UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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INTEL CORPORATION, CAVIUM, LLC,
WISTRON, INC, and DELL INC.
Petitioner,

v.

ALACRITECH, INC.,
Patent Owner.

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Case IPR2017-01392[1]
Patent 7,337,241 B2

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Before STEPHEN C. SIU, DANIEL N. FISHMAN, and
CHARLES J. BOUDREAU, *Administrative Patent Judges*.

FISHMAN, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.108

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[1] Cavium, Inc., which filed a Petition in Case IPR2017-01728 (later renamed
Cavium, LLC (Paper 76)), Wistron, Inc., which filed a Petition in Case
IPR2018-00328, and Dell Inc., which filed a Petition in Case IPR2018-
00372, have been joined as petitioners in this proceeding.

I. INTRODUCTION

Intel Corporation ("Petitioner" or "Intel") filed a Corrected Petition (Paper 4, "Petition" or "Pet.") requesting *inter partes* review of all claims (1–24) of U.S. Patent No. 7,337,241 B2 ("the '241 patent," Ex. 1001) pursuant to 35 U.S.C. §§ 311 *et seq*. Alacritech, Inc. ("Patent Owner") filed a Preliminary Response. Paper 10 ("Prelim. Resp.").

On November 30, 2017, based on the record before us at that time, we instituted an *inter partes* review of all claims (1–24) and all grounds. Paper 11 ("Decision" or "Dec.").

Patent Owner filed a Corrected Response (Paper 34, "PO Resp.") and Petitioner filed a Reply (Paper 45, "Reply").

Patent Owner also filed a Contingent Motion to Amend (Paper 25, "Motion" or "Mot.") to which Petitioner filed an Opposition (Paper 40, "Opposition" or "Opp."). Patent Owner then filed a Reply in support of its Motion (Paper 46, "PO Reply") and Petitioner filed a Sur-Reply to Patent Owner's Reply (Paper 54, "Sur-Reply"). Patent Owner's Motion is contingent on any of the challenged claims being found to be unpatentable. Mot. 1. We address Patent Owner's Motion to Amend below.

Each party filed a respective Motion to Exclude certain evidence of the other party. Papers 58, 59. Each party filed a respective Opposition to the other party's Motion to Exclude (Papers 61, 62) and a respective Reply in support of its Motion to Exclude (Papers 64, 65). We address these motions below.

Upon consideration of the complete record, we are persuaded by a preponderance of the evidence that claims 1–24 are unpatentable. Furthermore, we deny Patent Owner's Motion to Amend, deny Petitioner's

Motion to Exclude, deny-in-part and dismiss-in-part Patent Owner's Motion to Exclude, and we grant Patent Owner's Motion to Seal.

A. Related Matters

We are informed that the '241 patent is involved in the following litigations: *Alacritech, Inc. v. CenturyLink, Inc.,* Case No. 2:16-cv-00693-JRG-RSP (E.D. Tex.); *Alacritech, Inc. v. Wistron Corp.,* Case No. 2:16-cv-00692-JRG-RSP (E.D. Tex.); and *Alacritech, Inc. v. Dell Inc.,* Case No. 2:16-cv-00695-RWS-RSP (E.D. Tex.). Pet. 3; Paper 6, 1.

B. The '241 Patent

The '241 patent describes a system and method for accelerating data transfer between a network and storage unit. Ex. 1001, Abstract. An embodiment of the '241 uses the Transmission Control Protocol ("TCP") and Internet Protocol ("IP"). *Id*. at 3:8-10. Another transport protocol is User Datagram Protocol ("UDP"). In particular, the claimed invention of the '241 patent relates to fast-path processing in which processing for headers of a layered network protocol (e.g., TCP/IP or UDP/IP) is offloaded from the host computer to an intelligent network interface. *See id.* at 5:18–38, Fig. 24. Specifically, the intelligent network interface card ("INIC") includes accelerated processing features, "[t]he accelerated processing includes employing representative control instructions for a given message that allow data from the message to be processed via a fast-path which accesses message data directly at its source [in the host computer] or delivers it directly to its intended destination [in the host computer]." *Id.* at 5:18–22.

According to the '241 patent, its invention is based on the "FreeBSD" TCP/IP protocol stack. *Id*. at 37:38–49. The FreeBSD protocol stack is a widely and freely distributed package of software source code that implements the TCP/IP (and other) protocols. "The bulk of the protocol stack is based on the FreeBSD TCP/IP protocol stack." *Id*. at 48:13–15. "The base for the receive processing done by the INIC . . . is the fast-path or 'header prediction' code in the FreeBSD release." *Id*. at 74:56–59. To simplify the use of that software on the INIC, the '241 patent discloses an embodiment that avoids handling of certain complexities in the TCP/IP protocols. *Id*. at 37:50–38:62. According to the '241 patent, the embodiment results in two modes of operation—a slow path in which the INIC operates as a "typical dumb" network interface and a fast path for processing data that does not fall into one of the exception conditions excluded from its implementation. *Id*. at 38:63–39:2. "In the slow path case, network frames are handed to the system at the MAC layer and passed up through the host protocol stack like any other network frame. In the fast path case, network data is given to the host after the headers have been processed and stripped." *Id*. at 39:2–7.

C. Illustrative Claims

Claims 1, 9, and 17 are the independent claims of the '241 patent. Claims 1 and 9, reproduced below, are illustrative of the claimed subject matter:

> 1. A method for network communication, the method comprising:

receiving a plurality of packets from the network, each of the packets including a media access control layer header, a network layer header and a transport layer header;

processing the packets by a first mechanism, so that for each packet the network layer header and the transport layer header are validated without an interrupt dividing the processing of the network layer header and the transport layer header;

sorting the packets, dependent upon the processing, into first and second types of packets, so that the packets of the first type each contain data;

sending, by the first mechanism, the data from each packet of the first type to a destination in memory allocated to an application without sending any of the media access control layer headers, network layer headers or transport layer headers to the destination.

Id. at 98:32–49.

9. A method for communicating information over a network, the method comprising:

obtaining data from a source in memory allocated by a first processor;

dividing the data into multiple segments;

prepending a packet header to each of the segments by a second processor, thereby forming a packet corresponding to each segment, each packet header containing a media access control layer header, a network layer header and a transport layer header, wherein the network layer header is Internet Protocol (IP), the transport layer header is Transmission Control Protocol (TCP) and the media access control layer header, the network layer header and the transport layer header are prepended at one time as a sequence of bits during the prepending of each packet header; and

transmitting the packets to the network.

Id. at 99:19–35.

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