

**BEFORE THE WASHINGTON
UTILITIES & TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,

Complainant,

v.

CENTURYLINK COMMUNICATIONS, LLC,

Respondent.

DOCKET UT-181051

BRIAN ROSEN

**ON BEHALF OF THE
WASHINGTON STATE OFFICE OF THE ATTORNEY GENERAL
PUBLIC COUNSEL UNIT**

Exhibit BR-31

Public Counsel Response to CenturyLink Data Request No. 17 with Attachments

August 31, 2022

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

Docket UT-181051

Washington Utilities & Transportation Commission v. CenturyLink Communications, LLC

**RESPONSE OF PUBLIC COUNSEL TO CENTURYLINK
DATA REQUEST NO. 17**

Request No: 17
Directed to: Public Counsel
Date Received: February 18, 2022
Date Produced: March 7, 2022
Prepared by: Brian Rosen
Witnesses: Brian Rosen

DATA REQUEST NO. 17.

In response to CTL-13, you state that Mr. Rosen “is aware of several examples of failures like the one in question that have taken out an entire network for one carrier, and this is not the only event where all instances of a switch or other component failed due to configuration or software errors.” Identify by (a) date, (b) carrier, (c) location, and (d) description, each of the “several examples” of which Mr. Rosen is aware that form the basis of your response.

RESPONSE:

Brian Rosen has identified the following examples of failures similar to the CenturyLink outage at issue in this case:

1. AT&T outage
Date: April 13, 1998
Location: Nationwide
Description: The company reported that one of its switches was not able to upgrade software and sent error messages that overloaded other network switched. See LA Times article attached as Attachment A.
2. MCI Worldcom network outage
Date: August 10–20, 1999.
Location: Primarily East Coast US
Description: In this incident, there were 10 days of intermittent failures that affected 15 percent of MCI’s network and 30 percent of its customers due to problems with its frame relay network. The company upgraded software for frame relay switches made by Lucent Technologies. See New York Times article attached as Attachment B.
3. Fastly outage
Date: June 8, 2021
Location: Global

To: Adam Sherr, CenturyLink Communications, LLC
Re: Docket UT-181051
Public Counsel Response to CenturyLink DR 17
March 7, 2022

Description: This outage was caused by a software bug triggered by a valid customer configuration change. The outage was broad and severe and caused 85 percent of Fastly's network to return errors.

4. Softbank LTE (4G) outage

Date: December 6, 2018

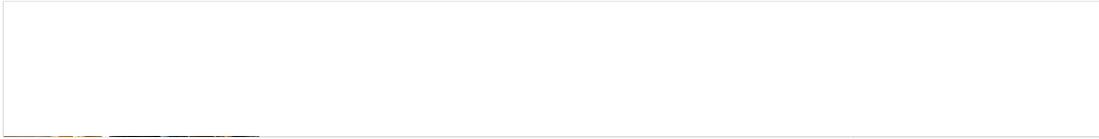
Location: Japan

Description: This outage affected mobile phone services for SoftBank, Y!mobile, fixed line services called "Ouchi-no-Denwa", and a part of SoftBank Air. Services were not available from 1:39 p.m. to 6:04 p.m. (JST) on December 6, 2018, due to a network outage caused by Ericsson-made software errors related to its packet switches. The SoftBank Network Center detected the software malfunction in all of the packet switching machines manufactured by Ericson installed at the Tokyo Center and Osaka Center, covering its mobile customers nationwide.

After the incident, SoftBank received a report from Ericsson that the software has been in operation for nine months and the failure caused by the same software also occurred simultaneously in other telecom carriers across 11 countries, which installed the same Ericsson-made devices. The network returned to normal operation by adapting the older version of the software to all packet switching machines. See TechCrunch article attached as Attachment C.



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AT&T; Says Switch Software Problems Caused Outage

L.A. TIMES ARCHIVES

APRIL 23, 1998 12 AM PT



<I> FROM BLOOMBERG NEWS</I>

AT&T; Corp. said Wednesday that software problems with one of its switches caused last week's outage of its nationwide frame-relay network for high-speed data services.

The No. 1 U.S. phone company said it has changed the procedure for upgrading switching software to prevent future outages. The frame-relay network, the largest of its kind in the U.S., shut down April 13, and some customers were without service as long as 26 hours.

Businesses, including airlines and banks, use the AT&T; network to send information between remote offices and automated-teller machines.

AT&T; Chairman and Chief Executive C. Michael Armstrong has been moving quickly to get to the root of the problem so he can assure customers it won't happen again. Since the outage, the New York-based company hasn't been charging for the service, which accounts for about \$1 billion, or 2%, of AT&T;'s annual revenue and is increasing at 30% to 35% a year.

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“This disruption certainly did not meet our customers’ expectations for service reliability,” Armstrong said in a statement. “We have taken steps to assure that this problem will not happen again.”

Armstrong said he expects further investigation of the problem to be completed shortly and to resume charging customers for the service.

The outage started when one of the switches, used to direct traffic on the network, wasn’t able to upgrade software and sent a large number of error messages that overloaded other switches in the network.

Cisco Systems Inc., which made the switches, worked closely with AT&T; to solve the problem. Armstrong said the problem didn’t alter AT&T;'s confidence in Cisco and its products.

AT&T; shares slipped 6 cents to close at \$63.31 on the New York Stock Exchange. San Jose-based Cisco fell 25 cents to close at \$73.63 on Nasdaq.

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PC Response to CTL-17
Attachment A
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The New York Times

BUSINESS DAY

Problems at MCI Worldcom Hit Its Data Network Users

By SETH SCHIESEL AUG. 10, 1999

Hundreds of corporate users of one of MCI Worldcom Inc.'s big data networks were suffering problems ranging from slowdowns to outright failures yesterday. The problems began Thursday night, the company said yesterday.

MCI Worldcom is the nation's No. 2 long-distance communications carrier, after the AT&T Corporation. Last April, AT&T suffered a similar problem, one that diluted the quarterly financial results for the company's unit that serves business customers. As did AT&T, MCI Worldcom is having a problem with one of its frame relay networks.

Frame relay is a data networking technology used by many companies to connect offices in different cities. In addition to proprietary data, Internet information and sometimes telephone calls can be transported using frame relay technology.

Of the several thousand customers of the MCI frame relay network, about 30 percent had been affected by the problems, which were concentrated on the East Coast.

An MCI spokesman said the data communications unit, which includes the frame relay operation, generated \$1.8 billion in revenue last quarter. The company's total revenue was \$8.1 billion.

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PC Response to CTL-17
Attachment B
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Executives at Data Research Associates Inc., a company based in St. Louis that develops software for library networks, said yesterday afternoon that they were suffering serious problems with their frame relay service provided by MCI Worldcom. Bridge News reported yesterday that the Chicago Board of Trade's electronic trading system had not worked properly since Thursday because of the problem.

The problems began Thursday as the company upgraded software for frame relay switches made by Lucent Technologies Inc. Spokesmen for both companies, however, said that the underlying cause had not yet been determined and that MCI Worldcom had conducted similar upgrades in recent weeks without incident.

MCI Worldcom said the network glitches were not related to the so-called Year 2000 problem.

AT&T's frame relay failures were caused by improper software for switches made by Cisco Systems Inc., one of Lucent's main competitors. AT&T cited the failure for a decline in earnings before interest and taxes in the company's business-services unit in the second quarter of 1998.

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Here's what caused yesterday's O2 and outages

Ron Miller

@ron_miller / 11:26 AM PST • December 7, 2018



Image Credits: Jose Luis Pelaez Inc / Getty Images

It appears that most mobile carriers, including O2 and SoftBank, have recovered from yesterday's outage that was triggered by a shutdown of Ericsson equipment running on their networks. The outages have been triggered by expired software certificates on the equipment itself.

While Ericsson acknowledged in their press release yesterday that expired certificates were the cause, you may be wondering why this would cause a shutdown. It turns out that it's likely due to a misconfiguration, says Tim Callan, senior fellow at Sectigo (formerly Comodo CA), a U.S. certificate-issuing authority with decades of experience in the industry.

He indicated that while he didn't have specific information on this outage, it would be consistent with best practices to shut down the system when encountering expired certificates "We don't have specific information on Ericsson systems in question, but a typical application would require valid certificates to be in order to be operating. That is to protect against breach by some kind of agent that is maliciously inserted into the system," he told TechCrunch.

In fact, Callan said that in 2009 a breach at Heartland Payments was directly related to such a misconfiguration. A data breach of Heartland Payment Systems occurred because the network in question did not meet a security requirement. Today it's common practice to use certificates to avoid that same vulnerability,"

Ericsson would not get into specifics about what caused the problem."Ericsson takes full res failure. The problem has been identified and resolved. After a complete analysis Ericsson wil such a failure from happening again."

Among those affected yesterday were millions of O2 customers in Great Britain and SoftBan SoftBank issued an apology in the form of a press release on the company website. "We de customers for all inconveniences it caused. We will strive to take all measures to prevent the

As for O2, they also apologized this morning after restoring service, tweeting:



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