

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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INTEL CORPORATION, and CAVIUM, INC.,

*Petitioners,*

v.

ALACRITECH INC.,

*Patent Owner*

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Case IPR2018-00234<sup>1</sup>  
U.S. Patent 8,805,948

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**PATENT OWNER'S EXHIBIT 2026  
DECLARATION OF KEVIN ALMEROOTH, PH.D.**

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<sup>1</sup> Cavium filed a Petition in Case IPR2018-00403 and has been joined as a petitioner in this proceeding.

1. I have been retained on behalf of Alacritech, Inc. (“Alacritech” or “Patent Owner”) 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. 8,805,948 (“the ’948 Patent”), titled “Intelligent network interface system and method for protocol processing.” The ’948 Patent is currently assigned to Alacritech. I have been retained to provide my opinions in support of Alacritech’s Patent Owner (“PO”) Response Pursuant to 35 U.S.C. § 313 and 37 C.F.R. § 42.107 pursuant to the legal standards set forth below. 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:

***“A Reduced Operation Protocol Engine (ROPE) for a multiple-layer bypass architecture”*** by **Y.H. Thia and C.M. Woodside (Ex. 1015, “Thia”)**, an academic article theorizing a potential processor architecture for “bypassing” certain layers in the OSI model published in 1995.

***Computer Networks, Third Edition, 1996*** by **Andrew S. Tanenbaum (Ex. 1006, “Tanenbaum”)**, an academic textbook describing general networking principles published in 1996.

***TCP/IP Illustrated, Volume 2, Third Edition, 1995*** by **W. Richard Stevens and Gary R. Wright (Ex. 1095 (3rd printing, Mar. 1996), “Stevens”)**, a reference book on the implementation of TCP/IP published in 1995.

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. 8,805,948 (Case IPR2018-00234).

4. The '948 Patent describes a novel system for accelerating network processing. An intelligent network interface card (INIC) of a communication processing device (CPD) works with a host computer for data communication. (Ex. 1001 at Abstract.) The INIC provides "a fast-path that avoids host protocol processing for most large multipacket messages, greatly accelerating data communication." (*Id.*) In some embodiments, the INIC "hardware circuits configured for protocol processing that can perform that specific task faster than the host CPU." (*Id.*)

5. 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.

#### **I. QUALIFICATIONS**

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

7. 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.

8. 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.

9. One of the major themes of my research has been the delivery of multimedia content and data between computing devices and users. In my research I have looked at large-scale content delivery systems and the use of servers located in a variety of geographic locations to provide scalable delivery to hundreds, or even thousands, of users simultaneously. I have also looked at smaller-scale

content delivery systems in which content, including interactive communication like voice and video data, is exchanged between computers and portable computing devices. As a broad theme, my work has examined how to exchange content more efficiently across computer networks, including the devices that switch and route data traffic. More specific topics of my work include the scalable delivery of content to many users, mobile computing, satellite networking, delivering content to mobile devices, and network support for data delivery in wireless and sensor networks.

10. Beginning in 1992, at the time I started graduate school, the initial focus of my research was the provision of interactive functions (*e.g.*, VCR-style functions like pause, rewind, and fast-forward) for near video-on-demand systems in cable systems, in particular, how to aggregate requests for movies at a cable head-end and then how to satisfy a multitude of requests using one audio/video stream to broadcast to multiple receivers simultaneously. Continued evolution of this research has resulted in the development of new techniques to scalably deliver on-demand content, including audio, video, web documents, and other types of data, through the Internet and over other types of networks, including over cable systems, broadband telephone lines, and satellite links.

11. An important component of my research from the very beginning has been investigating the challenges of communicating multimedia content between

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