UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEL CORP., CAVIUM, INC., and
WISTRON CORPORATION,

Petitioners,

v.

ALACRITECH INC.,

Patent Owner

Case IPR2017-01406[1]
U.S. Patent 7,673,072

DECLARATION OF KEVIN ALMEROTH, PH.D. IN SUPPORT OF PATENT OWNER'S REPLY IN SUPPORT OF CONTINGENT MOTION TO AMEND UNDER TO 37 C.F.R. § 42.121

[1] Wistron Corporation, which filed a Petition in Case IPR2018-00329, has been joined as a petitioner in this proceeding.

I. INTRODUCTION

1. I have been retained on behalf of Alacritech, Inc. ("Alacritech," "Patent Owner," OR "PO") for the above-captioned *inter partes* review (IPR) proceeding. I understand that this proceeding was filed by Intel Corporation ("Intel") (and joined by Cavium, Inc. ("Cavium")) and involves U.S. Patent No. 7,673,072 ("the '072 patent"). The '072 patent is currently assigned to Alacritech. I have been retained to provide my opinions in support of PO's Reply In Support of Its Contingent Motion to Amend Under 37 C.F.R. § 42.121. I am being compensated for my time at the rate of $600 per hour. I have no interest in the outcome of this proceeding.

2. In preparing this declaration, I have reviewed and am familiar with the following prior art references:

- U.S. Patent No. 5,768,618 ("Erickson") (Ex. 1005);
- Andrew S. Tanenbaum, Computer Networks, 3rd ed (1996) ("Tanenbaum96") (Ex. 1006).

3. I have also considered all other materials cited and discussed herein, including all other materials cited and discussed in Intel's Petition for *Inter Partes* Review of U.S. Patent No. 7,673,072 (Case IPR2017-01406) and its Opposition to PO's Motion to Amend, along with PO's Preliminary Response Pursuant to 35 U.S.C. § 313 and 37 C.F.R. § 42.107, and Corrected Patent Owner's Response Pursuant to 35 U.S.C. § 313 and 37 C.F.R. § 42.107. I

incorporate by reference herein my opinions and explanation regarding the overview of the above prior art and reasons why they do not invalidate the challenged claims of the '072 patent as were presented in my prior declaration, Ex. 2026.

4. The '072 patent describes a novel system for accelerating network processing. In particular, the '072 patent discloses a system with "a specialized microprocessor designed for processing network communications, avoiding the delays and pitfalls of conventional software layer processing, such as repeated copying and interrupts to the CPU," and "freeing the host CPU from most protocol processing and allowing improvements in other task." Ex. 1001 at 5:44-47, 7:47-49.

5. The '072 patent explains that, at the time of the invention, communications networks were growing "increasingly popular and the information communicated thereby [becoming] increasingly complex and copious" creating increased network protocol processing such that "a large fraction of the processing power of a host CPU may be devoted to controlling protocol processes, diminishing the ability of that CPU to perform other tasks." Ex. 1001, 5:5-11.

6. The '072 patent explains that the then-existing standard protocol processing involved too many data moves (*id.* at 35:1-27), too much processing

by the CPU (*id*. at 35:29-36:3), too many interrupts (*id*. at 36:4-34), and inefficient use of the peripheral component interconnect ("PCI") bus (*id*. at 36:36-61).

7. The '072 patent solves these problems with a specialized network interface device (*i.e.*, the INIC) that is capable of performing certain processing normally handled by the host CPU. Ex. 1001 at 7:41-55.

8. Despite industry skepticism, the '072 inventors came up with the claimed arrangement, which allows for enhanced network and system performance, a stark reduction or elimination of unnecessary processing by the host CPU, faster data throughput, increased system stability, and an overall better user experience. Instead of using an unspecified processor on a network card to carry out some protocol software, the '072 patent discloses "a specialized microprocessor designed for processing network communications." Ex. 1001, 5:44-47. This specialized microprocessor, residing in an intelligent network interface card (INIC), is described, for example, in Fig. 13 and corresponding embodiments described in the patent.

9. The statements made herein are based on my own knowledge and opinion. This Declaration represents only the opinions I have formed to date. I may consider additional documents as they become available or other documents

that are necessary to form my opinions. I reserve the right to revise, supplement, or amend my opinions based on new information and on my continuing analysis.

II. QUALIFICATIONS

10. My qualifications can be found in my Curriculum Vitae, which includes a complete list of my publications. Ex. 2027.

11. I am currently a Professor in the Department of Computer Science at the University of California, Santa Barbara. I also hold an appointment and am a founding member of the Computer Engineering (CE) Program at UCSB. I am also a founding member of the Media Arts and Technology (MAT) Program, and the Technology Management Program (TMP) at UCSB. I also served as the Associate Director of the Center for Information Technology and Society (CITS) at UCSB from 1999 to 2012. I have been a faculty member at UCSB since July 1997.

12. I hold three degrees from the Georgia Institute of Technology: (1) a Bachelor of Science degree in Information and Computer Science (with minors in Economics, Technical Communication, and American Literature) earned in June, 1992; (2) a Master of Science degree in Computer Science (with specialization in Networking and Systems) earned in June, 1994; and (3) a Doctor of Philosophy (Ph.D.) degree in Computer Science (Dissertation Title: Networking and System Support for the Efficient, Scalable Delivery of Services in Interactive Multimedia System), minor in Telecommunications Public Policy, earned in June, 1997.

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