

**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**

**AFFIDAVIT OF THOMAS MCNEALY**

**MARCH 24, 2022**

1     **I.     INTRODUCTION**

2     **A.     QUALIFICATIONS**

- 3     1.     I am Thomas McNealy and I am a Senior Director at Infinera Corporation, a  
4           communications equipment manufacturing company. Since 2008, I have  
5           developed and implemented a broad range of initiatives, with full customer  
6           management from pre-sales to implementation and support. In my current role, I  
7           lead the program management and engineering teams in their development,  
8           training, and compliance and work directly with the Infinera products supplied to  
9           Lumen and various of its affiliates, including CenturyLink Communications LLC  
10          d/b/a Lumen Technologies Group.
- 11    2.     Prior to my role at Infinera, I served in the United States Navy and was a member  
12          of the USS Rhode Island 740-Blue, an Ohio-class nuclear submarine where I  
13          served eight strategic deployments as a missile technician. As the Leading Petty  
14          Officer, I oversaw and tested the electrical, hydraulic, and pneumatic components  
15          of the weapon system and provided technical support during deployment as an  
16          administrator of the Local Area Network (“LAN”).
- 17    3.     Before serving in the Navy, I was employed by Level 3 Communications, an  
18          international, facilities-based communications network providing services that  
19          employ and leverage rapidly improving underlying optical and internet protocol  
20          technologies. At Level 3, I was responsible for all service impacting network  
21          maintenance in the network operations center and also developed network outage  
22          response and recovery plans. Before my employment at Level 3

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

4 **B. PURPOSE**

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

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

13 **II. PRODUCT OVERVIEW**

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

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

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

3 8. In an Infinera DTN system, the Switching Transport Chassis (“XTC”) houses the  
4 common equipment required for operations and the circuit packs that transport  
5 and terminate optical signals. The XTC-10 is a single bay chassis option  
6 providing ten universal card slots to house line modules to support a redundant  
7 and scalable switch fabric. The XTC-4 is a half-bay chassis option providing four  
8 universal card slots to house line modules and support a redundant and scalable  
9 switch fabric. The OTN Switch Module (“OXM”) provides a distributed, fault-  
10 tolerant, non-blocking switch fabric architecture for switching traffic between any  
11 two universal card cage slots. The XTC-4 and XTC-10 each have their own  
12 version of the OXM, with the OXM-X10 being a switching module for the XTC-  
13 10 that resides in the switch fabric card cage occupying OXM slots S-1 through S-  
14 10.<sup>1</sup> The OXM-X4 is a switching module for the XTC-4 that resides in the switch  
15 fabric card cage occupying OXM slots S-1 through S-5.<sup>2</sup>

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

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<sup>1</sup> The XTC-10 switch fabric houses a total of ten OXM-X10s (eight active OXM-X10s plus two standby OXM-X10s providing 8+2 redundancy).

<sup>2</sup> 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).

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

4 10. The IGCC is Infinera’s proprietary management channel [REDACTED]  
5 [REDACTED]  
6 [REDACTED]  
7 [REDACTED]

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

1

**FIGURE 1**



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**III. EVENTS**

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- 1 13. [REDACTED]
- 2 14. [REDACTED]
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- 8 15. [REDACTED]
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- 11 16. [REDACTED]
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- 15 [REDACTED]
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<sup>3</sup> [Redacted footnote text]

<sup>4</sup> [Redacted footnote text]

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25. [REDACTED]

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[REDACTED]

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

1 This concludes my sworn statement. Dated this 24<sup>th</sup> day of March, 2022.

*Thomas John McNealy*

2

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Thomas McNealy

3

Washington

King

*Yushan Sheard*

10/10/2025

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

