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

INTELLECTUAL VENTURES I LLC,	§	
	§	
Plaintiff,	§	
	§	
v.	§	**CIVIL ACTION NO. 2:17-CV-00577-JRG**
	§	
T MOBILE USA, INC., T-MOBILE US,	§	
INC., ERICSSON INC.,	§	
TELEFONAKTIEBOLAGET LM	§	
ERICSSON,	§	
	§	
Defendants.	§	

MEMORANDUM OPINION AND ORDER

Before the Court is Defendants T-Mobile USA, Inc.'s, T-Mobile US, Inc.'s ("T-Mobile"), Ericsson Inc.'s, and Telefonaktiebolaget LM Ericsson's ("Ericsson") (collectively, "Defendants") Motion for Partial Summary Judgment That Asserted Claims Reciting the Indefinite "Optimize" Term Are Invalid as Indefinite (Dkt. No. 155) ("the Motion"). After considering the briefing and evidence, the Court finds that the Motion should be **GRANTED**.

I. BACKGROUND

On August 9, 2017, Intellectual Ventures I, LLC ("Plaintiff" or "IV") brought suit alleging infringement of United States Patents Nos. 6,628,629, 7,359,971 ("the '971 Patent"), 7,412,517, and RE46,206 ("the '206 Patent") (collectively, "the Patents-in-Suit"). (*See* Dkt. No. 1.) The Parties submit that the patents-in-suit all share a common specification. (*See* Dkt. No. 118 at 2.)

On September 4, 2018, the Federal Circuit affirmed a District of Delaware decision that the term "optimize" in related United States Patent No. 6,640,248 ("the '248 Patent") was invalid as indefinite. *See Intellectual Ventures I LLC v. T-Mobile USA, Inc.*, 902 F.3d 1372 (Fed. Cir. 2018). The '248 Patent shares a common specification with the Patents-in-Suit.

The Court held a claim construction hearing on September 5, 2018, during which the Parties' arguments demonstrated the appropriateness of additional briefing regarding whether claims reciting "optimize" limitations are indefinite. (*See* Dkt. No. 155.) The Court instructed the Parties to file additional briefing on the "optimize" terms in light of the Federal Circuit's decision. (*See* Dkt. Nos. 147, 148).

II.   LEGAL PRINCIPLES

Summary judgment is proper when "the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a). Under this standard, "the mere existence of some alleged factual dispute between the parties will not defeat an otherwise properly supported motion for summary judgment; the requirement is that there be no genuine [dispute] of material fact." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247–48 (1986). The substantive law identifies the material facts, and disputes over facts that are irrelevant or unnecessary will not defeat a motion for summary judgment. *Id.* at 248. A dispute about a material fact is "genuine" when the evidence is "such that a reasonable jury could return a verdict for the nonmoving party." *Id.* Any evidence must be viewed in the light most favorable to the nonmovant. *See id.* at 255 (citing *Adickes v. S.H. Kress & Co.*, 398 U.S. 144, 158–59 (1970)).

The moving party has the burden to identify the basis for granting summary judgment and to supply evidence demonstrating the absence of a genuine dispute of material fact. *Celotex v. Catrett*, 477 U.S. 317, 323 (1986). If the moving party does not have the ultimate burden of persuasion at trial, the party "must either produce evidence negating an essential element of the nonmoving party's claim or defense or show that the nonmoving party does not have enough evidence of an essential element to carry its ultimate burden of persuasion at trial." *Nissan Fire & Marine Ins. Co., Ltd. v. Fritz Cos., Inc.*, 210 F.3d 1099, 1102 (9th Cir. 2000).

35 U.S.C. § 112, ¶ 2 requires that a patent specification "shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention." Claims are presumed to be valid but may be challenged:

> A patent shall be presumed valid. Each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim. The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity.

35 U.S.C. § 282(a). Section 112, ¶ 2 further "require[s] that a patent's claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). "A determination of claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005) (citations and internal quotation marks omitted), *abrogated on other grounds by Nautilus*, 134 S. Ct. 2120. "Indefiniteness must be proven by clear and convincing evidence." *Sonix Tech. Co. v. Publ'ns Int'l, Ltd.*, 844 F.3d 1370, 1377 (Fed. Cir. 2017).

"Claim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention." *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014). "[A]bsolute or mathematical precision is not required." *Id.*; *see also id.* ("We do not understand the Supreme Court to have implied in *Nautilus* . . . that terms of degree are inherently indefinite."); *Nautilus*, 134 S. Ct. at 2129 ("The definiteness requirement . . . mandates clarity, while recognizing that absolute precision is unattainable."). Nonetheless, "[t]he claims, when read in light of the specification and the prosecution history, must provide objective boundaries for those of skill in the art." *Interval*

Licensing, 766 F.3d at 1371. "[A] term of degree fails to provide sufficient notice of its scope if it depends on the unpredictable vagaries of any one person's opinion." *Id.* (citation and internal quotation marks omitted).

Although Defendants have the burden to demonstrate that summary judgment is appropriate, and although patent claims are presumed to be valid, if "the validity challenges to the independent claims coincide[] with the validity challenges to the dependent claims," then "the sameness of the inquiries permit[] the treatment of all claims at once." *Chiron Corp. v. Genentech, Inc.*, 363 F.3d 1247, 1260 (Fed. Cir. 2004); *see, e.g., Berkheimer v. HP Inc.*, 881 F.3d 1360, 1363–64 (Fed. Cir. 2018) ("Claim 10 recites 'a storage medium, and a set of executable instructions for establishing an archive of documents represented by linked object oriented elements stored in the medium, wherein the archive exhibits minimal redundancy with at least some elements linked to pluralities of the elements.' Claims 11–19 depend from claim 10 and therefore include the same limitation. This claim language is not reasonably clear as to what level of redundancy in the archive is acceptable.").

III. DISCUSSION

A. Claim 12 of the '971 Patent and Claims 1, 19, and 121 of the '206 Patent

Claim 12 of the '971 Patent and Claims 1, 19, and 121 of the '206 Patent all contain the claim element "to optimize end-user quality of service (QoS) for an Internet Protocol (IP) flow." Claim 12 of the '971 Patent, for example, recites:

12. A quality of service (QoS) aware, wireless communications system comprising:

a wireless access point base station coupled to a first data network;

one or more host workstations coupled to said first data network;

one or more wireless network stations in wireless communication with said wireless access point base station over a shared wireless network using a packet-centric protocol; and

a scheduler that allocates resources of said shared wireless network among said wireless network stations *to optimize end-user quality of service (QoS) for an Internet Protocol (IP) flow*, wherein said IP flow is associated with at least one of a latency-sensitive and a jitter-sensitive application;

wherein said scheduler comprises assigning means for assigning future slots of a transmission frame to a portion of said IP flow in said transmission frame for transmission over said shared wireless network,

wherein said assigning means comprises:

means for applying an advanced reservation algorithm[;]

means for reserving a first slot for a first data packet of an Internet Protocol (IP) flow in a future transmission frame based on said algorithm[;]

means for reserving a second slot for a second data packet of said IP flow in a transmission frame subsequent in time to said future transmission frame based on said algorithm,

wherein said second data packet is placed in said second slot in an isochronous manner to the placing of said first data packet in said first slot.

'971 Patent at 84:58–85:21 (emphasis added); *see also* '206 Patent at 81:31–45; 82:50–53, 91:47–52.

Defendants argue that terms reciting "optimize" limitations are indefinite for failing to satisfy 35 U.S.C. § 112 ¶ 2. (Dkt. No. 155 at 1.) In particular, Defendants challenge the definiteness of the claim terms "to optimize end-user quality of service (QoS) for an Internet Protocol (IP) flow," "so as to optimize end-user quality of service (QoS) associated with said IP flow," and "so as to optimize end-user internet protocol (IP) quality of service (QoS)." (*Id.* at 2.) Defendants also argue that the Court should reach the same conclusion here as the Federal Circuit reached in *Intellectual Ventures v. T-Mobile*, because the specification disclosure is the same and because "[n]othing recited in the independent or dependent claims (or prosecution history) changes the

status of 'optimiz[ing] . . . QoS' as a subjective term of degree or provides objective guidance to a POSITA for determining whether QoS has been optimized." (Dkt. No. 155 at 7.)

Plaintiff responds that "[t]he Federal Circuit [in *Intellectual Ventures*] did not, however, rule that the combination of the words 'optimize' and 'QoS' is fatal, no matter what other words are in a patent claim or what factual record is before this Court." (Dkt. No. 170 at 1.) Plaintiff argues that the claims here at issue "have additional context which renders the claims definite or at least creates a genuine issue of fact for trial." (*Id.* at 7.)

Defendants reply that "[n]one of the additional requirements recited in the express or dependent optimize claims, and nothing in the specification or prosecution history, provides the requisite objective boundaries for 'optimiz[ing] . . . QoS.'" (Dkt. No. 183 at 1.)

In sur-reply, Plaintiff argues that "[t]here is ample record evidence from the patents in suit, the usage of these words by the Defendants[,] and even Ericsson's own expert[] that these terms are used regularly in technical communications." (Dkt. No. 187 at 1.) Plaintiff also re-urges that the claims at issue "provide additional context which render the claims definite or, at the very least, create a genuine issue of fact for trial." (*Id.*)

The Court finds that the specification provides two competing definitions for "optimize." First, the specification refers to "optimal" performance in terms of handling communications in ways that depend on the types of data being communicated:

> Simply providing "adequate" bandwidth is not a sufficient QoS mechanism for packet-switched networks, and certainly not for wireless broadband access systems. Although some IP-flows are "bandwidth-sensitive," other flows are latency- and/or jitter-sensitive. Real time or multimedia flows and applications cannot be guaranteed timely behavior by simply providing excessive bandwidth, even if it were not cost-prohibitive to do so. It is desirable that QoS mechanisms for an IP-centric wireless broadband access system recognize the detailed flow-by-flow requirements of the traffic, and allocate system and media resources necessary to deliver these flows in an optimal manner.
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> . . .

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The wireless transmission frames in each direction are constructed in a manner dictated by the individual QoS requirements of each IP flow. By using QoS requirements to build the wireless transmission frames, *optimal QoS performance* can result over the entire range of applications being handled by the system. For example, latency and jitter sensitive IP telephony, other H.323 compliant IP streams, and real-time audio and video streams can be given a higher priority for *optimal placement in the wireless transmission frames*. On the other hand, hypertext transport protocol (HTTP) traffic, such as, e.g., initial web page transmissions, can be given higher bandwidth reservation priorities for that particular application task. Other traffic without latency, jitter, or bandwidth requirements such as, e.g., file transfer protocol (FTP) file downloads, email transmissions, can be assigned a lower priority for system resources and placement in the wireless transmission frame.

'206 Patent at 13:16–2, 21:41–58 (emphasis added); *see also id.* at 57:5–10 ("[T]he present invention's reservation protocol with a dynamically adjustable number of contention subslots and explicit wireless base station reservation grants, allows a more optimal means of providing for the allocation of wireless, such as, e.g., radio, bandwidth in response to QoS requirements of IP-flows than any prior method."); 58:45–50 ("For example, suppose the data packets of class 1 packet flow queue 1324 require jitter-free and latency-free delivery, i.e., delivery of packets must be at constant time intervals and in real-time. Packet flow queue 1324 creates, e.g., 4 equal time spaced slot reservations in future frames . . . ."); 58:28–60:28, 62:31–48. Plaintiff argues that the disclosures in the specification, as well as the recitals of "IP flows," are directed to network operators rather than end users. *See id.* at 14:21–25 ("simplify the operation and administration of the QoS mechanism"); 51:14–16 ("By placing all scheduling function at the wireless base station 302, overall system quality of service can be optimized by centralizing the control of scheduling.").

However, the specification further explains that optimizing QoS ultimately depends on how "the user defines it":

> *QoS can be a relative term, finding different meanings for different users.* A casual user doing occasional web browsing, but no file transfer protocol (FTP) file downloads or real time multimedia sessions may have different a different [*sic*] definition of QoS than a power user doing many FTP file downloads of large database or financial files, frequent H.323 video conferencing and IP telephony

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calls. Also, a user can pay a premium rate (i.e. a so-called service level agreement (SLA)) for high network availability, low latency, and low jitter, while another user can pay a low rate for occasional web surfing only, and on weekends only. Therefore, perhaps it is best to understand QoS as a continuum, defined by what network performance characteristic is most important to a particular user and the user's SLA. Maximizing the end-user experience is an essential component of providing wireless QoS.

. . .

QoS can be thought of as a mechanism to selectively allocate scarce networking, transmission and communications resources to differentiated classes of network traffic with appropriate levels of priority. Ideally, the nature of the data traffic, the demands of the users, the conditions of the network, and the characteristics of the traffic sources and destinations all modify how the QoS mechanism is operating at any given instant. Ultimately, however, it is desirable that the *QoS mechanism operate in a manner that provides the user with optimal service, in whatever manner the user defines it*.

Id. at 11:41–56, 12:7–17 (emphasis added); *see also id.* at 13:45–48 ("The nature of the data application itself and the desired end-user experience then can provide the most reliable criteria for the QoS mechanism.").

On balance, the Court finds that "to optimize end-user quality of service (QoS)" lacks sufficient "objective boundaries" for those of skill in the art to understand the scope of the claims, even when considered in light of the specification. *Interval Licensing*, 766 F.3d at 1371. The various general disclosures regarding QoS cited by Plaintiff do not compel otherwise. For example, the '206 Patent provides that "[t]o provide a non-ambiguous definition of QoS that applies to wireless data communications, the nature of the problem that QoS is meant to solve is helpful." '206 Patent at 10:61–63. The '206 Patent goes on to illustrate a host of ways in which "users or subscribers to a data network experience difficulties" and, broadly speaking, how QoS might help solve them. *See, e.g.,* '206 Patent at 10:61–11:54, 12:7–10, 13:34–48, 14:9–25 ("differing levels of system resources can be allocated"), 32:4–12, 39:7–20, 40:59–41:3. However, the breadth of

these disclosures prevents the Court from being able to set objective boundaries, and thus breathe

life into, the claim term.

The prosecution history cited by Plaintiff (regarding United States Patent Application No.

09/349,478, cited in the patents-in-suit) is likewise unpersuasive:

> The present invention *optimizes* end-user quality of service (QoS) by *differentiating between types of traffic or service types* so that differing levels of system resources can be allocated to these different types. . . . By creating a finite number of *discrete classes of service*, multiple IP flows can be consolidated and handled with a given set of *QoS* parameters by the QoS mechanisms.

(*See* Dkt. No. 111, Ex. 5, Mar. 27, 2002 Amendment and Reply Under 37 C.F.R. § 1.111 and

1.121, at 13 (emphasis in original); *see also id.* at 13–14 ("End-user quality of service (QoS) is not

optimized in [the] Meier [reference] because differentiating between types of traffic or service

types is required in order to optimize end-user quality of service (QoS).") (emphasis omitted).)

Here, too, although the patentee referred to differentiating between different types of data

traffic, the patentee did not define or sufficiently explain the meaning of "optimize," especially in

the context of "end-user" QoS. To the extent that Plaintiff is arguing that "to optimize" means

merely to treat differently, this argument is unavailing. The prosecution history set forth above

indicates that differentiating is necessary *in order to* optimize, but this does not amount to an

explanation of what "optimize" *means*.

Further, Dependent Claim 109 of the '206 Patent, upon which Claim 121 appears and in

which one of the disputed terms appears, recites "*classifying* a plurality of packets according to

end-user quality of service requirements of said plurality of packets." Claim 1 of the '206 Patent

is similar in this regard. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) ("Other

claims of the patent in question, both asserted and unasserted, can also be valuable sources of

enlightenment as to the meaning of a claim term."). While these disclosures demonstrate that to

"optimize" means something more than merely differentiating or classifying, the meaning remains unclear.[1]

Plaintiff responds that "the means elements refer to portions of the specification which define the scheduling algorithm. The manner in which QoS is managed is defined by these limitations, as well as by the further limitations requiring that the scheduler act on a latency or jitter sensitive IP flow and render it isochronous." (Dkt. No. 170 at 12.) Yet, Plaintiff has not cited any particular corresponding structure for the means limitations (*see id.*), let alone explained how any particular disclosure provides reasonable certainty for the "optimize" limitations. Indeed, the "optimize" limitations do not appear as part of any means-plus-function term in these claims.[2]

Further, Plaintiff has not shown how the recital that "said IP flow is associated with at least one of a latency-sensitive and a jitter-sensitive application" in Claim 12 of the '971 Patent lends certainty to the "optimize" limitations. For example, Plaintiff has not shown that merely taking into account latency sensitivity or jitter sensitivity amounts to "optimizing" end-user QoS. As to Plaintiff's reliance on the recital of packet placement "in an isochronous manner," (*see* Dkt. No.

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[1] Plaintiff's reliance on statements by Ericsson's expert in *Inter Partes* Review proceedings is similarly unavailing (Dkt. No. 187, Ex. 19, IPR 2018-01121, Declaration of Dr. Zygmunt Haas in Support of Petition for *Inter Partes* Review of U.S. Patent No. RE46,206 ¶ 38):

> The '206 Patent is generally directed to providing Quality of Service ("QoS") in a wireless communication environment. Ex. 1001 at 3:39–41. The '206 Patent states that "QoS can be thought of as a mechanism to selectively allocate scarce networking, transmission and communications resources to differentiated classes of network traffic with appropriate levels of priority." *Id.* at 12:7–10. The provision of QoS in communications systems was well known before the filing date of the '206 Patent. Indeed, the '206 Patent itself describes a number of existing communication systems that provided QoS. For example, conventional wireline networks used circuit switching to "achieve acceptable end user quality of service." *Id.* at 3:50–52. As another example, asynchronous transfer mode ("ATM") provided QoS for broadband network traffic. *Id.* at 12:63.

[2] Plaintiff's arguments regarding the specification more generally are addressed by the Court's analysis set forth above.

187 at 3,) Plaintiff has not persuasively shown that the claim (or the specification) links this limitation to the requirement of the scheduler optimizing end-user QoS.

As to extrinsic evidence, Plaintiff has cited documents produced by Defendants that refer to optimizing in various contexts, such as optimizing QoS as well as optimizing "performance," "capacity," "throughput," "network utilization," and "coverage area." (*See* Dkt. No. 170 at 2–4 (citing Exs. 2–15).) However, even assuming that these documents reflect an understanding of "optimizing" in the relevant art, these extrinsic documents do not override the above-discussed disclosures in the specification demonstrating that optimizing end-user QoS, as used in the patents-in-suit, is "purely subjective" and depends "on the unpredictable vagaries of any one person's opinion." *Datamize*, 417 F.3d at 1350–51.

Finally, Plaintiff's submission of expert opinions, (Dkt. No. 170, Suppl. Williams Decl. ¶ 7,) is insufficient to avoid summary judgment, because "[a] party cannot transform into a factual matter the internal coherence and context assessment of the patent simply by having an expert offer an opinion on it." *Teva Pharms. USA, Inc. v. Sandoz*, 789 F.3d 1335, 1342 (Fed. Cir. 2015); *see also id.* ("[T]he internal coherence and context assessment of the patent, and whether it conveys claim meaning with reasonable certainty, are questions of law."). Accordingly, the Court finds the opinions of Plaintiff's expert to be unpersuasive.

The Court therefore finds that the Motion **GRANTED** as to Claim 12 of the '971 Patent and Claims 1, 19, and 121 of the '206 Patent.

B. <u>Group 1A: Claims 14, 21, and 27 of the '971 Patent</u>

The Parties agree that these claims stand or fall with Claim 12 of the '971 Patent. (*See* Dkt. No. 155 at 9; *see also* Dkt. No. 170 at 11.) The Court therefore finds that the Motion should be **GRANTED** as to Claims 14, 21, and 27 of the '971 Patent.

C. Group 1B: Claims 2, 6, 8, 9, 11, 17, 18, 122, and 134 of the '206 Patent

Claims 2, 6, 8, 9, 11, 17, 18, 122, and 134 of the '206 Patent require "allocating said shared wireless bandwidth" that was optimized in Claim 1. '206 Patent at 81:46–49, 81:61–63, 82:1–7, 82:12–15, 82:41–49, 91:53–57, 92:45–49.

Defendants assert that such claims "add nothing to the indefiniteness analysis" and are "indefinite for the same reasons" as Claim 1 of the '206 Patent and Claim 12 of the '971 Patent. (Dkt. No. 155 at 9.) Plaintiff, however, argues that such optimization "is not a user-facing exercise" because "[o]ptimizing for a specific pre-selected flow involves giving that flow priority over others in packet transmission." (Dkt. No. 170 at 12; *see also* Suppl. William Decl., Dkt. No. 170-1 ¶ 5 ("The process of optimizing for an IP flow is not a user facing exercise, but instead involves the network giving that flow priority over others in a packet transmission network in the context of the capabilities and status of the network. That is the subject of the Optimize Claims.")

While "it is desired that a system be able to differentiate between types of traffic or service types so that differing levels of system resources can be allocated to these types," (*see* '206 Patent at 14:10–13,) neither Plaintiff nor Dr. Williams has shown how these claims provide objective boundaries for a POSITA to be able to narrow the nebulous standard of "providing the user with optimal service, in whatever manner the user defines it." '206 Patent at 12:14–17. As the "end-user experience is the final arbiter of QoS," '206 Patent at 13:30–31, the Court finds that these claims remain indefinite.

Accordingly, the Court finds that the Motion should be **GRANTED** as to Claims 2, 6, 8, 9, 11, 17, 18, 122, and 134 of the '206 Patent.

D. Group 2A: Claim 132 of the '206 Patent and Claim 22 of the '971 Patent

Claim 132 of the '206 Patent and Claim 22 of the '971 Patent recite that the "IP flow is associated with at least one of voice-over-Internet Protocol (VoIP) data and a video data application." '206 Patent at 92:37–41; '971 Patent at 85:54–56.

Defendants assert that such claims "add nothing to the indefiniteness analysis" and are "indefinite for the same reasons" as Claim 1 of the '206 Patent and Claim 12 of the '971 Patent. (Dkt. No. 155 at 9.) Plaintiff argues that voice networks, for example, "are designed to transport voice traffic with limited latency." '206 Patent at 3:43–50; *see id.* at 21:37–58 ("For example, latency and jitter sensitive IP telephony, other H.323 compliant IP streams, and real-time audio and video streams can be given a higher priority for optimal placement in the wireless transmission frames."). Plaintiff's expert opines that "[t]he optimization of an IP flow which is characterized by high jitter is performed by controlling the jitter" and that a person of skill in the art would know how to optimize for a specific voice or video flow by prioritizing it over other flows. (Dkt. No. 170-1, Suppl. Williams Decl. ¶ 6, 7.)

However, while Plaintiff asserts that "a network operator knows how to optimize for a specific flow" and that there "is no need to look into the mind of a user to figure out how to perform that function," the language of the claims indicates that the end-user remains "the final arbiter" of quality of service. (Dkt. No. 170 at 7–8, 8;) '206 Patent at 13:30–31. Further, while the IP flow contains "at least one" VoIP or video data application, "the nature of the data traffic, the demands of the users, the conditions of the network, and the characteristics of the traffic sources and destinations all modify how the QoS mechanism is operating at any given instant. Ultimately, however, it is desirable that the QoS mechanism operate in a manner that provides the user with optimal service, in whatever manner the user defines it." '206 Patent at 12:10–17.

Neither Plaintiff nor Dr. Williams, however, has persuasively shown that any disclosure in the specification informs how to resolve competing "higher priority" demands for limited network resources in a manner that "optimizes" end-user QoS. *See* '206 Patent at 21:37–58. Nor does anything in the disclosure of prioritization avoid the issue that "it is desirable that the QoS mechanism operate in a manner that provides the user with optimal service, *in whatever manner the user defines it*." '206 Patent at 12:14–17 (emphasis added). That is, even if the IP flow is limited to being VoIP or video, different users might nonetheless prefer different service parameters.

The Court finds that Claim 132 of the '206 Patent and Claim 22 of the '971 Patent remain indefinite; accordingly, the Court finds that the Motion should be **GRANTED** as to Claim 132 of the '206 Patent and Claim 22 of the '971 Patent.

E. **Group 2B: Claims 20, 27, 29, 123, and 126 of the '206 Patent and Claim 15 of the '971 Patent**

1. **Claims 20, 27, and 29 of the '206 Patent**

Claim 20 of the '206 Patent, which ultimately depends on Claim 1, recites:

20. The method according to claim 18, further comprising at least one of:

identifying said IP flow;

characterizing said IP flow;

storing said IP flow; and

prioritizing said IP flow.

'206 Patent at 82:53–58.

Claims 27 and 29 of the '206 Patent depend on Claim 20 while adding at least "determining a QoS requirement for an IP flow." *Id.* at 83:36–44, 83:49–51.

Defendants argue that each of these claims is indefinite because "they incorporate the subjective term of degree ('optimiz[ing] . . . QoS') and they do nothing to change the patents' 'entirely subjective and user-defined' understanding of QoS, or 'provide one of ordinary skill in the art with any way to determine whether QoS has been optimized.'" (Dkt. No. 155 at 9 (citing *Intellectual Ventures*, 902 F.3d at 1381).)

Plaintiff agrees that Claims 20, 27, and 29 of the '206 Patent "should rise or fall together." (Dkt. No. 170 at 13.) Plaintiff further responds that "[n]owhere do these claims require that the network operator consult with users. Indeed, the tenor of the claim set is just the opposite—the network operator determines what the QoS requirement for a flow is based on objective data such as, for example, a source address, a destination address, or a port number." (Dkt. No. 170 at 13.)

Nowhere in Claim 20's elements of "identifying," "characterizing," "storing," or "prioritizing" an IP flow, however, is there any limitation placed on the objective boundaries for a POSITA to be able to narrow the nebulous standard of "providing the user with optimal service, in whatever manner the user defines it." '206 Patent at 12:14–17. Accordingly, the Court finds that Claims 20, 27, and 29 of the '206 Patent are indefinite and **GRANTS** the Motion as to such claims.

2. Claims 123 and 126 of the '206 Patent and Claim 15 of the '971 Patent

Claim 123 of the '206 Patent recites:

123. The method according to claim 122, the step of assigning, further comprising:

applying a reservation algorithm;

reserving a slot for a first portion of a first IP flow in a future transmission frame based on said algorithm;

reserving a second slot for a second portion of said first IP flow in a transmission frame subsequent in time to said future transmission frame based on said algorithm;

placing said first portion of said first IP flow in said first slot; and

> placing said second portion of said first IP flow in said second slot in an isochronous manner to the placing of said first portion in said first slot.

Id. at 91:58–92:3.

Claim 126 of the '206 Patent recites:

126. The method according to claim 121, further comprising:

> determining whether said IP flow is at least one of a jitter-sensitive IP flow and a latency sensitive IP flow.

Id. at 92:14–17. Similarly to Claim 126 of the '206 Patent, Claim 15 of the '971 Patent depends on a prior claim and recites the additional element "determin[ing] whether said IP flow is jitter-sensitive." '971 Patent at 85:44–45.

Defendants argue that each of these claims is indefinite because "they incorporate the subjective term of degree ('optimiz[ing] . . . QoS') and they do nothing to change the patents' 'entirely subjective and user-defined' understanding of QoS, or 'provide one of ordinary skill in the art with any way to determine whether QoS has been optimized.'" (Dkt. No. 155 at 9 (citing *Intellectual Ventures*, 902 F.3d at 1381).)

As to Claim 123 of the '206 Patent, Plaintiff's only argument is that the claim "incorporates the requirement of isochronous transmission, which as discussed above, renders the claim definite to one of skill in the art."[3] (*Id.*) Similarly, Plaintiff only argument as to Claim 126 of the '206

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[3] The entirety of Plaintiff's argument regarding isochronous flow is:

> Many of the Optimize Claims require selection of a specific IP flow and isochronous transmission of the flow. Isochronous transmission smooths out jitter and provides for the optimal transmission characteristics for a jitter or latency sensitive flow. Suppl. Williams Decl. at ¶7. There is no uncertainty as to packet transmission time or what it takes to render a flow isochronous. *Id.* These claims should be interpreted to mean "optimize an IP flow by sending it isochronously." Accordingly, all claims including this term pass the reasonable certainty test of *Nautilus*.

(Dkt. No. 170 at 10.)

Patent and Claim 15 of the '971 Patent is that the claims "incorporate the requirement of acting on a jitter or latency sensitive flow, which as discussed above, is a function network operators know how to perform." (*Id.* (referring to Section III(D), *supra*).)

The Court finds inadequate Plaintiff's conclusory statement that the mere inclusion of "isochronous transmission" renders the claims definite. Regardless of the type of flow involved, the core problem that QoS is defined by the end-user, and not by the network operator, remains unresolved. Further, the Court previously found Plaintiff's argument regarding jitter unavailing. *See* Section III(D), *supra*. The Court therefore finds that Claims 123 and 126 of the '206 Patent and Claim 15 of the '971 Patent are indefinite and that the Motion should be **GRANTED** as to such claims.

F. **Group 3: Claims 25, 33, and 37 of the '971 Patent and Claims 32 and 33 of the '206 Patent**

Claim 25 of the '971 Patent, which is ultimately dependent upon Claim 12, recites:

25. The system of claim 12, wherein said scheduler classifies a plurality of packets according to end-user quality of service (QoS) requirements of said plurality of packets.

'971 Patent at 85:65–67.

Claim 33 of the '971 Patent builds upon Claim 25 and recites:

33. The system of claim 25, wherein said scheduler coordinates access to RF wireless resource by said one or more wireless network stations, by controlling access to said RF wireless resource via receiving reservation requests and sending grants.

Id. at 86:36–40.

Claim 37 of the '971 Patent further builds upon Claim 33 and recites:

37. The system of claim 33, wherein said coordinated access ensures high priority packets are provided appropriate bandwidth needed by said high priority packets.

Id. at 86:53–55.

Claim 32 of the '206 Patent recites:

32. The method according to claim 20, further comprising:

classifying a packet of said LIP flow into a QoS class grouping.

'206 Patent at 83:64–67.

33. The method according to claim 32, further comprising:

determining and taking into account said QoS class groupings when scheduling communication of said IP flow.

Id. at 84:1–5

Defendants argue that Claim 25 of the '971 Patent and Claims 32 and 33 of the '206 Patent "recite similar language regarding QoS." (Dkt. No. 155 at 12.) Defendants assert that none of the claims "discuss optimizing QoS, instead Claims 25 and 32 merely recite classifying a packet or plurality of packets based on QoS, and Claim 323 generically recites 'taking into account' QoS class groupings," and that the "mere act of classifying packets based on QoS, or allocating resources based on QoS does nothing to inform how to determine whether QoS has been optimized." (*Id.*) Finally, Defendants allege that Claims 33 and 37 of the '971 Patent rise and fall with Claim 25, as Claims 33 and 37 only provide for coordinated access and appropriate bandwidth. (*Id.* at 13.)

Plaintiff argues that at least Claims 25, 33, and 37 of the '971 Patent are definite because they use isochronicity. (Dkt. No. 170 at 14.) Plaintiff asserts that the language of such claims further supports a finding of definiteness because Claim 25 "adds the requirement that the scheduler classify packets 'according to end-user quality of service (SoS) requirements of said plurality of packets,' which is "not something on which a user would have an opinion." (*Id.*) Similarly, Plaintiff asserts that Claim 37's provision of appropriate bandwidth shows that QoS is defined by the network operator, and is not user-defined. (*Id.*)

As to Claims 32 and 33 of the '206 Patent, Plaintiff asserts that such claims "provide additional guidance on how to 'optimize'" over Claim 20, upon which they depend, in the form of classifying packets and forming QoS class groupings. (*Id.*)

The Court finds that the restrictions created by Claims 25, 33, and 37 of the '971 Patent and Claims 32 and 33 of the '206 Patent fail to lend any reasonable certainty to limitations that require *optimizing* end-user QoS. While Plaintiff asserts that the end user would not have an opinion on the end-user QoS requirements of the individual packets, such statements bely the Court's prior findings that the end-user, as the final arbiter of quality of service, would have opinions as to whether a video is jittery or a phone call cuts out. If those opinions were sufficiently definite, Claim 25 provides that the network operator would be able to categorize the packet groupings to fulfill such requirements, while Claims 33 and 37 provide for similar network management. However, as the Court has reiterated throughout this Order, the core problem is that the end-user's determination of what Quality of Service entails is undefined, and these dependent claims do not provide any objective boundaries as to such determination. Similarly, Claims 32 and 33 of the '206 Patent merely provide for background network architecture, without providing any objective boundaries to the end-user's Quality of Service desires.

The Court therefore finds that the Motion should be **GRANTED** as to Claims 25, 33, and 37 of the '971 Patent and Claims 32 and 33 of the '206 Patent.

G. **Group 4: Claim 18 of the '971 Patent and Claims 38, 41, 44, and 129 of the '206 Patent**

The Parties agree that Group 4 covers claims that incorporate the additional requirement of a service level agreement (SLA). Claim 18 of the '971 Patent recites:

18. The system of claim 12, wherein said scheduler comprises:

> means for taking into account service level agreement (SLA) based priorities for said IP flow.

'971 Patent at 85:41–44.

Claims 38, 41, 44, and 129 of the '206 Patent recite:

38. The method according to claim 20, further comprising:

> determining and taking into account service level agreement (SLA) based priorities for said IP flow when scheduling said IP flow.

41. The method according to claim 38, further comprising the step of:

> prioritizing said IP flow based on priorities of a service level agreement (SLA) for SLA subscribers.

44. The method according to claim 41, further comprising:

> prioritizing based on a premium service level;

> prioritizing based on a normal service level; and

> prioritizing based on a value service level.

129. The method according to claim 121, the step of allocating further comprising:

> accounting for service level agreement (SLA) based priorities for said IP flow.

'206 Patent at 84:27–31; 84:41–44; 84:51–55; 92:26–29.

Defendants argue that "SLAs are known as a blunt device that telecommunication providers can use to provide general tiers of service to users." (Dkt. No. 155 at 14 (citing '206 Patent 13:53–14:8).) However, using "SLA-based prioritization, *all flows* from a particular user can be prioritized over all flows of another user, regardless of the types of applications or the QoS requirements of those applications." (*Id.* (citing '206 Patent at 51:56–60).) Thus, "[a]ccording to certain embodiments, prioritizing based on SLAs can simply mean giving higher priority to users who pay more money, regardless of QoS considerations for any flows." (*Id.*)

Plaintiff responds that Defendants' blunt device analysis is not supported by the Patent, which states:

> QoS can be a relative term, finding different meanings for different users. A casual user doing occasional web browsing, but no file transfer protocol (FTP) file downloads or real time multimedia sessions may have a different definition of QoS than a power user doing many FTP file downloads of large database or financial files, frequent H.323 video conferencing and IP telephony calls. Also, *a user can pay a premium rate (i.e. a so-called service level agreement (SLA)) for high network availability, low latency, and low jitter, while another user can pay a low rate for occasional web surfing only, and on weekends only*. Therefore, perhaps it is best to understand QoS as a continuum, defined by what network performance characteristic is most important to a particular user and the user's SLA. Maximizing the end-user experience is an essential component of providing wireless QoS.

(Dkt. No. 170 at 10 (quoting '206 Patent at 11:41–56 (emphasis added).)

Instead, Plaintiff argues that an SLA can be used to "guarantee a particular quality of service." (Dkt. No. 170 at 10–11.) Further, "[b]ecause the SLA is an agreement between the network operator and the customer as to how service is to be prioritized, [Plaintiff asserts that] there is no need for guesswork regarding the user's wishes." (*Id.* at 11.) Plaintiff's expert Dr. Williams supports this position, opining that an SLA "is an agreement between the network operator and the customer as to how service is to be prioritized, and thus, there is no need to further consult with a user regarding how to optimize." (Dkt. No. 170-1 at ¶ 9.)

The Court finds that Plaintiff's argument amounts to a false equivalency. While SLAs are disclosed in the Patent as being used to schedule certain subscribers with a higher priority than others, an SLA is indicative of nothing more or less than the QoS that a user is willing to pay for. '206 Patent at 13:55–62 ("Service guarantees can be made and service level agreements (SLAs) can be entered into between a telecommunications service provider and a subscriber whereby a specified level of network availability can be described, and access charged can be based upon the specified level."); 51:53–60 ("For example, it is possible that low priority traffic from a subscriber who has purchased a premium SLA service agreement, can be scheduled at a higher priority than high priority traffic from a subscriber which has only signed up for a value level or low cost SLA

service priority."). The Patent further emphasizes this point by noting that QoS is "defined by what network performance characteristic is most important *to a particular user and the user's SLA*." (*Id.* at 11:53–54.) Thus, by defining the terms separately, the patent admits that the network performance characteristic that is most important to a particular user may be different than that provided by a user's SLA. For example, a user who pays "a low rate for occasional web surfing only, and on weekends only" may find that they are besieged by "slow traffic caused by congestion [as a result of being last in the SLA queue], local access bottlenecks, and network failures . . . [such] as slow web page loading, slow file transfers, or poor voice/video quality in streaming multimedia applications," thus failing to "[m]aximize the end-user experience[,] an essential component of providing wireless QoS." '206 Patent at 11:18–21; 11:34–35. On balance, none of these limitations or disclosures avoids the disclosure that "[u]ltimately," the QoS mechanism "provides the user with optimal service, *in whatever manner the user defines it*." '206 Patent 12:14–17 (emphasis added).

The Court therefore finds that the Motion should be **GRANTED** as to Claim 18 of the '971 Patent and Claims 38, 41, 44, and 129 of the '206 Patent.

H. Group 5: Claims 15 and 16 of the '206 Patent

The Parties agree that these claims stand or fall with Claim 1 of the '206 Patent. (*See* Dkt. No. 155 at 15; Dkt. No. 170 at 14 n.7.) The Court therefore finds that the Motion should be **GRANTED** as to Claims 15 and 16 of the '206 Patent.

IV.   CONCLUSION

The Court finds that Defendants' Motion for Partial Summary Judgment That Asserted Claims Reciting the Indefinite "Optimize" Term Are Invalid as Indefinite (Dkt. No. 155) should be and hereby is **GRANTED**. Accordingly, the Court finds that Claims 12, 14, 15, 18, 21, 22, 25, 27, 33, and 37 of United States Patent No. 7,359,971; and Claims 1, 2, 6, 8, 9, 11, 15–20, 27, 29,

32, 33, 38, 41, 44, 121–123, 126, 129, 132, and 134 of United States Patent No. RE46,206 are indefinite.

So ORDERED and SIGNED this 6th day of November, 2018.

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RODNEY   GILSTRAP
UNITED STATES DISTRICT JUDGE