

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE, INC.,

Petitioner

v.

KOVE IO, INC.,

Patent Owner

IPR2024-01019
U.S. Patent 7,814,170

PATENT OWNER'S PRELIMINARY RESPONSE

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PATENT OWNER'S EXHIBIT LIST

Exhibit	Description
2001	Declaration of Dr. Michael T. Goodrich In Support of Patent Owner's Preliminary Response
2002	Declaration of Nancy Adams, EdD
2003	Curriculum Vitae of Nancy Adams, EdD
2004	Website for ETH Zürich Research Collection - ETH Zürich Jahresbericht 1993 (available at https://www.research-collection.ethz.ch/handle/20.500.11850/643838)
2005	ETH Zürich, <i>Jahresbericht</i> (1993)
2006	Website for ETH Zürich Research Collection - Distributed file organization with scalable cost/performance (available at https://www.research-collection.ethz.ch/handle/20.500.11850/68912)
2007	Metadata of Distributed File Organization With Scalable Cost/Performance in the ETH Zurich repository (available at https://www.research-collection.ethz.ch/handle/20.500.11850/68912?show=full)
2008	ETH Zurich Library Online Catalog Search Results
2009	ETH Zurich Library Online Catalog Search Result for Jahresbericht – Eidgenössische Technische Hochschule
2010	Marc Record for Jahresbericht – Eidgenössische Technische Hochschule (available at https://eth.swisscovery.slsp.ch/discovery/fulldisplay?docid=alma99117224951305503&context=L&vid=41SLSP_ETH:ETH&lang=en&search_scope=DiscoveryNetwork&adaptor=Local%20Search%20Engine&tab=discovery_network&query=any,contains,1015-4191&mode=basic)
2011	Certified English Translation of ETH Zürich, <i>Jahresbericht</i> (1993)
2012	Norrie et al., <i>The Database Research Group at ETH Zurich</i> (available at https://dl.acm.org/doi/pdf/10.1145/181550.181567)
2013	Joint Claim Construction Chart in <i>Kove IO, Inc. v. Amazon Web Services, Inc.</i> , Case No. 1:18-cv-08175 (N.D. Ill. May 29, 2020) (Dkt. 382)
2014	Reexam Decision in <i>Ex Parte</i> Reexamination No. 90/014,552

I. INTRODUCTION

The Petition falls well short of demonstrating a reasonable likelihood of prevailing on its challenge to any claim of U.S. Patent No. 7,814,170 (“’170 patent”).

The Petition challenges all 17 claims of the ’170 patent on a single ground: that the claims are unpatentable as obvious over Kahn (EX1005) in view of Vingralek (EX1007). Every argument in the Petition therefore relies on Vingralek qualifying as pre-AIA § 102(b) prior art. It does not. Petitioner provides incorrect and insufficient evidence that Vingralek was publicly accessible before the ’170 patent’s critical date. Without Vingralek, the Petition fails as a matter of law.

Even if the Board were to find that Petitioner has shown that Vingralek qualifies as prior art, the Petition nevertheless fails for other independent reasons. In particular, claims 1-5 include the limitation, “*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.*” Petitioner relies on Kahn alone as teaching a portion of this limitation, and on the combination of Kahn and Vingralek for the rest. Both theories are wrong. Kahn openly acknowledges that its system cannot do what Petitioner cites it for, and combining Kahn with Vingralek compounds the error, not cures it.

The remaining claims 6-17 recite a “*redirect message*” limitation which requires that the location server receiving a client’s location query, return to the

client a message that includes the identity of the location server that contains the requested information. Neither Kahn, Vingralek nor their combination teach or render obvious this limitation.

Should the Board decide to institute trial, additional deficiencies in the Petition may be addressed.¹ However, the above-described flaws are fatal to Petitioner meeting its burden for institution under 35 U.S.C. §314(a). Accordingly, Patent Owner Kove respectfully submits that the Board should exercise its discretion to deny institution.

II. RELATED MATTERS

The '170 patent is among the patents asserted against Petitioner (Google) in the matter *Kove IO, Inc. v. Google LLC*, Case No. 1:23-cv-04244 (N.D. Ill.). In another related litigation, claims 1 and 2 of the '170 patent were asserted against Amazon Web Services in *Kove IO, Inc. v. Amazon Web Services, Inc.*, Case No.

¹ This Response focuses on certain limitations of the challenged claims and presents arguments for why the Petition should not be instituted due to the specific deficiencies in the Petition described herein. However, the Petition fails to establish that the challenged claims are invalid for additional reasons, and Patent Owner reserves the right to present additional evidence and arguments if the Petition were instituted.

1:18-cv-08175 (N.D. Ill.). In that matter, which was tried before a federal jury in April of 2024, Amazon dismissed all of its invalidity defenses with prejudice, and the jury found infringement of all asserted claims. The court denied Amazon's motion for judgment as a matter of law and request for a new trial. The case is currently on appeal.² Amazon also filed an IPR challenging a related patent, U.S. Patent No. 7,233,978 (IPR2020-00276), where institution was denied. The '170 patent was also subjected to a concluded *ex parte* reexamination: No. 90/019,035, where claims 1, 2, 6, 8, 9, 12, and 15 were confirmed. The '170 patent is pending in a second *ex parte* reexamination No. 90/019,165, where questions of patentability were raised regarding claims 1, 2, 6, 8, 9, 12, and 15 and reexamination was ordered in March 29, 2023. No office action has been issued.

III. BACKGROUND

The '170 patent is a continuation of, and shares the same specification as, its parent, U.S. Patent No. 7,130,640 ("'640 patent") (which is the subject of parallel petitions before this Board IPR2024-01017 and IPR2024-01018).

A. Overview of the '170 Patent

Drs. John Overton and Stephen Bailey, co-inventors of the '170 patent (EX1001), developed breakthrough distributed data storage technology while studying at the University of Chicago in the 1990s. By 1998, the inventors of the

² 24-2350 *Kove IO, Inc. v. Amazon Web Services, Inc.*

'170 patent recognized that data would grow so fast that storing and retrieving it reliably and efficiently would require a new and better way of doing things. The inventors founded a company to commercialize their inventions, which enabled high-performance, hyper-scalable distributed storage, years before the advent of the cloud. While that technology was ahead of its time commercially, Dr. Overton later went on to develop adjacent technologies for his company Kove IO, which is the Patent Owner. Kove's patented distributed storage innovations addressed the challenges of efficiently storing and retrieving location information for massive amounts of data across distributed servers, enabling the scalable distributed storage systems that are ubiquitous today. Goodrich Decl. (EX2001), ¶¶38-40.

The '170 patent describes an innovative system for efficiently managing and retrieving data stored across a distributed computing network. In large-scale distributed data collections, data may be spread across many different data repositories. Locating and retrieving the data associated with a particular entity can be challenging in such environments. The '170 patent teaches techniques to efficiently separate the "what" (i.e., the data itself) from the "where" (i.e., the location of the data). EX2001, ¶38.

The '170 patent teaches that, for example, data entities are stored in data repositories, where each data entity is associated with a unique identifier. EX1001, 4:10-12, 35-37. ("An 'identifier string' or an 'identifier' is a unique string with

which zero or more location strings are associated in an NDTP server. ... NDTP defines an entity key (or “identifier”) as a unique string used to refer to an entity about which a distributed query is performed”). A network of data location servers stores the mappings between identifiers and the locations of the corresponding data in the data repositories. *See, e.g., id.*, 3:19-21 (NDTP servers “maintain a mapping between entity identifiers and data locations.”) The patent further teaches that it is expected that the list of data location servers may change over time. *Id.*, 16:22-27; EX2001, ¶39.

As explained *infra* §V, this Preliminary Response focuses on the independent claims of the ’170 patent: claims 1, 6, and 15, where claim 15 is addressed with the same arguments as claim 6 in the Petition. A brief overview of exemplary embodiments taught by the ’170 patent in connection to claim 1 and claims 6 and 15 is provided below.

B. Overview of the Challenged Claims

Towards the latter half of the 1990’s, data storage was still relatively manageable. Most data could be stored locally, on local drives, compact discs (CDs) or disk drives. Single servers were often sufficient for data storage needs. Not long thereafter, the amount and size of data began increasing, soon reaching exponential rates. Networking became ubiquitous and storing data in single servers became

impractical if not impossible. This paved the way for distributed data collection environments. EX2001, ¶¶41-52.

Distributed data collection involves storing data stored and retrieved among multiple databases or data repositories connected by a network. Conventional distributed data collection environments maintained a static relationship of data and its location. In this regard, conventional distributed data collection environments maintained a static relationship of data and its location. Every time data moved from one location to the next, all of the systems that maintained the static relationship had to be updated. As a result, while conventional distributed data collection environments allowed for dispersed storage, doing so made reliably locating and retrieving the data challenging, particularly where data is added or removed dynamically. EX1001, 1:37-41; EX2001, ¶41.

The Inventors concluded that conventional systems were fundamentally limited in the types of searches that could be performed and the forms of data returned based on the search. EX1001, 1:43-53. For example, the '170 patent states, "One example is where a client requests files based on a subject, like a person's name. In the search results, therefore, only text files of peoples' names may be retrieved. Another problem in current retrieval systems is that the client may receive text and image files in the search results, but could not seamlessly access the image files. Yet another problem in current retrieval systems is that video and sound files

related to the request may not even be found in the search results. For example, a doctor might be able to retrieve medical records on a specific patient, but cannot view an MRI or X-Ray results associated with that record.” EX1001, 1:47-57; EX2001, ¶42.

The Inventors addressed the limitations of pre-existing systems in the ’170 Patent in two foundational ways. First, the ’170 patent teaches separating the data location information from the data itself. *See e.g.*, EX1001, 1:64-67, 20:17-21, Fig. 11. Second, the ’170 patent teaches organizing data location information in location servers such that every location server is configured to either identify another location server that has the requested information or enable the client device to calculate the location of the data location information (if the first location server does not itself have the requested information – if it does, it simply returns that to the client), as provided by claims 1, 6, and 15. EX2001, ¶43.

1. Claim 1

Claim 1 recites:

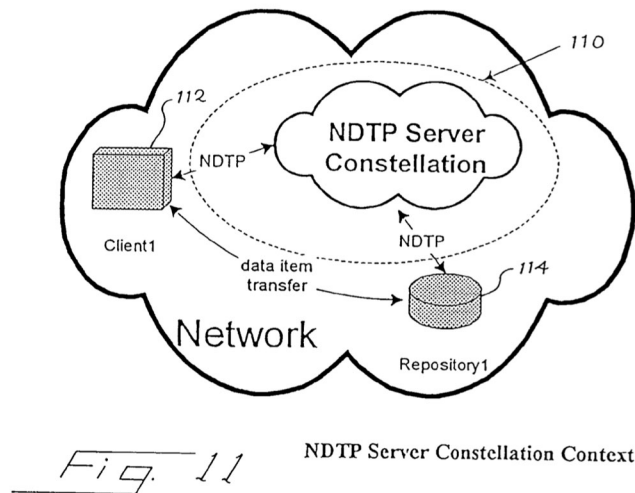
1. A system for managing data stored in a distributed network, the system comprising:

[1.a] a data repository configured to store a data entity, wherein an identifier string identifies the data entity; and

[1.b] 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.

EX1001, cl. 1.

Fig. 11 of the '170 patent shows an exemplary schematic of the system described by claim 1:



As Fig. 11 shows, the '170 patent teaches a network distributed tracking protocol (NDTP) system with features that include:

- A data repository that stores data entities, where each data entity is identified by an identifier string. As the patent explains, “NDTP defines an entity key (or ‘identifier’) as a unique string used to refer to an entity about which a distributed query is performed.” *Id.*, 5:33-35; *see also, id.*, 5:36-38 (“The NDTP server treats the entity key as an unstructured stream of octets, which is assumed to be unique to a particular entity.”). The '170 patent further describes that, for example, “the NDTP entity key might be a unique customer identifier, for example, a Social Security Number. . . .” *Id.*, 4:43-45; EX2001, ¶44-45.

- A data location server network with a plurality of data location servers that store the mapping between identifier strings and the locations of the corresponding data in the data repositories. Data location information is distributed across the

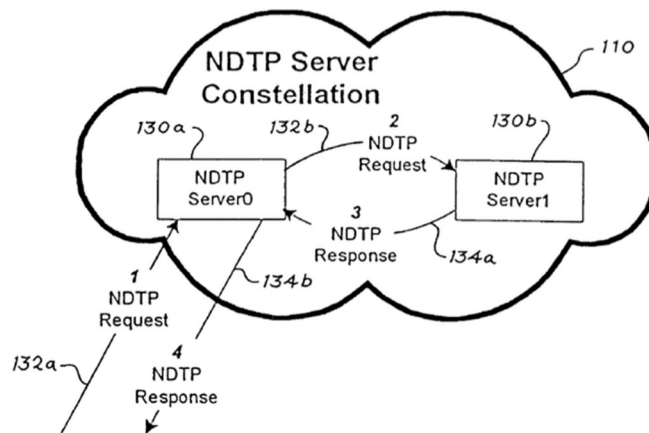
location servers based on a hash function. As described in the patent, “NDTP servers maintain a mapping between entity identifiers and data locations.” EX1001, 20:23-25); *see also id.*, 20:40-45 (“Those skilled in the art will note that the invention provides for the management and manipulation of indices and their associated relationships. Even more importantly, it is the manipulation of dynamic and spontaneous relationships between indices and locations, not the indices and locations, that is the core significance.”); EX2001, ¶44-45.

- The use of a hash function to index and organize the mapping of identifier strings to their corresponding data locations. *See, e.g.*, EX1001, 15:12-49 (describing the use of a hash function). The ’170 patent describes how the hash function makes the location server system scalable, even as the number of data entities being stored becomes massive. *See, e.g., id.*, 19:6-8. The patent further teaches that it is expected that the identifier string is identified at the time the protocol is implemented, but that the list of data location servers may change over time. *Id.*, 16:4-13; EX2001, ¶44-45.

- The ability for every data location server in the network to apply the hash function to an identifier string to precisely determine where to route mapping queries. As explained above, the ’170 patent teaches using a hash function to distribute the location information across distributed NDTP servers. Notably, the ’170 patent further teaches that the hash function and, if used, hash table, are

specifically designed to correctly identify the necessary location server for a client request. *See, e.g., id.*, 15:40-42; EX2001, ¶44-45.

The '170 patent thus teaches exemplary embodiments in which each NDTP server is able to apply the hash function to identify the server that contains requested data location information. Fig. 13, for example, shows a “Server-Centric Constellation” embodiment in which the first NDTP server (“NDTP Server0”) has the ability to direct an incoming NDTP request to the correct second server (NDTP Server1), which subsequently returns an NDTP response that can be returned to the querying client. *Id.*, 18:33-41. Fig. 13 of the '170 patent is shown below:



NDTP Server-Centric Constellation

EX001, FIG. 13; EX2001, ¶46.

2. Claims 6 and 15

Claim 6 and claim 15 describes a system in which, if a location server receives a location query but does not have desired location information, that queried location

server returns a “redirect message” to the client with information to find the location server that does contain the location information. For example, claim 6 states:

6. A system for managing data location information and providing the data location information in response to location queries, the system comprising:

[6.a] a location server configured to receive a location addition request, the location addition request formatted in conformance with a transfer protocol, the location addition request comprising an identifier and at least one location to associate with the identifier, wherein the identifier identifies an entity and wherein each of the at least one location specifies a location of data in a network pertaining to the entity;

[6.b] wherein the location server includes a processor; and

[6.c] programming logic stored on the location server, wherein the programming logic is configured to return, in response to a location query related to a desired entity, a location message, the location message in conformance with the transfer protocol and comprising at least one location associated with the desired entity, wherein the programming logic is further configured to return the location message if the location server contains location information for the desired entity, and *wherein the programming logic is further configured to return a redirect message if the location server lacks the location information for the desired entity, the redirect message*

comprising a list of at least one other location server known to have the location information for the desired entity.

The portion of element [6.c] regarding a “redirect message” is substantively representative of claim 15 as well and is the focus of the issues in dispute for these claims. EX2001, ¶47.

The ‘170 patent teaches several ways clients can request location information associated with an identifier string, where each request has a corresponding response message returned by the server receiving the request. *Id.*, 6:32-34. An example of NDTP protocol requests and responses are depicted in Figure 1:

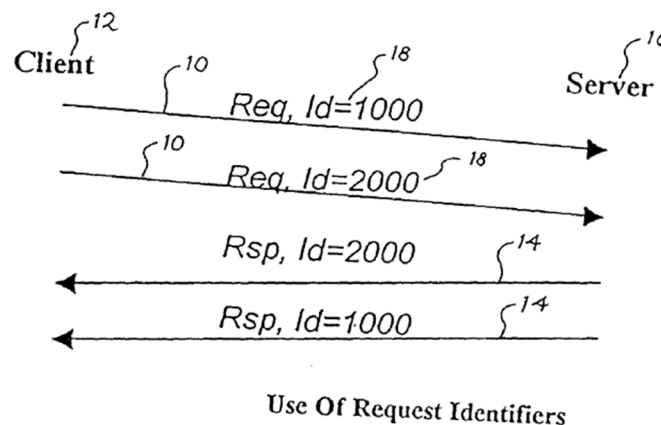
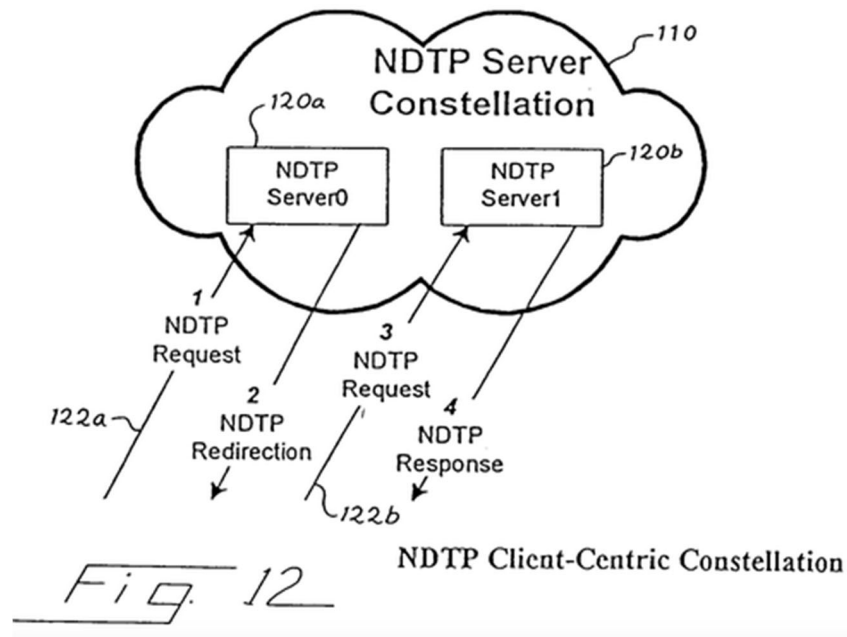


Fig. 1

Id., Fig. 1; EX2001, ¶48.

Also as relevant to the challenged claims, the '170 patent teaches an implementation illustrated by the “NDTP Client-Centric Constellation” schematic shown in Fig. 12:



EX1001, Fig. 12. In this client-centric approach, a client (not shown) may send a request (1 NTDP Request) to a server (NDTP Server0) in the network, requesting data. If Server0 does not have the requested data, it sends back an “NDTP Redirection” response, or **redirect message** (2 NDTP Redirection), to the client. The client uses the information contained in the redirect message to send the request to another server (NDTP Server1) that is expected to have the requested data. Server1 sends the requested data back to the client (4 NDTP Response). *Id.*, 17:27-37. In particular, the specification teaches:

[the] second NDTP redirection mechanism uses a NDTP_RDR_RSP message to indicate that the server 120 *a* to which the NDTP request 122 *a* was directed does not contain any of the location strings associated with the identifier string supplied in the NDTP request 122 *a*. **The NDTP_RDR_RSP message contains all the information required for the originator of the NDTP request 122 *a* [i.e., the client] to reissue the original NDTP request 122 *b* to a different NDTP server 120 *b* that does have location strings associated with the identifier string supplied in the NDTP request 122 *b*.**

Id., 17:61-18:3. The specification repeatedly and consistently teaches that a client may query a server in the network, and that queried server will provide a response back to the client. *Id.*, 2:38-42; 2:62-65; 3:3-6; 4:17-20; 4:31-35; 6:36-49; 9:41-46; 11:66-12:2; 13:4-8; 14:63-67; 17:3-6; 17:31-34; 17:65-18:3; 18:35-48. In sum, the patent teaches that responses to client queries always come from the queried server. This provides an efficient way for client requests to be serviced by “redirecting” the client’s query to the correct server if the storage of the sought-after information has changed from the queried server to a different server. EX2001, ¶49-51.

Claims 6 and 15 contain the “redirect message” limitation. The system of claim 6 requires “programming logic” stored on a location server, “wherein the programming logic is further configured to return a ***redirect message*** if the location

server lacks the location information for the desired entity, the redirect message comprising a list of at least one other location server known to have the location information for the desired entity.” Similarly, the method of claim 15 requires, “sending a *redirect message* to the client in response to determining the one of the plurality of location servers fails to include the location information, the redirect message identifying which of the plurality of location servers includes the location information.” EX1001, 22:44-48; EX2001, ¶52.

The '170 patent describes two ways the necessary information for redirection may be provided: First, the redirect message can include a data location server table. The client then uses a hash function on the identifier string and server table to calculate the location of the correct server. *Id.*, 14:56-15:34. Second, the redirect message can include a transmitted function that the client applies to the identifier string to calculate the location (URL) of the correct data location server *Id.*, 15:35-16:3. In both cases, the data location server that received the query (and was the incorrect data location server) directly sends the redirect message to the client. *Id.*, 14:48-55.

The importance of client redirection to the correct server via information in the redirect message was underscored in a reexamination proceeding involving the '170 patent's parent, the '640 patent (Reexam No. 90/014,552), which identified this

feature as crucial to the patents' redirect message-based claims, citing to the patent's prosecution history:

This limitation was also the focus of the Applicant's remarks filed in response to the 2/9/05 Office action. The Applicant argued, "Referring to claim 24, when a user enters a request at a client for data at a first client, the data query includes an identifier string (e.g. a file name or URL) and expects to receive information (a location string) on where the data corresponding to that filename resides. ...During this navigation process, if a data location server does not possess the sought after location string, it transmits a redirect message back along the communication path the data location request traveled to the first client. The redirect message that is sent back to the first server contains information with which the first client is configured to determine a location of a second data location server that does contain the sought after location string. In other words, the redirect message allows the first server to calculate a new data location server address so that the first server "redirects" its query to the right data location server.

...Similarly, the method of claim 33 also includes includes [sic] the feature of redirection, however claim 33 addresses a more simplified scenario such as shown in FIG. 12, where there are not

necessarily any intervening devices between the client and the data

location servers.”

EX2014, 13-14 (quoting the August 11, 2005 Response to Office Action at 11 for the underlying application of the ’640 patent). The reexamination proceedings and prosecution history further confirm that the ’170 patent’s redirect message provides the client the information necessary to determine the data location server expected to have the sought-after information and redirect its query to that server. EX2001, ¶53-54.

C. The Petition and Patent Owner’s Preliminary Response

The Petition challenges all 17 claims of the ’170 patent based on the single ground that each claim is obvious over Kahn in view of Vingralek. Claims 2-5 depend from claim 1, claims 7-14 depend from claim 6, and claims 16 and 17 depend from claim 15. Petitioner’s arguments for claim 15 refer back to those made for claims 1 and 6. *Id.* Accordingly, this Preliminary Response focuses on Petitioner’s arguments for claims 1 and 6. If Petitioner cannot prevail on the independent claims, it cannot prevail on the dependent claims.

This Preliminary Response focuses on the limitations in claim 1 that require each data location server in the data location server network be configured to determine which data location server stores the sought-after location information of a data entity (“each one of the data location servers is configured to determine the at

least one of the plurality of data location servers”). The claim recites that this is accomplished by applying a hash function to the identifier string identifying the data entity (“based on the hash function applied to the identifier string”). For the reasons below, the Petitioner fails to demonstrate a reasonable likelihood of prevailing on its burden of proving that Kahn, in view of Vingralek, renders these limitations obvious.

This Preliminary Response further focuses on the limitations present in independent claims 6 and 15 that require a “redirect message,” including *(i)* which server is responsible for transmitting the redirect message (“if the location server lacks the location information for the desired entity” (claim 6) and “sending a redirect message to the client in response to determining the one of the plurality of location servers fails to include the location information”(claim 15)), *(ii)* what information the redirect message must contain (“the redirect message comprising a list of at least one other location server” (claim 6) and “the redirect message identifying which of the plurality of location servers” (claim 15)). For the reasons below, the Petition fails to demonstrate a reasonable likelihood of prevailing on its burden of proving that the challenged claims’ “redirect message” limitations are rendered obvious by Kahn in view of Vingralek.

Moreover, Petitioner has not qualified Vingralek as prior art under pre-AIA 35 U.S.C. §102(b), making it an improper reference. A determination that Vingralek is not qualified prior art is dispositive of Ground 1.

The deficiencies in the Petition and failure to show reasonable likelihood of success are equally applicable to all challenged claims. Therefore, the reasons explained below for Ground 1 of the Petition is unavailing are sufficient to show that the Petition has failed to demonstrate a reasonable likelihood of success on any challenged claim, and trial should not be instituted.

IV. LEVEL OF ORDINARY SKILL

Petitioner sets forth a level of ordinary skill. Pet., 4. Patent Owner reserves the right to dispute Petitioner's definition if an IPR is instituted. For present purposes, this Preliminary Response establishes that Petitioner's arguments fail even under its preferred definition of the level of ordinary skill.

V. LEGAL STANDARDS

Before instituting an inter partes review (IPR), the Director must determine, based on the parties' submissions, whether "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." *SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1361 (2018) (quoting 35 U.S.C. §314(a)). The burden rests with the petitioner to demonstrate "a reasonable likelihood that at least one of the claims challenged in the petition is unpatentable." 37 C.F.R. §42.108.

When evaluating the reasonable likelihood of success, "[n]ot every factual contradiction rises to the level of a genuine issue of material fact at the preliminary

stage of a proceeding.” Consolidated Practice Trial Guide at 50-51. Moreover, “[t]he mere existence in the record of dueling expert testimony does not necessarily raise a genuine issue of material fact.” *Mortgage Grader, Inc. v. First Choice Loan Servs. Inc.*, 811 F.3d 1314, 1325–26 (Fed. Cir. 2016) (cited by the Consolidated Practice Trial Guide. For example, in *Honda Motor Co., Inc. v. Neo Wireless LLC*, IPR2023-00797, Paper 29 at 21-22 (PTAB Sept. 3, 2024), the Board denied institution where the patent owner submitted an expert declaration with its preliminary response that effectively countered the petitioner’s obviousness argument.

The petitioner also has the obligation to clearly set forth the basis for its challenges. See *Harmonic Inc. v. Avid Tech. Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. §312(a)(3), which requires IPR petitions to “identify with particularity . . . the evidence that supports the grounds for the challenge to each claim”). A petitioner may not introduce new evidence or arguments during the trial, including in papers filed after institution to remedy defects in its original petition. *SAS Inst.*, 138 S. Ct. at 1355; see also *Koninklijke Philips N.V. v. Google LLC, et al.* 948 F.3d 1330 (Fed. Cir. 2020) (holding “[I]t is the petition, not the Board’s ‘discretion,’ that defines the metes and bounds of an inter partes review.”) Furthermore, “the Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond.” *In re*

Magnum Oil Tools Int’l, Ltd. 829 F.3d 1381 (Fed. Cir. 2016). The Petitioner is the “master of the complaint” and may not reserve new theories to the reply. *Yita LLC v. MacNeil IP LLC*, 69 F.4th 1356, 1367 (Fed. Cir. 2023); *see also Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1367 (Fed. Cir. 2015) (holding that “a challenge can fail even if different evidence and arguments might have led to success”); *Intelligent Bio-Sys. Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (quoting 37 C.F.R. §42.23(b) (“All arguments for the relief requested in a motion must be made in the motion. A reply may only respond to arguments raised in the corresponding opposition or patent owner response.”)).

When alleging obviousness, a petition must provide a clear explanation of how specific references could be combined, the elements from each reference that would result in a predictable outcome, and how any proposed combination addresses the claims at issue. *ActiveVideo Networks, Inc. v. Verizon Commc’ns Inc.*, 694 F.3d 1312, 1327-28 (Fed. Cir. 2012); *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1051 n.14 (Fed. Cir. 2016) (en banc) (“Of course, concluding that the references are within the scope and content of the prior art to be considered for obviousness does not end the inquiry.”). Obviousness must not rely on hindsight; the petitioner must establish a rational motivation to combine references and show that the combination would have been within the skill of a person of ordinary skill in the art. *Personal Web Techs. v. Apple, Inc.*, 848 F.3d 987, 993 (Fed. Cir. 2017). The Petition must

articulate “some articulated reasoning with some rational underpinning” to support its proposed obviousness ground. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418, 127 S. Ct. 1727, 1741 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

VI. CLAIM CONSTRUCTION

Petitioner identifies certain claim constructions that were either construed in a previous IPR proceeding concerning a patent in the same family as the ‘170 patent (EX1022) or during a recent District Court litigation involving the ‘170 patent and related patents (EX1024, 1025). Pet., 8-11. These constructions are consistent with reexamination proceedings involving the ’170 patent and its related patents, including claims similar to those at issue in this proceeding. *See e.g., See generally* EX1024, EX1025, EX1037, EX1039; EX2001, ¶66. During proceedings before the Board, District Court, and Patent Office, the constructions were found to be consistent with the intrinsic record of the ’170 patent. Kove believes, and Petitioner does not dispute, the applicability of constructions determined in previous IPR and district court litigation proceedings, as set forth in part in the Petition. Pet., 9-11. For ease of reference, the relevant constructions are:

’170 Patent Terms	AWS Proceeding/IPR Construction
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identifier ³	a unique encoding that identifies an individual entity, and with which zero or more data location specifiers are associated in a location server (EX1022, 13) a unique encoding that identifies an individual entity, and with which zero or more data location strings are associated in a location server (EX2013, Exhibit B, 3)
location information	information pertaining to one or more locations of data and/or the identities of one or more location servers (EX1024, 35)

³ Patent Owner agrees with Petitioner that “identifier,” “identification string,” and “identifier string” are used interchangeably in the ’170 Patent, and that the terms are used in substantially the same manner as the ’978 patent. Pet., n 5. For completeness, Patent Owner includes the construction of “identifier” adopted by the Court in the AWS Proceeding, which differs by a single word (*strings*) but which does not substantively alter the construction from the IPR Construction.

location server	a network-attached component that maintains a set of identifier/location mappings that are modified or returned in response to location request messages from clients (EX1024, 35)
client	a network-attached component (which may be software or hardware) that initiates update or lookup of identifier/location mappings from a location server with location request messages (EX1024, 35)
plurality of location servers	location servers in non-hierarchical structures (EX1025, 19)

VII. GROUND 1 - OBVIOUSNESS OVER KAHN AND VINGRALEK

The Petition, which argues that the challenged claims are obviousness in view of Kahn in combination with Vingralek, fails to demonstrate a reasonable likelihood that the claims are unpatentable. As a threshold matter, the Petition does not establish that Vingralek is prior art under pre-AIA 35 U.S.C. §102(b). Vingralek also does not cure Kahn's deficiencies because it fails to disclose a "redirect message" in accordance with the claims' requirements. The Petition also fails to

demonstrate that a POSITA would have had a reasonable a motivation to combine Kahn with Vingralek, as well as a reasonable expectation of success in combining them to achieve the claimed invention.

A. Vingralek Is Not Prior Art

To qualify as printed publication prior art under pre-AIA 35 U.S.C. §102(b), Vingralek (EX1007) must have been publicly available prior to July 8, 1998, the priority date of the '170 patent. Petitioner bears the burden of demonstrating a reasonable likelihood of such public availability. As detailed in the accompanying declaration of Nancy E. Adams, an expert in library cataloging, classification, and searching, confirms, Petitioner has failed to carry its burden. EX2002, ¶¶ 14-40.

A reference is considered publicly accessible if it was “disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it.” *Blue Calypso, LLC v. Groupon, Inc.*, 815 F.3d 1331, 1348 (Fed. Cir. 2016). Whether a particular reference qualifies as a printed publication is determined on a case-by-case basis. *In re Cornyn*, 890 F.2d 1158, 1161 (Fed. Cir. 1989) (internal quotations omitted). Petitioner’s burden for institution is to “identify, with particularity, evidence sufficient to establish a reasonable likelihood that the reference was publicly accessible before the critical date of the challenged patent and therefore that there is a reasonable likelihood that it qualifies as a printed publication.” *Hulu, LLC*

v. Sound View Innovations, LLC, IPR2018-01039, Paper 29 at 13 (PTAB Dec. 20, 2019) (precedential).

Petitioner offers two theories in support of Vingralek's alleged public availability: (1) that Vingralek was included in a December 1993 *Jahresbericht* (Annual Report) that was purportedly catalogued and indexed by libraries (Ex. 1020, ¶¶50, 51, 54) and (2) that Vingralek was mentioned in an article by Norrie that was purportedly published in 1994 (Ex. 1015). Neither theory is availaing: (1) the December 1993 Annual Report *does not* include Vingralek and is therefore irrelevant, EX2002, ¶¶ 20-21, EX2005, EX2011; and (2) Vingralek's mention in Norrie is not evidence of public availability because the two papers originated from the same department in the same university around the same time and share a common author, making it likely that Vingralek was known to Norrie personally, *id.*, ¶¶ 34-40, EX2012. Personal knowledge is not a sufficient indicator of public availability.

1. The Hall-Ellis Declaration Fails to Establish Vingralek's Public Availability Before the Critical Date

The copy of Vingralek provided as Ex. 1007 is an electronic file that was not available until 2017, which is years after the '978 patent's July 1998 priority date. EX2002, ¶¶ 23-25, EX2006, EX2007. To overcome this, Petitioner's declarant, Dr. Hall-Ellis, alleges Vingralek's public availability is tied to the publication of a different document – a 1993 Annual Report that she contends was catalogued by

various libraries around that time. EX1020, ¶46 (“The Vingralek article was published on pages 3-26 in Volume 207 dated December 1993 of the open access *Jahresbericht* [Annual Report] issue of the journal *Eidgenössische Technische Hochschule* [Federal Technical University] Zürich (ETH Zürich) and was found in the digital repository Zeitschriftendatenbank [German Union Catalog of Serials] (ZBD) (Berlin, Germany).”⁴ But the Annual Report (which was not included in Dr. Hall-Ellis’ Declaration but which was readily available on a website she identified) does not actually include Vingralek, making the Annual Report not relevant evidence of Vingralek’s public availability. EX2002, ¶¶ 20-21, EX2005, EX2011.

a. Vingralek Bears No Indicia of Public Availability and Was Never Part of a December 1993 *Jahresbericht*

Vingralek EX1007 does not contain any indicia evidencing a date of public availability. EX2002, ¶¶ 15- 16. The exhibit’s cover page bears a “Publication date” of “1993” but no corroborating indication of public accessibility. EX1007, 1. The second page has a date of December 1993, and the third page has a “© 1993.” *Id.*,

⁴ The terms *Jahresbericht* and Annual Report are used interchangeably herein and refer to the December 1993 copy of the open access *Jahresbericht* issue of the journal *Eidgenössische Technische Hochschule* Zürich (ETH Zürich) Dr. Hall-Ellis identifies in paragraph 46 of her Declaration (EX1020).

2-3. Copyright and publication dates alone are not sufficient indication of public availability under §102(b).

For example, in *Sophos v. Open Text*, IPR2023-00731, the Board held that “[s]imply pointing to a date, alleged to be a ‘publication date,’ even where that date cascaded through various patent references, without interpretation or explanation, does not meet the threshold standard to show that it is reasonably likely that a reference was publicly accessible on that date.” Paper 23 (PTAB Nov. 2, 2023) (quoting *In-Depth Geophysical, Inc. v. ConocoPhillips Co.*, IPR2019-00849, Paper 17 at 5 (PTAB Mar. 30, 2020)). Dr. Hall-Ellis was also the declarant in the *Sophos* proceeding, and the Board found that “Petitioner and Dr. Hall-Ellis rely on nothing more than speculation that [the reference] was publicly accessible in the relevant time frame.” *Id.* at 19. The same is true here – Dr. Hall-Ellis “simply points to” the December 1993 date and speculates, without anything more, that Vingralek became publicly accessible around that time.⁵ Ex. 1020 ¶46. That is not enough.

⁵ Dr. Hall-Ellis’s opinion of Vingralek’s public availability around December 1993 is even more questionable in view of the fact the References section at the end of Vingralek cites to a paper from 1994, the year *after* Vingralek allegedly became publicly available. EX1007, 26 (“[HW94] Y. Huang, O. Wolfson, Object Allocation in Distributed Databases and Mobile Computers, Data Engineering Conference,

Overall, Exhibit 1007 bears no indication of whether or when it was made publicly available, either as a standalone document or as part of any other publication, including a *Jahresberich*. EX2002, ¶¶ 14-17.

Dr. Hall-Ellis explains that she downloaded Exhibit 1007 from a particular webpage.⁶ EX1020, n. 20. Included at the bottom of that webpage is a “Show all metadata” hyperlink that identifies the paper availability date as 2017, nearly two decades after the 1998 priority date. EX2002, ¶¶ 23-25, EX2006, EX2007.

Distributed file organization with scalable cost/performance	
dc.contributor.author	Vingralek, Radek
dc.date.accessioned	2017-11-17T14:34:28Z
dc.date.available	2017-06-10T18:45:16Z
dc.date.available	2017-11-17T14:34:28Z

Houston, 1994.”). A paper that was supposedly available in 1993 could not have cited to a paper that did not yet exist.

⁶ Dr. Hall-Ellis does not claim any personal knowledge of when Vingralek was first published or became publicly available. Her opinions appear to be based solely on her review of online databases (presumably around the time she prepared her declaration).

Dr. Hall-Ellis made no mention of metadata or the 2017 date in her declaration.⁷

Dr. Hall-Ellis included Attachments 1A-1D to her declaration as evidence supporting her opinion that Vingralek was publicly available around December 1993. All of the attachments relate to the Annual Report that she contends contains Vingralek. Ex. 1020, ¶46. Attachment 1A is supposedly “the web page where Vingralek is found on ZDB.” Ex. 1020, ¶46. Attachment 1A, however, relates to the “Jahresbericht / ETH, Eidgenössische Technische Hochschule Zürich” serial generally, but does not describe any individual articles published within it; that is not its purpose. EX2002, ¶ 27. Attachment 1A also identifies that the journal was published in German, not English. *Id.* Neither Vingralek nor a “volume 207” is mentioned anywhere in Attachment 1A. *Id.*, ¶¶ 18, 27.

Dr. Hall-Ellis claims Attachment 1B is “the MARC record for the open access *Jahresbericht* [Annual Report] of the journal *Eidgenössische Technische Hochschule* [Federal Technical University] Zürich in the ETH Zürich Library online

⁷ The Board has denied institution where a petitioner relied on a website without further evidence that it was a “true and correct copy” as of a date before the priority date of the patent at issue. *See I-Blason LLC v. Aevoe Corp.*, IPR2016-00231, Paper 6 at 14-15 (PTAB May 8, 2016); *Next Step Group, Inc. v. Deckers Outdoor Corp.*, IPR2024-00164, Paper 16 at 13-14 (PTAB Aug. 6, 2024).

catalog,” and cites to a link at footnote 21. Ex. 1020, ¶49, n.21. Attachment 1B, however, does not connect Vingralek to the *Jahresbericht ETH Zurich* publication and does not provide any evidence that Vingralek was published in the *Jahresbericht*. In fact, there is no support for Dr. Hall-Ellis’s statements that Attachment 1B is the true and correct copy of the MARC record for the print copy of *Jahresbericht ETH Zurich 1993*, where she claimed Vingralek was published. EX2002, ¶¶28-31, EX2008-EX2010.

Attachment 1C, which Dr. Hall-Ellis states is a “copy of the MARC record for the journal *Eidgenössische Technische Hochschule* [Federal Technical University] Zürich obtained from the OCLC bibliographic database” (Ex. 1020, ¶52), also does not provide any link between Vingralek and the Annual Report of ETH Zurich. Attachment C, which also references a German language publication (EX2002, ¶18), contains no information regarding the existence of a “volume 207” or any particular articles or authors.

Finally, Attachment 1D is the site where Dr. Hall-Ellis says the *Jahresbericht* journal can be found, according to the WorldCat database. Again, Attachment D relates to a German language publication and does not mention Vingralek or any article, author, or volume. EX2002, ¶¶18, 28-33.

Curiously, Dr. Hall-Ellis never includes a copy of the December 1993 Annual Report, even though the report can be found in the ETH Zürich digital repository

identified in her declaration.⁸ Ex. 1020, ¶¶47-48, n. 19, 20. In particular, searching for “*Jahresbericht ETH Zurich*” at <https://www.research-collection.ethz.ch>⁹ returns 51 results, which, when filtered by date range from “1990-1999” yields 10 results, one of which is the 1993 Annual Report. EX2002, ¶19. Per Dr. Hall-Ellis, this issue supposedly contains the Vingralek article. It does not. EX2002, ¶¶20-22.

The 1993 Annual Report (EX2005) is a document written entirely in German, whereas Vingralek (EX1007) is written entirely in English. EX2002, ¶¶18-19. It ***does not*** contain the Vingralek article or any mention of Vingralek or his paper. EX2002, ¶¶20-21, 26, EX2005, EX2011. Dr. Hall-Ellis does not explain why she did not include the Report in her declaration, or whether she reviewed a copy of it before rendering her opinion that “[t]he Vingralek article was published on pages 3-26 in Volume 207 dated December 1993 of the open access *Jahresbericht* [Annual Report] issue of the journal *Eidgenössische Technische Hochschule*.”

⁸ Dr. Hall-Ellis identifies the link <http://www.research-collection.ethz.ch>. The 1993 *Jahresbericht* can be found by entering “Jahresbericht 1993” in the search box, which leads to the following website, which includes the PDF for download: <https://www.research-collection.ethz.ch/handle/20.500.11850/643838>. EX2002, ¶19.

⁹ EX1020, ¶47-48, n. 19, n. 20.

Vingralek's absence from the Annual Report renders it, and all evidence relating to it, including Dr. Hall-Ellis's declaration statements, irrelevant. Petitioner should not be permitted to rely on Dr. Hall-Ellis's opinions or Attachments 1A-1D as evidence of Vingralek's public availability. Even if Petitioner were so permitted, such evidence cannot support Vingralek's availability because they bear no discernable relationship to Vingralek.

b. Norrie is Not Sufficient to Establish Vingralek's Public Availability

Norrie (EX1015) is an article about database research centers that appears in the publication *SIGMOD Record* that bears the date March 1994. Norrie references Vingralek in a single footnote (and nowhere else):

[3] R. Vingralek, Y. Breitbart, G. Weikum and R. Yavatker, "Distributed File Organisation with Scalable Cost/Performance", Technical Report 207, Dept. of Computer Science, ETH Zurich, Switzerland, December 93.

EX1015, 121, n. 3. This footnote is not sufficient indication of Vingralek's public availability for the reasons below.

i. Vingralek was personally known to the Norrie authors

Both Norrie and Vingralek originated from the same institution (the Computer Science Department at ETH-Zurich) and shared a common author (Weikum). Compare EX1015, 1 to EX1007, 1. Both papers also appear to have been prepared around 1993-1994. *Id.*; EX2002, ¶38, 40.

These facts indicate that the Norrie authors became aware of Vingralek through Weikum's shared authorship, as well as their departmental affiliations at ETH Zurich. As such, Norrie's citation to Vingralek cannot serve as reasonable indication that Vingralek was publicly accessible. *See Samsung Elecs. Co. v. Infobridge Pte. Ltd.*, 929 F.3d 1363, 1372 (Fed. Cir. 2019) (finding that a reference's accessibility to members of the authoring organization was insufficient to establish public accessibility); *Sophos*, Paper 23 at 18 (finding unpersuasive "citations by authors who had 'personal knowledge regarding the cited' reference).

ii. There is insufficient evidence that the *SIGMOD* publication containing Norrie was indexed or searchable

Dr. Hall-Ellis describes the cataloging of the *SIGMOD Record* generally. Ex. 1020 ¶¶56-61; EX2002, ¶36. The attachments she provides (Attachments 2A, 2B, 2C, 2D, and 2E) focus on the *SIGMOD Record* itself, and do not provide any indication of the contents of any article, nor any indication of how anyone would search for and locate a particular article within any record. *Id.* In other words, Dr. Hall-Ellis does not describe the cataloging or indexing of any article within any *SIGMOD Record* issue. Thus, based on the evidence submitted by Dr. Hall-Ellis, someone searching for Norrie would need to review each *SIGMOD Record*, its table of contents, and the documents within the record to find the particular article at issue. *Acceleration Bay, LLC v. Activision Blizzard Inc.*, 908 F.3d 765, 773 (Fed. Cir.

2018) (finding a reference not publicly accessible where searching for it “would have required skimming through potentially hundreds of titles . . . with most containing unrelated subject matter”). And, with respect to Norrie itself, the title is simply “The Database Research Group at ETH Zurich,” which refers generally to the group at the university and does not describe any particular content or topic. EX2002, ¶36.

Dr. Hall-Ellis also does not provide any evidence or assertion as to when Norrie may have been published in an online form. She provides a link <<https://dl.acm.org/doi/pdf/10.1145/181550.181567>> and states that “[t]he Norrie article is available in the *ACM Digital Library* which indicates a March 1, 1994, publication date.” Ex. 1020, ¶55, n.23. The document available at the link (EX2012) is not the same as the version that was submitted as Ex. 1015. EX2002, ¶37. In particular, the online version is 6 pages (compared to 8 pages for Norrie) and does not include the general cover page or table of contents included in Norrie, which Dr. Hall-Ellis appears to indicate is a “print copy.” Ex. 1020, ¶57; EX2002, ¶37, EX2012. The spellings of the titles are also different (“Organization” versus “Organisation”), which raises further questions about the document referenced in footnote 3 relative to Vingralek, especially when Norrie does not include or describe the contents of the document referenced in footnote 3. EX2002, ¶37. There is no indication or evidence as to when an online version was first made publicly available.

B. Claim 1: Not Obvious Over Kahn in View of Vingralek

This Preliminary Response addresses three substantial deficiencies relating to Petitioner's arguments regarding claim 1. Each deficiency relates to element [1.b] and Petitioner's failure to present availing obviousness arguments with respect to certain limitations in that element. Element [1.b] states:

[1.b] 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.*

EX1001, cl. 1 (emphasis added).

This element describes a network of data location servers. "At least one" of those servers must contain "location information associated with" a particular

identifier – for simplicity, Patent Owner refer to this as the “target server.”¹⁰ The element also requires that each (meaning, every) server in the network must be “configured to determine” which of the servers among them is the target server. Petitioner’s arguments address this limitation in two parts. First Petitioner alleges that Kahn teaches the “*determin[ing] the at least one of the plurality of data location servers [i.e., target server] based on the hash function applied to the identifier string*” portion of the limitation.¹¹ Pet., 22. Petitioner acknowledges that Kahn does not teach the “*each one of the data location servers is configured to*” portion of the limitation, and argues that a POSITA “would have been motivated and found it

¹⁰ Patent Owner introduces the phrase “target server” only for ease of reference; the term is not meant to, and does not, alter the meaning or scope of the claim in any way. “Target server” means “*the at least one of the plurality of data location servers*” which itself has antecedent basis in the limitation “*at least one of the plurality of data location servers includes location information associated with the identifier string.*” These terms are synonymous and are used interchangeably.

¹¹ Petitioner changed the term “configured to determine” to “determine[ing],” without explanation. Pet., 22. The claim requires that the claimed data location servers be “*configured to determine* the at least one of the plurality of data location servers....” Patent Owner addresses the limitation as presented in the claim.

obvious to include this feature in view of Vingralek” (*id.*, 25). Petitioner is wrong on both counts. EX2001, ¶¶67-69.

1. **Kahn does not teach data location servers “*configured to determine the at least one of the plurality of data location servers based on the hash function applied to the identifier string*”**

Kahn teaches a “handle management system” that is “used to find the location of digital objects and the locations of each object’s RMS [rights management system].” EX1005, 28:29-34. Kahn teaches that a client sends a handle query request to a handle server in the handle management system. *Id.*, 29:5-13, Fig. 8 (annotated below).

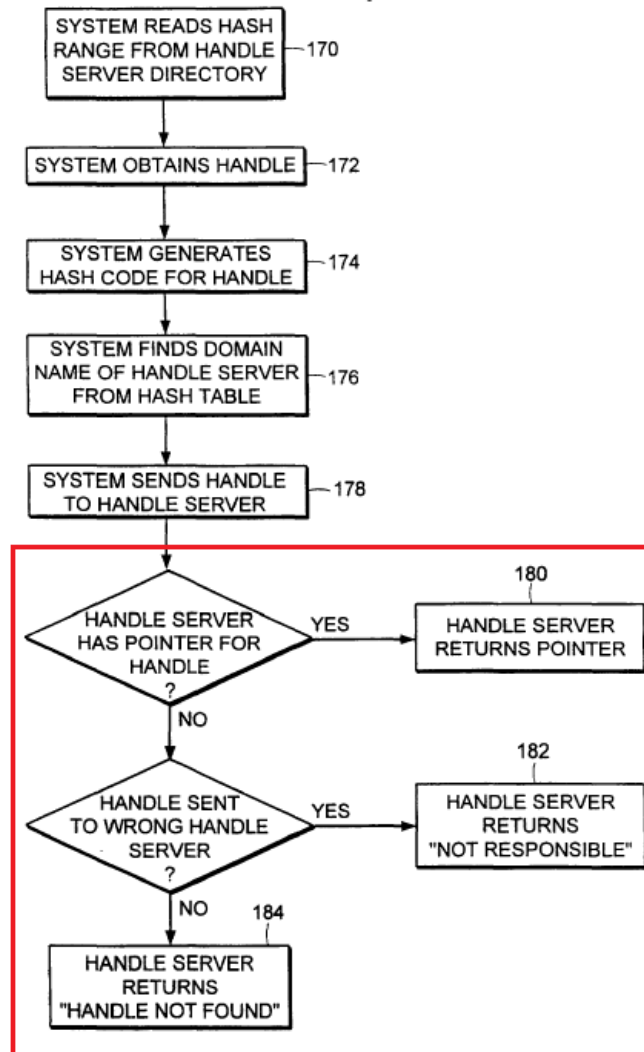


FIG. 8

If the handle server has the requested information, it returns that information to the client (box 180). *Id.*, 47:11-21; Fig. 8. If the handle server does not have the requested information, it transmits either a “not responsible” or a “handle not found” message back to the client (boxes 182, 184, respectively). *Id.* Thereafter, the client can “download the hash range/handle-server-domain-name- table from the handle server directory again and attempt the mapping again.” *Id.*; EX2001, ¶¶58-61, 70.

To disclose the limitation at issue, Kahn's handle server would need to be configured to determine which handle server in its network of handle servers is the "target server" (*see* fn. 9, *supra*), ***no matter which handle server that is***. But Kahn's handle servers are not so configured – a given handle server can only resolve whether it (*and only it*) has the requested information. If the queried server does not have the requested information, it is not configured to determine which server does. Petitioner's evidence in support of its theory that Kahn discloses the "configured to determine" limitation points only to the situation in which information "is indeed located in the queried handle server." Pet., 25. This is not what the limitation requires. Kahn's handle servers must configured to determine which server in the network is the target server, even if the queried server itself is not that target server. Kahn contains no disclosures teaching or suggesting this, and Petitioner offers no evidence otherwise. EX2001, ¶¶71.

2. A POSITA Would Not Be Motivated or Find It Obvious to Modify Kahn in view of Vingralek

Petitioner turns to Vingralek to teach that "each one of the data location servers is configured to ..." portion of the limitation. Pet., 25. Petitioner provides two theories for why it supposes POSITA would have been motivated to modify Kahn in view of Vingralek: (1) because Kahn and Vingralek both disclose that "client and handle server store copies of the hash table", a POSITA would have been motivated to "consider the teachings of Vingralek when implementing" Kahn (Pet.,

29); (2) modifying Kahn in view of Vingralek would “have been beneficial as it would have reduced the frequency of communications to a client and/or the use of the client’s computational resources, particularly in situations where the client has limited communication bandwidth and/or limited computational resources (e.g., resources required for calculating the correct handle server).” Pet., 29. Both theories fail on the merits and as a matter of law. EX2001, ¶¶72.

a. Kahn’s “handle servers” do not store hash tables

Petitioner assumes Kahn’s handle servers store a copy of the hash table. Pet., 29, citing to EX1005, 38:9-17, 46:29-32. Petitioner’s own citations disprove its theory. The first citation says:

As seen in Fig. 34, the handle server system 1230 includes handle servers 1232 and handle directory servers 1234 located at certain well known locations. **The directory servers will maintain a table of network addresses of handle servers (generally, each handle server will contain such a directory).** This table will 15 generally be downloaded by each participating site frequently enough to be “acceptably” up-to-date at all times.

EX1005, 38:9-17 (emphasis added). The “directory” that each handle server generally contains is the “table of network address of handle servers.” This is not a hash table. EX2001, ¶¶76-77.

The second citation Petitioner points to says:

In a first step 170, **a client system downloads the table that associates hash ranges with handle server domain names from the handle server directory** for future use.

EX1005, 46:29-32 (emphasis added). Although this citation references a hash table, that table is downloaded by a *client* (not a handle server) and from a handle server directory (not a handle server). Thus, when Petitioner posits that “a POSITA would have been motivated to implement a verification method similar to that of Vingralek, i.e., a location server applying the hash function to determine which location server contains the requested information, as discussed above, especially because Kahn already discloses that the handle server stores a copy of the hash table. (*Id.*, 38:9-17, 46:29-32; Ex. 1002, ¶71.)” and cites to the citations above in support, Petitioner is mistaken. Kahn does not disclose that the “handle server stores a copy of the hash table.” Rather, Kahn teaches that hash tables are stored by handle directory servers, which are (as detailed above) distinct from handle servers. EX2001, ¶¶55-57, 73-76.

b. A POSITA Would Not Have Been Motivated to Modify Kahn to Meet Vingralek’s Objectives

Petitioner’s theory that a POSITA would have been motivated to modify Kahn because it would have met *Vingralek’s* goal of reducing communication overhead is nonsensical. Pet., 29 (modifying Kahn with Vingralek “would have been beneficial

as it would have reduced the frequency of communications”). To meet its burden, Petitioner must show that a POSITA would have been motivated to combine Kahn with Vingralek because a POSITA would have consulted the references to seek a solution to the problem that the invention of claim 1 was trying to solve. Claim 1 does not concern communication overhead. A POSITA therefore would not have been motivated to modify Kahn to seek a solution unrelated to claim 1. EX2001, ¶77.

Petitioner’s theory fails for the added reason that even if reducing communication overhead was a proper motivation for combining the references, doing so would not in fact “reduce the frequency of communications to a client and/or the use of the client’s computational resources.” Both Kahn and Vingralek teach that a client queries the incorrect server when it has an incorrect or stale address table. EX1005, 47; EX1007, 9-10. As a result, in both references, the client downloads/receives a less stale version of the hash table or address table (*id.*; *id.*), meaning the client would still need to communicate with the servers to receive a less stale of a table. Otherwise, the client will always query an incorrect server. EX2001, ¶78.

Petitioner’s alleged combination also requires a lot of modifications to Kahn which would create an extensive burden on the handle servers. Particularly, as indicated above, none of Kahn’s handle servers are configured to determine which

other handle server is storing the sought-after information. *See supra* §VII.B.1. If Kahn were to be modified in the manner Petitioner suggests, each of the handle servers would have to be somehow configured store and maintain the hash table to the client. Because, contrary to Petitioner’s assertion, Kahn’s handle servers do not store copies of the “hash range/handle-server-domain-name table” (i.e., the alleged hash table). *See supra* §VII.B.2.a. A POSITA would understand that to maintain current and consistent hash tables in each handle server in the network would require extensive updates and downloads of the hash table by *each* handle server. *Id.*, ¶79. This would increase the workload and burden on the handle servers, making it a non-obvious and undesirable change to Kahn’s system. *Id.*

Indeed, a POSITA would understand that Kahn already provides a solution for retrieving an updated address table (i.e., by downloading it from the hash server directory). EX1005, 46:29-32. Petitioner offers no plausible reason why a skilled artisan would have discarded Kahn’s approach in favor of Vingralek’s error-prone system. *In re Anova Hearing Labs, Inc.*, 809 Fed. Appx. 840, 843 (Fed. Cir. 2020) (“The Board also does not explain why a person of ordinary skill in the art would be motivated to modify Brown, which already includes vents, to address occlusion effect.”) Far from reducing overhead (even if that were a stated goal of Kahn’s), incorporating Vingralek’s scheme into Kahn would introduce additional complexity

and inefficiency, as client requests bounce from server to server before eventually reaching their destination. EX2001, ¶79.

The Federal Circuit has cautioned against the exact type of impermissible hindsight that animates Petitioner’s arguments, where an obviousness assertion “simply retrace[s] the path of the inventor with hindsight, discounting the number and complexity of the alternatives which might have been considered by the inventor but ultimately discarded.” *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1364 (Fed. Cir. 2008). The Petition’s failure to provide a rational motivation to combine the teachings of Kahn and Vingralek, as well as its improper reliance on hindsight, render its obviousness challenge untenable. The Board should reject this deficient attempt to reconstruct the claimed invention through the distorted lens of hindsight. *See Personal Web Techs.*, 848 F.3d at 993-94 (affirming PTAB decision rejecting obviousness where petitioner relied on “a conclusory assertion from its expert” and failed to explain sufficiently “why a skilled artisan would have been motivated to combine [the asserted references]”); *Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017) (reversing PTAB obviousness determination for “fail[ing] to identify a reason why one of ordinary skill in the art would make the modification” despite expert’s “unsupported and conclusory statement that the combination would be obvious to one of ordinary skill”).

C. Claims 6 and 15: Kahn in View of Vingralek Does Not Teach the “Redirect Message” Limitation

Claims 6 and 15 contain a “redirect message” limitation. Relevant portions of the limitation are emphasized below:

[6.c] programming logic stored on the location server, wherein the programming logic is configured to return, in response to a location query related to a desired entity, a location message, the location message in conformance with the transfer protocol and comprising at least one location associated with the desired entity, wherein the programming logic is further configured to return the location message if the location server contains location information for the desired entity, and *wherein the programming logic is further configured to return a redirect message if the location server lacks the location information for the desired entity, the redirect message comprising a list of at least one other location server known to have the location information for the desired entity.*

Petitioner treats [6.c] in two parts, arguing that Kahn alone discloses the “redirect message,” and Kahn combined with Vingralek teaches “comprising a list of at least

one other location server known to have the location information for the desired entity.”¹² Pet., 46-47. Neither passes muster. EX2001, ¶81-82.

1. Kahn does not teach the claimed “redirect message”

Petitioner’s first assertion is that Kahn alone discloses the claimed “redirect message.” It does not. As explained above, Kahn teaches a “handle management system” in which a client can send a query to a handle server. EX1005, 29:3-12. If the handle server does not have the requested information, it transmits back to the client either a “not responsible for handle” or “handle not found” message. *Id.*, 47:9-21, Fig. 8. Petitioner identifies the “not responsible for handle” message as the

¹² The Petition’s arguments for claim 15 are the same Kahn-Vingralek obviousness arguments made for claim 6. Pet., 59-62. The statements merely refer back to Petitioner’s discussion of claims 1 and 6. *Id.* Specifically with respect to “redirect message,” Petitioner restates the claim limitations and minimal mapping and points to its arguments for claim 6. *Id.*, 62. The citation to the Chatterjee Declaration (Ex. 1002, ¶124) likewise refers to his opinions about claim 6. Accordingly, Petitioner fails to show a reasonable likelihood of success on claim 15 for the same reasons as claim 6. And because Petitioner does not substantively differentiate between claims 6 and 15, and, under 37 C.F.R. §42.23(b), Petitioner cannot introduce new theories doing so at trial. *See Intelligent Bio-Sys.*, 821 F.3d at 1369.

alleged “redirect message.” Pet., 45. The “not responsible” message, however, cannot be the claimed “redirect message” for the straightforward reason that it does not “redirect” the client to anything; it simply tells the client, “This handle server doesn’t have what you’re looking for.” EX2001, ¶83-84. In particular, a “not responsible for handle” message does not “compris[e] a list of at least one other location server known to have the location information for the desired entity.” Thus, even though the handle server (which is the server that received the client’s request) transmits a message back, that message is not the claimed “redirect message.” *Id.*

Petitioner’s argument rests on the false premise that because Patent Owner “reads the claimed ‘redirect message’ on a cache miss response” in its complaint against Google (Petitioner) in a parallel proceeding (Pet., 45-46), that means Kahn’s “not responsible” message suffices to disclose the claimed “redirect message.” Not so. Patent Owner’s complaint (which is based on publicly available information) alleges facts sufficient to plausibly allege that Google’s accused system includes the claimed redirect message. Patent Owner’s allegation that “the client detects a miss, which is the redirect message” refers to the process triggered by the cache miss, which it believes includes receiving the required redirect message with the claimed contents. But how redirection actually works in those accused products – including whether the detection of a cache miss includes receiving information identifying the location server that has the sought-after location information – is the subject of

forthcoming discovery.¹³ Simply put, if the evidence shows that the accused products perform redirection in the manner claimed, then the products infringe; if not, then they do not. What is not contestable, however, is the claim’s express requirement that a redirect message must redirect the client to a different server and “compris[e] a list of at least one other location server known to have” the desired location information. Kahn’s “not responsible” message does neither. Therefore, Kahn does not disclose this element. EX2001, ¶¶83-85.

2. Kahn in combination with Vingralek does not teach the claimed “redirect message comprising a list of at least one other location server known to have the location information for the desired entity”

Not only does Kahn never teach a redirect message, but it does also not disclose or suggest a handle server sending a “list” of other handle servers known to have the requested information back to the client following a failed query. Particularly, Kahn teaches that its handle management system is comprised of

¹³ Discovery in *Kove IO, Inc. v. Google LLC*, Case No. 1:23-cv-04244 (N.D. Ill.) is still in its early stages, and the case is currently stayed.

multiple servers, including *handle servers* and *handle directory servers*.¹⁴ EX1005, 38:9-17, Fig. 34.

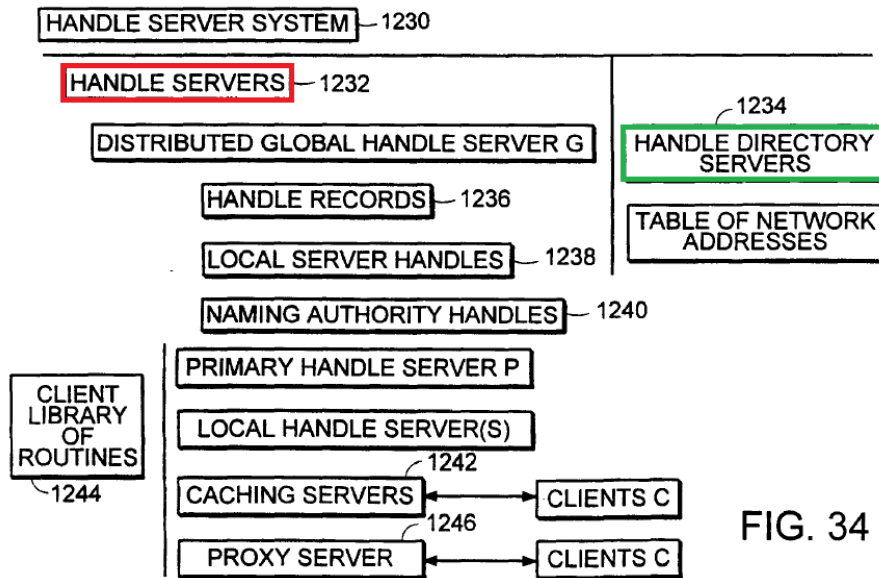


FIG. 34

EX1005, Fig. 34. *Handle directory servers* contain “hash range/handle-server-domain-name tables” that a client can download if its first query is to the wrong *handle server* and it receives a “not-responsible-for-handle” message. EX 1005, 47:9-21. Of significance is the fact that handle servers never receive or store the

¹⁴ Kahn uses “handle directory server” and “handle server directory” interchangeably. See, e.g., EX1005, 38:9-11 (“As seen in Fig. 34, the handle server system 1230 includes handle servers 1232 and **handle directory servers** 1234 located at certain well known locations.”), 46:29-32 (“In a first step 170, a client system downloads the table that associates hash ranges with handle server domain names from the **handle server directory** for future use.”) (emphasis added).

“hash range/handle-server-domain-name tables”; those tables reside in the separate handle directory server and are downloadable by the client (not the handle server). *Id.*, 29:23-26. When a client sends a query to a handle server and the handle server does not have the requested information, it sends back a “not-responsible-for-handle” message. *Id.*, 47:13-15. Thereafter, the client (not the handle server) may download a hash range/handle-server-domain-name tables from the handle directory server (not the handle server) and use that to determine the next server to query. *Id.*, 47:15-18. Thus, Kahn never discloses a handle server returning a message to the client querying it that “contains a list of at least one other location server known to have the location information for the desired entity.” EX2001, ¶¶55-57, 86-89.

Adding Vingralek does not cure Kahn’s deficiency, nor would a POSITA be motivated to try. Vingralek teaches a “distributed file organization for record-structured, disk-resident files with key-based exact-match access.” EX1007, 3. Files are put into buckets; the buckets are then spread across multiple servers, with a single server holding multiple buckets and each bucket holding different numbers of keys depending on their “levels”. EX1007, 8-9. Vingralek teaches that a client *c* sends a key *K* to a server *s*. *Id.*, 9. Server *s* applies certain hash functions to *K* until it identifies a server *s'* that it thinks has the records associated with *K* using an address table that identifies which server the bucket containing *K* is. *Id.* “The *address table* contains the mapping of bucket number onto server numbers.” *Id.*, 8

(emphasis in original). If the queried server *s* does not have the requested information, server *s* performs the calculation to identify server *s'* and forwards the key on while also “update[ing] the client’s view with its file level *L*, and its address table.” In other words, server *s* returns to the client an updated look up table of *bucket to server* mappings. EX1007, 8. This is not what the claims require. In order to meet the limitation in question, Vingralek would have needed to return a message to the client identifying the server (from among the network of server) “*known to have*” the information associated with *K*. Vingralek’s table of bucket-to-server mappings is not that. It is merely a lookup table – it does not identify which server among the universe of servers contains the desired information. EX2001, ¶¶58-61, 90-92.

Combining Kahn with Vingralek therefore does not result in or render obvious the claimed limitation. Recognizing this, Petitioner hypothesizes that “[a] POSITA would have understood that Vingralek’s redirect message including an address table may be implemented such that *only the portion of the address table corresponding to the location server(s) that contain the requested location information (‘a list of at least one other location server known to have the location information for the desired entity’)* would be sent in the message. This would allow the client to update the relevant portions of its own hash/address table, as well as provide the client with the addresses of the location server(s) that should receive the forwarded request.”

Pet., 49 (emphasis added). This theory appears to have been created from whole cloth. Kahn does not teach sending a message that contains any indication which handle server stores the sought-after information; and Vingralek returns an address table that provides bucket-to-server mappings for all servers, without identifying which among them is known to have the relevant information. EX2001, ¶¶93.

Petitioner's theory of modifying Kahn by combining it with Vingralek would also require modifying Vingralek itself, but Petitioner provides no evidence of how or why a POSITA would find it obvious to modify the combination this way. Neither Kahn nor Vingralek allow for sending "a portion" of an address table to a client. And neither teach a client updating their local address table using a partial address table received from a server. Instead, Kahn teaches that the client replaces the hash table stored locally at the client with the one downloaded (EX1005, 29-34), and Vingralek teaches that a client's receives an update address table the client (EX1007, 9-10). Neither table identifies which server is "known to have the location information for the desired entity." Petitioner has not provided any reasoned analysis or evidentiary support that the combination of Kahn and Vingralek can be modified to only send a portion of an address table to a client and the client can use that partial address table to update the locally stored address table. EX2001, ¶¶94.

3. A POSITA Would Not Be Motivated or Find it Obvious to Modify Kahn with Vingralek

A POSITA would not have been motivated or have found it obvious to modify Kahn in view of Vingralek with respect to claims 6 and 15 for the same reasons discussed above with respect to claim 1. *Supra* §VII.B.2.b.

VIII. DISCRETIONARY DENIAL 35 U.S.C. § 314(a)

The Board should exercise its discretion under 35 U.S.C. § 314(a) to deny institution. The PTAB Consolidated Trial Practice Guide explains that “the panel will evaluate the challenges and determine whether, in the interests of efficient administration of the Office and integrity of the patent system (*see* 35 U.S.C. § 316(b)), the entire petition should be denied under 35 U.S.C. § 314(a).” PTAB Consolidated Trial Practice Guide (Nov. 2019) at 64. The decision “to deny a petition is a matter committed to the [USPTO’s] discretion.” *Cuozzo Speed Techs., LLC v. Lee*, 579 U.S. 261, 273, 136 S. Ct. 2131, 2140 (2016); *see also BioDelivery Sciences International, Inc. v. Aquestive Therapeutics, Inc.*, 935 F.3d 1362 (Fed. Cir. 2019). The Board has exercised this discretion to deny institution in cases where the Petitioner demonstrates a reasonable likelihood of prevailing on only a fraction of the challenged claims or asserted grounds. *See Helmerich & Payne Int’l Drilling Co. v. Nabors Drilling Techs. USA, Inc.*, IPR2021-00621, Paper 12 at 28 (PTAB Sept. 21, 2021) (failure to demonstrate likelihood of prevailing on at least eighteen of nineteen challenged claims sufficient to denying institution); *Lenovo Holding Co.*,

Inc. v. InterDigital Tech. Corp., IPR2020-01515, Paper 11 at 46-47 (PTAB Apr. 15, 2021) (denying institution where petition met the institution threshold for at most two of twenty challenged claims); *Deeper, UAB v. Vexilar, Inc.*, IPR2018-01310, Paper 7 at 41–43 (PTAB Jan. 24, 2019) (informative); *Chevron Oronite Co. v. Infineum USA L.P.*, IPR2018-00923, 11, Paper 9 at 10-11 (P.T.A.B Nov. 7, 2018) (informative).

Here, Petitioner has failed to establish that Vingralek was publicly available on the alleged date, and thus, Vingralek is not qualified prior art. *See supra* §VII.A. Ground 1 (Petitioner’s only Ground) relies on Vingralek, making the Ground non-meritorious. As explained above, Ground 1 also includes significant weaknesses (beyond Vingralek’s lack of qualification) which prevent Petitioner from likely prevailing. Instituting on a Ground that is non-meritorious and/or include significant weaknesses would be an inefficient administration of the Office. As such, the Board should exercise its discretion under 35 U.S.C. § 314(a) to deny institution “in the interests of efficient administration of the Office and integrity of the patent system”. PTAB Consolidated Trial Practice Guide (Nov. 2019) at 64.

IX. CONCLUSION

For each of the foregoing reasons, the Petition fails to show a reasonable likelihood of prevailing against any challenged claim. Institution should be denied.

Dated: November 20, 2024

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CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that Patent Owner's Preliminary Response (the "POPR") consists of 11,688 words, excluding the table of contents, certificate of service, this certificate of compliance, or table of exhibits. The POPR complies with the type-volume limitation of 14,000 words as mandated in 37 C.F.R. § 42.24. In preparing this certificate, counsel has relied on the word count of the word-processing system used to prepare this paper (Microsoft Word).

Dated: November 20, 2024

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing **PATENT OWNER'S PRELIMINARY RESPONSE** was served on, via electronic mail, as agreed to by counsel, upon the following counsel for Petitioner:

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