EXH. MDV-3R
Docket UT-181051
Witness: Martin D. Valence

WUTC DOCKET: 181051
EXHIBIT: MDV-3C (R)
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BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **CENTURYLINK COMMUNICATIONS, LLC,** **Respondent.**	**DOCKET UT- 181051**

EXHIBIT TO TESTIMONY OF

MARTIN D. VALENCE

ON BEHALF OF
CENTURYLINK COMMUNICATIONS, LLC

AFFIDAVIT FROM THOMAS MCNEALY

March 31, 2022

Redacted Information is CONFIDENTIAL per Protective Order in Docket No. UT-181051

AFFIDAVIT OF THOMAS MCNEALY

MARCH 24, 2022

I. INTRODUCTION

A. QUALIFICATIONS

1. I am Thomas McNealy and I am a Senior Director at Infinera Corporation, a communications equipment manufacturing company. Since 2008, I have developed and implemented a broad range of initiatives, with full customer management from pre-sales to implementation and support. In my current role, I lead the program management and engineering teams in their development, training, and compliance and work directly with the Infinera products supplied to Lumen and various of its affiliates, including CenturyLink Communications LLC d/b/a Lumen Technologies Group.

2. Prior to my role at Infinera, I served in the United States Navy and was a member of the USS Rhode Island 740-Blue, an Ohio-class nuclear submarine where I served eight strategic deployments as a missile technician. As the Leading Petty Officer, I oversaw and tested the electrical, hydraulic, and pneumatic components of the weapon system and provided technical support during deployment as an administrator of the Local Area Network ("LAN").

3. Before serving in the Navy, I was employed by Level 3 Communications, an international, facilities-based communications network providing services that employ and leverage rapidly improving underlying optical and internet protocol technologies. At Level 3, I was responsible for all service impacting network maintenance in the network operations center and also developed network outage response and recovery plans. Before my employment at Level 3

Communications, I was a Network Administrator with AlphaPharma, Inc., where I designed and built a national Wide-Area Network ("WAN") and built remote access solutions and real-time production management systems.

B. PURPOSE

4. I am providing this Affidavit to document the cause and mitigating measures undertaken in response to the packet storms experienced on the Lumen network(s) in February 2018 and December 2018. I will refer to the February 2018 outage as the "Red Outage" and the December 2018 outage as the "Green Outage."

5. The Red and Green Outages occurred in separate Infinera optical networks. The Red Outage occurred on a network Infinera provides to Level 3 Communications, and the Green Outage occurred on a network Infinera provides to CenturyLink Communications.

II. PRODUCT OVERVIEW

6. To give context to why the Green Outage was not foreseeable or predictable I will briefly describe the Infinera equipment and how it operates.

7. Infinera has developed the Infinera Digital Optical Network, which allows the construction of a single unified optical transport network that scales from metro to ultra long haul applications. Optical fiber provides almost lossless transmission of signals at an ultra-wide range of frequencies. Packet switching, implemented using the ethernet family of protocols and interfaces, offers one of the most

efficient ways to sort and direct streams of digital data. Packet-optical networking combines these two outstanding technologies.

8. In an Infinera DTN system, the Switching Transport Chassis ("XTC") houses the common equipment required for operations and the circuit packs that transport and terminate optical signals. The XTC-10 is a single bay chassis option providing ten universal card slots to house line modules to support a redundant and scalable switch fabric. The XTC-4 is a half-bay chassis option providing four universal card slots to house line modules and support a redundant and scalable switch fabric. The OTN Switch Module ("OXM") provides a distributed, fault-tolerant, non-blocking switch fabric architecture for switching traffic between any two universal card cage slots. The XTC-4 and XTC-10 each have their own version of the OXM, with the OXM-X10 being a switching module for the XTC-10 that resides in the switch fabric card cage occupying OXM slots S-1 through S-10.[1] The OXM-X4 is a switching module for the XTC-4 that resides in the switch fabric card cage occupying OXM slots S-1 through S-5.[2]

9. The OXM directs traffic that arrives on a particular port and stream of an inbound line module ("LM") to the correct port on the correct outbound LM. The advanced LMs used in the XTC are tunable line modules that can generate and receive one of sixteen wavelength multiplexed Optical Carrier Groups ("OCG") tuned via the management interfaces. Beginning with software version R11.0,

[1] The XTC-10 switch fabric houses a total of ten OXM-X10s (eight active OXM-X10s plus two standby OXMX10s providing 8+2 redundancy).

[2] The XTC-4 switch fabric houses a total of five OXM-X4s (four active OXM-X4s plus one standby OXM-X4 providing 4+1 redundancy).

and continuing through the time of the Green Outage, the default OCG used to allow LMs to communicate with other nodes was the Infinera General Communications Channel ("IGCC").

10. The IGCC is Infinera's proprietary management channel [redacted]

11. Figure 1 conceptually shows how the Infinera nodes, line modules, and switching modules act together to send and receive network traffic from other nodes across the country.

FIGURE 1

III. EVENTS

12. [redacted]

13. [redacted]

14. [redacted]

15. [redacted]

16. [redacted]

17. [redacted]

[redacted]

18. [redacted]

19. [redacted]

20. [redacted]

21. [redacted][3] [redacted][4]

22. [redacted]

[3] [redacted]

[4] [redacted]

[redacted]

- [redacted]

- [redacted]

- [redacted]

23. [redacted].

24. [redacted]

[redacted]

25. [redacted]

[redacted] Lumen immediately disabled the IGCC upon Infinera's recommendation.

This concludes my sworn statement. Dated this 24th day of March, 2022.

Thomas John McNealy

Thomas McNealy

Washington

King

Yushan Sheard

10/10/2025

YU SHAN SHEARD
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION # 168034
COMMISSION EXPIRES 10/10/2025

JURAT

State/Commonwealthof WASHINGTON)
)
☐City ☑County of King)

On 03/24/2022 (Date), before me, Yu Shan Sheard (Notary Name),
the foregoing instrument was subscribed and sworn (or affirmed) before me by:

Thomas John McNealy
Name of Affiant(s)

❑ Personally known to me **-- OR --**

❑ Proved to me on the basis of the oath of _____ (*Name of Credible Witness*) **-- OR --**

☑ Proved to me on the basis of satisfactory evidence: driver_license (*Type of ID Presented*)

YU SHAN SHEARD
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION # 168034
COMMISSION EXPIRES 10/10/2025

WITNESS my hand and official seal.

Notary Public Signature: Yushan Sheard

Notary Name: Yu Shan Sheard

Notary Commission Number: 168034

Notary Commission Expires: 10/10/2025

Notarized online using audio-video communication

DESCRIPTION OF ATTACHED DOCUMENT

Title or Type of Document: Affidavit of Thomas McNealy

Document Date: March 24, 2022

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