

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

VISION SPHERE LABS, LLC,

Plaintiff,

v.

FIREWALLA INC.,

Defendants.

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Civil Action No. 2:24-cv-00949

**PLAINTIFF VISION SPHERE LABS, LLC’S
COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff Vision Sphere Labs, LLC, (VSL) by and through its attorneys, brings this action and makes the following allegations of patent infringement relating to United States Patent No. 7,769,028 (the “’028 patent”) and 7,990,860 (the “’860 patent”). Defendant Firewalla, Inc. (“Firewalla”) infringes Plaintiff’s ’028 and ’860 patents in violation of the patent laws of the United States of America, 35 U.S.C. § 1, *et seq.*

PARTIES

1. Plaintiff VSL is a Texas Limited Liability Company with a place of business at 17350 State Highway 249 STE 220, Houston, Texas, 77064.

2. Upon information and belief, Defendant Firewalla is a corporation organized and existing under the laws of the State of Delaware, with its principal place of business located at 19630 Allendale Ave Unit 2217, Saratoga, California, 95070. Defendant Firewalla may be served with process through its registered agent Cogency Global, Inc., 850 New Burton Road Suite 201, Dover, Denver, 19904.

JURISDICTION AND VENUE

3. This is an action for patent infringement arising under the patent laws of the United States of America, Title 35, United States Code.

4. This Court has original jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1338(a).

5. Upon information and belief, Defendants are subject to this Court's general and/or specific personal jurisdiction because they (a) have committed acts of infringement in the State of Texas as alleged below; and/or (b) are engaged in continuous and systematic activities in the State of Texas.

6. Venue is proper in this district under 28 U.S.C. § 1400(b). On information and belief, Defendant Firewalla has committed acts of infringement in this District as set forth below. On information and belief, customers purchase and use Defendant Firewalla's Accused Instrumentalities (defined below) in this District. On information and belief, Defendant Firewalla has sold, and continues to sell, Accused Instrumentalities at brick and mortar stores in Texas, including at 5305 S Rice Ave, Houston, TX 77081, and at other locations in this District.

7. In particular, Defendant has committed and continues to commit acts of infringement in violation of 35 U.S.C. § 271, and has made, used, marketed, distributed, offered for sale, sold, and/or imported infringing products in the State of Texas, including in this District, and engaged in infringing conduct within and directed at or from this District. For example, Defendant has purposefully and voluntarily placed the Accused Instrumentalities into the stream of commerce with the expectation that the Accused Instrumentalities will be used in this District. The Accused Instrumentalities have been, and continue to be, distributed to and used in this District. Defendant's acts cause and have caused injury to VSL, including within this District.

THE '028 PATENT

8. 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 A.

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

10. VSL 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.

11. The ‘028 Patent is valid and enforceable under United States Patent Laws.

12. 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 A 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.

13. 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 A 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.

14. 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 A at 5:17-20. The claimed inventions of the ‘028 Patent provide such systems and methods.

THE INVENTIONS CLAIMED IN THE ‘028 PATENT WERE NOT WELL-UNDERSTOOD, ROUTINE, OR CONVENTIONAL

15. 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 A 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.*

16. 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.

17. 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 A 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 A 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.

18. 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 A* 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.

19. 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.

20. 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.

THE '860 PATENT

21. 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 B.

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

23. VSL 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.

24. 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 B 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.

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

26. 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 B 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

27. 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 B at 5:19-22. The claimed inventions of the '860 Patent provide such systems and methods.

THE INVENTIONS CLAIMED IN THE ‘860 PATENT WERE NOT WELL-UNDERSTOOD, ROUTINE, OR CONVENTIONAL

28. 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 B 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.*

29. 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.

30. 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 B at Claims 1, 15, 20.

31. 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 B 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.

32. 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.

33. 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. 7,769,028

34. Plaintiff incorporates paragraphs 1 through 33 as though fully set forth herein.

35. Defendant Firewalla 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 operate with the “Smart Queue” feature, which supports numerous Firewalla routers, switches, and/or platforms listed on Firewalla’s website (collectively referred to herein as the “Accused ‘028 Products”), that infringe at least one or more claims of the ‘028 Patent. *See, e.g.*, <https://firewalla.com/pages/user-manual>.

36. As just one non-limiting example, set forth below is exemplary evidence of infringement of Claim 13 of the ‘028 Patent in connection with the Accused ‘028 Products. This description is based on publicly available information. VSL 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.

13. A system for communicating data, the system including:

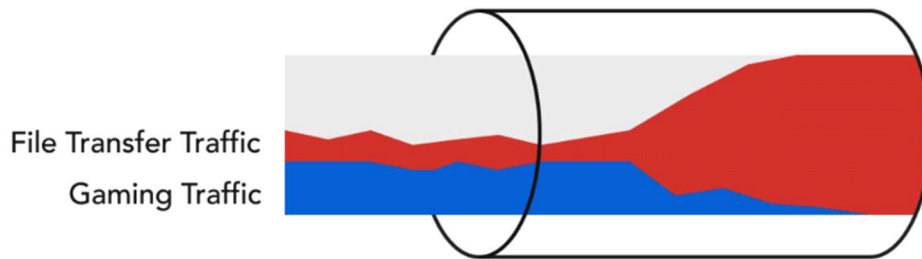
a data prioritization component adapted to assign a priority to data, wherein the prioritization occurs at least one of:

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

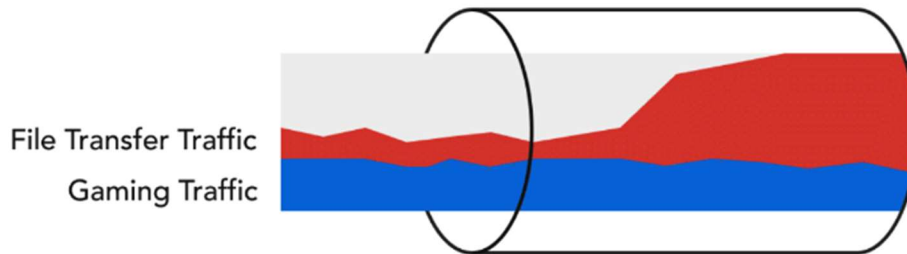
37. Firewalla makes, uses, sells, and/or offers to sell a system for communicating data in accordance with Claim 13. For instance, Firewalla makes, uses, sells, and/or offers to sell its Purple, Gold and Blue routers that have the Smart Queue feature. The Smart Queue feature prioritizes data communication through the router to optimize for performance and based on user-defined rules.

Like your home plumbing system, internet access can be congested and backed up. This will result in buffer bloat, which may increase delays in your network and applications. By default, this configuration will "smooth" out the traffic on your network and make all the flows "fair."

Smart Queue is



Smart Queue is



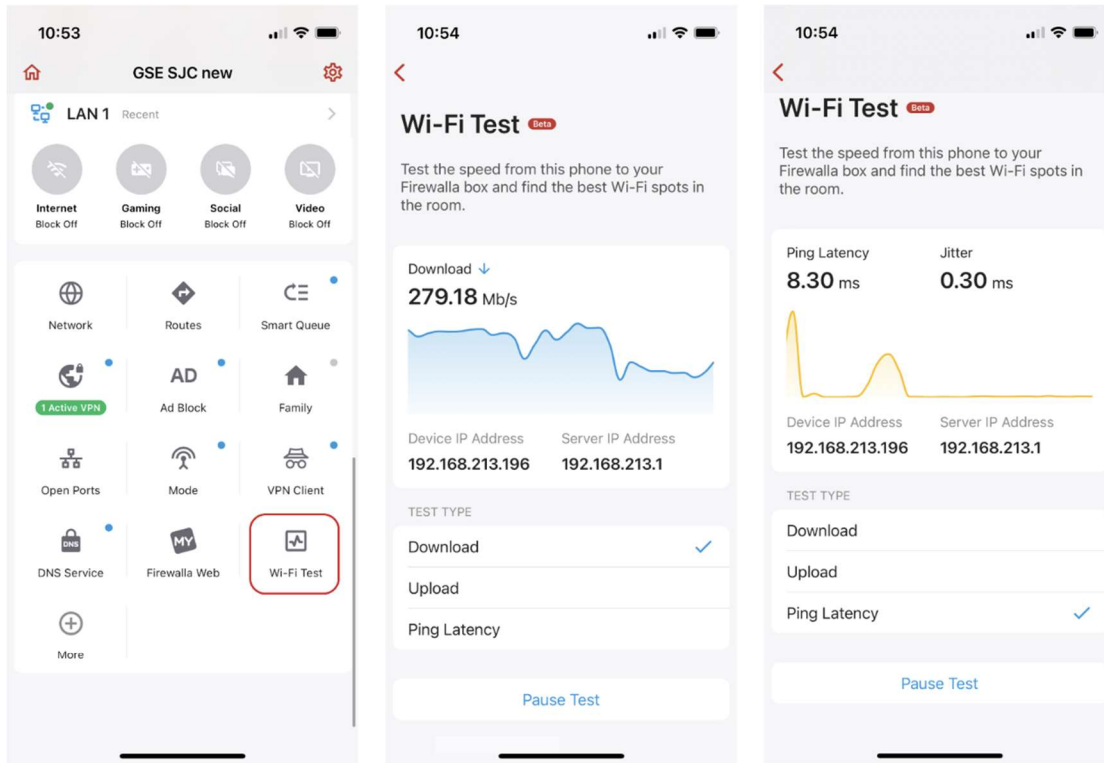
See, e.g., [Firewalla Feature: Smart Queue – Firewalla](#)

38. Additionally, Firewalla's Accused '028 Products include a data prioritization component configured to assign priority to data in either a transport layer or at the top of the transport layer. Specifically, Firewalla details that its Smart Queue is used to "[p]rioritize important network traffic," and "tailor your network experience by allowing you to prioritize traffic and setting upload or download limits." *Id.*

39. As explained by Firewalla, they can "set a download or upload limit [based on] ... Device, Category of traffic, IP Address/Range, Domain, Remote Port, Local Port..." *Id.* Moreover, Firewalla utilizes FQ_CoDel (Fair Queuing Controlled Delay) and CAKE (Common Applications Kept Enhanced). Firewalla therefore is utilizing rules based, at least in part, on TCP/UDP port assignments, which are two well-known protocols at the transport layer. *See also* <https://help.firewalla.com/hc/en-us/articles/360046703673-Firewalla-Feature-Guide-Network-Manager#:~:text=For%20each%20port%20forwarding%2C%20you%20can:%20Choose,To%20learn%20more%2C%20see%20our%20video%20tutorial>. ("Choose a protocol (TCP or UDP).")

13. (b) a network analysis component adapted to determine a status of a network;

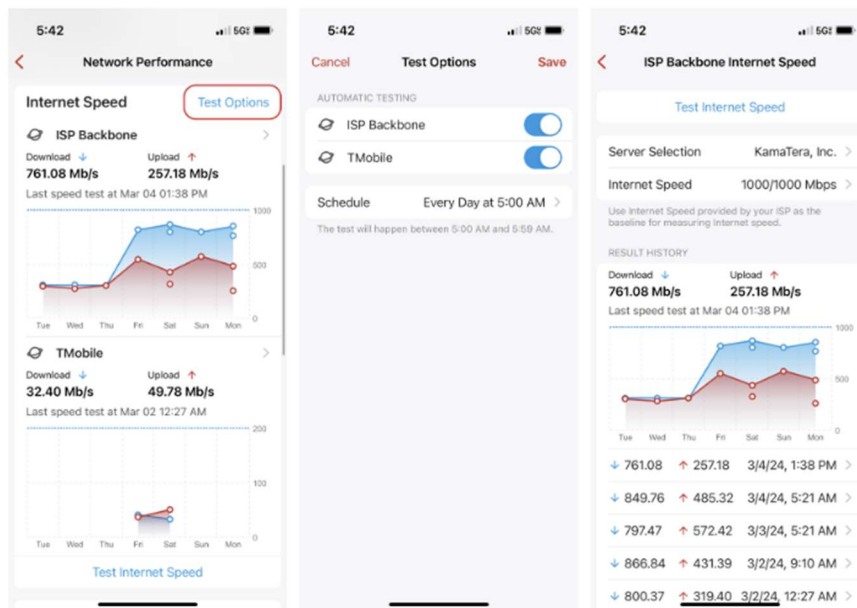
40. Firewalla's Accused '028 Products are all routers; as such they are capable of determining the status of a network. That said, please see the below figures of displays which show that the routers are capable of determining network status.



Internet Speed Tests for Multi-WAN

If you have multiple WANs, you can test the Internet Speed of each network separately. Tap the **Network Performance** widget on the top of your box's main page, then scroll down to the **Internet Speed** section. Tap on **Test Options** in the top right corner to set up automatic testing. Tap on each network's name to add server preferences, set bandwidths, and see the results history for each WAN.

To run the speed test manually, just tap **Test Internet Speed** and select which WAN to test.



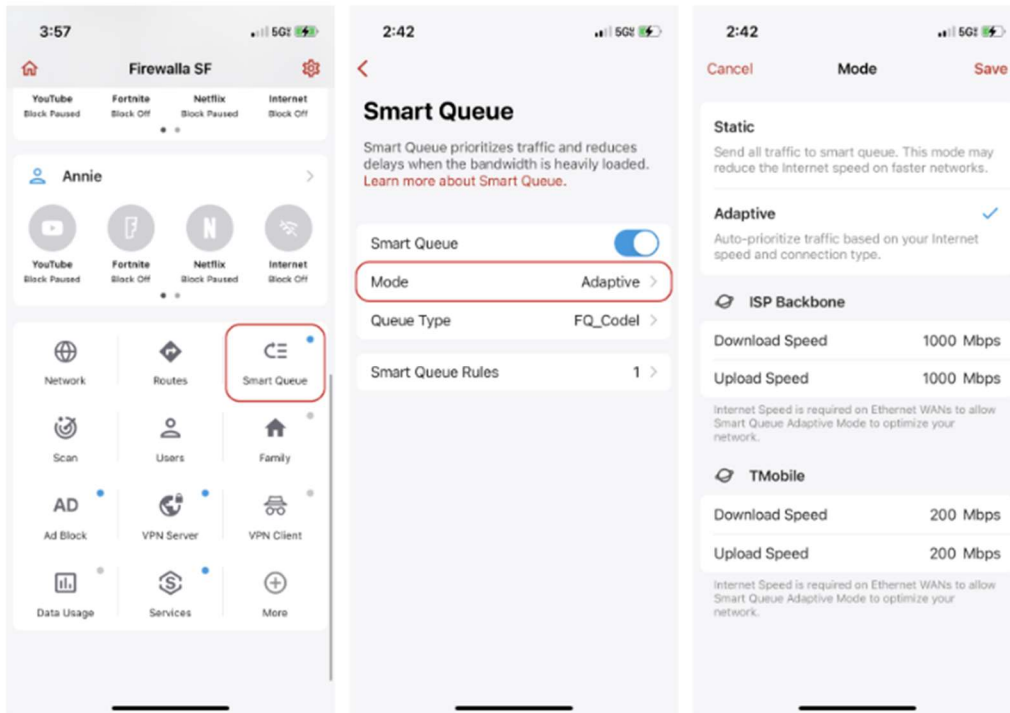
Network Performance and Quality Monitoring – Firewala

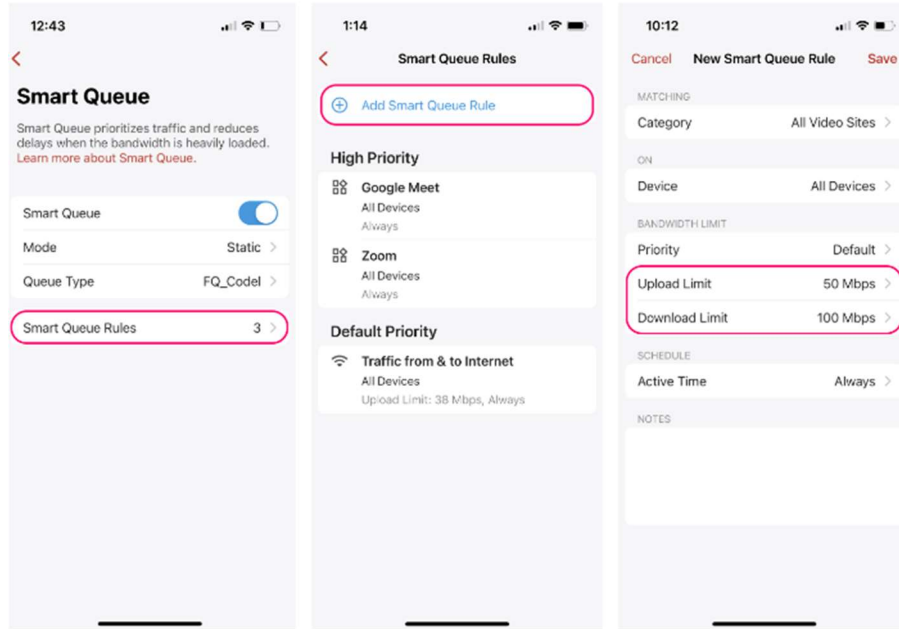
13 (c) a mode selection component adapted to select at least one mode based at least in part on the status of the network;

41. Firewalla makes, uses, sells, and/or offers to sell a system that comprises a mode selection component adapted to select at least one mode based at least in part on the status of the network. The Firewalla Gold and Purple products include the ability of a user to select between “two modes that vary in how they manage your traffic” in order to incorporate traffic shaping and rate limits based on a Smart Queue Rule or a category.

On Firewalla Purple and Gold Series, Smart Queue has two modes that vary in how they manage your traffic:

- In **Static Mode**, all your traffic gets routed through Smart Queue. This is the default mode and work well for most networks.
- In **Adaptive Mode**, Smart Queue will automatically adjust your traffic based on your Internet bandwidth. This can conserve CPU usage for high-speed networks when they're not congested. If you haven't provided your Internet Bandwidth before, the app will ask for it before you can enable Adaptive Mode (and if you have multiple WANs, you'll be asked to enter bandwidth information for each WAN separately).

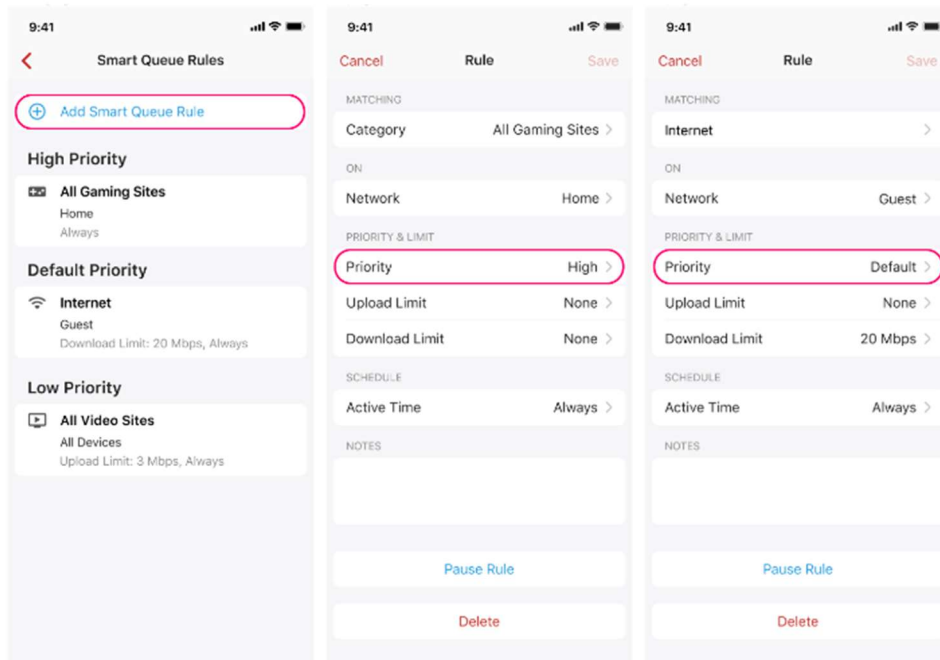




Traffic Prioritization

In addition to limiting bandwidth usage, you can prioritize traffic by creating smart queue rules. The priority applies to both Upload and Download traffic, it can be set to one of the following:

- **High:** For video conferencing/voice chat/gaming and other traffic that requires minimum delay.
- **Default:** Default priority for all traffic.
- **Low:** For non-essential services running in the background to prevent network congestion.



13(d): 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, the data prioritization component being adapted to assign priority to the data based on prioritization rules, wherein the prioritization rules are selected based upon the selected at least one mode, wherein the data is communicated at a transmission rate metered based at least in part on the status of the network.

42. Firewalla makes, uses, and/or offers to sell a system that comprises 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 upon the selected at least one mode, wherein the data is communicated at a transmission rate metered based at least in part on the status of the network.

43. The Firewalla Gold, Purple, and Blue Plus products allow a user to set rules which will prioritize their data based on the mode selected by the user, *i.e.*, whether in static mode (in which all traffic is routed through their Smart Queue rules), or Adaptive mode (in which the prioritization is based on internet bandwidth). See [Firewalla Feature: Smart Queue – Firewalla](#). Prioritization rules may be set by the user as well, and the data is communicated at a rate based at least in part on the status of the network.

44. Additionally, Defendant Firewalla 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).

45. Firewalla knew of the '028 Patent, or at least should have known of the '028 Patent, but was willfully blind to its existence. On information and belief, Firewalla has had actual knowledge of the '028 Patent since at least as early as July 15, 2024, the date of correspondence to Firewalla informing it of the inventions disclosed in the '028 Patent.

46. Firewalla 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 Firewalla's infringement. Therefore, on information and belief, Firewalla 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.

47. Firewalla knowingly and intentionally encourages and aids at least its end-user customers to directly infringe the '028 Patent.

48. Firewalla's end-user 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. Firewalla 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, Firewalla 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.

49. Additionally, Firewalla 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 Firewalla 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.

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

51. Additional allegations regarding Firewalla's knowledge of the '028 Patent and willful infringement will likely have evidentiary support after a reasonable opportunity for discovery.

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

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

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

54. Plaintiff incorporates paragraphs 1-53 as though fully set forth herein.

55. Defendant Firewalla 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 operate with the "Smart Queue" feature, which supports numerous Firewalla routers, switches, and/or platforms listed on Firewalla's website (collectively referred to herein as the "Accused '860 Products"), that infringe at least one or more claims of the '860 Patent. *See, e.g.,* <https://firewalla.com/pages/user-manual>.

56. As just one non-limiting example, set forth below 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. VSL 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 processing device for communicating data, the processing device including:

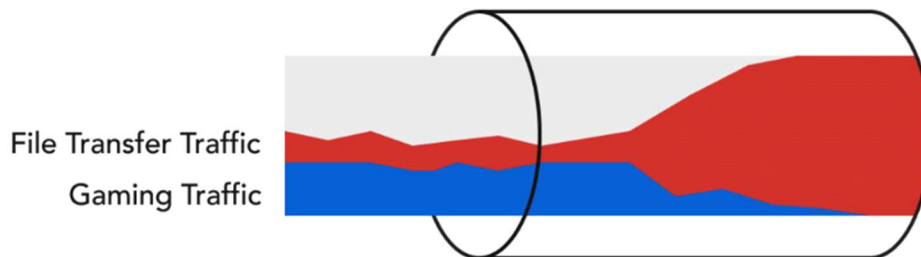
a network analysis component of the processing device configured to:


determine a network status from a plurality of network statuses based on analysis of network measurements, and determine at least one of an effective link speed and a link proportion for at least one link;

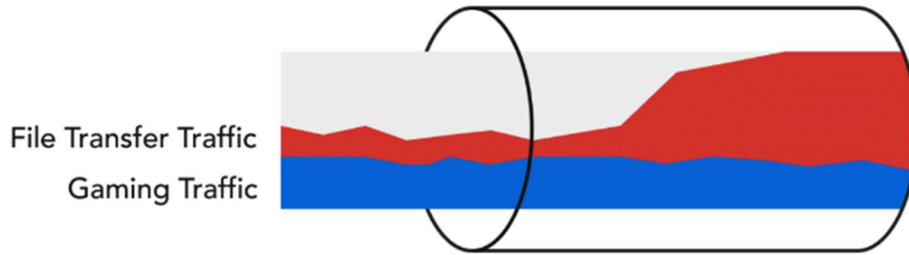
57. Firewalla makes, uses, sells, and/or offers to sell a system for communicating data in accordance with Claim 15. For instance, Firewalla makes, uses, sells, and/or offers to sell its Purple, Gold and Blue routers that have the Smart Queue feature. The Smart Queue feature prioritizes data communication through the router to optimize for performance.

Like your home plumbing system, internet access can be congested and backed up. This will result in buffer bloat, which may increase delays in your network and applications. By default, this configuration will "smooth" out the traffic on your network and make all the flows "fair."

Smart Queue is

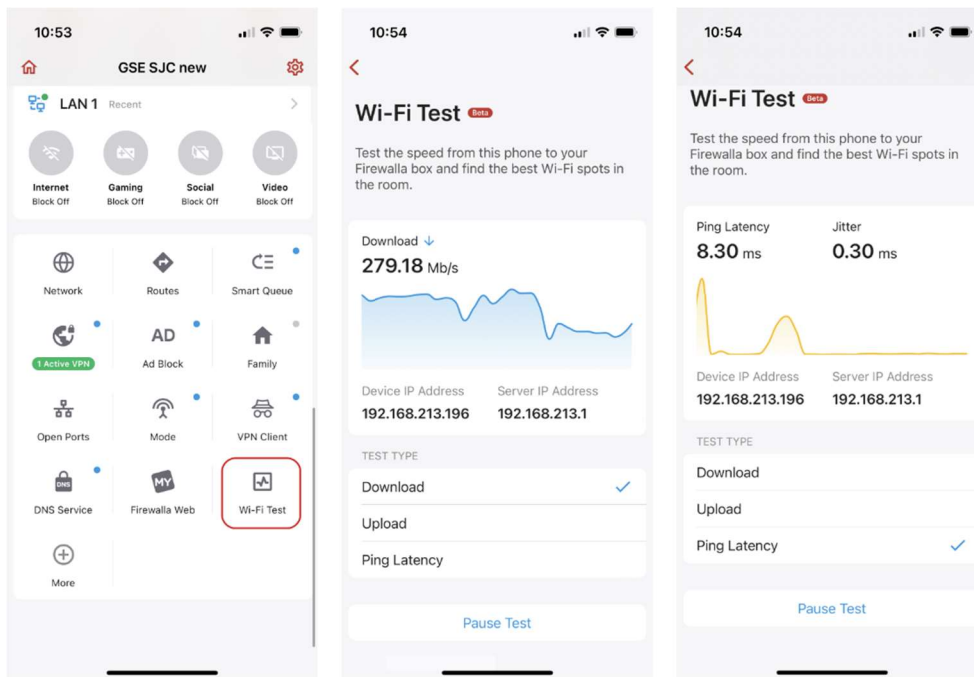


Smart Queue is 



See, e.g., [Firewalla Feature: Smart Queue – Firewalla](#)

58. Additionally, Firewalla’s Accused ‘860 Products include a network analysis component 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. Specifically, The Firewalla Gold, Purple, and Blue Plus products include “Network Performance and Quality Monitoring” in order to determine the status of a network. *Id.*

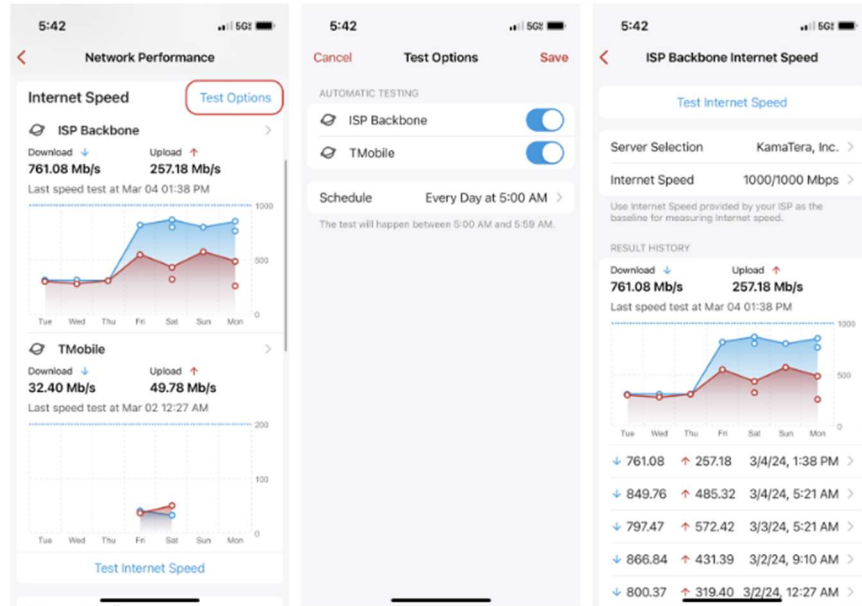


[Network Performance and Quality Monitoring – Firewalla](#)

Internet Speed Tests for Multi-WAN

If you have multiple WANs, you can test the Internet Speed of each network separately. Tap the **Network Performance** widget on the top of your box's main page, then scroll down to the **Internet Speed** section. Tap on **Test Options** in the top right corner to set up automatic testing. Tap on each network's name to add server preferences, set bandwidths, and see the results history for each WAN.

To run the speed test manually, just tap **Test Internet Speed** and select which WAN to test.



59. The Firewall Accused ‘860 Products (e.g., routers and switches) each determine at least one of an effective link speed and a link proportion for at least one link, allowing the “limiting [of] bandwidth usage...by creating smart queue rules.” *Id.*

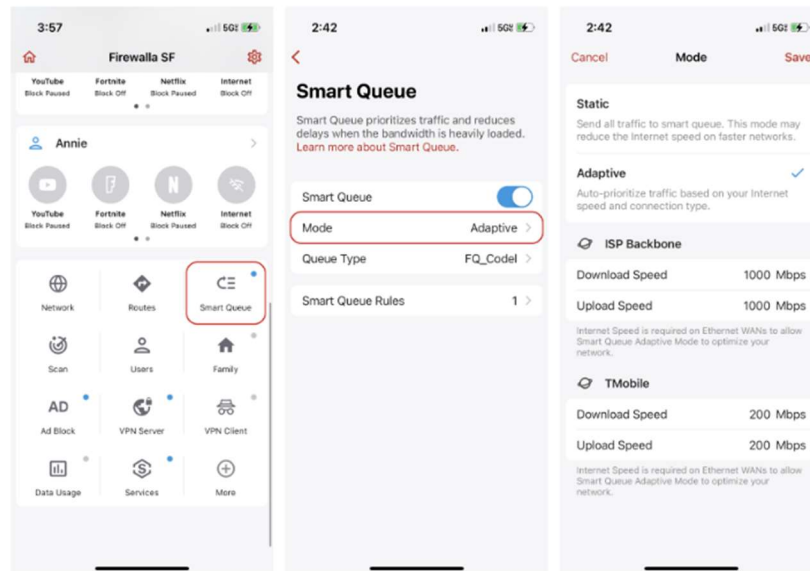
60. As explained by Firewalla, they can “set a download or upload limit [based on] ... Device, Category of traffic, IP Address/Range, Domain, Remote Port, Local Port...” *Id.* Moreover, Firewalla utilizes FQ_CoDel (Fair Queuing Controlled Delay) and CAKE (Common Applications Kept Enhanced). See also <https://help.firewalla.com/hc/en-us/articles/360046703673-Firewalla-Feature-Guide-Network-Manager#:~:text=For%20each%20port%20forwarding%2C%20you%20can:%20Choose,To%20learn%20more%2C%20see%20our%20video%20tutorial.>

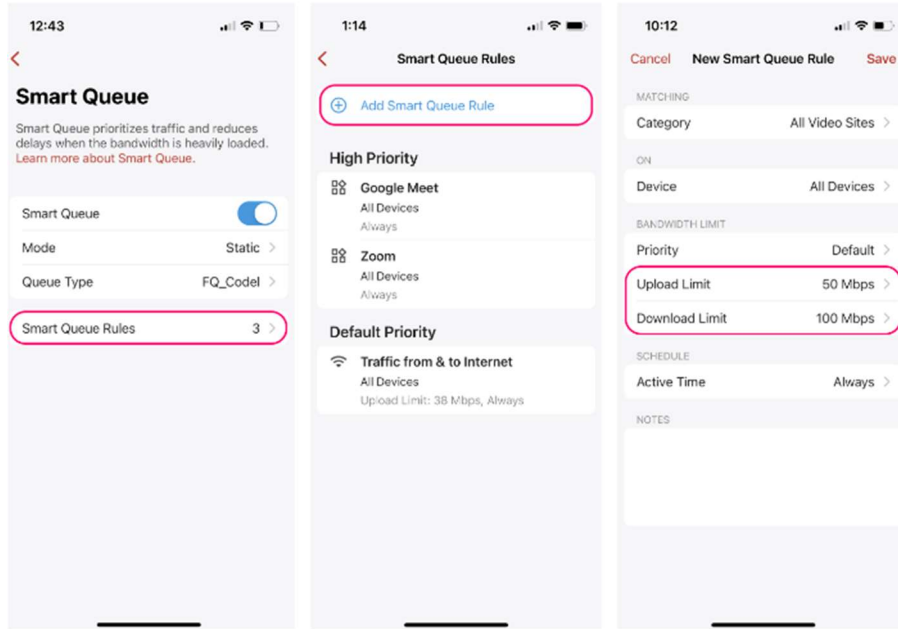
15(b): a mode selection component of the processing device configured to select a mode from a plurality of modes based on the determined network status, wherein each of the plurality of modes corresponds with at least one of the plurality of network statuses, wherein each of the plurality of modes comprises a user defined sequencing rule;

61. Firewalla makes, uses, sells, and/or offers to sell a system that comprises a mode selection component 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. The Firewalla Gold and Purple products include the ability of a user to select between “two modes that vary in how they manage your traffic,” in order to incorporate traffic shaping and rate limits based on a Smart Queue Rule or a category. These Smart Queue Rules can be defined by a user.

On Firewalla Purple and Gold Series, Smart Queue has two modes that vary in how they manage your traffic:

- In **Static Mode**, all your traffic gets routed through Smart Queue. This is the default mode and work well for most networks.
- In **Adaptive Mode**, Smart Queue will automatically adjust your traffic based on your Internet bandwidth. This can conserve CPU usage for high-speed networks when they're not congested. If you haven't provided your Internet Bandwidth before, the app will ask for it before you can enable Adaptive Mode (and if you have multiple WANs, you'll be asked to enter bandwidth information for each WAN separately).

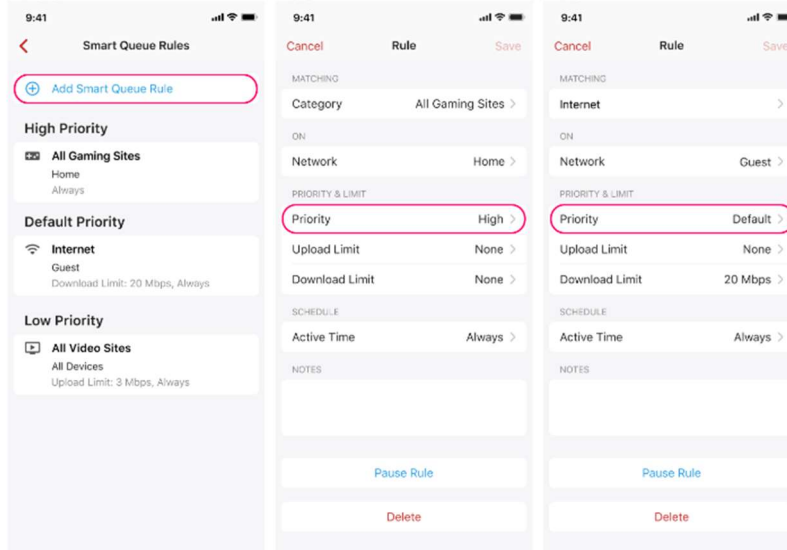




Traffic Prioritization

In addition to limiting bandwidth usage, you can prioritize traffic by creating smart queue rules. The priority applies to both Upload and Download traffic, it can be set to one of the following:

- **High:** For video conferencing/voice chat/gaming and other traffic that requires minimum delay.
- **Default:** Default priority for all traffic.
- **Low:** For non-essential services running in the background to prevent network congestion.



62. The Firewalla Gold, Purple, and Blue Plus products allow a user to set rules which will prioritize their data based on the mode selected by the user, *i.e.*, whether in Static mode (in which all traffic is routed through their Smart Queue rules), or Adaptive mode (in which the prioritization is based on internet bandwidth). See [Firewalla Feature: Smart Queue – Firewalla](#). Prioritization rules may be set by the user as well.

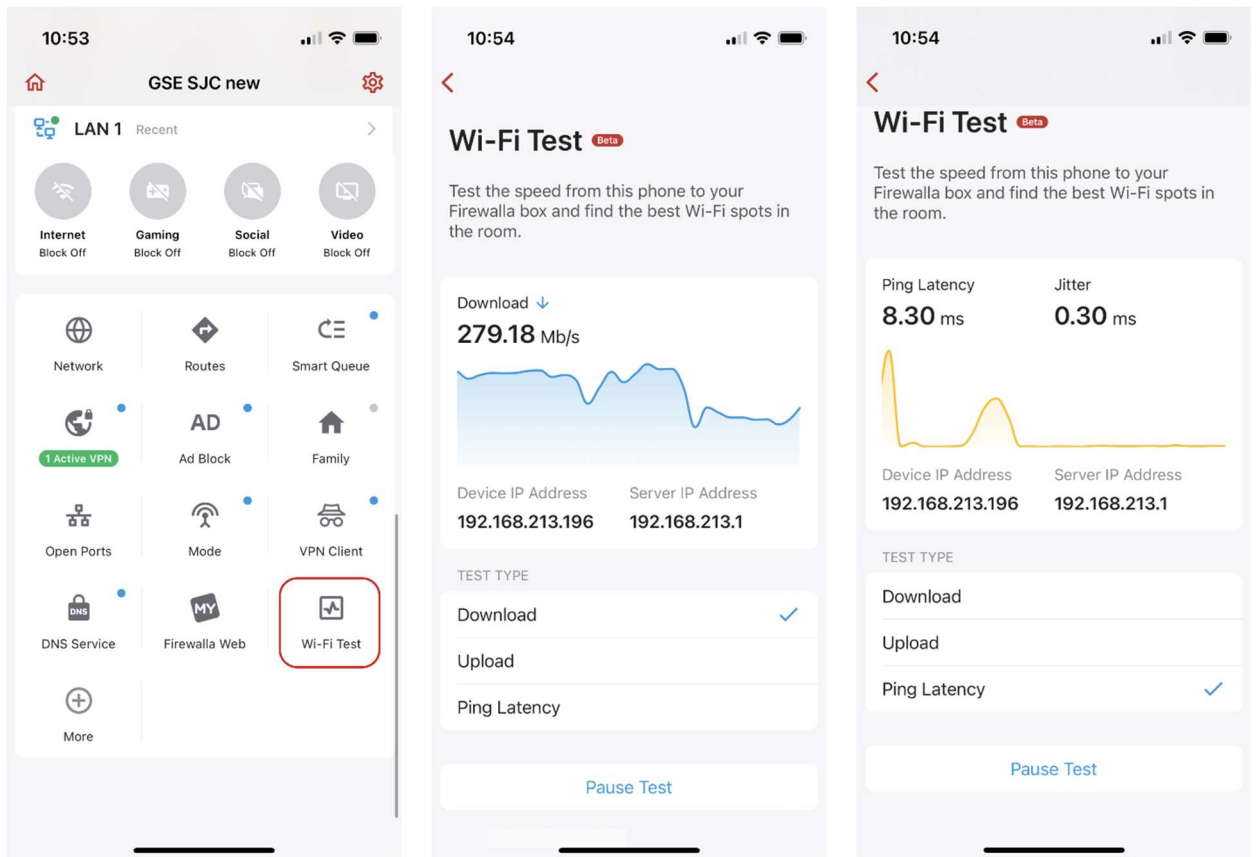
15(c): a data prioritization component of the processing device configured to prioritize data by assigning a priority to the data, wherein the prioritization component includes a sequencing component configured to sequence the data based at least in part on the user defined sequencing rule of the selected mode;

63. Firewalla makes, uses, sells, and/or offers to sell a system that comprises 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.

64. As already explained above, The Firewalla Gold, Purple, and Blue Plus products allow a user to set rules which will prioritize their data based on the mode selected by the user, *i.e.*, whether in Static mode (in which all traffic is routed through their Smart Queue rules), or Adaptive mode (in which the prioritization is based on internet bandwidth). See [Firewalla Feature: Smart Queue – Firewalla](#). Prioritization rules may be set by the user as well.

15(d): 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

65. Firewalla makes, uses, sells, and/or offers to sell a system that comprises 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. As has been explained above, Firewalla meters inbound and outbound data and polices outbound data.



15(e) And 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, wherein at least the data prioritization component is configured to operate at a transport layer of a protocol stack.

66. Firewalla makes, uses, sells, and/or offers to sell a system that comprises 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, wherein at least the data prioritization component is configured to operate at a transport layer of a protocol stack.

67. As noted above, Firewalla's Accused '860 Products can communicate data based on the priority of the data (when using user-defined priority rules) or simply by effective link speed (Adaptive mode).

68. Also as explained above, Firewalla's Accused '860 Products are configured to assign priority to data in either a transport layer or at the top of the transport layer. Specifically, Firewalla details that its Smart Queue is used to “[p]rioritize important network traffic” and “tailor your network experience by allowing you to prioritize traffic and setting upload or download limits.” *Id.*

69. Firewalla can “set a download or upload limit [based on] ... Device, Category of traffic, IP Address/Range, Domain, Remote Port, Local Port...” *Id.* Moreover, Firewalla utilizes FQ_CoDel (Fair Queuing Controlled Delay) and CAKE (Common Applications Kept Enhanced). Firewalla therefore is utilizing rules based, at least in part, on TCP/UDP port assignments, which are two well-known protocols at the transport layer. *See also* <https://help.firewalla.com/hc/en-us/articles/360046703673-Firewalla-Feature-Guide-Network-Manager#:~:text=For%20each%20port%20forwarding%2C%20you%20can:%20Choose,To%20learn%20more%2C%20see%20our%20video%20tutorial>. (“Choose a protocol (TCP or UDP).”)

70. Additionally, Defendant Firewalla 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).

71. Firewalla knew of the '860 Patent, or at least should have known of the '860 Patent, but was willfully blind to its existence. On information and belief, Firewalla has had actual knowledge of the '860 Patent since at least as early as July 15, 2024, the date of correspondence to Firewalla informing it of the inventions disclosed in the '860 Patent.

72. Firewalla has provided the Accused '860 Products to its customers and, on information and belief, instructions to (i) use the Accused '860 Products in an infringing manner and/or (ii) make an infringing device, while being on notice of (or willfully blind to) the '860 Patent and Firewalla's infringement. Therefore, on information and belief, Firewalla 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.

73. Firewalla knowingly and intentionally encourages and aids at least its end-user customers to directly infringe the '860 Patent.

74. Firewalla's end-user customers directly infringe at least one or more claims of the '028 Patent by using the Accused '860 Products in their intended manner to infringe. Firewalla 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, Firewalla specifically intends that its actions will result in infringement of 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.

75. Additionally, Firewalla contributorily infringes at least one or more claims of the '028 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 Firewalla 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.

76. At least as early as the filing and/or service of this Complaint, Firewalla's infringement of the '860 Patent was and continues to be willful and deliberate, entitling VSL to enhanced damages.

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

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

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

80. The limitation of damages provision of 35 U.S.C. § 287(a) is not applicable to Plaintiff.

DEMAND FOR JURY TRIAL

Plaintiff, under Rule 38 of the Federal Rules of Civil Procedure, requests a trial by jury of any issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff requests the following relief:

(a) A judgment in favor of Plaintiff that Defendant has directly infringed and/or has indirectly infringed by way of inducement of one or more claims of the Asserted Patents;

(b) A judgment and order requiring Defendant to pay Plaintiff damages adequate to compensate for infringement under 35 U.S.C. § 284, which damages may include lost profits but in no event shall be less than a reasonable royalty for their usage made of the inventions of the Asserted Patents, including pre- and post-judgment interest and costs, including expenses and disbursements;

(c) A judgment awarding treble damages against Defendant for willful infringement pursuant to 35 U.S.C. § 284;

(d) A judgment awarding Plaintiff its costs as provided under Fed. R. Civ. P. 54(d)(1);

(e) A judgment for pre- and post-judgment interest on all damages awarded;

(f) A judgment awarding Plaintiff post-judgment royalties; and

(g) Any and all such further necessary or proper relief as this Court may deem just and equitable.

Dated: November 19, 2024

Respectfully submitted,

BUETHER JOE & CARPENTER, LLC

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