Trials@uspto.gov
571-272-7822

Paper 39
Entered: February 27, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DELL INC., HEWLETT-PACKARD COMPANY,
and NETAPP, INC.,
Petitioners,

v.

ELECTRONICS AND TELECOMMUNICATIONS
RESEARCH INSTITUTE,
Patent Owner.

Case IPR2013-00635
Patent 6,978,346 B2

Before BRIAN J. McNAMARA, MIRIAM L. QUINN, and
GREGG I. ANDERSON, *Administrative Patent Judges.*

ANDERSON, *Administrative Patent Judge.*

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

I. INTRODUCTION

On September 27, 2013, Dell, Inc., Hewlett-Packard Company, and NETAPP, Inc. (collectively, "Petitioner") filed a Petition requesting an *inter partes* review of claims 1 through 9 of U.S. Patent No. 6,978,346 B2 (Ex. 1001, "the '346 patent"). Paper 1 ("Pet."). On March 20, 2014, we instituted trial for claims 1–3 and 5–8 of the '346 patent on certain of the grounds of unpatentability alleged in the Petition. Paper 19 ("Decision on Institution" or "Dec. Inst.").

After institution of trial, Electronics and Telecommunications Research Institute ("Patent Owner") filed a Patent Owner Response. Paper 28 ("PO Resp."). Petitioner filed a Reply. Paper 33 ("Pet. Reply").

An oral hearing was held on December 18, 2014. The transcript of the consolidated hearing has been entered into the record. Paper 38 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6(c). This final written decision is issued pursuant to 35 U.S.C. § 318(a).

A. Related Proceedings

The '346 patent has been asserted against Petitioner in the following actions: *Safe Storage LLC v. Dell Inc.*, 1-12-cv-01624 and *Safe Storage LLC v. NetApp Inc.*, 1-12-cv-01628. Pet 1–2. Petitioner advises us of an additional seventeen actions involving the '346 patent against third parties, all pending in the United States District Court for the District of Delaware. *Id.*

B. The '346 Patent

The '346 patent describes an apparatus with "redundant interconnection between multiple hosts and a redundant array of inexpensive disks (hereinafter referred to as 'RAID')." Ex. 1001, Abstract. As a result

of the redundant interconnection, the apparatus allows increased bandwidth in the event one of the two RAID controllers 460 and 461 has a failure. *Id.* at 3:1–9.

Figure 4 of the ’346 patent is reproduced below:

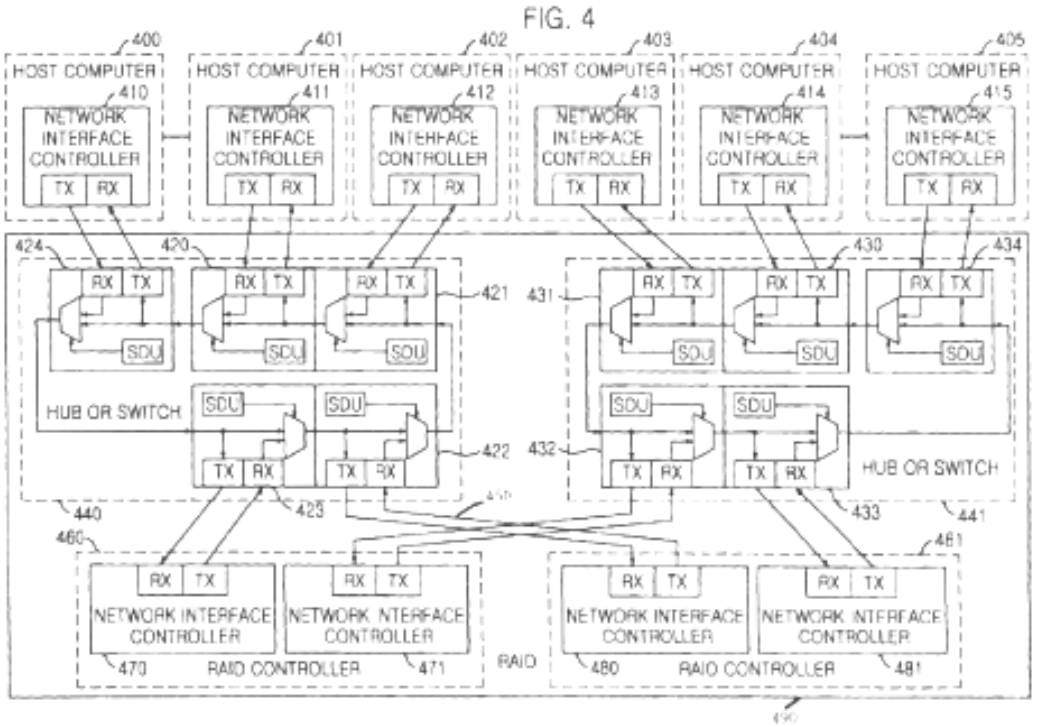

Figure 4 is a block diagram of a host matching system including RAID 490 and its interconnection to host computers 400–405. Ex. 1001, 2:64–3:6. RAID 490 includes two RAID controllers 460, 461 and hubs 440, 441. *Id.* at 3:10–18. Each RAID controller includes a pair of network interface controllers. For example, RAID controller 460 includes network interface controllers 470, 471, and RAID controller 461 includes network interface controllers 480, 481. *Id.* at 3:11–13. Each host computer has its own network interface controller (410–415), which connects the host computer through the hubs and to the network interface controllers (470, 471, 480, 481) of RAID controllers 460, 461. *Id.* at 3:31–35.

The ’346 patent describes that the result is two independent networks with twice the bandwidth of a single network and a “communication passage” between the two RAID controllers. *Id.* at 3:62–64. The communication passage creates a “fault tolerant function” should one of the RAID controllers 460 or 461 fail. *Id.* at 3:64–66. According to Figure 4, communications line 450 interconnects network interface controller 480 of RAID controller 461 and network interface controller 470 of RAID controller 460. *Id.* at 4:2–6; Fig. 4. Then, RAID controller 461 may send information to RAID controller 460. *Id.* In like manner, network interface controller 471 of RAID controller 460 may be connected over communications lines to network interface controller 481 of RAID controller 461, allowing RAID controller 460 to send information to RAID controller 461. *Id.* at 3:66–4:2.

In summary, and as shown in Figure 4, a communication circuit is provided for an error recovery, while maintaining bandwidth communication between two RAID controllers 460, 461. Ex. 1001, 3:1–5. Even though one RAID controller 460 or 461 has an occurrence of a trouble, the bandwidth becomes twice the single connection bandwidth. *Id.* at 3: 6–9.

C. Illustrative Claim

Independent claim 1 is reproduced below:

> 1. An apparatus for a redundant interconnection between multiple hosts and a RAID, comprising:
>
> a first RAID controlling units and a second RAID controlling unit for processing a requirement of numerous host computers, the first RAID controlling unit including a first network controlling unit and a second network controlling unit, and the second RAID controlling unit including a third network controlling unit and a fourth network controlling unit; and

> a plurality of connection units for connecting the first RAID controlling units and the second RAID controlling unit to the numerous host computers, wherein the first RAID controlling unit and the second RAID controlling unit directly exchange information with the numerous host computers through the plurality of connecting units, and the first network controlling unit exchanges information with the fourth network controlling unit, and the second network controlling unit exchanges information with the third network controlling unit.

D. Ground Upon Which Trial Was Instituted

Trial was instituted on the ground alleging that claims 1–3 and 5–8 of the ’346 patent are anticipated under 35 U.S.C. § 102(b) by Hathorn, U.S. Patent No. 5,574,950, issued November 12, 1996.

II. ANALYSIS

A. Claim Construction

1. Principles of Law

In an *inter partes* review, claim terms in an unexpired patent are interpreted 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).

2. “RAID” (Claim 1)

In the Decision on Institution we found that “RAID” is well understood by a person of ordinary skill in the art as an acronym for “redundant array of inexpensive disks.” Dec. Inst. 8 (citing Ex. 1001, Abstract). Patent Owner does not dispute the interpretation, but points out that each word of the construction conveys additional significance. PO Resp. 10.

With regard to the word “disks,” Patent Owner argues that “disks” means “disk drives,” and that a RAID is an “array of multiple disk drives configured for redundancy.” *Id.* (citing Declaration of Dr. Thomas M.

Conte, Ex. 2003 ¶¶ 16, 18). Based on the presence of "array" in our preliminary construction, Patent Owner offers evidence that an "array" is "a single logical storage unit of disk drives." *Id.* at 11 (citing *Webster's Computer Dictionary* 308 (9th ed. 2001) (Ex. 2004, 11); *Microsoft Computer Dictionary* 437 (5th ed. 2002) (Ex. 2005, 3)[1]; Ex. 2003 ¶ 19). Patent Owner also directs us to Dr. Conte's testimony for additional support. *See* Ex. 2003 ¶¶ 16–21. Patent Owner also cites to Weygant, which it alleges "only states that combinations of striping and mirroring do not appear as a single logical unit, but other forms of RAID like RAID Level 1 mirroring do." Tr. 38:9–13; Ex. 1003, 153.[2] Lastly, Patent Owner points to Chen which states that disk arrays "organize multiple independent disks into a large high-performance logical disk." Tr. 38:14–19; Ex. 1011, 5. Thus, Patent Owner contends that "RAID" should be construed as "a single logical unit for mass storage that provides fault tolerance and recovery via employing multiple physical disk drives." PO Resp. 12 (citing Ex. 2003 ¶ 38).

Petitioner proposes a construction of "RAID" consistent with the construction we provided in the Decision on Institution. Pet. 8. In response to Patent Owner's proposal, Petitioner argues that "the data mirroring

[1] The dictionary definitions are dated in 2001 and 2002, respectively, after the foreign priority date of the '346 patent, September 19, 2000. *See* Exs. 2004 and 2005. However, references having publication dates after the critical date may be cited to show the state of the art at or around the time of the invention. *Eli Lilly and Co. v. Barr Labs., Inc.*, 251 F.3d 955, 969–70 (Fed. Cir. 2001); *see also In re Wilson*, 311 F.2d 266, 268–269 (CCPA 1962).

[2] Citations to Weygant (Ex. 1003) are to Weygant's pages and not the Exhibit page number.

operation of Hathorn is a RAID configuration." Pet. Reply 1.[3] Petitioner offers evidence that data mirroring is RAID Level 1. *Id.* at 3–4 (citing Declaration of Dr. M. Ray Mercer, Ex. 1006, 22–23; Second Declaration of Dr. M. Ray Mercer, Ex. 1012, 3–4). Both cited portions of Dr. Mercer's Declarations cite to Weygant (Exhibit 1003) as supporting Dr. Mercer's opinion that "RAID" may be construed differently depending upon the particular RAID configuration, i.e., RAID Level 1–5. Pet. Reply at 7–8; Ex. 1003, 153. Dr. Mercer also cites to a 1999 edition of *Microsoft Computer Dictionary*, where the definition of "RAID" does not include "single logical storage unit." Ex. 1006, 22. Dr. Mercer testifies that, at the time the application for the '346 patent was filed, on December 29, 2000, "there is no one definition of the term that is agreed by everyone."[4] *Id.* at 21. Relying on Weygant, Dr. Mercer concludes that, in a RAID, "a group of disks do[es] not have to be configured as a single unit." *Id.* at 4.

We first review the intrinsic evidence as to the meaning of "RAID." The written description of the '346 patent restates the acronym for RAID, but otherwise lacks additional description of RAID or its functionality. Consistently and throughout the written description, RAID is referred to in the singular, i.e., "the apparatus for a redundant interconnection between multiple hosts and *a RAID* comprises a plurality of RAID controllers." Ex.

[3] Petitioner's Reply Brief lacks page numbers. Page number references used here begin with page 1, the first page following page iv.
[4] Dr. Mercer cites to the 1999 edition of *Microsoft Computer Dictionary*, which is not an exhibit of record, and, therefore, constitutes inadmissible hearsay, absent an exception. Nevertheless, the excerpt relied on need not be admissible for the opinion of Dr. Mercer regarding the definition of "RAID" to be admitted. Fed. R. Evid. 703. We further note that Patent Owner does not allege that the excerpt should be excluded.

1001, 2:16–18 (emphasis added). The claims also recite "a RAID." *Id.* at 5:7–8. Figure 4 of the '346 patent shows RAID 490 as a single component within a box which includes two RAID controllers 460 and 461. Similarly, the '346 patent represents the prior art RAID as a single component. Ex. 1001, Fig. 1, element 130; Fig. 2, element 240; Fig. 3, element 340. Neither party relies on the prosecution history (Exhibit 1002), and our independent review of that history failed to reveal any additional insight as to the term's meaning.

We now turn to the extrinsic evidence. Patent Owner's expert, Dr. Conte, testifies that a RAID is a mass storage device built from multiple, physical disk drives. Ex. 2003, 9. This evidence is uncontroverted. The prior art supports Dr. Conte. Weygant discloses that a RAID is a single logical unit, but also in "various combinations of striped and mirrored configurations." Ex. 1003, 153. Chen defines RAID to be Redundant Arrays of Inexpensive *Disks*. Ex. 1011, 1. (emphases added). Chen's discussion of RAID technology states that the problem of obtaining high performance is addressed by "arrays, which organize multiple independent disks into *a large, high-performance logical disk*." *Id.* at 2 (emphasis added).

The Specification consistently refers to RAID in the singular. Both Weygant and Chen, which predate the effective filing date of the '346 patent, and the testimony of Dr. Conte, support that a RAID is a single logical unit. Although Weygant also indicates that a RAID can exist in forms other than a single logical unit, those forms are limited to "striped and mirrored" configurations. Ex. 1003, 153. Furthermore, although the two dictionary definitions cited by Patent Owner are found in dictionaries

published after the foreign priority date of the ’346 patent, they further substantiate the proposition that those of ordinary skill generally refer to RAID as a single logical unit. Exs. 2004, 2005. We have not been shown evidence that the RAID of the ’346 patent is configured in a “striped and mirrored configuration,” which might not be in the single unit configuration of RAID. *See* Ex. 1003, 153. The evidence, on the full record before us, persuades us that it is necessary to modify our preliminary construction of “RAID” to account for the understanding of a person of ordinary skill in the art in light of the ’346 patent disclosure. Accordingly, applying the broadest reasonable interpretation we construe “RAID,” as the term is used in the ’346 patent, to mean “a single logical unit for mass storage using multiple physical disk drives.”

3. “RAID controlling unit” (Claim 1)

In the Decision on Institution we found “RAID controlling unit” to mean “a component that controls operation of the RAID.” Dec. Inst. 9–10. In our analysis, we declined to include extraneous language unsupported by either the ’346 patent or extrinsic evidence. *Id.* Patent Owner states that our interpretation “is not incorrect,” but points out that each word of the construction conveys additional significance. PO Resp. 12. Patent Owner argues that the function of a RAID controller is to provide redundancy by writing redundant data to multiple disk drives. *Id.* Thus, either a RAID controller, or multiple RAID controllers, “must be able to write to all of the disk drives in the RAID unit in order to perform redundancy.” *Id.* at 12–13 (citing Ex. 2003 ¶¶ 39, 41). Patent Owner contends that there must be a second RAID controller to establish the redundancy it argues is required for a RAID. PO Resp. 42–46. Patent Owner proposes that “RAID controlling

unit" be construed as "a component that controls operation of the RAID so as to provide redundant storage of data among the array of disk drives." *Id.* at 13.

Petitioner argues that the construction of "RAID controlling unit" from the Decision on Institution should not be further narrowed. Pet. Reply 8. Also, Petitioner disagrees with Patent Owner that "a RAID controlling unit must *directly* access *all* disks in the RAID." *Id.*

We find that Patent Owner's proposal imports limitations not supported by the Specification, e.g., "among the array of disk drives." Other than its appearance in the Abstract of the '346 patent, as part of the acronym for RAID, "array" does not appear in the Specification of the '346 patent. We decline to go beyond the '346 patent to add limitations to the construction not supported by the Specification, particularly when Patent Owner's expert agrees with our preliminary construction. Ex. 2007, 64:7–11.

That we changed our construction of RAID does not impact our construction of "RAID controlling unit." We are presented with no compelling reason to change our construction from the Decision on Institution. Accordingly, applying the broadest reasonable interpretation to the term RAID controlling unit, we construe "RAID controlling unit" to mean "a component that controls operation of the RAID."

4. "First RAID controlling unit" and "Second RAID controlling unit" (Claim 1)

"First RAID controlling unit" and "second RAID controlling unit" were not interpreted in the Decision on Institution, but Patent Owner argues

the terms should be construed. PO Resp. 13. Based on the claim language and Specification, Patent Owner argues that the "first" and "second RAID controlling units" are for "the same RAID." *Id.* Patent Owner asserts the only RAID in the claim appears in the preamble and should be given weight. *Id.* at 14 (citing *Proveris Sci. Corp. v. Innovasystems, Inc.*, 739 F.3d 1367, 1372 (Fed. Cir. 2014) (citations omitted)). Petitioner does not specifically argue against Patent Owner's construction and has no proposal of its own.

As discussed above, we have construed RAID controlling unit. Claim 1 recites "a first RAID controlling units and a second RAID controlling unit for processing a requirement of numerous host computers." The Specification states that the RAID supports "a fault tolerance of RAID controllers and simultaneously heightening a performance." Ex. 1001, Abstract, 1:12–14. Further, "a RAID comprises a plurality of RAID controllers for processing requests of numerous host computers connected with one another." *Id.* at 2:17–19. We agree that the claim and disclosure both include "a RAID" and two or more RAID controlling units. This is supported by the claim language, which recites a RAID and two RAID controlling units. The claim does not recite an express numerical correspondence between a RAID and the RAID controlling units. Nevertheless, we have construed "RAID" and "RAID controlling unit," above, and are satisfied that no construction of additional similar terms ("first RAID controlling unit" and "second RAID controlling unit") is needed.

5. "exchange/exchanges information" (Claim 1)

Neither party argues the "exchange/exchanges information" limitation of claim 1. As we found in the Decision on Institution, claim 1 uses

"exchange" and "exchanges information" according to their ordinary sense: to transmit and receive information reciprocally.[5] The claim recites the structures between which information is exchanged, i.e., between the RAID controlling units and the host computers, between the first and fourth network controlling units, and between the second and third network controlling units. The claim language requires only the information to and from the host computers to be exchanged through the connection units. The specification of the '346 patent is consistent with the ordinary meaning of giving and receiving information reciprocally, because it describes that information is transmitted to and from a network interface controller of a first RAID and another network interface controller of a second RAID. Ex. 1001, 3:66–4:12.

We are presented with no reason to change our construction from the Decision on Institution. Accordingly, applying the broadest reasonable construction in light of the Specification, we construe "exchange/exchanges information" to mean "to transmit and receive information reciprocally." Dec. Inst. 10–11.

6. "network controlling unit"

"Network controlling unit" was not interpreted in the Decision on Institution, but Patent Owner argues the term should be construed and that the term is "generally understood to one skilled in the art as a hardware controller that supplies communication functionality when attached to a computer network." PO Resp. 16 (quoting Ex. 2003 ¶ 42). Patent Owner

[5] *Definition exchange (vb) (3),* WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY, UNABRIDGED (1993), *available at* http://lionreference.chadwyck.com (Dictionaries/Webster's Dictionary).

submits that the '346 patent discloses two ports for each controller, one for transmitting and one for receiving. *Id.* Patent Owner, thus, proposes that the term additionally "includ[es] one or more ports." *Id.* at 16–17. A network controlling unit having one port, according to Patent Owner, is too limiting and not disclosed in the Specification. *Id.*

Petitioner argues that the term should be given the plain and ordinary meaning thereof.[6] Pet. Reply 9. In support for its argument, Petitioner reminds us that we disagreed in the Decision on Institution with the assertion in the Petition that a "network controlling unit" is necessarily specific hardware. *Id.* Petitioner points out that the Specification does not mention ports in connection with the "network controlling units," and only in connection with the "hub" or "switch." *Id.* at 10. Through its expert, Petitioner proposes a construction: "any component allowing a device to communicate over a network." *Id.* (citing Ex. 1012, 5–8). Petitioner contends that its proposal is consistent with the plain and ordinary meaning of the term. *Id.*

The experts for both parties agree that "network controlling unit" refers to a device for communication connected to a network. We do not agree with Patent Owner that the broadest reasonable interpretation requires that "one or more" ports be part of the construction. PO Resp. 16–17. However, there must be a connection to the network for communication to occur. Accordingly, we construe "network controlling unit" as "a

[6] Petitioner appears to rely on the Decision on Institution where we said that "Other Terms for Proposed Construction" would be given their ordinary and customary meaning and would not be construed "at this time." Dec. Inst. 11.

component, connected to a network, for providing communication over the network."

7. "connection unit/hub/switch" (Claim 5)

In the Decision on Institution, we found that, consistent with the definition provided in the Specification, "connection unit" is "a hub or switch." Ex. 1001, 3:13–18. The preceding was Petitioner's proposal in the Petition. Pet. 6. Patent Owner acknowledges the preceding definition but argues that "hub" and "switch" are not one in the same. PO Resp. 17. Patent Owner has no specific proposal for either "hub" or "switch" and only argues they are different in some unspecified way. Neither of the parties' experts testifies as to any difference between these terms.

We find that the Specification treats "hub" and "switch" as equivalents. For example, Figure 4 shows components 440 and 441 labeled as a "HUB OR SWITCH." We are not persuaded by Patent Owner's argument that "hub" should be interpreted to exclude or be different from a "switch." PO Resp. 19.

B. Anticipation By Hathorn

Petitioner contends that claims 1–3 and 5–8 of the '346 patent are anticipated under 35 U.S.C. § 102(b) by Hathorn. Pet. 9, 45–60. To support this position, Petitioner relies on the testimony of Dr. Mercer. Ex. 1006, 130–163 (including claim chart). For the reasons discussed below, we determine that Petitioner has not shown by a preponderance of the evidence that claims 1–3 and 5–8 are unpatentable as anticipated by Hathorn.

1. Hathorn Overview

Hathorn discloses a remote copy system with dynamically modifiable ports on the storage controller that are alternatively configurable. Ex. 1005,

Abstract. A primary storage controller can appear as a host processor to a secondary storage controller. *Id.* Hathorn describes a method for communicating between host processors and storage controllers, or between storage controllers.

Figure 3 of Hathorn is reproduced below.

FIG. 3

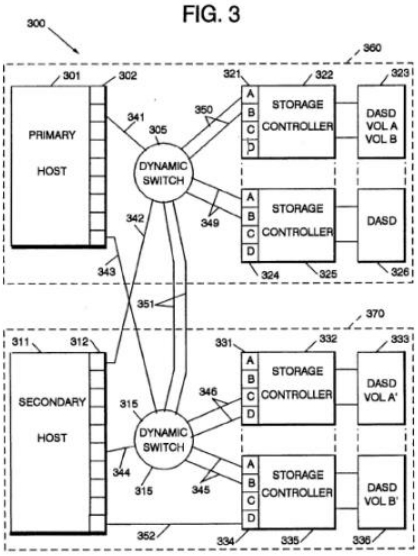

Figure 3 is a block diagram of one embodiment of a remote dual copy system of the invention described in Hathorn. Primary storage controller 322 communicates through port A 321 with secondary storage controller 332. Ex. 1005, 8:11–15. As shown in Figure 3, port A 321 acts as a channel link-level facility through communication links 350, dynamic switch 305, communication links 351, dynamic switch 315, and communication links 346 to communicate with secondary storage controllers 332 and/or 335. *Id.*

2. Analysis

Our discussion focuses on claim 1, the only independent claim at issue. All remaining challenged claims depend, directly or indirectly, from claim 1.

Petitioner cites to Hathorn's primary and secondary hosts and two dynamic switches 305, 315 as redundant interconnections recited in the preamble of claim 1. Pet. 46–47 (citing Ex. 1005, Fig. 3; Ex. 1006, 132–134). Petitioner also points out that Hathorn describes a RAID configuration that can be used in connection with a direct access storage device ("DASD"). *Id.* (citing Ex. 1005, 2:5–11).

Petitioner further points to Hathorn's storage controllers 322, 325, and 332, 335, respectively, as RAID controlling units that process requests from the primary host and secondary host for transferring data or records from the DASDs. Pet. 48 (citing Ex. 1006, 135–136). Petitioner also alleges that: (1) the communication ports in the storage controllers meet the "network controlling unit" limitation; (2) the first and second network controlling units are met by ports A, B 324; and (3) the third and fourth network controlling units are met by ports A, B 334. Pet. 48–49 (citing Ex. 1005, 8:5–6; Ex. 1006, 137–139).

Petitioner alleges that Hathorn's dynamic switches 305, 315 meet the recited "connection units." Pet. 50 (citing Ex. 1005, Fig. 3; Ex. 1006, 139–141). The switches connect to the RAID controlling units by links 351. *Id.*

Hathorn discloses the following concerning Figure 3:

> primary storage controller 322, via port A 321, can communicate with primary host 301 by communication links 350, dynamic switch 305 and communication link 341, wherein port A 321 is a control unit link-level facility. Alternately, primary storage controller 322, via the same port A 321, can communicate with secondary storage controller 332 by communication links 350, dynamic switch 305, communication links 351, dynamic switch 315, and communication links 346, wherein port A 321 acts as a channel link-level facility.

Ex. 1005, 8:6–15. Petitioner alleges the preceding disclosure and other similar disclosures in Hathorn disclose that the RAID controlling units "exchange information" through the connection units as claimed. Pet. 51–52 (citing Ex. 1005, 7:28–35, 8:3–15, Fig. 6, step 601; Ex. 1006, 141–142).

Petitioner contends that Hathorn explains that ports A and B 334, i.e., the third and fourth network controlling units, initiate the operation of Figure 4. Pet. 52–53 (citing Ex. 1005, 8:3–15; Ex. 1006, 143–144). Similarly, Petitioner argues that ports A and B 324, i.e., the first and second network controlling units, perform the data mirroring of Figure 5. *Id.* (citing Ex. 1005, 8:61–63, 9:49–51; Ex. 1006, 143–144). Petitioner relies on the preceding evidence to support that Hathorn discloses the second "exchanges information" limitation of claim 1.

Patent Owner relies on its construction of RAID and argues that "Hathorn also supports the view that a RAID 'array' must be a single logical storage unit of disk drives." PO Resp. 11. Patent Owner contends that Hathorn:

> makes a clear distinction between a "RAID" and a mirroring or dual-copy system employing two disk drives, which, although redundant, do not form an 'array' in the sense of a RAID. Indeed, Hathorn describes these two scenarios as "alternative[s]."

PO Resp. 11 (citing Ex. 1005, 1:60–2:11).

Beyond arguing that Hathorn does not show a RAID according to Patent Owner's proposed construction, Patent Owner emphasizes the difference between Hathorn's DASDs and a RAID. PO Resp. 22–23. Specifically, Patent Owner points to Petitioner's reliance on Hathorn's

Figure 3 and notes that Figure 3 makes no mention of "RAID," only DASDs. *Id*.

Patent Owner emphasizes that Petitioner's reliance on the sole mention of RAID in Hathorn is made in the Background discussion at column 2, lines 4 through 11. PO Resp. 23–24. The pertinent portion of Hathorn is as follows:

> Another data back-up alternative that overcomes the need to double the storage devices involves writing data to a redundant array of inexpensive devices (RAID) configuration. In this instance, the data is written such that the data is apportioned amongst many DASDs. If a single DASD fails, then the lost data can be recovered by using the remaining data and error correction procedures. Currently there are several different RAID configurations available.

Ex. 1005, 2:4–11. Patent Owner argues that the cited disclosure from Hathorn distinguishes a RAID configuration from the "single DASD," concluding that Hathorn discloses that a RAID would "be formed of 'many DASDs.'" PO Resp. 23–24(citing Ex. 1005, 2:8). Again, Patent Owner points out that there is no mention of Figure 3 in the cited disclosure. *Id.* at 24.

Patent Owner disagrees with the Decision on Institution's statement that "[t]he use of a RAID is disclosed specifically in Hathorn as a type of DASD." PO Resp. 24 (citing Dec. Inst. 15). Petitioner relies on its expert, Dr. Conte, for support, citing the following: (1) Figure 3 of Hathorn does not mention RAID; (2) the column 2 discussion in Hathorn is not connected to Figure 3; and (3) Hathorn states that a RAID is made up from "many DASDs." *Id.* at 25 (citing Ex. 2003 ¶ 52).

Patent Owner also argues that it is improper to combine the column 2 disclosure of Hathorn with Figure 3 to find that claim 1 is anticipated. PO Resp. 28. Thus, Hathorn does not disclose the limitations of claim 1 "arranged or combined in the same way as recited in the claim, [and] it cannot be said to prove prior invention of the thing claimed, and cannot anticipate under 35 U.S.C. § 102." *Id.* at 27 (citing *Net MoneyIN, Inc. v. Verisign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008)). Patent Owner also argues that combining the Background description in column 2 with the embodiment of Figure 3 of Hathorn "is in the province of an obviousness inquiry, not anticipation." *Id.* at 28. The ground at issue here is anticipation, and Patent Owner concludes that the challenge must fail. *Id.*

Patent Owner contends that Petitioner clarified its position on how Hathorn shows a RAID through the deposition of Petitioner's expert, Dr. Mercer. PO Resp. 34–35. Patent Owner characterizes the Petitioner's challenge as "a mirrored or remote-copy pair of different DASDs in Figure 3 constitute a RAID." *Id.* (citing Ex. 2006, 97[7]). Patent Owner argues two DASDs do not form a RAID because they do "not form a single logical unit or drive." *Id.* at 36 (citing Ex. 2003 ¶ 59).

In addition to its argument that Hathorn's Figure 3 does not disclose a RAID configuration, Patent Owner argues Hathorn lacks "first" and "second RAID controlling units." PO Resp. 37–48. Patent Owner also argues that Hathorn fails to disclose a "RAID controlling unit" with two "network controlling units." *Id.* at 48–50. Patent

[7] *See* Ex. 2006, 97:4–18.

Owner argues that Hathorn fails to anticipate claims 2, 3, and 8 under the Petition's interpretation of "coupled" and "connected." *Id.* at 50–54. Turning to claim 5, Patent Owner argues Hathorn fails to disclose a "hub" as claimed. *Id.* at 58. Patent Owner's last argument relates to connection of connection ports with the host computer, as recited in claims 5–7. *Id.* at 55–57.

Petitioner responds that the data mirroring operation of Hathorn is a RAID configuration. Pet. Reply 1. And Petitioner also contests Patent Owner's arguments regarding the "RAID controller," arguing that Hathorn's storage controllers satisfy the broadest reasonable interpretation of RAID controller, i.e., "a component that controls operation of the RAID." *Id.* at 2.

Petitioner argues that Figure 3 of Hathorn shows data being shadowed or mirrored between DASDs 326, 336 through storage controllers 325, 336. Pet. Reply 3. Petitioner's annotation of Hathorn Figure 3 is reproduced below.

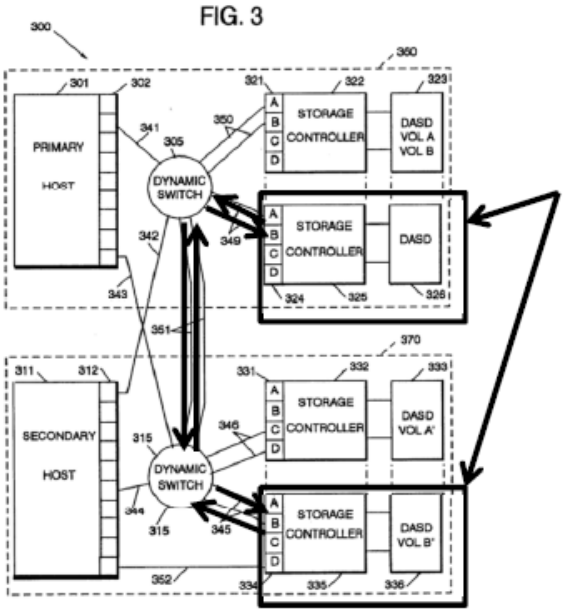

Figure 3, according to Petitioner, shows how Hathorn mirrors data between DASD 326 and DASD 336. *Id.* Petitioner argues that disk mirroring is RAID level 1. *Id.* at 3–4 (citing Ex. 1006, 22–23, 142–144; Ex. 1012, 3–4).[8] Petitioner contends that Hathorn's two storage controllers are two RAID controlling units because each provides control for the mirroring operation. *Id.* at 4–5. Further, Petitioner argues DASDs 326, 336 make up a RAID. Tr. 11:1–6.

Petitioner concludes that, because data mirroring is RAID level 1, Hathorn discloses a RAID. Pet. Reply 5. Petitioner's argument continues to rely on the Background disclosure in Hathorn, which references a "RAID." *Id.* Petitioner also notes that Patent Owner's expert, Dr. Conte, acknowledges that Hathorn's mirroring involving two storage controllers 325, 335 and two switches 305, 315 "hypothetically would constitute a RAID controlling Unit A.'" *Id.* (citing Ex. 2003, 32–33).

In response to Patent Owner's argument that a RAID controlling unit must be able to write directly to all disks in a RAID, Petitioner argues that this feature, which may be advantageous, is not recited in the claims. Pet. Reply 6. Further, Petitioner argues the claims express no relationship between the RAID and RAID controlling units. *Id.*

Petitioner has additional arguments relating to other limitations of claim 1 and to the dependent claims. *See* Pet. Reply 8–15. Because our decision rests on the analysis of "RAID" and "RAID

[8] Exhibits 1006 and 1012, Dr. Mercer's first and second declarations, in turn cite to Weygant and Chen, Exhibits 1003 and 1011, for additional support that data mirroring is RAID level 1.

controlling unit" limitations, we need not repeat those arguments in detail here.

Petitioner cites to the Background section of Hathorn to establish that "DASDs can be *configured* as a RAID." Pet. Reply 5 (citing Ex. 1005, 2:5–11) (emphasis added). Being capable of a RAID configuration is not the same as an actual RAID. To rebut Patent Owner's arguments that Hathorn's reference to a RAID is not enough to conclude that Hathorn discloses a RAID, Petitioner argued at the oral hearing that Figure 3, alone, shows a RAID configuration because it shows mirroring. Tr. 12:9–13:2. Petitioner alleges that Hathorn discloses that dual copy DASDs, where data is written to an additional DASD, is "sometimes referred to as mirroring." Ex. 1005, 1:65–67. We are not persuaded by Petitioner's argument that because DASDs are made up of disks and because a RAID is a redundant array of inexpensive disks "that DASDs can be arranged as a RAID." *See* Tr. 13:12–18.

RAID is described in Hathorn as a specific architecture that is "[a]nother data back-up alternative" to DASD. Ex. 1005, 1:60–2:4, 2:4–7. The evidence, thus, supports a distinction, in the reference upon which the challenge is based, between RAID and DASD.

The record does support that RAID level 1, one of several possible RAID configurations, is "disk mirroring." Ex. 1006, 4, 22; Ex. 1003, 153; Ex. 2007, 37:3–11. Further, Hathorn describes its "remote data shadowing" as "mirroring." Ex. 1005, 1:65–67. However, although Hathorn may disclose a RAID level 1 configuration, the question before us is whether Hathorn discloses a

RAID as we have construed the term, i.e., a "single logical unit." Petitioner now argues that DASDs 326, 336 are a RAID. Pet. Reply 3. We agree with Patent Owner that DASDs 326, 336 are not a single logical unit because primary host 301 *can* individually (or directly) access either one of those DASDs. *See* Tr. 50:4–7.

Furthermore, Petitioner's argument presented at oral hearing as to what is a RAID, DASDs 326, 336, differs from Petitioner's contention presented in the Petition, where Petitioner cited *generally* to DASDs as RAIDs. Pet. 47 (annotated Fig. 3). The late change in position raises a concern that when arising so late in the proceeding the timing of presenting rebuttal evidence may be unfair and imbalanced, especially in light of our rules requiring that the Petition must specify where each element of the claim is found in the prior art patent. 37 C.F.R. §42.104(b)(4). We address, nevertheless, the merits of Petitioner's latest position, recognizing that Patent Owner rebutted the new arguments sufficiently to dispel the prejudice that may have been sustained and would have precluded our consideration.

Based on the foregoing, we are persuaded that Petitioner has not shown by a preponderance of the evidence that Hathorn discloses a RAID as we have construed the term. Independent claim 1 recites RAID, and claims 2–3 and 5–8 all depend, directly or indirectly, from claim 1 and thus necessarily recite RAID. Petitioner has failed to show by a preponderance of the evidence that claims 1–3 and 5–8 of the '346 patent are anticipated by Hathorn.

III. ORDER

For the reasons given, it is

ORDERED that claims 1–3 and 5–8 of U.S. Patent No. 6,978,346 have not been shown by a preponderance of the evidence to be unpatentable; 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.

For PETITIONERS:

Lead Counsel
David McCombs
david.mccombs.ipr@haynesboone.com

Back-up Counsel
Andrew S. Ehmke
andy.ehmke.ipr@haynesboone.com

Thomas W. Kelton
Thomas.kelton.ipr@haynesboone.com

John Russell Emerson
Russell.emerson.ipr@haynesboone.com

For PATENT OWNER:

Lead Counsel
Mathew Phillips
matthew.phillips@renaissanceiplaw.com

Back-up Counsel
Alexander Giza
agiza@raklaw.com

Derek Meeker
derek.meeker@renaissanceiplaw.com