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Paper 10
Entered: July 31, 2019

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NETAPP, INC. and HEWLETT PACKARD ENTERPRISE CO.,
Petitioner,

v.

KOM SOFTWARE, INC.,
Patent Owner.

Case IPR2019-00592
Patent 6,438,642 B1

Before KIMBERLY McGRAW, DANIEL J. GALLIGAN, and BRENT M. DOUGAL, *Administrative Patent Judges*.

GALLIGAN, *Administrative Patent Judge.*

DECISION
Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

NetApp, Inc. and Hewlett Packard Enterprise Co. (collectively "Petitioner") filed a Petition requesting *inter partes* review of claims 1–7, 10, 12–17, and 20 of U.S. Patent No. 6,438,642 B1 ("the '642 patent," Ex. 1001). Paper 3 ("Pet."). KOM Software, Inc. ("Patent Owner") filed a Preliminary Response. Paper 9 ("Prelim. Resp."). Under 37 C.F.R. § 42.4(a), we have authority to determine whether to institute review.

The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted unless the information presented in the Petition and the Preliminary Response shows "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition."

After considering the Petition, the Preliminary Response, and associated evidence, we institute an *inter partes* review as to all challenged claims and on all grounds raised in the Petition.

A. Related Matters

As required by 37 C.F.R. § 42.8(b)(2), the parties identify various related matters. Pet. 68–69; Paper 5, 2–3; Paper 8, 2–3.

B. Real Parties in Interest

The parties identify themselves as the real parties in interest. Pet. 68; Paper 5, 2; Paper 8, 2.

C. The '642 Patent and Illustrative Claim

The '642 patent relates to computer storage and discloses various purported problems in the art. Ex. 1001, 1:14–65. For example, the '642 patent explains that computers have limited storage in their hard drives and

that increasing storage may require adding a hard drive, which can be costly and inconvenient. Ex. 1001, 1:14–45. To address this and other purported drawbacks of the art, the '642 patent discloses providing a virtual storage medium that is made up of physical storage media and that can be upgraded without affecting users. Ex. 1001, 1:66–2:1. Figures 2 and 3 of the '642 patent are reproduced below.

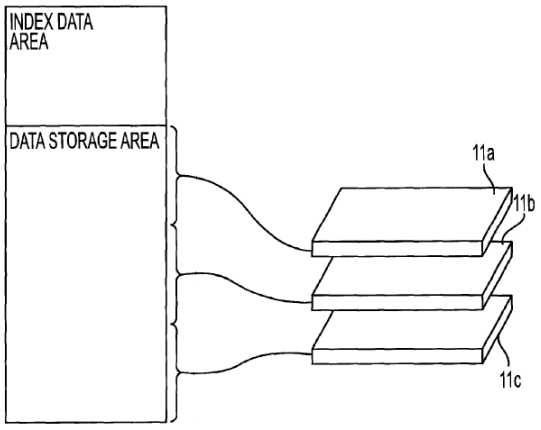

FIG. 2

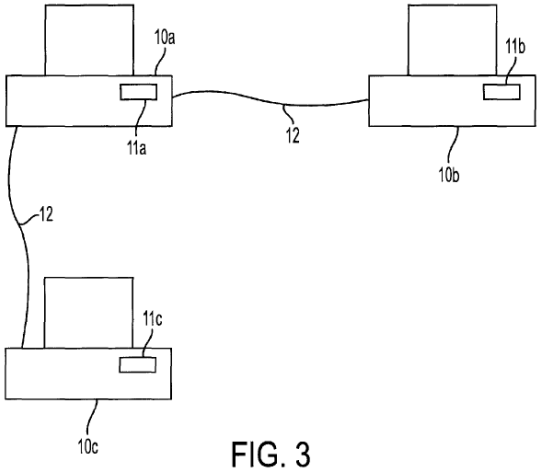

FIG. 3

Figure 2, reproduced above on the left, depicts a virtual storage device having an index data area and having a data storage area made up of three hard disk drives, denoted 11a, 11b, and 11c. Ex. 1001, 3:26–40. The index data area stores information used to locate data stored in the virtual storage medium. Ex. 1001, 3:41–54. Figure 3, reproduced above on the right, shows a network of three computers, 10a, 10b, and 10c, having disk drives 11a, 11b, and 11c that are used to form a single virtual storage medium. Ex. 1001, 3:57–62. The '642 patent explains that each of the disk drives has an area for local file storage for the user of that computer and another area that forms part of the virtual storage medium. Ex. 1001, 3:62–64.

Of the challenged claims, claims 1, 12, and 16 are independent.

Claim 1 is illustrative and is reproduced below.

> 1. A method of providing automated file management comprising the steps of storing data in a virtual file-based non-volatile storage medium comprising:
>
> providing said virtual file-based non-volatile storage medium having a file-based automated file management file system interfacing with a plurality of file system storage partitions of a plurality of corresponding physical non-volatile storage media associated therewith, locations within each physical non-volatile storage medium of said plurality of corresponding physical non-volatile storage media corresponding to locations within said virtual file-based non-volatile storage medium;
>
> providing data for storage in said virtual file-based non-volatile storage medium using said file-based automated file management file system;
>
> determining any free space at said locations within said virtual file-based non-volatile storage medium, said free space sufficient for storing the provided data, locations having said any free space corresponding to said locations within said plurality of corresponding physical non-volatile storage media having available non-volatile storage space therein;
>
> storing the provided data at said locations having said any free space; and
>
> storing index information for the stored data.

D. References

Petitioner relies upon the following references:

Cannon	US 5,983,239	Nov. 9, 1999, filed Oct. 29, 1997	Ex. 1008
Peter C. Dibble, A Parallel Interleaved File System (March 1990) (Ph.D. thesis, University of Rochester) ("Dibble")			Ex. 1005

E. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability:

Reference(s)	**Basis**[1]	**Claims**
Dibble	§ 103	1–6, 12–14, and 16
Dibble and Cannon	§ 103	7, 10, 15, 17, and 20

II. ANALYSIS

A. Claim Construction

The Petition was accorded a filing date of January 24, 2019. Paper 4, 1. In an *inter partes* review for a petition filed on or after November 13, 2018, a claim "shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b)." 37 C.F.R. § 42.100(b); *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) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018).

Petitioner proposes constructions for the following four phrases it contends are means-plus-function limitations subject to 35 U.S.C. § 112, ¶ 6: "means for storing data at locations within said virtual file-based non-volatile storage device," "means for storing index data," "means for updating index data," and "means for archiving data stored within said virtual file-based non-volatile storage device." Pet. 12–17. Patent Owner does not address Petitioner's constructions for these terms or propose its

[1] The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. §§ 102, 103, and 112 that became effective after the filing of the application for the '642 patent. Therefore, we apply the pre-AIA versions of these sections.

own constructions. *See* Prelim. Resp. 6 ("Patent Owner does not take a position on claim construction for any terms of the '642 Patent at this time."). Each of these limitations recites "means" and further recites a function, thus creating a presumption that 35 U.S.C. § 112, ¶ 6 applies. *See* 35 U.S.C. § 112, ¶ 6 ("An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof."); *see also Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015) (en banc in relevant part) (quoting *Personalized Media Commc'ns, LLC v. Int'l Trade Comm'n*, 161 F.3d 696, 703 (Fed. Cir. 1998)) (holding that "use of the word 'means' creates a presumption that § 112, ¶ 6 applies"). We agree with Petitioner that these limitations are means-plus-function limitations subject to 35 U.S.C. § 112, ¶ 6. We also agree, on this record, with Petitioner's identification of the structure corresponding to the recited functions. *See* Pet. 13–17.

Neither party proposes express constructions for any other claim terms in this proceeding. For purposes of this Decision, we do not find it necessary to construe expressly any other claim terms. *See, e.g.*, *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy' . . . ." (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

B. Principles of Law

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

C. Level of Ordinary Skill in the Art

Citing the testimony of its declarant, Dr. Darrell Long, Petitioner asserts the following:

> A person of ordinary skill at the time of the purported invention of the '642 patent would have held either a bachelor's degree in computer engineering or computer science with two years of experience in the field of data storage management or a master's degree in either discipline with an emphasis on data storage management.

Pet. 11–12 (citing Ex. 1002 ¶ 35). Patent Owner states that it "does not take issue with Petitioners' proposed definition of a person of ordinary skill in the art at this time." Prelim. Resp. 5. For purposes of this Decision, we adopt Petitioner's assessment.

[2] Patent Owner does not present arguments or evidence of such secondary considerations in the Preliminary Response.

D. Alleged Obviousness over Dibble
(Claims 1–6, 12–14, and 16)

Petitioner asserts claims 1–6, 12–14, and 16 of the '642 patent are unpatentable under 35 U.S.C. § 103 as obvious over the teachings of Dibble. Pet. 11, 24–56.

1. Dibble

Dibble is a Ph.D. thesis titled "A Parallel Interleaved File System." Ex. 1005. Petitioner argues Dibble was available to the public as a printed publication more than one year before the May 18, 1999, filing date of the '642 patent and, therefore, qualifies as prior art under 35 U.S.C. § 102(b). Pet. 17–19 (citing Ex. 1011 ¶¶ 1, 3–6; Ex. 1012 ¶¶ 1, 6; Ex. 1013, 1–2; Ex. 1014; Ex. 1015; Ex. 1016, 2). On this record, we are persuaded Petitioner has set forth sufficient evidence and argument to show Dibble qualifies as a prior art printed publication under 35 U.S.C. § 102(b).

Dibble "describes the design, implementation, and evaluation of a parallel interleaved file system (PIFS)." Ex. 1005, 1. Dibble's Figure 2.1 is reproduced below.

Figure 2.1: Components of a PIFS

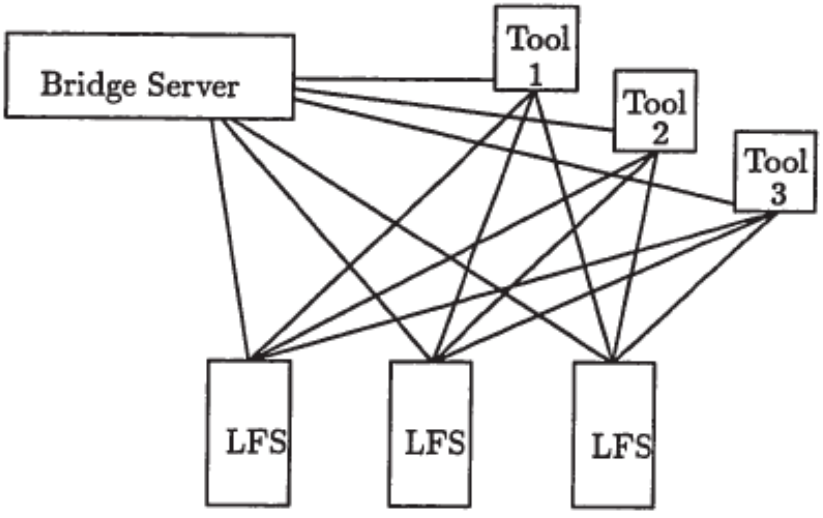

Figure 2.1 shows the components of a PIFS, including a Bridge server, local file systems (LFSs), and tools. Ex. 1005, 19. Dibble explains that "[a] PIFS has two layers and an unlimited number of components. The top layer contains a parallel interleaved file server (PIF Server) and a set of tools. The bottom layer is an array of Local File Systems (LFS's)." Ex. 1005, 18. Dibble discloses using the Elementary File System (EFS) to implement the LFSs. Ex. 1005, 29. Dibble discloses using an experimental file system named Bridge to implement the prototype PIFS. Ex. 1005, 28. Dibble explains that "[i]n our implementation of Bridge the Bridge Server is a single centralized process." Ex. 1005, 33. Dibble further explains that "[t]he PIF Server defines and maintains the structure of parallel interleaved files" but relies on LFSs, which "are complete, self-sufficient file systems," "to implement every feature of the file system that doesn't in some way involve parallelism." Ex. 1005, 18, 20. Thus, a local file system "must implement all the operations and concepts expected from a general-purpose file system: read, write, file creation, current position, end of file, and (optionally) file deletion." Ex. 1005, 20.

The details of Dibble's parallel interleaved file system (PIFS) will be discussed more fully below in our analysis of Petitioner's contentions and Patent Owner's arguments with respect to claim 1.

2. Independent Claim 1

a. Providing virtual non-volatile storage medium

Independent claim 1 recites "[a] method of providing automated file management comprising the steps of storing data in a virtual file-based non-volatile storage medium comprising" five steps recited in the claim. The first step of claim 1 recites the following:

> providing said virtual file-based non-volatile storage medium having a file-based automated file management file system interfacing with a plurality of file system storage partitions of a plurality of corresponding physical non-volatile storage media associated therewith, locations within each physical non-volatile storage medium of said plurality of corresponding physical non-volatile storage media corresponding to locations within said virtual file-based non-volatile storage medium.

Petitioner contends Dibble discloses a file system that makes a collection of physical devices appear as a single storage device and that makes data stored via the file system "appear to the application and/or end user as if stored in a single (virtual) location," thereby teaching a virtual storage medium. Pet. 26 (citing Ex. 1005, 8, 17; Ex. 1002 ¶¶ 66–67). Petitioner also contends that Dibble's disclosure of using various non-volatile storage media, including hard disks, teaches that the alleged virtual storage medium is non-volatile. Pet. 27 (citing Ex. 1005, 8–9, 16, 28, 38, 61–64, 106; Ex. 1002 ¶¶ 68–69). Furthermore, Petitioner argues Dibble's PIFS is "file-based" because it is a file system. Pet. 28 (citing Ex. 1005, 7–8, 15–17; Ex. 1002 ¶¶ 70–71).

Patent Owner argues that Dibble discloses virtualism with respect to parallel processing, not with respect to a file system. Prelim. Resp. 12–13 (citing Ex. 1005, 7, 8, 18). Even if Dibble's "virtual parallelism" (Ex. 1005, 18) is with respect to parallel processing, Petitioner's contention is that Dibble teaches virtual storage because it discloses a file system that makes a collection of physical devices appear as a single storage device. *See* Pet. 26. Dibble explains that "[a] file system interfaces with physical I/O devices" and "will typically conceal every novel attribute of the physical device." Ex. 1005, 17. Dibble also discloses that "[a] parallel file system must

distribute data among its constituent processors and disk drives." Ex. 1005, 8. Dr. Long, Petitioner's declarant, testifies that

> a person of ordinary skill would have understood *Dibble* to mean that the data stored and retrieved via a file system employing a PIF Server would appear to the application and/or end user as if stored in a single (virtual) location, thus virtualizing the actual parallel-interleaved storage *Dibble* provided through the PIF Server.

Ex. 1002 ¶ 67. On this record, we are persuaded Dibble teaches a virtual storage system by disclosing a file system that appears to a user as a single storage device but stores data in different physical devices. Ex. 1005, 7, 8, 18; Ex. 1002 ¶ 67. This is consistent with the '642 patent's description of a virtual storage device as using portions of different physical disks to store data but appearing as one repository to a user or an application. For example, referring to Figure 2, the '642 patent explains that a virtual storage medium uses portions of three different hard disk drives. Ex. 1001, 3:26–40. Referring to Figure 6, the '642 patent explains that, when a computer system selects a file to read from the virtual storage device, the file name is used to search the index data area of the virtual storage device to find "a location within a physical storage device and a specific physical storage device." Ex. 1001, 4:30–37. In the '642 patent, therefore, the storage is virtual in the sense that the underlying physical media that are used for storage do not need to be known by a user or an application using the virtual storage medium.

Petitioner contends Dibble teaches that its storage space is "non-volatile," as recited in claim 1, "because it comprises hard disks that store data in a persistent form, which is how a person of ordinary skill in the art would have understood the term 'non-volatile' at the time the '642 patent

was filed." Pet. 27 (citing Ex. 1002 ¶¶ 68–69; Ex. 1005, 8–9, 16, 28, 38, 61–64, 106). For example, Dibble discloses that "[e]ach PIFS processor requires at least one disk drive." Ex. 1005, 61.

Patent Owner does not dispute that Dibble teaches non-volatile storage devices; rather, Patent Owner argues that "[t]he Dibble system describes large mainframe disk drives" and, thus, "is not directed to the 'non-volatile storage medium' contemplated in the '642 Patent and commonly used in the PC compatible computer platform environment." Prelim. Resp. 13 (citing Ex. 1001, 1:28–31; Ex. 1005, 61–64). Claim 1, however, does not require the system to be PC compatible, and it does not preclude the use of mainframe disk drives. On this record, we are persuaded Dibble's disclosure of storing data in hard disk drives teaches "non-volatile storage."

Petitioner also contends Dibble's file system is "file-based," as recited in claim 1. Pet. 28 (citing Ex. 1005, 7–8, 15–17; Ex. 1002 ¶¶ 70–71). For example, Dibble discloses that the PIF server "administers the parallel aspects of the file system" and that, "[t]ogether with the *tools* discussed below, it forms the top layer of the file system. The lower level of the PIFS consists of a collection of self-sufficient *Local File Systems* that store the pieces of parallel interleaved files." Ex. 1005, 7–8.

Petitioner argues Dibble discloses certain PIFS operations that occur without user intervention, thereby teaching "a file-based automated file management file system," as recited in claim 1. Pet. 24–25 (citing Ex. 1005, 7–8, 18, 56; Ex. 1002 ¶¶ 61–65). Dibble discloses that the top layer of the PIFS has a PIF server and a set of tools. Ex. 1005, 18. Dibble explains that "[t]he PIF Server defines and maintains the structure of parallel interleaved

files, and repackages the parallelism provided by the LFS's into virtual parallelism that meets applications' requirements." Ex. 1005, 18. Furthermore, "[s]imple applications will interact only with the PIF Server, while more sophisticated applications may also invoke tools." Ex. 1005, 18. Dr. Long testifies that "[t]hese operations occur without user intervention, so in my opinion, a person of ordinary skill would have understood the PIF Server and LFS's to provide automated file management." Ex. 1002 ¶ 64.

Patent Owner cites various disclosures of the '642 patent, such as automated file sharing, optimization, and archiving, in an attempt to distinguish Dibble's disclosure from the claimed subject matter. Prelim. Resp. 10–12 (citing Ex. 1001, 4:29, 4:64–5:11, 5:13–29, Fig. 7). Claim 1, however, does not recite these features, and, therefore, these arguments are not commensurate with the scope of claim 1. On this record, we are persuaded by Petitioner's argument, supported by the testimony of Dr. Long, that Dibble discloses certain file management operations that occur without user intervention, such as "defin[ing] and maintain[ing] the structure of parallel interleaved files" (Ex. 1005, 18), thereby teaching "a file-based automated file management file system," as recited in claim 1.

Petitioner also contends Dibble teaches that its virtual storage system "interfac[es] with a plurality of file system storage partitions of a plurality of corresponding physical non-volatile storage media associated therewith, locations within each physical non-volatile storage medium of said plurality of corresponding physical non-volatile storage media corresponding to locations within said virtual file-based non-volatile storage medium," as recited in claim 1. Pet. 29–32. In particular, Petitioner relies on Dibble's disclosure that a PIFS has multiple local file systems (LFSs). Pet. 29–30

(citing Ex. 1005, 19, 61, Fig 2.1; Ex. 1002 ¶¶ 75–76). Petitioner also relies on Dibble's disclosure of distributing data among processors and disk drives that are part of the system and maintaining a Bridge directory. Pet. 21, 26, 32, (citing Ex. 1005, 17, 19, 36). Dibble's Figure 2.1 shows multiple LFSs as "Components of a PIFS." Ex. 1005, 19. Dibble further discloses that "[a] parallel file system must distribute data among its constituent processors and disk drives." Ex. 1005, 8. On this record, we are persuaded Dibble's disclosure of using multiple local file systems and distributing data among multiple drives teaches interfacing with a plurality of file system storage partitions. Dibble also discloses the following: "The Bridge directory contains the Bridge names of files and a list of the LFS files that make up each Bridge file. An LFS file is identified by the processor ID of the processor that runs the LFS and the LFS's internal file name." Ex. 1005, 36. On this record, we are persuaded Dibble's disclosure of a Bridge directory that keeps track of stored files teaches a correspondence between virtual storage locations in the system and physical storage locations in each LFS.

On this record, we are persuaded Dibble teaches

> providing said virtual file-based non-volatile storage medium having a file-based automated file management file system interfacing with a plurality of file system storage partitions of a plurality of corresponding physical non-volatile storage media associated therewith, locations within each physical non-volatile storage medium of said plurality of corresponding physical non-volatile storage media corresponding to locations within said virtual file-based non-volatile storage medium,

as recited in claim 1.

b. Providing data for storage

Claim 1 recites "providing data for storage in said virtual file-based non-volatile storage medium using said file-based automated file

management file system." Petitioner contends Dibble discloses that, "during a write operation, the data itself is included as an argument for the write command," thereby teaching this subject matter. Pet. 32–33 (citing Ex. 1005, 8, 20–21, 34, Table 3.3, Fig. 1; Ex. 1002 ¶ 84). On this record, we are persuaded Dibble teaches this subject matter because Dibble discloses that data is an argument for write commands to the Bridge server. Ex. 1005, 34 (Table 3.3).

c. Determining free space

Claim 1 recites "determining any free space at said locations within said virtual file-based non-volatile storage medium, said free space sufficient for storing the provided data, locations having said any free space corresponding to said locations within said plurality of corresponding physical non-volatile storage media having available non-volatile storage space therein." Petitioner contends Dibble's disclosure that the elementary file systems (EFSs), which implement the LFSs, "maintain[] free space as a bit map" (Ex. 1005, 32) teaches this subject matter. Pet. 33–35 (citing Ex. 1005, 30, 32; Ex. 1002 ¶¶ 85–92).

Patent Owner argues that "Dibble teaches at most that an LFS maintains free space as a bit map" and that "Dibble teaches away from maintaining a list or index of free space in a central system." Prelim. Resp. 15–16. Claim 1, however, does not require "maintaining a list or index of free space in a central system." Rather, it requires "determining any free space at said locations within said virtual file-based non-volatile storage medium," and on this record, we are persuaded that Dibble's disclosure that an "EFS maintains free space as a bit map" (Ex. 1005, 32) teaches this subject matter because the bit map would show the free space for that EFS.

See Ex. 1002 ¶ 85 (Dr. Long testifying that, through Dibble's disclosure of maintaining free space as a bit map, "a person of ordinary skill would recognize that the LFS's can 'determine any free space' and store data in the free space").

Patent Owner also argues that "Dibble avoids combining a linked list with a 'bit map allocation,' stating it is 'not good for performance.'" Prelim. Resp. 16. We agree with Patent Owner because Dibble states the following: "EFS does not use a free list structure to organize free space on a disk. EFS maintains free space as a bit map. This structure is justified by disk recovery considerations, but the combination of linked list files with bit map allocation is not good for performance." Ex. 1005, 32. However, we fail to see how this distinguishes the claimed subject matter from the disclosure of Dibble because claim 1 does not require a linked list of free space. Patent Owner further argues that "Dibble's PIF system does not maintain a free space list, leaving such determinations to the EFS, and Dibble actually teaches away from 'determining free space' within the entire non-volatile storage medium for performance reasons." Prelim. Resp. 16. Claim 1, however, recites "determining any free space at said locations within said virtual file-based non-volatile storage medium." Dibble's bit map of free space at each LFS would show "any free space" at locations in the virtual storage system.

On this record, we are persuaded Dibble teaches "determining any free space at said locations within said virtual file-based non-volatile storage medium, said free space sufficient for storing the provided data, locations having said any free space corresponding to said locations within said

plurality of corresponding physical non-volatile storage media having available non-volatile storage space therein."

Petitioner also argues that Dibble teaches this subject matter "if one were to interpret 'free space' as requiring storage locations that have either never held data or have had any residual data expunged." Pet. 36. Although claim 1 is not so limited, we have reviewed Petitioner's contentions, and we are persuaded, on this record, that Dibble teaches the subject matter under this narrower interpretation.

d. Storing the provided data

Claim 1 recites "storing the provided data at said locations having said any free space." Petitioner contends Dibble teaches storing data at locations with free space. Pet. 37–38 (citing Ex. 1005, 20–22, Fig. 2.2; Ex. 1002 ¶¶ 95–96). Dibble discloses that a "Write" operation "transfers one or more records from program memory to the specified file," and it also discloses a "record placement rule" by which "[a] PIFS must distribute data among its LFSs." Ex. 1005, 20–22. On this record, we are persuaded that Dibble's disclosure of writing data to LFSs teaches "storing the provided data at said locations having said any free space."

e. Storing index information

Claim 1 recites "storing index information for the stored data." Petitioner contends that Dibble's disclosure of a Bridge directory and associated information in LFSs used to find stored data teaches this subject matter. Pet. 38–40 (citing Ex. 1005, 33, 36; Ex. 1002 ¶¶ 97–102). Dibble discloses that "the Bridge Server is a single centralized process" and "maintains the Bridge directory." Ex. 1005, 33. Dibble discloses the following: "The Bridge directory contains the Bridge names of files and a

list of the LFS files that make up each Bridge file. An LFS file is identified by the processor ID of the processor that runs the LFS and the LFS's internal file name." Ex. 1005, 36. Dr. Long testifies that "a person of ordinary skill in the art would have understood that *Dibble*'s Bridge Directory and information stored in the LFS's are used together to resolve the physical locations for a file and collectively constitute 'index information for the stored data,' as claimed." Ex. 1002 ¶ 102. On this record, we are persuaded Dibble's disclosure of a Bridge directory and associated information in LFSs used to find stored data teaches "storing index information for the stored data."

f. Patent Owner's remaining arguments

Patent Owner makes various additional arguments with which we disagree. Patent Owner argues "it would not have been obvious to use the PIFs system of Dibble in a conventional Personal Computer (PC) environment as discussed in the '642 Patent." Prelim. Resp. 13. Patent Owner argues that Dibble's multiple instruction, multiple data ("MIMD") computer architecture is "very different" from and "non-analogous" to the '642 patent's alleged PC compatible architecture. Prelim. Resp. 14. Patent Owner also argues that Dibble's disclosure of using "at least 32 processors" (Ex. 1005, 13) "actually teaches away from the applicability of PIFS to systems with less than 32 processors." Prelim. Resp. 14. The claims of the '642 patent do not require implementation in a PC environment, nor do they require fewer than 32 processors. Furthermore, we disagree that Dibble is non-analogous art. A prior art reference qualifies as analogous art (1) if it is from the same field of endeavor as the claimed invention, regardless of the problem addressed, or (2) if the reference is not within the field of the

inventor's endeavor, it is nonetheless reasonably pertinent to the particular problem with which the inventor is involved. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). According to its "Field of the Invention" section, the '642 patent "relates to non-volatile storage of data within computers and to non-volatile storage within computer network environments." Ex. 1001, 1:8–10. Dibble relates to the same technology, as discussed in detail above. Indeed, we are persuaded Dibble teaches the subject matter of claim 1. On this record, we are persuaded Dibble is within the same field of endeavor as the '642 patent and, therefore, is analogous art.

g. Threshold determination for claim 1

On this record, Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that the subject matter of claim 1 would have been obvious over the teachings of Dibble.

3. Independent Claims 12 and 16 and Dependent Claims 2–6, 13, and 14

Petitioner also contends the subject matter of independent claims 12 and 16 and dependent claims 2–6, 13, and 14 would have been obvious over the teachings of Dibble. Pet. 40–56. Patent Owner argues Petitioner has not shown a reasonable likelihood of prevailing as to these claims for the reasons given for claim 1, which we address above. Prelim. Resp. 10–18. We have reviewed Petitioner's contentions that the subject matter of claims 2–6, 12–14, and 16 would have been obvious based on Dibble, and we are persuaded Petitioner's arguments and evidence are sufficient to show a reasonable likelihood Petitioner would prevail in proving unpatentability of these claims.

E. Alleged Obviousness over Dibble and Cannon (Claims 7, 10, 15, 17, and 20)

Petitioner also asserts claims 7, 10, 15, 17, and 20 are unpatentable under 35 U.S.C. § 103 based on the combined teachings of Dibble and Cannon. Pet. 11, 56–68. In its contentions, Petitioner explains how the cited art allegedly teaches the claimed subject matter and why a person of ordinary skill in the art allegedly would have combined the references in the manner asserted. *See* Pet. 56–68. Petitioner argues that a person of ordinary skill in the art would have been motivated to archive data, as allegedly taught in Cannon, in Dibble's system so that less frequently used data would be moved to slower, cheaper storage areas, thereby allegedly optimizing performance for the more frequently used data. Pet. 62 (citing Ex. 1002 ¶¶ 147–148). Thus, according to Petitioner, "performance and cost would both drive one of ordinary skill in the art to make this modification." Pet. 62. Petitioner also argues Dibble's disclosure that "a PIFS should be backed up regularly" (Ex. 1005, 56) provides an express motivation to combine Cannon's archiving teachings with the teachings of Dibble. Pet. 63.

Rather than addressing Petitioner's asserted reasoning, Patent Owner simply argues Petitioner provides no explanation or reasoning. Prelim. Resp. 18–19. For example, Patent Owner argues that "Petitioner[] provide[s] no explanation why a person of skill in the art would combine the teachings of Dibble with Cannon to perform any of the limitations of the independent claims or dependent claims 7, 10, 15, 17 and 20 as alleged," that Petitioner "rel[ies] exclusively on generic and conclusory statements," and that Petitioner does not "provid[e] any supporting reasons for" its assertion that a person of ordinary skill in the art would have been motivated

to combine the teachings of Dibble and Cannon. Prelim. Resp. 18–19. These arguments, however, do not address Petitioner's proffered evidence and arguments, such as Dibble's directive to back up file systems regularly. Ex. 1005, 56.

We have reviewed Petitioner's obviousness contentions based on the combined teachings of Dibble and Cannon. On this record, we are persuaded Petitioner has presented sufficient reasons to combine the teachings of Dibble and Cannon, and we are persuaded Petitioner has shown sufficiently for the purposes of institution that the combination of Dibble and Cannon teaches the subject matter of claims 7, 10, 15, 17, and 20. Therefore, Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that the subject matter of claims 7, 10, 15, 17, and 20 would have been obvious over the combined teachings of Dibble and Cannon.

III. CONCLUSION

For the foregoing reasons, we determine that the information presented in the Petition establishes that there is a reasonable likelihood that Petitioner would prevail in challenging at least one claim of the '642 patent. At this stage of the proceeding, we have not made a final determination with respect to the patentability of any of the challenged claims or the construction of any claim term. Because Petitioner has satisfied the threshold for institution as to one claim, we institute *inter partes* review on all claims and all grounds raised in the Petition. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018) (holding that a decision to institute under 35 U.S.C. § 314 may not institute on fewer than all claims challenged in the

petition); *see also* USPTO's "Guidance on the impact of SAS on AIA trial proceedings"[3] (April 26, 2018) (stating that, "if the PTAB institutes a trial, the PTAB will institute on all challenges raised in the petition").

IV. ORDER

Accordingly, it is

ORDERED that pursuant to 35 U.S.C. § 314(a) and 37 C.F.R. § 42.4, an *inter partes* review is hereby instituted as to all claims challenged (1–7, 10, 12–17, and 20 of the '642 patent) and on all challenges raised in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which will commence on the entry date of this decision.

[3] https://www.uspto.gov/patents-application-process/patent-trial-and-appeal-board/trials/guidance-impact-sas-aia-trial.

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