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Paper No. 71
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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BRIGHT HOUSE NETWORKS, LLC,
WIDEOPENWEST FINANCE, LLC, KNOLOGY OF FLORIDA, INC.,
and BIRCH COMMUNICATIONS, INC.,
Petitioner,

v.

FOCAL IP, LLC,
Patent Owner.

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Case IPR2016-01261
Patent 8,457,113 B2

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Before SALLY C. MEDLEY, JONI Y. CHANG, and
BARBARA A. PARVIS, *Administrative Patent Judges*.

PARVIS, *Administrative Patent Judge*.

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

# I. INTRODUCTION

## *A. Background*

Bright House Networks, LLC, WideOpenWest Finance, LLC, Knology of Florida, Inc., and Birch Communications, Inc. (collectively, "Petitioner") filed a Petition (Paper 1, "Pet.") requesting that we institute *inter partes* review of claims 1, 2, 8, 11, 15–19, 94, 95, 102, 109–13, 128, 163, 164, 166–68, 175, and 179–81 ("challenged claims") of U.S. Patent No. 8,457,113 B2 (Ex. 1001, "the '113 Patent"). In support of its Petition, Petitioner proffered a Declaration of Dr. Thomas F. La Porta, who has been retained as an expert witness for the instant proceeding. Ex. 1002 ¶ 3. Focal IP, LLC ("Patent Owner") filed a Preliminary Response (Paper 11, "Prelim. Resp.") and a Declaration of Mr. Regis J. Bates, who has been retained as an expert witness for the instant proceeding (Ex. 2001 ¶¶ 1, 2). Petitioner additionally filed a Reply to Patent Owner's Preliminary Response. Paper 17 ("POPR Reply"). Upon consideration of the parties' contentions and supporting evidence, we instituted an *inter partes* review pursuant to 35 U.S.C. § 314, as to the challenged claims of the '113 Patent. Paper 19 ("Dec. on Inst.").

After institution, Patent Owner filed a Patent Owner Response (Paper 30, "PO Resp."), and a Motion to Amend (Paper 31, "Mot."). In support of its Patent Owner Response and its Motion to Amend, Patent Owner proffered additional Declarations of Mr. Regis Bates. Ex. 2022 (supporting Patent Owner's Response); Ex. 2040 (supporting Motion to Amend); Ex. 2070 (supporting Reply to Opposition to Motion to Amend).[1] Petitioner

[1] Patent Owner also submits declaration and deposition testimony from other proceedings, including that of declarants of other Petitioners from other *inter*

filed a Reply (Paper 34, "Pet. Reply") and an Opposition to Patent Owner's Motion to Amend (Paper 35, "Oppn."). In support of its Reply and its Opposition to the Motion to Amend, Petitioner proffered additional Declarations of Dr. Thomas F. La Porta. Ex. 1065 (supporting Petitioner's Reply); Ex. 1066 (supporting Opposition to Motion to Amend). Patent Owner filed a Reply to Petitioner's Opposition to the Motion to Amend (Paper 43, "PO Reply"). Patent Owner filed a Listing of Improper Reply Arguments and Evidence, Paper 41 ("PO List") and Petitioner filed a Response, Paper 42 ("Pet. Resp. PO List"). Additionally, each of Petitioner and Patent Owner filed a Motion to Exclude. Paper 47 ("PO Mot. to Exclude"); Paper 50 ("Pet. Mot. to Exclude").

On September 19, 2017, we held an oral hearing and a transcript of the hearing has been entered into the record as Paper 68 ("Tr.").[2] Subsequent to oral hearing, Petitioner was authorized to file a supplemental brief in opposition to Patent Owner's Motion to Amend in light of the Federal Circuit's en banc decision in *Aqua Prods., Inc. v. Matal*, 872 F.3d 1290 (Fed. Cir. 2017) ("*Aqua Products*"). Paper 65. On October 31, 2017, Petitioner filed a supplemental brief in opposition to Patent Owner's Motion to Amend. Paper 67 ("Supp. Br.").

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*partes* review proceedings. *See, e.g.*, Exs. 2026–2030. Patent Owner, however, must include a detailed explanation of the significance of the evidence including, for example, why it should be considered in the instant proceeding. 37 C.F.R. §§ 42.22, 42.23, 42.120. To the extent appropriate, we address Patent Owner's contentions herein.

[2] The oral hearings in the following cases were consolidated: Cases IPR2016-01259, and IPR2016-01261 through -01263. Paper 53.

This Final Written Decision is entered pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine that Petitioner has demonstrated by a preponderance of evidence that the challenged claims of the ’113 Patent are unpatentable. Additionally, we deny Patent Owner’s Motion to Amend.

*B. Related Proceedings*

The parties indicate that the ’113 Patent is the subject of pending lawsuits in the Middle District of Florida, and these lawsuits include assertions against Bright House Networks, LLC, WideOpenWest Finance, LLC, YMax Corporation, Birch Communications, Inc., and T3 Communications, Inc. Pet. 4; Paper 7 (Patent Owner’s Mandatory Notices), 2–3; Paper 9 (Petitioner’s Updated Notice), 1. Additional petitions have been filed challenging claims of the ’113 Patent (i.e., IPR2016-01254, IPR2016-01257, and IPR2016-01260) and two related patents: (1) U.S. Patent No. 7,764,777 B2 (Ex. 1006, “the ’777 Patent”), which issued from the parent of the ’113 Patent Application; and (2) U.S. Patent No. 8,155,298 B2 (Ex. 1007, “the ’298 Patent”), which issued from a continuation of a parent of the ’777 Patent Application. Petitioner’s Updated Notice, 1, 2.

*C. Instituted Grounds of Unpatentability*

We instituted on the following grounds of unpatentability (Dec. on Inst. 25):

| Challenged Claims | Basis | Reference(s) |
|---|---|---|
| Claims 1, 2, 8, 11, 15–19, 94, 95, 102, 109–13, 128, 163, 164, 166–168, 175, and 179–81 | § 103 | U.S. Patent No. 6,683,870 B1 (“Archer,” Ex. 1003) and the knowledge of a |

| Challenged Claims | Basis | Reference(s) |
|---|---|---|
| | | person of ordinary skill in the art |
| Claims 1, 2, 8, 11, 15–19, 94, 95, 102, 109–13, 128, 163, 164, 166–68, 175, and 179–81 | § 103 | Archer and U.S. Patent No. 5,958,016 ("Chang," Ex. 1004) |

*D. The '113 Patent*

The '113 Patent relates to telephone services. Ex. 1001, 1:23. In the background section, the '113 Patent explains that the Public Switched Telephone Network (PSTN) consists of a plurality of edge switches connected to telephones on one side and to a network of tandem switches on the other. *Id.* at 1:45−47. The tandem switch network allows connectivity between all of the edge switches, and a signaling system is used by the PSTN to allow calling and to transmit both calling and called party identity. *Id.* at 1:48−51.

According to the '113 Patent, at the time of the invention, there were web-based companies managing third-party call control, via the toll-switch network, which allow users to enter call control information through a web portal. *Id.* at 1:34−36. Edge devices such as phones and PBXs that include voice mail, inter-active voice response, call forwarding, speed calling, etc., have been used to provide additional call control. *Id.* at 2:41−44.

The '113 Patent discloses a system for allowing a subscriber to select telephone service features. *Id.* at 1:23–26. Figure 1 of the '113 Patent is reproduced below (with annotations).

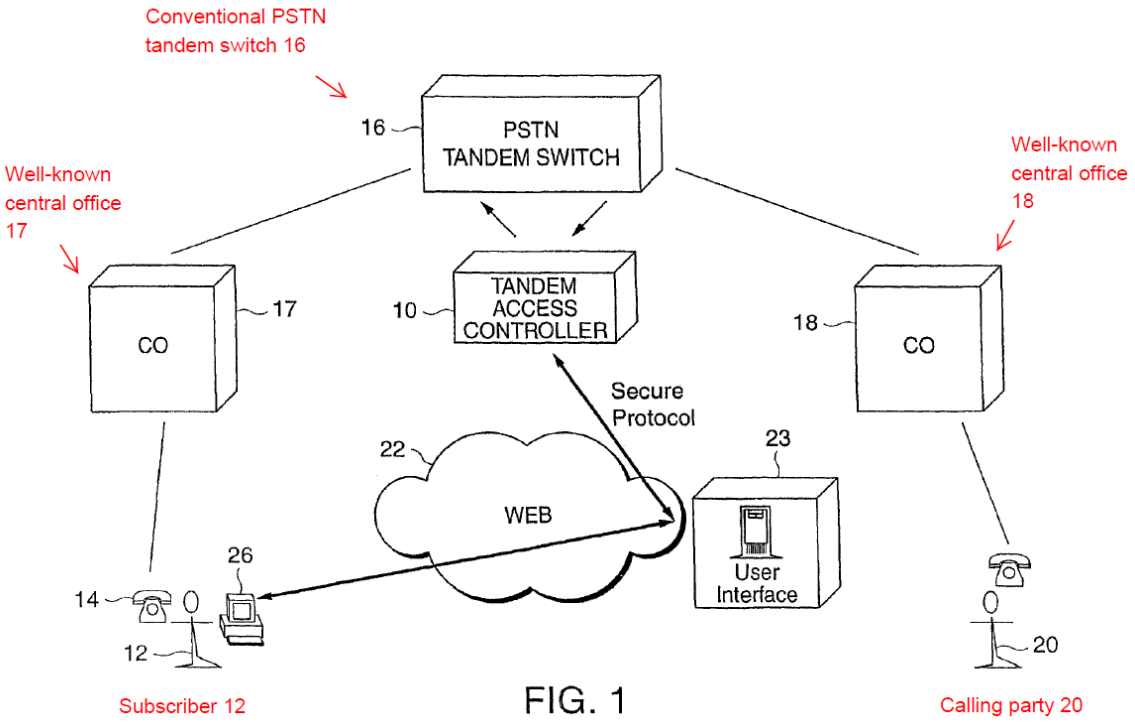


FIG. 1

Figure 1 illustrates a tandem access controller connected to an existing PSTN tandem switch.

Annotated Figure 1 illustrates tandem access controller 10 connected to conventional Public Switched Telephone Network (PSTN) tandem switch 16. *Id.* at 4:43, 44. According to the '113 Patent, "[d]etails of the operation of the existing phone network," including directing of phone calls by "existing" PSTN tandem switch 16 to central offices 17, 18 are further described in a publication incorporated by reference, as well as "numerous books describing the PSTN." *Id.* at 4:43–54.

The call flow in the network illustrated in Figure 1 with tandem access controller 10 remains the same as that in a conventional network, "except that additional 3rd-party features are applied to the call." *Id.* at 4:43–47. More specifically, in the network illustrated in Figure 1, a call from calling party 20 to subscriber's phone 14 is directed to tandem access controller 10,

which places a second call, subject to third party control information, to subscriber 12. *Id.* at 4:55–58. The second call is placed "to the subscriber's 'private' phone number," without terminating the first call. *Id.* at 4:58–60. When subscriber 12 answers the call, tandem access controller 10 connects the first call to the second call so as to connect calling party 20 to subscriber 12. *Id.* at 4:62–65.

Figure 1 also shows web server 23 within World Wide Web 22, which is connected to tandem access controller 10. *Id.* at Fig. 1. Subscriber 12 specifies third-party call control features via web server 23 and these features are then relayed via World Wide Web 22 to tandem access controller 10. *Id.* at 5:17–25.

*E. Illustrative Claim*

Challenged claims 1, 94, and 163 are independent claims. Claims 2, 8, 11, 15–19, 95, 102, 109–13, 128, 164, 166–168, 175, and 179–81 depend, directly or indirectly, from claim 1, 94, or 163. Independent claim 1 is illustrative of the claimed subject matter and is reproduced below:

> 1. A method performed by a web enabled processing system including one or more web servers coupled to a call processing system serving as an intelligent interconnection between at least one packet network and a second network coupled to a switching facility of a telecommunications network, the telecommunications network comprising edge switches for routing calls from and to subscribers within a local geographic area and switching facilities for routing calls to other edge switches or other switching facilities local or in other geographic areas, the method for enabling voice communication from a calling party to a called party across both the packet network and the second network, the method comprising the steps of:
>
> receiving call data which is associated with a call originated by the calling party via either the packet network or the second network, at the call processing system, the calling

party using a communications device to originate the call for the purpose of initiating voice communication, the call processing system coupled to at least one switching facility of the telecommunications network via the second network, the call processing system processing the call across both the packet network and the second network to complete the call to the called party; and

establishing the voice communication between the calling party and the called party after the call is completed, across both the packet network and the second network.

Ex. 1001, 12:30–56.

## II. CLAIM CONSTRUCTION

### *A. Legal Standard*

In an *inter partes* review, we construe claim terms in an unexpired patent according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b). Under this standard, claim terms are presumed to have their ordinary and customary meaning, as understood by a person of ordinary skill in the art in the context of the entire disclosure. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

### *B. Decision on Institution*

In the Decision on Institution, we made determinations regarding the broadest reasonable interpretations of "coupled to," "switching facility," "tandem switch," and "tandem access controller." These determinations are summarized in the table below.

| Claim Term | Broadest Reasonable Interpretation Determination in Decision on Institution |
|---|---|
| "coupled to" | "[W]e determine that the broadest reasonable interpretation of the term 'coupled to' includes both a direct and an indirect connection." *Id.* at 14. |

| | |
|---|---|
| "switching facility" | "[W]e determine that the broadest reasonable interpretation of the term is any switch in the circuit-switched network." *Id.* at 12. |
| "tandem switch" | "Petitioner has shown sufficiently that asserted prior art and admitted prior art expressly disclose 'tandem' switches (*see, e.g.*, Ex. 1001, 1:45–50; Ex. 1004, 8:2–5) and Petitioner provides sufficiently persuasive contentions that it would have been obvious to connect a tandem switch in the manner claimed. Pet. 20–26, 29–39. Accordingly, we determine that no express construction of the term 'tandem switch' is needed to resolve a controversy in this proceeding." *Id.* at 12. |
| "tandem access controller" | "We have considered both examples of the 'tandem access controller' in the '113 Patent Specification and, based on the record before us, we determine that the asserted prior art teaches both of them, including the more limited example of a processor that does not connect to subscribers directly." *Id.* at 23. |

*C. The Parties' Contentions*

Patent Owner disputes the broadest reasonable interpretations in the Decision on Institution of "switching facility," "coupled to," and "tandem access controller." PO Resp. 30–38, 63; *see also id.* at 10–29 (arguing disclaimer reflected in terms "switching facility" and "coupled to.") Petitioner agrees with our determinations. Pet. Reply 3, 18–27. We address the parties' contentions regarding these disputed terms below.

Claim 94 recites "tandem switches," rather than "switching facilities," as is recited in claim 1. *Compare* Ex. 1001, 19:55–20:17 *with id.* at 12:30–56. In the Decision on Institution, we declined to adopt a construction of "tandem switch" that prohibits performance of class 5 functions. Dec. on Inst. 12. Based on the evidence in the entire trial record, for the reasons discussed *infra* Section III.C.5 in this Decision, we determine that Petitioner

has demonstrated sufficiently that the asserted prior art teaches tandem switches on the basis that "tandem switch" means a class 4 switch in the PSTN (Ex. 1002 ¶¶ 53–55; Ex. 2022 ¶ 36).

Patent Owner does not provide contentions regarding the broadest reasonable interpretation of the terms "tandem switch" and "tandem switches," other than a brief mention in a footnote indicating that a tandem switch is "a switch in the PSTN that interconnects other PSTN tandem switches." PO Resp. 34 n.4. Patent Owner's claim construction contentions pertain to a purported "**General Disclaimer**" that Patent Owner contends "applies to all claims," but discusses with respect to only the terms "switching facility" and "coupled to." *Id.* at 1–38 ("Practically speaking, the disclaimer can be reflected in any or all of the claim terms 'switching facility' and 'coupled to.'"); *see also id.* at 30–38 (providing contentions only for the terms "switching facility" and "coupled to). Patent Owner's contentions regarding the purported disclaimer, as well as the construction of the terms "switching facility" and "coupled to" are discussed fully *infra* Section II.D. Patent Owner's contention that a tandem switch is "a switch in the PSTN that interconnects other PSTN tandem switches" (PO Resp. 34 n.4) is circular. Nonetheless, as discussed *infra* Section II.D, class 4 switches in the PSTN perform this function.

Because Petitioner's showing is sufficient, we determine that no further determinations or analyses regarding the construction of "tandem switch" are needed for this proceeding. *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011); *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

*D. "switching facility"*

We turn to the parties' contentions regarding the term "switching facility" recited in independent claim 1. The dispute between the parties pertains to whether another device recited in the claim, i.e., the call processing system, may be "*connected to an edge switch*." *See, e.g.*, PO Resp. 30.

The preamble of claim 1 recites "the telecommunications network comprising edge switches for routing calls from and to subscribers within a local geographic area and *switching facilities* for routing calls to *other edge switches or other switching facilities* local or in other geographic areas."[3] Ex. 1001, 12:35–39 (emphasis added). Apart from the claims, the term "switching facility" does not appear in the Specification. The term was introduced into the claims by amendment during prosecution of the '777 Patent Application. Ex. 1010, 68−80.

At institution, we adopted Petitioner's proposed construction for "switching facility," as it is consistent with the intrinsic evidence and the term's plain and ordinary meaning, construing "switching facility" as "any switch in the circuit-switched network." Dec. on Inst. 12; Pet. 9–10; Ex. 1010, 87, 87 n.1 (Applicants defined a "switching facility" as "[a]ny point in the switching fabric of converging networks"); TELECOMMUNICATIONS: GLOSSARY OF TELECOMMUNICATION TERMS, THE FEDERAL STANDARD 1037C, S-35 (1996) (Ex. 3001, 391) (defining "switching center" and "switching facility" as synonyms that mean "a

[3] In this proceeding, the parties agree that the preamble should be given patentable weight. Pet. 17−30; Prelim. Resp. 35; PO Resp. 31. For purposes of this Decision, we proceed on the assumption that it is.

facility in which switches are used to interconnect communications circuits on a circuit-, message-, or packet-switching basis"); THE NEWTON'S TELECOM DICTIONARY, (15th ed. 1999) (Ex. 3002) (defining "switching centers" to refer to all five classes of switches in the PSTN)). We rejected Patent Owner's proposed construction because it would improperly import limitations into the claim. Dec. on Inst. 7−12.

In its Response, Patent Owner maintains that "switching facility" is not an edge switch or edge device. PO Resp. 1−38. Patent Owner argues that the claim expressly distinguishes that a "switching facility" is not an "edge switch," and that construing "switching facility" to include "edge switch" would render the claim terms superfluous. *Id.* at 30−35. In Patent Owner's view, Applicants of the '113 Patent "unequivocally disclaimed controllers that applied call control features through an edge switch, or controllers that were themselves an edge device, from the scope of their inventions." *Id.* at 1−38. We disagree and address below each of Patent Owner's arguments in turn.

First, based on the evidence before us, we decline to adopt Patent Owner's proposed claim construction, as it would import limitations—"connecting the Tandem Access Controller ('TAC') to a PSTN tandem switch, rather than edge switches and edge devices"—from a preferred embodiment into the claim. *Id.* at 1–2, 9−10, 14−20; Ex. 1001, 2:1–3, 3:29–30, 3:66–4:3. Significantly, neither "Tandem Access Controller" nor "tandem switch" appears in most of the challenged claims, including independent claim 1.[4] In fact, Patent Owner admits that Applicants used

[4] Of the challenged claims, independent claim 94 recites "the call processing system coupled to at least one tandem switch," and dependent claims 18, 19,

"switching facility" in the claim instead of "tandem switch" to indicate that "switching facility" has broader scope than "tandem switch." Prelim. Resp. 37–38; PO Resp. 34–35.

A person of ordinary skill in the art would have understood that these two terms have different meanings. In the context of telecommunication and network communication, the plain and ordinary meanings of these terms are clear—"tandem switch" refers to class 4 switches in the PSTN (Ex. 1002 ¶¶ 53, 54; Ex. 2022 ¶ 36), whereas "switching facility" refers to all five classes of switches in the PSTN (Ex. 3002) or "a facility in which switches are used to interconnect communications circuits on a circuit-, message-, or packet-switching basis" (Ex. 3001, 391).[5] This is consistent with Applicants' definition of "switching facility"—"[a]ny point in the switching fabric of converging networks"—that was submitted with the Amendment that introduced the term. Ex. 2005, 82, 82 n.1. Moreover, "the general assumption is that different terms have different meanings." *Symantec Corp. v. Comput. Assocs. Int'l, Inc.*, 522 F.3d 1279, 1289 (Fed. Cir. 2008).

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112, and 113 recite "tandem access controller." The parties' claim construction contentions for those terms are discussed *supra* Section II.C and *infra* Section II.E, respectively.

[5] A "hybrid" switch has combined class 4 and class 5 switching features. Ex. 1037, 113, Fig. 4-5; Ex. 2002, 159, *cited in* Ex. 2022 ¶ 38. As noted in our claim construction discussion in our Decision on Institution, a reference relied upon by Patent Owner (Prelim. Resp. 5 (Ex. 2003, 474)) indicates "[i]n a contemporary PSTN, a tandem switch commonly is a hybrid Class 4/5, functioning as both a tandem and a CO (Class 5)" (Ex. 2003, 474–75). This reference is extrinsic evidence *offered by Patent Owner*. Nonetheless, this evidence is not necessary for us to arrive at our determinations herein, but adds contextual background that further supports our analyses.

Importantly, even if we were to interpret "switching facility" as a "tandem switch," it would not affect our analysis below because the language of claim 1 does not require a *direct* connection between a controller and a switching facility. Indeed, claim 1 recites "the call processing system *coupled to* at least one *switching facility*." Ex. 1001, 12:48–49 (emphases added). We discuss the broadest reasonable interpretation of "coupled to" *infra* Section II.E.

We decline to construe "switching facility" as not an edge switch or edge device, as urged by Patent Owner. As our reviewing court has explained, "each claim does not necessarily cover every feature disclosed in the specification," and "it is improper to limit the claim to other, unclaimed features." *Ventana Med. Sys., Inc. v. BioGenex Labs., Inc.*, 473 F.3d 1173, 1181 (Fed. Cir. 2006). Furthermore, the court "has repeatedly cautioned against limiting the claimed invention to preferred embodiments or specific examples in the specification." *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1346–47 (Fed. Cir. 2015); *SuperGuide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004) (noting that "it is important not to import into a claim limitations that are not a part of the claim"). "[I]t is the *claims*, not the written description, which define the scope of the patent right." *Williamson*, 792 F.3d at 1346–47; *see also Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (noting that "[i]t is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude").

Second, we are not persuaded by Patent Owner's arguments that the claims expressly distinguish that a "switching facility" is not an "edge switch," and that construing "switching facility" to include "edge switch"

would render the claim terms superfluous. PO Resp. 30−35; Ex. 2022 ¶¶ 61−65. Patent Owner's arguments fail to appreciate that claim 1 sets forth two separate functional requirements: (1) "edge switches for *routing calls from and to subscribers* within a local geographic area"; and (2) "switching facilities for *routing calls to other edge switches or other switching facilities* local or in other geographic areas." Ex. 1001, 12:35–39 (emphases added). The evidence before us shows that edge switches can perform the function recited in the first claim element, as well as "routing calls to other edge switches or other switching facilities local or in other geographic areas," as recited in the second claim element. Ex. 1002 ¶¶ 53−56. The two terms, "edge switches" and "switching facilities," are not mutually exclusive, but rather "switching facilities" encompasses all five classes of switches in the PSTN, including an edge switch. Ex. 3001, 391; Ex. 3002; Ex. 2005, 82, 82 n.1.

Notably, an ordinarily skilled artisan would have recognized that an edge switch can route calls to other edge switches directly via a direct trunk group or indirectly through a tandem switch, and to other switching facilities (e.g., a tandem switch). Ex. 1002 ¶¶ 53−56; Ex. 1037, Figs. 4-3, 4-4. Dr. La Porta's testimony regarding background information on the PSTN (Ex. 1002 ¶¶ 53−56) cites to Exhibit 1037, Figure 4-4, which is reproduced below (with highlighting added).

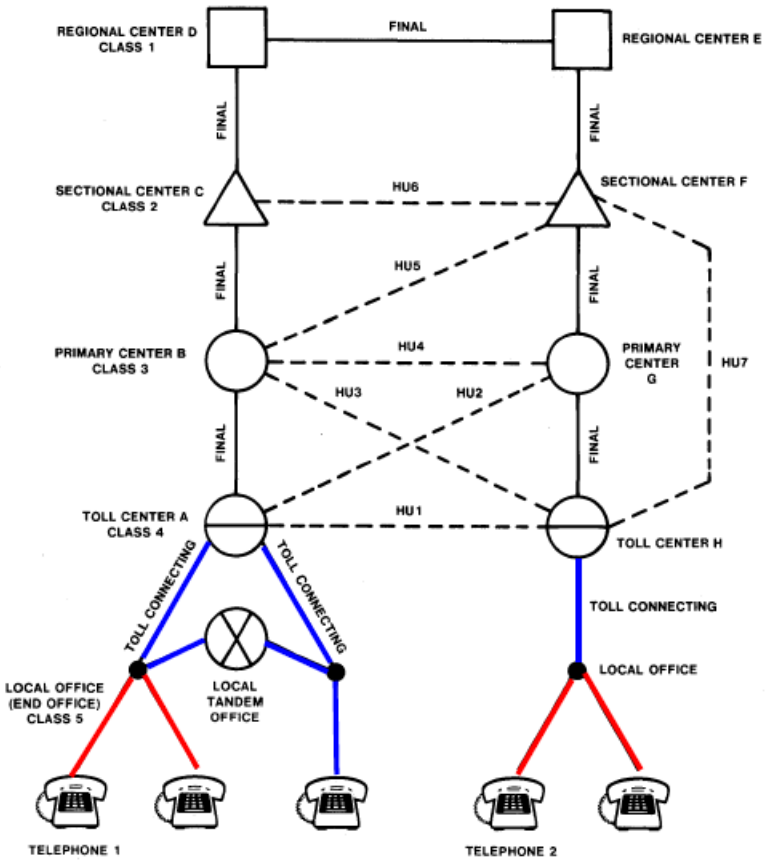


**Figure 4-4. The switching hierarchy.**

Annotated Figure 4-4 Illustrating the PSTN Switch Hierarchy

As shown in highlighted Figure 4-4 above, an edge switch (a class 5 switch) can route calls from and to users within local geographic area (highlighted in red). An edge switch also can route calls to a tandem switch and other edge switches directly using a direct trunk or indirectly through a tandem switch (highlighted in blue). Ex. 1002 ¶¶ 53−55; Ex. 1037, 90−92, 106−113, 119−122, 137−138, Figs. 4-3, 4-4.

The aforementioned functional claim elements map to the switches in the PSTN. The first claim element takes into account routing calls from and to users within a local geographic area. For the second claim element, the claim language "switching facilities for routing calls to *other edge switches*"

takes into account routing calls *from an edge switch to other edge switches*. The claim language "switching facility for routing calls . . . to other switching facilities" takes into account routing calls *from an edge switch to a tandem switch*, as well as from a tandem switch to other switches, including edge switches, in the network. Therefore, construing "switching facility" to include "edge switch" would not render the claim terms superfluous.

Patent Owner also attempts to show that an edge switch is not capable of performing the recited functions in the second claim element, arguing that "an edge switch cannot 'interconnect end office switches to other geographic areas that are *not local* to an end office switch.'" PO Resp. 32−33; Ex. 2022 ¶¶ 61−65 (emphasis added). However, that argument is not commensurate with the scope of the claims. For instance, claim 1 does not require every switching facility to perform that function. In fact, that claim uses the term "or" rather than "and"—"switching facilities for routing calls to other edge switches *or* other switching facilities *local or* in other geographic areas." Ex. 1001, 12:37−39 (emphasis added). Patent Owner does not identify, nor can we discern, a reason to read "or" as "and." As discussed above, an edge switch is capable of routing calls to other edge switches and other switching facilities within local geographic areas. Ex. 1002 ¶¶ 53−55; Ex. 1037, 106−113, Figs. 4-3, 4-4.

In light of the foregoing, Patent Owner's arguments (PO Resp. 30−35) and Mr. Bates' testimony (Ex. 2022 ¶¶ 61−65) that claim 1 expressly distinguishes that a "switching facility" is not an "edge switch," and that construing "switching facility" to include "edge switch" would render the claim terms superfluous, are unavailing.

Third, we are not persuaded by Patent Owner's argument or its expert's testimony that the Specification sets forth an unmistakable disclaimer that "switching facility" is not an edge switch or edge device. PO Resp. 1−2, 9−20, 28−38. There is a presumption that a claim term carries its ordinary and customary meaning. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002). To overcome this presumption, the patentee must "clearly set forth" and "clearly redefine" a claim term away from its ordinary meaning. *Bell Atlantic Network Servs., Inc. v. Covad Commc'ns Grp., Inc.*, 262 F.3d 1258, 1268 (Fed. Cir. 2001). The disavowal must be "unmistakable" and "unambiguous." *Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1322 (Fed. Cir. 2012).

Claim 1 and other of the challenged claims do not recite "tandem switch," but rather "switching facility."[6] Our construction for "switching facility" is consistent with its plain and ordinary meaning, encompassing all five classes of switches in the PSTN, including edge switches. Ex. 3001, 391; Ex. 3002; Ex. 1002 ¶¶ 53–55.

Turning to the Specification, the term "switching facility" is not found anywhere in the Specification. Accordingly, there is not much, if anything, intrinsically in the Specification that explicitly defines or informs a person of ordinary skill in the art at the time of the invention the meaning of "switching facility." As discussed above, Patent Owner, in fact, admits that Applicants introduced the term "switching facility" into the claims by

[6] Independent claim 94 recites "the call processing system coupled to at least one tandem switch," and dependent claims 18, 19, 112, and 113 recite "tandem access controller." The parties' claim construction contentions for those terms are discussed *supra* Section II.C and *infra* Section II.E, respectively.

Amendment to indicate that "switching facility" has *broader* scope than "tandem switch." Prelim. Resp. 37–38; PO Resp. 34–35; Ex. 2005, 82, 82 n.1.

We note that Patent Owner's arguments and Mr. Bates' testimony rely on the discussions in the Specification regarding *both edge switches and edge devices* (Ex. 1001, 1:37–40, 1:59−67, 2:40−54), to support their assertion that Applicants disparage the application of call control features at an *edge switch*. PO Resp. 14−16; Ex. 2022 ¶¶ 46–48. In any event, the Specification clearly states that connecting a controller at a tandem switch,[7] rather than an *edge switch*—to eliminate the problems regarding the provision of call features through the local service telephone company (telco) business office—is *a preferred embodiment*. Ex. 1001, 2:1–3 ("A preferred embodiment of the inventive system described herein connects at the tandem, thereby eliminating these problems."), 3:28−29 ("In one embodiment, the system includes a processor, referred to herein as a tandem access controller."), 3:66–4:1 ("FIG. 1 illustrates the tandem access controller (TAC) in one embodiment of the present invention connected to the existing PSTN tandem switch.").

Additionally, again Patent Owner's contentions (PO Resp. 10–38) depend not only on adoption of its proposed construction for "switching facility," but also its proposed construction for "coupled to" in only the

[7] As discussed previously, Patent Owner refrains from arguing that the connection between the call processing system and the tandem is direct such that no other hardware is connected between these two components (PO Resp. 10–38) and, instead, agrees that such connection doesn't have to be direct (Tr. 56:18–20).

recitation of "coupled to at least one switching facility." We discuss Patent Owner's contentions regarding "coupled to" *infra* Section II.E.

Furthermore, the '113 Patent Specification describes other embodiments. For instance, the Specification explains that in one embodiment the *web-enhanced services* "coexist with and overlay the local phone service at the local level." *Id.* at 3:41−57. As Mr. Bates confirms, edge switches "serve end users through local loop connections," and "interconnect subscriber lines within a local area." Ex. 2022 ¶ 38; Ex. 2002, 159; Ex. 2003, 102.

The Specification also does not support Patent Owner's position regarding *edge devices*. PO Resp. 14−17; Ex. 2022 ¶¶ 46−50. The allegedly disparaging statements are directed to only *certain types of edge devices*, such as phones, PBXs, and edge devices that provide extremely limited features. Ex. 1001, 1:34−40, 2:37−51. Therefore, if there is a disclaimer, such a disclaimer, at most, is limited to those prior art edge devices discussed specifically in the Specification.

More importantly, recognizing the advantages of a preferred embodiment over the prior art systems does not amount to an unmistakable disclaimer. As our reviewing court has explained, "patentees [are] not required to include within each of their claims all of [the] advantages or features described as significant or important in the written description." *Golight, Inc. v. Wal-Mart Stores, Inc.*, 355 F.3d 1327, 1331 (Fed. Cir. 2004). "An invention may possess a number of advantages or purposes, and there is no requirement that every claim directed to that invention be limited to encompass all of them." *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1370 (Fed. Cir. 2003).

Here, claim 1 is directed to a *web-enabled* processing system including one or more *web servers* coupled to a call processing system with access to two networks, one of which is coupled to a switching facility. In the "web-enhanced services" embodiments, the Specification does not describe requiring a controller to be connected to a tandem switch *directly*. Ex. 1001, 3:41−57. Even in cases where the specification describes only a single embodiment, our reviewing court consistently has not construed the claim as being limited to that embodiment. *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1366 (Fed. Cir. 2012) (holding that it is not enough that the only embodiment, or all of the embodiments, contain a particular limitation to limit a claim to that particular limitation); *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1117 (Fed. Cir. 2004).

In light of the foregoing, we do not agree with Patent Owner that the Specification sets forth an unmistakable disclaimer.

Finally, we also are not persuaded by Patent Owner's argument that the prosecution history confirms the alleged disclaimer set forth in the Specification. PO Resp. 20−28; Ex. 2022 ¶¶ 55−59. As an initial matter, no unmistakable disclaimer is found in the Specification for the reason stated above. Therefore, Patent Owner's assertion that Applicants did not rescind the clear disclaimer is misplaced.

Further, in the Decision on Institution, we rejected Patent Owner's argument that the prosecution history makes clear that "switching facility" cannot include an edge switch. Dec. on Inst. 10–12. We noted that the remarks made during prosecution are equivocal, and do not persuade us of a disavowal or disclaimer of the scope of the term "switching facility" to

exclude an edge switch. *Id.* For example, the portion of the prosecution history that Patent Owner cites includes a footnote for defining a "switching facility" as:

> Any point in the switching fabric of converging networks, also referred to in industry as a signal transfer point (STP), signal control point (SCP), session border controller (SBC), gateway, access tandem, class 4 switch, wire center, toll office, toll center, PSTN switching center, intercarrier connection point, trunk gateway, hybrid switch, etc.

Ex. 2005, 82, 82 n.1.

The above description does not explain that a switching facility excludes an edge switch. Indeed, "[a]ny point in the switching fabric of converging networks" appears broad. As Petitioner points out (Reply 23), these examples provided by Applicants include "a combination Class IV/Class V switch (hybrid switch), devices that only receive signaling (STP, SCP), and devices that would be located on packet networks and never on the PSTN (SBC)." Ex. 2002, 4; Ex. 1010, 87 n. 1; Ex. 1065 ¶ 78.

Patent Owner counters that we "misread" the Applicants' definition, suggesting that the Applicants' remarks should be read without that definition. PO Resp. 26−27. Relying on Mr. Bates' testimony, Patent Owner argues the Applicants' remarks "make clear that they have always consistently distinguished edge switches and tandem switches throughout the prosecution history." *Id.* at 26−28; Ex. 2022 ¶¶ 58−59.

However, as discussed above, the Applicants' definition, which is a part of the intrinsic evidence in this record, is consistent with the term's plain and ordinary meaning (Ex. 3001, 391; Ex. 3002) and the usage of the term in claim 1 (Ex. 1001, 12:30–56), as well as the general knowledge of a person with ordinary skill in the art (Ex. 1002 ¶¶ 53−55). Mr. Bates'

testimony (Ex. 2022 ¶¶ 58−59), which is extrinsic evidence, merely repeats Patent Owner's arguments. Moreover, "extrinsic evidence may be used only to assist in the proper understanding of the disputed limitation; it may not be used to vary, contradict, expand, or limit the claim language from how it is defined, even by implication, in the specification or file history." *Bell Atl. Network Servs. v. Covad Commc'ns Grp.*, 262 F.3d 1258, 1269 (Fed. Cir. 2001). Our reviewing court also has explained that "extrinsic evidence consisting of expert reports and testimony is generated at the time of and for the purpose of litigation and thus can suffer from bias that is not present in intrinsic evidence." *Phillips*, 415 F.3d at 1318.

In any event, the portions of the prosecution history relied upon by Patent Owner are ambiguous, and do not amount to an unmistakable disclaimer that limits the scope of "switching facility" to *exclude* an edge switch. Notably, Patent Owner and Mr. Bates (PO Resp. 26−27; Ex. 2022 ¶ 58) cite to the following Applicants' remarks for support:

> The PSTN is a configuration of *switching facilities for routing calls from calling parties to called parties*, comprising a plurality of end office switches (also referred to as central office switches or edge switches (e.g., a class 5 switch)) and a plurality of *interconnected switching facilities (also referred to as tandem switches*). The end office switches connect calling parties to called parties only within a local geographic area. The *tandem switching facilities* route calls received via end office switches or other tandem switching facilities to called parties within other geographic areas (national or international, beyond the local geographic area that a subscriber is in). Typically, a telephone call involves an originating end office switch, a plurality of tandem switches, and a terminating end office switch.

Ex. 2005, 82 (emphases added).

The phrase "switching facilities for routing calls from calling parties to called parties" in the first sentence makes clear that "switching facilities" encompasses edge switches. As discussed above, edge switches, not tandem switches, route calls from and to users. Ex. 1002 ¶¶ 54−56; Ex. 1037. The above paragraph also makes clear that "switching facilities" encompasses tandem switches, referring to this type of "switching facilities" sometimes, as "interconnected switching facilities" and "tandem switching facilities." Applicants' usage of "switching facilities" in this paragraph is consistent with our claim construction, and the term's plain and ordinary meaning, encompassing all five classes of switches in the PSTN, including edge switches. Ex. 3001, 391; Ex. 3002; Ex. 1002 ¶ 55. Therefore, the Applicants' remarks do not support Patent Owner's position that "switching facilities" excludes edge switches.

Patent Owner also maintains that Applicants distinguished their claimed controller from Schwab, the prior art asserted by Examiner. PO Resp. 21−29. As support, Patent Owner cites to the record of Applicants' in-person interview with the Examiner that states:

> Applicant explained the differences between Schwab et al and their apparatus. The major difference being that the subscriber is allowed to connect to *a tandem access switch directly through a tandem access controller* without any modification to the network. Applicant is going to file an RCE stressing this difference.

PO Resp. 22–23 (citing Ex. 2005, 110) (emphasis added by Patent Owner). However, notwithstanding this agreement between Applicants and Examiner during the prosecution history of the '777 patent, the claims at issue here in the '113 Patent do not recite that limitation. Neither a "tandem access controller" nor a "tandem switch" is recited in independent claim 1, and

none of the challenged claims recite a *direct connection* between these two devices. Therefore, the purported disclaimer in the prosecution history of the '777 patent regarding Schwab does not apply to the challenged claims. *See Ventana*, 473 F.3d at 1182 (holding that the alleged disclaimer made with respect to another claim limitation did not apply to the assert claims that used different claim language).

Upon consideration of the entire trial record, we maintain that the remarks made during prosecution are equivocal, and do not persuade us of a disavowal or disclaimer that limits the scope of "switching facility" to exclude an edge switch.

In light of the foregoing, we are not persuaded by Patent Owner's argument and Mr. Bates' testimony that Applicants of the '113 Patent "unequivocally disclaimed controllers that applied call control features through an edge switch, or controllers that were themselves an edge device, from the scope of their inventions." PO Resp. 1−39; Ex. 2022 ¶¶ 46−66. For the reasons stated above, in light of the Specification, the relevant prosecution history, and the knowledge of an ordinarily skilled artisan, we decline to construe "switching facilities" to exclude "edge switches."

For this Decision, we discern no reason to modify our claim construction set forth in the Decision on Institution with respect to "switching facility," construing the term as "any switch in the circuit-switched network," which, as discussed above, is consistent with its plain and ordinary meaning as understood by a person of ordinary skill in the art in the context of the '113 Patent (Ex. 3001, 391; Ex. 3002; Ex. 1002 ¶¶38−42, 59−60), the usage of the term in the claim (Ex. 1001, 12:30−59), and the intrinsic evidence (Ex. 2005, 82, 82 n.1).

*E. "coupled to"*

Each of independent claims 1 and 94 recites "coupled to." As we explained in the Decision on Institution, the plain and ordinary meaning of the term "coupled to" does not require a direct connection. Dec. on Inst. 13–14. Patent Owner does not dispute this plain and ordinary meaning. PO Resp. 35–38.

Patent Owner, instead, contends,

> Petitioner appears to believe that this limitation can be satisfied by an indirect connection. *See* Pet. at 36. Petitioner's goal is to obtain a construction that would allow a controlling device to be connected to a "switching facility" through an edge switch (i.e., the call processing system would be connected directly to the edge switch, and, hence, indirectly to a "switching facility" in the PSTN). Because this configuration was disclaimed by Applicants, Petitioner's construction is incorrect.

PO Resp. 35–36.

Patent Owner's contentions pertain to only one recitation of "coupled to" in each of claims 1 and 94, i.e., "the call processing system coupled to at least one switching facility," and "the call processing system coupled to at least one tandem switch." Each of claims 1 and 94, however, recites "coupled to" more than once. For example, claim 1 recites "one or more web servers *coupled to* a call processing system," "a second network *coupled to* a switching facility of a telecommunications network." Ex. 1001, 12:30–59.[8] Patent Owner does not urge that we construe "coupled to" as requiring a direct connection consistently throughout the claims and

[8] Claim 94 recites "one or more web servers *coupled to* a call processing system." 19:56–57 (emphasis added).

provides no argument or evidence supporting that "coupled to" in these other recitations requires a direct connection. PO Resp. 10–38.

Instead, Patent Owner focuses on only one recitation of "coupled to" in each of claims 1 and 94, i.e., "the call processing system coupled to at least one switching facility" and "the call processing system coupled to at least one tandem switch." *Id.* at 35–38. Patent Owner contends that the '113 Patent Specification "is repetitive and consistent in showing the claimed call processing system or controlling device as *always being connected to a tandem switch*, not an edge switch to access the PSTN." *Id.* at 36–37 (citing Ex. 1001, Fig. 1; Ex. 2022 ¶ 66). Patent Owner's argument pertains to the tandem switch, versus the edge switch. Patent Owner, however, refrains from arguing that the connection between the call processing system and the switch includes no hardware between these two components. *Id.* at 10–38.

Construing "coupled to" to require that the connection between the call processing system and the switch be limited to only a single line connection, without any hardware or other circuitry is not consistent with the '113 Patent Specification discussion cited by Patent Owner. In particular, that discussion in the '113 Patent Specification relies on the knowledge of the skilled artisan for how to implement the tandem access controller. For instance, tandem access controller 10 is illustrated as a single box with arrows to PSTN tandem switch 16 and a bidirectional arrow to Web 22. Ex. 1001, Fig. 1; *see also id.* at Figs. 2, 7, 8 (similarly illustrating TAC 10 as a box with lines or arrows to the PSTN and Web). The '113 Patent acknowledges that the PSTN used well-known SS7 signaling and standardized PSTN equipment, but the '113 Patent relies on the knowledge

of the skilled artisan for the operation of this signaling and equipment. *See, e.g.*, Ex. 1001, Figs. 1, 2, 7, 8 (omitting for example signaling transfer points and related connections);[9] *see also id.* 4:49–54 (relying on another publication incorporated by reference for details of SS7 operation and call flow), *id.* at 7:59–65 (relying on global standard for details of how information, including caller ID, is provided). In contrast to the PSTN, Web 22 was well-known to be a packet network that used a packet-based protocol, such as Internet Protocol (IP), rather than SS7. *See, e.g.*, Ex. 1002 ¶¶ 51, 79–87. Again the '113 Patent also omits details and relies on the knowledge of the skilled artisan for interfacing with Web 22, as well as the operation and infrastructure of Web 22. *See, e.g., id.* at 2:51–52, 4:4–8, 5:17–20, 5:52–56, Figs. 1, 2, 7, 8.

As set forth in the '113 Patent Specification, tandem access controller 10 is connected to and communicates with both the PSTN and Web 22, and the '113 Patent Specification relies on the knowledge of the skilled artisan for how to implement such a controller. *Id.* at 6:48–55. For instance, the Specification describes as exemplary that the tandem access controller "*may be* implemented using conventional processor hardware" and the connection to the tandem switch "*may be* as simple as a telephone circuit" (*id.* at 6:48–50).[10] Far from mandating Patent Owner's exclusion, this high-level,

[9] Dr. La Porta testifies that SS7 signaling is performed in accordance with the industry standard. Ex. 1002 ¶¶ 58–60 (citing Exs. 1027, 1036); *see also* Ex. 1027, 1, 9–14 (describing SS7 signaling and use of signaling transfer points STPs).

[10] The '113 Patent Specification also describes that "TAC 10 may use *any combination of hardware, firmware, or software*." Ex. 1001, 4:39–40 (emphasis added).

simplified description itself indicates it relies on the knowledge of the skilled artisan for developing the computer program used by the tandem access controller by further stating that it was "well within the capability of those skilled in the art" to "[d]evis[e] the software/firmware use[d] to control the TAC 10." *Id.* at 6:52–55. The plain and ordinary meaning of "coupled to" is consistent with the '113 Patent Specification's description, as well as its reliance on the knowledge of the skilled artisan.

Furthermore, during oral argument, Patent Owner agreed that the controller need not be connected directly to the tandem access switch.

> JUDGE PARVIS: So when you say associated, it [the tandem access controller] doesn't have to be directly connected to the tandem access switch; is that correct?
> MR. MURPHY: That's correct.

Tr. 56:18–20.

In addition to relying on embodiments in the '113 Specification, Patent Owner also points to its disclaimer. In particular, Patent Owner contends "the disclaimer can be reflected in any or all of the claim terms "switching facility" and "coupled to" because the scope of the disclaimer relates to the connection of the controller to the switching facility." PO Resp. 29. For the reasons given *supra* Section II.D, we are not persuaded by Patent Owner's contentions regarding the disclaimer. Patent Owner does not provide any further contentions regarding "coupled to" and the disclaimer other than those already discussed. PO Resp. 36–39.

Neither party argues that every recitation of "coupled to" requires a direct connection, and neither party disputes that the plain and ordinary meaning of "coupled to" is "connected either directly or indirectly." Pet. Reply 27; PO Resp. 35–38. Indeed, it is settled that "coupled to" generally

means that direct connection is not required. *See, e.g.*, *Bradford Co. v. Conteyor N. Am., Inc.*, 603 F.3d 1262, 1270−71 (Fed. Cir. 2010).

For these reasons, we decline to construe "coupled to" in only the recitation of "the call processing system coupled to at least one switching facility" as not connected through an edge switch, as urged by Patent Owner. Accordingly, we discern no reason to modify our claim construction set forth in the Decision on Institution with respect to "coupled to," construing the term in accordance with its plain and ordinary meaning as including "both a direct and an indirect connection."

*F. "tandem access controller"*

Each of claims 18, 19, 112, and 113 recites "tandem access controller." Claim 19 depends directly from claim 18 and claim 113 depends directly from claim 112. No other challenged claims recite the term.

At institution, we determined that "tandem access controller" was covered by a prior art "processor that does not connect to subscribers directly," which is an exemplary embodiment of a "tandem access controller in the '113 Patent Specification. Dec. on Inst. 23. We did not make further determinations regarding the meaning of "tandem access controller," except we rejected Patent Owner's proposed overly narrow construction of "coupled to." *Id.* at 13–14.

In its Response, Patent Owner provides only two sentences contending:

> Petitioner's construction, however, is unreasonably broad because it does not differentiate "tandem access controller" from "call processing system." A POSA would understand that in order to give meaning to the word "tandem" in the term "tandem

> access controller" and to differentiate "tandem access controller" from "call processing system," such a controller could not be coupled to an edge switch (as opposed to a tandem switch).

PO Resp. 63 (citing Ex. 2022 ¶ 100). Mr. Bates' testimony (Ex. 2022 ¶ 100), which is extrinsic evidence, merely repeats Patent Owner's arguments.

As we explained in the Decision on Institution (Dec. on Inst. 22–23) the '113 Patent Specification describes "tandem access controller" as "a processor." Ex. 1001, 3:28–29; *see also id*. at 6:48–49 ("The TAC 10 may be implemented using *conventional processor hardware*") (emphasis added). Additionally, the '113 Patent Specification indicates "[d]evising the software/firmware use[d] to control the TAC 10 is *well within* the capability of those skilled in the art since the various control features that can be made available are generally *already known*." *Id*. at 6:53–55 (emphasis added). Patent Owner does not provide contentions responsive to our analysis of this intrinsic evidence. *See, e.g.*, PO Resp. 62–63; Ex. 2022 ¶¶ 99–100.

Additionally, in the Decision on Institution (Dec. on Inst. 23), we explained that, the '113 Patent Specification describes an embodiment of the tandem access controller that is simply "inside the PSTN" because "it does not connect *directly to subscribers*." Ex. 1001, 5:3–6. Patent Owner again does not provide contentions responsive to our analysis of this intrinsic evidence. *See, e.g.*, PO Resp. 62–63; Ex. 2022 ¶¶ 99–100. As set forth in our Order of January 3, 2017, issued with our Decision on Institution, Patent Owner has been cautioned "that any arguments for patentability not raised in the response will be deemed waived." Paper 20, 3; *see also* Paper 23, 3 (Decision Denying Patent Owner's Request for Rehearing)

> During trial, Patent Owner has an opportunity to resubmit in its Response arguments previously made in its Preliminary Response, as well as its arguments newly made in the Request for Rehearing, along with any new arguments, explanations, and supporting evidence. As noted in the Scheduling Order, any arguments for patentability not raised in the Response will be deemed waived.

Patent Owner's contention that "such a controller could not be coupled to an edge switch" (PO Resp. 63; Ex. 2022 ¶ 100) is conclusory and at odds with '113 Patent Specification's description of the tandem access controller as being coupled to the PSTN, which as discussed *supra* Section II.D comprises both tandem and edge switches. Patent Owner's dispute is premised on its disclaimer contentions. As discussed *supra* Sections II.D and II.E, we are not persuaded by Patent Owner's arguments regarding the disclaimer and limiting either "switching facility" or "coupled to."[11]

For this Decision, we discern no reason to modify our claim construction set forth in the Decision on Institution with respect to "tandem access controller," because as set forth *infra* Sections III.C.15 and III.C.16, we determine that the asserted prior art teaches examples set forth in the '113 Patent Specification of a tandem access controller, including the example of not connecting to subscribers directly. Furthermore, Patent

[11] In our discussion of "coupled to" in connection with "tandem access controller" in the Decision on Institution, we noted a reference relied upon by Patent Owner (Prelim. Resp. 5 (Ex. 2003, 474)), which indicates "[i]n a contemporary PSTN, a tandem switch commonly is a hybrid Class 4/5, functioning as both a tandem and a CO (Class 5)" (Ex. 2003, 474–75). This reference is extrinsic evidence *offered by Patent Owner*. Patent Owner does not provide responsive contentions on our analysis regarding this evidence at the institution stage. Nonetheless, we need not rely on this evidence in this Decision in light of the intrinsic evidence discussed herein.

Owner does not separately argue claims 18 and 19, other than the brief argument noted above. Accordingly, we determine that no further express construction of the term "tandem access controller" is necessary to resolve a controversy in this proceeding.

## III. ANALYSIS

### *A. Principles of Law*

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc*., 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

### *B. Level of Ordinary Skill*

In determining the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation omitted). Petitioner's declarant, Dr. La Porta testifies that a person with ordinary skill in the art "would have been an engineer or computer scientist with at least a bachelor's degree, or equivalent experience . . . and at least three years of industry experience" in telecommunications or

network communications. Ex. 1002 ¶ 28. Mr. Bates, Patent Owner's declarant, agrees with this assessment. Ex. 2022 ¶ 22.

Therefore, we adopt Dr. La Porta's assessment of a person with ordinary skill in the art. We further note that the prior art of record in the instant proceeding (e.g., the Bell System reference (Ex. 1037)) reflects the appropriate level of ordinary skill in the art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1354–55 (Fed. Cir. 2001) ("the prior art itself reflects an appropriate level" of ordinary skill in the art).

*C. Obviousness*

Based on Petitioner's contentions in the Petition, we instituted on two grounds, i.e., that the challenged claims are unpatentable, under 35 U.S.C. § 103, as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang. Dec. on Inst. 25. For each asserted prior art combination, Petitioner explains how the combination describes all of the claim limitations and articulates a reason to combine the prior art teachings, citing to Dr. La Porta's testimony for support. Pet. 15–70 (citing Ex. 1002).

Relying on Mr. Bates' testimony, Patent Owner opposes and advances several arguments including that the prior art combinations do not "disclose a 'web enabled processing system' coupled to a 'switching facility' (Claim 1) or a 'tandem switch' (Claim 94)." PO Resp. 46–65 (citing Ex. 2022).

We begin our discussion below with an overview of Archer, Chang, and the Admitted Prior Art, and then we address the parties' contentions in turn.

*1. Overview of Archer*

Archer is directed to transmitting simultaneously call notifications to communication devices, such as a telephone, pager, and computer. Ex. 1003 Abstract. Figure 2 of Archer is reproduced below.

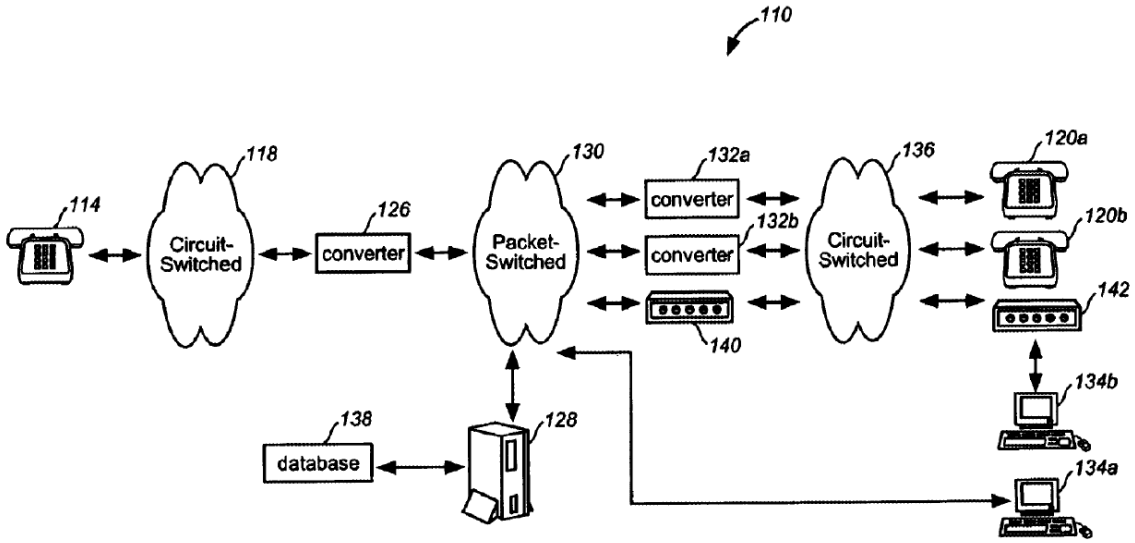


**FIG. 2**

Figure 2 is a communication system.

As shown in Figure 2 above, telephone 114 is connected to circuit-switched network 118. *Id.* at 4:66–67, 5:5–8. Circuit-switched network 118 is coupled to converter 126, which converts telephone signals into packets. *Id.* at 5:32–34. The packets are formatted in accordance with Internet Protocol (IP) and routed through packet-switched network 130. *Id.* at 5:41–46. Packet-switched network 130 is the Internet. *Id.* at 6:3–11. Converters 132a and 132b are coupled to packet-switched network 130 to convert digital packets into signals which can be transmitted across circuit-switched network 136. *Id.* at 8:18–21. In the preferred embodiment, converters 126

and 132 are interchangeable depending on which device 114, 120, or 134 initiates the call and where the call is routed. *Id*. at 8:23–26.

Server processor 128 queries database 138 using the number generated at telephone 114 to look up the forwarding phone numbers assigned to the user. *Id.* at 6:33–37. Server processor 128 will then transmit the packets simultaneously to each of destinations 132, 134. *Id.* at 7:3–4.

*2. Overview of Chang*

Chang discloses a system that has a web browser interface for allowing subscribers to control call features. Ex. 1004, Abstract, 4:45–58, 7:9–16. Figure 1 of Chang is reproduced below.

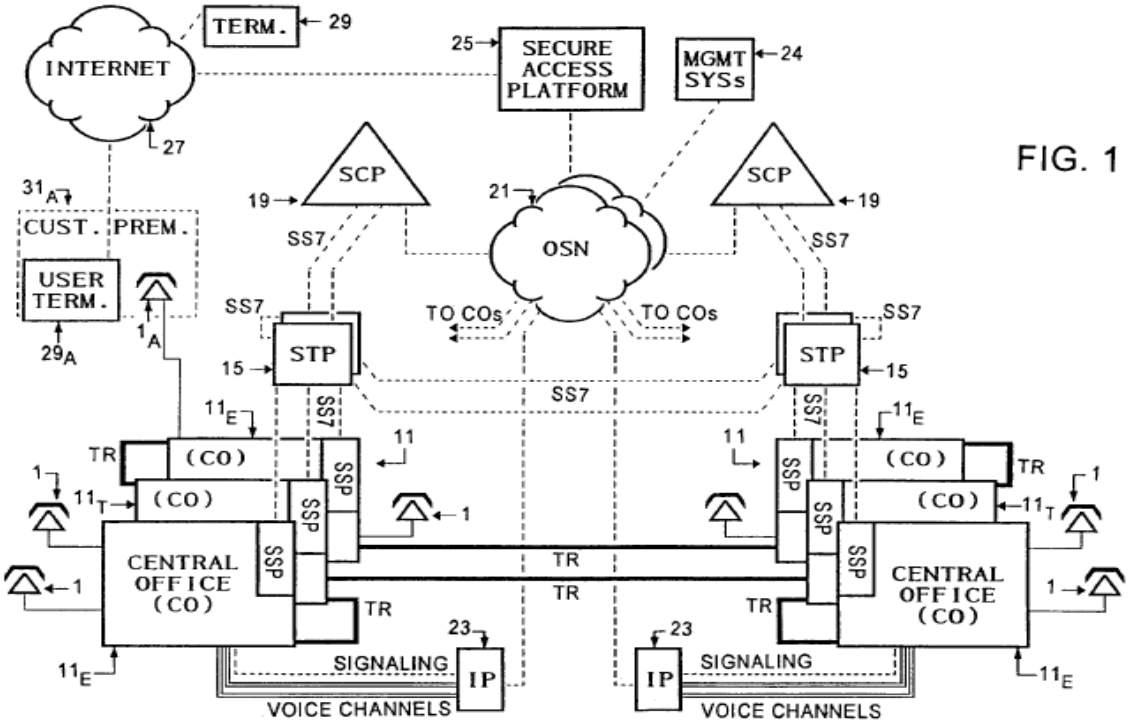


FIG. 1

Figure 1 shows a telephone network.

Figure 1 of Chang illustrates a telephone network that includes one or more tandem switching offices ($11_T$) that provide connections between end offices and/or between other tandem offices. *Id.* at 8:2–5. Secure access

platform 25 allows the subscribers to control their call features using a Web browser through the Internet, and provides user control selections to the tandem switches ($11_T$) through Service Control Point (SCP) 19 and Signaling Transfer Point (STP) 15 using Signaling System 7 (SS7) signaling. *Id*. at Abstract, 8:48–9:7, 11:9–12:17, 12:64–13:27.

*3. Overview of the Admitted Prior Art*

According to the '113 patent, it was known at the time of the invention that the PSTN "consists of a plurality of edge switches connected to telephones on one side and to a network of tandem switches on the other." Ex. 1001, 1:45−47. The tandem switch network allows connectivity between all of the edge switches, and a signaling system is used by the PSTN to allow calling and to transmit both calling and called party identity. *Id*. at 1:47–51. People had used various means for limiting interruptions due to the telephone, such as voice mail systems. *Id.* at 1:30−32. There were web-based companies managing third party call control, via the toll-switch network, which allow users to enter call control information through a web portal. *Id.* at 1:34−37.

*4. Claim 1*

*a. "call processing system coupled to at least one switching facility"*

Claim 1 recites "a web enabled processing system including one or more web servers coupled to a call processing system serving as an intelligent interconnection" between a packet network and the PSTN. Ex. 1001, 12:30–33. Claim 1 also recites "the call processing system coupled to at least one switching facility of the telecommunications network." *Id.* at 12:48–49. As discussed above, we interpret "switching facility" as "any

switch in the telecommunication network." *See supra* § II.D. Additionally, we interpret "coupled to" as "both a direct and an indirect connection." *Id.*

Petitioner takes the position that Archer in view of the Admitted Prior Art or Chang teaches or suggests these limitations. Pet. 15–29, 33–39. For instance, with respect to "the web enabled processing system including one or more web servers," recited in claim 1, Petitioner alleges that, in a preferred embodiment, Archer's packet network 130 is the Internet Protocol (IP)-based public Internet. *See, e.g., id.* at 26 (citing *e.g.*, Ex. 1003, 6:1–17). Dr. La Porta testifies that a person of ordinary skill in the art would have understood Archer to teach a system including web servers in packet network (Internet) 130 and also would have found it obvious to combine known web server technology used in the Internet with Archer's teachings. Ex. 1002 ¶¶ 111–118. We credit Dr. La Porta's testimony as consistent with Archer's teachings of a preferred IP-based network 130 that is "the public Internet" (Ex. 1003, 4:20–31, 4:43–58, 5:41–42, 6:1–29), as well as Chang's teachings of browsing the Internet by communicating with web servers (Ex. 1004, 4:4–5–58, 6:64–7:12, 13:7–11, 13:15–27). Dr. La Porta's testimony also is consistent with evidence he cites (Ex. 1002 ¶ 116, 117) describing known web server processes for data communication in the Internet. Ex. 1049, 124−131.

Additionally, Petitioner contends that Archer's server processor 128 has a web-enabled processor with an IP address that is a component of and is coupled to web servers in the Internet. Pet 18–19 (citing Ex. 1003, 4:17–42, 6:1–9, 6:30–32, 6:47–7:28, 7:44–47, 7:55–60, 8:8–10, 8:43–9:9, Figs. 2, 4; Ex. 1002 ¶¶ 100–01, 110–11). Petitioner additionally points to Chang's teachings of web servers (e.g., Web Server 525) and web server

communications, as well as provides reasons to combine Archer's teachings with known web technologies and/or Chang's teachings. *Id.* at 17–26 (citing e.g., 1004, 14:39–49, 14:63–15:10, 16:1–27, Figs 1, 2, 4, 5; Ex. 1002 ¶¶ 112–28, 130).

Patent Owner does not dispute Petitioner's showing as to Archer's disclosure of "a web enabled processing system including one or more web servers," as recited in claim 1. PO Resp. 48–62. Upon review of Petitioner's explanation and supporting evidence, we determine that Petitioner has shown sufficiently that Archer discloses this limitation.

The parties' dispute centers on whether Archer teaches "the call processing system coupled to at least one switching facility," recited in claim 1. PO Resp. 53–62. Petitioner takes the position that Archer's server processor 128 provides intelligent interconnection by executing software to route calls according to features selected by the subscribers across both the PSTN (having switching facilities) and the packet network. Pet. 26–27 (citing Ex. 1003, 5:4–67, 6:1–17, 6:31–56, 8:43–9:61, 10:56–11:43, Figs. 2, 4; Ex. 1002 ¶¶ 132–34). These contentions are not contested by Patent Owner. PO Resp. 40–62. We are persuaded by Petitioner's contentions and credit Dr. La Porta's testimony (Pet. 26–27; Ex. 1002 ¶¶ 132–34) that Archer's server processor 128 provides intelligent interconnection because Archer teaches server processor 128 executing software to route calls according to features selected by the subscribers across both the circuit (PSTN) and packet networks. Ex. 1003, 6:31–56 (describing server processor 128 executing software to take an incoming phone call and querying database 138 to look up the forwarding phone number), 8:43–9:61 (describing operation of server processor 128 providing find-me subscriber

service), 10:56–11:43 (describing operation of server processor 128 to provide conference call service), Figs. 2, 4.

Petitioner further argues that Archer's server processor 128 (a call processing system) is coupled to gateways 126, 132, tandem switches, and SCP switching facilities of the PSTN. *Id.* at 18, 26–29 (citing *e.g.*, Ex. 1003, 4:31–42, 5:4–67, 6:47–7:21, Figs. 2, 4; Ex. 1002 ¶¶ 100–01, 132–41). Petitioner contends that Archer's PSTN comprises edge switches and tandem switches (switching facilities). *Id.* at 18, 26–28 (citing *e.g.*, Ex. 1003, 5:4–32; Ex. 1001, 1:45–51; Ex. 1004; Ex. 1002 ¶¶ 132–34, 141).

Relying on the testimony of Dr. La Porta, Petitioner also alleges that it would have been obvious to couple Archer's server processor to a tandem switch in the PSTN because the server processor can receive calls from and place calls to the PSTN. *Id.* at 28–29, 33–36 (citing *e.g.*, Ex. 1003, 5:4–32; Ex. 1001, 1:45–50; Ex. 1004, 7:43–8:24, 18:66–19:12, Fig. 1; Ex. 1037, 64–69, 106–13, 139–49; Ex. 1002 ¶¶ 135–41). Petitioner, again relying on the testimony of Dr. La Porta, additionally, contends that it would have been obvious to combine Archer's system, i.e., web-enabled server processor 128 with Chang's teachings of coupling such a processor (e.g., web server 525) at a tandem switch $11_T$ shown within the conventional PSTN that uses standardized SS7 signaling and includes conventional PSTN infrastructure, such as service control points (SCPs). *Id.* at 36–39 (citing Ex. 1004, 2:63–66, 7:43–8:24, 9:38–58, 10:20–36, 11:41–54, 15:3–10, 18:66–19:12, Figs. 1, 5; Ex. 1026, 1–2; Ex. 1038; Ex. 1002 ¶¶ 165–72); *see also id.* at 18, 26–29 (citing *e.g.*, Ex. 1003, 4:31–42, 5:5–67, 6:47–7:21, Figs. 2, 4; Ex. 1002 ¶¶ 100–01, 132–41) (describing intelligent interconnect operation of server processor 128).

Patent Owner counters that Archer does not disclose "the call processing system coupled to at least one of the switching facilities," because Archer's converters are edge devices, not "switching facilities," and are not coupled to a switching facility. PO Resp. 53–62; Ex. 2022 ¶¶ 86−98.

Patent Owner's arguments and Mr. Bates' supporting testimony are premised on Patent Owner's proposed narrow interpretation of "switching facility" and "coupled to." *Id.* As discussed above, we decline to construe "switching facility" to exclude an edge switch, and decline to require a *direct connection* between the call processing system and a tandem switch. *See supra* §§ II.D, E. Accordingly, we are not persuaded by Patent Owner's arguments and the expert's testimony, as they are not commensurate with the claim's scope, improperly importing limitations from the preferred embodiment. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) (noting that it is well established that limitations not appearing in the claims cannot be relied upon for patentability).

Rather, we determine that Petitioner has shown sufficiently that Archer's PSTN satisfies the claimed "telecommunications network," and Archer's server processor and database satisfy the claimed "call processing system," and also are "web enabled." Additionally, claim 1 recites "the call processing system *coupled to* at least one switching facility of the telecommunications network." Ex. 1001, 12:48−49 (emphases added). We construe "coupled to" to include direct or indirectly coupling. *See supra* Sections II.D, E.

As Petitioner notes (Pet. 28−29), the PSTN that is coupled to Archer's server processor 128 contains switching facilities. Ex. 1003, 5:5–32, Fig. 2; Ex. 1002 ¶¶ 135−39. As Patent Owner admits (PO Resp. 4−7), the PSTN

was known in the art at the time of the invention to be a network that consists of a plurality of edge switches connected to telephones on one side and to a network of tandem switches on the other, and the tandem switch network allows connectivity between all of the edge switches. Ex. 1001, 1:42−55 (describing the PSTN); Ex. 1002 ¶¶ 50−69 (citing e.g., Ex. 1037, 91−92, 95−102), ¶¶ 135−41; Ex. 1004, 7:25−8:47, Fig. 1; Ex. 2022 ¶¶ 36–38. As such, we agree with Dr. La Porta's testimony that a person of ordinary skill in the art would have understood that the PSTN includes edge switches for routing calls from and to users within a local geographic area, and switching facilities for routing calls to other edge switches or other switching facilities local or in other geographic areas. Ex. 1002 ¶¶ 53, 135−42. In addition, we agree with Dr. La Porta's testimony that Archer's server processor is coupled to a tandem switch (a switching facility) in the PSTN 118, 136 through converters 126, 132, which are *PSTN-to-IP network gateways*. *Id.* at ¶¶ 155−64; Ex. 1003, 5:34−35 ("[c]onverter 126 can also be referred to as a gateway"), 5:59−60 ("PSTN to IP-network gateway (i.e., converter 126)").[12]

Second, Patent Owner argues that PSTN to IP-network gateways 126, 132 do not route calls to edge switches or other switching facilities, as recited in claim 1, and that circuit switched network 118 is connected to

[12] Additionally, we agree with Petitioner's contentions and Dr. La Porta's testimony that SS7 was well-known as it is consistent with the evidence cited therein. Ex. 1002 ¶¶ 56–65 (describing operation of standardized SS7 signaling and intelligent networking); Ex. 1027, 1–2, 9–14 (describing SS7 signaling network structures); Ex. 1021 (describing International Telecommunication Union's recommendation for intelligent networking including infrastructure such as service control points and intelligent peripherals).

gateways 126, 132 through *analog* lines, and the gateways include *modems* and do not *route calls*. PO Resp. 53−57; Ex. 2022 ¶¶ 86−91. Patent Owner's arguments and Mr. Bates' testimony, however, ignore the explicit teachings of Archer. Archer clearly discloses that, at the time of its invention, the heart of most PSTN networks was already *digital*. Ex. 1003, 5:10−31. Archer also discloses that "[i]n general the PSTN to IP-network gateway (i.e., converter 126) should be able to support the translation of PCM to multiple encoding schemes to interwork with software from various vendors." *Id.* at 5:59−62. Indeed, Mr. Bates, in his cross-examination testimony, confirms that pulse coded modulation (PCM) is a *digital* protocol that is used by a tandem switch. Ex. 1059, 22:23−23:8, 26:7−15, 229:23−24 (explaining that "[w]e use PCM to create the digital voice stream"). Moreover, as shown in Figure 3 of Archer, gateway 136 includes *router* 74 and *control circuitry* 72. Ex. 1003, 5:47−58, Fig. 3. Archer further describes that the operation of its invention includes *routing* a phone call from telephone 114 to server processor 128 through PSTN network 118, converter/gateway 126, and packet switched network 130, and then *routing* the voice packets to the destination device 120 through packet-switched network 130 converter/gateway 132, and PSTN network 136. *Id.* at 8:43−9:61, Fig. 5.

Third, Patent Owner argues that PSTN-to-IP network gateways 126, 132 are not switching facilities, but edge devices connected to edge switches. PO Resp. 53−57. Once again, Patent Owner is relying on its narrow claim construction for the term "switching facilities" excluding edge devices and edge switches, as well as its narrow construction of "coupled to" requiring a *direct connection* to the only switch Patent Owner contends is

not excluded, i.e., a tandem switch. Patent Owner's contentions are premised on adoption of its narrow constructions for *both* terms, i.e., "switching facilities" and "coupled to." *Id.* As discussed above, the Specification does not set forth any disclaimer to exclude an edge switch or edge device, much less a PSTN-to-IP network gateway, and further does not disclaim all configurations except that noted by Patent Owner. For instance, Patent Owner does not identify, nor can we discern, any disparaging statements regarding a *converter or gateway* in the Specification or prosecution history. PO Resp. 53−57; Ex. 2022 ¶¶ 86−91. In fact, the Applicants' definition includes a "gateway" as an example of a "switching facility." Ex. 2005, 82, 82 n.1. More importantly, Mr. Bates, in his cross-examination testimony, also admits that it was well known to interconnect an IP carrier network and the PSTN *at a tandem switch*. Ex. 1059, 201:22−202:11 (In response to the question, "when two telephone networks interconnect each other, they do not do it through class 5 switches . . . ," Mr. Bates answered, "They're doing it inside the network at their tandem access."), 205:15−206:16 (In response to the question, "what would be the connecting node between an IP carrier and the PSTN," Mr. Bates answered "It would be out at the higher level switch level, like a *tandem switch* where they would probably have an optical cable run out of one of their high end switches with an IP interface, talking to that IP carrier." (emphasis added)), 211:21−213:14. Indeed, the evidence regarding the state of the art and the general knowledge of an ordinarily skilled artisan also shows that such an interconnection between an IP network and the PSTN at a tandem switch was known in the art at the time of the invention. *See, e.g.*, Ex. 1058, Fig. 1B; Ex. 1057, Figs. 4−5.

Fourth, Patent Owner argues that it would not have been obvious to couple Archer's converters to switching facilities in the PSTN, and that Chang does not remedy Archer's deficiencies. PO Resp. 58–62. Patent Owner contends that Archer's converters "could not simply be connected" to PSTN switching facilities because SS7 signaling used in the PSTN does not pass beyond an edge switch to an edge device, like Archer's converters. *Id.*

Patent Owner's contentions are not commensurate with the scope of claim 1, which does not require SS7 signaling. Ex. 1001, 12:30–59. SS7 Signaling is information communicated within the PSTN (*see, e.g.*, Ex. 1001, Fig. 5; Ex. 1002 ¶¶ 42, 58–60; Ex. 2022 ¶ 40), whereas Patent Owner's contentions pertain to the terms "switching facility" and "coupled to," which are *physical structures* recited in claim 1. Patent Owner relies on the testimony of Mr. Bates (PO Resp. 58–59) that one having ordinary skill in the art would not have believed that Archer's system simply could be unplugged and reconnected using SS7 signaling at a tandem. Ex. 2022 ¶¶ 92, 93. An obviousness inquiry, however, is not limited to whether a skilled artisan would have had to do no more than simply unplug and reconnect a processor. *See KSR*, 550 U.S. at 421 ("A person of ordinary skill is also a person of ordinary creativity, not an automaton.") We credit Dr. La Porta's testimony that a person of ordinary skill in the art would have known of a limited number of choices, connecting at an edge switch or a tandem switch, and would have had a reason i.e., preferred performance, to connect Archer's database 138 and server processor 128 to a tandem in the PSTN. Ex. 1002 ¶¶ 61–78, 163–67. Dr. La Porta's testimony (*id.*) is consistent with the evidence cited therein, including Archer's express teachings of connecting database 138 and server processor 128 in the PSTN,

as well as other evidence he relies on teaching interconnecting in the PSTN. *See, e.g.*, Ex. 1003, 4:31–42, 8:50–9:16; Ex. 1001, 1:45–53, 4:47–54; Ex. 1037, 59–62, 97–100, 106–13, 119–22, 137–38.

Furthermore, Patent Owner's contentions and Mr. Bates' testimony do not take into account evidence in the record that it was well known to interconnect an IP carrier network and the PSTN *at a tandem switch*. Ex. 1059, 201:22−202:11 (interconnection between networks at tandem access), 205:15−206:16 (connecting node between an IP carrier and the PSTN would be at higher level switch like a tandem switch), 211:21−213:14; *see also* Ex. 1058, Fig. 1B; Ex. 1057, Figs. 4−5 (general knowledge of an ordinarily skilled artisan showing interconnection between an IP network and the PSTN at a tandem switch was known.)

We now turn to Patent Owner's contention that Chang does not remedy the deficiencies of Archer. PO Resp. 59–62. As discussed above we are not persuaded regarding the alleged deficiencies, but as an independent reason, Patent Owner's contentions do not take into account Chang's express teachings, relied upon by Petitioner, of interconnecting a web enabled processor (e.g., web server 525) at a tandem switch $11_T$ shown within the conventional PSTN that uses standardized SS7 signaling and includes conventional PSTN infrastructure, such as service control points (SCPs). Pet. 36–39 (citing Ex. 1004, 2:63–66, 7:43–8:24, 9:38–58, 10:20–36, 11:41–54, 15:3–10, 18:66–19:12, Figs. 1, 5; Ex. 1026, 1–2; Ex. 1038; Ex. 1002 ¶¶ 165–72); *see also id.* at 18, 26–29 (citing *e.g.*, Ex. 1003, 4:31–42, 5:4–67, 6:47–7:21, Figs. 2, 4; Ex. 1002 ¶¶ 100–01, 132–41) (describing intelligent interconnect operation of server processor 128). Patent Owner's arguments are premised on whether Chang alone discloses all elements

recited in claim 1. PO Resp. 59–62. We are not persuaded by Patent Owner's attacks on each of Archer and Chang individually rather than the combination of teachings of Archer and Chang relied upon by Petitioner. *Cf. In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986); *In re Keller*, 642 F.2d 413, 426 (CCPA 1981) (explaining that one cannot show non-obviousness by attacking references individually when obviousness is based on combinations of prior art references).

Furthermore, Patent Owner's contentions that Chang's secure access platform 25 is nothing more than a web server that does not receive call data and is not involved in processing calls across the networks does not take into account Chang's teachings in their entirety. PO Resp. 59–61. For instance, Chang teaches receiving call data, e.g., digit collection and transporting communication traffic and signaling via connections between Intelligent Peripherals (IPs) 23 and central office 11. Ex. 1004, 9:38–58. We are persuaded by Petitioner's explanation and Dr. La Porta's testimony that Chang's secure access platform 25 is coupled to switching facilities in the PSTN and, in particular, tandem switches through standardized SS7. See, e.g., Pet. 36–39 (citing e.g., Ex. 1002 ¶¶ 165–72). Petitioner relies on (*id*.) Chang's description of an embodiment that employs standardized PSTN infrastructure and SS7 signaling. Ex. 1004, 2:7–53 (describing the Advanced Intelligent Network developed by Bell Operating Companies that includes, for example, SS7 Service Control Points (SCPs)). Standardized SS7 signaling is the same method described in the '113 Patent Specification. Ex. 1001, 7:60–65 (explaining that SS7 is "a global standard for telecommunications and defines the procedures and protocol by which network elements in the PSTN exchange information"); *see also* Ex.

1002 ¶¶ 58–65. We discuss *infra* Section III.C.4.d why we are persuaded by Petitioner's reasons to combine Archer and Chang

After considering the entirety of the record, including the parties' contentions and supporting evidence, we determine that Petitioner has demonstrated by a preponderance of the evidence that Archer alone, with the knowledge of one of ordinary skill in the art, or Chang teaches or suggests "a web enabled processing system including one or more web servers coupled to a call processing system serving as an intelligent interconnection" between a packet network and the PSTN and "the call processing system coupled to at least one switching facility of the telecommunications network," recited in claim 1.

*b. "establishing the voice communication…after the call is completed"*

Patent Owner also disputes Petitioner's showing for "establishing the voice communication between the calling party and the called party after the call is completed, across both the packet network and the second network," recited in claim 1. PO Resp. 48–53. Petitioner asserts that Archer teaches this limitation because Archer teaches after the call is connected across both packet switched network 130 and circuit-switched network 118, 136, establishing a communication and commencing a "conversation." Pet. 40 (citing Ex. 1003, 3:4–10, 7:14−21, 9:30–37, 9:50−67, 11:28–43, Figs. 4−5). As support, Dr. La Porta testifies that server processor 128 routes voice packets to complete the call across packet-based network 130 and circuit-switched network/PSTN 118, 136 thereby establishing a communication and commencing a conversation. Ex. 1002 ¶¶ 176–78 (citing Ex. 1003, 3:4–10, 7:14−21, 8:19−26, 9:15–16, 9:30−67, 11:28–43, Figs 2, 4−5). Dr. La Porta

also testifies that "[t]he communication link is complete and the conversation commences between the calling party who initiated the call and the called party who picked up the call at one of the destination receiving devices (120, 134), which constitutes 'accept[ing] the communication.'" *Id.* ¶ 178 (citing Ex. 1003, 8:50–56, 9:30–55). We credit Dr. La Porta's testimony (*id.*) as it is consistent, for example, with Archer's teaching that after the call is completed "[u]pon receipt of a pickup notification," server processor 128 routes voice packets across circuit-switched network 136 to the destination completing the call to each of receiving devices 120, 134. Ex. 1003, 9:30–55, Figs. 2, 5. Based on the evidence in this entire record, we agree with Petitioner and credit Dr. La Porta's testimony as it is consistent with the prior art of record, including Archer's disclosure. Pet. 40; Ex. 1002 ¶¶ 176–78; Ex. 1003.

Patent Owner opposes and advances several arguments. PO Resp. 48−53. First, Patent Owner argues that the cited portions of Archer are silent as to what device establishes the voice communication and, therefore, Archer fails to disclose that the web-enabled processing system is the element that performs the "establishing" step. *Id.*

However, Petitioner and Dr. La Porta's testimony clearly point out Figure 4, which is a flowchart of the software that executes on server processor 128 (Ex. 1003, 6:47–48) of Archer and the pertinent description of that figure to support Petitioner's contention that Archer's server processor 128 "complete[s] a communications link" between the caller and recipient, as required by claim 1. Pet. 40 (citing Ex. 1003, Fig. 4 (68, "Establish communication"), 7:14−21). Similarly, Petitioner and Dr. La Porta's testimony direct our attention to Figure 5 and related disclosure describing

server processor 128 notifying each of receiving devices 120, 134 of the call and further explaining that the first destination to answer initiates voice digitization at server processor 128. *Id.* (citing *e.g.*, Ex. 1003, Fig. 5, 9:30−37); Ex. 1002 ¶¶ 176–78. Archer's disclosure relating to Figure 5 describes "terminat[ing] the call notification" to each of receiving devices 120, 134, as "was described above with respect to steps 64 and 66 of FIG. 4" and provides further details regarding routing packets to establish this end-to-end communication concluding with "[a]t this point the call is completed and conversation commences." Ex. 1003, 9:30–59, Fig. 5.

Petitioner specifically directs our attention to step 68 "Establish communication" in Figure 4 of Archer and step 109 "Commence communication" of Figure 5 of Archer. Pet. 40 (citing Ex. 1003, Figs 4−5). Figures 4 and 5 of Archer are reproduced below with red markings added to highlight the steps or tasks relied upon by Petitioner.

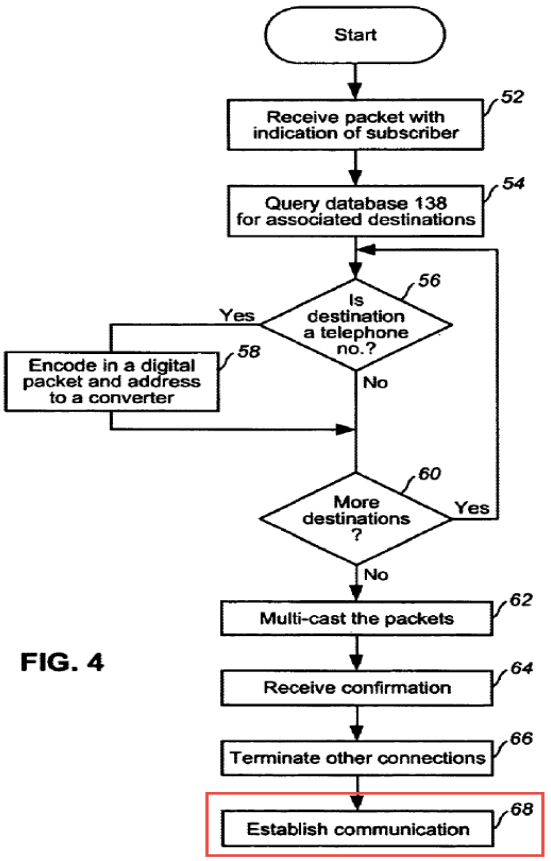


FIG. 4

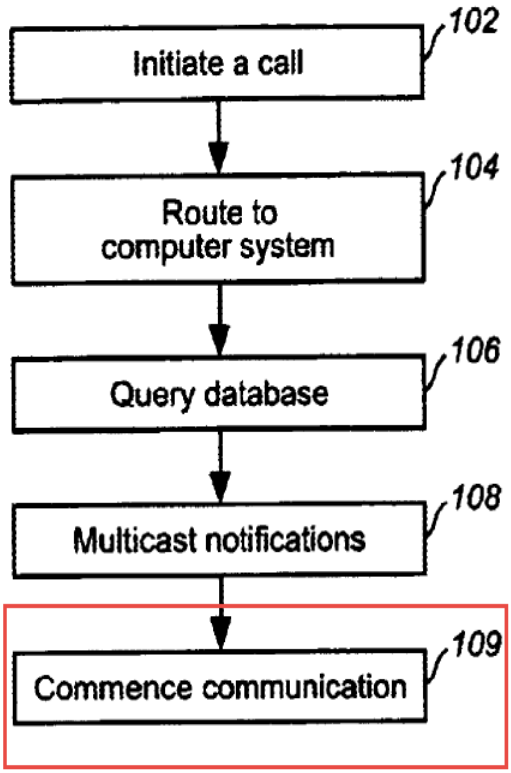


FIG. 5

Figure 4 of Archer "is a flowchart of the *software* which will *execute on server processor 128*." Ex. 1003, 6:48−49 (emphases added). Figure 5 of Archer "is a flow chart of a preferred embodiment *method of the present invention*." *Id.* at 3:38−40 (emphasis added). As Archer explains, "[s]erver processor 128 is a computer system coupled to packet-switched network 130 and *executes server software to perform the tasks required by the present invention*." *Id.* at 6:30−32 (emphasis added). One of ordinary skill in the art, reading the corresponding descriptions with the figures, would have understood that Archer's server processor 128, executing the disclosed software, performs the steps or tasks shown in Figures 4 and 5, including "establish communication" step 68 (highlighted with a red box) in Figure 4

and "commence communication" step 109 (highlighted with a red box) in Figure 5. *Id.* at 6:48−9:61.

Patent Owner's argument fails to recognize that "[w]hat a prior art reference discloses or teaches is determined from the perspective of one of ordinary skill in the art." *Sundance, Inc. v. DeMonte Fabricating Ltd.*, 550 F.3d 1356, 1361 n.3 (Fed. Cir. 2008). A prior art reference must be "considered together with the knowledge of one of ordinary skill in the pertinent art." *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994); *see also*; *DeGeorge v. Bernier*, 768 F.2d 1318, 1323 (Fed. Cir. 1985) (superseded on other grounds by statute, Patent Law Amendments Act of 1984, 35 U.S.C. §§ 135, 141–46) (holding that a reference "need not, however, explain every detail since [it] is speaking to those skilled in the art"); *In re Preda*, 401 F.2d 825, 826 (CCPA 1968) (explaining that "in considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom").

Based on the entirety of the full trial record, including Figures 4 and 5 of Archer and the relevant descriptions of those figures, we find Patent Owner's argument and Mr. Bates' testimony (PO Resp. 48−51; Ex. 2022 ¶¶ 79−84) that Archer is silent as to what device establishes the communication unavailing. Rather, we agree with Petitioner and Dr. La Porta's testimony Archer discloses that server processor 128 completes the communication link between the caller and recipient, as required by claim 1. Pet. 40; Ex. 1002 ¶¶ 176–78.

Patent Owner further argues that Archer provides no details "about what, where, or how the call is completed and conversation commences."

PO Resp. 51. However, the disputed limitation of claim 1 merely requires that the web-enabled processing system perform the step of "establishing the voice communication between the calling party and the called party after the call is completed" across both networks. Ex. 1001, 12:30−59. The web enabled processing system of claim 1 includes "one or more web servers coupled to a call processing system," i.e., Archer's server processor and database. As discussed above, Archer provides a detailed description regarding these recitations in claim 1.

To the extent that Patent Owner argues that Archer is not enabling, such argument is misplaced because there is a rebuttable presumption that the disclosure in a prior art patent, as here, is enabled. *See Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1355 (Fed. Cir. 2003); *see also In re Antor Media Corp.*, 689 F.3d 1282, 1287−88 (Fed. Cir. 2012) (holding that prior art publications and patents are presumed to be enabled). Patent Owner does not explain specifically why an ordinarily skilled artisan would not have known how to establish a communication link between the caller and recipient in view of Archer's detailed disclosure, much less demonstrate why such an artisan would have had to engage in undue experimentation to complete the link. PO Resp. 48−51. In fact, as Petitioner points out, Mr. Bates acknowledges in his cross-examination testimony that "no details of how the recited 'establish the voice communication' claim step is performed need be disclosed in a patent specification because such details were well known" to a person of ordinary skill in the art at the time of the invention. Reply 16; Ex. 1059, 155:13−158:11. Accordingly, we do not find Patent Owner's argument undermines Petitioner's obviousness showing.

After considering the entirety of the full trial record, including the parties' contentions and supporting evidence, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that Archer alone, with the knowledge of one of ordinary skill in the art, or Chang teaches or suggests the claimed processing system that performs the step of "establishing the voice communication between the calling party and the called party after the call is completed, across both the packet network and the second network," as required in claim 1.

*c. Remaining elements recited in Claim 1*

Patent Owner does not submit separate, specific arguments for other elements recited in claim 1. *See generally* PO Resp. For each asserted ground, i.e., that claim 1 is unpatentable, under 35 U.S.C. § 103, as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang, Petitioner explains how the combination describes all of the claim limitations and articulates a reason to combine the prior art teachings, citing to Dr. La Porta's testimony for support. Pet. 15–70 (citing Ex. 1002). Upon consideration of Petitioner's explanation and supporting evidence, we determine that Petitioner provides sufficient evidence, including Dr. La Porta's testimony, to show that the combined teachings of the asserted prior art teaches those other claim elements. *Id.*

For instance, we are persuaded by Petitioner's showing for the recitation in the preamble of claim 1 reproduced below.

> [T]he telecommunications network comprising edge switches for routing calls from and to subscribers within a local geographic area and switching facilities for routing calls to other edge switches or other switching facilities local or in

> other geographic areas, the method for enabling voice communication from a calling party to a called party across both the packet network and the second network.

Ex. 1001, 12:35–43.

Petitioner contends the PSTN included tandem switches and edge switches, and provides supporting evidence, including pointing to specific disclosure in Chang and the testimony of Dr. La Porta. Pet. 28–29 (citing *e.g.*, Ex. 1001, 1:45–50; Ex. 1004, Fig. 1, 7:43–8:24, 18:66–19:12; Ex. 1037, 64–69, 11–92, 106–13, 139–45; Ex. 1010, 87 n.1; Ex. 1002 ¶¶ 136–39). Consistent with Petitioner's contentions (*id*.), Archer teaches "public switched telephone network (PSTN) is the preferred circuit-switched communication network 118" (Ex. 1003, 5:23–24) and illustrates PSTN 136 in Figure 6 (*id*. at Fig. 6). The '113 Patent Specification acknowledges that the prior art "Public Switched Telephone Network (PSTN) consists of a plurality of edge switches connected to telephones on one side and to a network of tandem switches on the other." Ex. 1001, 1:45–47.

Additionally, both parties provided evidence that the PSTN comprised a hierarchical arrangement of equipment including edge switches and other switches. *See, e.g.*, Pet. 11–13 (citing Ex. 1002 ¶¶ 53–64); PO Resp. 4–8 (citing Ex. 2022 ¶¶ 36–39); Ex. 1037, 59, 61–69, 81–92, 95–102, 106–13, 119–22, 137–38. Dr. La Porta testifies the PSTN "consisted of a global network of circuit switches arranged in a geographical hierarchy" including "switches known as tandem switches, or class 4 switches," and "edge switches, or class 5 switches." Ex. 1002 ¶ 53. We credit Dr. La Porta's testimony as consistent with the evidence of record describing the hierarchical arrangement of the PSTN. Ex. 1037. Additionally, Patent Owner does not dispute Petitioner's contentions including that the PSTN

comprised a hierarchical arrangement of equipment including edge switches and other switches and, indeed, Mr. Bates testifies that the PSTN comprises the same five-level hierarchy. *See, e.g.*, Ex. 2022 ¶¶ 36–38 (illustrating hierarchical arrangement of PSTN equipment including "Tandem Switch" and "Class 5," which "contain edge switches.")

With respect to enabling a call across both the packet network and the telecommunications network, Petitioner again points to Archer's server processor 128 routing the call based on control criteria in database 138 such that the call is completed across packet network 130 and the PSTN. Pet. 29–30 (citing *e.g.*, Ex. 1003, Figs. 2, 4–5; Ex. 1002 ¶¶ 142–46). Dr. La Porta testifies that Archer's server processor 128 coupled to database 138, in conjunction with controller 126, 132, enables voice communication. Ex. 1002 ¶ 144. We credit Dr. La Porta's testimony as it is consistent with Archer's disclosure discussed above describing server processor 128 receiving calls from the PSTN via packet switch network 130 and completing them through to telephones 120 or computer 134. *See, e.g.*, Ex. 1003, 9:10–61, Figs. 2, 4–5.

For the limitation "receiving call data which is associated with a call originated by the calling party via either the packet network or the second network, at the call processing system," recited in claim 1, Petitioner points to call data, such as the called party's telephone number, that is received from the PSTN in Archer and converted into packets for transmission over the packet switched network. Pet. 30–32 (citing Ex. 1003, 4:17–36, 5:10–46, 6:33–38, 6:48–67, 8:27–34, 8:50–60, 9:62–64, Figs. 2, 4–6; Ex. 1002 ¶¶ 148–50). Dr. La Porta testifies that call signals are transmitted over the PSTN and the packet network to server processor 128, which identifies

the intended recipient user from extracted subscriber information, such as the called party's telephone number. Ex. 1002 ¶ 150–52. We credit Dr. La Porta's testimony as it is consistent with the evidence of record including, for example, with Archer's teaching that server processor 128 receives packets that include "an indication of the called party," which may be "the called party's telephone number or subscriber number." Ex. 1003, 6:49–56.

For the limitation "the calling party using a communications device to originate the call for the purpose of initiating voice communication," recited in claim 1, Petitioner explains that Archer teaches that a caller uses a standard telephone or a computer to initiate a call. Pet. 33 (citing Ex. 1003, 8:50–56, 10:25–44, Figs. 2, 5, 6; Ex. 1002 ¶¶ 152–54). Petitioner's contentions and Dr. La Porta's testimony are consistent with Archer's teachings including a caller initiating a call using "standard phone service and equipment" (Ex. 1003, 8:50–56) or a computer (*id.* at 10:25–44).

For the limitation "the call processing system processing the call across both the packet network and the second network to complete the call to the called party," recited in claim 1, Petitioner's contentions overlap those previously discussed. For instance, Petitioner explains that Archer teaches call processing capability for processing calls across the PSTN and packet network by describing packetizing signals received from a standard phone via the PSTN and sending the packets to server processor 128, which looks up forwarding addresses and multicasts packets to the forwarding addresses. Pet. 39–49 (citing Ex. 1003, 3:46–58, 6:57–67, 7:3–13, 8:43–11:43, Figs. 2, 4–6; Ex. 1002 ¶¶ 173–75). Petitioner also explains that, in accordance with certain of Archer's teachings, the multicast packets are converted and transmitted across the PSTN to the destination phone. *Id.* We agree with

Petitioner's contentions and Dr. La Porta's testimony as they are consistent with the evidence of record, including the evidence cited therein. Additionally, Petitioner's contentions and Dr. La Porta's testimony are consistent with the evidence discussed *supra* Section III.C.4.b with respect to the "establishing" step, and that reasoning applies here as well.

Based on the entirety of the record before us, we are persuaded by and adopt as our own, Petitioner's analysis and Dr. La Porta's supporting testimony, showing that all limitations of claim 1 are taught or suggested by the combination of Archer and the knowledge of one of ordinary skill in the art or Chang.

*d. Reasons to Combine*

Petitioner provides how and articulates reasoning why one of ordinary skill in the art would have combined (1) the prior art teachings of Archer with the knowledge of one of ordinary skill in the art in the manner recited in claim 1; and (2) the prior art teachings of Archer and Chang in the manner recited in claim 1. Pet. 17–40. Patent Owner contends that Petitioner did not articulate a reason as to why a person of ordinary skill in the art would combine the teachings of Archer and Chang or how one would combine the teachings. PO Resp. 61–62. We disagree, and instead we are persuaded by Petitioner's contentions and Dr. La Porta's testimony. Pet. 15–40; Ex. 1002. For instance, Petitioner contends that "[t]he combination of Archer's web-enabled processing system with Chang's coupling to a switching facility is nothing more than the combination of known prior art techniques in conventional ways, achieving predictable results in a system ready for improvement." Pet. 38; Ex. 1002 ¶ 168.

Petitioner's contentions and Dr. La Porta's testimony are consistent with the evidence of record. For example, regarding how one of ordinary skill in the art would have combined Archer's and Chang's teachings, contrary to Patent Owner's contentions (PO Resp. 61–62), Petitioner provides a detailed explanation. For example, Petitioner provides annotations to Figure 1 of Chang showing that Chang's coupling to a switching facility, i.e., each of tandem switches ($11_T$).

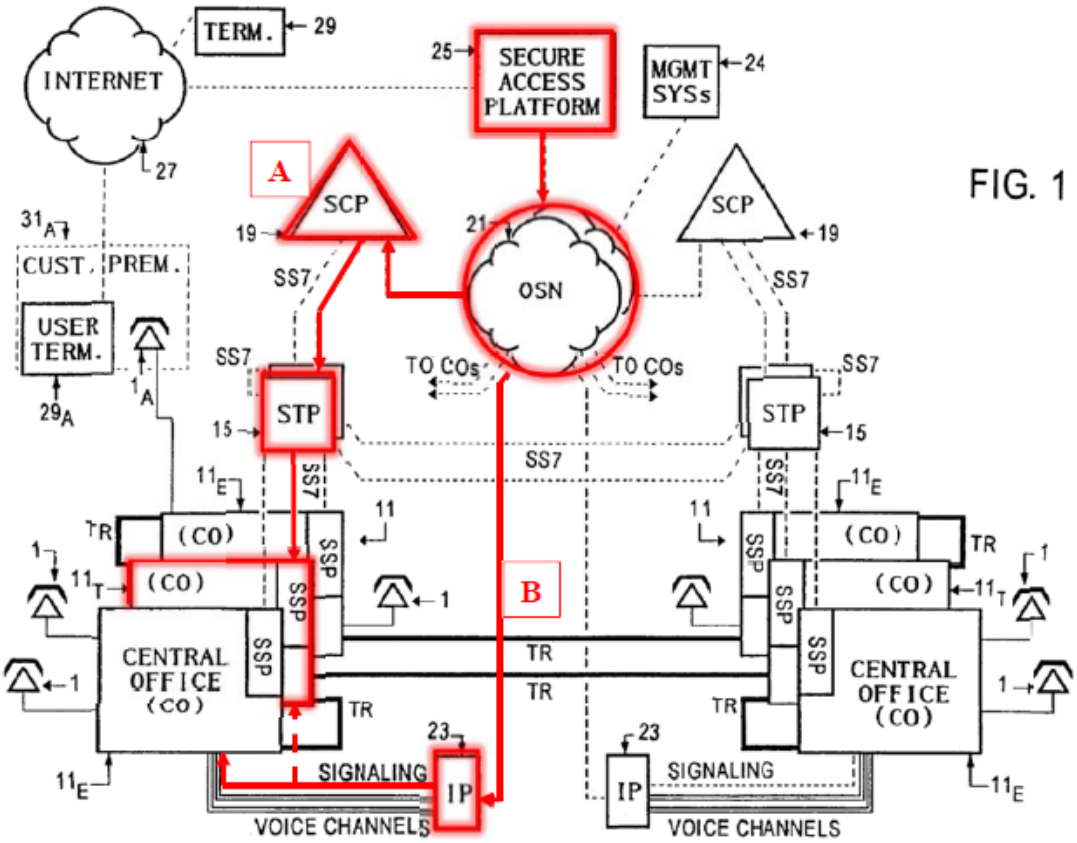


FIG. 1

Figure 1 of Chang with Annotations showing Secure Access Platform 25 connections to Central Offices (COs)

As highlighted in red by Petitioner's annotations to Figure 1 of Chang above, secure access platform 25 is connected to Tandem Switches $11_T$ in the Central Offices. Pet. 37 (citing Ex. 1004, Fig. 1). More specifically, Figure 1 of Chang illustrates a web enabled processor, i.e., Secure Access

Platform 25 that is connected to Tandem Switches $11_T$ shown within the conventional PSTN that uses standardized SS7 signaling and includes conventional PSTN infrastructure, including Service Control Point (SCP) 19 and Signaling Transfer Point (STP) 15. *Id.* at 37–38. Indeed, Chang provides more detail regarding the PSTN and standardized SS7 signaling than the '113 Patent Specification, which, instead, relies on external sources. *Compare* Ex. 1004, Fig. 1 *with* Ex. 1001, Figs. 1, 2, 7, 8; *see also* Ex. 1001, 4:49–54 (referring to external publications for details of the operation of the existing phone network including SS7 signaling), 7:60–63 (describing SS7 signaling as "global standard for telecommunications," but omitting description of SS7 signaling or operation); Ex. 1002 ¶¶ 56–65 (describing operation of standardized SS7 signaling and intelligent networking); Ex. 1027, 1–2, 9–14 (describing SS7 signaling network structures); Ex. 1021 (describing International Telecommunication Union's recommendation for intelligent networking including infrastructure such as service control points and intelligent peripherals).

Consistent with Petitioner's contentions and annotations (Pet. 37), Chang's secure access platform 25 connects via Operations Systems Network 21, which uses a generic data interface to connect an Intelligent Peripheral (IP) in the Internet to SCP 19 in the PSTN. Ex. 1004, 9:20–10:3. Additionally, consistent with the explanation in the Petition (Pet. 12–13), intelligent networking was well-known to the skilled artisan. Ex. 1038, 29–36, 46–48, 58–59, 90–92; Ex. 1002 ¶¶ 61–64.

Patent Owner contends that Petitioner fails to identify how Chang's secure access platform could receive call data. PO Resp. 62. However, as explained above, Archer's server processor 128 and database 138 already

receive call data from PSTN 118. For example, as we explained, we credit Dr. La Porta's testimony (Ex. 1002 ¶ 150–52) as it is consistent with the evidence of record including, for example, with Archer's teaching that server processor 128 receives packets that include "an indication of the called party," which may be "the called party's telephone number or subscriber number." Ex. 1003, 6:49–56.[13]

Upon consideration of the entirety of the record, we agree with Petitioner's contentions and Dr. La Porta's testimony (*see, e.g.*, Pet. at 38; Ex. 1002 ¶ 168) that the combination of Archer's web-enabled processing system, i.e., server processor 128 and database 138 with Chang's coupling to a switching facility is nothing more than the combination of known prior art techniques in conventional ways. As is shown above, Chang's coupling of a web server to a switching facility and, in particular, to Tandem Switches $11_T$ is nothing more than a known prior art technique. Chang teaches secure access platform 25 interfaces to Internet 27 as "a Web server" (Ex. 1004, 11:30–32) and, in accordance with one embodiment, computer 520 that interfaces with the Internet includes host software that "runs web server 525." *Id.* at 14:66–15:3; *see also id.* at Fig. 5 (illustrating computer 520 having a "TO/FROM" connection with the Internet as well as a two-way connection with OSN 21).

Like Chang's secure access platform 25 (*id.* 11:30–32) and "web server 525" (*Id.* at 15:1–3, Fig. 5), for the reasons discussed in *supra* Section

[13] For the reasons given, we are persuaded by Petitioner's contentions and Dr. La Porta's testimony regarding the step of receiving call data. *See* Pet. 30–32 (citing Ex. 1003, 4:17–36, 5:10–46, 6:33–38, 6:48–67, 8:27–34, 8:50–60, 9:62–64, Figs. 2, 4–6 ; Ex. 1002 ¶¶ 148–50).

III.C.4.a, we agree with Petitioner's contentions and Dr. La Porta's testimony that Archer's server processor 128 and database 138 are web enabled processors. *See e.g.*, Pet 18–19 (citing Ex. 1003, 4:17–42, 6:1–9, 6:30–32, 6:47–7:28, 7:44–47, 7:55–60, 8:8–10, 8:43–9:9, Figs. 2, 4; Ex. 1002 ¶¶ 100–01, 110–11). As discussed above, Patent Owner does not dispute that Archer's server processor 128 and database 138 are web enabled processors. PO Resp. 48–62.

Additionally, we disagree with Patent Owner's contentions (PO Resp. 61–62), and we are persuaded that Petitioner has articulated sufficient reason why one of ordinary skill in the art would have combined the teachings of Archer and Chang in the manner recited in claim 1. For instance, Dr. La Porta testifies that one of ordinary skill in the art would have had reason to and been motivated to couple Archer's web enabled processing system, i.e., server processor 128 and database 138, to switching facilities and, in particular, to Tandem Switches $11_T$ as is taught in Chang to control routing intelligently, thereby reducing switching traffic in the PSTN. Ex. 1002 ¶¶ 169–73. Dr. La Porta testifies that a person of ordinary skill would have had reason, known of advantages, and been motivated to efficiently control routing of calls by the suggestions in Archer and the existing commercial pressures to reduce traffic, among other known advantages. *Id.* ¶¶ 169–70.

We credit Dr. La Porta's testimony as it is consistent with the evidence cited therein. For instance, Archer teaches that its system "reduces switch traffic for telephone companies" by using intelligent routing. Ex. 1003, 2:63–66. Additionally, Archer teaches its system reduces waiting time, which further reduces traffic and inefficiencies in the switching

network. *Id.* at 2:61–63; *see also id.* at 9:10–25 (describing that ringing simultaneously provides an advantage over present sequential dialing). Also, Archer explains that another advantage of its intelligent routing system is that it provides access to intelligent network services, for example, by routing PSTN callers to a called party using a multimedia computer. *Id.* at 2:55–60. Furthermore, Archer, Chang, and other evidence of record demonstrate that it would have been known to a person of ordinary skill in the art that intelligent routing achieved by combining Archer and Chang as proposed would result in efficiencies by minimizing the number of switches, avoiding re-routing, and reducing traffic, and allowing access to intelligent networking services. Ex. 1002 ¶¶ 169–73, Ex. 1003, 2:51–66, Fig. 2; Ex. 1004, Fig. 1; Ex. 1038.

We, additionally, credit as consistent with the evidence of record Dr. La Porta's testimony that combining Archer's teachings of server processor 128 and database 138 with Chang's coupling of web enabled server technology with the existing PSTN is nothing more than combining known prior art techniques in conventional ways. Ex. 1002 ¶ 168. For instance, consistent with Dr. La Porta's testimony (*id.*), standard intelligent network functional units (e.g., SCPs, IPs, and STPs) and standard SS7 signaling were known. Ex. 1004; Ex. 1038, 29–36, 46–48, 58–59, 90–92; Ex. 1002 ¶¶ 56–66; Ex. 1027, 1–2, 9–14; Ex. 1021. The evidence of record demonstrates that one of ordinary skill in the art would have understood that the proposed combination would allow Archer's system to use existing PSTN switching and SS7 control without modification. Ex. 1002 ¶ 169.

Petitioner's contentions are further supported by Petitioner's explanation and Dr. La Porta's testimony regarding how and why one

having ordinary skill in the art would have combined Archer's and Chang's web server functionality. Pet. 22–26; Ex. 1002 ¶¶ 119–30. We credit Dr. La Porta's testimony that a person having ordinary skill in the art would have had reason and been motivated to combine Archer and Chang's features to allow subscribers to control selections using a standard web interface as it is consistent with the evidence cited therein. Ex. 1002 ¶¶ 119–30. For instance, consistent with Dr. La Porta's testimony (*id.* at ¶¶ 121, 122), Chang teaches allowing users to control intelligent network services through web access (Ex. 1004, 4:45–55, 21:1–27) and forwarding the user's input to secure access platform 25 (*id.* at 18:37–19:12, Figs. 1, 5). Additionally, we are persuaded that Petitioner has shown sufficiently, for example, that Archer and Chang are in the same field of endeavor because they both involve user selection of call features involving PSTN and packet switched networks. Pet. 16 (citing *e.g.*, Exs. 1001; 1003; 1004; 1002 ¶ 107).

We are persuaded by Petitioner's showing and articulated reasoning, supported by the testimony of Dr. La Porta, and adopt it as our own, that one having ordinary skill in the art would have combined Archer with the knowledge of one of ordinary skill in the art or Chang in the manner recited in claim 1. Upon consideration of Petitioner's analysis and supporting evidence including Dr. La Porta's testimony, as well as Patent Owner's contentions and evidence cited therein, we are persuaded that Petitioner has articulated sufficient reasons to combine (1) the prior art teachings of Archer with the knowledge of one of ordinary skill in the art in the manner recited in claim 1; and (2) the prior art teachings of Archer and Chang in the manner recited in claim 1.

*e. Conclusion—Claim 1*

Based on the evidence in the entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 1 is unpatentable as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang.

*5. Claim 94*

Petitioner argues claims 1 and 94 together presenting one set of contentions for both independent claims 1 and 94. Pet. 15–40. For each asserted prior art combination, i.e., (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang, Petitioner's explanation discussed *supra* Section III.C.4 with respect to claim 1 also describes all of the claim limitations of claim 94 and the articulated reasoning to combine the prior art teachings, citing to Dr. La Porta's testimony for support, is described with respect to both claims 1 and 94. *Id.* (citing Ex. 1002).

Patent Owner also argues claims 1 and 94 together contending, for example, that they "have limitations that are similar." PO Resp. 46–64. The only difference noted by Patent Owner is that claim 94 recites that the call processing system is coupled to a tandem switch. *Id.* at 53 n.7.

Our analysis and reasoning provided *supra* Section III.C.4 with respect to claim 1 applies in its entirety to claim 94 and we decline to repeat that analysis here. As discussed *supra* Section II.C, our determinations in this Decision are made on the basis that "tandem switch" means a class 4 switch in the PSTN (Ex. 1002 ¶ 53; Ex. 2022 ¶ 36). Although the meaning of "tandem switch" recited in claim 94 is narrower than the meaning of

"switching facility" recited in claim 1, as evident from the discussion *supra* Section III.C.4, Petitioner's contentions support sufficiently obviousness of claim 94.

Like claim 1, the parties' dispute on whether Archer teaches "the call processing system coupled to" at least one switch. PO Resp. 53–62. The difference is that claim 94 more specifically recites "the call processing system coupled to at least one *tandem* switch." As discussed *supra* Section III.C.4 with respect to claim 1, Patent Owner's arguments and Mr. Bates' supporting testimony are premised on adoption of *both* its interpretation of the term "switching facility" *and* its proposed narrow interpretation of the term "coupled to." As discussed *supra* Section II.D, Patent Owner does not dispute the plain and ordinary meaning of "coupled to," but instead Patent Owner focuses on only one recitation of "coupled to" in claims 1 and 94, i.e., "the call processing system coupled to at least one" switching facility or tandem switch, and contends that the '113 Patent Specification "is repetitive and consistent in showing the claimed call processing system or controlling device as *always being connected to a tandem switch*, not an edge switch to access the PSTN." *Id.* at 36–37 (citing Ex. 1001, Fig. 1; Ex. 2022 ¶ 66).

Patent Owner, however, refrains from arguing that the connection between the call processing system and the tandem is direct such that no other hardware is connected between these two components. PO Resp. 10–38. Indeed, during oral argument, Patent Owner agreed that the controller need not be connected directly to the tandem access switch.

> JUDGE PARVIS: So when you say associated, it [the tandem access controller] doesn't have to be directly connected to the tandem access switch; is that correct?
> MR. MURPHY: That's correct.

Tr. 56:18–20.

Accordingly, as discussed *supra* Section II.E, we decline to require a *direct connection* between the call processing system and a tandem switch. *See supra* § II.E. Therefore, because claim 94 recites "*coupled to* at least one tandem switch," we are not persuaded by Patent Owner's arguments and its expert's testimony, as they are not commensurate with the claim's scope.

Petitioner's argument and evidence shows sufficiently that each asserted prior art combination teaches "the call processing system coupled to at least one tandem switch," recited in claim 94. For instance, for the reasons discussed *supra* Section III.C.4 with respect to claim 1, we agree with Petitioner's contentions (Pet. 18, 26–28) and Dr. La Porta's testimony (Ex. 1002 ¶¶ 132–34, 141) that Archer's PSTN is a network that comprises both edge switches and *tandem switches*. Ex. 1003, 5:4–32, Figs 2, 6; Ex. 1001, 1:45–51; Ex. 1037. Indeed, Patent Owner admits (PO Resp. 4−7), the PSTN was known in the art at the time of the invention to be a network that includes both edge switches and tandem switches. Ex. 2022 ¶¶ 36–38. Additionally, as discussed *supra* Section III.C.4, we agree with Petitioner's contentions (Pet. 18, 26–28) and Dr. La Porta's testimony (Ex. 1002 ¶¶ 100–01, 132–41) that Archer's server processor 128 is coupled to gateways 126, 132 and to switching facilities of the PSTN, including tandem switches. *See, e.g.*, Ex. 1003, 4:31–42, 5:5–67, 6:47–7:21, Figs. 2, 4, 6.

Importantly, we agree with Petitioner's contentions and the testimony of Dr. La Porta that it would have been obvious to couple Archer's server processor to a tandem switch in the PSTN. See, e.g., Pet. 33–39; Ex. 1002 ¶¶ 155–72. For instance, as discussed *supra* Section III.C.4 with respect to claim 1, we credit Dr. La Porta's testimony that a person of

ordinary skill in the art would have known of a limited number of choices, connecting at an edge switch or a tandem switch, and would have had a reason i.e., preferred performance to connect Archer's database 138 and server processor 128 to a tandem in the PSTN. Ex. 1002 ¶¶ 61–78, 163–67.[14] Dr. La Porta's testimony is consistent with the evidence cited therein describing benefits of implementing intelligent networking features centrally, for example, at the tandem switch. Ex. 1021; Ex. 1038, 30–31, 34–36, 58–59, Figs. 2.5 (illustrating intelligence for server centralized in a service control node connected within the PSTN, not at a local node), 3.3 (illustrating freephone service implementation connected to a transit switch within the PSTN, not at a local switch). Additionally, we agree with Dr. La Porta's testimony (Ex. 1002 ¶ 165) that Archer suggests connecting at the tandem switch by illustrating server processor in the middle of PSTN 118, 136. Ex. 1003, Fig. 2. We also are persuaded by Dr. La Porta's testimony that one of ordinary skill in the art would have known and had reason to connect the call processing system to a tandem switch because the server processor can receive calls from and place calls to the PSTN, as it is consistent with the evidence cited therein. Pet. 28–29, 33–36 (citing *e.g.*, Ex. 1003, 5:5–32; Ex. 1001, 1:45–50; Ex. 1004, 7:43–8:24, 18:66–19:12, Fig. 1; Ex. 1037, 64–69, 106–13, 139–49; Ex. 1002 ¶¶ 135–41).

Furthermore, as discussed *supra* Section III.C.4, Patent Owner's contentions and Mr. Bates' testimony disputing such coupling (see, e.g., PO Resp. 46–47, 53–59) do not take into account evidence in the record that it was well known to interconnect an IP carrier network and the PSTN *at a*

[14] Dr. La Porta's testimony regarding "tandem switches" expressly pertains to class 4 switches in the PSTN. *See, e.g.*, Ex. 1002 ¶¶ 53–60.

*tandem switch*. Ex. 1059, 201:22−202:11 (interconnection between networks at tandem access), 205:15−206:16 (connecting node between an IP carrier and the PSTN would be at higher level switch like a tandem switch), 211:21−213:14; *see also* Ex. 1058, Fig. 1B; Ex. 1057, Figs. 4−5 (general knowledge of an ordinarily skilled artisan showing interconnection between an IP network and the PSTN at a tandem switch was known.)

Petitioner, again relying on the testimony of Dr. La Porta, additionally, contends that it would have been obvious to combine Archer's system, i.e., web-enabled server processor 128 with Chang's teachings of coupling such a processor (e.g., web server 525) at Tandem Switch $11_T$ shown within the conventional PSTN that uses standardized SS7 signaling and includes conventional PSTN infrastructure, such as service control points (SCPs). Pet. at 36–39 (citing Ex. Ex. 1003, 2:63–66; 1004, 7:43–8:24, 9:38–58, 10:20–36, 11:41–54, 15:3–10, 18:66–19:12, Figs. 1, 5; Ex. 1026, 1–2; Ex. 1038; Ex. 1002 ¶¶ 165–72); *see also id.* at 18, 26–29 (citing *e.g.*, Ex. 1003, 4:31–42, 5:4–67, 6:47–7:21, Figs. 2, 4; Ex. 1002 ¶¶ 100–01, 132–41). Importantly, Chang discloses expressly "tandem switches" (*see, e.g.*, Ex. 1004, 9:33–36) which is the same term recited in claim 94, e.g., "the circuit-switched network comprising edge switches for routing calls from and to subscribers and tandem switches for routing calls to other edge switches or other tandem switches local or in other geographic areas" (Ex. 1001, 19:60–64). Not only does Chang use the same term, but also Chang describes "tandem switch" and "tandem switches" that are the tandem switch or tandem switches in the embodiments in the '113 Patent Specification. *Compare* Ex. 1004, 7:42–9:36 *with* Ex. 1001, 4:43–54 (describing "the conventional PSTN tandem switch 16" that operates in a

"well-known" manner.) For instance, like the '113 Patent, Chang's "tandem switches" are within the telephone network and provide "trunk connections between end offices and/or between other tandem offices." Ex. 1004, 8:2–10; *see also id.* at 7:47–51 ("The telephone network . . . includes a number of nodes, typically end office and tandem office type central office (CO) switching systems 11 interconnected by trunk circuits TR.")

We agree with Petitioner's contentions and Dr. La Porta's testimony that it would have been obvious to combine the teachings of Archer and Chang because they are consistent with the evidence of record, including the evidence cited therein. For instance, Chang teaches that connecting a *web server* (secure access platform 25 or Web Server 525) to *Tandem Switches* $11_T$ was a known prior art technique. Ex. 1004. As discussed *supra* Section III.C.4 with respect to claim 1, Petitioner provides detailed explanation (*see, e.g., id.* at 36–39) including annotations to Chang's Figure 1 showing such connections in the PSTN using known standardized SS7 signaling and including known infrastructure such as SCP 19, STP 15, and IP 23. Pet. 37 (citing Ex. 1004, Fig. 1). In contrast to the prior art of record, including Chang, although the '113 Patent Specification indicates that problems with prior art are omitted by use of SS7 signaling (Ex. 1001, 1:65–67, 7:55–65), the '113 Patent Specification omits description of SS7 signaling used in the PSTN, and instead relies on external sources. *See, e.g.*, Ex. 1001, Figs. 1, 2, 7, 8; *see also id.* at 4:49–54 (referring to external publications for details of the operation of the existing phone network including SS7 signaling), 7:60–63 (describing SS7 signaling as "global standard for telecommunications," but omitting description of SS7 signaling or operation); Ex. 1002 ¶¶ 56–65 (describing operation of standardized SS7 signaling and intelligent

networking); Ex. 1027, 1–2, 9–14 (describing SS7 signaling network structures); Ex. 1021 (describing International Telecommunication Union's recommendation for intelligent networking including infrastructure such as service control points and intelligent peripherals). Accordingly, as discussed with respect to claim 1, we agree with Petitioner's contentions and Dr. La Porta's testimony that Chang teaches coupling a web server to one or more tandem switches.[15]

Additionally, we agree with Petitioner's contentions and Dr. La Porta's testimony regarding how and why one of ordinary skill in the art would have combined the teachings of Archer's web enabled processing system and Chang's coupling such a system to one or more tandem switches. Again, consistent with Petitioner's contentions (Pet. 36–39), Archer teaches a web enabled processing system, i.e., server processor 128 and database 138 that provides intelligent interconnection end-to-end from a call received via PSTN 118 to computer 134 or phone 120. Ex. 1003, 4:17–42, 5:5–6:9, 6:30–32, 6:47–7:28, 7:44–47, 7:55–60, 8:8–10, 8:43–9:9, Figs. 2, 4, 5; Ex. 1002 ¶¶ 100–01, 132–41). For instance, we credit Dr. La Porta's testimony that one of ordinary skill in the art would have had reason to and been

[15] Indeed, only processing equipment that translates from IP protocol to SS7 is between Chang's web server (e.g., secure access platform 25 or web server 525) and the Tandem Switch $11_T$. Ex. 1004, Fig. 2. That translation processing equipment, more specifically, is OSN 21 and IP 23, and the specific implementation is described as optional. *Id.* at 9:48–10:3 (describing OSN 21 as providing a generic interface for translating IP to SS7 and IP 23 as separating transport of voice grade communication from the channel for SS7 signaling). Even in the preferred embodiments in the '113 Patent Specification, translation between IP protocol in Web 22 and SS7 signaling in the PSTN would be needed. Ex. 1001, Figs. 1, 2, 7, 8.

motivated to couple Archer's web enabled processing system, i.e., server processor 128 and database 138 to Tandem Switches $11_T$ as is taught in Chang to efficiently control routing of calls by the suggestions in Archer and the existing commercial pressures to reduce traffic, among other known advantages. Ex. 1002 ¶¶ 169–70. For instance, Archer teaches that its system "reduces switch traffic for telephone companies" by using intelligent routing (Ex. 1003, 2:63–66), reduces waiting time, which further reduces traffic and inefficiencies in the switching network (*id.* at 2:61–63, 9:10–25), and provides access to intelligent network services, for example, by routing PSTN callers to a called party using a multimedia computer (*id.* at 2:55–60).

For the same reasons discussed with respect to claim 1 *supra* Section III.C.4.a thorough III.C.4.e, we agree with Petitioner's contentions and Dr. La Porta's testimony that one of ordinary skill in the art would have combined the teachings of Archer and Chang in the manner recited in claim 94. The entirety of the analysis and discussion provided for claim 1 regarding the combination of Archer and Chang pertains to claim 94 as the switching facilities taught by Chang clearly are *Tandem Switches* $11_T$. We are persuaded by Petitioner's showing, and adopt it as our own, that Archer with the knowledge of one of ordinary skill in the art or Chang renders obvious claim 94.

*6. Claim 163*

Patent Owner acknowledges "Claim 163 is broader than Claims 1 and 94 in several aspects." PO Resp. 47. The preamble of claim 163 recites "[a] controller for use between a first communication network and a second communication network." Ex. 1001, 23:45–46. This recitation is broader, but similar to "a call processing system serving as an intelligent

interconnection between at least one packet network and a second network," recited in claim 1. *Id.* at 12:30–33. Similar to its position with respect to claim 1, Petitioner takes the position that Archer's server processor 128 and database 138 teaches the "controller" recited in claim 163. *See, e.g.*, Pet. 55–57 (citing *e.g.*, Ex. 1003, 2:41–48, 5:32–6:67, 7:30–43, 8:43–9:9, Figs. 2, 6; Ex. 1002 ¶¶ 235–36, 238–39).

The dispute between the parties also is similar to that discussed with respect to claim 1 in that it centers on Patent Owner's disclaimer contentions, although claim 163 does not recite any of the terms previously discussed with respect to the alleged disclaimer. PO Resp. 64–65. More specifically, claim 163 does not recite "switching facility," "tandem switch," "tandem access controller," or "coupled to." Ex. 1001, 23:45–24:6. Patent Owner contends that "[i]mplementing call control features in a controller through an edge device and edge switch was disclaimed" and Archer "at best discloses a controller at an edge switch or that itself is an edge device." PO Resp. 64–65. For the same reasons discussed *supra* Section II with respect to not limiting the terms "switching facility" and "coupled to," within the larger recitation of "the call processing system coupled to at least one switching facility," we also decline to limit the term "controller" as implicitly proposed by Patent Owner (PO Resp. 64–65).

We agree with Petitioner's contentions and Dr. La Porta's testimony that Archer's controller, i.e., server processor 128 and database 138, is for use between a first communication network and a second communication network. Pet. 55–57; Ex. 1002 ¶¶ 235–39. Dr. La Porta testifies that Archer's server processor 128 coupled to database 138 is used to control and process calls between PSTN 118, 136 and packet switched network 130. Ex.

1002 ¶¶ 236–37 (referencing and relying on disclosures identified in earlier testimony for independent claims 1 and 94). We credit Dr. La Porta's testimony as it is consistent with Archer's teachings of the server processor receiving a call from telephone 114 via the PSTN and packet network 130 and processing that call through to the called party on phone 120 or computer 134 across both the PSTN and packet network 130. *See, e.g.*, Ex. 1003, 6:31–7:29, 8:43–9:62, Figs. 2, 4–6, *cited in* Ex. 1002 ¶¶ 235–39. For the same reasons discussed *supra* Section III.C.a through Section III.C.e with respect to claim 1, we agree with Petitioner's contentions and the testimony of Dr. La Porta that Archer teaches "[a] controller for use between a first communication network and a second communication network," recited in claim 163.

Patent Owner does not dispute the remaining recitations in claim 163. PO Resp. 64–65. Certain of these recitations, i.e., the receiving call data, initiating a call, and enabling communication steps are substantially the same as recitations in claim 1. *Compare* Ex. 1001, 23:45–24:6 *with id.* at 12:30–59. For the reasons discussed *supra* Section III.C.4 with respect to claim 1, upon consideration of the entire record, we determine Petitioner has shown sufficiently that Archer and the knowledge of a person of ordinary skill in the art or Chang teaches these recitations.

Claim 163 further recites "accessing control criteria based upon call data" and that "at least one of the first and second communication networks is a voice over IP (VOIP) network." For "accessing control criteria based upon call data," we agree with Petitioner's contentions and Dr. La Porta's testimony (Pet. 58; Ex. 1002 ¶ 243–44), for example, because Archer teaches server processor 128 extracting subscriber information, e.g., "the

called party's telephone number of subscriber number" and querying database 138 to determine the forwarding address,[16] which is used to generate IP packets to complete the call. *See, e.g.*, Ex. 1003, 6:47–7:13, 7:30–50, 8:57–9:16, Figs. 2, 4–6.

For the requirement that at least one network be "a voice over IP (VOIP) network" recited in claim 163, we agree with Petitioner's contentions and Dr. La Porta's testimony (Pet. 59–61; Ex. 1002 ¶ 248–51), for example, because Archer teaches that packet network 130 uses Internet Protocol to support voice calls. See, e.g., Ex. 1003, 4:20–30, 6:1–17, Fig. 2. Furthermore, we agree with Petitioner's contentions and Dr. La Porta's testimony (Pet. 60–61; Ex. 1002 ¶ 248–51) that it would have been obvious to one of ordinary skill in the art to use a VOIP network for Archer's packet switched network 130 because such networks were known as being the option for communicating voice over IP packet networks (Ex. 1003; Ex. 1026). Additionally, Archer suggests such an implementation by explaining that its invention improves problems with existing VOIP systems. Ex. 1003, 1:48–67, Ex. 1002 ¶¶ 251–52.

Additionally, for the same reasons discussed *supra* Sections III.C.4 and III.C.5 with respect to claims 1 and 94, we are persuaded that Petitioner articulates sufficient reasoning to combine the teachings of Archer and the knowledge of one of ordinary skill in the art or Chang in the manner recited in claim 163. We are persuaded by Petitioner's showing, and adopt it as our

[16] Archer teaches "Database 138 stores a series of destinations associated with each subscriber. These destinations are returned to server processor 128." Ex. 1003, 6:60–62.

own, that Archer with the knowledge of one of ordinary skill in the art or Chang renders obvious claim 163.

Based on the evidence in the entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 163 is unpatentable as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang.

*7. Dependent claim 164, 166, and 179*

Each of claims 164, 166, and 179 depends directly from independent claim 163. Patent Owner does not argue separately these dependent claims. PO Resp. 46–65.

Dependent claim 164 recites the further limitation that one of the networks is the PSTN (Ex. 1001, 24:7–9) and Petitioner, for example, identified Archer's teaching of PSTN 118, 136 as corresponding to the telecommunications network recited in claim 1. Pet. 25, 61. Because Archer teaches PSTN 118, 136 (*see, e.g.*, Ex. 1003, 5:5–62, Fig. 2) and for the reasons discussed *supra* in Section III.C.4 with respect to claim 1, upon consideration of the entire record, we determine Petitioner has shown sufficiently that Archer and the knowledge of a person of ordinary skill in the art or Chang teaches this recitation.

Dependent claim 166 recites that the controller is configured to enable communication through an external device. Ex. 1001, 24:14–16. We agree with Petitioner's contentions and Dr. La Porta's testimony (Pet. 62; Ex. 1002 ¶¶ 254–55), for example, because Archer teaches an external device, i.e., gateway/converters 126, 132 and, as discussed *supra* in Section III.C.4 with respect to claim 1, gateway/converters 126, 132 enable communications

by converting a first call into a format, e.g., IP protocol for sending over packet network 130 to server processor 128 and converting a second call into a format, e.g., SS7 for sending from server processor 128 over the PSTN. *See, e.g.*, Ex. 1003, 5:32–46, 5:59–67, Figs. 2, 3; *see also* Ex. 1002 ¶ 58 ("[T]he most prominent signaling protocol for use in the PSTN had been Signaling System 7 (SS7).")

Dependent claim 179 recites that the call data includes a VOIP signaling message. Ex. 1001, 24:42–43. We agree with Petitioner's contentions and Dr. La Porta's testimony (Pet. 67; Ex. 1002 ¶¶ 269–71), for example, because as discussed *supra* in Sections III.C.4 and III.C.6 with respect to claims 1 and 163, Archer gateway/converters 126, 132 translate PSTN signals to VOIP signaling. Ex. 1003, 4:20–30 (describing a first embodiment of the invention based on "Internet Protocol (IP) based voice traffic), 6:1–17 (describing packet network 130 as carrying various media including voice calls in IP packets), 9:62–67. Additionally, for the same reasons discussed *supra* Section III.C.6 with respect to claim 163, we credit Dr. La Porta's testimony that one of ordinary skill in the art would have had a reason to transmit voice over Archer's IP network in accordance with voice over IP standards, i.e., because the skilled artisan would have known that equipment within the IP network processed transmissions in accordance VOIP standards. Ex. 1002 ¶ 271.

Based on the evidence in the entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that each of claims 164, 166, and 179 is unpatentable as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang.

*8. Dependent claims 168, 175, 180, and 181*

Each of claims 168, 180, and 181 depends directly from independent claim 163 and claim 175 depends directly from claim 168. Patent Owner does not argue separately these dependent claims. PO Resp. 46–65. Dependent claims 168, 175, 180, and 181 recite further limitations on the control criteria. For instance, claim 168 further recites that the control criteria includes security measures and claim 175 further recites that the control criteria is supplied via a packet interface. Ex. 1001, 24:20–21, 24:34–35. We agree with Petitioner's contentions and Dr. La Porta's testimony regarding claim 168 (Pet. 63–66; Ex. 1002 ¶¶ 257–67), for example, because Archer teaches that a subscriber must "log onto" the system to modify features (Ex. 1003, 7:44–50) and further that such security measures would be obvious over Chang's teaching of a "*secure* access platform" that "validates predetermined users" and has a "firewall" that comprises "access control" (*see, e.g.*, Ex. 1004, 4:67–5:15, 5:42–51, 11:42–54, Fig. 5). Additionally, we agree with Petitioner's contentions and Dr. La Porta's testimony regarding claim 175 (Pet. 66; Ex. 1002 ¶¶ 268–69), for example, because Archer teaches that login information is supplied to database 138 via a packet interface (packet network 130). Ex. 1003, 7:23–29, 6:1–17.

Claim 180 further recites that the control criteria includes a selection of a telephone number. Ex. 1001, 24:44–45. We agree with Petitioner's contentions and Dr. La Porta's testimony regarding claim 180 (Pet. 68–69; Ex. 1002 ¶ 272), for example, because Archer teaches server processor 128 querying database 138 for forwarding addresses in the form of telephone numbers. Ex. 1003, 6:57–67 ("For telephone number destinations, the

number is encoded within the body of the packet."), 7:3–15, 7:34–36, 7:43–45, 8:61–67 (describing that database 138 stores and retrieves "phone number lists provided by the called party"), 9:9–16, Fig. 4.

Claim 181 further recites that the control criteria includes a feature selection. Ex. 1001, 24:46–47. We agree with Petitioner's contentions and Dr. La Porta's testimony regarding claim 181 (Pet. 69; Ex. 1002 ¶¶ 273–74), for example, because Archer teaches users having the ability to program which devices go into which priority group for call forwarding. Ex. 1003, 7:44–50, 9:40–50, 10:56–60.

Based on the evidence in the entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that each of claims 168, 175, 180, and 181 is unpatentable as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang.

*9. Dependent claims 2 and 95*

Claim 2 depends directly from claim 1 and claim 95 depends directly from claim 94. Each of claims 2 and 95 further require that either the calling or the called party is a subscriber of the web enabled processing system. Ex. 1001, 12:57–59, 20:18–20. Patent Owner does not argue separately these dependent claims. PO Resp. 46–65. We agree with Petitioner's contentions and Dr. La Porta's testimony regarding claims 2 and 95 (Pet. 41; Ex. 1002 ¶¶ 179–83), for example, because Archer teaches that server processor 128 receives a call with a "subscriber number" and the information is used to query database 138 that stores information "associated with each subscriber." Ex. 1003, 6:48–62; *see also id.* at 7:33–39 (describing that database 138 also stores "subscriber billing information."). Archer also

teaches that database 138 is "accessed by the subscriber" to modify forwarding numbers. *Id.* at 7:44–50.

Based on the evidence in the entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that each of claims 2 and 95 is unpatentable as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang.

*10. Dependent claims 8 and 102*

Claim 8 depends directly from claim 2 and claim 102 depends directly from claim 95. Each of claim 8 and 102 further requires identifying control criteria associated with the subscriber that have been previously provided to the web server, and completing the call and establishing the voice communication in accordance with that control criteria. Ex. 1001, 13:26–34, 20:55–63. We agree with Petitioner's contentions and Dr. La Porta's testimony regarding claims 8 and 102 (Pet. 41–44; Ex. 1002 ¶¶ 184–93), for example, because Archer teaches that subscriber information including destination information such as "find-me/follow-me telephone numbers for each subscriber" and "forwarding priorities" are retrieved from database 138 and used to issue a call notification to the called party at communication devices 120, 134. Ex. 1003, 7:30–47, 8:61–9:61, Fig. 5. Server processor 128 encodes packets using the destination information, e.g., telephone number or IP address, issues the call notification, and when the subscriber answers, server processor 128 completes the call and commences the conversation. *Id.* at 6:57–7:30, 7:44–50, 8:57–9:37, 9:50–67, 11:28–43, Figs. 2, 4–6. The find-me/follow-me telephone numbers and forwarding priorities were previously provided to database 138 by subscribers logging

into the Internet. *Id.* at 7:30–47. Petitioner Patent Owner does not argue separately these dependent claims. PO Resp. 46–65.

Based on the evidence in the entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that each of claims 8 and 102 is unpatentable as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang.

*11. Dependent claim 11 and 167*

Claim 11 depends directly from claim 1 and claim 167 depends directly from claim 163. Claim 11 further require that the processing system is implemented using a distributed architecture spanning at least two locations (Ex. 1001, 13:41–43), and claim 167 further requires that the controller spans multiple devices (*id.* at 24:17–19). We agree with Petitioner's contentions and Dr. La Porta's testimony regarding claims 11 and 167 (Pet. 44–45, 62; Ex. 1002 ¶¶ 196–98, 256–57), for example, because Archer teaches that server processor 128 can be made up of separate computers that can be "at remote locations many miles apart." *See, e.g.*, Ex. 1003, 6:38–43, 7:41–43 (describing that database 138 also can be distributed "at many remote locations."), 10:45–52, Fig. 6. Patent Owner does not argue separately these dependent claims. PO Resp. 46–65.

Based on the evidence in the entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that each of claims 11 and 167 is unpatentable as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang.

*12. Dependent claims 15 and 109*

Claim 15 depends directly from claim 1 and claim 109 depends directly from claim 94. Each of claims 15 and 109 recites the further limitation that the call originated by the calling party via the packet network is facilitated using VoIP. Ex. 1001, 13:53–55, 21:17–19. In addition to the reasons discussed in *supra* Section III.C.6 with respect to claim 163, we agree with Petitioner's contentions and Dr. La Porta's testimony regarding claims 15 and 109 (Pet. 45; Ex. 1002 ¶¶ 199–202), for example, because Archer teaches "the present invention is based on Internet Protocol (IP) based traffic." Ex. 1003, 4:20–30, 6:1–17. Patent Owner does not argue separately these dependent claims. PO Resp. 46–65.

Based on the evidence in the entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that each of claims 15 and 109 is unpatentable as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang.

*13. Dependent claims 16 and 110*

Claim 16 depends directly from claim 15 and claim 110 depends directly from claim 109. Each of claims 16 and 110 requires that the call that is originated and completed using VOIP has at least one leg through the circuit-switched network. Ex. 1001, 13:56–58, 21:20–22. In addition to the reasons discussed in *supra* Sections III.C.4 through III.C.6, and III.C.12 with respect to claims 1, 15, 94, 109, and 163, we agree with Petitioner's contentions and Dr. La Porta's testimony regarding claims 16 and 110 (Pet. 45–47; Ex. 1002 ¶¶ 203–05), for example, because as shown by Dr. La Porta's annotations to Figure 6 of Archer, Archer's VOIP call has one leg

through PSTN 136. Ex. 1002 ¶ 205; Ex. 1003, Fig. 6. Patent Owner does not argue separately these dependent claims. PO Resp. 46–65.

Based on the evidence in the entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that each of claims 16 and 110 is unpatentable as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang.

*14. Dependent claims 17 and 111*

Each of claims 17 and 111 further requires that the system is located within a local service area corresponding to the specified recipient. Ex. 1001, 13:59–61, 21:23–25. We agree with Petitioner's contentions and Dr. La Porta's testimony regarding claims 17 and 111 (Pet. 47–50; Ex. 1002 ¶¶ 206–12), for example, because Archer teaches that each of the circuit-switched network and the packet network can be a private network, e.g., a PBX, intranet that is owned by a single entity, such as a company or university. Ex. 1003, 5:7–9, 6:23–30, Fig. 2; *see also* Ex. 1032, 13, Ex. 1033, 9, 11. Additionally, we credit Dr. La Porta's testimony (Ex. 1002 ¶¶ 206–12) that a person having ordinary skill in the art would have had a reason to locate the system in a local area corresponding to the specified recipient to reduce costs, e.g., cabling and network costs, and increase efficiency. Ex. 1033, 11. Patent Owner does not argue separately these dependent claims. PO Resp. 46–65.

Based on the evidence in the entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that each of claims 17 and 111 is unpatentable as obvious over (1) Archer in combination

with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang.

*15. Dependent claims 18 and 19*

Claim 18 depends directly from claim 1 and claim 19 depends directly from claim 18. For the reasons discussed in *supra* Section III.C.4 with respect to claim 1, we are persuaded the Petitioner has shown by a preponderance of the evidence that each of the asserted prior art combinations teaches all of the recitations in claim 1. Claim 18 recites the further limitation "wherein the call processing system is configured as a *tandem access controller*," and claim 19 recites the further limitation "wherein the tandem access controller is coupled to and *operates in conjunction with* at least one of the switching facilities located within the telecommunications network." Ex. 1001, 13:62–67 (emphasis added).

We agree with Petitioner's contentions and Dr. La Porta's testimony that the asserted prior art combinations teach the further recitations of claims 18 and 19. Pet. 50–54; Ex. 1002 ¶¶ 212–28. Patent Owner's contentions are premised on its overly narrow interpretation of "tandem access controller" and "coupled to," which we do not adopt for the reasons set forth *supra* in Sections II.E and II.F. PO Resp. 62–63. Importantly, Patent Owner's contentions are premised on adoption of its interpretations of *both* terms.

As discussed *supra* Section II.F with respect to claim construction, we determine that the broadest reasonable interpretation of "tandem access controller" encompasses examples set forth in the '113 Patent Specification. For instance, the '113 patent Specification describes "tandem access controller" as "implemented using conventional processor hardware." Ex. 1001, 6:48–49; see also id. 6:52–55 ("[d]evising the software/firmware

use[d] to control the TAC 10 is *well within* the capability of those skilled in the art since the various control features that can be made available are generally *already known*.") The '113 Patent Specification also describes an embodiment in which "TAC 10 is connected inside the PSTN in the sense that it is not an edge device such as a PBX or central office (CO) switch because it does not connect directly to subscribers." *Id*. at 5:3–6.

We determine that the asserted prior art teaches these examples of "tandem access controller" set forth in the '113 Patent Specification. For example, regarding the embodiment in which the tandem access controller is connected within the PSTN such that it has no direct connections to subscribers (*id*. at 5:3–5), as shown in Figure 2 of Archer, processor 128 and database 138 do not connect to subscriber equipment 114, 120a, 120b, 142, 134a, and 134b directly. Ex. 1003, Fig. 2. Also, as shown in Figure 1 of Chang, secure access platform 25 interconnects with Internet 27 and the PSTN, without direct connection to subscriber equipment, for example to telephone 1. Ex. 1004, Fig. 1.

Additionally, for the reasons discussed in *supra* Section III.C.4 with respect to claim 1, we agree with Petitioner's contentions and Dr. La Porta's testimony (*see, e.g.*, Pet. 38; Ex. 1002 ¶ 168) that the combination of Archer's web-enabled processing system, i.e., server processor 128 and database 138 such that it connects directly to a tandem switch, is nothing more than the combination of known prior art techniques in conventional ways. Furthermore, we are persuaded by and adopt as our own Petitioner's analysis and Dr. La Porta's testimony regarding combining Archer's web-enabled processing system, i.e., server processor 128 and database 138 with Chang's teaching of coupling to a Tandem Switch $11_T$. Pet. 17–40.

Petitioner provides persuasive contentions explaining how and why one of ordinary skill in the art would combine these teachings in the manner claimed. *Id.* For instance, as highlighted in red by Petitioner's annotations to Figure 1 of Chang, a web enabled processor, i.e., Secure Access Platform 25 is connected to Tandem Switches $11_T$ in the Central Offices. Pet. 37 (citing Ex. 1004, Fig. 1). Also, for the reasons set forth in *supra* Section III.C.4 with respect to claim 1, we credit Dr. La Porta's testimony that one of ordinary skill in the art would have had reason to and been motivated to couple Archer's web enabled processing system, i.e., server processor 128 and database 138 to Tandem Switches $11_T$ as is taught in Chang. Ex. 1002 ¶¶ 169–73.

Furthermore, interconnecting Archer's server processor 128 and database 138 with the tandem switch results in a configuration that is very similar to that shown in the exemplary embodiments illustrated in the Figures of the '113 Patent Specification (*see, e.g.*, Ex. 1001, Figs. 1, 2). For instance, coupling Archer's server processor 128 and database 138 in the manner illustrated in Chang results in the processor 128 and database 138 interfacing between Internet 27 and Tandem Switch 11T, like tandem access controller 10 interfaces between Web 22 and PSTN Tandem Switch 16. *Compare* Pet. 37 *with* Ex. 1001, Figs. 1, 2. In particular, as explained in more detail in *infra* Section III.C.16, Chang illustrates a connection between secure access platform 25 and Internet 27 and only translation processing between that same secure access platform 25 and the tandem switch. *See, e.g.*, Ex. 1005, Fig. 1. In particular, Chang illustrates that its secure access

platform 25 connects via Operations Systems Network (OSN) 21 and an Intelligent Peripheral (IP). Ex. 1004, 9:22–10:3.[17]

Regarding the requirement that the tandem access "*operates in conjunction with* at least one of the switching facilities," we agree with Petitioner's contentions and Dr. La Porta's testimony (Pet. 50–54; Ex. 1002 ¶¶ 212–28) for the reasons discussed *supra* in Section III.C.4 with respect to claim 1. For instance, we credit Dr. La Porta's testimony (*id.*) as it is consistent with Archer's teaching that its server processor is coupled to a tandem switch (a switching facility) in the PSTN 118, 136 through converters 126, 132, which are *PSTN-to-IP network gateways*. *Id.* at ¶¶ 155−64; Ex. 1003, 5:34−35 ("[c]onverter 126 can also be referred to as a gateway"), 5:59−60 ("PSTN to IP-network gateway (i.e., converter 126)").

Additionally we agree with Petitioner's contentions and Dr. La Porta's testimony (Pet. 50–54; Ex. 1002 ¶¶ 212–28), for example, because Archer teaches that server processor 128 encodes call data in a packet. Ex. 1003, 4:17–36, 6:48–67. Archer further describes that the operation of its invention includes *routing* a phone call from telephone 114 to server processor 128 through PSTN network 118, converter/gateway 126, and packet switched network 130, and then *routing* the voice packets to the destination device 120 through packet-switched network 130 converter/gateway 132, and PSTN network 136. *Id.* at 8:43−9:61, Fig. 5. Additionally, we credit Dr. La Porta's testimony (Ex. 1002 ¶¶ 212–28) because Chang describes that secure access platform 25 operates in

[17] As discussed, for example, *supra* Sections III.C.4 and III.C.5, intelligent networking was well-known to the skilled artisan. Ex. 1038, 29–36, 46–48, 58–59, 90–92; Ex. 1002 ¶¶ 61–64.

conjunction with switching facilities in the PSTN, including Tandem Switches $11_T$, for example, providing web pages and receiving requests for users to set up or change call control features using the secure access platform. Ex. 1004, Abstract, 18:66–19:12, Figs. 1, 5.

Based on the evidence in the entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that each of claims 18 and 19 is unpatentable as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang.

*16. Dependent claims 112 and 113*

Claim 112 depends from claim 109 (which depends from claim 94) and claim 113 depends from claim 112. For the reasons discussed *supra* Sections III.C.4 and III.C.5, we are persuaded the Petitioner has shown by a preponderance of the evidence that each of the asserted prior art combinations teaches all of the recitations in claims 1 and 94. Claim 112 further recites "wherein the web-enabled processing system is configured as a *tandem access controller*" and claim 113 further recites "wherein the tandem access controller is coupled to and *operates in conjunction* with at least one of the tandem switches." Ex. 1001, 21:26–31 (emphasis added).

For the reasons discussed with respect to claims 1, 18, 19, and 94 in *supra* Sections III.C.4, III.C.5, and III.C.15, we agree with Petitioner's contentions and Dr. La Porta's testimony that the asserted prior art combinations teach the further recitations of claims 112 and 113. Pet. 50–54; Ex. 1002 ¶¶ 212–28. As compared to claims 18 and 19, claims 112 and 113 are distinct in that they indirectly depend from claim 94, which recites tandem access switch, rather than switching facility, recited in claim 1. That

distinction, however, is addressed in *supra* Section III.C.5. Patent Owner does not argue separately claims 112 and 113. PO Resp. 46–65.

Importantly, we explain in *supra* Sections III.C.4, III.C.5, and III.C.15 why we determine that one of ordinary skill in the art would have known to connect Archer's server processor 128 and database 138 at the tandem switch in view of the knowledge of the skilled artisan, or in view of Chang. Additionally, in those same sections, we explain why we determine that the asserted prior art combinations teach examples set forth in the '113 Patent Specification of the "tandem access controller" limitation.

For instance, in addition to discussing the embodiment that is simply connected within the PSTN, with respect to the combined teachings of Archer and Chang, as indicated *supra* in Section III.C.15, we further note that the proposed combination of Archer's server processor 128 and database 138 with Chang's coupling is, for example, very similar to Figures 1 and 2 of the '113 Patent. Indeed, only processing equipment that translates from IP protocol to SS7 is between Chang's web server (e.g., secure access platform 25 or web server 525) and the Tandem Switch $11_T$. Ex. 1004, Fig. 2. That translation processing equipment, more specifically, is OSN 21 and IP 23, and the specific implementation is described as optional. *Id.* at 9:48–10:3 (describing OSN 21 as providing a generic interface for translating IP to SS7 and IP 23 as separating transport of voice grade communication from the channel for SS7 signaling). Even in the preferred embodiments in the '113 Patent Specification, such as Figure 1, translation between IP protocol in Web 22 and SS7 signaling in the PSTN would be needed. Ex. 1001, Figs. 1, 2, 7, 8.

Based on the evidence in the entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that each of claims 112 and 113 is unpatentable as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang.

*17. Dependent claim 128*

Claim 128 depends directly from claim 94 and further recites "wherein the one or more web servers coupled to the call processing system are coupled through a data base." Ex. 1001, 22:19–21. We agree with Petitioner's contentions and Dr. La Porta's testimony (Pet. 54–55; Ex. 1002 ¶¶ 229–35) because Archer teaches that database 138 is accessed by subscribers via the Internet to change call forwarding numbers (Ex. 1003, 7:44–47). Additionally, we agree with Petitioner's contentions and Dr. La Porta's testimony that it would have been obvious to one of ordinary skill in the art to combine Archer's teaching of database 138 with Chang's teaching of coupling such a database to a web server, because they are consistent with the evidence cited therein. Pet. 54–55; Ex. 1002 ¶¶ 229–35. Patent Owner does not argue separately this dependent claim. PO Resp. 46–65.

Based on the evidence in the entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 128 is unpatentable as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang.

*D. Patent Owner's Motion to Amend*

We have concluded that the challenged claims of the '113 Patent are unpatentable. Therefore, we address Patent Owner's contingent motion to

enter proposed substitute claim 183. Mot. 1; Ex. 2062.[18] For the reasons that follow, Patent Owner's motion is *denied*.

We first turn to the United States Court of Appeals for the Federal Circuit's en banc decision in *Aqua Products*. The Federal Circuit remanded the case "for the Board to issue a final decision under § 318(a) assessing the patentability of the proposed substitute claims without placing the burden of persuasion on the patent owner." 872 F.3d at 1296. Judge Reyna's opinion in *Aqua Products* stated "a majority of the court interprets § 316(e) to be ambiguous as to the question who bears the burden of persuasion in a motion to amend claims." *Id.* at 1335. Part III of Judge Reyna's opinion stated that "Part III of this opinion sets forth the judgment of this court on what the Board may and may not do with respect [to] the burden of production on remand in this case," and "[t]here is no disagreement that the patent owner bears a burden of production in accordance 35 U.S.C. § 316(d)." *Id.* at 1340–41; *see also, e.g.*, *id.* at 1305–06 (explaining that "patent owner must satisfy the Board that the statutory criteria in § 316(d)(1)(a)–(b) and § 316(d)(3) are met and that any reasonable procedural obligations imposed by the Director are satisfied").

On November 21, 2017, the Office provided guidance on motions to amend in view of *Aqua Products*. *See* "Guidance on Motions to Amend in view of *Aqua Products*" (Nov. 21, 2017)

[18] Proposed substitute claim 183 in the instant proceedings is the same as proposed substitute claim 183 in IPR2016-01260. *Compare* Ex. 2062 *with* IPR2016-01260, Ex. 2062. In the final decision entered in IPR2016-01260, we determine based on a preponderance of the evidence that proposed substitute claim 183 is unpatentable, under 35 U.S.C. § 103(a), as obvious over Shtivelman in combination with the O'Neal.

(https://www.uspto.gov/sites/default/files/documents/guidance_on_motions_to_amend_11_2017.pdf). As discussed therein, in addition to the requirements of 35 U.S.C. § 316(d), a motion to amend must meet the requirements of 37 C.F.R. § 42.121.

For the reasons explained below, we conclude that Patent Owner's Motion to Amend does not satisfy the requirements of 37 C.F.R. § 42.121(b)(1) because it does not set forth written description support for proposed substitute claim 183. Additionally, we determine based on a preponderance of the evidence in the entire trial record that proposed substitute claim 183 is unpatentable, under 35 U.S.C. § 103(a), as obvious over Archer in combination with the knowledge of one of ordinary skill in the art or Chang.

*1. Proposed Substitute Claim*

Proposed substitute claim 183 is set forth below, with changes shown in redline.

> 183. A method performed by a web enabled processing system including one or more web servers coupled to a ~~call processing system~~tandem access controller serving as an intelligent interconnection between at least one packet network and a second network coupled to a ~~switching facility~~ particular PSTN tandem switch of a PSTN telecommunications network, ~~the~~wherein the second network is a network of PSTN tandem switches, the PSTN telecommunications network comprising ~~edge switches for routing~~ a plurality of edge switches connected to telephones on one side and PSTN tandem switches on the other side, wherein the PSTN tandem switches includes the particular PSTN tandem switch, wherein the edge switches route calls from and to subscribers within a local geographic area and ~~switching facilities for routing~~the PSTN tandem switches route calls to ~~other~~the edge switches or ~~other switching facilities~~the PSTN tandem switches local or in other geographic areas, ~~the~~

~~method for enabling~~ ~~voice communication from a calling party to a called party across both the packet network and~~ ~~the second network, the method comprising the steps of:~~

wherein the PSTN tandem switches are not the edge switches, wherein the PSTN tandem switches are not directly connected to any of the telephones, the method for enabling voice communication of a call from a calling party to a called party across both the packet network and the second network, wherein the called party is a subscriber, the method comprising the steps of:

receiving, at the tandem access controller, a first call request and call data which is associated with a first call originated by the calling party via either the packet network or the second network, ~~at the call processing system,~~ the calling party using a communications device to originate the first call request for the purpose of initiating voice communication~~, the call processing system~~ to the subscriber, the tandem access controller coupled to ~~at least one switching facility~~the particular PSTN tandem switch of the PSTN telecommunications network via the second network, ~~the~~ wherein communications between the tandem access controller and the particular PSTN tandem switch occur without passing through any edge switches, the tandem access controller processing a second call ~~processing system processing the call~~ request associated with a second call across ~~both~~ the packet network ~~and the second network~~ to complete the call to the ~~called party~~subscriber; and

establishing the voice communication between the calling party and the ~~called party~~ subscriber, by the tandem access controller, after the second call is completed and answered, across both the packet network and the second network.

Ex. 2062.

*2. Discussion—Written Description*

An amendment may not enlarge the scope of the claims of the patent or introduce new matter. 35 U.S.C. § 316(d)(3). In connection with its

motion to amend, a patent owner must set forth "support in the original disclosure of the patent for each claim that is added or amended." 37 C.F.R. § 42.121(b)(1). We first address whether Patent Owner's Motion to Amend sets forth how the original application provides written description support for the amended claims. The test for determining compliance with the written description requirement is whether the disclosure of the application as originally filed reasonably conveys to a person of ordinary skill in the art that the inventor had possession at that time of filing of the claimed subject matter, rather than the presence or absence of literal support in the specification for the claim language. *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc); *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563 (Fed. Cir. 1991); *In re Kaslow*, 707 F.2d 1366, 1375 (Fed. Cir. 1983). One shows that one is "in possession" of the invention by describing the invention, with all its claimed limitations, not that which makes it obvious. *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997); *In re Wertheim*, 541 F.2d 257, 262 (CCPA 1976).

Patent Owner argues that "[s]upport for the Substitute Claim from the original disclosure of the patent . . . is provided in Ex. 2041" (a claim listing). Mot. 4. Besides referring to two paragraphs in Ex. 2040 (Bates' Declaration), the motion provides no further explanation for the entirety of proposed substitute claim 183. *Id*. at 4–5. While Patent Owner is correct that we authorized it to file an appendix with a claim listing showing text of the specification alongside corresponding citations, Patent Owner was not excused from setting forth how the original disclosure provides written description support for the amended claims. Paper 29, 3 ("[w]e cautioned that Patent Owner should not include in its appendix any argument or

characterizations in support of written description"). In other words, Patent Owner was implicitly instructed to put arguments or characterizations in support of written description not in the appendix, but rather in its motion.

We start our analysis with Patent Owner's proposed amendments to the "establishing" limitation: "establishing the voice communication between the calling party and the subscriber, *by the tandem access controller* after the second call is completed *and answered*, across both the packet network and the second network." Ex. 2062 (emphasis added). We turn to Patent Owner's listing of written description support for proposed substitute claim 183. Ex. 2041. In Exhibit 2041, Patent Owner lists the amended claim in one column, and the alleged support beside the claim language. For the '119 Application,[19] Patent Owner provides combined contentions for "processing a second call request" and "establishing the voice communication" without explanation as to how the identified disclosures pertain to these two different steps. Ex. 2041, 13–15.

For the disputed limitation and the "processing" step, Patent Owner directs our attention to several figures and paragraphs of the '119 Application, without further explanation. *Id.* We first consider the '119 Application disclosures of Figures 1, 2, 7, and 8 identified by Patent Owner. *Id.* at 13. These portions of the '119 Application pertain to the connection between the tandem access controller and the tandem switch, not processing or establishing performed by the tandem access controller. Ex. 2066, Figs. 1, 2, 7, 8. Each of Figures 1, 2, 7, and 8 illustrates only a physical connection between the hardware, i.e., the tandem access controller and the

[19] U.S. Patent Application No. 12/821,119 ("the '119 Application").

tandem switch. *Id.* at Figs. 1, 2, 7, 8. Figure 1 illustrates an incoming arrow and an outgoing arrow. *Id.* at Fig. 1. These figures, however, are silent with respect to how the tandem access controller would perform the step of "establishing the voice communication between the calling party and the subscriber." *Id.*

Patent Owner also identifies as written description support Figure 5 and, in particular, "Box 11" of Figure 5. Ex. 2041, 13. Figure 5 of the '119 Application illustrates a flow chart including receipt of the incoming SS7 request from the tandem office (*id.* at Fig. 5 (Box 2)) and sending a SS7 call request to the PSTN tandem switch (*id.* at Fig. 5 (Box 11)), but with respect to establishing voice communication between the calling party and the subscriber, after the second call is completed and answered, across both the packet network and the second network, Figure 5 is silent (*id.* at Fig. 5 (Boxes 1–15)). Other than Boxes 2 and 11, Figure 5 indicates only "[c]onnect this outbound call to original inbound call," without explanation as to whether the second call is completed and answered. *Id.* at Fig. 5 (Box 14).

Patent Owner, additionally, points to textual description in the '119 Application for both the "processing" and "establishing" steps. Ex. 2041, 13–15 (citing Ex. 2066, 8:28–9:13, 9:20–25, 10:15, 10:31–11:15, 11:17–19, 11:31). These disclosures describe the PSTN directing the call to the tandem access controller and the tandem access controller calling the subscriber and connecting the calls, but do not describe establishing voice communication between the calling party and the subscriber after the second call is completed and answered. *See, e.g.*, Ex. 2066, 8:28–9:13, 9:20–25, 11:17–19. Similarly, deficient is the '119 Application disclosure that "TAC 10

links the two calls and monitors the connection," without mentioning whether the second call is completed and answered. *Id.* at 11:31. Other disclosures identified by Patent Owner do not pertain specifically to establishing the voice communication but, instead, more generally indicate that voice over IP may be used in the invention. *See, e.g.*, Ex. 10:15, 10:31–11:5.

One of the disclosures indicates "[w]hen the subscriber 12 *terminates (or answers)* the second call, the TAC 10 *terminates the first call and connects it to the second call*, thereby connecting the calling party 20 to the subscriber 12." Ex. 2066, 9:4–8 (emphases added). Regarding the first of these emphasized phrases, i.e., "terminates (or answers)" is not disclosure of "completed and answered," set forth in Patent Owner's proposed amendment. By using the conjunctive "or," the '119 Application presents two alternatives, i.e., terminating or answering. This is in contrast to the proposed amendment, which requires establishing voice communication after two events occur, i.e., after the second call "is completed *and answered*." Ex. 2062 (emphasis of proposed amendment added).

The second of the emphasized phrases, i.e., the "TAC 10 *terminates* the first call and connects it to the second call" (Ex. 2066, 9:5–7) is silent as to whether voice communication is established after "the second call is completed *and answered*," as required in the amendment. Ex. 2062 (emphasis added). Both the functions of terminating and connecting pertain at least in part to the first call, not just the second call, and neither is answering.

We also have considered that the original claim recites "after the call is completed." However, the proposed substitute claim changes the scope of

that phrase to "after the second call is completed and answered." Thus, the "establishing the voice communication" between the parties does not occur until the second call is both *completed and answered*.

While *ipsis verbis* support for claim terms is not necessary, it is incumbent upon the Patent Owner to set forth where the original disclosure provides written description support for the new limitation in the substitute claim. Patent Owner has not done so with respect to "establishing the voice communication between the calling party and the subscriber, by the tandem access controller, after the second call is completed *and answered*, across both the packet network and the second network," as set forth in proposed substitute claim 183. Ex. 2062 (emphasis added).

The '119 Application, including the figures, omits many details, for example, of the standardized SS7 signaling protocol and standard infrastructure in the PSTN, relying instead on the knowledge of the skilled artisan. *See, e.g.*, Ex. 2066, 16:15–21 (relying on global standard for details of how information, including caller ID, is provided), Figs. 1, 2, 7, 8 (omitting for example signaling transfer points and related connections). That establishing voice communications was known to one of ordinary skill in the art, however, is not a substitute for disclosure in the '119 Application of the proposed amendment. *See Lockwood*, 107 F.3d at 1571–72 ("It is the disclosures of the applications that count. Entitlement to a filing date does not extend to subject matter which is not disclosed, but would be obvious over what is expressly disclosed.")

In support of its Motion to Amend, Patent Owner proffers the declaration of Mr. Bates. Ex. 2040. For the most part, however, Patent Owner does not rely on the testimony of Mr. Bates in its contentions

regarding written description support for its substitute claim. In particular, Patent Owner includes only a single citation to Mr. Bates' testimony. Mot. 4–5 (citing Ex. 2040 ¶¶ 45–46). Mr. Bates' testimony, however, is conclusory. Ex. 2040 ¶¶ 45–46. He simply points to Figures 2 and 5, as well as column four, line 55 to column five, line three of the '113 Patent Specification. *Id.* To the extent that corresponding disclosures in the '119 Application are identified by Patent Owner as relevant, they are discussed above. He also testifies one of ordinary skill in the art would have known of local tandem switches. *Id.* His testimony does not remedy the aforementioned deficiencies.

In conclusion, we determine that Patent Owner's Motion to Amend does not set forth that the original disclosure provides written description support for the aforementioned phrase. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii) and (b)(1). For this reason alone, Patent Owner's Motion to Amend is *denied*.

*3. Discussion—Unpatentability*

As a separate, independent reason, we also determine based on a preponderance of the evidence that proposed substitute claim 183 is unpatentable at least under 35 U.S.C. § 103(a) as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang. As discussed *supra* in Section III.C.4, Petitioner has shown by a preponderance of the evidence that claim 1 is unpatentable, under 35 U.S.C. § 103(a), as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang. Patent Owner contends that the newly added limitations indicate that the tandem access controller is

associated with a tandem switch, not an edge switch to eliminate "the possibility" that the tandem access controller "is connected through an edge switch with the tandem switch." Mot. 2–4.

Communications between the tandem access controller and the PSTN tandem switch would have been well-known to one having ordinary skill in the art.[20] To try to distinguish over the asserted prior art, Patent Owner adds the requirement that these communications "occur without passing through any edge switches." Ex. 2062. Additionally, Patent Owner adds that "the tandem access controller" is coupled to "the particular PSTN tandem switch."

This requirement has been addressed *supra* in Sections III.C.4, III.C.5, III.C.15, and III.C.16, with respect to claims 1, 18, 19, 94, 112, and 113. In particular, it was well-known to connect Archer's server processor 128 (tandem access controller) at the tandem switch. Additionally, we agree with Petitioner's contentions and Dr. La Porta's testimony (*see, e.g.*, Pet. 38; Ex. 1002 ¶ 168) that the combination of Archer's tandem access controller, i.e., server processor 128 and database 138 with Chang's coupling to a tandem switch is nothing more than the combination of known prior art techniques in conventional ways. As highlighted in red by Petitioner's annotations to Figure 1 of Chang, a web enabled processor, i.e., Secure

[20] As discussed *supra* Sections III.C.4, III.C.5, III.C.15, and III.C.16, Petitioner has shown sufficiently that Archer's server processor communicates with a switching facility in the PSTN 118, 136 through converters 126, 132, which are PSTN-to-IP network gateways (Ex. 1002 at ¶¶ 155−64, 212–28; Ex. 1003, 4:17–36, 5:34−35, 5:59−60, 6:48–67, 8:43−9:61, Figs. 2, 5) and Chang's secure access platform 25 communicates with Tandem Switches 11T (Ex. 1002 ¶¶ 212–28; Ex. 1004, Abstract, 18:66–19:12, Figs. 1, 5).

Access Platform 25 is connected to Tandem Switches $11_T$ in the Central Offices. Pet. 37 (citing Ex. 1004, Fig. 1). For the reasons set forth *supra* Sections III.C.4, III.C.5, III.C.15, and III.C.16, we credit Dr. La Porta's testimony that one of ordinary skill in the art would have had reason to and been motivated to couple Archer's tandem access controller, i.e., server processor 128 and database 138 to Tandem Switches $11_T$ as is taught in Chang. *See, e.g.*, Ex. 1002 ¶¶ 169–73.

Importantly, as explained, for example, *supra* in Sections III.C.15 and III.C.16 interconnecting Archer's server processor 128 and database 138 with the tandem switch results in a configuration that is very similar to that shown in the exemplary embodiments illustrated in the Figures of the '113 Patent Specification (*see, e.g.*, Ex. 1001, Figs. 1, 2). For instance, coupling Archer's server processor 128 and database 138 in the manner illustrated in Chang results in the processor 128 and database 138 interfacing between Internet 27 and Tandem Switch 11T, like tandem access controller 10 interfaces between Web 22 and PSTN Tandem Switch 16. *Compare* Pet. 37 *with* Ex. 1001, Figs. 1, 2. In particular, Chang illustrates a connection between secure access platform 25 and Internet 27 and only translation processing between that same secure access platform 25 and the tandem switch. *See, e.g.*, Ex. 1005, 9:20–10:3, Fig. 1. Similarly, tandem access controller 10 interfaces with Web 22 (that uses IP) and PSTN Tandem Switch 16 (that uses SS7) and, therefore, translation is needed. *See, e.g.*, Ex. 1001, Figs. 1, 2.[21]

[21] The '113 Specification describes as exemplary that the tandem access controller "*may be* implemented using conventional processor hardware" (Ex. 1001, 6:48–50) and that "TAC 10 may use *any combination of hardware, firmware, or software*" (*id.* at 4:39–40 (emphasis added).

Other recitations added or modified by Patent Owner's amendment are directed to only known technologies. For the reasons set forth *supra* in Sections III.C.4, III.C.5, III.C.15, and III.C.16, we are persuaded by and adopt as our own Petitioner's contentions and Dr. La Porta's supporting testimony. For instance, Patent Owner asserts it more specifically identifies the telecommunications network as a PSTN network and a called party as a subscriber (Mot. 2–3), but the PSTN and subscribers were well-known. Patent Owner also asserts that it adds other limitations pertaining to PSTN tandem switches to make explicit restrictions on claim scope, but these limitations simply restrict the tandem access switch to a certain switch, that was well-known in the PSTN, as acknowledged by both parties. Additionally, "tandem access controller" is disclosed by Archer. Our reasoning and the evidence relied upon for the above is set forth fully *supra* in Sections III.C.4, III.C.5, III.C.15, and III.C.16.

In its Reply, Patent Owner contends "Petitioner has not provided any reasons as to how or why any reference could be modified or combined" so as to arrive at proposed substitute claim 183. PO Reply 12. Patent Owner, however, does not provide further details. *Id.* Mr. Bates' Reply Declaration repeats the same argument. Ex. 2070 ¶¶ 54, 55. We have already discussed fully Patent Owner's contentions provided in its Patent Owner Response and, for the reasons given, for example, in Sections III.C.4, III.C.5, III.C.15, and III.C.16, we are not persuaded. Therefore, neither Patent Owner's

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Additionally, the '113 Specification indicates it relies on the knowledge of the skilled artisan for developing the computer program used by the tandem access controller by further stating that it was "well within the capability of those skilled in the art" to "[d]evis[e] the software/firmware use[d] to control the TAC 10." *Id.* at 6:52–55.

Reply nor Mr. Bates' Reply Declaration remedy the aforementioned deficiencies.

Accordingly, we determine based on a preponderance of the evidence that proposed substitute claim 183 is unpatentable, under 35 U.S.C. § 103(a), as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang. For this additional reason, Patent Owner's Motion to Amend is *denied*.

*4. Conclusion—Motion to Amend*

Based on the evidence in the entire trial record, we determine that Patent Owner's Motion to Amend does not set forth that the '119 Application provides written description support for proposed substitute claim 183. Additionally, based on the evidence in the entire trial record, we determine based on a preponderance of the evidence that proposed substitute claim 183 is unpatentable, under 35 U.S.C. § 103(a), as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang. Accordingly, Patent Owner's Motion to Amend is *denied*.

*E. Patent Owner's Listing of Improper Reply Arguments and Evidence*

Patent Owner filed a Listing of Improper Reply Arguments and Evidence (PO List) and Petitioner filed a Response (Pet. Resp. PO List). Patent Owner's listing includes Petitioner's reply contentions relating to cross-examination of Patent Owner's declarant, portions of Archer that teach, for example, the "establishing" step, as well as reasons to combine set forth in the Petition, and responsive arguments to Patent Owner's claim construction contentions. PO List, 1. As set forth above, we have made our

determinations regarding the original claims based on the arguments and evidence set forth in the Petition. The arguments and evidence in Petitioner's Reply that informed our analysis are properly responsive.

*F. Petitioner's Motion to Exclude*

Petitioner filed a Motion to Exclude Evidence (Pet. Mot. to Exclude), seeking to exclude: (1) Patent Owner's Declaration of Mr. Bates in support of Patent Owner's Motion to Amend Reply filed as Exhibit 2070 (*id.* at 1–9); (2) Patent Owner's Exhibit 2011, which includes an opening claim construction expert declaration of Dr. Eric Burger filed by several defendants in related district court litigation (*id.* at 9–10); (3) Exhibits 2021, 2024, 2025, 2027−2030, and 2065, which includes excerpts of expert's testimony from other related proceedings (*id.* at 10−12); and (4) Patent Owner's Exhibit 2041, which includes Patent Owner's listing of written description support for proposed substitute claim 183 (*id.* at 12–13).

Under the particular circumstances in this case, we need not assess the merits of Petitioner's Motion to Exclude Evidence. As discussed above, even without excluding those parts of Patent Owner's evidence, we have determined that Petitioner has demonstrated by a preponderance of the evidence that the challenged claims are unpatentable and we have denied Patent Owner's Motion to Amend. Accordingly, Petitioner's Motion to Exclude Evidence is *dismissed* as moot.

*G. Patent Owner's Motion to Exclude*

Patent Owner filed a Motion to Exclude Evidence (PO Mot. to Exclude), seeking to exclude: (1) Exhibit 1058, which includes U.S. Patent No. 6,333,931 to LaPier (*id.* at 4−6); (2) Exhibit 1057, which includes U.S. Patent No. 6,442,169 to Lewis (*id.* at 3–4); and (3) portions of Exhibit 1065,

which includes Dr. La Porta's testimony filed in support of Petitioner's Reply to Patent Owner's Response (*id.* at 6–7). Patent Owner argues that these items are relied upon by Petitioner to support new arguments. Mot. 3−4; Paper 56, 1–3. We have determined that Petitioner has demonstrated by a preponderance of the evidence that the challenged claims are unpatentable, without considering the portions of Exhibit 1065 identified by Patent Owner.

We note, however, that Petitioner did not rely on LaPier and Lewis to meet the claim limitations, but rather to rebut Mr. Bates' testimony (Ex. 2022 ¶¶ 67, 68) regarding *the state of the art* at the time of the invention. Paper 52, 7−12. As our reviewing court noted in *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359 (Fed. Cir. 2015), we are required to consider prior art references cited as "evidence of the background understanding of skilled artisans," even when such references were cited in a reply to a patent owner response. *Id.* at 1365 (holding that references "can legitimately serve to document the knowledge that skilled artisans would bring to bear in reading the prior art identified as producing obviousness," and vacating the Board's decision because it appeared that the Board had declined to consider a reference simply because the reference "had not been identified at the petition stage as one of the pieces of prior art defining a combination for obviousness.") (citing *Randall Mfg. v. Rea*, 733 F.3d, 1355, 1362−63 (Fed. Cir. 2013)). Therefore, we have considered La Pier and Lewis as they are evidence of "the knowledge that skilled artisans would bring to bear in reading the prior art identified as producing obviousness." *See id.*

Accordingly, we *dismiss* Patent Owner's Motion to Exclude.

## IV. CONCLUSION

For the foregoing reasons, we determine that Petitioner has established by a preponderance of the evidence that the challenged claims of the ’113 Patent are unpatentable based on the following grounds:

| Challenged Claims | Basis | Reference(s) |
|---|---|---|
| Claims 1, 2, 8, 11, 15–19, 94, 95, 102, 109–13, 128, 163, 164, 166–168, 175, and 179–81 | § 103 | U.S. Patent No. 6,683,870 B1 (“Archer,” Ex. 1003) and the knowledge of a person of ordinary skill in the art |
| Claims 1, 2, 8, 11, 15–19, 94, 95, 102, 109–13, 128, 163, 164, 166–68, 175, and 179–81 | § 103 | Archer and U.S. Patent No. 5,958,016 (“Chang,” Ex. 1004) |

Additionally, we determine that (1) Patent Owner’s Motion to Amend does not set forth that the ’119 Application provides written description support for proposed substitute claim 183; and (2) based on a preponderance of the evidence in the entire trial record, proposed substitute claim 183 is unpatentable, under 35 U.S.C. § 103(a), as obvious over (1) Archer in combination with the knowledge of a person of ordinary skill in the art; and (2) Archer in combination with Chang.

## V. ORDER

Accordingly, it is:

ORDERED that claims 1, 2, 8, 11, 15–19, 94, 95, 102, 109–13, 128, 163, 164, 166–68, 175, and 179–81 of the '113 patent have been proven to be unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Amend is *denied*;

FURTHER ORDERED that Petitioner's Motion to Exclude is *dismissed* as moot;

FURTHER ORDERED that Patent Owner's Motion to Exclude is *dismissed*; and

FURTHER ORDERED that because this is a Final Written Decision, parties to the proceeding seeking judicial review of the Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2016-01261
Patent 8,457,113 B2

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