	Case 3:25-cv-03738 Document 1 File	ed 04/29/25 Page 1 of 61
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11	Attorneys for Plaintiff Netflix, Inc.	
12	UNITED STATES D	DISTRICT COURT
13	NORTHERN DISTRIC	T OF CALIFORNIA
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15	NETFLIX, INC.,	Case No. 3:25-cv-3738
16	Plaintiff,	COMPLAINT FOR PATENT
17	v.	INFRINGEMENT
18	BROADCOM INC., VMWARE LLC,	JURY TRIAL DEMANDED
19	Defendants.	
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1 Plaintiff, Netflix, Inc. ("Plaintiff" or "Netflix") hereby asserts the following claims for Patent 2 Infringement against Defendants Broadcom Inc. ("Broadcom") and VMware LLC ("VMware"), 3 and alleges as follows:

NATURE OF THE ACTION

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1. This is a civil action for patent infringement arising under the patent laws of the United States, 35 U.S.C. § 1, et seq.

7 2. Defendants Broadcom and VMware, jointly and severally, have directly infringed 8 and continue to infringe, have induced and continue to induce, and have contributed to and continue 9 to contribute to infringement of one or more claims of U.S. Patent Nos. 10,331,472 (the 10 "472 Patent") and 7,313,102 (the "102 Patent") through their development, use, and 11 commercialization of the Broadcom Load Balancing Accused Products and Broadcom Subnet 12 Provisioning Accused Products, respectively, as defined below. Defendant Broadcom has directly 13 infringed and continues to infringe, has induced and continues to induce, and has contributed to 14 and continues to contribute to infringement of U.S. Patent No. 7,649,912 (the "'912 Patent") 15 through its development, use, and commercialization of the Broadcom Switching Accused 16 Products, as defined below. The '472 Patent, '102 Patent, and '912 Patent, collectively, are referred to as the "Asserted Patents." 17

18 3. Netflix is the owner of the Asserted Patents, which were duly and legally issued by 19 the United States Patent and Trademark Office ("USPTO"). For each of the Asserted Patents, 20 Netflix owns all substantial rights to sue for infringement in its own name, including for past, 21 present, and future damages, and injunctive relief.

22 4. Netflix seeks monetary damages as redress for Broadcom's and VMware's 23 infringement.

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Netflix is a Delaware corporation with its principal place of business located at 121 Albright Way, Los Gatos, California 95032.

THE PARTIES

27 6. Netflix was founded in Scotts Valley, California in 1997 and is an innovative video 28 on-demand streaming services company and one of the world's leading entertainment services

COMPLAINT

bringing TV series, films, games, and live content to 278 million members in over 190 countries.

7. Broadcom is a corporation organized under the laws of the State of Delaware with regular and established places of business in this Judicial District, including offices in Palo Alto, Petaluma. and San Jose.

5 8. Broadcom's organizational history involves a complex web of mergers and 6 acquisitions. In brief, in 1999, Hewlett-Packard's Semiconductor Products Group spun off as 7 Agilent Technologies, which later formed Avago Technologies. Avago merged with and acquired 8 multiple companies between 2005 to 2015. Then, in 2015, Avago announced it would buy 9 Broadcom but adopt the Broadcom name because of its broader name recognition.¹ Broadcom 10 today comprises an amalgamation of companies, including Brocade Communications Systems, CA 11 Technologies, Symantec Enterprise Security, and Avago, among many others.² Broadcom is known 12 to sell off its acquired companies for parts in a strategy summed up as: "Buy. Chop up. Sell off. Raise prices. Rinse. Repeat."³ 13

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9. On May 26, 2022, Broadcom and VMware Inc. entered into an Agreement and Plan of Merger (the "Merger Agreement"), and on November 22, 2023, Broadcom merged with or acquired VMware Inc. for \$69 billion in a "transformational" transaction.⁴

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10. The series of transactions and agreements executed between Broadcom and VMware 18 Inc. that ultimately resulted in Broadcom's merger and/or acquisition of VMware Inc. is complex, 19 perhaps intentionally so.

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11. At the end of the transaction, VMware Inc. was renamed VMware LLC, and VMware

¹ "Avago Technologies to Acquire Broadcom for \$37 Billion," Broadcom.com (May 28, 2015), 23 https://investors.broadcom.com/news-releases/news-release-details/avago-technologies-acquirebroadcom-37-billion. 24

https://www.lexology.com/library/detail.aspx?g=925c5af8-43a7-480f-af7c-7dc896541c28. 27

⁴ "Broadcom Inc. Announces Fourth Quarter and Fiscal Year 2023 Financial Results and 28 Quarterly Dividend," Broadcom.com (December 7, 2023), https://investors.broadcom.com/newsreleases/news-release-details/broadcom-inc-announces-fourth-quarter-and-fiscal-year-2023.

² "Company History," Broadcom.com, https://www.broadcom.com/company/about-us/company-25 history.

³ Joff Wild, "Five big patent talking points raised by Broadcom's proposed buy-out of 26 Qualcomm," IAM (November 9, 2017),

products were thereafter sold under the brand name "VMware by Broadcom."⁵ VMware Inc. and 1 2 VMware LLC are collectively referred to herein as "VMware." 3 12. VMware has a principal place of business in this District, at 3401 Hillview Avenue, 4 Palo Alto, California, 94304. 5 JURISDICTION AND VENUE 6 13. Netflix brings this civil action for patent infringement under the Patent Laws of the 7 United States, 35 U.S.C. § 1 et. seq., including 35 U.S.C. §§ 271, 281-285. 8 14. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. 9 §§ 1331 and 1338. 10 15. This Court has personal jurisdiction over Broadcom and VMware because they 11 maintain their principal places of business in this District and engage in continuous and systematic 12 business activities within this District. 13 Venue is proper in this District pursuant to at least 28 U.S.C. § 1400(b) because 16. 14 Broadcom and VMware maintain their principal places of business in this District, reside in this 15 district, and have committed acts of patent infringement in this District. 16 BACKGROUND 17. 17 This Complaint asserts causes of action for infringement of the '472 Patent, the '102 18 Patent, and the '912 Patent, (collectively, the "Asserted Patents"). 19 18. The '472 Patent is entitled "Virtual Machine Service Availability." Bo Wang is 20 identified on the face of the '472 Patent as the inventor. On June 25, 2019, the USPTO duly and 21 legally issued the '472 Patent from Application No. 15/503,138, originally filed as 22 PCT/CN2014/085541 on August 29, 2014. A true and correct copy of the '472 Patent is attached 23 as Exhibit A. Netflix is the current owner by assignment of all rights, title, and interest in and under 24 the '472 Patent, including the right to sue and obtain damages for past, current, and future 25 infringement. Netflix has standing to sue for infringement of the '472 Patent. 26 19. The '102 Patent is entitled "System and Method for Subnet Configuration and 27 ⁵ VMware.com, https://www.vmware.com/; VMware LLC Securities and Exchange Commission 28 Form 8-K, (November 22, 2023), http://edgar.secdatabase.com/1558/119312523282097/filingmain.htm.

Selection." Bryan Craig Stephenson, Jennifer Jie Fu, Julie Kosakowski, Samuel L. Scarpello, Jr., Andrea Eakin, Jon Russell Sawyer, Rheid Schloss, and Ron MacDonald are identified on the face of the '102 Patent as the inventors. On December 25, 2007, the USPTO duly and legally issued the '102 Patent from Application No. 10/390,492, filed on March 17, 2003. A true and correct copy of the '102 Patent is attached as Exhibit B. Netflix is the current owner by assignment of all rights, title, and interest in and under the '102 Patent, including the right to sue and obtain damages for past, current, and future infringement. Netflix has standing to sue for infringement of the '102 Patent.

9 20. The '912 Patent is entitled "Time Synchronization, Deterministic Data Delivery and 10 Redundancy for Cascaded Nodes on Full Duplex Ethernet Networks." Sivaram Balasubramanian, 11 Anatoly Moldovansky, and Kendal R. Harris are identified on the face of the '912 Patent as the 12 inventors. On January 19, 2010, the USPTO duly and legally issued the '912 Patent from 13 Application No. 11/115,536, filed on April 27, 2005. A true and correct copy of the '912 Patent is 14 attached as Exhibit C. Netflix is the current owner by assignment of all rights, title, and interest in 15 and under the '912 Patent, including the right to sue and obtain damages for past, current, and 16 future infringement. Netflix has standing to sue for infringement of the '912 Patent.

The '472 Patent

18 21. The '472 Patent is generally directed to improvements in implementing network 19 services across a server network (for example, partitions implementing various databases).⁶ Before 20 the '472 Patent, a server network executing a service with high availability requirements required 21 replicating the service on multiple servers, so that if one server failed, the service could continue to operate on the redundant server.⁷ Even then, if the second server also failed, the service would 22 become entirely unavailable to the users of the service.⁸ The innovation of the '472 Patent avoids 23 24 the significant reliability issues and inefficiencies in the prior art. The patent describes executing 25 services in a server network on virtual machines in a server cluster and instantiating the service as

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- 27 6 *See* '472 Patent, 1:62-2:8.
- $_{28} \parallel ^{7} Id., 1:54-56.$
 - ⁸ *Id.*, 1:56-57.
 - COMPLAINT

a virtual machine image stored on a hardware server.⁹ For example, a service availability controller
monitors or polls services executing on different virtual machines on the different servers in the
network to determine when and which services to instantiate on which virtual machine.¹⁰ In this
way, the '472 Patent enhances overall service availability without additional hardware costs while
limiting required redundancy and increasing efficiency in resource usage and allocation of a server
network.¹¹ The '472 Patent therefore addresses a specific technical problem, existing in thenexisting methods, of ensuring service availability while limiting unnecessary redundancy.¹²

8 22. The '472 Patent claims specific, novel techniques for solving these technical
9 problems and improving the technological systems and methods themselves. For example, Claim 6
10 recites:¹³

A method comprising:

monitoring a first availability of a first service, the first service having a first availability requirement and a first availability tolerance;

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 detecting a reduction in the first availability of the first

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 service;

17creating capacity for the first service by deactivating a second18service on a first active virtual machine on a server, the second service19having a second availability exceeding a second availability tolerance20and having a second availability requirement lower than the first21availability requirement; and

activating a second active virtual machine executing the first
 service on the server.¹⁴

- ⁹ *Id.*, 1:62-65.
- $25 \parallel 10 Id., 2:58-63.$

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- $26 \int_{-11}^{11} Id., 1:65-2:8.$
- 12 Id., 1:44-51.

¹⁴ *Id.*, 9:32-45.

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 ¹³ The claims mentioned in this section are merely exemplary and not representative of all the claims of the '472 Patent.

1 23. In one aspect, the patent explains that the service availability controller determines 2 when and which service(s) to instantiate on which virtual machine(s) by analyzing the availability requirements and availability tolerances of each of the services.¹⁵ As recited, the claimed solution 3 4 involves monitoring (e.g., polling) a particular virtual service and detecting a reduction in service 5 availability. The recited solution further advantageously identifies a second service for 6 deactivation. A service will only be identified for activation if it meets the specific claimed 7 availability parameters. The claimed solution deactivates the second service and reallocates the resources used by the second service, thereby avoiding an interruption of the first service.¹⁶ Claim 6 8 9 therefore recites a combination of features that provide particular, concrete technical improvements 10 to a technical problem relating to enhancing overall service availability without additional 11 hardware costs. Specifically, and for example, reducing and/or eliminating the need for redundant 12 servers to maintain high availability of a virtual service by identifying and dynamically responding 13 to a reduction in availability of the virtual service.

14 24. The above examples and disclosures demonstrate that the claimed invention is not
15 abstract and is directed to improvements in the technology itself.

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25. Pursuant to 35 U.S.C. § 282, the '472 Patent is presumed valid and patent eligible.

The '102 Patent

18 26. The '102 Patent is generally directed to improvements in subnetwork (or "subnet") 19 management and provisioning within network infrastructures.¹⁷ Before the '102 Patent, subnet 20 management and provisioning lacked the ability to manage inter-related characteristics of the IP 21 address space, such as performance and security characteristics.¹⁸ Prior art methods required the 22 network manager to determine the IP address and network mask of an available subnet that met a 23 network consumer's requirements.¹⁹ Further, then-existing tools were separate and apart from the

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¹⁵ Id. 4:35-44. ¹⁶ Id., 3:40-44 & 4:35-44.

- 27 || ¹⁷ See '102 Patent, 1:55-2:13.
- $28 \parallel ^{-18} Id., 1:29-48.$

¹⁹ *Id*.

- COMPLAINT

provisioning system itself.²⁰ This separation hindered efficient resource allocation and made it 1 2 difficult to adapt to fluctuating network demands, leading to potential delays and increased error rates.²¹ The innovation of the '102 Patent avoids the inefficiencies of subnet management disclosed 3 in the prior art. The patent describes provisioning subnets by grouping the subnets based on their 4 5 logical properties, such as security characteristics and performance characteristics, route information, or subnet usage metering.²² The patent also describes a graphical user interface (GUI) 6 that allows a network consumer to make constrained selections of a particular subnet.²³ The '102 7 8 Patent therefore addresses a specific technical problem (efficient subnet management and 9 provisioning), which existed due to then-existing methods.

10 27. The '102 Patent claims specific, novel techniques for solving these technical
11 problems and improving the technological systems and methods themselves. For example, Claim 1
12 of the '102 Patent recites:²⁴

13	A method for provisioning subnets, the method comprising:
14	grouping the subnets into subnet groups based on logical
15	properties of the subnets;
16	assigning to each network consumer those subnet groups that
17	are accessible to that network consumer; and
18	providing for constrained selection of a particular subnet by a
19	network consumer accomplished by way of a graphical user interface
20	with selectable fields, wherein the constrained selection includes (i)
21	selecting a public or private type address space, (ii) if applicable,
22	selecting a gateway device from amongst those gateway devices that
23	are accessible to the network consumer, and (iii) selecting a subnet
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25	20 Id.
26	21 Id.
27	²² <i>Id.</i> , 3:35-47.
27	²³ <i>Id.</i> , 1:55-61.
28	²⁴ The claims mentioned in this section are merely exemplary and not representative of all claims of the '102 Patent.
	COMPLAINT 7

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group from those subnet groups that are accessible to the network consumer, and (iv) selecting a subnet mask that represents a size of the particular subnet.

28. In one aspect, the patent explains that logical properties for grouping may include security characteristics and performance characteristics, route information, subnet usage metering, IP address space information, availability of a dynamic host configuration protocol (DHCP), availability of multicasting support, and/or resilience to failures.²⁵

8 29. As recited, the claimed solution involves logically grouping subnets and limiting 9 subnets assigned to a consumer, and providing a constrained selection of subnets by 10 advantageously implementing a GUI with certain selectable fields, that constrain the potential 11 subnet provisioning based advantageously on (i) whether a public or private type address space is 12 needed, (ii) ensuring any applicable gateway devices are accessible by the network consumer, (iii) 13 ensuring the constrained group of subnet groups are all accessible by the network consumer, and 14 further ensuring the subnet mask reflects the size of the particular constrained subnets. Claim 1 15 therefore recites a combination of features that provide particular, concrete technical improvements 16 to a technical problem relating to the accuracy and reliability of subnet provisioning in a network 17 environment. Specifically, and for example, by dynamically constraining the selection of subnets 18 to eliminate user error and improve the subnet provisioning process (in turn, subnet provisioning 19 improves the efficiency of a network, for example, by confining data traffic to smaller sections of 20 the network, more efficiently routing data, containing potential security breaches, and reducing 21 wastage of IP addresses).

30. The above examples and disclosures demonstrate that the claimed invention is not
abstract and is directed to improvements in the technology itself.

The '912 Patent

Pursuant to 35 U.S.C. § 282, the '102 Patent is presumed valid and patent eligible.

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32. The '912 Patent is generally directed to improvements in the synchronization of node clocks within a network of nodes, specifically enhancing the precision and efficiency of time

²⁵ *Id.*, 3:35-47. COMPLAINT

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synchronization in networked systems using the IEEE 1588 standard.²⁶ The first version of the 2 IEEE 1588 standard was published in 2002 and established a basic framework for the Precision 3 Time Protocol (PTP). However, the IEEE 1588-2002 standard was sensitive to network delays, 4 making it difficult to maintain precise synchronization in networks. The '912 Patent specifically 5 addresses a particular technical problem with then-existing methods, including issues such as network collisions, limited data throughput, and non-deterministic data delivery.²⁷ 6

7 33. The '912 Patent claims specific, novel techniques for enhancing the synchronization 8 of clocks in networked nodes by addressing delays through timestamp adjustments, prioritizing 9 time synchronization frames for transmission, and ensuring reliable data delivery paths, particularly in industrial control and motion control applications using full duplex Ethernet networks.²⁸ For 10 example, Claim 1 recites:²⁹ 11

A method of synchronizing node clocks within a plurality of nodes on a network including a time master node having a master clock and including at least one time slave node, the method comprising:

16 connecting the plurality of nodes through a full duplex 17 Ethernet network with a daisy-chain connection of the nodes to each 18 other;

19 transmitting a time synchronization message frame from one 20 of the plurality of nodes to a second one of said plurality of nodes, the 21 time synchronization message frame having a timestamp field 22 according to IEEE 1588 standard and a checksum field and a cyclic 23 redundancy checking code;

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at a given one of the plurality of nodes between the first and

²⁶ See '912 Patent, 2:34-47. 26

²⁷ *Id.*, 1:25-2:30.

²⁷ ²⁸ *Id.*, 2:34-3:29.

²⁸ ²⁹ The claims mentioned in this section are merely exemplary and not representative of all the claims of the '912 Patent.

1	second nodes:
2	(i) receiving the time synchronization message frame;
3	(ii) reading a timestamp value of a timestamp field of the time
4	synchronization message frame;
5	(iii) near a time of retransmission of the time synchronization
6	message frame from the given node, adjusting the read timestamp
7	value in the timestamp field by an amount of delay between time of
8	reception and a time of the retransmission to produce a corrected
9	timestamp value;
10	(iv) writing the corrected timestamp value over the timestamp
11	value of the timestamp field of the time synchronization message
12	frame;
13	(v) adjusting a checksum value in the checksum field and
14	adjusting the cyclic redundancy checking code of the time
15	synchronization message frame to account for adjusting the
16	timestamp value; and
17	(vi) transmitting the time synchronization message frame
18	from the given node; and
19	providing a highest priority to process and forward time
20	synchronization message frames and lower priorities to process and
21	forward other types of message frames. ³⁰
22	34. As recited with respect to one aspect, the claimed solution involves adjusting a
23	timestamp to produce a corrected timestamp value, writing that corrected value over a current
24	value, with this correct value, adjusting a checksum value and cyclic redundancy checking code of
25	the sync message frame to account for adjusted timestamp value, and, at the intermediary node,
26	prioritizing processing and forwarding of this corrected sync message frame.
27	35. Claim 1 therefore recites a combination of features that provide particular, concrete
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	COMPLAINT 10
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technical improvements to a technical problem relating to the reducing latency and collisions in a
 network. Specifically, and for example, allowing for improved communication between nodes in a
 network by improving clock synchronization through dynamic adjustments to a timestamp value

- and by prioritizing time synchronization frames for transmission.
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36. The '912 Patent further elaborates on specific embodiments for the claimed method.

6 For example, the '912 Patent explains:

When a timestamp point according to IEEE 1588 standard is reached during transmission, a timestamp trigger is sent to associated timestamp register 32-39 to capture transmit timestamp (Txts) from delay time counter 31, as represented by process block 79. Next, the switching delay experienced by the frame inside switch is calculated by subtracting a saved receive timestamp (Rxts) from a transmit timestamp (Txts), as represented by process block 80. Next, as represented by process block 81, the UDP checksum for the time synchronization message is recomputed from the saved UDP checksum, for the added switching delay to origin timestamp at block 82 and inserted at appropriate location in frame. Next, as represented by process block 82, the switching delay is added to the saved origin timestamp and is inserted at the appropriate location in frame. Then, the CRC error checking code for the entire frame is computed and inserted at the end of frame, as represented by process block 83. The frame transmission is completed, followed by interframe gap according IEEE 802.3 standard and the transmit channel is ready for transmission as represented by process block 75.³¹

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37. In other words, a network switch may capture and adjust timestamps of transmitted

time synchronization message frames to account for internal switching delays, thereby ensuring precise clock synchronization.

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38. The above examples and disclosures demonstrate that the claimed invention is not

abstract and is directed to improvements in the technology itself.

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39. Pursuant to 35 U.S.C. § 282, the '912 Patent is presumed valid and patent eligible.

DEFENDANTS' INFRINGEMENT AND LIABILITY

40. The '472 and '102 Patents are infringed by virtualization products (defined below as the "Broadcom Load Balancing Accused Products" and "Broadcom Subnet Provisioning Accused Products", respectively), which Broadcom acquired from VMware in the Merger Agreement. When it merged with VMware, Broadcom told its investors that VMware "pioneered the concept

of virtualization."³² However, as explained herein, VMware did so by leveraging the technological
 innovations of others.

41. On information and belief, Broadcom stands in VMware's shoes and/or shares liability for all infringement of the '472 and '102 Patents, both before and after the Merger Agreement.

42. On information and belief, any and all liability for the infringement of the '472 and '102 Patents held by VMware shall also be deemed held by Broadcom as a result of the Merger Agreement.

9 43. For example, pursuant to the Merger Agreement, VMware, Inc.'s operations, 10 knowledge, products, product marketing/instructions, and employees are now integrated with 11 and/or attributable to Broadcom. Broadcom described the "anticipated synergies and economies of 12 scale expected from the integration of the VM ware business . . . includ[ing] cost savings, operating 13 efficiencies and other strategic benefits projected to be achieved as a result of the VMware 14 Merger."³³ Broadcom described the challenges of the VMware Merger as "integrating the VMware 15 workforce," "integrating operations," "integrating corporate, information technology, finance and 16 administrative infrastructures," and "integrating financial forecasting and controls, procedures and 17 reporting cycles."³⁴ In its IRS filings, Broadcom refers to the Transaction as the "Broadcom/VMware Combination."35 Accordingly, on information and belief, Broadcom and 18 19 VMware are jointly and severally liable for infringement of the '472 and '102 Patents, including 20 past and future damages, as set forth in detail herein.

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44. The '912 Patent is infringed by Broadcom's ethernet switching products as defined further below (the "Broadcom Switching Accused Products"). For at least the statutory-defined

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³² Broadcom (AVGO) Q2 2022 Earnings Call Transcript, Motley Fool Transcribing, Fool.com (May 26, 2022), available at <u>https://www.fool.com/earnings/call-transcripts/2022/06/02/broadcom-ltd-avgo-q2-2022-earnings-call-transcript/</u>.

³³ Broadcom SEC Form 10-Q for quarter ending on August 4, 2024, available at https://investors.broadcom.com/static-files/b32ea83a-0ca4-4f37-bd83-715a82ad795a at 12.

³⁴ Broadcom SEC Form 10-K for fiscal year ending on October 29, 2023, available at <u>https://investors.broadcom.com/static-files/2b98b262-4fbb-4731-b3dd-88f6ca187002</u> at 17-18.

³⁵ Broadcom SEC Form 8937 filed on December 21, 2023, available at https://investors.broadcom.com/static-files/7720c4c1-c940-4d9d-800c-66819bfdc7a0 at 2.
 COMPLAINT 12

damages period, Broadcom has made, used, offered to sell, and/or sold the Broadcom Switching
 Accused Products and continues to make, use, offer to sell, and sell the Broadcom Switching
 Accused Products.

45. Accordingly, on information and belief, Broadcom is liable for infringement of the '912 Patent including past and future damages, as set forth in detail herein.

FIRST CLAIM FOR RELIEF

Infringement of U.S. Patent No. 10,331,472 (the "'472 Patent")

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46. Netflix incorporates by reference all preceding paragraphs, *supra*.

9 47. Broadcom and VMware, jointly and severally, have infringed, and Broadcom and 10 VMware continue to infringe, at least Claim 6 of the '472 Patent, either literally or under the 11 doctrine of equivalents, by making, using, selling, and/or offering for sale within the United States 12 and/or importing into the United States products that are covered by at least Claim 6 of the 13 '472 Patent. These products include, but are not limited to, VMware Cloud Foundation, VMware 14 Cloud on AWS, Azure VMware Solution, Google Cloud VMware Engine, Oracle Cloud VMware 15 Solution, IBM Cloud for VMware Solutions, Alibaba Cloud VMware Service, as well as any other products and/or services incorporating VMware NSX/NSX-T Data Center and/or VMware Avi 16 Load Balancer (formerly VMware NSX Advanced Load Balancer)³⁶ (collectively, the "Broadcom 17 18 Load Balancing Accused Products"). 19 48. Claim 6 of the '472 Patent recites:

A method comprising:

monitoring a first availability of a first service, the first service having a first availability requirement and a first availability tolerance;

detecting a reduction in the first availability of the first

- ³⁶ See, e.g., "Transform Your Apps and Cloud Faster with VMware Cloud," VMware Cloud
 Partners, VMware.com, <u>https://www.vmware.com/solutions/cloud-partners/;</u> "Build numbers and versions of VMware NSX/NSX-T Data Center," Broadcom.com (updated October 21, 2024),
 https://knowledge.broadcom.com/external/article/317797/build-numbers-and-versions-of-vmware-
- 11110217 [Intps://knowledge.broadcom/external/article/317797/bund-numbers-and-versions-of-vinwarensx.html; "VMware Avi Load Balancer Release Notifications," Broadcom.com (updated September 10, 2024), https://knowledge.broadcom.com/external/article/312808/vmware-avi-loadbalancer-release-notific.html.

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2 creating capacity for the first service by deactivating a second 3 service on a first active virtual machine on a server, the second service 4 having a second availability exceeding a second availability tolerance 5 and having a second availability requirement lower than the first 6 availability requirement; and 7 activating a second active virtual machine executing the first 8 service on the server. 9 49. The Broadcom Load Balancing Accused Products perform a method comprising 10 "monitoring a first availability of a first service, the first service having a first availability 11 requirement and a first availability tolerance." 12 50. For example, the Broadcom Load Balancing Accused Products include a page displaying monitored "virtual services," which includes virtual service "health."³⁷ The product 13 14 documentation explains the health indicator "[d]isplays a numeric, color-coded health status of the 15 virtual service," that "[a] red exclamation mark (!) indicates that the virtual service is down," and that "[a] dash appears if the virtual service is disabled, not deployed, or in error state."³⁸ The 16 Broadcom Load Balancing Accused Products also have a "minimum and maximum scale-out per 17 18 virtual service" setting which "govern[s] the number of [Service Engines (SEs)] across which a virtual service can be scaled."39 19 20 21 22 23 24 25 ³⁷ "VMware NSX Advanced Load Balancer 30.2," Broadcom.com (last updated November 11, 26 2024), https://techdocs.broadcom.com/us/en/vmware-security-load-balancing/avi-loadbalancer/avi-load-balancer/30-2/vmware-avi-load-balancer-configuration-guide/load-balancing-27 overview/virtual-services.html. ³⁸ *Id*. 28 ³⁹ Id. COMPLAINT 14

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0	Figure 1. Screensh	ot from the "h	NSX pr nealth"	roduct web indicator	page highi	sho lighte	wing ed in	red.	rtual	serv	vices	" page	with the
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2	"data plane virtual m	nachines:"	mentat	ion describ	es th	at th	e se	rvic	e eng	gmes		scussed	above al
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4	plane	vi Service virtual mac	chine.	e, also calle A Service	ea th Engi	ne r	rvice uns	e Engone	gine, or m	1s tr	ie a virti	ata ual	
5	service	es. A Serv	vice Ei	ngine is n	nana	ged	by t vir	the	cont	rolle $\frac{4}{2}$	r. T	`he	
6	contro	nei piovisio				0 1105	ινΠ	ual s		.05.			
7	52. The B	roadcom Lo	oad Ba	lancing Ac	cuse	d Pro	oduc	ts pe	erfor	m th	e ste	ep of "d	letecting
0	reduction in the first	availability	of the	first servio	ce."								
0	53. Notabl	ly, as desc	ribed,	a SE has	"a r	naxi	mun	n cap	pacit	y fo	r pr	ocessing	g traffic,
9	meaning that as that	capacity the	reshold	l is approac	hed,	the S	SE's	abili	ity to	acc	omn	nodate r	new traffi
0	is reduced—meaning	g the availa	bility o	of virtual se	ervice	e(s) r	unni	ng o	n the	SE	is al	so redu	ced.
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	<u>ces</u> .												
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1	Virtual Service Scaling
2	Each SE has a maximum capacity for processing traffic, typically measured in terms of traffic throughput or SSL transactions per second. The SE capacity is a function of various parameters, such as SE VM size
3	(number of vCPUs, or memory), type of traffic, and the ecosystem in which the SE is functioning.
4	In the default configuration, a virtual service is placed on a single SE. However, if the SE is not sufficient to handle traffic for the virtual service, the virtual service can be scaled out to added SEs. Here, more than one SE handles traffic for the virtual service.
5	Scaling out or scaling in virtual services can be performed manually or automatically.
6	In the case of automated scaling of virtual service placements, one of the following SE parameters can be used to configure thresholds beyond which a virtual service must be scaled out to a new SE, or scaled back into fewer SEs:
/	CPLLutilization of the SE
8	Bandwidth in Mons being served by the SE
9	Connections per second (CPS) being served by the SE
	Packets per second (PPS)
10	For more information on virtual service scaling, see Virtual Service Scaling
11	To more mormation on vital service scaling, see vital service scaling.
12	Figure 2. Screenshot from the NSX product webpage describing "virtual service scaling" with description of SE maximum capacity highlighted in yellow.
13	54. Relatedly, in addition to the virtual service health monitoring discussed above, the
14	Broadcom Load Balancing Accused Products use metric-based thresholds to detect a reduction in
15	availability virtual services within an SE for the purposes of scaling out the virtual service to
16	additional SEs (at least to maintain virtual service availability).
17 18	Virtual Service Scaling
19	Each SE has a maximum capacity for processing traffic, typically measured in terms of traffic throughput or SSL transactions per second. The SE capacity is a function of various parameters, such as SE VM size (number of vCPUs, or memory), type of traffic, and the ecosystem in which the SE is functioning.
20	In the default configuration, a virtual service is placed on a single SE. However, if the SE is not sufficient to
21	handle traffic for the virtual service, the virtual service can be scaled out to added SEs. Here, more than one SE handles traffic for the virtual service.
22	Scaling out or scaling in virtual services can be performed manually or automatically.
23	In the case of automated scaling of virtual service placements, one of the following SE parameters can be used to configure thresholds beyond which a virtual service must be scaled out to a new SE, or scaled back into fewer SEs:
24	CPU utilization of the SE
	Bandwidth in Mbps, being served by the SE
25	Connections per second (CPS) being served by the SE
26	Packets per second (PPS)
27	For more information on virtual service scaling, see Virtual Service Scaling.
21	
28	Figure 3. Screenshot from the NSX product webpage describing "virtual service scaling" with description thresholds for "scaling out" highlighted in yellow.

1	55. As one example, when automatic scaling is enabled, the Broadcom Load
2	Balancing Accused Products detect "when the SE CPU exceeds an 80% average" to consider
3	whether to perform a virtual service scale out or migration operation. ⁴¹ After detecting that "the SE
4	CPU exceeds an 80% average," the Broadcom Load Balancing Accused Products determine
5	whether "one virtual service is generating more than 70% of the PPS [(packets per second)] for the
6	SE."
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27	⁴¹ "VMware Avi Load Balancer 30.2," Broadcom.com (last updated October 31, 2024), <u>https://techdocs.broadcom.com/us/en/vmware-security-load-balancing/avi-load-balancer/avi-load-</u>
28	balancer/30-2/vmware-avi-load-balancer-configuration-guide/load-balancing-overview/autoscale- service-engines/automated-versus-manual-scaling.html.
	COMPLAINT 17



58. The product documentation explains that, after a migration operation, "[i]f further

capacity is required, the virtual service can still be scaled out to additional SEs" (discussed below).⁴⁴

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⁴² *Id*.

⁴³ *Id*.

⁴⁴ *Id*.





controlling and maintaining responsibility for the infringing functionality.

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2 Broadcom and VMware also condition the benefit of the Broadcom Load 65. 3 Balancing Accused Products on Broadcom and VMware's partners performing the infringing 4 functionality and Broadcom and VMware's control of the manner and timing of said performance. 5 For example, Broadcom and VMware maintain a "Shared Responsibility Model" that is "common among the different VMware Cloud Providers" and "defines distinct roles and responsibilities 6 7 between the VMware Cloud Infrastructure Services provider and an organization consuming the service."47 As shown below, Broadcom and VMware maintain responsibility for the "NSX 8 9 Lifecycle." As further confirmation, when describing the AWS implementation, Broadcom and 10 VMware describe one of the goals of the shared responsibility model as being to "[p]rotect VMware-managed objects" including "management appliances" and "hosts."⁴⁸ The "management 11 12 appliances" and "hosts" execute code performing the steps of Claim 6 described above. 13 14 15 [remainder of page intentionally left blank] 16 17 18 19 20 21 22 23 24 25 ⁴⁷ "VMware Cloud Well-Architected Framework for VMware Cloud on AWS," VMware.com 26 (copyright 2023), https://docs.vmware.com/en/VMware-Cloud-Well-Architected-Framework/services/vmcwaf-aws.pdf. 27 ⁴⁸ "VMware Cloud on AWS: vCenter Architecture," VMware.com (copyright 2005-2024), 28 https://vmc.techzone.vmware.com/vmc-arch/docs/compute/vmc-aws-vcenterarchitecture#sec27179-sub1. COMPLAINT 21



1 infringement by the Broadcom Load Balancing Accused Products since at least December 23, 2 2024, when Netflix sent a notice letter to Broadcom's and VMware's Legal Departments by email 3 and/or December 27, 2024 when they were served the same letter in hard-copy. See Exhibit D. That 4 letter identified the '472 Patent, the infringing products, and a brief explanation tying an example 5 claim to the infringing activities. See id. Broadcom and VMware did not respond to that letter or 6 otherwise alter its infringing conduct.

7 69. Broadcom and VMware are sophisticated entities who have engaged in extensive 8 patent litigation across the country. For example, Broadcom has been involved in no less than 45 9 patent cases since 2002.⁵⁰ As another example, Broadcom has at least 83 IP professionals in its legal department.⁵¹ Broadcom and VMware had ample time to review Netflix's notice of its infringing 10 11 activities and deliberately chose to not respond or alter their infringing behavior.

12 70. Broadcom and VMware, jointly and severally, have actively induced and continue to 13 actively induce infringement of at least Claim 6 of the '472 Patent in violation of at least 35 U.S.C. 14 § 271(b).

15 71. Broadcom and VMware's customers directly infringe at least Claim 6 of the 16 '472 Patent when they use the Broadcom Load Balancing Accused Products in the ordinary, 17 customary, and intended way.

18 72. Broadcom and VMware's inducement includes, without limitation and with specific 19 intent to encourage the infringement, knowingly inducing consumers to use the Broadcom Load 20 Balancing Accused Products within the United States in the ordinary, customary, and intended way 21 by, directly or through intermediaries, supplying the Broadcom Load Balancing Accused Products 22 to consumers within the United States and instructing and encouraging such customers to use the 23 Broadcom Load Balancing Accused Products in the ordinary, customary, and intended way, which 24 Broadcom and VMware know or should know infringes at least Claim 6 of the '472 Patent.

²⁶ ⁵⁰ This information was collected from the Docket Navigator research tool by searching for the party "Broadcom Inc." Notably, this estimate does not include other Broadcom entities or 27 subsidiaries.

⁵¹ This information was collected by searching Broadcom's LinkedIn "People" tab, using the 28 search "intellectual property OR patent OR trademark OR copyright," and limiting to individuals listed under "Legal." COMPLAINT 23

1 73. For example, in some cases, Broadcom and VMware sell the Broadcom Load 2 Balancing Accused Products to their customers as software for installation on customer computer(s).⁵² Whenever customers install the Broadcom Load Balancing Accused Products and 3 4 use them to manage virtual services, for example, with the auto-rebalance feature enabled (e.g., 5 virtual service autoscaling), at least Claim 6 of the '472 Patent is performed. Broadcom and 6 VMware specifically intend and instruct their customers to install the Broadcom Load 7 Balancing Accused Products to manage virtual services with, for example, the auto-rebalance 8 feature enabled and therefore specifically intend and instruct their customers to infringe. Broadcom 9 and VMware have provided and continue to provide these instructions to infringe despite knowing 10 of the '472 Patent and knowing or being willfully blind to the fact these activities infringe the '472 11 Patent.

74. By way of example, Broadcom and VMware's instructions to their customers to
infringe are made at least through their creation and distribution of marketing, promotional, and
instructional materials. The promotional and product literature for the Accused Products is
designed to instruct, encourage, enable, and facilitate the user of the Broadcom Load
Balancing Accused Products to use the Broadcom Load Balancing Accused Products in a manner
that directly infringes the '472 Patent. And Broadcom and VMware provide instructions, support,
and technical assistance to their customers in support of committing the infringement.

19 75. One non-limiting example of Broadcom and VMware's inducement includes at least
 20 their creation, distribution, and instruction to customers in VMware Hands-on Labs for NSX.⁵³

- ⁵² See, e.g., "NSX Installation Guide," VMware.com (modified September 9, 2024),
 <u>https://docs.vmware.com/en/VMware-NSX/4.1/nsx_41_install.pdf;</u> VMware Avi Load Balancer
 Installation Guide, VMware Avi Load Balancer 30.2, VMware.com (copyright 2024),
 <u>https://docs.vmware.com/en/VMware-Avi-Load-Balancer/30.2/Installation-Guide.pdf</u>.
- 28 ⁵³ *See, e.g.*, "Try VMware NSX Hands-on Labs for Free," VMware.com <u>https://www.vmware.com/info/nsx/hol</u>; FAQ, VMware.com, <u>https://www.vmware.com/resources/hands-on-labs/faq</u>.

COMPLAINT

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80. Like the Hands-on Labs discussed above, these support documents also provide stepby-step instructions explaining how to use the Broadcom Load Balancing Accused Products in an infringing manner.

81. Thus, Broadcom and VMware have induced their customers to infringe the '472 Patent. Broadcom and VMware's knowing inducement of their customers to infringe has caused and continues to cause damage to Netflix, and Netflix is entitled to recover damages sustained as a result of Broadcom and VMware's wrongful acts in an amount subject to proof at trial.

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INDIRECT INFRINGEMENT: CONTRIBUTORY INFRINGEMENT

Broadcom and VMware have actively contributed to infringement of at least Claim 6
of the '472 Patent in violation of at least 35 U.S.C. § 271(c). Broadcom and VMware sell the
Broadcom Load Balancing Accused Products, which include components specially made or
especially adapted to practice the method claimed in at least Claim 6 of the '472 Patent.

14 83. The infringing components of the Broadcom Load Balancing Accused Products have
15 no substantial function or use other than to practice the invention claimed in at least Claim 6 of the
16 '472 Patent at least because infringement of the claimed method is performed automatically when
17 customers use the Broadcom Load Balancing Accused Products installed on a computer system
18 with the auto-rebalance feature enabled.

19 84. The Broadcom Load Balancing Accused Products include material components of
20 the claimed method recited in at least Claim 6 of the '472 Patent and are not a staple article or
21 commodity of commerce, including because they are specifically configured to infringe according
22 to at least Claim 6 of the '472 Patent (*see* ¶¶ 46-67).

85. Broadcom and VMware's contributory infringements include, without limitation,
making, offering to sell, and/or selling within the United States, and/or importing into the United
States, the Broadcom Load Balancing Accused Products, which each include one or more
components for use in practicing at least Claim 6 of the '472 Patent, knowing the component(s) to
be especially made or especially adapted for use in an infringement of at least Claim 6 of the
'472 Patent (*see* ¶¶ 46-83), and not a staple article or commodity of commerce suitable for

substantial non-infringing use.

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WILLFUL INFRINGEMENT

3 86. As detailed above, Broadcom and VMware had knowledge of the '472 Patent and
4 had knowledge, or were willfully blind, as to Broadcom's and VMware's infringement of the '472
5 Patent.

6 87. Broadcom and VMware's infringement of the '472 Patent has been and is willful and
7 deliberate.

8 88. As discussed above, Broadcom and VMware have had actual knowledge of the '472
9 Patent since at least December 23, 2024, when Netflix sent a notice letter to Broadcom's and
10 VMware's Legal Departments by email and/or December 27, 2024 when they were served the same
11 letter in hard-copy.

12 89. As discussed above, Broadcom knew or should have known that its actions infringe
13 and actively induce infringement of the '472 Patent.

14 90. As discussed above, Broadcom specifically intended that both itself and/or its
15 customers infringe the '472 Patent.

91. Broadcom and VMware's willfulness is further evidenced by VMware's
demonstrated culture of knowingly using patented technology.⁵⁶ Copying other people's patents is
circumstantial evidence of willful infringement and it appears the Accused Products are copies of
the Asserted Patents. Further, VMware's former CEO, who served in that role for ten (10) years,
from October 2013 to December 2023, allegedly testified in deposition that VMware has a culture
of copying.⁵⁷ Upon information and belief, Broadcom continues VMware's culture of copying
today.

92. Broadcom and VMware's willfulness is further evidenced by VMware's culture of
willful blindness toward patents, including intentionally not reviewing third-party patents when
any rational actor would understand—based on, for example, the application rejections in

⁵⁷ *Cirba*, 1:19-cv-00742-GBW ECF 1529, 1531. COMPLAINT

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 ⁵⁶ See, e.g., Cirba Inc. (d/b/a Densify) v. VMware, Inc., Case No. 1:19-cv-00742-GBW ("Cirba"), ECF 1528; 1:19-cv-00742-GBW ECF 1848.
 ⁵⁷ Gi da a 1.10 and 200742 GBW ECF 1848.

VMware's patent applications—that a substantial risk of infringement exists.⁵⁸ Upon information and belief, Broadcom continues that culture today.

93. In fact, two separate juries have found VMware committed willful infringement, in part, because of VMware's culture of copying and refusing to review third-party patents during a time period relevant to this matter.⁵⁹ Upon information and belief, Broadcom continues the pattern and practice of willful infringement today.

94. Thus, Broadcom and VMware have willfully infringed the '472 Patent. Broadcom and VMware's knowing and willful infringement has caused and continues to cause damage to Netflix, and Netflix is entitled to recover damages sustained as a result of Broadcom and VMware's wrongful acts in an amount subject to proof at trial.

SECOND CLAIM FOR RELIEF

Infringement of U.S. Patent No. 7,313,102 (the "'102 Patent")

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95. Netflix incorporates by reference all preceding paragraphs, *supra*.

14 96. Broadcom and VMware, jointly and severally, have infringed and continue to 15 infringe, at least Claim 1 of the '102 Patent, either literally or under the doctrine of equivalents, by 16 making, using, selling, and/or offering for sale within the United States and/or importing into the 17 United States products that are covered by at least Claim 1 of the '102 Patent. These products 18 include, but are not limited to, VMware Cloud Foundation, VMware Cloud on AWS, Azure 19 VMware Solution, Google Cloud VMware Engine, Oracle Cloud VMware Solution, IBM Cloud 20 for VMware Solutions, Alibaba Cloud VMware Service, as well as any other products and/or services incorporating VMware NSX/NSX-T Data Center⁶⁰ (collectively, the "102 Accused 21 22 Products").

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97. Claim 1 of the '102 Patent recites:

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⁵⁸ See, e.g., Cirba, ECF Nos. 1529, ECF 1531, ECF 1848.

Partners, Virware.com, <u>https://www.virware.com/solutions/cloud-partners/</u>, Build humbers and versions of VMware NSX/NSX-T Data Center," Broadcom.com (updated October 21, 2024),
 <u>https://knowledge.broadcom.com/external/article/317797/build-numbers-and-versions-of-vmware-nsx.html</u>.

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 ⁵⁹ Cirba Inc. (d/b/a Densify) v. VMware, Inc., Case No. 1:19-cv-00742-GBW, ECF Nos. 577, 1785.

 ⁶⁰ See, e.g., "Transform Your Apps and Cloud Faster with VMware Cloud," VMware Cloud
 Partners, VMware.com, <u>https://www.vmware.com/solutions/cloud-partners/;</u> "Build numbers and

A method for provisioning subnets, the method comprising:

grouping the subnets into subnet groups based on logical properties of the subnets;

assigning to each network consumer those subnet groups that are accessible to that network consumer; and

6 providing for constrained selection of a particular subnet by a 7 network consumer accomplished by way of a graphical user interface 8 with selectable fields, wherein the constrained selection includes (i) 9 selecting a public or private type address space, (ii) if applicable, 10 selecting a gateway device from amongst those gateway devices that 11 are accessible to the network consumer, and (iii) selecting a subnet 12 group from those subnet groups that are accessible to the network 13 consumer, and (iv) selecting a subnet mask that represents a size of 14 the particular subnet.

15 98. The '102 Accused Products perform a method for provisioning subnets comprising
16 "grouping the subnets into subnet groups based on logical properties of the subnets."

17 99. Broadcom and VMware's NSX Administration Guide provides instructions for configuring and managing networking for VMware NSX.⁶¹ The NSX Administration Guide 18 19 explains that "NSX Virtual Private Clouds (VPCs) is an abstraction layer that simplifies setting up 20 self-contained virtual private cloud networks within an NSX project to consume networking and 21 security services in a self-service consumption model." Within VPCs, users "can add subnets 22 (networks) inside the NSX VPC that is assigned to them" where the "[s]ubnets are realized as overlay segments in the default transport zone of the project."⁶² NSX provides for selecting from 23 24 two groups of subnets based on the logical properties of the subnets. For example, NSX supports 25 both tier-0 and tier-1 subnets.

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 ⁶¹ "NSX Administration Guide," VMware.com (modified October 9, 2024), <u>https://docs.vmware.com/en/VMware-NSX/4.2/nsx_42_admn.pdf</u>.
 ⁶² Id.

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If you configure route redistribution for the tier-0 gateway, you can select from two groups of sources: tier-0 subnets and advertised tier-1 subnets. The sources in the tier-0 subnets group are:

Source Type	Description
Connected Interfaces and Segments	Redistribute all subnets configured on Interfaces and routes related to tier-0 segments, tier-0 DNS Forwarder IP, tier-0 IPsec Local IP, tier-0 NAT types. Redistribute subnets configured on segments connected to tier-0.

Figure 14. Annotated NSX Administrator Guide discussing the tier-0 subnet group.

Source Type	Description
Connected Interfaces & Segments / VPC Subnets	 Redistribute subnets configured on segments and advertised from the connected tier-1 gateway. Redistribute subnets configured in NSX VPC and advertised from the connected NSX VPC. NSX VPC advertises all its public subnets to the connected tier-0 gateway.
Figure 15. Annota	ted NSX Administrator Guide discussing the tier-1 subnet group.
100. Broadcom	and VMware explain that a "Tier-0 [logical router (LR)] connects to
or more physical routers	northbound using Uplink Port and connects to Tier-1 LRs or directly
logical switches southbou	and via a downlink port" while a "Tier-1 LR connects to a Tier-0 LR (
link is known as Route	rLink) northbound and it connects to one or more logical swite
southbound using Downl	ink port." ⁶³
101. The '102 A	ccused Products perform the step of "assigning to each network consu
those subnet groups that a	are accessible to that network consumer."
102. As discusse	ed above, through NSX, users "can add subnets (networks) inside the N
VPC that is assigned to the	nem." ⁶⁴
<u></u>	
⁶⁵ Amit Aneja, "NSX-T: N https://blogs.vmware.com/ architecture.html	Iulti-Tiered Routing Architecture," VMware.com (February 20, 2013 /networkvirtualization/2018/02/nsx-t-multi-tiered-routing-
⁶⁴ "NSX Administration G https://docs.vmware.com/g	uide," VMware.com (modified October 9, 2024), en/VMware-NSX/4.2/nsx_42_admn.pdf.
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VPC Name	VPC Users	IP Address Blocks
Order Management	Jim: VPC Admin Bob: Network Operator Carol: Security Operator	Private IPv4 block: 172.16.0.0/24 External IPv4 block: 192.168.1.0/2
Analytics	Mike: VPC Admin Steve: Network Operator Maria: Security Operator	Private IPv4 block: 172.18.0.0/24 External IPv4 block: 192.168.1.0/2

security policies for these workloads. The security policies impact only the workloads within the NSX VPC and not outside the NSX VPC.

Figure 16. Annotated NSX Administrator Guide discussing user's ability to add subnets inside the NSX VPC.⁶⁵

12 103. The '102 Accused Products perform the step of "providing for constrained selection 13 of a particular subnet by a network consumer accomplished by way of a graphical user interface 14 with selectable fields, wherein the constrained selection includes (i) selecting a public or private 15 type address space, (ii) if applicable, selecting a gateway device from amongst those gateway 16 devices that are accessible to the network consumer, and (iii) selecting a subnet group from those 17 subnet groups that are accessible to the network consumer, and (iv) selecting a subnet mask that 18 represents a size of the particular subnet."

19 104. When adding a subnet, the user can specify the following subnet properties: name,
20 access mode, IP assignment, size, IP CIDR, and an optional description.

⁶⁵ "NSX Virtual Private Clouds," VMware.com (updated April 26, 2024),
 https://docs.vmware.com/en/VMware-NSX/4.2/administration/GUID-45670D79-7CBE-424D-

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B1D3-B9BB3B6D8C88.html.

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5. Click Add Subnet. 1 6. Configure the subnet properties. 2 Property Description 3 Name Enter a name for the subnet. Select any one of these access modes: Private, Public, Isolated. 4 To learn more these access modes, see the Access Modes for NSX VPC Subnets section in Access Mode NSX Virtual Private Clouds. 5 By default, private is selected. 6 By default, Automatic IP assignment is set for private and public subnets. It means that the system will assign an IPv4 CIDR for the subnet automatically. For a public subnet, the CIDR is assigned from the external IPv4 blocks of the NSX VPC. For a private subnet, the CIDR is 7 assigned from the private IPv4 blocks of the NSX VPC. **IP** Assignment For isolated subnets, only Manual IP assignment mode is supported. 8 In Manual IP assignment mode, you must enter a valid IPv4 CIDR for the subnet. 9 This property is applicable only when you select the Automatic IP assignment mode. Select a size from the drop-down menu. System reserves four IP addresses for internal use, 10 such as subnet network address, subnet gateway address, subnet broadcast address, DHCP Size server address. 11 For example, if you select size as 32, you can attach a maximum of 28 workloads to the subnet. 12 This property is applicable only when you select the Manual IP assignment mode. Enter the IPv4 subnet address in a CIDR format. For example, 172.16.0.1/24 13 IP CIDE You can enter only one IPv4 CIDR. If the IPv4 CIDR that you entered is invalid or unavailable for assignment, the system throws an appropriate error message. You must enter a different 14 IPv4 CIDR until the system accepts it. Description Optionally, enter a description for the subnet. 15 16

Figure 17. NSX Administrator Guide discussing subnet properties.

105. For example, as shown above in Figure 17, a user can specify whether the subnet 17 uses a public, private, or isolated access mode. In a public subnet, "the IPv4 addresses in the public 18 subnets are reachable both from the project and outside the project."⁶⁶ In contrast, "[w]orkloads on 19 an isolated subnet can communicate with each other but cannot communicate with workloads on 20 private or public subnets within the same NSX VPC" while "[w]orkloads that are attached to a 21 private subnet can communicate with workloads on other private or public subnets within the same 22 NSX VPC."⁶⁷ Figure 18 shows a user is able to specify a subnet within the IP address blocks made 23 accessible to that user. Additionally, a user can select a size of the subnet from a drop-down menu. 24 In at least some implementations of NSX, a user could also provision a subnet and specify the 25 gateway IP: 26

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⁶⁶ Id.

IP Addr	ress Pool (#IP Address Pool Subnets 1			
ADD S	SUBNET Y		COLLAPSE AL	L Q Search	
	Source	IP Ranges / Block			
:	IP Ranges	(172.31.102.31-172.31.102.40 × Enter IPv4 or IPv6 Ranges Example: IPv4 Range - 192.168.1 2001:0fff.ffff.ffff.ffff.ffff.ffff.ffff.f	2.1-192.168.12.60, IPv6 Range - 2	001:800::-	*
	CIDR *	172.31.102.0/24	Gateway IP	172.31.102.1	
	ADD	CANCEL			
				CANCEL	
Figure 1	8. Showing s	upport for Gateway Broad	IP specification as com's NSX. ⁶⁸	part of subnet pro	visionir
106	. Broadcom	and VMware's d	ocuments show	that the subnet	is suce
provisioned	l as overlay s	egments in the defau	lt transport zone of	the project:	
		[remainder of page	e intentionally left	blank]	
		VTMonogon 25 "	TheOddAngryShot	$t_{\rm com}$ (April 28, 20)20)

1	Results
2	When a subnet is realized successfully in the NSX VPC, the Status column shows Successful.
	Subnets in an NSX VPC are realized as overlay segments in the default transport zone of the
3	An Enterprise Admin or a Project Admin can view these overlay segments by doing these steps:
4	1 Ensure that you are in the project view.
5	2 Navigate to Networking > Segments.
6	3 Click the VPC realized objects check box at the bottom of the Segments page.
7	For example:
8	Segments
9	NSX Profiles
10	ADD SEGMENTS
10	Name Connected Gateway Transport Zone
11	: > roject Default Transport Zone
12	: > sales_segment Sales_T1 Project Default Transport Zone
13	: > sales_vpc_subnet @ sales_vpcTIER1sales_vpc Project Default Transport Zone
14	
15	Figure 19. NSX Administrator Guide discussing admin roles. ⁹⁹
16	107. Accordingly, the '102 Accused Products perform all steps of Claim 1 of the
17	'102 Patent.
18	DIRECT INFRINGEMENT
19	108 Broadcom and VMware directly infringe the '102 Patent in multiple ways
20	100 Broadcom and VMware directly infringe the '102 Patent when they perform the
21	alaimed methods of the '102 Detent in violation of at loss 25 U.S.C. & 271(a) by providing the
	charmed methods of the 102 ratent, in violation of at least 55 U.S.C. § 271(a), by providing the
	102 Accused Products as a service.
23	
24	[remainder of page intentionally left blank]
25	
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28	⁶⁹ "Add a Subnet in an NSX VPC," VMware.com (updated February 15, 2024), <u>https://docs.vmware.com/en/VMware-NSX/4.2/administration/GUID-CC2A7BC0-3021-4312-</u> AF8C-941A995EE8E5.html.
	COMPLAINT 36

What is VMware Cloud on AWS?

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VMware Cloud [™] on AWS brings VMware's enterprise-class SDDC software to the AWS Cloud with optimized access to AWS services. Powered by VMware Cloud Foundation, VMware Cloud on AWS integrates VMware compute, storage and network virtualization products (VMware vSphere®, vSAN[™] and NSXS) along with VMware vCenter management, optimized to run on dedicated, elastic, bare-metal AWS infrastructure.

...

How do I sign up for the service?

Please contact your VMware account teams AWS account team or AWS partner network. You can learn more about the onboarding process with our Ouick Start.

Figure 20. Annotated screenshot from VMware Cloud Tech Zone FAQ page explaining the VMware Cloud on AWS Service and how to sign up.

110. When a customer signs up for and uses a NSX cloud-based service (*e.g.*, VMware Cloud on AWS), Broadcom and VMware perform the claimed methods as discussed above by controlling and maintaining responsibility for the infringing functionality. Alternatively, Broadcom and VMware condition the benefit of the '102 Accused Products on Broadcom's partners performing the infringing functionality and Broadcom and VMware's control of the manner and timing of said performance.

111. For example, Broadcom and VMware maintain a "Shared Responsibility Model" that 15 is "common among the different VMware Cloud Providers" and "defines distinct roles and 16 responsibilities between the VMware Cloud Infrastructure Services provider and an organization 17 consuming the service."⁷⁰ As shown below, Broadcom and VMware maintain responsibility for the 18 "vSphere Lifecycle." As further confirmation, when describing the AWS implementation, 19 Broadcom and VMware describe one of the goals of the shared responsibility model as being to 20 "[p]rotect VMware-managed objects" including "management appliances" and "hosts."⁷¹ The 21 "management appliances" and "hosts" execute code performing the steps of Claim 1 described 22 above. 23

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 ⁷⁰ "VMware Cloud Well-Architected Framework for VMware Cloud on AWS," VMware.com (copyright 2023), <u>https://docs.vmware.com/en/VMware-Cloud-Well-Architected-</u>
 <u>Framework/services/vmcwaf-aws.pdf</u>.

 ⁷¹ "VMware Cloud on AWS: vCenter Architecture," VMware.com (copyright 2005-2024), <u>https://vmc.techzone.vmware.com/vmc-arch/docs/compute/vmc-aws-vcenter-architecture#sec27179-sub1</u>.



notice letter to Broadcom's and VMware's Legal Departments. *See* Exhibit D. That letter identified the '102 Patent, the infringing products, and a brief explanation tying an example claim to the infringing activities. *See id.* Broadcom and VMware did not respond to that letter or otherwise alter its infringing conduct.

114. Broadcom and VMware are sophisticated entities who have engaged in extensive patent litigation across the country. For example, Broadcom has been involved in no less than 45 patent cases since 2002.⁷³ As another example, Broadcom has at least 83 IP professionals in its legal department.⁷⁴ Broadcom and VMware had ample time to review Netflix's notice of its infringing activities and deliberately chose to not respond or alter their infringing behavior.

10 115. Broadcom and VMware, jointly and severally, have actively induced and continue to
actively induce infringement of at least Claim 1 of the '102 Patent in violation of at least 35 U.S.C.
§ 271(b).

13 116. Broadcom and VMware's customers directly infringe at least Claim 1 of the 14 '102 Patent when they use the '102 Accused Products in the ordinary, customary, and intended 15 way. Broadcom and VMware's inducements include, without limitation and with specific intent to 16 encourage the infringement, knowingly inducing consumers to use the '102 Accused Products 17 within the United States in the ordinary, customary, and intended way by, directly or through 18 intermediaries, supplying the '102 Accused Products to consumers within the United States and 19 instructing and encouraging such customers to use the '102 Accused Products in the ordinary, 20 customary, and intended way, which Broadcom knows or should know infringes at least Claim 1 21 of the '102 Patent.

- 117. Broadcom and VMware sell the '102 Accused Products as software for installation
 on customer computer(s).⁷⁵ When Broadcom's customers install the '102 Accused Products and
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 ⁷³ This information was collected from the Docket Navigator research tool by searching for the party "Broadcom Inc." Notably, this estimate does not include other Broadcom entities or subsidiaries.

 ⁷⁴ This information was collected by searching Broadcom's LinkedIn "People" tab, using the search "intellectual property OR patent OR trademark OR copyright," and limiting to individuals listed under "Legal."
 ⁷⁵ See e.g. "NSX Installation Guide" VMware com (modified September 9, 2024)

^{28 &}lt;sup>75</sup> See, e.g., ¹ NSX Installation Guide," VMware.com (modified September 9, 2024), <u>https://docs.vmware.com/en/VMware-NSX/4.1/nsx_41_install.pdf;</u> VMware Avi Load Balancer

provision a subnet, at least Claim 1 of the '102 Patent is performed. In at least this way, the customers of Broadcom directly infringe the '102 Patent *while* Broadcom and VMware know of the '102 Patent, know or should know that these activities infringe the '102 Patent, and specifically intend and instruct for their customers to infringe. Broadcom and VMware have provided and continue to provide these instructions to infringe despite knowing of the '102 Patent and knowing or being willfully blind to the fact these activities infringe the '102 Patent.

118. Broadcom and VMware's instructions to their customers to infringe are made at least through their creation and distribution of marketing, promotional, and instructional materials. The promotional and product literature for the Accused Products is designed to instruct, encourage, enable, and facilitate the user of the '102 Accused Products to use the '102 Accused Products in a manner that directly infringes the '102 Patent. And Broadcom and VMware provide instructions, support, and technical assistance to their customers in support of committing the infringement.

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119. One non-limiting example of Broadcom and VMware's inducement includes at least
 VMware Hands-on Labs for NSX-based products.⁷⁶

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16	We have ever 20 labs on the latert VMusice Bredwite and Celutions, including uCohere, Medicable One 1997 uCAN, uDealize Suite, VMusice Cloud		
17	plus Cloud Native Application development offerings and many more.		
18			
19	Figure 22. Screensnot from VMware Hanas-on Lab FAQ page showing application to NSX products.		
20			
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25			
26 27	Installation Guide, VMware Avi Load Balancer 30.2, VMware.com (copyright 2024), https://docs.vmware.com/en/VMware-Avi-Load-Balancer/30.2/Installation-Guide.pdf.		
28	⁷⁶ See, e.g., "Try VMware NSX Hands-on Labs for Free," VMware.com <u>https://www.vmware.com/info/nsx/hol;</u> FAQ, VMware.com, <u>https://www.vmware.com/resources/hands-on-labs/faq</u> .		
	COMPLAINT 40		



121. Broadcom and VMware offer VMware Hands-on Labs directly related to use of NSX functionality that infringes the '102 Patent. For example, Broadcom offers a VMware Hands-on Lab on "VMware NSX – Advanced Networking (HOL-2540-02-VCF-L)," which is described as covering "advanced configurations for experienced users, including dynamic routing, multicast, VRF, Active/Active Gateways, Multi-Tenancy, VPCs, VPNs, and NSX federation capabilities for network and security self-service." This exemplary lab has a specific module on "Multi-Tenancy with NSX Projects and Virtual Private Clouds (VPC)."



Figure 25. Screenshot from VMware Hands-on Lab Catalog for "VMware NSX – Advanced Networking (HOL-2540-02-VCF-L)" with the title highlighted in yellow and a red arrow highlighting a specific module.

17 122. Broadcom and VMware thus encourage their customers to infringe the '102 Patent
at least by instructing customers on how to infringe by providing "manuals and built in modules"
in proximity to "actual VMware products" for customers to practice infringing conduct through
their VMware Hands-on Labs.
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	Case 3:25-cv-03738 Document 1 Filed 04/29/25 Page 44 of 61
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2	Lab: HOL-SDC-1304 - vSphere Performance Optimization
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4	Site A vSphere Clent: Site A vCenter Admin Wwware vBendmark
5	vmware
6	
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9	VMware vSphere Web Client
10	Password:
11	Actual VMware products online!
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13	Figure 26. Screenshot from VMware YouTube video titled "What are VMware Hands-on Labs?"
14	123 Besides the VMware Hand-on Labs discussed above. Broadcom and VMware
15	publicly share numerous instructions, troubleshooting manuals, and product documentations
16	through Broadcom's support portal (https://support.broadcom.com/) and at
17	https://docs.vmware.com/en/VMware-NSX/index.html.
18	124. Like the Hands-on Labs discussed above, these support documents also provide step-
19	by-step instructions explaining how to use the '102 Accused Products in an infringing manner to
20	provision subnets in NSX.
21	125. Thus, Broadcom and VMware have induced their customers to infringe the
22	'102 Patent. Broadcom and VMware's knowing inducement of their customers to infringe has
23	caused and continues to cause damage to Netflix, and Netflix is entitled to recover damages
24	sustained as a result of Broadcom and VMware's wrongful acts in an amount subject to proof at
25	trial.
26	INDIRECT INFRINGEMENT: CONTRIBUTORY INFRINGEMENT
27	126. Broadcom and VMware have actively contributed to infringement of at least Claim 1
28	of the '102 Patent in violation of at least 35 U.S.C. § 271(c). Broadcom and VMware sell the
	COMPLAINT 43

'102 Accused Products which are software specially made or especially adapted to practice the method claimed in at least Claim 1 of the '102 Patent.

127. The '102 Accused Products have no substantial function or use other than to practice the invention claimed in at least Claim 1 of the '102 Patent at least because infringement of the claimed method is performed automatically when customers install the '102 Accused Products on a computer system and provision a subnet.

128. The '102 Accused Products are material components of the claimed method recited 8 in at least Claim 1 of the '102 Patent and are not a staple article or commodity of commerce, including because they are specifically configured to infringe according to at least Claim 1 of the '102 Patent (see ¶¶ 95-112).

11 129. Broadcom and VMware's contributory infringements include, without limitation, 12 making, offering to sell, and/or selling within the United States, and/or importing into the United 13 States, the '102 Accused Products, which each include one or more components for use in 14 practicing at least Claim 1 of the '102 Patent, knowing the component to be especially made or 15 especially adapted for use in an infringement of at least Claim 1 of the '102 Patent (see ¶¶ 95-127), 16 and not a staple article or commodity of commerce suitable for substantial non-infringing use.

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WILLFUL INFRINGEMENT

18 130. As detailed above, Broadcom and VMware had knowledge of the '102 Patent and 19 had knowledge, or were willfully blind, as to Broadcom's and VMware's infringement of the '102 20 Patent.

21 131. Broadcom and VMware's infringement of the '102 Patent has been willful and 22 deliberate.

23 132. As discussed above, Broadcom and VMware have had knowledge of the '102 Patent 24 since at least December 23, 2024, when Netflix sent a notice letter to Broadcom's and VMware's 25 Legal Departments by email and/or December 27, 2024 when they were served the same letter in 26 hard-copy.

27 133. As discussed above, Broadcom and VMware knew or should have known that their 28 actions constitute infringement or recklessly disregarded those facts.

134. The willfulness facts for the '472 Asserted Patent, ¶¶ 86-94, *supra*, are incorporated by reference herein.

135. Broadcom and VMware have willfully infringed the '102 Patent. Broadcom and VMware's knowing and willful infringement has caused and continues to cause damage to Netflix, and Netflix is entitled to recover damages sustained as a result of Broadcom and VMware's wrongful acts in an amount subject to proof at trial.

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THIRD CLAIM FOR RELIEF

Infringement of U.S. Patent No. 7,649,912 (the "'912 Patent")

136. Netflix incorporates by reference all preceding paragraphs, *supra*.

10 137. Broadcom has infringed and continues to infringe, at least Claim 1 of the '912 Patent, 11 either literally or under the doctrine of equivalents, by making, using, selling, and/or offering for 12 sale within the United States and/or importing into the United States products that are covered by at least Claim 1 of the '912 Patent. These products include but are not limited to, the BCM56070; 13 14 BCM88690; BCM88860; StrataDNX devices including, but not limited to, StrataDNX 28.8 T/s 15 StrataDNX Ethernet Switch Router Series, StrataDNX 10 Tb/s Scalable Switching Device and 440 16 Gb/s TSN Ethernet Switch; BroadPTP 1588 Software Suite; BroadSync firmware for enabling 17 synchronization between BroadSync slave devices (switch chips) and BroadSync Master devices; 18 Optical PHYs; Industrial Broad-R Reach; mGig PHYs; Gigabit PHYs; Roboswitch; StrataXGSs; 19 10GBASE-T PHYs; Automotive Switches, as well as any other Ethernet-based products 20 implementing and supporting the PTPv2 specification (collectively, "Broadcom Switching 21 Accused Products").

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1	Broadcom's BCM56070	Broadcom's BCM88690	Broadcom's BCM88860			
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3	9 monorcon					
4		88690	BCM88860 Jericho3			
5	Key Features					
6	 Non-blocking architecture with line-rate performance 	Key Features	Key Features			
/	Flexible I/O that supports IG/2.5G/5G/10G/25G/40G/	switching and routing device.	Highly-integrated StrataDNX scalable switching and routing			
8	50G/100G port speedsSupport for direct connect to mGig	 Highly scalable, field-proven StrataDNX traffic manager, with deep packet buffers 	device.			
9 10	PHYs • Line-rate MACsec	 Advanced and programmable packet processor, with built-in 	StrataDNX traffic manager, with deep packet buffers.			
10	VxLAN support for next-generation wireless LAN and SDN support	support for data center and carrier applications.	 Advanced and programmable packet processor, with built-in 			
11	 Support for port extender applications (eTAG, VN-Tag, HiGig™) 	Hardware support for IEEE 1588v2 and SyncE implementations with	support for data center and carrier applications.			
12	 VRF to support isolated Layer 3 domains in a multi-tenant 	nanosecond-scale time stamping.Large on-chip tables with off-chip	Hardware support for IEEE 1588v2 and SyncE implementations with			
13	Full IPv4 and IPv6 routing support	expandability.	nanosecond-scale time stamping.Large on-chip tables with off-chip			
15	 IEEE 1588 transparent clock and synchronized Ethernet (SyncE) 		expandability.			
16	Figure 27. Exemplary Broadcom products that practice the claims of the '912 Patent. ⁷⁹					
17	158. Ulaim I the 912 Patent recites:					
18	nodes on a network including a time master node having a master					
19	clock and including at least one time slave node the method					
20	comprising:					
21	connecting the plurality of nodes through a full duplex					
22	Ethernet network with a daisy-chain connection of the nodes to each					
23	other;					
24	transmitting a time synchronization message frame from one					
25	of the plurality of nodes to a second one of said plurality of nodes, the					
26						
27	https://docs.broadcom.com/docs/56070-PB; BCM88690 StrataDNX TM 10 Tb/s Scalable Switching					
28	$\frac{PB100}{Brief, Broadcom.com (copyright 2018), https://docs.broadcom.com/doc/88860-PB.$					

COMPLAINT

time synchronization message frame having a timestamp field according to IEEE 1588 standard and a checksum field and a cyclic redundancy checking code;

at a given one of the plurality of nodes between the first and second nodes:

(i) receiving the time synchronization message frame;

(ii) reading a timestamp value of a timestamp field of the time synchronization message frame;

(iii) near a time of retransmission of the time synchronization message frame from the given node, adjusting the read timestamp value in the timestamp field by an amount of delay between time of reception and a time of the retransmission to produce a corrected timestamp value;

(iv) writing the corrected timestamp value over the timestamp
value of the timestamp field of the time synchronization message
frame;

(v) adjusting a checksum value in the checksum field and
adjusting the cyclic redundancy checking code of the time
synchronization message frame to account for adjusting the
timestamp value; and

21 (vi) transmitting the time synchronization message frame
22 from the given node; and

providing a highest priority to process and forward time
synchronization message frames and lower priorities to process and
forward other types of message frames.

26 139. The Broadcom Switching Accused Products implement a "method of synchronizing
27 node clocks within a plurality of nodes on a network including a time master node having a master
28 clock and including at least one time slave node."

COMPLAINT

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140. The Broadcom Switching Accused Products implement a precision clock synchronization protocol for networked measurement and control systems.⁸⁰ Specifically, the Broadcom Switching Accused Products include a Boundary clock, that is a "system with multiple connections – one source port and one or more sink ports."⁸¹ The Boundary clock system configuration is exemplified in the below figure from Broadcom's User Guide:



Figure 28. Graphic explaining PTP system configuration from the product user guide.

141. The Broadcom Switching Accused Products perform the step of "connecting the plurality of nodes through a full duplex Ethernet network with a daisy-chain connection of the nodes to each other."

14 142. The Broadcom Switching Accused Products utilize a "clock synchronization 15 protocol. This protocol is applicable to distributed systems consisting of one or more nodes, 16 communicating over a network. . . . The protocol provides a mechanism for synchronizing the clocks of participating nodes to a high degree of accuracy and precision."⁸² "Clocks communicate 17 with each other over a network. . . . PTP works on any packet-based system. PTP is designed to 18 19 work in a multicast environment, although it is possible to design unicast PTP components and systems. Ethernet is an ideal network for implementing PTP."⁸³ The PTP provides synchronization 20 21 of one or more nodes communicating over a distributed network system (such as Ethernet network) 22 and may be implemented within distributed topologies, such as a daisy-chain topology.⁸⁴

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 ⁸⁰ "Broadcom Ethernet Network Adapter User Guide," PTP Specification, Broadcom.com (last updated October 21, 2024), <u>https://techdocs.broadcom.com/us/en/storage-and-ethernet-</u> <u>connectivity/ethernet-nic-controllers/bcm957xxx/adapters/Configuration-adapter/precision-time-</u> <u>protocol/ptp-specification.html</u>.

 $[] ^{81}$ *Id.*

²⁶ || ⁸² IEEE Std 1588TM-2008 at 16.

27 $\| ^{83}$ *Id.* at 208.

28 ⁸⁴ *See, e.g.*, Get In Sync! IEEE1588v2 Transparent Clock Benefits for Industrial Control Distributed Networks, Microchip.com (March 22, 2012),

143. The Broadcom Switching Accused Products also perform the step of "transmitting a time synchronization message frame from one of the plurality of nodes to a second one of said plurality of nodes, the time synchronization message frame having a timestamp field according to IEEE 1588 standard and a checksum field and a cyclic redundancy checking code."

144. The Broadcom Switching Accused Products transmit messages "between the source clock and the sink clocks on the network."⁸⁵ These messages include Sync messages sent by the source clock to the sink clocks, containing "the current time as measured by the source clock" along "with an accurate timestamp that is generated at both the transmit time and receive time."⁸⁶

9 145. In the IEEE 1588-2008 PTP standard, a "Sync message is transmitted by a master to 10 its slaves."⁸⁷ The sync message "either contains the time of its transmission or is followed by a 11 Follow_Up message containing this time."⁸⁸ "The message exchange pattern is as follows: a) The 12 master sends a Sync message to the slave and notes the time t_1 at which it was sent" and "b) The 13 slave receives the Sync message and notes the time of reception t_2 ."⁸⁹

14 146. Once the Sync message is sent, the "<residenceTime>" is "added to the 15 correctionField of the Sync event message by the egress port of the clock" which makes "any 16 needed corrections to checksums or other content dependent fields of the message."⁹⁰ The 17 Broadcom Switching Accused Products include one-step clock features including "On-the-fly 18 egress packet modification including UDP checksum updates and CRC updates."⁹¹ In this way, the 19 Sync message essentially includes a timestamp field, a checksum field, and the other content

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- $24 \parallel \frac{}{86}$ Id.
- 25 87 IEEE Std 1588TM-2008 at 42.
- $26 ||^{-88} Id.$
- ⁸⁹ IEEE Std 1588TM-2008 at 34.
- ²⁷ || ⁹⁰ IEEE Std 1588TM-2008 at 117.
- ⁹¹ Broadcom BCM56072/BCM56071N Low-Power 440G Switch Data Sheet, Broadcom.com (September 28, 2020), <u>https://docs.broadcom.com/doc/56072-56071N-DS1-PUB</u>.

^{21 &}lt;u>https://ww1.microchip.com/downloads/aemDocuments/documents/OTH/ApplicationNotes/Applic</u> <u>ationNotes/GetinSync-WP.pdf</u>.

 ⁸⁵ "Broadcom Ethernet Network Adapter User Guide," PTP Specification, Broadcom.com (last updated October 21, 2024), <u>https://techdocs.broadcom.com/us/en/storage-and-ethernet-connectivity/ethernet-nic-controllers/bcm957xxx/adapters/Configuration-adapter/precision-time-protocol/ptp-specification.html.
</u>

dependent fields according to the IEEE 1588 standard.

147. As part of this method, the Broadcom Switching Accused Products perform steps "at a given one of the plurality of nodes between the first and second nodes" including "(i) receiving the time synchronization message frame and (ii) reading a timestamp field of the time synchronization message frame."

6 148. In the precision time protocol utilized by the Broadcom Switching Accused Products, 7 a sink clock "determines the time by receiving time synchronization messages from the source clock."92 8

9 149. The Broadcom Switching Accused Products use a Sync message that is transmitted 10 by a master to its slaves. The Sync message "may be used by a receiving node to measure the packet transmission delay from the master to the slave."⁹³ A transparent clock then generates an "ingress 11 12 timestamp for all version 2 event messages [] indicating the time of receipt of the event message on the ingress port."94 In this way, a receiving node receives the Sync message with the 13 14 correctionField, and the correctionField indicates a time value in nanoseconds.

15 150. The Broadcom Switching Accused Products further perform the step of "(iii) near a 16 time of retransmission of the time synchronization message frame from the given node, adjusting 17 the read timestamp value in the timestamp field by an amount of delay between time of reception 18 and a time of the retransmission to produce a corrected timestamp value" and the step of "iv) 19 writing the corrected timestamp value over the timestamp value of timestamp field of the time 20 synchronization message frame."

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151. The Broadcom Switching Accused Products also feature a Transparent clock capable of "correct[ing] network delays to improve the accuracy of the time distribution."⁹⁵ In the Transparent clock's peer-to-peer mode, as the source sends its timestamped Sync message to the

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⁹² *Id*.

⁹³ IEEE Std 1588[™]-2008 at 42.

²⁶ ⁹⁴ *Id.* at 117.

²⁷ ⁹⁵ "Broadcom Ethernet Network Adapter User Guide," PTP Specification, Broadcom.com (last updated October 21, 2024), https://techdocs.broadcom.com/us/en/storage-and-ethernet-28 connectivity/ethernet-nic-controllers/bcm957xxx/adapters/Configuration-adapter/precision-timeprotocol/ptp-specification.html.

sinks, each network element along the way receives and adds the measured time delay correction to the Sync message.⁹⁶

3 152. The precision time protocol utilized by the Broadcom Switching Accused Products 4 discloses that before transmitting the Sync message, the egress port computes a residence time and 5 adds it to the timestamp value in the correctionField of the Sync message to generate a corrected 6 timestamp value. This correction is based on the difference in the timestamp generated when the 7 Sync message enters and leaves the transparent clock. Specifically, the Broadcom Switching 8 Accused Products utilize a method of residence time computation, in which the "residence time for 9 each such event message shall be computed for each egress port" and the residence time is 10 calculated by subtracting the ingress timestamp from the egress timestamp.⁹⁷ The Broadcom 11 Switching Accused Products then utilize a residence time correction for Sync messages wherein 12 the residence time is "added to the correctionField of the Sync event message by the egress port of the clock as the Sync event message is being transmitted."⁹⁸ 13

14 153. The Broadcom Switching Accused Products perform the step of "(v) adjusting a
15 checksum value in the checksum field and adjusting the cyclic redundancy checking code of the
16 time synchronization message frame to account for adjusting the timestamp value" and the step of
17 "(vi) transmitting the time synchronization message frame from the given node."

18 154. In the Broadcom Switching Accused Products, corrections are made to checksum
and other content dependent fields based on the corrected timestamp value. The PTP message frame
modification includes UDP checksum updates and CRC updates. Specifically, in the Broadcom
Switching Accused Products, the residence time is "added to the correctionField of the Sync event
message by the egress port of the clock as the Sync event message is being transmitted."⁹⁹ "The
egress port shall make any needed corrections to checksums or other content dependent fields of
the message."¹⁰⁰ Further, the one-stop clock within the Broadcom Switching Accused Product

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- ⁹⁶ *Id.* ⁹⁷ IEEE Std 1588[™]-2008 at 117.
- 27 98 Id.
- $28 ||^{99}$ *Id.* at 117.
 - ¹⁰⁰ *Id.* at 117.
 - COMPLAINT

features "[o]n-the-fly egress packet modification including UDP checksum updates and CRC
updates."¹⁰¹ "All modifications to Correction Field are handled in hardware with a very short
residence time."¹⁰²

155. Finally, the Broadcom Switching Accused Products also perform the step of "providing a highest priority to process and forward time synchronization message frames and lower priorities to process and forward other types of message frames."

7 156. The precision time protocol utilized by the Broadcom Switching Accused Products recommends "that PTP event messages be sent in high priority compared with other data."¹⁰³ 8 9 Implementations of the Broadcom Switching Accused Products' precision time protocol "must 10 ensure that adequate computing and memory resources are available to meet these requirements. 11 Implementations must also ensure that the resources needed by the PTP implementation have 12 adequate priority over other applications sharing these resources to meet the PTP and servomechanism timing requirements. PTP tasks should be assigned the highest priority in an 13 14 implementation, similar to priorities assigned to the protocol stack and other operating system resources."104 15

16 157. Accordingly, the Broadcom Switching Accused Products perform all steps of
17 Claim 1 of the '912 Patent.

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DIRECT INFRINGEMENT

158. Broadcom directly infringes the '912 Patent in multiple ways.

20 159. Broadcom directly infringes the '912 Patent at least when the Broadcom Switching
21 Accused Products, automatically and by design, perform the steps of Claim 1 of the '912 Patent, in
22 violation of at least 35 U.S.C. § 271(a).

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 ¹⁰¹ Broadcom BCM56072/BCM56071N Low-Power 440G Switch Data Sheet, Broadcom.com (September 28, 2020), <u>https://docs.broadcom.com/doc/56072-56071N-DS1-PUB</u>.
 ¹⁰² Id.

 $28 ||^{103}$ IEEE Std 1588TM-2008 at 17.

¹⁰⁴ *Id.* at 190.



	Case 3:25-cv-03738 Document 1 Filed 04/29/25 Page 55 of 61				
1 2 3 4					
5 6 7	BCM88860 Jericho3				
8 9	Figure 31. Broadcom's StrataDNX TM 28.8 Tb/s StrataDNX TM Ethernet Switch Router Series (BCM88860). ¹⁰⁷				
10	160. Broadcom offers to sell and sells the Broadcom Switching Accused Products on its				
11 12 13	website via a button to contact Broadcom's Sales Americas. BCM56070 Series Contact Sales Americas				
14 15	440 Gb/s TSN Ethernet Switch with MACsec Encryption				
16 17	BCM88690 Contact Sales Americas				
18 19	10 Tb/s StrataDNX™ Jericho2 Ethernet Switch Series				
20 21	BCM88860 Contact Sales Americas				
22 23	Jericho3 — 28.8 Tb/s StrataDNX™ Ethernet Switch				
24	Router Series				
25	Figure 32. Broadcom offers the Broadcom Switching Accused Products for sale. ¹⁰⁸				
26 27 28	 ¹⁰⁷ BCM88860 StrataDNXTM 28.8 Tb/s StrataDNXTM Ethernet Switch Router Series Product Brief, Broadcom.com (copyright 2023), <u>https://docs.broadcom.com/doc/88860-PB</u>. ¹⁰⁸ BCM56070, 440 Gb/s TSN Multilayer Switch Product Brief, Broadcom.com (copyright 2020), <u>https://docs.broadcom.com/doc/56070-PB</u>; BCM88690 StrataDNXTM 10 Tb/s Scalable Switching Device Product Brief, Broadcom com/doc/88600 				
	COMPLAINT 54				

161. Broadcom also directly infringes by using the claimed method to demonstrate, test, install, and configure the Broadcom Switching Accused Products for its customers.¹⁰⁹

162. Accordingly, Broadcom directly infringes the '912 Patent by selling the Broadcom Switching Accused Products and by using the Broadcom Switching Accused Products for testing and demonstrating performance of the Broadcom Switching Accused Products.

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INDIRECT INFRINGEMENT: INDUCEMENT

163. Broadcom has had actual knowledge of the '912 Patent and its infringement by the
Broadcom Switching Accused Products since at least December 23, 2024, when Netflix sent a
notice letter to Broadcom's and VMware's Legal Departments. *See* Exhibit D. That letter identified
the '912 Patent, the infringing products, and a brief explanation tying an example claim to the
infringing activities. *See id.* Broadcom and VMware did not respond to that letter or otherwise alter
its infringing conduct.

13 164. Broadcom and VMware are sophisticated entities who have engaged in extensive
patent litigation across the country. For example, Broadcom has been involved in no less than 45
patent cases since 2002.¹¹⁰ As another example, Broadcom has at least 83 IP professionals in its
legal department.¹¹¹ Broadcom and VMware had ample time to review Netflix's notice of its
infringing activities and deliberately chose to not respond or alter their infringing behavior.

18 165. Broadcom has actively induced and continues to actively induce infringement of at
19 least Claim 1 of the '912 Patent in violation of at least 35 U.S.C. § 271(b).

20 166. Broadcom's customers directly infringe at least Claim 1 of the '912 Patent when they
21 use the Broadcom Switching Accused Products in the ordinary, customary, and intended way.

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PB100; BCM88860 StrataDNX[™] 28.8 Tb/s StrataDNX[™] Ethernet Switch Router Series Product Brief, Broadcom.com (copyright 2023), https://docs.broadcom.com/doc/88860-PB.

167. Broadcom has actively induced infringement of at least Claim 1 of the '912 Patent

25 ¹⁰⁹ See, e.g., "10G/25G/50G/100G IEEE 1588 Optical PHY," Broadcom Inc. YouTube Channel, YouTube.com (June 2, 2021), <u>https://www.youtube.com/watch?v=tq5cLOJ3DZY</u>.

28 ¹¹¹ This information was collected by searching Broadcom's LinkedIn "People" tab, using the search "intellectual property OR patent OR trademark OR copyright," and limiting to individuals listed under "Legal." 55

 ¹¹⁰ This information was collected from the Docket Navigator research tool by searching for the party "Broadcom Inc." Notably, this estimate does not include other Broadcom entities or subsidiaries.

1 in violation of at least 35 U.S.C. § 271(b). Users of the Broadcom Switching Accused Products 2 directly infringe at least Claim 1 of the '912 Patent when they use the Broadcom Switching 3 Accused Products in the ordinary, customary, and intended way. Broadcom's inducement includes, 4 without limitation and with specific intent to encourage the infringement, knowingly inducing 5 consumers to use the Broadcom Switching Accused Products within the United States in the 6 ordinary, customary, and intended way by, directly or through intermediaries, supplying the 7 Broadcom Switching Accused Products to consumers within the United States and instructing and 8 encouraging such customers to use the Broadcom Switching Accused Products in the ordinary, 9 customary, and intended way, which Broadcom knows or should know infringes at least Claim 1 10 of the '912 Patent.

11 168. For example, Broadcom sells the Broadcom Switching Accused Products to its 12 customers. When Broadcom's customers install the Broadcom Switching Accused Products and 13 enable them for use, at least Claim 1 of the '912 Patent is performed. In at least this way, the 14 customers of Broadcom directly infringe the '912 Patent while Broadcom knows of the '912 Patent, 15 knows or should know that these activities infringe the '912 Patent, and specifically intends for its 16 customers to perform these activities.

17 169. Broadcom instructs its customers, at least through marketing, promotional, and
18 instructional materials, to use the infringing Accused Products, as described in detail above.
19 Broadcom creates and distributes promotional and product literature for the Accused Products that
20 is designed to instruct, encourage, enable, and facilitate the user of the Accused Products to use the
21 Accused Products in a manner that directly infringes the Patent. And Broadcom provides
22 instructions, support, and technical assistance to its customers in support of committing the
23 infringement.

24 170. One non-limiting example of Broadcom's inducement includes Broadcom's
 25 BroadPTP 1588 Software Suite.¹¹² Broadcom's engineers provide specific instructions that
 26 Broadcom's BroadPTP solution can be used to implement at least Claim 1 of the '912 Patent in a

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 ¹¹² BroadPTPTM 1588 Software Suite, Broadcom.com

 <u>https://www.broadcom.com/products/ethernet-connectivity/software/broadptp</u>.

 COMPLAINT
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variety of different use cases.¹¹³ "BroadSync is a Broadcom software-firmware that runs on a
StrataDNX/XGS internal ARM processor and it synchronizes the time-based events between a
BroadSync-Master (source) and BroadSync-Slaves (sinks)... BroadPTP software combines a
feature rich PTP stack with a highly flexible servo to provide an integrated and scalable PTP/IEEE
1588 solution."¹¹⁴

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171. Broadcom encourages its customers to infringe the '912 Patent at least by instructing customers on how to infringe by providing software and "manuals and built in modules" in proximity to Broadcom products for customers to practice infringing conduct through the use of the BroadPTP and BroadSync software packages for use with Broadcom switch products.

10 172. Thus, Broadcom has induced its customers to infringe the '912 Patent. Broadcom's
11 knowing inducement of its customers to infringe has caused and continues to cause damage to
12 Netflix, and Netflix is entitled to recover damages sustained as a result of Broadcom's wrongful
13 acts in an amount subject to proof at trial.

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INDIRECT INFRINGEMENT: CONTRIBUTORY INFRINGEMENT

15 173. Broadcom has actively contributed to infringement of at least Claim 1 of the
'912 Patent in violation of at least 35 U.S.C. § 271(c). Broadcom sells the Broadcom Switching
17 Accused Products, which are especially adapted to practice the method claimed in at least Claim 1
18 of the '912 Patent.

19 174. The Broadcom Switching Accused Products have no substantial function or use other
20 than to practice the invention claimed in at least Claim 1 of the '912 Patent at least because
21 infringement of the claimed method is performed automatically when customers install and enable
22 the Broadcom Switching Accused Products.

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175. The Broadcom Switching Accused Products are material components of the claimed method recited in at least Claim 1 of the '912 Patent and are not a staple article or commodity of commerce, including because they are specifically configured to infringe according to at least

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 ¹¹³ See, e.g., "High Port Density Timing Card for Next Gen Networks," Open Compute Project
 YouTube Channel, YouTube.com <u>https://www.youtube.com/watch?v=lavW_621DMk&t=503s</u>.

 ¹¹⁴ "BroadSyncTM: Using your own PTP stack with Broadcom chips," ipInfusion.com (June 21, 2020), <u>https://www.ipinfusion.com/resources/broadsync-using-your-own-ptp-stack-with-broadcom-chips/</u>.

1 Claim 1 of the '912 Patent (*see* ¶ 136-162).

176. Broadcom's contributory infringements include, without limitation, making, offering
to sell, and/or selling within the United States, and/or importing into the United States, the
Broadcom Switching Accused Products, which each include one or more components for use in
practicing at least Claim 1 of the '912 Patent, knowing the component to be especially made or
especially adapted for use in an infringement of at least Claim 1 of the '912 Patent (*see* ¶¶ 136174), and not a staple article or commodity of commerce suitable for substantial non-infringing
use.

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WILLFUL INFRINGEMENT

10 177. As detailed above, Broadcom and VMware had knowledge of the '912 Patent and
11 had knowledge, or were willfully blind, as to Broadcom's and VMware's infringement of the '912
12 Patent.

13 178. Broadcom and VMware's infringement of the '912 Patent has been willful and
14 deliberate.

15 179. As discussed above, Broadcom and VMware have had knowledge of the '912 Patent
16 since at least December 23, 2024, when Netflix sent a notice letter to Broadcom's and VMware's
17 Legal Departments by email and/or December 27, 2024 when they were served the same letter in
18 hard-copy.

19 180. As discussed above, Broadcom and VMware knew or should have known that their
20 actions constitute infringement or recklessly disregarded those facts.

21 181. The willfulness facts for the '472 Asserted Patent, ¶¶ 86-94, *supra*, are incorporated
22 by reference herein.

182. Broadcom and VMware have willfully infringed the '912 Patent. Broadcom and
VMware's knowing and willful infringement has caused and continues to cause damage to Netflix,
and Netflix is entitled to recover damages sustained as a result of Broadcom and VMware's
wrongful acts in an amount subject to proof at trial.

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PRAYER FOR RELIEF

Netflix respectfully requests the following relief:

1	A. That the Court enter judgment that Broadcom, alone or in combination with VMware			
2	infringe each of the Asserted Patents;			
3	B. That the Court award damages to Netflix for Broadcom's infringement, either alone			
4	or on combination with VMware, including interest;			
5	C. That the Court award attorneys' fees under 35 U.S.C. § 285;			
6	D. That the Court award Netflix its statutory costs; and			
7	E. That the Court award Netflix any and all other relief to which Netflix may be entitled			
8	and that the Court may deem just, equitable, and proper.			
9	JURY DEMAND			
10	Netflix respectfully demands a jury trial pursuant to Rule 38(b) of the Federal Rules of Civil			
11	Procedure on all claims and issues so triable.			
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	COMPLAINT 59			

	Case 3:25-cv-03738	Document 1	Filed 04/29/25 Page 61 of 61
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	COMPLAINT		60