the right information. Primus explained that if the service was used nomadically or with an out-of-exchange NPA-NXX, the 9-1-1 call would be completed, but to the PSAP associated with the customer's NPA-NXX and without the typical ALI information being provided to the PSAP.
44. MTS Allstream and Calgary each reported that they had conducted 9-1-1 testing with Primus' VoIP service. MTS Allstream indicated that Primus' VoIP service calls were passed to the correct PSAP with the correct ANI and ALI information and that some call control features, such as call hold and call disconnection, had been proved to work consistently, but that there were problems with emergency ringback. MTS Allstream further noted that for FX or nomadic end-users subtending behind a VoIP switch or PBX, forwarding of ANI and ALI information to the PSAP did not work.
45. Vonage provided details regarding the 9-1-1 solution that it used in the United States, but noted that it could not be made available in Canada due to the fact that not all Canadian PSAPs accepted 10-digit routing, nor had 10-digit administrative lines to which calls could be routed. Vonage further stated that the 9-1-1 solution that it will implement in Canada would likely represent a partial solution.

Unbundling 9-1-1 elements

46. Xit submitted that competitors did not have the financial resources to provide an end-to-end 9-1-1 service that was as reliable as the 9-1-1 service provided by ILECs today and that, as such, the ILECs' 9-1-1 service needed to be viewed as an essential facility. Vonage stressed that unbundling of 9-1-1 elements was a critical precondition to the implementation of effective E9-1-1 service for VoIP. Primus and Microcell also supported the unbundling of components of the ILECs' 9-1-1 networks. The Companies and TELUS indicated that they were not clear what competitors were requesting with regard to 9-1-1 unbundling, but stated that they were prepared to discuss solutions that would allow all parties to provide emergency services to their customers.

Commission's analysis and determinations

47. The Commission notes that traditional 9-1-1/E9-1-1 service was developed for circuit-switched technology and that the features and capabilities of VoIP services present certain technical and operational challenges to local VoIP service providers in terms of their ability to support traditional emergency services. The Commission further notes that these challenges are, in some respects, similar to the challenges faced by the wireless industry.
48. The Commission notes that the degree to which a local VoIP service provider can support traditional 9-1-1/E9-1-1 services depends on how the local VoIP service is provided. In determining the appropriate emergency services obligations for local VoIP service providers, the Commission notes there are three different ways in which VoIP services can be deployed:
- from a fixed address with a telephone number that is native to one of the exchanges within the customer's PSAP serving area (fixed/native);
 - from a fixed address with a telephone number that is not native to one of the exchange within the customer's PSAP serving area (fixed/non-native); and
 - on a nomadic basis, where the customer does not necessarily make calls from a fixed address.
49. In using the term *fixed* to describe local VoIP services, whether it is provided with a native or a non-native telephone number, the Commission is referring to services without nomadic capability.

Fixed/native service

50. The Commission notes that reliable 9-1-1/E9-1-1 service using the existing wireline 9-1-1 system can be provided with local VoIP services, if the service provider knows the address from which the call is placed and has populated the ALI database with this address (service address).
51. The Commission notes that when local VoIP service is deployed on a fixed/native basis, which closely resembles wireline service, a 9-1-1 call will be routed to the proper PSAP and the PSAP agent will automatically receive ANI and ALI information, for E9-1-1 service, provided the service address is populated in the ALI database. The Commission further notes, however,

that not all E9-1-1 call control features are currently functional under this configuration. As reliable 9-1-1/E9-1-1 service, with ALI and ANI, can currently be provided with fixed/native local VoIP services, the Commission considers it to be in the public interest to ensure that local VoIP service providers, who offer fixed/native local VoIP service, provide 9-1-1/E9-1-1 service to their subscribers.

52. Accordingly, the Commission **directs** Canadian carriers offering fixed local VoIP services, where the end-user is assigned an NPA-NXX native to any of the local exchanges within the region covered by the customer's serving PSAP, to provide 9-1-1/E9-1-1 service, where it is available from the ILEC, within 90 days from the date of this Decision. This support is to include provisioning end-user information in the ALI database associated with the end-user's serving PSAP, and routing 9-1-1 calls, along with ANI and ALI data, to the correct PSAP in a manner that is compatible with the PSAP's systems. Call control features are to be supported to the extent technically feasible.
53. The Commission further **directs** all Canadian carriers, as a condition of providing telecommunications services to local VoIP service providers, to include in their service contracts or other arrangements with these service providers, the requirement that the latter abide by the directions set out in the preceding paragraph.

Fixed/non-native and nomadic service

54. The Commission notes that with local VoIP service offered on a fixed/non-native basis, a VoIP customer is assigned an NPA-NXX that is not native to any of the local exchanges within that customer's PSAP serving area. Under such a scenario, there are two fundamental concerns with respect to handling 9-1-1 calls: (a) calls may be routed to the wrong PSAP; and (b) the existing 9-1-1 system, including the ALI database, may not accept out-of-territory NPA-NXXs.
55. The Commission notes that parties generally agreed that if the NPA-NXX of a VoIP telephone number is not native to one of the local exchanges within the boundaries of the customer's serving PSAP, the ALI database would reject the customer's information and the 9-1-1 call would not be handled properly.
56. In addition to allowing customers the option of choosing a non-native telephone number, many local VoIP service providers allow customers to roam, that is to use their analogue telephone adapter from any location offering broadband access. Because of these nomadic capabilities, service providers are not currently able to automatically detect whether the service is being used from the registered service address or from some other location. Consequently, when a subscriber relocates, the service provider no longer has valid 9-1-1 routing or ALI information with which to process 9-1-1 calls from that customer, unless the customer updates his/her location information.
57. The Commission notes that no party to the proceeding described a comprehensive solution, practical for implementation in Canada at this time, that would ensure the proper routing of 9-1-1 calls and the delivery of accurate ALI information to the PSAPs when calls are placed using fixed/non-native or nomadic local VoIP service. The Commission further notes that no party could give a definitive timeline for when a comprehensive solution would be available.

58. The Commission notes that parties proposed two general types of interim solutions. One solution, submitted by Primus, is essentially to disregard the possibility that the local VoIP service was being used nomadically and to route all 9-1-1 calls to the PSAP associated with the customer's telephone number.
59. Although Primus' default routing approach is highly effective when a customer calls from the service address with a phone number native to the exchange serving that service address, the Commission notes that Primus also supports fixed/non-native and nomadic service. The Commission therefore considers that such a routing scheme is unacceptable, as it places undue additional burden on PSAPs, which are not equipped to deal with out-of-region callers. The Commission notes that simply routing 9-1-1 calls to what may be the wrong PSAP will lead to a slowdown in emergency response time.
60. The second type of interim solution, outlined by Call-Net and Comwave, bypasses the traditional 9-1-1 tandem switches and the traditional ALI database, and routes 9-1-1 calls directly to a third-party call centre. There, agents answer the call, verbally determine the nature of the emergency and the location of the caller, and transfer the call to the appropriate PSAP or emergency services agency.
61. The Commission considers that an interim solution that connects an emergency call to an intermediary, which in turn transfers the call to the proper PSAP or emergency services agency, provides benefits similar to Basic 9-1-1 service and superior to the alternative employed by Primus.
62. Furthermore, the Commission considers that an interim solution that uses an intermediary should mitigate the financial and other burdens that improper routing of calls places on PSAPs. In effect, the local VoIP service providers would absorb the costs of the temporary work-around by funding the intermediary call centres.
63. The Commission notes however that this type of interim solution is not without shortcomings, such as:
 - the call centre agent may be inadequately trained to deal with the types of emergencies that are commonly the subject of a 9-1-1 call;
 - in certain situations, the caller must be able to verbally communicate his/her location to the call centre agent;
 - adding a third party increases delays related to handling of 9-1-1 calls and thus increases the risk to the individual in an emergency calling situation; and
 - not all PSAPs provide a 10-digit administration number for use by third-party call centres, requiring these call centres to use alternative arrangements to transfer calls to emergency services personnel. Calls handled this way may not be given the same priority as normal 9-1-1 calls.

64. Notwithstanding these shortcomings, the Commission considers that intermediaries, serving as a hub for emergency calls, will at least ensure that a person in need of emergency services is able to contact someone tasked with the responsibility of seeking help for the caller.
65. Although such a solution deviates from the traditional routing methods used in the wireline and wireless markets, it does provide a level of 9-1-1 service functionally comparable to Basic 9-1-1 service. The Commission notes that in Decision 2003-53, it adopted a similar approach, by requiring wireless CLECs to provide 9-1-1/E9-1-1 service that is comparable to the level of service offered by the ILECs in that region.
66. The Commission notes that wireless CLECs are currently only obligated to provide wireless E9-1-1 service in those communities where wireless E9-1-1 network access is available from an ILEC. The Commission also notes that no comparable level of network access has yet been made available to local VoIP service providers offering nomadic service, yet certain parties argued that local VoIP service providers should not be permitted to offer local VoIP services until such time as they can support E9-1-1 service.
67. The Commission is of the view that to ignore the technological realities and to impose more stringent obligations on local VoIP service providers than are currently imposed on wireless CLECs would not only be harmful to competition, but would also be inconsistent with the pragmatic approach that the Commission has adopted for similar technical challenges faced in the wireless market. The Commission considers that until such time as a comprehensive solution, practical for implementation in Canada, is available, local VoIP service providers should be required to implement interim solutions that provide a level of service functionally comparable to Basic 9-1-1 service.
68. In light of the foregoing, the Commission **directs** Canadian carriers supporting nomadic local VoIP services or fixed/non-native local VoIP services to implement an interim solution, within 90 days from the date of this Decision, which provides a level of 9-1-1 service, in areas where 9-1-1/E9-1-1 service is available from the ILEC, that is functionally comparable to Basic 9-1-1 service. The Commission further **directs** Canadian carriers to ensure that a 9-1-1 call originating from a local VoIP service is not routed to a PSAP that does not serve the geographic location from which the call is placed.
69. The Commission also **directs** all Canadian carriers, as a condition of providing telecommunications services to local VoIP service providers, to include in their service contracts or other arrangements with these service providers, the requirement that the latter abide by the directions set out in the preceding paragraph.
70. All local VoIP service providers that cannot meet the deadline for implementation of an interim solution, set out in paragraph 68, are required to apply, within 30 days of this Decision, for an extension. The application must provide sufficient evidence to justify an extension, as well as provide an alternative implementation date.

CISC

71. The Commission notes that the industry has already made progress towards the development of interim solutions for the provision of 9-1-1/E9-1-1 service by local VoIP service providers, and considers that the development of comprehensive solutions requires time, effort, investment, and a co-operative approach. The Commission also notes that virtually every party agreed that CISC is the appropriate forum to analyze, evaluate and resolve issues related to the support of 9-1-1/E9-1-1 service by local VoIP service providers.
72. The Commission remains of the view that, as these are technical and operational issues, the most effective approach to resolving them is through the CISC process, provided that CISC is guided by a fixed timeline.
73. Accordingly, the Commission requests CISC to submit to the Commission, within six months from the date of this Decision, a report identifying the technical and operational issues that impede 9-1-1/E9-1-1 service delivery when local VoIP service is offered on a fixed/non-native basis, and, within one year from the date of this Decision, a similar report with respect to local VoIP service offered on a nomadic basis. Each report should identify all viable solutions and recommend the preferred solution(s), with supporting rationale, and a proposed timeframe for implementation.
74. The Commission also requests CISC to meet in person, at least once per month, and provide the Commission with quarterly status reports documenting achievements, as well as issues where progress has stalled.
75. The Commission notes that certain parties suggested that CISC may benefit from participation in the NENA process in the United States. The Commission recognizes that the progress made by other national telecommunications regulators, with respect to the provisioning of emergency services with local VoIP services, may be of value to the Canadian industry and encourages CISC to monitor the reports and progress being made in other jurisdictions on this important issue.

Unbundling 9-1-1 elements

76. The Commission notes that Xit, Vonage, Microcell and Primus emphasized a need for ILECs to unbundle their 9-1-1 network elements; however no specific details were provided with respect to the desired configurations. The Commission will address the unbundling of specific 9-1-1 network elements, if and when any party files an application making such a request.

Customer notification

Background

77. In Decision CRTC 2001-299, 31 May 2001, the Commission directed Maskatel to advise its FX customers that FX service does not typically provide access to certain services that are usually available with local services, including 9-1-1/E9-1-1 service.

78. Similarly, in Decision 2003-53, the Commission directed all WSPs to file proposals for providing their subscribers with notification of the availability, characteristics and limitations of the 9-1-1 service offered by the WSPs. As a follow-up to that Decision, Commission staff issued a letter on 21 February 2005, outlining approaches for providing WSP subscribers with such notification. Accordingly, WSPs are to provide, through a variety of communication tools, all new or existing customers with initial notification of 9-1-1 service limitations, and provide all customers with on-going periodic notification (given annually, at a minimum).

Position of parties

79. The following parties were of the view that local VoIP service providers should be directed, as an interim measure, to notify customers of the 9-1-1/E9-1-1 service limitations, associated with their local VoIP service: the ACUQ, AT&T, Calgary, Call-Net, the CCTA, the CCTP, the Companies, Cybersurf, MCI Canada, MTS Allstream, Primus, TELUS, Vonage and Yak.
80. Parties proposed various methods by which customer notification should be provided, including: service provider's website, service contracts, starter kits, customer service representatives, marketing materials, terms and conditions of service, warning stickers on telephone sets, and billing inserts.
81. Vonage indicated that it required confirmation that its customers understand the 9-1-1 service limitations associated with their VoIP services. The Companies stated that their customers would be asked to confirm that they understand and accept the terms and conditions of their VoIP services at the time of subscription.
82. Call-Net stated that, at service activation, its subscribers were informed that they must advise the company when accessing their VoIP service from a location different than the service address. Call-Net also stated that its customer equipment was equipped with prominent warning labels advising customers of this requirement.
83. The following parties opposed the adoption of a customer notification process, considering it an insufficient measure to ensure public safety: ARCH, BCOAPO et al., the CEP, the Consumer Groups, FCI Broadband, the GVRD and the TWU.
84. BCOAPO et al., the CEP and the Consumer Groups shared the view that there can be no justification for tolerating any degree of foreseeable and avoidable risk of harm to the public for the sake of accelerating the introduction of new competition in the telecommunications market. They argued that in lieu of requiring customer notification, the Commission should impose an obligation on VoIP service providers to provide 9-1-1 service as a condition of entry into the Canadian market. The TWU submitted that if certain providers were not able to provide 9-1-1/E9-1-1 initially, then they should be required to cease selling their VoIP services until they are able to do so.
85. The Consumer Groups stated that while consumers might recognize at sign-up that there were 9-1-1 service limitations associated with their VoIP service, when an emergency strikes, they might forget about the information provided to them at sign-up. They added that in an emergency, an individual would pick up any available telephone and expect to be able to connect to a local PSAP. BCOAPO et al. echoed the Consumer Groups on this point.

86. ARCH submitted that one could not ensure that individuals who check off a box on a contract truly understand what they had agreed to. ARCH indicated that for many persons with a variety of disabilities, the advance notice would be potentially meaningless. ARCH submitted that such notice would only be accessible to persons with visual disabilities if it was provided in alternative formats (e.g., Braille and large print). ARCH further submitted that persons with cognitive disabilities might not understand such a notice unless it was written in language accessible to them or unless there was a requirement that it be explained to them.
87. The GVRD stated that VoIP service providers must appreciate that the public would not necessarily read warnings about limited 9-1-1 service.

Commission's analysis and determinations

88. The Commission has previously noted that there is a general public expectation with respect to the availability of reliable 9-1-1/E9-1-1 service. The Commission considers that this expectation exists regardless of the type of technology that callers use to access 9-1-1/E9-1-1 service.
89. Because of this expectation, it is the Commission's view that if local VoIP service providers are permitted to provide services that offer limited or no 9-1-1/E9-1-1 service and customers are unaware of these service limitations, there is a public safety risk. To mitigate this risk, the Commission considers it appropriate to mandate a customer notification process.
90. The Commission considers that not all proposed methods of notification would be effective at all times. For example, notification contained in service contracts or starter kits would not reach all potential 9-1-1 users, such as a baby-sitter, friend or family member unaware of the terms of service. The Commission therefore considers it necessary that customers receive notification, both before signing up for service and during service provision.
91. The Commission considers that providing initial customer notification before service commencement would ensure that potential customers make an informed choice when opting for local VoIP services.
92. The Commission considers that ongoing customer notification, included in billing inserts and made available in the form of a sticker to be affixed on the telephone set, would serve two additional purposes. Such notification would act as a reminder to customers that their local VoIP service has 9-1-1/E9-1-1 service limitations. The notification would also serve as a warning to any person wishing to dial 9-1-1 from any VoIP telephone set.
93. Accordingly, the Commission **directs** all Canadian carriers offering local VoIP services to provide initial customer notification, regarding any limitations that may exist with respect to 9-1-1/E9-1-1 service, before service commencement. This information is to be made available through all of the following: marketing material used for television, radio and printed media, the terms and conditions of service, on-line material, customer service representatives, service contracts and starter kits.

94. The Commission further **directs** all Canadian carriers offering local VoIP service to provide on-going customer notification during service provision through all of the following: marketing material used for television, radio and printed media, the terms and conditions of service, on-line material, customer service representatives, warning stickers affixed to telephone sets and billing inserts.
95. The Commission requests CISC to develop standard notifications, for the implementation of this requirement, and report back to the Commission within 60 days from the date of this Decision.
96. The Commission notes some parties' concerns that customers may not fully understand the 9-1-1/E9-1-1 service limitations, as provided to them in the notification prior to service commencement. The Commission considers it appropriate to require local VoIP service providers to obtain express customer consent, by which a customer would acknowledge his/her understanding of this notification.
97. In *Part VII application to revise Article 11 of the Terms of Service*, Telecom Decision CRTC 2005-15, 17 March 2005 (Decision 2005-15), the Commission found that express consent for the disclosure of confidential customer information may be taken to be given where the customer provides:
- written consent;
 - oral confirmation verified by an independent third party;
 - electronic confirmation through the use of a toll-free number;
 - electronic confirmation via the Internet;
 - oral consent, where an audio recording of the consent is retained by the carrier; or
 - consent through other methods, as long as an objective documented record of customer consent is created by the customer or by an independent third party.
98. In cases where there are limitations on VoIP 9-1-1/E9-1-1 service, the Commission **directs** Canadian carriers offering local VoIP services to obtain, prior to commencement of service, the customer's express consent, by which the customer acknowledges his/her understanding of the 9-1-1/E9-1-1 service limitations, using one of the methods approved in Decision 2005-15. To ensure that information regarding limitations on 9-1-1/E9-1-1 service is accessible to persons with visual disabilities, all customer notification, and any printed information used to secure the express customer consent, must be provided in alternative formats (e.g., Braille and large print), upon request. Furthermore, to ensure that such documentation is accessible to persons with cognitive disabilities, local VoIP service providers are required, at a minimum, to explain it, upon request.
99. The Commission **directs** all Canadian carriers, as a condition of providing telecommunications services to local VoIP service providers, to include in their service contracts or other arrangements with these service providers, the requirement that the latter abide by the directions set out in paragraphs 93, 94 and 98.

Funding for 9-1-1/E9-1-1 service

Provincial 9-1-1 networks

Background

100. The ILECs, who own and operate the provincial 9-1-1 networks, charge their local exchange subscribers, resellers and certain interconnecting carriers, including CLECs and WSPs, a tariffed monthly 9-1-1 service rate to recover the costs of their provincial 9-1-1 networks. This rate was first approved in Decision 93-12, when the Commission found that Bell Canada's provincial 9-1-1 service was in the public interest.
101. Multi-line customers are charged the 9-1-1 service rate per access line equipped for outward calling, Centrex customers are charged per working telephone number (WTN), CLECs are charged per network access service or WTN, and WSPs are charged by wireless WTN. The methods of charging other customers and resellers vary among ILECs, in accordance with each ILEC's 9-1-1 service tariff.

Position of parties

102. Calgary stated that the framework for VoIP regulation must allow for adequate, equitable and sustainable funding of provincial 9-1-1 networks. Calgary submitted that all users of local telephone service should be required to contribute to the funding of 9-1-1, no matter what underlying technology was used to provide service. The GVRD was also concerned about the equitable distribution of costs for 9-1-1 service, specifically about possible rate increases in the event of a major shift to VoIP services.
103. Calgary requested that the Commission provide clear direction indicating that VoIP service providers must contribute to the funding of provincial E9-1-1 networks on the basis of the number of VoIP WTNs equipped for outgoing access to the PSTN, because to do otherwise would cause wireline subscribers to bear a disproportionate share of 9-1-1 service costs. QMI expressed a similar view, and indicated that it would not oppose paying the 9-1-1 service rate in accordance with prevailing ILEC 9-1-1 service tariffs, provided competitive equity was ensured.
104. The CCTA stated that it anticipated that payment for 9-1-1 access would form part of the charge that VoIP service providers would collect from subscribers and noted that there was no regulatory requirement that CLECs or resellers collect this payment as a separate or distinct charge on customers' bills.
105. MTS Allstream was of the view that LECs and WSPs were obligated to remit 9-1-1 fees, irrespective of whether the local voice service was provided as primary exchange service or VoIP service.
106. TELUS stated that it would apply the 9-1-1 charges, in accordance with its tariff, to local VoIP service providers in the same manner as it currently applied to other resellers, i.e., based on the PSTN access connections and not on WTNs.

Commission's analysis and determinations

107. The Commission notes that, under the current regulatory framework, all local subscribers, end-users and wireless customers served by provincial 9-1-1/E9-1-1 networks contribute to the recovery of the ILECs' costs of maintaining these networks, in accordance with the ILECs' 9-1-1 service tariffs.
108. With respect to parties' concerns regarding the ways in which local VoIP service providers remit the 9-1-1 service rate to the ILECs, for their local VoIP service customers (i.e., per PSTN access circuit rather than per WTN), the Commission considers that the ILECs' current provincial 9-1-1 tariffs should apply to local VoIP service providers in the same manner as they apply to other carriers and resellers. The Commission notes that should there be a need to modify these tariffs, the ILECs or any other party may file an application to request such modifications.

Funding of 9-1-1 call centres

109. A number of parties made submissions regarding the on-going funding of 9-1-1 call centres, which are managed and operated by local, municipal, or provincial governments (the municipalities). The Commission notes that pursuant to provincial laws, municipalities are authorized to enact by-laws imposing fees and charges on any class of persons, including telephone subscribers, for services or activities provided or done by or on behalf of the municipality. The Commission further notes that in those regions of Canada where the fees and charges have been levied on telephone subscribers, the municipality and the Canadian carrier have entered into billing and collection agreements.
110. A number of parties submitted that the Commission should mandate billing and collection agreements between the municipalities and local VoIP service providers. The Commission notes that Canadian carriers have the option of applying for approval of a service that would permit them to bill and collect on behalf of the municipalities.

Secretary General

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