

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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NOKIA OF AMERICA CORPORATION

Petitioner

v.

SPADA INNOVATIONS, INC.

Patent Owner

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Case No. IPR2025-01442

U.S. Patent No. 11,589,142

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**PETITIONER'S REPLY TO  
PATENT OWNER'S PRELIMINARY RESPONSE**

**TABLE OF EXHIBITS**

| <b>Exhibit</b> | <b>Short Name</b> | <b>Description</b>                                                                                                                             |
|----------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Ex. 1001       | '142 Patent       | U.S. Patent No. 11,589,142                                                                                                                     |
| Ex. 1002       | Hajduczenia Dec.  | Declaration of Dr. Marek Hajduczenia                                                                                                           |
| Ex. 1003       | Hajduczenia CV    | <i>Curriculum Vitae</i> of Dr. Marek Hajduczenia                                                                                               |
| Ex. 1004       | '142 FH           | File History of U.S. Patent No. 11,589,142                                                                                                     |
| Ex. 1005       | '042 FH           | File History of U.S. Patent Application No. 17/128,042                                                                                         |
| Ex. 1006       | '302 FH           | File History of U.S. Patent Application No. 16/600,302                                                                                         |
| Ex. 1007       | '602 FH           | File History of U.S. Patent Application No. 16/431,602                                                                                         |
| Ex. 1008       | '315 FH           | File History of U.S. Patent Application No. 15/351,315                                                                                         |
| Ex. 1009       | '092 FH           | File History of U.S. Patent Application No. 14/419,092                                                                                         |
| Ex. 1010       | '997 Prov FH      | File History of U.S. Patent Application No. 61/678,997                                                                                         |
| Ex. 1011       | G.984.1           | ITU-T Recommendation G.984.1, Gigabit-capable Passive Optical Networks (G-PON): General Characteristics (Mar. 2008)                            |
| Ex. 1012       | G.984.2           | ITU-T Recommendation G.984.2, Gigabit-capable Passive Optical Networks (G-PON): Physical Media Dependent (PMD) Layer Specification (Mar. 2003) |

| Exhibit  | Short Name        | Description                                                                                                                                                                     |
|----------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ex. 1013 | G.984.3           | ITU-T Recommendation G.984.3, Gigabit-capable Passive Optical Networks (G-PON): Transmission convergence layer specification (Mar. 2008)                                        |
| Ex. 1014 | RFC 4364          | Network Working Group Request for Comments: 4364: BGP/MPLS IP Virtual Private Networks (VPNs) (Feb. 2006)                                                                       |
| Ex. 1015 | Ahn               | <i>Certified English Translation of Shin-Young Ahn, et al., A student on Ethernet-PON System functionality for L2/L3 MPLS based VPN service (Nov. 2002)</i>                     |
| Ex. 1016 | Ravindran         | U.S. Patent Publication No. 2012/0159176 to Ravindran, <i>et al.</i>                                                                                                            |
| Ex. 1017 | Liu               | U.S. Patent No. 6,005,694                                                                                                                                                       |
| Ex. 1018 | Ramaswami         | Rajiv Ramaswami & Kumar Sivarajan, <i>Optical Networks, A Practical Perspective</i> (2d ed. 2002)                                                                               |
| Ex. 1019 | Kramer            | Glen Kramer & Gerry Pesavento, <i>Ethernet Passive Optical Network (EPON): Building a Next-Generation Optical Access Network</i> , IEEE Communications Magazine (February 2002) |
| Ex. 1020 | BCM56685          | Broadcom BCM56685 Product Brief                                                                                                                                                 |
| Ex. 1021 | Wayback Affidavit | Affidavit of Mina Ching, Records Request Processor at the Internet Archive regarding public availability of BCM56685                                                            |

| Exhibit  | Short Name             | Description                                                                                                                                                                                                                                                                |
|----------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ex. 1022 | EPON v. GPON           | <i>What is the Difference Between EPON and GPON?</i> , Hitron,<br><a href="https://us.hitrontech.com/learn/what-is-the-difference-between-epon-and-gpon/">https://us.hitrontech.com/learn/what-is-the-difference-between-epon-and-gpon/</a> (last accessed August 3, 2025) |
| Ex. 1023 | EPON Call for Interest | 10Gbps PHY for EPON Call for Interest (Mar. 7, 2006)                                                                                                                                                                                                                       |
| Ex. 1024 | Ahn                    | <i>Original Korean Language version of Shin-Young Ahn, et al.</i> , A student on Ethernet-PON System functionality for L2/L3 MPLS based VPN service (Nov. 2002)                                                                                                            |
| Ex. 1025 | G.983 Standards        | Collectively, ITU-T Recommendations G.983.1, G.983.2, G.983.3, G.983.4                                                                                                                                                                                                     |
| Ex. 1026 | Scheduling Order       | <i>SPADA Innovations, Inc., v. AT&amp;T Corp., et al.</i> , Case No. 2:24-cv-06703-MWF-MAR, Dkt. No. 61 (C.D.C.A. Aug. 7, 2025), Order Re Jury Trial, Order Re Deadlines                                                                                                   |
| Ex. 1027 | Complaint              | <i>SPADA Innovations, Inc., v. AT&amp;T Corp., et al.</i> , Case No. 2:24-cv-06703-MWF-MAR, Dkt. No. 1 (C.D.C.A. Aug. 7, 2024), Complaint                                                                                                                                  |
| Ex. 1028 | Opposition to MTD      | <i>SPADA Innovations, Inc., v. AT&amp;T Corp., et al.</i> , Case No. 2:24-cv-06703-MWF-MAR, Dkt. No. 31 (C.D.C.A. Dec. 16, 2024), Spada Innovations, Inc.’s Opposition to Defendants’ Motion to Dismiss Amended Complaint                                                  |

| Exhibit  | Short Name                      | Description                                                                                                                                                                                                                                         |
|----------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ex. 1029 | Dec. to<br>Opposition to<br>MTD | <i>SPADA Innovations, Inc., v. AT&amp;T Corp., et al.</i> , Case No. 2:24-cv-06703-MWF-MAR, Dkt. No. 31 (C.D.C.A. Dec. 16, 2024), Declaration in Support of Spada Innovations, Inc.’s Opposition to Defendants’ Motion to Dismiss Amended Complaint |
| Ex. 1030 | Hall-Ellis Dec.                 | Declaration of Dr. Sylvia D. Hall-Ellis                                                                                                                                                                                                             |
| Ex. 1031 | Hall-Ellis CV                   | <i>Curriculum Vitae</i> of Dr. Sylvia D. Hall-Ellis                                                                                                                                                                                                 |
| Ex. 1032 | Attachment 1A                   | Hall-Ellis Declaration Attachment 1A                                                                                                                                                                                                                |
| Ex. 1033 | Attachment 1B                   | Hall-Ellis Declaration Attachment 1B                                                                                                                                                                                                                |
| Ex. 1034 | Attachment 1C                   | Hall-Ellis Declaration Attachment 1C                                                                                                                                                                                                                |
| Ex. 1035 | Attachment 1D                   | Hall-Ellis Declaration Attachment 1D                                                                                                                                                                                                                |
| Ex. 1036 | Attachment 1E                   | Hall-Ellis Declaration Attachment 1E                                                                                                                                                                                                                |
| Ex. 1037 | Attachment 2A                   | Hall-Ellis Declaration Attachment 2A                                                                                                                                                                                                                |
| Ex. 1038 | Attachment 2B                   | Hall-Ellis Declaration Attachment 2B                                                                                                                                                                                                                |
| Ex. 1039 | Attachment 3A                   | Hall-Ellis Declaration Attachment 3A                                                                                                                                                                                                                |
| Ex. 1040 | Attachment 3B                   | Hall-Ellis Declaration Attachment 3B                                                                                                                                                                                                                |
| Ex. 1041 | Attachment 4A                   | Hall-Ellis Declaration Attachment 4A                                                                                                                                                                                                                |
| Ex. 1042 | Attachment 4B                   | Hall-Ellis Declaration Attachment 4B                                                                                                                                                                                                                |
| Ex. 1043 | Attachment 4C                   | Hall-Ellis Declaration Attachment 4C                                                                                                                                                                                                                |
| Ex. 1044 | Attachment 4D                   | Hall-Ellis Declaration Attachment 4D                                                                                                                                                                                                                |
| Ex. 1045 | Attachment 5A                   | Hall-Ellis Declaration Attachment 5A                                                                                                                                                                                                                |
| Ex. 1046 | Attachment 5B                   | Hall-Ellis Declaration Attachment 5B                                                                                                                                                                                                                |

| <b>Exhibit</b> | <b>Short Name</b> | <b>Description</b>                   |
|----------------|-------------------|--------------------------------------|
| Ex. 1047       | Attachment 5C     | Hall-Ellis Declaration Attachment 5C |
| Ex. 1048       | Attachment 5D     | Hall-Ellis Declaration Attachment 5D |
| Ex. 1049       | Attachment 5E     | Hall-Ellis Declaration Attachment 5E |
| Ex. 1050       | Attachment 5F     | Hall-Ellis Declaration Attachment 5F |

**I. The Petition Does Not Rely on Expert “Gap Filling”**

While the Petition identifies explicit teachings in the primary references for each claim element and does not rely on a declaration for any gap-filling, the July 31, 2025 Memo (at 4) is nonetheless clear: it applies “to any petition for IPR filed on or after September 1, 2025,” thus not to the present August 27, 2025 Petition.

The Petition points out that G.984 (specifically, G.984.1) explicitly teaches “that OLT’s are connected to an ‘edge routing device’” to receive/transmit data between OLTs and the edge routing device. Pet. 26; Ex. 1011, 26. And RFC 4364 describes an edge routing device—a Provider Edge (PE) router—implementing virtual routing and forwarding (VRF). Pet. 26-27; Ex. 1014, 1. Indeed, PO admits that RFC 4364 discloses that PE devices implement VRF. Pet. 26; Ex. 1028, 16. These disclosures are cited in both Ground 1 and Ground 3 of the Petition. *See* Pet. 73-74. Thus, the Petition explains how VRF is performed in a device upstream of an OLT, and how the OLT receives VRF-separated data from the PE device. Pet. 30.

And for Ground 1, Ahn goes deeper, explaining why a POSITA would have combined these teachings, such that an OLT receives VRF-separated data streams from an edge routing device (*e.g.*, a PE device). Pet. 29-30; Ex. 1015, 2-3. PO repeatedly notes Ahn’s mention of “at the OLT level,” but that does not necessarily mean that VRF separation is accomplished by the OLT itself. Instead, it refers to the implementation of VRF routing at the PE device, as depicted in Fig. 4 and described

in Section 3 of Ahn, which is at the OLT's "level" on the operator side of the network, as depicted in Fig. 5. Pet. 54, Ex. 1015, 3-4, Ex. 1002, ¶¶ 93-94, 222.

For Ground 3, the Petition points out that Ravindran additionally discloses an OLT that receives from a PON interface router at least one private data stream that has already been virtually separated using VRF. Pet. 73-74. Ravindran teaches that a Content Oriented Network (CON) uses VPNs (which may use VRF tables) to distribute data to end users (ONUs) of a PON. Pet. 74.

The Petition points out that G.984.1 and Ahn (Ground 1) disclose aggregating the virtually separated data streams into one or more common data feeds. Pet. 31-33, 75. Both references include figures and text explaining this common feature of a PON. *Id.*; Ex. 1015, FIG. 2; Ex. 1011, FIG. 2.

Thus, it is the art—not just the declaration—that explicitly discloses an OLT that receives VRF-separated private data streams from an edge router device.

## **II. PO's Secondary Considerations Arguments are not Entitled to Weight**

The declaration testimony of Mr. Vilella (the inventor) and Mr. Zegarski ("Motorola Mobility's Senior System Engineer") was submitted during prosecution of a *different* patent with *different* claim language, namely Patent No. 10,904,649. POPR, 35-39. Contrary to PO's assertions, the Examiner never credited this evidence during the subject patent's prosecution, and the Director should not credit it now. These declarations are nothing more than summaries of self-serving opinions

that lack factual support, and PO has not established the required nexus between the alleged evidence and the claims at issue. These declarations should not be given any weight. *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019).

PO falsely claims that the Examiner “credited” this evidence in allowing patents in this family. POPR, 37-38. But the Examiner *never* mentioned any declaration evidence in the allowances for the parent ’898 and ’649 patents, or the present ’142 patent. *See* Ex. 1005, 105-06 (not mentioning these declarations); Ex. 1006, 227-28 (same); Ex. 1004, 18-19 (same).

PO’s arguments of “commercial success” and “skepticism” are similarly deficient. PO’s only evidence that “many major ISPs have adopted the use of the method claimed in the ’142 patent” is *PO’s own [incorrect] allegations of infringement*. POPR, 38 (*citing* Ex. 1019). This egregious self-serving citation should be disregarded. Similarly, PO’s only evidence that “as of 2012, PON vendors had not implemented OLTs receiving VRF-separated Layer-3 data streams” is declaration evidence submitted by the inventor and Mr. Zegarski describing that “[he] had never heard ... VRF-labeled Ethernet frames going through a layer-2 OLT”. POPR, 43-44 (*citing* Ex. 1006, 82-83). Ignorance of existing prior art has never been a defense to invalidity—nor is this objective or reliable evidence. As the Petition demonstrates, the prior art, including G.984.1, G.984.3, RFC 4364, Ahn, and Ravindran plainly render the ’142 patent claims invalid as obvious.

Case No. IPR2025-01442

Patent No. 11,589,142

Respectfully submitted,

Date: December 15, 2025

By: / Christopher TL Douglas /

Christopher TL Douglas, Reg. No. 56,950

**CERTIFICATE OF SERVICE**

Pursuant to 37 C.F.R. §§42.6(e), the undersigned hereby certifies that a true and correct copy of the above-captioned **Petitioner's Reply to Patent Owner's Preliminary Response Under 35 U.S.C. §312 and 37 C.F.R. §42.104** was served in its entirety on December 15, 2025, via filing through the Patent Trial and Appeal Case Tracking System (P-TACTS), as well as by a delivering copy via electronic mail to the following:

Mark Bloomberg  
mbloomberg@zuberlawler.com

Casey A. Kniser  
ckniser@zuberlawler.com

With a courtesy copy sent to:

Joseph L Vilella  
joevilella@gmail.com

Tom Zuber  
tzuber@zuberlawler.com

Jeff Zuber  
jzuber@zuberlawler.com

James Lawrence  
rlawrence@zuberlawler.com

Date: December 15, 2025

By: / Christopher TL Douglas /  
Christopher TL Douglas