United States Court of Appeals for the Federal Circuit

AC TECHNOLOGIES S.A.,
Appellant

v.

AMAZON.COM, INC., BLIZZARD ENTERTAINMENT, INC.,
Appellees

2018-1433

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. IPR2015-01802.

Decided: January 9, 2019

MINGHUI YANG, Hardy Parrish Yang, LLP, Austin, TX, argued for appellant. Also represented by VICTOR G. HARDY; ANDREW DINOVO, NICOLE E. GLAUSER, DiNovo, Price, Ellwanger & Hardy LLP.

DANIEL T. SHVODIAN, Perkins Coie, LLP, Palo Alto, CA, argued for appellees. Also represented by CHRISTOPHER LEE KELLEY, WING LIANG, VICTORIA Q. SMITH; DAN L. BAGATELL, Hanover, NH.

Before MOORE, SCHALL, and STOLL, *Circuit Judges*.

STOLL, *Circuit Judge*.

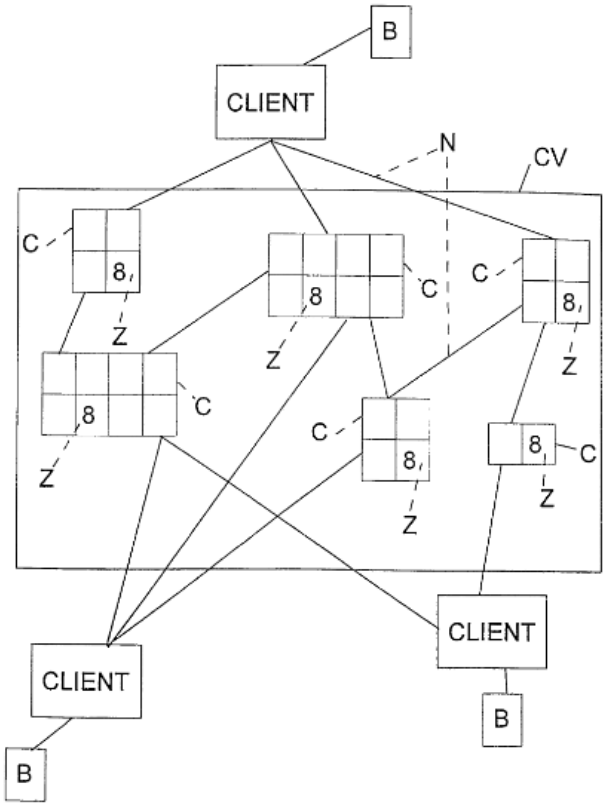
The Patent Trial and Appeal Board issued a final written decision ruling certain claims of AC Technologies S.A.'s U.S. Patent No. 7,904,680 unpatentable. On reconsideration, it invalidated the remaining claims based on a ground of unpatentability raised by Amazon.com, Inc. and Blizzard Entertainment, Inc. (collectively, "Amazon") in their petition but not addressed in the final written decision. AC appeals, arguing that the Board exceeded its authority and deprived it of fair process by belatedly considering this ground.

We disagree. Precedent mandates that the Board consider all grounds of unpatentability raised in an instituted petition. The Board complied with due process, and AC does not persuade us that the Board erred in either its claim construction or its ultimate conclusions of unpatentability. Accordingly, we affirm.

BACKGROUND

I. The '680 Patent

The '680 patent relates generally to data access and management. As shown in Figure 1, clients, such as users' (B) personal computers, may store data in or request data stored in clusters (C), each composed of one or more cells (Z), via a network (N).



'680 patent col. 7 ll. 45–46, 53–56, col. 9 ll. 55–56. The patent teaches that storing copies of data across a network improves data integrity and reduces network lag. *Id.* at col. 1 l. 28–col. 2 l. 5, col. 2 ll. 21–31. To achieve this, the system copies data—either "the entire data GD or the fields [data subsets] F"—redundantly across the network. *Id.* at col. 7 ll. 1–3, col. 7 l. 65–col. 8 l. 2. The system determines when and where to copy and store particular data as a function of predetermined data transmission parameters. *See, e.g.*, *id.* at col. 2 ll. 21–27.

Representative claim 1 reads as follows:

1. A data management system comprising:

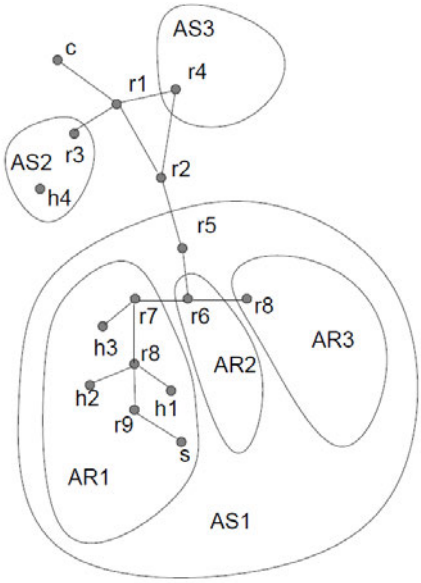
at least two data storage units;

> at least one computer unit that stores at least one complete file, each file including a plurality of individual pieces, the pieces containing parts of the files, *wherein at least one piece is stored in a redundant manner in the at least two data storage units*;
>
> a controller to enable data transmission between the data storage units and the computer unit;
>
> wherein at least one of the data storage units and computer unit measures a data transmission performance between at least one of the data storage units and the computer unit, *the at least one piece being stored by the computer unit in a redundant manner* in the data storage units as a function of the measured data transmission performance, and the computer unit accessing the at least one of the data storage units as a function of the measured data transmission performance; and
>
> wherein at least one of the at least two data storage units measures a data transmission performance between at least two of the at least two data storage units and the *data storage units copy pieces that are redundantly stored in the system* from one of the data storage units to another of the data storage units *independently of an access of the computer unit* based on the data transmission performance measured between the data storage units.

(emphases added to indicate limitations relevant to the parties' disputes). Claim 2 depends from claim 1 and further recites that the data storage units and computer unit "are connected over a wireless network." Claims 4 and 6 depend from claims similar to claim 1 and likewise require connection over a wireless network.

II. Rabinovich

Amazon challenged the '680 patent in an IPR. It based its unpatentability arguments on a single prior art reference: "Dynamic Replication on the Internet," by Dr. Michael Rabinovich. *See* Michael Rabinovich, et al., AT&T Labs Research, *Dynamic Replication on the Internet* (1998) (J.A. 567–601). Figure 1 shows the Rabinovich system, which, as relevant here, includes both a client (c), which requests files, and hosts (h and s), which maintain those files and service client requests.



J.A. 573. To better manage client requests, Rabinovich defines an algorithm for making and placing file copies across hosts. Among other things, that algorithm considers both "cnt(s, x_s)," defined as the total number of requests for file x_s from a particular host (s) for a particular period of time, and "cnt(E, x_s)," defined as the number of times those requests for file x_s have passed an entity (E) as they pass from the client to host (s). J.A. 577–78.

III. The IPR

Amazon's petition for IPR presented three grounds. In Ground 1, Amazon argued that if "computer unit" were construed narrowly and mapped to Rabinovich's client, Rabinovich rendered all claims of the '680 patent obvious. In Ground 2 and Ground 3, Amazon argued that if "computer unit" were instead construed broadly and mapped to Rabinovich's host, it anticipated some claims (Ground 2) and rendered remaining claims 2, 4, and 6 obvious (Ground 3).

At institution, the Board adopted the broad construction of "computer unit" and then instituted review of Grounds 1 and 2. *See Amazon.com, Inc. v. AC Techs. S.A.*, No. IPR2015-01802, Paper 10 at 7–9, 23, 25 (P.T.A.B. Mar. 8, 2016). With respect to Ground 3, the Board stated that it had "addressed Petitioner's contentions in our analysis above of Ground 1 and determined that Petitioner has established a reasonable likelihood of showing that claims 2, 4, and 6 are unpatentable as obvious over Rabinovich under our construction of 'computer unit.' As a result, this ground is moot." *Id.* at 25. The Board concluded by instituting review of whether all claims of the '680 patent would have been obvious over Rabinovich and whether some claims were anticipated by Rabinovich. *See id.* at 26.

The IPR proceeded, and AC filed a patent owner response. In it, AC argued that as properly construed, the claims require redundantly storing file pieces, not redundantly storing a complete file, and that Rabinovich failed to disclose this aspect of the claims. AC further argued that Rabinovich failed to disclose copying data "independently of an access of the computer unit" because Rabinovich's replication algorithm relied on $cnt(s, x_s)$, entailing access of the client computers. At oral argument, AC added that Rabinovich's reliance on $cnt(E, x_s)$ also violated the "independently of an access" limitation.

In its final written decision, the Board rejected AC's contention that the claims require storage of distinct individual pieces of the file. It reasoned that because the claims recite "*at least one* piece" and "pieces," the claims contemplate and include copying and storing more than one piece of a file, including up to an entire file. And it noted that the claims do not limit how the system stores or copies the at least one file-piece(s). *Amazon.com, Inc. v. AC Techs. S.A.*, No. IPR2015-01802, Paper 32 at 25–30 (P.T.A.B. Mar. 6, 2017) ("*Final Written Decision*"). The Board also rejected AC's contention that Rabinovich failed to teach copying data "independently of an access of the computer unit." The Board agreed that if Rabinovich's client corresponded to the claimed "computer unit," Rabinovich did not render any claims obvious under Amazon's Ground 1. At the same time, however, it found that if Rabinovich's host corresponded to the claimed "computer unit," as argued by Amazon in Ground 2, then Rabinovich anticipated every claim except claims 2, 4, and 6 because neither of the cnt parameters cited by AC involved access of Rabinovich's hosts. It found that cnt(s, x_s) represented access of Rabinovich's *client*, not the host. *See id.* at 18, 33. And it credited Amazon's expert's unchallenged testimony that cnt(E, x_s) measured possible future demand for a file and did not require access of the host. *Id.* at 34–36.

The Board's final decision did not address whether claims 2, 4, and 6 would have been obvious if the host were treated as the "computer unit," as Amazon had asserted in Ground 3. Pointing to that omission, Amazon promptly moved for reconsideration. Despite AC's protest that Ground 3 had never been part of the IPR, the Board determined that it should reach the challenge. With the Board's permission, both parties submitted additional arguments, expert declarations, and supporting exhibits. AC urged that under the Board's claim constructions, the claims permitted only ad hoc wireless networks, with

which Rabinovich would have been incompatible. But the Board determined that nothing in the claims or the specification limited the claimed wireless network to a particular type of network, and it held that Amazon had proven claims 2, 4, and 6 unpatentable. *See Amazon.com, Inc. v. AC Techs. S.A.*, No. IPR2015-01802, Paper 55 at 7–8 (P.T.A.B. Nov. 14, 2017) ("*Rehearing Decision*"). AC now appeals.

DISCUSSION

Exclusive jurisdiction to review the Board's final written decisions rests with this court. *See* 35 U.S.C. § 319; *see also* 28 U.S.C. § 1295(a)(4)(A). We enforce the limits placed on the Board by statute and due process. *See Wi-Fi One, LLC v. Broadcom Corp.*, 878 F.3d 1364, 1374 (Fed. Cir. 2018) (en banc) ("Enforcing statutory limits on an agency's authority to act is precisely the type of issue that courts have historically reviewed."); *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1080 (Fed. Cir. 2015) (reviewing alleged denial of procedural due process rights by the Board). We consider de novo the Board's legal conclusions. *See PPC Broadband, Inc. v. Corning Optical Commc'ns RF, LLC*, 815 F.3d 734, 739 (Fed. Cir. 2016). And we ensure that substantial evidence supports the Board's factual findings. *See Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1064 (Fed. Cir. 2018).

I

AC argues that the Board erred procedurally when it invalidated claims 2, 4, and 6 based on a ground that it did not institute in its institution decision. AC claims that in doing so, the Board exceeded its statutory authority and fell short of the requirements of due process. We address these arguments in turn.

A

At institution, the Board determines "whether to institute an [IPR]." 35 U.S.C. § 314(b). The Supreme Court

recently clarified that this statutory language "indicates a binary choice—either institute review or don't." *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018). If the Board institutes an IPR, it must issue a final written decision addressing all claims challenged by the petitioner. *See id.* at 1359–60; *see also* 35 U.S.C. § 318(a). And, we have held, if the Board institutes an IPR, it must similarly address all grounds of unpatentability raised by the petitioner. *See Adidas AG v. Nike, Inc.*, 894 F.3d 1256, 1258 (Fed. Cir. 2018) (remanding noninstituted grounds for review); *BioDelivery Scis. Int'l, Inc. v. Aquestive Therapeutics, Inc.*, 898 F.3d 1205, 1208 (Fed. Cir. 2018) ("Post-*SAS* cases have held that it is appropriate to remand to the PTAB to consider non-instituted claims as well as non-instituted grounds.").

This precedent forecloses AC's argument that the Board exceeded its statutory authority when it reconsidered its final written decision and addressed non-instituted Ground 3. Indeed, it would have violated the statutory scheme had the Board *not* done so. *See PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) ("Equal treatment of claims and grounds for institution purposes has pervasive support in *SAS*."). Contrary to AC's arguments, *see* Appellant's Br. 49–53, neither § 314(b)'s timing requirements nor § 314(d)'s limits on appealability alter the Board's statutory obligation to rule on all claims and grounds presented in the petition. *See SAS*, 138 S. Ct. at 1356 (explaining that an IPR must "proceed[] '[i]n accordance with' or 'in conformance to' the petition" (second alteration in original) (quoting *Pursuant*, Oxford English Dictionary (3d ed. 2007), http://www.oed.com/view/Entry/155073)).

B

We recognize that *SAS* did not displace the Board's responsibility to comply with due process. We have explained that due process dictates that parties before the

Board must receive adequate notice of the issues the Board will decide as well as an opportunity to be heard on those issues. *See Genzyme Therapeutic Prods. Ltd. P'ship v. Biomarin Pharm. Inc.*, 825 F.3d 1360, 1367–68 (Fed. Cir. 2016).

No due process violation occurred here. As AC admits, after the Board decided to accept Amazon's rehearing request and consider Ground 3, it permitted AC to take discovery and submit additional briefing and evidence on that ground. Though AC did not receive a hearing specific to Ground 3, it never requested one. Had AC desired a hearing, it should have made a request before the Board. *See, e.g.*, *Intellectual Ventures II LLC v. Ericsson Inc.*, 686 F. App'x 900, 905–06 (Fed. Cir. 2017) (finding no due process violation where party had notice and an opportunity to be heard and failed to request surreply or rehearing to address issue).

II

On the merits, AC initially challenges the Board's interpretation of the claim limitations reciting "piece(s)." We review the Board's ultimate claim constructions de novo, *see In re Man Mach. Interface Techs. LLC*, 822 F.3d 1282, 1285 (Fed. Cir. 2016), and we review any subsidiary factual findings involving extrinsic evidence for substantial evidence, *see Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 841 (2015). The broadest reasonable interpretation standard applies to this IPR.[1] Thus, the

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[1] Per recent regulation, the Board applies the *Phillips* claim construction standard to petitions filed on or after November 13, 2018. *See Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board*, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (to be codified at 37 C.F.R. pt. 42). Because Amazon filed its petition before

Board's construction must be reasonable in light of the record evidence and the understanding of one skilled in the art. *See Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015), *overruled on other grounds by Aqua Prods., Inc. v. Matal*, 872 F.3d 1290 (Fed. Cir. 2017) (en banc).

The Board acknowledged that a file consists of pieces of data. The Board explained, however, that because the claims recite storing "at least one piece" and copying "pieces" of data, they permit copying and storing of "more than one piece, and thus all of the pieces of an entire file." *Final Written Decision*, at 25–26. The Board further explained that the claims impose no limit on *how* the system stores or copies pieces and they do not require storing or copying pieces on an individual basis or prohibit storing or copying pieces "contiguously with other pieces of the same file." *Id.* at 28–29.

We conclude that the intrinsic evidence supports the Board's view. The claims themselves specifically contemplate storage and copying of multiple pieces of a file. They recite storing "*at least one* piece" and copying "*pieces* that are redundantly stored in the system." '680 patent col. 25 l. 64–col. 26 l. 24 (emphases added). Though other claims recite "the received piece" of data, such claims each refer back to the "at least one piece" limitation for antecedent basis. *See, e.g.*, *id.* at col. 27 ll. 36–37, 49–50, col. 28 ll. 25–26, 31–32; Oral Arg. at 11:45–59, http://oralarguments.cafc.uscourts.gov/default.aspx?fl=2017-1999.MP3 (agreeing that "every time [the claim] refer[s] to a piece of data later in the claim, it refers back to 'at least one piece'"). No claim limits how many pieces the system may copy and store, and no claim limits how the system copies and stores those pieces. Indeed, claim 1

November 13, 2018, we apply the broadest reasonable interpretation standard.

requires storage of all pieces of a complete file as a complete file, at least on the computer unit. *See* '680 patent col. 25 ll. 66–67 ("[A]t least one computer unit that stores at least one complete file, each file including a plurality of individual pieces . . . .").

The specification further supports the Board's claim construction. It contemplates "distribution of the entire data," not merely specific pieces. *Id.* at col. 7 l. 65–col. 8 l. 2. And though it also describes the system separately storing pieces of data, it specifies that those disclosures relate to particular embodiments of the claimed invention and never disclaims whole-file storage. *See id.* at col. 2 l. 55–61 ("*In another embodiment* the data in the system is divided into data subsets, and . . . stored in . . . cells . . . ." (emphasis added)). The prosecution history contains no contrary statements.

AC asserts that the Board's construction conflicts with the invention's purpose and that the specification compels a contrary construction. But it crafts that argument by ignoring—often through strategic use of ellipses—the disclosures noted above and by relying on an expert whose testimony the Board elsewhere characterized as "conclusory." *See Final Written Decision*, at 7; Appellant's Br. 31, 37. Having broadly drafted its claims to encompass both systems that copy and store individual pieces and those that copy and store multiple or all pieces of a file, AC cannot now read features from preferred embodiments into its claims to bolster its validity arguments. *See In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993) ("[L]imitations are not to be read into the claims from the specification."). For all of the above reasons, we see no error in the Board's claim interpretation.

III

AC also challenges the Board's ultimate findings of anticipation and conclusions of obviousness. Specifically,

AC disputes the Board's finding that Rabinovich discloses copying "independently of an access of the computer unit," as recited by the anticipated independent claims, and the Board's conclusion that it would have been obvious to connect Rabinovich's computer unit and data storage units over a wireless network, as recited by claims 2, 4, and 6. We address these arguments in turn.

A

We review the Board's finding that Rabinovich discloses copying "independently of an access of the computer unit," a question of fact, for substantial evidence. *See In re Gleave*, 560 F.3d 1331, 1334–35 (Fed. Cir. 2009). The Board found that Rabinovich discloses this limitation because neither cnt(s, x_s) nor cnt(E, x_s) requires access of Rabinovich's host, the element Amazon identified as the claimed computer unit. *See Final Written Decision*, at 32–37. Substantial evidence supports the Board's finding. Specifically, Rabinovich defines cnt(s, x_s) as the access count for a particular file by the client, not the host, and it defines cnt(E, x_s) as the number of appearances of an entity (E) (which may be a host) along a request's path from the client to a requested file. J.A. 577. Dr. David Ratner confirmed this understanding of cnt(E, x_s) in his testimony, where he further explained that cnt(E, x_s) simply measures "possible future demand for a replica of [file] x." J.A. 432. The Board specifically credited this unchallenged testimony. *See Final Written Decision*, at 34–35.

AC nonetheless argues that the Board should have accepted its understanding of Rabinovich, and it further argues that without explicit disclosure affirming that Rabinovich does not depend on an access of the host, Rabinovich cannot disclose independent access. AC's contentions lack merit. The first misunderstands our role on appeal. We evaluate whether substantial evidence supports the Board, but "[w]e may not re-

weigh . . . evidence." *In re Warsaw Orthopedic, Inc.*, 832 F.3d 1327, 1333 (Fed. Cir. 2016). The second misapprehends the law. Contrary to AC's suggestion, a reference need not state a feature's absence in order to disclose a negative limitation. *See, e.g.*, *Sud-Chemie, Inc. v. Multisorb Techs., Inc.*, 554 F.3d 1001, 1004–05 (Fed. Cir. 2009) (affirming finding that reference disclosed "uncoated" film where it did not describe the film as coated and did not suggest necessity of coatings).

B

We review the Board's ultimate determination that claims 2, 4, and 6 would have been obvious de novo, and we review its underlying factual findings for substantial evidence. *See Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016).

AC asserts that per the Board's constructions and Amazon's petition, Rabinovich's data storage units and its computer unit must both serve as hosts. Continuing from that premise, it contends that only "ad hoc" networks permit hosts to directly connect to one another and that Rabinovich could not operate with an ad hoc network. As a result, AC claims, the Board erred in finding that it would have been obvious to connect Rabinovich's system over a wireless network.

AC assumes that the phrase "connected over a wireless network" requires a direct wireless connection. But the Board specifically found the claims "broad enough to encompass a connection through a wireless hub." *Rehearing Decision*, at 8. AC fails to explain how or why the Board erred in doing so, and we see no error in the Board's construction.[2] Consequently, we affirm.

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[2] Though AC does not directly challenge the Board's construction, we note that it finds support in the claims,

CONCLUSION

We have reviewed the parties' remaining arguments and find them unpersuasive. Accordingly, we affirm the Board.

AFFIRMED

COSTS

Costs to Appellees.

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which do not recite "direct" or "ad hoc" network connections, the specification, which describes the claimed wireless connections in only the broadest terms, *see* '680 patent col. 3 ll. 41–49, and in the prosecution history, in which the examiner specifically recognized that "wireless networks were notoriously well known in the art and commonly used at the time of the invention," *see Rehearing Decision*, at 6.