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Paper 29
Entered: June 22, 2017

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

VIRNETX INC.,
Patent Owner.

Case IPR2016-00331
Patent 8,504,696 B2

Before *Vice Chief Administrative Patent Judge* MICHAEL P. TIERNEY, KARL D. EASTHOM, and STEPHEN C. SIU, *Administrative Patent Judges*

EASTHOM, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

A. Background

Petitioner, Apple Inc., filed a Petition (Paper 1, "Pet.") requesting an *inter partes* review of claims 1–11, 14–25, and 28–30 (the "challenged claims") of U.S. Patent No. 8,504,696 B2 (Ex. 1001, "the '696 patent"). Patent Owner, VirnetX Inc., filed a Preliminary Response. Paper 6 ("Prelim. Resp.").

Subsequent to institution (Paper 9, "Inst. Dec."), Patent Owner filed a Patent Owner Response (Paper 14, "PO Resp."), and Petitioner filed a Reply (Paper 17, "Pet. Reply"). Patent Owner also filed a Motion to Exclude evidence (Paper 20), Petitioner filed an Opposition (Paper 23), and Patent Owner filed a Reply to the Opposition (Paper 24).

The record includes a transcription of the Oral Hearing held on March 27, 2017. Paper 28. This Final Written Decision issues concurrently with the final written decision involving the '696 patent in *Apple Inc. v. VirnetX Inc.*, IPR2016-00332 (PTAB June 22, 2017).

The Board has jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision issues pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–11, 14–25, and 28–30 of the '696 patent are unpatentable.

B. Related Matters

Petitioner indicates that the '696 patent "has not been asserted in litigation or the subject of other IPR proceedings." Pet. 2. Petitioner concurrently filed a petition challenging the same claims in the '696 patent in IPR2016-00332. *Id.* at 5. Petitioner and Patent Owner provide listings of

district court actions, other *inter partes* review, and *inter partes* reexamination proceedings challenging related patents. *See* Pet. 2–5, Paper 5, 2–15; *see also VirnetX, Inc. v. Cisco Systems, Inc.*, 767 F.3d 1308, 1317–19 (Fed. Cir. 2014) (addressing ancestor *VirnetX* patents); *VirnetX Inc. v. Apple Inc.*, 665 F. App'x 880 (Fed. Cir. 2016) (affirming *Apple Inc. v. VirnetX Inc.*, Cases IPR2014-00237, IPR2014-00238 (final written decisions "'237 FWD," "'238 FWD," or generally, "'237 IPR," "'238 IPR") (PTAB May 11, 2015) (appealed by VirnetX))[1]; *VirnetX Inc. v. Apple Inc.*, 671 F. App'x. 786 (Fed. Cir. 2016) (affirming *Apple Inc. v. VirnetX Inc.*, Cases IPR2014-00403, IPR2014-00404, (PTAB July 29, 2015) (appealed by VirnetX)); *Apple Inc. v. VirnetX Inc.*, Cases IPR2014-00481, IPR2014-00482 (PTAB August 24, 2015) (appealed by VirnetX))[2]; *Apple Inc. v. VirnetX Inc.*, Case IPR2015-00811 (PTAB Sept. 8, 2016) (appealed by VirnetX); *Apple Inc. v. VirnetX Inc.*, Case IPR2015-00812 (PTAB Aug. 30, 2016) (appealed by VirnetX); *Apple Inc. v. VirnetX Inc.*, IPR2015-00870 (PTAB Sept. 28, 2016) (appealed by VirnetX); *Apple Inc. v. VirnetX Inc.*, IPR2015-00871 (PTAB Sept. 28, 2016) (appealed by VirnetX). Some of these related cases involve overlapping claim construction and prior art issues with the instant case as discussed further below.

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[1] The court affirmed the '237 FWD and the '238 FWD without reaching the merits of the '237 FWD. *See* 665 F. App'x. at 889 (*In re Gleave*, 560 F.3d 1331, 1338 (Fed. Cir. 2009) ("declining to address alternative grounds of invalidity when the court upholds one such ground").

[2] The court affirmed the four final written decisions without reaching the merits of the '404 and '482 proceedings. *See* 671 F. App'x at 787 (finding "no error in the Patent Trial and Appeal Board's ('the Board') claim constructions or findings in the 403 and 481 proceedings).

C. Instituted Grounds of Unpatentability

We instituted under 35 U.S.C. § 103 on the ground that combination of Beser[3] and RFC 2401[4] would have rendered obvious claims 1–11, 14–25, and 28–30 of the '696 patent. Petitioner relies on, *inter alia*, the "Declaration of Roberto Tamassia Regarding U.S. Patent Nos. 8,540,696." Ex. 1005 (the "Tamassia Declaration"). Patent Owner relies on, *inter alia*, the "Declaration of Fabian Monrose, Ph.D." Ex. 2018 (the "Monrose Declaration"), originally filed in a related case, *Apple Inc. v. VirnetX Inc.*, IPR2015-00866 (PTAB Jan. 25, 2016) (Ex. 2018).

D. The '696 Patent

The '696 patent describes secure methods for communicating over the Internet. Ex. 1001, Abstract, 10:3–8. Specifically, the '696 patent describes "the automatic creation of a virtual private network (VPN) in response to a domain-name server look-up function." *Id.* at 39:23–25. This automatic creation employs a modified Domain Name Server, which may include a conventional Domain Name Server (DNS) and a DNS proxy (*id.* at 40:20–40:22).

> Conventional Domain Name Servers (DNSs) provide a look-up function that returns the IP address of a requested computer or host. For example, when a computer user types in the web name "Yahoo.com," the user's web browser transmits a request to a DNS, which converts the name into a four-part IP address that is returned to the user's browser and then used by the browser to contact the destination web site.

Id. at 39:26–32.

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[3] U.S. Patent No. 6,496,867 B1 (Ex. 1007).
[4] S. Kent and R. Atkinson, *Security Architecture for the Internet Protocol*, Request for Comments: 2401, BBN Corp., November 1998 (Ex. 1008).

The DNS proxy of the modified DNS server intercepts all DNS lookup requests, determines whether the user has requested access to a secure site (using for example, a domain name extension or an internal table of secure sites), and if so, whether the user has sufficient security privileges to access the requested site. *Id.* at 40:26–35. If the user has requested access to a secure site to which it has insufficient security privileges, the DNS proxy returns a "'host unknown'" error to the user. *Id.* at 40:49–53. If the user has requested access to a secure site to which it has sufficient security privileges, the DNS proxy requests a gatekeeper to create a VPN between the user's computer and the secure target site. *Id.* at 40:31–42. The DNS proxy then returns to the user the resolved address passed to it by the gatekeeper, which need not be the actual address of the destination computer. *Id.* at 40:39–44.

The VPN is "preferably implemented using the IP address 'hopping' features," (i.e., changing IP addresses based upon an agreed upon algorithm) described elsewhere in the '696 patent, "such that the true identity of the two nodes cannot be determined even if packets during the communication are intercepted." *Id.* at 40:4–8. The system may hide the identities (i.e., anonymity, a form of security) by encrypting parts of packets, including the true final destination. *See id.* at 1:50–56, 10:3–10:67.

"Tunneled Agile Routing Protocol (TARP)" (*id.* at 3:16–18) routers 122–127, described as "special servers or routers" (*id.* at 10:4–5) along the hopping path, "are similar to regular IP routers 128–132" (*id.* at 10:5–6). *See id.* Fig. 2. TARP routers determine the "next-hop in a series of TARP router hops" (*id.* at 10:15–16) in the path and the final destination, by authenticating or decrypting transmitted encrypted parts of packets to find

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