MARC BELLOLI (SBN 244290)
mbelloli@feinday.com
M. ELIZABETH DAY (SBN 177125)
eday@feinday.com
RUSSELL S. TONKOVICH (SBN 233280)
rtonkovich@feinday.com
FEINBERG DAY KRAMER ALBERTI LIM TONKOVICH & BELLOLI LLP
1600 El Camino Real, Suite 280
Menlo Park, CA 94025
Tel: 650.618.4360/Fax: 650.618.4368

George I. Lee (pro hac vice to be filed)
lee@ls3ip.com
Sean M. Sullivan (pro hac vice to be filed)
sullivan@ls3ip.com
Michael P. Boyea (pro hac vice to be filed)
boyea@ls3ip.com
Cole B. Richter (pro hac vice to be filed)
richter@ls3ip.com
Jae Y. Pak (pro hac vice to be filed)
pak@ls3ip.com
LEE SULLIVAN SHEA & SMITH LLP
656 W Randolph St, Floor 5W
Chicago, IL 60661
Tel: (312) 754-0002/Fax: (312) 754-0003

Attorneys for Plaintiff Commstech LLC

UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

OAKLAND DIVISION

COMMSTECH LLC,

Plaintiff,

v.

ALLIED TELESIS, INC.,

Defendant.

Case No. 4:19-cv-04006-JST

FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT

JURY TRIAL DEMANDED

Plaintiff Commstech LLC ("Commstech" or "Plaintiff") hereby asserts the following claims for patent infringement against Defendant Allied Telesis, Inc. ("Allied" or "Defendant"), and alleges as follows:

SUMMARY

1. Commstech owns United States Patent Nos. 6,349,340, 7,769,028, and 7,990,860 (collectively, the "Patents-in-Suit").

2. Allied infringes the Patents-in-Suit by implementing, without authorization, Commstech's proprietary technologies in a number of its commercial networking products and related software switches (collectively referred to herein as the "Accused Products") including, inter alia, products that support the RFC 4607 specification related to "Source-Specific Multicast for IP" (*e.g.*, Allied Telesis network switches, including the x310/x510/x530/x550/x610/x900/x930/x950 Series Switches, the DC2552XS/L3 Switch, the IE200/IE300 Series Switches, the IE510-28GSX Switch, the SwitchBlade x8100 Series Switches, the SwitchBlade x908 Switch, and the x530L-52GPX Switch) and products that support "Advanced QoS," such as the Allied Telesis x900 Series Switches and advanced Allied Telesis routers that operate with the "AlliedWare Software" (*e.g.*, AR415S/AR410S, AR440S/AT-AR441S, AR450S, AR725, AR745, AR750S, AR770S). *See, e.g.*, Advanced QoS White Paper at p. 15, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf; https://www.alliedtelesis.com/products/selector/switches. These Accused Products are marketed, offered and distributed throughout the United States, including in this District.

3. By this action, Commstech seeks to obtain compensation for the harm Commstech has suffered as a result of Allied's infringement of the Patents-in-Suit.

NATURE OF THE ACTION

4. This is a civil action for patent infringement arising under the patent laws of the United States, 35 U.S.C. § 1 *et seq.*

5. Allied has infringed and continues to infringe, and at least as early as the filing and/or service of this Complaint, has induced and continues to induce infringement of, and has

contributed to and continues to contribute to infringement of, at least one or more claims of Commstech's Patents-in-Suit at least by making, using, selling, and/or offering to sell its products and services in the United States, including in this District.

6. Commstech is the legal owner by assignment of the Patents-in-Suit, which were duly and legally issued by the United States Patent and Trademark Office ("USPTO"). Commstech seeks monetary damages for Allied's infringement of the Patents-in-Suit.

INTRADISTRICT ASSIGNMENT

7. Pursuant to Local Rule 3-2(c), this case is subject to district-wide assignment because it is an Intellectual Property Action.

THE PARTIES

8. Plaintiff Commstech LLC is a Texas limited liability company with its principal place of business at 1708 Harrington Dr., Plano, Texas 75075. Commstech is the owner of intellectual property rights at issue in this action.

9. On information and belief, Defendant Allied Telesis, Inc. is a Delaware corporation with a principal place of business at 3041 Orchard Parkway, San Jose, California 95134.

10. On information and belief, Allied directly and/or indirectly develops, designs, manufactures, distributes, markets, offers to sell and/or sells infringing products and services in the United States, including in the Northern District of California, and otherwise directs infringing activities to this District in connection with its products and services.

JURISDICTION AND VENUE

11. As this is a civil action for patent infringement arising under the patent laws of the United States, 35 U.S.C. § 1 *et seq.*, this Court has subject matter jurisdiction over the matters asserted herein under 28 U.S.C. §§ 1331 and 1338(a).

12. This Court has personal jurisdiction over Allied because Allied has (1) availed itself of the rights and benefits of the laws of the State of California, (2) transacted, conducted, and/or solicited business and engaged in a persistent course of conduct in the State of California (and in this District), (3) derived substantial revenue from the sales and/or use of products, such

as the Accused Products, in the State of California (and in this District), (4) purposefully directed activities (directly and/or through intermediaries), such as shipping, distributing, offering for sale, selling, and/or advertising the Accused Products, at residents of the State of California (and residents in this District), (5) delivered Accused Products into the stream of commerce with the expectation that the Accused Products will be used and/or purchased by consumers in the State of California (and in this District), and (6) committed acts of patent infringement in the State of California (and in this District).

13. This Court also has personal jurisdiction over Allied because it is registered to do business in California and has a regular and established place of business in the Northern District of California.

14. Venue is proper in this District under 28 U.S.C. § 1400(b).

PATENTS-IN-SUIT

U.S. Patent No. 6,349,340

15. U.S. Patent No. 6,349,340 ("the '340 Patent") is entitled "Data multicast channelization," and was issued on February 19, 2002. A true and correct copy of the '340 Patent is attached as Exhibit A.

16. The '340 Patent was filed on January 13, 2000 as U.S. Patent Application No. 09/482,496.

17. Commstech is the owner of all rights, title, and interest in and to the '340 Patent, with the full and exclusive right to bring suit to enforce the '340 Patent, including the right to recover for past infringement.

18. The '340 Patent is valid and enforceable under United States Patent Laws.

19. The '340 Patent recognized several problems with existing high-speed network data distribution technology, such as multicast technology. Notably, the '340 Patent recognized that "[m]anagement of high-speed data across distributed data networks can involve two basic approaches," both of which have several drawbacks. Exhibit A at 1:32-33.

20. For instance, the '340 Patent recognized problems with a "more common approach" referred to as the "client-based" approach, where "client nodes notify server nodes of

their interest in certain desired data," and the "servers can individually distribute data packets to each interested, subscribing client." *Id.* at 1:33-39. In this respect, the '340 Patent recognized that this "client-based" approach "tends to overburden the server as network demands grow." *Id.* at 1:30-41. In particular, the '340 Patent discloses that "as additional client nodes are added to the network, the server not only must individually distribute the data packets to each interested client node, but also the server must individually distribute the data packets to each additional subscribing client node," and thus, "as the client node list grows, so does the server's workload." *Id.* at 1:41-47.

21. The '340 Patent also recognized problems with another approach referred to as the "server-based" approach that uses multicast technology, in which "the server transmits the data packet to a multicast destination address identifying a particular multicast session," and "[i]nterested client nodes merely subscribe to the multicast address, rather than the server, in order to receive the broadcast data." *Id.* at 1:48-58. However, the '340 Patent recognized that "because all client nodes receive each broadcast data packet, regardless of the content of the data packet, each client node must filter unwanted data upon receipt of each data packet," but "[c]lient nodes generally are uninterested in most of the broadcast data and, as a result, client nodes expend substantial processor resources identifying and discarding unwanted data packets." *Id.* at 1:54-2:4. Further, the '340 Patent recognized that, although these existing approaches "allow[ ] a server to provide data at high data transmission rates to more client[ ] nodes," these approaches can "limit the client node's ability to filter unwanted data packets" given the client node's "processor overhead." *Id.* at 2:7-11.

22. To address one or more shortcomings of existing high-speed network data distribution technology, such as existing multicast technology that "challeng[ed] the client node's ability to filter the unwanted data packets," the '340 Patent discloses, inter alia, a "method for efficient filtering of unwanted data in a multicast network environment" that "satisfies the long-felt need of the prior art by applying a combination hardware and software solution which selectively filters multicast data by selectively disabling channels containing unwanted data." *Id.* at 2:14-25. The '340 Patent's "inventive arrangements" have "advantages over all other data

distribution methods" and provide "a novel and nonobvious method for receiving the benefits of multicasting while avoiding the drawbacks associated with such systems." *Id.* at 2:26-30.

23. Indeed, the inventions of the '340 Patent improved the functionality of "client" computers operating in a multicast network environment by reducing the "substantial processor resources" expended by "client" computers using existing data filtering mechanisms, such as by reducing the resources expended by a "client" computer's "network applications software." Exhibit A at 6:9-47. In this respect, the inventions of the '340 Patent allow a "client" computer to "avoid excessive software filtering" that leads to "performance gain" that can be "significant." *Id.* at 10:21-31.

The Inventions Claimed in U.S. Patent No. 6,349,340 Improved Technology & Were Not Well-Understood, Routine, or Conventional

24. Given the state of the art at the time of the inventions of the '340 Patent, including the deficiencies in network data distribution systems of the time, the inventive concepts of the '340 Patent cannot be considered to be conventional, well-understood, or routine. *See*, *e.g.*, Exhibit A at 1:32-2:17. Indeed, there was a long-felt need in the art at the time of the inventions of the '340 Patent that the claimed inventions of the '340 Patent addressed. *See*, *e.g.*, *id.* at 2:20-26. In this respect, the '340 Patent discloses, among other things, an unconventional solution to problems arising in the context of network data distribution systems, namely, that "client" computers in such systems "expend[ed] substantial processor resources" filtering multicast data and this "processor overhead" inhibited the "client" computers' ability to handle the increasing user demands for network data distribution systems to broadcast more data. *See*, *e.g.*, *id.* at 2:1-17.

25. The inventions of the '340 Patent offered an unconventional, technological solution to such problems resulting in a "novel and nonobvious method for receiving the benefits of multicasting while avoiding the drawbacks associated with such [existing] systems." Exhibit A at 2:25-30; *see also*, *e.g.*, *id.* at 10:21-26 ("The inventive multicast channelization strategy can increase the bandwidth available to the expanding client node base by distributing the broadcast data across multiple channels," such that "client nodes can selectively filter unwanted broadcast

data within the network interface circuitry of each client node."). In this respect, the inventions of the '340 Patent improved the functionality of "client" computers operating in a multicast network environment. *See*, *e.g.*, *id.* at 6:9-47, 10:21-31.

26. Indeed, it was not well-understood, routine, or conventional at the time of the inventions of the '340 Patent to perform the following functions, alone and/or in combination with one another: (i) selecting from among a plurality of multicast communications channels a source communications channel for receiving requested multicast data, (ii) enabling the selected source communications channel, (iii) receiving the requested multicast data through the enabled source communications channel, (iv) forwarding the requested multicast data to requesting processes, and (v) disabling the selected source communications channel when the requesting processes indicate that no further data is requested to be received over the selected source communications channel. *See*, *e.g.*, Exhibit A at Claims 1, 8, 14. Moreover, it was not well-understood, routine, or conventional at the time of the inventions of the '340 Patent to perform one or more of the following functions alone and/or in combination with one or more of the preceding functions: (i) receiving from one or more processes in a client node a request for multicast data, (ii) identifying a multicast data source for each requested data, and (iii) disabling an enabled selected source communications channel when the requesting client node process indicates that no further data is requested to be received from the identified multicast data source over the selected source communications channel and no other requesting client node processes have indicated a continuing need for further data to be received from the identified multicast data source over the selected source communications channel. *See*, *e.g.*, *id.* at Claims 1, 8, 14.

27. Further, it was not well-understood, routine, or conventional at the time of the inventions of the '340 Patent to perform one or more of the following functions alone and/or in combination with one or more of the unconventional functions set forth in paragraph number 25: (i) filtering, from multicast data received through an enabled source communications channel, unwanted/unrequested multicast data, (ii) discarding the unwanted/unrequested multicast data, and (ii) forwarding the filtered multicast data to one or more requesting processes. *See*, *e.g.*, Exhibit A at Claims 3, 9, 15.

28. These are just exemplary reasons why the inventions claimed in the '340 Patent were not well-understood, routine, or conventional at the time of the invention of the '340 Patent.

29. Consistent with the problems addressed by the '340 Patent being rooted in network data distribution systems, the '340 Patent's inventions naturally are also rooted in that same technology that cannot be performed solely with pen and paper or in the human mind. Indeed, using pen and paper or a human mind would not only ignore, but would run counter to, the stated technical solution of the '340 Patent noted above and the technical problems that the '340 Patent was specifically designed to address. Likewise, at least because the '340 Patent's claimed inventions address problems rooted in network data distribution systems, these inventions are not merely drawn to longstanding human activities.

U.S. Patent No. 7,769,028

30. U.S. Patent No. 7,769,028 ("the '028 Patent") is entitled "Systems and methods for adaptive throughput management for event-driven message-based data," and was issued on August 3, 2010. A true and correct copy of the '028 Patent is attached as Exhibit B.

31. The '028 Patent was filed on June 21, 2006 as U.S. Patent Application No. 11/471,923.

32. Commstech is the owner of all rights, title, and interest in and to the '028 Patent, with the full and exclusive right to bring suit to enforce the '028 Patent, including the right to recover for past infringement.

33. The '028 Patent is valid and enforceable under United States Patent Laws.

34. The '028 Patent discloses, among other things, "a method for communicating data including prioritizing data by assigning a priority to the data, analyzing a network to determine a status of the network, and communicating data based at least in part on the priority of the data and the status of the network." Exhibit B at Abstract. The '028 Patent also discloses "Quality of Service (QoS)," which "refers to one or more capabilities of a network to provide various forms of guarantees with regard to data this is carried." *Id.* at 4:16-18. The '028 Patent states that "[t]he primary goal of QoS is to provide priority including dedicated bandwidth, controlled jitter and latency (required by some real-time and interactive traffic), and improved [data] loss

characteristics." *Id.* at 4:27-31.

35. In discussing QoS, the '028 Patent recognized various shortcomings of existing QoS systems. As one example, the '028 Patent states that "[e]xisting QoS systems cannot provide QoS based on message content at the transport layer" of the Open Systems Interconnection (OSI) seven-layer protocol model. Exhibit B at 5:1-2. Indeed, the '028 Patent explains that the "Transmission Control Protocol (TCP)," which is a protocol at the transport layer, "requires several forms of handshaking and acknowledgements to occur in order to send data," and "[h]igh latency and [data] loss may result in TCP hitting time outs and not being able to send much, if any, meaningful data over [] a network." *Id.* at 1:57-60, 3:53-57. As another example, the '028 Patent states that "[c]urrent approaches to QoS often require every node in a network to support QoS, or at the very least, for every node in the network involved in a particular communication to support QoS," but such approaches to QoS "do[] not scale well because of the large amount of state information that must be maintained at every node and the overhead associated with setting up such connections." *Id.* at 4:35-39, 4:46-49. As yet another example, the '028 Patent states that "[d]ue to the mechanisms existing QoS solutions utilize, messages that look the same to current QoS systems may actually have different priorities based on message content," but "data consumers may require access to high-priority data without being flooded by lower-priority data." *Id.* at 4:61-67.

36. In discussing the shortcomings of the prior art, the '028 Patent recognized that "[t]here is a need for systems and methods for providing QoS on the edge of a [] data network," and "a need for adaptive, configurable QoS systems and methods in a [] data network." Exhibit B at 5:17-20. The claimed inventions of the '028 Patent provide such systems and methods.

The Inventions Claimed in U.S. Patent No. 7,769,028 Improved Technology & Were Not Well-Understood, Routine, or Conventional

37. Given the state of the art at the time of the inventions of the '028 Patent, including the deficiencies with existing QoS systems for computer networks, the inventive concepts of the '028 Patent cannot be considered to be conventional, well-understood, or routine. *See*, *e.g.*, Exhibit B at 1:57-60, 3:53-57, 4:35-39, 4:46-49, 4:61-67, 5:1-2, 5:17-20. The '028 Patent

discloses, among other things, an unconventional solution to problems arising in the context of communications networks that relied on existing QoS systems, namely, that such QoS systems did not scale, were not adaptive or configurable to different network types or architectures, and could not provide QoS based on message content at the transport layer, among other deficiencies. *See*, *e.g.*, *id.*

38. To address one or more deficiencies with existing QoS systems, the inventions of the '028 Patent offered a technological solution that facilitated providing an improved technique for communicating data over a network, which helped to control jitter and latency and improve data loss, among other benefits. In particular, the inventions of the '028 Patent provided a specific, unconventional solution for prioritizing data as part of and/or at the top of the transport layer, dynamically changing rules for assigning priority to data, and communicating data based at least in part on the priority of the data and the status of the network. *See*, *e.g.*, *id.* at Claims 1, 13, 17; 7:29-31. In this respect, the inventions of the '028 Patent improved the technical functioning of computers and computer networks by reciting a specific technique for prioritizing data communications over a network. *See*, *e.g.*, *id.* at 4:11-37, 4:57-5:9.

39. Indeed, it was not well-understood, routine, or conventional at the time of the invention of the '028 Patent for a communication device to (i) prioritize data by assigning priority to data, where the prioritization occurs either as part of and/or at the top of the transport layer, (ii) analyze a network to determine a status of the network, (iii) select a mode based on the status of the network, (iv) change rules for assigning priority to the data based on the mode, and (v) communicate the data based at least in part on the priority of the data and the status of the network, where the data is communicated at a transmission rate metered based at least in part on the status of the network. *See*, *e.g.*, Exhibit B at Claim 1. Moreover, it was not well-understood, routine, or conventional at the time of the invention of the '028 Patent for a communication device to receive the data at a node on the edge of the network. *See*, *e.g.*, Exhibit B at Claim 5. It was also not well-understood, routine, or conventional at the time of the invention of the '028 Patent for a communication device to receive the data at least in part from an application program and/or communicate the data to an application program. *See*, *e.g.*, *id.* at Claims 6, 12. Further, it was

not well-understood, routine, or conventional at the time of the invention of the '028 Patent for a communication device to assign the priority to the data based at least in part on message content of the data, protocol information of the data, or a user defined rule. *See*, *e.g.*, *id.* at Claims 7-9.

40. Additionally, it was not well-understood, routine, or conventional at the time of the invention of the '028 Patent for a communication system to include (i) a data prioritize component adapted to assign a priority to data, where the prioritization occurs either as part of and/or at the top of the transport layer, (ii) a network analysis component adapted to determine a status of the network, (iii) a mode selection component adapted to select a mode based at least on the status of the network, and (iv) a data communications component adapted to communicate the data based at least in part on the priority of the data and the status of the network, where the data prioritization component is adapted to assign priority to the data based on prioritization rules that are selected based on a selected mode, and where the data is communicated at a transmission rate metered based at least in part on the status of the network. *See*, *e.g.*, Exhibit B at Claims 13, 17. It was also not well-understood, routine, or conventional at the time of the invention of the '028 Patent for a communication system to include a data organization component adapted to organize the data with respect to other data based at least in part on the priority of the data. *See*, *e.g.*, *id.* at Claim 14.

41. These are just exemplary reasons why the inventions claimed in the '028 Patent were not well-understood, routine, or conventional at the time of the invention of the '028 Patent.

42. Consistent with the problems addressed being rooted in QoS systems for computer networks, the '028 Patent's inventions naturally are also rooted in that same technology that cannot be performed solely with pen and paper or in the human mind. Indeed, using pen and paper or a human mind would not only ignore, but would run counter to, the stated technical solution of the '028 Patent noted above and the technical problems that the '028 Patent was specifically designed to address. Likewise, at least because the '028 Patent's claimed inventions address problems rooted in QoS systems for computer networks, these inventions are not merely drawn to longstanding human activities.

U.S. Patent No. 7,990,860

43. U.S. Patent No. 7,990,860 ("the '860 Patent") is entitled "Method and system for rule-based sequencing for QoS," and was issued on August 2, 2011. A true and correct copy of the '860 Patent is attached as Exhibit C.

44. The '860 Patent was filed on June 16, 2006 as U.S. Patent Application No. 11/454,220.

45. Commstech is the owner of all rights, title, and interest in and to the '860 Patent, with the full and exclusive right to bring suit to enforce the '860 Patent, including the right to recover for past infringement.

46. The '860 Patent is valid and enforceable under United States Patent Laws.

47. The '860 Patent discloses, among other things, "a method for communicating data over a network to provide Quality of Service," including "prioritizing the data, and communicating the data based at least in part on the priority." Exhibit C at Abstract. According to the '860 Patent, "Quality of Service (QoS)" "refers to one or more capabilities of a network to provide various forms of guarantees with regard to data that is carried." *Id.* at 4:16-18. The '860 Patent states that "[t]he primary goal of QoS is to provide priority including dedicated bandwidth, controlled jitter and latency (required by some real-time and interactive traffic), and improved [data] loss characteristics." *Id.* at 4:27-32.

48. Like the '028 Patent, the '860 Patent recognized various shortcomings of existing QoS systems. As one example, the '860 Patent states that "[e]xisting QoS systems cannot provide QoS based on message content at the transport layer" of the Open Systems Interconnection (OSI) seven-layer protocol model. Exhibit C at 5:2-3. Indeed, the '860 Patent explains that the "Transmission Control Protocol (TCP)," which is a protocol at the transport layer, "requires several forms of handshaking and acknowledgements to occur in order to send data," and "[h]igh latency and [data] loss may result in TCP hitting time outs and not being able to send much, if any, meaningful data over [] a network." *Id.* at 1:57-60, 3:53-57. As another example, the '860 Patent states that "[c]urrent approaches to QoS often require every node in a network to support QoS, or at the very least, for every node in the network involved in a particular communication

to support QoS," but such approaches to QoS "do[] not scale well because of the large amount of state information that must be maintained at every node and the overhead associated with setting up such connections." *Id.* at 4:36-39, 4:47-50. As yet another example, the '860 Patent states that "[d]ue to the mechanisms existing QoS solutions utilize, messages that look the same to current QoS systems may actually have different priorities based on message content," but "data consumers may require access to high-priority data without being flooded by lower-priority data." *Id.* at 4:64-5:1.

49. In discussing the shortcomings of the prior art, the '860 Patent recognized that "[t]here is a need for systems and methods for providing QoS on the edge of a [] data network," and "a need for adaptive, configurable QoS systems and methods in a [] data network." Exhibit C at 5:19-22. The claimed inventions of the '860 Patent provide such systems and methods.

The Inventions Claimed in U.S. Patent No. 7,990,860 Improved Technology & Were Not Well-Understood, Routine, or Conventional

50. Given the state of the art at the time of the inventions of the '860 Patent, including the deficiencies with existing QoS systems for computer networks, the inventive concepts of the '860 Patent cannot be considered to be conventional, well-understood, or routine. *See*, *e.g.*, Exhibit C at 1:57-60, 3:53-57, 4:36-39, 4:47-50, 4:64-5:2, 5:19-22. The '860 Patent discloses, among other things, an unconventional solution to problems arising in the context of communications networks that relied on existing QoS systems, namely, that such QoS systems did not scale, were not adaptive or configurable to different network types or architectures, and could not provide QoS based on message content at the transport layer, among other deficiencies. *See*, *e.g.*, *id.*

51. To address one or more deficiencies with existing QoS systems, the inventions of the '860 Patent offered a technological solution that facilitated providing an improved technique for communicating data over a network, which helped to control jitter and latency and improve data loss, among other benefits. In particular, the inventions of the '860 Patent provided a specific, unconventional solution for prioritizing data as part of and/or at the top of the transport layer by sequencing the data based at least in part on a user defined rule. *See*, *e.g.*, *id.* at Abstract,

Claims 1, 13, 17. In this respect, the inventions of the '860 Patent improved the technical functioning of computers and computer networks by reciting a specific technique for prioritizing data communications over a network. *See*, *e.g.*, *id.* at 4:11-37, 4:57-5:9.

52. Indeed, it was not well-understood, routine, or conventional at the time of the invention of the '860 Patent for a communication device to include (i) a network analysis component configured to determine a network status from a plurality of network statuses based on analysis of network measurements, and determine at least one of an effective link speed and a link proportion for at least one link, (ii) a mode selection component configured to select a mode from a plurality of modes that corresponds with at least one of the plurality of network statuses based on the determined network status, where each of the plurality of modes comprises a user defined sequencing rule, (iii) a data prioritization component configured to operate at a transport layer of a protocol stack and prioritize the data by assigning a priority to the data, where the prioritization component includes a sequencing component configured to sequence the data based at least in part on the user defined sequencing rule of the selected mode, (iv) a data metering component configured to meter inbound data by shaping the inbound data at the data communications system for the at least one link, and meter outbound data by policing the outbound data at the data communications system for the at least one link, and (v) a data communication component configured to communicate the data based at least in part on the priority of the data, the effective link speed, and/or the link proportion. *See*, *e.g.*, Exhibit C at Claims 1, 15, 20.

53. Moreover, it was not well-understood, routine, or conventional at the time of the invention of the '860 Patent for the user defined sequencing rule mentioned above to be dynamically reconfigurable. *See*, *e.g.*, Exhibit C at Claim 5. It was also not well-understood, routine, or conventional at the time of the invention of the '860 Patent for a communication device to receive the data at least in part from an application program operating on the node, or pass the data at least in part to an application program operating on the node. *See*, *e.g.*, *id.* at Claims 6, 12. Further, it was not well-understood, routine, or conventional at the time of the invention of the '860 Patent for a communication device to prioritize the data by differentiating the data based

at least in part on message content, protocol information, or a user defined differentiation rule. *See*, *e.g.*, *id.* at Claims 8-11.

54. These are just exemplary reasons why the inventions claimed in the '860 Patent were not well-understood, routine, or conventional at the time of the invention of the '860 Patent.

55. Consistent with the problems addressed being rooted in QoS systems for computer networks, the '860 Patent's inventions naturally are also rooted in that same technology that cannot be performed solely with pen and paper or in the human mind. Indeed, using pen and paper or a human mind would not only ignore the stated technical solution of the '860 Patent noted above and the technical problem that the '860 Patent was specifically designed to address. Likewise, at least because the '860 Patent's claimed inventions address problems rooted in QoS systems for computer networks, these inventions are not merely drawn to longstanding human activities.

COUNT I: INFRINGEMENT OF U.S. PATENT NO. 6,349,340

56. Commstech incorporates by reference and re-alleges paragraphs 15-29 of this Complaint as if fully set forth herein.

57. Defendant Allied has infringed and is infringing, either literally or under the doctrine of equivalents, the '340 Patent in violation of 35 U.S.C. § 271 *et seq.*, directly and/or indirectly, by making, using, offering for sale, or selling in the United States, and/or importing into the United States without authority or license, products that support the RFC 4607 specification related to "Source-Specific Multicast for IP" (*e.g.*, Allied Telesis network switches, including the x310/x510/x530/x550/x610/x900/x930/x950 Series Switches, the DC2552XS/L3 Switch, the IE200/IE300 Series Switches, the IE510-28GSX Switch, the SwitchBlade x8100 Series Switches, the SwitchBlade x908 Switch, and the x530L-52GPX Switch) (collectively referred to herein as the "Accused '340 Products"). *See*, *e.g.*, https://www.alliedtelesis.com/products/selector/switches. As set forth below, an entity that uses one or more of the Accused '340 Products in their intended manner performs the method of Claim 1 and thus infringes the '340 Patent.

58. As just one non-limiting example, set forth below (with claim language in bold

and italics) is exemplary evidence of infringement of Claim 1 of the '340 Patent in connection with the Accused '340 Products. This description is based on publicly available information. Commstech reserves the right to modify this description, including, for example, on the basis of information about the Accused '340 Products that it obtains during discovery.

1(a): A method for receiving requested multicast data over a plurality of multicast communications channels comprising:—Allied practices a method of receiving requested multicast data over a plurality of multicast communications channels in accordance with Claim 1 when Allied uses one or more of the Accused '340 Products. For instance, the Accused '340 Products support the RFC 4607 specification related to "Source-Specific Multicast for IP" that discloses the method recited in Claim 1. *See, e.g.*, https://www.alliedtelesis.com/sites/default/files/documents/datasheets/x610_series_ds_revzf.pdf (expressly disclosing "RFC 4607"); https://www.alliedtelesis.com/sites/default/files/ie510-28gsx_ds_revd.pdf (same). In particular, RFC 4607 defines a "source-specific multicast service" ("SSM") as "[a] datagram sent with source IP address S and destination IP address G in the SSM range [that] is delivered to each host socket that has specifically requested delivery of datagrams sent by S to G, and only to those sockets." Holbrook, Source-specific multicast for IP, RFC 4607 (2006), p. 5, *available at* https://tools.ietf.org/pdf/rfc4607.pdf; *see also* https://www.alliedtelesis.com/sites/default/files/documents/feature-guides/pimsm_feature_overview_guide.pdf at p. 1 (disclosing "two multicast protocols" "PIM-SM" and "PIM-SSM").

1(b): selecting from among the plurality of multicast communications channels a source communications channel for receiving said requested multicast data;—Allied selects from among the plurality of multicast communications channels a source communications channel for receiving said requested multicast data when it uses one or more of the Accused '340 Products. For instance, the Accused '340 Products support the RFC 4607 specification, which discloses a plurality of multicast communication channels, where each "channel is identified (addressed) by the combination of a unicast source address and a multicast destination address in the SSM range" (*e.g.*, "S, G = (192.0.2.1, 232.7.8.9)," "S, G = (192.0.2.2, 232.7.8.9)"). *Id.* at p. 6; *see also, e.g., id.* at pp. 3-4 ("The network service identified by (S,G), for SSM address G

and source host address S, is referred to as a 'channel'"); *id.* at p. 6 ("We use the term 'channel' to refer to the service associated with an SSM address," and "[a] channel is identified by the combination of an SSM destination address and a specific source, *e.g.*, an (S,G) pair."). In particular RFC 4607 discloses that "[t]he IP module interface to upper-layer protocols is extended to allow a socket to 'Subscribe' to . . . a particular channel identified by an SSM destination address and a source IP address." *Id.* at p. 5; *see also, e.g., id.* at p. 6 ("The receiver operations allowed on a channel are called 'Subscribe (S,G)' and 'Unsubscribe (S,G)'"); *id.* at p. 7 ("If reception of the same channel is desired on multiple interfaces, Subscribe is invoked once for each"); *id.* at p. 8 ("An incoming datagram destined to an SSM address MUST be delivered by the IP module to all sockets that have indicated (via Subscribe) a desire to receive data that matches the datagram's source address, destination address, and arriving interface."); https://www.alliedtelesis.com/documents/routing-protocols-guide at p. 427 ("The term subscribe is used to refer to the act of a host requesting to receive a certain group from a certain source (a channel)."); https://www.alliedtelesis.com/sites/default/files/documents/feature-guides/pimsm_feature_overview_guide.pdf at p. 33 (disclosing that "[i]f the group address is in the SSM range, the router will verify that a specific source or sources have been included in the IGMP join, and "[i]f a specific source or sources has been included in the IGMP join, then the router will forward a PIM (S,G) join towards the source IP address.").

1(c): enabling said selected source communications channel;—Allied enables the selected source communications channel when it uses one or more of the Accused '340 Products. For instance, the Accused '340 Products support the RFC 4607 specification, which discloses that "[t]he IP module interface to upper-layer protocols is extended to allow a socket to 'Subscribe' to . . . a particular channel identified by an SSM destination address and a source IP address," and subscribing to a particular channel comprises selecting a source communications channel and also enabling the selected source communications channel. Holbrook, Source-specific multicast for IP, RFC 4607 (2006), p. 5, *available at* https://tools.ietf.org/pdf/rfc4607.pdf; *see also, e.g., id.* at p. 6 ("The receiver operations allowed on a channel are called 'Subscribe (S,G)' and 'Unsubscribe (S,G)'"); *id.* at p. 7 ("If reception of the same channel is desired on multiple

interfaces, Subscribe is invoked once for each"); *id.* at p. 8 ("An incoming datagram destined to an SSM address MUST be delivered by the IP module to all sockets that have indicated (via Subscribe) a desire to receive data that matches the datagram's source address, destination address, and arriving interface."); *see also* https://www.alliedtelesis.com/documents/routing-protocols-guide at p. 427 ("The term subscribe is used to refer to the act of a host requesting to receive a certain group from a certain source (a channel)."); https://www.alliedtelesis.com/sites/default/files/documents/feature-guides/pimsm_feature_overview_guide.pdf at p. 33 (disclosing that "[i]f the group address is in the SSM range, the router will verify that a specific source or sources have been included in the IGMP join, and "[i]f a specific source or sources has been included in the IGMP join, then the router will forward a PIM (S,G) join towards the source IP address."). Indeed, RFC 4607 discloses that "'interface' is a local identifier of the network interface on which reception of the channel identified by the (source-address, group-address) pair is to be ***enabled*** [*e.g.*, subscribed] or disabled [*e.g.*, unsubscribed]." *Id.* at p. 7 (emphasis added); *see also* https://www.alliedtelesis.com/documents/routing-protocols-guide at p. 427 ("In essence, PIM SSM is PIM Sparse Mode without Rendezvous Points. Because hosts know the source from which they wish to receive streams . . . Fortunately, the process of joining the Source Path Tree (SPT) already involves sending PIM joins that specify the source address from which the router wishes to receive the stream – i.e. (S,G) Joins. So, PIM is already set up for supporting SSM."); *id. at* p. 429 ("if the request is a Source-Specific request, then immediately join the SPT for the channel being requested.").

1(d): receiving said requested multicast data through said enabled source communications channel;—Allied receives the requested multicast data through the enabled source communications channel when it uses one or more of the Accused '340 Products. For instance, the Accused '340 Products support the RFC 4607 specification, which discloses that "[a]n incoming datagram destined to an SSM address MUST be delivered by the IP module to all sockets that have indicated (via Subscribe) a desire to receive data that matches the datagram's source address, destination address, and arriving interface." Holbrook, Source-specific multicast for IP, RFC 4607 (2006), p. 8, *available at* https://tools.ietf.org/pdf/rfc4607.pdf; *see*

also, e.g., id. ("When the first socket on host H subscribes to a channel (S,G) on interface I, the host IP module on H sends a request on interface I to indicate to neighboring routers that the host wishes to receive traffic sent by source S to source-specific multicast destination G."); https://www.alliedtelesis.com/sites/default/files/documents/feature-guides/pimsm_feature_overview_guide.pdf at pp. 33-34 ("To join multicast group 232.1.1.1 each PC must send an IGMPv3 join with the source IP address specified. The join will be a (S,G) join, for example (85.1.1.1,232.1.1.1). The router will receive the IGMP join and check if the group address is in the SSM range."); https://www.alliedtelesis.com/documents/routing-protocols-guide at p. 427 ("In essence, PIM SSM is PIM Sparse Mode without Rendezvous Points. Because hosts know the source from which they wish to receive streams . . . Fortunately, the process of joining the Source Path Tree (SPT) already involves sending PIM joins that specify the source address from which the router wishes to receive the stream – i.e. (S,G) Joins. So, PIM is already set up for supporting SSM.").

1(e): forwarding said requested multicast data to requesting processes; and,—Allied forwards the requested multicast data to requesting processes when it uses one or more of the Accused '340 Products. For instance, as noted above, the Accused '340 Products support the RFC 4607 specification, which discloses that "[a]n incoming datagram destined to an SSM address MUST be delivered by the IP module to all ***sockets*** that have indicated (via Subscribe) a desire to receive data that matches the datagram's source address, destination address, and arriving interface." Holbrook, Source-specific multicast for IP, RFC 4607 (2006), p. 8, *available at* https://tools.ietf.org/pdf/rfc4607.pdf (emphasis added); *see also, e.g., id.* ("When the first socket on host H subscribes to a channel (S,G) on interface I, the host IP module on H sends a request on interface I to indicate to neighboring routers that the host wishes to receive traffic sent by source S to source-specific multicast destination G."). In particular, RFC 4607 defines a "socket" as "an implementation-specific parameter used to distinguish among different requesting entities (*e.g.*, programs or processes or communication end-points within a program or process) within the requesting host." *Id.* at p. 5; *see also* https://www.alliedtelesis.com/documents/routing-protocols-guide at p. 429 ("if the request is a Source-Specific request, then

immediately join the SPT for the channel being requested."); https://www.alliedtelesis.com/sites/default/files/documents/feature-guides/pimsm_feature_overview_guide.pdf at p. 33 ("If they have been requested to send a stream (S1,G), but not a stream to the same group, from a different source (S2,G), they will forward (S1,G), but not (S2,G).").

1(f): disabling said selected source communications channel when said requesting processes indicate that no further data is requested to be received over said selected source communications channel.—Allied disables the selected source communications channel when the requesting processes indicate that no further data is requested to be received over the selected source communications channel when it uses one or more of the Accused '340 Products. For instance, the Accused '340 Products support the RFC 4607 specification, which discloses that "[t]he IP module interface to upper-layer protocols is extended to allow a socket to . . . 'Unsubscribe' from a particular channel identified by an SSM destination address and a source IP address," and unsubscribing from a particular channel disables the particular channel to indicate that no further data is requested to be received over the particular channel. Holbrook, Source-specific multicast for IP, RFC 4607 (2006), p. 5, *available at* https://tools.ietf.org/pdf/rfc4607.pdf; *see also, e.g., id.* at p. 8 (disclosing that "[a]n incoming datagram destined to an SSM address MUST be delivered by the IP module to all sockets that have indicated (via Subscribe) a desire to receive data that matches the datagram's source address, destination address, and arriving interface," but "MUST NOT be delivered to other sockets" (*e.g.*, sockets that have Unsubscribed)). Indeed, as noted above, RFC 4607 discloses that "'interface' is a local identifier of the network interface on which reception of the channel identified by the (source-address, group-address) pair is to be enabled [*e.g.*, subscribed] or ***disabled*** [*e.g.*, unsubscribed]." *Id.* at p. 7 (emphasis added); https://www.alliedtelesis.com/documents/routing-protocols-guide at p. 427 ("[W]hen a host indicates that it no longer wishes to receive that channel, it is said to *unsubscribe* from the channel.") (emphasis in original).

59. On information and belief, Allied has used and is using one or more of the Accused '340 Products to perform the method of Claim 1 at least during internal testing of the Accused '340 Products, during research and development activities involving the Accused '340 Products,

during and in preparation for conferences, webinars, and trade shows at which the Accused '340 Products are exhibited, during training and certification programs involving the Accused '340 Products, and/or in the course of obtaining certifications for the Accused '340 Products.

60. As one example, Allied maintains what it refers to as an "Engineering Headquarters/Demo Lab" in this judicial District. *See* https://www.alliedtelesis.com/contact ("Office Locator . . . Engineering Headquarters/Demo Lab 3041 Orchard Parkway San Jose, CA 95134 United States."); *see also* http://www.at-global.com/en/corporate/companies/ (noting the "Major Activity" of Allied Telesis Inc. is "Sales/R&D/Service"). On information and belief, at this "Engineering Headquarters/Demo Lab," Allied has conducted and is conducting internal tests, demonstrations, and other research and development activity involving the Accused '340 Products to perform the method of Claim 1 and thereby has infringed and is infringing the '340 Patent.

61. As another example, Allied participates in numerous conferences, webinars, and trade shows in the United States at which the Accused '340 Products are exhibited. On information and belief, at such conferences, webinars, and trade shows, Allied has operated and is operating the Accused '340 Products to perform the method of Claim 1 and thereby has infringed and is infringing the '340 Patent. As just one example, Allied participated in the "Berkeley Lab Faucet Conference 2017" in this judicial District in San Jose, California. *See* https://www.alliedtelesis.com/press/berkeley-lab-faucet-conference-2017. As Allied explains:

> Allied Telesis and other leading network vendors gathered to test and demonstrate the interoperability of Faucet, an open-source Software Defined Networking (SDN) controller . . .
>
> Faucet's goal was to facilitate distributed stacking of multiple vendor switches without the need for proprietary stacking cables. As the SDN controller, Faucet routed traffic from hosts connected to one vendor's switch to another vendor's switch, via the x930. Allied Telesis was able to demonstrate complete interoperability with the other vendors, with the x930 excelling in its role, performing distributed routing and stacking.
>
> Allied Telesis has attended a number of PlugFests with excellent results. This one was no different. The company easily demonstrating

> interoperability with OpenFlow and passing the OpenConfig tests with flying colors, impressing the Faucet community.

Id. On information and belief, at this particular conference, as well as at the "number of PlugFests" that "Allied has attended," Allied operated the Accused '340 Products to perform the method of Claim 1 and thereby infringed the '340 Patent.

62. As yet another example, Allied conducts and has conducted training and certification programs in the United States. For instance, Allied conducts "Certified Allied Telesis Technician / Enterprise" training and certification programs, at which attendees are given the "theory behind configuration tasks, opportunity to try configurations and explanations of simple networking debugging scenarios." *See* http://alliedtelesis.force.com/training. Allied also conducts "Certified Allied Telesis Professional / Enterprise" training and certification programs, at which Allied provides "a more advance [sic] and in-depth knowledge of installation, configurations, and troubleshooting Allied Telesis enterprise network solution products . . ." and "the opportunity to try the configurations and to understand how to debug any issues." *See* http://alliedtelesis.force.com/training. On information and belief, at these training and certification programs, Allied has operated and is operating the Accused '340 Products to perform the method of Claim 1 and thereby has infringed and is infringing the '340 Patent.

63. As yet another example, Allied has obtained various Security and Functional Certifications for the Accused '340 Products, including certifications related to "Common Criteria," "Joint Interoperability Test Command," "The OpenFlow Conformance Certification," and/or "IPv6 Forum." *See* https://www.alliedtelesis.com/certifications; https://www.alliedtelesis.com/certifications/products/common-criteria; https://www.alliedtelesis.com/certifications/products/jitc; https://www.alliedtelesis.com/certifications/products/openflow; https://www.alliedtelesis.com/certifications/products/ipv6. On information and belief, in the course of obtaining such Security and Functional Certifications for the Accused '340 Products, Allied – in conjunction with its agents, those acting in concert with Allied, and/or those engaging in acts that are directed and controlled by Allied – has operated and is operating in the United States the Accused '340 Products to perform the method of Claim 1 and thereby has infringed and is

infringing the '340 Patent.

64. Additionally, at least since July 12, 2019, Allied has been and/or currently is an active inducer of infringement of the '340 Patent under 35 U.S.C. § 271(b) and contributory infringer of the '340 Patent under 35 U.S.C. § 271(c).

65. Indeed, Allied has provided the Accused '340 Products to its customers and, on information and belief, instructions to use the Accused '340 Products in an infringing manner while being on notice of (or willfully blind to) the '340 Patent, as well as the fact that using the Accused '340 products in their intended manner would perform the method of Claim 1, and thus directly infringe the '340 Patent. Therefore, on information and belief, Allied knew or should have known of the '340 Patent and of its own infringing acts, or deliberately took steps to avoid learning of those facts.

66. In particular, Allied has sold numerous of each of the Accused '340 Products to its customers. In fact, Allied indicates that it has "[o]ver 100,000 installed systems to date." *See* https://www.alliedtelesis.com/about-us.

67. Allied's customers have purchased the Accused '340 Products from Allied and have thereafter used the Accused '340 Products in their intended manner and have thus performed the method of Claim 1. Thus, Allied's customers who purchased at least one of the Accused '340 Products and used such product(s) in their intended manner have directly infringed and are directly infringing the '340 Patent.

68. Allied has and is currently knowingly and intentionally encouraging and aiding its customers to engage in such direct infringement of the '340 Patent. As one example, Allied provides video promotions and/or tutorials regarding the infringing functionalities and also provides user guides that instruct customers on how to use the Accused '340 Products in an infringing manner. *See, e.g.,* https://www.alliedtelesis.com/sites/default/files/documents/feature-guides/pimsm_feature_overview_guide.pdf (disclosing how PIM-SSM works and how to configure PIM-SSM); https://www.youtube.com/watch?v=P6uYh4OEgk4 (educating users on how multicasting works). As another example, and as set forth in the paragraphs above regarding Allied's direct infringement of the '340 Patent, Allied educates its customers at various events

and provides hands-on training courses to teach customers and its own employees on how to use the Accused '340 Products in an infringing manner. *See, e.g.,* http://alliedtelesis.force.com/training; https://www.alliedtelesis.com/about-us/events/all.

69. Allied knew and knows that such encouraging and aiding would and does result in its customers directly infringing the '340 Patent. For instance, Allied knows and has known of the existence of the '340 Patent, or at least should have known of the existence of the '340 Patent, but was willfully blind to its existence. Allied has had actual knowledge of the '340 Patent since at least as early as the filing and/or service of this Complaint. And as a result of its knowledge of the '340 Patent (and/or as a direct and probable consequence of its willful blindness to this fact), Allied specifically intended that its encouraging and aiding would result in its customers' performance of the method of Claim 1 and thus result in direct infringement of the '340 Patent.

70. In sum, Allied's customers directly infringe at least one or more claims of the '340 Patent by using the Accused '340 Products in their intended manner to infringe. And Allied induces such direct infringement by providing the Accused '340 Products and instructions to enable and facilitate this direct infringement, knowing, or being willfully blind to the existence of, the '340 Patent. On information and belief, Allied specifically intends that its actions will result in direct infringement of one or more claims of the '340 Patent, and/or subjectively believes that its actions would result in infringement of the '340 Patent, but took deliberate actions to avoid learning of those facts, as set forth above.

71. Additionally, Allied contributorily infringes at least one or more claims of the '340 Patent by providing the Accused '340 Products and/or software components thereof, that embody a material part of the claimed inventions of the '340 Patent, that are known by Allied to be specially made or adapted for use in an infringing manner, and are not staple articles with substantial non-infringing uses. The Accused '340 Products are specially designed to infringe at least one or more claims of the '340 Patent, and their accused components have no substantial non-infringing uses. In particular, on information and belief, the software modules and code that implement and perform the infringing functionalities identified above are specially made and

adapted to carry out said functionality and do not have any substantial non-infringing uses. For example, as set forth above, entities who use one or more of the Accused '340 Products in their normal and intended usage (*e.g.*, pursuant to instructions provided in Allied's user guides), infringe claim 1 of the '340 Patent.

72. At least as early as the filing and/or service of this Complaint, Allied's infringement of the '340 Patent was and continues to be willful and deliberate, entitling Commstech to enhanced damages.

73. Additional allegations regarding Allied's knowledge of the '340 Patent and willful infringement will likely have evidentiary support after a reasonable opportunity for discovery.

74. Allied's infringement of the '340 Patent is exceptional and entitles Commstech to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

75. Commstech is in compliance with any applicable marking and/or notice provisions of 35 U.S.C. § 287 with respect to the '340 Patent.

76. Commstech is entitled to recover from Allied all damages that Commstech has sustained as a result of Allied's infringement of the '340 Patent, including, without limitation, a reasonable royalty.

COUNT II: INFRINGEMENT OF U.S. PATENT NO. 7,769,028

77. Commstech incorporates by reference and re-alleges paragraphs 30-42 of this Complaint as if fully set forth herein.

78. Defendant Allied has infringed and is infringing, either literally or under the doctrine of equivalents, the '028 Patent in violation of 35 U.S.C. § 271 *et seq.*, directly and/or indirectly, by making, using, offering for sale, or selling in the United States, and/or importing into the United States without authority or license, products that support "Advanced QoS," such as the Allied Telesis x900 Series Switches and advanced Allied Telesis routers that operate with the "AlliedWare Software" (*e.g.*, AR415S/AR410S, AR440S/AT-AR441S, AR450S, AR725, AR745, AR750S, AR770S) (collectively referred to herein as the "Accused '028 Products"), that infringe at least one or more claims of the '028 Patent. *See, e.g.*, Advanced QoS White Paper at p. 15, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-

qos_wp.pdf.

79. As just one non-limiting example, set forth below is exemplary evidence of infringement of Claim 17 of the '028 Patent in connection with the Accused '028 Products. This description is based on publicly available information. Commstech reserves the right to modify this description, including, for example, on the basis of information about the Accused '028 Products that it obtains during discovery.

17(a): A non-transitory computer-readable medium including a set of instructions for execution on a computer, the set of instructions including: —Allied makes, uses, sells, and/or offers to sell a non-transitory computer-readable medium including a set of instructions for execution on a computer that include the functions recited in Claim 17. For instance, the Accused '028 Products support "Advanced QoS" for "end-to-end data delivery." *See* Advanced QoS White Paper, pp. 1, 3, *available at* http:// www.alliedtelesis.com/sites/default/files/ documents/white-papers/adv-qos_wp.pdf. In particular, Allied discloses that advanced Allied Telesis routers that operate with the "AlliedWare operating system" provide "advanced Quality of Service (QoS) and traffic shaping features." AR415S Datasheet at p. 2, *available at* https://www.alliedtelesis.com/sites/default/files/documents/datasheets/ar415s_datasheet_rev_l.pdf. Similarly, Allied discloses that its Layer 3+ switches include "[c]omprehensive low-latency wire-speed QoS [that] provides flow-based traffic management with full classification, prioritization, traffic shaping and min/max bandwidth profiles." *See, e.g.*, x900 Series Datasheet at p. 2, *available at* https://www.alliedtelesis.com/sites/default/files/documents/ datasheets/x900_series_rev_zb.pdf.

17(b): a data prioritization routine configured to assign a priority to data, wherein the prioritization occurs at least one of: in a transport layer of a network communications protocol stack of a data communication system, and at a top of the transport layer of the network communications protocol stack of the data communication system;—Allied makes, uses, sells, and/or offers to sell a non-transitory computer-readable medium including a set of instructions comprising a data prioritization routine configured to assign a priority to data, where the prioritization occurs at least in a transport layer of a network communications

protocol stack of a data communication system (*i.e.*, Layer 4). For instance, the Accused '028 Products support "Advanced QoS" that includes a data prioritization routine configured to assign a priority to data. *See, e.g.*, Advanced QoS White Paper at p. 13, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf. ("With priority scheduling the ***queues are assigned a set of priorities*** and packets are always sent from the highest-priority queue first with very little delay.") (emphasis added); *id.* at p. 4 ("[T]he Ethernet switching equipment must be able to give relative priorities to different traffic types . . ."); *id.* at p. 5 (disclosing new features available with Advanced QoS); *see also* x900 Series Datasheet at p. 2, *available at* https://www.alliedtelesis.com/sites/default/files/documents/datasheets/x900_series_rev_zb.pdf ("Comprehensive low-latency wire-speed QoS provides flow-based traffic management with full classification, ***prioritization***, traffic shaping and min/max bandwidth profiles.") (emphasis added); AR415S Datasheet at p. 2, *available at* https://www.alliedtelesis.com/sites/default/files/documents/datasheets/ar415s_datasheet_rev_l.pdf (disclosing "Mixed Scheduling" which includes "priority scheduling"). Moreover, Allied explains that "[q]ueue management is fundamental to QoS" because it "ensures that traffic is dealt with as its priority requires." QoS White Paper at p. 10, *available at* https://www.alliedtelesis.com/sites/default/files/documents/white-papers/qos_wp.pdf. Allied further explains that priority queueing "ensures that high priority traffic is always given priority over other traffic, and thereby suffers less delay." *Id.* According to Allied, the prioritization of data occurs at least at the transport layer of the network communications protocol stack (*i.e.*, Layer 4). *See, e.g.*, Advanced QoS White Paper at p. 11, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf ("Allied Telesis high-end Layer 3+ switches provide full classification and re-marking capabilities based on the DiffServ CodePoint (DSCP) as well as source and destination Layer 2 (MAC), Layer 3 (IP / IPX), and ***Layer 4(TPC / UDP port)*** addresses.") (emphasis added). Allied touts that its "very advanced classification capability operating in the data plane of Allied Telesis' switches enables very advanced traffic classification based on the type of traffic, its source, and priority." *Id.; see also id.* ("Traffic classification is complemented by extensive queuing capability, with eight priority

queues at the output ports . . .").

17(c): a network analysis routine configured to determine a status of a network;— Allied makes, uses, sells, and/or offers to sell a non-transitory computer-readable medium including a set of instructions comprising a network analysis routine configured to determine a status of a network. For instance, the Accused '028 Products support "Advanced QoS" that includes a network analysis routine configured to determine how congested a network is with respect to bandwidth, which may involve "measuring the bandwidth profile" that "specifies the average rate of 'committed' and 'excess' Ethernet packets allowed into the SP's network at the switch port." Advanced QoS White Paper at pp. 5-6, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf. The network analysis routine of the Accused '028 Products may then "require packets to be coloured" to "indicate a packet's level of conformance with a bandwidth profile." *Id.* at p. 5; *see also*, *e.g.*, Advanced QoS White Paper at p. 8, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf ("The algorithm decides which particular packets are within the bandwidth limits, and which are in excess of the limit."); *id.* at p. 6 (disclosing that "[i]f the packets conform to the committed rate of the bandwidth profile, they are marked green, "[i]f the packets are over of the committed information rate and below the excess rate of the bandwidth profile, they are marked yellow, and "[i]f the packets do not conform to either the committed or the excess rates of the bandwidth profile, they are marked red and are usually discarded immediately."); *id.* at p. 11 ("If the switch is congested, the queues may fill up and no more packets can be added, so even high priority packets can be dropped from the end of queues."); *id.* at p 12 ("When congestion occurs, RED curves enable packets to be dropped before the egress queue exceeds the allocated maximum length."); QoS White Paper at p. 10, *available at* https://www.alliedtelesis.com/sites/default/files/documents/white-papers/qos_wp.pdf (disclosing "'graceful' dropping of lower priority packets via the RED mechanism when severe congestion occurs, dropping progressively more and higher priority packets, until congestion is eased."). In this respect, a network analysis routine of the Accused '028 Products is configured to determine a status of a network.

17(d): a mode selection routine configured to select at least one mode based at least in part on the status of the network; and—Allied makes, uses, sells, and/or offers to sell a non-transitory computer-readable medium including a set of instructions comprising a mode selection routine configured to select at least one mode based at least in part on the status of the network. For instance, the Accused '028 Products support "Advanced QoS" that includes a mode selection routine configured to select at least one mode based at least in part on the status of the network. *See* Advanced QoS White Paper at p. 11, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf. In particular, Allied explains that "if there are multiple traffic classes passing through the device, each with different bandwidth limits, it is possible for an over-limit traffic class to make use of bandwidth made available by another traffic flow that is well below its bandwidth limit[, b]ut, if all traffic flows are at or above their limit, then the shaping process will make sure the flows do not encroach on each other's allocated bandwidth." *Id.* In this respect, Allied discloses that "[t]he most common method used to achieve this selective admission of packets into the egress queues is called Random Early Detection/Discard (RED)." *Id.* According to Allied, "[w]hen congestion occurs, RED curves enable packets to be dropped before the egress queue exceeds its allocated maximum length." *Id.* at p. 12. Specifically, Allied discloses that "red packets start being dropped when only a small amount of data has been backed up in the egress queues, yellow packets start getting dropped when the queues are backed up a bit more, and the green packets start to be dropped when the congestion is quite severe." *Id.*

17(e): a data communications routine configured to communicate the data based at least in part on the priority of the data and the status of the network, the data prioritization routine being configured to assign priority to the data based on prioritization rules, wherein the prioritization rules are selected based upon the selected mode, wherein the data is communicated at a transmission rate metered based at least in part on the status of the network.—Allied makes, uses, sells, and/or offers to sell a non-transitory computer-readable medium including a set of instructions comprising a data communications routine configured to communicate the data based at least in part on the priority of the data and the status of the

network, where the data prioritization component is adapted to assign priority to the data based on prioritization rules that are selected based upon the selected at least one mode, and where the data is communicated at a transmission rate metered based at least in part on the status of the network. For instance, the Accused '028 Products support "Advanced QoS" that includes such a data communications routine and data prioritization component. *See* Advanced QoS White Paper at p. 11, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf ("[I]f there are multiple traffic classes passing through the device, each with different bandwidth limits, it is possible for an over-limit traffic class to make use of bandwidth made available by another traffic flow that is well below its bandwidth limit[, b]ut, if all traffic flows are at or above their limit, then the shaping process will make sure the flows do not encroach on each other's allocated bandwidth."); *see also id.* at pp. 5-6 (disclosing "Bandwidth metering"). According to Allied, "[w]henever there are packets in the highest-priority queue, they are transmitted; they do not have to wait for lower priority queues to be process," and thus, "if there is so much traffic coming into the higher priority queue that it always has packets to send, then queues below it will never get a chance to send any packets." *Id; see also id.* at p. 4 ("[T]he Ethernet switching equipment must be able to give relative priorities to different traffic types . . ."); *id.* at p. 11 ("Each egress port has a set of egress queues, which are allocated different priorities or weights."). Moreover, Allied discloses that "[i]f more than one traffic class is sending packets to one egress queue and the total bandwidth allowed from all of these traffic classes needs to be limited, a ***bandwidth limit*** can be assigned to the common egress queue." *Id.* at p. 14. (emphasis added). According to Allied, "[t]his bandwidth limit is known as applying a virtual bandwidth to the egress queue," which "enables users to prevent some traffic flows from starving others, and if some of the traffic flows are quiet, then others are able to use a bigger slice of the virtual bandwidth and send more of their non-conformant packets." *Id*; *see also id.* at pp. 5-6 (disclosing "bandwidth metering").

80. Additionally, at least since July 12, 2019, Defendant Allied has been and/or currently is an active inducer of infringement of the '028 Patent under 35 U.S.C. § 271(b) and contributory infringer of the '028 Patent under 35 U.S.C. § 271(c).

81. In particular, Allied has sold numerous of each of the Accused '028 Products to its customers. In fact, Allied indicates that it has "[o]ver 100,000 installed systems to date." *See* https://www.alliedtelesis.com/about-us.

82. On information and belief, Allied's customers have purchased the Accused '028 Products from Allied and have thereafter used the Accused '028 Products in their intended manner to infringe the '028 Patent. Thus, Allied's customers who purchased at least one of the Accused '028 Products and used such product(s) in their intended manner have directly infringed and are directly infringing the '028 Patent.

83. Allied knew of the '028 Patent, or at least should have known of the '028 Patent, but was willfully blind to its existence. Allied has had actual knowledge of the '028 Patent since at least as early as the filing and/or service of this Complaint.

84. Allied has provided the Accused '028 Products to its customers and, on information and belief, instructions to (i) use the Accused '028 Products in an infringing manner and/or (ii) make an infringing device, while being on notice of (or willfully blind to) the '028 Patent and Allied's infringement. Therefore, on information and belief, Allied knew or should have known of the '028 Patent and of its own infringing acts, or deliberately took steps to avoid learning of those facts.

85. Allied knowingly and intentionally encourages and aids its customers to directly infringe the '028 Patent. As one example, Allied provides video promotions and/or tutorials regarding the infringing functionalities and also provides user guides that instruct customers on how to use the Accused '028 Products in an infringing manner. *See, e.g.,* https://www.alliedtelesis.com/sites/default/files/documents/how-alliedware-plus/overview_aw_plus_qos_c.pdf (disclosing how to configure various QoS functions); https://www.youtube.com/watch?v=Z07nrX1as_s (promoting how QoS works for advanced traffic control on Allied Telesis x900 Series Switches). As another example, on information and belief, Allied educates its customers at various events and provides hands-on training courses to teach customers (and perhaps its own employees) on how to use the Accused '028 Products in an infringing manner. *See, e.g.,* http://alliedtelesis.force.com/training; https://www.alliedtelesis.

com/about-us/events/all. As yet another example, Allied provides periodic software updates for the AlliedWare Software that runs on the Accused '028 Products and provides instructions on how to obtain and install the software updates. *See, e.g.,* https://www.alliedtelesis.com/documents/release-notes-alliedware-plus-549.

86. Accordingly, Allied's customers directly infringe at least one or more claims of the '028 Patent by using the Accused '028 Products in their intended manner to infringe. Allied induces such infringement by providing the Accused '028 Products and instructions to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '028 Patent. On information and belief, Allied specifically intends that its actions will result in infringement of one or more claims of the '028 Patent, or subjectively believe that their actions will result in infringement of the '028 Patent, but took deliberate actions to avoid learning of those facts, as set forth above.

87. Additionally, Allied contributorily infringes at least one or more claims of the '028 Patent by providing the Accused '028 Products and/or software components thereof, that embody a material part of the claimed inventions of the '028 Patent, that are known by Allied to be specially made or adapted for use in an infringing manner, and are not staple articles with substantial non-infringing uses. The Accused '028 Products are specially designed to infringe at least one or more claims of the '028 Patent, and their accused components have no substantial non-infringing uses. In particular, on information and belief, the software modules and code that implement and perform the infringing functionalities identified above are specially made and adapted to carry out said functionality and do not have any substantial non-infringing uses. For example, as set forth above, entities that use the Accused '028 Products in their normal and intended usage (*e.g.*, pursuant to instructions provided in Allied's user guides), infringe claim 17 of the '028 Patent.

88. At least as early as the filing and/or service of this Complaint, Allied's infringement of the '028 Patent was and continues to be willful and deliberate, entitling Commstech to enhanced damages.

89. Additional allegations regarding Allied's knowledge of the '028 Patent and willful

infringement will likely have evidentiary support after a reasonable opportunity for discovery.

90. Allied's infringement of the '028 Patent is exceptional and entitles Commstech to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

91. Commstech is in compliance with any applicable marking and/or notice provisions of 35 U.S.C. § 287 with respect to the '028 Patent.

92. Commstech is entitled to recover from Allied all damages that Commstech has sustained as a result of Allied's infringement of the '028 Patent, including, without limitation, a reasonable royalty.

COUNT III: INFRINGEMENT OF U.S. PATENT NO. 7,990,860

93. Commstech incorporates by reference and re-alleges paragraphs 43-55 of this Complaint as if fully set forth herein.

94. Defendant Allied has infringed and is infringing, either literally or under the doctrine of equivalents, the '860 Patent in violation of 35 U.S.C. § 271 *et seq.*, directly and/or indirectly, by making, using, offering for sale, or selling in the United States, and/or importing into the United States without authority or license, products that support "Advanced QoS," such as the Allied Telesis x900 Series Switches and advanced Allied Telesis routers that operate with the "AlliedWare Software" (*e.g.*, AR415S/AR410S, AR440S/AT-AR441S, AR450S, AR725, AR745, AR750S, AR770S) (collectively referred to herein as the "Accused '860 Products"), that infringe at least one or more claims of the '028 Patent. *See, e.g.*, Advanced QoS White Paper at p. 15, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf.

95. As just one non-limiting example, set forth below (with claim language in bold and italics) is exemplary evidence of infringement of Claim 15 of the '860 Patent in connection with the Accused '860 Products. This description is based on publicly available information. Commstech reserves the right to modify this description, including, for example, on the basis of information about the Accused '860 Products that it obtains during discovery.

15(a): A processing device for communicating data, the processing device including:—Allied makes, uses, sells, and/or offers to sell a processing device for communicating data in

accordance with Claim 15. For instance, the Accused '860 Products support "Advanced QoS" for "end-to-end data delivery." *See* Advanced QoS White Paper at pp. 1, 3, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf; *id.* at p. 5 (disclosing new features available with Advanced QoS). In particular, Allied discloses that advanced Allied Telesis routers that operate with the "AlliedWare operating system" provide "advanced Quality of Service (QoS) and traffic shaping features." AR415S Datasheet at p. 2, *available at* https://www.alliedtelesis.com/sites/default/files/documents/datasheets/ar415s_datasheet_rev_l.pdf. Similarly, Allied discloses that its Layer 3+ switches include "[c]omprehensive low-latency wire-speed QoS [that] provides flow-based traffic management with full classification, prioritization, traffic shaping and min/max bandwidth profiles." *See*, *e.g.*, x900 Series Datasheet at p. 2, *available at* https://www.alliedtelesis.com/sites/default/files/documents/datasheets/x900_series_rev_zb.pdf.

15(b): a network analysis component of the processing device configured to: determine a network status from a plurality of network statuses based on analysis of network measurements, and—Allied makes, uses, sells, and/or offers to sell a processing device that comprises a network analysis component configured to determine a network status from a plurality of network statuses based on analysis of network measurements. For instance, the Accused '860 Products support "Advanced QoS" and includes a network analysis component configured to determine how congested a network is with respect to bandwidth, which may involve "measuring the bandwidth profile" that "specifies the average rate of 'committed' and 'excess' Ethernet packets allowed into the SP's network at the switch port." Advanced QoS White Paper at pp. 5-6, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf. The network analysis component of the Accused '860 Products may then "require packets to be coloured" to "indicate a packet's level of conformance with a bandwidth profile." *Id.* at p. 5; *see also*, *e.g.*, Advanced QoS White Paper at p. 8, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf ("The algorithm decides which particular packets are within the bandwidth limits, and which are in excess of the limit."); *id.* at p. 6 (disclosing that "[i]f the

packets conform to the committed rate of the bandwidth profile, they are marked green, "[i]f the packets are over of the committed information rate and below the excess rate of the bandwidth profile, they are marked yellow, and "[i]f the packets do not conform to either the committed or the excess rates of the bandwidth profile, they are marked red and are usually discarded immediately."); *id.* at p. 11 ("If the switch is congested, the queues may fill up and no more packets can be added, so even high priority packets can be dropped from the end of queues."); *id.* at p 12 ("When congestion occurs, RED curves enable packets to be dropped before the egress queue exceeds the allocated maximum length."); QoS White Paper at p. 10, *available at* https://www.alliedtelesis.com/sites/default/files/documents/white-papers/qos_wp.pdf (disclosing "'graceful' dropping of lower priority packets via the RED mechanism when severe congestion occurs, dropping progressively more and higher priority packets, until congestion is eased."). In this respect, a network analysis component of the Accused '860 Products is configured to determine a network status from a plurality of network statuses based on analysis of network measurements.

15(c): a network analysis component of the processing device configured to: determine at least one of an effective link speed and a link proportion for at least one link;—Allied makes, uses, sells, and/or offers to sell a processing device that comprises a network analysis component configured to determine at least one of an effective link speed and a link proportion for at least one link. For instance, the Accused '860 Products support "Advanced QoS" and are "capable of accurately shaping traffic to conform to set bandwidth limits, so they can then offer specific bandwidth profiles." Advanced QoS White Paper at p. 4, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf; *see also* x900 Series Datasheet at p. 2, *available at* https://www.alliedtelesis.com/sites/default/files/documents/datasheets/x900_series_rev_zb.pdf (disclosing that its Layer 3+ switches include "[c]omprehensive low-latency wire-speed QoS [that] provides flow-based traffic management with full classification, prioritization, traffic shaping and min/max bandwidth profiles."). In particular, "Advanced QoS" supports "bandwidth metering," which "requires a bandwidth profile that specifies the average rate of 'committed' and 'excess' Ethernet packets allowed into

the [Service Provider]'s network at the switch port. *Id.* at 5. Allied explains that "[p]ackets that are transmitted up to the 'committed' rate are allowed into the provider's network," and "[p]ackets sent above the 'committed' rate and below the 'excess' rate are allowed into the provider's network but are delivered without any service performance objectives." *Id.* at p. 6. According to Allied, "[i]f packets conform to the committed rate of the bandwidth profile, they are marked green and delivered in accordance with the service performance objective," "[i]f the packets are over the committed information rate and below the excess rate of the bandwidth provide, they are marked yellow," and "[i]f the packets do not conform to either the committed or the excess rates of the bandwidth profile, they are marked red and are usually discarded immediately." *Id.*; *see also id*. at p. 7 (disclosing "the maximum number of bytes allowed"). Moreover, Allied explains that "if there are multiple traffic classes passing through the device, each with different bandwidth limits, it is possible for an over-limit traffic class to make use of bandwidth made available by another traffic flow that is well below its bandwidth limit[, b]ut, if all traffic flows are at or above their limit, then the shaping process will make sure the flows do not encroach on each other's allocated bandwidth." *Id; see also id.* at p. 4 ("Ethernet switching equipment must be capable of accurately shaping traffic to conform to set bandwidth limits, so they can then offer specific bandwidth profiles."). In this respect, the Accused '860 Products are configured to determine at least an effective link speed and/or a link proportion for at least one link.

15(d): a mode selection component of the processing device configured to select a mode from a plurality of modes based on the determined network status, wherein each of the plurality of modes corresponds with at least one of the plurality of network statuses, wherein each of the plurality of modes comprises a user defined sequencing rule,—Allied makes, uses, sells, and/or offers to sell a processing device that comprises a mode selection component configured to select a mode from a plurality of modes based on the determined network status, where each of the plurality of modes corresponds with at least one of the plurality of network statuses, and where each of the plurality of modes comprises a user defined sequencing rule. For instance, the Accused '860 Products support "Advanced QoS" and comprises a mode selection

component configured to select at least one mode based at least in part on the status of the network. *See* Advanced QoS White Paper at p. 11, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf. In particular, Allied explains that "if there are multiple traffic classes passing through the device, each with different bandwidth limits, it is possible for an over-limit traffic class to make use of bandwidth made available by another traffic flow that is well below its bandwidth limit[, b]ut, if all traffic flows are at or above their limit, then the shaping process will make sure the flows do not encroach on each other's allocated bandwidth." *Id.* In this respect, Allied discloses that "[t]he most common method used to achieve this selective admission of packets into the egress queues is called Random Early Detection/Discard (RED)." *Id.* According to Allied, "[w]hen congestion occurs, RED curves enable packets to be dropped before the egress queue exceeds its allocated maximum length." *Id.* at p. 12. Specifically, Allied discloses that "red packets start being dropped when only a small amount of data has been backed up in the egress queues, yellow packets start getting dropped when the queues are backed up a bit more, and the green packets start to be dropped when the congestion is quite severe." *Id.* Moreover, Allied discloses that "very advanced classification capability operating in the data plane of Allied Telesis' switches enables very advanced traffic classification based on the type of traffic, its source, and priority," which "means that network providers can roll out different service levels to their customers based on service charge, as well as implement admission control . . . ." QoS White Paper at p. 11, *available at* https://www.alliedtelesis.com/sites/default/files/documents/white-papers/qos_wp.pdf; *see also id.* ("Operating above these is the Allied Telesis SNMP management system," which provides "a[] Graphical User Interface."); Advanced QoS White Paper at p. 11, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf ("The service provider defines the particular802.1p/DSCP values used to indicate different packet colours."); *see also id.* at p. 4 ("A bandwidth profile outlines the service guarantees that the SP will provide by defining the traffic types and amounts of each traffic type that subscribers can send into the SP's network."); https://www.networkcomputing.com/wireless-infrastructure/qos-best-practices-better-bandwidth-

management/477227828 ("Quality of Service (QoS) offers administrators the ability to prioritize certain data traffic as it traverses a corporate network."). In this respect a given mode comprises a sequencing rule defined by a user.

15(e): a data prioritization component of the processing device configured to prioritize data by assigning a priority to the data, wherein the prioritization component includes a sequencing component configured to sequence the data based at least in part on the user defined sequencing rule of the selected mode;—Allied makes, uses, sells, and/or offers to sell a processing device that comprises a data prioritization component configured to prioritize data by assigning a priority to the data, where the prioritization component includes a sequencing component configured to sequence the data based at least in part on the user defined sequencing rule of the selected mode. For instance, the Accused '860 Products support "Advanced QoS" and include such a data prioritization component. *See, e.g.*, Advanced QoS White Paper at p. 13, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf. ("With priority scheduling the ***queues are assigned a set of priorities*** and packets are always sent from the highest-priority queue first with very little delay.") (emphasis added); *id.* at p. 4 ("[T]he Ethernet switching equipment must be able to give relative priorities to different traffic types . . ."); *id.* at p. 5 (disclosing new features available with Advanced QoS); *see also* x900 Series Datasheet at p. 2, *available at* https://www.alliedtelesis.com/sites/default/files/documents/datasheets/x900_series_rev_zb.pdf ("Comprehensive low-latency wire-speed QoS provides flow-based traffic management with full classification, ***prioritization***, traffic shaping and min/max bandwidth profiles.") (emphasis added); AR415S Datasheet at p. 2, *available at* https://www.alliedtelesis.com/sites/default/files/documents/datasheets/ar415s_datasheet_rev_l.pdf (disclosing "Mixed Scheduling" which includes "priority scheduling"); https://www.networkcomputing.com/wireless-infrastructure/qos-best-practices-better-bandwidth-management/477227828 ("Quality of Service (QoS) offers administrators the ability to prioritize certain data traffic as it traverses a corporate network."). Moreover, Allied explains that "[q]ueue management is fundamental to QoS" because it "ensures that traffic is dealt with as its priority requires." QoS White Paper at p. 10, *available at* https://www.allied

telesis.com/sites/default/files/documents/white-papers/qos_wp.pdf. Allied further explains that priority queueing "ensures that high priority traffic is always given priority over other traffic, and thereby suffers less delay." *Id.* Furthermore, Allied discloses that "[i]f more than one traffic class is sending packets to one egress queue and the total bandwidth allowed from all of these traffic classes needs to be limited, a bandwidth limit can be assigned to the common egress queue." *Id.* at p. 14. According to Allied, "[t]his bandwidth limit is known as applying a virtual bandwidth to the egress queue," which "enables users to prevent some traffic flows from starving others, and if some of the traffic flows are quiet, then others are able to use a bigger slice of the virtual bandwidth and send more of their non-conformant packets." *Id.*

15(f): a data metering component of the processing device configured to: meter inbound data by shaping the inbound data for the at least one link, and meter outbound data by policing the outbound data for the at least one link; and—Allied makes, uses, sells, and/or offers to sell a processing device that comprises a data metering component configured to meter inbound data by shaping the inbound data for the at least one link, and meter outbound data by policing the outbound data for the at least one link. For instance, the Accused '860 Products support "Advanced QoS" and includes a data metering component configured for "shaping" data packets. *See* Advanced QoS White Paper at p. 11, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp. Specifically, Allied discloses that "[t]he ***shaping*** process uses rules to decide which packets are allowed to enter the egress queues instead of simply dropping all the red packet." *Id.* (emphasis added). Allied explains that "[i]n this way, if there are multiple traffic classes passing through the device, each with different bandwidth limits, it is possible for an over-limit traffic class to make use of bandwidth made available by another traffic flow that is well below its bandwidth limit[, b]ut, if all traffic flows are at or above their limit, then the shaping process will make sure the flows do not encroach on each other's allocated bandwidth." *Id.*; *see also* QoS White Paper at p. 11, *available at* https://www.alliedtelesis.com/sites/default/files/documents/white-papers/qos_wp.pdf ("At the entry to the network a policy is applied to the classified flows. This ***shapes*** the traffic to meet the requirements of the particular flow.") (emphasis added); The Handbook of Computer

Networks, Distributed Networks, Network Planning, Control, Management, and New Trends and Applications at p. 346 *available at* download.library1.org/main/1055000/19ed533ea3d2d9a5a9645bb2a2689800/%28Volume%203%29%20Hossein%20Bidgoli-The%20Handbook%20of%20Computer%20Networks%2C%20Distributed%20Networks%2C%20Network%20Planning%2C%20Control%2C%20Management%2C%20and%20New%20Trends%20and%20Applications-Wiley%20%282007%29.pdf ("Traffic shaping can be done at the source prior to entrance into the network or within the network.") In this respect, the Accused '860 Products are configured to meter inbound data by shaping the inbound data. Moreover, the Accused '860 Products support "Advanced QoS" and includes a data metering component configured for "policing" data packets. *See* Advanced QoS White Paper at p. 11, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp. For instance, as noted above, Allied discloses that "[i]f packets conform to the committed rate of the bandwidth profile, they are marked green and delivered in accordance with the service performance objective," "[i]f the packets are over the committed information rate and below the excess rate of the bandwidth provide, they are marked yellow," and "[i]f the packets do not conform to either the committed or the excess rates of the bandwidth profile, they are marked red and are usually discarded immediately." *Id.* at p. 6. According to Allied, "the immediate discarding of red-marked packets is a choice known as ***policing***." *Id.* at p. 11 (emphasis added); *see also* https://searchunifiedcommunications.techtarget.com/tip/Policing-and-shaping-within-QoS ("Policing drops or remarks traffic that exceeds limits, but shaping regulates the traffic back to a defined rate by delaying or queuing the traffic."). In this respect, the Accused '860 Products are configured to meter outbound data by policing the outbound data.

15(g): a data communication component of the processing device configured to communicate the data based at least in part on at least one of: the priority of the data, the effective link speed, and the link proportion;—Allied makes, uses, sells, and/or offers to sell a processing device that comprises a data communication component configured to communicate the data based at least in part on the priority of the data, the effective link speed, and/or the link proportion. For instance, the Accused '860 Products support "Advanced QoS" and includes

such a data communications component. *See* Advanced QoS White Paper at p. 11, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf ("[I]f there are multiple traffic classes passing through the device, each with different bandwidth limits, it is possible for an over-limit traffic class to make use of bandwidth made available by another traffic flow that is well below its bandwidth limit[, b]ut, if all traffic flows are at or above their limit, then the shaping process will make sure the flows do not encroach on each other's allocated bandwidth."). According to Allied, "[w]henever there are packets in the highest-priority queue, they are transmitted; they do not have to wait for lower priority queues to be process," and thus, "if there is so much traffic coming into the higher priority queue that it always has packets to send, then queues below it will never get a chance to send any packets." *Id.* Moreover, Allied discloses that "[i]f more than one traffic class is sending packets to one egress queue and the total bandwidth allowed from all of these traffic classes needs to be limited, a bandwidth limit can be assigned to the common egress queue." *Id.* at p. 14. According to Allied, "[t]his bandwidth limit is known as applying a virtual bandwidth to the egress queue," which "enables users to prevent some traffic flows from starving others, and if some of the traffic flows are quiet, then others are able to use a bigger slice of the virtual bandwidth and send more of their non-conformant packets." *Id.*

15(h): wherein at least the data prioritization component is configured to operate at a transport layer of a protocol stack.—Allied discloses that the data prioritization component is configured to operate at a transport layer of a protocol stack (*i.e.*, "Layer 4). *See*, *e.g.*, Advanced QoS White Paper at p. 11, *available at* http://www.alliedtelesis.com/sites/default/files/documents/white-papers/adv-qos_wp.pdf ("Allied Telesis high-end Layer 3+ switches provide full classification and re-marking capabilities based on the DiffServ CodePoint (DSCP) as well as source and destination Layer 2 (MAC), Layer 3 (IP / IPX), and ***Layer 4(TPC / UDP port)*** addresses.") (emphasis added). Allied touts that its "very advanced classification capability operating in the data plane of Allied Telesis' switches enables very advanced traffic classification based on the type of traffic, its source, and priority." *Id.*; *see also id.* ("Traffic classification is complemented by extensive

queuing capability, with eight priority queues at the output ports . . .").

96. Additionally, at least since July 12, 2019, Defendant Allied has been and/or currently is an active inducer of infringement of the '860 Patent under 35 U.S.C. § 271(b) and contributory infringer of the '860 Patent under 35 U.S.C. § 271(c).

97. In particular, Allied has sold numerous of each of the Accused '860 Products to its customers. In fact, Allied indicates that it has "[o]ver 100,000 installed systems to date." *See* https://www.alliedtelesis.com/about-us.

98. On information and belief, Allied's customers have purchased the Accused '860 Products from Allied and have thereafter used the Accused '860 Products in their intended manner to infringe the '860 Patent. Thus, Allied's customers who purchased at least one of the Accused '860 Products and used such product(s) in their intended manner have directly infringed and are directly infringing the '860 Patent.

99. Allied knew of the '860 Patent, or at least should have known of the '860 Patent, but was willfully blind to its existence. Allied has had actual knowledge of the '860 Patent since at least as early as the filing and/or service of this Complaint.

100. Allied has provided the Accused '860 Products to its customers and, on information and belief, instructions to use the Accused '860 Products in an infringing manner while being on notice of (or willfully blind to) the '860 Patent and Allied's infringement. Therefore, on information and belief, Allied knew or should have known of the '860 Patent and of its own infringing acts, or deliberately took steps to avoid learning of those facts.

101. Allied knowingly and intentionally encourages and aids its customers to directly infringe the '860 Patent. As one example, Allied provides video promotions and/or tutorials regarding the infringing functionalities and also provides user guides that instruct customers on how to use the Accused '860 Products in an infringing manner. *See, e.g.,* https://www.alliedtelesis.com/sites/default/files/documents/how-alliedware-plus/overview_aw_plus_qos_c.pdf (disclosing how to configure various QoS functions); https://www.youtube.com/watch?v=Z07nrX1as_s (promoting how QoS works for advanced traffic control on Allied Telesis x900 Series Switches). As another example, on information and

belief, Allied educates its customers at various events and provides hands-on training courses to teach customers (and perhaps its own employees) on how to use the Accused '860 Products in an infringing manner. *See, e.g.,* http://alliedtelesis.force.com/training; https://www.alliedtelesis.com/about-us/events/all. As yet another example, Allied provides periodic software updates for the AlliedWare Software that runs on the Accused '860 Products and provides instructions on how to obtain and install the software updates. *See, e.g.,* https://www.alliedtelesis.com/documents/release-notes-alliedware-plus-549.

102. Accordingly, Allied's customers directly infringe at least one or more claims of the '860 Patent by using the Accused '860 Products in their intended manner to infringe. Allied induces such infringement by providing the Accused '860 Products and instructions to enable and facilitate infringement, knowing of, or being willfully blind to the existence of, the '860 Patent. On information and belief, Allied specifically intends that its actions will result in infringement of at least one or more claims of the '860 Patent, or subjectively believe that their actions will result in infringement of the '860 Patent, but took deliberate actions to avoid learning of those facts, as set forth above.

103. Additionally, Allied contributorily infringes at least one or more claims of the '860 Patent by providing the Accused '860 Products and/or software components thereof, that embody a material part of the claimed inventions of the '860 Patent, that are known by Allied to be specially made or adapted for use in an infringing manner, and are not staple articles with substantial non-infringing uses. The Accused '860 Products are specially designed to infringe at least one or more claims of the '860 Patent, and their accused components have no substantial non-infringing uses. In particular, on information and belief, the software modules and code that implement and perform the infringing functionalities identified above are specially made and adapted to carry out said functionality and do not have any substantial non-infringing uses. For example, as set forth above, entities that use the Accused '860 Products in their normal and intended usage (*e.g.*, pursuant to instructions provided in Allied's user guides), infringe claim 15 of the '860 Patent.

104. At least as early as the filing and/or service of this Complaint, Allied's

infringement of the '860 Patent was and continues to be willful and deliberate, entitling Commstech to enhanced damages.

105. Additional allegations regarding Allied's knowledge of the '860 Patent and willful infringement will likely have evidentiary support after a reasonable opportunity for discovery.

106. Allied's infringement of the '860 Patent is exceptional and entitles Commstech to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

107. Commstech is in compliance with any applicable marking and/or notice provisions of 35 U.S.C. § 287 with respect to the '860 Patent.

108. Commstech is entitled to recover from Allied all damages that Commstech has sustained as a result of Allied's infringement of the '860 Patent, including, without limitation, a reasonable royalty

PRAYER FOR RELIEF

WHEREFORE, Commstech respectfully requests:

A. That Judgment be entered that Allied has infringed at least one or more claims of the Patents-in-Suit, directly and/or indirectly, literally and/or under the doctrine of equivalents;

B. An award of damages sufficient to compensate Commstech for Allied's infringement under 35 U.S.C. § 284, including an enhancement of damages on account of Allied's willful infringement;

C. That the case be found exceptional under 35 U.S.C. § 285 and that Commstech be awarded its reasonable attorneys' fees;

D. Costs and expenses in this action;

E. An award of prejudgment and post-judgment interest; and

F. Such other and further relief as the Court may deem just and proper.

DEMAND FOR JURY TRIAL

Plaintiff demands trial by jury for all issues so triable pursuant to Fed. R. Civ. Pro. 38(b) and Civil L.R. 3-6(a).

Respectfully submitted,

Dated: October 23, 2019

FEINBERG DAY KRAMER ALBERTI LIM TONKOVICH & BELLOLI LLP

and

LEE SULLIVAN SHEA & SMITH LLP

By: */s/ M. Elizabeth Day*
M. Elizabeth Day

Attorneys for Plaintiff
Commstech LLC