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

COMMWORKS SOLUTIONS, LLC, Plaintiff -against- FRONTIER COMMUNICATIONS PARENT, INC., FRONTIER COMMUNICATIONS HOLDINGS, LLC, FRONTIER COMMUNICATIONS CORPORATION, FRONTIER COMMUNICATIONS OF AMERICA INC., and FRONTIER SOUTHWEST INCORPORATED d/b/a FRONTIER COMMUNICATIONS OF TEXAS INC., Defendants.	Civil Action No.: 6:22-cv-01268 **Jury Trial Demanded**

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff CommWorks Solutions, LLC ("CommWorks" or "Plaintiff"), by way of this Complaint against Defendants Frontier Communications Parent, Inc., Frontier Communications Holdings, LLC, Frontier Communications Corporation, Frontier Communications of America, Inc., and Frontier Southwest Incorporated d/b/a Frontier Communications of Texas Inc. (collectively, "Frontier" or "Defendants"), alleges as follows:

PARTIES

1. Plaintiff CommWorks Solutions, LLC is a limited liability company organized and existing under the laws of the State of Georgia, having its principal place of business at 44 Milton Avenue, Suite 254, Alpharetta, GA 30009.

2. On information and belief, Defendant Frontier Communications Parent, Inc. is a

corporation organized and existing under the laws of Delaware, having its principal place of business at 401 Merritt 7, Norwalk, CT 06851. Frontier Communications Parent, Inc. may be served through its registered agent, Corporation Service Company, at 251 Little Falls Drive, Wilmington, DE 19808.

3. On information and belief, Frontier Communications Holdings, LLC is a corporation organized and existing under the laws of Delaware, having its principal place of business at 401 Merritt 7, Norwalk, CT 06851. Frontier Communications Holdings, LLC may be served through its registered agent, Corporation Service Company, at 251 Little Falls Drive, Wilmington, DE 19808. Frontier Communications Holdings, LLC is a subsidiary of Frontier Communications Parent, Inc. On information and belief, Frontier Communications Holdings, LLC assumed all outstanding indebtedness pursuant to Frontier Communications Corporation's Chapter 11 bankruptcy. *See* Frontier's 2021 Form 10-K, p. 10, at https://s1.q4cdn.com/144417568/files/doc_financials/2021/q4/FYBR-4Q21-10K.pdf.

4. On information and belief, Frontier Communications Corporation is a corporation organized and existing under the laws of Delaware, having its principal place of business at 401 Merritt 7, Norwalk, CT 06851. Frontier Communications Corporation may be served through its registered agent, Corporation Service Company, at 251 Little Falls Drive, Wilmington, DE 19808. Frontier Communications Corporation is registered to do business in Texas. On information and belief, Frontier Communications Corporation filed voluntary petitions for relief under Chapter 11 of the United States Bankruptcy Code on April 14, 2020. On information and belief, Frontier Communications Corporation emerged from Chapter 11 bankruptcy on April 30, 2021 and Frontier Communications Holdings, LLC assumed all of the outstanding indebtedness of Frontier Communications Corporation. *See* Frontier's 2021 Form 10-K, p. 10, at

https://s1.q4cdn.com/144417568/files/doc_financials/2021/q4/FYBR-4Q21-10K.pdf.

5. On information and belief, Frontier Communications of America, Inc. is a corporation organized and existing under the laws of Delaware, having its principal place of business at 401 Merritt 7, Norwalk, CT 06851. Frontier Communications of America, Inc. may be served through its registered agent, Corporation Service Company, at 251 Little Falls Drive, Wilmington, DE 19808. Frontier Communications of America, Inc. is registered to do business in Texas. Frontier Communications of America, Inc. is a subsidiary of Frontier Communications Parent, Inc.

6. On information and belief, Frontier Southwest Incorporated d/b/a Frontier Communications of Texas Inc. is a corporation organized and existing under the laws of Delaware, having its principal place of business at 401 Merritt 7, Norwalk, CT 06851. Frontier Southwest Incorporated may be served through its registered agent, Corporation Service Company d/b/a CSC-Lawyers Incorporated, at 211 E. 7th Street, Suite 620, Austin, Texas 78701. Frontier Southwest Incorporated is registered to do business in Texas. Frontier Southwest Incorporated is a subsidiary of Frontier Communications Parent, Inc.

7. On information and belief, Defendants form an interrelated group of companies and do business as a collective whole under the Frontier brand which together comprise Frontier, one of the largest internet service providers in the United States.

8. On information and belief, Frontier, either itself and/or through the activities of its subsidiaries, makes, uses, sells, offers for sale, and/or imports throughout the United States, including within this District, products and services that infringe the Patents-in-Suit, defined below.

JURISDICTION AND VENUE

9. This is an action under the patent laws of the United States, 35 U.S.C. §§ 1, *et seq.*, for infringement by Frontier of claims of U.S. Patent No. 6,832,249; U.S. Patent No. 6,891,807; U.S. Patent No. 7,027,465; U.S. Patent No. 7,177,285; U.S. Patent No. 7,463,596; U.S. Patent No. 7,760,664; U.S. Patent No. 7,911,979; and U.S. Patent No. RE44,904. (collectively "the Patents-in-Suit").

10. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

11. Frontier is subject to personal jurisdiction of this Court because, *inter alia*, on information and belief, (i) Frontier maintains a regular and established place of business in Texas in this Judicial District at, *inter alia*, 911 South Church Street, Georgetown, TX 78626; (ii) Frontier makes, uses, offers to sell, and/or sells accused products and services to customers in Texas including in this Judicial District and derives revenues from Texas residents; and (iii) the patent infringement claims arise directly from Frontier's continuous and systematic activity in this Judicial District.

12. Venue is proper as to Frontier in this Judicial District under 28 U.S.C. § 1400(b) because, *inter alia*, on information and belief, Frontier has a regular and established place located at 911 South Church Street, Georgetown, TX 78626, and has committed acts of patent infringement in this Judicial District and/or has contributed to or induced acts of patent infringement by others in this District.

BACKGROUND

13. On December 14, 2004, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 6,832,249 ("the '249 Patent"), entitled "Globally Accessible

Computer Network-Based Broadband Communication System With User-Controllable Quality of Information Delivery and Flow Priority."

14. At the time of the invention, millions of Internet users being online simultaneously, causing congestion (too many users) and latency (long pauses and delays), presented a difficult bandwidth load management challenge. '249 Patent at col. 1:32-34, 2:34-36. No conventional routing system existed that avoided the congestion and best effort delivery methods then used by the Internet. *Id.* at col. 2:8-10. Conventional routing systems relating to multiple OSI layers also did not consistently ensure quality of service. *Id.* at col. 6:53-63.

15. The invention of the '249 Patent improved upon the conventional services delivery systems by enabling quality of service control by content providers, Application Service Providers (ASPs), ISPs, and, by extension, their customers. *Id.* at col. 3:60-63. Additional improvements over the conventional services delivery systems afforded by the invention of the '249 Patent included bridging the gaps between the layers of the OSI reference model; ensuring more control by users over the priority of their information flow; more control by network administrators over the congestion of their networks; and more control by content providers over costs and the experiences they provide to their users. *Id.* at col. 3:65-4:2, 6:53-63.

16. On May 10, 2005, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 6,891,807 ("the '807 Patent"), entitled "Time Based Wireless Access Provisioning."

17. At the time of the invention, wireless access to data networks was not yet conventional. Then existent systems for provisioning access to a network were impractical, such as for wireless devices which lacked a user interface configured for communicating provisioning information, or for simple home-based intranets, such as a wireless picture frame device lacking a

control interface to read or extract identification information, such as a MAC address, to facilitate wireless access provisioning. '807 Patent at col. 3:5-18. Further, wireless devices that did have a dedicated user interface were incapable of, or cumbersome in, communicating device identification and exchanging provisioning information, still requiring a user to be technically proficient to properly initiate and complete a provisioning process. *Id.* at col. 3:19-28.

18. The invention of the '807 Patent improved upon existent network provisioning systems by enabling provisioning without requiring a user interface for the initiation of a provisioning process—"a major technological advance." *Id.* at col. 3:29-33. The invention of the '807 Patent further improved upon existent provisioning systems by providing a wireless access provisioning structure and process with minimal device requirements and/or user proficiency, whereby a wireless device is readily provisioned by the provisioning system, and whereby other unauthorized devices within an access region are prevented from being provisioned by the provisioning system. *Id.* at col. 3:34-41. The invention of the '807 Patent further improved upon existent provisioning systems by providing a time-based wireless access provisioning system integrated with easily monitored parameters of a wireless device, such as the time monitoring of power on and/or start of signal transmission, for provisioning secure encrypted communication. *Id.* at col. 3:42-50. Moreover, the structure of the devices described in the '807 Patent was not conventional at the time of the invention. Specifically, a device such as an access point, comprising a provisioning activation button, time-based provisioning logic, access control list, wired network logic, a wired network connection and a transceiver were not conventional (or even available) at the time of the invention.

19. On April 11, 2006, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 7,027,465 ("the '465 Patent"), entitled "Method for Contention

Free Traffic Detection."

20. At the time of the invention, "conventionally … transmission differentiation based on priority was not conducted at all." '465 Patent at col. 2:9-10. Obtaining priority information for traffic transmitted through an Access Point (AP) required searching all fields in all frames for indications of the priority state of the actual data frame, resulting in all fields in all frames being checked and all headers being analyzed, starting from the outer most headers, until the right field in the header had been found. *Id.* at col. 1:53-59. This measure was very complex, took a long time, and required a large amount of processing, especially for complex tunneling protocols. *Id.* at col. 1:62-65. All the frame headers and protocols which can be included in the data frames transmitted via the network had to be known, hence, the amount of information needed for identifying the data was huge. *Id.* at col. 1:66-2:4. Such a huge amount of information was typically too heavy to handle in small and low price equipment like WLAN access points (AP). *Id.* Further, then existing systems according to the IEEE 802.11 standard did not separate traffic based on priority. *Id.* at col. 2:11-15.

21. The invention of the '465 Patent improved upon conventional network traffic routing systems by providing methods by which priority traffic can easily be distinguished from normal traffic without the need of complex processing making it possible to execute in a low cost and possibly low performance AP. *Id.* at col. 2:19-23, 2:60-62, 3:43. The methods of the invention of the '465 Patent further improved upon conventional network traffic routing systems by easily finding higher priority traffic from the stream of MAC layer frames without necessarily requiring knowledge of the upper layer protocols. *Id.* at col. 2:53-56. The methods of the invention of the '465 Patent further improved upon conventional network traffic routing systems by being protocol-independent and flexible such that their configuration may be done in an external

configuration program; with the Access Point not needing to know anything about the processed traffic; further alleviating the need of complex structure of the device. *Id.* at col. 2:63-66, col. 3:5-11. A further advantage over conventional network traffic routing systems is that installation of new software or hardware in the network element would not be required when new protocols or modified protocols are introduced in the network. *Id.* at col. 3:12-21.

22. On February 13, 2007, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 7,177,285 ("the '285 Patent"), entitled "Time Based Wireless Access Provisioning."

23. At the time of the invention, wireless access to data networks was not yet conventional. Then existent systems for provisioning access to a network were impractical, such as for wireless devices which lacked a user interface configured for communicating provisioning information, or for simple home-based intranets, such as a wireless picture frame device lacking a control interface to read or extract identification information, such as a MAC address, to facilitate wireless access provisioning. '285 Patent at col. 3:13-26. Further, wireless devices that did have a dedicated user interface were incapable of, or cumbersome in, communicating device identification and exchanging provisioning information, still requiring a user to be technically proficient to properly initiate and complete a provisioning process. *Id.* at col. 3:27-36.

24. The invention of the '285 Patent improved upon existent network provisioning systems by enabling provisioning without requiring a user interface for the initiation of a provisioning process—"a major technological advance." *Id.* at col. 3:37-41. The invention of the '285 Patent further improved upon existent provisioning systems by providing a wireless access provisioning structure and process with minimal device requirements and/or user proficiency, whereby a wireless device is readily provisioned by the provisioning system, and

whereby other unauthorized devices within an access region are prevented from being provisioned by the provisioning system. *Id.* at col. 3:42-49. The invention of the '285 Patent further improved upon existent provisioning systems by providing a time-based wireless access provisioning system integrated with easily monitored parameters of a wireless device, such as the time monitoring of power on and/or start of signal transmission, for provisioning secure encrypted communication. *Id.* at col. 3:50-58. Moreover, the structure of the devices described in the '285 Patent was not conventional at the time of the invention. Specifically, a device such as an access point, comprising a provisioning activation button, time-based provisioning logic, access control list, wired network logic, a wired network connection and a transceiver were not conventional (or even available) at the time of the invention.

25. On December 9, 2008, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 7,463,596 ("the '596 Patent"), entitled "Time Based Wireless Access Provisioning."

26. At the time of the invention, wireless access to data networks was not yet conventional. Then existent systems for provisioning access to a network were impractical, such as for wireless devices which lacked a user interface configured for communicating provisioning information, or for simple home-based intranets, such as a wireless picture frame device lacking a control interface to read or extract identification information, such as a MAC address, to facilitate wireless access provisioning. '596 Patent at col. 3:13-26. Further, wireless devices that did have a dedicated user interface were incapable of, or cumbersome in, communicating device identification and exchanging provisioning information, still requiring a user to be technically proficient to properly initiate and complete a provisioning process. *Id.* at col. 3:27-36.

27. The invention of the '596 Patent improved upon existent network provisioning

systems by enabling provisioning without requiring a user interface for the initiation of a provisioning process—"a major technological advance." *Id.* at col. 3:37-41. The invention of the '596 Patent further improved upon existent provisioning systems by providing a wireless access provisioning structure and process with minimal device requirements and/or user proficiency, whereby a wireless device is readily provisioned by the provisioning system, and whereby other unauthorized devices within an access region are prevented from being provisioned by the provisioning system. *Id.* at col. 3:42-49. The invention of the '596 Patent further improved upon existent provisioning systems by providing a time-based wireless access provisioning system integrated with easily monitored parameters of a wireless device, such as the time monitoring of power on and/or start of signal transmission, for provisioning secure encrypted communication. *Id.* at col. 3:50-58. Moreover, the structure of the devices described in the '596 Patent was not conventional at the time of the invention. Specifically, a device such as an access point, comprising a provisioning activation button, time-based provisioning logic, access control list, wired network logic, a wired network connection and a transceiver were not conventional (or even available) at the time of the invention.

28. On July 20, 2010, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 7,760,664 ("the '664 Patent"), entitled "Determining and Provisioning Paths in a Network."

29. At the time of the invention, graphical systems for provisioning network paths were not yet conventional. Prior art systems for provisioning network paths typically modeled every port of every network element as a node on a graph and modeled every physical link that interconnected these ports to one another as links that interconnected the nodes of the graph. '664 Patent at col. 1:27-36. This resulted in very large, complex, and inefficient model graphs that did

not adapt well to diverse network elements and large networks and created performance and scalability issues due to the demanding processing requirements associated with such graphs. *Id.* at col. 2:30-40.

30. The invention of the ’664 Patent improved upon existent systems for provisioning network paths by enabling management of links instead of nodes in a graphical interface, reducing route processing, resulting in a corresponding reduction in overhead and resources required to route network traffic from one node to another. *Id.* at col. 3:32-35. The invention of the ’664 Patent further improved upon existent systems by reducing the number of nodes necessary to consider in routing network traffic from one point to another, greatly reducing the processing overhead and timeliness associated with making routing decisions. *Id.* at col. 4:53-65. The invention of the ’664 Patent further improved upon existent systems by adding considerable flexibility in designing and maintaining routing graphs. *Id.*

31. On March 22, 2011, the United States Patent and Trademark Office duly and lawfully issued U.S. Patent No. 7,911,979 (“the ’979 Patent”), entitled “Time Based Access Provisioning System and Process.

32. At the time of the invention wireless access to data networks was not yet conventional. Then existent systems for provisioning access to a network were impractical, such as for wireless devices which lacked a user interface configured for communicating provisioning information, or for simple home-based intranets, such as a wireless picture frame device lacking a control interface to read or extract identification information, such as a MAC address, to facilitate wireless access provisioning. ’979 Patent at col. 3:19-31. Further, wireless devices that did have a dedicated user interface were incapable of, or cumbersome in, communicating device identification and exchanging provisioning information, still requiring a user to be technically

proficient to properly initiate and complete a provisioning process. *Id.* at col. 3:32-41.

33. The invention of the '979 Patent improved upon existent network provisioning systems by enabling provisioning without requiring a user interface for the initiation of a provisioning process—"a major technological advance." *Id.* at col. 3:42-46. The invention of the '979 Patent further improved upon existent provisioning systems by providing a wireless access provisioning structure and process with minimal device requirements and/or user proficiency, whereby a wireless device is readily provisioned by the provisioning system, and whereby other unauthorized devices within an access region are prevented from being provisioned by the provisioning system. *Id.* at col. 3:47-53. The invention of the '979 Patent further improved upon existent provisioning systems by providing a time-based wireless access provisioning system integrated with easily monitored parameters of a wireless device, such as the time monitoring of power on and/or start of signal transmission, for provisioning secure encrypted communication. *Id.* at col. 3:54-62. Moreover, the structure of the devices described in the '979 Patent was not conventional at the time of the invention. Specifically, a device such as an access point, comprising a provisioning activation button, time-based provisioning logic, access control list, wired network logic, a wired network connection and a transceiver were not conventional (or even available) at the time of the invention.

34. On May 20, 2014, the United States Patent and Trademark Office duly and lawfully reissued U.S. Patent No. RE44,904 ("the '904 Patent"), entitled "Method for Contention Free Traffic Detection."

35. At the time of the invention, "conventionally … transmission differentiation based on priority was not conducted at all." '904 Patent at col. 2:9-10. Obtaining priority information for traffic transmitted through an Access Point (AP) required searching all fields in all frames for

indications of the priority state of the actual data frame, resulting in all fields in all frames being checked and all headers being analyzed, starting from the outer most headers, until the right field in the header had been found. *Id.* at col. 1:63-2:2. This measure was very complex, took a long time, and required a large amount of processing, especially for complex tunneling protocols. *Id.* at col. 2:5-8. All the frame headers and protocols which can be included in the data frames transmitted via the network had to be known, hence, the amount of information needed for identifying the data was huge. *Id.* at col. 2:8-14. Such a huge amount of information was typically too heavy to handle in small and low price equipment like WLAN access points (AP). *Id.* Further, then existing systems according to the IEEE 802.11 standard did not separate traffic based on priority. *Id.* at col. 2:20-25.

36. CommWorks is the assignee and owner of the right, title, and interest in and to the Patents-in-Suit, including the right to assert all causes of action arising under said patents and the right to any remedies for infringement of them.

37. Frontier has infringed and continues to infringe the Patents-in-Suit by making, using, selling, or offering for sale in the United States, or importing into the United States routers, access points, gateways, devices, and equipment with routing, Wi-Fi, and/or provisioning technologies claimed in the Patents-in-Suit.

NOTICE

38. By letter and email dated February 21, 2020, CommWorks via its licensing agent notified Frontier of the existence of the Patents-in-Suit and invited Frontier to hold a licensing discussion with CommWorks.

39. By letter and email dated April 17, 2020, CommWorks via its legal counsel notified Frontier that it infringes the Patents-in-Suit, identified exemplary infringed claims and infringing Frontier products, and invited Frontier to hold a licensing discussion with CommWorks.

COUNT I: INFRINGEMENT OF THE '249 PATENT BY FRONTIER

40. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

41. On information and belief, Frontier has infringed the '249 Patent, pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by providing services to its customers that make, use, offer to sell, sell in the United States or import into the United States the Ciena devices that run Service Aware Operating System (SAOS), as well as Juniper devices running Junos OS, and other equipment utilizing substantially similar methods of providing broadband communications over a multi-layered network used by Frontier to provide services to its customers ("Accused Products and Services").

42. For example, on information and belief, Frontier has infringed and continues to infringe at least claim 15 of the '249 Patent by making, using, offering to sell, selling, and/or importing the Accused Products and Services, which perform a method for providing broadband communications over a multi-layered network having a plurality of Open System Interconnection (OSI) reference model layers functioning therein. *See* Ex. 1 (showing that the "Frontier NEBS Equipment List" includes Ciena and Juniper equipment including "Ciena DN 7200" and "Juniper Network M40E Router" equipment); Ex. 2 (showing that a "Senior Network Engineer" for Frontier "Configured, maintained, and improved network infrastructure with … Juniper, … Ciena Z, Ciena DN7000, [and Ciena] 5150" equipment); Exs. 3 and 4 (showing that Ciena devices running Service-Aware Operating Systems (SAOS), including the Ciena 5150 and DN 7000 Series platforms, facilitate broadband communications over an OSI model multi-layered network, e.g., a network having at least OSI model layers 2 and 3, and have MPLS Fast Reroute functionality as standardized in IETF RFC 4090); Ex. 5 (showing that Juniper devices running Junos OS, including the Juniper M40E Router, facilitate broadband communications over an OSI model multi-layered network, e.g., a network having at least OSI model layers 2 and 3, and have MPLS Fast Reroute

functionality as standardized in IETF RFC 4090). The method of providing broadband communications over a multi-layered network of each of the Accused Products and Services comprises monitoring at least one OSI reference model layer functioning in the multi-layered network. *See* Ex. 6 at 1, 11-12, 18, 23, 25 (showing that Ciena SAOS devices and Juniper Junos OS devices with MPLS Fast Reroute monitor and detect a failure of a node and/or link associated with the Internet Protocol (IP) layer, i.e., OSI model layer 3, in the communications network). The method of providing broadband communications over a multi-layered network of each of the Accused Products and Services further comprises determining that a quality of service event has occurred in the multi-layered network. *See* Ex. 6 at 3, 23, 25 (showing that Ciena SAOS devices and Juniper Junos OS devices with MPLS Fast Reroute determine the occurrence of a quality of service event, i.e., a failure condition, such as packet loss and/or latency, of a node and/or link associated with an IP address, thereby affecting network quality of service with particular effect on the quality of real time application services). The method of providing broadband communications over a multi-layered network of each of the Accused Products and Services further comprises determining that the quality of service event occurred at a layer N in the OSI reference model. *See* Ex. 6 at 3, 11-12, 23, 25 (showing that Ciena SAOS devices and Juniper Junos OS devices with MPLS Fast Reroute determine that a node and/or link associated with an IP address has failed in OSI model layer 3 thereby affecting network quality of service). The method of providing broadband communications over a multi-layered network of each of the Accused Products and Services further comprises responding to the quality of service event in the multi-layered network by changing network provisioning at a layer less than N. *See* Ex. 6 at 1, 4, 6-7, 23-25 (showing that Ciena SAOS devices and Juniper Junos OS devices with MPLS Fast Reroute respond to the quality of service event by changing the provisioning of the data traffic

path at OSI model layer 2 which is less than OSI model layer 3 by switching the routing of packets to a pre-established backup LSP detour using a one-to-one backup method and/or backup LSP tunnel using a facility backup method). The method of providing broadband communications over a multi-layered network of each of the Accused Products and Services further comprises signaling that the network provisioning at the layer less than N has been changed. *See* Ex. 6 at 25-27 (showing that Ciena SAOS devices and Juniper Junos OS devices with MPLS Fast Reroute send messages and/or notifications signaling that the data traffic path has changed to the backup LSP tunnel at OSI model layer 2). The method of providing broadband communications over a multi-layered network of each of the Accused Products and Services further comprises the quality of service event in the multi-layered network occurring at layer 3 in the OSI reference model and responding to the quality of service event comprises provisioning additional OSI layer 2 circuits in a communication link of the multi-layer network. *See* Ex. 6 at 1, 3-4, 6-7, 11-12, 23-25(showing that Ciena SAOS devices and Juniper Junos OS devices with MPLS Fast Reroute determine that a node and/or link associated with an IP address has failed in OSI model layer 3 and respond to the quality of service event by changing the provisioning of the data traffic path at OSI model layer 2 by switching the flow of packets to a pre-established backup LSP detour using, for example, a one-to-one backup method and/or backup LSP tunnel using a facility backup method).

43. On information and belief, Frontier has induced infringement of the ’249 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, its partners, customers, and end users, to use, sell, and/or offer to sell in the United States, and/or import into the United States, the Accused Products and Services by, among other things, providing the Accused Products and Services, specifications, instructions, manuals, advertisements, marketing materials, and technical

assistance relating to the installation, set up, use, operation, and maintenance of said products. *See* ¶¶ 38-39 above (explaining that CommWorks notified Frontier of infringement by letter and email dated April 17, 2020); Ex. 1 (showing that the "Frontier NEBS Equipment List" includes Ciena and Juniper equipment including "Ciena DN 7200" and "Juniper Network M40E Router" equipment); Ex. 2 (showing that a "Senior Network Engineer" for Frontier "Configured, maintained, and improved network infrastructure with … Juniper, … Ciena Z, Ciena DN7000, [and Ciena] 5150" equipment); Exs. 3 and 4 (showing that Ciena devices running Service-Aware Operating Systems (SAOS), including the Ciena 5150 and DN 7000 Series platforms, facilitate broadband communications over an OSI model multi-layered network, e.g., a network having at least OSI model layers 2 and 3, and have MPLS Fast Reroute functionality as standardized in IETF RFC 4090); Ex. 5 (showing that Juniper devices running Junos OS, including the Juniper M40E Router, facilitate broadband communications over an OSI model multi-layered network, e.g., a network having at least OSI model layers 2 and 3, and have MPLS Fast Reroute functionality as standardized in IETF RFC 4090).

44. On information and belief, Frontier has committed the foregoing infringing activities without a license.

45. On information and belief, Frontier knew the '249 Patent existed and knew of exemplary infringing Frontier products and services while committing the foregoing infringing acts thereby willfully, wantonly and deliberately infringing the '249 Patent.

COUNT II: INFRINGEMENT OF THE '807 PATENT BY FRONTIER

46. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

47. On information and belief, Frontier has infringed the '807 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering for sale, selling, and/or importing into the United States Wi-Fi enabled routers, access points, and gateways,

such as, for example, the Arris NVG468MQ (included in the "Accused Products and Services").

48. For example, on information and belief, Frontier has infringed and continues to infringe at least claim 17 of the '807 Patent by making, using, offering to sell, selling, and/or importing the Accused Products, which include a time based network access provisioning system between a wireless device and a network. *See* Ex. 7 (showing that "Frontier provides an integrated modem and router with WiFi capabilities with all Internet plans" such as "The Frontier FiberOptic Gateway Router Arris NVG468MQ"); Ex. 8 (showing the Arris NVG468MQ supports Wi-Fi Protected Setup (WPS)); Ex. 9 (showing the Arris NVG468MQ is WPS certified by the Wi-Fi Alliance); Ex. 10 at 1, 7, 11 (showing that WPS access points comprise a time based network access provisioning system between a wireless device and a network, for example a Wireless Local Area Network ("WLAN")). The time based network access provisioning system comprises a network access point connected to the network, the network access point comprising logic for tracking operation of the wireless device. *See* Ex. 10 at 11-14, 25, 78, 80 (showing, for example, that Frontier's WPS access points comprise logic for tracking operation of a wireless device seeking to join a WLAN domain and that WPS access points track requests to join the network from a wireless device). The time based network access provisioning system further comprises logic for provisioning the wireless device if the operation of the wireless device occurs within an activatable time interval. *See* Ex. 10 at 11-14, 77-78, 80 (showing, for example, WPS access points include logic that provision wireless devices if the WPS button on the wireless device is pressed within 120 seconds of the press ("Walk Time") of the WPS button on the access point (activatable time period)).

49. On information and belief, Frontier has induced infringement of the '807 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and

encouraging others, including, but not limited to, its partners, customers, and end users, to use, sell, and/or offer to sell in the United States, and/or import into the United States, the Accused Products by, among other things, providing the Accused Products, specifications, instructions, manuals, advertisements, marketing materials, and technical assistance relating to the installation, set up, use, operation, and maintenance of said products. *See* ¶¶ 38-39 above (explaining that CommWorks notified Frontier of infringement by letter and email dated April 17, 2020); Ex. 7 (showing that "Frontier provides an integrated modem and router with WiFi capabilities with all Internet plans" such as "The Frontier FiberOptic Gateway Router Arris NVG468MQ"); Ex. 8 (showing the Arris NVG468MQ supports Wi-Fi Protected Setup (WPS)); Ex. 9 (showing the Arris NVG468MQ is WPS certified by the Wi-Fi Alliance).

50. On information and belief, Frontier has committed the foregoing infringing activities without a license.

51. On information and belief, Frontier knew the '807 Patent existed and knew of exemplary infringing Frontier products while committing the foregoing infringing acts thereby willfully, wantonly and deliberately infringing the '807 Patent.

COUNT III: INFRINGEMENT OF THE '465 PATENT BY FRONTIER

52. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

53. On information and belief, Frontier has infringed the '465 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by performing methods for contention free traffic detection using Wi-Fi enabled routers, access points, and gateways, such as, for example, the Arris NVG468MQ (included in the "Accused Products and Services").

54. For example, on information and belief, Frontier has infringed at least claim 1 of the '465 Patent by performing a method for detecting priority of data frames in a network. *See* Exs. 7, 13 (showing that "Every Frontier customer receives a router that's selected and tested" such as

"The Frontier FiberOptic Gateway Router Arris NVG468MQ"); Ex. 8 (showing, e.g., the Arris NVG468MQ supports Wi-Fi Multimedia (WMM)); Ex. 9 (showing, e.g., the Arris NVG468MQ is WMM certified by the Wi-Fi Alliance); Ex. 11 at 7-8, 25-26 (showing, for example, that WMM compatible Access Points detect the priority of data frames in a network by mapping to the Access Category ("AC") of the Enhanced Distributed Channel Access ("EDCA") mechanism); *see also* Ex. 12 at 12, 51, 268-269 (showing, for example, 802.11-2007+ compatible Access Points detect priority data frames in a network by mapping the AC of the EDCA mechanism). The method for detecting priority of data frames comprises the step of extracting a bit pattern from a predetermined position in a frame. *See* Ex. 11 at 10, 12, 25 (showing, for example, WMM compatible Access Points extract a bit pattern from a predetermined position in a data frame, such as in the QoS Control field); Ex. 12 at 51, 60, 67, 253 (showing, for example, 802.11-2007+ compatible Access Points extract a bit pattern from a predetermined position in a data frame, such as in the QoS Control field). The method for detecting priority of data frames further comprises the step of comparing said extracted bit pattern with a search pattern. *See* Ex. 11 at 25-26 (showing, for example, that WMM compatible Access Points compare the extracted UP bit pattern with a search pattern, such as the Access Category ("AC")); Ex. 12 at 252, 268-269 (showing, for example, that 802.11-2007+ compatible Access Points compare the extracted TID bit pattern User Priority ("UP") with the Access Category ("AC") search pattern). The method for detecting priority of data frames further comprises the step of identifying a received frame as a priority frame in case said extracted bit pattern matches with said search pattern. *See* Ex. 11 at 25-26 (showing, for example, that WMM compatible Access Points identify the priority Access Category ("AC") of the WMM Data frame if the UP of said frame matches an AC search pattern); Ex. 12 at 51, 252, 268-269 (showing, for example, that 802.11-2007+ compatible Access Points identify the priority Access

Category ("AC") of the data frame if the TID UP bit pattern matches an AC search pattern). In the method for detecting priority of data frames, the predetermined position in said frame is defined by the offset of said bit pattern in said frame. *See* Ex. 11 at 10-12 (showing, for example, WMM compatible Access Points predetermine the position of the bit pattern by inspecting the Frame Control field to anticipate which non-minimal field has data present in the frame MAC Header so the offset of the UP bit pattern can be determined); Ex. 12 at 60, 62, 67 (showing, for example, 802.11-2007+ compatible Access Points predetermine the position of the bit pattern by inspecting the Frame Control field to anticipate which non-minimal field has data present in the frame MAC Header so the offset of the TID bit pattern can be determined).

55. On information and belief, Frontier has committed the foregoing infringing activities without a license.

56. On information and belief, Frontier knew the '465 Patent existed and knew of exemplary infringing Frontier products while committing the foregoing infringing acts thereby willfully, wantonly and deliberately infringing the '465 Patent.

COUNT IV: INFRINGEMENT OF THE '285 PATENT BY FRONTIER

57. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

58. On information and belief, Frontier has infringed the '285 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering for sale, selling, and/or importing into the United States Wi-Fi enabled routers, access points, and gateways, such as, for example, the Arris NVG468MQ (included in the "Accused Products and Services").

59. For example, on information and belief, Frontier has infringed and continues to infringe at least claim 1 of the '285 Patent by making, using, offering to sell, selling, and/or importing the Accused Products, which perform a process for provisioning between a wireless device and a network. *See* Ex. 7 (showing that "Frontier provides an integrated modem and router

with WiFi capabilities with all Internet plans" such as "The Frontier FiberOptic Gateway Router Arris NVG468MQ"); Ex. 8 (showing the Arris NVG468MQ supports Wi-Fi Protected Setup (WPS)); Ex. 9 (showing the Arris NVG468MQ is WPS certified by the Wi-Fi Alliance); Ex. 10 at 1, 7, 11 (showing that WPS access points perform a process for provisioning between a wireless device and a network, such as a WLAN). The process for provisioning comprises the step of tracking an operating parameter of the wireless device within a service area, wherein the operating parameter of the wireless device comprises an onset of a signal transmission of the wireless device. *See* Ex. 10 at 11, 13, 25, 80 (showing that, for example, WPS access points monitors Probe Request {WSC IE, PBC}, wherein said Probe Requests include an onset of a signal transmission and PBC operating parameter in the onset signal Probe Request {WSC IE PBC} transmitted from an in range wireless device (enrollee) seeking access to the network). The process for provisioning further comprises the step of initiating provisioning of the wireless device if the tracked operating parameter occurs within a time interval. *See* Ex. 10 at 12-13, 25, 77-78, 80 (showing that, for example, WPS access points initiate provisioning of the wireless device if the tracked operating parameter (transmission of signal seeking access) occurs within the 120-second time period ("Walk Time")).

60. On information and belief, Frontier has induced infringement of the '285 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, its partners, customers, and end users, to use, sell, and/or offer to sell in the United States, and/or import into the United States, the Accused by, among other things, providing the Accused Products, specifications, instructions, manuals, advertisements, marketing materials, and technical assistance relating to the installation, set up, use, operation, and maintenance of said products. *See* ¶¶ 38-39 above (explaining that

CommWorks notified Frontier of infringement by letter and email dated April 17, 2020); Ex. 7 (showing that "Frontier provides an integrated modem and router with WiFi capabilities with all Internet plans" such as "The Frontier FiberOptic Gateway Router Arris NVG468MQ"); Ex. 8 (showing the Arris NVG468MQ supports Wi-Fi Protected Setup (WPS)); Ex. 9 (showing the Arris NVG468MQ is WPS certified by the Wi-Fi Alliance).

61. On information and belief, Frontier has committed the foregoing infringing activities without a license.

62. On information and belief, Frontier knew the '285 Patent existed and knew of exemplary infringing Frontier products while committing the foregoing infringing acts thereby willfully, wantonly and deliberately infringing the '285 Patent.

COUNT V: INFRINGEMENT OF THE '596 PATENT BY FRONTIER

63. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

64. On information and belief, Frontier has infringed the '596 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering for sale, selling, and/or importing into the United States Wi-Fi enabled routers, access points, and gateways, such as, for example, the Arris NVG468MQ (included in the "Accused Products and Services").

65. For example, on information and belief, Frontier has infringed and continues to infringe at least claim 1 of the '596 Patent by making, using, offering to sell, selling, and/or importing the Accused Products, which perform a process for associating devices. *See* Ex. 7 (showing that "Frontier provides an integrated modem and router with WiFi capabilities with all Internet plans" such as "The Frontier FiberOptic Gateway Router Arris NVG468MQ"); Ex. 8 (showing the Arris NVG468MQ supports Wi-Fi Protected Setup (WPS)); Ex. 9 (showing the Arris NVG468MQ is WPS certified by the Wi-Fi Alliance); Ex. 10 at 1, 9, 11 (showing, for example, that WPS access points perform a process for associating devices, such as the PushButton

Configuration ("PBC") method). The process for associating devices comprises the step of tracking an operating parameter of a first device, wherein the operating parameter of the first device comprises any of a power on of the first device, and an onset of a signal transmission of the first device. *See* Ex. 10 at 9, 11-13, 25, 77, 80 (showing, for example, WPS access points track racks the PBC operating parameter of the first device found in the onset signal of the Probe Request {WSC IE PBC}, where the Probe Request is activated by pressing a PBC button on the first device (enrollee) that is seeking access to the network). The process for associating devices further comprises the step of automatically associating the first device with at least one other device if the tracked operating parameter occurs within a time interval. *See* Ex. 10 at 12-13, 77-78, 80 (showing, for example, WPS access points automatically associate the wireless device seeking access with the access point if the signal transmission initiated by a button on the wireless device occurs within the 120-second time period ("Walk Time")).

66. On information and belief, Frontier has induced infringement of the '596 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, its partners, customers, and end users, to use, sell, and/or offer to sell in the United States, and/or import into the United States, the Accused Products by, among other things, providing the Accused Products, specifications, instructions, manuals, advertisements, marketing materials, and technical assistance relating to the installation, set up, use, operation, and maintenance of said products. *See* ¶¶ 38-39 above (explaining that CommWorks notified Frontier of infringement by letter and email dated April 17, 2020); Ex. 7 (showing that "Frontier provides an integrated modem and router with WiFi capabilities with all Internet plans" such as "The Frontier FiberOptic Gateway Router Arris NVG468MQ"); Ex. 8 (showing the Arris NVG468MQ supports Wi-Fi Protected Setup (WPS)); Ex. 9 (showing the Arris

NVG468MQ is WPS certified by the Wi-Fi Alliance).

67. On information and belief, Frontier has committed the foregoing infringing activities without a license.

68. On information and belief, Frontier knew the '596 Patent existed and knew of exemplary infringing Frontier products while committing the foregoing infringing acts thereby willfully, wantonly and deliberately infringing the '596 Patent.

COUNT VI: INFRINGEMENT OF THE '664 PATENT BY FRONTIER

69. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

70. On information and belief, Frontier has infringed the '664 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by providing services to its customers that make, use, offer to sell, sell in the United States or import into the United States the Ciena Blue Planet Manage, Control and Plan platform, as well as the Juniper Contrail platform, and all other equipment and/or platforms utilizing substantially similar methods of routing traffic used by Frontier to provide services to its customers ("Accused Products and Services").

71. For example, on information and belief, Frontier has infringed and continues to infringe at least claim 7 of the '664 Patent by making, using, offering to sell, selling, and/or importing the Accused Products and Services, which perform a method for routing network traffic between a first network and a second network, each of the of the networks comprising a plurality of network elements. *See* Ex. 1 (showing that the "Frontier NEBS Equipment List" includes Ciena and Juniper equipment including "Ciena DN 7200" and "Juniper Network M40E Router" equipment); Ex. 2 (showing that a "Senior Network Engineer" for Frontier "Configured, maintained, and improved network infrastructure with … Juniper, … Ciena Z, Ciena DN7000, [and Ciena] 5150" equipment); Ex. 14 (showing that Ciena's Blue Planet Manage, Control and Plan (MCP) network configuration management system routes network traffic between two

networks wherein each network comprises a plurality of network elements that are connected by a digital cross connect, such as an Multiprotocol Label Switching (MPLS) Tunnel and/or an Ethernet [Virtual] Private Line (EPL/EVPL) Service); Exs. 15-18 (showing that Juniper Contrail Network configures and monitors network traffic between networks and network elements using a digital cross connection, e.g., VXLAN). The plurality of network elements of the Accused Products and Services are connected by a digital cross connect. *See* Exs. 14-18. The method for routing network traffic of each of the Accused Products and Services comprises the step of determining, with a network configuration management system, the interconnections created by said digital cross connect between at least two network elements in said plurality of network elements. *See* Ex. 14 (showing that Ciena's Blue Planet MCP network configuration management system configures MPLS Tunnels-and/or EPL/EVPL Services between at least two network elements, e.g., Ciena 5150, 8700, and/or 3930 devices, which includes determining the interconnections between the network elements); Exs. 17-18 (showing that Juniper Contrail determines and/or configures digital cross connections between network elements in different networks using VXLAN tunneling). The method for routing network traffic of each of the Accused Products and Services further comprises representing each of said interconnections as a link between said at least two network elements. *See* Ex. 14 (showing that Ciena's Blue Planet represents the MPLS tunnel as a link between network elements, for example, the Ciena 8700-1 device on the first network and the Ciena 8700-3 device on the second network); Exs. 17 and 19 (showing that Juniper Contrail represents the interconnections between the network elements as a link (VXLAN tunnel)). The method for routing network traffic of each of the Accused Products and Services further comprises storing a status of each of said interconnections in a cross connection status database, wherein the status indicates whether a cross-connection using said

digital cross connect was successfully provisioned. *See* Ex. 14 (showing that Ciena's Blue Planet stores and displays the status, e.g., operational status, of the MPLS tunnel and/or EPL/EVPL service including whether the cross connection was successfully provisioned); Ex. 19 (showing that Juniper Contrail stores the status, e.g., connection status, the VXLAN tunnel between networking elements in different networks).

72. On information and belief, Frontier has induced infringement of the '664 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, its partners, customers, and end users, to use, sell, and/or offer to sell in the United States, and/or import into the United States, the Accused Products and Services by, among other things, providing the Accused Products and Services, specifications, instructions, manuals, advertisements, marketing materials, and technical assistance relating to the installation, set up, use, operation, and maintenance of said products. See ¶¶ 38-39 above (explaining that CommWorks notified Frontier of infringement by letter and email dated April 17, 2020); Ex. 1 (showing that the "Frontier NEBS Equipment List" includes Ciena and Juniper equipment including "Ciena DN 7200" and "Juniper Network M40E Router" equipment); Ex. 2 (showing that a "Senior Network Engineer" for Frontier "Configured, maintained, and improved network infrastructure with … Juniper, … Ciena Z, Ciena DN7000, [and Ciena] 5150" equipment); Ex. 14 (showing that Ciena's Blue Planet Manage, Control and Plan (MCP) network configuration management system routes network traffic between two networks wherein each network comprises a plurality of network elements that are connected by a digital cross connect, such as an Multiprotocol Label Switching (MPLS) Tunnel and/or an Ethernet [Virtual] Private Line (EPL/EVPL) Service); Exs. 15-18 (showing that Juniper Contrail Network configures and monitors network traffic between networks and network elements using

a digital cross connection, e.g., VXLAN).

73. On information and belief, Frontier has committed the foregoing infringing activities without a license.

74. On information and belief, Frontier knew the ’664 Patent existed and knew of exemplary infringing Frontier products and services while committing the foregoing infringing acts thereby willfully, wantonly and deliberately infringing the ’664 Patent.

COUNT VII: INFRINGEMENT OF THE ’979 PATENT BY FRONTIER

75. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

76. On information and belief, Frontier has infringed the ’979 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by making, using, offering for sale, selling, and/or importing into the United States Wi-Fi enabled routers, access points, and gateways, such as, for example, the Arris NVG468MQ (included in the “Accused Products and Services”).

77. For example, on information and belief, Frontier has infringed and continues to infringe at least claim 19 of the ’979 Patent by making, using, offering to sell, selling, and/or importing the Accused Products, which include a network access device comprising access control logic. *See* Ex. 7 (showing that “Frontier provides an integrated modem and router with WiFi capabilities with all Internet plans” such as “The Frontier FiberOptic Gateway Router Arris NVG468MQ”); Ex. 8 (showing the Arris NVG468MQ supports Wi-Fi Protected Setup (WPS)); Ex. 9 (showing the Arris NVG468MQ is WPS certified by the Wi-Fi Alliance); Ex. 10 at 1, 11-14 (showing, for example, that WPS access points include a network access device with access control logic (i.e. software and/or hardware components used to implement interfaces such as A, M, and/or E illustrated below) configured to provision devices accessing a network using the PushButton Configuration (“PBC”) method). The control logic of the Accused Products is configured to track an operating parameter of a first device, wherein the operating parameter of the first device

includes any of an indication of a power-on of the first device, and an onset of a signal transmission from the first device. *See* Ex. 10 at 12-13, 25, 80 (showing, for example, WPS access points' access control logic tracks and monitors a PBC operating parameter, such as an onset of a Probe Request {WSC IE PBC} sent by the first device (enrollee)). The control logic of the Accused Products is further configured to send a signal to initiate provisioning of the first device with a network if the tracked operating parameter occurs within a designated time interval. *See* Ex. 10 at 12-13, 77-78, 80 (showing that, for example, WPS access points' access control logic sends a Probe Response {WSC IE, PBC} signal to initiate provisioning of the first device (enrollee) if the Probe Request {WSC IE PBC} occurs within the 120-second walk time).

78. On information and belief, Frontier has induced infringement of the '979 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, its partners, customers, and end users, to use, sell, and/or offer to sell in the United States, and/or import into the United States, the Accused Products by, among other things, providing the Accused Products, specifications, instructions, manuals, advertisements, marketing materials, and technical assistance relating to the installation, set up, use, operation, and maintenance of said products. *See* ¶¶ 38-39 above (explaining that CommWorks notified Frontier of infringement by letter and email dated April 17, 2020); Ex. 7 (showing that "Frontier provides an integrated modem and router with WiFi capabilities with all Internet plans" such as "The Frontier FiberOptic Gateway Router Arris NVG468MQ"); Ex. 8 (showing the Arris NVG468MQ supports Wi-Fi Protected Setup (WPS)); Ex. 9 (showing the Arris NVG468MQ is WPS certified by the Wi-Fi Alliance).

79. On information and belief, Frontier has committed the foregoing infringing activities without a license.

80. On information and belief, Frontier knew the ’979 Patent existed and knew of exemplary infringing Frontier products while committing the foregoing infringing acts thereby willfully, wantonly and deliberately infringing the ’979 Patent.

COUNT VIII: INFRINGEMENT OF THE ’904 PATENT BY FRONTIER

81. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

82. On information and belief, Frontier has infringed the ’904 Patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by performing methods for contention free traffic detection using Wi-Fi enabled routers, access points, and gateways, such as, for example, the Arris NVG468MQ (included in the “Accused Products and Services”).

83. For example, on information and belief, Frontier has infringed and continues to infringe at least claim 7 of the ’904 Patent by performing a method comprising detecting a received frame is a priority frame based, at least in part, on information in the received frame. *See* Exs. 7, 13 (showing that “Every Frontier customer receives a router that's selected and tested” such as “The Frontier FiberOptic Gateway Router Arris NVG468MQ”); Ex. 8 (showing, e.g., the Arris NVG468MQ supports Wi-Fi Multimedia (WMM)); Ex. 9 (showing, e.g., the Arris NVG468MQ is WMM certified by the Wi-Fi Alliance); Ex. 11 at 7, 10, 12, 25-26 (showing, for example, that WMM compatible Access Points detect the priority of data frames by mapping to an Access Category (“AC”) based, at least in part, on information in the QoS Control field of a received frame, such as the User Priority (“UP”) subfield); Ex. 12 at 12, 51, 60, 67, 287 (showing, for example, that 802.11-2007+ compatible Access Points detect the priority of data frames by mapping to an Access Category (“AC”) based, at least in part, on information in the QoS Control field of a received frame, such as the User Priority (“UP”) TID subfield). The method further comprises extracting a bit pattern from a predetermined position in the received frame. *See* Ex. 11 at 10, 12, 25 (showing, for example, that in WMM compatible Access Points extract a bit pattern

(i.e. UP subfield bit pattern) from a predetermined position in a data frame, such as in the QoS Control field); Ex. 12 at 51, 60, 67, 253 (showing, for example, that 802.11-2007+ compatible Access Points extract a bit pattern (i.e. TID) UP from a predetermined position in a data frame, such as in the QoS Control field). The method further comprises comparing the extracted bit pattern with a search pattern. *See* Ex. 11 at 25-26 (showing, for example, that WMM compatible Access Points compare the extracted UP bit pattern with a search pattern, such as the AC); Ex. 12 at 252, 258-259 (showing, for example, that 802.11-2007+ compatible Access Points compare the extracted TID bit pattern UP with the AC search pattern). In the method, the detecting is based on a match between the extracted bit pattern and the search pattern. *See* Ex. 11 at 25-26 (showing, for example, that WMM compatible Access Points determine the AC of the WMM Data frame if the UP of said frame matches to an AC search pattern); Ex. 12 at 51, 252, 268-269 (showing, for example, that 802.11-2007+ compatible Access Points determine the priority AC of the data frame if the TID UP bit pattern matches an AC search pattern). The method further comprises transmitting the received frame in a transmit period reserved for priority frames in response to the detecting. *See* Ex. 11 at 25-27, 39 (showing, for example, that WMM compatible Access Points detect a data frame to be high priority and transmits said frame from a high priority queue, with the transmitting occurring while frames in said queue are being sent in succession onto the wireless medium during said queue's Transmission Opportunity ("TXOP") interval); Ex. 12 at 5, 15, 51, 69, 252-253, 268-269, 1021-1023 (showing, for example, that 802.11-2007+ compatible Access Points detect a data frame to be high priority and transmits said frame from a high priority queue, with the transmitting occurring while frames in said queue are being sent in succession onto the wireless medium during said queue's Transmission Opportunity ("TXOP") interval). The method adjusts a duration of the transmit period reserved for priority frames based on statistic information

regarding sent priority frames. *See* Ex. 11 at 25, 27 (showing, for example, that WMM compatible Access Points adjust the duration of the TXOP interval (such as the TXOP limit) based on statistic information regarding sent priority frames, such as when using a lower PHY rate than selected for the initial transmission attempt of the first data frame, for retransmission of a data frame or for the initial transmission of a data frame if any previous data frame in the current data frame set has been retransmitted); Ex. 12 at 5, 15, 287, 1024-1025 (showing, for example, that 802.11-2007+ compatible Access Points adjust the duration of the TXOP based on statistic information regarding sent priority frames, such as when using a lower PHY rate than selected for the initial transmission attempt of the first data frame, for retransmission of a data frame or for the initial transmission of a data frame if any previous data frame in the current data frame set has been retransmitted).

84. On information and belief, Frontier has committed the foregoing infringing activities without a license.

85. On information and belief, Frontier knew the ’904 Patent existed and knew of exemplary infringing Frontier products while committing the foregoing infringing acts thereby willfully, wantonly and deliberately infringing the ’904 Patent.

PRAYER FOR RELIEF

WHEREFORE, CommWorks prays for judgment in its favor against Frontier for the following relief:

A. Entry of judgment in favor of CommWorks against Frontier on all counts;

B. Entry of judgment that Frontier has infringed the Patents-in-Suit;

C. Entry of judgment that Frontier’s infringement of the Patents-in-Suit has been willful;

D. An order permanently enjoining Frontier from infringing the Patents-in-Suit;

E. Award of compensatory damages adequate to compensate CommWorks for Frontier's infringement of the Patents-in-Suit, in no event less than a reasonable royalty trebled as provided by 35 U.S.C. § 284;

F. CommWorks' costs;

G. Pre-judgment and post-judgment interest on CommWorks' award; and

H. All such other and further relief as the Court deems just or equitable.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38 of the Fed. R. Civ. Proc., Plaintiff hereby demands trial by jury in this action of all claims so triable.

Dated: December 8, 2022

Respectfully submitted,

/s/ Stafford Davis

Stafford Davis
State Bar No. 24054605
sdavis@stafforddavisfirm.com
Catherine Bartles
State Bar No. 24104849
cbartles@stafforddavisfirm.com
THE STAFFORD DAVID FIRM, PC
815 South Broadway Avenue
Tyler, Texas 75701
Tel: (903) 593-7000
Fax: (903) 705-7369

Dmitry Kheyfits
dkheyfits@kblit.com
Brandon Moore
bmoore@kblit.com
KHEYFITS BELENKY LLP
12600 Hill Country Blvd, Suite R-275
Austin, TX 78738
Tel: 737-228-1838
Fax: 737-228-1843

Andrey Belenky
abelenky@kblit.com
Hanna G. Cohen
hgcohen@kblit.com
KHEYFITS BELENKY LLP
80 Broad Street, 5th Floor
New York, NY 10004
Tel: 212-203-5399
Fax: 212-203-6445

Attorneys for Plaintiff
CommWorks Solutions, LLC