UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

DIFF SCALE OPERATION RESEARCH, LLC, ***Plaintiff,*** v. **BROADCOM LIMITED,** ***Defendant.***	**Civil Action No._____** **JURY TRIAL DEMANDED**

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") and 6,847,609 (the, "'609 patent") (collectively, the "patents-in-suit"). Defendant Broadcom Limited ("Broadcom" or "Defendant") 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*.

INTRODUCTION

1. This case arises from Broadcom's 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 Company[1] 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

[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.").

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, 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***

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[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).

[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.").

> ***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 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,

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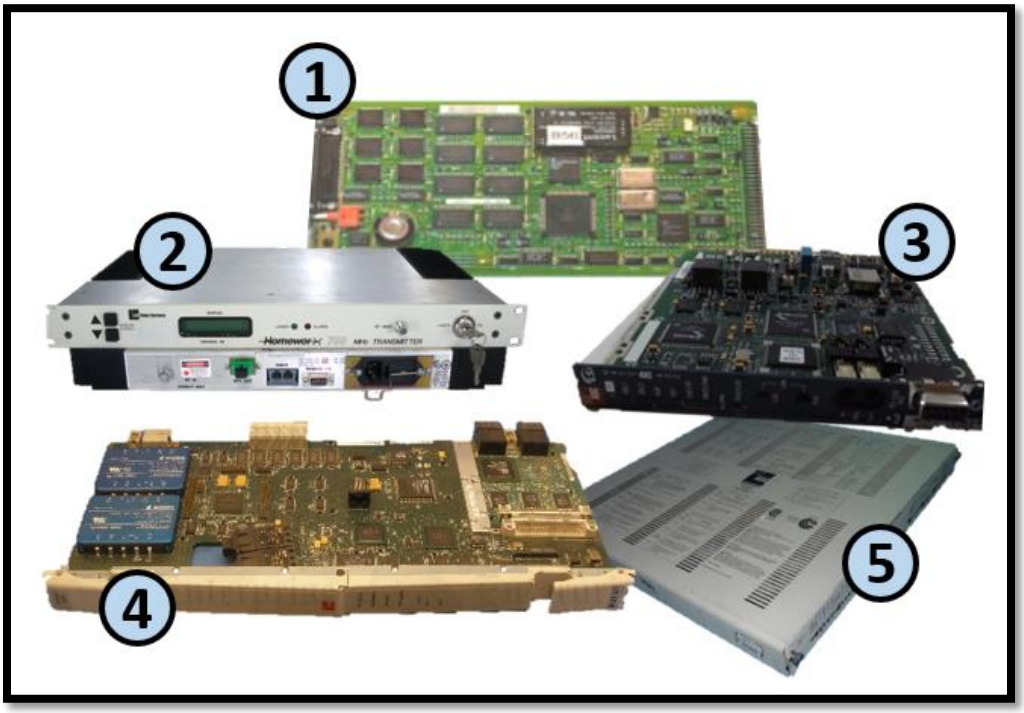
[6] Sue Boyle, *Cable-Telephony Platform,* LIGHTWAVE MAGAZINE Vol. 17; No. 16 at 185 (September 1, 2000) ("The Homeworx cable-telephony system adds new features to the carrier-class hybrid fiber/coaxial telephony platform. The system offers improvements in flexibility, manageability, and robustness.").

[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.").

Cellworx STN Service, the EZT1 Voice Multiplexer, FOLENS (Fiber Optic Local Exchange Network System), and the DS3 Fiber Loop Converter. [9]



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 BA4IKKLBAA; 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]

[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.").

[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.").

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 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 Corporation[11]

[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.

- Apple, Inc.[12]
- Intel Corporation[13]
- ***Broadcom Corporation***[14]
- Microsoft Corporation[15]
- Sony Corporation[16]
- Cisco Systems, Inc.[17]
- Hewlett-Packard Enterprise Company[18]
- Huawei Technologies Co., Ltd.[19]
- Alcatel-Lucent S.A.[20]
- Fujitsu Ltd.[21]
- Panasonic Corporation[22]
- Telefonaktiebolaget L.M. Ericsson[23]
- NEC Corporation[24]
- Marvell Technology Group, Limited[25]

12. Further confirming the value of DIFF Scale Operation Research's patent portfolio is Broadcom's extensive citation of the DIFF Scale Operation Research patents in issued patents and published patent applications assigned to Broadcom including: U.S. Patent Nos. US7203227;

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[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; 7046675; 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.

[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.

7,339,890; 7,724,661; 8,401,025; 8,411,705; 8,462,819; 9,544,638; U.S. Patent Application Nos. 2003/0142628; 2007/0242678; 2008/0151750; 2011/0164627; 2011/0164630; 2011/0267946 and European Patent No. EP1333628B1.

THE PARTIES

DIFF SCALE OPERATION RESEARCH, LLC

13. 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.

14. 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.

15. In an effort to obtain compensation for ADC Telecommunications' pioneering work in the fields of semiconductors, electronic circuitry, and network infrastructure, CommScope 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; 7,106758; 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;

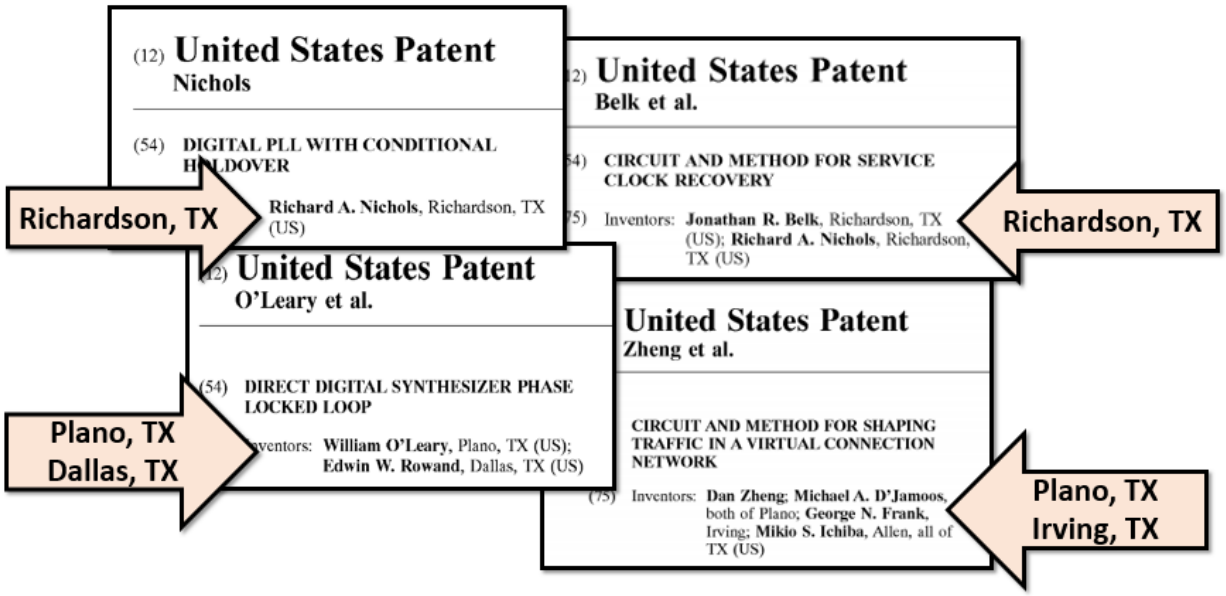
EP1057361A1; EP1386450A2; EP1386450A4; EP2132589A1; EP2132589B1; ES2368361T3; JP03811007B2; JP2001523059A; JP2002502146A; JP2002504793A; JP3811007B2; WO1999025066A1; WO1999038285A1; WO1999043184A1; WO2001037468A2; WO2001037468A3; WO2002084927A2; WO2002084927A3; WO2002101959A1; WO2008104282A1; WO2008104284A1.[26]

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

17. CommScope maintains 79,950 square feet of office space at 2601 Telecom Pkwy, Richardson, Texas. Over 200 CommScope employees are employed at its Richardson, Texas location. CommScope maintains off-site document storage at its Richardson, Texas office where hard-copy documents are stored, at least some of which are relevant to this case. CommScope also maintains a datacenter located in Richardson, Texas, where at least some information and software relating to the patents-in-suit in this action are stored. In addition, CommScope maintains a Wide Band Multimode Fiber testing facility in Richardson, Texas.

18. ADC Telecommunications had a significant presence in Richardson, Texas and many of the inventions disclosed in the ADC Telecommunications patent portfolio were made at its Richardson location. On information and belief, many of the named inventors of the ADC Telecommunications patent portfolio continue to be located in and in close proximity to the Eastern District of Texas.

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



U.S. PATENT NOS. 7,881,413; 6,664,827; 7,106,758; 6,407,983 (annotations added) (showing the named inventors located in and in close proximity to the Eastern District of Texas).

BROADCOM LIMITED

19. 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.

20. On information and belief, Defendant Broadcom Limited has asserted patents in the Eastern District of Texas through its wholly-owned subsidiary, Avago Technologies General IP (Singapore) Pte. Ltd. *See, e.g., Avago Techs. General IP (Singapore) Pte. Ltd. v. Maxim Integrated Prods., Inc.*, Case No. 2:15-cv-00539 (E.D. Tex. April 23, 2015).

21. 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 Texas. 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).

22. Broadcom Limited has affirmatively entered the Texas market with products that give rise to DIFF Scale Operate Research's claims of infringement. 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.").

23. Broadcom Limited maintains highly interactive and commercial websites, accessible to residents of Texas and this judicial District, through which Defendant promotes its products and services, including products that infringe the patents-in-suit.

24. 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

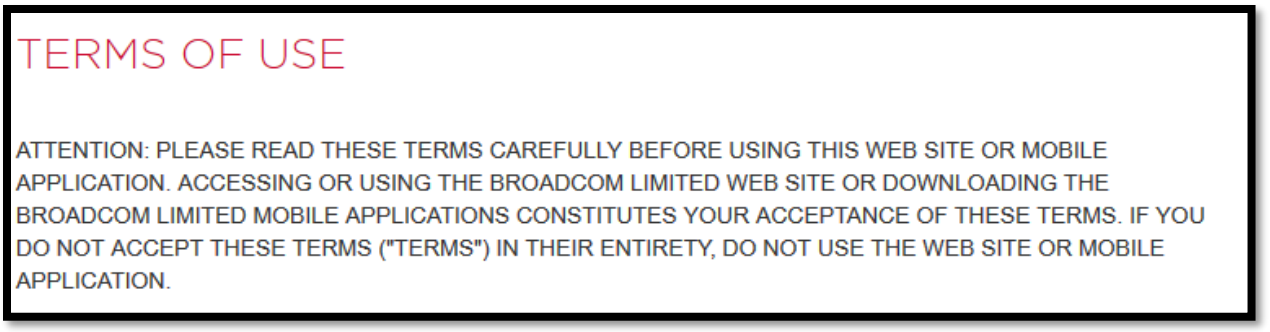
The Broadcom Limited communicates with customers in a wide variety of forms:

- 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.

25. Broadcom websites that promote the infringing products to residents of Texas 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."

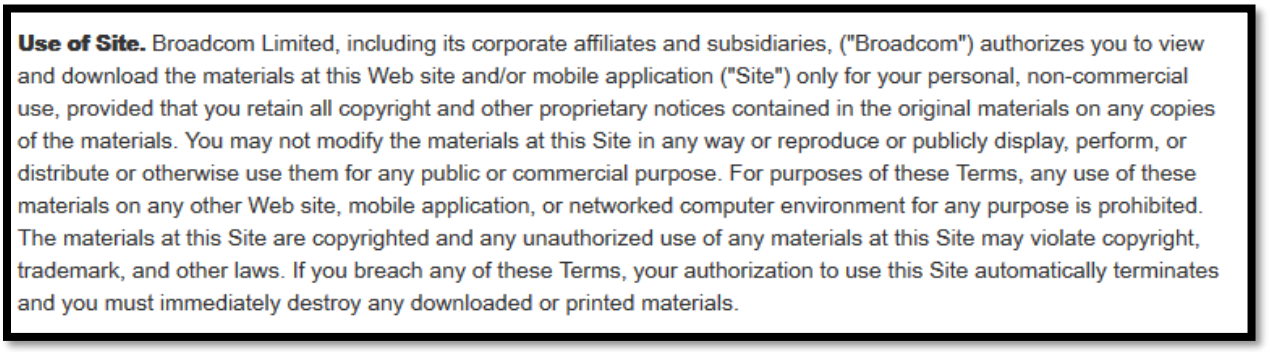


TERMS OF USE

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").

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



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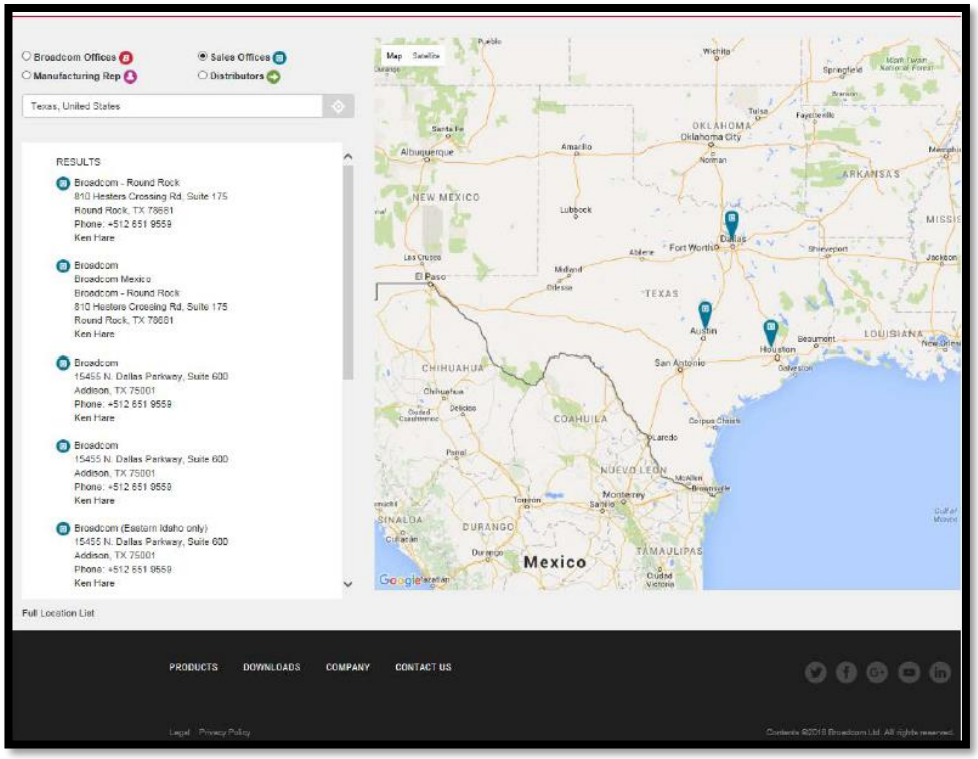
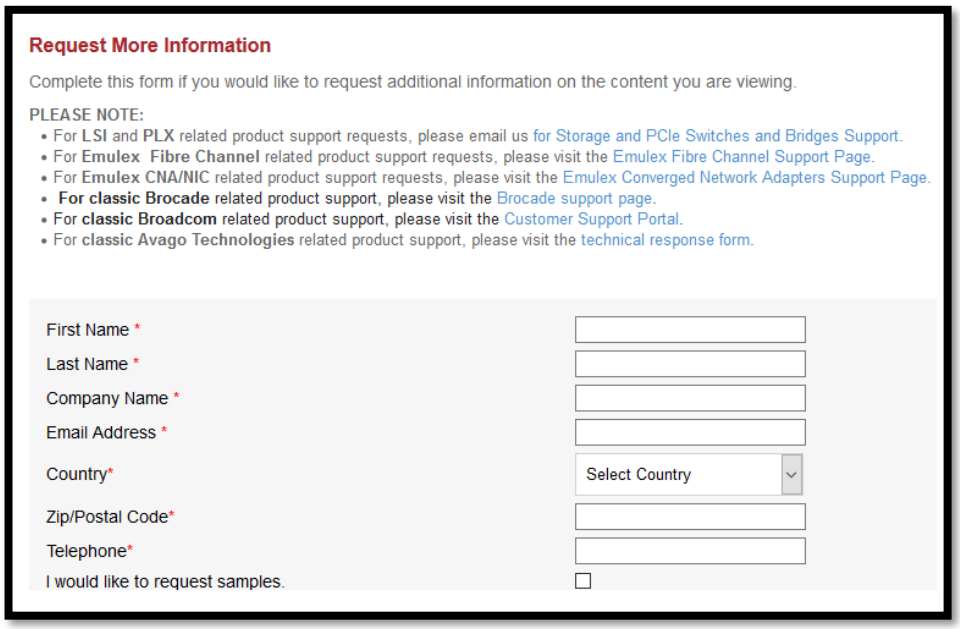
27. Until 2016, Broadcom Limited's website has an interactive map that allows customers to find where to purchase Broadcom Limited's products, including, for example, in Texas.



BROADCOM.COM WEBSITE - WHERE TO PURCHASE WEBPAGE (2016) (The above image was cited in Judge Roy S. Payne's Report and Recommendation in *Godo Kaisha IP Bridge 1 v. Broadcom Limited, et al*., Case No. 16-cv-0134-JRG-RSP, Dkt. No. 191 at 13 (March 1, 2017) (holding that "Broadcom Ltd. and Avago Ltd. are supporting highly interactive websites such as www.broadcom.com, www.avagotech.com and www.avagotech-online.com, it would not be improper for GK to assert specific personal jurisdiction over Defendants.")).

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 directed activities related to its infringing conduct to Texas residents by offering various interactive services. For example, the website Broadcom.com not only directs customers as to where to buy accused devices, it also has: (i) a submission form that allows customers to obtain technical support; (ii) downloadable product selection guides and whitepapers; and (3) a client support portal with information about accused products.



Request More Information

Complete this form if you would like to request additional information on the content you are viewing.

PLEASE NOTE:

- For **LSI** and **PLX** related product support requests, please email us for Storage and PCIe Switches and Bridges Support.
- For **Emulex Fibre Channel** related product support requests, please visit the Emulex Fibre Channel Support Page.
- For **Emulex CNA/NIC** related product support requests, please visit the Emulex Converged Network Adapters Support Page.
- **For classic Brocade** related product support, please visit the Brocade support page.
- For **classic Broadcom** related product support, please visit the Customer Support Portal.
- For **classic Avago Technologies** related product support, please visit the technical response form.

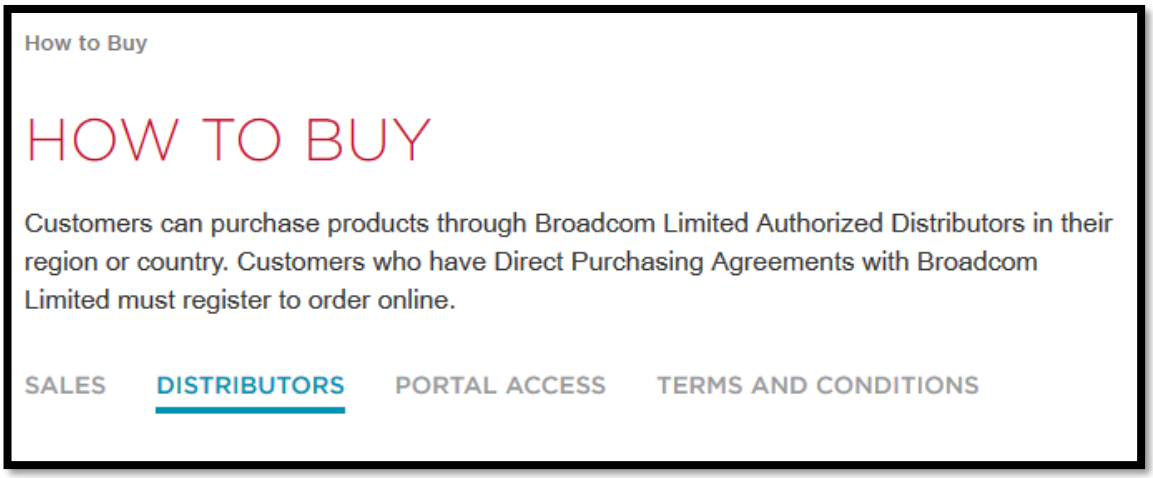
First Name *
Last Name *
Company Name *
Email Address *
Country* Select Country
Zip/Postal Code*
Telephone*
I would like to request samples.

BROADCOM.COM REQUEST MORE INFORMATION WEBPAGE (last visited March 1, 2018), available at: https://www.broadcom.com/products/fibre-channel-networking/switches/g610-switch

30. 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 Texas to ensure their products reach Texas and this judicial District.

31. Broadcom Limited maintains a website at www.broadcom.com that advertises products available for sale in the United States. Broadcom Limited's website directs customers to its sales representatives and distributors, including those located in Texas. Thus, Broadcom maintains a web presence in a manner in which there is no meaningful way for a prospective client to determine that Broadcom Limited is separate and apart from its domestic subsidiaries.

32. The Broadcom.com website identifies that customers "can purchase products through Broadcom Limited Authorized Distributors" or directly from Broadcom Limited if they have a "Direct Purchasing Agreement."



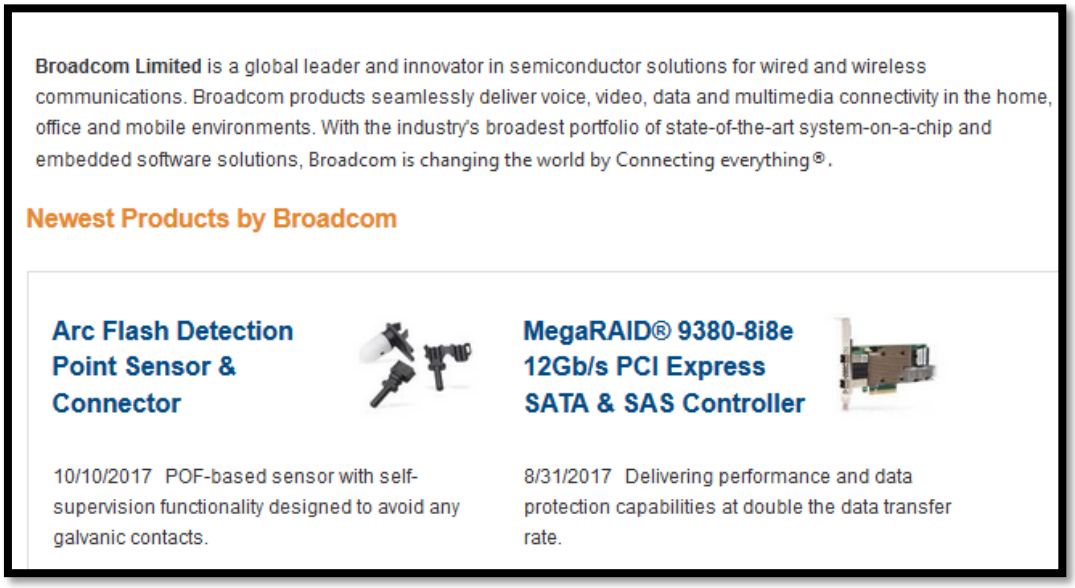
BROADCOM.COM HOW TO BUY WEBPAGE (last visited March 1, 2018), available at: https://www.broadcom.com/how-to-buy/#distributors ("Customers can purchase products through Broadcom Limited Authorized Distributors in their region or country.").

33. Broadcom Limited maintains websites that advertise the accused devices, 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 Texas) rises to a level where establishing minimum contacts over Broadcom Limited would not offend traditional notions of fair play and substantial justice.

34. Broadcom Limited has official distributors located in Plano, Texas; Richardson, Texas; Austin, Texas; Houston, Texas; and Sugarland, Texas. For example, a visitor to the Broadcom Limited website that clicks on "How to Buy" on the webpage of the infringing products is shown the following distributors: Avnet Electronics Marketing - Storage products (All), Digi-Key Corporation, Info X Distribution, Inc., Microland Electronics Corp., Mouser Electronics.

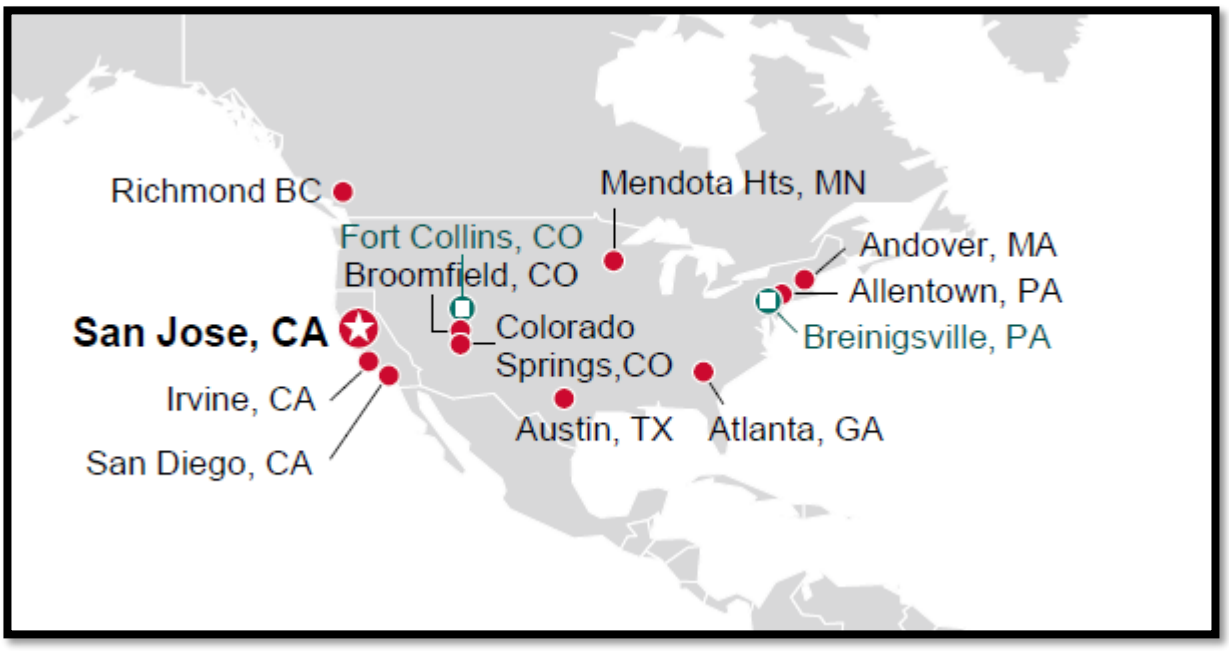
Mouser Electronics is identified on the Broadcom Limited website (www.broadcom.com) as located in Texas.

35. Broadcom Limited's Texas based distributor Mouser Electronics identifies on its website that it distributes products for Broadcom Limited. "Broadcom Limited is a global leader and innovator in semiconductor solutions for wired and wireless communications."



MOUSER ELECTRONICS BROADCOM SALES PAGE (last visited March 1, 2018), available at: https://www.mouser.com/broadcom/

36. In December 2017, Broadcom Limited published a "Broadcom Limited Company Overview," which identified its Texas presence. In the "Broadcom Limited Company Overview," Broadcom Limited identifies its design site located in Austin, Texas as having more than 100 employees.



BROADCOM LIMITED COMPANY OVERVIEW at 5 (December 2017) (identifying the Austin, Texas design center).

37. Broadcom Limited has a Chief Technical Officer who is responsible for driving the company vision for engineering research and development activities. "Henry Samueli is the Chief Technical Officer and a board member at Broadcom. He is responsible for driving the company vision for engineering research and development activities." Broadcom.com Website – Chief Technical Officer (last visited March 1, 2018), available at: https://www.broadcom.com/company/about-us/executives/henry-samueli

38. Broadcom Limited has a Chief Sales Officer who is responsible for global sales and marketing across all business divisions of Broadcom Limited "Charlie Kawwas is Senior Vice President and Chief Sales Officer at Broadcom, responsible for global sales and marketing across all business divisions." Broadcom.com Website – Chief Sales Officer (last visited March 1, 2018), available at: https://www.broadcom.com/company/about-us/executives/charlie-kawwas

39. Upon information and belief, the activities of the Chief Technical Officer and the Chief Sales Officer are directly or indirectly related to Broadcom Limited's making, using selling, offering to sell and/or importing into the United States Broadcom Limited's infringing products.

40. 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).

41. In its March 9, 2018 letter to Congress, Broadcom Limited stated that, although it was currently a foreign corporation, its activities were directed to the United States, including having more than half its workforce located in the United States, including in Texas.

> Broadcom is led by an executive team of American citizens and a Board of Directors made up of nearly all American citizens. Ninety percent of Broadcom's shareholders are in the United States . . . . More than half of Broadcom's total workforce is in the United States, across more than 25 states, ***including Texas,*** Colorado, California and Pennsylvania.

LETTER TO CONGRESS, BROADCOM PLEDGES TO MAKE THE U.S. THE GLOBAL LEADER IN 5G 9MARCH 9, 2018) available at: http://investors.broadcom.com/phoenix.zhtml?c=203541&p=irol-newsArticle&id=2337280 (this letter was signed by Broadcom Limited) (emphasis added).

JURISDICTION AND VENUE

42. 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).

43. Upon information and belief, this Court has personal jurisdiction over Broadcom in this action because Broadcom has committed acts within the Eastern District of Texas giving rise to this action and has established minimum contacts with this forum such that the exercise of

jurisdiction over Broadcom would not offend traditional notions of fair play and substantial justice. Defendant Broadcom, directly and/or through subsidiaries or intermediaries (including distributors, retailers, and others), has committed and 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.

44. Venue is proper in this district under 28 U.S.C. §§ 1391(b)-(d) and 1400(b). Defendant Broadcom is registered to do business in the State of Texas, has offices in the State of Texas, and upon information and belief, has transacted business in the Eastern District of Texas and has committed acts of direct and indirect infringement in the Eastern District of Texas.

ADC TELECOMMUNICATIONS LANDMARK SEMICONDUCTOR AND NETWORKING TECHNOLOGIES

45. 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").

The Billboard

High-Fidelity Audio Devices Boost Capitol Diskery Sales

WASHINGTON, July 29. — High fidelity listening equipment to spur disk sales and please the customers is fast becoming a byword in retail diskeries here, with considerable credit for the trend going to a local firm, the Shrader Manufacturing Company, which specializes in high-fidelity installations. The Shrader company is doing a land-office business not only in store installations but in even greater volume in high fidelity custom sets for homes, a two-way course of operations which, as one enthusiastic dealer has commented, "has been literally filling the Washington air with good music and filling the record shops with good customers."

With customers showing more and more discrimination in choosing recordings ever since the battle of the disk speeds, disk dealers figure that by using high-fidelity equipment in their listening booths they are satisfying a natural trade need. They point out that results of high-fidelity gear are being shown not only in volume of improved high-fidelity recordings.

Among numerous retail diskeries here equipped by Shrader with high-fidelity gear are the Super Music Company, which has three outlets in the city; the Disc Shop, the Hollywood Music Shop and the John Learmont record and book store. The Super Music Company group and the Disc Shop have recently undergone expansion (*The Billboard*, July 22) and are completely rigged with high-fidelity equipment. The Disc Shop alone has half a dozen listening booths, each equipped with individual high-fidelity amplifiers and speakers. The Super Music group has a total of nearly 70 disk listening posts rigged to high-fidelity equipment. Particularly popular with dealers who have installed high-fidelity gear are the Livingston tone arm, the Rek-O-Kut heavy transcription turntable, Audio Development Company (ADC) amplifiers and Altec 15-inch speakers.

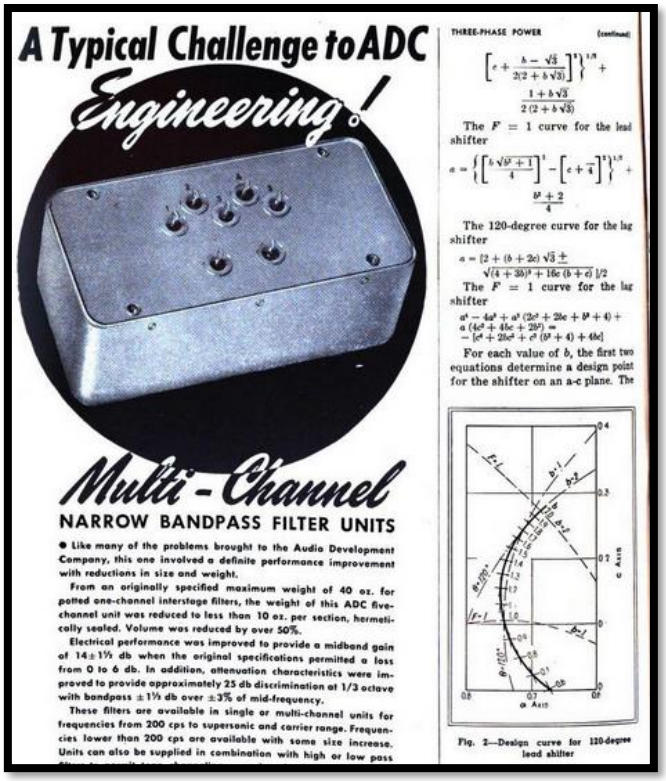
High-fidelity gear is considered by

(See High-Fidelity Audio, page 38)

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

46. 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 potted 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 ± 1½ 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 ± 1½ db over ±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)

The $F = 1$ curve for the lead shifter

The 120-degree curve for the lag shifter

The $F = 1$ curve for the lag shifter

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).

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

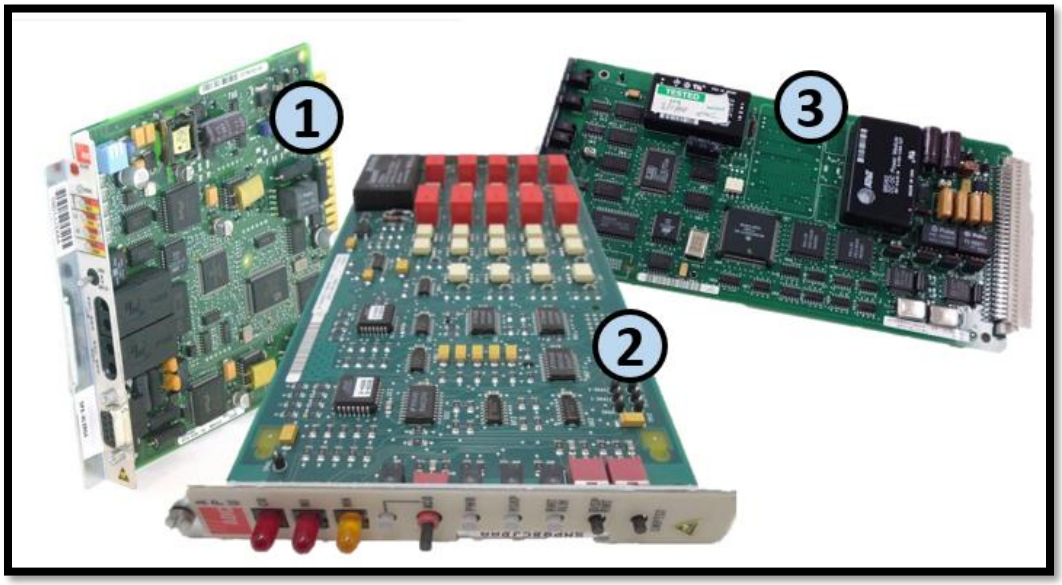
power supply board. The transceivers used are the CAF model manufactured by ADC Telecommunications, Inc.. The transceiver use bidirectional, full-duplex signal transmission over a single optic fiber. The transceiver is a self-contained, circuit-board-mountable device that contains the transmitting LED, 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).

48. 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]

49. 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 Networx, 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 Networx 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).

50. 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."

51. 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

52. 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. DIFF 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.

53. 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.

54. 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.

55. 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.

56. 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.

57. 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.

58. 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.

59. 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.

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

61. 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

62. 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.

63. 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.

64. 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.

65. 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.

66. 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.

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

68. The ‘609 patent further discloses monitoring operation of a telecommunications network at a network entity.

69. 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.

70. 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.

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

72. 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.

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

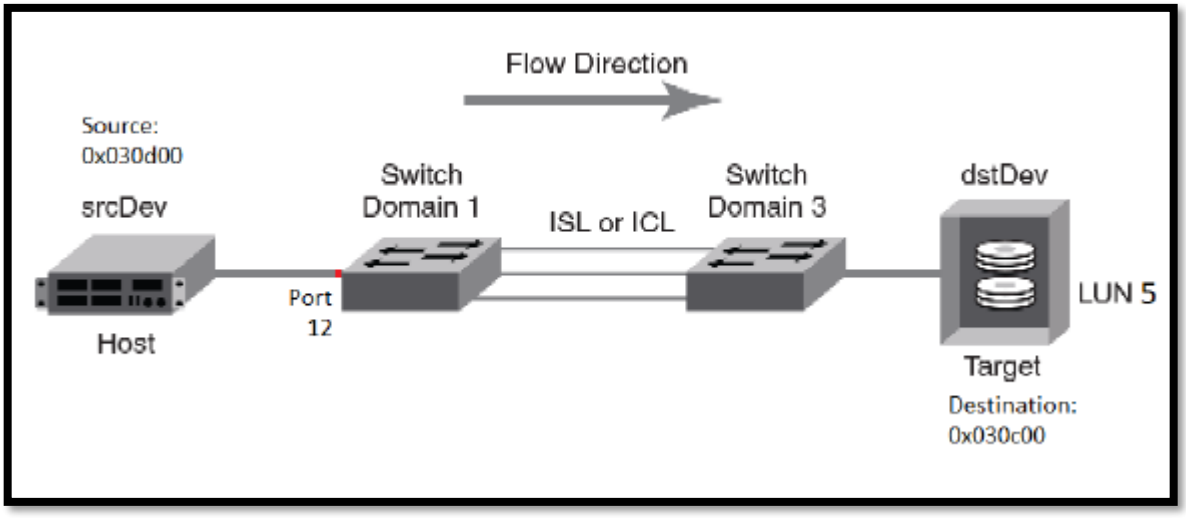
73. DIFF Scale Operation Research references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

74. Broadcom 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.

75. Broadcom designs, makes, sells, offers to sell, imports, and/or uses Broadcom switches incorporating traffic management technology, including the following products: G610 Switch, G620 Switch, 6520 Switch, 6510 Switch, 6505 Switch, and 300 Switch (collectively, the "Broadcom '983 Product(s)").

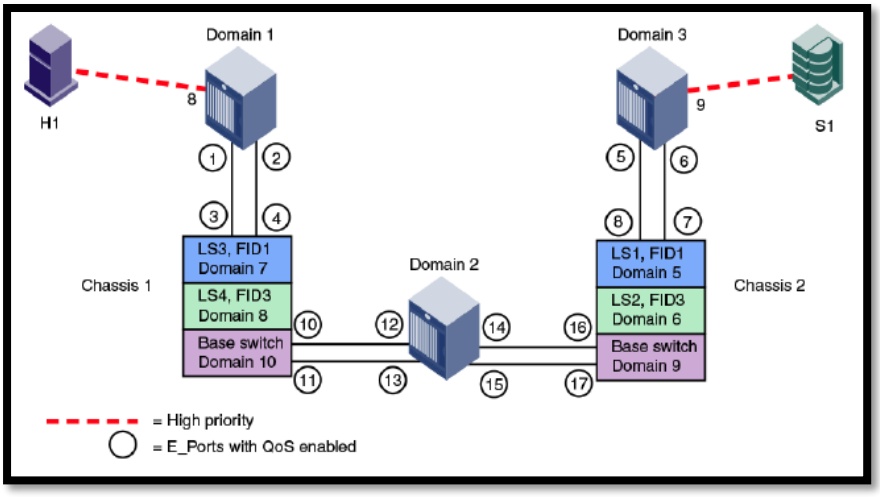
76. On information and belief, one or more Broadcom subsidiaries and/or affiliates use the Broadcom '983 Products in regular business operations.

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



FLOW VISION CONFIGURATION GUIDE, 8.1.X at 97 (June 7, 2017) ("The following example creates a flow named "lunFlow11" that monitors traffic ingressing on port 12 between source device 0x030d00 and destination device 0x030c00 using LUN 5, and then displays the results of that flow.).

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



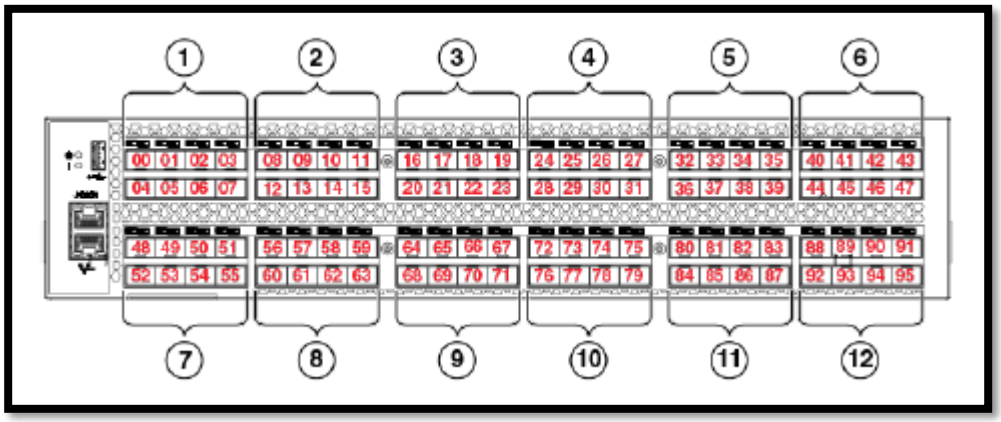
FABRIC OS ADMINISTRATION GUIDE, 8.1.X at 156 (June 7, 2017) (traffic management in a virtual fabric showing traffic exchanged between a traffic source and node).

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

80. On information and belief, the Broadcom '983 Products are provided to businesses and individuals located in the Eastern District of Texas.

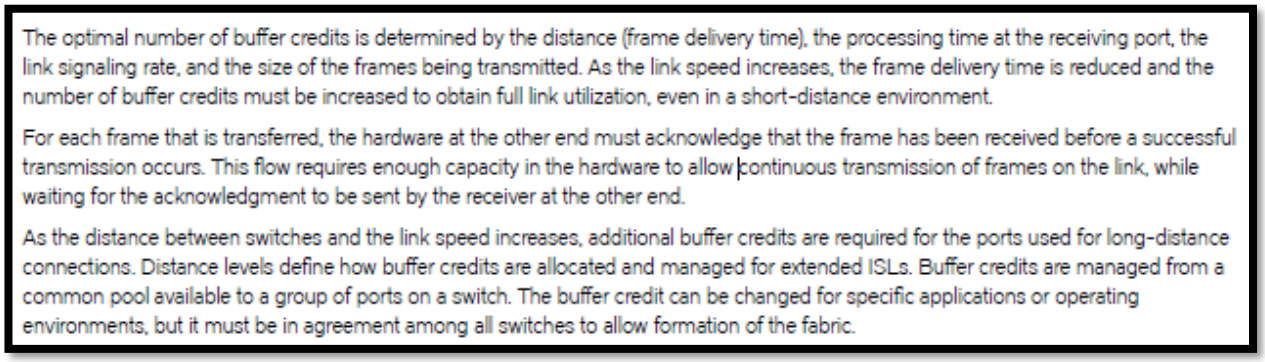
81. On information and belief, Broadcom has directly infringed and continues to directly infringe the '983 patent by, among other things, making, using, offering for sale, and/or selling technology for traffic shaping, including but not limited to the Broadcom '983 Products, which include infringing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

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



6520 SWITCH HARDWARE INSTALLATION GUIDE - TECHNICAL SPECIFICATIONS at 12 (December 29, 2017) ("6520 includes the system status LED, console port, Ethernet port and LEDs, USB port, and Fibre Channel.").

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



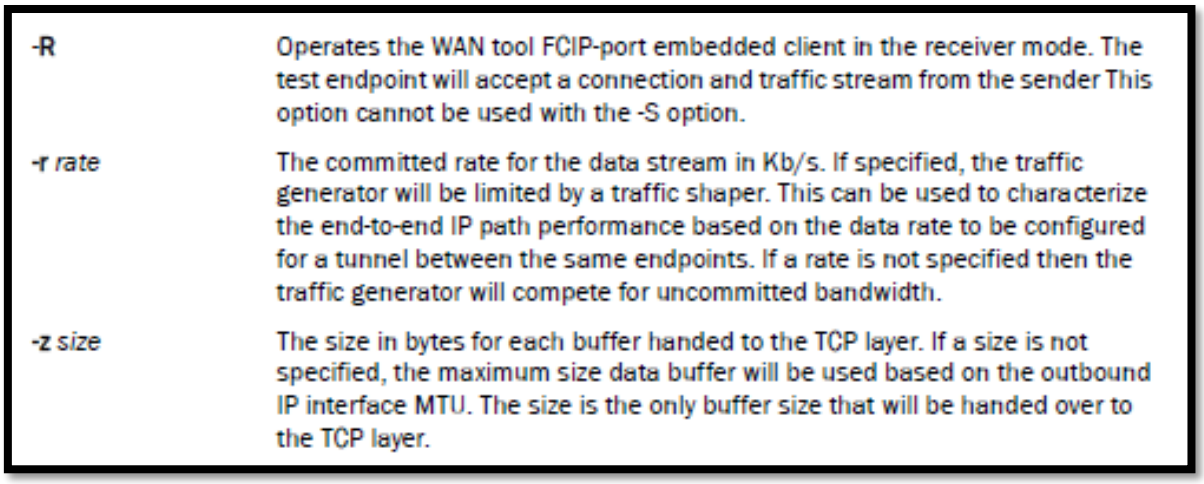
The optimal number of buffer credits is determined by the distance (frame delivery time), the processing time at the receiving port, the link signaling rate, and the size of the frames being transmitted. As the link speed increases, the frame delivery time is reduced and the number of buffer credits must be increased to obtain full link utilization, even in a short-distance environment.

For each frame that is transferred, the hardware at the other end must acknowledge that the frame has been received before a successful transmission occurs. This flow requires enough capacity in the hardware to allow continuous transmission of frames on the link, while waiting for the acknowledgment to be sent by the receiver at the other end.

As the distance between switches and the link speed increases, additional buffer credits are required for the ports used for long-distance connections. Distance levels define how buffer credits are allocated and managed for extended ISLs. Buffer credits are managed from a common pool available to a group of ports on a switch. The buffer credit can be changed for specific applications or operating environments, but it must be in agreement among all switches to allow formation of the fabric.

FABRIC OS ADMINISTRATION GUIDE, 8.1.X at 156 (June 7, 2017) ("The optimal number of buffer credits is determined by the distance (frame delivery time), the processing time at the receiving port, the link signaling rate, and the size of the frames being transmitted.").

84. On information and belief, the 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.



-R	Operates the WAN tool FCIP-port embedded client in the receiver mode. The test endpoint will accept a connection and traffic stream from the sender This option cannot be used with the -S option.
-r *rate*	The committed rate for the data stream in Kb/s. If specified, the traffic generator will be limited by a traffic shaper. This can be used to characterize the end-to-end IP path performance based on the data rate to be configured for a tunnel between the same endpoints. If a rate is not specified then the traffic generator will compete for uncommitted bandwidth.
-z *size*	The size in bytes for each buffer handed to the TCP layer. If a size is not specified, the maximum size data buffer will be used based on the outbound IP interface MTU. The size is the only buffer size that will be handed over to the TCP layer.

FABRIC OS FCIP ADMINISTRATOR'S GUIDE at 78 (March 30, 2010) ("The committed rate for the data stream in Kb/s. If specified, the traffic generator will be limited by a traffic shaper. This can be used to characterize the end-to-end IP path performance based on the data rate to be configured for a tunnel between the same endpoints.").

85. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Broadcom '983 Products, Broadcom has injured DIFF Scale Operation Research and is 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).

86. On information and belief, Broadcom also indirectly infringes the '983 patent by actively inducing infringement under 35 U.S.C. § 271(b).

87. On information and belief, Broadcom has had knowledge of the '983 patent since at least February 1, 2016. U.S. Patent No. 7,339,890 cites the '983 patent as relevant prior art and was issued on March 4, 2008 to Broadcom Corporation. On information and belief, Broadcom Corporation was acquired by Avago Technologies on February 1, 2016, and the newly-combined company became Broadcom Limited.

88. On information and belief, Broadcom intended to induce patent infringement by third-party customers and users of the Broadcom '983 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. Broadcom specifically intended and was aware that the normal and customary use of the accused products would infringe the '983 patent. Broadcom performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '983 patent and with the knowledge that the induced acts would constitute infringement. For example, Broadcom provides the Broadcom '983 Products that have the capability of operating in a manner that infringe one or more of the claims of the '983 patent, including at least claim 8, and Broadcom further provides documentation and training materials that cause customers and end users of the Broadcom '983 Products to utilize the products in a

manner that directly infringe one or more claims of the '983 patent.[30] By providing instruction and training to customers and end-users on how to use the Broadcom '983 Products in a manner that directly infringes one or more claims of the '983 patent, including at least claim 8, Broadcom specifically intended to induce infringement of the '983 patent. On information and belief, Broadcom engaged in such inducement to promote the sales of the Broadcom '983 Products, e.g., through Broadcom user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '983 patent. Accordingly, Broadcom 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 '983 patent, knowing that such use constitutes infringement of the '983 patent.

89. The '983 patent is well-known within the industry as demonstrated by multiple citations to the '983 patent in published patents and patent applications assigned to technology companies and academic institutions. Broadcom is utilizing the technology claimed in the '983 patent without paying a reasonable royalty. Broadcom is infringing the '983 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

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

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[30] *See, e.g.*, 6520 SWITCH HARDWARE INSTALLATION GUIDE - TECHNICAL Specifications (December 29, 2017); FABRIC OS FCIP ADMINISTRATOR'S GUIDE (March 30, 2010); FABRIC OS ADMINISTRATION GUIDE, 8.1.X (June 7, 2017); FLOW VISION CONFIGURATION GUIDE, 8.1.X (June 7, 2017); Sujal Das and Rochan Sankar, BROADCOM SMART-BUFFER TECHNOLOGY IN DATA CENTER SWITCHES FOR COST-EFFECTIVE PERFORMANCE SCALING OF CLOUD APPLICATIONS (April 2012); *G610 Switch*, DATA SHEET (2017); *NetIron QoS and Traffic Management*, CONFIGURATION GUIDE (2015); FABRIC OS ADMINISTRATOR'S GUIDE at 394 (July 28, 2009)

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

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

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

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

94. Broadcom designs, makes, sells, offers to sell, imports, and/or uses Broadcom network management products, including: Network Advisor 14.4.0, Network Advisor 14.3.1, Network Advisor 14.3.0, Network Advisor 14.2.1, Network Advisor 14.2.0, Network Advisor 14.1.1, Network Advisor 14.1.0, Network Advisor 14.0.2, Network Advisor 14.0.1, Network Advisor 14.0.0, Network Advisor 12.4.3, Network Advisor 12.4.2, Network Advisor 12.4.0, Network Advisor 12.3.4, Network Advisor 12.3.3, Network Advisor 12.3.2, Network Advisor 12.3.4, Network Advisor 12.3.0, Network Advisor 12.2.0, Network Advisor 12.1.6, Network Advisor 12.1.4, Network Advisor 12.1.0, Network Advisor 12.0.3, Network Advisor 12.0.2, Network Advisor 12.0.1, and Network Advisor 12.0.0 (collectively, the "Broadcom '609 Product(s)").

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

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

TABLE 41 Enterprise-supported limits by SAN size for SMI Agent only on Fabric OS fabrics

	Small	Medium	Large
Number of Fabrics	8	16	24
Number of Switches and Access Gateways	40	90	200
Number of Switch Ports	2000	5000	9000
Number of Device Ports	5000	10000	20000

Documentation Updates: Network Advisor 12.1.X, NETWORK ADVISOR DOCUMENTATION (January 8, 2014) (The above table summarizes the scalability limits for pure Fabric OS fabrics with Network Advisor Enterprise edition.).

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

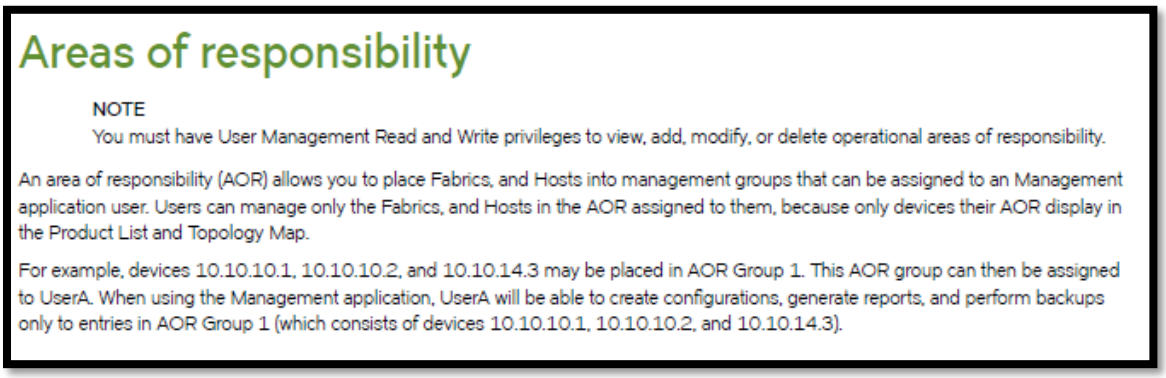
> This software management tool offers flexible and proactive SAN/IP network performance analysis in addition to IP network configuration change deployment and monitoring for compliance. [Network Advisor] supports. . . wireless networks, application delivery networks, and Multiprotocol Label Switching (MPLS) networks for service providers.

PROPOSAL FOR WSCA-NASPO DATA COMMUNICATIONS PRODUCTS AND SERVICES at 49 (August 30, 2013).

98. On information and belief, the Broadcom '609 Products are available to businesses and individuals throughout the United States.

99. On information and belief, the Broadcom '609 Products include policies for bandwidth allocation stored on a computer readable medium, such that the at least one service delivery unit selectively allocates bandwidth to users based on the policies stored in the policy server.

100. On information and belief, the Broadcom '609 Products comprise a service delivery unit with a memory that stores data including at least one of configuration data, control data, billing data, diagnostic data and management data.



Areas of responsibility

NOTE

You must have User Management Read and Write privileges to view, add, modify, or delete operational areas of responsibility.

An area of responsibility (AOR) allows you to place Fabrics, and Hosts into management groups that can be assigned to an Management application user. Users can manage only the Fabrics, and Hosts in the AOR assigned to them, because only devices their AOR display in the Product List and Topology Map.

For example, devices 10.10.10.1, 10.10.10.2, and 10.10.14.3 may be placed in AOR Group 1. This AOR group can then be assigned to UserA. When using the Management application, UserA will be able to create configurations, generate reports, and perform backups only to entries in AOR Group 1 (which consists of devices 10.10.10.1, 10.10.10.2, and 10.10.14.3).

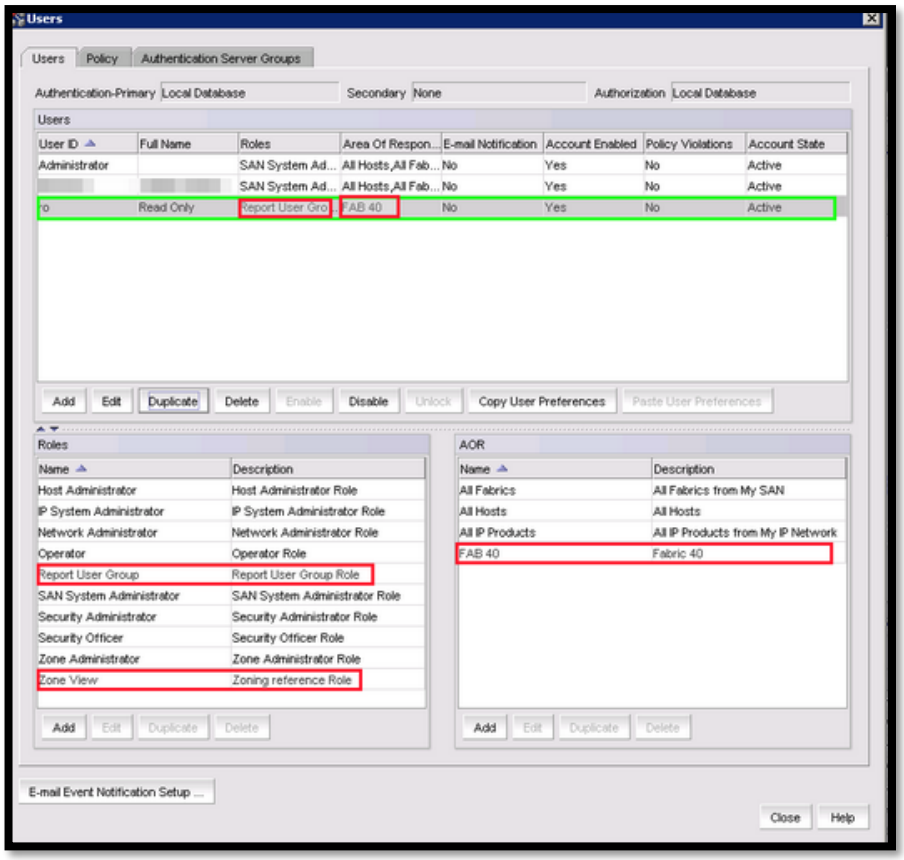
Network Advisor SAN User Manual: Network Advisor 14.3.1, NETWORK ADVISOR DOCUMENTATION AT 134 (September 18, 2017) ("An area of responsibility (AOR) allows you to place Fabrics, and Hosts into management groups that can be assigned to an Management application user. Users can manage only the Fabrics, and Hosts in the AOR assigned to them, because only devices their AOR display in the Product List and Topology Map.").

101. On information and belief, the Broadcom '609 Products are provided to businesses and individuals located in the Eastern District of Texas.

102. On information and belief, Broadcom 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 Broadcom '609 Products, which include infringing technology for network management. Such products and/or services include, by way of example and without limitation, the Broadcom '609 Products.

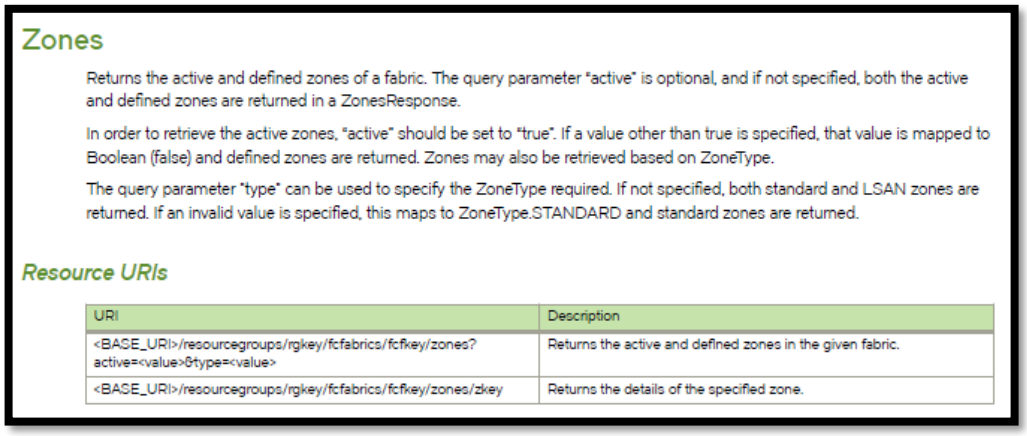
103. On information and belief, the Broadcom '609 Products comprise a system that includes a service delivery unit that has a network interface port.

104. On information and belief, the Broadcom '609 Products comprise a network entity configured to allow the network management station to view data related to management of physical and link layers.



SCREENSHOT OF NETWORK ADVISOR 12.2.X (showing that the network management station can be configured to show data related to the physical and link layers of the network).

105. On information and belief, the Broadcom '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.



Zones

Returns the active and defined zones of a fabric. The query parameter "active" is optional, and if not specified, both the active and defined zones are returned in a ZonesResponse.

In order to retrieve the active zones, "active" should be set to "true". If a value other than true is specified, that value is mapped to Boolean (false) and defined zones are returned. Zones may also be retrieved based on ZoneType.

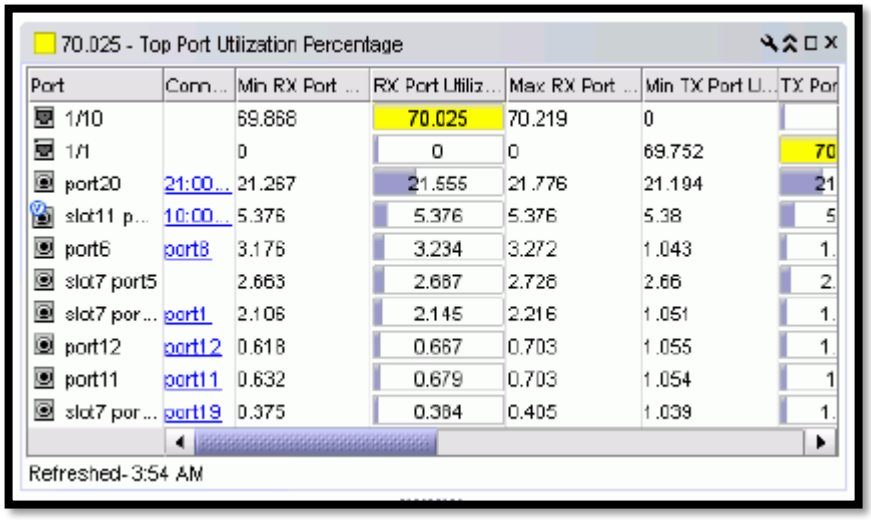
The query parameter "type" can be used to specify the ZoneType required. If not specified, both standard and LSAN zones are returned. If an invalid value is specified, this maps to ZoneType.STANDARD and standard zones are returned.

Resource URIs

URI	Description
<BASE_URI>/resourcegroups/rgkey/fcfabrics/fcfkey/zones?active=<value>&type=<value>	Returns the active and defined zones in the given fabric.
<BASE_URI>/resourcegroups/rgkey/fcfabrics/fcfkey/zones/zkey	Returns the details of the specified zone.

Network Advisor REST API Guide Version 14.4.0, NETWORK ADVISOR API REFERENCE GUIDE at 238 (December 2017) (Describing the use of Zones for managing different networks and parts of networks. "Returns the active and defined zones of a fabric.").

106. On information and belief, the Broadcom '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").



70.025 - Top Port Utilization Percentage

Port	Conn...	Min RX Port ...	RX Port Utiliz...	Max RX Port ...	Min TX Port U...	TX Por
1/10		69.868	70.025	70.219	0	
1/1		0	0	0	69.752	70
port20	21:00...	21.287	21.555	21.776	21.194	21
slot11 p...	10:00...	5.376	5.376	5.376	5.38	5
port6	port8	3.176	3.234	3.272	1.043	1.
slot7 port5		2.663	2.687	2.726	2.66	2.
slot7 por...	port1	2.106	2.145	2.216	1.051	1.
port12	port12	0.618	0.667	0.703	1.055	1
port11	port11	0.632	0.679	0.703	1.054	1
slot7 por...	port19	0.375	0.384	0.405	1.039	1.

Refreshed- 3:54 AM

Network Advisor SAN User Manual: Network Advisor 14.3.1, NETWORK ADVISOR DOCUMENTATION at 220 (September 18, 2017) (The above image shows the top port utilization bar displaying the top port utilizations for a selection of a network in a table.).

107. On information and belief, the Broadcom '609 Products comprise a system with a central processing unit that enables a network management terminal to view a configurable portion

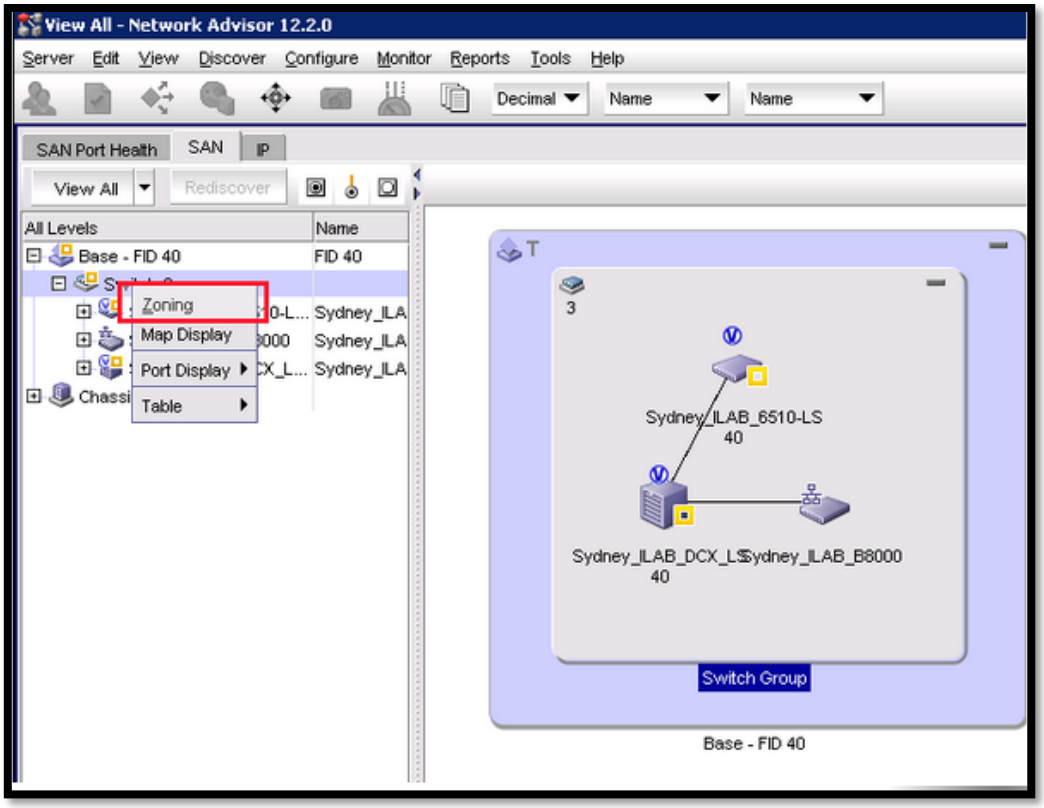
of the data in the memory and to allow a second network management terminal to view a second, configurable portion of the data in the memory to allow shared management of the service delivery unit.

108. On information and belief, the Broadcom '609 Products include functionality for connecting to a switch fabric.

Feature	Roles with Read/Write Access	Roles with Read-Only Access
Active Session Management	SAN System Administrator, Security Officer	Operator
Call Home	SAN System Administrator, Operator	
Certificate Management	SAN System Administrator, Network Administrator, Host Administrator, Security Administrator	Operator
Configuration Management	SAN System Administrator, Network Administrator	Operator
DCB Management	SAN System Administrator, Network Administrator	Security Administrator, Security Officer
E-mail Event Notification Setup	SAN System Administrator, Operator	
Element Manager	SAN System Administrator	
Element Manager - Product Administration	SAN System Administrator	
Event Management	SAN System Administrator, Network Administrator	Operator
Fabric Watch	SAN System Administrator	
Fault Management	SAN System Administrator, Network Administrator	Operator
FCoE Management	SAN System Administrator, Network Administrator	Security Administrator, Zone Administrator, Security Officer, Operator

Network Advisor SAN User Manual: Network Advisor 14.3.1, NETWORK ADVISOR DOCUMENTATION at 1442 (September 18, 2017) ("The Management application provides preconfigured roles (SAN System Administrator, IP System Administrator, Security Administrator, Zone Administrator, Security Officer, Operator, and Network Administrator.").

109. On information and belief, the Broadcom '609 Products include functionality wherein one network entity is further configurable to allow at least one additional network management station to view a second selected portion of the data stored in the memory of the at least on service delivery unit.



SCREENSHOT OF NETWORK ADVISOR 12.2.X (showing that network management entity can be configured sot that it can view a selected portion of the data stored in the memory of the at least on service delivery unit).

110. By making, using, testing, offering for sale, and/or selling products and services, including but not limited to the Broadcom '609 Products, Broadcom has injured DIFF Scale Operation Research and is liable for directly infringing one or more claims of the '609 patent, including at least claim 17, pursuant to 35 U.S.C. § 271(a).

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

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

113. On information and belief, Broadcom intended to induce patent infringement by third-party customers and users of the Broadcom '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. Broadcom specifically intended and was aware that the normal and customary use of the accused products would infringe the '609 patent. Broadcom 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, Broadcom provides the Broadcom '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 17, and Broadcom further provides documentation and training materials that cause customers and end users of the Broadcom '609 Products to utilize the products in a manner that directly infringe one or more claims of the '609 patent.[31] By providing instruction and training to customers and end-users on how to use the Broadcom '609 Products in a manner that directly infringes one or more claims of the '609 patent, including at least claim 17, Broadcom specifically intended to induce infringement of the '609 patent. On information and belief, Broadcom engaged in such inducement to promote the sales of the Broadcom '609 Products, e.g., through Broadcom user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '609 patent. Accordingly, Broadcom has induced and continues to induce users of the accused products to use the accused

[31] *See, e.g.*, *Network Advisor SAN User Manual: Network Advisor 14.3.1*, NETWORK ADVISOR DOCUMENTATION (September 18, 2017); *Network Advisor REST API Guide Version 14.4.0*, NETWORK ADVISOR API REFERENCE GUIDE (December 2017); *Documentation Updates: Network Advisor 12.1.X*, NETWORK ADVISOR DOCUMENTATION (January 8, 2014); *Fabric Vision Technology*, DATA SHEET (March 2017); *Network Advisor: Storage Networking*, DATA SHEET (March 2017); NETWORK ADVISOR: TARGET PATH SELECTION GUIDE (Aug. 24, 2017).

products in their ordinary and customary way to infringe the '609 patent, knowing that such use constitutes infringement of the '609 patent.

114. 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. Broadcom is utilizing the technology claimed in the '609 patent without paying a reasonable royalty. Broadcom 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.

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

116. As a result of Broadcom's infringement of the '609 patent, DIFF Scale Operation Research has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Broadcom's infringement, but in no event less than a reasonable royalty for the use made of the invention by Broadcom 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 Broadcom has infringed, either literally and/or under the doctrine of equivalents, the '983 and '609 patents;

B. An award of damages resulting from Broadcom's acts of infringement in accordance with 35 U.S.C. § 284;

C. A judgment and order finding that Broadcom's 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.

D. 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 Broadcom.

E. 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: March 15, 2018

Respectfully submitted,

s/ Daniel P. Hipskind
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