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FOR PUBLIC INSPECTION

Via ECFS

June 16, 2014

Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
Room TW-A325
445 12th Street, S.W.
Washington, DC 20554

Re: *Inquiry into Circumstances of Major 911 Outage Centered in Washington State on April 9-10, 2014, PS Docket No. 14-72 – Comments of CenturyLink*

Dear Ms. Dortch:

Enclosed for filing in the above-referenced proceeding are two hard copies of the non-redacted Comments of CenturyLink. The Comments include Exhibit A, a network diagram of the Washington 911 system that is a confidential document. Inasmuch as no protective order has been adopted to date in PS Docket No. 14-72, attached to this correspondence is an Appendix wherein CenturyLink requests confidential treatment of the diagram pursuant to 47 C.F.R. §§ 0.457, 0.459, and provides its justification for such treatment. Such material presumably also would be entitled to confidential treatment pursuant to 47 C.F.R. § 4.2.

Exhibit A is marked "**CONFIDENTIAL – NOT FOR PUBLIC INSPECTION**" and is included only with the non-redacted version of CenturyLink's Comments, which are being filed today in hard copy with the Office of the Secretary. No confidential information is contained in the Comments to which Exhibit A is appended, and nor does this correspondence contain any confidential information. Also included is an extra copy of the non-redacted version of today's submission, to be stamped and returned to the courier. A redacted version of CenturyLink's Comments, in which Exhibit A has been omitted, and which are marked "**FOR PUBLIC INSPECTION**" are simultaneously being filed in the above-referenced proceeding via the Commission's Electronic Comments Filing System.

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Please contact the undersigned or Melissa Newman (202-429-3120) in CenturyLink's Federal Regulatory Affairs office if you have any questions.

Sincerely,

/s/ Jeanne W. Stockman

Attachments

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APPENDIX

Confidentiality Request/Justification

47 C.F.R. § 0.457

CenturyLink requests confidential treatment of its Exhibit A, “Washington 911 Architecture,” as attached to its Comments of June 16, 2014 in PS Docket No. 14-72, pursuant to 47 C.F.R. § 0.457. This type of material, which is the confidential and proprietary commercial information of CenturyLink that is not routinely available for public disclosure, is protected from public availability under 47 C.F.R. § 0.457(d). Presumably, Exhibit A also would be entitled to confidential treatment pursuant to 47 C.F.R. § 4.2, which is referenced in 47 C.F.R. § 0.457(d)(1)(vi).

47 C.F.R. § 0.459

Should the Commission not deem Exhibit A as protected from public disclosure under 47 C.F.R. § 0.457, then CenturyLink requests confidential treatment pursuant to 47 C.F.R. § 0.459(b) as described as follows.

Information for which confidential treatment is sought

CenturyLink requests confidential treatment under 47 C.F.R. § 0.459 of its Exhibit A, “Washington 911 Architecture,” as attached to its Comments of June 16, 2014 in PS Docket No. 14-72. The Exhibit reflects confidential and proprietary commercial information. Exhibit A, for which confidential treatment is sought, bears the legend **CONFIDENTIAL – NOT FOR PUBLIC INSPECTION**.

Commission proceeding in which the information was submitted

Exhibit A is being submitted appended to the Comments of CenturyLink on June 16, 2014 in PS Docket No. 14-72.

Degree to which the information in question is commercial or financial, or contains a trade secret or is privileged

Exhibit A is commercial information that CenturyLink considers proprietary and confidential. Specifically, the information is a network diagram of the Washington 911 system that includes outage-related information that also presumably would be considered confidential pursuant to 47 C.F.R. § 4.2.

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Degree to which the information concerns a service that is subject to competition; and manner in which disclosure of the information could result in substantial competitive harm

The type of information in Exhibit A would generally not be subject to routine public inspection under the Commission's rules (47 C.F.R. § 0.457(d)), demonstrating that the Commission already anticipates that the release of this type of information likely would produce competitive harm. The telecommunications services CenturyLink provides -- local exchange and interexchange services, etc. -- are all competitive. The release of this confidential and proprietary information would cause competitive harm by allowing competitors to become aware of sensitive proprietary information regarding CenturyLink's business and operations. The outage-related information also presumably would be considered confidential pursuant to 47 C.F.R. § 4.2.

Measures taken to prevent unauthorized disclosure; and availability of the information to the public and extent of any previous disclosure of the information to third parties

CenturyLink has treated and treats the information disclosed in Exhibit A as confidential and has protected it from public disclosure.

Justification of the period during which CenturyLink asserts that the material should not be available for public disclosure

At this time, CenturyLink cannot determine any date on which Exhibit A should not be considered confidential.

Other information that CenturyLink believes may be useful in assessing whether its request for confidentiality should be granted

Under applicable FCC and court rulings, the information in question should be withheld from public disclosure. Exemption 4 of the Freedom of Information Act shields information that is (1) commercial or financial in nature; (2) obtained from a person outside government; and (3) privileged or confidential. The information in question satisfies this test.

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**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)
)
Inquiry into Circumstances of Major 911) PS Docket No. 14-72
Outage Centered in Washington State)
on April 9-10, 2014)

COMMENTS OF CENTURYLINK

I. INTRODUCTION

CenturyLink files these comments in response to the Federal Communications Commission's ("FCC" or "Commission") May 16, 2014 Public Notice¹ requesting information about the 911 outage centered in the State of Washington on April 9-10, 2014. As stated in the Public Notice, this outage also affected portions of Oregon, California, Pennsylvania, Minnesota, Florida, North Carolina, and South Carolina. Given the large area impacted by this outage and the interdependent communications infrastructure spread across multiple states and providers, the Public Notice is soliciting information on the causes, effects, and implications of this outage.²

Due to a technical problem in third-party vendor equipment, CenturyLink experienced a major 911 service outage in Washington in the early hours of April 10, 2014. This same technical problem also caused limited CenturyLink 911 service outages in Minnesota and North

¹ In re: Public Safety and Homeland Security Bureau Announces Inquiry into Circumstances of Major 911 Outage Centered in Washington State on April 9-10, 2014, PS Docket No. 14-72, Public Notice, DA 14-676 (rel. May 16, 2014) ("Public Notice").

² Public Notice, at 1.

Carolina during the same timeframe.³ The outages in Washington, Minnesota and North Carolina were not caused by any failures or malfunctions of CenturyLink’s network. As discussed more fully below, this technical problem prevented the 911 system from properly processing 911 calls for approximately six (6) hours. Once the third party vendor identified and corrected this technical problem, 911 service was immediately restored.

CenturyLink is fully committed to providing its customers reliable communications services, particularly 911 service, and understands how vital robust communications services are to the public. On learning 911 service was impaired, CenturyLink immediately began working closely with its vendor partner to isolate the cause and communicating with affected public safety answering points (“PSAPs”) to update them on network status. CenturyLink remained in frequent contact with PSAPs throughout the outage until service was restored. CenturyLink also ensured that its third-party vendor took corrective steps not only to remedy the outage at hand, but also to prevent a future recurrence. Also during and after these outages, CenturyLink was in close communications with the Commission via telephone and the Network Outage Reporting System (“NORS”).

CenturyLink appreciates and shares the Commission’s concern about this outage given its substantial impact within the State of Washington, as well as its geographic reach to other states

³ The Public Notice references Oregon as one of the states affected by the outage centered in the State of Washington. *Id.* In addition to the outage affecting Washington, Minnesota and North Carolina, on April 10, 2014 CenturyLink experienced a separate 911 outage that affected approximately 16,000 people in 3 Oregon counties for 3 hours and 26 minutes due to a maintenance issue unrelated to the third-party equipment issue discussed throughout the majority of this filing. While CenturyLink takes any outage of its 911 network very seriously, CenturyLink devotes this filing to the Washington, Minnesota, and North Carolina outage given its common cause and large scope.

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thousands of miles away. However, in contrast to the large number of discrete failures with related causes that resulted in 911 outages during and after the June 2012 Derecho,⁴ it is CenturyLink's understanding that this service disruption – though undeniably significant – had a much more isolated cause. Further, given that CenturyLink experienced a 911 outage in only a subset of the states listed on the Public Notice, there were clearly impacts beyond CenturyLink's network. However, given the confidentiality of the NORS process and outage reporting in general, as of this writing, CenturyLink is not aware if those other outages were triggered by the same third-party vendor issue that CenturyLink experienced. CenturyLink respectfully submits that only once all relevant information is available from all of the outages referenced in the Public Notice can the appropriate next steps be determined to ensure 911 network reliability and resiliency going forward.

II. CENTURYLINK'S APRIL 9-10, 2014 911 NETWORK OUTAGE IN WASHINGTON, MINNESOTA AND NORTH CAROLINA WAS CAUSED BY A TECHNICAL PROBLEM IN THIRD-PARTY VENDOR EQUIPMENT

A. Washington 911 Architecture Background

CenturyLink is the sole wireline 911 service provider for the State of Washington and has partnered with Intrado to provide this service. The contract was executed between Qwest and the State of Washington in 2008 and effective in 2009. Service was turned up in 2009 and a

⁴ The Public Safety and Homeland Security Bureau found that, above and beyond any physical destruction by the derecho, 911 communications were disrupted in large part because of avoidable planning and system failures, including inadequate physical diversity of critical 911 circuits and a lack of functional backup power in central offices. *See, In the Matter of Improving 911 Reliability, and Reliability and Continuity of Communications Networks, Including Broadband Technologies*, PS Docket Nos. 13-75 and 11-60, Report and Order, 28 FCC Rcd 17476, 17483 (2013).

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transition began at that time from legacy 911 to Emergency Services IP Network (“ESINet”). All PSAPs in Washington completed that transition by March 2012. The network was designed and finalized with the concurrence of CenturyLink, Intrado, and representatives from the State of Washington. The ESINet itself is internal to Intrado. In this partnership, Intrado provides 911 call routing and Automatic Location Identification (“ALI”) services through a redundant network. A network diagram of the Washington 911 system is attached as **CONFIDENTIAL** Exhibit A. In addition to Washington, CenturyLink also uses Intrado to provide these services to certain PSAPs in Minnesota, North Carolina, and Utah, and the basic network diagram for these states is the same as set forth in Exhibit A.

The network is designed with redundant elements. The standard is to have one element designated as Primary, with overflow and failover to the other element which is designated as Secondary. This allows the network to take advantage of all call paths to the PSAPs to maximize call completion. As shown on Exhibit A, under normal operations, 911 calls from originating service providers are generally routed to the region’s Primary Intrado gateway where they are converted to Internet Protocol (“IP”) data packets. Intrado has a Secondary redundant gateway in place that is physically diverse from the Primary gateway. These gateways direct traffic to a given Intrado IP selective router housed in an Emergency Call Management Complex (“ECMC”) and failover to a redundant Secondary ECMC in another location. Intrado’s Englewood, Colorado ECMC houses what is generally the Primary IP selective router for the State of Washington, while the Secondary IP selective router is located in Intrado’s Miami, Florida ECMC. The Intrado IP selective router collects the packetized data transmission that may

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include a voice call and related information from various databases and routes those data packets to the PSAP. The PSAP uses a gateway module or router to hand off data from the Intrado ESINet to the 911 customer premise equipment (“CPE”) owned by the PSAP to take 911 calls. All Washington PSAPs use Centralized Automatic Message Accounting (“CAMA”) trunks to interface the PSAP call taker equipment with the ESINet, and do not yet employ direct SIP-enabled CPE.

CenturyLink does not have visibility into Intrado or into Intrado’s network. Now that all PSAPs in Washington are on the ESINet, all reroutes for the PSAPs are done by Intrado Network Operations Center (“NOC”) personnel at the request of CenturyLink.

B. The Outage, Its Root Cause and Impact

CenturyLink is advised that on April 9, 2014 at 11:54 PM PDT, Intrado’s PSAP Trunk Member (“PTM”) threshold counter in the Englewood (Primary) ECMC exceeded its administered threshold. Under normal operations for calls to PSAP CAMA destinations, this counter is incremented when a PSAP CAMA trunk is assigned for call delivery and is used as a unique identifier within the geographically distributed databases. When the threshold counter reached capacity, no additional database entries to reserve a PSAP CAMA trunk could be created, resulting in the inability to assign a trunk for call delivery.

CenturyLink understands that Intrado has alarms in place to monitor the PTM. These alarms were delivered, but the alarms were not specific nor was the appropriate severity clear to Intrado. Since CenturyLink lacks visibility to Intrado’s network, CenturyLink did not receive such an alarm. At the same time that the PTM was alarming, CenturyLink understands that

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Intrado's NOC was receiving other notifications regarding additional network alarms for simultaneous events. NOC to NOC communications between Intrado and CenturyLink initially focused engineers' attentions on the transport network before the issue was properly diagnosed.

As described above, the system is redundant and geographically diverse, and designed to failover between core processing sites. However, CenturyLink is advised that this situation occurred at a point in Intrado's application logic that was not designed to perform any automated corrective actions, which means that no failure response was sent back through their network to trigger alternate call routing. CenturyLink understands that the situation at the Englewood ECMC did not affect the processing at Intrado's Miami ECMC. During the time of impact, CenturyLink understands that all calls that routed through Intrado's Englewood ECMC to PSAP CAMA destinations were impacted, and callers experienced either Fast Busy or Ring No Answer. Once the problem was properly diagnosed, Intrado initiated manual failover of all call processing to the Miami ECMC. CenturyLink understands that service was restored after completion of this step, at approximately 6:06 AM PDT on April 10, 2014.

The outage lasted approximately 6 hours and 12 minutes and CenturyLink is knowledgeable of major impacts on the State of Washington and lesser impacts in Minnesota and North Carolina. CenturyLink is aware of this outage having affected 127 PSAPs in Washington, 11 PSAPs in Minnesota, and 3 PSAPs in North Carolina. Approximately 4,452 calls in the States of Washington, Minnesota and North Carolina were impacted during the outage. Given that additional states are listed in the Public Notice, CenturyLink has reason to believe that there may have been greater impacts beyond what it details here.

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Despite this technical issue with the PTM, there were 792 successful calls in CenturyLink's affected areas during the outage. CenturyLink understands that all of these calls processed through the Miami ECMC, as well as calls routed by the Englewood ECMC to PSAPs using any other method of connectivity besides analog CAMA connectivity were successful. As described above, CenturyLink understands that only calls to PSAPs using CAMA connectivity via the Englewood ECMC were impacted.

C. Communications Concerning the Outage

CenturyLink was notified of the outage by one of its PSAP customers in Washington at approximately 12:40 AM (PDT) on April 10, 2014. CenturyLink informed Intrado of the outage and began notifying the affected PSAPs by telephone, but at that time the full scope of the outage was not yet known. CenturyLink continued reaching out to additional affected PSAPs and the Washington State E911 Coordinator's Office and making test calls as the wide scope of the outage became clearer through the early morning hours of April 10, 2014, and was ultimately resolved. CenturyLink also worked with Intrado to help implement re-routes at the request of some PSAPs in an effort to enable them to receive 911 calls during the event. Throughout the duration of the outage CenturyLink was busily responding to PSAPs and Washington State officials with status updates, reaching out to Intrado for information since CenturyLink lacked visibility to the Intrado equipment issue, and seeking escalation of this issue both within Intrado and CenturyLink to prompt resolution. To apprise the Washington public of the outage, CenturyLink posted notices on Facebook and Twitter in the early morning hours of April 10, 2014 and reached out to various other traditional media outlets. To inform the Commission of

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events, CenturyLink promptly filed NORS reports as required by Part 4 of the Commission's Rules and was in telephone contact with the Public Safety and Homeland Security Bureau.

D. Corrective Actions Taken and Ongoing Measures

Intrado has advised that it has taken specific, corrective steps to ensure the same 911 outage will not occur again: (1) the PTM threshold has been increased for both ECMCs so that it is not theoretically possible to exhaust the threshold ranges; (2) an enhanced alarming system has been implemented with a specific, identifiable alarm if the PTM threshold is ever reached; (3) periodic manual checks of the counter are being performed; and (4) Intrado technical teams are actively engaged in an architecture review. With respect to the PTM threshold, the threshold counter is increased each time a PSAP CAMA trunk is utilized and CenturyLink understands that the current threshold has been moved from millions to billions. Intrado advises it is now actively monitoring the counter and will reset it as needed until the threshold range is no longer part of the architecture. CenturyLink understands that architecture changes are scheduled for later in the year. Additionally, the architecture is being further modified to divert individual calls to another ECMC if call processing cannot be completed due to unforeseen resource issues, as well as to remove database inserts for all call processing interactions.

Intrado and CenturyLink have also initiated joint measures to learn from this experience and improve the reliability and resiliency of the 911 network. Specifically, Intrado and CenturyLink will engage in a NOC-to-NOC partnership session to work through NOC-to-NOC challenges and establish or clarify process changes. While Intrado and CenturyLink had outage handling procedures in place prior to this event, they have since adopted additional procedures

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such as the establishment of a joint technical bridge, a modified escalation process, and an outage and event group email notification. Intrado and CenturyLink will also jointly review the ingress trunking configuration distribution between ECMC processing sites. Intrado and CenturyLink are also jointly reviewing the current architectural design to assess potential improvements for even greater resiliency.

Additionally, the Staff of the Washington Utilities and Transportation Commission has initiated an investigation of this outage. On April 24, 2014, CenturyLink filed a major outage report as required by Washington Administrative Code (WAC) 480-120-439.⁵ On May 30, 2014, CenturyLink, with Intrado's participation, responded to Staff's data requests. The investigation remains ongoing.

III. CONCLUSION

CenturyLink has a deep commitment to public safety and takes its role as a 911 provider extremely seriously. As CenturyLink communicated in statements released immediately following this outage, CenturyLink's top priority is customer safety and reliable communications.⁶ CenturyLink constantly invests in its network and proactively reviews its network performance. Even though this outage was not caused by any failures or malfunctions of CenturyLink's network, this event shows how carriers must remain vigilant to ensure the utmost reliability and resiliency of the 911 network. However, based on the information CenturyLink has to date, not only is the cause of this outage quite different than the outages

⁵ See, Docket UT-140597 (Washington Utilities and Transportation Commission).

⁶ See, e.g., <http://www.seattlestar.net/2014/04/centurylink-speaks-911-has-been-returned-to-normal/> (visited June 13, 2014).

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caused by the June 2012 Derecho, this cause has been remedied. Because the Public Notice suggests there were impacts beyond what CenturyLink experienced, CenturyLink respectfully submits that only once all relevant information from all of the outages referenced in the Public Notice is available can the appropriate next steps be determined to best ensure 911 network reliability and resiliency going forward.

Respectfully submitted,

CENTURYLINK

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Dated: June 16, 2014

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EXHIBIT A – FOR PUBLIC INSPECTION

(Redacted in its Entirety)