

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS**

AKAMAI TECHNOLOGIES, INC.

Plaintiff and Counter Defendant,

v.

LIMELIGHT NETWORKS, INC.

Defendant and Counter Claimant.

Case No. 1:16-cv-10253-GAO

Case No. 1:16-cv-12624-GAO

JURY TRIAL DEMANDED

(Leave to file granted 10/10/17)

**LIMELIGHT NETWORKS, INC.'S PRELIMINARY CLAIM CONSTRUCTION
BRIEF**

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I. INTRODUCTION

Pursuant to the Court’s Order (D.I. 60), Limelight Networks, Inc. (“Limelight”) hereby submits its preliminary claim construction brief addressing terms from Limelight’s and Akamai’s asserted patents. Limelight’s positions are supported by the declaration of its expert Dr. Kevin Almeroth, and other supporting documents.

II. RELEVANT CLAIM CONSTRUCTION PRINCIPLES

Because the Court is familiar with the principles of claim construction, Limelight omits a full recitation of the legal principles relevant to resolving the disputes herein, and raises those principles directly in discussion of the disputes, where appropriate.

III. AKAMAI PATENTS

A. U.S. Patent No. 8,250,211 (“211 Patent”)

1. “global cache”

Limelight’s Proposed Construction	Akamai’s Proposed Construction
Claims 1, 5, 6 and 7: “cache on a cluster of LAN-connected edge servers that primarily serve worldwide requests, not primarily requests from the region in which the edge server is located” Claim 8: “cache on multiple clusters of LAN-connected edge servers that primarily serve worldwide requests, not primarily requests from the region in which the edge server is located”	Plain and ordinary meaning; no construction needed Alternatively, if the court deems construction to be necessary “global cache” should be construed as “geographically distributed collection of edge servers.”

The dispute over “global cache” turns on the meaning of “global.” Limelight’s proposed construction correctly clarifies that “global” refers to the worldwide reach of requests and services (*e.g.* to and from around the globe). Akamai’s construction reads the central term “global” completely out of the claim by proposing that “global cache” means “a geographically distributed collection of edge servers.” The 211 Patent leaves no doubt that “global” servers are

those that provide worldwide services regardless of their physical location. Akamai's proposed construction deletes the term it purports to construe and means nothing. Almeroth Decl. ¶¶ 40, 52.

The 211 Patent purportedly addresses a problem of serving content, such as video content, to users spread around the world. Almeroth Decl. ¶ 44. Video (and other media) can be difficult to distribute because the service provider has competing concerns: providers want multiple copies of media files accessible to end users so users can access content quickly and reliably, but providers do not want to use needless server storage for large rarely-used files. The 211 Patent states that a solution is to use a combination of distinct classes of servers with different roles and capabilities:

FIG. 3 illustrates an embodiment of the invention that provides two levels of edge servers. ***Regional edge servers 301, 302, 303, provide edge servers on a regional basis***, e.g., United States, Europe, Asia, etc. These regional edge servers 301, 302, 303, are placed on the edges of the regional networks for improved accessibility to the interior Internet network 305. ***Global edge servers 304 are edge servers that are on the edge of the worldwide Internet 305***. Customers are given the option to purchase memory space on specific regional edge servers 301, 302, 303, and/or on global edge servers 304. ***The global edge server memory allocations typically garner a higher rate than memory on the regional edge servers because of the greater geographic coverage and higher operational costs***.

Ex. 1 at 6:60-7:6. *See also*, Abstract, 1:59-61, 3:66-4:7, Fig. 3, and 7:17-25. “Global” servers have enhanced capacity and performance that allow them to be dedicated to global coverage—serving in-demand content to users around the globe. “Regional” servers with lower capacity and performance serve only a specific geographic region, and may be a better option for rarely-used files. Caching files on a “global” server commands a higher price than “regional” caching, and the content provider can balance the price and performance based on whether there is truly a need to provide worldwide access to a given file. In other words, in the 211 Patent, “global” and “regional” describe where the clients are, not where the servers are. Almeroth Decl. ¶¶ 45-46.

While the complete phrase “global cache” is not used in the specification or the prosecution history and is used for the first time in the claims, the meaning of “global” in this context is clear. CDN customers pay for global caching because handling requests from across the entire Internet rather than from a single region is worth the extra cost. The patent’s consistent description of (1) dedicated servers with enhanced capabilities, purpose-built for worldwide coverage and (2) higher prices for placing content to be served globally rather than regionally shows that Limelight’s proposed construction is correct—a “global cache” is one that primarily serves worldwide requests rather than merely regional requests. Indeed, while the specification does not mention global cache, it discusses two types of edge servers, global edge servers and regional edge servers. It is apparent that the global cache is made up of the global edge servers that the specification does discuss—but in clusters rather than as individual servers. Almeroth Decl. ¶¶ 47-48.

This term must be construed because there is a dispute between the parties over the scope of the term, as shown by Akamai’s “alternative” construction. The parties dispute the meaning of “global.” While Limelight proposes that global refers to the worldwide reach of the service performed by the global cache, Akamai simply ignores the word “global” altogether, deletes it from the claim, and replaces it with “geographically distributed,” which means nothing and in any event does not mean the same thing as “global.” Akamai’s non-construction of “plain and ordinary meaning” is thus improper as it does not resolve the parties’ dispute and does not explain what “global” actually means in the context of the 211 Patent. *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1361 (Fed. Cir. 2008) (“A determination that a claim term ‘needs no construction’ or has the ‘plain and ordinary meaning’ may be inadequate when a term has more than one ‘ordinary’ meaning or when reliance on a term’s ‘ordinary’

meaning does not resolve the parties' dispute."); *NobelBiz, Inc. v. Glob. Connect, L.L.C.*, 2017 U.S. App. LEXIS 12946, at **9-11 (Fed. Cir. July 19, 2017) (finding the district court's plain and ordinary meaning construction erroneous when the parties disputed the scope of the claim term).

Akamai's alternative construction that a cache is "global" whenever its servers are "geographically distributed" is inconsistent with the specification and the claim language. The specification repeatedly describes "global" servers as serving requests from around the world, and having enhanced capability to do so. "Regional" servers are distributed to different regions and focus on regional requests. The 211 Patent envisions each region (e.g. Europe, Asia, the Americas) with its own collection of "regional" servers. Regional servers are not "global" servers or a "global" cache because they serve regional rather than worldwide requests. Their geographical distribution does not make them a global cache. Indeed, as described, regional edge servers are in fact geographically distributed, *i.e.* in different geographic regions. Conversely, the "global" servers remain "global" even if they are not distributed geographically. Even a single server can provide global cache service if that server primarily serves worldwide requests, and there is no requirement that a specific number of global servers must be used or must be distributed worldwide.

Akamai's construction for Claim 1 is inconsistent with the language of Claim 1, which identifies the global cache as "a cluster of *LAN connected* edge servers." The specification defines LAN as "Local Area Network. Connects local hosts," and "Local" as "[a] *geographically limited region* that allows better network communication. Typically to a *one km radius*." **Ex. 1** at 2:64, 2:52-55. Akamai's construction implies a geographic distribution of these servers far

beyond a single LAN and is thus incompatible with Claim 1. A cluster of edge servers cannot be geographically distributed and geographically limited at the same time. Almeroth Decl. ¶ 43.

The distinction between regional and global services described in the 211 Patent was how Speedera, the original patent applicant, described its own network, consistent with the description in the 211 Patent:¹

Speedera provides several options in choosing how large a global streaming edge network of servers you need: dual site, regional (Americas, Europe, Asia-Pacific), or global... Stream live or on-demand events from dual sites, ***specific geographical regions (Americas, Europe, or Asia-Pacific) or our entire global edge*** – pay only for what you need.

Ex. 2 at LLNW_M_00001529. *See*, Almeroth Decl. ¶¶ 49-51.

A person of skill in the art would understand that a “global cache” means edge servers serving worldwide requests as proposed by Limelight, and not geographically distributed edge servers as proposed by Akamai. *See* Almeroth Decl. ¶ 41.

2. “close to end users”

Limelight’s Proposed Construction	Akamai’s Proposed Construction
Indefinite.	Plain and ordinary meaning; no construction needed Alternatively, if the court deems construction to be necessary “close to end users” should be construed as “proximate to end users.”

A patent is indefinite “if its claims, read in light of the patent’s specification and prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2123 (2014). When a party asserts that a claim is indefinite “general principles of claim construction apply.” *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1348 (Fed. Cir. 2005). A claim

¹ Speedera was a CDN service provider that was acquired by Akamai in 2005.

comprising a term of degree like “close” “without any accompanying guidance in the intrinsic record for determining its scope” and “objective boundaries” for interpreting the term, is indefinite. *In re Walter*, No. 2016-2256, 2017 U.S. App. LEXIS 15909, at *10-11 (Fed. Cir. Aug. 21, 2017). *See also, Dow Chem. Co. v. Nova Chems. Corp. (Can.)*, 803 F.3d 620, 633-35 (Fed. Cir. 2015) (holding claims indefinite when the claims, specification, and prosecution history did not provide guidance on what method should be used to measure a term of degree).

The term “close to end users” is a term of degree without a reasonable standard for measuring, objectively, what “close” means in context. Such terms are indefinite if the specification does not provide sufficient guidance to the person of skill in the art on how to measure proximity. *Advanced Aero. Techs., Inc. v. United States*, 124 Fed. Cl. 282, 292 (2015) (holding that “*near* the point of engagement” is indefinite because the specification did not use this term and the patent did not provide a reasonable standard for a person of skill in the art for measuring what should be considered as near.); *In re Neurografix ('360) Patent Litig.*, 201 F. Supp. 3d 206, 222-23 (D. Mass. 2016) (holding the term “*near*” indefinite because the specification and prosecution history did not provide an objective standard for positioning the physical proximity); *Abdou v. Alphatec Spine, Inc.*, 2014 U.S. Dist. LEXIS 163044, at *20-27 (S.D. Cal. Nov. 19, 2014) (holding “*in proximity to* the first vertebral bone” indefinite because the patent lacked any quantitative parameters or range to define what proximity would be).

The specification and prosecution history do not provide any guidance on how to measure what is “close to end users.” This term is used for the first time in Claim 1, where the cluster of LAN connected edge server is “organized within a third party edge network *close to end users*.” Because the specification does not use or discuss the term “close” (or any potential

synonyms, like “near” or “proximate”), the 211 Patent provides no standard for measuring what would be close and what would not. Nor do the claims themselves provide any further explanation or clarification on how to measure closeness to an end user or what metrics should be used. A person of skill in the art would need guidance in interpreting “close to end users,” because in the field of content delivery networks the degree of proximity can be measured in different ways. Almeroth Decl. ¶¶ 54-55. For example, closeness to an end user can be measured by the geographical distance between the edge server and the end user, the number of network hops, counting the number of network routers between two points, or measuring the number of autonomous systems traversed by packets on their way from one host to another. Almeroth Decl. ¶¶ 56-61 (discussing extrinsic evidence). When there are multiple methods for measuring a term of degree and neither the claims nor the specification provide any guidance as to what method to apply, the claim is indefinite. *Dow Chem. Co.*, 803 F.3d at 633-5.

Akamai’s proposed constructions do not provide any guidance on how to measure closeness to an end user. Almeroth Decl. ¶¶ 53, 62. Akamai’s first proposal, that the term should have a plain and ordinary meaning is improper, because as discussed above, “close to end users” does not have a plain and ordinary meaning and applying such construction would not resolve the dispute between the parties. *O2 Micro Int’l Ltd.*, 521 F.3d at 1361. Akamai’s alternative construction should also be rejected because it simply replaces the word “close” with the synonym “proximate,” without providing further guidance on how to measure proximity to an end user. “[M]erely rephrasing or paraphrasing the plain language of a claim by substituting synonyms does not represent genuine claim construction.” *C.R. Bard, Inc. v. United States Surgical Corp.*, 388 F.3d 858, 863 (Fed. Cir. 2004). This is especially the case where Akamai has attempted to replace one indefinite term of degree (“close”) with another (“proximate”) that

itself has been found to be indefinite under similar circumstances. *See Abdou*, 2014 U.S. Dist. LEXIS 163044, at *20-27 (“in proximity to”). Akamai’s construction does not provide any guidance or clarification on how to measure closeness to an end user. The term “close to end users” is indefinite. Almeroth Decl. ¶ 53.

3. “high-bandwidth content”

Limelight’s Proposed Construction	Akamai’s Proposed Construction
Indefinite.	“content requiring high-bandwidth delivery, including, for example, video and other multimedia files”

Akamai’s construction should be rejected because “high-bandwidth” is an indefinite term of degree and Akamai’s construction simply repeats the word without construing it. The specification and file history do not disclose how to identify or distinguish “high-bandwidth” content from other content. *See In re Walter*, No. 2016-2256, 2017 U.S. App. LEXIS 15909, at *10-11 (Fed Cir. 2017). (holding that “block like” is an indefinite term of degree because the intrinsic record does not provide any guidance or objective boundaries on which shapes are “like” a “block”). Furthermore, the patent does not provide any guidance on which method should be applied to determine whether content is high-bandwidth. *See Dow Chem. Co.*, 803 F.3d 620 at 633-5; *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371-2 (Fed Cir. 2014); *Datamize, LLC*, 417 F.3d at 1350. A person skilled in the art reading the patent would not know what content is high-bandwidth content, because numerous variables affect whether content is high bandwidth or low bandwidth, such as the end user’s network quality and whether the content is streamed or downloaded. Almeroth Decl. ¶¶ 64-67, 72-73. In addition, the meaning of high bandwidth changes over time as end users’ available bandwidth improves. While in 2003 (Akamai’s asserted priority date) most households in the United states had low bandwidth internet connections, by 2011 more than 60% of households had high speed broadband network

connections. Therefore, content that would have been considered high bandwidth in 2003 would now be considered low bandwidth due to the improvements in the end user's network quality. Almeroth Decl. ¶ 69. Similarly, high bandwidth in a location with advanced broadband infrastructure would have a completely different meaning than it would have in a location where broadband infrastructure was either less developed or lacking. Almeroth Decl. ¶¶ 68, 70-71.

Akamai's construction should be rejected because it simply shuffles the indefinite claim terms around, proposing to construe "wherein the high-bandwidth content is video content," as "content requiring high-bandwidth delivery, including, for example, video." *See Wi-Lan Inc. v. Acer, Inc.*, No. 2:07-CV-473 TJW, 2010 U.S. Dist. LEXIS 99263, at *92 (E.D. Tex. Sep. 20, 2010) (the court refused to construe a term where the construction merely rephrased the claim language without adding any meaning). Akamai's use of the claim's limitation of "video" in its construction adds no clarity to "high-bandwidth," because while Claim 1 expressly notes that "high-bandwidth" content includes video, not all video is "high-bandwidth." What is lacking in the claims, the specification, and in Akamai's own construction is any guidance for separating high-bandwidth video from low-bandwidth video. Akamai's proposed construction adds further ambiguity to the term, because Akamai proposes that high-bandwidth content can be "video and other multimedia files." There are various types of multimedia files, such as audio, video and image. Almeroth Decl. ¶ 77. Different multimedia files have different sizes, resolutions, compressions and therefore have different bandwidth requirements. Almeroth Decl. ¶¶ 74-76. The same applies to audio and image files, compounding the indefiniteness of the term.

4. "third party edge network"

Limelight's Proposed Construction	Akamai's Proposed Construction
"a network of an entity other than the service provider where the entity owns and manages the network infrastructure and the network"	Plain and ordinary meaning; no construction needed

provides, administers and controls end users' Internet access"	Alternatively, if the court deems construction to be necessary "third party edge network" should be construed as "an edge network, operated by an entity other than the content provider or end user."
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As a threshold matter, Akamai's proposal of plain and ordinary meaning will not work. Under *O2 Micro* there is a clear dispute about two separate aspects of the meaning of this claim term, and accordingly the following disputes must be resolved: (1) whether "third party" needs to be a party that is *different* from the service provider that places its servers in a "third party" network (it does); (2) what an "edge network"—which is nowhere defined in the specification—is. Limelight's construction properly embodies the ideas that (1) a "third party" must be someone other than the service provider, such that when a CDN service provider puts its servers in a third party network it is the third party and not the CDN service provider that provides, administers, and controls the network and that (2) the edge network as claimed should be given a clear definition that is consistent with how the term is used in the context of Akamai's practice of putting its own servers in ISPs that belong to third parties. Akamai's alternative construction attempts to impermissibly expand each aspect of this term.

First, the asserted claims are methods "implemented by a *service provider* on behalf of a content provider" and indeed most limitations of the asserted claims are performed by the service provider, which according to Akamai is a CDN. The claims also require the service provider to locate its servers in a *third-party* edge network. Limelight's construction properly acknowledges that the *third-party* edge network is "a network of an entity *other than the service provider*" in which the service provider chooses to locate its servers. Akamai's proposed construction attempts to eviscerate this limitation—suggesting that, as long as the network does not belong to an end user or a content provider, it could belong to a "third party." But in the context of a claim

implemented by a service provider, third party must mean someone other than the party implementing the method, i.e. someone other than the *service provider*. Akamai's construction ignores claim language and invites the untenable argument that a service provider can locate its servers in a *third-party* network by locating them in *its own* network, or said another way: that the service provider could somehow be a third party in relation to itself, which is obvious nonsense. Akamai's own usage of the term "third party network" confirms that this term means a network belonging to someone *other than the service provider*, in this case Akamai, and that it is that third party rather than Akamai that owns and manages the network infrastructure. Almeroth Decl. ¶ 81. In its annual report, Akamai describes its network providers as "third-party network providers."

Cost of revenues consists primarily of fees paid to network providers for bandwidth and for housing servers in *third-party network data centers*, also known as co-location costs... The Company enters into contracts for bandwidth with *third-party network providers* with terms typically ranging from several months to two years.

Ex. 4 at LLNW_M_00001453-4; *see also*, Almeroth Decl. ¶ 82. Indeed, Akamai's longstanding practice of putting its servers in networks that belong to *other entities* has been touted by Akamai for years, and is a point of pride. *See Ex. 5* at LLNW_M_00001164. ("Akamai doesn't have a network. Akamai doesn't have leased lines to connect its boxes together...The base goal is to have servers at the edge of the Internet. What does that mean? It means ideally they're not sitting inside UUNET's hosting center, Abovenet's hosting center, or whomever else's center. Ideally, they're sitting at the ISP's, at the DSL providers, the cable head-ins. Locating in this way minimizes the problems getting to the last mile."). *see also*, Almeroth Decl. ¶¶ 83-84. Akamai's proposed construction attempts to run away from this basic requirement of the 211 Patent and it should be rejected. Limelight's construction, in contrast, accurately reflects the core concept that the CDN service provider must locate its servers inside the network of a *different entity* that

owns and manages the network infrastructure.

Second, the parties dispute what an edge network is. The specification and the prosecution history do not include any teaching about an “edge network.” Edge network is also not a lay term in ordinary use. Almeroth Decl. ¶ 80. Thus, “edge network” must either find defining support in extrinsic technical evidence or be indefinite. *In re Walter*, 2017 U.S. App. LEXIS 15909 at *9 (affirming the Board’s ruling that “block like” is indefinite because the specification and file history did not provide guidance as to the meaning of the term and the expert opinion that this is a term of art was not supported by evidence and was therefore conclusory).

Neither Akamai’s plain meaning proposal, nor its alternative construction (which simply defines “edge network” to mean “edge network”) offers any explanation of what an edge network *is*. As Dr. Almeroth explains, an edge network in this context is a network dedicated to providing, administering, and controlling end users’ Internet access. Almeroth Decl. ¶¶ 84-85.

5. “filling the global cache [with popular, high-bandwidth content]”

Limelight’s Proposed Construction	Akamai’s Proposed Construction
“filling all available storage of the global cache selected on the basis of [popularity and high-bandwidth]”	“adding content to edge servers in the global cache”

The word “filling” has an understood meaning and the claim language and specification are consistent with that meaning. The parties dispute whether filling a global cache requires using all of the available storage in the global cache, consistent with the commonly understood meaning of the word “fill” (Limelight’s position) or merely “adding” any content at all regardless whether the cache is anywhere close to actually being full (Akamai’s position). Because Limelight’s construction gives the word “filling” a correct meaning, and Akamai’s

construction would attempt to call a cache full even if it is mostly empty, Limelight’s construction should be adopted.

Limelight’s construction reflects that filling the cache is both a process (i.e. putting content in the cache) and a result (i.e. that all the available storage of the cache is actually being used). This is supported by the specification, which describes a process of putting content into all available space in the edge server: “The edge servers keep track of the popularity of content requested by users and initiate replication of content to its local storage device and re-replication *to make the best use of its available storage.*” **Ex. 1** at 11:25-28. *See also, id.* at 11:24-44. Thus, the claimed invention requires that *all* the space in the global cache be used for popular content. Dr. Almeroth explains that the concept of “filling” a cache does not simply refer to adding any content to a cache, but to using the entirety of the cache. Almeroth Decl. ¶¶ 88-90. Extrinsic evidence confirms that “filling” does not simply mean adding any amount no matter how small, but actually requires putting as much content into the cache as the cache can hold. Thus, “fill” is defined: “to put into as much as can be held or conveniently contained” **Ex. 6** at LLNW_M_00001499.

Akamai’s use of the “adding” would render “filling” meaningless, inviting a nonsensical argument that adding just a little bit of content is enough to fill something, even if it is mostly empty. Filling does not mean adding. It means making something full. Almeroth Decl. ¶¶ 91-92.

6. “selectively filling at least a portion of the global cache [with popular, high-bandwidth content]”

Limelight’s Proposed Construction	Akamai’s Proposed Construction
“filling all available storage of a portion of the global cache assigned to a specific customer with [popular, high-bandwidth] content selected by the customer”	“adding content to edge servers in at least one selected portion of the global cache”

In addition to the dispute above regarding the meaning of “filling,” which also applies here and about which Limelight is correct for the same reasons, the parties also dispute what is the claimed **portion** of the global cache, and what it means to **selectively** fill it. The specification discloses an embodiment that clarifies the meaning of these terms. In this embodiment a customer pays for maintaining its files in a fixed amount of memory allocated to that specific customer on an edge server. “An edge server maintains a dynamic number of popular files in its memory for the customer. The number of files is determined by the **fixed amount of memory that the edge server reserves for the customer.**” Ex. 1 at 3:53-56. *See also, id.* at 3:43-65; *see also*, Almeroth Decl. ¶¶ 94-96. Thus, **selectively** filling **at least a portion** refers to the portion of the cache that is allocated to a specific customer, as opposed to the entire cache as a whole. Further, Limelight’s construction reflects the embodiment where the customer makes the selection of which content to use for filling the cache: “An embodiment allows a customer to select content files that are to be transferred to a group of edge servers.” *Id.* at 3:43-44 ; *see also*, Almeroth Decl. ¶ 97. Limelight’s construction adheres to the 211 specification and gives life to the different embodiments the inventors disclosed therein. *Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1383 (Fed. Cir. 2008) (“It is often the case that different claims are directed to and cover different disclosed embodiments.”).

Akamai’s construction, rather than taking its meaning from a specifically disclosed embodiment of the purported invention, as Limelight’s does, instead attempts to erase the distinction between this distinct claim term and simply **adding** content to a cache: this is because as to any particular piece of content that a party adds to a cache, that content will be added to whatever part of the cache is selected to store that particular piece of content. Almeroth Decl.

¶ 98. Akamai’s construction, if accepted, would lead Akamai to argue that simply putting any content in any part of any cache would mean filling it selectively—making the term meaningless.

7. “popular/popularity”

Limelight’s Proposed Construction	Akamai’s Proposed Construction
Indefinite.	“content receiving a relatively higher number of requests than other content”

The terms “popular” and “popularity” are indefinite for two reasons. First, popular is a term of degree that must be accompanied by a standard of measurement and the specification does not provide sufficient guidance as to how to measure popularity. *See In re Walter*, 2017 U.S. App. LEXIS 15909 at *10-11; *Interval Licensing LLC*, 766 F.3d at 1371-72; *See also*, Almeroth Decl. ¶ 100.. Second, popularity is a term requiring subjective judgment, a qualitative multi-dimensional term that does not have an objective technological meaning but depends entirely on the perspective and the opinion of the observer. *See Datamize*, 417 F.3d 1348-50 (holding that “aesthetically pleasing” is indefinite because it depends on one’s subjective opinion and the specification does not provide guidance to a person making aesthetic choices). Absent sufficient guidance in the specification explaining how to distinguish what is popular from what is not popular, such terms are indefinite.

The specification discloses different theoretical frameworks for judging popularity, such as (1) ranking popularity among stored files, **Ex. 1** at 3:43-65, 4:65-5:5; (2) measuring *popularity* in an edge server at a location in a time period, *id.* at 9:31-56, 10:43-52, 10:60-63; (3) aggregating popularity data from all edge servers, *id.* at 9:63-10:39. *See* Almeroth Decl. ¶¶ 101-103. But these disclosures do not explain what standard should be used to measure any of these concepts of popularity. Further, even if the 211 Patent provided a specific metric for making a popularity judgment from one of those frameworks, applying the same metric from another

framework would produce a different result: “popular content can vary from one edge location to another. For example, the top ten songs in the Atlanta area will be different from the top ten songs in London.” *Id.* at 9:53-56. Almeroth Decl. ¶ 104. Indeed, the most specific example in the specification about how popularity could be measured confirms that the very concept of popularity is itself determined by the subjective whims of a given customer: “The Interval at which the log files are processed, the miss count threshold, and the number of files to migrate *can be configured*.” *Id.* at 9:63-65. Almeroth Decl. ¶ 105. Thus, even the 211 Patent itself confirms that “popularity” is in the eye of the beholder, where a user of the supposed system is left to decide what to count as popular and what not to count. Thus, the specification not only fails to provide guidance about how to apply this ambiguous term of degree, but affirmatively abrogates any responsibility for doing so. Almeroth Decl. ¶¶ 106-7.

Akamai’s construction further illustrates why these terms of degree are indefinite, for two separate reasons. First, Akamai proposes that popular content is content that receives “a *relatively* higher number of requests than other content.” Akamai’s use of the word “relatively” reinforces that this is a *relative* term of degree that would require a specific standard or scale of measurement. *Dow Chem. Co.*, 803 F.3d at 633-5. But like the 211 Patent itself, Akamai does not provide any such standard or scale, merely saying that popular content must have a *relatively* higher number of requests than other content. Akamai thus proposes a construction that confirms the ambiguous nature of the claim term rather than resolves it. Moreover, Akamai’s construction appears to encompass content that is the opposite of any common sense understanding of “popular”: If there is *any* content that has not been requested, then under Akamai’s definition any content receiving even one request would be argued as so-called “popular content.” Almeroth Decl. ¶ 109.

Because the 211 Patent provides no single sufficient metric to judge whether content is supposedly “popular” or not, thus failing to provide a person of skill in the art sufficient guidance as to the meaning of the term, these terms of degree are indefinite.

B. U.S. Patent No. 8,484,319 (“319 Patent”)

1. “host configuration table (HCT)”

Limelight’s Proposed Construction	Akamai’s Proposed Construction
“a table containing content delivery network service provider-wide metadata with entries following a dictionary form, including a unique version attribute corresponding to the customer for which the table applies”	“A table that includes information used to configure a host for the delivery of content.”

“Host configuration table,” is not a term of art that has a readily understood meaning to one skilled in the art but is instead a construct created by the inventors of the 319 Patent to describe the alleged invention. *See* Almeroth Decl. ¶ 113. The inventors deliberately define the term and describe its content, format, and function in the specification to inform one skilled in the art of the exact meaning and scope of the term. The inventors acted as their own lexicographers and the Court should adopt their definitional disclosure as the correct construction of this disputed term. *See Pacing Techs., LLC v. Garmin Int’l, Inc.*, 778 F.3d 1021, 1024 (Fed. Cir. 2015) (explaining that to act as its own lexicographer, a patentee must “clearly set forth a definition of the disputed claim term” and “clearly express an intent to define the term.”).

Specifically, in the section entitled “1. Host Configuration Table,” the specification provides “[t]he Host Configuration Table *contains CDNSP-wide metadata, including hints that enable locating customer-specific metadata.*” Ex. 7 at 16:14-18. The specification then expressly states: “[t]his section *describes the format of the HCT, defines its contents, and the method used to find entries in it when matching requests.*” *Id.* at 16:18-20. In the following subsection of “1.1.1 HCT Content,” the specification states: “Conceptually, *host configuration*

table entries follow a dictionary form, keyed on the Customer Configuration ID.” *Id.* at 16:20-23. The specification further states in the next subsection of “1.1.2 HCT Format:” “each ‘hct’ represents *a separate Host Configuration Table*, and *must have a different ‘version’ attribute, which is required.*” *Id.* at 16:31-33. These definitional statements, as incorporated in Limelight’s construction,² provide the correct construction of this term.

In addition to the inventors’ deliberate acts of lexicography, the specification also contains a clear disavowal, excluding from the claim scope any table that does not have the required unique version attribute. In *Andersen Corp. v. Fiber Composites, LLC*, the Federal Circuit found disclaimer when the specification states “the successful manufacture . . . *requires*” a specific step. 474 F.3d 1361, 1367 (Fed. Cir. 2007) (emphasis in original). Here, the 319 Patent specification emphasizes that “each ‘hct’ represents a separate Host Configuration Table, and *must* have a different ‘version’ attribute, *which is required.*” **Ex. 7** at 16:31-33. This statement makes clear that a unique “‘version’ attribute” is a required and essential feature of each claimed Host Configuration Table. Such statement, like the disclaimer in *Andersen*, is not a mere description of a particular embodiment, but is characterization directed to the overall invention, and manifests the clear intent to limit the claimed Host Configuration Table to have the required version attribute. *Andersen Corp.*, 474 F.3d at 1367. These statements of clear and unequivocal disclaimer are simply inconsistent with Akamai’s proposed construction.

Additionally, Akamai’s construction merely rephrases the disputed term and fails to inform the jury of the meaning and scope of the disputed term. *C.R. Bard*, 388 F.3d at 863

² For simplicity and to better aid the jury, Limelight’s proposed construction incorporates part of the definitional language in the specification that presently appears most relevant to the determination of infringement. Should the Court find it necessary, Limelight does not object to incorporating additional lexicographical statements in the specification into the construction. *See e.g.*, **Ex. 7** at 16:34-38; 9:39-43.

("[M]erely rephrasing or paraphrasing the plain language of a claim by substituting synonyms does not represent genuine claim construction."). Particularly, Akamai's construction is unclear on what is meant by "configure a host for the delivery of content," which appears even contradictory to the function of the HCT disclosed in the specification, as explained by Dr. Almeroth. Almeroth Decl. ¶ 114.

C. U.S. Patent No. 8,194,538 ("538 Patent")

1. "alternate path"

Limelight's Proposed Construction	Akamai's Proposed Construction
"path other than a primary path already specified by the content delivery network"	Plain and ordinary meaning; no construction needed Alternatively, if the court deems construction to be necessary, "alternate path" should be construed as "one of multiple paths between a given edge server and an origin server."

The 538 Patent describes a purported invention that uses a CDN's server node locations as waypoints in what it calls "alternate paths" between an edge server and an origin server. The CDN can consider network conditions and select a new path—an alternate path—through its server nodes around the internet, to avoid congestion and outages. Limelight's construction reflects this. Akamai's construction attempts to nullify this central requirement. The patent states:

The present invention identifies alternate paths from a CDN edge server to an origin server and uses these alternates to either improve the performance of content delivery, or to provide for fail-over in the event that the direct route is congested or otherwise unavailable. When an edge server contacts the origin server, the "direct" route typically is the route obtained through the Border Gateway Protocol (BGP). *When the inventive routing technique is used, in contrast, alternate routes to the origin server are accessed by sending the request from the edge server to another intermediate (preferably CDN-managed) server/region before going to the origin.*

Ex. 8 at 6:23-33. Per the limiting language "the present invention," the alternate paths are not just any path that happens to work, they are specifically *identified* as such by the CDN before

they are used. *See also, id.* at 7:4-16. When the direct route cannot or should not be used, the CDN then uses this identified alternate route instead. The specification further describes “*a map of potential alternate routes* is created current ping data is used to *identify the two best alternates* . . . [and] *each CDN edge server chooses among the direct route and the alternate routes based on the current actual performance.* . . .” *Id.* at 7:23-32. This confirms that the primary and alternate paths are distinct specified paths, identified in advance, tested for performance or accessibility, so that the CDN can make a selection among the specified paths.³ The specification states that “[t]he edge server then chooses among these alternate routes and the direct route by occasionally testing the performance of each connection, e.g., with a request for content.” *Id.* at 7:64-67. *See also, id.* at 9:7-46.

The prosecution history further supports Limelight’s construction. The applicants argued that prior art involving “point-to-point delivery of digitally encoded messages over the public-switched telephone network” was not in the same field of endeavor because “it does not include or utilize ‘edge servers’ or alternative paths for delivery of objects.” **Ex. 9** at LLNW_M_00001278.

Akamai’s proposal of “plain and ordinary meaning” does not resolve the parties’ dispute and does not explain what “alternate path” means in the context of the 538 Patent as required by *O2 Micro*. Akamai’s alternative construction, by requiring only “one of multiple paths,” will be argued to allow any path to be the “alternate path” as long as there may be other possible paths, even if *one and only one* path is ever used. Under Akamai’s construction, as long as it is possible to identify any other hypothetical path, the *only actual* path used by the accused system

³ While this description relates to a preferred embodiment, this does not imply that there is any definition of alternate route that does not require routes to have been specified in advance.

would be argued to constitute the claimed “alternate path,” which does not make sense. Akamai’s “alternative” construction makes a nullity of this claim term and should therefore be rejected.

2. “server node”

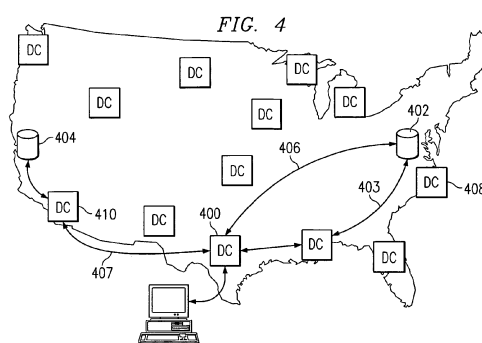
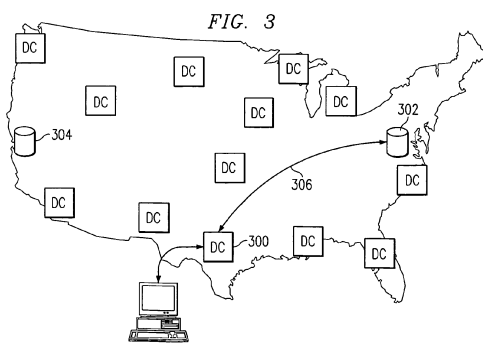
Limelight’s Proposed Construction	Akamai’s Proposed Construction
“data center containing the content delivery network edge servers for a particular geographic region”	<p>Plain and ordinary meaning; no construction needed</p> <p>Alternatively, if the court deems construction to be necessary, “server node” should be construed as “a set of one or more CDN servers.”</p>

Again, the 538 Patent purports to disclose a beneficial way of routing traffic from one part of the internet through a CDN’s own nodes rather than using default Internet paths, and that such rerouting is geographical in nature—*i.e.*, from one region, to another, to another.

The inventive routing technique enables an edge server operating within a given CDN region to retrieve content (cacheable, non-cacheable and the like) more efficiently by *selectively routing through the CDN’s own nodes*, thereby avoiding network congestion and hot spots. *The invention* thus enables an edge server to fetch content from an origin server through an intermediate CDN server or, more generally, *enables an edge server within a given first region to fetch content from the origin server through an intermediate CDN region*. As used herein, this routing through an intermediate server, node or region

Ex. 8 at 6:11-22. Server nodes are the geographic waypoints of the invention.

“Node” is used in the 538 Patent specification, such as to explain that “[a] content delivery network or ‘CDN’ is a network of geographically distributed content delivery *nodes* that are arranged for efficient delivery of content on behalf of third party content providers.” *Id.* at 1:29-32. But the support for what a “server node” actually *is*, or how it actually gets used, comes in Figure 4 and the related description. Figures 3 and 4 together show the difference between default CDN routing and the alternative routing purportedly invented by the 538 Patent. Figure 4 shows the alternative routing between two datacenters, with a third datacenter used as a waypoint:



Id. at Figs. 3, 4. As the 538 Patent discloses:

FIGS. 3-4 illustrate ***the basic concept of routing through intermediate CDN regions according to the present invention***. In FIG. 3 an end user request is directed (e.g., through a DNS request routing mechanism) to an edge server located at a datacenter 300 in Texas. In this case the content provider is operating mirrored origin servers at a datacenter 302 on the East Coast, and at a datacenter 304 on the West Coast. In a typical scenario, the edge server connects to the datacenter 302 over a direct connection 306 if it becomes necessary to fetch content from the origin server. ***In FIG. 4, in contrast, a pair of alternative routes is made available to the edge server. One alternative route 402 uses region 406, which is located intermediate of the datacenter 402 and the datacenter 400 to which the end user was originally directed. Another alternative route 408 uses region 410, which is located intermediate of the datacenter 404 and the datacenter 400.***

Id. at 6:43-59. This confirms that the “server nodes” are the datacenters containing the CDN edge servers for a particular geographic region, which datacenters are the waypoints in the alternative routing scheme of the 538 Patent. *See also, id.* at 6:39-7:3; 9:47-10:24.

Akamai’s “plain and ordinary meaning” proposal once again fails to define the disputed claim term and should therefore be rejected under *O2 Micro*. Akamai’s proposed “alternative” construction of “a set of one or more CDN servers” is redundant of other claim language and, by focusing on the things that a server node ***has***, neglects to explain what a server node ***is***. Claim 1 already requires that “a server node comprises a cluster of content delivery network edge servers.” **Ex. 8** at Cl. 1. Saying that a server node is “a set of one or more CDN servers” is redundant of this existing claim requirement. Akamai’s proposed construction of “a set of one or more CDN

servers” is very similar to Akamai’s construction of “global cache” from the 211 Patent: “geographically distributed collection of edge servers.” Both constructions are part of an effort to obtain overbroad constructions disconnected from the disclosures of Akamai’s patents.

IV. LIMELIGHT PATENTS

A. U.S. Patent No. 8,775,661 (“661 Patent”)

1. “[the identified] one or more [global] policies”

Limelight’s Proposed Construction	Akamai’s Proposed Construction
“policies that can be used to manage content delivery to, from and between clients”	“global policies” = “policies determined by a global resource authority from settings received from one or more entities”

Limelight’s 661 Patent teaches a novel method and apparatus of transferring content in a CDN from sources, including origin servers, CDN servers, and other clients (called “eligible sources”), identified based on defined policies in response to a content request. The claimed policies are policies that can be used to manage delivery to, from and between clients, which is reflected in Limelight’s construction. Akamai’s proposal improperly imports limitations of one embodiment—policies being determined by a global resource authority from settings received from one or more entities—to the arbitrary exclusion of other applicable embodiments in the specification contrary to basic precepts of claim construction. Akamai’s proposal is also erroneous because it does not purport to define the actual claim term (global policies) but instead seeks to add another limitation to the claim (a global resource authority) which is not in the claim.

The claims do not require that the policies be determined by a global resource authority from settings received from one or more entities as Akamai proposes. The only claims that mention “a global resource authority,” are the dependent Claims 14-16. Akamai’s reading a limitation of dependent claims into independent claims runs afoul of the doctrine of claim differentiation. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314-15 (Fed. Cir. 2005).

Consistent with Limelight’s construction, the claims recite that global policies are used to control activity of a client and identify the authorized transfer of content from eligible sources in response to a client’s content request. *See e.g.*, **Ex. 10** at Cl. 1 (“wherein the one or more global policies identify circumstances under which clients are authorized to receive content objects from other clients instead of from servers associated with the CDN”); Cls. 5, 13 (“the one or more global policies controlling a behavior or activity of the client and identifying circumstances under which the client is authorized to receive the content”); *see also*, Cls. 2-3.

The specification also repeatedly describes that the key aspect of the claimed policies is to manage content to, from, and between clients. For example, the specification states “[t]he policies may be set according to one or more control layer settings and *serve to manage content delivery to, from and between clients*,” and “[t]he global resource authority **104** uses the status information and control layer settings to determine a set of policies *which, for example, control content transfer over the network*.” **Ex. 10** at 7:7-9, 5:62-65. It further provides:

The global resource authority 104 includes *policies to enable control of the behavior and activities of the clients in the home and business networks 132, 136. According to these policies, the clients can receive and request content globally or within some limited scope, or can be prohibited from either sourcing or receiving altogether.*

Id., 5:33-39; 11:15-33, Figs. 4-5. The specification thus supports Limelight’s construction.

The specification does not limit global policies to being defined by a global resource authority. For example, the summary of the invention states “[a] policy based on the first and second settings is determined,” and “[t]he system . . . may determine a policy based on the first and second settings,” without requiring any particular way of determination. *Id.* at 2:43-45; 3:4-8; *see also, id.* at 3:33-35; 15:40-45, 16:15-19, 17:20-25. Determination of global policies by a global resource authority is described only in relation to one embodiment in the specification. *See e.g., id.* at 4:42-43 (referring to Fig. 1 and the description of system of 100 as an

embodiment). The specification explicitly discloses other embodiments where policies are determined by different entities, including, e.g., the appropriate client, a super node, and the local resource authority. *See e.g.*, 7:35-47 (“In these embodiments, ***the control layer policies could be implemented by the individual or super node clients***. . . . Alternatively, input from the multiple tiers in the control layer may report directly to ***the appropriate client or super node which could then determine the resulting policies***.”); 9:8-11 (“In one aspect, ***the local resource authority*** 208 processes the various control layer settings and ***provides the resulting setting policies***, status and the like to the global resource authority 104.”). Akamai’s construction improperly imports limitations from one embodiment while arbitrarily excluding other applicable embodiments and is thus improper. *See Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1349-50 (Fed. Cir. 2013) (finding a construction improper as it “limit[s] the broadly drafted claims to one preferred embodiment (thereby excluding others) or would be the result of improperly importing a limitation from the specification into the claims”); *GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1307 (Fed. Cir. 2014) (“[W]here claims can reasonably [be] interpreted to include a specific embodiment, it is incorrect to construe the claims to exclude that embodiment, absent probative evidence on the contrary.”).

2. “circumstances”

Limelight’s Proposed Construction	Akamai’s Proposed Construction
“one or more condition(s)”	“more than one condition”

The parties agree that “circumstances” means condition(s) but dispute whether it can encompass one condition as Limelight proposes or requires multiple conditions as Akamai insists. The claims read “***one or more policies identify[ing] circumstances*** under which clients are authorized to receive [the] content.” **Ex. 10** at Cls. 1, 5, 13 (emphasis added). There is no dispute that “circumstances” is in a plural form. The only impact of the plural form of “circumstances” is

that, if there are multiple policies, there will of course be multiple circumstances. Akamai's attempt to stretch that to mean that each policy must identify multiple circumstances is inconsistent with the claim language, not supported by the specification, and contradicts the common usage of the term. The reason that "circumstances" is in a plural form is because the claims require "one or more policies" so that if there are multiple policies there must also be multiple circumstances (*i.e.*, at least one per policy).

The actual dispute is whether the claimed one or more policies must *each* identify multiple circumstances as Akamai suggests or one claimed policy can identify one circumstance as Limelight proposes. Nothing in the claims requires that there be multiple circumstances for *each* policy, and such a reading would be inconsistent with disclosures in the specification and the technological nature of the claimed invention as explained by Dr. Almeroth.

Applying the agreed part of the construction—"condition"—the claims would be understood by one skilled in the art to mean that one or more policies identify the conditions under which clients are authorized to receive content, including multiple conditions or a single condition. Nothing in the claims suggests that the alleged invention would not work if a policy were to identify only one condition that alone sufficed to authorize the client's receipt of content. Akamai's construction requiring more than one authorizing condition to be identified would arbitrarily restrict claim language that can naturally be read in a broader and more permissive way to a narrower and more restrictive meaning. Nothing in the claims supports this. *See also*, Almeroth Decl. ¶¶ 118-119.

The specification does not exclude a *single* condition from the scope of the claimed circumstances under which clients are authorized to receive content. To the contrary, the specification discloses a single authorization condition that if the request for content specifies

that content is to be sourced from an origin server, the requesting client is authorized to receive content from an origin server. *See e.g.*, **Ex. 10** at 2:52-55 (“In other cases, the receipt of the request for content includes receiving the request for content from the client specifying content sourced from an origin server.”); 3:20-22; 3:44-46; *see also*, Almeroth Decl. at ¶ 121. The specification also teaches “[a] client associated with one or more client settings may have a defined relationship to a second client from within the set of eligible. Content sharing privileges associated with the relationship may be specified,” which indicates a setting specifying the content share privilege can be another single condition authorizing receipt of content. **Ex. 10** at 3:49-52; 9:41-52; *see also*, Almeroth Decl. ¶ 121. Akamai’s construction excluding a single authorization condition is therefore contradicted by the specification. As Dr. Almeroth explains, a person of skill in the art, reading the intrinsic record of the 661 Patent, would not consider that the claims were only satisfied if more than one condition was present, but rather any number of applicable conditions that controlled the authorization process would meet that limitation. *See* Almeroth Decl. ¶ 120.

The common usage and dictionary definitions of the word “circumstance” also contradict Akamai’s construction. For example, when asked to identify what circumstances have changed since an earlier point in time during an insurance enrollment, one would understand that this question is asking to identify any and all changed conditions and the answer is not limited to or required to providing at least two such conditions. The response specifying a single condition, if that is the only changed condition since earlier, such as a new child, would be considered perfectly acceptable. Dictionary definitions also confirm “circumstances” can mean a single condition. For example, the plural form of “circumstance” can mean “the logical surroundings or adjuncts of an action; the time, place, manner, cause, occasions, etc., amid which it takes place;

any one of these conditioning adjuncts,” “[t]he condition or state of affairs surrounding and affecting an agent; esp. the external conditions prevailing at the time. (*Now usually pl.*). Mere situation is expressed by ‘in the circumstances,’ action affected in performed ‘under the circumstances.’” **Ex. 11** at LLNW_M_00001533. The claim term “circumstances” encompasses both a singular and a plural meaning.

3. “one or more authorized transfers of [at least a portion] of the content”

Limelight’s Proposed Construction	Akamai’s Proposed Construction
“content (or a portion thereof) permitted to be obtained by a data transfer”	“one or more transfers that satisfy the global policies determined by the global resource authority”

Akamai again seeks to import the same limitations of one embodiment—“the global policies determined by the global resource authority”—into the claim without any support from the specification or claim language. As discussed in connection with “the global policies,” the specification describes several embodiments where the global policies are determined by entities other than a global resource authority. *See Ex. 10* at 7:35-47; 9:8-11. The independent claims do not recite “the global resource authority.” Akamai’s construction is incorrect.

Akamai wrongly reads one possible condition for authorization—satisfying the global policies—into “authorized.” The claims only recite that global policies can be used to identify the authorized transfers, which does not narrow the ordinary meaning of the word “authorized.” “Authorized” should be construed to have its plain and ordinary meaning, which is permitted or allowed—consistent with Limelight’s construction. *See Ex. 12* at LLNW_M_00001498 (“authorize” means “give official permission for”).

V. CONCLUSION

Limelight respectfully request that its proposed constructions be adopted.

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Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that this document filed through the CM/ECF system will be sent electronically to the registered participants as identified on the NEF (NEF) and paper copies will be sent to those indicated as non registered participants on October 20, 2017.

/s/ Matthew D. Powers
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