

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

WSOU INVESTMENTS, LLC d/b/a  
BRAZOS LICENSING AND  
DEVELOPMENT,

Plaintiff,

v.

DELL TECHNOLOGIES INC., DELL  
INC., AND EMC CORPORATION,

Defendants.

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CIVIL ACTION NO. 6:20-cv-403

**JURY TRIAL DEMANDED**

**ORIGINAL COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff WSOU Investments, LLC d/b/a Brazos Licensing and Development (“Brazos” or “Plaintiff”), by and through its attorneys, files this Complaint for Patent Infringement against Dell Technologies Inc., Dell Inc., and EMC Corporation (collectively, “Defendants”) and alleges:

**NATURE OF THE ACTION**

1. This is a civil action for patent infringement arising under the Patent Laws of the United States, 35 U.S.C. §§ 1, et seq., including §§ 271, 281, 284, and 285.

**THE PARTIES**

2. Brazos is a limited liability corporation organized and existing under the laws of Delaware, with its principal place of business at 605 Austin Avenue, Suite 6, Waco, Texas 76701.

3. On information and belief, defendant Dell Technologies Inc. is a Delaware corporation with a principal place of business at One Dell Way, Round Rock, Texas 78682.

4. On information and belief, defendant Dell Inc. is a Delaware corporation with a principal place of business at One Dell Way, Round Rock, Texas 78682. Dell Inc. is wholly owned by its corporate parent, Dell Technologies Inc.

5. On information and belief, defendant EMC Corporation is a Massachusetts corporation with a principal place of business at One Dell Way, Round Rock, Texas 78682. EMC Corporation is wholly owned by its corporate parent, Dell Technologies Inc.

**JURISDICTION AND VENUE**

6. This is an action for patent infringement which arises under the Patent Laws of the United States, in particular, 35 U.S.C. §§ 271, 281, 284, and 285.

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

8. This Court has specific and general personal jurisdiction over each defendant pursuant to due process and/or the Texas Long Arm Statute, because each defendant has committed acts giving rise to this action within Texas and within this judicial district. The Court's exercise of jurisdiction over each defendant would not offend traditional notions of fair play and substantial justice because each defendant has established minimum contacts with the forum. For example, on information and belief, each defendant has committed acts of infringement in this judicial district, by among other things, selling and offering for sale products that infringe the asserted patent, directly or through intermediaries, as alleged herein.

9. Venue in the Western District of Texas is proper pursuant to 28 U.S.C. §§1391 and/or 1400(b). Each defendant has established places of business in the Western District of Texas. Each defendant is registered to do business in Texas. Upon information and belief, each defendant has transacted business in this District and has committed acts of infringement in this District.

**COUNT ONE - INFRINGEMENT OF  
U.S. PATENT NO. 9,137,144**

10. Brazos re-alleges and incorporates by reference the preceding paragraphs of this Complaint.

11. On September 15, 2015, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 9,137,144 (“the ‘144 Patent ”), entitled “Method and Apparatus for Communication Path Selection.” A true and correct copy of the ‘144 Patent is attached as Exhibit A to this Complaint.

12. Brazos is the owner of all rights, title, and interest in and to the ‘144 Patent, including the right to assert all causes of action arising under the ‘144 Patent and the right to any remedies for the infringement of the ‘144 Patent.

13. Defendants make, use, sell, offer for sale, import, and/or distribute in the United States, including within this judicial district, products such as, but not limited to, augmented reality headsets and services, including but not limited to, the Dell EMC SmartFabric Operating System (collectively, the “Accused Products”).

14. The Accused Products support multiple architecture and environments.

Dell EMC SmartFabric OS10 is a network operating system (NOS) supporting multiple architectures and environments. The SmartFabric OS10 solution allows multi-layered disaggregation of network functionality. SmartFabric OS10 bundles industry-standard management, monitoring, and Layer 2 and Layer 3 networking stacks over CLI, SNMP, and REST interfaces. Users can choose their own third-party networking, monitoring, management, and orchestration applications. To develop scalable L2 and L3 networks, the SmartFabric OS10 delivers a modular and disaggregated solution in a single-binary image.

Source: [https://topics-cdn.dell.com/pdf/smartfabric-os10-5-0\\_en-us.pdf](https://topics-cdn.dell.com/pdf/smartfabric-os10-5-0_en-us.pdf)

15. The Accused Products include standard networking features and switching routing protocols. The SmartFabric OS also provides a method of selecting a communication path from a

group of equal-cost paths with the help of hashing. The hash algorithm makes decisions that are based on values in various packet fields and internal values.

**SmartFabric OS10 key features**

- Standard networking features, interfaces, and scripting functions for legacy network operations integration
- Standards-based switching hardware abstraction through the Switch Abstraction Interface (SAI)
- Pervasive, unrestricted developer environment through Control Plane Services (CPS)
- Layer 2 switching and Layer 3 routing protocols with integrated IP services, quality of service, manageability, and automation features
- Increase VM Mobility region by extending L2 VLAN within or across two DCs with unique VLT capabilities
- Programmatic APIs and CLI automation using batch and aliases to simplify configuration management
- Converged network support for Data Center Bridging, with priority flow control (802.1Qbb), ETS (802.1Qaz), DCBx, and iSCSI TLV

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## Equal cost multi-path

ECMP is a routing technique where next-hop packet forwarding to a single destination occurs over multiple best paths. When you enable ECMP, OS10 uses a hash algorithm to determine the next-hop. The hash algorithm makes hashing decisions based on values in various packet fields and internal values.

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16. A VLAN, i.e., Virtual Local Area Network, provides a way to group devices with a LAN. A group of devices within a VLAN communicate as if they were attached to the same wire.

**What is a VLAN**

Within a switched internetwork, VLANs provide segmentation and organizational flexibility. VLANs provide a way to group devices within a LAN. A group of devices within a VLAN communicate as if they were attached to the same wire. VLANs are based on logical connections, instead of physical connections.

<https://www.dell.com/community/Connectrix/An-Introduction-to-VLAN-and-Trunk/td-p/7076385>,

17. For configuring the load balancing parameters, a router/switch can use the hash fields as VLAN -ID for the hash calculations.

### load-balancing

Distributes or load balances incoming traffic using the default parameters in the hash algorithm.

**Syntax**            `load-balancing {ingress-port enable | [tcp-udp-selection l4-destination-port | l4-source-port] | [ip-selection destination-ip | source-ip | protocol | vlan-id | l4-destination-port | l4-source-port] | [ipv6-selection destination-ip | source-ip | protocol | vlan-id | l4-destination-port | l4-source-port] | [mac-selection destination-mac | source-mac | ethertype | vlan-id]}`

**Parameters**

- `ingress-port enable` — Enables load-balancing on ingress ports.
- `tcp-udp-selection` — Enables the TCP UDP port for the load-balancing configuration.
- `ip-selection` — Enables IPv4 key parameters to use in the hash computation.
- `ipv6-selection` — Enables IPv6 key parameters to use in hash computation.
- `destination-ip` — Enables the destination IP address in the hash calculation.
- `source-ip` — Enables the source IP address in the hash calculation.
- `protocol` — Enables protocol information in the hash calculation.
- `vlan-id` — Enables VLAN ID information in the hash calculation.

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18. The traffic forwards to the VLAN with the help of hash values. The port in a port-channel or a next-hop in an ECMP group is selected based on hash key modulo the number of ports in a port channel.

### Resilient hashing

To increase bandwidth and for load balancing, traffic distributes across the next hops of an ECMP group or member ports of a port channel. OS10 uses a hash algorithm to determine a hash key. The egress port in a port channel or the next hop in an ECMP group is selected based on the hash key modulo the number of ports in a port channel or next hops in an ECMP group, respectively. When a member link goes down or a new member link is added, the traffic flows remap based on the new hash result.

In this section, the term, "member link" refers to either a member physical port, in the case of port channels or next hop in the case of ECMP groups.

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19. ECMP (i.e., equal-cost multipath routing) is a routing technique where next-hop packet forwarding (i.e., forwarding through the node) to a single destination can occur over multiple best paths (i.e., lowest cost paths).

20. There are multiple nodes between a single source node and a destination node. These multiple nodes give rise to multiple paths. Dell Smart Fabric OS uses ECMP to determine

the multiple best paths. The best paths are the lowest cost paths, i.e., paths with the minimum number of hops between the source node and destination node. These paths are used for forwarding packet from the source node to the destination node. (i.e., a plurality of contiguous communication paths).

ECMP is a routing technique where next-hop packet forwarding to a single destination occurs over multiple best paths. When you enable ECMP, OS10 uses a hash algorithm to determine the next-hop. The hash algorithm makes hashing decisions based on values in various packet fields and internal values.

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21. The hashing algorithm helps in determining the best paths for communication traffic. Hashing helps in mapping VLAN ID with a set of lowest-cost paths by using VLAN ID for hash calculations. The hash key modulo, i.e. N, is the number of ports in a port channel or next-hops in ECMP groups (i.e., the paths to the next nodes). The Hash fields for load balancing can also be VLAN based on a VLAN ID (i.e., V). Mod of V with N is used to determine hash value.

### Resilient hashing

To increase bandwidth and for load balancing, traffic distributes across the next hops of an ECMP group or member ports of a port channel. OS10 uses a hash algorithm to determine a hash key. The egress port in a port channel or the next hop in an ECMP group is selected based on the hash key modulo the number of ports in a port channel or next hops in an ECMP group, respectively. When a member link goes down or a new member link is added, the traffic flows remap based on the new hash result.

In this section, the term, "member link" refers to either a member physical port, in the case of port channels or next hop in the case of ECMP groups.

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## load-balancing

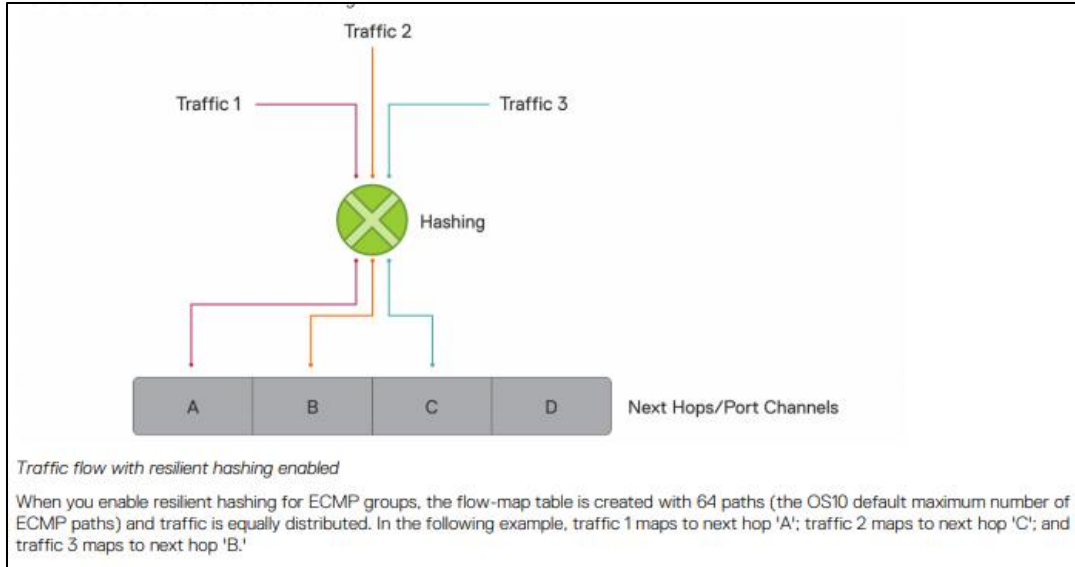
Distributes or load balances incoming traffic using the default parameters in the hash algorithm.

<b>Syntax</b>	<pre>load-balancing {ingress-port enable   [tcp-udp-selection l4-destination-port   l4-source-port]   [ip-selection destination-ip   source-ip   protocol   vlan-id   l4-destination-port   l4-source-port]   [ipv6-selection destination-ip   source-ip   protocol   vlan-id   l4-destination-port   l4-source-port]   [mac- selection destination-mac   source-mac   ethertype   vlan-id]}</pre>
<b>Parameters</b>	<ul style="list-style-type: none"> <li>• ingress-port enable — Enables load-balancing on ingress ports.</li> <li>• tcp-udp-selection — Enables the TCP UDP port for the load-balancing configuration.</li> <li>• ip-selection — Enables IPv4 key parameters to use in the hash computation.</li> <li>• ipv6-selection — Enables IPv6 key parameters to use in hash computation.</li> <li>• destination-ip — Enables the destination IP address in the hash calculation.</li> <li>• source-ip — Enables the source IP address in the hash calculation.</li> <li>• protocol — Enables protocol information in the hash calculation.</li> <li>• vlan-id — Enables VLAN ID information in the hash calculation.</li> </ul>

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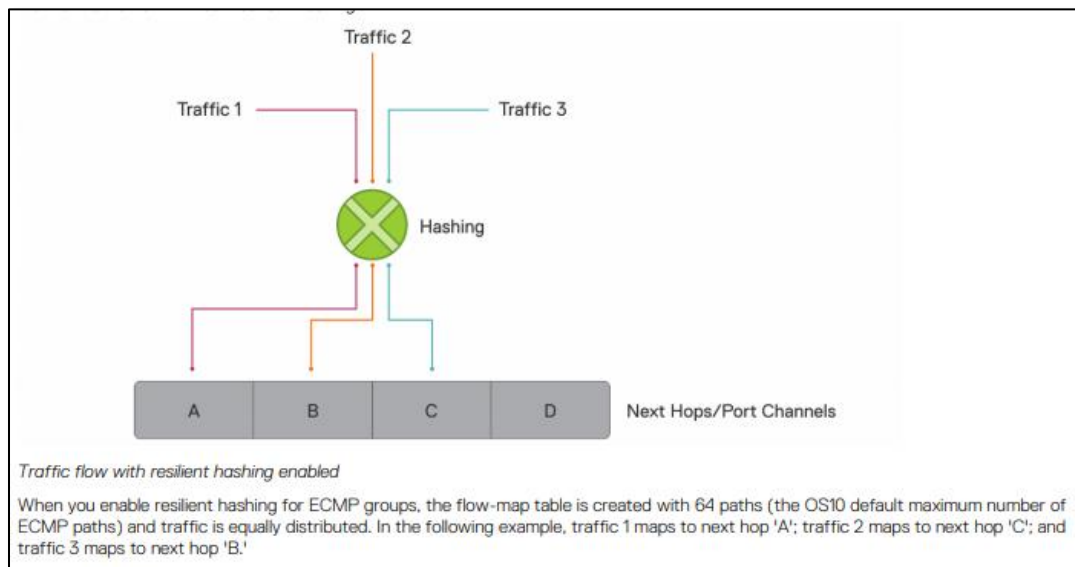
22. After the resilient hashing for the ECMP groups, a flow-map table is created with 64 paths for the traffic flow. The paths on the flow-map table distribute the traffic equally and identify the traffic uniquely.

23. As an example, traffic 1 is mapped on the next-hop A (i.e., path A). The paths/next-hops are uniquely identified (based on an index) by the hashing algorithm to distribute the traffic equally.



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24. As an example, after the resilient hashing, Traffic 1 maps to next-hop A, Traffic 2 maps to next-hop B, and Traffic 3 maps to next-hop C (i.e., selecting a path associated with an index equal to the result). The hash key modulo, i.e.  $N$ , is the number of ports in a port channel or next-hop in an ECMP group.  $V$  is the value of the VLAN ID used.



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25. In view of preceding paragraphs, each and every element of at least claim 1 of the '144 Patent is found in the Accused Products.

26. Defendants continue to directly infringe at least one claim of the '144 Patent, literally or under the doctrine of equivalents, by making, using, selling, offering for sale, importing, and/or distributing the Accused Products in the United States, including within this judicial district, without the authority of Brazos.

27. Defendants have received notice and actual or constructive knowledge of the '144 Patent since at least the date of service of this Complaint.

28. Since at least the date of service of this Complaint, through its actions, Defendants have actively induced product makers, distributors, retailers, and/or end users of the Accused Products to infringe the '144 Patent throughout the United States, including within this judicial district, by, among other things, advertising and promoting the use of the Accused Products in various websites, including providing and disseminating product descriptions, operating manuals, and other instructions on how to implement and configure the Accused Products. Examples of such advertising, promoting, and/or instructing include the documents at:

- [https://topics-cdn.dell.com/pdf/smartfabric-os10-5-0\\_en-us.pdf](https://topics-cdn.dell.com/pdf/smartfabric-os10-5-0_en-us.pdf)
- <https://www.dell.com/community/Connectrix/An-Introduction-to-VLAN-and-Trunk/td-p/7076385>

29. Since at least the date of service of this Complaint, through its actions, Defendants have contributed to the infringement of the '144 Patent by having others sell, offer for sale, or use the Accused Products throughout the United States, including within this judicial district, with knowledge that the Accused Products infringe the '144 Patent. The Accused Products are especially made or adapted for infringing the '144 Patent and have no substantial non-infringing

use. For example, in view of the preceding paragraphs, the Accused Products contain functionality which is material to at least one claim of the '144 Patent.

**JURY DEMAND**

Brazos hereby demands a jury on all issues so triable.

**REQUEST FOR RELIEF**

WHEREFORE, Brazos respectfully requests that the Court:

(A) Enter judgment that Defendants infringe one or more claims of the '144 Patent literally and/or under the doctrine of equivalents;

(B) Enter judgment that Defendants have induced infringement and continue to induce infringement of one or more claims of the '144 Patent;

(C) Enter judgment that Defendants have contributed to and continue to contribute to the infringement of one or more claims of the '144 Patent;

(D) Award Brazos damages, to be paid by Defendants in an amount adequate to compensate Brazos for such damages, together with pre-judgment and post-judgment interest for the infringement by Defendants of the '144 Patent through the date such judgment is entered in accordance with 35 U.S.C. § 284, and increase such award by up to three times the amount found or assessed in accordance with 35 U.S.C. § 284;

(E) Declare this case exceptional pursuant to 35 U.S.C. § 285; and

(F) Award Brazos its costs, disbursements, attorneys' fees, and such further and additional relief as is deemed appropriate by this Court.

Dated: May 18, 2020

Respectfully submitted,

/s/ James L. Etheridge

James L. Etheridge

Texas State Bar No. 24059147

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**COUNSEL FOR PLAINTIFF**