IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

ALACRITECH, INC., Plaintiff, v.	
CENTURYLINK, INC., *et al.*,	Case No. 2:16-cv-693-RWS-RSP (LEAD CASE)
WISTRON CORP., *et al.*	Case No. 2:16-cv-692-RWS-RSP
DELL, INC. Defendants.	Case No. 2:16-cv-695-RWS-RSP

DEFENDANTS' INVALIDITY CONTENTIONS

Pursuant to the Court's Scheduling Order, Defendants collectively serve their Disclosures Under Local Patent Rule 3-3 on Plaintiff Alacritech, Inc. These invalidity contentions relate to the following U.S. Patent Nos. and claims:

U.S. Patent No. 7,124,205 ("the '205 Patent"), claims 1, 3-11, 13, 16, 22, 24-33, 35, and 36

U.S. Patent No. 7,237,036 ("the '036 Patent"), claims 1-7

U.S. Patent No. 7,337,241 ("the '241 Patent"), claims 1-10, 12-19, and 22

U.S. Patent No. 7,673,072 ("the '072 Patent"), claims 1-5 and 7-19

U.S. Patent No. 7,945,699[1] ("the '699 Patent"), claims 1-3, 6-7, 10-11, 13, and 16-17

U.S. Patent No. 8,131,880 ("the '880 Patent"), claims 1, 5-10, 12, 14, 16-17, 20-23, 27, 28, 32, 34-35, 37-39, 41-43, 45, and 55

[1] U.S. Patent No. 7,945,699 is not asserted against any defendant in *Alacritech, Inc. v. Wistron Corp., et al.*, Case No. 2:16-cv-692-RWS-RSP.

U.S. Patent No. 8,805,948 ("the '948 Patent"), claims 1, 3, 6-9, 11, 14-17, 19, 21, and 22

U.S. Patent No. 9,055,104 ("the '104 Patent"), claims 1, 6, 9, 12, 15, and 22 (collectively "Asserted Patents").

RESERVATIONS AND SCOPE

Defendants' Invalidity Contentions reflect present knowledge and contentions, and Defendants reserve all rights to modify and supplement these contentions without prejudice in the event that additional invalidity or unenforceability grounds are identified. Defendants' Invalidity Contentions are not, and should not been seen as, admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular element is met in any particular way. Defendants object to any attempt to imply claim constructions from any identification or description of potential prior art. In addition, Defendants' Invalidity Contentions may rely upon Alacritech's improper assertions of infringement and improper applications of the claims, but Defendants do not agree with those applications and deny infringement.

Defendants reserve all rights to rely on witness testimony to supplement these Invalidity Contentions, where appropriate. Further, to the extent an accused product or feature comprises or arises from prior art, Defendants contend, without admitting purported infringement, that the Asserted Patents are anticipated and/or made obvious in light of that prior art.

Defendants further reserve all rights to seek leave to amend their Invalidity Contentions in view of, without limitation: (1) information provided by Alacritech concerning its infringement allegations, theories, contentions, facts supporting them, prior suits involving the Asserted Patents or related patents, and/or positions that Alacritech or its fact or expert witness(es) may take concerning claim construction, infringement, and/or invalidity issues; (2) information provided by Alacritech concerning the alleged priority, conception, and reduction to practice dates for any of the asserted claims; (3) any change by Alacritech in the asserted claims; (4) the claim construction process; (5) additional prior art, including, without limitation, prior art obtained through discovery from Alacritech or a third party or from prior suits involving the Asserted Patents or related patents; or (6) any other basis in law or in fact.

BACKGROUND OF THE ART AND MOTIVATIONS TO COMBINE

All network communication entails protocol processing overhead. All of the art cited in these invalidity contentions is directed to solving the problem of accomplishing the required protocol processing in the face of ever-increasing network communication speeds and traffic. Additionally, all of the art cited in these invalidity contentions is directed to solving the well-known problems of optimizing the networking protocol processing path, reducing the overall network protocol processing impact on the host computer system, while maintaining or increasing networking communication performance, and distributing protocol overhead among computing elements. Persons of skill in the art understood that a variety of well understood techniques could be applied, individually or collectively, to solve these problems. Thus, persons of skill in the art would be motivated to combine the teachings of the references cited in these invalidity contentions to solve these problems.

The fast-path slow-path concept articulated and claimed by the Asserted Patents was an application of a well-known prior art performance tuning technique that had been applied to network protocol processing by many researchers and practitioners. Software practitioners would frequently profile and analyze the commonly used execution path to determine if any optimizations to this common execution path would benefit the performance of the overall software system. These techniques are almost as old as the software field itself and have long been taught in introductory courses in the field. Persons of skill in the art in the mid-1990s were aware of the application of these profiling and performance tuning techniques and applied them to the field of protocol processing generally and TCP/IP specifically. Networking protocols including TCP/IP are frequently described and implemented using state machines with a variety of states and actions required to transition between those states. These state machines have typically been first implemented in software and then optimized and implemented in whole or in part in dedicated hardware.

For example, Front-end protocol processors (or FEPs) date at least from the 1970s and were deployed with mainframe computers manufactured by IBM, Burroughs, and others. Front-end processors that ran the majority of the protocol stack were well-known in the prior art during the 1970s development of the ARPANET. Offloading via a front-end processor or network front ends (NFE) was so well-known to the early Internet pioneers that they stated in RFC 647 (dated November 1974) that "[i]n what might be thought of as the greater network community, the consensus is so broad that the front-ending is desirable that the topic needs almost no discussion here."

ARPANET has been in existence since the 1970s and the TCP/IP-based Internet since the early 1980s. However, the introduction of the World Wide Web in the early 1990s precipitated the wide-spread use of the Internet outside of the established government, business and academic communities. The foundational protocol of the World Wide Web was HTTP, which was above the TCP/IP level in the protocol stack. The number of World Wide Web users increased exponentially during the mid-1990s, driving an exponential growth of TCP/IP traffic as well. Local area network speeds also increased by orders of magnitude in the early to mid-1990s, rapidly increasing demands on network protocol stacks and network adapters. This exponential growth in TCP/IP network traffic and speeds motivated researchers and practitioners to investigate and apply known networking and computer system optimization principles and techniques to the TCP/IP protocol stack.

Analysis of high volume, high usage network loads and protocol processing paths led practitioners and researchers to understand that the majority of TCP/IP protocol processing overhead was due to connections in the "established" state. Analysis of networking traffic led Van Jacobson to realize that the majority of the fields of the TCP/IP protocol headers did not change from packet to packet over such an established connection. His analysis showed that only a few fields of the TCP/IP header changed and that the TCP/IP header of the next-expected TCP segment could frequently be accurately predicted from the header of the previous packet. As such, he devised a header compression technique that took advantage of this observation and only transmitted an indication that the next header is, in fact, the predicted header. Other researchers relied on Van Jacobson's and related work in this area to optimize the transmit and receive protocol processing paths based on the small number of fields in the TCP/IP header that are likely to change between successive packets on an established TCP/IP connection.

Van Jacobson's work in the TCP protocol field resulted in a widely cited paper entitled, "An Analysis of TCP Processing Overhead," coauthored with Clark, Romkey, and Salwen and published in 1989. This paper and Van Jacobson's other works were cited by numerous references in these invalidity contentions including, but not limited to, Afterburner, Biersack, Chua, Hotz, Floyd, Hall, IBM Redbook, Koelbel, Maclean, Nectar, Rutsche, Stevens, Tanenbaum, Thia, Thia 2, Whetton, Traw, and Woodside. These and other commonly cited authors and literature demonstrate that the references cited in these invalidity contentions are directed to the common set of well-known problems described above, and the teachings of these references would readily be combined by persons of ordinary skill in the art.

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