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Attorneys for Plaintiff
DIFF Scale Operation Research, LLC

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

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	:
DIFF SCALE OPERATION RESEARCH, LLC	:
	:
Plaintiff,	: Civil Action No. 1:18-cv-02324-KBF
	:
v.	: FIRST AMENDED COMPLAINT
	:
	: JURY TRIAL DEMANDED
EXTREME NETWORKS, INC. AND BROADCOM	:
LIMITED	: <i>Document Electronically Filed</i>
	:
Defendants.	:
	:
-----X	:

FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT

DIFF Scale Operation Research, LLC (“Plaintiff”), by its undersigned counsel, bring this action and make the following allegations of patent infringement relating to U.S. Patent Nos.: 6,407,983 (the, “‘983 patent”); 6,847,609 (the, “‘609 patent”); 6,940,810 (the, “‘810 patent”); 6,990,110 (the, “‘110 patent”); 6,216,166 (the, “‘166 patent”); 6,233,221 (the, “‘221 patent”); and 6,859,430 (the, “‘430 patent”) (collectively, the “patents-in-suit”). Defendant Extreme Networks, Inc. (“Extreme Networks”) infringes each of the patents-in-suit in violation of the patent laws of

the United States of America, 35 U.S.C. § 1 *et seq.*, and Defendant Broadcom Limited (“Broadcom”) infringes the ‘983 patent and the ‘166 patent in violation of the patent laws of the United States of America, 35 U.S.C. § 1 *et seq.* Defendants Extreme Networks and Broadcom are collectively referred to herein as “Defendants.”

INTRODUCTION

1. This case arises from Defendants’ infringement of a portfolio of semiconductor and network infrastructure patents. This patent portfolio arose from the groundbreaking work of ADC Telecommunications, Inc. (“ADC Telecommunications”).

2. In 1935, ADC Telecommunications, then known as the Audio Development Company¹ was founded in Minneapolis, Minnesota by two Bell Laboratory engineers to create custom transformers and amplifiers for the broadcast radio industry. In the 1950s, ADC Telecommunications began to produce jacks, plugs, patch cords, and jack fields, which would be cornerstones for ADC Telecommunications’ later entry into telecommunications equipment.²

3. In the late 1990s, ADC Telecommunications pioneered the development of microchips and network switches for the burgeoning telecommunications industry.³ ADC Telecommunications’ products included fiber-optic video, data, and voice transmission systems,

¹ Audio Development Company was later renamed ADC Telecommunications, Inc. *U.S. Senate Executive Reports*, U.S. PRINTING OFFICE at 39 (1999) (“The story of ADC Telecommunications begins in 1935, the height of the great depression The company got its start with a new innovation called the audiometer, an electronic device designed to test hearing.”).

² *High Fidelity Audio Devices Boost Capitol Diskery Sales*, BILLBOARD MAGAZINE at 12 (August 8, 1950) (describing Audio Development Company’s amplifiers).

³ David Beal, *Seeing the Light; ADC Telecommunications Has Grown From Making Telephone Jacks And Plugs Into A Force For The Global Fiber-Optic Future*, ST. PAUL PIONEER PRESS at E1 (December 25, 1995).

and its clients included all the major domestic cable TV operators, numerous phone companies, and a majority of TV broadcasters.⁴

4. Prior licensing of ADC Telecommunications' patents confirms the significant value of ADC Telecommunications' innovations. In 2011, HTC the Taiwan based smartphone manufacturer, bought a portfolio of 82 patents and 14 pending applications related to mobile technology from ADC Telecommunications.⁵ HTC asserted two of these patents against Apple before the International Trade Commission.

Apple Inc. may face a difficult task invalidating two HTC Corp. patents for data transmission in wireless devices, a U.S. Trade Judge said at a trial that could lead to import bans on the newest iPad and the next version of the iPhone. . . In this case, though, HTC acquired the patents at issue in April 2011, around the same time it began selling its first LTE phone, the Thunderbolt. ***The patents are part of a portfolio HTC bought for \$75 million from ADC Telecommunications Inc.*** [Judge] Pender told McKeon. "They are a property right."

Susan Decker, *HTC Patents Challenged by Apple Probably Valid, Judge Says*, BLOOMBERG NEWS (September 7, 2012) (emphasis added).

5. HTC's assertion of two patents acquired from ADC Telecommunications was described by commentators as forcing Apple to the negotiating table following a series of lawsuits between Apple and HTC:

A separate case before the ITC may have ***forced Mr. Cook to the negotiating table*** after a judge at the agency said Apple would be likely to face difficulty getting a series of HTC patents invalidated. ***HTC bought those patents, which covered technology used in LTE high-speed wireless devices, from ADC Telecommunications for US \$75 million.*** "The settlement is a big surprise and is likely due to HTC's LTE patents, which is bought from ADC last year, as Apple's

⁴ George Lawton, *Fiber Optic Architecture Evolution Evident at Cable-TV Exhibition*, LIGHTWAVE MAGAZINE (August 1, 1995) ("Cable-Tec Expo's exhibition area featured new fiber-optic products and technologies for the optical-fiber and cable-TV industries. For example, Minneapolis-based ADC Telecommunications Inc.")

⁵ *HTC Buys Patents from ADC Telecommunications for \$75 million*, THE NATIONAL LAW REVIEW (April 19, 2011), available at: <https://www.natlawreview.com/article/htc-buys-patents-adc-telecommunications-75-million> ("HTC, the Taiwan based smartphone manufacturer, has bought a portfolio of 82 patents and 14 pending applications related to mobile technology from US based ADC Telecommunications.").

LTE patents are relatively weak,” said Jeff Pu, an analyst from Fubon Financial Holding Co.

Apple Settles HTC Patent Suits, Signaling Shift from Jobs’ War Plan, FINANCIAL POST / BLOOMBERG NEWS (November 12, 2012) (emphasis added).

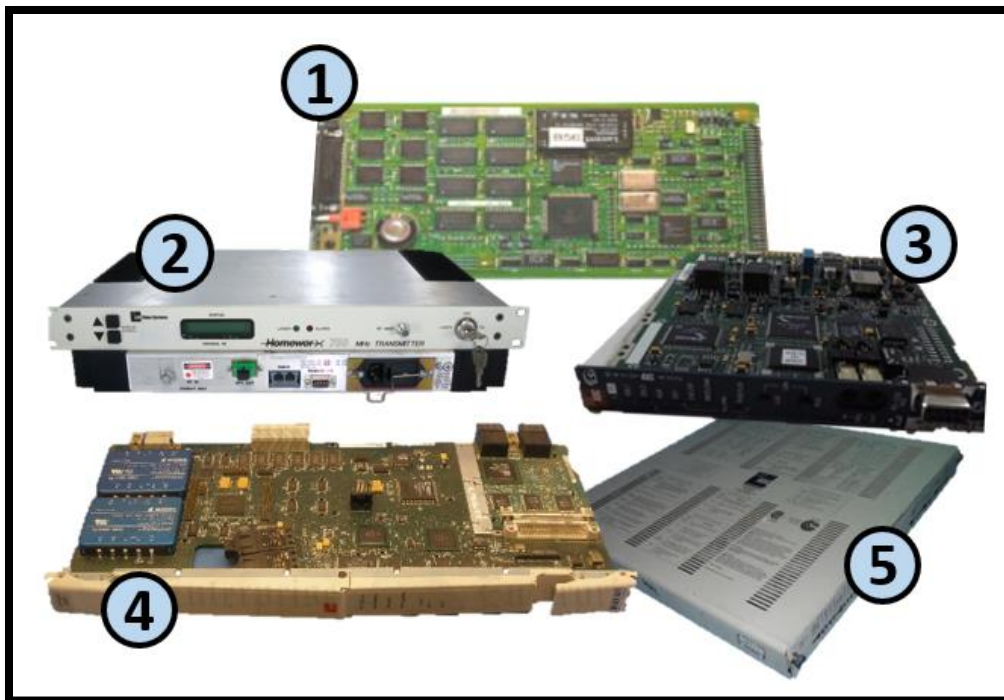
6. ADC Telecommunication’s revolutionary products included Homeworx Hybrid Fiber/Coax Access Platform (“ADC Homeworx”).⁶ ADC Homeworx was an integrated broadband transport system that could deliver video, telephony, data, and other services over a network of fiber optic and coaxial cables.⁷ The ADC Homeworx network utilized fiber-optic and radio frequency transmission technologies for transporting various services over a network.⁸ ADC Telecommunications’ groundbreaking products also included: the Soneplex Platform, CityCell, Cellworx STN Service, the EZT1 Voice Multiplexer, FOLENS (Fiber Optic Local Exchange Network System), and the DS3 Fiber Loop Converter.⁹

⁶ Sue Boyle, *Cable-Telephony Platform*, LIGHTWAVE MAGAZINE Vol. 17; No. 16 at 185 (September 1, 2000) (“The Homeworx cable-telephony system adds new features to the carrier-class hybrid fiber/coaxial telephony platform. The system offers improvements in flexibility, manageability, and robustness.”).

⁷ *Homeworx HFC Access Platform Outdoor ISU-32 Integrated Services Unit Installation Manual*, ADC Telecommunications Manual at 1-1 (July 1999).

⁸ *ADC AT&T Bis Team for Cable Telephony*, CABLE WORLD MAGAZINE Vol. 11 at 28 (May 31, 1999) (“The company’s Homeworx cable telephony platform has the largest capacity in the fledgling 6 MHz bandwidth channel compared to conventional telephone carriers.”).

⁹ *Modems, Test Gear, Return Path Hot at Expo*, CED MAGAZINE (June 30, 1997), available at: <https://www.cedmagazine.com/article/1997/06/modems-test-gear-return-path-hot-expo> (“ADC Telecommunications introduced a new forward path receiver that extends performance to 860 MHz for cable TV and telephony applications.”).



ANNOTATED GRAPHIC OF SELECTED ADC TELECOMMUNICATIONS PRODUCTS (numbered annotations showing: (1) ADC Soneplex SPX MPU Board MC68302; (2) ADC Homeworx 750MHz XMTR; (3) ADC HiGain HDSL4 Remote Unit H4TUR402L53; (4) ADC Cellworx BA4IKKLBA; and (5) ADC Telecommunications EZT1 Access Multiplexer).

7. By 1999, ADC Telecommunications had almost 10,000 employees and annual sales of 1.5 billion dollars. Although ADC Telecommunications was a leading innovator in its field, it was a mid-sized company in a market dominated by multinational corporations.¹⁰

8. A 1999 New York Times article on the telecommunication industry foreshadowed the difficulties that ADC Telecommunications would face when competing against much large competitors who were able to use their market power to dominate the market at the expense of smaller players:

Cisco's is not the only approach in the M.M.D.S. broad-band data market, however. The company's wireless competitors will include Spike Technologies, ADC Telecommunications and Adaptive Broadband. But *Cisco's prominence as an*

¹⁰ Barnaby J. Feder, *Optical Fiber (Almost at Home)*, N.Y. TIMES at F-6 (March 24, 1991) (“AT&T's competitors range from giants like Alcatel of France and Fujitsu of Japan to mid-sized companies like ADC Telecommunications Inc.”).

Internet technology vendor, along with the powerful alliance it has built, could give the company an inside edge, some analysts said.

John Markoff, *Cisco to Offer More Details on Wireless Technology*, N.Y. TIMES a C-1 (November 29, 1999) (emphasis added).

9. In 2015, ADC Telecommunications (including its foundational intellectual property) were acquired by CommScope, Inc. (“CommScope”). CommScope, a spin-off of General Instrument Corporation, manufactures optical fiber cabling, multiplexers, and telecommunications antennas.

10. To facilitate the licensing of ADC Telecommunications’ technology, CommScope assigned 73 patents and patent applications covering ADC Telecommunications’ pioneering innovations relating to electronic circuits for timing and network traffic management to DIFF Scale Operation Research. DIFF Scale Operation Research protects and licenses ADC Telecommunications’ inventions, which are widely adopted by leading technology companies.

11. Highlighting the importance of the patents-in-suit is the fact that the patents-in-suit have been cited by over 600 U.S. Patents and Patent Applications by a wide variety of the largest companies operating in the field. For example, the patents-in-suit have been cited by companies such as:

- International Business Machines Corporation¹¹
- Apple, Inc.¹²
- Intel Corporation¹³
- Broadcom Corporation¹⁴
- Microsoft Corporation¹⁵

¹¹ See, e.g., U.S. Patent Nos. 7,894,478; 8,270,296; 8,559,460; 7,398,326; 7,827,317; 7,321,648; and 7,746,777.

¹² See, e.g., U.S. Patent Nos. 9,026,680; 7,457,302; and 8,275,910.

¹³ See, e.g., U.S. Patent Nos. 7,248,246; 7,046,675; 7,263,557; 7,903,560; 8,233,506; 7,248,246; 6,507,915; 6,996,632; 7,346,099; and 7,673,073.

¹⁴ See, e.g., U.S. Patent Nos. 7,161,935; 7,203,227; 7,436,849; 7,724,661; 8,401,025; 8,411,705; 8,462,819; and 9,544,638.

¹⁵ See, e.g., U.S. Patent Nos. 7,526,677; 7,533,407; 7,793,096; 7,827,545; and 9,225,684.

- Sony Corporation¹⁶
- Cisco Systems, Inc.¹⁷
- Hewlett-Packard Enterprise Company¹⁸
- Huawei Technologies Co., Ltd.¹⁹
- Alcatel-Lucent S.A.²⁰
- Fujitsu Ltd.²¹
- Panasonic Corporation²²
- Telefonaktiebolaget L.M. Ericsson²³
- NEC Corporation²⁴
- Marvell Technology Group, Limited²⁵

THE PARTIES

DIFF SCALE OPERATION RESEARCH, LLC

12. DIFF Scale Operation Research, LLC (“DIFF Scale Operation Research”) is a limited liability company organized under the laws of Delaware. DIFF Scale Operation Research is committed to advancing the current state of electronic circuitry and network infrastructure.

13. Brooks Borchers, a former leader of research and development divisions at Boston Scientific Corporation, is the president and owner of DIFF Scale Operation Research, LLC.

14. In an effort to obtain compensation for ADC Telecommunications’ pioneering work in the fields of semiconductors, electronic circuitry, and network infrastructure, CommScope

¹⁶ See, e.g., U.S. Patent No. 8,200,873.

¹⁷ See, e.g., U.S. Patent Nos. 7,023,883; 7,523,185; 7,631,055; 7,653,924; 7,751,412; 8,144,591; 8,289,873; 8,379,648; and 8,811,281.

¹⁸ See, e.g., U.S. Patent Nos. 7,103,654; 7,187,674; 7,266,598; and 7,478,260.

¹⁹ See, e.g., U.S. Patent Nos. 7,664,051 and 7,916,758.

²⁰ See, e.g., U.S. Patent Nos. 6,798,741; 6,895,004; 7,209,530; 7,525,913; 7,536,716; 7,583,689; 7,602,701; and 8,379,509.

²¹ See, e.g., U.S. Patent Nos. 6,647,012; 7,330,057; 7,450,505; 7,469,298; and 7,664,217.

²² See, e.g., U.S. Patent Nos. 8,648,632 and 7,457,979.

²³ See, e.g., U.S. Patent Nos. 8,780,695 and 7,215,664.

²⁴ See, e.g., U.S. Patent Nos. 6,218,875; 6,707,823; 6,810,497; 6,885,676; and 7,486,663.

²⁵ See, e.g., U.S. Patent Nos. 7,733,588; 7,737,793; and 7,944,313.

assigned the following patents and patent application to DIFF Scale Operation Research: U.S. Patents and Application Nos. 5,986,486; 6,008,734; 6,157,646; 6,216,166; 6,233,221; 6,363,073; 6,407,983; 6,433,988; 6,664,827; 6,721,328; 6,757,247; 6,847,609; 6,859,430; 6,940,810; 6,959,006; 6,980,565; 6,990,110; 7,106,758; 7,170,894; 7,239,627; 7,881,413; 8,121,455; US20010000071A1; US20020150108A1; US20020163886A1; US20020176411A1; US20020180498A1; US20020190764A1; US20030063625A1; US20030118033A1; US20070019686A1; US20100061686A1; US20100150515A1 and International Patents and Application Nos. AT519138T; AU199914551A; AU199923274A; AU199923353A; AU200134402A; AU2002309562A1; CA2442738A1; CA2447983A1; CA2447983C; CN1278969A; CN1289489A; CN1291414A; DE102007010863A1; DE102007010863B4; DE102007032186A1; DE202007008151U1; DK2132589T3; EP1031185A1; EP1050125A1; EP1057361A1; EP1386450A2; EP1386450A4; EP2132589A1; EP2132589B1; ES2368361T3; JP03811007B2; JP2001523059A; JP2002502146A; JP2002504793A; JP3811007B2; WO1999025066A1; WO1999038285A1; WO1999043184A1; WO2001037468A2; WO2001037468A3; WO2002084927A2; WO2002084927A3; WO2002101959A1; WO2008104282A1; WO2008104284A1.²⁶

15. DIFF Scale Operation Research pursues the reasonable royalties owed for Extreme Networks' use of ADC Telecommunications' and CommScope's groundbreaking technology both here in the United States and throughout the world.

²⁶ The patents were assigned to DIFF Scale Operation Research by CommScope DSL Systems, LLC and CommScope Technologies, LLC.

EXTREME NETWORKS, INC.

16. On information and belief, Extreme Networks, Inc. (“Extreme Networks”), is a Delaware corporation with its principal place of business in San Jose, California. Extreme Networks may be served through its registered agent CT Corporation System 111 Eighth Avenue, New York, New York 10011. On information and belief, Extreme Networks is registered to do business in the State of New York and has been since at least June 14, 2000.

17. On information and belief, Extreme Networks conducts business operations within the Southern District of New York including at its office located at One Penn Plaza, New York, New York 10119.

18. On information and belief, Extreme Networks has offices in the Southern District of New York where it sells, develops, and/or markets its products including sales offices in New York City.

19. On information and belief, Extreme Networks has entered into contracts with the State of New York.

20. On information and belief, Extreme Networks has partnered with several Southern District of New York - based businesses to sell and service Extreme Networks products, including, for example, Logicalis, Myriad Supply Company and Saturn Business Systems.

BROADCOM LIMITED

21. On information and belief, Broadcom Limited (“Broadcom”), is a corporation organized under the laws of Singapore with principal places of business at 1 Yishun Avenue 7, Singapore 768923, and at 1320 Ridder Park Drive, San Jose, California 95131.

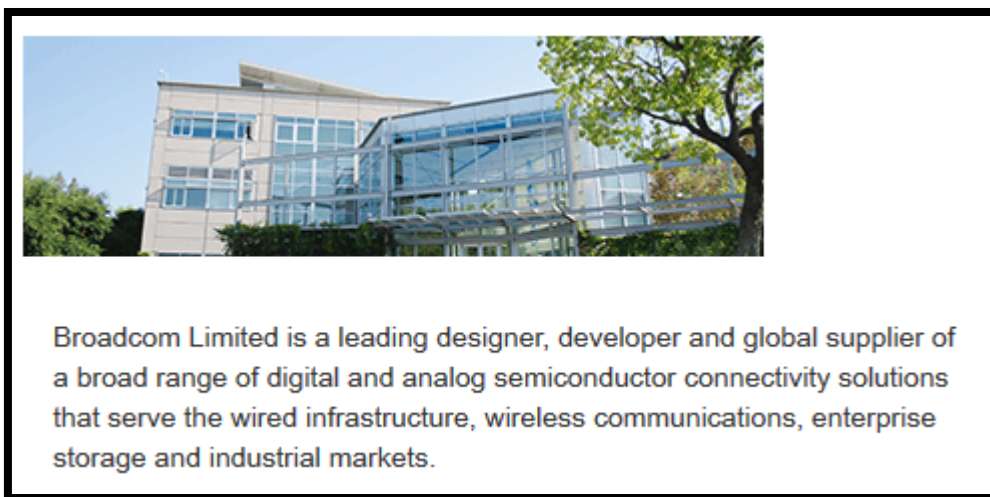
22. Broadcom Limited’s statements to the public, including statements made through websites (as well as press releases and other marketing materials) demonstrate that Broadcom Limited is actively involved in developing its worldwide business, including in the United States.

For example, in correspondence to the United States Congress, dated March 9, 2018, Broadcom Limited stated:

Broadcom Limited is a leading designer, developer and global supplier of a broad range of digital and analog semiconductor connectivity solutions. Broadcom Limited's extensive product portfolio serves four primary end markets: wired infrastructure, wireless communications, enterprise storage and industrial & other. Applications for our products in these end markets include enterprise and data center networking, home connectivity, set-top boxes, broadband access, telecommunication equipment, smartphones and base stations, data center servers and storage systems, factory automation, power generation and alternative energy systems, and electronic display.

LETTER TO CONGRESS, BROADCOM PLEDGES TO MAKE THE U.S. THE GLOBAL LEADER IN 5G (March 9, 2018), available at: <http://investors.broadcom.com/phoenix.zhtml?c=203541&p=irol-newsArticle&id=2337280> (emphasis added).

23. Broadcom Limited has publicly stated that it “is a leading designer, developer and global supplier of a broad range of digital and analog semiconductor connectivity solutions.”



BROADCOM.COM WEBSITE INTRODUCTORY WEBPAGE (last visited March 1, 2018), available at: <https://www.broadcom.com/> (“Broadcom Limited is a leading designer, developer and global supplier of a broad range of digital and analog semiconductor connectivity solutions that serve the wired infrastructure, wireless communications, enterprise storage and industrial markets.”).

24. Broadcom Limited maintains highly interactive and commercial websites, accessible to residents of New York and this judicial District, through which Defendant promotes its products and services, including products that infringe the '983 patent and '166 patent.

25. Broadcom Limited stated in its BROADCOM LIMITED QUALITY MANUAL ISO9001:2015 that it “communicates with customers” through “Websites,” “Press release and advertisements,” and “Direct discussions by Field Sales Engineers.”

8.2 Requirements for Products and Services

8.2.1 Customer Communication

The Broadcom Limited communicates with customers in a wide variety of forms:

- Direct discussions by the Field Sales Engineers
- Telephone, fax, and e-mail at all levels of the organization
- Website
- Press release and advertisements

Customer feedback on the performance of our products and services is also collected, both formally and informally. This feedback drives improvements, as necessary.

BROADCOM LIMITED QUALITY MANUAL ISO9001:2015 at 16 (last visited March 1, 2018), available at: <https://www.broadcom.com/company/citizenship/quality>.

26. Broadcom websites that promote the infringing products to residents of New York clearly identify that the websites are controlled and managed by Broadcom Limited. The following excerpt from the “Terms of Use” for www.broadcom.com states that visitors are “Using the Broadcom Limited Website.”

TERMS OF USE

ATTENTION: PLEASE READ THESE TERMS CAREFULLY BEFORE USING THIS WEB SITE OR MOBILE APPLICATION. ACCESSING OR USING THE BROADCOM LIMITED WEB SITE OR DOWNLOADING THE BROADCOM LIMITED MOBILE APPLICATIONS CONSTITUTES YOUR ACCEPTANCE OF THESE TERMS. IF YOU DO NOT ACCEPT THESE TERMS ("TERMS") IN THEIR ENTIRETY, DO NOT USE THE WEB SITE OR MOBILE APPLICATION.

BROADCOM.COM TERMS OF USE (last visited March 1, 2018), available at: <https://www.broadcom.com/company/legal/terms-of-use/> (last visited March 1, 2018) (“Please read these terms carefully before using this web site or mobile application. Accessing or using the Broadcom Limited web site or downloading the Broadcom Limited mobile applications”).

27. Furthermore, the Broadcom.com website identifies in its “Terms of Use” that “Use of [the] Site” is authorized by Broadcom Limited.

Use of Site. Broadcom Limited, including its corporate affiliates and subsidiaries, (“Broadcom”) authorizes you to view and download the materials at this Web site and/or mobile application (“Site”) only for your personal, non-commercial use, provided that you retain all copyright and other proprietary notices contained in the original materials on any copies of the materials. You may not modify the materials at this Site in any way or reproduce or publicly display, perform, or distribute or otherwise use them for any public or commercial purpose. For purposes of these Terms, any use of these materials on any other Web site, mobile application, or networked computer environment for any purpose is prohibited. The materials at this Site are copyrighted and any unauthorized use of any materials at this Site may violate copyright, trademark, and other laws. If you breach any of these Terms, your authorization to use this Site automatically terminates and you must immediately destroy any downloaded or printed materials.

BROADCOM.COM TERMS OF USE (last visited March 1, 2018), available at: <https://www.broadcom.com/company/legal/terms-of-use/> (last visited March 1, 2018) (“Use of Site. Broadcom Limited, including its corporate affiliates and subsidiaries, (“Broadcom”) authorizes you to view and download the materials at this Web site and/or mobile application”).

28. Broadcom Limited has directed and controlled activities of its subsidiaries that relate to the making, using, selling, offering for sale, or importation into the U.S. of one of more of the products accused of infringement herein.

29. Broadcom Limited has purposefully and voluntarily placed one or more infringing products into the stream of commerce with the expectation that they will be purchased and/or used by residents of this District and/or incorporated into downstream products purchased by consumers

in this District, including by directly or indirectly working with subsidiaries, distributors, and other entities located in New York to ensure their products reach New York and this judicial District.

30. On information and belief, Broadcom Limited maintained websites that advertised the accused devices for which Broadcom bears liability, including identifying the applications for which the accused devices can be used. The level of interactivity of Broadcom Limited's website (e.g., technical support submission forms, client support portals, downloadable product selection guides and whitepapers containing information about the accused products, and interactive menus allowing customers to find and buy Broadcom Limited's products, including in New York) rises to a level where establishing minimum contacts over Broadcom Limited would not offend traditional notions of fair play and substantial justice.

31. Broadcom Limited's 2017 Form 10-K states, "We sell our products through our direct sales force and a select network of distributors globally. . . . We have strategically developed distributor relationships to serve thousands of customers around the world. A significant amount of our sales are to large global electronic components distributors, including Avnet, Inc., complemented by a number of regional distributors with customer relationships based on their respective product ranges." Broadcom Limited 2017 Form 10-K at 8 (December 21, 2017).

DATA CENTER PRODUCT LINE PURCHASE BY EXTREME NETWORKS, INC.

32. On information and belief, on October 3, 2017, Defendant Extreme Networks, Inc. purchased various lines of data center products from Brocade Communications Systems, Inc.

33. On information and belief, among the product lines purchased by Defendant Extreme Networks in connection with the October 3, 2017 asset purchase include the following products: Extreme Network products including: ERS5000 Series Switches (ERS 59100GTS, ERS 59100GTS-PWR+, ERS 5952GTS, ERS 5952GTS-PWR+, ERS 5928GTS, ERS 5928GTS-

PWR+, ERS 5928GTS-uPWR, ERS 5928MTS-uPWR), ERS4000 Series Switches (ERS 4950GTS, ERS 4950GTS-PWR+, ERS 4926GTS, ERS 4926GTS-PWR+, ERS 4850GTS, ERS 4850GTS-PWR+, ERS 4826GTS, ERS 4826GTS-PWR+), ERS3000 Series Switches (ERS 3650GTS, ERS 3650GTS-PWR+, ERS 3626GTS, ERS 3626GTS-PWR+, ERS 3549GTS, ERS 3549GTS-PWR+, ERS 3510GT, ERS 3510GT-PWR+, ERS 3524GT, ERS 3524GT-PWR+, ERS 3550T, ERS 3550T-PWR+, ERS 3526T, ERS 3526T-PWR+), and the 6910 Ethernet Access Switch. ASSET PURCHASE AGREEMENT at §§ 1.1, 2.1 (October 3, 2017).

34. On information and belief, at the time the October 3, 2017, Asset Purchase Agreement between Brocade Communications, Inc. and Extreme Networks, Inc. was executed, an Agreement and Plan of Merger, dated November 2, 2016, was executed between Brocade Communications, Inc., Broadcom Corporation, and Defendant Broadcom Limited. ASSET PURCHASE AGREEMENT at § 1.1 (October 3, 2017).

35. On information and belief, Broadcom Corporation acquired Brocade Communications, Inc. in November 2017.

36. On information and belief, subsequently the Brocade Communications, Inc. entity has been terminated.

37. On information and belief, in connection with the November 2, 2016, Agreement and Plan of Merger, Broadcom Corporation reorganized and merged into Defendant Broadcom Limited. On information and belief, the October 3, 2017, Asset Purchase Agreement contemplated that, after the contemplated Plan of Merger between, among other corporate entities, Brocade Communications, Inc., Broadcom Corporation, and Defendant Broadcom Limited was completed, Defendant Broadcom Limited would be the “Ultimate Parent.” ASSET PURCHASE AGREEMENT at § 1.1 (October 3, 2017).

38. On information and belief, the merger and corporate reorganization contemplated by the November 2, 2016 Agreement and Plan of Merger has been executed and the obligations and liabilities of Brocade Communications, Inc. are presently the obligations and liabilities of Defendant Broadcom Limited. ASSET PURCHASE AGREEMENT at §§ 1.1, 8.3 (October 3, 2017).

39. On information and belief, the November 2, 2016 Agreement and Plan of Merger and October 3, 2017 Asset Purchase Agreement made Broadcom Ltd. liable for patent infringement claims that arise from the sale of Extreme Network products prior to October 3, 2017 including the following products: ERS5000 Series Switches (ERS 59100GTS, ERS 59100GTS-PWR+, ERS 5952GTS, ERS 5952GTS-PWR+, ERS 5928GTS, ERS 5928GTS-PWR+, ERS 5928GTS-uPWR, ERS 5928MTS-uPWR), ERS4000 Series Switches (ERS 4950GTS, ERS 4950GTS-PWR+, ERS 4926GTS, ERS 4926GTS-PWR+, ERS 4850GTS, ERS 4850GTS-PWR+, ERS 4826GTS, ERS 4826GTS-PWR+), ERS3000 Series Switches (ERS 3650GTS, ERS 3650GTS-PWR+, ERS 3626GTS, ERS 3626GTS-PWR+, ERS 3549GTS, ERS 3549GTS-PWR+, ERS 3510GT, ERS 3510GT-PWR+, ERS 3524GT, ERS 3524GT-PWR+, ERS 3550T, ERS 3550T-PWR+, ERS 3526T, ERS 3526T-PWR+), and the 6910 Ethernet Access Switch. *See* ASSET PURCHASE AGREEMENT at §§ 1.1, 2.1 (October 3, 2017).

JURISDICTION AND VENUE

40. This action arises under the patent laws of the United States, Title 35 of the United States Code. Accordingly, this Court has exclusive subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338(a).

41. Upon information and belief, this Court has personal jurisdiction over Defendants in this action because Defendants have committed acts within the Southern District of New York giving rise to this action and has established minimum contacts with this forum such that the

exercise of jurisdiction over Defendants would not offend traditional notions of fair play and substantial justice. Defendants, directly and/or through subsidiaries or intermediaries (including distributors, retailers, and others), have committed, and Defendant Extreme Networks continues to commit acts of infringement in this District by, among other things, offering to sell and selling products and/or services that infringe the patents-in-suit. Moreover, Defendants Broadcom and Extreme Networks actively direct their activities to customers located in the State of New York.

42. Venue is proper in this district under 28 U.S.C. §§ 1391(b)-(d) and 1400(b). Upon information and belief, Defendants have transacted business in the Southern District of New York and have committed acts of direct and indirect infringement in the Southern District of New York.

**ADC TELECOMMUNICATIONS LANDMARK SEMICONDUCTOR
AND NETWORKING TECHNOLOGIES**

43. In 1935, ADC Telecommunications, then known as the Audio Development Company was founded in Minneapolis, Minnesota by two Bell Laboratory engineers to create custom transformers and amplifiers for the radio broadcast industry. In 1941, while participating in a project to develop a sophisticated audio system for Coffman Union at the University of Minnesota, ADC Telecommunications began to produce jacks, plugs, patch cords, and jack fields, which would be cornerstones for ADC Telecommunications' later entry into telecommunications equipment.²⁷

²⁷ James F. Mauk, INDUSTRIAL RESEARCH LABORATORIES OF THE UNITED STATES at 47 (1947) (listing the research activities of the Audio Development Company as “high temperature electronic transformers; miniaturization of electronic transformers; high frequency electrical wave filters, encapsulation techniques; epoxies”).

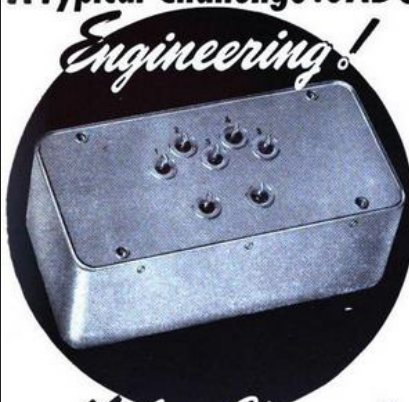


High Fidelity Audio Devices Boost Capitol Diskery Sales, BILLBOARD MAGAZINE at 12 (August 8, 1950) (describing Audio Development Company's amplifiers).

44. In 1961, ADC Telecommunications released the Bantam jack. This product was an amalgam of miniaturized components and became standard for telephone circuit access and patching.²⁸

²⁸ Steven Titch, *ADC Unveils Loop Product Strategy*, TELEPHONY at 9 (February 24, 1992).

A Typical Challenge to ADC Engineering!



Multi-Channel NARROW BANDPASS FILTER UNITS

● Like many of the problems brought to the Audio Development Company, this one involved a definite performance improvement with reductions in size and weight.

From an originally specified maximum weight of 40 oz. for gotted one-channel interstage filters, the weight of this ADC five-channel unit was reduced to less than 10 oz. per section, hermetically sealed. Volume was reduced by over 50%.

Electrical performance was improved to provide a midband gain of $14 \pm 1\frac{1}{2}$ db when the original specifications permitted a loss from 0 to 6 db. In addition, attenuation characteristics were improved to provide approximately 25 db discrimination at 1/3 octave with bandpass $\pm 1\frac{1}{2}$ db over $\pm 3\%$ of mid-frequency.

These filters are available in single or multi-channel units for frequencies from 200 cps to supersonic and carrier range. Frequencies lower than 200 cps are available with some size increase. Units can also be supplied in combination with high or low pass

THREE-PHASE POWER (continued)

$$\left[c + \frac{b - \sqrt{b^2 - 4c}}{2(2 + b\sqrt{3})} \right]^{1/2} + \frac{1 + b\sqrt{3}}{2(2 + b\sqrt{3})}$$

The $F = 1$ curve for the lead shifter

$$a = \left\{ \left[\frac{b\sqrt{b^2 + 1}}{4} \right] - \left[c + \frac{b}{4} \right] \right\}^{1/2} + \frac{b^2 + 2}{4}$$

The 120-degree curve for the lag shifter

$$a = \frac{12 + (b + 2c)\sqrt{3} \pm \sqrt{(4 + 3b)^2 + 16c(b + c)}}{\sqrt{(4 + 3b)^2 + 16c(b + c)}}^{1/2}$$

The $F = 1$ curve for the lag shifter

$$a^2 - 4b^2 + a^2(2b^2 + 2bc + b^2 + c) + a(4c^2 + 4bc + 2b^2) = -[c^2 + 2bc + c^2(b^2 + 4) + 4bc]$$

For each value of b , the first two equations determine a design point for the shifter on an a - c plane. The

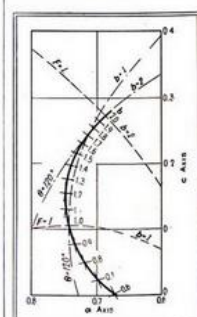


Fig. 2—Design curve for 120-degree lead shifter

A Typical Challenge To ADC Engineering!, ELECTRONICS MAGAZINE Vol. 18 at 288 (August 1945) (describing one of the early innovations of ADC Telecommunications).

45. In the 1960s, ADC Telecommunications began an ongoing partnership with NASA’s space missions, designing and manufacturing sensors for the Columbia space shuttle.

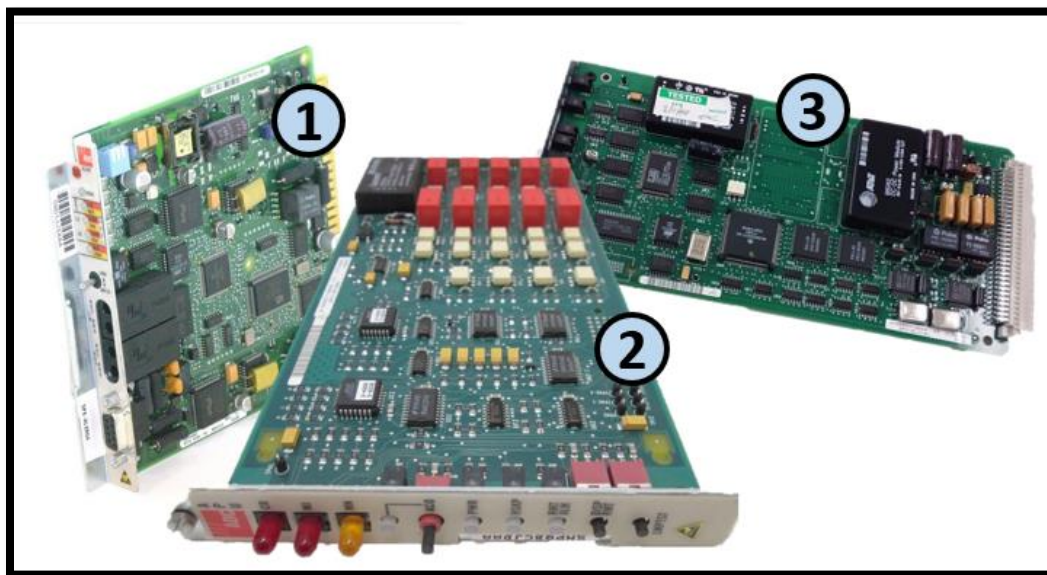
power supply board. The transceivers used are the CAF model manufactured by ADC Telecommunications, Inc.. The transceiver use bidirectional, full-duplex signal transmission over a single optic fiber. The transceiver is a self-contained, circuit-board-mountable device that contains the transmitting LED, the receiving photodetector, and the beam splitter. The transceivers are a matched pair which utilize two different light frequencies for receiving and transmitting. This configuration allows for full-duplex and bidirectional operation over a single fiber optic line. The optic fiber connects to the transceivers with SMA-type connectors.

R. L. Glassell et al., *Custom Electronic Subsystems For The Laboratory Telerobotic Manipulator*, PROCEEDINGS OF THE FOURTH ANS TOPICAL MEETING ON ROBOTICS AND REMOTE SYSTEMS at 151 (1991) (describing the work ADC Telecommunications was doing for NASA).

46. The 1970s and 1980s ushered in technological advancement in all areas of telecommunications and data processing. Public and private computer use increased, and telecommunications evolved into the computer age, with telephonic digital transmission and the

expansion of data communications. As a leading innovator in these fields, ADC Telecommunications grew dramatically. ADC Telecommunications entered the video services delivery market and was a leading supplier of fiber-optic video transmission equipment for cable operators.²⁹

47. In the 1990's ADC Telecommunications utilized its fiber-optics expertise to develop a local loop system with the goal of providing economical fiber directly to private homes. ADC Telecommunications also created Networkx, a novel transmission platform that integrated cable management and private networking products, using synchronous optical network and the asynchronous transfer mode (ATM). The cornerstone of Networkx was Sonoplex, a multi-rate, multimedia system that brought fiber to the customer's work or residence site, while making use of existing copper lines.



ANNOTATED GRAPHIC OF SELECTED ADC SONOPLEX TELECOMMUNICATIONS PRODUCTS (numbered annotations showing: (1) SPX-HLXRG4 Sonoplex HDSL Module; (2) ADC SPX-APU0B1 SONEPLEX ALM Processor Module; and (3) ADC SPX-RLX1B1 CARD.).

²⁹ Carol Wilson, *ADC Launches Fiber-Coax Platform*, TELEPHONY AT 11 (May 24, 1993).

48. In the 1990s, ADC Telecommunications partnered with South Central Bell, Mississippi Educational Television, Northern Telecom, IBM, and Apple Computer to create Fibernet, a network linking students at four high schools in Clarksville, Corinth, West Point, and Philadelphia, Mississippi, with teachers at Mississippi State University, Mississippi University for Women, and Mississippi School for Mathematics and Science to create "electronic classrooms."

49. ADC Telecommunications became an "early leader" in the asynchronous transfer mode (ATM) market, developing some of the first ATM switches. The ADC Telecommunications ATM switch enabled the handling the massive flows of simultaneous high-speed digital information that the industry projected would be generated during the latter half of the 1990s and into the 21st century, arising from the blending of the communications, computing, and entertainment industries. ADC Telecommunications also landed a coup in March 1994 when Ameritech chose ADC to supply equipment for its fiber-optic video system. This \$4.4 billion project would bring 70 channels of analog television and 40 channels of digital video to customers, with unlimited program choices and interactive, customer-controllable programming. By 1999, ADC Telecommunications employed 9,700 people and was selling \$1.5 billion dollars in communications equipment.

THE ASSERTED PATENTS

U.S. PATENT NO. 6,407,983

50. U.S. Patent No. 6,407,983 (the "983 patent") entitled, *Circuit and Method for Shaping Traffic in a Virtual Connection Network*, was filed on February 20, 1998. DIFP Scale Operation Research is the owner of all right, title, and interest in the '983 patent. A true and correct copy of the '983 patent is attached hereto as Exhibit A.

51. The '983 patent claims specific methods and systems for delivering data packets from a traffic source to a virtual connection at a uniform rate using a traffic shaper. For example, one or more of the '983 patent claims describe a system where a buffer receives packets from a traffic source (e.g., a server on a computer network that originates data packets). The claimed system utilizes a counter that indicates the beginning of each of a number of timeslots over a selectable time period. Further, the claimed system contains a request generator that creates request signals that request timeslots for transmitting data out of a buffer. The requests are distributed so that a desired data rate for the traffic source is established.

52. The '983 patent teaches a method and system for an improved traffic shaper. At the time the inventions disclosed in the '983 patent were conceived "conventional[] telecommunications services [had] been provided to subscribers using dedicated channels." '983 patent, col. 1:11-12.

53. In the late 1990's, conventional traffic shaping technology could not selectively allocate timeslots for data transmission in a measurement window. The '983 patent teaches specific solutions to the problem apparent in the technology at the time. For example, the '983 patent teaches the use of a request generator that generates requests during a specific time window. The request generator attempts to evenly distribute the requests over the duration of the window.

54. The '983 patent discloses additional improvements to the functioning of traffic shapers by teaching the delivery of data packets from at least one traffic source to a virtual connection network at a substantially uniform rate.

55. The '983 patent further teaches the use of generating requests for timeslots for data transmission according to a stored pattern based on a selected data rate.

56. Another insight for improving the performance of traffic shaping systems described by the '983 patent is to use a counter which can generate pulses that indicate the beginning of each timeslot in a measurement window.

57. The inventions taught in the '983 patent achieve improvements in traffic shaping systems by creating request signals that request timeslots for transmitting data out of the buffer. Implementation of the system and methods disclosed in the '983 patent is directed to a specific improvement in computer technology - delivering data packets from at least one traffic source at a substantially uniform rate. Further, the claims of the '983 patent are directed to specific asserted improvements in computer capabilities. For example, the claims recite specific steps – a counter that indicates the beginning of each of a number of time slots over a selectable time period – that accomplish the desired result – delivering data packets at a substantially uniform rate.

58. The '983 patent claims a technical solution to a problem unique to computer systems: delivering data packets to a virtual connection.

59. The '983 patent family has been cited by 61 United States patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '983 patent family as relevant prior art:

- Alcatel-Lucent S.A.
- AT&T, Inc.
- ***Broadcom Corporation***
- End II End Communications, Inc.
- Intel Corporation
- InterDigital, Inc.
- International Business Machines Corporation
- ORBCOMM, Inc.
- PRO DESIGN Electronics GmbH
- Riverstone Networks, Inc.
- Verizon Communications, Inc.

U.S. PATENT NO. 6,847,609

60. U.S. Patent No. 6,847,609 (“the ‘609 patent”) entitled, *Shared Management of Network Entity*, was filed on August 18, 1999, and claims priority to June 29, 1999. DIFF Scale Operation Research is the owner of all right, title, and interest in the ‘609 patent. A true and correct copy of the ‘609 patent is attached hereto as Exhibit B.

61. The ‘609 patent claims specific methods and systems for improved management of network entities at the point of demarcation that allows the service provider and enterprise flexibility in creating enterprise networks. The systems and methods claimed by the ‘609 patent include a network entity that is configurable to be jointly managed by at least two network management stations, *e.g.*, a network management station controlled by the enterprise and a network management station controlled by a service provider. Advantageously, this provides greater flexibility to service providers and enterprises in implementing an enterprise network.

62. The ‘609 patent teaches a method and system where a number of local area networks are each coupleable to at least one network element of a service provider network.

63. The ‘609 patent further teaches the use of a service delivery unit that allows management functions for a network to be divided or shared by the service provider and the enterprise network.

64. Another insight for improving the performance of enterprise networks described by the ‘609 patent is to have a network management terminal communicatively coupled to one network element of the service provider network such that the network management terminal is operable to view a configurable portion of data stored in memory.

65. Further, the ‘609 patent improves the performance of an enterprise network by facilitating management of selected aspects of a network element.

66. The '609 patent further discloses monitoring operation of a telecommunications network at a network entity.

67. Among the inventions disclosed in the '609 patent is bifurcating management of a network by having a network management station of an enterprise network view a first, configurable portion of the management data.

68. The inventions taught in the '609 patent achieve improvements in enterprise networks by having a network entity that is configurable to be jointly managed by at least two network management stations, e.g., a network management station controlled by the enterprise and a network management station controlled by a service provider. This provides greater flexibility to service providers and enterprises in implementing an enterprise network. Implementation of the system and methods disclosed in the '609 patent are directed to a specific improvement in computer technology – enterprise networks. Further, the claims of the '609 patent are directed to specific improvements in computer capabilities. For example, the claims recite specific steps – a network management terminal communicatively coupled to the at least one network element of the service provider network – that accomplish the desired result.

69. The '609 patent claims a technical solution to a problem unique to computer systems: improved management of network entities at the point of demarcation.

70. The '609 patent and its related patents have been cited by 61 United States patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '609 patent family as relevant prior art:

- Aerohive Networks, Inc.
- Alcatel-Lucent S.A.
- Allied Telesis K.K.
- AT&T, Inc.
- Avaya, Inc.
- Ciena Corporation

- Cisco Systems, Inc.
- International Business Machines Corporation
- Microsoft Corporation
- Narad Networks, Inc.
- Packeteer, Inc.
- SBCX Properties, L.P.
- Sun Microsystems, Inc.
- Telecom Italia S.p.A.

U.S. PATENT NO. 6,940,810

71. U.S. Patent No. 6,940,810 (“the ‘810 patent”) entitled, *Protection Switching of Virtual Connections at the Data Link Layer*, was filed on October 25, 2000, and claims priority to February 20, 1998. The ‘810 patent is subject to a 35 U.S.C. § 154(b) term extension of 875 days. DIFF Scale Operation Research is the owner of all right, title, and interest in the ‘810 patent. A true and correct copy of the ‘810 patent is attached hereto as Exhibit C.

72. The ‘810 patent claims specific methods and systems for protection switching in a network that uses virtual connections. The system includes first and second switch fabrics, unidirectional busses that provide a communication path between the first and second switch fabrics, and network elements that separately track the status of a number of virtual connections such that when an error is detected by one of the switch fabrics, the error is communicated to the other switch fabric.

73. The ‘810 patent teaches a method and system wherein the first and second switch fabrics of each network element are associated with a route.

74. The ‘810 patent further teaches the use of a first and second uni-directional bus that is used to communicate the change in state for a virtual connection.

75. Another insight for improving the performance of a network described by the '810 patent is to have a number of ring segments coupled between adjacent network elements to form first and second routes for transporting cells using virtual connections.

76. The '810 patent further discloses at least two uni-directional busses coupled between two switch fabrics.

77. Among the inventions disclosed in the '810 patent is a ring network that includes two routes for transporting cells using a virtual connection. Further, for each virtual connection, one route is the working route and the other route is the protection route.

78. The inventions taught in the '810 patent achieve improvements in computer network systems by using virtual connections to communicate between two switch fabrics. Implementation of the system and methods disclosed in the '810 patent is directed to a specific improvement in computer technology – protection switching in a network that uses virtual connections. Further, the claims of the '810 patent are directed to specific asserted improvements in computer networking capabilities. For example, the claims recite specific steps – first and second unidirectional busses that provide a communication path between the first and second switch fabrics – that accomplish the desired result.

79. The '810 patent claims a technical solution to a problem unique to computer systems: network survivability following errors.

80. The '810 patent and its related patents have been cited by 17 United States patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '810 patent family as relevant prior art:

- ***Brocade Communications Systems, Inc. (now part of Broadcom Limited)***
- Foundry Networks LLC (now part of Broadcom Limited)
- Ciena Corporation
- Audiocodes Texas, Inc.

- Hewlett-Packard Development Company, L.P.
- Positron Networks PNI, Inc.
- Samsung Electronics Co., Ltd.
- Symantec Corporation
- Tekelec, Inc. (now part of Oracle Corporation)
- Telefonaktiebolaget LM Ericsson
- ***Broadcom Limited***

U.S. PATENT NO. 6,990,110

81. U.S. Patent No. 6,990,110 (“the ‘110 patent”) entitled, *Automatic Permanent Virtual Circuit Connection Activation for Connection Oriented Networks*, was filed on April 12, 2001. The ‘110 patent is subject to a 35 U.S.C. § 154(b) term extension of 530 days. DIFF Scale Operation Research is the owner of all right, title, and interest in the ‘110 patent. A true and correct copy of the ‘110 patent is attached hereto as Exhibit D.

82. The ‘110 patent claims specific methods and systems for improvements in end-to-end provisioning of communication systems. The system includes an access network, a central unit, and customer premises equipment. Further, the ‘110 patent describes a system wherein an automatic permanent virtual circuit connection is embedded within the central unit. The automatic permanent virtual circuit is enabled when the customer premises equipment is initialized and can create a translation connection between the customer premises equipment and the central unit.

83. The ‘110 patent teaches a method and system for automatic permanent virtual circuit connection activation.

84. The ‘110 patent further teaches the use of a central unit selectively coupled to the access network.

85. Another insight for improving the performance of a communications network described by the ‘110 patent is to have an automatic permanent virtual circuit connection activation

function embedded in the central unit. And, when the customer premises equipment is initialized, a translation connection between the customer premises equipment and the central unit is created.

86. The '110 patent further discloses a central unit that recognizes at least one virtual circuit identifier of the customer premises equipment by receiving traffic from the customer premises equipment.

87. Among the inventions disclosed in the '110 patent is a system for automatically configuring a permanent virtual circuit in an asynchronous transfer mode network.

88. The inventions taught in the '110 patent achieve improvements in end-to-end provisioning of communication networks by creating a translation connection between the customer premises equipment and the central unit. Implementation of the system and methods disclosed in the '110 patent is directed to a specific improvement in computer technology - end-to-end provisioning of communication systems. Further, the claims of the '110 patent are directed to specific asserted improvements in computer capabilities. For example, the claims recite specific steps – detecting initiation of communication at a user network interface between a first and a second network element and creating a translation connection between the first and second network elements – that accomplish the desired result.

89. The '110 patent claims a technical solution to a problem unique to computer systems: end-to-end provisioning of communication systems.

90. The '110 patent and its related patents have been cited by 34 United States patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '110 patent family as relevant prior art:

- Alcatel-Lucent S.A.
- AT&T, Inc.
- BellSouth Intellectual Property Corporation
- Brooktree Broadband Holding, Inc. (now part of Synaptics, Inc.)

- Cisco Systems, Inc.
- Fujitsu, Ltd.
- Huawei Technologies Co., Ltd.
- Intel Corporation
- Nant Holdings IP, LLC
- NEC Corporation
- SBC Properties, L.P.
- Tellabs, Inc.
- Wireless LAN Systems Oy

U.S. PATENT NO. 6,216,166

91. U.S. Patent No. 6,216,166 (“the ‘166 patent”) entitled, *Shared Media Communications in a Virtual Connection Network*, was filed on February 20, 1998. DIFF Scale Operation Research is the owner of all right, title, and interest in the ‘166 patent. A true and correct copy of the ‘166 patent is attached hereto as Exhibit E.

92. The ‘166 patent claims specific methods and systems for efficient shared media communications in a virtual connection network. The system includes network elements including elements providing for switching and transport and a policing network element that contains functionality for terminating a local area network group of data that has a corrupted media access address.

93. The ‘166 patent teaches a method and system for shared media communications in a virtual connection network.

94. The ‘166 patent further teaches the assigning of media access control (MAC) addresses to network elements.

95. Another insight for improving the performance of a computer network described by the ‘166 patent is to have a unique (MAC) address assigned to each network element.

96. The ‘166 patent further discloses a policing network element that terminates any local area network type groups of data that have corrupted source or destination MAC addresses.

97. Among the inventions disclosed in the '166 patent is a system for a virtual connection dedicated to transmitting packets including management data to the network elements based on the MAC addresses of each of the network elements.

98. The inventions taught in the '166 patent achieve improvements in virtual connection networks by policing network elements and terminating network elements with corrupted source or destination MAC addresses. Implementation of the system and methods disclosed in the '166 patent are directed to a specific improvement in computer technology – policing network elements with corrupted media access control addresses. Further, the claims of the '166 patent are directed to specific asserted improvements in computer capabilities. For example, the claims recite specific steps – assigning each network element a media access control address and terminating network elements with corrupted media access control addresses – that accomplish the desired result.

99. The '166 patent claims a technical solution to a problem unique to computer systems: multicasting management data on a virtual connection network.

100. The '166 patent and its related patents have been cited by 14 United States patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '166 patent family as relevant prior art:

- Alcatel-Lucent S.A.
- Avaya, Inc.
- Fujitsu, Ltd.
- NEC Corporation
- Nokia Corporation
- Nortel Networks Corporation
- Orbit Communication Systems, Ltd.
- Qwest Communications International, Inc. (now owned by CenturyLink, Inc.)
- Thomson Licensing S.A. (now Technicolor SA)

U.S. PATENT NO. 6,233,221

101. U.S. Patent No. 6,233,221 (“the ‘221 patent”) entitled, *System and Method for a Ring Network with Virtual Path Connections*, was filed on February 20, 1998. DIFF Scale Operation Research is the owner of all right, title, and interest in the ‘221 patent. A true and correct copy of the ‘221 patent is attached hereto as Exhibit F.

102. The ‘221 patent claims specific methods and systems for a virtual path ring network. The system includes an add/drop multiplexer and when the destination address corresponds to an endpoint that is not associated with the add/drop multiplexer the system and methods in ‘221 patent teach switching the packet back out onto the ring.

103. The ‘221 patent teaches a method and system for processing packets in an add/drop multiplexer.

104. The ‘221 patent further teaches the use of a first sub-network that includes a number of add/drop multiplexers coupled to form a ring including first and second routes for transmitting data around the network;

105. Another insight for improving the performance of a virtual path network described by the ‘221 patent is to have a first ring interconnection module that interconnects the first sub-network with one of the routes of the second sub-network.

106. The ‘221 patent further discloses the use of a sub-network in a virtual path network that includes a number of add/drop multiplexers coupled to form another ring network for transmitting data around a network.

107. Among the inventions disclosed in the ‘221 patent is a system for a virtual path network with two sub-networks that each include an add/drop multiplexer for transmitting data around the network.

108. The inventions taught in the ‘221 patent achieve improvements in a virtual path ring network. Implementation of the system and methods disclosed in the ‘221 patent is directed to a specific improvement in computer technology – a ring network with virtual connections that survives a single point of failure and can interconnect with other ring networks without interfering with the operation of the other ring networks. Further, the claims of the ‘221 patent are directed to specific asserted improvements in computer capabilities. For example, the claims recite specific steps – interconnection module that interconnects the first sub-network with the other route of the second sub-network – that accomplish the desired result.

109. The ‘221 patent claims a technical solution to a problem unique to computer systems: preventing a single point of failure from bringing down a network element and network.

110. The ‘221 patent and its related patents have been cited by 15 United States patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the ‘221 patent family as relevant prior art:

- Beijing Kaihua Network Alliance Technology Co., Ltd
- Coriant Operations, Inc. (part of Tellabs, Inc.)
- Telefonaktiebolaget LM Ericsson
- Fujitsu, Ltd.
- Lucent Technologies, Inc.
- Micron Technology, Inc.
- NEC Corporation
- Nortel Networks Limited
- Siemens AG
- Texas Instruments, Inc.

U.S. PATENT NO. 6,859,430

111. U.S. Patent No. 6,859,430 (“the ‘430 patent”) entitled, *Protection Switching of Virtual Connections*, was filed on October 1, 1999, and claims priority to February 20, 1998.

DIFF Scale Operation Research is the owner of all right, title, and interest in the '430 patent. A true and correct copy of the '430 patent is attached hereto as Exhibit G.

112. The '430 patent claims specific methods and systems for the protection of virtual connections in a network.

113. The inventions taught in the '430 patent achieve improvements in networking systems. Implementation of the system and methods disclosed in the '430 patent is directed to a specific improvement in computer technology – virtual connection switching. Further, the claims of the '430 patent are directed to specific asserted improvements in computer capabilities

114. The '430 patent and its related patents have been cited by 16 United States patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '430 patent family as relevant prior art:

- Adtran, Inc.
- Ciena Corporation
- Hewlett-Packard Development Company, L.P.
- Infinera Corporation
- Mitsubishi Denki Kabushiki Kaisha
- Nortel Networks, Ltd.
- Alcatel-Lucent S.A.

COUNT I
INFRINGEMENT OF U.S. PATENT NO. 6,407,983

115. DIFF Scale Operation Research references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

116. On information and belief, Defendant Broadcom Limited is liable for infringing the '983 patent in connection with its merger and acquisition of Brocade Communications, Inc., which was responsible for designing, making, using, selling, and/or offering for sale in the United States products and/or services for traffic shaping that delivered data packets from one traffic source at a substantially uniform rate.

117. Prior to October 3, 2017, Brocade Communications, Inc. designed, made, sold, offered to sell, imported, and/or used switching and routing products, including the following products: Brocade SLX 9850-4 router, Brocade SLX 9850-8 router, Brocade SLX 9540 switch, Brocade NetIron XMR Series; Brocade NetIron MLX Series; NetIron CES 2000; NetIron CER 2000 Series (including the following products: Brocade NetIron XMR 4000, Brocade NetIron XMR 8000, Brocade NetIron XMR 16000, Brocade NetIron XMR 32000, Brocade MLX-4, Brocade MLX-8, Brocade MLX-16, Brocade MLX-32, Brocade MLXe-4, Brocade MLXe-8, Brocade MLXe-16, Brocade MLXe-32, Brocade NetIron CES 2024C, Brocade NetIron CES 2024F, Brocade NetIron CES 2048C, Brocade NetIron CES 2048CX, Brocade NetIron CES 2048F, Brocade NetIron CES 2048FX, Brocade NetIron CER 2024C, Brocade NetIron CER-RT 2024C, Brocade NetIron CER 2024F, Brocade NetIron CER-RT 2024F, Brocade NetIron CER 2048C, Brocade NetIron CER-RT 2048C, Brocade NetIron CER 2048CX, Brocade NetIron CER-RT 2048CX, Brocade NetIron CER 2048F, Brocade NetIron CER-RT 2048F, Brocade NetIron CER 2048FX, and Brocade NetIron CER-RT 2048FX) (collectively, the “Extreme-Broadcom ‘983 Product(s)’”).

118. On information and belief, Defendant Broadcom Limited has assumed liability for the sales of the Extreme-Broadcom ‘983 Products as a result of the acquisition of Brocade Communications, Inc. and the ensuing corporate reorganization and merger that resulted in the formation of Broadcom Limited.

119. Extreme Networks designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for traffic shaping that deliver data packets from one traffic source at a substantially uniform rate.

120. On information and belief, after its October 3, 2017 product line acquisition, Defendant Extreme Networks designs, makes, sells, offers to sell, imports, and/or uses switching and routing products, including each of the Extreme-Broadcom '983 Products.

121. On information and belief, one or more Extreme Networks subsidiaries and/or affiliates used the Extreme-Broadcom '983 Products in regular business operations.

122. On information and belief, one or more of the Extreme-Broadcom '983 Products include technology for traffic shaping.

123. On information and belief, one or more of the Extreme-Broadcom '983 Products include technology for controlling data traffic on a network to match its transmission to the speed of the remote target interface.

124. On information and belief, the Extreme-Broadcom '983 Products are available to businesses and individuals throughout the United States.

125. On information and belief, the Extreme-Broadcom '983 Products are and have been provided to businesses and individuals located in the Southern District of New York.

126. On information and belief, Defendant Broadcom Limited has directly infringed the '983 patent by, among other things, making, using, offering for sale, and/or selling technology for traffic shaping, including but not limited to the Extreme-Broadcom '983 Products, which include infringing technology for delivering data packets from at least one traffic source at a substantially uniform rate. Such products and/or services include, by way of example and without limitation, the Extreme-Broadcom '983 Products.

127. On information and belief, Extreme Networks has directly infringed the '983 patent by, among other things, making, using, offering for sale, and/or selling technology for traffic shaping, including but not limited to the Extreme-Broadcom '983 Products, which include

infringing technology for delivering data packets from at least one traffic source at a substantially uniform rate. Such products and/or services include, by way of example and without limitation, the Extreme-Broadcom '983 Products.

128. On information and belief, Defendant Broadcom Limited is liable for the direct infringement of the '983 patent by, among other things, its corporate predecessors' making, using, offering for sale, and/or selling technology for traffic shaping, including but not limited to the Extreme-Broadcom '983 Products prior to October 3, 2017.

129. In the alternative, and on information and belief, to the extent Broadcom Limited is not liable for the direct infringement of the '983 patent by virtue of its corporate predecessors' making, using, offering for sale, and/or selling technology for traffic shaping, including but not limited to the Extreme-Broadcom '983 Products prior to October 3, 2017, the liability for such infringement was lawfully transferred to Defendant Extreme Networks either expressly or impliedly in the October 3, 2017 Asset Purchase Agreement or because or because an exception to the rule of successor non-liability (e.g., product line exception or *de facto* merger) applies to Defendant Extreme Networks' purchase of several data center product lines, which include but are not limited to the Extreme-Broadcom '983 Products from Brocade Communications, Inc. which, on information and belief, is now a terminated corporate entity no longer in existence.

130. On information and belief, Defendant Extreme Networks is liable for the direct infringement of the '983 patent by, among other things, making, using, offering for sale, and/or selling technology for traffic shaping, including but not limited to the Extreme-Broadcom '983 Products after October 3, 2017 until the expiration of the '983 patent.

131. On information and belief, the Extreme-Broadcom '983 Products comprise a buffer that receives packets from at least one traffic source.

132. On information and belief, the Extreme-Broadcom '983 Products include a counter that indicates the beginning of each of a number of timeslots over a selectable time period.

133. On information and belief, the Extreme-Broadcom '983 Products comprise a request generator that creates request signals that request timeslots for transmitting data out of the buffer, wherein the requests are distributed over the time period based on at least one table so as to establish a desired data rate for the traffic source.

134. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Extreme-Broadcom '983 Products, Defendants Broadcom and Extreme Networks have injured DIFF Scale Operation Research and are liable for directly infringing one or more claims of the '983 patent, including at least claim 8, pursuant to 35 U.S.C. § 271(a).

135. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '983 patent.

136. As a result of Defendants' infringement of the '983 patent, DIFF Scale Operation Research has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants together with interest and costs as fixed by the Court.

COUNT II
INFRINGEMENT OF U.S. PATENT NO. 6,847,609

137. DIFF Scale Operation Research references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

138. Extreme Networks designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for network management.

139. Extreme Networks designs, makes, sells, offers to sell, imports, and/or uses Extreme Networks' network management and orchestration products, including: Extreme Management Center Versions 8.1, 8.0, 7.1.3, and 7.0.9 (collectively, the "Extreme Networks '609 Product(s)").

140. On information and belief, one or more Extreme Networks subsidiaries and/or affiliates use the Extreme Networks '609 Products in regular business operations.

141. On information and belief, one or more of the Extreme Networks '609 Products include technology for managing network elements.

142. On information and belief, one or more of the Extreme Networks '609 Products enable management of a network topology in which network nodes interconnect via one or more network switches.

143. On information and belief, the Extreme Networks '609 Products are available to businesses and individuals throughout the United States.

144. On information and belief, the Extreme Networks '609 Products are provided to businesses and individuals located in the Southern District of New York.

145. On information and belief, Extreme Networks has directly infringed and continues to directly infringe the '609 patent by, among other things, making, using, offering for sale, and/or selling technology for management of network entities, including but not limited to the Extreme Networks '609 Products, which include infringing technology for network management. Such products and/or services include, by way of example and without limitation, the Extreme Networks '609 Products.

146. On information and belief, the Extreme Networks '609 Products comprise a system that includes a service delivery unit that has a network interface port.

147. On information and belief, the Extreme Networks '609 Products include functionality for a service delivery unit that is configured to store configuration data, control data, billing data, diagnostic data, and/or management data.

148. On information and belief, the Extreme Networks '609 Products are a system that includes a service delivery unit that contains a data port coupleable to at least one local area network ("LAN").

149. On information and belief, the Extreme Networks '609 Products comprise a system with a central processing unit that enables a network management terminal to view a configurable portion of the data in the memory and to allow a second network management terminal to view a second, configurable portion of the data in the memory to allow shared management of the service delivery unit.

150. On information and belief, the Extreme Networks '609 Products include functionality for connecting to a switch fabric.

151. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Extreme Networks '609 Products, Extreme Networks has injured DIFF Scale Operation Research and is liable for directly infringing one or more claims of the '609 patent, including at least claim 26, pursuant to 35 U.S.C. § 271(a).

152. On information and belief, Extreme Networks also indirectly infringes the '609 patent by actively inducing infringement under 35 USC § 271(b).

153. On information and belief, Extreme Networks has had knowledge of the ‘609 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Extreme Networks knew of the ‘609 patent and knew of its infringement, including by way of this lawsuit.

154. On information and belief, Extreme Networks intended to induce patent infringement by third-party customers and users of the Extreme Networks ‘609 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Extreme Networks specifically intended and was aware that the normal and customary use of the accused products would infringe the ‘609 patent. Extreme Networks performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the ‘609 patent and with the knowledge that the induced acts would constitute infringement. For example, Extreme Networks provides the Extreme Networks ‘609 Products that have the capability of operating in a manner that infringe one or more of the claims of the ‘609 patent, including at least claim 26, and Extreme Networks further provides documentation and training materials that cause customers and end users of the Extreme Networks ‘609 Products to utilize the products in a manner that directly infringe one or more claims of the ‘609 patent.³⁰ By providing instruction and training to customers and end-users on how to use the Extreme Networks ‘609 Products in a manner that directly infringes one or more claims of the ‘609 patent, including at least claim 26, Extreme Networks specifically intended to induce infringement of the ‘609 patent. On information and belief, Extreme Networks engaged in such inducement to promote the sales of the Extreme Networks ‘609 Products, e.g., through Extreme Networks user manuals, product support, marketing materials, and training materials to actively

³⁰ See, e.g., EXTREME MANAGEMENT CENTER SUITE INSTALLATION (April 2017); EXTREME NETWORKS EXTREME MANAGEMENT CENTER, CONSOLE USER GUIDE (2017).

induce the users of the accused products to infringe the '609 patent. Accordingly, Extreme Networks has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '609 patent, knowing that such use constitutes infringement of the '609 patent.

155. The '609 patent is well-known within the industry as demonstrated by multiple citations to the '609 patent in published patents and patent applications assigned to technology companies and academic institutions. Extreme Networks is utilizing the technology claimed in the '609 patent without paying a reasonable royalty. Extreme Networks is infringing the '609 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

156. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '609 patent.

157. As a result of Extreme Networks' infringement of the '609 patent, DIFF Scale Operation Research has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Extreme Networks' infringement, but in no event less than a reasonable royalty for the use made of the invention by Extreme Networks together with interest and costs as fixed by the Court.

COUNT III
INFRINGEMENT OF U.S. PATENT NO. 6,940,810

158. DIFF Scale Operation Research references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

159. Extreme Networks designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for ring networks.

160. Extreme Networks designs, makes, sells, offers to sell, imports, and/or uses network switches, including the following products: ExtremeSwitching X440-G2 series (ExtremeSwitching X440-G2-24t-10GE4, ExtremeSwitching X440-G2-24t-10GE4-DC, ExtremeSwitching X440-G2-24p-10GE4, ExtremeSwitching X440-G2-48t-GE4, ExtremeSwitching X440-G2-48t-GE4-DC, ExtremeSwitching X440-G2-48p-10GE4, ExtremeSwitching X440-G2-12t-10GE4, ExtremeSwitching X440-G2-12p-10GE4, ExtremeSwitching X440-G2-24x-10GE4, ExtremeSwitching X440-G2-24fx-GE4, ExtremeSwitching X440-G2-12t8fx-GE4, ExtremeSwitching X440-G2-24t-GE4), Summit X450-G2 series (Summit X450-G2-24t-10GE4, Summit X450-G2-24p-10GE4, Summit X450-G2-48t-10GE4, Summit X450-G2-48p-10GE4, Summit X450-G2-24t-GE4, Summit X450-G2-24p-GE4, Summit X450-G2-48t-GE4, Summit X450-G2-48p-GE4), Summit X460-G2 series (Summit X460-G2-24t-10GE4, Summit X460-G2-48t-10GE4, Summit X460-G2-24p-10GE4, Summit X460-G2-48p-10GE4, Summit X460-G2-24x-10GE4, Summit X460-G2-48x-10GE4, Summit X460-G2-24t-GE4, Summit X460-G2-48t-GE4, Summit X460-G2-24p-GE4, Summit X460-G2-48p-GE4, ExtremeSwitching X460-G2-24p-24hp-10GE4, ExtremeSwitching X460-G2-24t-24ht-10GE4, ExtremeSwitching X460-G2-16mp-32p-10GE4), ExtremeSwitching X620 series (ExtremeSwitching X620-10x, ExtremeSwitching X620-8T-2x, ExtremeSwitching X620-16x, ExtremeSwitching X620-16t, ExtremeSwitching X620-16p), Summit X670-G2 series (Summit X670-G2-48x-4q, Summit X670-G2-72x), Summit X770 series (Summit X770-32q), and ExtremeSwitching X870 series (ExtremeSwitching X870-32c, ExtremeSwitching X870-96x-8c) (collectively, the “Extreme Networks ‘810 Product(s)’”).

161. On information and belief, one or more Extreme Networks subsidiaries and/or affiliates use the Extreme Networks ‘810 Products in regular business operations.

162. On information and belief, one or more of the Extreme Networks '810 Products include technology for protection switching of virtual connections at the data link level.

163. On information and belief, the Extreme Networks '810 Products are available to businesses and individuals throughout the United States.

164. On information and belief, the Extreme Networks '810 Products are provided to businesses and individuals located in the Southern District of New York.

165. On information and belief, Extreme Networks has directly infringed and continues to directly infringe the '810 patent by, among other things, making, using, offering for sale, and/or selling networking technology, including but not limited to the Extreme Networks '810 Products, which include infringing technology for protection switching of virtual connections at the data link layer. Such products and/or services include, by way of example and without limitation, the Extreme Networks '810 Products.

166. The Extreme Networks '810 Products comprise a system for a ring network.

167. The Extreme Networks '810 Products include functionality for two or more uni-directional busses that connect a first and second switch fabrics.

168. The Extreme Networks '810 Products are a system wherein ring segments connected between adjacent network elements form routes for transporting cells using virtual connections.

169. The Extreme Networks '810 Products comprise a system, wherein for each virtual connection, one route is a working route and the other route is a protection route.

170. The Extreme Networks '810 Products comprise a system where the first and second routes are associated with the first and second switch fabrics.

171. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Extreme Networks '810 Products, Extreme Networks has injured DIFF Scale Operation Research and is liable for directly infringing one or more claims of the '810 patent, including at least claim 13, pursuant to 35 U.S.C. § 271(a).

172. On information and belief, Extreme Networks also indirectly infringes the '810 patent by actively inducing infringement under 35 USC § 271(b).

173. On information and belief, Extreme Networks has had knowledge of the '810 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Extreme Networks knew of the '810 patent and knew of its infringement, including by way of this lawsuit.

174. On information and belief, Extreme Networks intended to induce patent infringement by third-party customers and users of the Extreme Networks '810 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Extreme Networks specifically intended and was aware that the normal and customary use of the accused products would infringe the '810 patent. Extreme Networks performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '810 patent and with the knowledge that the induced acts would constitute infringement. For example, Extreme Networks provides the Extreme Networks '810 Products that have the capability of operating in a manner that infringe one or more of the claims of the '810 patent, including at least claim 13, and Extreme Networks further provides documentation and training materials that cause customers and end users of the Extreme Networks '810 Products to utilize the products in a manner that directly infringe one or more claims of the

‘810 patent.³¹ By providing instruction and training to customers and end-users on how to use the Extreme Networks ‘810 Products in a manner that directly infringes one or more claims of the ‘810 patent, including at least claim 13, Extreme Networks specifically intended to induce infringement of the ‘810 patent. On information and belief, Extreme Networks engaged in such inducement to promote the sales of the Extreme Networks ‘810 Products, e.g., through Extreme Networks user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the ‘810 patent. Accordingly, Extreme Networks has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the ‘810 patent, knowing that such use constitutes infringement of the ‘810 patent.

175. The ‘810 patent is well-known within the industry as demonstrated by multiple citations to the ‘810 patent in published patents and patent applications assigned to technology companies and academic institutions. Extreme Networks is utilizing the technology claimed in the ‘810 patent without paying a reasonable royalty. Extreme Networks is infringing the ‘810 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

176. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the ‘810 patent.

177. As a result of Extreme Networks’ infringement of the ‘810 patent, DIFF Scale Operation Research has suffered monetary damages, and seeks recovery in an amount adequate to

³¹ See, e.g., ETHERNET AUTOMATIC PROTECTION SWITCHING (EAPS), EXTREME NETWORKS WHITE PAPER (Nov. 2006); EXTREMESWITCHING X440-G2, DATA SHEET (2016); EXTREMESWITCHING AND SUMMIT SWITCHES: HARDWARE INSTALLATION GUIDE (Aug. 2017); EXTREMESWITCHING X620 10Gb EDGE ETHERNET SWITCH, DATA SHEET (2017); EXTREMEXOS 15.6 USER GUIDE (Oct. 2014).

compensate for Extreme Networks' infringement, but in no event less than a reasonable royalty for the use made of the invention by Extreme Networks together with interest and costs as fixed by the Court.

COUNT IV
INFRINGEMENT OF U.S. PATENT NO. 6,990,110

178. DIFF Scale Operation Research references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

179. Extreme Networks designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for automatic connection activation of permanent virtual circuits in communication networks.

180. Extreme Networks designs, makes, sells, offers to sell, imports, and/or uses network switches, including the following products: ExtremeSwitching X440-G2 series (ExtremeSwitching X440-G2-24t-10GE4, ExtremeSwitching X440-G2-24t-10GE4-DC, ExtremeSwitching X440-G2-24p-10GE4, ExtremeSwitching X440-G2-48t-GE4, ExtremeSwitching X440-G2-48t-GE4-DC, ExtremeSwitching X440-G2-48p-10GE4, ExtremeSwitching X440-G2-12t-10GE4, ExtremeSwitching X440-G2-12p-10GE4, ExtremeSwitching X440-G2-24x-10GE4, ExtremeSwitching X440-G2-24fx-GE4, ExtremeSwitching X440-G2-12t8fx-GE4, ExtremeSwitching X440-G2-24t-GE4), Summit X450-G2 series (Summit X450-G2-24t-10GE4, Summit X450-G2-24p-10GE4, Summit X450-G2-48t-10GE4, Summit X450-G2-48p-10GE4, Summit X450-G2-24t-GE4, Summit X450-G2-24p-GE4, Summit X450-G2-48t-GE4, Summit X450-G2-48p-GE4), Summit X460-G2 series (Summit X460-G2-24t-10GE4, Summit X460-G2-48t-10GE4, Summit X460-G2-24p-10GE4, Summit X460-G2-48p-10GE4, Summit X460-G2-24x-10GE4, Summit X460-G2-48x-10GE4, Summit

X460-G2-24t-GE4, Summit X460-G2-48t-GE4, Summit X460-G2-24p-GE4, Summit X460-G2-48p-GE4, ExtremeSwitching X460-G2-24p-24hp-10GE4, ExtremeSwitching X460-G2-24t-24ht-10GE4, ExtremeSwitching X460-G2-16mp-32p-10GE4), ExtremeSwitching X620 series (ExtremeSwitching X620-10x, ExtremeSwitching X620-8T-2x, ExtremeSwitching X620-16x, ExtremeSwitching X620-16t, ExtremeSwitching X620-16p), Summit X670-G2 series (Summit X670-G2-48x-4q, Summit X670-G2-72x), Summit X770 series (Summit X770-32q), ExtremeSwitching X870 series (ExtremeSwitching X870-32c, ExtremeSwitching X870-96x-8c) (collectively, the “Extreme Networks ‘110 Product(s)”).

181. On information and belief, one or more Extreme Networks subsidiaries and/or affiliates use the Extreme Networks ‘110 Products in regular business operations.

182. On information and belief, one or more of the Extreme Networks ‘110 Products include technology for improvements in end-to-end provisioning of communication systems.

183. On information and belief, the Extreme Networks ‘110 Products are available to businesses and individuals throughout the United States.

184. On information and belief, the Extreme Networks ‘110 Products are provided to businesses and individuals located in the Southern District of New York.

185. On information and belief, Extreme Networks has directly infringed and continues to directly infringe the ‘110 patent by, among other things, making, using, offering for sale, and/or selling technology for automatic connection activation, including but not limited to the Extreme Networks ‘110 Products, which include infringing technology for automatic permanent virtual circuit connection activation. Such products and/or services include, by way of example and without limitation, the Extreme Networks ‘110 Products.

186. On information and belief, the Extreme Networks '110 Products comprise a system for detecting initiation of communication at a user network interface between a first and a second network element.

187. On information and belief, the Extreme Networks '110 Products include functionality for identifying a virtual circuit identifier of the first network element.

188. On information and belief, the Extreme Networks '110 Products include functionality for identifying a second virtual circuit identifier of the first network element.

189. On information and belief, the Extreme Networks '110 Products are a system that enables creation of a translation connection between the first and second network elements.

190. On information and belief, the Extreme Networks '110 Products enable identifying a virtual circuit identifier of the second network element that comprises receiving traffic from the second network element containing one virtual circuit identifier of the second network element and storing at least one virtual circuit identifier of the second network element.

191. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Extreme Networks '110 Products, Extreme Networks has injured DIFF Scale Operation Research and is liable for directly infringing one or more claims of the '110 patent, including at least claim 1, pursuant to 35 U.S.C. § 271(a).

192. On information and belief, Extreme Networks also indirectly infringes the '110 patent by actively inducing infringement under 35 USC § 271(b).

193. On information and belief, Extreme Networks has had knowledge of the '110 patent since at least service of this Complaint or shortly thereafter, and on information and belief, Extreme Networks knew of the '110 patent and knew of its infringement, including by way of this lawsuit.

194. On information and belief, Extreme Networks intended to induce patent infringement by third-party customers and users of the Extreme Networks ‘110 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Extreme Networks specifically intended and was aware that the normal and customary use of the accused products would infringe the ‘110 patent. Extreme Networks performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the ‘110 patent and with the knowledge that the induced acts would constitute infringement. For example, Extreme Networks provides the Extreme Networks ‘110 Products that have the capability of operating in a manner that infringe one or more of the claims of the ‘110 patent, including at least claim 1, and Extreme Networks further provides documentation and training materials that cause customers and end users of the Extreme Networks ‘110 Products to utilize the products in a manner that directly infringe one or more claims of the ‘110 patent.³² By providing instruction and training to customers and end-users on how to use the Extreme Networks ‘110 Products in a manner that directly infringes one or more claims of the ‘110 patent, including at least claim 1, Extreme Networks specifically intended to induce infringement of the ‘110 patent. On information and belief, Extreme Networks engaged in such inducement to promote the sales of the Extreme Networks ‘110 Products, e.g., through Extreme Networks user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the ‘110 patent. Accordingly, Extreme

³² See, e.g., ETHERNET AUTOMATIC PROTECTION SWITCHING (EAPS), EXTREME NETWORKS WHITE PAPER (Nov. 2006); EXTREMESWITCHING X440-G2, DATA SHEET (2016); EXTREMESWITCHING AND SUMMIT SWITCHES: HARDWARE INSTALLATION GUIDE (Aug. 2017); EXTREMESWITCHING X620 10Gb EDGE ETHERNET SWITCH, DATA SHEET (2017); EXTREMEXOS 15.6 USER GUIDE (Oct. 2014); EXTREMEXOS 15.7 USER GUIDE (Feb. 2015); SUMMIT FAMILY HARDWARE INSTALLATION GUIDE (Dec. 2013); EXTREME NETWORKS SUMMIT X770 SERIES HARDWARE INSTALLATION MANUAL (July 2014).

Networks has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '110 patent, knowing that such use constitutes infringement of the '110 patent.

195. The '110 patent is well-known within the industry as demonstrated by multiple citations to the '110 patent in published patents and patent applications assigned to technology companies and academic institutions. Extreme Networks is utilizing the technology claimed in the '110 patent without paying a reasonable royalty. Extreme Networks is infringing the '110 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

196. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '110 patent.

197. As a result of Extreme Networks' infringement of the '110 patent, DIFF Scale Operation Research has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Extreme Networks' infringement, but in no event less than a reasonable royalty for the use made of the invention by Extreme Networks together with interest and costs as fixed by the Court.

COUNT V
INFRINGEMENT OF U.S. PATENT NO. 6,216,166

198. DIFF Scale Operation Research references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

199. On information and belief, Defendant Broadcom Limited is liable for infringing the '166 patent in connection with its merger and acquisition of Brocade Communications, Inc., which was responsible for designing, making, using, selling, and/or offering for sale in the United States

products and/or services for network management, including the 6910 Ethernet Access Switch (the “Extreme-Broadcom ‘166 Product(s)’”).

200. Prior to October 3, 2017, Brocade Communications, Inc. designed, made, sold, offered to sell, imported, and/or used network switches, including the Extreme-Broadcom ‘166 Products.

201. On information and belief, Defendant Broadcom Limited has assumed liability for the sales of the Extreme-Broadcom ‘166 Products as a result of the acquisition of Brocade Communications, Inc. and the ensuing corporate reorganization and merger that resulted in the formation of Broadcom Limited.

202. Extreme Networks designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for network management.

203. Extreme Networks designs, makes, sells, offers to sell, imports, and/or uses network switches, including the following products: ERS5000 Series Switches (ERS 59100GTS), ERS 59100GTS-PWR+ , ERS 5952GTS , ERS 5952GTS-PWR+ , ERS 5928GTS , ERS 5928GTS-PWR+ , ERS 5928GTS-uPWR , ERS 5928MTS-uPWR), ERS4000 Series Switches (ERS 4950GTS, ERS 4950GTS-PWR+, ERS 4926GTS, ERS 4926GTS-PWR+, ERS 4850GTS, ERS 4850GTS-PWR+, ERS 4826GTS, ERS 4826GTS-PWR+), ERS3000 Series Switches (ERS 3650GTS, ERS 3650GTS-PWR+, ERS 3626GTS, ERS 3626GTS-PWR+, ERS 3549GTS, ERS 3549GTS-PWR+, ERS 3510GT, ERS 3510GT-PWR+, ERS 3524GT, ERS 3524GT-PWR+, ERS 3550T, ERS 3550T-PWR+, ERS 3526T , ERS 3526T-PWR+) (collectively, the “Extreme Networks ‘166 Product(s)’”).

204. On information and belief, after its October 3, 2017 product line acquisition, Defendant Extreme Networks designs, makes, sells, offers to sell, imports, and/or uses switching products, including the Extreme-Broadcom '166 Products.

205. On information and belief, one or more Extreme Networks subsidiaries and/or affiliates use the Extreme Networks '166 Products and the Extreme-Broadcom '166 Products in regular business operations.

206. On information and belief, one or more of the Extreme Networks '166 Products and the Extreme-Broadcom '166 Products include technology for policing network elements.

207. On information and belief, the Extreme Networks '166 Products and the Extreme-Broadcom '166 Products are available to businesses and individuals throughout the United States.

208. On information and belief, the Extreme Networks '166 Products Extreme Networks '166 Products and the Extreme-Broadcom '166 Products are and were provided to businesses and individuals located in the Southern District of New York.

209. On information and belief, Defendant Broadcom Limited has directly infringed the '166 patent by, among other things, making, using, offering for sale, and/or selling technology for network management, including but not limited to the Extreme-Broadcom '166 Products, which include infringing technology for policing network elements using a media access control address. Such products and/or services include, by way of example and without limitation, the Extreme-Broadcom '166 Products.

210. On information and belief, Defendant Broadcom Limited is liable for the direct infringement of the '166 patent by, among other things, its corporate predecessors' making, using, offering for sale, and/or selling technology for network management, including but not limited to the Extreme-Broadcom '166 Products prior to October 3, 2017.

211. In the alternative, and on information and belief, to the extent Broadcom Limited is not liable for the direct infringement of the ‘166 patent by virtue of its corporate predecessors’ making, using, offering for sale, and/or selling technology for network management, including but not limited to the Extreme-Broadcom ‘166 Products prior to October 3, 2017, the liability for such infringement was lawfully transferred to Defendant Extreme Networks either expressly or impliedly in the October 3, 2017 Asset Purchase Agreement or because or because an exception to the rule of successor non-liability (e.g., product line exception or *de facto* merger) applies to Defendant Extreme Networks’ purchase of several data center product lines, which include but are not limited to the Extreme-Broadcom ‘166 Products from Brocade Communications, Inc. which, on information and belief, is now a terminated corporate entity no longer in existence.

212. On information and belief, Defendant Extreme Networks is liable for the direct infringement of the ‘166 patent by, among other things, making, using, offering for sale, and/or selling technology for traffic shaping, including but not limited to the Extreme-Broadcom ‘166 Products after October 3, 2017 until the expiration of the ‘166 patent.

213. On information and belief, Extreme Networks has directly infringed the ‘166 patent by, among other things, making, using, offering for sale, and/or selling technology for network management, including but not limited to the Extreme Networks ‘166 Products, which include infringing technology for policing network elements using a media access control address. Such products and/or services include, by way of example and without limitation, the Extreme Networks ‘166 Products.

214. On information and belief, the Extreme Networks ‘166 Products and the Extreme-Broadcom ‘166 Products include network elements that perform switching and transport functions.

215. On information and belief, the Extreme Networks '166 Products and the Extreme-Broadcom '166 Products include a policing network element that terminates a local area network group of data with a corrupted media access address relating to a network element.

216. On information and belief, the Extreme Networks '166 Products and the Extreme-Broadcom '166 Products contain transmission media coupling the network elements and policing network elements to each other.

217. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Extreme-Broadcom '166 Products, Broadcom Limited has injured DIFF Scale Operation Research and is liable for directly infringing one or more claims of the '166 patent, including at least claim 1, pursuant to 35 U.S.C. § 271(a).

218. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Extreme Networks '166 Products and the Extreme-Broadcom '166 Products, Extreme Networks has injured DIFF Scale Operation Research and is liable for directly infringing one or more claims of the '166 patent, including at least claim 1, pursuant to 35 U.S.C. § 271(a).

219. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '166 patent.

220. As a result of Defendants' infringement of the '166 patent, DIFF Scale Operation Research has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Defendants' infringement, but in no event less than a reasonable royalty for the use made of the invention by Defendants together with interest and costs as fixed by the Court.

COUNT VI
INFRINGEMENT OF U.S. PATENT NO. 6,233,221

221. DIFF Scale Operation Research references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

222. Extreme Networks designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for a virtual path network.

223. Extreme Networks designs, makes, sells, offers to sell, imports, and/or uses network switches, including the following products: ExtremeSwitching X440-G2 series (ExtremeSwitching X440-G2-24t-10GE4, ExtremeSwitching X440-G2-24t-10GE4-DC, ExtremeSwitching X440-G2-24p-10GE4, ExtremeSwitching X440-G2-48t-GE4, ExtremeSwitching X440-G2-48t-GE4-DC, ExtremeSwitching X440-G2-48p-10GE4, ExtremeSwitching X440-G2-12t-10GE4, ExtremeSwitching X440-G2-12p-10GE4, ExtremeSwitching X440-G2-24x-10GE4, ExtremeSwitching X440-G2-24fx-GE4, ExtremeSwitching X440-G2-12t8fx-GE4, ExtremeSwitching X440-G2-24t-GE4), Summit X450-G2 series (Summit X450-G2-24t-10GE4, Summit X450-G2-24p-10GE4, Summit X450-G2-48t-10GE4, Summit X450-G2-48p-10GE4, Summit X450-G2-24t-GE4, Summit X450-G2-24p-GE4, Summit X450-G2-48t-GE4, Summit X450-G2-48p-GE4), Summit X460-G2 series (Summit X460-G2-24t-10GE4, Summit X460-G2-48t-10GE4, Summit X460-G2-24p-10GE4, Summit X460-G2-48p-10GE4, Summit X460-G2-24x-10GE4, Summit X460-G2-48x-10GE4, Summit X460-G2-24t-GE4, Summit X460-G2-48t-GE4, Summit X460-G2-24p-GE4, Summit X460-G2-48p-GE4, ExtremeSwitching X460-G2-24p-24hp-10GE4, ExtremeSwitching X460-G2-24t-24ht-10GE4, ExtremeSwitching X460-G2-16mp-32p-10GE4), ExtremeSwitching X620 series (ExtremeSwitching X620-10x, ExtremeSwitching X620-8T-2x, ExtremeSwitching X620-16x, ExtremeSwitching X620-16t, ExtremeSwitching X620-16p), Summit X670-G2 series (Summit

X670-G2-48x-4q, Summit X670-G2-72x), Summit X770 series (Summit X770-32q), ExtremeSwitching X870 series (ExtremeSwitching X870-32c, ExtremeSwitching X870-96x-8c) (collectively, the “Extreme Networks ‘221 Product(s)’”).

224. On information and belief, one or more Extreme Networks subsidiaries and/or affiliates use the Extreme Networks ‘221 Products in regular business operations.

225. On information and belief, one or more of the Extreme Networks ‘221 Products include technology for network management.

226. On information and belief, the Extreme Networks ‘221 Products are available to businesses and individuals throughout the United States.

227. On information and belief, the Extreme Networks ‘221 Products are provided to businesses and individuals located in the Southern District of New York.

228. On information and belief, Extreme Networks has directly infringed and continues to directly infringe the ‘221 patent by, among other things, making, using, offering for sale, and/or selling technology for network management, including but not limited to the Extreme Networks ‘221 Products, which include infringing technology for a ring network with virtual path connections. Such products and/or services include, by way of example and without limitation, the Extreme Networks ‘221 Products.

229. On information and belief, the Extreme Networks ‘221 Products comprise a system that includes add/drop multiplexers coupled to form a ring including first and second routes for transmitting data around the network.

230. On information and belief, the Extreme Networks ‘221 Products include at least one sub-network that includes a number of add/drop multiplexers coupled to form a ring including first and second routes for transmitting data around the network.

231. On information and belief, the Extreme Networks '221 Products contain functionality for a first ring interconnection module that interconnects the first sub-network with one of the routes of the second sub-network.

232. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Extreme Networks '221 Products, Extreme Networks has injured DIFF Scale Operation Research and is liable for directly infringing one or more claims of the '221 patent, including at least claim 18, pursuant to 35 U.S.C. § 271(a).

233. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '221 patent.

234. As a result of Extreme Networks' infringement of the '221 patent, DIFF Scale Operation Research has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Extreme Networks' infringement, but in no event less than a reasonable royalty for the use made of the invention by Extreme Networks together with interest and costs as fixed by the Court.

COUNT VII
INFRINGEMENT OF U.S. PATENT NO. 6,859,430

235. DIFF Scale Operation Research references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

236. Extreme Networks designs, makes, uses, sells, and/or offers for sale in the United States products and/or services for protection switching in a ring network.

237. Extreme Networks designs, makes, sells, offers to sell, imports, and/or uses network switches, including the following products: ExtremeSwitching X440-G2 series (ExtremeSwitching X440-G2-24t-10GE4, ExtremeSwitching X440-G2-24t-10GE4-DC,

ExtremeSwitching X440-G2-24p-10GE4, ExtremeSwitching X440-G2-48t-GE4, ExtremeSwitching X440-G2-48t-GE4-DC, ExtremeSwitching X440-G2-48p-10GE4, ExtremeSwitching X440-G2-12t-10GE4, ExtremeSwitching X440-G2-12p-10GE4, ExtremeSwitching X440-G2-24x-10GE4, ExtremeSwitching X440-G2-24fx-GE4, ExtremeSwitching X440-G2-12t8fx-GE4, ExtremeSwitching X440-G2-24t-GE4), Summit X450-G2 series (Summit X450-G2-24t-10GE4, Summit X450-G2-24p-10GE4, Summit X450-G2-48t-10GE4, Summit X450-G2-48p-10GE4, Summit X450-G2-24t-GE4, Summit X450-G2-24p-GE4, Summit X450-G2-48t-GE4, Summit X450-G2-48p-GE4), Summit X460-G2 series (Summit X460-G2-24t-10GE4, Summit X460-G2-48t-10GE4, Summit X460-G2-24p-10GE4, Summit X460-G2-48p-10GE4, Summit X460-G2-24x-10GE4, Summit X460-G2-48x-10GE4, Summit X460-G2-24t-GE4, Summit X460-G2-48t-GE4, Summit X460-G2-24p-GE4, Summit X460-G2-48p-GE4, ExtremeSwitching X460-G2-24p-24hp-10GE4, ExtremeSwitching X460-G2-24t-24ht-10GE4, ExtremeSwitching X460-G2-16mp-32p-10GE4), ExtremeSwitching X620 series (ExtremeSwitching X620-10x, ExtremeSwitching X620-8T-2x, ExtremeSwitching X620-16x, ExtremeSwitching X620-16t, ExtremeSwitching X620-16p), Summit X670-G2 series (Summit X670-G2-48x-4q, Summit X670-G2-72x), Summit X770 series (Summit X770-32q), ExtremeSwitching X870 series (ExtremeSwitching X870-32c, ExtremeSwitching X870-96x-8c) (collectively, the “Extreme Networks ‘430 Product(s)’”).

238. On information and belief, one or more Extreme Networks subsidiaries and/or affiliates use the Extreme Networks ‘430 Products in regular business operations.

239. On information and belief, one or more of the Extreme Networks ‘430 Products include technology for network management.

240. On information and belief, the Extreme Networks '430 Products are available to businesses and individuals throughout the United States.

241. On information and belief, the Extreme Networks '430 Products are provided to businesses and individuals located in the Southern District of New York.

242. On information and belief, Extreme Networks has directly infringed and continues to directly infringe the '430 patent by, among other things, making, using, offering for sale, and/or selling technology for network management, including but not limited to the Extreme Networks '430 Products, which include infringing technology for protection switching in a ring network. Such products and/or services include, by way of example and without limitation, the Extreme Networks '430 Products.

243. On information and belief, the Extreme Networks '430 Products comprise a number of network elements.

244. On information and belief, the Extreme Networks '430 Products contain ring segments coupled between adjacent network elements to form first and second routes for transporting cells using virtual connections wherein, for each virtual connection, one route is a working route and the other route is a protection route.

245. On information and belief, the Extreme Networks '430 Products contain functionality wherein each network element separately tracks the status of a number of virtual connections on each route such that when an error is detected on the working route for a virtual connection, the network element switches to the protection route for the virtual connection.

246. On information and belief, the Extreme Networks '430 Products comprise a system wherein each network element includes two ring interface modules having a microprocessor, a physical layer device, and a switch fabric.

247. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Extreme Networks '430 Products, Extreme Networks has injured DIFF Scale Operation Research and is liable for directly infringing one or more claims of the '430 patent, including at least claim 10, pursuant to 35 U.S.C. § 271(a).

248. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '430 patent.

249. As a result of Extreme Networks' infringement of the '430 patent, DIFF Scale Operation Research has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Extreme Networks' infringement, but in no event less than a reasonable royalty for the use made of the invention by Extreme Networks together with interest and costs as fixed by the Court.

PRAYER FOR RELIEF

WHEREFORE, DIFF Scale Operation Research respectfully requests that this Court enter:

- A. A judgment in favor of DIFF Scale Operation Research that Extreme Networks has infringed, either literally and/or under the doctrine of equivalents, the '983, '609, '810, '110, '166, '221, and '430 patents;
- B. A judgment in favor of DIFF Scale Operation Research that Broadcom Limited has infringed, either literally and/or under the doctrine of equivalents, the '983 and '166 patents;
- C. An award of damages resulting from Defendants' acts of infringement in accordance with 35 U.S.C. § 284;
- D. A judgment and order finding that Extreme Networks' infringement was willful, wanton, malicious, bad-faith, deliberate, consciously wrongful,

flagrant, or characteristic of a pirate within the meaning of 35 U.S.C. § 284 and awarding to DIFF Scale Operation Research enhanced damages.

- E. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to DIFF Scale Operation Research their reasonable attorneys' fees against Extreme Networks.
- F. Any and all other relief to which DIFF Scale Operation Research may show themselves to be entitled.

JURY TRIAL DEMANDED

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, DIFF Scale Operation Research, LLC requests a trial by jury of any issues so triable by right.

Dated: May 2, 2018

Respectfully submitted,

/s/ Daniel P. Hipskind

Dorian S. Berger (*pro hac vice*)

Daniel P. Hipskind (*pro hac vice*)

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*Attorneys for DIFF Scale Operation
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CERTIFICATE OF SERVICE

I hereby certify that on May 2, 2018, a true and correct copy of the foregoing FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT was served by CM/ECF and electronic mail upon the following parties:

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