UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

KOVE IO, INC.,	)
	)
Plaintiff,	)
	)
v.	) **No. 18 C 8175**
	)
AMAZON WEB SERVICES, INC.,	) **Judge Rebecca R. Pallmeyer**
	)
Defendant.	)

MEMORANDUM ORDER AND OPINION

Plaintiff Kove IO, Inc., has sued Defendant Amazon Web Services, Inc. ("AWS"), alleging

infringement of three patents disclosing a data storage network architecture that permits cloud-

based storage of information on a large scale. AWS has moved to dismiss the suit, contending

that the asserted claims violate the Patent Act, 35 U.S.C. § 101, because they are based on

abstract ideas and do not contain an "inventive concept" sufficient to confer patent eligibility. For

the following reasons, the court disagrees and denies Defendant's motion to dismiss [36].

BACKGROUND

Plaintiff's allegations, assumed true for purposes of this analysis, establish the following:

Plaintiff Kove IO, Inc., is a Delaware corporation with its principal place of business in

Chicago, Illinois. (Compl. [1] ¶ 6.) Defendant AWS is a Delaware corporation and is registered

to do business in Illinois. (*Id.* ¶ 7.) There are three patents-in-suit: U.S. Patent No. 7,103,640

(the "'640 Patent"), No. 7,233,978 (the "'978 Patent"), and No. 7,814,170 (the "'170 Patent"),[1] all

of which are owned by Plaintiff and name as inventors Dr. Stephen Bailey and Dr. John Overton,

who serves as Plaintiff's chief executive officer. (*Id.* ¶¶ 5, 11.) The earliest application related to

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[1]   As Defendant notes in a footnote (*see* Def.'s Mem. in Supp. of Mot. to Dismiss [38]
at 2 n.2), Plaintiff alleges that Defendant infringed "at least" three claims, specifically identifying
only one from each patent. (Compl. [1] ¶¶ 35, 57, 72.) Plaintiff implies that it may assert additional
claims later on, apparently to avoid dismissal of the suit if this court were to grant Defendant's
motion. (Pl.'s Mem. in Opp'n to Amazon's Mot. to Dismiss [44] at 7 n.5.) In this ruling the court
addresses only the three identified claims.

all three patents was filed on July 8, 1998. (*Id.* ¶¶ 20–22.) And each has the same subject matter as well: a distributed data storage technology that can be utilized in cloud computing. (*Id.* ¶¶ 1–2.)

Traditionally, storage systems would store both a data file itself as well as its corresponding location information, "which records where the data file is located on the network of servers and computers." (*Id.* ¶ 14.) This location information would be stored on a single server. A user seeking information from a particular data file would start by sending a request to that server. (*Id.* ¶ 15.) Such a process is akin to finding a book in the library by first checking the card catalog to see in which section and on which shelf the book is located. The problem with such a system, Plaintiff alleges [1], is that as the system grows, it "would someday contain so many unique data files that it would become impractical—if not impossible—to store the corresponding location information in one place." (*Id.* ¶ 16.) After all, a library's card catalog could become too unwieldy as more books are added to the library and stored in different locations. The patented distributed network system is aimed at overcoming such a problem, thus allowing storage systems to grow to a significant size. The distributed network achieves this by not only storing data files in different locations but storing location information across multiple servers, as well. (*Id.* ¶ 17.) Specifically, Plaintiff describes the patented system as using "hash values" that "correspond[ ] to the location information of data files" and that are distributed throughout the network. (*Id.* ¶ 18.) "Hash values" are assigned to a file based on a mathematical operation. (Ex. 1 to Compl. [1-1] at 3.) And the hash values are stored in a "hash table," in which each file is assigned to its own row, and the row stores the file's location. (*Id.*) These hash tables are distributed throughout different locations around a network. (*Id.*) "Each table points to other tables, so while the first hash table searched may not list the file you want, it will point to other tables that will eventually—but still within milliseconds—reveal the file's location." (*Id.*) In other words, a request from a user for a particular data file will be routed first to one server, but if that

server does not have the location information, the request is quickly rerouted to another server, then another, and so on until the file is found. (Compl. [1] ¶ 18.)

The '170 Patent

The '170 Patent, entitled "Network Distributed Tracking Wire Transfer Protocol," generally describes a system and method for storing and retrieving information, including "identification strings for specifying the identity of an entity in the distributed data collection, and location strings for specifying network locations of data associated with an entity." (The '170 Patent, Ex. 6 to Compl., [1-6] col. 2 ll. 18–21.)   In order to hold a large number of files, "[t]he protocol accommodates variable length identifier and location strings," up to 2^{32}-4 bytes in length. (*Id.* at col. 2 ll. 21–22, col. 3 ll. 26–28.) "Relationships between identification strings and location strings can be dynamically and spontaneously manipulated thus allowing the corresponding data relationships also to change dynamically, spontaneously, and efficiently"— that is, as the court understands this language, data repositories can always be added to the architecture and identifier/location mapping can update frequently as data files are altered or change locations. (*Id.* at col. 2 ll. 22–26.)   This patent contains a total of seventeen claims, of which three are independent claims and fourteen are dependent claims. (*See id.* at col. 20 l. 58–col. 22 l.60.) Plaintiff alleges that Defendant has infringed Claim 1, which recites:

> 1.   A system for managing data stored in a distributed network, the system comprising:
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> a data repository configured to store a data entity, wherein an identifier string identifies the data entity; and
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> a data location server network comprising a plurality of data location servers, wherein data location information for a plurality of data entities is stored in the data location server network, at least one of the plurality of data location servers includes location information associated with the identifier string, each one of the plurality of data location servers comprises a processor and a portion of the data location information, the portion of the data location information included in a corresponding one of the data location servers is based on a hash function used to organize the data location information across the plurality of data location servers, and each one of the data location servers is configured to determine the at least one

of the plurality of data location servers based on the hash function applied to the identifier string.

(*id.* at col. 20 l. 58–col. 21 l. 10.)

The '640 Patent

The '640 Patent, entitled "Network Distributed Tracking Wire Transfer Protocol," generally describes the same invention as that described in the '170 Patent. (The '640 Patent, Ex. 4 to Compl. [1–4] col. 1 ll. 25–30.) The '640 Patent contains a total of twenty-five claims, of which four are independent and twenty-one are dependent. (*id.* at col. 20 l. 48–col. 24 l. 15.) Plaintiff has alleged that Defendant has infringed Claim 18 of this patent, which adds to the patented system a "redirection mechanism" that "assist[s] the client"—meaning a computer connected to the network—"in identifying an alternative data location server in the event the client sends a request to the wrong server." (Pl.'s Mem. in Opp'n to Amazon's Mot. to Dismiss [44] at 10.) Claim 18 recites:

> 18. A system for retrieving data location information for data stored in a distributed network, the system comprising:
>> a data repository configured to store data, wherein the data is associated with an identifier string;
>> a client responsive to a data query to query a data location server for location information associated with the identifier string;
>> a data location server network comprising a plurality of data location servers, at least one of the plurality of data location servers containing location information associated with the identifier string, wherein each of the plurality of data location servers comprises computer executable code configured to execute the following steps in response to receiving a data location request from the client:
>> if the data location server contains the location string associated with the identification string provided in the data location request, the data location server transmits location information for use by the client to calculate a location of the data associated with the identification string;
>> if the data location server does not contain the location string associated with the identification string, the location server transmits a redirect message to the client, wherein the redirect message contains redirect information for use by the client to calculate a location of a different data location server in the plurality of data location servers, wherein the different data location server contains the location string.

(The '640 Patent at col. 22 l. 41–col. 23 l. 2.)

The '978 Patent

The '978 Patent, entitled "Method and Apparatus for Managing Location Information in a Network Separate from the Data to Which the Location Information Pertains," generally describes the same invention as that in the '170 Patent and '640 Patent, but it adds "a type of load balancing, so that identifiers and location information can be moved to a different location server when certain performance criteria have been satisfied." (The '640 Patent, Ex. 5 to Compl. [1–5]; Pl.'s Mem. in Opp'n to Amazon's Mot. to Dismiss [44] at 10–11.) The patent includes thirty-one claims, including five independent and twenty-six dependent claims. (The '640 Patent at col. 25 l. 24–col. 28 l. 65.) Plaintiff alleges that Defendant has infringed Claim 17 of the '978 Patent, which discloses:

> 17.   A method of scaling at least one of capacity and transaction rate capability in a location server in a system having a plurality of location servers for storing and retrieving location information, wherein each of the plurality of location servers stores unique set of location information of an aggregate set of location information, the method comprising:
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>> providing a transfer protocol configured to transport identifier and location information, the location information specifying the location of information related to the identifier;
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>> storing location information formatted according to the transfer protocol at a first location server;
>>
>> receiving an identifier and a location relevant to the identifier at the first location server;
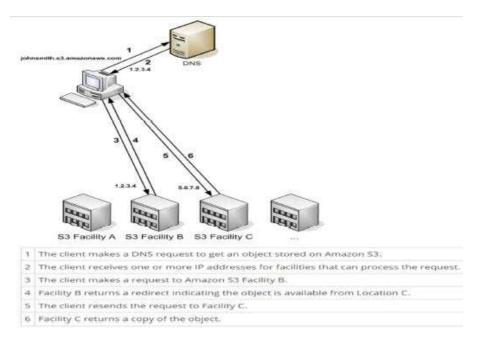>>
>> storing the received location in a location store at the first data location server, the location store comprising a plurality of identifiers, each identifier associated with at least one location, wherein the received location is associated with the received identifier in the location store; and transferring a portion of the identifiers and associated locations to a second data location server when a performance criterion of the first location server reaches a predetermined performance limit.

 (*id.* at col. 27 ll. 19–43.)

Defendant's Alleged Infringement

Plaintiff identifies two of Defendant's products as infringing the patents-in-suit: Amazon Simple Storage Service ("Amazon S3") and DynamoDB. (Compl. [1] ¶ 26.) Defendant launched Amazon S3 in 2006, and it allows users to store data in the cloud. Defendant describes Amazon S3 as providing "highly scalable, reliable, and low-latency data storage infrastructure." (Press

Release, Ex. 7 to Compl., [1-1] at 1.) DynamoDB is a database service that Defendant says

permits users to "create database tables that can store and retrieve any amount of data, and

serve any level of request traffic." (DynamoDB Developer Guide, Ex. 11 to Compl., [1-11] at 1.)

Together, Amazon S3 and DynamoDB manage data stored in a distributed network, according to

Plaintiff. (Compl. [1] ¶ 37.) "Amazon S3 stores objects in a 'File Repository,'" and each of those

Amazon S3 objects is given a unique identifier string. (*Id.* ¶ 38.) DynamoDB tables house location

information for those S3 objects. (*Id.* ¶ 40.) Moreover, according to Plaintiff, the DynamoDB

tables, like the hash tables in the patented system, are distributed across multiple servers and

organize data location information based on a hash function. (*Id.* ¶¶ 76, 78.) Likewise, when an

Amazon S3 user requests to download a particular file or object, Defendant's system will send a

request to a particular S3 location and, if that server is the wrong location, Amazon S3 will redirect

the requester to a new location. (*Id.* ¶¶ 79–80.) This system is illustrated in the following figure

that Plaintiff included with its complaint:

1	The client makes a DNS request to get an object stored on Amazon S3.
2	The client receives one or more IP addresses for facilities that can process the request.
3	The client makes a request to Amazon S3 Facility B.
4	Facility B returns a redirect indicating the object is available from Location C.
5	The client resends the request to Facility C.
6	Facility C returns a copy of the object.

(*Id.* ¶ 80.)[2]

Plaintiff initiated this suit on December 12, 2018, seeking damages and a permanent injunction for Defendant's alleged direct, indirect, and contributory infringement of its patents. *See* 35 U.S.C. § 271(a)–(c). Defendant moves to dismiss, contending that Claim 1 of the '170 Patent, Claim 18 of the '640 Patent, and Claim 17 of the '978 Patent are invalid because they are directed only to the abstract idea of data storage and lack an inventive concept.

DISCUSSION

In deciding a motion to dismiss, the court accepts the well-pleaded factual allegations in the complaint as true and draws all reasonable inferences in favor of the plaintiff. *Kubiak v. City of Chi.*, 810 F.3d 476, 480–81 (7th Cir. 2016). Because every patent is presumed to be issued properly, *see* 35 U.S.C. § 282(a), a party challenging patent eligibility must point to clear and convincing evidence that the patent covers a patent-ineligible subject matter, *see Microsoft Corp. v. i4i Ltd. P'ship*, 564 U.S. 91, 95 (2011). A patent may be obtained for "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. § 101. The Supreme Court has long interpreted § 101 as implicitly excepting laws of nature, natural phenomena, and abstract ideas from patent protection. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014) (citing *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 589 (2013)). These are the "building blocks of human ingenuity," and affording them patent protection could "inhibit further discovery" and thereby "impede innovation." *Id.* (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 71, 85 (2012)).

Defendant argues that dismissal is necessary because the asserted patent claims concern only abstract ideas and are therefore invalid. When evaluating a § 101 challenge, the Supreme Court's opinion in *Alice* instructs the court to "first determine whether the claims at issue are

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hostnames into Internet addresses." *Domain Name System*, FREE ON-LINE DICTIONARY OF COMPUTING, http://foldoc.org/Domain+Name+System (last visited Mar. 16, 2020).

directed to a patent-ineligible concept," *id.* at 218, and, if they are, then "consider the elements of

each claim both individually and 'as an ordered combination' to determine whether the additional

elements 'transform the nature of the claim' into a patent-eligible application," *id.* at 217 (quoting

Mayo, 566 U.S. at 78–79). Although "it will ordinarily be desirable—and often necessary—to

resolve claim construction issues prior to a § 101 analysis," that is not a hard-and-fast rule.

Bancorp Servs., LLC v. Sun Life Assurance Co. of Canada (U.S.), 687 F.3d 1266, 1273 (Fed. Cir.

2012). In fact, "evaluation of a patent claim's subject matter eligibility under § 101 can proceed

even before a formal claim construction." *Genetic Techs. Ltd. v. Merial LLC*, 818 F.3d 1369, 1374

(Fed. Cir. 2016). Because neither party has raised any claim construction issues yet,[3] the court

may proceed and resolve eligibility for patenting as a matter of law. *See Aatrix Software, Inc. v.

Green Shades Software, Inc.*, 882 F.3d 1121, 1125 (Fed. Cir. 2018) ("We have held that patent

eligibility can be determined at the Rule 12(b)(6) stage."). As set forth below, the court finds that

the asserted claims are not directed to a patent-ineligible concept, so Defendant's § 101 challenge

fails.

The court's first task is to determine whether the asserted claims are "directed to" an

abstract idea. There is no "definitive rule to determine what constitutes an 'abstract idea'"; instead,

"both [the Federal Circuit] and the Supreme Court have found it sufficient to compare the claims

at issue to those claims already found to be directed to an abstract idea in previous cases."

Enfish, LLC v. Microsoft Corp., 822 F.3d 1327, 1334 (Fed. Cir. 2016). Examples of abstract ideas

include: the "formation and manipulation of economic relations," the "performance of certain

financial transactions," and "data recognition and storage," *Content Extraction & Transmission

LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1347 (Fed. Cir. 2014); indexing "various

items using classifications, parameters, and values," *BSG Tech LLC v. BuySeasons, Inc.*, 899

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[3]   At oral argument, Plaintiff contended that part of Defendant's argument amounted
to "undercover claim construction". (Oral Arg. Tr. [49] at 23:3–6.) Resolving this issue, however,
is not necessary for the court's analysis of this motion.

F.3d 1281, 1285–86 (Fed. Cir. 2018); mathematical algorithms, *Gottschalk v. Benson*, 409 U.S. 63, 64 (1972); and "accessing and distributing electronic documents using electronic document references," *Cloud Satchel, LLC v. Amazon.com, Inc.*, 76 F. Supp. 3d 553, 561–62 (D. Del. 2014), *aff'd mem.*, 667 Fed. App'x 1010 (Fed. Cir. 2015).

Following this precedent, courts have regularly found claims directed toward generating or manipulating data to be abstract. For example, in *A. Zahner Co. v. Hendrick Metal Prods., LLC*, 328 F. Supp. 3d 870, 880 (N.D. Ill. 2018), this court analyzed claims focused on "a method for collecting two types of data—an image and information about a surface—and then using a computer to convert that data into machine code that is usable for transferring the image to the surface." Considering everything from the title of the patent, its specification, and the language of the claims, the court noted that "[n]othing in the patent suggests a specific improvement over existing methods for generating machine code . . . or a 'specific improvement to computer functionality.'" *Id.* (quoting *Enfish*, 822 F.3d at 1338–39). That the patented method also resulted in the physical manipulation of a building material surface did not mean that the claims themselves were not "directed to" an abstract idea: "the physical manipulation of a surface is the *application* of the claimed process for generating machine code. As the Supreme Court made clear in *Alice*, '[s]tating an abstract idea while adding the words "apply it" is not enough for patent eligibility.'" *Id.* at 881 (quoting *Alice*, 573 U.S. at 223). In contrast, the Federal Circuit determined at *Alice* step one that the patent at issue in *Visual Memory LLC v. NVIDIA Corp.*, 867 F.3d 1253, 1259 (Fed. Cir. 2017), was not directed to an abstract idea. The district court had initially held that the claims—which purported to "creat[e] a memory system with programmable operational characteristics that can be tailored for use with multiple different processors without the accompanying reduction in performance"—"were directed to the 'abstract idea of categorical data storage.'" *Id.* at 1256–57. But the Federal Circuit reversed, reasoning that the claims were directed to "an improved computer memory system, not to the abstract idea of categorical data storage." *Id.* at 1259. As the *Visual Memory* court noted, the specification described the

9

disadvantages of the prior art as well as the advantages of the claimed technology. *Id.* at 1259–60. The Federal Circuit acknowledged that "the concept of categorical data storage underlies" the patent's claims, "[b]ut this is not enough to doom a claim under § 101." *Id.* at 1262. After all, "all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas." *Id.* (quoting *Mayo*, 566 U.S. at 71).

Zahner and *Visual Memory* are just two of the many post-*Alice* cases in which courts have considered § 101 challenges to patents concerning the use, manipulation, or configuration of data. Reviewing this precedent, including the cases relied on by both parties in their briefs and at oral argument, the court concludes that the asserted claims are not directed to an abstract idea.

Plaintiff argues that the Federal Circuit's opinion in *Enfish* controls, and the court agrees. At issue in *Enfish*, 822 F.3d at 1330, were two patents "directed to an innovative logical model for a computer database." Prior computer databases followed a "relational" model in which each characteristic of a particular object—*e.g.,* title, author, address—would be logged in a different table. *Id.* at 1331–32. The patented "self-referential" model, however, used only one table for all characteristics and "define[d] the table's columns by rows in the same table." *Id.* at 1332. In other words, if an additional column is needed, a new row can provide the label to be added to that new column. *See id.* at 1332–33. "In other situations, the row might define other characteristics of the column, such as the type of data that the column can hold." *Id.* at 1333. According to the specification, a self-referential database enables faster searching, more effective storage, and more flexibility in configuration than a relational one. *Id.* at 1333. Noting that *Alice* did not imply that "all improvements in computer-related technology are inherently abstract" or "that claims directed to software, as opposed to hardware, are inherently abstract," the Federal Circuit reasoned that *Alice* step one "asks whether the focus of the claims is on the specific asserted improvement in computer capabilities . . ., or, instead, on a process that qualifies as an 'abstract idea' for which computers are invoked merely as a tool." *Id.* at 1335–36. The court found the

following claim (as well as two others) to be focused on a specific improvement in computer

capabilities:

> 17.   A data storage and retrieval system for a computer memory, comprising:
> means for configuring said memory according to a logical table, said logical table
> including:
> > a plurality of logical rows, each said logical row including an object
> > identification number (OID) to identify each said logical row, each said
> > logical row corresponding to a record of information;
> > a plurality of logical columns intersecting said plurality of logical
> > rows to define a plurality of logical cells, each said logical column including
> > an OID to identify each said logical column; and
> > means for indexing data stored in said table.

Id. at 1336 (quoting U.S. Patent No. 6,151,604.) The district court had concluded that this claim

was simply directed to the abstract idea of storing, organizing, and retrieving information, but as

the Federal Circuit observed, by "describing the claims at such a high level of abstraction and

untethered from the language of the claims," the trial court improperly "all but ensure[d] that the

exceptions to § 101 swallow the rule." *Id.* at 1337. "Here, the claims are not simply directed to

any form of storing tabular data, but instead are specifically directed to a *self-referential* table for

a computer database." *Id.* The Federal Circuit concluded its *Alice* step one analysis in these

words:

> In sum, the self-referential table recited in the claims on appeal is a specific type
> of data structure designed to improve the way a computer stores and retrieves
> data in memory.   The specification's disparagement of conventional data
> structures, combined with language describing the "present invention" as including
> the features that make up a self-referential table, confirm that our characterization
> of the "invention" for purposes of the § 101 analysis has not been deceived by the
> "draftman's art."

Id. at 1339.

This analysis from *Enfish* applies in the case before this court as well. The patents-in-suit

here are directed toward a distributed storage system in which location information can be stored

in multiple servers to reduce the processing time to find a data file. (Compl. [1] ¶¶ 16–17.)

According to the patents' specifications, prior data storage systems enabled a user to search only

for information stored in one server and "only data that are statically associated with that server

are returned. Disadvantageously, the search is also usually restricted to previously known systems. The search is thus conducted only where the server knows in advance to look." ('640 Patent at col. 1 ll. 34–41.) The invention disclosed in Plaintiff's patents, in contrast, connects multiple servers, each of which have the mapping between "identification strings" (the identifier for a particular data file) and the "location strings," which specify where a data file is located. (*Id.* at col. 2 l. 66–col. 2 l. 7.) When one of these location servers receives a request for a file from a computer or client connected to the network, it can redirect the client to a location server that "contain[s] information relevant to the entity identified in the query." ('978 Patent at col. 2 ll. 47–52.) Unlike older, "static" data retrieval systems, which stored location information in a hierarchical index that needed periodic updates (Compl. [1] ¶ 13), the patented system is "dynamic" because, by distributing location information and identifier mapping across multiple servers, repositories holding data files can be added to the system "without the need to reprogram the database." (*Id.* at col. 2 l. 10.)

As in *Enfish*, not only do the patents' specifications explain how they improve on prior systems; the asserted claims also "focus on the specific asserted improvement in computer capabilities" and are not simply directed to "an 'abstract idea' for which computers are invoked merely as a tool." *Enfish*, 822 F.3d at 1335–36. As noted above, Claim 1 of the '170 Patent discloses a data storage system comprising "a data repository," which stores data entities, and a series of data location servers, all of which together hold the location information for the data entities. The location information held by a particular location server is based on a hash function, which also permits a location server without a particular data file's location information to determine which location server would have that information. (*See* the '170 Patent at col. 20 l. 58–col. 21 l. 10.) Defendant urges that this claim "is directed to the abstract idea of storing data and location information in different places, and using a 'hash function' on an identifier to determine where the location information can be found." (Def.'s Mem. in Supp. of Mot. to Dismiss [38] at 8.) The court does not adopt that dismissive characterization; Claim 1 is not directed at

12

simply storing and locating information in different places. Rather, it is, as Plaintiff argues, directed to a specific network architecture that employs multiple location servers that organize location information based on a distributed hash table. And as in *Enfish*, 822 F.3d at 1337, the specification teaches how this architecture functions differently than—and improves upon— conventional systems.

A similar analysis applies to Claim 18 of the '640 Patent, which, as already noted, discloses a network architecture that is almost the same as that included in Claim 1 of the '170 Patent. (*See* the '640 Patent at col. 22 l. 41–col. 23 l. 2.) This claim adds one critical component: a "redirect message" from one data location server that permits the client to determine the location of a different data location server. That is, if a client requests a particular data file from a location server that does not have that file's location information, the location server will redirect the client to the proper location server. This redirect message is essential because it makes possible the distributed network architecture disclosed in the patents-in-suit. Defendant characterizes this claim as merely "directed to the abstract idea of storing location information in multiple places, with information at each place directing the user to the right place." (Def.'s Mem. in Supp. of Mot. to Dismiss [38] at 10.) Characterizing the claim at such a high level of abstraction, as the *Enfish* court noted, runs the risk of "all but ensur[ing] that the exceptions to § 101 swallow the rule." 822 F.3d at 1337. It is also "untethered from the language of the claim[ ]," *id.*, notably excluding mention of the "computer-executable code" that automatically redirects the client to the correct location server or the fact that the client uses the redirect message to calculate the location of a different data location server.

The court's conclusion is the same for Claim 17 of the '978 Patent. That claim describes a method for transferring identification strings and location strings from one location server to another when a particular "performance criterion" is met. (*See* the '978 Patent at col. 27 ll. 19– 43.) Subsequent claims in the patent define the performance criteria to include available storage space and transaction rate limit. (*See id.* at col. 28 ll. 12–16.) This enables one of the

specification's claimed advantages over the prior art: it permits "on-the-fly addition and removal of data repositories," which makes possible the distributed network's growth in scale. (*Id.* at col. 2 ll. 1–10.) Defendant is incorrect to portray this claim as simply directed to "receiving and storing information, and transferring some location information to a different location based on a predetermined criteria." (Def.'s Mem. in Supp. of Mot. to Dismiss [38] at 6.) Like the claims discussed above, Claim 17 of the '978 Patent is, in the words of *Enfish*, 822 F.3d at 1336, "not directed to an abstract idea within the meaning of *Alice*. Rather, [it is] directed to a specific improvement" in the way networks operate.

In its reply brief and at oral argument, Defendant argues that *Enfish* is distinguishable because that case concerned a "means-plus-function" claim. (Def.'s Reply Br. in Supp. of Mot. to Dismiss [45] at 2; Oral Arg. Tr. [49] at 18:4–18.) "Means-plus-function" claims can be "construed to cover the corresponding structure . . . described in the specification." 35 U.S.C. § 112(f). According to Defendant, the *Enfish* court considered the specification when interpreting a claim only because it was reviewing a means-plus-function claim, and it is improper for this court to consider the patents' specifications when reviewing the asserted claims. Again, the court is not persuaded. The *Enfish* court did not limit its validity finding to "means-plus-function" claims. *See* 822 F.3d at 1337 (emphasis added) ("[T]he claims are not simply directed to *any* form of storing tabular data, but instead are specifically directed to a *self-referential* table for a computer database. For claim 17, this is reflected in step three of the 'means for configuring' algorithm described above. *For both pairs of claims 31 and 32, this is reflected in other claim language.*"). Indeed, nothing about the Federal Circuit's analysis was expressly limited to means-plus-function claims. And the Federal Circuit has elsewhere discussed and followed *Enfish* without suggesting that its holding is so limited. *See, e.g., Visual Memory*, 867 F.3d at 1258–60; *Thales Visionix Inc. v. United States*, 850 F.3d 1343, 1346–49 (Fed. Cir. 2017). In fact, despite Defendant's insistence that *Enfish* requires the court to focus exclusively on the claims' language, the Federal Circuit has frequently taken the specification into consideration at *Alice* step one—even for non-means-plus-

function claims.[4] *See, e.g., Visual Memory*, 867 F.3d at 1261–62 (after discussing both the specification and the claim language, the court stated that its holding that the asserted claims were patent-eligible was "particularly proper on a motion to dismiss under Rule 12(b)(6), where all factual inferences drawn from the specification must be weighed in favor . . . of the non-moving party"); *id.* at 1260 (noting that, as in other cases in which the Federal Circuit has rejected § 101 challenges, "the specification discusses the advantages offered by the technological improvement").

Defendant also maintains that the claims are not "necessarily rooted in computer technology" because the data storage and retrieval protocol disclosed in them could be utilized by a library card catalogue. (Def.'s Mem. in Supp. of Mot. to Dismiss [38] at 6.) For instance, Defendant rewrites Claim 1 of the '170 Patent as follows, with the rewritten parts underlined:

> 1. A system for managing <u>books stored in multiple libraries</u>, the system comprising:
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> > a <u>library</u> that stores <u>a book</u>, wherein an <u>author</u> identifies the <u>book</u>;
> > a <u>group of card catalogues</u> comprising a plurality of <u>card catalogues</u>;
> > wherein <u>book</u> location information for a plurality of <u>books</u> is stored in the <u>group of card catalogues</u>;
> > at least one of the plurality of <u>card catalogues</u> includes location information associated with the <u>author</u>;
> > each one of the plurality of <u>card catalogues</u> comprises a <u>chart</u> and a portion of the <u>book</u> location information;
> > the portion of the <u>book</u> location information included in a corresponding one of the <u>card catalogues</u> is based on a hash function used to organize the <u>book</u> location information across the plurality of <u>card catalogues</u>;

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[4]   In both of its briefs, Defendant cites *Two-Way Media Ltd. v. Comcast Cable Commc'ns, LLC*, 874 F.3d 1329 (Fed. Cir. 2017), to support the proposition that the court should review only the claim language and not the specification when considering whether the claimed invention improves on prior art. (Def.'s Mem. in Supp. of Mot. to Dismiss [38] at 15; Def.'s Reply Br. in Supp. of Mot. to Dismiss [45] at 4.) The portion of the *Two-Way* opinion that Defendant cites, however, concerns the court's analysis at *Alice* step two—not *Alice* step one, where the Federal Circuit has been clear that the specification should be considered. *See Enfish*, 822 F.3d at 1335 (emphasis added) (quoting *Internet Patents Corp. v. Active Network*, 790 F.3d 1343, 1346 (Fed. Cir. 2015)) ("[T]he 'directed to' inquiry applies a stage-one filter to claims, *considered in light of the specification*, based on 'whether their character as a whole is directed to excluded subject matter.'"); *see also, e.g., In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 612–13 (Fed. Cir. 2016) (discussing the patent specification as part of its *Alice* step one analysis).

> each one of the <u>card catalogues' charts allows someone to</u> determine the at least one of the plurality of <u>card catalogues</u> based on the hash function applied to the <u>author</u>.

(*Id.* at 9.) But there are several problems with this analogy, as Plaintiff rightly points out. Defendant's suggested rewrite ignores the patents' specifications, which make clear that the invention is aimed at improving computer network storage. As explained above, conventional storage systems used hierarchical indices that could limit growth and slow down searches. It is not clear that this is a problem encountered by libraries or that the distributed card catalogue system in Defendant's rewrite would provide any improvement for them. *See DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014) (affirming finding of validity for a "claimed solution [that] is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks"). Moreover, endorsing Defendant's analogy could risk invalidating any claim concerning data storage or network architecture. *See Alice*, 573 U.S. at 217 ("[W]e tread carefully in construing this exclusionary principle lest it swallow all of patent law."); *cf. Enfish*, 822 F.3d at 1339 ("To hold otherwise risks resurrecting a bright-line machine-or-transformation test, or creating a categorical ban on software patents.") (citation omitted).

Nor is the court persuaded that the asserted claims' language is "so result-focused, so functional, as to effectively cover any solution to an identified problem." *Electr. Power Grp, LLC v. Alstom S.A.*, 850 F.3d 1250, 1356 (Fed. Cir. 2016). The Federal Circuit in *Electric Power* expressly contrasted the claims at issue in that case with those in *Enfish*:

> In *Enfish*, we applied the distinction [between computer-functionality improvements and uses of existing computers as tools in aid of processes focused on "abstract ideas"] to reject the § 101 challenge at stage one because the claims at issue focused not on asserted advances in uses to which existing computer capabilities could be put, but on a specific improvement—a particular database technique—in how computers could carry out one of their basic functions of storage and retrieval of data. The present case is different: the focus of the claims is not such an improvement in computers as tools, but on certain independently abstract ideas that use computers as tools.

Id. at 1354 (citations omitted). The Federal Circuit's analysis of *Enfish* in that passage applies to the claims asserted in this case as well. Because they are "focused . . . on a specific improvement," the asserted claims are not so broad as to preempt future innovations in network storage, unlike those in *Electric Power*, 850 F.3d at 1356.

Finally, Defendant compares the asserted claims to those that have been invalidated in other cases. Careful analysis of those precedents, however, satisfies the court that they are either distinguishable from the present case or supportive of the conclusion that the asserted claims in this case are not directed to an abstract idea. For instance, Defendant cites *In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 609 (Fed. Cir. 2016), which concerned a patent that "relates generally to an apparatus for recording of a digital image, communicating the digital image from the recording device to a storage device, and to administering the digital image in the storage device." The representative claim was, as the court noted, "drawn to the concept of classifying an image and storing the image based on its classification." *Id.* at 611. This claim did require the use of "a telephone unit" and a "server," but "the specification makes clear that the recited physical components merely provide a generic environment." *Id.* In contrast, the specifications of the patents at issue here describe the different servers used in the network architecture as more than generic because they explain how those machines function in the network and how they will interact. While the *TLI* patent "fails to provide any technical details for the tangible components," *id.* at 612, Plaintiff's patents describe, for example, how the distributed hash tables and redirect message work as well as how this network architecture is different from the prior art. And whereas the claims asserted in *TLI* were "not directed to a specific improvement to computer functionality," *id.* at 612, Plaintiff's patents are expressly aimed at improving on conventional data storage networks.[5] Further distinguishing the current case from *TLI* is that the patents-in-suit *are* "directed to a solution to a 'technological problem.'" *Id.* at 613.

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[5]   This also distinguishes *Cloud Satchel, LLC v. Amazon.com, Inc.*, 76 F. Supp. 3d 553 (D. Del. 2014), *aff'd mem.*, 667 Fed. App'x 1010 (Fed. Cir. 2015). In that case, the district

Another case Defendant relies on is *BSG Tech LLC v. BuySeasons, Inc.*, 899 F.3d 1281, 1285–86 (Fed. Cir. 2018). In that case, the Federal Circuit invalidated three patents "directed to a 'self-evolving generic index' for organizing information stored in a database," which "organizes information about various items using classifications, parameters, and values." *Id.* at 1283. A representative claim "recite[d] a method of indexing wherein a user adds data to a database using 'a mechanism for posting the data as parametized items' after receiving 'summary comparison usage information' about parameters and values selected by users." *Id.* at 1286. Unlike in the case at bar, the *BSG Tech* patent specification made clear that such databases predate the patent. *Id.* "Rather, the claim's 'focus' is guiding database users by presenting summary comparison information before they input data. It amounts to having users consider previous item descriptions before they describe items to achieve more consistent item descriptions. Whether labeled as a fundamental, long-prevalent practice or a well-established method of organizing activity, this qualifies as an abstract idea." *Id.* (citation omitted). That is, in contrast to Plaintiff's patents, the claims asserted in *BSG Tech* were not "necessarily rooted in computer technology" because they were not aimed at "a problem specifically arising in the realm of computer networks." *Id.* at 1286 (quoting *DDR*, 773 F.3d at 1257). Likewise, the *BSG* patent recited only "a database structure slightly more detailed than a generic database," *id.* at 1287, but Plaintiff's patents here disclose an entirely new network architecture and protocol. Noting that "the focus of BSG Tech's claims is unrelated to how databases function," the *BSG Tech* court compared its case with *Enfish* and *Visual Memory*: "The claims do not recite any improvement to the way in which such databases store or organize information analogous to the self-referential table in *Enfish* or the

court in Delaware held that certain patents concerning the transmission and storage of documents were invalid, reasoning that the steps recited in a representative system claim involved nothing more than a generic computer without any special programming. *Id.* at 564. That is unlike the instant case, in which the patents disclose a network architecture that improves on conventional systems and utilizes servers specially programmed to operate within that network. Although *Cloud Satchel*, 76 F. Supp. 3d at 563–64, considered this issue under *Alice* step two, the Federal Circuit has noted that "analysis of whether there are arguably concrete improvements in the recited computer technology" can take place at *Alice* step one. *See Enfish*, 822 F.3d at 1339.

adaptable memory caches in *Visual Memory*." *Id.* at 1288. As this court reads Plaintiff's asserted

claims, those claims—like those in *Enfish* and *Visual Memory* but unlike those in *BSG Tech*—do

"focus[ ] on improved ways in which systems store and access data." *Id.*

Finally, *Two-Way Media Ltd. v. Comcast Cable Commc'ns, LLC*, 874 F.3d 1329 (Fed. Cir.

2017), is distinguishable. At issue in that case were patents that "generally relate to a system for

streaming audio/visual data over a communications system like the internet." *Id.* at 1333. For

example, a representative claim recited:

> 1. A method for transmitting message packets over a communications
> network comprising the steps of:
>> converting a plurality of streams of audio and/or visual information
>> into a plurality of streams of addressed digital packets complying with the
>> specifications of a network communication protocol, for each stream,
>> routing such stream to one or more users,
>> controlling the routing of the stream of packets in response to
>> selection signals received from the users, and
>> monitoring the reception of packets by the users and accumulating
>> records that indicate which streams of packets were received by which
>> users, wherein at least one stream of packets comprises an audio and/or
>> visual selection and the records that are accumulated indicate the time that
>> a user starts receiving the audio and/or visual selection and the time that
>> the user stops receiving the audio and/or visual selection.

Id. at 1334–35 (quoting U.S. Patent No. 5,778,187). The Federal Circuit noted that this claim

"require[d] the functional results of 'converting,' routing,' 'controlling,' 'monitoring,' and

'accumulating records,' but does not sufficiently describe how to achieve these results in a non-

abstract way." *Id.* at 1337. As this court reads Plaintiff's asserted claims, in contrast, those claims

do describe the patented network architecture as well as components that enable the distributed

network to function, such as the redirect message. Similarly, unlike in *Two-Way*, 874 F.3d at

1338, where the asserted claims were not "directed to a scalable network architecture that itself

leads to an improvement in the functioning system," the claims asserted here are directed to a

network architecture, and the patents' specifications explain how that architecture improves on

prior systems.

Because the court has found that the asserted claims are not directed to an abstract idea under *Alice* step one, the court need not proceed to the second step of the *Alice* analysis. *Enfish*, 822 F.3d at 1339.

CONCLUSION

For the foregoing reasons, Defendant's motion to dismiss [36] is denied.

ENTER:

Date: March 23, 2020

REBECCA R. PALLMEYER
United States District Judge