

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VERIZON BUSINESS NETWORK SERVICES INC.,
Petitioner,

v.

HUAWEI TECHNOLOGIES CO. LTD.,
Patent Owner.

IPR2020-01141
Patent 7,965,709 B2

Before TREVOR M. JEFFERSON, MICHELLE N. WORMMEESTER, and
KEVIN C. TROCK, *Administrative Patent Judges*.

WORMMEESTER, *Administrative Patent Judge*.

DECISION
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

Verizon Business Network Services Inc. (“Petitioner”) filed a Petition (Paper 3, “Pet.”) requesting *inter partes* review of claims 1, 4, 7, and 16 of U.S. Patent No. 7,965,709 B2 (Ex. 1001, “the ’709 patent”). Huawei Technologies Co. Ltd. (“Patent Owner”) filed a Preliminary Response (Paper 7). With our authorization (*see* Paper 9), Petitioner filed a Preliminary Reply (Paper 10) to Patent Owner’s Preliminary Response, and Patent Owner filed a Preliminary Sur-reply (Paper 11). Pursuant to 35 U.S.C. § 314, we instituted an *inter partes* review of all the challenged claims, namely, claims 1, 4, 7, and 16, based on all the grounds presented in the Petition. Paper 12 (“Inst. Dec.”). Thereafter, Patent Owner filed a Response (Paper 17, “PO Resp.”) to the Petition, Petitioner filed a Reply (Paper 21, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 28, “PO Sur-reply”). On October 6, 2021, we conducted an oral hearing. A copy of the transcript (Paper 30, “Tr.”) is included in the record.

We have jurisdiction under 35 U.S.C. § 6(b). For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 4, 7, and 16 of the ’709 patent are unpatentable. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a).

II. BACKGROUND

A. *Related Proceedings*

The parties identify one related federal district court case, *Huawei Technologies Co. v. Verizon Communications, Inc.*, Case No. 6:20-cv-00090 (W.D. Tex.). Pet. 7; Paper 4, 2.

Additionally, Petitioner filed a petition challenging claims 17, 18, 21, and 23 (not challenged in this proceeding) of the '709 patent in IPR2020-01143. Pet. 7; Paper 4, 2. In a separate decision, we denied instituting trial in that case. *Verizon Bus. Network Servs. Inc. v. Huawei Techs. Co.*, IPR2020-01143, Paper 12 (PTAB Jan. 14, 2021) (Decision Denying Institution of *Inter Partes* Review).

B. The '709 Patent

The '709 patent relates to network switching. Ex. 1001, 1:6. In particular, the '709 patent describes layer 2 bridge forwarding of Ethernet frames across virtual local area networks (VLANs). *Id.* at 1:6–15, 2:20–22. To illustrate, Figure 4 of the '709 patent is reproduced below.

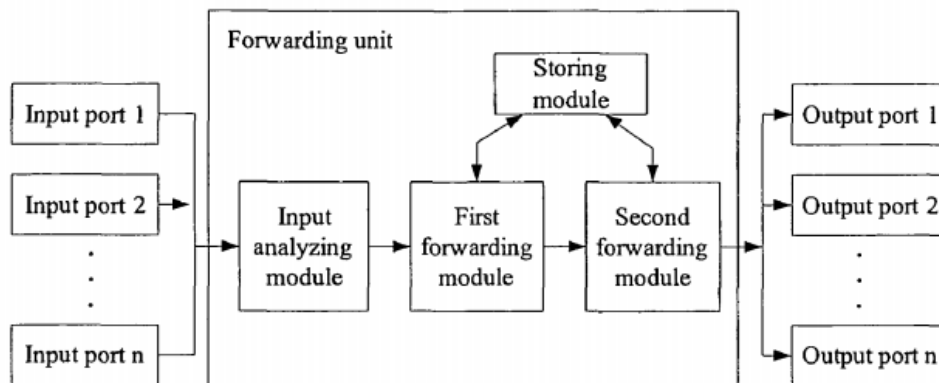


Fig.4

Figure 4 is a diagram of a cross-VLAN bridge forwarding apparatus according to one embodiment of the '709 patent. *Id.* at 3:50–52. The bridge forwarding apparatus includes at least one input port, a forwarding unit, and at least one output port. *Id.* at 8:57–67.

The input port receives a frame from a VLAN. *Id.* at 8:59–60.

The forwarding unit includes an input analyzing module, a first forwarding module, a second forwarding module, and a storage module. *Id.* at 9:1–18. The input analyzing module obtains the input VLAN identifier (VLAN ID) and the destination MAC (DMAC) address of the frame, and outputs the input VLAN ID and the DMAC address to a first forwarding module. *Id.* at 9:7–9, Fig. 4. The first forwarding module determines the virtual switching instance (VSI) that corresponds to the combination of the input port and the input VLAN ID, then searches the MAC address forwarding table corresponding to the VSI (using the DMAC address as a keyword) to obtain the output port and the output VLAN ID. *Id.* at 4:37–39, 7:16–18, 9:10–15. To do this, the first forwarding module uses information in the storage module, which stores the relationship between the combinations of the ports and the VLAN IDs with the VSIs, as well as the MAC address forwarding tables corresponding to each VSI. *Id.* at 9:2–6, Fig. 4. The search result of the first forwarding module is output to the second forwarding module, which transmits the frame to the output port according to the search result. *Id.* at 9:16–18, Fig. 4.

The output port transmits the frame to the destination VLAN. *Id.* at 8:66–67.

C. Illustrative Claim

Petitioner challenges claims 1, 4, 7, and 16 of the '709 patent. Claim 1 is independent and illustrative of the claims under challenge:

1. A forwarding method, comprising:
receiving, via an input port, a frame associated with a first virtual local area network (VLAN);

obtaining an input VLAN identifier (ID) representing the first VLAN and a destination media access control (MAC) address of the received frame;

determining a Virtual Switching Instance (VSI) corresponding to the combination of the input port and the input VLAN ID;

obtaining an output port and an output VLAN ID, wherein the output VLAN ID represents a second VLAN and wherein the output port and the output VLAN ID relate to the destination MAC address and the VSI; and

communicating the received frame and the output VLAN ID to the obtained output port, wherein the output VLAN ID is different from the input VLAN ID.

D. Asserted Grounds of Unpatentability

Petitioner challenges claims 1, 4, 7, and 16 of the '709 patent on the following two grounds of obviousness under 35 U.S.C. § 103.¹ Pet. 8, 20–58. We instituted *inter partes* review of both grounds. Inst. Dec. 46.

Claims Challenged	35 U.S.C. §	References
1, 4, 16	103	Carrie, ² Hawthorne ³
7	103	Carrie, Hawthorne, Dobbins ⁴

In support of its arguments, Petitioner relies on a Declaration of Dr. Samrat Bhattacharjee (Ex. 1003). Patent Owner submits with its Response a

¹ The Leahy-Smith America Invents Act (“AIA”) amended 35 U.S.C. § 103, effective March 16, 2013. *See* Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011). Because the application that issued as the '709 patent was filed before this date, the pre-AIA version of § 103 applies.

² Carrie, U.S. Patent No. 7,693,158 B1, issued Apr. 6, 2010 (Ex. 1005).

³ Hawthorne, U.S. Publ’n No. 2003/0152075 A1, published Aug. 14, 2003 (Ex. 1006).

⁴ Dobbins, U.S. Patent No. 6,711,171 B1, issued Mar. 23, 2004 (Ex. 1007).

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