Xiaohua Huang
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*Pro Se* Plaintiff

**UNITED STATES DISTRICT COURT**
**NORTHERN DISTRICT OF CALIFORNIA**
**SAN JOSE DIVISION**

Xiaohua Huang *Pro Se*
Plaintiff(s),

vs.

Fastmetrics, Inc.

Defendant(s)

Case Number: EC 20 00204

MR. Xiaohua Huang's amended **complaint against Fastmetrics, Inc. for patent infringement**

**Demand for Jury Trial**

Plaintiff Xiaohua Huang (hereinafter "Huang" or "Plaintiff") alleges as follows:

## NATURE OF THE ACTION

1. This is an action for patent infringement arising out of 6,744,653 (hereinafter the " '653 Patent") issued on June 1, 2004 to Xiaohua Huang. This action is brought to remedy the infringement of the '653Patent by Defendant Fastmetrics, Inc.. (hereinafter "Fastmetrics, Inc." or "Defendant").

## THE PARTIES

2. Xiaohua Huang is an individual, his current residential address is at 505 Cypress Point Drive, Apt. 272, Mountain view, CA 94043. Huang has developed the state of the art high speed and low power U.S. patented TCAM designs to build IC chips used inside of Internet IP Routers("Routers"), Ethernet Switches("Switches") and Data Center Switches etc since the year of 2000.

3. Fastmetrics, Inc. is or purports to be an corporation with its main offices in 1 Hallidie Plaza, Suite 838, San Francisco, CA 94102, United States with contact telephone number (800) 724-7100. Fastmetrics, Inc. has used Routers, Switches and Data Center Switches to generate its revenues in the United States.

## JURISDICTION AND VENUE

4. This action arises under the patent laws of the United States, 35 U.S.C. § 101, *et seq*. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1338(a). Venue is proper in this District pursuant to 28 U.S.C. §§1391(b) - (c) and 1400(b) in that Defendant has been generating revenues and profits through using "Switches", "Routers" and Data Center Switches which infringes the '653 Patents within Northern California.

## BACKGROUND FACTUAL ALLEGATION

5. A true and correct copy of the '653 Patents is attached hereto as Exhibit B . The '653Patent Patent is valid and owned by Plaintiff Mr. Huang as the inventor.

6. In Nov. 2000 "Huang" found CMOS Micro Device Inc ("CMOS") to develop Ternary Content Addressable Memory (TCAM). "Huang" is the owner of "CMOS", "CMOS" is a California corporation and having its office in 900 East Hamilton Ave, Room 100, Campbell, California. TCAM are used to perform the search function in internet networking router, switches and Data Center Switches.

7. In Oct. 2001 "Huang" filed the provisional patent application titled "High-speed and low power content addressable memory (CAM) sensing circuits", some content of which was granted as US patent 6744653 "CAM cells and differential sense circuit for content addressable memory (CAM)" in June1, 2004.

8. From November, 2000 to April, 2002, Huang finished the design of ternary content addressable memory( TCAM) with 0.18um TSMC technology which are

covered by the '653 Patents. The TCAM designed by Huang is three to tens of times faster in speed and consume much less power than the same products in Market at that time. Then Huang shared his patent application with two Cisco executives, they are GM and VP of Router and Gigbit switches division respectively. They both consider that Huang's patents of TCAM are the best solution among all the vendors and asked Huang to review their next generation TCAM specification and do a feasible design to evaluate the possible product performance. The design data provided by Huang is still better than the best products in market today. '653Patent is the basic fundamentals to design high speed and low power TCAM used in internet Router and Switches as well as Data Center Switches up to today. The TCAM designed by Huang provide the example design using '653Patent. By using '653Patent the TCAM used in Routers and Switches helps Internet transfer information many time faster.

9. The patented TCAM IP developed by Huang has been recognized by the industry. In 2003 Huang was an invited speaker to present his TCAM design at networking symposium at Boston organized by the Industry Authority Linley Group. In 2015 Huang was also a presenter of MEMCON 2015 in Santa Clara convention center to present his patented TCAM design.

10. The ternary content addressable memory component are used as table look up function and used in internet router and switches as well as data center switches to perform table look up to realize access control list(ACL), Quality of Service(QoS), VLAN, LPM and other parallel searching.

11. The TCAM using '653Patent have been used in the chips of Broadcom Inc., Marvell, Cisco, HPE, ZTE, Mellanox and Juniper etc., thoss chips have been used in the Routers and Switches products for the company including ZTE, Cisco, HPE, Dell, Ericsson, Juniper, Netgear, D-link, IBM etc. So the Routers and Switches products for the company including ZTE, Cisco, HPE, Dell,

Ericsson, Juniper, Netgear, D-link, IBM, Extreme Network Inc. etc. infringes the claim 1,5,8,12,15 and 17 of US patent 6744653.

12. Based on information (Data sheet, reverse engineering and information obtained) and believe Huang found that the "TCAM IP" used in the networking chips designed in ZTE's chips, Cisco's chips, Ericsson's chip, HPE's chips, Mellanox's chips, Microchip's chips. Qualcomm's chips, Juniper's chips, Texas Instrument's chips, NXP's chips, Marvell's chips, Broadcom's chips and Nephos' chips have the following feature:

(a) Valid bit for each row to indicate whether the content stored in this row are valid for search or not.

(b) Use a differential sense amplifier to sense match line signal.

(c) Use dummy line to be reference to match line.

(d) differential TCAM cell

(e) differential dummy TCAM cell

The "TCAM IP" above infringes the claims of US patents 6744653 including but not limited to the claim 1, 5, 8, 12,15 and 17 of US patent 6744653 based on Exhibit T. The above TCAM IP have been used in the Routers and Switches products of the company including ZTE, Cisco, HPE, Dell, Ericsson, Juniper, D-link Netgear and IBM etc. So the Routers and Switches products of the company including ZTE, Cisco, HPE, Dell, Ericsson, Juniper, D-link, Netgear

and IBM etc. have infringed the claim1, 5, 8, 12,15 and 17 of US patent 6744653.

13. Mr. Huang informed several company including but not limited to Broadcom and a company which provide TCAM IP to Huawei, Broadcom and Texas Instrument etc. that its TCAM have infringed US patent 6744653. So those company's infringement of "patent-in-suit" is willful.

14. Despite the willful infringement those company have sold the "switches" to "Fastmetrics, Inc." and through product data sheet and application notes to instruct "Fastmetrics, Inc." to use the "ACL" , "QoS" etc. function of "switches" and "router" which use TCAM and have induced "Fastmetrics, Inc." to directly infringe '653Patent.

15. The most function, such as AcL, QoS, VLAN and LPM, of "Router" and "Switches" use TCAM lookup. Through using "Switches" "Fastmetrics, Inc." has conducted the act of direct infringement.

**THE INFRINGING PRODUCTS WHICH "FASTMETRICS, INC." MAY HAVE USED**

16. Fastmetrics, Inc. is a company which has used networking Router, Switches to build network among its Customers. "Fastmetrics, Inc." has used network Routers, Switches to help its Customers to access the high end Routers and Switches of the Main Internet. Those network Routers, Switches and data center Switches may be purchased from one or some of the following company: ZTE, Cisco, HPE, Dell, Ericsson, Juniper, D-link Netgear ,IBM and Extreme Network Inc. etc.

17. ZTE's Switches and Routers includes but not limited to : ZXR10 8900E series core switches ,ZXR10 8900 Series Terabit MPLS Routing Switch ,ZXR10 5960 Series All 10Gigabit Switch ,ZXR10 5900E Series Easy-Maintenance MPLS Routing Switch ,ZXR10 5950-H series All

Gigabit Intelligent Routing Switches ,ZXR10 5250 Series All Gigabit Intelligent Switch, ZXR10 3900E Series Easy-Maintenance Routing Switch , ZXR10 M6000-S Series Multi-services Edge Router.

18. Cisco's Switches and Routers includes but not limited to :

Cisco Catalyst 9400 Series Switches

Cisco Catalyst 9300 Series Switches

Cisco Catalyst 9200 Series Switches

Cisco Catalyst 4500 Series Switches

Cisco Catalyst 3850 Series Switches

Cisco Catalyst 3650 Series Switches

Cisco Catalyst 2960-L Series Switches

Cisco Catalyst 2960-Plus Series Switches

Cisco Catalyst 2960-X Series Switches

Cisco Catalyst 9500 Series Switches

Cisco Catalyst 6800 Series Switches

Cisco Catalyst 6500 Series Switches

Cisco Catalyst 6500 Virtual Switching System 1440

Cisco Catalyst 4900 Series Switches

Cisco Catalyst 4500 Series Switches

Cisco Catalyst 4500-X Series Switches

Cisco Catalyst 3850 Series Switches

Cisco Nexus 7000 Series Switches

Cisco Catalyst 3560-CX Series Switches

Cisco Catalyst 2960-C Series Switches

Cisco Catalyst 2960-CX Series Switches

Cisco Catalyst 2960-L Series Switches

Cisco Nexus 9000 Series Switches

Cisco Nexus 7000 Series Switches

Cisco Nexus 6000 Series Switches
Cisco Nexus 5000 Series Switches
Cisco Nexus 4000 Series Switches
Cisco Nexus 3000 Series Switches
Cisco Nexus 2000 Series Fabric Extenders
Cisco Catalyst 6500 Series Switches
Cisco Catalyst 4900 Series Switches
Cisco 2500 Series Connected Grid Switches
Cisco Embedded Service 3300 Series Switches
Cisco Embedded Service 2020 Series Switches
Cisco Industrial Ethernet 5000 Series Switches
Cisco Industrial Ethernet 4010 Series Switches
Cisco Industrial Ethernet 4000 Series Switches
Cisco Industrial Ethernet 3010 Series Switches
Cisco Industrial Ethernet 3000 Series Switches
Cisco Industrial Ethernet 2000 Series Switches
Cisco Industrial Ethernet 2000U Series Switches
Cisco Industrial Ethernet 1000 Series Switches
Cisco SFS 7000 Series InfiniBand Server Switches
Cisco SFS 3500 Series Multifabric Server Switches
Cisco SFS 3000 Series Multifabric Server Switches
Cisco 550X Series Stackable Managed Switches
Cisco 350 Series Managed Switches
Cisco 350X Series Stackable Managed Switches
Cisco 250 Series Smart Switches
Cisco 220 Series Smart Switches
Cisco ESW2 Series Advanced Switches
Cisco Small Business 300 Series Managed Switches

Cisco Small Business 200 Series Smart Switches
Cisco Small Business 110 Series Unmanaged Switches
Cisco Catalyst 6500 Series Switches
Cisco Catalyst 4500 Series Switches
Cisco ME 4900 Series Ethernet Switches
Cisco Catalyst 3750 Metro Series Switches
Cisco ME 1200 Series Carrier Ethernet Access Devices
Cisco Cloud Services Platform 2100
Cisco Nexus 1000V InterCloud
Cisco Nexus 1000V Switch for KVM
Cisco Nexus 1000V Switch for Microsoft Hyper-V
Cisco Nexus 1000V Switch for VMware vSphere
Cisco Nexus 1000VE Virtual Switch
Cisco Cloud Services Router 1000V Series
Cisco IGX 8400 Series Switches
Cisco MGX 8900 Series Switches
Cisco MGX 8850 Software
Cisco MGX 8800 Series Switches
Cisco MGX 8250 Software
Cisco MGX 8200 Series Edge Concentrators
Cisco 4000 Series Integrated Services Routers
Cisco 1900 Series Integrated Services Routers
Cisco 1800 Series Integrated Services Routers
Cisco 1000 Series Integrated Services Routers
Cisco 800 Series Routers
Cisco ASR 1000 Series Aggregation Services Routers
Cisco Carrier Routing System
Cisco Catalyst 6500 Series Switches

Cisco Nexus 7000 Series Switches

Cisco 2000 Series Connected Grid Routers

Cisco 1000 Series Connected Grid Routers

Cisco 900 Series Industrial Routers

Cisco 800 Series Industrial Integrated Services Routers

Cisco 500 Series WPAN Industrial Routers

Cisco 5900 Series Embedded Services Routers

Cisco 5000 Series Enterprise Network Compute System

Cisco Network Convergence System 6000 Series Routers

Cisco ASR 9000 Series Aggregation Services Routers

Cisco ASR 1000 Series Aggregation Services Routers

Cisco ASR 920 Series Aggregation Services Router

Cisco ASR 901 Series Aggregation Services Routers

Cisco ASR 900 Series Aggregation Services Routers

Network Convergence System 500 Series Routers

Cisco 1900 Series Integrated Services Routers

Cisco 800 Series Routers

Cisco ASR 1000 Series Aggregation Services Routers

Cisco Catalyst 6500 Series Switches

Cisco Network Convergence System 5500 Series

Cisco Network Convergence System 5000 Series

19. HPE's Switches and Routers includes but not limited to :

HPE FlexNetwork 5510 HI Switch Series

HPE FlexFabric 5700

HPE FlexFabric 5800

HPE FlexFabric 5940

HPE FlexFabric 5950

HPE FlexFabric 12900E

HPE FlexFabric 12900E Switch Series

HPE-Router

20. Dell's Switches and Routers includes but not limited to: Brocade M5424, Dell Networking Z Series, Dell Networking S Series 1gbe , Dell Networking X-Series, Dell EMC Networking N1100 Series ,Dell Networking N1500 Switches , Dell Networking N2000 Series, Dell Networking N3000 Series, Dell Networking N4000 Series ,Dell Networking C9000 Series ,SonicWall NSA Series ,SonicWALL TZ Series.

21. Ericsson's Switches and Routers includes but not limited to: Router 6274, Router 6371, Router 6471, Router 6672, Router 6675, Router 8801.

22. Juniper's Switches and Routers includes but not limited to : MX5,MX10,MX40,MX80,MX104,MX150,MX204,MX240,MX480,MX960,MX2008, MX2010,MX2020, MX10003,MX10008 and MX10016,PTX1000,PTX3000,PTX5000, PTX10001,PTX10002,PTX10008 and PTX10016, T4000 Core Router.

23. D-link's Switches and Routers includes but not limited to : DXS-3600, DXS-3400, DGS-3630 ,DGS-3120, DGS-3630 Series, DXS-3400 Series, DXS-3600 Series, DGS-3120 Series, DGS-1210/ME Series, DGS-3130 Series, DGS-3130-30PS,DGS-3130-54TS,DGS-3130-54S,DGS-3630-52TC,DGS-3130-54PS,DGS-3630-28PC,DGS-363028SC, DGS-3630-28TC, DXS-3400-24TC , DXS-3400-24SC.

24. Netgear's Switches and Routers includes but not limited to: M4200 Series, M4300 Series, M4100 Series, M5300 Series, M6100 Series, M7100 Series, M7300 Series.

25. IBM's Switches and Routers includes but not limited to: Ethernet Switches (7120-24E, 7120-24L, 7120-48E, 7120-64C, 8831-00M, 8831-00M, 8831-S48, 8831-NF2, 8831-S52), Infinity Band Switches (8828-E36, 8828-E37, 8828-ED0, 8828-ED1, 8828-ED2, 8831-F36, 8831-F37, 8867-FM1, 8867-FM2, 8828-E36, 8828-E36, 8828-ED0, 8828-ED1, 8828-ED2, 8831-F36, 8831-

F37, 8867-FM1, 8867-FM2.), Storage Networking Switches (SAN512B-6, SAN256B-6,SAN384C-6, SAN192C-6, SAN768B-2 , SAN384B-2, SAN64B-6, SAN96B-5, SAN48B-5, SAN32C-6, SAN24B-6, SAN24B-5, SAN24B-4 , SAN50C-R,SAN42B-R, SAN06B-R).

26. All products in the above from paragraph 17 to paragraph 25 use either/both "TCAM IP" or /and TCAM chips to perform the ACL, QoS, VLAN, LPM and other parallel searching , filtering and access control functions based on its data sheet or application notes. The chips using TCAM inside those "Router" and "Switches" are the chips of Broadcom Inc., Marvell, Cisco, HPE, ZTE, Mellanox and Juniper etc., those products have infringed the claim 1,5,8,12 and 15 of patent 6744653. The network platform that Fastmetrics, Inc. has built for its Customers to use may have accessed and used some of the Routers and Switches listed from paragraph 17 to paragraph 25 above , so Fastmetrics, Inc. may have infringed the claim 1,5,8,12 and 15 of patent 6744653 at least.

**COUNT I: INFRINGEMENT OF U.S. PATENT NO. 6744653**

27. Plaintiff Mr. Huang refers to and incorporates herein the allegations of Paragraphs 1-26 above.

28. On June1, 2004, U.S. Patent No.6744653 (the "'653Patent") was duly and legally issued for a "CAM cells and differential sense circuit for content addressable memory (CAM)." A true and correct copy of the '653 patent is attached hereto as Exhibit B. Xiaohua Huang as inventor is the owner of all rights, title, and interest in and to the '653 patent.

29. On information and belief, Fastmetrics, Inc. has infringed and continue to infringe directly, indirectly, literally one or more of the claims of the '653patent through using the Networking Routers and Switches as well as data center Switches of the following company: ZTE, Cisco, HPE, Dell, Ericsson, Juniper, D-link Netgear and IBM etc. Those Networking Routers and Switches

using either/Both "TCAM IP" or/and TCAM chips have infringed at least claim 1, 5, 8, 12 and 15 of the '653patent under 35 U.S.C. § 271(a), (b) and(c).

30. On information and belief, Fastmetrics, Inc. has induced its Customers to have infringed and continue to infringe directly, indirectly, literally one or more of the claims of the '653patent by transferring data through the Networking Routers and Switches as well as data center Switches of the Internet, which Routers and Switches as well as Data Center Switches are from, but not limited to, following company: ZTE, Cisco, HPE, Dell, Ericsson, Juniper, D-link Netgear and IBM etc. Those Networking Routers and Switches using either/Both "TCAM IP" or/and TCAM chips have infringed at least claim 1, 5, 8, 12 and 15 of the '653patent under 35 U.S.C. § 271 (b) and(c).

30. Defendant Fastmetrics, Inc.'s acts of infringement and inducing infringement have caused damage to Xiaohua Huang, and Xiaohua Huang is entitled to recover from Defendant Fastmetrics, Inc. for the damages sustained by Xiaohua Huang as a result of Defendant Fastmetrics, Inc.'s wrongful acts in an amount subject to proof at trial. Defendant Fastmetrics, Inc.'s infringement of Xiaohua Huang exclusive rights under the '653patent will continue to damage Xiaohua Huang, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court. Defendant Fastmetrics, Inc.'s infringement entitle Xiaohua Huang to recover damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

## JURY DEMAND

31. Pursuant to Fed. R. Civ. P. 38(b), Plaintiff Xiaohua Huang requests a trial by jury on all issues.

## PRAYER FOR RELIEF

WHEREFORE, Xiaohua Huang prays for the following relief:

(a). A judgment in favor of Xiaohua Huang that Defendant has infringed and is infringing U.S. Patent Nos. 6744653;

(b). A judgment that the '653 patent is valid and enforceable;

(c). An order preliminarily and permanently enjoining Defendant and its subsidiaries, parents, officers, directors, agents, servants, employees, affiliates, attorneys and all others in active concert or participation with any of the foregoing, from further acts of infringement of the '653patent;

(d). An accounting for damages resulting from Defendant's infringement of the '653 patent under 35 U.S.C. § 284;

(e). An assessment of interest on damages;

(f). A judgment awarding damages to Xiaohua Huang for its costs, disbursements, expert witness fees, and attorneys' fees and costs incurred in prosecuting this action, with interest pursuant to 35 U.S.C. § 285 and as otherwise provided by law;

(g). Such other and further relief as this Court may deem just and equitable.

Dated: January 8, 2020

Respectfully Submitted,

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Exhibit B 6744653 Patent

Exhibit T Expert Report