

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ORCA SECURITY LTD.,
Petitioner,

v.

WIZ, INC.,
Patent Owner.

IPR2025-01084
Patent 11,929,896 B1

Before KARL D. EASTHOM, NABEEL U. KHAN, and
LISA A. MURRAY, *Administrative Patent Judges*.

KHAN, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

Orca Security Ltd. (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–29 (“the challenged claims”) of U.S. Patent No. 11,929,896 B1 (“the ’896 patent,” Ex. 1001). Wiz, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 9, “Prelim. Resp.”).

An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). Having considered the arguments and evidence presented by Petitioner and Patent Owner, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on at least one of the challenged claims of the ’896 patent. We institute *inter partes* review as to all the challenged claims of the ’896 patent on all the grounds of unpatentability set forth in the Petition.

B. *Related Proceedings*

The parties identify the following matters as involving the ’896 patent: *Orca Security Ltd. v. Wiz, Inc.*, No. 1:23-CV-00758 (D. Del.) (“the related litigation”). Pet. 56; Paper 3, 1.

C. *The ’896 Patent (Ex. 1001)*

The challenged patent relates to “[a] system and method for generation of unified graph models for network entities.” Ex. 1001, Abstract.

A cloud environment is depicted in Figure 1A, reproduced below.

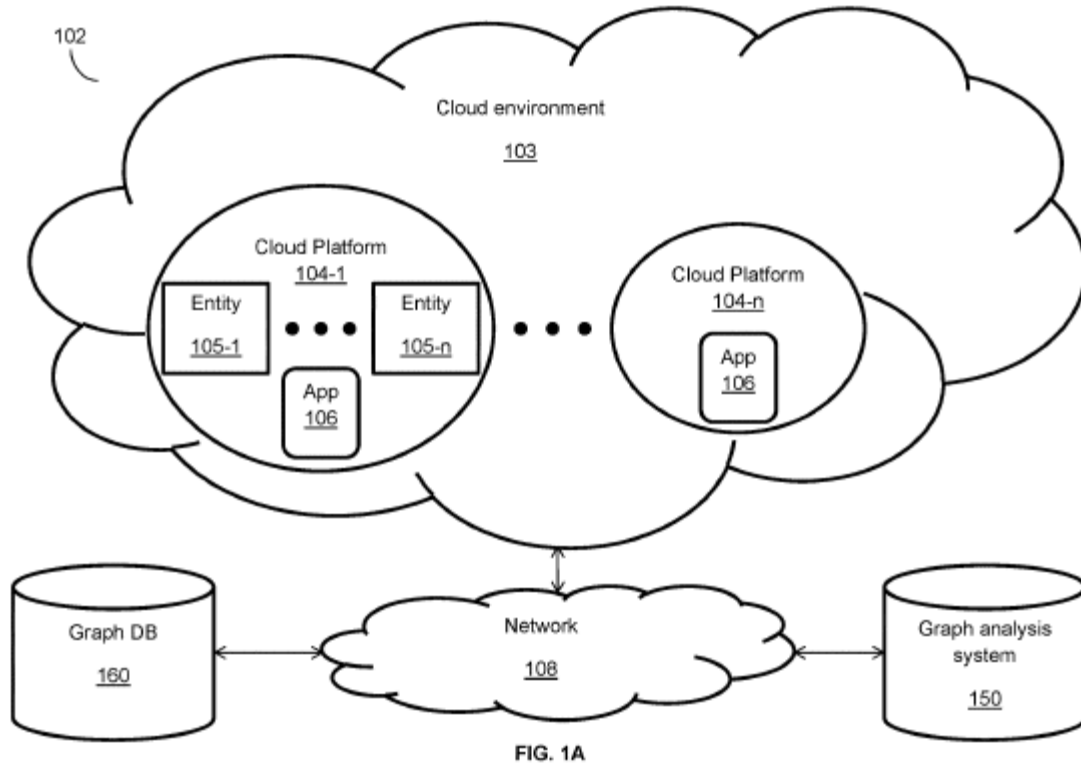


Figure 1A of the '896 patent, reproduced above, depicts a cloud environment 103 that includes a number of cloud computing platforms, 104-1 through 104-*n*. Ex. 1001, 4:40–47. Each cloud platform may include multiple network entities, 105-1 through 105-*n*, and one or more applications 106. Ex. 1001, 4:47–51. The cloud environment may be configured to connect, via a network 108, with a graph analysis system 150 and a graph database system 160. *Id.* at 4:51–54.

Figure 2, reproduced below, is a flowchart depicting a method for generating unified graph models for network entities. Ex. 1001, 7:43–44.

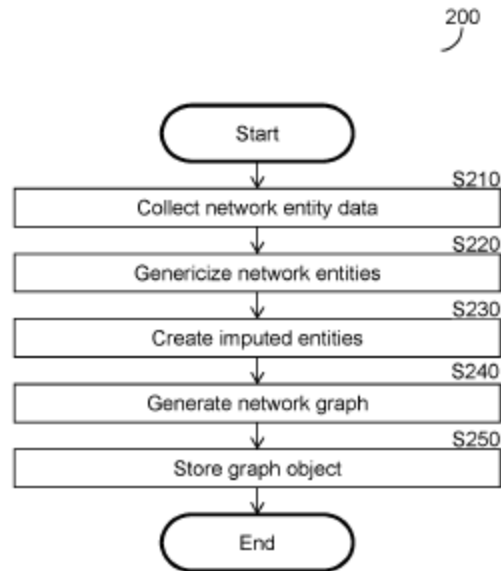


FIG. 2

Figure 2 of the '896 patent, reproduced above, depicts a flowchart 200 comprising five steps S210 – S250. At S210, network entity data is collected. Ex. 1001, 8:64. Network entity data may include data describing the various network entities including properties, names, network addresses, permissions, and configurations. *Id.* at 8:67–9:4. At S220, network entities are genericized based on the collected network entity data. *Id.* at 9:17–18. “Generic network entities . . . are network entities which are configured to include one or more standard properties” which “may be applicable to all genericized network entities of the same type.” *Id.* at 9:18–22. At S230, imputed entities are created. *Id.* at 10:58. Imputed entities are generic entities constructed to provide representation of network entities which are integrated into host platforms, or network entities which are shielded from, or not otherwise exposed to, a system configured to execute network analysis. *Id.* at 10:59–65. “At S240, a network graph is generated.” *Id.* at 11:51. “A graph is a multi-dimensional data feature providing representation of the contents and structure of a network, cloud environment,

or the like.” *Id.* at 11:51–54. “A graph may include one or more graph vertices, interconnected by one or more graph edges.” *Id.* at 11:54–55. “At S250, the generated network graph is stored in a graph database.” *Id.* at 13:41–42. “Storage of a graph object at S250 may include storage of a graph object as a unified representation of network or environment entities, and relationships therebetween, providing for functionalities including . . . execution of unified queries across graphs or graph elements, and execution of unified graph management commands or instructions.” *Id.* at 13:42–49.

D. Illustrative Claims

Claims 1 and 14 are the only independent claims of the ’896 patent. Claim 1 is reproduced below with limitation identifiers in brackets corresponding to claim analysis headings in the Petition. *See, e.g.*, Pet. 9–35.

1. [1[Pre]] A method for generation of unified graph models for network entities, comprising:

[1[a]] collecting, for each network entity of a plurality of network entities, network entity data, wherein the network entity data collected for a network entity includes at least a network entity property, wherein the plurality of network entities are deployed in a plurality of cloud computing platforms;

[1[b]] genericizing each of the network entities based on the respective collected network entity data to generate a plurality of generic network entities, wherein a generic network entity includes a generic representation of respective network entities from different cloud computing platforms of the plurality of cloud computing platforms;

[1[c]] generating at least a network graph, wherein the generated network graph is a multi-dimensional data structure providing a representation of the plurality of generic network entities and relations between the generic network entities of the plurality of network entities; and

[1[d]] creating at least one imputed entity, wherein the at least one imputed entity is a generic network entity representing an executed platform functionality, and wherein the executed platform functionality is different than a network entity; and

[1[e]] storing the generated network graph.

Ex. 1001, 22:5–30.

E. Evidence

The Petition relies on the following references:

Reference	Exhibit No.
US 11,863,580 B2; filed Dec. 23, 2020; issued Jan. 2, 2024 (“Ross patent”)	1004
US 9,800,470 B2; filed Nov. 10, 2014; issued Oct. 24, 2017 (“Agarwal patent”)	1005
US 10,447,553 B2; filed May 5, 2018; issued Oct. 15, 2019 (“Biran patent”)	1006

Petitioner also relies on the Declaration of Dr. Chuck Easttom (Ex. 1003) in support of its arguments. The parties rely on other exhibits as discussed below.

F. Prior Art and Asserted Grounds

Petitioner sets forth the following challenges (Pet. 6–7):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–29	103	Ross, Agarwal, Biran

II. ANALYSIS

A. Principles of Law

Petitioner bears the burden of persuasion to prove unpatentability of the claims challenged in the Petition, and that burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that

the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) if presented, any objective evidence of obviousness or non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (internal quotation marks and citation omitted).

Petitioner argues that a person of ordinary skill in the art (POSITA) “would have had a bachelor’s degree in an academic area emphasizing computer science (i.e., computer science, computer information systems, computer engineering, etc.) or cybersecurity and (2) at least two years of work experience with cybersecurity and cloud computing.” Pet. 5 (citing Ex. 1003 ¶ 53–54). Petitioner further argues that “[a]dditional education or experience might substitute for the above requirements.” *Id.* Patent Owner does not contest Petitioner’s proposed definition of a POSITA at this stage of the proceeding. *See generally*, Prelim. Resp.

For purposes of this Decision, we adopt Petitioner’s proposed level of ordinary skill because it is consistent with the level of skill in the art at the time of the invention as reflected by the ’896 patent and the cited prior art.

C. Claim Construction

We apply the same claim construction standard used in district court actions under 35 U.S.C. § 282(b), namely that articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b).

In applying that standard, claim terms generally are given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). Only claim terms in controversy require express construction, “and only to the extent necessary to resolve the controversy.” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *see also Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

Petitioner notes that in the related litigation, the parties have agreed to the construction for the term “imputed entity” as follows: “Generic entity representing a network entity that is integrated into one or more host platforms, or a network entity that is shielded from, or not otherwise exposed to, a system configured to execute network analysis processes and

methods.” Pet. 6–7 (citing Ex. 1053, 3). Petitioner argues that the challenged claims are unpatentable under this agreed construction and also the plain and ordinary meaning of the term. *Id.* at 7. Thus, Petitioner “does not contend that any claim construction is necessary.” *Id.* (citing *Nidec*). Patent Owner asserts that “no constructions are necessary to deny institution,” and that “the petition’s failure to offer a claim construction for the term *genericizing each of the network entities* renders its analysis deficient.” Prelim. Resp. 3.

We apply the agreed construction of “imputed entity” to the claims in our analysis below because it is consistent with record evidence. We also briefly address other issues relating to claim construction in our analysis of the grounds. For example, we determine that the preamble of claim 1 is non-limiting. We also take preliminary positions on some aspects of the scope of terms such as “genericizing,” “generic network entity,” and “multi-dimensional data structure.” *See infra* §§ II.E.1.a–c. Because the parties have not expressly addressed the construction of these terms, these positions are preliminary and based on the current record. A final determination as to claim construction will be made at the close of the proceeding, after any hearing, based on all the evidence of record. The parties are expected to assert all their claim construction arguments and evidence in their briefing, or otherwise during trial, as permitted by our rules.

D. Overview of Prior Art

Petitioner relies on Ross, Agarwal, and Biran in its asserted grounds. *See* § I.F. Below we provide an overview of the relied-upon references.

I. Overview of Ross

Ross describes “[m]ethods and systems for managing security in a cloud computing environment.” Ex. 1004, Abstract. Ross’ Figure 1, below, shows a cloud computing environment. *Id.* at 2:54.

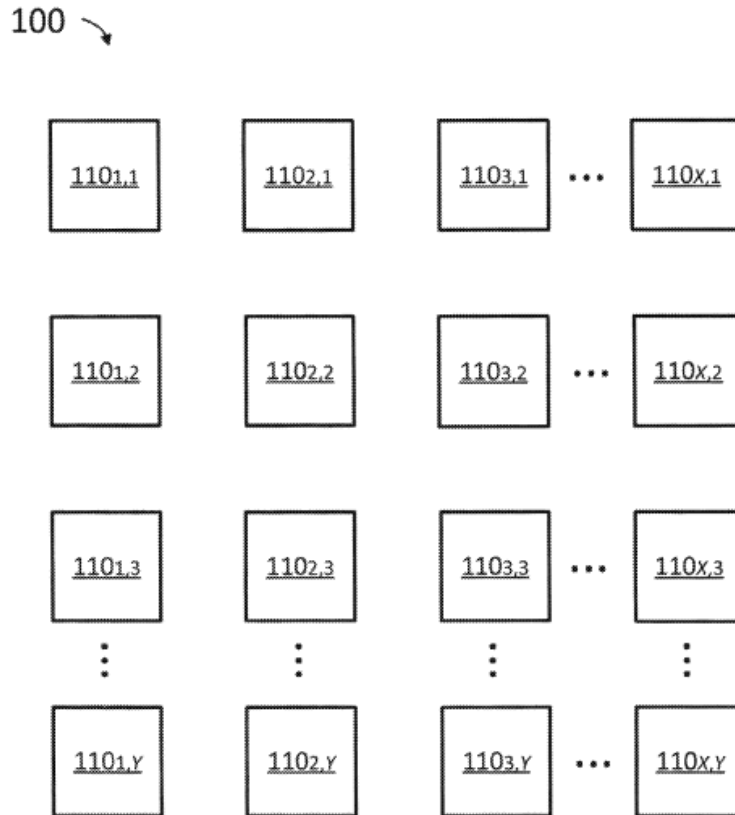


Figure 1 of Ross shows cloud computing environment 100 including workloads 100_{1,1}–110_{x,y}. Ex. 1004, 2:54–56. Each of workloads 100_{1,1}–110_{x,y} can be a unit of computing resource, such as a physical computing system (also referred to as a bare metal server), virtual machine, container, pod, and combinations thereof. *Id.* at 3:3–6.

Figure 2, below, shows a system for cloud security management. *Id.* at 4:3.
at 4:3.

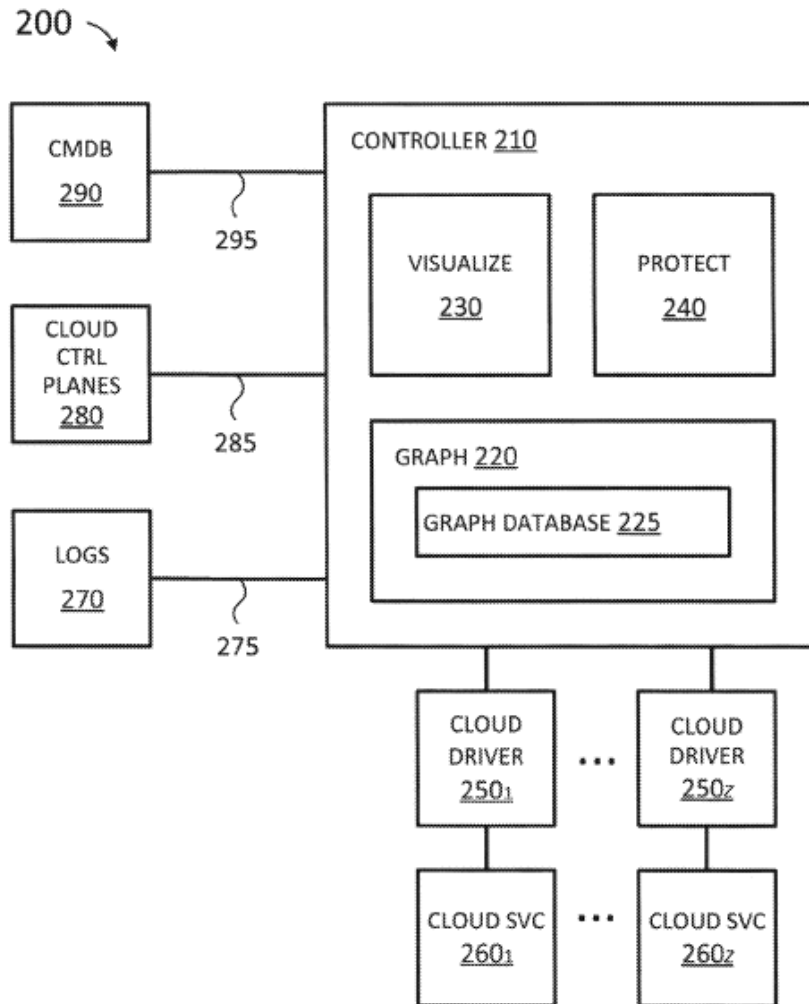


Figure 2 shows a system 200 for cloud security management that includes controller 210. *Id.* at 4:3–5. Controller 210 can receive streaming telemetry 275 from network logs 270, events 285 from cloud control plane 280, and inventory 295 from configuration management database (CMDB) 290. *Id.* at 4:5–9. Network and middleware system logs 270 can be data sources such as flow logs from cloud services 260₁–260_z. Streaming telemetry 275 can be low-level data about relationships between applications. *Id.* at 4:17–18. Events 285 can include information about a

container (and/or a pod) being created, having a state change, having an error, and the like. *Id.* at 4:45–47. Configuration management database (CMDB) 290 can be a database of information about the hardware and software components (also known as assets) used in a cloud computing environment and relationships between those components and business functions. *Id.* at 4:53–58. Streaming telemetry 275, events 285, and inventory 295 can be ingested by graph 220, which normalizes information received into a standard data format and/or model, graph database 225. *Id.* at 4:66–5:3.

2. *Overview of Agarwal*

Agarwal “relates to the area of managing virtual resources in a cloud environment” and, more particularly, “to a system and a user interface associated with grouping entities and visualizing the relationship, influence, and performance of grouped entities in the context of virtual networks and clouds.” Ex. 1005, 1:20–25. Agarwal’s Figure 1, below, shows a representation of a flow path. *Id.* at 5:20.

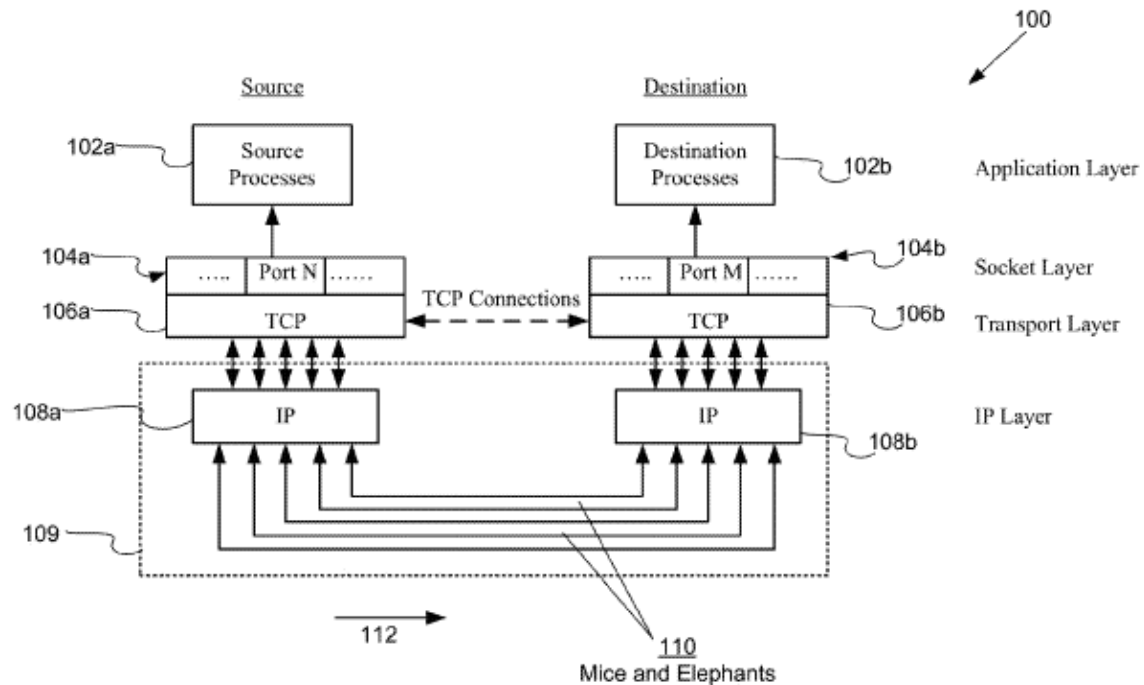


Figure 1 shows a representation of a flow path, including a source and a destination. Ex. 1005, 5:20–21. A flow or path can be a representation of resources between a source resource and a destination resource used to carry data between two points. *Id.* at 5:23–25. A source or a destination of a flow or a path can be any type of logical resource. *Id.* at 5:35–36. A flow can represent the data exchanged between a source and a destination during a period of time. *Id.* at 6:1–2. A flow starts at the source transport layer 106a and ends at the destination transport layer 106b. *Id.* at 6:3–4. A flow can be composed of different types of microflows (or connections) 110, referred to as “elephants” (high volume long duration) or “mice” (small volume, short duration). *Id.* at 6:5–8. A path is the representation of the sequence of network software and hardware components between a source and a destination used to carry flow data between these two points. *Id.* at 6:34–36. A path starts at the transport layer of the source and ends at the transport layer of the destination. *Id.* at 6:37–38.

3. *Overview of Biran*

Biran relates to “[s]ystems, methods, and media for finding configuration files.” Ex. 1006, Abstract. Biran describes that traffic-based connections may provide search parameter insight for searching a component for configuration data and that search parameters derived from the traffic based connections may be used to facilitate discovery of configuration files in non-conventional locations. *Id.* Biran discloses that an IT system may include service mapping logic that generates an accurate, service-aware view (e.g., a “service mapping”) of the system infrastructure that is frequently refreshed, keeping the view up to date. *Id.* at 1:59–62. The service mapping may be constructed by discovering and mapping relationships between IT components running specific services. *Id.* at 1:62–65. The service mapping logic may monitor the IT infrastructure for service-affecting changes and update the service mapping in real-time. *Id.* at 1:65–67.

E. Ground 1 – Obviousness over Ross, Agarwal, and Biran

Petitioner contends that claims 1–29 are unpatentable as obvious over Ross, Agarwal, and Biran. Pet. 9–55. Below we analyze Petitioner’s contentions in light of Patent Owner’s arguments.

1. Analysis of Independent Claim 1

Petitioner argues that the combination of Ross, Agarwal, and Biran teaches the limitations of claim 1. Pet. 9–36. Patent Owner disputes Petitioner’s contentions for limitations 1[b], 1[c], and 1[d]. Prelim. Resp. 5–16.

- a) *1[Pre] A method for generation of unified graph models for network entities, comprising:*

Petitioner contends that the preamble is not limiting, but to the extent

that it is, the combination of Ross, Agarwal, and Biran teaches the preamble by teaching the remaining limitations of the claim which are the steps in generating unified graph models for network entities, as the preamble recites. Pet. 9–10. Patent Owner does not dispute Petitioner’s contentions.

At this stage of the proceeding, we agree with Petitioner that the preamble is not limiting because it merely states the purpose or intended use of an invention and because none of the subsequent limitations rely upon the preamble for completeness or antecedent basis. *See Catalina Marketing Int’l., Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002); *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 952 (Fed. Cir. 2006); *In re Hirao*, 535 F.2d 67 (CCPA 1976).

b) *1[a] collecting, for each network entity of a plurality of network entities, network entity data, wherein the network entity data collected for a network entity includes at least a network entity property, wherein the plurality of network entities are deployed in a plurality of cloud computing platforms;*

Petitioner contends that Ross teaches collecting “network entity data” by disclosing that it gathers data, such as telemetry data, event data, and inventory data about workloads and applications in a cloud computing environment. Pet. 14 (citing Ex. 1004, Abstract, 4:3–9, 9:10–19, Figs. 2, 5). Petitioner notes that Ross describes “workloads” as “a unit of computing resource, such a physical computing system, . . . virtual machine, container, pod, and combinations thereof” and that a POSITA would have understood that workloads are network entities. Pet. 11 (quoting Ex. 1004, 3:3–6).

Patent Owner does not dispute Petitioner’s contentions regarding limitation 1[a]. *See* Prelim. Resp. We determine that Petitioner has demonstrated a reasonable likelihood that Ross teaches limitation 1[a] for the reasons provided in the Petition and summarized above. Pet. 11–16.

c) *1[b] genericizing each of the network entities based on the respective collected network entity data to generate a plurality of generic network entities, wherein a generic network entity includes a generic representation of respective network entities from different cloud computing platforms of the plurality of cloud computing platforms;*

Petitioner contends that Ross alone or Ross and Agarwal teach “genericizing” network entities and that the generated network entities include “a generic representation of respective network entities from different cloud computing platforms of the plurality of cloud computing platforms.” Pet. 16–19. Patent Owner argues that the Petition fails to show that Ross alone, or Ross combined with Agarwal, teaches (1) genericizing network entities and (2) that the generic network entity represents network entities from different cloud computing platforms. Prelim. Resp. 5–12.

Having reviewed the current record, we are persuaded that Petitioner has demonstrated a reasonable likelihood that the combination of Ross and Agarwal teaches limitation 1[b] for the reasons provided in the Petition. We turn first to the issue of whether Ross alone or Ross combined with Agarwal teaches genericizing network entities. Petitioner contends that Ross “teaches or suggests, *genericizing . . . each of the network entities . . . based on collected network entity data*” in three ways: 1) classifying workload nodes into groups; 2) clustering together workload nodes; and 3) identifying communities of workloads. Pet. 16 (citing Ex. 1004, 5:64–6:48). Additionally, Petitioner contends that “Agarwal expressly discloses genericizing *network entities*” by generating node groups where each group includes a generic representation of respective network entities. *Id.* at 18 (citing Ex. 1005, 5:5–14, 5:35–43, 11:59–63, 15:11–13, 15:45–51, 18:55–19:5, 24:23–46, 25:34–39).

Petitioner’s contention that Ross and Agarwal teach genericizing

network entities by disclosing the grouping or clustering of nodes based on their common characteristics is consistent with the '896 patent's description of generic network entities, which explains that "[g]eneric network entities . . . are network entities which are configured to include one or more standard properties." Ex. 1001, 9:18–20. For example, Ross teaches that nodes can be classified based on their connections to other nodes, or clustered based on whether they behave similarly or fulfill the same function. Ex. 1004, 5:67–6:6, 6:21–27. We agree with Petitioner that classifying, clustering, or forming communities of workloads based on whether they behave similarly or fulfill the same function teaches genericizing network entities because these classifications or clusters of nodes have common standard properties of their members. For these same reasons we disagree with Patent Owner's argument that Petitioner fails to explain how Ross's disclosure of classifying, clustering, or forming communities teaches genericizing network entities. Prelim. Resp. 6 (arguing that "the petition fails to sufficiently explain how each of these actions [of classifying, clustering, forming communities] constitute *genericizing* a workload."). To the extent the parties' dispute depends on the scope of the term "genericizing" or "generic network entities," the parties should assert their claim construction arguments and evidence in the Patent Owner Response, Petitioner Reply, or otherwise during trial, as permitted by our rules.

We also agree with Petitioner that Ross combined with Agarwal teaches "generat[ing] a plurality of generic network entities, wherein a generic network entity includes a generic representation of respective network entities." Agarwal discloses that its system collects data associated with network entities and groups the nodes based on node characteristics

such as “i) security groups, ii) instance tags, iii) load balancers, iv) key [p]air v) auto scaling groups.” Ex. 1005, 15:45–51; *see also id.* at 18:55–19:5 (“Metadata attributes can be used by a grouping component within the system to group nodes together. . . . [T]he selectable metadata attributes can include one or more process names, port numbers, different type of flow metrics”). Agarwal provides an example of a group family created by grouping nodes based on these aforementioned characteristics, explaining in “Test Case 1” that two groups can be created from four nodes based on similarities of their names. Ex. 1005, 24:10–47. Dr. Easttom credibly testifies that a POSITA would have understood that each of Agarwal’s node groups is a generic representation of respective network entities. Ex. 1003 ¶¶ 98–102.

Patent Owner argues that the Petition fails to show that Agarwal teaches limitation 1[b] because Agarwal’s node groups are generated before any nodes satisfying the criteria of a particular node group are sorted into the group. Prelim. Resp. 9 (citing Ex. 1005, 24:24–46, 15:45–16:1, 16:18–22, 16:30–31, Figs. 8, 22). Patent Owner does not tie this argument to any requirement in the claim, however, and thus this argument does not rebut Petitioner’s contentions.

We turn next to the issue of whether the combination of Ross and Agarwal teaches that the generic network entities represent entities from “different cloud computing platforms.” In this regard, Petitioner contends that Ross’s computing environment includes workloads (network entities) deployed in a plurality of cloud platforms and that a POSITA would understand that Ross’s classification and clustering of workloads would apply across all workloads from which data is collected, including those from different cloud service providers. Pet. 17 (citing Ex. 1004, 2:54–3:6,

Fig. 2). Ross supports Petitioner's contentions. For example, Ross discloses that its cloud security management system includes different cloud services 260₁ to 260_z. Ex. 1004, 4:10–11, Fig. 2. These cloud services include Amazon Web Services, Microsoft Azure, Google Cloud Platform and others. *Id.* at 4:12–18. Ross discloses that it collects information from workloads across these different cloud platforms. *Id.* at 4:10–11 (“Network and middleware system logs 270 can be data sources such as flow logs from cloud services 260₁ to 260_z.”). Dr. Easttom credibly testifies that because Ross collects data about workloads from different cloud platforms “a POSITA would . . . have found it obvious, that any classification, clustering, and community formation based on such data would include workloads from the different cloud computing platforms.” Ex. 1003 ¶ 96. Accordingly, we are persuaded of a reasonable likelihood that the combination of Ross and Agarwal teaches “a generic network entity [that] includes a generic representation of respective network entities from different cloud computing platforms of the plurality of cloud computing platforms,” as recited in limitation 1[b].

d) 1[c] generating at least a network graph, wherein the generated network graph is a multi-dimensional data structure providing a representation of the plurality of generic network entities and relations between the generic network entities of the plurality of network entities; and

Petitioner contends that Ross and Agarwal teach limitation 1[c]. Pet. 22–28. For example, Petitioner contends that Ross teaches a graph database (Ross's graph database 225) and that a POSITA would have understood that a graph database stores nodes and edges instead of tables and documents. Pet. 22–23 (citing Ex. 1004, 5:16–20, 4:66–5:13, Fig. 2; Ex. 1003 ¶¶ 109–110). Petitioner contends that a POSITA would have understood that by teaching the creation of a graph database, Ross teaches generating a network

graph that is a multi-dimensional data structure. *Id.* at 22–23 (citing Ex. 1003 ¶¶ 109–110).

Petitioner also relies on Agarwal’s disclosure of a “flow map” that “represents a particular grouping of resources and the connections between the resources.” Pet. 25–26 (citing Ex. 1005, 8:11–12, 25:67–26:1, Fig. 23H). Petitioner argues that Agarwal’s Grouping Manager service creates groups of nodes and flows and its TGraph Server service represents a cloud infrastructure as a graph where the output of the TGraph Server is to “OrientDB.” Pet. 27 (citing Ex. 1005, 23:51–64, Fig. 21). Relying on Dr. Easttom’s testimony, Petitioner notes that OrientDB, released in 2010, is an open-source NoSQL database management system that supports graph models and where relationships are managed in the same way as a graph database with direct connections between records. Pet. 27 (citing Ex. 1003 ¶ 118). According to Patent Owner, “[b]ased on these disclosures, a POSITA would have understood Agarwal to teach a multi-dimensional data structure (e.g., OrientDB) providing a representation of generic network entities (e.g. node groups) and relations between them (e.g., flow groups).” *Id.* (citing Ex. 1003 ¶¶ 115–120).

Patent Owner argues that neither Ross nor Agarwal characterize their graph databases as multi-dimensional data structures and that Petitioner’s arguments are supported only by conclusory expert testimony. Prelim. Resp. 12–13. Patent Owner also argues that even though Petitioner identifies Agarwal’s OrientDB as the claimed multi-dimensional data structure the Petition does not show that the combination of Ross and Agarwal teaches the recited “generating at least one network graph” aspect of the claims. Prelim. Resp. 14.

Having reviewed the current record, we are persuaded that Petitioner

has demonstrated a reasonable likelihood that the combination of Ross and Agarwal teaches limitation 1[c] for the reasons provided in the Petition. Specifically, we agree that Ross and Agarwal teach a network graph that is a multi-dimensional data structure. The '896 patent explains that a “graph is a multi-dimensional data feature providing a representation of the contents and structure of a network, cloud, environment or the like.” Ex. 1001, 11:51–54. Keeping this description in mind, we note that Ross discloses that its graph 220 “normalizes information received in streaming telemetry 275, events 285, and inventory 295 into a standard data format and/or model, graph database 225.” Ex. 1004, 4:67–5:3. Ross’s “Graph database 225 uses a graph data model comprised of nodes . . . which is an entity such as a workload . . . and edges, which represent the relationship between two nodes.” *Id.* at 5:3–8.

Similarly, Agarwal discloses a “flow map [that] represents a particular grouping of resources and the connections between the resources.” Ex. 1005, 8:10–11. Agarwal explains that “the flow map can be configured to display the application graph with flows between nodes.” *Id.* at 8:1–2. Agarwal discloses a TGraph Server service that “represent[s] a cloud infrastructure . . . as a graph.” *Id.* at 23:61–64. Figure 21 of Agarwal shows that the TGraph Server stores the graph in a database labeled “OrientDB.” Dr. Easttom testifies that OrientDB was “initially released in 2010, [and] is an open-source NoSQL database management system that supports graph models and where relationships are managed in the same way as graph databases.” Ex. 1003 ¶ 118.

Dr. Easttom testifies the graphs in Ross and Agarwal are stored in a graph database which a POSITA would recognize as a multi-dimensional data structure. *Id.* ¶¶ 109, 120. We credit Dr. Easttom’s testimony because

it is consistent with the '896 patent, which explains that a “graph is a multi-dimensional data feature providing a representation of the contents and structure of a network, cloud, environment or the like.” Ex. 1001, 11:51–54. To the extent the parties’ dispute depends on the scope of the term “multi-dimensional data structure” the parties should assert their claim construction arguments and evidence in the Patent Owner Response, Petitioner Reply, or otherwise during trial, as permitted by our rules.

e) 1[d] creating at least one imputed entity, wherein the at least one imputed entity is a generic network entity representing an executed platform functionality, and wherein the executed platform functionality is different than a network entity; and

Both parties agreed in the related litigation that the term “imputed entity” should be construed as a “Generic entity representing a network entity that is integrated into one or more host platforms, or a network entity that is shielded from, or not otherwise exposed to, a system configured to execute network analysis processes and methods.” Pet. 6 (citing Ex. 1053, 3). Petitioner argues that the combination of Ross, Agarwal, and Biran teaches limitation 1[d] under the agreed construction or under the plain and ordinary meaning of “imputed entity.” *Id.* at 6–7.

Petitioner relies on Biran as teaching creating at least one imputed entity. Pet. 28–34. Specifically, Petitioner argues that Biran teaches discovering “host-less components” in a network and that host-less components, such as those components in a Platform as a Service (“PaaS”), are transparent to a system configured to execute network analysis processes. Pet. 29–30 (citing Ex. 1006, 1:59–61, 2:4–10, 4:9–10, 4:31–41, 5:41–47, 5:47–6:5, 17:46–65; Ex. 1003 ¶¶ 128–131). Petitioner contends that a “POSITA would have understood that the discovered ‘host-less components’ in Biran each constitute a network entity that is integrated into

one or more host platforms, or a network entity that is shielded from, or not otherwise exposed to, a system configured to execute network analysis processes and methods,” consistent with the agreed upon construction of “imputed entity.” *Id.* at 31 (citing Ex. 1003 ¶¶ 128–131).

When Biran’s teaching of discovering host-less components is combined with Ross and Agarwal’s teaching of creating groups of nodes, Petitioner contends that a “POSITA would have found it obvious and been motivated to create a group of such transparent assets” and “would have understood that a group of similar transparent assets (e.g. elastic load balancers) constitutes an ‘imputed entity’ under the agreed construction.” Pet. 33 (citing Ex. 1003 ¶¶ 137–141). Petitioner also contends that a group of transparent assets represents an executed platform functionality, for example those of AWS elastic load balancing and Azure Load Balancer, and that the executed platform functionality is different than those of a network entity, for example, the functionality of Ross’s workloads. *Id.* (citing Ex. 1003 ¶¶ 139–141).

Patent Owner argues that the Petition fails to show that the combined references disclose “creating at least one imputed entity” as recited in limitation 1[d]. Prelim. Resp. 15. Patent Owner points out that the Petition relies on Biran for discovering host-less components but does not allege that Biran discloses creating an imputed entity. *Id.* at 15–16. Patent Owner criticizes Petitioner’s contention that it would have been obvious to create an imputed entity in light of Agarwal’s teaching of creating a group of similar virtual load balancers. *Id.* Patent Owner argues that the Petition fails to point to any disclosure in Agarwal to expressly suggest creating a group of load balancers, much less a group of host-less load balancers. *Id.*

Having reviewed the current record, we are persuaded that Petitioner

has demonstrated a reasonable likelihood that the combination of Ross and Agarwal teaches limitation 1[d] for the reasons provided in the Petition. Specifically, Biran discloses discovery of “host-less components” in Platform as a Service (PaaS) services such as Amazon Web Services. Ex. 1006, 17:46–65. Biran explains that PaaS discovery may be more complex and that host-less components are where hosts are “transparent” to a service. *Id.* Dr. Easttom credibly testifies that Biran’s host-less components are “integrated into one or more host platforms, or a network entity that is shielded from, or not otherwise exposed to, a system configured to execute network analysis processes and methods,” consistent with the agreed construction of “imputed entity.” Ex. 1003 ¶ 131. We agree that in light of Biran’s teachings and those of Agarwal and Ross, which group nodes together based on common characteristics (as explained above), it would have been obvious to a POSITA to create a group of host-less components. Ex. 1003 ¶ 137. Such a group would, therefore, teach the recited “imputed entity” because it would be “integrated into one or more host platforms, or a network entity that is shielded from, or not otherwise exposed to, a system configured to execute network analysis processes and methods.”

f) 1[e] storing the generated network graph.

Petitioner contends that Ross discloses storing its generated graph in “graph database 225.” Pet. 34 (citing Ex. 1004, 4:67–5:3, 9:20–30). Similarly, Petitioner contends that Agarwal also teaches storing its graph in OrientDB, which is similar to a graph database. Pet. 35–36 (citing Ex. 1005, 23:51–64; Ex. 1003 ¶ 150). Patent Owner does not dispute Petitioner’s contentions for limitation 1[e].

We determine that Petitioner has demonstrated a reasonable likelihood that Ross teaches limitation 1[e] for the reasons provided in the Petition and

summarized above. Pet. 34–36.

g) Whether Petitioner has Established a Sufficient Rationale to Combine Ross, Agarwal, and Biran

Patent Owner argues that the petition “fails to sufficiently explain why a POSITA would have been motivated to combine Ross, Agarwal, and Biran to arrive at the claimed invention.” Prelim. Resp. 16. Patent Owner accuses Petitioner of addressing motivation to combine “on a piecemeal basis” in which Petitioner addresses the motivation to combine Ross and Agarwal for limitations 1[b] and 1[c] and separately addresses the motivation to combine Ross and Biran for limitation 1[d]. *Id.* at 17.

We determine, at this stage of the proceeding, that Petitioner has sufficiently established a motivation to combine Ross, Agarwal, and Biran in the manner proposed. For example, Petitioner contends for limitation 1[b] that a POSITA would have been motivated to implement Ross’s system to genericize network entities as taught by Agarwal and that Agarwal provides an express motivation to do so, explaining that “[t]he grouping of nodes can be helpful when attempting to understand system properties in a cloud environment, like availability, security and performance, where the system includes a large number of nodes.” Pet. 21 (citing Ex. 1005, 4:13–26, 13:21–27; Ex. 1003 ¶¶ 103–108). Similarly, for limitation 1[d] Petitioner argues that “Biran provides express motivation to implement Ross to gather information on host-less components . . . to generate an accurate, service-aware view of the system infrastructure.” *Id.* at 32 (citing Ex. 1006, 1:59–61; Ex. 1003 ¶¶ 134–136). These disclosures demonstrate that Petitioner’s motivation to combine stems from the prior art references themselves rather than from hindsight. Moreover, Petitioner’s contentions are supported by credible testimony from Dr. Easttom. *See* Ex. 1003 ¶¶ 103–108, 122–123,

134–136, 142.

Addressing a motivation to combine on a limitation-by-limitation basis, as Petitioner has done in its Petition, is not necessarily improper, and may in fact be more suitable in certain situations depending on the proposed combination. Patent Owner does not provide any authority supporting its contention that providing a motivation to combine in the manner asserted in the Petition is contrary to proper obviousness analysis under *Graham*.

Patent Owner argues that for limitation 1[c], the “[P]etition argues that ‘a POSITA would have found Ross to teach or suggest that the graph database provides a representation of the plurality of generic network entities,’ even though the petition does not allege that Ross even teaches or suggests the plurality of generic network entities recited in limitation 1[b].” Prelim. Resp. 17 (citing Pet. 23). This argument is unavailing because the Petition *does* allege that Ross teaches the plurality of generic network entities of limitation 1[b]. Pet. 16 (“Ross teaches or suggests, *genericizing* . . . each of the *network entities* . . . based on collected *network entity data*.”).

Patent Owner notes that the Petition asserts that a POSITA would have been motivated to combine Agarwal and Ross “for ease of visual representation to a user.” Prelim. Resp. 18 (quoting Pet. 21–22). Patent Owner criticizes Petitioner’s proposed motivation to combine Ross and Agarwal arguing that “Ross already incorporates specific methods for providing such functionality” and that Petitioner does not “allege that Agarwal’s methods would be an improvement over Ross’s teachings.” Prelim. Resp. 19. This argument is unavailing. The fact that one reference addresses a problem does not mean that it cannot be combined with another reference that provides a different or alternative solution to the problem. *See Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380–81 (Fed. Cir.

2023) (finding it obvious to modify a first reference with an element from a second reference to address a specified issue if the element was a “suitable option,” even where the first reference already addressed the issue in a different way). Similarly, the law is clear that “just because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes.” *In re Mouttet*, 686 F.3d 1322, 1333 (Fed. Cir. 2012). Here, Agarwal expressly states that one reason to group nodes together (“genericizing” network entities) is to “simplify the visualization of system performance.” Ex. 1005, 13:21–25. This reason is sufficient to demonstrate that a POSITA would have been motivated to combine Ross and Agarwal’s teachings.

h) Conclusion – Claim 1

For the aforementioned reasons, we determine Petitioner has demonstrated a reasonable likelihood that the combination of Ross, Agarwal, and Biran teaches each of the limitations of claim 1 and that a person of ordinary skill in the art would have been motivated to combine the references’ teachings to arrive at the claimed invention.

2. Analysis of Independent Claims 14 and 15

With a few exceptions, independent claims 14 and 15 recite limitations that are similar in scope to those of independent claim 1. Petitioner, therefore, relies on its contentions for claim 1 for the overlapping limitations of claims 14 and 15. *See* Pet. 48–52. Patent Owner does not separately dispute Petitioner’s contentions for claims 14 and 15. *See* Prelim. Resp. We have reviewed Petitioner’s contentions for the limitations of claim 14 and 15, including those that do not overlap with claim 1 (e.g. those that recite a “processing circuitry” and “a memory” storing instructions) and determine Petitioner has demonstrated a reasonable likelihood that the

combination of Ross, Agarwal, and Biran teach these limitations for the reasons provided in the Petition.

3. *Dependent Claims 2–13 and 16–29*

Dependent claims 2–13 and 16–29 depend, directly or indirectly, from claims 1 and 15. Petitioner addresses each of the limitations of these dependent claims. Pet. 36–48. Petitioner demonstrates a reasonable likelihood of success in proving that at least the independent claims of the ’896 patent are unpatentable. *See supra* §§ II.E.1–2. At this stage of the proceeding, we do not provide an assessment of the dependent claims challenged by Petitioner, which Patent Owner does not separately dispute. Those challenges, in our view, are best left for trial after full development of the record.

III. CONCLUSION

Petitioner has demonstrated a reasonable likelihood of prevailing in showing the unpatentability of the independent claims. We institute on all grounds and all claims raised in the Petition. *See* C.F.R. § 42.108(a). At this stage of the proceeding, however, we have not made a final determination with respect to the patentability of the challenged claims.

IV. ORDER

For the foregoing reasons, it is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–29 of the ’896 patent is instituted with respect to all grounds of unpatentability set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the ’896 patent shall commence on

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the entry date of this Order, and notice is hereby given of the institution of a trial.

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