



Jason D. Topp
Assistant General Counsel
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February 15, 2019

Mr. Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101

**Re: In the Matter of a Commission Inquiry into the 911 Obligations of West,
Inc. and CenturyLink
MPUC Docket No. P-6049, 421/CI-18-542**

Dear Mr. Wolf:

Enclosed for filing are Qwest Corporation dba CenturyLink QC's Comments regarding the above-referenced matter.

Very truly yours,

/s/ Jason D. Topp

JDT/bardm

Enclosure

cc: Service List

STATE OF MINNESOTA
BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Nancy Lange	Chair
Dan Lipschultz	Commissioner
Matt Schuerger	Commissioner
Katie Sieben	Commissioner
John Tuma	Commissioner

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AFFIDAVIT OF SERVICE

STATE OF MINNESOTA)
) ss
COUNTY OF HENNEPIN)

Dianne Barthel hereby certifies that on the 15th day of February, 2019, she e-filed a true and correct copy of Qwest Corporation dba CenturyLink QC's Comments by posting it on www.edockets.state.mn.us. Said document was also served on the service list via U.S. mail and e-mail as designated with the Minnesota Public Utilities Commission.

/s/ Dianne Barthel
Dianne Barthel

Subscribed and sworn to before me
this 15th day of February, 2019.

/s/ LeAnn M. Cammarata
Notary Public

My Commission Expires Jan 31, 2020

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Linda	Chavez	linda.chavez@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 55101-2198	Electronic Service	No	OFF_SL_18-542_Official
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1800 St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_18-542_Official
Regulatory	Department	N/A	West Safety Communications Inc.	1601 Dry Creek Dr Longmont, CO 80503	Paper Service	No	OFF_SL_18-542_Official
Ian	Dobson	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	Yes	OFF_SL_18-542_Official
Pete	Eggimann	PEGGIMANN@MN-MESB.ORG	Metropolitan Emergency Services Board	2099 University Ave W Ste 201 St. Paul, MN 551043431	Electronic Service	No	OFF_SL_18-542_Official
William	Phillips	wphillips@aarp.org	AARP	30 E. 7th St Suite 1200 St. Paul, MN 55101	Electronic Service	No	OFF_SL_18-542_Official
Jason	Topp	jason.topp@centurylink.com	CenturyLink	200 S 5th St Ste 2200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_18-542_Official
Dana	Wahlberg	dana.wahlberg@state.mn.us	Department of Public Safety	Town Square Ste 137 444 Cedar St St. Paul, MN 551015126	Electronic Service	No	OFF_SL_18-542_Official
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	Yes	OFF_SL_18-542_Official

**STATE OF MINNESOTA
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QWEST CORPORATION DBA CENTURYLINK QC'S COMMENTS

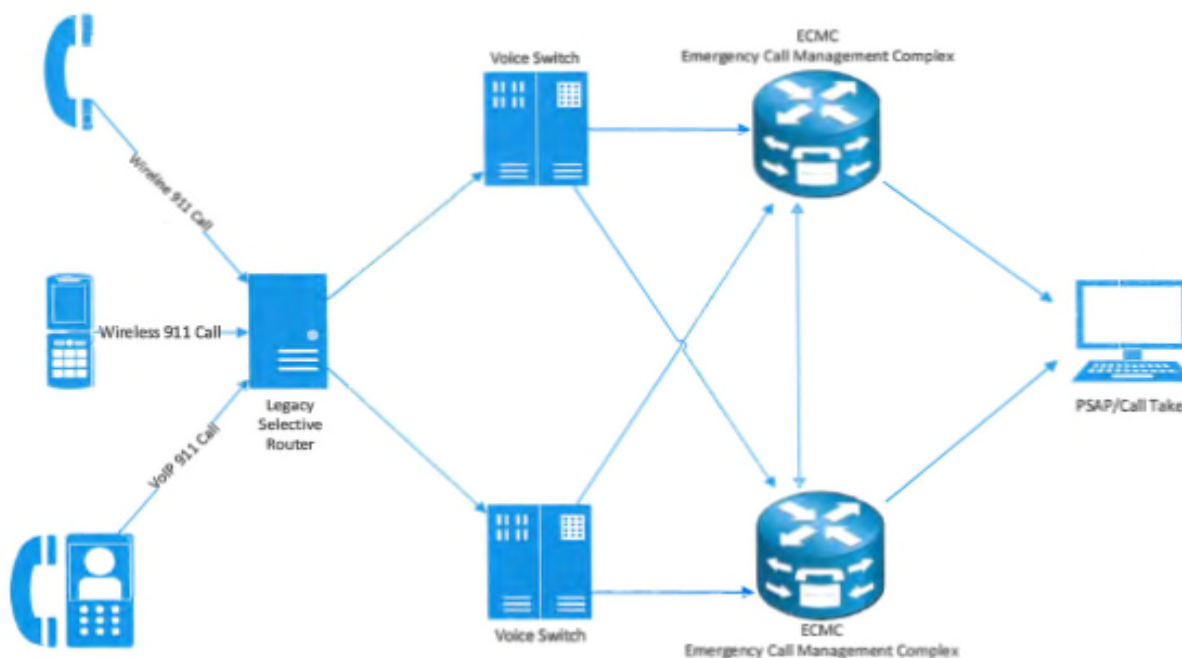
CenturyLink files these comments in response to the Commission's August 22, 2018 Notice of Investigation and Comment Period ("Notice") related to the 911 Outage on August 1, 2018. The Notice raises the following issues:

- Minnesota experienced a 911 outage on August 1, 2018. Did West and CenturyLink comply with all statutes, Commission rules, and Commission orders relating to adequate service in their provision of 911 service?
- Do West and CenturyLink have adequate protections in place to ensure that future 911 outages will be prevented?
- Are there other issues or concerns related to this matter?

CenturyLink is not aware of any allegations that it or West Safety Services, Inc. ("West Safety Services"), the CenturyLink vendor involved in the August 1, 2018 outage, violated Commission rules or Commission orders with respect to this outage. Nonetheless, CenturyLink recognizes the critical nature of 911 services and provides these comments to inform the Commission of (1) the design of its 911 system; (2) the cause of the outage; (3) efforts made to address the outage once it occurred and (4) steps CenturyLink and West Safety Services have taken to prevent similar outages in the future.

DISCUSSION

CenturyLink contracts with West Safety Services to provide Next Generation 911 services in Minnesota. The Next Generation 911 services system routes 911 calls and all associated data to one of two Emergency Call Management Centers (“ECMC”) operated by West Safety Services and located in Miami, Florida and Englewood, Colorado. Each Public Safety Answering Point (“PSAP”) designates one of these two ECMCs as the primary ECMC. If a call cannot be completed to the primary ECMC, the call will be routed to the other ECMC as a backup. The following diagram illustrates how the system is designed:



The Outage:

The outage on August 1, 2018 that is the subject of this proceeding, occurred because of human error by an employee of West Safety Services when provisioning additional trunks (circuits that connect one network device to another) to the Miami ECMC. Trunks can be physical facilities, or, more commonly, software instructions to the network designed to

ensure that traffic assigned to that trunk travels to its intended destination. Managing network infrastructure involves continuous management and alterations to trunks to ensure adequate capacity exists to handle anticipated traffic so that calls reach the correct destination.

When a caller places a call to 911, the call and data associated with that call (such as location) are routed via trunks to an ECMC. If, for some reason, the call is not completed to the ECMC, West Safety Services software sends a “cause code” back to the originating provider indicating how the call was handled and allowing any calls that were not delivered to a primary ECMC to be routed to the backup ECMC.

In this case, a West Safety Services employee inadvertently implemented a configuration change that prevented the Miami ECMC from accepting inbound 911 calls for routing, prevented calls from being rerouted to the redundant data center in Englewood ECMC, and returned a cause code indicating “No Route Found” to CenturyLink. The “No Route Found” cause code could not allow calls to be re-routed on the CenturyLink network and CenturyLink’s alarming indicated a simplex event suggesting there was an available path to the backup ECMC to route the 911 calls. Consequently, CenturyLink’s systems did not know to associate the cause code with a call failure or to trigger an alert that 911 traffic to the PSAPs was being impacted.

The outage started on August 1, 2018 at 3:47 p.m. CDT. West Safety Services quickly corrected the outage at 4:52 p.m. CDT by reversing (“rolled back”) the configuration change, allowing all 911 calls to process correctly and restoring service.

CenturyLink started its notification process for all Minnesota PSAPs at 4:24 p.m. CDT. CenturyLink’s records show 764 verbal and email notification attempts to Minnesota

PSAPs by 6:35 p.m. on August 1, with 12 follow up contacts over the following 4 days.¹

CenturyLink provided email notification to the Department of Commerce and Commission at 9:03 p.m. CDT that day.

During the outage, 693 CenturyLink 911 calls failed in Minnesota because they were directed to the Miami ECMC. CenturyLink understands that 72 Minnesota PSAPs experienced missed calls. During the period of the outage, 356 calls were completed because those Minnesota PSAPs had Englewood as their primary ECMC.

Corrective Actions:

CenturyLink and West Safety Services have extensively reviewed the outage and have taken a series of actions designed to (1) prevent a similar outage from happening in the future, (2) ensure that calls blocked because of an outage of this nature are routed to West Safety Services' backup ECMC and (3) communicate with interested stakeholders about our progress.

1. On August 1, 2018, West Safety Services implemented a moratorium for all provisioning work related to the impacted platform while additional analysis and modifications were completed. That moratorium was lifted September 10, 2018 after completion of changes to allow provisioning to occur as intended.

2. West Safety Services made changes to its system software to enhance its current provisioning software to prevent recurrence of the type of error that led to the outage. Two software patches were put in place. The first was completed on October 18, 2018. The

¹ Details of these timelines were provided in discovery responses to the Department of Commerce. See Attachment 3A (RFO revised) and Attachment 6A (Contacts) (not attached).

second enhancement was downloaded to its lab for testing on November 1, 2018. The testing was completed and moved into production on November 19, 2018.

3. West Safety Services modified the change order process to divide provisioning changes into multiple change orders to assist with isolating any event impacts. This work was completed in August, 2018.

4. West Safety Services reviewed and enhanced its trunk provisioning Method of Procedure (“MOP”) process to enhance planning and documentation of all aspects of the process, including:

- a. Revised MOP validation steps, including additional route test calls.
- b. Developed and implemented additional post-change testing procedures and NOC validation.

This was completed in August, 2018.

5. West Safety Services analyzed and implemented enhanced alarming for cause codes that inhibit route advancement. This was completed in August, 2018 and also completed additional NOC training in August, 2018.

6. West Safety Services provided CenturyLink with completed and blocked call records. CenturyLink provided those records to appropriate state agencies in August, 2018.

Communications:

CenturyLink and West Safety Services have regularly communicated with the Minnesota Statewide Emergency Services Board (“MESB”), the Minnesota Department of Public Safety and individual PSAPs to keep them informed of their investigation into the outage and the steps being taken to prevent similar outages in the future. CenturyLink is working with state agencies to improve the notification process. As referenced below,

during face to face meetings, specifically with the Minnesota Emergency Communications Network Board, the MESB Board and the Minnesota Public Information Officer, CenturyLink provided updates on a communication strategy that would provide actionable information more rapidly.

CenturyLink and West Safety Services have strengthened the communication path between the two companies through greater up-front communication around planned activity that has the potential to impact 911 call processing, reinforced existing avenues for communication during incidents and provided more robust after-the-fact reviews with documented corrective action plans. CenturyLink is in the process of making systematic changes to initial notifications to include additional information and discussions are taking place to improve methods in which statuses are being provided to different groups. Additionally, CenturyLink, West Safety Services and the State entities will be facilitating “table top” exercises to test the improvements in communication, identify any potential gaps and work toward closure.

SUMMARY

CenturyLink and West Safety Services believe that these actions will enable calls to flow to West Safety Services’ backup ECMC in the event a similar outage associated with trunk provisioning were to occur. The software West Safety Services uses for trunk provisioning has been modified to prevent a similar error. Finally, additional monitoring is in place to notify CenturyLink if an error occurs in the future.

Dated this 15th day of February, 2019.

QWEST CORPORATION DBA
CENTURYLINK QC

/s/ Jason D. Topp_____

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