NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

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VIRNETX INC., LEIDOS, INC., FKA SCIENCE APPLICATIONS INTERNATIONAL CORPORATION,
Plaintiffs-Appellees

v.

APPLE INC.,
Defendant-Appellant

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VIRNETX INC.,
Plaintiff-Appellee

v.

APPLE INC.,
Defendant-Appellant

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2019-1050

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Appeal from the United States District Court for the Eastern District of Texas in Nos. 6:11-cv-00563-RWS, 6:12-cv-00855-RWS, Judge Robert Schroeder, III.

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Decided: November 22, 2019

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Before LOURIE, MAYER, and TARANTO, *Circuit Judges.*

TARANTO, *Circuit Judge.*

VirnetX Inc. and Leidos, Inc. (together, VirnetX) brought this case against Apple Inc., alleging that Apple infringed four VirnetX patents. The district court entered summary judgment for VirnetX on invalidity, determining that Apple was precluded from pressing its proposed invalidity challenges because of previous litigation between the parties. A jury found for VirnetX on infringement and awarded roughly $503 million as a reasonable royalty, equal to a rate of $1.20 for each device whose sale by Apple infringed. The district court denied Apple's post-trial motion for judgment as a matter of law and entered a final judgment for VirnetX.

Apple appeals. We affirm the district court's determination that Apple is precluded by the prior litigation from pressing its proposed invalidity challenges. We affirm the judgment of infringement as to two of the patents but reverse as to two others. In light of our partial reversal on infringement, we vacate the damages award and remand for the district court to consider whether it can and should enter a revised award without conducting a new trial and, if not, to hold a new trial limited to damages.

I

A

VirnetX owns U.S. Patent Nos. 6,502,135, 7,418,504, 7,490,151, and 7,921,211, the patents asserted in this case. Those patents are related to and claim improvements over VirnetX's U.S. Patent No. 7,010,604, which is not at issue in this appeal. The '604 patent describes Virtual Private Network (VPN) techniques for securely and privately transmitting communications over public networks. In particular, it describes a method in which a data packet is sent through a randomized series of servers before reaching its final destination. '604 patent, col. 3, lines 3–12. An intermediate server in the series may send the packet to its final destination or to another randomly selected server, subject to the constraint that each packet must stop at a minimum number of intermediate servers before being sent to its final destination. *Id.*, col. 3, lines 29–37. The recipient's identity is thereby obscured, enhancing privacy.

The '135, '151, '504, and '211 patents claim improvements of existing VPN methods, such as the '604 patent's method. The parties group the '135 and '151 patents together and the '504 and '211 patents together.

The '135 patent teaches a method of automatically establishing a VPN in response to a domain name inquiry. '135 patent, col. 47, lines 20–32. Claim 1 is representative of the asserted claims of the '135 patent:

1. A method of transparently creating a virtual private network (VPN) between a client computer and a target computer, comprising the steps of:

> (1) generating from the client computer a Domain Name Service (DNS) request that requests an IP [internet protocol] address corresponding to a domain name associated with the target computer;

> (2) determining whether the DNS request transmitted in step (1) is requesting access to a secure website; and

> (3) in response to determining that the DNS request in step (2) is requesting access to a secure target web site, automatically initiating the VPN between the client computer and the target computer.

Id.; *see also* '151 patent, col. 48, lines 18–29 (claim 13). The '151 patent issued from a divisional of the '135 patent's application, so the two patents share a specification. Whereas the '135 patent recites a method claim, the '151 patent recites a "computer readable medium" capable of executing a set of instructions. '151 patent, col. 48, lines 18–29. Claim 13 is the only asserted claim of the '151 patent:

13. A computer readable medium storing a domain name server (DNS) module comprised of computer readable instructions that, when executed, cause a data processing device to perform the steps of:

> (i) determining whether a DNS request sent by a client corresponds to a secure server;

> (ii) when the DNS request does not correspond to a secure server, forwarding the DNS request to a DNS function that returns an IP address of a nonsecure computer; and

(iii) when the intercepted DNS request corresponds to a secure server, automatically creating a secure channel between the client and the secure server.

Id.

The '504 patent and the '211 patent make up the second group of patents at issue in this case. The '504 patent, which issued from a continuation-in-part of the '135 patent's application, describes certain logistical aspects of a secure communication link between computer nodes, including a repository of names and network addresses. '504 patent, col. 55, lines 49–56. Claim 1 is representative of the asserted claims of the '504 patent:

1. A system for providing a domain name service for establishing a secure communication link, the system comprising:

A domain name service system configured to be connected to a communication network, to store a plurality of domain names and corresponding network addresses, to receive a query for a network address, and to comprise an indication that the domain name service system supports establishing a secure communication link.

Id.; *see also* '211 patent, col. 57, lines 38–46 (claim 36). The '211 patent issued from a continuation of the '504 patent's application, so the two patents share a specification. Whereas the '504 patent recites a system claim, the '211 patent claims a "machine-readable medium" comprising instructions for establishing the system. '211 patent, col. 57, lines 38–46.

<center>B</center>

Apple designs and sells mobile devices. Over time, various such devices have used different versions of Apple's

iOS operating system. Many of the devices at issue here included a VPN on Demand application. All the devices at issue included a FaceTime application.

VPN on Demand allows an Apple device to communicate with a secure website, generally one hosted by a private server and protected by a firewall, by establishing a VPN between the device and the private server. Before Apple released iOS 7, VPN on Demand had two modes of operation: "Always" and "If Needed." For both modes, a user created a list of websites, indicated by domain names, that the user wanted to be able to access, at least some of the time, through a VPN. If the user selected "Always" mode, VPN on Demand established a VPN connection any time the user requested access to a domain name on the list. By contrast, if the user selected "If Needed" mode, VPN on Demand first attempted to connect to any requested website, including one on the list, without a VPN; only if the request failed—commonly, because a firewall stopped the request—did VPN on Demand establish a VPN.

FaceTime allows Apple devices to have secure audio and video communication sessions (calls) between devices in which the FaceTime application is installed. Before Apple released iOS 7, a user (the caller) initiated a FaceTime call by selecting another user (the receiver) from the caller's list of contacts. The calling device constructed a message—containing the calling device's IP address and certificate, the receiving device's Apple ID, and a push token—and sent that message to a dedicated FaceTime server. When the FaceTime server received the message, it used the calling device's certificate to confirm that the calling device was registered with FaceTime and used the receiving device's Apple ID to obtain the receiving device's IP address. Then, the server constructed a message with information about the calling device—its IP address and a session token—and sent that message to the receiving device. If the receiver accepted the call, the receiving device constructed a new message containing information about

itself—its IP address, its certificate, a push token, and a session token—and sent that message back to the FaceTime server. Finally, the FaceTime server sent the receiving device's IP address and certificate to the calling device, which allowed the two devices to establish a secure communication.

C

In 2010, VirnetX sued Apple for patent infringement based on Apple's use and sale of mobile devices running on iOS (the "417" litigation, reflecting the district court's docket number). VirnetX relied on the "Always" mode of VPN on Demand to allege that Apple infringed the '135 and '151 patents and on FaceTime to allege that Apple infringed the '504 and '211 patents. Apple counterclaimed that each asserted claim was invalid. The case proceeded toward trial and in September 2012, VirnetX and Apple submitted a proposed joint final pretrial order. In that order, Apple indicated that it intended to press several invalidity theories at trial: anticipation, obviousness, written description, enablement, derivation, double patenting, and non-joinder of an alleged co-inventor. Apple submitted numerous prior-art references and extensive expert reports on invalidity. On October 22, 2012, the district court granted VirnetX partial summary judgment rejecting the derivation and non-joinder challenges. J.A. 25476, 25486.

On October 25, 2012, a week before trial was set to begin, Apple filed a motion to voluntarily dismiss the remainder of its invalidity counterclaims. J.A. 25487–90. The district court denied Apple's motion. *See* J.A. 25591–92. Then, at trial, Apple informed the court that it would present only one invalidity challenge—an anticipation challenge based on a 1996 article by Takahiro Kiuchi and Shigekoto Kaihara (Kiuchi). Thereafter, the court entered judgment as a matter of law rejecting all of Apple's other invalidity counterclaims.

On November 6, 2012, a jury found that Apple had infringed all asserted claims. The jury also found that Apple had failed to establish by clear and convincing evidence that the claims were anticipated by Kiuchi. Based on VirnetX's evidence at trial, the jury awarded VirnetX $368,160,000 as a reasonable royalty for Apple's use of VirnetX's inventions.

D

On the day the jury returned a verdict in the 417 litigation, VirnetX filed the present infringement action against Apple. This case (the "855" litigation, again reflecting the district court's docket number) involves redesigned versions of VPN on Demand and FaceTime.

The redesigned version of VPN on Demand, found in iOS 7 and later versions of iOS, replaced the "Always" and "If Needed" modes with different sets of rules defining options for the user. One of the new features, "EvaluateConnection," is similar to the "Always" mode. To operate "EvaluateConnection," a user puts into the "Domains" list websites for which the user desires a secure connection. Later, when the user enters a domain name in a standard web browser, VPN on Demand checks whether the name is on the "Domains" list. Whereas the "Always" mode would have established a VPN connection at this step, "Evaluate Connection" causes the redesigned version to go through additional steps. Before establishing a VPN, the redesigned version sends a domain name request to the local domain name server on the network to which the device is connected. If this request fails, and the user has enabled the "ConnectIfNeeded" option—one of the choices within the "EvaluateConnection" feature—VPN on Demand establishes a VPN. But if the request succeeds, VPN on Demand does not establish a VPN. Evidence at trial explained the logic: whether a VPN is necessary for a secure connection turns on the user device's "location" *vis-à-vis* a private network. In particular, a failed request for

the IP address of a server hosted on a private network indicates that the user device is outside that private network, so a VPN is required for secure, private communications; in contrast, a successful request for such a server's IP address indicates that the user device is inside the private network and thus does not need a VPN for secure, private communications.

The redesigned version of FaceTime operates in largely the same way as the earlier version already found to infringe, but with one change that Apple contends is significant to the question of infringement of the '504 and '211 patents. In the redesigned version, the final message from the FaceTime server to the calling device does not include the receiving device's IP address. Because the receiving device knows the address of the calling device but not vice versa, the receiving device must initiate the communication through what Apple calls the "ICE protocol." The receiving device sends encrypted data packets to the calling device, and those data packets include the receiving device's IP address. Once the calling device decrypts the data packets, the two devices can establish a secure communication.

In the 855 litigation before us, Apple again counterclaimed that the asserted patents are invalid under 35 U.S.C. §§ 101, 102, 103, and 112. In August 2014, the district court granted VirnetX's motion for summary judgment on Apple's invalidity counterclaims. J.A. 5–9. The district court held that issue preclusion prevented Apple from pursuing its invalidity challenges because Apple had already lost on the invalidity challenges in the 417 litigation. The only invalidity challenges Apple places in issue on appeal are obviousness and non-joinder of an alleged co-inventor. Brief for Appellant at 58; Reply Brief at 25.

In April 2018, a jury found that Apple's redesigned version of VPN on Demand infringed all asserted claims of the '135 and '151 patents and that Apple's redesigned version

of FaceTime infringed all asserted claims of the '504 and '211 patents. Based on VirnetX's evidence at trial, the jury awarded VirnetX $502,567,709 as a reasonable royalty for Apple's use and sale of VirnetX's inventions. Apple filed a motion for judgment as a matter of law, and the district court denied the motion and entered judgment for VirnetX.

Apple timely appealed to this court. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

II

We review the district court's ruling on issue preclusion de novo, following the Fifth Circuit. *Wills v. Arizon Structures Worldwide, LLC*, 824 F.3d 541, 545 (5th Cir. 2016); *Voter Verified, Inc. v. Election Systems & Software LLC*, 887 F.3d 1376, 1382 (Fed. Cir. 2018) (applying regional circuit law). We review the grant of summary judgment de novo and apply the "same criteria employed by the district court." *Waste Mgmt. of Louisiana, L.L.C. v. River Birch, Inc.*, 920 F.3d 958, 964 (5th Cir. 2019); *Eli Lilly & Co. v. Hospira, Inc.*, 933 F.3d 1320, 1327 (Fed. Cir. 2019) (applying regional circuit law). We review the denial of a motion for judgment as a matter of law de novo and ask whether the underlying jury findings were supported by substantial evidence. *See Apache Deepwater, L.L.C. v. W&T Offshore, Inc.*, 930 F.3d 647, 652–53 (5th Cir. 2019); *Elbit Systems Land & C4I Ltd. v. Hughes Network Systems, LLC*, 927 F.3d 1292, 1296 (Fed. Cir. 2019) (following Fifth Circuit law). We review a claim construction de novo and any underlying factual findings based on extrinsic evidence for clear error. *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015).

A

We begin with Apple's challenge to the district court's conclusion that, because of what transpired in the earlier 417 litigation, issue preclusion bars Apple from presenting the invalidity challenges it raised in this litigation—

specifically, an obviousness challenge and a non-joinder challenger. We agree with the district court. We follow regional circuit law on the non-patent-specific matter of whether issue preclusion's requirement of "actual litigation" is satisfied when, in an earlier case, the party has taken a vigorously contested claim through extensive discovery all the way to trial, then lost on the issue after choosing not to present evidence on it. *See Voter Verified*, 887 F.3d at 1382–83 (applying regional circuit's law to non-patent-specific aspect of preclusion law).

The doctrine of issue preclusion prevents "successive litigation of an issue of fact or law actually litigated and resolved in a valid court determination essential to the prior judgment, whether or not the issue arises on the same or a different claim." *New Hampshire v. Maine*, 532 U.S. 742, 748–49 (2001). Only the requirement of actual litigation and resolution is contested here. We conclude that each of the invalidity challenges Apple now asserts was actually litigated and resolved in the 417 litigation. We therefore affirm the district court's determination that Apple is precluded from raising these invalidity challenges in the present case.

In the 417 litigation, Apple asserted that VirnetX's four patents are invalid based on 35 U.S.C. §§ 101, 102, 103, and 112. *See*, *e.g.*, Apple's Answer, Affirmative Defenses, and Counterclaims to Plaintiff's Third Amended Complaint at 9, Dkt. # 257 (Apr. 16, 2012). Just a month before trial, moreover, after extensive discovery and the submission of expert reports, the parties jointly submitted a pretrial order. Apple there continued to assert invalidity challenges based on anticipation, obviousness, written description, enablement, double patenting, derivation, and non-joinder. J.A. 25452–53 (pretrial order).

The district court granted summary judgment rejecting Apple's non-joinder challenge (along with its derivation challenge). J.A. 25476, 25486. Although Apple then tried

to voluntarily dismiss the remaining invalidity challenges without prejudice on the eve of trial, the district court denied the request, telling Apple that it could dismiss those challenges only *with* prejudice. J.A. 25591–92. Apple declined to do so, and the invalidity challenges (besides nonjoinder and derivation) were still alive when trial began. J.A. 25592. At trial, Apple informed the district court and VirnetX that it intended to present only an anticipation claim based on the Kiuchi reference. J.A. 25980. When the district court asked Apple if this decision meant that Apple was "dismissing" the rest of its invalidity claims, VirnetX interjected and reminded the district court that Apple's decision not to pursue the other claims at trial did not mean that Apple could dismiss those claims. J.A. 25981. VirnetX informed the court that it would be "filing a JMOL on any theory that [Apple was] not going forward with." J.A. 25981–82. At the close of trial and after VirnetX formally submitted a motion for judgment as a matter of law, the court entered "judgment as a matter of law on theories of invalidity, other than anticipation over the Kiuchi references as to the asserted claims of the VirnetX patents." J.A. 26113.

The record just recited is one of actual litigation of the invalidity issues Apple now wants to raise. Apple contends otherwise, asserting that it did not "actually litigate" any invalidity challenge except anticipation by Kiuchi simply because it chose to present to the jury no evidence on any other invalidity issue. We disagree.

A leading treatise states that, as a general rule, "preclusion applies to any issue framed by the pleadings and not withdrawn, even though it has not been raised at trial in any way." 18A CHARLES ALAN WRIGHT ET AL., FEDERAL PRACTICE AND PROCEDURE § 4419 (3d ed.) (Wright and Miller). The Fifth Circuit has concluded that an issue is "actually litigated" when the "issue is raised and the party who has the burden fails in his proof and the issue is decided against him." *Santopadre v. Pelican Homestead &*

Sav. Ass'n, 937 F.2d 268, 274 (5th Cir. 1991) (citing *United States v. Silliman*, 167 F.2d 607, 617 (3d Cir. 1948)). Here, in the 417 litigation, Apple asserted invalidity under 35 U.S.C. §§ 101, 102, 103, and 112 from the outset, and the issues were extensively developed in discovery. Apple expressly included a host of invalidity issues, as enumerated above, in the pretrial order, which "supersede[d] all prior pleadings" and governed the proceedings to come. *Meaux Surface Protection, Inc. v. Fogleman*, 607 F.3d 161, 167 (5th Cir. 2010); *see In re Pirani*, 824 F.3d 483, 493 n.1 (5th Cir. 2016). That framing of the issues in the trial-governing pleadings, together with full pretrial engagement on the issues and the eventual judicial rulings resolving the issues based on evidentiary insufficiency, is enough to constitute actual litigation.

Preclusion in this scenario serves important interests protected by preclusion principles. One is the judicial system's interest in avoiding duplication caused by an earlier bypassing of a present and adequate opportunity for conclusive resolution after fully prepared development of the issue. Another is the related reliance interest of the opposing party: "once an issue has been framed, the opposing party has a right to rely on the expectation that it will be resolved conclusively in that action." Wright and Miller § 4419. When the adversarial litigation of the issue has proceeded as far as it did in the 417 matter, preclusion serves the interests in "conserving judicial resources" and "avoiding oppression or harassment of the adverse party." Restatement (Second) of Judgments § 27 comment e.

Here, VirnetX expended "considerable effort . . . in preparing to meet a case that [was] never made" when the time came for presentation of evidence. Wright and Miller § 4419. VirnetX prevailed by summary judgment on two of the invalidity issues, including non-joinder. Then, only one week before trial, Apple informed the district court and VirnetX, in an "Emergency Motion to Dismiss," that it

would prefer not to pursue the remaining invalidity challenges, but it proposed to dismiss them only if it could save them, unimpaired, for future litigation. J.A. 25487. In response, VirnetX explained to the court:

> VirnetX has spent well over a million dollars in this case defending the validity of the patents. There were more than 100 references asserted by Apple in this case in their invalidity contentions. We had to deal with all of those.

> We have had extensive motion practice in this Court on invalidity issues. We filed expert reports in this Court. We have taken depositions in this Court directed to invalidity.

J.A. 25585–86. When the district court denied the motion to dismiss, Apple knew that the issues remained in the case. But Apple bypassed the opportunity to try the issues then and there, choosing to present no evidence on those issues. Judgment as a matter of law for failure of proof followed. Apple's choice to present no evidence does not change the character of the judgment as a resolution of issues actually litigated.

Apple relies for its contrary position on our decision in *Voter Verified*, but that decision did not hold that there is no actual litigation in a situation involving adversarial engagement on an issue as extensive in scope and duration, in a costly course of litigation, as the validity dispute in the 417 matter. In *Voter Verified*, there had been an earlier case in which Voter Verified, Inc. sued Election Systems & Software LLC for patent infringement and Election Systems counterclaimed that the asserted claims were invalid under §§ 101, 102, 103, and 112. 887 F.3d at 1379. But that was all Election Systems did in pressing the § 101 counterclaim. Indeed, when Voter Verified moved for summary judgment, "Election Systems failed to present any arguments or evidence regarding invalidity of these claims." *Id.* In that circumstance, when Voter Verified sued

Election Systems a second time, we applied Eleventh Circuit preclusion law to reject issue preclusion of a § 101 challenge. In addition to concluding that Voter Verified had not shown that the § 101 ruling in the first case was necessary to the judgment in that case, we concluded that invalidity under § 101 was not "actually litigated" in the first case because the "district court disposed of the § 101 issue when Election Systems chose not to respond." *Id.* at 1383.

Voter Verified thus involved such a "feeble effort" at presenting an issue that the case could be characterized as not involving actual litigation of the issue. Wright and Miller § 4419 n.11; *see id.* (calling *Voter Verified* a "close call"). How much litigation is enough to constitute actual litigation for preclusion purposes requires some judgment calls, but *Voter Verified* occupies a place on the spectrum far from a true adversarial contest and only a step away from bare pleading followed by consensual resolution, which is distinguished from actual litigation. *See* Restatement (Second) of Judgments § 27 Comment e. In the circumstances of *Voter Verified*, moreover, preclusion was not meaningfully supported by the policies of protecting the judicial system and opposing parties that weigh so heavily here.

Apple also contends that the district court in the 417 litigation never actually entered judgment on the invalidity defenses that Apple did not present to the jury. We disagree. Apple relies on the fact that, after the verdict in the 417 litigation, VirnetX moved for "judgment against Apple on Apple's late-abandoned counterclaims and defenses, including all of Apple's alleged prior art references," 417 litigation, Dkt. 625, and the district court, in denying the motion, said:

> The Court cannot and will not enter judgment upon claims and defenses that were not presented for consideration to the jury. There is no basis to enter such a judgment, no more than there is a basis to

enter judgment of non-infringement for Apple as to VirnetX's unasserted claims.

J.A. 22396. Apple effectively reads "defenses" as independent from "claims" in relying on this passage to support its contention. We reject Apple's argument.

During the trial, as we have noted, the court had already formally granted judgment on the invalidity defenses other than anticipation based on Kiuchi. *See* J.A. 25523 ("Court granted" "Plaintiff's JMOL on invalidity other than anticipation regarding Kiuchi"). The court did so after VirnetX succeeded in persuading the district court not to permit Apple to dismiss its invalidity challenges voluntarily without prejudice, which would free Apple to reassert those challenges in future litigation. It is unreasonable to understand the district court as having suddenly reversed itself on those decisions. In any event, the mid-trial JMOL, together with the pretrial partial summary judgment, stand as judgments on the challenges now at issue. The refusal to enter a further judgment does not undo those already-entered judgments.

In context, the reference to "claims and defenses" must be understood as referring to the defenses Apple asserted against the patent claims that VirnetX ultimately excluded from its infringement assertions. Indeed, in responding to VirnetX's motion, Apple noted that it was "not requesting to dismiss its invalidity claim in its entirety," stating: "Apple only seeks to dismiss those claims as to which VirnetX has not asserted infringement." J.A. 25552 n.18. Moreover, during the trial, after the district court had entered JMOL, Apple pointed out that VirnetX had initially "only asserted a subset of the claims," had subsequently "limited those asserted claims to 18 claims," and then had finally narrowed those claims even further at trial. J.A. 26122. The district court, in response, noted that it "ha[d] already granted [VirnetX's] motion as to the asserted claims" but would "make note of [Apple's] motion as to the unasserted

claims and all of the patents" and would "take that under advisement." J.A. 26122. The post-trial ruling that Apple now quotes is where the court addressed the unasserted claims.

For the foregoing reasons, we affirm the district court's determination that Apple is precluded from pressing the invalidity challenges it proposed to press in this case.

B

We next address Apple's appeal of the finding of infringement of the '151 and '135 patents based on the redesigned VPN on Demand software in the mobile devices Apple sold. The jury found that Apple infringed the method claims of the '135 patent and the computer readable medium claim of the '151 patent by developing, testing, and selling to its customers—with detailed instructions about how to perform the method—mobile devices with VPN on Demand installed. We reject Apple's challenges, conclude that the jury had substantial evidence to support its verdict, and affirm the judgment of infringement.

1

We affirm the judgment of infringement of the asserted claims of the '135 patent.

The record contains substantial evidence that the redesigned version of VPN on Demand performs every step of the methods claimed in the asserted claims of the '135 patent. *See* J.A. 10079, 10114–21 (Apple's guide for configuring VPN on Demand); J.A. 1328–52 (VirnetX's expert testimony); J.A. 2343–47 (Apple's expert testimony). VirnetX used Apple's configuration guide to show that the "EvaluateConnection" mode begins to operate when a user enters a domain name and, in response, the Apple device requests an IP address corresponding to that domain name. J.A. 10118–19; J.A. 1335. VPN on Demand "compares the requested domain against the domains listed in the Domains array," thereby determining whether the

request was for a secure website. J.A. 10118, 10120; *see also* J.A. 1335; J.A. 2345. If VPN on Demand finds that the requested domain is listed in the Domains array, it checks, by sending a request to a local DNS server, whether the user device is connected to the private network that hosts the requested website. J.A. 10121; J.A. 1335; J.A. 2344. If VPN on Demand determines that the user device is not connected to the private network, it automatically sets up a VPN between the user device and the website. J.A. 10121; J.A. 1335; J.A. 2344–45. Therefore, substantial evidence supports the jury's determination that VPN on Demand practices each limitation of the asserted claims.

Apple argues that use of its VPN on Demand software does not infringe the asserted claims of the '135 patent because the "location check"—the DNS request that determines whether the user device is connected to the private network—does not correspond to a step in the claimed method and sometimes prevents VPN on Demand from establishing a VPN. Apple does not dispute that, as a general matter, an additional step does not defeat an infringement finding for a "comprising" claim because "[i]nfringement arises when all of the steps of a claimed method are performed, whether or not the infringer also performs additional steps." *Smith & Nephew, Inc. v. Ethicon, Inc.*, 276 F.3d 1304, 1311 (Fed. Cir. 2001). But Apple nevertheless argues that the claims at issue here exclude VPN on Demand.

In particular, Apple argues that the "automatically initiating" limitation adds the following two requirements: (1) that there are no intervening steps between the "determining" step and the "initiating" step and (2) that a VPN must be initiated every time the requested domain name corresponds to a secure website. The first requirement excludes VPN on Demand, Apple says, because after VPN on Demand determines whether the requested domain name is listed in the Domains array, it performs the "location check" before initiating a VPN connection. The second

requirement excludes VPN on Demand, Apple says, because the "location check" often prevents VPN on Demand from initiating a VPN, even when the requested domain name is listed in the Domains array: if VPN on Demand determines that the device is connected to the private network that hosts the website, it does not initiate a VPN.

We reject Apple's argument in light of the agreed-on claim construction of "automatically initiating the VPN" as meaning, simply, "initiating the VPN without involvement of a user." J.A. 15046. Under that construction, the "automatically initiating" limitation does not exclude a method just because, after determining that the domain request corresponds to a secure website, it performs extra steps before establishing a VPN and sometimes does not establish a VPN at all. The limitation precludes post-determination further *user action* to initiate the VPN, but the operation of VPN on Demand accused of infringing does not involve such action.

The presumption of claim differentiation and the specification's description of a particular embodiment bolster this conclusion. Contrary to Apple's suggestion that claim 1 forbids any steps between determining that a request is for a secure website and initiating the VPN, claims dependent on claim 1—which must be consistent with claim 1—involve such intermediate steps. For example, claim 4 adds the step of "prior to automatically initiating the VPN between the client computer and the target computer, determining whether the client computer is authorized to establish a VPN with the target computer." *Id.*, col. 47, lines 42–45. Similarly, claim 5 adds the step of "prior to automatically initiating the VPN between the client computer and the target computer, determining whether the client computer is authorized to resolve addresses of non secure target computers." '135 patent, col. 47, lines 48–51. Furthermore, the specification provides that in one embodiment, "if access to a secure host was requested, then . . . a further check is made to determine whether the user is

authorized to connect to the secure host." *Id.*, col. 39, lines 7–9. Apple has not provided any reason that we should read these claims or this embodiment out of the patent.

Having concluded that the devices at issue perform the claimed steps, we also conclude that substantial evidence supports a finding that Apple infringed the asserted method claims of the '135 patent both directly through testing and indirectly by inducing users to perform the methods. As to the former, there was sufficient evidence of a test plan that the jury could infer was carried out. As to the latter, there was sufficient evidence for the jury to find, for example, that the method covered by those claims, as embodied in the redesigned VPN on Demand, was important to customers generally as a replacement for the earlier version's Always mode, that Apple provided instructions to customers for how to use the functionality in the redesigned VPN on Demand, and that Apple intended such use.

<div align="center">2</div>

We also affirm the judgment of infringement of the asserted claim of the '151 patent.

The jury had sufficient evidence to conclude that Apple's sale of mobile devices constituted direct infringement of claim 13 of the '151 patent, which is directed to a computer readable medium capable of executing the steps required to set up a VPN. That claim includes the "automatically creating" language that Apple treats as indistinguishable from the "automatically initiating" language of the '135 patent claims. Having rejected Apple argument for the '135 patent's language, we reject the argument for the '151 patent's language as well. But Apple has an additional challenge to the infringement finding for claim 13 of the '151 patent. We also reject this separate challenge.

Claim 13 requires a computer readable medium, not the underlying process itself, so infringement "do[es] not require the performance of any method steps." *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1204 (Fed. Cir. 2010). When it is "undisputed that software for performing the claimed functions existed in the products when sold," infringement occurs when the party sells those products. *Id.* at 1205. Accordingly, VirnetX was not required to prove that Apple or its customers actually executed VPN on Demand, just that Apple sold devices with VPN on Demand installed. There is no dispute that Apple did so.

Apple nevertheless contends that the devices with VPN on Demand installed could not reasonably be found to come within claim 13—specifically, its requirement that the "computer readable instructions, when executed, cause a data processing device" to perform the specified steps—because too much alteration is needed for the instructions to run to perform those steps. We disagree.

The "when executed" language does not preclude the need for any activation action to enable the execution, any more than the language in *Finjan—i.e.*, "storage medium storing program code for causing" performance of specified steps—required that the relevant code be "active" without the need for any user action to activate it. *See Finjan*, 626 F.3d at 1205 (concluding that such language "does not require that the program code be 'active,' only that it be written 'for causing'" a computer to "perform certain steps"). We have held, moreover, that "an accused device may be found to infringe if it is reasonably capable of satisfying the claim limitations, even though it may also be capable of noninfringing modes of operations," *id.* at 1204–05, and that a device sold in a noninfringing mode of operation may still be found to infringe if the mode that infringes can be enabled "without significant alterations," *Ericsson, Inc. v. D-Link Systems, Inc.*, 773 F.3d 1201, 1217 (Fed. Cir. 2014). More specifically, we have upheld a finding of infringement based on a company's provision of instructions to users on

how to operate the company's product in the infringing
mode. *See, e.g., Versata Software, Inc. v. SAP America,
Inc.*, 717 F.3d 1255, 1262–63 (Fed. Cir. 2013) ("Versata's
expert did not alter or modify SAP's code in order to achieve
the claimed functionality. Rather, he followed SAP's own
directions on how to implement pricing functionality in its
software and activated functions already present in the
software."); *Ericsson*, 773 F.3d at 1217 ("In *Versata*, we
found that the patentee presented evidence that, if a user
followed the accused infringer's own instructions, the sys-
tem would operate in an infringing manner.").

The jury could find those standards met in this case.
VirnetX used publicly available Apple documents—specifi-
cally, the "Configuration Profile Reference"—to show that
a user could reasonably follow the directions contained in
those documents to enable "EvaluateConnection." J.A.
10118–21 (instructions); J.A. 1332–33 (VirnetX's expert ex-
plaining instructions). There is no evidence that customers
would need to "modify the underlying code to unlock" the
infringing mode. *Finjan*, 626 F.3d at 1205. And the jury
did not have to find it significant that an "IT person," and
not the user, would perform the configuration. J.A. 2218.
In *Finjan*, we considered whether certain products in-
fringed the asserted claims where the infringing software
modules were "'locked' when the [products] [we]re sold, re-
quiring a customer to purchase a separate key to activate
each individual module." *Finjan*, 626 F.3d at 1202. We
explained that the "fact that users needed to 'activate the
functions programmed' by purchasing keys does not de-
tract from or somehow nullify the existence of the claimed
structure in the accused software." *Id.* at 1205. The need
for help from an "IT person," who did not need to rewrite
underlying code, could reasonably be treated the same as
the need to secure a key in *Finjan*.

C

We now address Apple's appeals of the verdict of infringement of the system claims of the '504 patent and the computer readable medium claims of the '211 patent based on Apple's sale of mobile devices with FaceTime installed. We agree with Apple that the claim term "domain name service system" in all the asserted claims at issue, when properly construed, requires that the system include what a "domain name service" requires under *its* construction (not challenged on appeal). That is, we conclude that the district court erred as a matter of law in ruling that "the construction of 'domain name service system' does not incorporate the construction of 'domain name service.'" J.A. 26684. Because no reasonable jury could find infringement under the correct construction, we hold that Apple is entitled to judgment as a matter of law of non-infringement as to those two patents.[1]

1

In the 417 litigation, the district court construed the term "domain name service" as "a lookup service that returns an IP address for a requested domain name to the

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[1]   For ease of reference, we again quote claim 1 of the '504 patent, which is representative:

1. A system for providing a domain name service for establishing a secure communication link, the system comprising:

A domain name service system configured to be connected to a communication network, to store a plurality of domain names and corresponding network addresses, to receive a query for a network address, and to comprise an indication that the domain name service system supports establishing a secure communication link.

requester." J.A. 22214. The parties "provided no reason to modify" that construction in the present litigation—they incorporated by reference their arguments from the 417 litigation. J.A. 15064. And the construction of "domain name service" is not in dispute before us.

For the claim phrase "domain name service system," the district court ruled, in the 417 litigation, that the phrase required no construction because the "claim language itself provides a description of the domain name service system." J.A. 22219. VirnetX had proposed that no construction was necessary but argued that if the court were inclined to construe it, the phrase should be construed as "a computer system that includes a domain name service (DNS)." J.A. 22218. For its part, Apple proposed that the phrase should be construed as "*a DNS* that is capable of differentiating between, and responding to, both standard and secure top-level domain names." J.A. 21303 (emphasis added). Thus, both parties proposed that a "domain name service system" includes a "DNS." The district court rejected Apple's proposal for adding a specific capability of "handl[ing] both secure and non-secure domain names." J.A. 22219. But the court left "domain name service system" without a claim construction.

Before trial in the present case, VirnetX filed an "Emergency Motion to Clarify" in response to a claim construction argument that Apple had made in a motion to exclude certain expert testimony. Specifically, VirnetX asked the court to confirm that "domain name service" and "domain name service system" are separate terms with separate definitions. At the pre-trial conference, the court agreed with VirnetX's argument and determined that "domain name service" and "domain name service system" are "two different terms used in different context[s]." J.A. 26684. The district court explained that it is "not a tenet of patent law that similar terms necessarily incorporate the constructions of one another." *Id.* On that basis the court concluded that "the construction of 'domain name

service system' does not incorporate the construction of 'domain name service.'" *Id.*

That conclusion, we hold, is legally incorrect. The phrase "domain name service system" consists of a noun modified by the adjectival phrase, "domain name service." The ordinary meaning of such a phrase is that the noun is characterized by the adjectival phrase—here, that the system includes a "domain name service" according to that term's unchallenged meaning. *See, e.g., Shire Development, LLC v. Watson Pharms., Inc.*, 787 F.3d 1359, 1365 (Fed. Cir. 2015) (regarding the phrase "inner lipophilic matrix," the court held: "'lipophilic' is an adjective that modifies matrix. The parties stipulated that 'lipophilic' means 'poor affinity towards aqueous fluids.'[] Thus, the *matrix*—not just an excipient within the matrix—must exhibit the stipulated-to lipophilic characteristic.") (internal citations omitted). Indeed, as already noted, in the 417 litigation, VirnetX agreed that a domain name service system "includes a domain name service (DNS)." J.A. 22218; *see also* J.A. 20024.

Although a single claim term sometimes can bear different meanings when used in different contexts, we generally presume that a "word or phrase used consistently throughout a claim should be interpreted consistently." *Phonometrics, Inc. v. N. Telecom Inc.*, 133 F.3d 1459, 1465 (Fed. Cir. 1998). Here, there is no inconsistency between the use of the phrase "domain name service" when standing alone (in the preamble of claim 1) and when embedded in the phrase "domain name service system" (in the body of claim 1). The strong inference, supported as well by the natural meaning of the language itself, is that "domain name service system" requires a "domain name service" as defined by its unchallenged claim construction.

VirnetX argues that incorporating the construction of "domain name service" would render the rest of the claim language surplusage. But VirnetX has not shown

surplusage. The term "domain name service" requires simply that the system return an IP address to a requester. It does not dictate how the system communicates with the requester, how the system obtains the IP address, or what the system sends to the requester other than an IP address. According to the district court's construction of the "indicate" limitation, the indication must be something "other than the mere returning of requested DNS records, such as an IP address or key certificate." J.A. 15052. The phrase "domain name service" specifies that the system must return an IP address, and the "indicate" limitation specifies that the system must return something more. That the claim provides additional specific requirements says nothing to negate the core requirement of the phrase "domain name service": the return of an IP address to the requester.

To the extent that VirnetX's argument is that "domain name service" has a different meaning as an adjective than as a noun, the argument is unpersuasive. While there are situations in which adjectives do not "reflect the meaning of corresponding nouns," this situation is not one of them. *FCC v. AT&T Inc.*, 562 U.S. 397, 402 (2011). For example, "[t]he noun 'crab' refers variously to a crustacean and a type of apple, while the related adjective 'crabbed' can refer to handwriting that is 'difficult to read.'" *Id.* (citing Webster's Third New International dictionary 527 (2002)). Here, however, VirnetX does not point to *any* difference between the contexts in which "domain name service" is used as a noun and as an adjective, much less a difference pointing away from simple incorporation of the noun's meaning when used to modify "system." VirnetX in fact fails to provide any alternative definition for the adjectival version of "domain name service," let alone one that removes the characteristic of "returning an IP address."

VirnetX's position goes beyond departing from the ordinary role of the adjectival phrase as meaning the same thing as when that phrase is used as a noun. VirnetX's position reduces the adjectival version of "domain name

service" to a nullity. Under VirnetX's approach, the phrase does not modify "system" in any meaningful way, because in VirnetX's view the "system" is defined entirely by the subsequent listed functions. An interpretation that renders language superfluous is strongly disfavored. *See*, *e.g.*, *Becton, Dickinson and Co. v. Tyco Healthcare Group, LP*, 616 F.3d 1249, 1257 (Fed. Cir. 2010); *Elekta Instrument S.A. v. O.U.R. Scientific Int'l, Inc.*, 214 F.3d 1302, 1305–07 (Fed. Cir. 2000). Nothing about the particular phrase at issue here suggests an exception to that important principle—suggests, in other words, that the words that provide essentially all the substantive content of the phrase "domain name service system" should be treated as a nullity.

The specification provides no support for VirnetX's nullifying construction. To the contrary, the specification describes the invention as a system that includes a "domain name service." '504 patent, col. 7, lines 27–29; *id.*, col. 49, lines 1–2. There is no indication of some special meaning of "domain name service" when that service is part of the system.

VirnetX points to portions of the specification that differentiate between a "secure domain name service" (an "SDNS") and a "standard domain name service" (an "STD DNS"). '504 patent, col. 50, lines 40–44; *id.*, col. 50, lines 48–51. One embodiment requires a "secure network" that "includes an internal router 3312, a secure domain name service (SDNS) 3313, a VPN gatekeeper 3314 and a secure proxy 3315." *Id.*, col. 50, lines 45–48. The secure network can also include "other network services, such as e-mail 3316, a plurality of chatrooms . . . and a standard domain name service (STD DNS) 3318." *Id.*, col. 50, lines 48–51. VirnetX contends that because the specification refers to an STD DNS as an optional feature, it is not automatically covered by claim 1's "domain name service system." But the STD DNS discussion does not suggest that the domain name service system of claim 1 fails to return an IP address. Nothing in the specification indicates that the

difference between an SDNS and a STD DNS is related to
the IP address function; indeed, the specification describes
the secure DNS as "built on top of the existing Internet pro-
tocol (IP)." *Id.*, col. 6, lines 21–24. The distinction on which
VirnetX focuses therefore cannot support VirnetX's posi-
tion on the point at issue.

What remains is VirnetX's brief claim-differentiation
argument. VirnetX points to claims 14, 15, and 35 of the
'504 patent, which depend on claim 1, and argues that they
suggest, by what they add to claim 1, that "domain name
service system" in claim 1 cannot by itself require a "do-
main name service" according to that phrase's unchal-
lenged claim construction. VirnetX does not suggest that
claim 14, 15, or 35 requires something inconsistent with
the construction of "domain name service," only that each
adds requirements that already appear in that construc-
tion, suggesting a redundancy disfavored in claim con-
struction. We are not persuaded. VirnetX, in its largely
unelaborated argument on this point, has not established
a clear redundancy, if a redundancy at all, in claim 14's re-
quirement of configuring the system to respond to an ad-
dress inquiry, claim 15's requirement of a certain source of
the network address information, or claim 35's require-
ment of a domain name database. In any event, in the cir-
cumstances of this case, we conclude, the bases for the
claim construction we have set forth are so strong that the
thin case for claim differentiation does not support a differ-
ent result. *See*, *e.g.*, *Wi-LAN USA, Inc. v. Apple Inc.*, 830
F.3d 1374, 1391–92 (Fed. Cir. 2016); *American Calcar, Inc.
v. American Honda Motor Co.*, 651 F.3d 1318, 1337 (Fed.
Cir. 2011); *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533,
1538 (Fed. Cir. 1991).

2

VirnetX does not dispute that the redesigned version of
FaceTime does not return an IP address to the caller de-
vice. At trial, VirnetX's expert, testifying about the

operation of FaceTime, agreed that when the FaceTime server creates the final message, it excludes the receiving phone's IP address from that message. J.A. 1362. The message contains a push token, a certificate, and a session token, but it does not include an IP address. *Id.*

Thus, under the proper claim construction, a reasonable jury could not conclude that redesigned FaceTime is a "domain name service system." We hold that Apple is entitled to judgment as a matter of law of noninfringement of the asserted claims of the '504 and '211 patents. We reverse the district court's contrary ruling.

D

The jury's verdict provided that VirnetX was entitled to a damages award of $502,567,709.00 but did not indicate which portions of the award were allocated to which patents. We have affirmed the judgment of infringement by VPN on Demand but reversed the judgment of infringement by FaceTime. Those rulings raise the question of whether a new trial must or should be held because of the reduced basis of liability. We see no difficulty with limiting any such trial to damages, but there is a question whether a limited retrial need or should be held at all.

We will not decide that question. We have said that "where the jury rendered a single verdict on damages, without breaking down the damages attributable to each patent, the normal rule would require a new trial as to damages." *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1310 (Fed. Cir. 2007); *see also Memphis Cmty. Sch. Dist. v. Stachura*, 477 U.S. 299, 312 (1986) ("When damages instructions are faulty and the verdict does not reveal the means by which the jury calculated damages, the error in the charge is difficult, if not impossible, to correct without retrial, in light of the jury's general verdict."); *WesternGeco L.L.C. v. ION Geophysical Corp.*, 913 F.3d 1067, 1074 (Fed. Cir. 2019) (invalidating all but one asserted claim and determining that "the award can be

sustained if there was undisputed evidence that the tech-
nology covered by [the remaining claim] was necessary to
perform the [infringing method]"). We have not received
full briefing on the issue of whether, despite the normal
rule, this is a case in which a new trial on damages is un-
necessary.

It appears to be undisputed that the jury used a per-
unit royalty of $1.20 and adopted the calculation of Vir-
netX's expert to reach its damages figure—$1.20 per unit,
with over 384 million units having both FaceTime and VPN
on Demand and over 34 million units having only
FaceTime. J.A. 1811–12; J.A. 1852–53; J.A. 2571–73. It
appears, therefore, that the jury found that FaceTime by
itself was worth $1.20 per unit. But because the jury found
infringement by FaceTime as well as VPN on Demand, and
Facetime was installed on all units, the jury did not have
to decide whether the $1.20-per-unit figure would be cor-
rect if only VPN on Demand infringed. VirnetX's expert
did assert that the same figure would apply, J.A. 1854–55
(explaining calculation based on licensing), but the jury did
not have to decide that issue. Apple's expert, for his part,
asserted that VPN on Demand was vastly more valuable
than FaceTime, J.A. 2569–73 (testifying that VPN on De-
mand was worth about 6 cents per unit, FaceTime about 1
cent per unit), but neither Apple nor VirnetX has suggested
to us that the jury accepted that testimony.

We do not go further in exploring the law, the facts, and
any admissions that might be relevant to an inquiry into
the need for a new damages trial. We remand for further
proceedings in the district court. We leave it to the parties
and the district court to consider in the first instance rele-
vant aspects of whether to hold a limited damages-only re-
trial given the reduced basis of liability, including what
discretion there might be to hold such a retrial without con-
clusively determining whether one is needed, especially if
doubt remains as to the application of the above-quoted
standards to this case. We do not prejudge these issues.

III

We affirm the district court's judgments that Apple is precluded from making certain invalidity arguments and that Apple infringed the '135 and '151 patents. We reverse the district court's judgment that Apple infringed the '504 and '211 patents. We remand the case for proceedings on damages consistent with this opinion.

The parties shall bear their own costs.

AFFIRMED IN PART, REVERSED IN PART, AND REMANDED