



Ticket ID	MN.080118.008
Customer	State of Minnesota ECN
Associated Tickets	ME204803
Start date and time	8/1/2018 3:47 p.m. (CDT)
Restore date and time	8/1/2018 4:52 p.m. (CDT)
Duration	1 hour and 5 minutes
Location	Miami, FL
Equipment that Failed	Miami Emergency Call Management Complex (ECMC)
Root Cause	Human error by a vendor
Event Timeline (all times are CDT)	<p><b><u>August 1, 2018</u></b></p> <p><b>2:54 p.m.</b> - Vendor initiated routine trunk provisioning</p> <p><b>3:47 p.m.</b> - Vendor inadvertently implemented a configuration change that prevented the Miami ECMC from accepting inbound 911 calls for routing, prevented call failover from occurring to the redundant data center in Englewood, CO, and returned a cause code indicating “No Route Found” to CenturyLink</p> <p><b>3:58 p.m.</b> - CenturyLink received a call from a Public Safety Answering Point (PSAP) indicating they were experiencing call failures</p> <p><b>3:59 p.m.</b> - Vendor became aware of the broader issue when they identified an influx of calls</p> <p><b>4:02 p.m.</b> - CenturyLink contacted the vendor about the issue. The vendor noted they were aware of an issue and investigating it.</p> <p><b>4:15 p.m.</b> - Two additional PSAPs reported to CenturyLink that they were experiencing call failures. At this point, CenturyLink believed there was a broader vendor event impacting 911 services for some CenturyLink customers.</p> <p><b>4:24 p.m.</b> - CenturyLink initiated the PSAP notification process for all PSAPs in MN, NC, and ND</p>

	<p><b>4:52 p.m.</b> – The configuration change was rolled back by the vendor, allowing all calls to process correctly and service restored.</p> <p>CenturyLink took additional steps to verify call processing occurred and that all services were restored.</p> <p><b>5:33 p.m.</b> – CenturyLink initiated the PSAP notification process for all PSAPs in AZ, UT and WA</p>
<p>Key Findings</p>	<ul style="list-style-type: none"> <li>– Work being done by the vendor in their network impacted call processing, which included 911 services for CenturyLink.</li> <li>– The vendor’s provisioning work prevented the Miami ECMC from accepting inbound 911 calls for routing, prevented call failover from occurring to the redundant data center in Englewood, CO, and returned a cause code indicating “No Route Found” to CenturyLink. <ul style="list-style-type: none"> <li>○ 911 calls were unable to reach the Miami ECMC; however, the vendor was unaware that 911 calls were not completing because trunks were available to the Miami ECMC.</li> <li>○ The vendor became aware of the broader issue when they identified an influx of calls at 3:59 p.m. (CDT)</li> </ul> </li> <li>– During the impact time, 693 CenturyLink 911 calls in Minnesota failed to the vendor’s Miami ECMC.</li> <li>– During the impact time, 356 CenturyLink 911 calls in Minnesota were routed successfully through the vendor’s Englewood ECMC.</li> <li>– The vendor investigated the event and determined that operating procedures were correct and had previously been performed successfully; however, the vendor’s employee inadvertently made a provisioning work error.</li> <li>– Being that 911 calls were not accepted by the Miami ECMC, the vendor did not receive and was unable to record the 911 caller’s telephone number (TN) information. <ul style="list-style-type: none"> <li>○ The Miami ECMC database could not be utilized to identify call detail information</li> <li>○ To isolate the TN information, the vendor was required to conduct a manual data review of the NPA/NXXs associated with the inbound traffic to the Miami ECMC, which required an extended time to complete.</li> </ul> </li> </ul>



	<ul style="list-style-type: none"> <li>- While CenturyLink's standard maintenance window is from 10:00 p.m. to 6:00 a.m., the vendor does not categorize this type of provisioning work as maintenance activity and routinely performs this type of work during standard business hours.</li> <li>- 911 and Public Safety Services are a high priority for CenturyLink and we understand the urgency for information after a service disruption.</li> </ul>
Corrective Actions	<ul style="list-style-type: none"> <li>- On 8/1/18, the vendor implemented a moratorium for all provisioning work related to the impacted platform while additional analysis and modifications are completed.               <ul style="list-style-type: none"> <li>o The moratorium is scheduled to be fully lifted by the end of August 2018</li> </ul> </li> <li>- The vendor partner is working with its switch vendor to enhance current provisioning software by providing additional validations to prevent inadvertent configuration changes from occurring.</li> <li>- The vendor is reviewing processes and systems to determine whether enhancements and system guard rails are needed.</li> <li>- The vendor modified the change order process to divide provisioning changes into multiple change orders to assist with isolating any event impacts.</li> <li>- The vendor reviewed and enhanced its trunk provisioning MOP (Method of Procedure) process to enhance planning and documentation of all aspects of the process.               <ul style="list-style-type: none"> <li>o Revised MOP validation steps, including additional route test calls.</li> <li>o Developed and implemented additional post-change testing procedures and NOC validation.</li> </ul> </li> <li>- The vendor analyzed and implemented enhanced alarming for cause codes that inhibit route advancement. The vendor partner has also completed additional NOC training.</li> <li>- The vendor will remap default cause codes to ensure CenturyLink receives valid error codes.               <ul style="list-style-type: none"> <li>o Expected to be in production by the end of August 2018</li> </ul> </li> <li>- The vendor provided CenturyLink with completed and blocked call records.</li> </ul>
Restoration	The vendor reverted to the original configuration to restore service.
Date Report Prepared	8/14/18