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

WUTC DOCKET: 181051 EXHIBIT: MDV-3C (R) ADMIT ☑ W/D ☐ REJECT □

#### BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

### WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,

### **DOCKET UT- 181051**

Complainant,

v.

CENTURYLINK COMMUNICATIONS, LLC,

**Respondent.** 

### 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

# I. INTRODUCTION

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### 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 10d/b/a Lumen Technologies Group.

- 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").
- 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

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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.

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#### <u>PURPOSE</u>

- 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."
- 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**

- 6. To give context to why the Green Outage was not foreseeable or predictable I willbriefly 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

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

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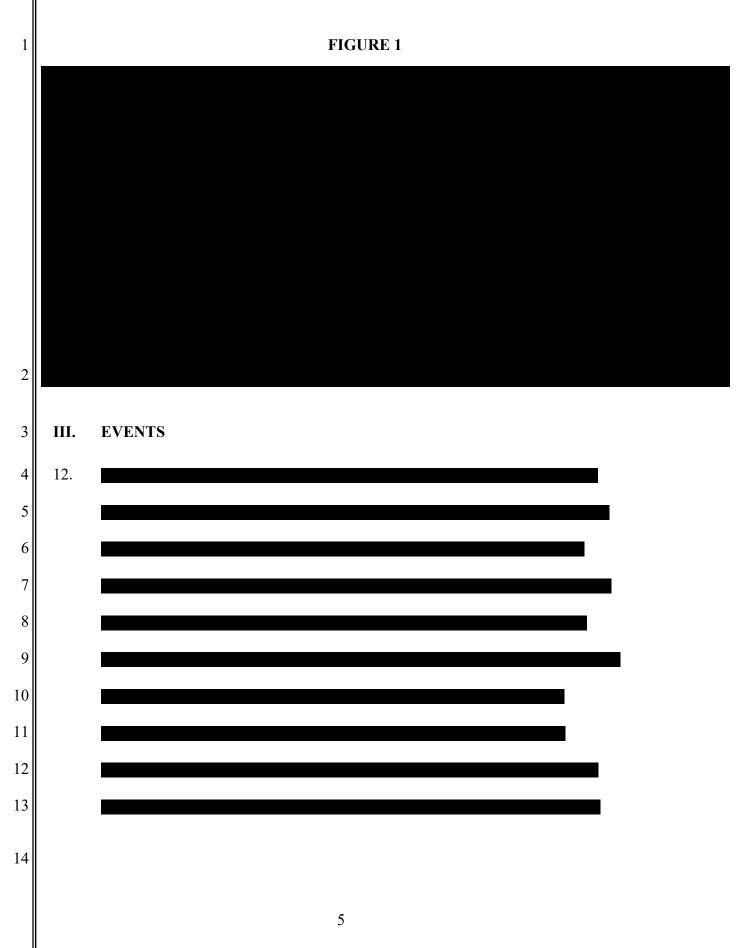
3 8. In an Infinera DTN system, the Switching Transport Chassis ("XTC") houses the 4 common equipment required for operations and the circuit packs that transport 5 and terminate optical signals. The XTC-10 is a single bay chassis option 6 providing ten universal card slots to house line modules to support 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>

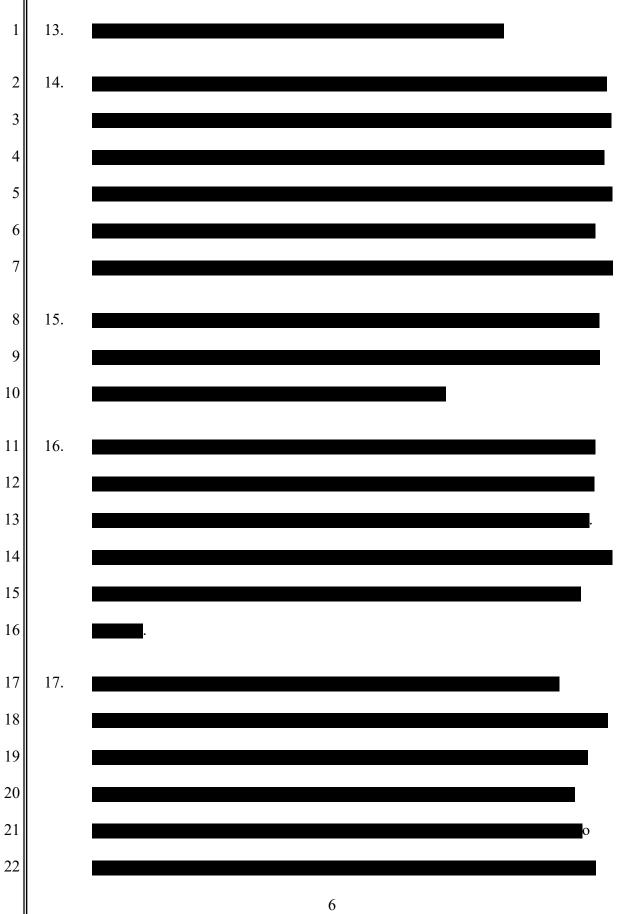
9. The OXM directs traffic that arrives on a particular port and stream of an inbound
line module ("LM") to the correct port on the correct outbound LM. The
advanced LMs used in the XTC are tunable line modules that can generate and
receive one of sixteen wavelength multiplexed Optical Carrier Groups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

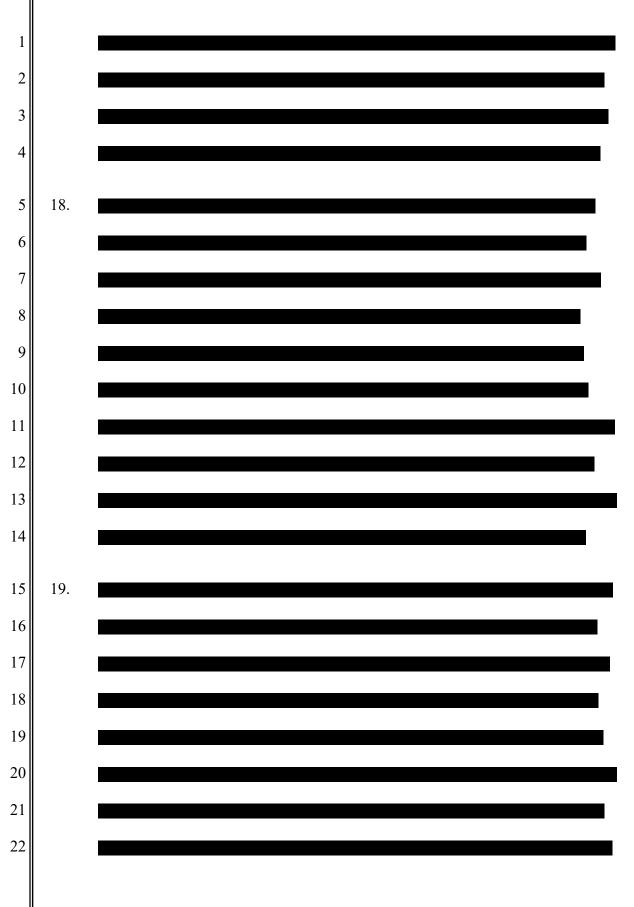
<sup>&</sup>lt;sup>1</sup> The XTC-10 switch fabric houses a total of ten OXM-X10s (eight active OXM-X10s plus two standby OXMX10s providing 8+2 redundancy).

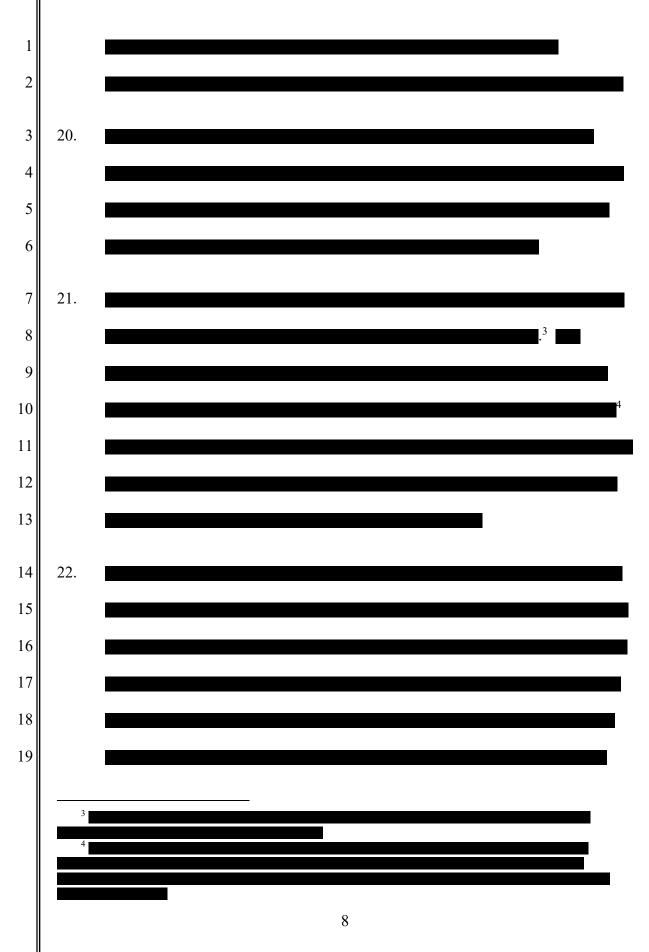
<sup>&</sup>lt;sup>2</sup> The XTC-4 switch fabric houses a total of five OXM-X4s (four active OXM-X4s plus one standby OXM-X4 providing 4+1 redundancy).

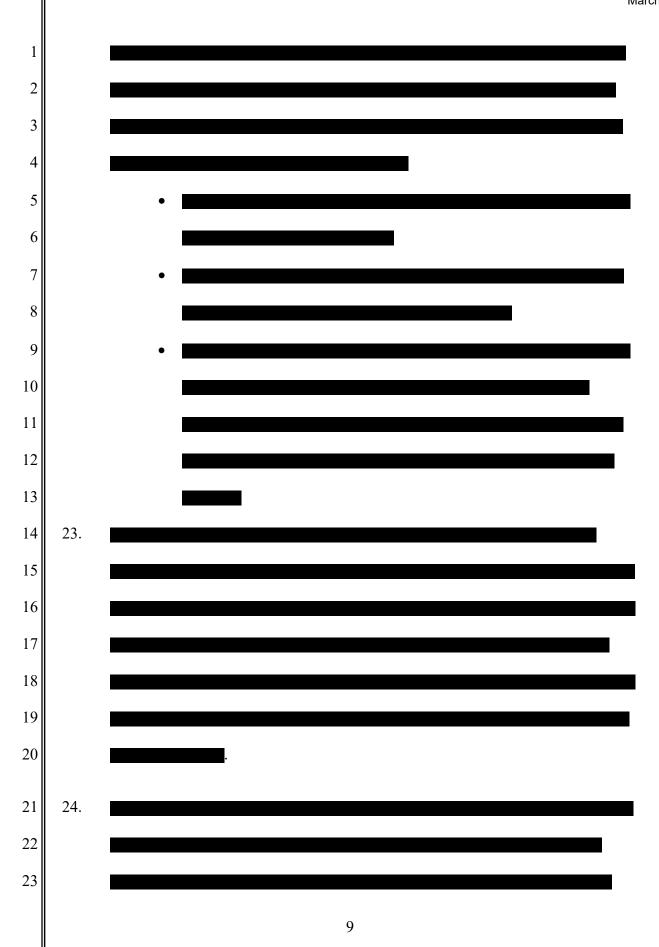
and continuing through the time of the Green Outage, the default OCG used to 1 2 allow LMs to communicate with other nodes was the Infinera General Communications Channel ("IGCC"). 3 4 10. The IGCC is Infinera's proprietary management channel 5 6 7 8 Figure 1 conceptually shows how the Infinera nodes, line modules, and switching 11. 9 modules act together to send and receive network traffic from other nodes across 10 the country.

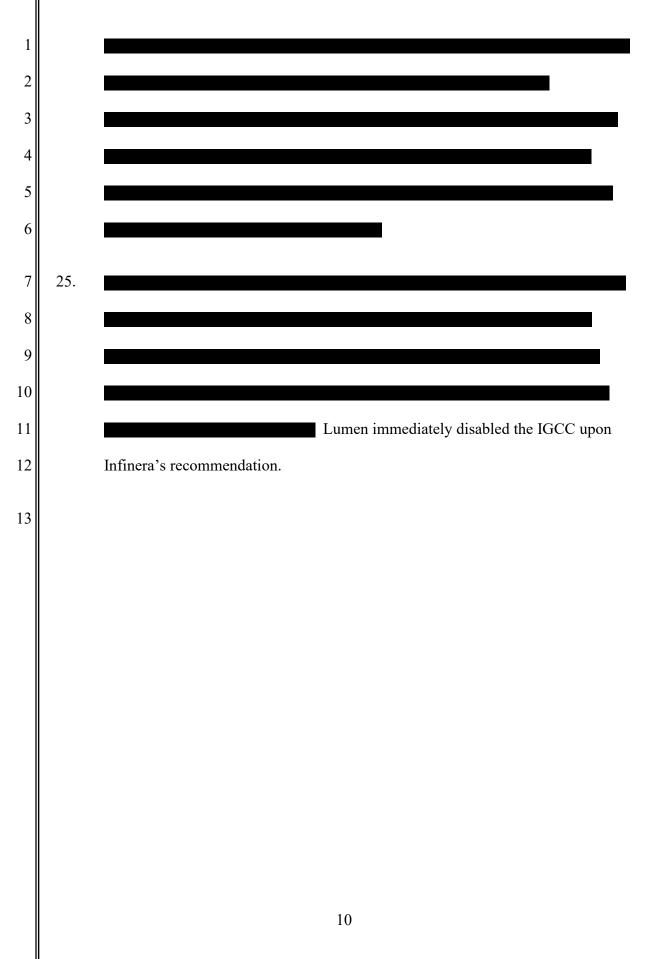












This concludes my sworn statement. Dated this 24<sup>th</sup> day of March, 2022.

Thomas John Mc Nealy

Thomas McNealy

Washington

King

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Yushan sheard

10/10/2025

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

# JURAT

State/Commonwealthof	WASHINGTO	<u>v</u> )
	King	)
City County of	KIIIG	)
On <u>03/24/2022</u> , be <i>Date</i> the foregoing instrument v		Yu Shan Sheard , Notary Name d sworn (or affirmed) before me by:
	Thomas John Mo	cNealy .
Name of Affiant(s)		
Personally known to me	OR	
Proved to me on the basis of the oath of		OR
Name of Credible Witness  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	Notary Public	y hand and official seal. Signature: <u>Jushan Sheard</u> Yu Shan Sheard
	Notary Comm	ission Number: 168034
	Notary Comm	ission Expires: 10/10/2025
	Notarized online	using audio-video communication
DESCRIPTION OF ATTACHEI	DOCUMENT	
Title or Type of Document:	Affidavit of Thoma	as McNealy
Document Date: March 24,	2022	

Number of Pages (including notarial certificate): <u>13</u>