

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

PARITY NETWORKS LLC,  <i>Plaintiff,</i>  v.  DELL TECHNOLOGIES INC., DELL INC., and EMC CORPORATION,  <i>Defendants.</i>	§ § § § § § § § § §	CIVIL ACTION NO. 6:19-cv-00550  <b>JURY TRIAL DEMANDED</b>
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**ORIGINAL COMPLAINT**

Plaintiff Parity Networks LLC (“Plaintiff” or “Parity Networks”), by and through its attorneys, for its Original Complaint against Dell Technologies Inc., Dell Inc., and EMC Corporation (collectively “Defendants” or “Dell”), 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. Defendants manufacture, provide, use, sell, offer for sale, imports, and/or distribute infringing products and services; and encourages others to use their 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 Dell’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, Dell Technologies Inc. is a corporation organized under the laws of Delaware, having established places of business in this District at One Dell Way, Round Rock, Texas 78682. Dell Technologies Inc. may be served through its registered agent, Corporation Service Company, 251 Little Falls Drive, Wilmington, Delaware 19808.

6. On information and belief, Dell Inc. is a corporation organized under the laws of Delaware, having established places of business in this District at One Dell Way, Round Rock, Texas 78682; 1404 Park Center Dr., Austin, Texas; 701 E. Parmer Lane, Bldg. PS2, Austin, Texas; 12500 Tech Ridge Road, Austin, Texas; 9715 Burnet Road, Austin, Texas; and 4309 Emma Browning Avenue, Austin, Texas. Dell Inc.'s registered agent for service of process in Texas is Corporation Service Company 211 E. 7th Street, Suite 620, Austin, TX 78701. Dell Inc. is wholly owned by its corporate parent, Dell Technologies Inc.

7. On information and belief, Defendant EMC Corporation is a corporation organized under the laws of Massachusetts, having established places of business in this District at One Dell Way, Round Rock, Texas 78682; 501 Congress Avenue, Suite 200, Austin, Texas; 11044 Research Blvd., Building D, Suite D-500, Austin, Texas; 3900 N. Capital of Texas Highway, Suites 400 & 500, Austin, Texas; 6500 River Place Blvd., Suites 100 & 300 Austin, Texas; and 110 San Antonio Street, Suite 409, Austin, Texas 78701. EMC Corporation may be served through its registered agent, Corporation Service Company, 211 E. 7th Street, Suite 620, Austin, TX 78701. EMC Corporation is wholly owned by its corporate parent, Dell Technologies Inc.

### III. JURISDICTION AND VENUE

8. 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.

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

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

11. On information and belief, Defendants are 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 their 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

12. Parity Networks is the owner of all right, title and interest in and to U.S. Patent No. 6,553,005 (the "'005 Patent"), entitled "Method and Apparatus for Load Apportionment Among Physical Interfaces in Data Routers," issued on April 22, 2003. (*See* Exhibit 1.)

13. 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. (*See* Exhibit 2.)

14. 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. (*See* Exhibit 3.)

15. 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. (*See* Exhibit 4.)

16. The '394 Patent and the '352 Patent share a common specification.

17. 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 5).

18. Collectively, the '005 Patent, the '394 Patent, the '046 Patent and the '352 Patent are, collectively, the "Patents-in-Suit."

19. 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.

#### DEFENDANTS' ACTS

20. Dell is a leader in technology, computing systems and data networking. It provides hardware and software directed to switching and routing network data to its customers in the United States, including in this District.

21. In 2015, Dell Inc. acquired the enterprise technology firm EMC Corporation. Following the completion of the purchase, Dell Inc. and EMC became divisions of Dell Technologies Inc. Unless otherwise specified, Dell Technologies, Inc., Dell Inc. and EMC Corporation are collectively referred to herein as "Dell."

22. Thereafter, Dell rebranded the Open Networking Z Series, S Series and N Series switch portfolio to Dell EMC PowerSwitch.

23. DNOS or Dell Networking Operating System is a network operating system running on Dell switches. It is derived from the PowerConnect OS (DNOS 6.x) or Force10 OS/FTOS (DNOS 9.x). Presently, Dell implements at least the following four network software systems on its switches: Dell EMC Networking OS3; OS6; OS9; and OS10.

24. In that regard, Dell makes, uses and sells switches running Dell EMC PowerSwitch family of networking switches. The PowerSwitch family of switches were designed for high-performance data center and computing environments. They employ a non-blocking switching architecture to deliver line-rate layer 2 (L2) and layer 3 (L3) forwarding capacity to maximize network performance.

25. In DNOS10, Dell has deployed SmartFabric Services (SFS). SFS technology provides the underlying network automation and orchestration to support all automated network operations. SFS is the underlying technology for all Dell EMC SmartFabric OS10 automation efforts.

26. Dell instructs its customers regarding the implementation and operation of the accused instrumentalities, including at <https://www.dell.com/en-us/work/learn/resource-library>.

27. On information of belief, Dell 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.

28. Moreover, on information and belief, Dell implements technical precautions to attempt to thwart customers who would circumvent the intended operation of Dell's products.

29. Dell has knowledge of the Patents-in-Suit and the infringing nature of certain of its products. On or about October 5, 2016; November 28, 2016; and October 19, 2018, Parity Networks sent notice letters to Dell identifying the Parity's patents and requested that Dell license Parity's patents (the "Notice Letters"). On information and belief, Dell actually received each of the Notice Letters. The parties also exchanged other emails and letters during this time period. In that correspondence, Dell acknowledged receipt of the Notice Letters.

## **V. COUNTS OF PATENT INFRINGEMENT**

### **COUNT ONE INFRINGEMENT OF U.S. PATENT NO. 6,553,005**

30. Parity Networks incorporates by reference its allegations in preceding paragraphs as if fully restated in this paragraph.

31. Parity Networks is the assignee and owner of all right, title and interest to the '005 Patent. Parity Networks has the legal right to enforce the patent, sue for infringement, and seek equitable relief and damages.

32. On information and belief, Dell, without authorization or license from Parity Networks, has been and is presently directly infringing at least claim 1 of the '005 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 '005 Patent.

33. Dell is thus liable for direct infringement of the '005 Patent pursuant to 35 U.S.C. § 271(a).

34. Exemplary infringing products include Dell EMC PowerSwitch Z-Series Core and Aggregation Switches (including but not limited to: Z9100-ON, Z9264F-ON), PowerSwitch S-Series Switches (including but not limited to: S3100, S5048F, S6100-ON, S6000-ON, S3048-ON,

S4048-ON, S4048T-ON, S6010-ON, S4128-ON, S4148, S4248-ON, S4112-ON, S5148F-ON, S5212F-ON, S5232F-ON, S5248F-ON, S5296F-ON, S4810-ON, S4820T, S5000); Networking N-Series Switches (including but not limited to: N1100-ON, N1500, N2000, N2100-ON, N3000, N3100-ON, N4000); and PowerEdge MX-Series Switches (including but not limited to: MX5108n, MX7116n, MX9116n, MXG610s) based on Dell EMC Networking OS10, as well as other products operating in a substantially similar manner.

35. On information and belief, Dell, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '005 Patent, including actively inducing infringement of the '005 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 Dell knows or should know infringe one or more claims of the '005 Patent. Dell instructs its customers to make and use the patented inventions of the '005 Patent by operating Dell's products in accordance with Dell's specifications. Dell specifically intends its customers to infringe by deploying and using the infringing functionality.

36. For example, Dell markets to its customers benefits of the Dell Networking Z9100-ON 100GbE fabric switch, including describing it as a "10/25/40/50/100GbE fixed switch purpose-built for applications in high-performance data center and computing environments." [https://i.dell.com/sites/csdocuments/Product\\_Docs/en/25gb-ethernet-the-new-standard-for-data-center-connectivity.pdf](https://i.dell.com/sites/csdocuments/Product_Docs/en/25gb-ethernet-the-new-standard-for-data-center-connectivity.pdf).

37. Dell further markets as a benefit to its customers that "the Z9100-ON delivers line-rate L2 and L3 forwarding capacity to maximize network performance. The compact Z9100-ON design provides industry-leading density of either 32 ports of 100GbE, 64 ports of

50GbE, 32 ports of 40GbE, 128 ports of 25GbE or 128 ports 10GbE and two SFP+ ports of 10GbE/1GbE/100MbE to conserve rack space.” *See id.*

38. Dell markets the Z9100-ON’s link aggregation control protocol capabilities as providing “both load-sharing and port redundancy across line cards.”

**Link Aggregation Control Protocol (LACP)**

A link aggregation group (LAG), referred to as a *port channel* by the Dell EMC Networking OS, can provide both load-sharing and port redundancy across line cards. You can enable LAGs as static or dynamic.

**Introduction to Dynamic LAGs and LACP**

A link aggregation group (LAG), referred to as a *port channel* by Dell EMC Networking OS, can provide both load-sharing and port redundancy across line cards. You can enable LAGs as static or dynamic.

The benefits and constraints are basically the same, as described in *Port Channel Interfaces* in the Interfaces chapter.

The unique benefit of a dynamic LAG is that its ports can toggle between participating in the LAG or acting as dedicated ports, whereas ports in a static LAG must be removed from the LAG in order to act alone.

The Dell EMC Networking OS uses LACP to create dynamic LAGs. LACP provides a standardized means of exchanging information between two systems (also called Partner Systems) and automatically establishes the LAG between the systems. LACP permits the exchange of messages on a link to allow their LACP instances to:

- Reach an agreement on the identity of the LAG to which the link belongs.
- Move the link to that LAG.
- Enable the transmission and reception functions in an orderly manner.

The Dell EMC Networking OS implementation of LACP is based on the standards specified in the IEEE 802.3: “Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications.”

LACP functions by constantly exchanging custom MAC protocol data units (PDUs) across local area network (LAN) Ethernet links. The protocol packets are only exchanged between ports that are configured as LACP capable.

[https://downloads.dell.com/manuals/all-products/esuprt\\_ser\\_stor\\_net/esuprt\\_networking/esuprt\\_net\\_fxdprt\\_swch/networking-z9100\\_user%27s-guide16\\_en-us.pdf](https://downloads.dell.com/manuals/all-products/esuprt_ser_stor_net/esuprt_networking/esuprt_net_fxdprt_swch/networking-z9100_user%27s-guide16_en-us.pdf) at 507.

39. Dell markets the benefits of “load balancing through port channels” and instructs its customers to use “load balancing through port channels” functionality as follows:



## Load Balancing Through Port Channels

Dell EMC Networking OS uses hash algorithms for distributing traffic evenly over channel members in a port channel (LAG).

The hash algorithm distributes traffic among Equal Cost Multi-path (ECMP) paths and LAG members. The distribution is based on a flow, except for packet-based hashing. A flow is identified by the hash and is assigned to one link. In packet-based hashing, a single flow can be distributed on the LAG and uses one link.

Packet based hashing is used to load balance traffic across a port-channel based on the IP Identifier field within the packet. Load balancing uses source and destination packet information to get the greatest advantage of resources by distributing traffic over multiple paths when transferring data to a destination.

*See id.* at 407.

40. Dell further instructs its customers to use the default load-balancing method, “By default, LAG hashing uses the source IP, destination IP, source transmission control protocol (TCP)/user datagram protocol (UDP) port, and destination TCP/UDP port for hash computation.”

## Load-Balancing Method

By default, LAG hashing uses the source IP, destination IP, source transmission control protocol (TCP)/user datagram protocol (UDP) port, and destination TCP/UDP port for hash computation. For packets without a Layer 3 header, Dell EMC Networking OS automatically uses `load-balance mac source-dest-mac`.

Do not configure IP hashing or MAC hashing at the same time. If you configure an IP and MAC hashing scheme at the same time, the MAC hashing scheme takes precedence over the IP hashing scheme.

To change the IP traffic load-balancing default, use the following command.

- Replace the default IP 4-tuple method of balancing traffic over a port channel.  
CONFIGURATION mode

```
[no] load-balance {ip-selection [dest-ip | source-ip]} | {mac [dest-mac | source-dest-mac | source-mac]} | {tcp-udp enable} {ipv6-selection} {tunnel} | {ingress-port}
```

You can select one, two, or all three of the following basic hash methods:

- `ip-selection [dest-ip | source-ip]` — Distribute IP traffic based on the IP destination or source address.
- `mac [dest-mac | source-dest-mac | source-mac]` — Distribute IPv4 traffic based on the destination or source MAC address, or both, along with the VLAN, Ethertype, source module ID and source port ID.
- `tcp-udp enable` — Distribute traffic based on the TCP/UDP source and destination ports.
- `ingress-port` — Option to Source Port Id for ECMP/ LAG hashing.
- `ipv6-selection` — Set the IPv6 key fields to use in hash computation.
- `tunnel` — Set the tunnel key fields to use in hash computation.

*See id.* at 408.

41. On information and belief, Dell, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 of the '005 Patent, including contributory infringement of the '005 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. Dell knows that the infringing products

(i) constitute a material part of the inventions claimed in the '005 Patent; (ii) are especially made or adapted to infringe the '005 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 implement load balancing.

42. As a result of Dell's infringement of the '005 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

43. Parity Networks incorporates by reference its allegations in preceding paragraphs as if fully restated in this paragraph.

44. 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.

45. On information and belief, Dell, without authorization or license from Parity Networks, has been and is presently directly infringing at least claim 1 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. Dell is thus liable for direct infringement of the '394 Patent pursuant to 35 U.S.C. § 271(a).

46. Exemplary infringing products include Dell EMC PowerSwitch S6010-ON Switch based on the Dell EMC Networking OS10 software, as well as other products operating in a substantially similar manner.

47. On information and belief, at least since the filing of the Original Complaint, Dell, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 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 Dell knows or should know infringe one or more claims of the '394 Patent. Dell instructs its customers to make and use the patented inventions of the '394 patent by operating Dell's products in accordance with Dell's specifications. Dell specifically intends its customers to infringe by deploying and using the infringing functionality.

48. For example, Dell markets the benefits of the S6010-ON as having "line-rate L2 and L3 forwarding capacity to maximize network performance. The compact S6010-ON design provides industry-leading density of 32 ports of 40GbE or 96 ports of 10GbE1 and eight additional ports of 40GbE to conserve rack space while enabling denser footprints and simplifying migration to 40Gbps in the data center core."

**Data center optimized**

The Dell EMC Networking S Series S6010-ON 10/40GbE top-of-rack (ToR) switch is purpose-built for applications in high-performance data center and computing environments. Leveraging a non-blocking switching architecture, the S6010-ON delivers line-rate L2 and L3 forwarding capacity to maximize network performance. The compact S6010-ON design provides industry-leading density of 32 ports of 40GbE or 96 ports of 10GbE<sup>1</sup> and eight additional ports of 40GbE to conserve rack space while enabling denser footprints and simplifying migration to 40Gbps in the data center core. In addition, the S6010-ON incorporates multiple architectural features that optimize data center network flexibility, efficiency and availability, including redundant, hot-swappable power supplies and fans.

<https://i.dell.com/sites/doccontent/shared-content/data-sheets/en/Documents/Dell-Networking-S-Series-S6010-ON-Spec-Sheet.pdf>.

49. Dell further instructs customers to use the Dell EMC PowerSwitch S6010-ON Switch Access Control Lists (ACLs) functionality for ingress port for egress pass/drop determination.

## Access Control Lists (ACLs)

This chapter describes access control lists (ACLs), prefix lists, and route-maps.

At their simplest, access control lists (ACLs), prefix lists, and route-maps permit or deny traffic based on MAC and/or IP addresses. This chapter describes implementing IP ACLs, IP prefix lists and route-maps. For MAC ACLs, refer to [Layer 2](#).

An ACL is essentially a filter containing some criteria to match (examine IP, transmission control protocol [TCP], or user datagram protocol [UDP] packets) and an action to take (permit or deny). ACLs are processed in sequence so that if a packet does not match the criterion in the first filter, the second filter (if configured) is applied. When a packet matches a filter, the switch drops or forwards the packet based on the filter's specified action. If the packet does not match any of the filters in the ACL, the packet is dropped (implicit deny).

The number of ACLs supported on a system depends on your content addressable memory (CAM) size. For more information, refer to [User Configurable CAM Allocation and CAM Optimization](#). For complete CAM profiling information, refer to [Content Addressable Memory \(CAM\)](#).

You can configure ACLs on VRF instances. In addition to the existing qualifying parameters, Layer 3 ACLs also incorporate VRF ID as one of the parameters. Using this new capability, you can also configure VRF based ACLs on interfaces.

**NOTE: You can apply Layer 3 VRF-aware ACLs only at the ingress level.**

## IP Access Control Lists (ACLs)

In Dell Networking switch/routers, you can create two different types of IP ACLs: standard or extended.

A standard ACL filters packets based on the source IP packet. An extended ACL filters traffic based on the following criteria:

- IP protocol number
- Source IP address
- Destination IP address
- Source TCP port number
- Destination TCP port number
- Source UDP port number
- Destination UDP port number

For more information about ACL options, refer to the *Dell Networking OS Command Reference Guide*.

For extended ACL, TCP, and UDP filters, you can match criteria on specific or ranges of TCP or UDP ports. For extended ACL TCP filters, you can also match criteria on established TCP sessions.

When creating an access list, the sequence of the filters is important. You have a choice of assigning sequence numbers to the filters as you enter them, or the Dell Networking Operating System (OS) assigns numbers in the order the filters are created. The sequence numbers are listed in the display output of the `show config` and `show ip accounting access-list` commands.

Ingress and egress Hot Lock ACLs allow you to append or delete new rules into an existing ACL (already written into CAM) without disrupting traffic flow. Existing entries in the CAM are shuffled to accommodate the new entries. Hot lock ACLs are enabled by default and support both standard and extended ACLs and on all platforms.

[https://downloads.dell.com/manuals/all-products/esuprt\\_ser\\_stor\\_net/esuprt\\_networking/esuprt\\_net\\_fxd\\_prt\\_swths/networking-s6010-on\\_user%27s%20guide4\\_en-us.pdf](https://downloads.dell.com/manuals/all-products/esuprt_ser_stor_net/esuprt_networking/esuprt_net_fxd_prt_swths/networking-s6010-on_user%27s%20guide4_en-us.pdf) at 93-94. Paragraphs 48-49 are collectively referred to as the “S6010-ON Instructions and Benefits.”

50. On information and belief, Dell, without authorization or license from Parity Networks, has been and is presently indirectly infringing at least claim 1 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. Dell 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 for or in operating systems to implement the infringing functionality.

51. As a result of Dell'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

52. Parity Networks incorporates by reference its allegations in preceding paragraphs as if fully restated in this paragraph.

53. 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.

54. On information and belief, Dell, 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. Dell is thus liable for direct infringement of the '046 Patent pursuant to 35 U.S.C. § 271(a).

55. Exemplary infringing products include the Dell EMC PowerSwitch N1500 Switch, all substantially similar switches and routers.

56. On information and belief, at least since the filing of the Original Complaint, Dell, 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 Dell knows or should know infringe one or more claims of the '046 Patent. Dell instructs its customers to make and use the patented inventions of the '046 Patent by operating Dell's products in accordance with Dell's specifications. Dell specifically intends its customers to infringe by deploying and using the infringing functionality.

57. On information and belief, Dell, 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. Dell 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 to implement the infringing functionality.

58. For example, Dell markets the Dell EMC PowerSwitch N1500 Switch as offering “a power-efficient Gigabit Ethernet (GbE) network-access switching solution with integrated 10GbE uplinks.” [https://i.dell.com/sites/csdocuments/Shared-Content\\_data-Sheets\\_Documents/en/aa/Dell\\_Networking\\_N1500\\_Series\\_SpecSheet.pdf](https://i.dell.com/sites/csdocuments/Shared-Content_data-Sheets_Documents/en/aa/Dell_Networking_N1500_Series_SpecSheet.pdf).

59. Dell markets to its customers and instructs its customers to use QoS commands so that the customer will receive the benefit of “are intended to provide guaranteed timely delivery of specific application data to a particular destination. In contrast, standard IP-based networks are designed to provide best effort data delivery service.”

## **QoS Commands**

**Dell EMC Networking N1100-ON/N1500/N2000/N2100-ON/N3000-ON/N3100-ON Series Switches**

Quality of Service (QoS) technologies are intended to provide guaranteed timely delivery of specific application data to a particular destination. In contrast, standard IP-based networks are designed to provide best effort data delivery service. Best effort service implies that the network delivers the data in a timely fashion, although there is no guarantee. During times of congestion, packets may be delayed, sent sporadically, or dropped. For typical Internet applications, such as electronic mail and file transfer, a slight degradation in service is acceptable and, in many cases, unnoticeable.

Conversely, any degradation of service has undesirable effects on applications with strict timing requirements, such as voice or multimedia.

QoS is a means of providing consistent, predictable data delivery by distinguishing between packets that have strict timing requirements from those that are more tolerant of delay. Packets with strict timing requirements are given special treatment in a QoS-capable network. To accomplish this, all elements of the network must be QoS-capable. If one node is unable to meet the necessary timing requirements, this creates a deficiency in the network path and the performance of the entire packet flow is compromised.

[https://downloads.dell.com/manuals/common/n-series\\_cli\\_660\\_en-us.pdf](https://downloads.dell.com/manuals/common/n-series_cli_660_en-us.pdf) at 679.

60. Dell further instructs its customers to use the “Dell EMC Networking CoS Queuing feature allows the user to directly configure device queuing.”

### **Class of Service (CoS)**

The Dell EMC Networking CoS Queuing feature allows the user to directly configure device queuing and, therefore, provide the desired QoS behavior without the complexities of DiffServ. The CoS feature allows the user to determine the following queue behavior:

- Queue Mapping
  - Trusted Port Queue Mapping
  - Untrusted Port Default Priority
- Queue Configuration

This enables Dell EMC Networking switches to support a wide variety of delay sensitive video and audio multicast applications.

[https://downloads.dell.com/manuals/common/n-series\\_cli\\_660\\_en-us.pdf](https://downloads.dell.com/manuals/common/n-series_cli_660_en-us.pdf) at 680.

61. Dell also instructs users to use queue mapping features “to steer the packet to the appropriate outbound CoS queue through a mapping table. Network packets arriving at an ingress port are directed to one of n queues in an egress port(s) based on the translation of packet priority to CoS queue.”

### **Queue Mapping**

The priority of a packet arriving at an interface is used to steer the packet to the appropriate outbound CoS queue through a mapping table. Network packets arriving at an ingress port are directed to one of n queues in an egress port(s) based on the translation of packet priority to CoS queue. The CoS mapping tables define the queue used to handle each enumerated type of user priority designated in either the 802.1p User Priority, or IP DSCP contents of a packet. If neither of these fields is trusted to contain a meaningful COS queue designation, the ingress port can be configured to use its default priority to specify the CoS queue.

CoS queue mappings use the concept of trusted and untrusted ports.

*See id.* at 681.

62. As a result of Dell’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

63. Parity Networks incorporates by reference its allegations in preceding paragraphs as if fully restated in this paragraph.

64. 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.

65. On information and belief, Dell, 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. Dell is thus liable for direct infringement of the '352 Patent pursuant to 35 U.S.C. § 271(a).

66. Exemplary infringing products include the Dell EMC PowerSwitch S-Series (including but not limited to: S3048-ON, S3124, S4048-ON, S3124F, S3148, S3124P, S3148P, S4048T-ON, S6100-ON, S6010-ON, S5048F-ON, S4810 System, S4820T System, S5000, S5048F-ON, S6000 System, S6000-ON ); Dell EMC PowerSwitch N-Series (including but not limited to: N1100-ON, N1500, N2000, N2100-ON, N3000, N3000-ON, N3100-ON, N4000); and Dell EMC PowerSwitch Z-Series (including but not limited to: Z9100) based on the Dell EMC Networking OS10 software.

67. On information and belief, at least since the filing of the Original Complaint, Dell, 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 Dell knows or should know infringe one or more claims of the '352 Patent. Dell instructs its customers to make and use the patented inventions of the '352 Patent by operating Dell's products in accordance with Dell's specifications. Dell specifically intends its customers to infringe by deploying and using the infringing functionality.

68. On information and belief, Dell, 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. Dell 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 for or in operating systems to implement the infringing functionality.

69. Dell markets to its customers and instructs its customer to use the S6010-ON Instructions and Benefits.

70. As a result of Dell'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. WILLFULNESS**

71. Parity Networks realleges and incorporates the preceding paragraphs herein.

72. On information and belief, Dell has had knowledge of some or all of the Patents-in-Suit and the infringing nature of its products by virtues of the Notice Letters and related correspondence. Despite being notified of the Patents-in-Suit in the Notice Letters, Dell

nonetheless continued to make, use, sell and/or import infringing products despite knowing that its actions constituted infringement of one or more valid patents, and/or ignored the existence of an objectively high likelihood that its products infringed one or more of the Patents-in-Suit.

73. Accordingly, Dell acted egregiously and/or knowingly and/or intentionally when it infringed the Patents-in-Suit.

74. Parity Networks seeks enhanced damages pursuant to 35 U.S.C. §284.

## **VII.**

75. 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 Dell, 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 award enhanced damages pursuant to 35 U.S.C. §284; and
- D. That the Court award such other relief to Parity Networks as the Court deems just and proper.

DATED: September 23, 2019

Respectfully submitted,

/s/ Andrew G. DiNovo

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