

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

PARITY NETWORKS LLC,

Plaintiff,

v.

CISCO SYSTEMS, INC.,

Defendant.

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CIVIL ACTION NO. 6:19-cv-00209

JURY TRIAL DEMANDED

FIRST AMENDED COMPLAINT

Plaintiff Parity Networks LLC (“Plaintiff” or “Parity Networks”), by and through its attorneys, for its Original Complaint against Cisco Systems, Inc. (“Defendant” or “Cisco”), and demanding trial by jury, hereby alleges as follows:

I. NATURE OF THE ACTION

1. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. §§ 271, *et seq.*, to enjoin and obtain damages resulting from Defendant’s unauthorized use, sale, and offer to sell in the United States of products, methods, processes, services and/or systems that infringe Parity Networks’ United States patents, as described herein.

2. Cisco manufactures, provides, uses, sells, offers for sale, imports, and/or distributes infringing products and services; and encourages others to use its products and services in an infringing manner, including their customers, as set forth herein.

3. Parity Networks seeks past and future damages and prejudgment and post judgment interest for Cisco’s past infringement of the Patents-in-Suit, as defined below.

II. PARTIES

4. Plaintiff Parity Networks is a limited liability company organized and existing under the laws of the State of Texas. Parity Networks' registered agent for service of process in Texas is InCorp Services, Inc., 815 Brazos Street, Suite 500, Austin, Texas 78701.

5. On information and belief, Defendant Cisco is a corporation organized under the laws of California, having established places of business in this District at 12515-3 Research Park Loop, Austin, TX 78759 and 18615 Tuscany Stone, San Antonio, Texas 78258. Cisco's registered agent for service of process in Texas is Prentice Hall Corporation System, 211 E. 7th Street, Suite 620, Austin, TX 78701-3218.

III. JURISDICTION AND VENUE

6. This is an action for patent infringement which arises under the patent laws of the United States, namely, 35 U.S.C. §§ 271, 281, 283, 284 and 285.

7. This Court has exclusive jurisdiction over the subject matter of this action under 28 U.S.C. §§ 1331 and 1338(a).

8. On information and belief, venue is proper in this District pursuant to 28 U.S.C. §§ 1391(b), 1391(c), and 1400(b) because Defendant has a regular and established place of business in this district, transacted business in this District, and has committed and/or induced acts of patent infringement in this district.

9. On information and belief, Defendant Cisco is subject to this Court's specific and general personal jurisdiction pursuant to due process and/or the Texas Long Arm Statute, due at least to its substantial business in this forum, including: (i) at least a portion of the infringements alleged herein; and (ii) regularly doing or soliciting business, engaging in other persistent courses of conduct, and/or deriving substantial revenue from goods and services provided to individuals in Texas and in this Judicial District.

IV. FACTUAL ALLEGATIONS

PATENTS-IN-SUIT

10. Parity Networks is the owner of all right, title and interest in and to U.S. Patent No. 6,738,378 (the “’378 Patent”), entitled “Method and Apparatus for Intelligent Sorting and Process Determination of Data Packets Destined to a Central Processing Unit of a Router or Server on a Data Packet Network,” issued on May 18, 2004.

11. Parity Networks is the owner of all right, title and interest in and to U.S. Patent No. 6,763,394 (the “’394 Patent”), entitled “Virtual Egress Packet Classification at Ingress,” issued on July 13, 2004.

12. Parity Networks is the owner of all right, title and interest in and to U.S. Patent No. 7,103,046 (the “’046 patent”), entitled “Method and Apparatus for Intelligent Sorting and Process Determination of Data Packets Destined to a Central Processing Unit of a Router or Server on a Data Packet Network,” issued on September 5, 2006. The ’378 Patent and the ’046 Patent share a common specification.

13. Parity Networks is the owner of all right, title and interest in and to U.S. Patent No. 7,107,352 (the “’352 Patent”), entitled “Virtual Egress Packet Classification at Ingress,” issued on September 12, 2006. The ’394 Patent and the ’352 Patent share a common specification. Terms from the claims of the ’394 Patent and the ’352 Patent were previously construed in connection with the case styled *Parity Networks, LLC v. Hewlett Packard Enterprise Company*, Case No. 6:17-cv-683-JDK-KNM in the Eastern District of Texas. *See* Memorandum Opinion and Order (Doc. No. 99), attached as **Exhibit 1**.

14. Together, the foregoing patents are referred to herein as the “Patents-in-Suit.” Parity Networks is the assignee of the Patents-in-Suit, and has all rights to sue for infringement and collect past and future damages for the infringement thereof.

DEFENDANT'S ACTS

15. Cisco is a world leader in data networking, and provides hardware and software directed to switching and routing network data to its customers in the United States, including in this District.

16. Among a few others, Cisco implements the following four network software systems on its switches and routers: Cisco IOS, Cisco IOS XR, Cisco IOS XE, and Cisco NX-OS. <https://www.cisco.com/c/en/us/products/ios-nx-os-software/index.html>

17. In that regard, Cisco makes, uses and sells routers and switches running Cisco IOS network software.

18. Routers and switches running Cisco IOS network software implement software and hardware queueing based at least in part on packet classification.

19. For example, within the Cisco IOS Software suite, Cisco 2600 Series Modular Access Routers implement Class-Based Weighted Fair Queueing (CBWFQ) to direct traffic to appropriate queues. https://www.cisco.com/c/en/us/products/collateral/routers/2600-series-multiservice-platforms/product_data_sheet0900aecd800fa5be.html

20. In addition, Cisco makes, uses and sells routers and switches based on the Cisco IOS XR software. Cisco IOS XR Software is a modular and fully distributed network operating system for service provider networks.

21. According to Cisco's documentation, Cisco IOS XR creates a highly available, highly secure routing platform, distributes processes across the control, data, and management planes with their own access controls, delivers routing-system scalability, service isolation, and manageability and supports network and service convergence.

22. An exemplary product implemented with Cisco IOS XR is the Cisco NCS 5500 Series Router. It includes a plurality of ingress and egress ports in several forms and configurations

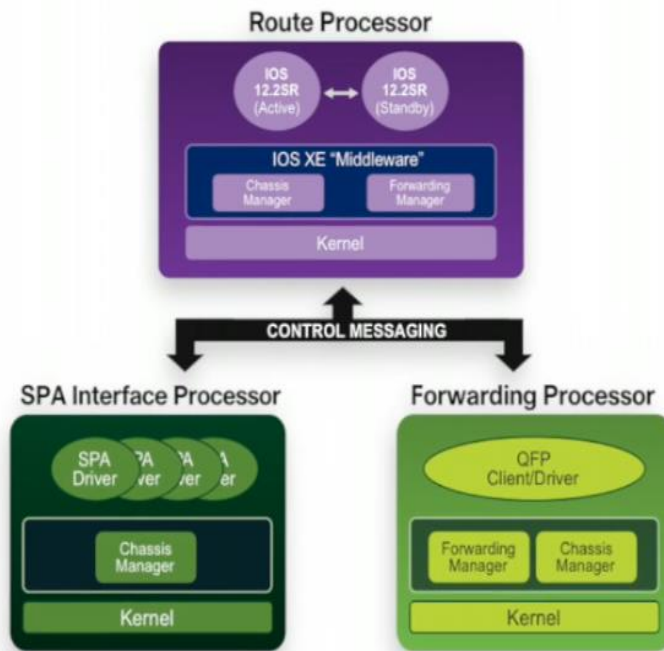
that receive and send packets. Cisco NCS 5500 Series Routers: Implementing Access Lists at 2, (https://www.cisco.com/c/en/us/td/docs/iosxr/ncs5500/ip-addresses/62x/b-ip-addresses-configuration-guide-ncs5500-62x/b-ipaddr-cg-ncs5500-62x_chapter_010.pdf).

23. Within the Cisco NCS 5500, extended Access Control Lists (“ACLs”) are used. Pass/drop determinations may be performed at ingress ports using various criteria, including destination address, destination port and protocol-specific parameters.

24. As an example within the IOS XE product suite, Cisco makes, uses, sells and offers for sale the Cisco 1000 Series Aggregation Service Router (“ASR”), also known as the Cisco ASR 1000 Series Router. <https://www.cisco.com/c/en/us/products/collateral/routers/asr-1000-series-aggregation-services-routers/datasheet-c78-731632.html>

25. The Cisco ASR 1000 Series Router is described by Cisco as a critical part of the Cisco Borderless Network Architecture. Cisco claims that the Cisco ASR 1000 Series Router is the industry’s first aggregation services router and the first system within the Cisco portfolio to use the Cisco QuantumFlow Processor, a processor built for edge-based service delivery.

26. Cisco has developed a router engine it calls the Cisco QuantumFlow Processor. Cisco claims the QuantumFlow Processor is the industry’s first fully integrated and programmable flow processor. The Cisco QuantumFlow Processor combines multi-threaded packet processing, massive parallel processing, customized quality of service (QoS), advanced memory management, and integrated services programmability.



<https://www.cisco.com/c/en/us/products/routers/asr-1000-series-aggregation-services->

[routers/index.html](https://www.cisco.com/c/en/us/products/routers/asr-1000-series-aggregation-services-routers/index.html). Cisco lists other of its products running IOS XE.

<https://www.cisco.com/c/en/us/products/ios-nx-os-software/ios-xe/index.html#~stickynav=2>

27. In addition, Cisco implements the Cisco NX-OS, or Nexus Operating System, which supports Multiprotocol Label Switching (MPLS). MPLS is a high-performance packet forwarding technology that integrates the performance and traffic management capabilities of data link layer (Layer 2) switching with the scalability, flexibility, and performance of network-layer (Layer 3) routing.

28. Cisco implements MPLS with the use of normalized labels for packets that are used substantially throughout MPLS-enabled networks.

29. Cisco instructs its customers regarding the implementation and operation of the accused instrumentalities, including at <https://www.cisco.com/c/en/us/support/routers/index.html>.

30. On information of belief, Defendant Cisco also implements contractual protections in the form of license and use restrictions with its customers to preclude the unauthorized reproduction, distribution and modification of its software.

31. Moreover, on information and belief, Defendant Cisco implements technical precautions to attempt to thwart customers who would circumvent the intended operation of Cisco's routers and switches.

PRIOR KNOWLEDGE OF THE PATENTS-IN-SUIT

32. By letters dated October 5, 2016 and November 28, 2016, Cisco was provided and actually received notice of the Patents-in-Suit, and consequently has actual or constructive knowledge of each of them. True and correct copies of these letters are attached as **Exhibit 2** and **Exhibit 3**. Cisco's counsel responded on February 23, 2017, representing it would conduct an investigation and would provide a complete response "in due course." A true and correct copy of Cisco's response is attached hereto as **Exhibit 4**. More than two years later, it has not responded.

33. In addition, during the course of its own prosecution activities, Cisco and its affiliates have been apprised and gained prior knowledge of at least some of the Patents-in-Suit, including by way of family members. The following table summarizes several examples of instances in which Cisco or the USPTO identified the Patents-in-Suit as material to Cisco's efforts to patent what it asserted to be its own intellectual property. The asterisk denotes a family to family citation.

Patent-in-Suit	Cisco Pat. or Pub. No.	Publication Date	Assignee	Title
6,738,378	US6091725A	2000-07-18	Cisco Systems, Inc.	Method for traffic management, traffic prioritization, access control, and packet

				forwarding in a datagram computer network
	US7254639B1	2007-08-07	Cisco Technology, Inc.	Methods and apparatus for directing packets among a group of processors
6,763,394	US7062571B1	2006-06-13	Cisco Technology, Inc.	Efficient IP load-balancing traffic distribution using ternary CAMs
	US9106574B2	2015-08-11	Cisco Technology, Inc.	Supporting quality of service differentiation using a single shared buffer
	US9100407B2*	2015-08-04	Cisco Technology, Inc.	Method and system to enhance performance of a session initiation protocol network and its elements
7,103,046	US6091725A*	2000-07-18	Cisco Systems, Inc.	Method for traffic management, traffic prioritization, access control, and packet forwarding in a datagram computer network
	US7254639B1*	2007-08-07	Cisco Technology, Inc.	Methods and apparatus for directing packets among a group of processors
7,107,352	US7062571B1*	2006-06-13	Cisco Technology, Inc.	Efficient IP load-balancing traffic distribution using ternary CAMs

	US9100407B2*	2015-08-04	Cisco Technology, Inc.	Method and system to enhance performance of a session initiation protocol network and its elements
	US9106574B2*	2015-08-11	Cisco Technology, Inc.	Supporting quality of service differentiation using a single shared buffer

V. COUNTS OF PATENT INFRINGEMENT

COUNT ONE INFRINGEMENT OF U.S. PATENT NO. 6,738,378

34. Parity Networks incorporates by reference its allegations in Paragraphs 1-33 as if fully restated in this paragraph.

35. Parity Networks is the assignee and owner of all right, title and interest to the '378 Patent. Parity Networks has the legal right to enforce the patent, sue for infringement, and seek equitable relief and damages.

36. On information and belief, Defendant Cisco, without authorization or license from Parity Networks, has been and is presently directly infringing at least claim 1 of the '378 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling and offering for sale methods and articles infringing one or more claims of the '378 Patent. Defendant Cisco is thus liable for direct infringement of the '378 Patent pursuant to 35 U.S.C. § 271(a).

37. Exemplary infringing products include the Cisco 2600 Series Modular Access Routers, which have multiple packet processors and sorts packets into categories for processing and directs packets to hardware queues based on that classification.

38. On information and belief, Defendant Cisco, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '378 Patent, including actively inducing infringement of the '378 Patent under 35 U.S.C. § 271(b). Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing consumers to use infringing articles and methods that Cisco knows or should know infringe one or more claims of the '378 Patent. Cisco instructs its customers to make and use the patented inventions of the '378 Patent by operating Cisco's products in accordance with Cisco's specifications. Cisco specifically intends its customers to infringe by implementing its operating systems to sort and process data packets into two or more categories of different priority for processing and a queue for queuing sorted packets destined for the CPU.

39. On information and belief, Defendant Cisco, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '378 Patent, including contributory infringement of the '378 Patent under 35 U.S.C. § 271(c) and/or § 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the infringing products. Cisco knows that the infringing products (i) constitute a material part of the inventions claimed in the '378 Patent; (ii) are especially made or adapted to infringe the '378 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used for or in operating systems used to sort and process data packets into two or more categories of different priority for processing and a queue for queuing sorted packets destined for the CPU in an infringing manner.

40. As a result of Cisco's infringement of the '378 Patent, Parity Networks has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement under 35 U.S.C. § 284, but in no event, less than a reasonable royalty.

COUNT TWO
INFRINGEMENT OF U.S. PATENT NO. 6,763,394

41. Parity Networks incorporates by reference its allegations in Paragraphs 1-40 as if fully restated in this paragraph.

42. Parity Networks is the assignee and owner of all right, title and interest to the '394 Patent. Parity Networks has the legal right to enforce the patent, sue for infringement, and seek equitable relief and damages.

43. On information and belief, Defendant Cisco, without authorization or license from Parity Networks, has been and is presently directly infringing at least claim 13 of the '394 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling and offering for sale methods and articles infringing one or more claims of the '394 Patent. Defendant Cisco is thus liable for direct infringement of the '394 Patent pursuant to 35 U.S.C. § 271(a).

44. Exemplary infringing products include switches and routers with Cisco IOS XR software, including the Cisco NCS 5500 Series Routers wherein egress determinations are performed at ingress using multiple LUTs.

45. On information and belief, Defendant Cisco, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 13 of the '394 Patent, including actively inducing infringement of the '394 Patent under 35 U.S.C. § 271(b). Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing consumers to use infringing articles and methods that Cisco knows or should know infringe one or more claims of the '394 Patent. Cisco instructs its customers to make and use the patented inventions of the '394 patent by operating Cisco's products in accordance with Cisco's specifications. Cisco specifically intends its customers to infringe by implementing its

switches and routers to perform egress determinations at ingress through multiple ACLs, including extended ACLs as set forth above.

46. On information and belief, Defendant Cisco, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 13 of the '394 Patent, including contributory infringement of the '394 Patent under 35 U.S.C. § 271(c) and/or § 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the infringing products. Cisco knows that the infringing products (i) constitute a material part of the inventions claimed in the '394 Patent; (ii) are especially made or adapted to infringe the '394 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used to perform egress determinations at ingress through multiple ACLs, including extended ACLs as set forth above.

47. As a result of Cisco's infringement of the '394 Patent, Parity Networks has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement under 35 U.S.C. § 284, but in no event, less than a reasonable royalty.

COUNT THREE
INFRINGEMENT OF U.S. PATENT NO. 7,103,046

48. Parity Networks incorporates by reference its allegations in Paragraphs 1-47 as if fully restated in this paragraph.

49. Parity Networks is the assignee and owner of all right, title and interest to the '046 Patent. Parity Networks has the legal right to enforce the patent, sue for infringement, and seek equitable relief and damages.

50. On information and belief, Defendant Cisco, without authorization or license from Parity Networks, has been and is presently directly infringing at least claim 1 of the '046 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for

testing purposes), selling and offering for sale methods and articles infringing one or more claims of the '046 Patent. Defendant Cisco is thus liable for direct infringement of the '046 Patent pursuant to 35 U.S.C. § 271(a).

51. Exemplary infringing products include Cisco 2600 Series Modular Access Routers, which include multiple processors for parallel packet processing and hardware queues of a network access controller (NAC) for queuing the packets according to category.

52. On information and belief, Defendant Cisco, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '046 Patent, including actively inducing infringement of the '046 Patent under 35 U.S.C. § 271(b). Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing consumers to use infringing articles and methods that Cisco knows or should know infringe one or more claims of the '046 Patent. Cisco instructs its customers to make and use the patented inventions of the '046 Patent by operating Cisco's products in accordance with Cisco's specifications. Cisco specifically intends its customers to infringe by implementing its operating systems to sort and process data packets into two or more categories of different priority for processing and a queue for queuing sorted packets destined for the CPU.

53. On information and belief, Defendant Cisco, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '046 Patent, including contributory infringement of the '046 Patent under 35 U.S.C. § 271(c) and/or § 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the infringing products. Cisco knows that the infringing products (i) constitute a material part of the inventions claimed in the '046 Patent; (ii) are especially made or adapted to infringe the '046 Patent; (iii) are not staple articles or commodities of commerce

suitable for non-infringing use; and (iv) are components used for or in operating systems used to sort and process data packets into two or more categories of different priority for processing and a queue for queuing sorted packets destined for the CPU in an infringing manner.

54. As a result of Cisco's infringement of the '046 Patent, Parity Networks has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement under 35 U.S.C. § 284, but in no event, less than a reasonable royalty.

COUNT FOUR
INFRINGEMENT OF U.S. PATENT NO. 7,107,352

55. Parity Networks incorporates by reference its allegations in Paragraphs 1-54 as if fully restated in this paragraph.

56. Parity Networks is the assignee and owner of all right, title and interest to the '352 Patent. Parity Networks has the legal right to enforce the patent, sue for infringement, and seek equitable relief and damages.

57. On information and belief, Defendant Cisco, without authorization or license from Parity Networks, has been and is presently directly infringing at least claim 1 of the '352 Patent, as infringement is defined by 35 U.S.C. § 271(a), including through making, using (including for testing purposes), selling and offering for sale methods and articles infringing one or more claims of the '352 Patent. Defendant Cisco is thus liable for direct infringement of the '352 Patent pursuant to 35 U.S.C. § 271(a).

58. Exemplary infringing products include the Cisco NCS 5500 Series Routers, which include ACLs for filtering and dropping of packets implemented at the ingress port for egress pass/drop determination.

59. On information and belief, Defendant Cisco, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '352 Patent,

including actively inducing infringement of the '352 Patent under 35 U.S.C. § 271(b). Such inducements include without limitation, with specific intent to encourage the infringement, knowingly inducing consumers to use infringing articles and methods that Cisco knows or should know infringe one or more claims of the '352 Patent. Cisco instructs its customers to make and use the patented inventions of the '352 Patent by operating Cisco's products in accordance with Cisco's specifications. Cisco specifically intends its customers to infringe by implementing its switches and routers to perform egress determinations at ingress through multiple ACLs, including extended ACLs as set forth above.

60. On information and belief, Defendant Cisco, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '352 Patent, including contributory infringement of the '352 Patent under 35 U.S.C. § 271(c) and/or § 271(f), either literally and/or under the doctrine of equivalents, by selling, offering for sale, and/or importing into the United States, the infringing products. Cisco knows that the infringing products (i) constitute a material part of the inventions claimed in the '352 Patent; (ii) are especially made or adapted to infringe the '352 Patent; (iii) are not staple articles or commodities of commerce suitable for non-infringing use; and (iv) are components used to perform egress determinations at ingress through multiple ACLs, including extended ACLs as set forth above.

61. As a result of Cisco's infringement of the '352 Patent, Parity Networks has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement under 35 U.S.C. § 284, but in no event, less than a reasonable royalty.

VI. WILLFUL INFRINGEMENT

62. On multiple occasions, Cisco has been provided notice of infringement of the Patents-in-Suit by direct communications from Plaintiff's representatives.

63. Plaintiff further alleges that, in connection with the knowledge it gained in connection with its own prosecution activities, Cisco has received actual notice and/or constructive notice of at least the '378 Patent, the '394 Patent, '046 Patent and the '352 Patent.

64. Notwithstanding this knowledge, Cisco has knowingly or with reckless disregard willfully infringed one or more of the foregoing Patents-in-Suit. Cisco has thus had actual notice of infringement of one or more of the Patents-in-Suit and acted despite an objectively high likelihood that its actions constituted infringement of Plaintiff's presumptively valid patent rights.

65. This objective risk was either known or so obvious that it should have been known to Cisco. Accordingly, Plaintiff seeks enhanced damages pursuant to 35 U.S.C. § 284.

VII. JURY DEMAND

66. Plaintiff Parity Networks demands a trial by jury of all matters to which it is entitled to trial by jury, pursuant to FED. R. CIV. P. 38.

VIII. PRAYER FOR RELIEF

WHEREFORE, Parity Networks prays for judgment and seeks relief against Defendant as follows:

- A. That the Court determine that one or more claims of the Patents-in-Suit is infringed by Defendant Cisco, either literally or under the doctrine of equivalents;
- B. That the Court award damages adequate to compensate Parity Networks for the patent infringement that has occurred, together with prejudgment and post-judgment interest and costs, and an ongoing royalty for continued infringement;
- C. That the Court permanently enjoin Defendant pursuant to 35 U.S.C. § 283;
- D. That the Court award enhanced damages pursuant to 35 U.S.C. §284; and
- E. That the Court award such other relief to Parity Networks as the Court deems just and proper.

DATED: June 7, 2019

Respectfully submitted,

/s/ Andrew G. DiNovo

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Counsel for Plaintiff Parity Networks LLC

CERTIFICATE OF SERVICE

I hereby certify that on the 7th of June 2019, all counsel of record who are deemed to have consented to electronic service are being served with a copy of this document via the Court's CM/ECF system.

/s/ Andrew G. DiNovo