

United States Court of Appeals for the Federal Circuit

2009-1086, -1098

VERIZON SERVICES CORP., VERIZON COMMUNICATIONS, INC.,
MCI COMMUNICATIONS CORP., and VERIZON BUSINESS GLOBAL LLC,

Plaintiffs-Appellants,

v.

COX FIBERNET VIRGINIA, INC., COX VIRGINIA TELECOM, INC.,
COX COMMUNICATIONS HAMPTON ROADS, LLC,
COXCOM, INC., and COX COMMUNICATIONS, INC.,

Defendants-Cross Appellants.

Richard G. Taranto, Farr & Taranto, of Washington, DC, argued for plaintiffs-appellants. Of counsel on the brief were Michael K. Kellogg, John C. Rozendaal and Michael E. Joffre, Kellogg, Huber, Hansen, Todd, Evans & Figel, PLLC, of Washington, DC; John Thorne and Robert H. Griffen, Verizon Communication Inc., of Arlington, Virginia, and Leonard C. Suchyta, of Basking Ridge, New Jersey.

Mitchell G. Stockwell, Kilpatrick Stockton LLP, of Atlanta, Georgia, argued for defendants-cross appellants. With him on the brief were William H. Boice and Audra A. Dial.

Appealed from: United States District Court for the Eastern District of Virginia

Senior Judge Claude M. Hilton

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COMMUNICATIONS HAMPTON ROADS, LLC, COXCOM, INC., and COX
COMMUNICATIONS, INC.,

Defendants-Cross Appellants.

Appeals from the United States District Court for the Eastern District of Virginia in case
no. 1:08-CV-157, Senior Judge Claude M. Hilton.

DECIDED: April 16, 2010

Before MAYER, LINN, and PROST, Circuit Judges.

LINN, Circuit Judge.

Verizon Services Corp., Verizon Communications, Inc., MCI Communications, Inc., and Verizon Business Global LLC (collectively “Verizon”) appeal from a final judgment of the United States District Court for the Eastern District of Virginia entered after a jury found: (1) claims 5 and 6 of U.S. Patent No. 6,282,574 (“the ’574 patent”) and claims 1, 3, and 11 of U.S. Patent No. 6,104,711 (“the ’711 patent”) invalid; and (2) claim 1 of U.S. Patent No. 6,430,275 (“the ’275 patent”); claims 1, 19, 27, and 35 of U.S. Patent No. 6,292,481 (“the ’481 patent”); claim 1 of U.S. Patent No. 6,137,869 (“the ’869

patent”); and claims 12, 13, and 20 of U.S. Patent No. 6,636,597 (“the ’597 patent”) not infringed by Cox Fibernet Virginia, Inc., Cox Virginia Telecom, Inc., Cox Communications Hampton Roads, LLC, Coxcom, Inc., and Cox Communications, Inc. (collectively “Cox”). See Verizon Servs. Corp. v. Cox Fibernet Va., Inc., No. 08-CV-0157 (E.D. Va. Oct. 6, 2008) (judgment); Verizon Servs. v. Cox Fibernet Va., Inc., 08-CV-0157 (E.D. Va. Nov. 7, 2008) (order denying cross-motions for judgment as a matter of law and new trial); Verizon Servs. Corp. v. Cox Fibernet Va., Inc., No. 08-CV-0157 (E.D. Va. Nov. 11, 2008) (agreed order amending and clarifying the judgment). On appeal, both parties challenge the district court’s denial of their respective motions for judgment as a matter of law and motions for new trial. Because the evidence introduced at trial supports the jury’s verdict, and because the district court did not err in instructing the jury on the scope of the claims, we affirm.

I. BACKGROUND

A. The Patents at Issue

The six patents at issue in this appeal are owned by Verizon and relate generally to packet-switched telephony—technology for providing telephone calls by breaking up voice signals and sending the resulting data in packets, not all of which need traverse the same path, through a network. Packet-switched telephony increases the efficiency of the underlying network over traditional circuit switching, which relies on a dedicated path between endpoints of a call.

To explain the technology involved in the six asserted patents, the parties divide them into three groups: the ’711 and ’574 patents (the “Feature Patents”), the ’275, ’869, and ’481 patents (the “Network Patents”), and the ’597 patent (the “Quality of

Service Patent”). None of the claims in any of the patents at issue in this appeal refer explicitly to the Internet or to a “public packet data network,” which this court has previously equated to the Internet. Verizon Servs. Corp. v. Vonage Holdings Corp., 503 F.3d 1295, 1305 (Fed. Cir. 2007). Instead, the asserted claims refer to “packet switched networks,” “circuit switched networks,” and a “system of interlinked packet data networks.”

1. The Feature Patents ('711 and '574)

The Feature Patents share a specification and involve methods for providing features such as call-forwarding over packet-switched networks. These features are made possible by an enhanced name translation server. The specification describes the existing Domain Name System (“DNS”), which uses computers associated with the Internet, known as domain name servers, to convert textual domain names into numeric Internet Protocol (“IP”) addresses. The specification also describes software developed for use on personal computers to permit the two-way transfer of real-time voice information via an Internet data link between two personal computers (“VOIP”). The inventions relate to a server with an expanded variety of translation services over a traditional domain name server, allowing for a wider range of routing options over packet-switched networks. This additional functionality allows providers of VOIP to offer enhanced features, such as call-forwarding and voicemail, to which users of traditional telephone service have become accustomed. Although the inventions are “particularly advantageous for processing of voice telephone communications through the packet data network,” they are not limited to voice services or the Internet. '711 patent col.6 ll.48-50.

2. The Network Patents ('275, '869, and '481)

The Network Patents relate to an architecture for providing per-call support functionality for voice service over a packet-switched network. The inventions in this group provide for bundling the traditionally separate databases of usage recording, pricing, and authorization into a single logical database in order to ensure scalability of the system, reduce the potential for fraud, and allow mechanisms for network support infrastructure, pricing, call flow, and billing. The patents do not require this single logical database, referred to as a “unitary logical object” or “ULO,” to be implemented as a single physical system.

3. The Quality of Service Patent ('597)

The Quality of Service Patent covers a method for providing services over a packet-switched network by dynamically allocating resources to vary the quality of service on a call-by-call basis. The invention includes an enhanced routing technique, which is more flexible than the traditional routing tables used by the public switched telephone network and allows the invention to quickly respond to changes in network configuration and network traffic.

B. The Parties and the Litigation

In 1996, Cox began to offer telephone service. This service initially was based on traditional, circuit-switched telephony, operated over Cox’s private cable network. In 2003, Cox began to provide telephone service over its private cable network using a packet-switched technology called PacketCable.

In January 2008, Verizon sued Cox for willfully infringing its patents by deploying Cox’s packet-switched telephone service. Four of the six patents at issue, the Feature

Patents (the '711 and '574 patents) and two of the three Network Patents (the '275 and '869 patents), had been previously litigated in Verizon Servs. Corp. v. Vonage Holdings Corp., No. 06-CV-1782 (E.D. Va. 2007) ("Vonage"). Although different claims were asserted in Vonage, the claims at issue in that case were closely related to the asserted claims in this case and used many of the same terms. The issues relating to the Feature Patents were reviewed by this court on appeal, and the claim constructions made in connection therewith were affirmed. Verizon Servs. Corp. v. Vonage Holdings Corp., 503 F.3d 1295 (Fed. Cir. 2007). The district court adopted the relevant claim constructions from the Vonage litigation and, in addition, construed several terms that had not been at issue in the Vonage case. Verizon Servs. v. Cox Fibernet Va., Inc., No. 08-CV-0157 (E.D. Va. Sept. 3, 2008) ("Claim Construction Order"). A jury found that Cox did not infringe any of the asserted claims of the six patents and that the asserted claims of the Feature Patents were invalid. Verizon Servs. v. Cox Fibernet Va., Inc., No. 08-CV-0157 (E.D. Va. Oct. 6, 2008) (jury verdict).

After the jury verdict, Verizon renewed its Rule 50(a) motion for judgment as a matter of law ("JMOL") under Rule 50(b) of the Federal Rules of Civil Procedure and, alternatively, moved for a new trial under Rule 59(a). Cox filed its own motions for JMOL under Rules 50(a) and (b) arguing that the asserted claims of the Network Patents and the Quality of Service Patent are invalid. In the alternative, Cox requested a new trial on invalidity in the event the district court were to grant Verizon a new trial on infringement. The district court denied all of these motions and both parties appeal.

We discuss the parties' arguments in the following order. First, we discuss Verizon's argument that a new trial is necessary for both validity and infringement of all

the asserted claims in all six patents because Cox improperly made arguments to the jury about claim scope. Second, we discuss the challenges to the jury's verdicts on validity of the asserted claims of the Feature Patents. This includes Verizon's request for JMOL that the Feature Patents are not invalid and, in the alternative, its request for a new trial on validity of the Feature Patents because of an allegedly improper argument by Cox. This section also includes Cox's cross-appeal of the denial of its motion for JMOL that the Network Patents and the Quality of Service Patent are invalid and its alternative motion for new trial. Third, we discuss the challenges to the jury's verdicts finding no infringement, including Verizon's request for JMOL of infringement of claim 1 of the '481 patent and its request for a new trial on infringement of the asserted claims of the Quality of Service Patent based on its allegation that the district court misconstrued a claim term.

We have jurisdiction under 28 U.S.C. § 1295(a)(1) (2006).

DISCUSSION

I. Standard of Review

JMOL is appropriate when "there is no legally sufficient evidentiary basis for a reasonable jury to find for that party on that issue." Fed. R. Civ. P. 50(a)(1). We review the denial of a motion for judgment as a matter of law or for a new trial under the law of the regional circuit. Riverwood Int'l Corp. v. R.A. Jones & Co., 324 F.3d 1346, 1352 (Fed. Cir. 2003). The Fourth Circuit reviews rulings on motions for judgment as a matter of law de novo. Johnson v. MBNA Am. Bank, NA, 357 F.3d 426, 431 (4th Cir. 2004). "The question is whether a jury, viewing the evidence in the light most favorable to [the nonmovant], could have properly reached the conclusion reached by this jury.

We must reverse [the denial of a motion for JMOL] if a reasonable jury could only rule in favor of [the movant]; if reasonable minds could differ, we must affirm.” Id. (internal quotations and citation omitted). The Fourth Circuit reviews rulings on motions for a new trial for abuse of discretion. United States v. Perry, 335 F.3d 316, 320 (4th Cir. 2003). “In reviewing a grant or denial of a new trial, the crucial inquiry is whether an error occurred in the conduct of the trial that was so grievous as to have rendered the trial unfair.” Bristol Steel & Iron Works, Inc. v. Bethlehem Steel Corp., 41 F.3d 182, 186 (4th Cir. 1994) (internal quotations omitted).

We also review a district court’s evidentiary rulings under the law of the regional circuit. MicroStrategy Inc. v. Bus. Objects, S.A., 429 F.3d 1344, 1349 (Fed. Cir. 2005). Under the law of the Fourth Circuit, this court reviews the district court’s exclusion of evidence for abuse of discretion. United States v. Wilkerson, 84 F.3d 692, 696 (4th Cir. 1996).

II. Jury Arguments About Claim Scope

Verizon argues that we should vacate the district court’s judgment that the asserted claims of the Feature Patents are invalid and that Cox did not infringe any of the asserted claims of all six patents because Cox improperly made arguments to the jury about claim scope that subverted the jury’s ability to fairly decide the issues before it.

The scope of the claims was considered at several times leading up to trial. At the claim construction phase of the proceedings, both parties agreed that the term “packet data network” in the asserted claims included both public networks, like the

Internet, and private networks, like that used by Cox. The construction adopted by the district court was that the term “packet data network” means:

a packet-switched data network, where the network transports packets of data over a non-dedicated circuit to a destination, and each packet includes source and destination addresses.

Claim Construction Order 4-5. Neither party asserts on appeal that this construction is incorrect.

Prior to the jury charging conference, Verizon submitted a proposed jury instruction stating “[t]he subjective intent of the inventor when he used a particular term is of little or no probative weight in determining the scope of a claim. It is not unusual for there to be a significant difference between what an inventor thinks his patented invention is and what the ultimate scope of the claims is after allowance by the Patent and Trademark Office.” Verizon Servs. v. Cox Fibernet Va., Inc., No. 08-CV-0157 (E.D. Va. Sept. 24, 2008) (Verizon’s proposed jury instruction No. 31). The district court did not give this proposed instruction and rejected Verizon’s renewed request made prior to the initiation of jury deliberations.

At the trial, the district court gave comprehensive instructions to the jury defining its role in claim construction. The instructions included the following: “the scope of the patent claims is a question of law for me to decide”; “you must give the claims the scope my interpretations give them”; “all of the terms which I have not given you in an express interpretation are to be given by you their ordinary and customary meaning to a person of ordinary skill in the art to which the patent pertains”; and “[t]he scope of the patent is not limited to particular embodiments . . . but is limited only by what is fairly within the scope of the claims.” Trial Tr. vol. 8, 1694, 1704, Sept. 29, 2008. The district court also

instructed the jury that “[f]rom time to time in their arguments, the lawyers may have stated what law was applicable to this case. And if they made a reference . . . that is contrary to what I state the law to be, you must disregard what the lawyers said and abide by what the Court states the law to be.” Trial Tr. vol. 8, 1717, Sept. 29, 2008. Neither party argues that any of the jury instructions were incorrect.

The dispute in this case is not over the district court’s claim construction or jury instructions, but instead about arguments that Cox made to the jury about claim scope. More specifically, Verizon alleges that Cox and its experts repeatedly argued that the scope of the asserted claims was limited by the intent of the inventors. In support of this allegation, Verizon cites to several places where Cox’s counsel and its experts referred to statements of the inventors and then distinguished Cox’s system from the asserted claims based on those statements. Verizon also points to the following statement made by Cox’s counsel while he questioned an expert, “[Verizon] accuse[s] a small part of the Cox system which has nothing to do with the purpose of the patent.” Verizon’s Principal Br. 13. In addition, Verizon asserts that although witness testimony about the Internet’s role in the patents was “unobjectionable as background,” during closing arguments Cox improperly made statements inviting the jury to use this testimony to interpret the claims. Verizon’s Reply Br. at 6-7. The particular portion of Cox’s closing argument that Verizon finds objectionable is the following:

You will notice that the Court has construed some terms, but not all the terms. And at the bottom of each page there is a footnote that I want you to look at and read. And what it says is, “all of the terms that the Court did not give an express interpretation, are to be given their customary and ordinary meaning to a person of ordinary skill in the art to which the patents pertain.”

In other words, all this language that is not construed, you have got to apply as it would be understood by a person of ordinary skill in the art. Well, I certainly am not, and I assume that at least some of you are not persons of ordinary skill in this art. So, how are you to do that? To apply these patent terms or these claims, you have got to understand what they cover, what the context is. And that's why we put on the evidence that we have.

Trial Tr. vol. 8, 1650, Sept. 29, 2008. According to Verizon, this “unmistakably created a dispute over claim scope by inviting the jury to limit the claims to the Internet.” To remedy this perceived problem, Verizon requested an instruction after the district court charged the jury that “none of the claims in this case is limited to the Internet.” Trial Tr. vol. 8, 1722, Sept. 29, 2008. The district court denied this request.

Verizon frames its challenge on appeal as a claim construction issue governed by O2 Micro International Ltd. v. Beyond Innovation Technology Co., Ltd., 521 F.3d 1351 (Fed. Cir. 2007). In O2 Micro, the parties disputed the specific meaning of the claim term “only if” at the Markman hearing. Id. at 1357. In its Markman order, while acknowledging the parties’ dispute, the court ruled that the term had a well-understood definition and therefore needed no construction. Id. At trial, the “only if” limitation “was a key issue disputed by the parties” and both parties presented explicit arguments to the jury regarding the term’s meaning. Id. at 1358. In O2 Micro, we held that the district court’s conclusion that the term “only if” need not be construed was wrong because it left the parties’ dispute over the scope of the claim term unresolved and was a question of law that should have been determined by the court and not left to the jury. Id. at 1361. Thus, we remanded the case to the district court for proper construction of the claim term “only if.” Id. at 1362-63.

Several subsequent cases have clarified when a remand for additional claim construction is appropriate. For example, in Kinetic Concepts, Inc. v. Blue Sky Medical Group, Inc., we noted that “[w]hile [O2 Micro] permits a remand for further claim construction, it does not require one,” particularly when the parties do not use the allegedly disputed construction in front of the jury. 554 F.3d 1010, 1019 n.4 (Fed. Cir. 2009). Further, in Broadcom Corp. v. Qualcomm Inc., we refused to remand a case for further construction of a claim term when the purported dispute over claim construction was raised for the first time after the jury verdict. 543 F.3d 683, 694 (Fed. Cir. 2008) (“Unlike in O2 Micro, where the parties disputed the proper construction of a term at a pre-trial Markman hearing, 521 F.3d at 1362, Qualcomm here has failed to offer its proposed construction of ‘networks’ at or prior to trial, and we reject such arguments raised for the first time after the jury verdict.”)

Verizon characterizes Cox’s closing argument as creating “an actual dispute regarding whether the patent claims were limited to communications over the Internet and/or the particular problems the inventors were trying to solve” and requires reversal under O2 Micro. Verizon’s Principal Br. 23. Verizon’s reliance on O2 Micro is misplaced. Unlike O2 Micro, where the scope of a specific claim term was in dispute beginning at the Markman hearing and continuing throughout the trial, Verizon never identified at any time during the proceedings before the district court any specific claim term that was misconstrued or that needed further construction. Moreover, the allegedly improper arguments it complains that Cox made do not relate to any particular misconstrued term. Cox did not invite the jury to choose between alternative meanings of technical terms or words of art or to decide the meaning of a particular claim term, as

was the case in O2 Micro. To the contrary, Cox asserts that not only did it not argue that the claim generally should be limited to the Internet, it acknowledged through its expert that the asserted claims are not limited to the Internet. Specifically, Cox's expert, Dr. Evans, testified at the trial that:

Q. In your conclusion that the Cox system does not have a system of interlinked packet data networks but instead is one network, are you relying in any way on a distinction between the public or private interlink packet data networks?

A. No, sir, I'm not.

Trial Tr. vol. 4, 839, Sept. 23, 2008.

Cox contends that the arguments now objected to by Verizon were not intended to limit claim scope but more broadly to distinguish its accused system, which it contended lacked any sort of "system of interlinked packet data networks," from the claimed system of the Feature Patents. Cox also argues that because it believed at the time it implemented its PacketCable system that Verizon's patents solved problems related to the Internet, it was proper to contend at the trial—as a matter unrelated to claim scope—that its actions should not be found to have been willful.

While Verizon attempts to characterize the issue as one of claim construction, its argument is more accurately about whether Cox's arguments to the jury about the distinction between how its system works and the Internet were improper in offering the jury "appealingly simplifying ways to determine invalidity and infringement" thus "invit[ing] the jury to shirk its key factfinding function." Verizon's Principal Br. 28-29.

On that issue, we turn, once again, to the law of the Fourth Circuit. See Juicy Whip, Inc. v. Orange Bang, Inc., 382 F.3d 1367, 1370-71 (Fed. Cir. 2004). The Fourth Circuit reviews the refusal to set aside a verdict based on improper arguments by

considering the totality of the circumstances, including “the nature of the comments, their frequency, their possible relevancy to the real issues before the jury, the manner in which the parties and the court treated the comments, the strength of the case (e.g., whether it is a close case), and the verdict itself.” Arnold v. E. Air Lines, Inc., 681 F.2d 186, 197 (4th Cir. 1982) (quoting City of Cleveland v. Peter Kiewit Sons’ Co., 624 F.2d 749 (6th Cir. 1980)). Only when there is a “reasonable probability,” that improper arguments effectively subverted “the jury’s reason or [] its commitment to decide the issues on the evidence received and the law as given it by the trial court” can an abuse of discretion in declining to set aside that verdict be found. Id.

On this record, we are not persuaded that the district court abused its discretion by refusing to order a new trial on the basis of Cox’s arguments to the jury. Validity and infringement were vigorously litigated, with extensive testimony, physical exhibits, and argument from both sides. Each side presented multiple expert witnesses. From thousands of pages of trial testimony, Verizon singles out snippets of testimony by Cox’s witnesses and of argument by counsel as improper. And Verizon admits that each of the cited statements “were not necessarily objectionable on their own,” but that somehow taken together, these statements made “prejudice to the jury deliberations inescapable.” Verizon’s Principal Br. 28; Verizon’s Reply Br. 6-7. We disagree. We cannot say that the singular or cumulative effect of these statements effectively subverted the jury’s reason or commitment to decide the issues on the evidence received and the law as given by the court.

The district court specifically instructed the jury that counsel’s arguments and statements were not evidence. During closing, along with the allegedly improper

arguments, Cox properly described the specific claim limitations that were missing from the accused system. In addition, Verizon did not, during the trial, request a limiting instruction based on Cox's allegedly improper claim scope arguments. Nor did Verizon object to any arguments made during Cox's closing. Finally, Verizon had the opportunity, in its own closing, to rebut any improper or misleading statements it perceived in Cox's closing arguments but instead said nothing. Looking at the entire record, including the extensive evidence and testimony along with the district court's comprehensive jury instructions, we see no reason to conclude that the district court abused its discretion in finding that the jury had not been deprived of its ability to decide this case. We thus conclude that the district court properly denied Verizon's request for a new trial.

III. Validity

A. JMOL

Both parties argue that the jury verdicts on validity should be overturned because the jury could not reasonably have made its decision based on the evidence advanced at trial. Verizon argues that Cox presented insufficient evidence to support the jury's finding that the asserted claims of the Feature Patents were invalid. Cox, on the other hand, argues that the Network Patents and the Quality of Service Patent are invalid as a matter of law. At trial, Cox argued that all the asserted claims of Verizon's six patents were invalid because of anticipation and obviousness.

1. Anticipation

To show invalidity of the asserted claims of the Feature Patents, Cox presented an expert at trial, Dr. Mark J. Handley. Dr. Handley testified that two papers he had co-

authored on protocols for using the Internet for telephony, a February 1996 draft of the Session Initiation Protocol (“SIP Article”) and a November 1995 paper on Session Description Protocol (“SDP Article”), along with another document entitled RFC 1183, were relevant prior art. Dr. Handley testified that the Feature Patents were anticipated, as the SIP Article disclosed all the elements of the claims in the ’711 patent and RFC 1183 disclosed all elements of the ’574 patent. For example, after extensive explanation of how the SIP Article disclosed each element of asserted claims 1, 3, and 11 of the ’711 patent, Dr. Handley testified:

Q. Dr. Handley, I believe we were getting ready to get to a dependent Claim 3 of the ’711 patent. Did you reach an opinion as to whether that claim is embodied in your 1996 SIP article?

A. Yes, I believe it is.

...

Q. Do you have anything else to add to your conclusion that Claims 1 and 11 are invalid in view of the SIP article?

A. No, I believe that that’s the key points, that all of these elements are present in the February 1996 document.

Trial Tr. vol. 4, 909, 914, Sept. 23, 2008. Dr. Handley also provided testimony that RFC 1183 disclosed each element of the asserted claims of the ’574 patent— independent claim 5 and dependent claim 6, which adds to claim 5 the limitation “wherein the reply also contains an address conforming to the first protocol”:

Q. Okay. So, let’s look at your slides here. If you could look at Exhibit 25, Defendant’s Exhibit 4225 [“Claim 5 of the ’574 Patent v. 1990 RFC 1183” J.A. 15721]. Does that help illustrate your point that Claim 5 of the ’574 patent is embodied in this 1990 RFC?

A. Yes. This is basically what you have already seen several times.

...

Q. What about, we don't have a slide for this, but what about Claim 6's point about adding another IP address. Was that disclosed in the RFC?

A. It is disclosed in the RFC sort of implicitly.

Trial Tr. vol. 4, 927, 930, Sept. 23, 2008. In addition, Dr. Handley testified that the SIP Article and SDP Article, read together, anticipated the asserted claims of both of the Feature Patents.

Cox also called Dr. Williams and Dr. Helgert as expert witnesses to testify that the asserted claims of the Network Patents and the Quality of Service Patent were anticipated. Dr. Williams testified that U.S. Patent 5,233,604 ("the '604 patent") disclosed every element of the asserted claims of the Quality of Service Patent. Dr. Helgert testified that U.S. Patent 6,310,873 ("the '873 patent") disclosed each element of the asserted claims of the Network Patents. Verizon, in turn, presented an expert witness at trial, Pieter Zatko, who testified that the '604 patent did not disclose several limitations of the asserted claims of the Quality of Service Patent and therefore did not anticipate those claims. Verizon also called an expert, Dr. Houh, who testified that the '873 patent did not disclose several elements of the asserted claims of the Network Patents.

For a prior art reference to anticipate a patent, it must disclose each and every limitation of the claimed invention. Schering Corp. v. Geneva Pharms., Inc., 339 F.3d 1373, 1377 (Fed. Cir. 2003). "[A] prior art reference may anticipate without disclosing a feature of the claimed invention if that missing characteristic is necessarily present, or inherent, in the single anticipating reference." Id. However, a patent claim "cannot be anticipated by a prior art reference if the allegedly anticipatory disclosures cited as prior

art are not enabled.” Amgen, Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1354 (Fed. Cir. 2003). “The standard for what constitutes proper enablement of a prior art reference for purposes of anticipation under section 102, however, differs from the enablement standard under section 112.” Rasmusson v. SmithKline Beecham Corp., 413 F.3d 1318, 1325 (Fed. Cir. 2005). It is well-settled that utility or efficacy need not be demonstrated for a reference to serve as anticipatory prior art under section 102. See Bristol-Myers Squibb Co. v. Ben Venue Labs., Ind., 246 F.3d 1368 (Fed. Cir. 2001); In re Schoenwald, 964 F.2d 1122, 1124 (Fed. Cir. 1992).

Verizon argues that since the SIP paper refers to the SDP paper only as a “companion draft,” it does not properly identify the specific material it incorporates as required to treat two documents as one for anticipation purposes. Kyocera Wireless Corp. v. Int’l Trade Comm’n, 545 F.3d 1340, 1352 (Fed. Cir. 2008). Verizon also argues that since incorporation by reference is a matter of law, it was improperly left for the jury to decide without any instruction. Verizon is correct that if incorporation by reference comes into play in an anticipation determination, it is the court’s role to determine what material in addition to the host document constitutes the single reference. Advanced Display Sys., Inc. v. Kent State Univ., 212 F.3d 1272, 1283 (Fed. Cir. 2000). However, we find that Dr. Handley’s testimony, noted above, provided substantial evidence for the jury to determine that the SIP paper, by itself, anticipated the claims of the ’711 patent, and the RFC 1183 paper anticipated the claims of the ’574 patent. Therefore, the lack of instruction on incorporation by reference was harmless. See Z4 Techs., Inc. v. Microsoft Corp., 507 F.3d 1340, 1354 (Fed. Cir. 2007) (holding that district court’s

erroneous jury instruction was harmless because the instruction would not have affected the outcome of the case).

Verizon also argues that the SIP and SDP articles are not enabling because they do not disclose or enable the “basic claim requirement” of being able to make ordinary two-way telephone calls. However, none of the claims in the Feature Patents actually recite performing two-way telephone calls. The patents relate to telephony, but do not specifically recite the steps of making an actual call. Furthermore, Cox’s expert, Dr. Handley, provided testimony that a person of ordinary skill in the art would have had no problems implementing the functionality disclosed in the SIP Article. The record thus reveals that the jury had substantial evidence to find that the SIP Article was enabling in the sense of 35 U.S.C. § 102 and that the Feature Patents were invalid based on anticipation.

2. Obviousness

Dr. Handley testified that, in addition to being anticipated, the asserted claims of the Feature Patents would have been obvious to one of skill in the art based on both the SIP Article and the SDP Article. “In reviewing the jury verdict of obviousness, we review whether the jury was correctly instructed on the law, and whether there was substantial evidence whereby a reasonable jury could have reached its verdict upon application of the correct law to the facts, recognizing that invalidity must be proved by clear and convincing evidence.” U.S. Surgical Corp. v. Ethicon, Inc., 103 F.3d 1554, 1563 (Fed. Cir. 1997) (internal citations omitted). A determination of obviousness in this case requires an inquiry into the scope and content of the prior art, the level of ordinary skill

in the art, and the differences between the claimed inventions and the prior art. Graham v. John Deere Co., 383 U.S. 1, 17 (1966).

Verizon argues that the jury could not have found that the Feature Patents would have been obvious because “Cox offered no evidence of what an ordinary skilled artisan in the relevant art would be taught by the prior art or find obvious in light of the proper art.” Verizon’s Principal Br. 42. Verizon asserts that Cox’s expert, Dr. Handley, testified regarding obviousness using the wrong field of art—“Internet and network protocols”—instead of the art correctly defined by the district court in the jury instructions “telephony and wireless communications.”

While it is true that the Feature Patents pertain to telephony and wireless communications, the language of the patents themselves, which make frequent reference to the Internet, makes clear that the patents also relate to the field of Internet and network protocols. In fact, Dr. Handley explained that he was describing the background of a person of ordinary skill working in the area of the “Internet telephony industry,” which is clearly a subset of telephone and wireless communications. “In determining the relevant art for purposes of addressing issues of patent validity, the court must look to the nature of the problem confronting the inventor.” Bancorp Servs., L.L.C. v. Hartford Life Ins. Co., 359 F.3d 1367, 1375 (Fed. Cir. 2004). The problem facing the inventors of the Network Patents was related to providing communication services, including voice telephone service, over packet-based networks, including the Internet. Therefore, the relevant art in this case plainly includes the use of network protocols and the Internet. Thus, it was not improper for the jury to rely on Dr. Handley’s testimony to find that the Feature Patents were obvious.

* * *

Both parties assert numerous additional arguments about the reliability of the other party's experts and the sufficiency of the other party's evidence relating to invalidity. We do not find these arguments persuasive. The jury was presented with opposing experts expressing conflicting views about the validity of the six patents-in-suit. The jury was entitled to resolve the conflicting evidence in favor of Cox for the Feature patents and for Verizon on the Network and Quality of Service patents. Bio-Tech. Gen. Corp. v. Genentech, Inc., 267 F.3d 1325, 1330-31 (Fed. Cir. 2001); see also U.S. Surgical, 103 F.3d at 1559 (affirming a jury verdict of invalidity because “[c]onflicting evidence and argument must be viewed as resolved favorably to the party in whose favor the jury found. The reviewing court must give appropriate deference to the jury's choices in weighing the evidence, in deciding between opposing positions, and in drawing factual inferences.”). Looking at the record as a whole, we find that the jury had substantial evidence upon which to conclude that Cox met its burden of showing invalidity by clear and convincing evidence for the Feature patents, but that it did not meet its burden of showing invalidity of the Network and Quality of Service patents. Therefore, we find the district court correctly determined that a reasonable jury could find that the Feature Patents were invalid for anticipation or obviousness and that the Network Patents and Quality of Service Patent were not. We affirm the district court's denial of Verizon's motion for JMOL on validity and Cox's motion for JMOL on invalidity.

B. New Trial

Verizon argues that a new trial is required on validity of the Feature Patents because the district court failed to correct another improper argument by Cox relating solely to validity. Verizon alleges that Cox improperly argued that the jury could find the Feature Patents invalid simply because they were identical, in all material respects, to what was taught in the prior art SIP and SDP articles. Verizon points to testimony by Dr. Handley explaining the evolution of the 1996 SIP and SDP articles to the current SIP protocol used by the accused system as improper. In addition, Verizon again points to statements in Cox's closing argument:

Now, what is the mistake they made? They made a mistake of accusing that protocol [SIP] of infringing their patent. So, what they are doing is they are saying, by using this protocol, you infringe. But the protocol predates the patent.

So, they have accused the prior art. That invalidates their patent.

Trial Tr. vol. 8, 1673, Sept. 29, 2008.

It is true that in Zenith Electronics Corp. v. PDI Communication Systems, Inc., 522 F.3d 1348, 1363 (Fed. Cir. 2008), this court held that “anticipation cannot be proved by merely establishing that one ‘practices the prior art.’” Instead, “[a]nticipation requires a showing that each element of the claim at issue, properly construed, is found in a single prior art reference. ‘It is the presence of the prior art and its relationship to the claim language that matters for invalidity.’” Id. (quoting Tate Access Floors, Inc. v. Interface Architectural Res., Inc., 279 F.3d 1357 (Fed. Cir. 2002)). In Zenith, we remanded a finding of anticipation because the accused infringer provided no evidence whatsoever that the accused product satisfied two limitations of the asserted claim. Id. This is not the case here. As described above, Cox's expert, Dr. Handley, detailed how

the prior art disclosed each of the claim elements. Thus, a reasonable jury could conclude, based on evidence in the record and separate and apart from any alleged “practicing the prior art” argument, that the Feature Patents were invalid.

On cross-appeal Cox asserts that it is entitled to a new trial on validity of the Network and Quality of Service patents because the district court abused its discretion in excluding the factual testimony of Eric Voit and Kelvin Porter, named inventors of Verizon’s patents. Cox argues that the district court erred in adopting Verizon’s argument that assignor estoppel precluded inventor testimony about prior art. We need not and do not address the issue of assignor estoppel because the district court properly allowed testimony from the witnesses about the patents they invented based on their personal knowledge, and properly excluded these same witnesses from providing expert testimony on invalidity for which they had not previously provided expert reports or been qualified as an expert. The district court did not abuse its discretion in limiting inventor testimony to factual testimony that did not require expert opinion. See Kumho Tire, Ltd. v. Carmichael, 526 U.S. 137, 152 (1999) (“[W]e conclude that the trial judge must have considerable leeway in deciding in a particular case how to go about determining whether particular expert testimony is reliable.”); Voice Techs. Group, Inc. v. VMC Sys., Inc., 164 F.3d 605, 615-16 (Fed. Cir. 1999) (stating that the inventor may provide testimony explaining the claimed invention and its development, but that “the inventor can not by later testimony change the invention and the claims from their meaning at the time the patent was drafted and granted”).

IV. Infringement

A. JMOL

Verizon asserts that it is entitled to JMOL of infringement of claim 1 of the '481 Network Patent because it “demonstrated that Cox’s system practices every step of that claim and Cox never disputed Verizon’s expert testimony regarding how calls were actually made on Cox’s system.” Verizon’s Principal Br. 33-34. A determination of infringement is a question of fact, reviewed for substantial evidence when tried to a jury. Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1309 (Fed. Cir. 2009).

Claim 1 of the '481 patent recites:

1. A method of establishing a communication path between terminals through a packet switched network, a circuit switched network, and at least one interface that interconnects the packet switched network and the circuit switched network, comprising the steps of:
 - a) requesting from one of said terminals the establishment of said communication path through said interface;
 - b) searching a first database for the address of a second database containing a table of terminal data which includes identification of said requesting terminal;
 - c) searching said second database to obtain data regarding said requesting terminal;
 - d) responsive to data regarding said requesting terminal obtained from said search authorizing the establishment of said communication path; and
 - e) responsive to said authorization establishing said communication path between terminals through said interface.

'481 patent col.34 l.52-col.35 l.3.

Both parties provided expert testimony on infringement. Cox provided expert testimony that its accused system does not practice several of claim 1’s limitations. First, Cox’s expert, Dr. Evans explained that Cox’s system does not practice the requirement of “searching a first database” because it simply uses the domain name server to translate the textual domain name of a known Call Management Server

("CMS") into its numeric IP Address and this translation is a lookup, not a search. Trial Tr. vol. 4, 783, Sept. 23, 2008. Verizon countered with expert testimony that this translation amounts to "searching" as required by claim 1. Trial Tr. vol. 1, 197-99, Sept. 17, 2008. Therefore, there was a factual dispute between the experts over whether a simple database lookup for translation is equivalent to "searching a first database."

Second, Dr. Evans testified that a CMS is not a database and therefore does not qualify as the "second database" in the limitation "searching a first database for the address of a second database." Trial Tr. vol. 4, 783, Sept. 23, 2008. In addition, another Cox witness explained that any database residing internally on a CMS was not addressable by IP address and therefore could not be returned by the domain name server lookup. Trial Tr. vol. 3, 609-10, Sept. 22, 2008. Verizon's expert, Dr. Houh, testified that the CMS is equivalent to "the second database" because the CMS is a server that includes a database containing a table of terminal data. Trial Tr. vol. 1, 197-99, Sept. 17, 2008. Again, this amounted to a factual dispute between the experts over whether Cox's system was fairly within the scope of the claims.

Both of these factual disputes were properly for the jury to decide. The jury was entitled to credit Cox's experts over Verizon's experts and thus it was not unreasonable for the jury to find that claim 1 of the '481 patent was not infringed. See Kinetic Concepts, Inc. v. Blue Sky Med. Group, Inc., 554 F.3d 1010, 1024 (Fed. Cir. 2009) (finding that a jury is at liberty to accept or reject expert testimony); accord Aldridge v. Balt. & Ohio R.R. Co., 789 F.2d 1061, 1065 (4th Cir. 1986), aff'd en banc, 814 F.2d 157 (4th Cir. 1987). There is no basis on which to overturn the district court's denial of Verizon's request for JMOL on this ground.

Verizon also argues that Cox improperly argued that steps (a) and (b) in claim 1 had to be performed in sequence. Verizon points to the following testimony from Cox's expert, Dr. Evans:

Q. You say [step] (b) occurs before (a) you mean in Verizon's contentions?

A. Yes. In the patent, (a) comes before (b), but in time, if you look at what happens on the way Cox's system works, (b) would have to occur before (a).

Trial Tr. vol. 4, 781, Sept. 23, 2008. The district court found that Dr. Evans's testimony on sequence was simply an explanation, not a part of his opinion as to why there was no infringement. Trial Tr. vol. 4, 837-38, Sept. 23, 2008. In fact, Verizon itself later clarified this with Dr. Evans:

Q. Just to clarify the last point, Dr. Evans, you were not claiming, I understand, that the various steps of the patent, and in particular, step (b), has to be done in a particular order in order for the patent claim to be satisfied; is that correct?

A. That would be a legal conclusion, so that is correct.

The district court subsequently instructed the jury "[t]here is no requirement that steps (a), (b) or (c) occur in any order." Trial Tr. vol. 8, 1702-03, Sept. 29, 2008. Because the jury had substantial evidence to find that claim 1 of the '481 patent was not infringed based on the district court's undisputed construction of that claim, we find the district court did not err in denying Verizon's motion for JMOL on this issue.

B. New Trial

Verizon contends that a new trial on infringement of the '597 Quality of Service Patent is required because the district court misconstrued the term "evaluating said set of candidate resources to find a best candidate resource." Verizon asserted that Cox

infringed claims 12, 13, and 20 of the Quality of Service Patent. Independent claim 12 represents the asserted claims:

12. A method of providing services in a communications network, which comprises the steps of:
receiving a request for service;
determining criteria for a resource necessary to provide the requested service;
searching a resource data structure for a set of candidate resources meeting said criteria wherein each resource of said resource data structure comprises a resource identifier, a set of static attributes, and a set of dynamic attributes;
evaluating said set of candidate resources to find a best candidate resource; and
allocating said best candidate resource to meet said request for service.

'597 patent col.9 ll.1-15 (emphasis added). Claims 13 and 20 are dependent from claim 12.

We need not resolve this issue because the jury had substantial evidence to find that the '597 patent was not infringed regardless of whether the district court was correct in its construction of “evaluating said set of candidate resources to find a best candidate resource.” We may affirm the jury’s findings on infringement “if substantial evidence appears in the record supporting the jury’s verdict and if correction of the errors in a jury instruction on claim construction would not have changed the result, given the evidence presented.” Teleflex Inc. v. Ficosa N. Am. Corp., 299 F.3d 1313, 1328 (Fed. Cir. 2002). The record shows that Cox’s expert testified that many of the limitations of the '597 patent were not performed by Cox’s system, including the “determining a criteria,” “searching a resource data structure,” and “evaluating said set of candidate resources” limitations. For example, one of Cox’s experts testified as follows:

Q. [C]an you just summarize what you found was missing in terms of how Cox's, how Cox operates?

A. Well, in the Cox system, the very first element, which is a network based selection of a service, is not present. Cox does not do its network path selection on a network basis.

Element (b), there is no determination of a criteria. All of Cox's systems have the same criteria for a voice call. So, there is no differentiation between the types of calls.

Element (c), there is no resource data structure within the Cox system. There is no resource data structure that contains the type of information we are talking about here.

Q. Then what about the last step, this evaluation step in finding the best candidate resource?

A. So, the evaluation step, there is no evaluation of candidate resources because there are no candidate resources created. And also there is no allocation of a best resource because all of the resources that are being accused by Verizon are equivalent resources.

Trial Tr. vol. 5, 1115, Sept. 24, 2008. Because the evidence that Cox's system does not practice several of these limitations does not depend on the disputed claim construction, the jury had substantial evidence to find that the '597 patent was not infringed independently of the disputed limitation. Moreover, because we hold that Verizon is not entitled to a new trial on infringement, we need not and do not reach Cox's arguments that a remand on infringement would entitle it to a new trial on validity based on an allegedly erroneous construction of the claim term "authenticating . . . from a unitary logical object."

CONCLUSION

For the foregoing reasons, we affirm the district court's denial of Verizon's motion for a new trial on all issues based on Cox's allegedly improper arguments regarding claim scope. We also affirm the district court's denial of both parties' motions for JMOL

of validity or invalidity and Verizon's alternative request for a new trial on validity of the Feature Patents. Finally, we affirm the district court's denial of Verizon's request for JMOL on infringement of claim 1 of the '481 patent and its request for a new trial on infringement of the asserted claims of the Quality of Service Patent.

AFFIRMED