United States Court of Appeals for the Federal Circuit

IRIDESCENT NETWORKS, INC.,
Plaintiff-Appellant

v.

AT&T MOBILITY, LLC, ERICSSON INC.,
Defendants-Appellees

2018-1449

Appeal from the United States District Court for the Eastern District of Texas in No. 6:16-cv-01003-RWS-JDL, Judge Robert Schroeder, III.

Decided: August 12, 2019

SHAWN DANIEL BLACKBURN, Susman Godfrey LLP, Houston, TX, argued for plaintiff-appellant. Also represented by PARKER C. FOLSE, III, IAN B. CROSBY, Seattle, WA; ERIC J. ENGER, ALDEN HARRIS, LESLIE PAYNE, Heim, Payne & Chorush, LLP, Houston, TX.

MICHAEL HAWES, Baker Botts, LLP, Houston, TX, argued for defendants-appellees. Also represented by DOUGLAS M. KUBEHL, BETHANY ROSE FORD, JEFFERY SCOTT BECKER, Dallas, TX. Defendant-appellee AT&T Mobility, LLC also represented by BRYANT C. BOREN, JR., Palo Alto, CA.

Before PROST, *Chief Judge,* REYNA and TARANTO, *Circuit Judges.*

REYNA, *Circuit Judge.*

Iridescent Networks, Inc. sued AT&T Mobility, LLC and Ericsson Inc. in the U.S. District Court for the Eastern District of Texas for infringement of U.S. Patent No. 8,036,119. Following claim construction, the parties jointly stipulated to noninfringement, and the district court entered judgment in favor of AT&T Mobility, LLC and Ericsson Inc. Iridescent Networks, Inc. appeals on the ground that the district court erred in its construction of the term "high quality of service connection." Because the district court correctly construed this term, we affirm.

BACKGROUND

I. The '119 Patent

Iridescent Networks, Inc. ("Iridescent") is the assignee of U.S. Patent No. 8,036,119 ("the '119 patent"), entitled "System and Method of Providing Bandwidth on Demand." The '119 patent is directed to a system and method of network communication that provides guaranteed bandwidth on demand for applications that require high bandwidth and minimizes data delay and loss during transmission.[1]

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[1] Modern networks, including cellular networks, transfer data in small blocks called "packets." Appellant's Br. 6–7. Transmission of the packets may be affected by three factors: bandwidth, latency, and packet loss. "Bandwidth" refers to the maximum data transfer rate of a network. *See id.* at 14. "Latency" refers to the time required to transmit a packet across a network, with longer latency indicating a delay. *See id.* "Packet loss" refers to the loss of packets during transmission. *See id.* at 7.

'119 patent col. 1 ll. 19–22, 58–60, col. 3 ll. 46–48, col. 6 ll. 21–23.

The '119 patent discloses that prior art networks transmit data packets in an ad hoc manner, with each packet taking an unpredictable route to its destination. *Id.* col. 1 ll. 35–45. This is undesirable because some applications delivered on broadband "are very sensitive to any delay and . . . any variance in the delay" of packet transmission. *Id.* col. 1 l. 66–col. 2 l. 2. The '119 patent teaches that some applications "are also sensitive to any packets . . . which may be lost in the transmission (0.0001% packet loss is the preferred quality for video transmission)." *Id.* col. 2 ll. 2–5. The '119 patent also teaches that some applications require significantly more bandwidth than others to provide tolerable levels of quality. *Id.* col. 1 ll. 58–60, col. 3 ll. 31–45. The '119 patent describes video applications as examples of such applications and explains that prior art "video compression methods vary greatly in the bandwidth they require to transport the video in real-time—some solutions are as low as 64 kbps up to 300 Mbps." *Id.* col. 3 ll. 31–45. Figure 3 of the '119 patent illustrates bandwidth, packet loss, and latency requirements of several applications, including different video applications:

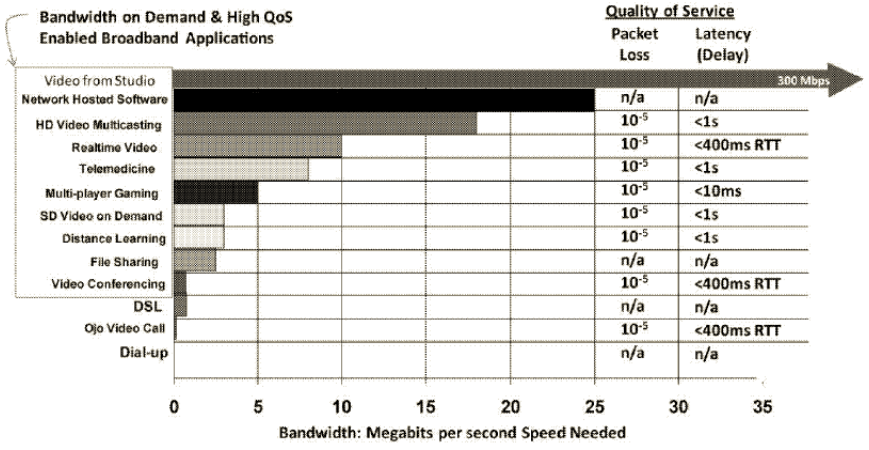

FIG. 3

Id. Fig. 3.

To deal with these parameter-sensitive applications, the '119 patent discloses a system and method for managing network traffic routes and bandwidth availability to minimize adverse network conditions and to assure that the network connection maintains a requested minimum level of one of these three parameters. *Id.* col. 5 l. 64–col. 6 l. 3. Rather than using existing ad hoc network routes, the invention creates custom routes to maximize the availability of the required bandwidth, minimize packet loss, and reduce latency. *Id.* col. 5 ll. 64–67; *id.* col. 6 ll. 57–61. According to the '119 patent, this results in a "high quality" network connection with bandwidth "on demand." *Id.* col. 5 ll. 23–29. Applications that do not have minimum network connection parameter requirements may be routed through existing "best-effort" ad hoc network connections using "existing network components." *Id.* col. 5 ll. 14–20. Claim 1 is illustrative and recites:

> 1. A method for providing bandwidth on demand comprising:
>
> > receiving, by a controller positioned in a network, a request for a *high quality of service connection* supporting any one of a plurality of one-way and two-way traffic types between an originating end-point and a terminating end-point, wherein the request comes from the originating end-point and includes at least one of a requested amount of bandwidth and a codec;
> >
> > determining, by the controller, whether the originating end-point is authorized to use the requested amount of bandwidth or the codec and whether the terminating end-point can be reached by the controller;

> directing, by the controller, a portal that is positioned in the network and physically separate from the controller to allocate local port resources of the portal for the connection;
>
> negotiating, by the controller, to reserve far-end resources for the terminating end-point; and
>
> providing, by the controller to the portal, routing instructions for traffic corresponding to the connection so that the traffic is directed by the portal based only on the routing instructions provided by the controller, wherein the portal does not perform any independent routing on the traffic, and wherein the connection extending from the originating end-point to the terminating end-point is provided by a dedicated bearer path that includes a required route supported by the portal and dynamically provisioned by the controller, and wherein control paths for the connection are supported only between each of the originating and terminating end-points and the controller and between the portal and the controller.

Id. col. 7 l. 43–col. 8 l. 7 (emphasis added).

The application that led to the '119 patent is a continuation of U.S. Application No. 11/743,470 ("the parent application"), which issued as U.S. Patent No. 7,639,612, also assigned to Iridescent. Both patents share a substantially identical specification.

During prosecution of the parent application, the examiner rejected several claims containing a similar limitation: "high quality and low latency bandwidth." J.A. 271,

369. The examiner explained that this limitation was rejected as not enabled because the specification "d[id] not adequately describe how *high quality and low latency* are determined." J.A. 368–69; *see also* J.A. 270–71. In response, the applicant amended the claims to replace the rejected term with the "high quality of service connection" limitation at issue in this appeal. J.A. 140. The applicant argued that Figure 3 and its description supported this new claim language:

> As illustrated by the boxed set of applications on the left side of Fig. 3, high QoS (quality of service) may be viewed in the present application as having speeds varying from approximately 1–300 megabits per second, packet loss requirements that are typically about 10^{-5}, and latency requirements that are typically less than one second. These are commonly used parameters and, as illustrated in Fig. 3, often vary somewhat based on the type of application. For example, video conferencing may be possible with the listed parameters, while HD video multicasting typically has more stringent requirements in order to be acceptable.
>
> . . . .
>
> Accordingly, Applicant submits that the term "high quality of service connection" is supported by the various connection parameters illustrated for high quality of service enabled bandwidth applications in Fig. 3.

J.A. 141. After considering Iridescent's arguments, the examiner withdrew the rejection and allowed the amended claims containing the "high quality of service connection" limitation to issue.

II. District Court Proceedings

On July 11, 2016, Iridescent brought suit against AT&T Mobility, LLC and Ericsson Inc. (collectively,

"AT&T") for infringement of claims 1, 3–4, 7, and 11 of the '119 patent. Claim 1 was the only asserted independent claim. During claim construction proceedings, Iridescent proposed broadly construing the term "high quality of service connection" to mean "a connection in which one or more quality of service connection parameters, including bandwidth, latency, and/or packet loss, are assured from end-to-end based on the requirements of the application." *Iridescent Networks, Inc. v. AT&T Mobility, LLC*, No. 6:16-CV-01003, 2017 WL 3033400, at *3 (E.D. Tex. July 18, 2017) ("*Claim Construction Order*"). The magistrate judge, however, largely adopted AT&T's proposed construction, construing the term to mean "a connection that assures connection speed of at least approximately one megabit per second and, where applicable based on the type of application, packet loss requirements that are about 10^{-5} and latency requirements that are less than one second." *Id.* at *5. The magistrate judge determined that "high quality of service connection" is a term of degree that is "not a known term of art, but rather a term coined by the patentee." *Id.* at *4. Relying on the '119 patent's intrinsic record, the magistrate judge explained that Figure 3 of the '119 patent and Iridescent's statements during prosecution of the parent application "serve to provide some standard for measuring this term of degree." *Id.* at *5 (internal quotation marks omitted).

Iridescent subsequently objected to the magistrate judge's construction, raising the same arguments it renews on appeal. *Iridescent Networks, Inc. v. AT&T Mobility, LLC*, No. 6:16-CV-01003, 2017 WL 10185852, at *1–3 (E.D. Tex. Dec. 1, 2017) ("*Order Adopting Constructions*"). The district judge overruled Iridescent's objections, determining that the magistrate judge's construction was not clearly erroneous or contrary to law. *Id.* at *3.

The parties agreed that under the district court's construction, AT&T's accused network products and services were excluded, and they jointly stipulated to

noninfringement. On December 18, 2017, the court entered a final judgment against Iridescent. Iridescent timely appealed. We have jurisdiction over this appeal under 28 U.S.C. § 1295(a)(1).

DISCUSSION

Whether a district court's construction of a claim is correct presents a legal question that we review de novo. *InfoHold, Inc. v. Applied Media Techs. Corp.*, 783 F.3d 1262, 1265 (Fed. Cir. 2015). We review underlying factual findings related to extrinsic evidence for clear error. *E.I. du Pont De Nemours & Co. v. Unifrax I LLC*, 921 F.3d 1060, 1067 (Fed. Cir. 2019). When claim construction is based solely upon intrinsic evidence, as in this case, our review is de novo. *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015).

Claim construction seeks to ascribe the meaning to a claim term as understood by a person of ordinary skill in the art at the time of invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc). The meaning of a term "must be considered in the context of all the intrinsic evidence, including the claims, specification, and prosecution history." *Biogen Idec, Inc. v. GlaxoSmithKline LLC*, 713 F.3d 1090, 1094 (Fed. Cir. 2013) (citing *Phillips*, 415 F.3d at 1314). The prosecution history, like the specification, provides evidence of how the U.S. Patent and Trademark Office and the inventor understood the patent. *Edwards Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1327 (Fed. Cir. 2009) (citing *Phillips*, 415 F.3d at 1317). Statements made during prosecution of a parent application are relevant to construing terms in a patent resulting from a continuation application if such statements relate to the subject matter of the claims being construed. *Ormco Corp. v. Align Tech., Inc.*, 498 F.3d 1307, 1314 (Fed. Cir. 2007); *see also E.I. du Pont*, 921 F.3d at 1070 ("When a parent application includes statements involving 'common subject matter' with the terms at issue, those statements

are relevant to construction of the terms in the child patent."); *Wang Labs., Inc. v. Am. Online, Inc.*, 197 F.3d 1377, 1384 (Fed. Cir. 1999) (applying statements from prosecution of a parent application where subject matter was common to the continuation-in-part application).

This appeal turns on whether the term "high quality of service connection" is a term of degree that is limited to the minimum connection parameter requirements disclosed in Figure 3 of the '119 patent. We conclude that it is.

We begin with the language of the claims. *In re Power Integrations, Inc.*, 884 F.3d 1370, 1376 (Fed. Cir. 2018) (citing *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 457 F.3d 1293, 1301 (Fed. Cir. 2006)). Here, the district court found that "high quality of service connection" is a coined term that has no ordinary meaning in the industry. *Claim Construction Order*, 2017 WL 3033400, at *4; *Order Adopting Constructions*, 2017 WL 10185852, at *3. We agree that the claim language is not sufficiently clear on its face to provide guidance to a person of ordinary skill in the art as to the meaning of the term "high quality of service connection." Although every network connection has some degree of quality of service, Reply Br. 2–3, the claims expressly require the connection to provide *high* quality of service. The claim language, however, is silent as to what amount of quality is sufficient to be "high." We therefore look first to the specification, followed by the prosecution history, to determine the meaning of the term "high quality of service connection."

As noted above, the applicant of the '119 patent relied on Figure 3 during prosecution to support an amendment that gave rise to the term "high quality of service connection." Figure 3 indicates minimum requirements for connection speed, packet loss, and latency. Figure 3 shows a box labeled "High QoS" ("Quality of Service") that is drawn around some, but not all, listed applications. '119 patent Fig. 3. The applications placed within this box have

connection parameter requirements consistent with the district court's construction for the disputed term. For example, the written description explains that "[t]hese real time critical applications are very sensitive to any delay[,] . . . any variance in the delay[,]. . . . [and] any packets (or frames) which may be lost in the transmission (0.0001% packet loss is the preferred quality for video transmission)." *Id.* at col. 1 l. 66–col. 2 l. 5. One application ("Ojo Video Call") and two network transmission line technologies ("DSL" and "Dial-up") are placed outside the "High QoS" box. *Id.* Fig. 3. The Ojo Video Call application is shown to have lower minimum connection requirements than the applications within the box. *Id.* Figure 3 and the written description, therefore, imply that a "high quality of service connection" involves minimum service parameters required by the applications within the "High QoS" box. This conclusion is consistent with the prosecution history of the '119 patent.

During prosecution of the parent application, the applicant argued that "the various connection parameters illustrated for high quality of service enabled bandwidth applications in Fig. 3" supported the term "high quality of service connection." J.A. 141. The applicant stated that the term "may be viewed in the present application as having speeds varying from approximately 1–300 megabits per second, packet loss requirements that are typically about 10^{-5}, and latency requirements that are typically less than one second," which are the illustrated parameters for the applications within the "High QoS" box in Figure 3. *Id.* Thus, the applicant relied on the minimum connection parameter requirements described in Figure 3 to overcome the examiner's § 112 enablement rejection.

Iridescent argues that the term "high quality of service connection" is a mere requirement that the connection assure the level of quality that meets the service parameter needs of a particular service or application. Appellant's Br.

14. Iridescent raises three primary arguments in support of its proposed construction. We address each in turn.

First, Iridescent contends that the term serves to distinguish a high quality of service connection from a prior art "best-effort" connection that does not guarantee any level of quality. Appellant's Br. 13–15, 22. Iridescent points to the '119 patent's disclosure that different applications have varying connection parameter requirements, and argues that "there are no hard-and-fast numerical requirements for the quality of service parameters." *Id.* at 15. This argument, however, contradicts the written description and Figure 3 of the '119 patent. If, as Iridescent contends, a "high quality of service connection" is one that provides only some assurance of required quality of connection, then a connection that meets the requirements of all the applications listed in Figure 3 would fall within that definition. Yet Figure 3 excludes the Ojo Video Call application from the box identified as "High QoS," even though that application also has specific connection parameter requirements of less than 1 megabit per second in bandwidth, packet loss of 10^{-5}, and latency delay of less than 400 milliseconds—parameters that would satisfy Iridescent's proposed construction of "high quality of service connection." '119 patent Fig. 3.

Iridescent argues that Figure 3's exclusion of the Ojo Video Call application from the "High QoS" box demonstrates only that a prior art best-effort connection is sufficient to meet that application's connection requirements. Reply Br. 6. The '119 patent, however, teaches that a best-effort connection provides no assurance of any amount of quality. *See* '119 patent col. 1 ll. 23–60 (detailing the ad hoc nature of prior art network connections); *id.* col. 3 ll. 6–22, 46–48 (distinguishing "best-effort internet" from "guaranteed high bandwidth" connections); *see also* Appellant's Br. 7, 13. Thus, a best-effort connection may not always meet the connection requirements of the Ojo Video Call application. Rather, Figure 3 excludes that application from

the "High QoS" box because its connection requirements are lower than what the patentee intended to be covered by the term "high quality of service connection."

The written description demonstrates that the inventor knew how to describe quality assurance. For example, the written description teaches that prior art Multi-Protocol Label Switching technology provided "packet quality assurance." '119 patent col. 2 ll. 6–8, 43–47. The written description also discloses that when the prior art "IEEE 802.1p" standard is utilized, "[s]ervices are delivered with assurance." *Id.* col. 3 ll. 16–19. By contrast, the claims here require a "high quality of service connection." When read in the context of the written description, the inventor's decision to claim a connection that provides *high* quality of service instead of a connection that provides *assured* quality of service informs a person of ordinary skill in the art that the claims require something more than mere assurance of quality.

Iridescent's statements during prosecution of the parent application also belie Iridescent's attempt to equate "high" quality of service with "assured" quality of service. In response to the examiner's § 112 rejection, Iridescent argued that "high QoS (quality of service) may be viewed in the present application as having speeds varying from approximately 1–300 megabits per second, packet loss requirements that are typically about 10^{-5}, and latency requirements that are typically less than one second. These are commonly used parameters . . . ." J.A. 141. This language focuses on the objective characteristics of the quality of the connection rather than on whether any amount of quality is assured. In view of the intrinsic record, we are not persuaded that the term "high quality of service connection" equates with assurance of quality.

Second, Iridescent contends that the prosecution history is irrelevant to the claim construction question because there is no clear and unmistakable disavowal of

claim scope. Appellant's Br. 12. We disagree. We have explained that "[a]ny explanation, elaboration, or qualification presented by the inventor during patent examination is relevant, for the role of claim construction is to 'capture the scope of the actual invention' that is disclosed, described, and patented." *Fenner Invs., Ltd. v. Cellco P'ship*, 778 F.3d 1320, 1323 (Fed. Cir. 2015) (quoting *Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1305 (Fed. Cir. 2011)); *see also Aptalis Pharmatech, Inc. v. Apotex Inc.*, 718 F. App'x 965, 971 (Fed. Cir. 2018) (relying on the prosecution history to inform a claim construction analysis without finding a disavowal of claim scope). Although the prosecution history may not in some cases be as clear a guide as the specification, it nonetheless "can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be." *Phillips*, 415 F.3d at 1317.

Iridescent's reliance on *3M Innovative Properties Co. v. Tredegar Corp.*, 725 F.3d 1315 (Fed. Cir. 2013), is misplaced. In *3M*, we held that where there is no clear disavowal, "the ordinary and customary meaning of the claim term will be given its full effect." 725 F.3d at 1326. The question here, however, is not whether Iridescent narrowed the scope of the disputed term during prosecution from its full ordinary and customary meaning. Rather, because the disputed term is a coined term, meaning it has no ordinary and customary meaning, the question is whether the intrinsic evidence provides objective boundaries to the scope of the term. *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014). In these circumstances, where there is no clear ordinary and customary meaning of a coined term of degree, we may look to the prosecution history for guidance without having to first find a clear and unmistakable disavowal.

Third, Iridescent contends that even if its statements during prosecution may be considered, they are still irrelevant to the construction of the disputed term because Iridescent made those statements in response to an enablement rejection. Appellant's Br. 27–29; Reply Br. 10–11. Iridescent argues that unlike an indefiniteness rejection, an enablement rejection is not issued "to force the applicant to define the metes and bounds of the claim." Appellant's Br. 27. This is not correct. It is long-settled that "[e]nablement serves the dual function in the patent system of ensuring adequate disclosure of the claimed invention and of preventing claims broader than the disclosed invention. This important doctrine prevents both inadequate disclosure of an invention and overbroad claiming that might otherwise attempt to cover more than was actually invented." *MagSil Corp. v. Hitachi Glob. Storage Techs., Inc.*, 687 F.3d 1377, 1380–81 (Fed. Cir. 2012) (internal citation omitted); *see also Nat'l Recovery Techs., Inc. v. Magnetic Separation Sys., Inc.*, 166 F.3d 1190, 1195–96 (Fed. Cir. 1999). Thus, Iridescent's statements made to overcome the examiner's enablement rejection inform the claim construction analysis by demonstrating how Iridescent understood the scope of the disputed term.

Iridescent raises other arguments that we find unpersuasive. For example, Iridescent argues that the district court's determination that the disputed term is a term of degree rests on an erroneous finding that the '119 patent discloses a third "quality of service" connection. Appellant's Br. 19–24. Iridescent asserts that the '119 patent discloses only two connection types—best-effort and high quality of service connections—and "[t]here is no question of degree between" the two. *Id.* at 22.

We agree that "quality of service" is not a connection type, but a characteristic of any network connection, much like "height" is a characteristic of any human being. Iridescent is mistaken, however, that the district court misread "quality of service" to be a third connection type, or

that such a misreading is a necessary predicate to determining that the term "high quality of service connection" is a term of degree. That "quality of service" is a characteristic of any network connection says nothing about the *level* of quality of service that connection provides. The district court was thus correct to look to the specification and the prosecution history for disclosure of what constitutes *high* quality of service. Because Figure 3 and the applicant's prosecution history statements disclose the disputed term's scope, the district court's analysis was correct.

Iridescent also argues that this court's precedent forecloses limiting the term "high" to numerical values. We disagree. In each case on which Iridescent relies, this court concluded that importing numerical limits into the independent claim at issue would have rendered a dependent claim meaningless. *See Honeywell Int'l Inc. v. Universal Avionics Sys. Corp.*, 488 F.3d 982, 993–94 (Fed. Cir. 2007); *In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1348–49 (Fed. Cir. 2002); *Am. Seating Co. v. USSC Grp., Inc.*, 91 F. App'x 669, 676 (Fed. Cir. 2004). That is not a concern here. Additionally, in *American Seating*, the claim language itself defined the disputed term. 91 F. App'x at 675. By contrast, the claims here provide no clear meaning or definition of "high quality of service connection."

CONCLUSION

We have considered Iridescent's remaining arguments and find them unpersuasive. We hold that the correct construction of "high quality of service connection" means "a connection that assures connection speed of at least approximately one megabit per second and, where applicable based on the type of application, packet loss requirements that are about 10^{-5} and latency requirements that are less than one second." We therefore affirm the district court's judgment.

AFFIRMED

COSTS

No costs.