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

PLECTRUM LLC, Plaintiff, v. NEC CORPORATION OF AMERICA and NEC CORPORATION, Defendants.	C.A. NO. 4:17-CV-00125-ALM COMPLAINT FOR PATENT INFRINGEMENT **JURY TRIAL DEMANDED**

FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Plectrum LLC ("Plectrum") files this first amended complaint against NEC Corporation of America and NEC Corporation (collectively, "Defendant" or "NEC"), alleging, based on its own knowledge as to itself and its own actions and based on information and belief as to all other matters, as follows:

PARTIES

1. Plectrum is a limited liability company formed under the laws of the State of Texas, with its principal place of business at 2325 Oak Alley, Tyler, Texas, 75703.

2. Defendant NEC Corporation of America is a corporation organized under the laws of the state of Nevada with a principle place of business at 6535 N. State Hwy 161, Irving, Texas 75039. It can be served with process by serving its registered agent: National Registered Agents, Inc., 1999 Bryan Street, Suite 900, Dallas, Texas 75201.

3. Defendant NEC Corporation is a corporation organized under the laws of the country of Japan. Its headquarters is located at 7-1, Shiba 5-chrome, Minato-ku, Tokyo 108-8001, Japan.

4. On information and belief, NEC Corporation of America is a wholly owned subsidiary of NEC Corporation. Information and belief, NEC Corporation directs or controls the actions of NEC Corporation of America.

JURISDICTION AND VENUE

5. This is an action for infringement of United States patents arising under 35 U.S.C. §§ 271, 281, and 284–85, among others. This Court has subject matter jurisdiction of the action under 28 U.S.C. § 1331 and § 1338(a).

6. Venue is proper in this district pursuant to 28 U.S.C. §§ 1391 and 1400(b). Upon information and belief, Defendant has transacted business in this district and has committed, by itself or in concert with others, acts of patent infringement in this district.

7. Defendant 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 Defendant's substantial business in this forum, including: (i) at least a portion of the infringements alleged herein; and/or (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 district.

BACKGROUND

8. The patents-in-suit generally pertain to communications networks and the technology that enables computers and other network devices to communicate with each other. The technology disclosed by two of the patents, 6,205,149 and 5,978,951, was developed by engineers at 3Com Corporation ("3Com").

9. 3Com was an industry pioneer and leader for computer network infrastructure products and ideas. Formed in Massachusetts in 1979 by some of the key figures in the early days of networking (a co-founder, Robert Metcalfe, was one of the inventors of Ethernet), 3Com

focused on developing networking technology in the then-nascent personal computer market. 3Com's name is derived from "Computers, Communication, and Compatibility," which emphasized the company's focus on developing industry standards—and the corresponding hardware and software—in order for computers to communicate across wide-area networks, such as the Internet, and local-area networks, such as Ethernet.

10. At the time of 3Com's founding, few organizations, including businesses, universities, and government institutions, had more than a single mainframe computer with a limited number of workstations. At that time, the late 1970's, networking multiple computers together, whether in the same building or spread throughout the country, was nearly non-existent. The founders of 3Com, however, foresaw the rise of personal computers and the need to connect those computers to peripherals, such as printers or modems, and to external networks like the Internet.

11. 3Com developed and sold a wide range of networking products, such as switches, routers, firewalls, and modems, and its engineers developed many aspects of the networking technology still in use today. These developments resulted in over 1400 issued patents, including the two aforementioned patents that are asserted in this suit. 3Com was acquired by Hewlett-Packard Company ("HP") in 2010 and ceased operating as a separate entity at that time.

12. The other patent asserted in this case, U.S. Patent No. 6,751,677, discloses technology developed by engineers at HP. Founded in 1939, HP was started in a car garage in Palo Alto, California and was instrumental in the growth and development of computer technology and Silicon Valley itself.

13. HP is known worldwide for its computer and computer peripherals, such as printers and scanners. The Hewlett-Packard 9100A was launched in 1968 and is considered to be the first personal computer, and HP's inkjet and laser printers are among the most popular in the world. In addition to those products, HP also develops and manufactures networking products, servers, and software. Around the same time HP released its first personal computer, it also began offering servers for businesses. HP servers and other network equipment, such as switches and firewalls, are used by businesses worldwide. HP is one of the most prolific filers of patents in the United States, with more than 23,000 patents in its portfolio.

THE TECHNOLOGY

14. United States Patent No. 5,978,951 ("the '951 Patent"), titled "High Speed Cache Management Unit for use in a Bridge/Router," teaches hardware-based systems and methods for increasing data-transfer speeds, and minimizing latency, across communications networks. Typically, much of the routing functionality, such as reading the header information, was handled via software. Using software to perform this function, however, can create latency in the network, causing a slowdown in the delivery of the data units.

15. To solve this latency issue, the '951 Patent utilizes a hardware-based cache management unit to streamline the reading of the header information, and thereby increasing the data transmission speed. The cache management unit stores data relating to the various network addresses associated with the particular network. This address data is then compared with the header information for the data unit, and, if matching, the system sends the data unit to the appropriate destination, all at superior speeds compared to a traditional software-based system.

16. United States Patent No. 6,205,149 ("the '149 Patent"), titled "Quality of Service Control Mechanism and Apparatus," teaches systems and methods for utilizing Quality of Service ("QoS") processing control within a communications network. Certain types of data sent across a

network, such as video, will be significantly impaired if there is a delay, while other types of data, such as email, will not suffer if there is a short delay. In order to minimize these issues, specific types of data can be given priority to help ensure timely transfer.

17. Each data unit transmitted across a network includes a header portion, which contains information for handling that data unit. This header data can include a "QoS priority indicator," which informs the transmitting and receiving devices the priority level for the data unit. Prior to the invention described in the '149 Patent, however, use of QoS to prioritize data units was not effectively implemented. The '149 Patent provides systems and methods to improve QoS processing, resulting in enhanced performance of the network.

18. United States Patent No. 6,751,677 ("the '677 Patent"), titled "Method and Apparatus For Allowing a Secure and Transparent Communication Between a User Device and Servers of a Data Access Network System via a Firewall and a Gateway," teaches a method for securely communicating across a network that is less complex than a traditional firewall. In a typical communications network, firewalls are used to control external access to and from the servers to improve security and prevent unauthorized intrusions, such as a hacker.

19. The '677 Patent uses a number of dynamically assigned ports to connect a user device, such as a PC, with a target server, such as a secure website. In addition, the '677 Patent utilizes "proxifying" the communication request sent by the user device, which allows for a single, end-to-end connection with the target server.

COUNT I

DIRECT INFRINGEMENT OF U.S. PATENT NO. 5,978,951

20. On November 2, 1999, the '951 Patent was duly and legally issued by the United States Patent and Trademark Office for an invention entitled "High Speed Cache Management Unit For Use in a Bridge/Router."

21. Plectrum is the owner of the '951 Patent, with all substantive rights in and to that patent, including the sole and exclusive right to prosecute this action and enforce the '951 Patent against infringers, and to collect damages for all relevant times.

22. Defendant made, had made, used, imported, provided, supplied, distributed, sold, and/or offered for sale, within the United States, network switches and/or routers that perform a lookup operation on a generated hash function to identify the matching destination address ("accused products"). Defendant's accused products include, for example, Defendant's PF5248 Switch:

(Source: https://www.necam.com/sdn/Hardware/PF5248Switch/)

23. By doing so, Defendant has directly infringed (literally and/or under the doctrine of equivalents) at least Claim 1 of the '951 Patent. Defendant's infringement in this regard is ongoing.

24. NEC has infringed the '951 Patent by making, having made, using, importing, providing, supplying, distributing, selling or offering for sale systems utilizing a method for selecting an output port eligible to be used for transmission of a frame received at a computer network device, wherein said computer network device has at least one input port and a plurality of output ports and said received frame has a source address and a received destination address.

25. The accused products include receiving said frame at one of said at least one input port of said computer network device.

26. The accused products include parsing said received destination address from said received frame.

27. The accused products include processing said received destination address with a code generator to generate a coded address. For example, the NEC PF5248 Switch complies with the IEEE 802.3ad standard. According to the IEEE Standard document, a port selection procedure is followed by using the hash of the source and destination addresses to generate a port number. The hashed address can be construed as the coded address and the hashing algorithm can be construed as the code generator:

Network Features	Security	Filter (L2/IPv4/L4), Interruption of relays between ports
	QoS	Classifier L2/IPv4/L4, Rate Limiting, Marking(DSCP/User Priority), Discard Control, Shaping(8class, Port Bandwidth Control, Scheduling(PQ, WPR, WFQ)), Diffserv
	Reliability, Availability	ECMP(IPv4/IPv6), VRRP(IPv4/IPv6), Static Polling(IPv4/IPv6), VRRP Polling (IPv4/IPv6), Link Aggregation(IEEE802.3ad), Strom Limiting, Graceful Restart(helper), UDLD(IEEE802.3ah), Ring Protocol, Local ProxyARP, L2 Loop Detection, Uplink trunk redundant, CFM(IEEE802.1ag)

(Source: https://www.necam.com/docs/?id=cd53542b-cc3c-4a2f-adc5-a8fb30ebb74d, Page 2)

43A.2 Port selection

A distribution algorithm selects the port used to transmit a given frame, such that the same port will be chosen for subsequent frames that form part of the same conversation. The algorithm may make use of information carried in the frame in order to make its decision, in combination with other information associated with the frame, such as its reception port in the case of a MAC Bridge.

The algorithm may assign one or more conversations to the same port, however, it must not allocate some of the frames of a given conversation to one port and the remainder to different ports. The information used to assign conversations to ports could include:

a) Source MAC address;
b) Destination MAC address;
c) The reception port;
d) The type of destination address (individual or group MAC address);
e) Ethernet Length/Type value (i.e., protocol identification);
f) Higher layer protocol information (e.g., addressing and protocol identification information from the LLC sublayer or above);
g) Combinations of the above.

One simple approach applies a hash function to the selected information to generate a port number. This produces a deterministic (i.e., history independent) port selection across a given number of ports in an aggregation. However, as it is difficult to select a hash function that will generate a uniform distribution of load across the set of ports for all traffic models, it might be appropriate to weight the port selection in favor of ports that are carrying lower traffic levels. In more sophisticated approaches, load balancing is dynamic; i.e., the port selected for a given set of conversations changes over time, independent of any changes that take place in the membership of the aggregation.

(Source: http://www.cs.technion.ac.il/Labs/Lccn/projects/winter2000/ibm/802_3.pdf, Page 162)

28. The accused products include comparing said coded address to a value associated with a row within a cache.

29. The accused products include, in the event of a match between said coded address and said value associated with said row, comparing said received destination address with a cached destination address associated with a first entry in said row.

30. The accused products include, in the event of a match between said received destination address and said cached destination address associated with said first entry, reading a port mask associated with said first entry to identify at least one port from said plurality of output ports which is eligible for transmission of said received frame.

31. NEC has knowledge of the '951 Patent at least since on or around November 1, 2002, when U.S. Patent No. 6,411,622, which lists the '951 Patent as one of only four prior-art references, was assigned to NEC.

32. Plectrum has been damaged as a result of the infringing conduct by Defendant alleged above. Thus, Defendant is liable to Plectrum in an amount that adequately compensates it for such infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

33. Plectrum and/or its predecessors-in-interest have satisfied all statutory obligations required to collect pre-filing damages for the full period allowed by law for infringement of the '951 Patent.

COUNT II

DIRECT INFRINGEMENT OF U.S. PATENT NO. 6,205,149

34. On March 20, 2001, the '149 Patent was duly and legally issued by the United States Patent and Trademark Office for an invention entitled "Quality of Service Control Mechanism and Apparatus."

35. Plectrum is the owner of the '149 Patent, with all substantive rights in and to that patent, including the sole and exclusive right to prosecute this action and enforce the '149 Patent against infringers, and to collect damages for all relevant times.

36. Defendant made, had made, used, imported, provided, supplied, distributed, sold, and/or offered for sale, within the United States, network switches and/or routers that include network switches and/or routers that utilize, for example, Content Addressable Memory ("CAM") or Ternary Content Addressable Memory ("TCAM"), and Access Control Lists ("ACL") to perform a single look-up with a quality-of-service variable and routing information ("accused products"). The accused products include, for example, Defendant's PF5248 Switch:

(Source: https://www.necam.com/sdn/Hardware/PF5248Switch/)

37. By doing so, Defendant has directly infringed (literally and/or under the doctrine of equivalents) at least Claim 1 of the '149 Patent. Defendant's infringement in this regard is ongoing.

38. NEC has infringed the '149 Patent by making, having made, using, importing, providing, supplying, distributing, selling or offering for sale systems for utilizing a method for assigning at least one Quality of Service Ethernet frame in a telecommunications device.

39. The accused products include receiving said Ethernet frame at a network interface module of said device configured for Ethernet type traffic, said received Ethernet frame having a header.

40. The accused products include determining if said received Ethernet frame includes both positively identified source and destination addresses, wherein said determining if said received Ethernet frame includes both positively identified source and destination addresses includes comparing a unique identifier with a first portion of a destination address selected from the header, wherein said unique identifier is associated with the bridge/router, and comparing a second portion of the destination address with a predetermined range of values in the event that

the unique identifier matches the first portion of the destination address.

41. The accused products include determining, in the event that the second portion of the destination address is within the predetermined range of values, whether a protocol type of said received Ethernet frame is an IP protocol type, wherein said determining whether said protocol type of said Ethernet frame is an IP protocol type includes comparing the protocol type with at least one predetermined value.

42. The accused products include associating said received Ethernet frame with a flow in the event said received Ethernet frame includes both positively identified source and destination addresses.

43. The accused products include, in the event said protocol type of said received Ethernet frame is an IP protocol type and said received Ethernet frame is associated with a flow, indexing into a memory within said device using selected portions of said header to obtain, via a single lookup, both said at least one quality of service variable and routing information associated with said received Ethernet frame.

44. Plectrum has been damaged as a result of the infringing conduct by Defendant alleged above. Thus, Defendant is liable to Plectrum in an amount that adequately compensates it for such infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

45. Plectrum and/or its predecessors-in-interest have satisfied all statutory obligations required to collect pre-filing damages for the full period allowed by law for infringement of the ‘149 Patent.

COUNT III

DIRECT INFRINGEMENT OF U.S. PATENT NO. 6,751,677

46. On June 15, 2004, the '677 Patent was duly and legally issued by the United States Patent and Trademark Office for an invention entitled "Method and Apparatus For Allowing a Secure and Transparent Communication Between a User Device and Servers of a Data Access Network System via a Firewall and a Gateway."

47. Plectrum is the owner of the '677 Patent, with all substantive rights in and to that patent, including the sole and exclusive right to prosecute this action and enforce the '677 Patent against infringers, and to collect damages for all relevant times.

48. Defendant made, had made, used, imported, provided, supplied, distributed, sold, and/or offered for sale, within the United States, network switches, routers, and/or firewalls that include a dynamic Network Address Translation of the user IP address and the capability of performing dynamic Port Address Translation ("accused products"). Defendant's accused products include, for example, Defendant's PF5248 Switch:

(Source: https://www.necam.com/sdn/Hardware/PF5248Switch/)

49. By doing so, Defendant has directly infringed (literally and/or under the doctrine of equivalents) at least Claim 1 of the '677 Patent. Defendant's infringement in this regard is ongoing.

50. NEC has infringed the '677 Patent by making, having made, using, importing, providing, supplying, distributing, selling or offering for sale systems utilizing a method of allowing a secure and transparent communication between a user device and servers of a data access network system via a firewall and a router.

51. The accused products include designating a plurality of ports in the firewall for the router, each corresponding to one of a number of ports in the router, wherein each of the router ports can be dynamically assigned to correspond to the port of one of the servers.

52. The accused products include proxifying an object reference referring to a target server of the servers which is to be accessed by a user request by replacing the IP address and the port number of the target server in the object reference with a dynamically assigned router port and the IP address of the router.

53. The accused products include mapping the dynamically assigned router port and the router IP address to the port and IP address of the target server.

54. The accused products include sending the proxified object reference back to the user device such that the user device uses it to issue the user request to access the target server via the router in order to allow secure connection between the user device and the target server to be established without requiring the user request to expose the IP address and port of the target server at the route.

55. NEC has knowledge of the '677 Patent since at least on or around October 22, 2015, when it was cited as relevant prior art by the examiner in European Application No. EP 20130765141, which is assigned to NEC. The '677 Patent was also cited on January 22, 2016, as

relevant prior art by the applicant in U.S. App. No. 14/387,228, which is the US application for EP 2130765141.

56. Plectrum has been damaged as a result of the infringing conduct by Defendant alleged above. Thus, Defendant is liable to Plectrum in an amount that adequately compensates it for such infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

57. Plectrum and/or its predecessors-in-interest have satisfied all statutory obligations required to collect pre-filing damages for the full period allowed by law for infringement of the '677 Patent.

ADDITIONAL ALLEGATIONS REGARDING DIRECT INFRINGEMENT

58. Defendant has also directly infringed the '149, '951, and '677 Patents by exercising direction or control over the use of the accused products by its customers. When Defendant contracts with the customer to provide network services and equipment, including the accused products, Defendant is putting the accused products into service and conditions the benefit received by each customer from using the accused products (which utilize the methods taught by the '149, '951, and '677 Patents), such benefit including improved network functionality, only if the accused products are used in the manner prescribed by Defendant. Use of the accused products in such manner infringes the '149, '951, and '677 Patents.

ADDITIONAL ALLEGATIONS REGARDING INDIRECT INFRINGEMENT

59. Defendant has also indirectly infringed the '149, '951, and '677 Patents by inducing others to directly infringe the '149, '951, and '677 Patents in the United States. Defendant has induced the end-users, Defendant's customers, to directly infringe (literally and/or under the doctrine of equivalents) the '149, '951, and '677 Patents by using the accused products. Defendant took active steps, directly and/or through contractual relationships with others, with the

specific intent to cause them to use the accused products in a manner that infringes one or more claims of the patents-in-suit, including, for example, claim 1 of the ‘149 Patent, claim 1 of the ‘951 Patent, and claim 1 of the ‘677 Patent. Such steps by Defendant included, among other things, advising or directing customers and end-users to use the accused products in an infringing manner; advertising and promoting the use of the accused products in an infringing manner; and/or distributing instructions that guide users to use the accused products in an infringing manner. Defendant performed these steps, which constitute induced infringement with the knowledge of the ‘149, ‘951, and ‘677 Patents and with the knowledge that the induced acts would constitute infringement. Additionally, Defendant provides network management services, which help Defendant’s customers optimize the networks utilizing the accused products. This also induces end-users to use the accused products in a manner that infringes ‘149, ‘951, and ‘677 Patents. Defendant was and is aware that the normal and customary use of the accused products by Defendant’s customers would infringe the ‘149, ‘951, and ‘677 Patents. Defendant’s inducement is ongoing.

60. Defendant has also indirectly infringed by contributing to the infringement of the ‘149, ‘951, and ‘677 Patents. Defendant has contributed to the direct infringement of the ‘149, ‘951, and ‘677 Patents by the end-user of the accused products. The accused products have special features that are specially designed to be used in an infringing way and that have no substantial uses other than ones that infringe the ‘149, ‘951, and ‘677 Patents, including, for example, claim 1 of the ‘149 Patent, claim 1 of the ‘951 Patent, and claim 1 of the ‘677 Patent. The special features include the use of CAMs or TCAMs and ACL lists in a manner that infringes the ‘149 Patent, as described above. The special features also include the ability to perform a lookup operation on a generated hash function to identify the matching destination address is a manner that infringes the ‘951 Patent, as described above. The special features also include a dynamic Network Address

Translation of the user IP address and/or the capability of performing dynamic Port Address Translation in a manner that infringes the '677 Patent, as described above. The special features constitute a material part of the invention of one or more of the claims of the '149, '951, and '677 Patents and are not staple articles of commerce suitable for substantial non-infringing use. Defendant's contributory infringement is ongoing.

61. Defendant also has knowledge of the '149, '951, and '677 Patents at least as of the date when it was notified of the filing of this action. In addition, Defendant has knowledge of the '951 Patent since at least on or around November 1, 2002, as described above. Defendant has knowledge of the '677 Patent since at least on or around October 22, 2015, as described above. Despite this knowledge, Defendant continues to make, have made, use, import, provide, supply, distribute, sell, and/or offer for sale the accused products.

62. Furthermore, Defendant has a policy or practice of not reviewing the patents of others (including instructing its employees to not review the patents of others), despite there being a high probability that Defendant infringes the patents of others, and thus has been willfully blind of Plectrum's patent rights.

63. Defendant's actions are at least objectively reckless as to the risk of infringing a valid patent and this objective risk was either known or should have been known by Defendant.

64. Defendant's direct and indirect infringement of the '149, '951, and '677 Patents is, has been, and continues to be willful, intentional, deliberate, and/or in conscious disregard of Plectrum's rights under the patent.

65. Plectrum has been damaged as a result of the infringing conduct by defendant alleged above. Thus, Defendant is liable to Plectrum in an amount that adequately compensates it for such infringements, which, by law, cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

JURY DEMAND

Plectrum hereby requests a trial by jury on all issues so triable by right.

PRAYER FOR RELIEF

Plectrum requests that the Court find in its favor and against Defendant, and that the Court grant Plectrum the following relief:

a. Judgment that one or more claims of the '149, '951, & '677 Patents have been infringed, either literally and/or under the doctrine of equivalents, by Defendant and/or all others acting in concert therewith;

b. A permanent injunction enjoining Defendant and its officers, directors, agents, servants, affiliates, employees, divisions, branches, subsidiaries, parents, and all others acting in concert therewith from infringement of the '149, '951, & '677 Patents; or, in the alternative, an award of a reasonable ongoing royalty for future infringement of the '149, '951, & '677 Patents by such entities;

c. Judgment that Defendant accounts for and pays to Plectrum all damages to and costs incurred by Plectrum because of Defendant's infringing activities and other conduct complained of herein, including an award of all increased damages to which Plectrum is entitled under 35 U.S.C. § 284;

d. That Plectrum be granted pre-judgment and post-judgment interest on the damages caused by Defendant's infringing activities and other conduct complained of herein;

e. That this Court declare this an exceptional case and award Plectrum its reasonable attorney's fees and costs in accordance with 35 U.S.C. § 285; and

f. That Plectrum be granted such other and further relief as the Court may deem just and proper under the circumstances.

Dated: May 17, 2017

Respectfully submitted,

/s/ *Zachariah S. Harrington*

Matthew J. Antonelli
Texas Bar No. 24068432
matt@ahtlawfirm.com
Zachariah S. Harrington
Texas Bar No. 24057886
zac@ahtlawfirm.com
Larry D. Thompson, Jr.
Texas Bar No. 24051428
larry@ahtlawfirm.com
Michael D. Ellis
Texas Bar No. 24081586
michael@ahtlawfirm.com

ANTONELLI, HARRINGTON
& THOMPSON LLP
4306 Yoakum Blvd., Ste. 450
Houston, TX 77006
(713) 581-3000

Stafford Davis
State Bar No. 24054605
THE STAFFORD DAVIS FIRM, PC
The People's Petroleum Building
102 N College Ave., 13th Floor
Tyler, Texas 75702
(903) 593-7000
sdavis@stafforddavisfirm.com

Attorneys for Plectrum LLC

CERTIFICATE OF SERVICE

I hereby certify that on the 17th day of May, 2017, I electronically filed the foregoing with the Clerk of the Court using the CM/ECF system, which will send notification of such filing to all counsel of record.

/s/ *Zachariah S. Harrington*
Zachariah S. Harrington