

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMAZON.COM, INC., and
BLIZZARD ENTERTAINMENT, INC.,
Petitioner,

v.

AC TECHNOLOGIES S.A.,
Patent Owner.

Case IPR2015-01803
Patent 7,904,680 B2

Before MATTHEW R. CLEMENTS, PETER P. CHEN, and
JEFFREY W. ABRAHAM, *Administrative Patent Judges*.

CLEMENTS, *Administrative Patent Judge*.

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

I. INTRODUCTION

Amazon.com, Inc. and Blizzard Entertainment, Inc. (collectively, “Petitioner”) filed a Petition requesting *inter partes* review of claims 1–15 (“the challenged claims”) of U.S. Patent No. 7,904,680 B2 (Ex. 1002, “the ’680 patent”). Paper 1 (“Pet.”). AC Technologies S.A. (“Patent Owner”) filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). On March 8, 2016, we instituted an *inter partes* review of claims 1–15 (“the instituted claims”) of the ’680 patent on one ground of unpatentability alleged in the Petition. Paper 10 (“Dec. to Inst.” or “Inst. Dec.”)

After institution of trial, Patent Owner filed a Patent Owner Response (Paper 17, “PO Resp.”), to which Petitioner filed a Reply (Paper 21, “Pet. Reply”).

We held a consolidated hearing on December 5, 2016, for this case and related Cases IPR2015-01801, IPR2015-01803, IPR2015-01804, and IPR2015-01805; and a transcript of that hearing is part of this record. Paper 31 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6(b). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has not shown, by a preponderance of the evidence, that the instituted claims of the ’680 patent are unpatentable.

A. *Related Proceedings*

The ’680 patent is involved in several cases pending in the Western District of Texas, and in one case pending in the Northern District of California. Pet. 1–2; Paper 7, 2–3; Paper 29, 1–2. Petitioner also has filed other petitions seeking *inter partes* review of the ’680 patent in IPR2015-

01802 (pending) and of related patents in IPR2015-01801 (pending), IPR2015-01804 (pending) and IPR2015-01805 (pending). Pet. 2; Paper 7, 3; Paper 29, 2.

B. The '680 patent

The '680 patent relates generally to a data access and management system as well as to a method for data access and data management for a computer system. Ex. 1002, 1:21–23. In particular, it relates to a system and a method for optimising the access to data and the processing of that data in distributed and networked computer structures. *Id.* at 1:23–26. According to the '680 patent, conventional distributed systems built on the client/server model were vulnerable to failure of the server, failure of network areas connecting the server to the clients, and different “lags” between the server and various clients. *Id.* at 1:28–62.

To address these and other problems, the '680 patent describes a distributed system in which data is stored in a redundant manner depending on parameters of data transmission between computer units and data storage means, and the computer units access one of the data storage means as a function of the data transmission parameters. *Id.* at 2:21–27. Figure 2 is reproduced below.

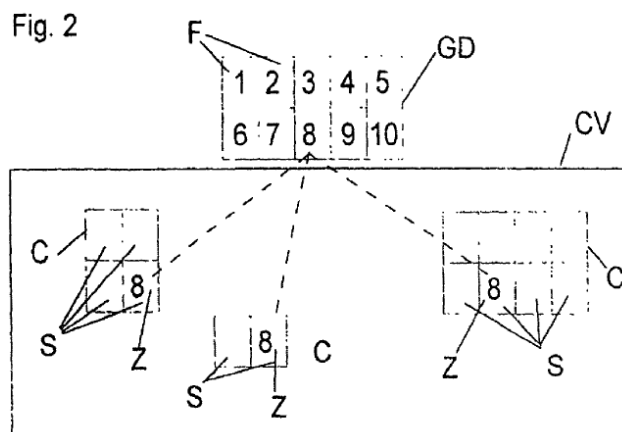


Figure 2 shows a schematic representation of a data structure and its division and assignment to cells. *Id.* at 6:53–55. Data quantity GD is divided into individual data subsets referred to as fields F. *Id.* at 7:1–3. A single field F is stored in several cells Z in a redundant manner. *Id.* at 8:1–2. A cluster C comprises one or more cells Z. *Id.* at 7:13–14. Each memory location of a cluster is referred to as a slot S. All clusters C are combined for the representation of GD to form a cluster compound CV. *Id.* at 7:18–20.

Figure 1 is shown below.

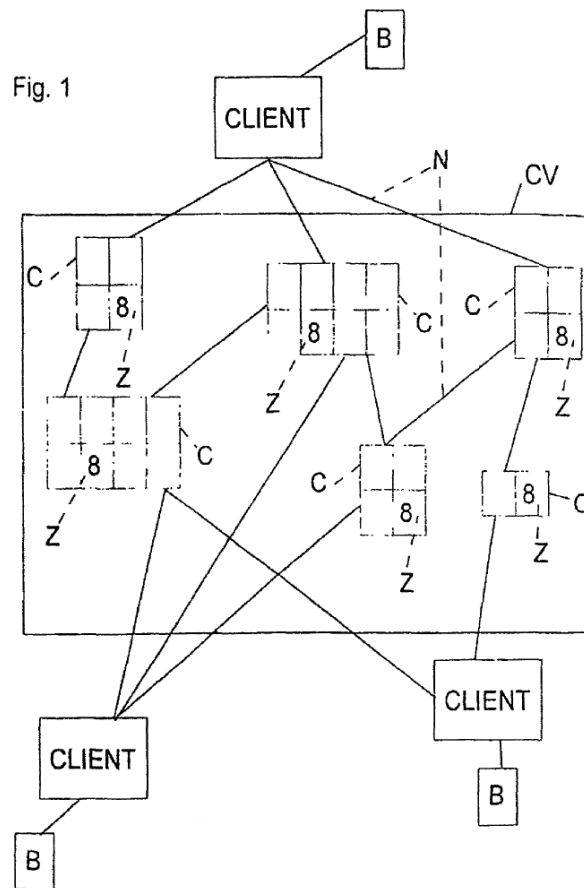


Figure 1 shows a schematic representation of a preferred embodiment. *Id.* at 6:50–52. Figure 1 depicts clients CL connected to clusters C via network N. *Id.* at 7:53–64. User B connects to a client CL generally through only one connection, which, according to the '680 patent, is usually a telephone line.

Id. at 9:54–58. The system can be used to provide computer games over the Internet. *Id.* at 3:63–4:7, 9:48–51.

C. Illustrative Claim

Of the instituted claims, claims 1, 3, 5, 7, 10, and 13 are independent.

Claim 1 is illustrative and is reproduced below:

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.

Ex. 1002, 25:64–26:24.

D. Evidence Relied Upon

Petitioner relies upon the following references:

Rabinovich, M., et al., “Dynamic Replication on the Internet,” Ex. 1006
Work Project No. 3116-17-7006, AT&T Labs Research
Technical Memorandum HA6177000-980305-01TM (March 5,
1998) (“Rabinovich”)

Carter, Robert L., et al., “Server Selection Using Dynamic Path Ex. 1007
Characterization in Wide-Area Networks,” PROCEEDINGS OF
IEEE INFOCOM ’97 (April 1997) (“Carter”)

Akizawa US 5,548,724 Aug. 20, 1996 Ex. 1008

Pet. 4. Petitioner also relies upon the Declaration of Dr. David H. Ratner
 (“Ratner Decl.”) (Ex. 1005). Patent Owner relies upon the Declaration of
Dr. Paul S. Jacobs (“Jacobs Decl.”) (Ex. 2006).

E. The Instituted Ground of Unpatentability

We instituted *inter partes* review of claims 1–15 of the ’680 patent
under 35 U.S.C. § 103 as obvious over Rabinovich, Carter, and Akizawa.
Dec. to Inst. 27.

II. ANALYSIS

A. Claim Construction

We interpret claims of an unexpired patent using the broadest
reasonable construction in light of the specification of the patent in which
they appear. See 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*,
136 S.Ct. 2131, 2142–46 (2016). In applying a broadest reasonable
construction, claim terms generally are given their ordinary and customary
meaning, as would be understood by one 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).

In our Decision on Institution, we determined that “computer unit” is not limited to a client computer and, instead, encompasses any computing device. Dec. to Inst. 8–9. We also construed “means for storing at least one complete file,” “controller,” “second data storage means for storing data,” and “control means.” *Id.* at 9–13. Neither party disputes our determinations or proposes additional terms for construction. Based on the record developed during this proceeding, we continue to apply these constructions.

In addition, we find it necessary to construe the term “pieces” in order to resolve the disputes between the parties.

“pieces”

Claim 1 recites “each file including a plurality of individual pieces, the pieces containing parts of the files.” Ex. 1002, 25:67–26:1. The other independent claims recite limitations commensurate in scope. Neither party proposes explicitly a construction of the term “piece.” Petitioner argues that “[f]iles are inherently composed of pieces in the form of bits that make up bytes, the bytes themselves being pieces of the file.” Pet. 33. Patent Owner argues that construing “piece” to cover “bits and bytes” of a file “would read out the ‘pieces’ limitation from the claim entirely” (PO Resp. 31–32) and that “one of ordinary skill in the art would not read the ‘pieces’ limitation of the claim to include bits and bytes” (*id.* at 32).

The claims themselves define “piece” by requiring that a “file” have a “plurality of individual pieces,” but do not establish a lower bound—i.e., a minimum number of bits or bytes—to qualify as a “piece.” Patent Owner identifies no support in the ’680 patent for its contention that “piece” or “pieces” excludes a byte or bytes of a file, relying instead solely on the testimony of Dr. Paul S. Jacobs. *Id.* (citing Ex. 2006 ¶¶ 38, 39). We are not

persuaded by Dr. Jacobs’s conclusory testimony. Because “piece” and “pieces” are limited by the claims only to being a subset of a file and because a byte or collection of bytes of a file is a subset of that file, we are persuaded that the broadest reasonable interpretation of “piece” and “pieces” in light of the Specification of the ’680 patent encompasses a byte or bytes.

B. Principles of Law

To prevail in this *inter partes* review of the challenged claims, Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d).

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 skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

We analyze the instituted ground of unpatentability in accordance with the above-stated principles.

C. Level of Ordinary Skill in the Art

Petitioner’s declarant, Dr. Ratner, testifies that a person of ordinary skill in the art at the time of the alleged invention “would have had an undergraduate degree in Computer Science or a related field, such as

Electrical Engineering, and two to three years of experience working in the field, or an equivalent level of experience.” Ex. 1005 ¶ 17; Pet. 14. Patent Owner does not challenge this definition or present its own.

Accordingly, we credit the testimony of Dr. Ratner regarding the level of ordinary skill in the art, and find that a person of ordinary skill in the art would have had an undergraduate degree in Computer Science or a related field, such as Electrical Engineering, and two to three years of experience working in the field, or an equivalent level of experience. This level of ordinary skill is reflected not only by the information presented by the parties, but also by the prior art of record. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the prior art itself can reflect the appropriate level of ordinary skill in the art).

D. Whether Rabinovich is a Printed Publication

In the Decision on Institution, we determined that for the preliminary stage of this proceeding, Petitioner had shown Rabinovich to be a printed publication. Dec. on Inst. 13–19. We noted:

Here, Petitioner presents testimony from Dr. Rabinovich that indicates Rabinovich was posted to a specific URL no later than December 1998, which is more than one year before the earliest priority date (January 11, 2000) of the ’680 patent. Ex. 1004 ¶¶ 2, 4, 6, 8. Dr. Rabinovich testifies that he authored an article that was published in the December 1998 IEEE Bulletin, cited Rabinovich in footnote 16 of that article, and included the URL on his webpage from which the general public could download Rabinovich. *Id.* Petitioner provides a copy of Dr. Rabinovich’s article published in the December 1998 IEEE Bulletin as Exhibit 1011, which includes a citation to Rabinovich in footnote 16, and states that the article is available at a specific URL. Ex. 1011, 13 n. 16. Dr. Rabinovich further testifies that his practice was, “for each cited article identified as being

available on my website at a specific URL, [to] confirm the cited article’s actual availability at that URL.” Ex. 1004 ¶ 6.

Our review of the evidence on the present record, including the footnote in the December 1998 IEEE Bulletin article and Dr. Rabinovich’s testimony, indicates that, at this stage, Petitioner has shown sufficiently that Rabinovich was publicly accessible to one of ordinary skill in the art as of December 1998. In particular, the fact that the 1998 IEEE Bulletin article expressly cites Rabinovich in footnote 16, which indicates that Rabinovich is a technical report from AT&T labs and is available at a specific URL, suggests that a person of ordinary skill in the art interested in the subject matter at issue, exercising reasonable diligence, could have located Rabinovich. *See Blue Calypso, LLC. v. Groupon, Inc.*, No. 2015-1391, -1393, -1394, slip op. at 32 (Fed. Cir. March 1, 2016).

Id. at 16–17 (footnote omitted).

In the Patent Owner Response, Patent Owner discusses *Cornell Univ. v. Hewlett-Packard Co.*, No. 01-cv-1974, 2008 U.S. Dist. LEXIS 39343 (N.D.N.Y. May 14, 2008). PO Resp. 38–40. According to Patent Owner,

[i]n [*Cornell*], the case cited by the Federal Circuit to suggest an article is prior art because another article cited to it, the Court found a published article’s in-context citation to a master’s thesis supported a finding that the master’s thesis was prior art – and the context was critical. In particular, there was no dispute in *Cornell* that the master’s thesis, while unpublished, could be found in the university’s collections.

Id. at 44. Patent Owner argues that, unlike in *Cornell*, there is no evidence in the present record demonstrating that Rabinovich was ever available on Dr. Rabinovich’s personal website. *Id.* at 44–45. Patent Owner further argues that in *Cornell*, the disputed prior art reference “set forth the common subject matter between” the patent at issue and the disputed reference, whereas “the IEEE publication at issue here provides no such context” for

common subject matter of the challenged patent and the alleged publication. *Id.* at 45. Patent Owner asserts, “because the IEEE article cites Rabinovich in the context of algorithms unrelated to the patented subject matter, it would cause a [person of ordinary skill in the art] to ignore Rabinovich—not to seek it out. . . . The IEEE article is not a research aid that would guide someone to Rabinovich.” *Id.* at 45–46.

In its Reply, Petitioner contends:

Dr. Rabinovich’s testimony establishes that Rabinovich was publicly available at least by December 1998. Dr. Rabinovich’s consistent, professional practice was to personally re-publish his AT&T technical memoranda on the webpage that he managed on AT&T’s publicly accessible website whenever he cited to those memoranda in later publications. (Ex. 1004 at ¶¶ 2, 6, 8; Ex. 2004 at 5:5-9:25.).

. . .

Patent Owner argues a [person having ordinary skill in the art] would not have located Rabinovich because Rabinovich and the December 1998 Article relate to data replication instead of segmented file transfer. This argument is based upon a mischaracterization of the invention and additionally fails because the scope of relevant prior art is not limited to the solution reached by the inventor.

Reply 20–21 (footnote omitted).

Petitioner also argues that in *Cornell*, the unpublished Master’s thesis was ruled prior art because it was cited in an IEEE article circulated to many researchers in the relevant field and the IEEE article acted as a “road map” in setting forth the common subject matter between the patent at issue and the Master’s thesis in a way that would “guide a person of ordinary skill interested in the subject matter” to the thesis. *Id.* at 22. Petitioner contends the December 1998 IEEE article serves as such a roadmap to Rabinovich:

The 1998 Article was published in a “Special Issue on Data Replication” of the IEEE Bulletin focusing on “technique[s] for ensuring high availability ... and performance of distributed database systems,” “fault tolerance,” and “synchronization mechanisms.” (Ex. 1011 (December 1998 Article) at cover, 1-2.) The December 1998 Article itself “examines issues that arise in Web content replication, paying special attention to challenges in dynamic replication.” (*Id.* at 21.) Most importantly, the passage in the December 1998 Article that cites to Rabinovich identifies an algorithm in Rabinovich (“[fn16]”) for optimizing access to data using the rank of replicated data combined with the proximity of the replicated data in order to increase performance. (*Id.* at 26.) Footnote 16 contains the URL to Rabinovich. Thus, the December 1998 Article provided a roadmap directing persons of interest, such as the IEEE members to whom the Bulletin was distributed, to Rabinovich.

Reply 22–23.

We agree with and adopt Petitioner’s reasoning and determine Rabinovich to be a printed publication. We credit the unrebutted testimony of Dr. Rabinovich regarding the consistency of his professional practice in 1998 for republication of his AT&T technical memoranda on a webpage that he managed on AT&T’s publicly accessible website. Furthermore, we find the December 1998 IEEE article corroborates the public availability of Rabinovich on that website, and would have been a roadmap, for one of ordinary skill in the art of data management and optimized access to data, to be guided to Rabinovich. *See* Reply 21–22. As Petitioner points out, Patent Owner’s own declarant states that Rabinovich and the December 1988 IEEE article “are ‘similar[.]’ in that they both address ‘problems in network connectivity caused by multiple clients accessing servers.’” (Ex. 2006 at 12).” *Id.* Additionally, the passage in the December 1998 IEEE article that cites to Rabinovich refers to an algorithm in Rabinovich for

optimizing access to data in order to increase performance. *Id.*

Accordingly, we find that footnote 16 of the IEEE article, which contains the URL to Rabinovich, would have guided one of ordinary skill directly to Rabinovich.

We are, therefore, persuaded, that Rabinovich is a printed publication under 35 U.S.C. § 102.

*E. Claims 1–15:
Obviousness over Rabinovich, Carter, and Akizawa*

Petitioner argues that claims 1–15 are unpatentable under 35 U.S.C. § 103 as obvious over Rabinovich, Carter, and Akizawa. Pet. 48–60. For the reasons explained below, Petitioner has not established, by a preponderance of the evidence, that claims 1–15 would have been obvious over Rabinovich.

1. Rabinovich (Ex. 1006)

Rabinovich describes

a protocol suite for dynamic replication and migration of Internet objects. It consists of an algorithm for deciding on the number and location of object replicas and an algorithm for distributing requests among currently available object replicas. Our approach attempts to place replicas in the vicinity of a majority of requests while ensuring at the same time that no servers be overloaded. The request distribution algorithm uses the same simple mechanism to take into account both server proximity and load, without actually knowing the latter. The replica placement algorithm executes autonomously on each node, without the knowledge of other object replicas in the system.

Ex. 1006, 1.

2. Carter (Ex. 1007)

Carter is titled, “Server Selection Using Dynamic Path Characterization in Wide-Area Networks,” and describes dynamic selection of servers to service client requests based on transmission parameters between client and server. Ex. 1007, Abstract, 1015. For example, Carter describes selection of a server to service a data transfer request by measuring the average response time from servers in response to pings or a series of pings. *Id.* at 1017. Carter further discloses measuring the available bandwidth as another factor in selecting a server to service a request. *Id.* at 1018–19.

3. Akizawa (Ex. 1008)

Akizawa describes a file server system and file access-control method that includes a plurality of file servers connected on a network. Ex. 1008, Abstract, 2:54–61. Upon receiving either a read or write request from a client computer, Akizawa’s server system measures the load information of the plurality of file servers and selects a particular file server to service the client request based on the load information. *Id.*

4. The Parties’ Positions

Independent claim 1 recites, “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.” Ex. 1002, 26:18–24 (emphasis added). Every other independent claim includes a limitation of commensurate scope. *Id.* at 26:49–55 (claim 3), 27:17–23 (claim 5), 27:48–53 (claim 7), 28:37–42 (claim 10), 29:25–30:3 (claim 13).

Petitioner relies solely upon the teachings of Rabinovich for this limitation, arguing that “the host/server will create a new replica of the stored object in a new server,” “[b]ased in part on the loads of both hosts/servers and measures of proximity to requesting clients,” and that “[t]he determination of where to make a new replica is independent of an access by a client at that time.” Pet. 36 (citing Ex. 1006, 2, 10–17; Ex. 1005 ¶¶ 257–260), 51 (referring to analysis at page 36).

As to the meaning of “independently of an access,” Petitioner argues the ’680 patent describes two ways in which the copying is done “independently” of an access by the computer unit. First, the ’680 patent “identifies no role for the client computer” when a storage host periodically checks its past transmission performance metrics to decide whether to copy data to a new host, or when data is actually copied from one storage device to another. Reply 12. Second, according to Petitioner, “[c]opying is not initiated as a result of specific access requests from the computer unit.” *Id.* at 13; Tr. 13:18–20.

In view of this, Petitioner argues that a storage device can copy “independently of an access” even if its decision to copy or its decision where to copy is based, in part, on data transmission performance measurements made during, or based on, prior access by the computer unit. Tr. 9:19–23, 11:6–12 (“[R]elying upon past communications with the client is not making it dependent upon an access of the computer unit, because . . . the data storage units . . . check their parameters periodically. And they decide whether to move the data . . . independent of any involvement of the computer unit.”).

Petitioner further argues that “[i]f copying decisions based on measured transmission data do not qualify as being made ‘independently of an access’ by the computer unit, then there is no disclosure in the patent of independent copying.” *Id.* at 13–14, 16 (“[T]here is no disclosure in the ’680 Patent of any technique for shifting data from one storage device to another based on ‘data transmission parameters’ other than those collected during prior requests for the data from a computer unit.”); Tr. 12:19–24 (arguing that “independent of an access” does not exclude reviewing parameters related to past communications with clients because that would be contrary to the purpose of the patent).

Petitioner also argues that Rabinovich replicates data “independently of an access of a computer unit” in the same manner as the ’680 patent. Reply 14–16. Petitioner contends that replication is performed “periodically” by a storage host and is not initiated in response to any specific access request for data by a computer unit. *Id.* at 14. Petitioner acknowledges that Rabinovich uses a count of prior accesses from the client, but notes that “it doesn’t take a count to trigger this.” Tr. 14:22–23. Rather, “it’s possible that the count might not have changed at all since . . . you’ve run this algorithm. The count hasn’t changed. There’s been no new accesses.” *Id.* at 14:16–19. Petitioner also contends that Rabinovich uses data parameters that are similar or identical to those used by the ’680 patent when determining whether and where to replicate data, and that Rabinovich, like the 680 patent, updates the data transmission parameters for each storage device as the requests are received. Reply 15–16.

Patent Owner argues that “independently of an access” means that “the data storage units cannot consider any access from the computer unit.”

Tr. 33:14–16. Patent Owner contends that the host in Rabinovich “explicitly takes into account access by the clients” in its replication step. PO Resp. 35 (emphasis omitted). According to Patent Owner, Rabinovich discloses that a host will replicate an object only when the number of accesses of that object by the client exceeds a certain threshold. *Id.* Specifically, Patent Owner contends that hosts record accesses by the client as $cnt(s, x_s)$, and that Rabinovich’s replication step proceeds only if the ratio of $cnt(s, x_s)$ to $aff(x_s)$ is greater than a threshold value m . *Id.* at 35–36. At the Hearing, counsel for Patent Owner stated

the Rabinovich algorithm only performs the replication and copying step if the access count here is non zero. This is pointed out directly in Rabinovich's algorithm. Even though the algorithm itself is run periodically, the first step of the algorithm checks to see if the access count is divided by the affinity is less than the threshold. If the access count is zero, that’s certainly less. . . . So the replication is . . . not performed.

Tr. 34:17–35:5; *see also id.* at 38:8–12 (arguing that “if the only way this [copy operation] is going to be triggered is a situation where a computer unit conducts an access, then there is a dependency on the access for the copy operation”), 41:8–13 (arguing that copying in Rabinovich occurs only “when a computer unit conducts an access and turns the count to a non zero number”).

Patent Owner argues that Petitioner’s contention that Rabinovich’s hosts copy “independently of an access” because a replica is made “independently of an access by a client *at that time and without contacting the clients*” attempts to read additional limitations into the claim language. PO Resp. 36. According to Patent Owner, even though Rabinovich’s replication occurs *after* the client accesses the object, the decision to

replicate still “depends” on the client access. *Id.* at 36–37 (“Essentially, Rabinovich teaches the hosts record the accesses made by the clients and use the recorded number of accesses to control replication, which is dependent of access.”).

5. Analysis

There is no dispute that Rabinovich’s algorithm for replication considers the parameter $cnt(s, x_s)$ in determining whether to replicate data object x_s . Rabinovich defines $cnt(s, x_s)$ as the “total access count for x_s ,” which is equal to $cnt(x_s)$. Ex. 1006, 11. According to Dr. Ratner, “[t]he metric $cnt(s, x_s)$ measures the total number of times in that window that replica x_s has been served to a client computer.” Ex. 1005 ¶ 253. As Patent Owner points out, Rabinovich teaches replicating object x_s only if the ratio of $cnt(s, x_s)$ over $aff(x_s)$ is greater than m , and the ratio can be greater than m only if $cnt(s, x_s)$ is greater than zero. PO Resp. 35; Ex. 1006, 12, Fig. 4. In view of this, we agree with Patent Owner that if $cnt(s, x_s)$ has a value of zero, meaning that object x has not been served to any client computer, then the ratio of $cnt(s, x_s)$ to $aff(x_s)$ will be zero, i.e., less than m , and Rabinovich will not carry out its replication step. This means that Rabinovich will not replicate object x_s until x_s has been accessed by a client computer at least once, such that the access count for x_s is greater than zero. In this regard, we agree with Patent Owner that object x_s is not “sen[t], from the at least one data storage device to the another data storage device . . . independently of an access of the at least one client computer” because Rabinovich teaches explicitly that object x_s is not sent unless there has been at least one access from the client computer.

We are not persuaded by Petitioner’s argument that Rabinovich replicates data “independently of an access of a computer unit” in the same manner as the ’680 patent. Reply 14–16. The ’680 patent does not expressly define the phrase “independently of an access of a computer unit.” The ’680 patent does, however, explain that the data storage means processes stored data independently from the computer unit. *See, e.g.*, Ex. 1002, 2:50–51 (“[I]t is to be preferred that the data storage means process the stored data independently from the computer unit.”). The ’680 patent also teaches that interactions between the computer unit and data storage units are considered in determining replication of data between data storage devices. For example the ’680 patent states:

All cells Z and/or clusters C and/or clients CL periodically check their applicable parameters for data transmissions. In periodic intervals or subsequently to specified actions, all cells Z and/or clusters C and/or clients CL check the parameters for data transmissions, which are applicable to the used cells Z. If the checked parameters do not meet specified limits, or if other cells Z and/or clusters C comprise better data transmission parameters, the checking cells Z will try to shift its data to these other cells Z and/or clusters C in order to improve the data transmission parameters applicable for this data. In this manner, the inventive cluster compound CV optimises itself automatically during operation with respect to data transmissions.

Id. at 9:4–15. The ’680 patent further explains that

[i]n order to carry out the data access and the data management in a more efficient manner each cell may comprise additional data which relates to parameters of data transmissions between the individual data storage means and the computer unit, and/ or neighbouring cells, and/or cells which comprise data which is stored in the system in a redundant manner.

Id. at 2:66–3:5, 4:59–64. Thus, the '680 patent does disclose considering parameters of data transmission between the computer unit and data storage device as part of data replication (shifting) between data storage units.

We, therefore, agree with Petitioner that “independently of an access” can encompass replication that is performed periodically and with no active role for the client computer in deciding whether to copy data or in copying the data itself. We also agree that a storage device can act “independently of an access” even if it considers data transmission performance measurements made during, or based on, prior access by the computer unit. In those respects, Rabinovich’s teachings are similar to the teachings of the '680 patent.

Unlike Rabinovich, however, the '680 patent does not require that a parameter of data transmission between a client computer and data storage device, such as an access count, be above a certain threshold before replication can occur. Rather, as noted above, the '680 patent explains that as an alternative to instances where “checked parameters do not meet specified limits,” data may be replicated to other data storage units “if other cells Z and/or clusters C comprise better data transmission parameters” Ex. 1002, 9:8–13. Therefore, although Rabinovich’s hosts can decide autonomously, i.e., at any time and without contacting a client, when to initiate its replication algorithm, that algorithm will not “send[], from the at least one data storage device to the another data storage device, a copy of the received piece of data,” as required by the claims, unless at least one access by a client (i.e., computer unit) has taken place. As a result, despite the similarities between Rabinovich and the '680 patent, Rabinovich’s requirement that object x_s have an access count greater than zero before it

will replicate object x_s leads us to conclude that Rabinovich fails to teach copying data between data storage devices “independently of an access” of the computer unit. We find that this outcome is consistent with the teachings of the ’680 patent in view of the disclosure in the ’680 patent regarding replicating data based on whether checked parameters do not meet specified limits, or if other cells Z and/or clusters C “comprise better data transmission parameters.”

For all of the foregoing reasons, we are not persuaded that Rabinovich teaches copying data from one storage device to another “independently of an access of the computer unit,” as required by each of the independent claims.

6. Conclusion

We are not persuaded that Petitioner has established, by a preponderance of the evidence, that claims 1–15 are unpatentable under 35 U.S.C. § 103 as obvious over Rabinovich, Carter, and Akizawa.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has not established, by a preponderance of the evidence, that claims 1–15 of the ’680 patent are unpatentable under 35 U.S.C. § 103.

IV. ORDER

Accordingly, it is

ORDERED that Petitioner has not shown that claims 1–15 of the ’680 patent are unpatentable; and

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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.

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