

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS, INC.,

Petitioner,

v.

UMBRA TECHNOLOGIES LTD.

Patent Owner.

Case No. IPR2024-00344

U.S. Patent No. 11,146,632

PATENT OWNER'S PRELIMINARY RESPONSE

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TABLE OF EXHIBITS

Ex. 2001	RESERVED.
Ex. 2002	Qin, Y., et al. “Mobility Weakens the Distinction Between Multicast and Unicast,” IEEE/ACM Transactions on Networking, Vol. 24, No. 3, June 2016.
Ex. 2003	U.S. Publication No. 2012/0196646 A1.
Ex. 2004	U.S. Patent No. 9,736,870.
Ex. 2005	U.S. Publication No. 2014/0310243 A1.
Ex. 2006	Microsoft Press (2002). Beacon. In <i>Microsoft Computer Dictionary Fifth Edition</i> . Retrieved on May 13, 2024 from: https://burmasterrecords.wordpress.com/wp-content/uploads/2009/12/microsoft_computer_dictionary__fifth_edition1.pdf .
Ex. 2007	PCMag. Retrieved on May 13, 2024 from: https://www.pcmag.com/encyclopedia/term/beacon ; https://www.pcmag.com/encyclopedia/term/beaconing .
Ex. 2008	April 8, 2024, Letter from Patrick Delaney to Counsel for Cisco Systems, Inc.
Ex. 2009	UMBRA Technologies Ltd.’s Revised Infringement Chart, served on Cisco Systems, Inc. on May 13, 2024.

Patent Owner UMBRA Technologies Ltd. respectfully submits this preliminary response to Cisco System, Inc.’s petition seeking *inter partes* review (“Petition”) of U.S. Patent No. 11,146,632 (the “’632 patent”). For the following reasons, the Board should decline to institute *inter partes* review.

I. INTRODUCTION

Every corner of Patent Owner’s as-filed patent application describes systems for delivering data beacons. The file history shows that the preamble recitation “network system *for providing data beacons*” was given limiting effect. In the notice of allowance, the Examiner explained that, although the body of the independent claim appeared to recite “somewhat non-complex subject matter,” the preamble’s *data beacon* recitation rendered the claim patentable. Since the data beacon recitation was relied upon to distinguish over the prior art, it is limiting.

The Examiner explained that the term *data beacon* requires something more than the recitations in the body of the independent claim. The notice of allowance clearly states that the claims were allowed because the Examiner could not find any suggestion in the prior art of a *data beacon* system having the features recited in the body of the independent claim.

Notwithstanding the clarity of the ’632 patent and the file history on this point, the Petition simply assumes that any system, which has the features recited in the body of the independent claim, is a *data beacon* system. That cannot be squared

with the patent and the Examiner's statements in the notice of allowance. The Petition fails to meaningfully address the *data beacon* limitation and provides no explanation how the asserted reference, Agarwala, discloses a data beacon system as that term is properly interpreted.

The specification repeatedly and consistently underscores the importance of "data beacons" to the disclosed invention. The Examiner correctly recognized that the term "data beacon" supplies patentable weight to the claims. And because the Petition did not (and could not) demonstrate that Agarwala discloses a data beacon, the Petition should be denied.

II. ARGUMENT

A. The Claims Were Allowed Due to the Preamble Recitations, and They Are Limiting

The preamble recitation "network system for *providing data beacons*" is limiting for two reasons: i) this feature was relied upon during prosecution to distinguish over the prior art, and ii) the entirety of the specification makes clear that providing data beacon functionality is the fundamental purpose of the invention.

The title of the '632 patent is *Data Beacon Pulser(s) Powered by Information Slingshot*. The Background of the Invention section explains that "[t]he present disclosure relates generally to networks, and more particularly, to the topology, configuration and operation of a data beacon pulser (DBP)." Ex. 1001 at 1:29-31. The entirety of the background section, which spans six columns of the patent,

exclusively discusses prior art and technical issues related to data beacon pulsers (DBPs). It explains that “[t]he invention overcomes the distance issues associated with TCP/IP and UDP/IP because the underlying protocol of Slingshot powering DBP does not have the same congestion and inefficiencies problems over distance.” *Id.* at 5:21-24. Each mention of “the invention” involves a data beacon. The first sentence of the Summary of the Disclosure section summarizes the specification as follows: “Systems and methods for providing data beacons are disclosed.” *Id.* at 7:30-31.

Claim 1, the only independent claim in the ’632 patent, was originally filed in this form:

1. A network system for providing data beacons, comprising:
 - a first node comprising a first read queue, a first write queue, and a first parallel file system;
 - a second node comprising a second read queue, a second write queue, and a second parallel file system;
 - wherein the first node writes first data from the first write queue to the second parallel file system; and
 - wherein the second node reads the first data from the second parallel file system and places the first data in the second read queue.

Courts have uniformly looked to the entirety of the patent application to understand when a preamble term provides a claim limitation. Whether to treat a preamble as a limitation is a determination “resolved only on review of the entire[]

... patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim.” *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257 (Fed. Cir. 1989).

In *Poly-America LP v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1310 (Fed. Cir. 2004), the court stated that “a ‘[r]eview of the entirety of the [] patent reveals that the preamble language relating to ‘blown-film’ does not state a purpose or an intended use of the invention, but rather discloses a fundamental characteristic of the claimed invention that is properly construed as a limitation of the claim itself.”” *See also Corning Glass*, 868 F.2d at 1257 (limiting claim scope to “optical waveguides” rather than all optical fibers in light of the specification); *General Electric Co. v. Nintendo Co.*, 179 F.3d 1350, 1361-62, (Fed. Cir. 1999) (limiting claim scope to a “raster scanned display device” rather than all display systems in view of the specification’s focus on the prior art problem of displaying binary data on a raster scan display device). In this case, a fundamental characteristic of the claimed network system is a “data beacon” system implemented in a novel fashion using queues, parallel file systems, and direct writes, which demonstrates the preamble is limiting. *See Proveris Scientific Corp. v. Innovasystems, Inc.*, 739 F.3d 1367, 1373 (Fed. Cir. 2014) (“However, the preamble of claim 3 is the only reference in any independent claim to the inventive concept of capturing a sequence of images in

order to characterize the time evolution of the spray plume. This fact alone is likely sufficient to support a conclusion that the preamble is limiting.”).

Further, under the *Corning Glass Works* “review of the entire patent,” it is evident that here, the inventors actually invented improved systems for delivering data beacons and intended that the claims encompass only improved data beacon delivery systems having certain features recited in the body of the claim (albeit features which, when divorced from the preamble, may not appear particularly complex). The specification consistently refers to the invention as relating solely to data beacons. The title expressly recites data beacons. The claims as originally filed recite data beacons. *See Rotatable Techs. LLC v. Motorola Mobility LLC*, 567 F. App’x 941, 943 (Fed. Cir. 2014) (finding the preamble limiting where a patent’s “title, abstract, background of the invention, summary of the invention, description of the drawings, detailed description, and all independent claims recite ‘selectively rotating’” as referenced in the preamble). And, to the best understanding of the undersigned, nothing in the specification suggests that the inventors intended to claim anything outside the realm of data beacons. Accordingly, the preamble recitation “network system for providing data beacons” is fundamental to the invention and limiting.

The prosecution history is consistent with the specification’s focus on the data beacons recited in the preamble as being *the* disclosed invention. For example, in a

first action notice of allowance, the Examiner explained that “[a]lthough independent claim 1 appears at first to be somewhat non-complex subject matter, it was found to be novel in the art.” Ex. 1002 at 9. The Examiner then notes that “a search for the term ‘data beacon pulser,’ *which is disclosed in the specification as the technology upon which the invention is based*, was not found in any prior art other than that of the inventor.” *Id.* at 10. Similarly, the Examiner noted: “A broader search for ‘data beacon’ in the same paragraph as variations of the term ‘pulse’ yielded the reference, Crinon et al. (US 20120196646 A1) and related references by the same inventors. However, those references deal with mobile networks, and do not disclose any information about read queues, write queues, or parallel file systems. Examiner also reviewed the prior art references provided as being relevant in the PCT International Search Report, but did not find that the references teach the claimed subject matter with the required level of specificity.” *Id.*

Thus, like the specification, the prosecution highlights the fact that the data beacons recited in the preamble are the basis of the invention. To that end, the Examiner was exactly correct in allowing the claims on the basis of the preamble’s recitation of data beacons. Indeed, reliance on the preamble in the notice of allowance is of particular importance. M.P.E.P. 1302.14 (“The examiner’s statement of reasons for allowance is an important source of prosecution history”).

When there is an allowance in the first action, the notice of allowance may embody the entirety of the “back-and-forth” between the applicant and the examiner.

More generally, the prosecution history can be highly instructive in confirming that a preamble provides a meaningful limitation. *See Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 866 (Fed. Cir. 1985) (“the district court, however, was influenced—and so are we—by statements made during prosecution of the [] patent.”). To that end, it is well settled that “[n]o litmus test defines when a preamble limits claim scope, [] but dependence on a particular disputed preamble phrase for antecedent basis may limit claim scope because it indicates a reliance on both the preamble and claim body to define the claimed invention.” *Shoes by Firebug LLC v. Stride Rite Children’s Grp., LLC*, 962 F.3d 1362, 1367 (Fed. Cir. 2020) (internal quotations and citations omitted).

Here, while it was the examiner’s (rather than the applicant’s) reliance on the preamble that distinguished the prior art, Patent Owner respectfully submits that such reliance is nonetheless indicative that the preamble is limiting—especially where the examiner allowed the claims in a first action allowance before the applicant had a chance to distinguish prior art. Indeed, the examiner’s data beacons-premised allowance is consistent with the specification’s clear reliance on the importance of the “data beacons” to the overall disclosed invention.

B. As Properly Construed, “Data Beacon” Requires “One-Way Casting or Multi-Casting”

The intrinsic evidence shows that the term *data beacon* refers to a signal delivered via one-way casting or one-way multi-casting (the latter of which is simply one-way casting to multiple recipients, as explained in Ex. 2002).

The Background of the Invention section of the patent begins with the following passage:

The present disclosure relates generally to networks, and more particularly, to the topology, configuration and operation of a data beacon pulser (DBP). *A DBP offers fast, efficient, and dependable **one-way casting/multi-casting** of information globally.* A DBP can be utilized for transmission of financial data, news feeds, seismic data, and many other applications where dependable and accurate near wire speed dissemination of rapidly changing information is time critical.

Ex. 1001 at 1:29-37 (emphasis added).

The Background section continues by framing the invention in terms of its use of “slingshot” technology, which uses a one-way communication protocol.

The technology powering a data beacon pulser (DBP) is based on slingshot technology as described in U.S. Provisional Application Nos. 62/296,257 and 62/266,060 . . .

Slingshot ***one-way sending*** (U.S. Provisional Patent No. 62/266,060 referenced herein) offers certain advantages to the reliable movement of data at near wire-speed.

Id. at 1:41-43; 3-36-38 (emphasis added).

One of the key benefits of slingshot is that it does not require responses or acknowledgements, which are required for common communication protocols such as TCP over IP. *Id.* at 2:54-57; 4:6-19; 6:1-5. The specification explains that the elimination of the overhead and latency associated with TCP/IP ACK packets (or other responsive communications required in prior art two-way communication protocols) provides substantial performance benefits over longer distances. *Id.* at 6:29-42.

Much of the background section is dedicated to distinguishing the invention over a particularly relevant prior art technique that involves one-way casting or multi-casting: UDP over IP. The specification explains in detail how the inventive one-way casting/multi-casting technique is superior to and different from the prior art UDP/IP multi-casting technique. *Id.* at 4:43-5:51. One of the most relevant passages is reproduced below.

The invention overcomes the distance issues associated with TCP/IP and UDP/IP because the underlying protocol of Slingshot powering DBP does not have the same congestion and inefficiencies problems over distance. In the case of repeat queries to fast moving and rapidly changing information, especially during times of heavy activity, UDP/IP and TCP/IP are subject to congestion events and subsequent packet loss. *UDP/IP will simply drop packets without receiver nor sender being aware of this loss leading to imperfect visibility of market*

info. Data Beacon Pulser addresses this by offering reliability and speed superior to UDP/IP and TCP/IP over distance.

While the financial industry was used as an example of mission critical need for complete and accurate and fast transmission of data, many other industries and sectors have their own criticality around speed of delivery, and in some cases, the sheer volume of data such as in transmission of large medical diagnostic images, this volume of data can also overwhelm IP networks with congestion which leads to slowdowns.

Data Beacon Pulser can be used in financial technology networking (FinTech). *It provides advantages over the current state of the art such as UDP one-way multi-casting vs DBP utilizing slingshot.* DBP FinTech has important application to price discovery where accuracy, timing, and scope of information are critical to trade decision making as the basis for order execution order/confirmation. The focus on value in financial markets is an example only as a DBP may be applicable in many other industries. Those with sufficient knowledge and skill can utilize DBP for many other applications.

Ex. 1001, 5:21-51 (emphasis added).

During prosecution, the Examiner cited several references which relate generally to data beacons. In the notice of allowance, the Examiner stated that “[a] broader search for ‘data beacon’ in the same paragraph as variations of the term ‘pulse’ yielded the reference, Crinon et al. (US 20120196646 A1) and related

references by the same inventors.” Ex. 1002 at 10. The “beacon” described in Crinon is a one-way broadcast. Ex. 2003 at [0056]. Two other references cited by the Examiner disclose beacons, and each of those references describe one-way information broadcasts. Ex. 2004, 2005 (US 9736870, US20140312043A1 respectively).

For the sake of completeness, the Microsoft Computer Dictionary defines beacon in the context of one network as “a special frame generated and passed along when a node detects a problem.” Ex. 2006. PC Magazine defines beacon as “[a] device that transmits a continuous signal, typically via Bluetooth.” Ex. 2007, definition 3; *see also definition of “beaconing”*.

Considering the foregoing, the proper interpretation of *data beacon* is a signal delivered via one-way casting or one-way multi-casting; it is fundamental to the claimed systems that they deliver such signals.

C. The Petition Does Not Meaningfully Address the Data Beacon Limitation, and Agarwala Does Not Disclose a Data Beacon

The Petition does not attempt to interpret the term *data beacon*. Rather, it assumes that the term “data beacon” is met if the recitations in the body of the claim are met. Petitioner argues that any system that writes or reads data across nodes provides a *data beacon*:

To the extent the preamble is limiting, Agarwala discloses this limitation. EX-1004; EX-1005. Agarwala discloses “the StorFS system

is a storage system that includes a plurality of storage nodes coupled together by an interconnection network” (a network system). EX-1004 ¶¶0039; EX-1005 3:59-62. With respect to providing data beacons, the body of claim 1 does not refer to “data beacons” and instead only recites that “first data” is written (e.g., [1.3] from the first write queue to the second parallel file system) and read (e.g., [1.4] from the second parallel file system to the second read queue). *As such, “data” that is written or read across nodes is an example of a “data beacon”, and Agarwala discloses that its StorFS system writes and read data across nodes (providing data beacons).* For example:

In one embodiment, the input/out request can be a request to read content from the StorFS system, write content to the StorFS system, and/or request status of content stored in the StorFS system.

EX-1004 ¶¶0053, EX-1005 4:50-53. Data is mirrored from the write log in the write cache of one node across the network to other nodes for storage in persistent storage. EX-1004 ¶¶0043 (describing asynchronous replication across nodes).

...

That data that is written or read across nodes is an example of a “data beacon” is also consistent with Plaintiff’s assertions in the Related Litigation. See EX-1006 p. 3 (“The HX Data Platform controller handles all read and write requests for volumes that the hypervisor accesses and thus intermediates all I/O from the virtual machines and containers....’, i.e., Cisco HyperFlex HX-Series nodes in a Cisco HyperFlex System are a network system for providing data beacons.”),

p. 9 (“[Node2] commits the write to the active local write log on the caching SSD [A1] and sends duplicate copies to other nodes, e.g., ‘[A2] on Node 1’, i.e. the first node writes first data from the first write queue to the second parallel file system”).

Petition at 28:22-29:30; 30: 1-10 (emphasis added).

As noted above, this position cannot be squared with the notice of allowance. Therein the Examiner explained that the term *data beacon* requires something more than the “somewhat non-complex” recitations in the body of the claims. The notice of allowance made clear that the claims were allowed because the Examiner could not find any suggestion in the prior art of a *data beacon* system having the features recited in the body of the claim. In other words, the file history is clear that the Examiner interpreted the term *data beacon* as requiring something more than that which is recited in the body of the claim.

Neither the Petition nor the supporting declaration asserts that Agarwala or any of the other cited prior art uses one-way casting or multi-casting (i.e. one-way casting to multiple recipients). The Petition should be denied for this reason.

Even if the Board were to endeavor to conduct its own search for a disclosure in Agarwala of one-way casting or multi-casting (which would be improper), it would not find one. Agarwala does not describe any such one-way broadcasting, and such an approach would be fundamentally inconsistent with Agarwala’s objective of providing a multi-level caching protocol. A caching protocol would not

use a lossy protocol like UDP because such protocols do not ensure that the data is safely received at the destination. Stated another way, a distributed multi-layer cache could not use a lossy protocol¹ like UDP/IP because in such a system there would be no guarantee that the caches on multiple nodes actually received (and are storing in their fast access memories) the transmitted information, thus there is no guarantee of cache coherency. Because the Petition provides no explanation as to how the cited art might meet the data beacon limitation, properly interpreted, the Petition should be denied.

In an apparent attempt to justify the Petition's reliance on a very broad interpretation of the term "data beacon," the Petition argues that its interpretation is allegedly "consistent with Plaintiff's assertions in the Related Litigation." Petition at 30. Petitioner's reliance on the claim charts voluntarily submitted along with the complaint (in the related litigation) cannot save the Petition. Unlike formal contentions (which are only served later in litigation) the complaint and its attachment are subject only to notice pleading requirements. Thus, the claim charts voluntarily filed with the complaint need not specifically address every claim element in detail. Patent Owner recognizes that the charts submitted with the

¹UDP, strictly speaking, is a lossy protocol because it permits packet loss. For context, Patent Owner notes that recently, long after the time of filing, techniques have been developed to make UDP substantially more reliable. As a result, UDP is in some contexts no longer described as a lossy protocol.

complaint could have included a more detailed treatment of the data beacon limitation, but this lack of detail has no bearing on the proper construction of claim terms.

Further, although the district court litigation was stayed on April 25, 2024, Patent Owner had already notified Petitioner that Patent Owner planned to serve updated claim charts that addressed the data beacon feature, among other elements, in greater detail. Ex. 2008. Patent Owner informed Petitioner that at least one such sample chart would be provided in advance of the formal contentions deadline of May 29, 2024, before this date was nullified by the stay order. Contemporaneous with this filing, on May 13, 2024, Patent Owner served the at least one sample chart, which addresses the data beacon limitation in a manner consistent with the arguments set forth herein. Ex. 2009. In short, Patent Owner acknowledges that the original notice charts lacked detail in their treatment of the data beacon limitation, detail that has now been added in updated charts served in litigation.

III. CONCLUSION

For the foregoing reasons, Patent Owner UMBRA Technologies Ltd. respectfully submits that the Board should decline to institute *inter partes* review in this proceeding.

Dated: May 13, 2024

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WORD COUNT CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), I hereby certify that the foregoing PATENT OWNER'S PRELIMINARY RESPONSE contains 3,480 words as measured by the word processing software used to prepare the document. This total does not include the table of contents, the caption page, the table of exhibits, any signature blocks, the certificate of service, or this certificate of word count.

Respectfully submitted,

Dated: May 13, 2024

By: /James E. Harris/

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CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing PATENT OWNER'S PRELIMINARY RESPONSE along with EXHIBITS 2002-2009 were served in their entirety by filing the documents through the Patent Trial and Appeal Case Tracking System (P-TACTS) as well as providing courtesy copies via e-mail to the following attorneys of record for the Petitioner listed below:

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