**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.
 	
 CISCO SYSTEMS, INC.
 	
       Defendant.
	CIVIL ACTION NO. 6:21-cv-128
	
	 JURY TRIAL DEMANDED

**BRAZOS COMPLAINT FOR
<u>PATENT INFRINGEMENT AND JURY DEMAND</u>**

Plaintiff WSOU Investments, LLC d/b/a Brazos Licensing and Development ("Brazos"), by and through its attorneys, files this Complaint for Patent Infringement against defendant Cisco Systems, Inc. ("Cisco Systems") and alleges as follows:

1.   This Complaint arises from Cisco Systems' unlawful infringement of the following United States patents owned by Brazos: United States Patent Nos. 8,989,216 ("'216 Patent"), 7,443,859 ("'859 Patent"); 8,191,106 ("'106 Patent"); 8,665,733 ("'733 Patent"); and 9,357,014 ("'014 Patent") (collectively, the "Asserted Patents").

Parties

2.   Plaintiff 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.   Defendant Cisco Systems is a corporation organized under the laws of the State of California, with its principal place of business at 170 W. Tasman Dr., San Jose, CA 95134. Cisco Systems is registered to do business in the state of Texas. Cisco Systems is doing business, either

directly or through its agents, on an ongoing basis in this judicial district and elsewhere in the United States, and has a regular and established place of business in this judicial district at its campuses at 12515-3 Research Park Loop, Austin, TX 78759, and at 18615 Tuscany Stone, San Antonio, TX 78258. Cisco Systems may be served with process through its registered agent, Corporation Service Company d/b/a CSC-Lawyers Incorporating Service Company, 211 E. 7th St., Suite 620, Austin, TX 78701-3218.

Jurisdiction & Venue

4.   This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a) because this action arises under the patent laws of the United States, 35 U.S.C. §§ 1 *et seq*.

5.   This Court has personal jurisdiction over Cisco Systems in this action because Cisco Systems has committed acts of infringement of the Asserted Patents within this District giving rise to this action, and has established minimum contacts with this forum such that the exercise of jurisdiction over Cisco Systems would not offend traditional notions of fair play and substantial justice. Cisco Systems, directly and through subsidiaries or intermediaries, has committed and continues to commit acts of infringement in this District by, among other things, making, using, importing, offering to sell, and selling products that infringe the Asserted Patents. Notably, Cisco Systems has repeatedly failed to dispute that this Court has personal jurisdiction over it in patent actions. *See, e.g.*, Motion to Dismiss, *Monarch Networking Sols. LLC v. Cisco Sys., Inc.*, 6:20-cv-00381-ADA (W.D. Tex. July 23, 2020), ECF No. 19; Motion to Dismiss, *Sable Networks, Inc. v. Cisco Sys., Inc.*, 6:20-cv-00288-ADA (W.D. Tex. June 19, 2020), ECF No. 15.

6.   Venue is proper in this District under 28 U.S.C. §§ 1391(b), (c), (d) and 1400(b). Cisco Systems is registered to do business in Texas and, upon information and belief, Cisco Systems has transacted business in this District and has committed acts of direct and indirect

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infringement in this District by, among other things, importing, offering to sell, and selling

products that infringe the Asserted Patents. Cisco Systems has a regular and established place of

business in the District, including campuses at 12515-3 Research Park Loop, Austin, TX 78759,

and at 18615 Tuscany Stone, San Antonio, TX 78258.[1]

Count 1
(Infringement of the '216 Patent)

7.   Brazos repeats and re-alleges the allegations in the preceding paragraphs as if fully

set forth herein.

8.   On March 24, 2015 the U.S. Patent & Trademark Office duly and legally issued the

'216 Patent entitled "Diameter versioning dictionary." A true and correct copy of the '216 Patent

is attached as Exhibit A to this Complaint.

9.   Brazos is the owner of all rights, title, and interest in and to the '216 Patent,

including the right to assert all causes of action arising under the '216 Patent and the right to any

remedies for the infringement of the '216 Patent.

10.   Claim 4 of the '216 Patent recites:

> 4. A network node comprising a Diameter protocol command dictionary comprising: a first definition for a Diameter protocol command, wherein said Diameter protocol command is defined by a first default definition unless a first context applies in which case said command is defined by a context-specific definition, and the Diameter protocol command dictionary supports multiple versions of a standard, a second definition for a Diameter protocol attribute value pair (AVP), wherein said command or AVP is defined by a second default definition unless a second context applies in which case said AVP is defined by a second context-specific definition, wherein said Diameter protocol command dictionary interoperates with a Diameter protocol stack to perform functions for processing Diameter messages.

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[1] *See, e.g., Contact Cisco*, CISCO, https://www.cisco.com/c/en/us/about/contact-cisco.html (last accessed Feb. 5, 2021) (showing San Antonio office address).

11.   Cisco Systems has directly infringed and continues to directly infringe, literally and/or under the doctrine of equivalents, one or more claims, including at least claim 4, of the '216 Patent in violation of 35 U.S.C. § 271(a) because Cisco Systems makes, uses, offers for sale, sells, and/or imports certain products, including within this District, such diameter dictionaries that are implemented in at least the following products: Cisco ASR 5500, Cisco ASR 5700, Cisco ASR 5000 Small Cell Gateway Series, and Cisco Virtual Packet Core ("'216 Accused Products"). Cisco Systems' infringing use of the '216 Accused Products includes its internal use and testing of the '216 Accused Products.

12.   The '216 Accused Products satisfy all claim limitations of one or more of the claims of the '216 Patent, including at least claim 4.

13.   For example, the '216 Accused Products implement a network node comprising a Diameter protocol command dictionary comprising: a first definition for a Diameter protocol command, wherein said Diameter protocol command is defined by a first default definition unless a first context applies in which case said command is defined by a context-specific definition, and the Diameter protocol command dictionary supports multiple versions of a standard. Cisco Systems provides various diameter dictionaries that are used by the '216 Accused Products. The dictionaries included in the Cisco Systems diameter dictionaries are DPCA, DCCA, CSCF, and Diameter AAA.[2] A standard dictionary is used (e.g., a default definition) until there is a specific context. In the case of a specific context, custom-defined dictionaries are used.[3]

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[2] *Diameter Dictionaries and Attribute Definitions*, CISCO, at 1, https://www.cisco.com/c/en/us/td/docs/wireless/asr_5000/21-4_N5-7/AAA/21-4-AAA-Reference/21-AAA-Reference_chapter_01101.pdf (last accessed Feb. 5, 2021); *Id.* at 14..

[3] *AAA Server Group Configuration Mode Commands*, CISCO, at 4, https://www.cisco.com/c/en/us/td/docs/wireless/asr_5000/21-10_6-4/Mode_A-B-CLI-Reference/21-10-A-B_CLI-Reference/21-10-A-B_CLI-Reference_chapter_011.html#reference_b2cbc647-30fb-4b46-a7d6-9a4cb4136517 (last

14.   The '216 Accused Products also comprise a second definition for a Diameter protocol attribute value pair ("AVP"), wherein said command or AVP is defined by a second default definition unless a second context applies in which case said AVP is defined by a second context-specific definition, wherein said Diameter protocol command dictionary interoperates with a Diameter protocol stack to perform functions for processing Diameter messages. The Diameter Attribute Value Pair is used to carry the specific authentication, accounting, authorization, routing, and security information, and configuration details for the requests made by the nodes and the replies received by them.[4] The Diameter protocol command dictionary interoperates with multiple dictionary protocols (e.g., a Diameter protocol stack) to perform functions for processing Diameter messages.[5]

15.   Cisco Systems has received notice and actual or constructive knowledge of the '216 Patent and the infringing nature of the '216 Accused Products since at least the date of service of this Complaint.

16.   Since at least the date of service of this Complaint, through its actions, Cisco Systems has indirectly infringed and continues to indirectly infringe the '216 Patent in violation of 35 U.S.C. § 271(b). Cisco Systems has actively induced product makers, distributors, retailers,

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accessed Feb. 5, 2021); *Diameter Dictionaries and Attribute Definitions*, CISCO, at 13, https://www.cisco.com/c/en/us/td/docs/wireless/asr_5000/21-4_N5-7/AAA/21-4-AAA-Reference/21-AAA-Reference_chapter_01101.html#reference_8815aa7a-8a20-4a1e-9dd7-1b6acdcd7f59 (last accessed Feb. 5, 2021).
[4] *Diameter Dictionaries and Attribute Definitions*, CISCO, at 1, https://www.cisco.com/c/en/us/td/docs/wireless/asr_5000/21-4_N5-7/AAA/21-4-AAA-Reference/21-AAA-Reference_chapter_01101.html#reference_8815aa7a-8a20-4a1e-9dd7-1b6acdcd7f59 (last accessed Feb. 5, 2021).
[5] *Diameter Dictionaries and Attribute Definitions*, CISCO, at 12, https://www.cisco.com/c/en/us/td/docs/wireless/asr_5000/21-4_N5-7/AAA/21-4-AAA-Reference/21-AAA-Reference_chapter_01101.html#reference_8815aa7a-8a20-4a1e-9dd7-1b6acdcd7f59 (last accessed Feb. 5, 2021).

and/or end users of the '216 Accused Products to directly infringe the '216 Patent throughout the United States, including within this Judicial District, by, among other things, advertising and promoting the use of the '216 Accused Products in various websites, including providing and disseminating product descriptions, operating manuals, and other instructions on how to implement and configure the '216 Accused Products. Examples of such advertising, promoting, and/or instructing include the documents at:

- https://www.cisco.com/c/en/us/products/wireless/asr-5500/index.html

- https://www.cisco.com/c/en/us/support/wireless/asr-5500/model.html

- https://www.cisco.com/c/en/us/products/collateral/wireless/asr-5500/data_sheet_c78-707265.html

- https://www.cisco.com/c/en/us/td/docs/wireless/asr_5000/platform/Install-ASR5500/b_ASR5500_Install.html

- https://www.cisco.com/c/en/us/support/wireless/asr-5700/model.html

- https://www.cisco.com/c/en/us/support/wireless/asr-5000-small-cell-gateway/series.html

- https://www.cisco.com/c/en/us/support/wireless/virtual-packet-core/series.html

17.   Cisco Systems does so knowing and intending that its customers and end users will commit these infringing acts. Cisco Systems also continues to make, use, offer for sale, sell, and/or import the '216 Accused Products, despite its knowledge of the '216 Patent, thereby specifically intending for and inducing its customers to infringe the '216 Patent through the customers' normal and customary use of the '216 Accused Products.

18.   In addition, Cisco Systems has indirectly infringed and continues to indirectly infringe the '216 Patent in violation of 35 U.S.C. § 271(c) by selling or offering to sell in the

United States, or importing into the United States, the '216 Accused Products with knowledge that they are especially designed or adapted to operate in a manner that infringes that patent and despite the fact that the infringing technology or aspects of the products are not a staple article of commerce suitable for substantial non-infringing use.

19.   For example, Cisco Systems is aware that the technology described above included in the '216 Accused Products enables the product to operate as described above and that such functionality infringes the '216 Patent, including claim 4. Cisco Systems continues to sell and offer to sell these products in the United States after receiving notice of the '216 Patent and how the products' functionality infringe that patent.

20.   The infringing aspects of the '216 Accused Products can be used only in a manner that infringes the '216 Patent and thus have no substantial non-infringing uses. The infringing aspects of those instrumentalities otherwise have no meaningful use, let alone any meaningful non-infringing use.

21.   Brazos has suffered damages as a result of Cisco Systems' direct and indirect infringement of the '216 Patent in an amount adequate to compensate for Cisco Systems' infringement, but in no event less than a reasonable royalty for the use made of the invention by Cisco Systems, together with interest and costs as fixed by the Court.

<u>Count 2</u>
(Infringement of the '859 Patent)

22.   Brazos repeats and re-alleges the allegations in the preceding paragraphs as if fully set forth herein.

23.   On October 28, 2008, the U.S. Patent & Trademark Office duly and legally issued the '859 Patent entitled "Method and apparatus for address allocation in GPRS networks that

facilitates end-to-end security." A true and correct copy of the '859 Patent is attached as Exhibit

B to this Complaint.

24.   Brazos is the owner of all rights, title, and interest in and to the '859 Patent,

including the right to assert all causes of action arising under the '859 Patent and the right to any

remedies for the infringement of the '859 Patent.

25.   Claim 1 of the '859 Patent recites:

1. A method comprising:

receiving an Activate Packet Data Protocol (PDP) Context Request message
at a Serving General Packet Radio System (GPRS) Support Node (SGSN) of a
network from a mobile station of the network, the Activate PDP Context
Request message having an APN (Access Point Name) field containing
information that explicitly indicates requesting either a private network address
or a public network address to be assigned to the mobile station; and

sending an Activate PDP Context Accept message to the mobile station
containing information assigning one of a private network address and a public
network address to the mobile station based on the information contained in the
APN field of the Activate PDP Context Request message.

26.   Cisco Systems has directly infringed and continues to directly infringe, literally

and/or under the doctrine of equivalents, one or more claims, including at least claim 1, of the '859

Patent in violation of 35 U.S.C. § 271(a) because Cisco Systems makes, uses, offers for sale, sells,

and/or imports certain products, including within this Judicial District, such as Cisco Systems'

switches that support Cisco Star OS, which is implemented on at least the following products: the

Cisco ASR 5500, Cisco ASR 5700, and Cisco Virtual Packet Core ("'859 Accused Products").

Cisco Systems' infringing use of the '859 Accused Products includes its internal use and testing

of the '859 Accused Products.

27.   The '859 Accused Products satisfy all claim limitations of the one or more claims

of the '859 Patent, including at least claim 1.

28.   By way of example, the '859 Accused Products practice a method which receives an Activate Packet Data Protocol ("PDP") Context Request message at a Serving General Packet Radio System ("GPRS") Support Node ("SGSN") of a network from a mobile station of the network, the Activate PDP Context Request message having an Access Point Name ("APN") field containing information that explicitly indicates requesting either a private network address or a public network address to be assigned to the mobile station. The '859 Accused Products provide an SGSN application that runs on the '859 Accused Products and virtualized platforms.[6] SGSN and Gateway GPRS Support Nodes ("GGSN") work in conjunction to keep user equipment connected to the Internet and IP-based applications.[7] To resolve received APNs in a PDP activation request message, the SGSN sends a Create PDP context request ("DNS query") to the GGSN. The SGSN, in turn, sends an APN restriction value in the Create PDP context request for establishing a PDP context.[8] The APN restriction value defines the type of APN access, whether private or public.[9]

29.   Further, the method practiced by the '859 Accused Products comprises sending an Activate PDP Context Accept message to the mobile station containing information assigning one of a private network address and a public network address to the mobile station based on the information contained in the APN field of the Activate PDP Context Request message. The SGSN

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[6] *SGSN Administration Guide, StarOS Release 21.15*, CISCO, at 44, https://www.cisco.com/c/en/us/td/docs/wireless/asr_5000/21-15_6-9/SGW-Admin/21-15-SGSN-Admin.pdf (last accessed Feb. 5, 2021); *Cisco ASR 5500*, CISCO, at 1, https://www.cisco.com/c/en/us/products/wireless/asr-5500/index.html (last accessed Feb. 5, 2021).
[7] *SGSN Administration Guide, StarOS Release 21.15*, CISCO, at 45, https://www.cisco.com/c/en/us/td/docs/wireless/asr_5000/21-15_6-9/SGW-Admin/21-15-SGSN-Admin.pdf (last accessed Feb. 5, 2021).
[8] *Id.* at 118.
[9] *Id.* at 222.

sends an Activate PDP context to accept message to user equipment/mobile stations along with

the IP address based on the successful GGSN resolution of the DNS query by utilizing APN

restriction value.[10] After verifying the APN restriction values, the GGSN creates the PDP context

and sends a create response message back to the SGSN containing the IP address assigned to the

user equipment/mobile station. The SGSN then sends an Activate PDP Context Accept message

to the user equipment/mobile station.[11]

      30.   Cisco Systems has received notice and actual or constructive knowledge of the '859

Patent and the infringing nature of the '859 Accused Products since at least the date of service of

this Complaint.

      31.   Since at least the date of service of this Complaint, through its actions, Cisco

Systems has indirectly infringed and continues to indirectly infringe the '859 Patent in violation

of 35 U.S.C. § 271(b). Cisco Systems has actively induced product makers, distributors, retailers,

and/or end users of the '859 Accused Products to directly infringe the '859 Patent throughout the

United States, including within this Judicial District, by, among other things, advertising and

promoting the use of the '859 Accused Products in various websites, including providing and

disseminating product descriptions, operating manuals, and other instructions on how to

implement and configure the '859 Accused Products. Examples of such advertising, promoting,

and/or instructing include the documents at:

- https://www.cisco.com/c/en/us/td/docs/wireless/asr_5000/21-15_6-9/SGW-
  Admin/21-15-SGSN-Admin.pdf

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[10] *Id.* at 118–19.
[11] *Id.* at 222.

- https://www.cisco.com/c/en/us/td/docs/wireless/asr_5000/21-3_N5-5/GGSN/21-3-GGSN-Admin/21-GGSN-Admin_chapter_011.html

- https://www.cisco.com/c/en/us/products/wireless/asr-5500/index.html

- https://www.cisco.com/c/en/us/support/wireless/asr-5700/model.html

- https://www.cisco.com/c/en/us/support/wireless/virtual-packet-core/series.html

32.   Cisco Systems does so knowing and intending that its customers and end users will commit these infringing acts. Cisco Systems also continues to make, use, offer for sale, sell, and/or import the '859 Accused Products, despite its knowledge of the '859 Patent, thereby specifically intending for and inducing its customers to infringe the '859 Patent through the customers' normal and customary use of the '859 Accused Products.

33.   In addition, Cisco Systems has indirectly infringed and continues to indirectly infringe the '859 Patent in violation of 35 U.S.C. § 271(c) by selling or offering to sell in the United States, or importing into the United States, the '859 Accused Products with knowledge that they are especially designed or adapted to operate in a manner that infringes that patent and despite the fact that the infringing technology or aspects of the products are not a staple article of commerce suitable for substantial non-infringing use.

34.   For example, Cisco Systems is aware that the Cisco Star OS technology included in the '859 Accused Products enables the products to operate as described above and that such functionality infringes the '859 Patent, including claim 1. Cisco Systems continues to sell and offer to sell such products in the United States after receiving notice of the '859 Patent and how the products' functionality infringes that patent.

35.   The infringing aspects of the '859 Accused Products can be used only in a manner that infringes the '859 Patent and thus have no substantial non-infringing uses. The infringing

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aspects of those instrumentalities otherwise have no meaningful use, let alone any meaningful non-infringing use.

36.   Brazos has suffered damages as a result of Cisco Systems' direct and indirect infringement of the '859 Patent in an amount adequate to compensate for Cisco Systems' infringement, but in no event less than a reasonable royalty for the use made of the invention by Cisco Systems, together with interest and costs as fixed by the Court.

Count 3
(Infringement of the '106 Patent)

37.   Brazos repeats and re-alleges the allegations in the preceding paragraphs as if fully set forth herein.

38.   On May 29, 2012, the U.S. Patent & Trademark Office duly and legally issued the '106 Patent entitled "System and method of network access security policy management for multimodal device." A true and correct copy of the '106 Patent is attached as Exhibit C to this Complaint.

39.   Brazos is the owner of all rights, title, and interest in and to the '106 Patent, including the right to assert all causes of action arising under the '106 Patent and the right to any remedies for the infringement of the '106 Patent.

40.   Claim 1 of the '106 Patent recites:

1. A system for network access security policy management of multimodal access to a converged network, the system comprising:

an inter-technology change-off monitoring entity (ICME) for detecting an inter-technology change-off of a multimodal device from a first access technology of the converged network to a second access technology of the converged network, and for transmitting an inter-technology change-off message;

a policy database for storing a plurality of access technology policies; and

a policy manager for receiving said inter-technology change-off message from the ICME, for searching said policy database for an access technology policy

corresponding to said second access technology, for determining appropriate policies to be enforced, and for distributing said appropriate policies to at least one policy enforcement point (PEF) for enforcing said appropriate policies in respect of access by the multimodal device to the converged network,

wherein at least one of the ICME and the policy manager is implemented in hardware.

41.   Cisco Systems has directly infringed and continues to directly infringe, literally and/or under the doctrine of equivalents, one or more claims, including at least claim 1, of the '106 Patent in violation of 35 U.S.C. § 271(a) because Cisco Systems makes, uses, offers for sale, sells, and/or imports certain products, including within this Judicial District, such as the Cisco Packet Gateway and Policy Manager, which is implemented on at least the following products: Cisco Cloud Services Router 1000V Series, Cisco 1000 Series Aggregation Services Routers, Cisco ASR 9000 Series Aggregation Services Routers, Cisco 5500 Series Wireless Controllers, Cisco 8500 Series Wireless Controllers, Cisco Virtual Wireless Controller, and Cisco Aironet 1530, 1550, and 1570 Series Outdoor Access Points ("'106 Accused Products"). Cisco Systems' infringing use of the '106 Accused Products includes its internal use and testing of the '106 Accused Products.

42.   The '106 Accused Products satisfy all claim limitations of at least one or more of the claims of the '106 Patent, including at least claim 1.

43.   By way of example, the '106 Accused Products practice a system for network access security policy management of multimodal access to a converged network. Cisco Systems provides a system for network access security policy management of multimodal access (e.g., Wi-Fi and cellular access) to a converged network (e.g., the network comprises both Wi-Fi and cellular technology). Cisco Systems' converged network architecture comprises elements including, but not limited to, Access Points ("APs"), Wireless Controllers ("WLCs"), Wireless Access Gateway

("WAG"), Packet Gateway ("PGW"), Policy and Charging Rule Function ("PCRF"), Policy and

Charging Enforcement Function ("PCEF").[12]

44.   The '106 Accused Products practice an inter-technology change-off monitoring

entity ("ICME") for detecting an inter-technology change-off of a multimodal device from a first

access technology (e.g., a 3G/4G/LTE network) of the converged network to a second access

technology of the converged network (e.g., WLAN), and for transmitting an inter-technology

change-off message (e.g., via a DHCP message).[13] The '106 Accused Products enables user

equipment ("UE") connected to, e.g., an LTE network to initiate authentication using available

cellular network credentials after which a DHCP sequence is performed signaling the start of the

handoff process between access technologies (e.g., detecting an inter-technology change-off).[14]

45.   Further, the '106 Accused Products practice a policy database for storing a plurality

of access technology policies. Cisco System's PCRF Authentication, Authorization, and

Accounting ("AAA") servers store subscriber profiles (e.g., storing a plurality of access

technology policies) and provide subscriber management, authentication, and network policy

control functionalities.[15] The stored subscriber profiles affect applied services for a UE.[16]

46.   Finally, the '106 Accused Products practice a policy manager for receiving said

inter-technology change-off message from the ICME, for searching said policy database for an

access technology policy corresponding to said second access technology, for determining

appropriate policies to be enforced, and for distributing said appropriate policies to at least one

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[12] *End-to-End Service Provider Wi-Fi Solutions*, CISCO, at 19, https://www.ciscolive.com/c/
dam/r/ciscolive/us/docs/2015/pdf/TECSPM-2122.pdf (last accessed Feb. 5, 2021).
[13] *Id*. at 26.
[14] *Id*. at 69.
[15] *Id*. at 26.
[16] *Id*. at 59.

policy enforcement point ("PEF") for enforcing said appropriate policies in respect of access by

the multimodal device to the converged network. The '106 Accused Products provide WiFi-

cellular offloading combining the functionality of Proxy Mobile IPv6 ("PMIPv6") and GPRS

Tunneling Protocol ("GTP") on the Cisco Intelligent Services Gateway ("ISG") framework and/or

the WAG.[17] This functionality provides handover processing for UEs based upon a received

message(s) at the ISG/WAG.[18] Cisco Systems' network architecture consists of, including but not

limited to, an ISG/WAG in which edge access devices deliver flexible and scalable services to

subscribers which is, in turn, connected to the AAA/PCRF servers to facilitate the retrieval of

subscriber information (e.g., a policy manager for receiving a inter-technology change-off message

from the ICME which searches a policy database for an access technology).[19] The ISG/WAG, as

an example, implements Policy Enforcement Points ("PEPs"), a component of policy-based

management (e.g., determinining appropriate policies to be enforced).[20] The ISG/WAG retrieves

the service profile data associated with the second access technology from the AAA/PCRF servers

and acts as a policy manager for providing policy management functions (e.g., distributing said

appropriate policies to at least one policy enforcement point). When the service profile is retrieved

and a user session is created, the policies are enforced for the UE (e.g., a multimodal device) by

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[17] *Intelligent Wireless Access Gateway Configuration Guide*, CISCO, at 1, https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/iwag/configuration/xe-3s/IWAG_Config_Guide_BookMap/iwag-overview.html (last accessed Feb. 5, 2021).

[18] *End-to-End Service Provider Wi-Fi Solutions*, CISCO, at 19, https://www.ciscolive.com/c/dam/r/ciscolive/us/docs/2015/pdf/TECSPM-2122.pdf (last accessed Feb. 5, 2021).

[19] *Id*. at 26.

[20] *Cisco Policy Suite 5.5.3 Wi-Fi Configuration Guide*, CISCO, at 199, https://www.cisco.com/c/dam/en/us/td/docs/wireless/quantum-policy-suite/R5-5-3/CPS5-5-3Wi-FiConfigurationGuide.pdf (last accessed Feb. 5, 2021).

the ISG/WAG (e.g., PEF) for enforcing said appropriate policies in respect of access by the multimodal device to the converged network).[21]

47.   The '106 Accused Products practice a system wherein at least one of the ICME and the policy manager is implemented in hardware. Cisco Systems provides, as one example, the ASR5000 Series hardware for AP/WLAN control (e.g., an ICME) and the Cisco ASR1000 which implements the ISG/WAG (e.g., the policy manager).[22]

48.   Cisco Systems has received notice and actual or constructive knowledge of the '106 Patent and the infringing nature of the '106 Accused Products since at least the date of service of this Complaint.

49.   Since at least the date of service of this Complaint, through its actions, Cisco Systems has indirectly infringed and continues to indirectly infringe the '106 Patent in violation of 35 U.S.C. § 271(b). Cisco Systems has actively induced product makers, distributors, retailers, and/or end users of the '106 Accused Products to directly infringe the '106 Patent throughout the United States, including within this Judicial District, by, among other things, advertising and promoting the use of the '106 Accused Products in various websites, including providing and disseminating product descriptions, operating manuals, and other instructions on how to implement and configure the '106 Accused Products. Examples of such advertising, promoting, and/or instructing include the documents at:

- https://www.cisco.com/c/en/us/td/docs/wireless/asr_5000/20/ePDG/b_20-ePDG-Admin/b_20-ePDG-Admin_chapter_01.html

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[21] *SP WiFi: Deploying Access for 3G and 4G Mobile Networks*, CISCO, at 65, https://www.cisco.com/c/dam/global/en_ca/assets/plus/assets/pdf/CiscoPlus-SP-WiFi-Deployment-SWOOD.pdf (last accessed Feb. 5, 2021).

[22] *End-to-End Service Provider Wi-Fi Solutions*, CISCO, at 19, https://www.ciscolive.com/c/dam/r/ciscolive/us/docs/2015/pdf/TECSPM-2122.pdf (last accessed Feb. 5, 2021).

- https://www.ciscolive.com/c/dam/r/ciscolive/emea/docs/2016/pdf/BRKSPG-2065.pdf

- https://www.cisco.com/c/en/us/products/wireless/pgw-packet-data-network-gateway/index.html

- https://www.cisco.com/c/en/us/td/docs/wireless/asr_5000/21-11_6-5/SAEGW-Admin/21-11-SAEGW-Admin.pdf

- https://www.cisco.com/c/en/us/support/routers/cloud-services-router-1000v-series/series.html

- https://www.cisco.com/c/en/us/support/routers/asr-1000-series-aggregation-services-routers/series.html

- https://www.cisco.com/c/en/us/support/routers/asr-9000-series-aggregation-services-routers/series.html

- https://www.cisco.com/c/en/us/support/wireless/8500-series-wireless-controllers/series.html

50.   Cisco Systems does so knowing and intending that its customers and end users will commit these infringing acts. Cisco Systems also continues to make, use, offer for sale, sell, and/or import the '106 Accused Products, despite its knowledge of the '106 Patent, thereby specifically intending for and inducing its customers to infringe the '106 Patent through the customers' normal and customary use of the '106 Accused Products.

51.   In addition, Cisco Systems has indirectly infringed and continues to indirectly infringe the '106 Patent in violation of 35 U.S.C. § 271(c) by selling or offering to sell in the United States, or importing into the United States, the '106 Accused Products with knowledge that they are especially designed or adapted to operate in a manner that infringes that patent and despite

the fact that the infringing technology or aspects of the products are not a staple article of commerce suitable for substantial non-infringing use.

52.   For example, Cisco Systems is aware that the technology described above included in the '106 Accused Products enables the product to operate as described above and that such functionality infringes the '106 Patent, including claim 1. Cisco Systems continues to sell and offer to sell such products in the United States after receiving notice of the '106 Patent and how the products' functionality infringes that patent.

53.   The infringing aspects of the '106 Accused Products can be used only in a manner that infringes the '106 Patent and thus have no substantial non-infringing uses. The infringing aspects of those instrumentalities otherwise have no meaningful use, let alone any meaningful non-infringing use.

54.   Brazos has suffered damages as a result of Cisco Systems' direct and indirect infringement of the '106 Patent in an amount adequate to compensate for Cisco Systems' infringement, but in no event less than a reasonable royalty for the use made of the invention by Cisco Systems, together with interest and costs as fixed by the Court.

<u>Count 4</u>
(Infringement of the '733 Patent)

55.   Brazos repeats and re-alleges the allegations in the preceding paragraphs as if fully set forth herein.

56.   On March 4, 2014 the U.S. Patent & Trademark Office duly and legally issued the '733 Patent entitled "Method and apparatus for round trip delay KPI monitoring in live network using user plane probe session." A true and correct copy of the '733 Patent is attached as Exhibit D to this Complaint.

57.   Brazos is the owner of all rights, title, and interest in and to the '733 Patent, including the right to assert all causes of action arising under the '733 Patent and the right to any remedies for the infringement of the '733 Patent.

58.   Claim 1 of the '733 Patent recites:

1. A method for apportioning delays of a plurality of network elements on a round trip path in a network, said method comprising the steps of:

Transmitting, at a user element, a loopback packet having a probe session indicator along said round trip path, wherein said roundtrip path reaches a core network element, and wherein the loopback packet is received at said user element after completing said roundtrip path;

determining at each of said plurality of network elements on said round trip path the presence of said probe session indicator, and responsive to the presence of said probe session indicator, logging a first timestamp corresponding to the time of receipt of said loopback message, and a second timestamp corresponding to the time of retransmission of said loopback message; and

transmitting at each of said plurality of network elements said first and second timestamps to a network management system.

59.   Cisco Systems has directly infringed and continues to directly infringe, literally and/or under the doctrine of equivalents, one or more claims, including at least claim 1, of the '733 Patent in violation of 35 U.S.C. § 271(a) because Cisco Systems makes, uses, offers for sale, sells, and/or imports certain products, including within this Judicial District, such as the Cisco IOS 15.6M and above, which is implemented on at least the following products: Cisco 800 Series Industrial Integrated Services Routers, Cisco 800M Integrated Services Router, Cisco 1000 Series Connected Grid Routers, Cisco 2000 Series Connected Grid Routers, Cisco Catalyst 9200 Series Switches, Cisco Catalyst 9300 Series Switches, Cisco Catalyst 9400 Series Switches, Cisco Catalyst 9500 Series Switches, and Cisco Catalyst 9600 Series Switches ("'733 Accused Products"). Cisco Systems' infringing use of the '733 Accused Products includes its internal use and testing of the '733 Accused Products.

60.   The '733 Accused Products satisfy all claim limitations of one or more of the claims of the '733 Patent, including at least claim 1.

61.   For example, the '733 Accused Products practice a method for apportioning delays of a plurality of network elements on a round trip path in a network. The '733 Accused Products implement the use of IP Service Level Agreements ("SLA"), which collect network performance metrics data that includes delay, jitter, packet loss, packet sequencing, path, connectivity, server, or website download time, or voice quality scores.[23] IP SLAs minimize these processing delays on the source device as well as on the target device to determine round-trip times.

62.   The '733 Accused Products practice a method of transmitting, at a user element, a loopback packet having a probe session indicator along said round trip path, wherein said roundtrip path reaches a core network element, and wherein the loopback packet is received at said user element after completing said roundtrip path. The '733 Accused Products implement the use of IP SLAs, which provide various network performance metrics such as delay, jitter, and packet loss to the user device (e.g., a user element). By way of example, IP SLAs test packets (e.g., loopback packets) via time stamping to minimize processing delays. The source and target devices (e.g., network elements) record round-trip time stamps using the time indicator (e.g., a probe session indicator) embedded in the IP SLA packets.

63.   Further, the '733 Accused Products practice a method of determining at each of the plurality of network elements on said round trip path the presence of said probe session indicator, and responsive to the presence of said probe session indicator, logging a first timestamp

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[23] *IP SLAs Overview*, CISCO, at 2, https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/ip sla/configuration/15-mt/sla-15-mt-book/sla_overview-0.html (last accessed Feb. 5, 2021); *IP SLA Fundamentals*, CISCO, at 1, https://learningnetwork.cisco.com/s/blogs/a0D3i0000 02SKN0EAO/ip-sla-fundamentals (last accessed Feb. 5, 2021).

corresponding to the time of receipt of said loopback message, and a second timestamp corresponding to the time of retransmission of said loopback message. IP SLA packets (e.g., loopback packets) record time stamps during reception and transmission at each network element. The source and target devices (e.g., network elements) record timestamps along a roundtrip packet processing path. When the packet is received, the timestamps are collected by the embedded packet indicators.[24] A timestamp is recorded corresponding to the time of receipt of said loopback message, and another timestamp is recorded corresponding to the time the loopback packet is sent (e.g., the time of retransmission).[25]

64.   Lastly, the '733 Accused Products practice a method of transmitting at each of said plurality of network elements said first and second timestamps to a network management system. Each network element transmits the two timestamps in response to the IP SLA packet(s). A round-trip starts with sending an IP SLA packet from the source router to the target router and back again from the target router to the source router. The timestamps collected from the network elements can be reported (e.g., transmitted) to the network management system.[26]

65.   Cisco Systems has received notice and actual or constructive knowledge of the '733 Patent and the infringing nature of the '733 Accused Products since at least the date of service of this Complaint.

66.   Since at least the date of service of this Complaint, through its actions, Cisco Systems has indirectly infringed and continues to indirectly infringe the '733 Patent in violation of 35 U.S.C. § 271(b). Cisco Systems has actively induced product makers, distributors, retailers,

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[24] *IP SLAs Overview*, CISCO, at 6, https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/ipsla/configuration/15-mt/sla-15-mt-book/sla_overview-0.html (last accessed Feb. 5, 2021).
[25] *Id.*
[26] *Id.* at 4, 5.

and/or end users of the '733 Accused Products to directly infringe the '733 Patent throughout the United States, including within this Judicial District, by, among other things, advertising and promoting the use of the '733 Accused Products in various websites, including providing and disseminating product descriptions, operating manuals, and other instructions on how to implement and configure the '733 Accused Products. Examples of such advertising, promoting, and/or instructing include the documents at:

- https://www.cisco.com/c/en/us/support/routers/800-series-industrial-routers/series.html

- https://www.cisco.com/c/en/us/support/routers/800m-integrated-services-router-isr/model.html

- https://www.cisco.com/c/en/us/support/routers/2000-series-connected-grid-routers/series.html

- https://www.cisco.com/c/en/us/support/switches/catalyst-9200-r-series-switches/series.html

- https://www.cisco.com/c/en/us/td/docs/ios-xml/ios/ipsla/configuration/15-mt/sla-15-mt-book/sla_overview-0.html

- https://learningnetwork.cisco.com/s/blogs/a0D3i000002SKN0EAO/ip-sla-fundamentals

- https://www.cisco.com/c/en/us/support/ios-nx-os-software/ios-15-4m-t/products-installation-and-configuration-guides-list.html

67.   Cisco Systems does so knowing and intending that its customers and end users will commit these infringing acts. Cisco Systems also continues to make, use, offer for sale, sell, and/or import the '733 Accused Product, despite its knowledge of the '733 Patent, thereby specifically

intending for and inducing its customers to infringe the '733 Patent through the customers' normal and customary use of the '733 Accused Products.

68.   In addition, Cisco Systems has indirectly infringed and continues to indirectly infringe the '733 Patent in violation of 35 U.S.C. § 271(c) by selling or offering to sell in the United States, or importing into the United States, the '733 Accused Products with knowledge that they are especially designed or adapted to operate in a manner that infringes that patent and despite the fact that the infringing technology or aspects of the products are not a staple article of commerce suitable for substantial non-infringing use.

69.   For example, Cisco Systems is aware that the technology described above included in the '733 Accused Products enables the products to operate as described above and that such functionality infringes the '733 Patent, including claim 1. Cisco Systems continues to sell and offer to sell the '733 Accused Products in the United States after receiving notice of the '733 Patent and how the product's functionality infringes that patent.

70.   The infringing aspects of the '733 Accused Products can be used only in a manner that infringes the '733 Patent and thus have no substantial non-infringing uses. The infringing aspects of those instrumentalities otherwise have no meaningful use, let alone any meaningful non-infringing use.

71.   Brazos has suffered damages as a result of Cisco Systems' direct and indirect infringement of the '733 Patent in an amount adequate to compensate for Cisco Systems' infringement, but in no event less than a reasonable royalty for the use made of the invention by Cisco Systems, together with interest and costs as fixed by the Court.

Count 5
(Infringement of the '014 Patent)

72.   Brazos repeats and re-alleges the allegations in the preceding paragraphs as if fully

set forth herein.

73.   On May 31, 2016, the U.S. Patent & Trademark Office duly and legally issued the

'014 Patent entitled "Service-based networking." A true and correct copy of the '014 Patent is

attached as Exhibit E to this Complaint.

74.   Brazos is the owner of all rights, title, and interest in and to the '014 Patent,

including the right to assert all causes of action arising under the '014 Patent and the right to any

remedies for the infringement of the '014 Patent.

75.   Claim 18 of the '014 Patent recites:

18. A method, comprising:

running, by a processor, a connected services stack, the connected services stack
comprising a connected services layer configured to operate below an application
layer and above a transport layer, wherein the connected services layer is
configured to support establishment of a service connection between the connected
services layer and a remote connected services layer of a remote endpoint, wherein
the connected services layer is configured to support establishment of the service
connection based on a service name of the connected services layer, a service name
of the remote connected services layer, and a service connection identifier for the
service connection, wherein the connected services layer is configured to:

send, toward a server, a service connection request message comprising the service
name of the connected services layer and the service name of the remote connected
services layer of the remote endpoint; and

receive, from the server, a service connection response message comprising the
service name of the remote connected services layer of the remote endpoint, an
Internet Protocol (IP) address of the remote endpoint, and the service connection
identifier for the service connection.

76.   Cisco Systems has directly infringed and continues to directly infringe, literally

and/or under the doctrine of equivalents, one or more claims, including at least claim 18, of the

'014 Patent in violation of 35 U.S.C. § 271(a) because Cisco Systems makes, uses, offers for sale,

sells, and/or imports certain products, including within this Judicial District, such as the Cisco

Ultra 5G packet core solution, which is implemented on at least the following products: Cisco

Ultra Cloud Core, and the Cisco Ultra / Virtual Packet Core (VPCSW) ("'014 Accused Products").

Cisco Systems' infringing use of the '014 Accused Products includes its internal use and testing

of the '014 Accused Products.

77.   The '014 Accused Products satisfy all claim limitations of one or more of the claims

of the '014 Patent, including at least claim 18.

78.   For example, the '014 Accused Products practice a method comprising running, by

a processor, a connected services stack, the connected services stack comprising a connected

services layer configured to operate below an application layer and above a transport layer,

wherein the connected services layer is configured to support establishment of a service connection

between the connected services layer and a remote connected services layer of a remote endpoint,

wherein the connected services layer is configured to support establishment of the service

connection based on a service name of the connected services layer, a service name of the remote

connected services layer, and a service connection identifier for the service connection. Cisco

provides an Ultra 5G packet core solution which is based on the 3GPP 5G Service-Based

Architecture.[27] In the 3GPP 5G Service-Based Architecture, the functions of a 5G network

component are delivered by way of a set of interconnected Network Functions ("NF") that can

access other NF services.[28] Each NF node runs a transmission control protocol/Internet protocol

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[27] *5G Network Architecture*, CISCO, at 12, https://www.cisco.com/c/dam/m/en_us/network-intelligence/service-provider/digital-transformation/pdfs/cisco-ultra-5g-packet-core-solution-wp-v1a.pdf (last accessed Feb. 5, 2021).
[28] *3GPP 5G CoreNetwork Status*, 3GPP, at 8, https://www.3gpp.org/ftp/information/presentations/Presentations_2017/webinar-ct-status-11-2017.pdf (last accessed Feb. 5, 2021).

("TCP/IP") stack (e.g., a connected services stack). An NF allows establishment of service connections with other remote NFs using the name of the service producer instance (e.g., a service name of the connected services layer), name of the service consumer instance (e.g., a service name of the remote connected services layer), and a unique ID of the service instance within the given NF instance (e.g., a service connection identifier for the service connection).[29]

79.   Further, the '014 Accused Products comprise a method wherein the connected services layer is configured to send, toward a server, a service connection request message comprising the service name of the connected services layer and the service name of the remote connected services layer of the remote endpoint. In the 5G Service-Based Architecture, the Network Repository Function ("NRF") (e.g., a server) allows an NF to register its services with the NRF. Additionally, the NRF provides a "NFDiscovery" service that can be used by NF consumers in a HTTP request to discover services offered by NF producers (e.g., a remote endpoint).[30] The "NF Discovery" service supports the "NFService" data type which can be sent by the consumer to the NRF in a HTTP request (e.g., a service connection request message) to discover the services and other connection parameters of the producer.[31] The "NFService" data type supports different attributes such as IP address and serviceInstanceID (e.g., a service connection identifier for the service connection).[32]

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[29] *5G; 5G System Network function repository services; Stage 3 (3GPP TS 29.510 version 15.1.0 Release 15)*, ETSI, at 39, 59, https://www.etsi.org/deliver/etsi_ts/129500_129599/1295 10/15.01.00_60/ts_129510v150100p.pdf (last accessed Feb. 5, 2021); *3GPP 5G CoreNetwork Status*, 3GPP, at 11, https://www.3gpp.org/ftp/information/presentations/Presentations_201 7/webinar-ct-status-11-2017.pdf (last accessed Feb. 5, 2021).

[30] *5G; 5G System Network function repository services; Stage 3 (3GPP TS 29.510 version 15.1.0 Release 15)*, ETSI, at 27, https://www.etsi.org/deliver/etsi_ts/129500_129599/1295 10/15.06.00_60/ts_129510v150600p.pdf (last accessed Feb. 5, 2021).

[31] *Id.* at 81.

[32] *Id.* at 39, 59.

80.   Finally, the '014 Accused Products comprise a method wherein the connected services layer is configured to receive, from the server, a service connection response message comprising the service name of the remote connected services layer of the remote endpoint, an Internet Protocol (IP) address of the remote endpoint, and the service connection identifier for the service connection. The NRF (e.g., a server) receives the request and will reply to the NF consumer with the HTTP Response message that contains the service name, IP address of the producer and the serviceInstance ID (e.g., a service connection identifier for the service connection).[33]

81.   Cisco Systems has received notice and actual or constructive knowledge of the '014 Patent and the infringing nature of the '014 Accused Products since at least the date of service of this Complaint.

82.   Since at least the date of service of this Complaint, through its actions, Cisco Systems has indirectly infringed and continues to indirectly infringe the '014 Patent in violation of 35 U.S.C. § 271(b). Cisco Systems has actively induced product makers, distributors, retailers, and/or end users of the '014 Accused Products to directly infringe the '014 Patent throughout the United States, including within this Judicial District, by, among other things, advertising and promoting the use of the '014 Accused Products in various websites, including providing and disseminating product descriptions, operating manuals, and other instructions on how to implement and configure the '014 Accused Products. Examples of such advertising, promoting, and/or instructing include the documents at:

- https://www.cisco.com/c/en/us/products/collateral/wireless/packet-core/datasheet-c78-744630.html

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[33] *Id*. at 27, 39, 59.

- https://www.cisco.com/c/en/us/products/collateral/wireless/packet-core/datasheet-c78-741418.html

- https://www.cisco.com/c/en/us/solutions/service-provider/mobile-internet/ultra-5g-packet-core-solution-whitepaper.html

- https://www.cisco.com/c/dam/en/us/products/collateral/routers/network-convergence-system-500-series-routers/white-paper-c11-740360.pdf

- https://www.cisco.com/c/en/us/products/wireless/packet-core/index.html

83.   Cisco Systems does so knowing and intending that its customers and end users will commit these infringing acts. Cisco Systems also continues to make, use, offer for sale, sell, and/or import the '014 Accused Products, despite its knowledge of the '014 Patent, thereby specifically intending for and inducing its customers to infringe the '014 Patent through the customers' normal and customary use of the '014 Accused Products.

84.   In addition, Cisco Systems has indirectly infringed and continues to indirectly infringe the '014 Patent in violation of 35 U.S.C. § 271(c) by selling or offering to sell in the United States, or importing into the United States, the '014 Accused Products with knowledge that they are especially designed or adapted to operate in a manner that infringes that patent and despite the fact that the infringing technology or aspects of the products are not a staple article of commerce suitable for substantial non-infringing use.

85.   For example, Cisco Systems is aware that the technology described above included in the '014 Accused Products enables the products to operate as described above and that such functionality infringes the '014 Patent, including claim 18. Cisco Systems continues to sell and offer to sell the '014 Accused Products in the United States after receiving notice of the '014 Patent and how the product's functionality infringes that patent.

86.   The infringing aspects of the '014 Accused Products can be used only in a manner that infringes the '014 Patent and thus have no substantial non-infringing uses. The infringing aspects of those instrumentalities otherwise have no meaningful use, let alone any meaningful non-infringing use.

87.   Brazos has suffered damages as a result of Cisco Systems' direct and indirect infringement of the '014 Patent in an amount adequate to compensate for Cisco Systems' infringement, but in no event less than a reasonable royalty for the use made of the invention by Cisco Systems, together with interest and costs as fixed by the Court.

Demand for Jury Trial

88.   Brazos hereby demands a jury trial for all issues so triable.

Prayer for Relief

WHEREFORE, Brazos requests the that the Court:

(a)   enter judgment that Cisco Systems infringes one or more claims of the Asserted Patents literally and/or under the doctrine of equivalents;

(b)   enter judgment that Cisco Systems has induced and/or contributed to infringement literally and/or under the doctrine of equivalents and continues to induce and/or contributed to infringement of one or more claims of the Asserted Patents;

(c)   award Brazos damages, to be paid by Cisco Systems in an amount adequate to compensate Brazos for such damages, together with pre-judgment and post-judgment interest for the infringement by Cisco Systems of the Asserted Patents through the date such judgment is entered in accordance with 35 U.S.C. § 284;

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

(e)   award Brazos its costs, disbursements, attorneys' fees, and such further and

additional relief as is deemed appropriate by this Court.

Dated: February 5, 2021   Respectfully submitted,

                                           By: */s/ Max L. Tribble, Jr.*
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