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

| | | |
|---|---|---|
| WSOU INVESTMENTS, LLC d/b/a BRAZOS LICENSING AND DEVELOPMENT,<br><br>Plaintiff,<br><br>v.<br><br>Huawei Investment & Holding Co., Ltd., Huawei Technologies Co., Ltd., Huawei Technologies USA Inc., Huawei Device Co. Ltd. (f/k/a Huawei Device (Dongguan) Co.), Huawei Device (Shenzhen) Co., Ltd. (f/k/a Huawei Device Co., Ltd.), Huawei Device USA, Inc. | § | CIVIL ACTION NO. 6:20-cv-198<br><br>**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 Defendants Huawei Investment & Holding Co., Ltd., Huawei Technologies Co., Ltd., Huawei Technologies USA Inc., Huawei Device Co. Ltd. (f/k/a Huawei Device (Dongguan) Co.), Huawei Device (Shenzhen) Co., Ltd. (f/k/a Huawei Device Co., Ltd.), and Huawei Device USA, Inc. (collectively "Huawei" or "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 Ave, Ste 6, Waco, TX 76701.

3. On information and belief, Defendant Huawei Investment & Holding Co., Ltd. is a Chinese corporation that does business in Texas, directly or through intermediaries, with a principal place of business at Bantian, Longgang District, Shenzhen, 518129, People's Republic of China.

4. On information and belief, Defendant Huawei Technologies Co., Ltd. is a Chinese corporation that does business in Texas, directly or through intermediaries, with a principal place of business at Bantian, Longgang District, Shenzhen 518129, People's Republic of China.

5. Upon information and belief, Defendant Huawei Technologies USA Inc. is a corporation organized and existing under the laws of Texas that maintains an established place of business at 2391 NE Interstate 410 Loop, San Antonio, TX 78217. Huawei Technologies USA, Inc. is authorized to do business in Texas and may be served via its registered agent, CT Corporation System, 1999 Bryan Street, Suite 900, Dallas, Texas 75201-3136.

6. Upon information and belief, Defendant Huawei Device Co. Ltd. (formerly known as Huawei Device (Dongguan) Co.) is a Chinese corporation that does business in Texas, directly or through intermediaries, and maintains a principal place of business in No.2 of Xincheng Road, Songshan Lake Zone, Dongguan, Guangdong 523808, People's Republic of China.

7. Upon information and belief, Huawei Device (Shenzhen) Co., Ltd. (formerly known as Huawei Device Co., Ltd.) is a wholly-owned subsidiary of Defendant Huawei

Device Co. Ltd. is a Chinese corporation that does business in Texas, directly or through intermediaries, and maintains a principal place of business in Bantian, Longgang District, Shenzhen 518129, People's Republic of China.

8. On information and belief, Defendant Huawei Device USA, Inc., is a Texas corporation with a principal place of business located at 5700 Tennyson Parkway, Suite 600, Plano, Texas 75024. Huawei Device USA, Inc. is authorized to do business in Texas and may be served via its registered agent, CT Corporation System, 1999 Bryan Street, Suite 900, Dallas, Texas 75201-3136.

9. All of the Defendants operate under and identify with the trade name "Huawei." Each of the Defendants may be referred to individually as a "Huawei Defendant" and, collectively, Defendants may be referred to below as "Huawei" or as the "Huawei Defendants." Upon information and belief, Defendant Huawei Investment & Holding Co., Ltd. provides consolidated financial reporting for Huawei entities, including all Huawei Defendants.

## JURISDICTION AND VENUE

10. 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.

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

12. This Court has specific and general personal jurisdiction over each Huawei Defendant pursuant to due process and/or the Texas Long Arm Statute, because each Huawei Defendant has committed acts giving rise to this action within Texas and within this judicial district. The Court's exercise of jurisdiction over each Huawei Defendant would not offend traditional notions of fair play and substantial justice because Huawei has established

minimum contacts with the forum. For example, on information and belief, Huawei Defendants have 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.

13. Venue in the Western District of Texas is proper pursuant to 28 U.S.C. §§1391(b), (c)(3), and 1400(b) because Huawei Technologies USA Inc. and Huawei Device USA Inc. have committed acts of infringement in this judicial district and have a regular and established places of business in this judicial district and in Texas. As non-limiting examples, on information and belief, Huawei Technologies USA Inc. and Huawei Device USA Inc. have sold or offered to sell the Accused Products in this judicial district and have employees or agents that operate Huawei equipment in this judicial district, including at 189 CR 265, Georgetown, TX 78626, 1150 S Bell Blvd, Cedar Park, TX 78613, 1399 S A W Grimes Blvd, Round Rock, TX 78664, 12335 IH 35, Jarrell, TX 76537, 1050 Rabbit Hill Rd, Unit #E, Georgetown, TX 78626, 1602 A W Grimes Blvd, Round Rock, TX 78664, 4120 IH 35 N, Georgetown, TX 78626, 900 CR 272, Leander, TX 78641, 1950 Crystal Falls Pkwy, Leander, TX 78641, 1101 N Industrial Blvd, Round Rock, TX 78681, 506 McNeil Rd, Round Rock, TX 78681, 3210 Chisholm Trail Rd, Round Rock, TX 78681, 112 Roundville Ln, Round Rock, TX 78664, 202 Central Dr W, Georgetown, TX 78628, 3595 E Hwy 29, Georgetown, TX 78626, 1402 W Welch St, Taylor, TX 76574, 3801 Oak Ridge Dr, Round Rock, TX 78681, 1957 Red Bud Ln #B, Round Rock, TX 78664, 6603 S Lakewood Dr, Georgetown, TX 78633, 500 W Front, Hutto, TX 78634.

## COUNT ONE - INFRINGEMENT OF U.S. PATENT NO. 7,872,973

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

15. On January 18, 2011, the United States Patent and Trademark Office duly and legally issued U.S. Patent No. 7,872,973("the '973 Patent"), entitled "Method and system for using a queuing device as a lossless stage in a network device in a communications network." A true and correct copy of the '973 Patent is attached as Exhibit A to this Complaint.

16. Brazos is the owner of all rights, title, and interest in and to the '973 Patent, including the right to assert all causes of action arising under the '973 Patent and the right to any remedies for the infringement of the '973 Patent.

17. Huawei makes, uses, sells, offers for sale, imports, and/or distributes in the United States, including within this judicial district, products such as, but not limited to, Huawei switches that incorporate queuing features so as to prevent packet dropping (collectively, the "Accused Products").

18. The Accused Products include CloudEngine 6800 series switches.

19. Huawei's Accused Product provides the ability to monitor the queue depth in the queuing device and compare it with a certain threshold value.

**36.2.1 PFC Initiator**

The PFC Initiator entity generates M_CONTROL PFC requests using the M_CONTROL.request primitive (see 36.1.3.1) when appropriate (e.g., when an input buffer reaches a certain threshold).

https://ieeexplore.ieee.org/document/6032693

20. Huawei's Accused Product incorporate the architecture of the queue functions of a PFC aware system. The queuing device sends the status of queue depth and when a queue buffer reaches a certain fill level threshold, the upstream device sends a PFC frame to the

connected upstream network device to pause transmission of the traffic. Pausing the incoming traffic prevents the queue buffer from overflowing and dropping packets.

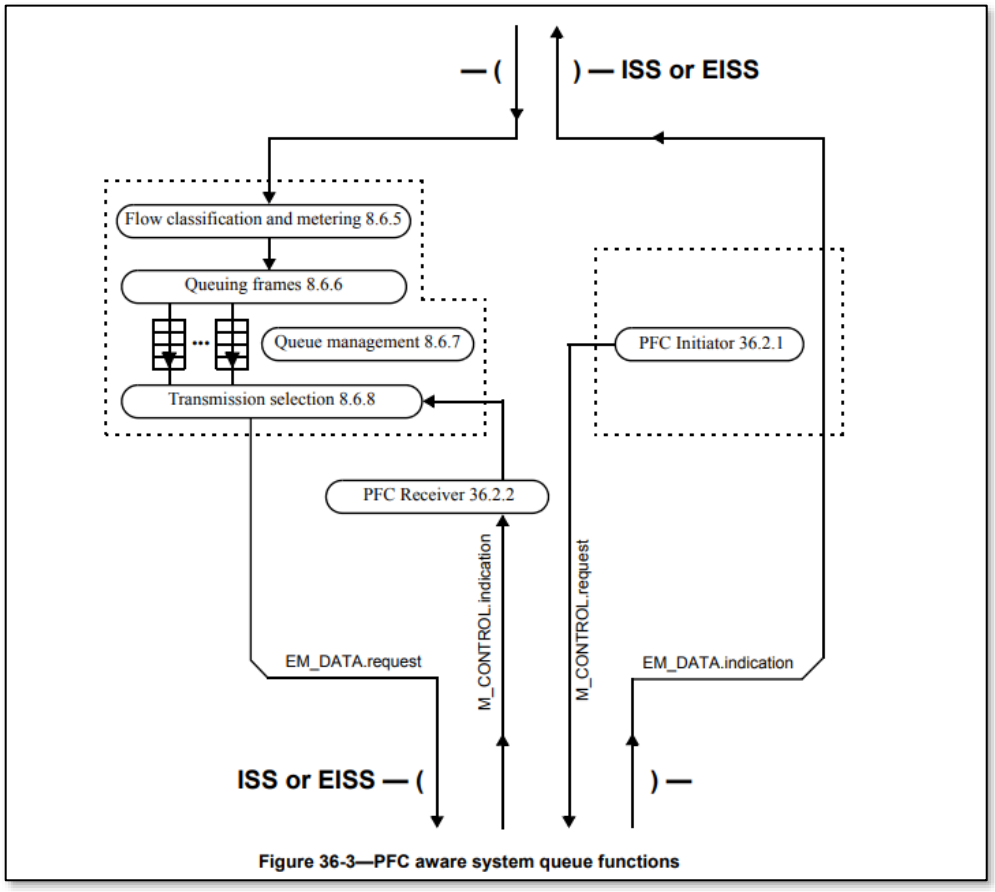



Figure 36-3—PFC aware system queue functions

https://ieeexplore.ieee.org/document/6032693

21. When a queue buffer reaches a certain level threshold, the queuing device acts as a discarding point, by discarding the packets.

> With PFC, instead of interrupting traffic on the entire interface, only traffic of certain queues is suspended. That is, each queue can be suspended or restarted separately, without affecting the traffic in other queues. In this way, multiple types of traffic can be simultaneously transmitted over a link. The system does not apply the backpressure mechanism to the queues with PFC disabled and directly discards packets in these queues when congestion occurs.

https://support.huawei.com/enterprise/us/doc/EDOC1100102950/

22. Huawei describes the Accused Products as an intelligent lossless network combines the priority-based flow control (PFC) mechanism with the intelligent congestion control technology to achieve a zero-packet loss, low latency, and high throughput.

> An intelligent lossless network combines the priority-based flow control (PFC) mechanism with the intelligent congestion control technology to achieve a zero packet loss, low latency, and high throughput Ethernet that is able to support distributed high-performance applications.

https://support.huawei.com/enterprise/us/doc/EDOC1100102950/

23. Huawei's Accused Product supports the Priority-based Flow Control (PFC) feature.

> The device supports Priority-based Flow Control (PFC), Enhanced Transmission Selection (ETS), and Data Center Bridging eXchange protocol (DCBX).
>
> Among the following DCB configuration tasks, **Configuring PFC** and **Configuring ETS** are mandatory and can be performed in any sequence. **Configuring DCBX** is optional. When PFC is configured to work in **auto** mode, perform the operation of **Configuring DCBX**.
>
> **Table 5-7** DCB configuration task summary

| Scenario | Description | Task |
|---|---|---|
| Configure PFC | When traffic of a certain type is congested, PFC stops such traffic without interrupting traffic of other types. | **5.7 Configuring PFC** |

https://support.huawei.com/enterprise/us/doc/EDOC1000150282?section=k008

24. After configuring PFC, differentiated scheduling can be configured on lossless queues.

> Before configuring differentiated scheduling for elephant and mice flows in lossless queues, configure PFC according to **5 Configuring PFC**.

https://support.huawei.com/enterprise/us/doc/EDOC1100102950/

25. To ensure the lossless forwarding of lossless services, implements differentiated scheduling for "elephant" and "mice" flows in a specific lossless queue can be enabled.

26. After this function is enabled, the device records the packet information in lossless queues in flow table entries (i.e., sends a message reporting the depth of the queue to the upstream device), identifies elephant flows based on the flow table entries and elephant flow identification parameters.

27. The upstream device forwards elephant flows in lower priority queues and forwards mice flow in the original queue (i.e., reduce or increase the rate at which the upstream device sends packets to the queuing device), implementing differentiated scheduling of the elephant and mice flows.

> To ensure lossless forwarding of lossless services, you can enable differentiated scheduling for elephant and mice flows in a specific lossless queue. After this function is enabled, the device records the packet information in lossless queues in flow table entries, and identifies elephant flows based on the flow table entries and elephant flow identification parameters. Then the device forwards elephant flows in lower priority queues and forwards mice flows in the original queue, implementing differentiated scheduling of the elephant and mice flows. This ensures the FCT of mice flows.

https://support.huawei.com/enterprise/us/doc/EDOC1100102950/

28. Huawei's Accused Products provide an interface that acts as an upstream device. A PFC message is sent to the immediate upstream switch to pause or limit the sending of packets on a particular priority/traffic class in order to avoid buffer overrun. While pausing, if the upstream network device buffers fill, it may issue its own PFC message to the next upstream network device, and so on, until eventually the sending node is paused.

29. If the queue fills to a certain threshold, the switch sends a PFC pause message to the connected peer device that is transmitting data. The pause message tells the transmitting switch to pause transmission of the flow. This process can be considered as sending the message from the upstream device to an upstream network device to control the rate of packet transmission.

**Figure 4-1** PFC working mechanism

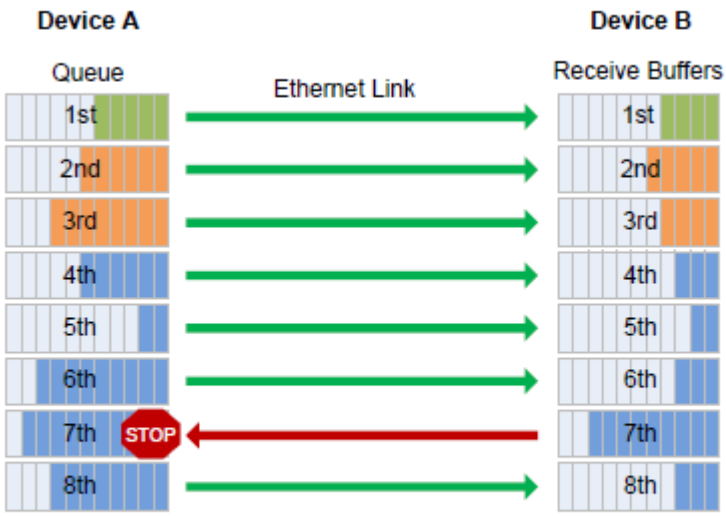



Table 4-1 describes the mappings between packet priorities and interface queues.

https://support.huawei.com/enterprise/us/doc/EDOC1000150304?section=k007

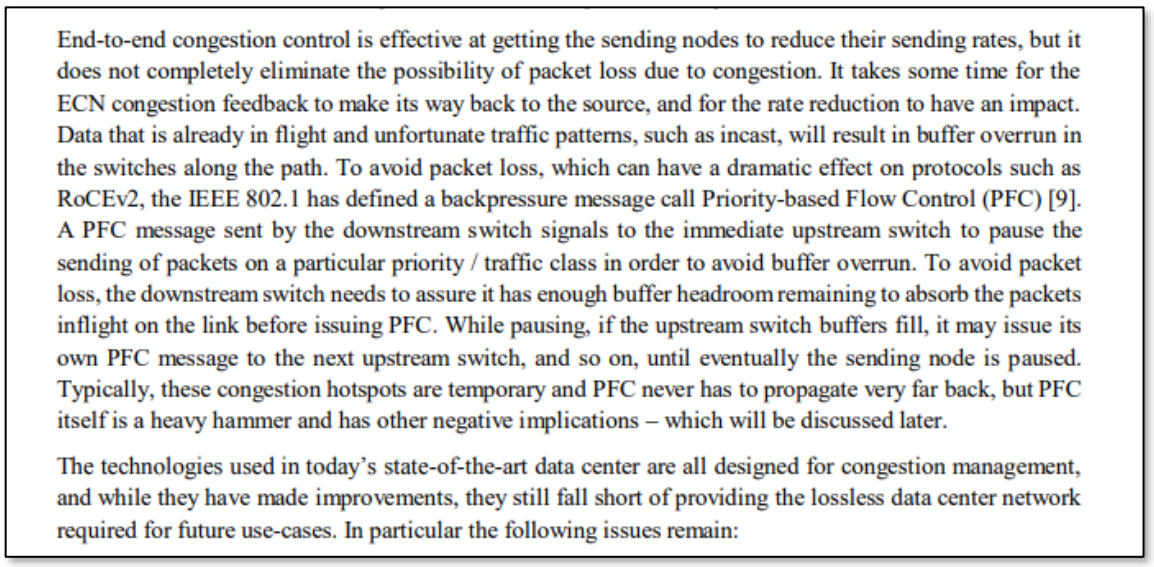
The device supports Priority-based Flow Control (PFC), Enhanced Transmission Selection (ETS), and Data Center Bridging eXchange protocol (DCBX).

Among the following DCB configuration tasks, **Configuring PFC** and **Configuring ETS** are mandatory and can be performed in any sequence. **Configuring DCBX** is optional. When PFC is configured to work in **auto** mode, perform the operation of **Configuring DCBX**.

**Table 5**-7 DCB configuration task summary

| Scenario | Description | Task |
|---|---|---|
| Configure PFC | When traffic of a certain type is congested, PFC stops such traffic without interrupting traffic of other types. | **5.7 Configuring PFC** |

https://support.huawei.com/enterprise/us/doc/EDOC1000150282?section=k008



End-to-end congestion control is effective at getting the sending nodes to reduce their sending rates, but it does not completely eliminate the possibility of packet loss due to congestion. It takes some time for the ECN congestion feedback to make its way back to the source, and for the rate reduction to have an impact. Data that is already in flight and unfortunate traffic patterns, such as incast, will result in buffer overrun in the switches along the path. To avoid packet loss, which can have a dramatic effect on protocols such as RoCEv2, the IEEE 802.1 has defined a backpressure message call Priority-based Flow Control (PFC) [9]. A PFC message sent by the downstream switch signals to the immediate upstream switch to pause the sending of packets on a particular priority / traffic class in order to avoid buffer overrun. To avoid packet loss, the downstream switch needs to assure it has enough buffer headroom remaining to absorb the packets inflight on the link before issuing PFC. While pausing, if the upstream switch buffers fill, it may issue its own PFC message to the next upstream switch, and so on, until eventually the sending node is paused. Typically, these congestion hotspots are temporary and PFC never has to propagate very far back, but PFC itself is a heavy hammer and has other negative implications – which will be discussed later.

The technologies used in today's state-of-the-art data center are all designed for congestion management, and while they have made improvements, they still fall short of providing the lossless data center network required for future use-cases. In particular the following issues remain:

https://mentor.ieee.org/802.1/dcn/17/1-17-0006-01-ICne-the-lossless-network-for-data-centers-white-paper.pdf

30. In view of preceding paragraphs, each and every element of at least claim 1 of the '973 Patent is found in the Accused Products.

31. Huawei has and continues to directly infringe at least one claim of the '973 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.

32. Huawei has received notice and actual or constructive knowledge of the '973 Patent since at least the date of service of this Complaint.

33. Since at least the date of service of this Complaint, through its actions, Huawei has actively induced product makers, distributors, retailers, and/or end users of the Accused Products to infringe the '973 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:

- http://files.rakurs.su/IT/Kommytatory/Huawei/CloudEngine-6800/CloudEngine%206850%20Series%20Data%20Center%20Switches%20Data%20Sheet.pdf
- https://support.huawei.com/enterprise/us/doc/EDOC1000150304?section=k007
- https://ieeexplore.ieee.org/document/6032693
- https://mentor.ieee.org/802.1/dcn/17/1-17-0006-01-ICne-the-lossless-network-for-data-centers-white-paper.pdf
- https://support.huawei.com/enterprise/us/doc/EDOC1100102950/

34. Since at least the date of service of this Complaint, through its actions, Huawei has contributed to the infringement of the '973 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 '973 Patent. The Accused Products are especially made or adapted for infringing the '973 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 '973 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 Huawei infringes one or more claims of the '973 Patent literally and/or under the doctrine of equivalents;

(B) Enter judgment that Huawei has induced infringement and continues to induce infringement of one or more claims of the '973 Patent;

(C) Enter judgment that Huawei has contributed to and continues to contribute to the infringement of one or more claims of the '973 Patent;

(D) Award Brazos damages, to be paid by Huawei in an amount adequate to compensate Brazos for such damages, together with pre-judgment and post-judgment interest for the infringement by Huawei of the '973 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: March 18, 2020

Respectfully submitted,

*/s/ James L. Etheridge*

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