2009-1372, -1380, -1416, -1417

IN THE
UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

AKAMAI TECHNOLOGIES, INC.,
Plaintiff-Appellant,

and

THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY,
Plaintiff-Appellant,

v.

LIMELIGHT NETWORKS, INC.,
Defendant-Cross-Appellant.

Appeals from the United States District Court for the District of Massachusetts in case nos. 06-CV-11109 and 06-CV-11585, Judge Rya W. Zobel

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PRINCIPAL AND RESPONSE BRIEF OF DEFENDANT-CROSS-APPELLANT LIMELIGHT NETWORKS, INC.

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December 9, 2009

CERTIFICATE OF INTEREST

Counsel for the Defendant-Cross-Appellant Limelight Networks, Inc. certifies the following:

1. The full name of every party or amicus represented by us is:

Limelight Networks, Inc.

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by us is:

Limelight Networks, Inc.

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by us are:

Goldman Sachs & Co.

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by us in the trial court or agency or are expected to appear in this court are:

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STATEMENT OF RELATED CASES

Limelight accepts Akamai's statement.

STATEMENT OF JURISDICTION

This action arises under the Patent Laws of the United States, Title 35, United States Code. The district court had jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1338. Jurisdiction in this Court is based on 28 U.S.C. § 1295(a)(1).

After entry of final judgment in this case on May 27, 2009, Limelight filed a timely Notice of Cross-Appeal on June 4, 2009, pursuant to 28 U.S.C. § 2107 and Rule 4(a) of the Federal Rules of Appellate Procedure.

I. STATEMENT OF THE ISSUES

Akamai's appeal presents an issue of joint infringement and three claim construction issues. Contingent on the outcome of Akamai's appeal, Limelight presents four additional issues arising from its alternative ground for affirmance and cross-appeal.

Akamai's Appeal

1. Whether this Court should affirm the district court's grant of JMOL, where:

(1) it is undisputed that Limelight does not perform every step of the asserted claims of the '703 patent, and

(2) Limelight's control or direction over alleged performance of certain steps of the asserted claims (i.e., the "tagging" and "serving the page" steps) was indistinguishable from that held insufficient as a matter of law to prove direct infringement in *Muniauction*, *Inc. v. Thomson Corp.*, 532 F.3d 1318 (Fed. Cir. 2008), *cert. denied*, 129 S. Ct. 1585 (2009)?

2. Whether the district court properly construed the limitation in Claim 1 of the '645 patent, "a given object . . . associated with an alphanumeric string," to require "the URL used to identify the object in the absence of a content delivery network" where the patent:

(1) defines the invention as prepending a virtual server hostname to an object's original URL, and

(2) teaches no other way to associate an object with an alphanumeric string?

3. Whether the district court properly construed the limitation of claim 1 of the '645 patent, "the given name server that receives the DNS query being close to the client local name server as determined by given location information," to require that "the particular name server that receives the DNS query is selected by the alternative domain name system" where the patent:

(1) describes the invention as the alternative domain name system selecting a DNS server based on the location of the user, and

(2) teaches no other way for a "given name server" to be "close to the client local name server as determined by given location information?"

4. Whether the district court properly construed the limitation of claims 8 and 18 of the '413 patent, "responsive to a DNS query, selecting a given one of the name servers in the content delivery network," to mean "in response to a DNS query, the content delivery network's domain name system selects a particular name server" where the patent:

(1) describes the invention as the CDN domain name system selecting a name server that will then identify a content server to serve the requested object, and

(2) discloses only the CDN domain name system to both respond to a DNS query and select a name server?

Limelight's Alternative Ground for Affirmance and Cross-Appeal

5. Whether the district court should have granted JMOL of no infringement, where:

(1) the patent and prosecution history define "the invention" as prepending a virtual server hostname to an object's original URL, and

(2) Akamai presented no evidence of Limelight or its customers prepending a virtual server hostname to an object's original URL?

6. Whether the district court erred in refusing to grant Limelight a new trial because the jury instructions:

(1) required the jury to find that Limelight "controls or directs" its customers unless those customers act "entirely independently" from Limelight, and

(2) failed to state that instructing a customer how to use the Limelight system is irrelevant and insufficient to show control or direction by Limelight?

7. Whether the district court erred in refusing to grant Limelight a new trial, where:

(1) Akamai obtained and successfully applied a construction of the '703 patent in prior litigation that required selection of an "optimal" server,

(2) the parties' stipulated construction in the present case required selection of an "optimal" server,

(3) Akamai admitted in the prior litigation and in this case that "optimal" means "best," and

(4) the district court reinterpreted "optimal," which allowed Akamai to argue at trial that a "good" server satisfied the "optimal" requirement?

8. Whether the district court erred by denying JMOL that Akamai was not legally entitled to lost profits and by denying a motion for a new trial, where Akamai:

(1) failed to present any sound economic proof of a causal link between Limelight's infringement and any lost sales, and

(2) relied solely on an expert's "judgment call" that 75% of Limelight's customers would have purchased Akamai's service in the but-for world, even though Akamai's price was twice as high as Limelight's and higher than other competitors in the market?

II. STATEMENT OF THE CASE

A. Course of Proceedings

The course of proceedings is generally set forth in Akamai's brief, subject to the additional issues raised in Limelight's alternative ground for affirmance and cross-appeal.

Contingent on the outcome of Akamai's appeal, Limelight presents an alternative ground for affirming JMOL because there was no substantial evidence supporting the jury's verdict that Limelight met the "tagging" requirement of the asserted claims. If JMOL is not affirmed, Limelight seeks a remand for a new trial based on the district court's incorrect jury instruction on "control or direction" and based on the district court's reinterpretation of "optimal" from its prior construction and the parties' stipulation. Finally, Limelight cross appeals the district court's denial of JMOL that Akamai failed to prove lost profits as a matter of law and denial of its motion for a new trial on lost profits.

B. Prior History

Akamai's '703 patent-in-suit was previously before this Court on appeal from the same district court in *Akamai Techs., Inc. v. Cable & Wireless Internet Servs., Inc*., 344 F.3d 1186 (Fed. Cir. 2003).

C. Disposition by the District Court

Akamai filed this case on June 23, 2006, alleging infringement of the '703 and '413 patents. It later added infringement allegations under the '645 patent, but

dropped that patent after claim construction. (A1-2.) The district court granted summary judgment of no infringement on the '413 patent. (A1.)

Akamai waived any assertion of indirect infringement before the February, 2008 trial on the '703 patent. (A737:46; A20800.) The jury found that Limelight directly infringed claims 19-21 and 34 and awarded $40.1 million in lost profits and $2.4 million in reasonable royalty damages. (A93-99.)

On July 1, 2008, the district court denied Limelight's motions for JMOL of no infringement and lost profits and a new trial due to the flawed jury instructions and claim construction without explanation. (A20680; A20683.)

On April 24, 2009, following reconsideration, the district court granted JMOL of no infringement in view of this Court's decision in *Muniauction*. (A1.)

III. STATEMENT OF FACTS

A. The Parties and the CDN Marketplace

Limelight and Akamai each operate competing content delivery networks ("CDN"), by which each offers specialized content delivery services over the Internet to different categories of content providers in a highly competitive market. (A697-98:64-66.) Content providers maintain websites on the Internet (e.g., CNN and Amazon). A CDN offers those providers an alternative way to deliver content requested by users. (A333:15-16.) Instead of responding to user requests directly, content providers can decide, on an object-by-object basis, to redirect requests for

particular objects to a CDN for delivery of the requested content. (A571:63-65.) CDNs deliver content for many content providers simultaneously and offload demand from the content providers' servers. (A338:36-37.)

Akamai is, and has been, the dominant player in the CDN market, having amassed a 75+% market share. (A501:99-100; A502:104.) Akamai's CDN pricing was twice Limelight's, and higher than its other CDN competitors (none of which are alleged to infringe the Akamai patents). (A504:111; A530:86; A698:68-69.)

When Limelight was founded by four individuals in 2001, it relied on a small number of servers in one location to deliver content. (A558:11.) Shortly thereafter, it expanded to other locations and implemented a "switch-based" architecture, which Akamai initially alleged infringed its patents. Akamai later conceded that architecture did not infringe and dropped the switch-based architecture from the case. In April, 2005, Limelight began migrating its primary architecture from switch-based to the CDN system that Akamai challenged at trial. (A575-76:81-85.)

Meanwhile, Akamai acquired the previous number two CDN provider, Speedera. (A577:86.) With Speedera's demise, its price-sensitive customers looked for other CDN service providers to take its place. (*Id.*) Limelight

competed successfully for Speedera's former customers, building its revenue and market share to claim the number two spot itself. (*Id.*)

During 2005-2006, Akamai considered acquiring Limelight, eventually making an offer in 2006, which Limelight declined. (A575:80-81; A577:88-89.) Akamai persisted, proposing to double its offer if Limelight would change its decision. Limelight demurred, having already committed to remain independent via a substantial investment from investors led by Goldman Sachs. (A577:89.)

The next day, Akamai filed this suit without warning. (A577:89.)

B. The Patents–in–Suit

Each patent at issue describes and claims a particular method to deliver specified content on behalf of a content provider over the Internet. All the patents-in-suit have identical specifications and claim priority from the same application.

1. Background

This Court's prior decision contains an excellent overview of the technology relevant to the patents-in-suit. *Akamai Techs.*, 344 F.3d at 1188-1190.

In brief summary, content providers maintain websites that have web pages containing embedded objects, such as graphics or pictures. Each embedded object is identified by a URL ("uniform resource locator") that can be used to retrieve the object after the base web page is served in response to an Internet user's request.

(A265, Fig. 2; A269, 5:23-32.) A typical URL (e.g., http://www.provider.com/Tech/images/space story.gif) includes:

a protocol ("http://"),

a hostname ("www.provider.com"),

a path ("/Tech/images/") and

an object name ("space story.gif").

(A270, 8:4-7.) An object's original URL is the URL conventionally used (before any modification) to serve the object in the absence of a CDN. (A269, 6:38-41.)

A user requests content over the Internet using the URL for that content, usually via a web browser such as Microsoft Explorer. The Internet's Domain Name System ("DNS") resolves the hostname portion of the URL and returns one or more Internet Protocol ("IP") addresses that identify one or more content servers that may contain the requested content. The user's browser then uses the URL to request the content from one of the content servers, which generally responds by delivering the requested content.

CDNs allow content providers to direct some or all such requests to the CDN's domain name servers and content servers, reducing load on the content provider's resources. The content provider can elect to do this by modifying an object's original URL to include the hostname for the CDN. When a user requests

an object using this modified URL, the request for the object is directed to the CDN rather than the content provider's website.

2. "The Invention" as Described by the Patents

Akamai's patents describe only one way to modify the object's original URL to include the hostname for the CDN — described as "*the invention*":

> According to *the invention*, the embedded object URL is first modified, preferably in an off-line process, to condition the URL to be served by the global hosting servers. . . . Thus, according to *the present invention*, a virtual server hostname is prepended into the URL for a given embedded object . . . .

(A269, 6:41-44; A270, 7:24-26.)[1] The "virtual server hostname" is prepended to the object's original URL. It is called "virtual" because it may correspond to multiple different "actual" physical computer servers in a CDN. (A343:56.)

The patents then explain how the disclosed system operates, including that the purpose of retaining the object's original URL after prepending the virtual server hostname is: to retrieve the object from the content provider. The specification further states that "according to *the invention*, the Web site returns a page with embedded object URLs that are modified according to the method illustrated in the flowchart of FIG. 4." (A270, 7:54-57.)

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[1] All emphasis added unless otherwise noted.

Figure 4 in the patents graphically describes the prepending process of the invention:

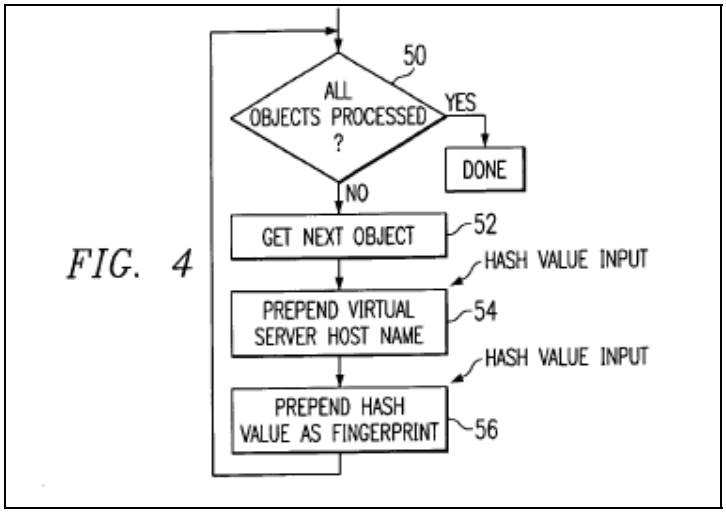

FIG. 4

The patents thus define "the invention" as adding a virtual server hostname to the object's original URL. In the specification's example of an original object URL:

www.provider.com/TECH/images/space.story.gif

[original object URL]

the object is "space.story.gif" and is associated with the alphanumeric string in the modified URL by prepending the virtual server hostname to the object's original URL:

ghost1467.ghosting.akamai.com/www.provider.com/TECH/images/space.story.gif

[virtual server hostname] [original object URL]

(A270, 8:4-12.) The CDN receives requests for the object identified by this modified URL because the virtual server hostname is resolved by the DNS to an IP address in the CDN's domain (e.g., akamai.com). (A269, 6:35-46.)

After the CDN name server resolves the user's request and returns the IP address of a CDN content server, the user then sends the entire URL to the content server in the CDN in order to serve the content. (A272, 12:26-28.) The CDN determines if it has the requested object on its own servers. If it does, it serves the object to the user in response to the request. If the CDN does not have the object, it requests the object from the content provider — using the original URL portion of the prepended URL to identify where the object can be found and making the request for it there. After the CDN retrieves the object from the content provider, the CDN serves it to the user in response to the request. (A272, 12:31-39.)

That the CDN's DNS cannot resolve the *original* URL to identify a content server in the CDN (Akamai Br. at 12) is beside the point. As the patents explain, it never needs to do so. (A271, 9:8-30.) The CDN only uses the original URL to retrieve the object when the CDN servers do not already have a copy. (A272, 12:33-39.)

An inventor of Akamai's patents, Dr. Leighton, admitted that the only way the patent discloses modifying an object's original URL (which the '703 claims call "tagging") is by using the object's original URL along with the virtual server

hostname. (A364:46.) The patent nowhere describes or discloses "replacing" or "substituting" the hostname of the object's original URL. (*Contra* Akamai Br. at 13-14, 56.) No evidence exists that a person of ordinary skill in the art would have known of other techniques for "replacing" a hostname with one that points to a CDN. (Akamai Br. at 14.) The testimony cited by Akamai does not address replacing hostnames, and certainly not when "the invention" requires use of the original URL. Nor do the patents explain how the CDN would retrieve the requested object from the content provider unless the object's original URL were included in the alphanumeric string.

Akamai also asserts that modifying so-called CNAME records (which are stored in name servers and can be used by content providers to enable hostname aliases) constitutes "tagging." (Akamai Br. at 26-28, 42.) The patents do not refer to CNAME records, or to modifying such records, and modifying records in a name server does not change the URL in any way. (A781-83:146-54.)

3. The Only Disclosed Method for Selecting a Name Server

As another aspect of "the invention," the CDN domain name system uses location information to select a name server close to the client that will later select a content server to deliver the requested object:

> As will be seen, the global hosting architecture of *the present invention* manipulates the DNS system so that the name is resolved to one of the ghosts that is near the client and is likely to have the page already.

(A271, 9:25-28.) The specification subsequently describes the "inventive system" in which the top-level DNS "include[s] appropriate control routines that are used to determine where in the network a user is located" and then selects the low-level name server that will later resolve the request for content. (A271, 9:31-39.)

The specification discloses only one way for selecting a name server — using the CDN DNS:

- "[T]he top-level DNS server determines the user's location in the network to identify a given low-level DNS server to respond to the request for the embedded object." (A268, 3:30-33.)
- "The top level DNS servers include appropriate control routines that are used to determine where in the network a user is located, and then to direct the user to a akamai.com (i.e., a low level DNS) server that is close-by." (A271, 9:35-39.)
- "After determining where in the network the request originated, the top level DNS server redirects the DNS request to a low level DNS server close to the user in the network." (A271, 10:12-15.)
- Figures 3 and 5 (called descriptions of the *present invention*) show the top level and low level name servers. (A265-66; A268, 4:45-52.)

The specification discloses no "other techniques" for selecting a name server. (*Contra* Akamai Br. at 15.) All "other techniques" disclosed in the patents are only techniques for determining a user's location in the network, not "other techniques" for selecting a name server. (A271, 9:55-57.)

The lower-level name server selected by the CDN DNS in turn selects a content server by resolving the virtual server hostname of the modified URL into an IP address of the content server. The patents nowhere refer to this as

"intelligent DNS" (Akamai Br. at 12), although that was a central theme of Akamai's presentation to the jury.

The specification also notes "[a]lternatively, there may be a single DNS level that combines the functionality of the top level and low-level servers." (A269, 5:56-57.) Other than this single sentence, the patents provide no description of a single DNS level system.

The specification also nowhere discloses use of routers (which direct traffic on the Internet) or Anycast (an Internet protocol by which multiple computers are assigned the same IP address) to select a name server. Indeed, Akamai internal documents acknowledged that Limelight's system using Anycast was "architected fundamentally differently" from Akamai's system (A20694; A20712), calling it "offensive." (A20722; A20769.) Nevertheless, at trial, Akamai argued to the jury that its patent covered Anycast. (A404-05:69-72.)

4. The Prosecution History

During prosecution of the '703 patent, Akamai introduced the term "tagging" to describe prepending a virtual server hostname onto an object's original URL when it added application claims 42 and 47 (issued claims 17 and 19). (A20134-35.)

The only discussion of "tagging" occurred when Akamai later amended those claims, and added application claim 53 (issued claim 34). (A20145-64.) The

inventors argued for allowance of these claims by stating that all independent claims require "tagging" by "prepend[ing] given data to the domain name and path normally used to retrieve the embedded object":

> [T]his functionality [referring to the present invention] is achieved by modifying the embedded object URL that is normally sent with the base HTML of the web page when that page is served from the content provider server. In particular, the embedded object URL is modified (e.g., at the content provider server) *to prepend given data to the domain name and path normally used to retrieve the embedded object*. (A20155.)
>
> . . . .
>
> [T]o simplify prosecution of this case, the undersigned (as promised) has gone back through the pending claims and cancelled certain claims and modified others where appropriate so that *all independent claims now emphasize the above-described aspects of the present invention*.

(A20155-56.)

C. The District Court's Claim Constructions

The district court conducted a lengthy tutorial and claim construction hearing in May, 2007, and issued its detailed 28-page order rendering its constructions and reasoning on June 29, 2007. (A127; A65-92.)

1. "The Invention" as Defined by the Intrinsic Record

In its claim construction order, the district court stated:

> the specification describes the invention as associating a particular object of a content provider with an alphanumeric string consisting of a virtual server hostname prepended onto the URL for the object.

(A69, emphasis in original.)

The district court further explained:

> the specification discloses no other way that an object is associated with an alphanumeric string, nor is there any suggestion or teaching that an association which did not include the URL for the embedded object could be used in an embodiment of the invention.

(A69-70.)

Accordingly, the district court ruled:

Term	Court's Construction
... a given object of a participating content provider is associated with an alphanumeric string ...	... a particular object of a participating content provider is associated with an alphanumeric string that includes the URL used to identify the object in the absence of a content delivery network ...

(A68.)

The district court further held:

> [t]he specification describes "the present invention" as "manipulat[ing] the DNS system so the name is resolved to one of the ghosts that is near the client"

and that

> the purpose of establishing "an alternative domain name system (DNS), distinct from the Internet domain name system" is to run "appropriate control routines" to "determine where in the network a user is located."

(A74-75; emphasis and second alteration in original.)

The order then refers to the top-level CDN DNS server as performing this function. The district court concluded:

> Read in light of the specification, the invention claims an alternate DNS system that selects a DNS server in response to a user request based on the location of the user.

(A75.)

Thus, the district court ruled:

Term	Court's Construction
... the given name server that receives the DNS query being close to the client local name server as determined by given location information ...	... the particular name server that receives the DNS query is selected by the alternative domain name system and is close in Internet terms to the client local name server ...

and

Term	Court's Construction
... responsive to a DNS query, selecting a given one of the name servers in the content delivery network ... [claims 8, 18]	... in response to a DNS query, the content delivery network's domain name system selects a particular name server ...

(A72; A78.)

Acknowledging that the specification contains one sentence that "'the functionality of the top and low-level servers' may be combined in 'a single DNS level,'" and addressing one of Akamai's claim construction arguments, the district

court explained how the one-level system as construed would work based on the specification. (A79; emphasis in original.)

2. The Parties' Stipulated Construction Requiring Selection of an "Optimal" Server

a. Akamai's Previous Lawsuit Against Cable & Wireless

In a prior case asserting the '703 patent against Cable & Wireless ("C&W"), Akamai obtained a claim construction for "tagging" that required identification of a group of content servers "from which an optimal server is to be selected." (A17874.) Akamai consistently used the term "optimal" to mean "best." (A20327; A20347.) For example, during the C&W trial, inventor Leighton testified that "optimal" means "best":

> Q Because you're saying you need to resolve to a group of computers, rather than a single computer?
> A No, because we are resolving to a domain, it consists of a group of computers, *from which the best server will be selected later, and that is what tagging is defined as.*
> Q And you're saying because it requires "to a domain being a group of computers"?
> A No, because the language says tagging is a point or a hook to the domain other than the content provider domain *"from which a single best computer will later be selected."*
> Q Where is that in your claim?
> A That's in the Court construction of what it means.

(A20571-73.) After the C&W jury invalidated certain claims of the '703 patent, including claims at issue in this case, Akamai successfully moved the district court to vacate that finding and revive the otherwise invalid claims by arguing that,

unlike the '703 patent, the prior art did not disclose selection of a "best" server. (A20672, ¶ 11.)

In the present case, the parties stipulated to the same construction for "tagging" — requiring selection of an optimal server. Opposing summary judgment in this case, Akamai admitted that it used the term "best" interchangeability with the term "optimal." (A20242, fn.7.)

b. The District Court's Last-Minute Interpretation of "Optimal"

On the last court day before trial, the district court interpreted the word "optimal" in the parties' stipulated construction. (A60-64.) Limelight argued that "optimal" in the stipulated construction should be given its ordinary meaning of "best," as Akamai had previously argued for, obtained, and successfully applied in the C&W litigation. (A20269-73.) Akamai, however, changed its position and argued that optimal did not mean best. (A20239-42; A20274-75.) Rather than resolving the issue, the district court included *both* inconsistent positions in its interpretation.

On one hand, the court's order stated that "optimal" ordinarily meant "most favorable or desirable." (A63.) On the other hand, the court also stated that an optimal server was *not* limited to a "single best server" but instead could include multiple content servers "which meet some or all of the criteria described in the specification." (A63.) With the jury verdict form, the Court included only a

portion of its discussion of "optimal" and shortened its definition to "one or more content servers that are better than other possible choices considering some or all of the following criteria: [listing five factors]." (A100.) However, this formulation did not indicate whether the optimal server must be better than any other, some other or all other servers. Nor did it indicate how many of the five criteria should be considered.

The district court's failure to either leave the stipulation alone or resolve the issue with an unambiguous statement that optimal had its ordinary meaning of best, allowed Akamai to argue repeatedly that merely "good" servers satisfied the "optimal" requirement. (A381:117; A382:121; A383:122-23, 125; A385:133; A390:11; A398:43; A402:61; A404:68; A406:75; A426:149-50; A427:154-55; A428:157-59.) It was on this basis that the jury found infringement.

D. Customers' Arms-Length Relationship with Limelight

1. Content Providers Decide for Themselves Whether to Use a CDN to Serve Particular Content

Content providers sometimes ask CDN service providers to deliver embedded objects from their web pages rather than doing it themselves. Limelight and its content provider customers operate this way. (A573-74:71-74.)

In each case, it is the customer that decides, at its sole discretion, whether it wants Limelight (or another CDN) to deliver certain objects from the customer's page. (A570-71:61-65; A587:122.) If a customer chooses to use Limelight to

deliver some or all of its content, the customer modifies the URLs or CNAME records for the objects it chooses to have delivered by the CDN. Thereafter, when an Internet user requests those objects, the requests are sent to Limelight rather than to the customer's content servers for delivery. (A570:58-61; A587:121-122.)

Limelight provides one or more hostnames for its customers to use to modify URLs or CNAME records. (A570:58; A587:121-123.) The customer needs to modify a URL or the CNAME record for objects it wants Limelight to deliver. In the case of modifying a URL, the customer deletes the hostname identifying its domain and inserts in its place a hostname provided by Limelight. In the case of modifying a CNAME record, the customer adds or changes a CNAME record on its name server. Thereafter, requests for the selected object will be sent to Limelight. (A570:58-61; A587:121-122.) To access Limelight's CDN, Limelight customers never prepend a virtual server hostname to an object's original URL.

Limelight's customers are separate entities that make their own choices about delivering their content. They can choose, via an arms-length transaction, to become a customer of Limelight's CDN. Limelight then provides instructions so that its customers will know how to use its CDN service. (A575:79; A587:120-122.) On an object-by-object basis, customers select for themselves what content to ask Limelight to deliver, to ask another CDN to deliver, or to deliver

themselves. (A570:59-61; A586:119.) If they choose to use Limelight's CDN, they pay Limelight for delivery of that content. (A587:122.)

The customer controls who delivers its content, and can (and does) direct requests for content alternatively to Limelight and to competing CDNs, such as Akamai. (A570-71:60-65; A442:39-40.) Thus, a customer can change its hostname "at will" to direct some requests to Limelight and other requests to CDN competitors. (A571:65.)

Similarly, the customer is solely responsible for serving its web pages. (A573-74:71-74; A586-87:119-122; A17807.) A customer can serve the web pages itself, or may hire a hosting service to serve its web pages. (A573-74:71-74.) Limelight plays no role in how the customer serves its pages, or what entity might serve those pages on the customer's behalf. (*Id.*)

2. Limelight's Installation Guidelines

Akamai references in its appeal brief, for the first time, that Limelight Technical Account Managers supposedly provide assistance to customers in modifying their URLs or CNAME records, citing language from a Limelight document entitled "Installation Guidelines." (Akamai Br. at 24-27, citing A17787-95.) But these Installation Guidelines state that Limelight Technical Account Managers will "process the order" and "complete quality assurance (QA) testing of

the service *prior* to providing the customer with the account information." (A17790.)

Thus, any work by Technical Account Managers takes place *before* Limelight gives the customer instructions on how to modify its URLs or CNAME records. Although Limelight personnel remain available to answer customer questions, nothing in the cited document indicates that Limelight personnel participate in the modification of customer URLs or CNAME records. (*Id.*; A17576; A586.)

Finally, the reference to "prepending" in Limelight's documents (e.g., Akamai Br. at 26) bears no relationship to the use of the term "prepending" in the Akamai patents. (A640:28.) In the Limelight system, it refers to use of an assigned customer short name that is sent to the customer and may be used after deleting the customer's hostname. (A570:58-59; A584:110-111.) The patents, by contrast, refer to prepending a virtual server hostname to the front of an object's original URL, leaving the original hostname in place. (A361:36-37; A364:46-49.) Limelight never prepends a virtual server hostname to an object's original URL. (A574:76-77; A640:28.)

3. Lack of Evidence Concerning Alleged Limelight Contracts

Akamai presented minimal evidence concerning Limelight's contracts. (A587:120-22.) Akamai offered an exhibit containing language from several

Limelight documents, one of which appeared to be an unsigned excerpt from a contract. (A587:120-121.) Akamai questioned only one Limelight witness about this exhibit, who testified that he did not recognize the document. (A587:120.) Upon being shown the excerpt of contract language, the witness testified: "Looks like an [sic] contract. I don't believe it's the complete contract." (*Id.*) Akamai did not establish with whom, when, or *even if* this excerpt was actually ever used. (*Id.*, A17796.) While Akamai asked several more questions about this exhibit, none established a foundation for the arguments Akamai now makes. (A587.)

No evidence supports the assertion that the excerpted language on which Akamai relies is "Limelight's standard contract" (Akamai Br. at 23, 24, and 34), or "Limelight's form contract" (Akamai Br. at 36 and 43), or "Limelight's standard form contract." (Akamai Br. at 40.) At most, the documents and testimony established that if a customer wants Limelight to deliver content, the customer needs to use a Limelight-assigned hostname, either in its URLs or in a CNAME record. (A587.)

The excerpted contract language is not a promise by the customer to modify URLs on Limelight's behalf and does not constitute "contracting out" by Limelight:

> Customer shall be responsible for identifying via the then current Company process all uniform resource locators ("URLs") of the Customer Content to enable such

> Customer Content to be delivered by the Company Network.

(A17807.) Rather than compel the customer to do anything, this language puts the customer in control. The customer is "responsible for identifying" via a particular hostname in its URLs what content, if any, it wishes to have served by Limelight's CDN. (A587:121.) This document similarly designates the customer as being "solely responsible" for its web site, IP addresses, domain names, hyperlinks, data bases and other resources used to operate the customer's web site. (A17807.) The customer alone decides if, when, and for which content it will modify URLs or CNAME records that direct user requests for embedded content to the Limelight CDN. (A569-571; A573-74; A587.)

E. JMOL of No Infringement Based on *Muniauction*

1. Erroneous Jury Instructions on "Controls or Directs"

The district court instructed the jury on joint infringement, and particularly "whether the content provider acted under the direction and control of Limelight": "[s]o you should review the evidence, decide how the Limelight systems work, . . . and, specifically, does Limelight direct and control the modifications or does the content provider carry out these tasks entirely independently." (A818:21.) The district court later clarified: "It is either direct or control, control or direct; it doesn't have to be both." (A826:53.) This instruction required the jury to find

"control or direction" unless it concluded that customers acted "entirely independently" from Limelight.

The jury trial here concluded before *Muniauction* was decided. Thus, the instructions did not take into account this Court's additional guidance on "control or direction." (A813-27.) Specifically, the instructions did not explain that controlling customer access to a system and providing instructions to customers on use of the system are not sufficient to show direct infringement by the system provider. (*Id.*) Similarly, the instructions did not inform the jury that teaching, instructing or facilitating a customer's participation in a system is irrelevant to the question of whether the system provider "controls or directs" the customer's actions. (*Id.*)

2. Limelight's Initial Request for JMOL or New Trial Before *Muniauction*

After the verdict, Limelight moved for JMOL of no infringement because there was no substantial evidence Limelight "controlled or directed" its customers' actions. (A15262-66.) Limelight challenged the jury instructions on "controls or directs" and moved for JMOL based on the fact that Limelight did not "tag" as required by the claims. Limelight also sought a new trial based on the district court's interpretation of "optimal." (A20924-27.) Limelight further sought JMOL on lost profits based on the legally insufficient evidence presented by Akamai.

(A15275-78.) The district court denied Limelight's motions without explanation. (A20680; A20683.)

3. Limelight's Motion for Reconsideration Based on *Muniauction*

Immediately following this Court's decision in *Muniauction*, Limelight moved for reconsideration. (A17877-82.) Limelight cited the *Muniauction* holding and noted the remarkable similarity to the instant case. In opposition, Akamai argued, as it does here, that Limelight allowed access to its system by providing a Limelight hostname and instructions on using the system to its customers. Akamai further argued that customers must "tag" objects in order for the system to work.

Finding "no material difference between Limelight's interaction with its customers and that of Thomson in *Muniauction*" and applying the holding of *Muniauction*, the district court granted JMOL of no infringement. (A1; A58.)

IV. SUMMARY OF ARGUMENT

The district court's grant of JMOL should be affirmed because no legally sufficient evidentiary basis exists for a reasonable jury to find under the *Muniauction* holding that Limelight controls or directs the actions of content providers who elect to become customers by modifying URLs for selected objects so that they can be served by Limelight's CDN.

As the district court concluded, Akamai's evidence is indistinguishable from that found legally insufficient in *Muniauction*. The method claims in both cases include multiple steps, some of which are allegedly performed by the provider of an Internet-based system (Thomson and Limelight, respectively) while others are allegedly performed by customers (bidders and content providers). Thomson did not input bids as required by the *Muniauction* patent claims, just as it is undisputed that Limelight never performs the "tagging" or "serving the page" steps in the '703 patent claims. In both cases, the system providers simply made their systems available and provided instructions to customers on how to use those systems. Akamai's effort to distinguish these facts from those in *Muniauction* is unsupported and ineffective.

An alternative basis for affirming JMOL of no infringement is the absence of substantial evidence that Limelight prepends a virtual server hostname to the object's original URL. The only description in the patent for "tagging" is prepending a virtual server hostname to an object's original URL. The patent contains no disclosure of tagging by removing the original hostname from that original URL and replacing it with the virtual server hostname, as Akamai argues. It is undisputed that Limelight never prepends a virtual server hostname to an object's original URL. Therefore, Akamai did not prove "tagging" as properly interpreted by the district court.

Even if this Court were to disrupt the JMOL, a reinstatement of the jury's infringement verdict would be inappropriate. Akamai wrongly contends that "the jury was properly instructed on the 'control or direction' test." (Akamai Br. at 3.) The district court incorrectly instructed the jury that the relevant question was: "does Limelight direct and control the modifications or does the content provider carry out these tasks *entirely independently*"? (A818:21.) This instruction directed the jury to find that Limelight exercised "control or direction" unless the jury concluded that customers acted "entirely independently" from Limelight. This is inconsistent with the "control or direction" standard articulated in both *BMC Resources* and *Muniauction*. Thus, if the district court's JMOL is not affirmed, a new trial will be required on the issue of whether Limelight exercised "control or direction" over its customers, with proper jury instructions on this point.

A second conditional basis for remand arises because the district court upset the parties' stipulated construction of the term "tagging" with an inconclusive ruling that allowed Akamai to reverse its position that "optimal" means "best" and instead argue to the jury that "optimal" means "good." The district court's order was internally inconsistent, did not clearly resolve the parties' dispute and failed to hold Akamai to its prior position that "optimal" means "best." Taking advantage of these deficiencies in the order, Akamai presented an infringement theory to the jury that an optimal server need not be a best server to infringe — contrary to the

position that Akamai had taken previously in this and prior litigation. For these reasons, a new trial is necessary.

Limelight also conditionally cross-appeals the award of $40.1 million in lost profits because Akamai failed to present sound economic proof of a causal link between Limelight's asserted infringement and any Akamai lost sales. Without applying any principled methodology, Akamai simply conjectured via a "judgment call" by its expert that 75% of Limelight's business would have gone to Akamai — at twice the price — had Limelight not offered its accused service. Akamai's failure to establish by sound economic proof that its lost profits are compensable requires reversal of the jury's lost profits verdict, as a matter of law. At a minimum, the lost profits verdict should be vacated and remanded for a new trial.

With regard to Akamai's challenge to the claim constructions of the '645 and '413 patents, this Court has repeatedly held that when a patent describes an embodiment as "the invention," the claims must be so construed. The district court correctly construed the contested terms and did not improperly import limitations from the specification. Rather, the court properly construed the claims to be consistent with "the invention" as expressly described by the patents.

V. ARGUMENT

A. The JMOL of No Infringement Should be Affirmed

This Court reviews a district court's grant or denial of JMOL under the law of the regional circuit to which an appeal from the district court would normally lie. *Proveris Scientific Corp. v. Innovasystems, Inc.*, 536 F.3d 1256, 1266-67 (Fed. Cir. 2008). The First Circuit reviews an order granting or denying JMOL *de novo* by reapplying the JMOL standard. *Id.*

Thus, this Court should affirm the district court's JMOL because the infringement verdict was based on a standard for joint infringement that cannot be supported in law. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454 (Fed. Cir. 1998) (*en banc*). Insufficient evidence exists for a reasonable jury to find that Limelight controls or directs the actions of its customers under this Court's *Muniauction* holding. *See Mag Jewelry Co. v. Cherokee Inc.*, 496 F.3d 108, 117-19 (1st Cir. 2007) (affirming JMOL where plaintiff presented insufficient evidence to support a verdict).

As an alternative ground to affirm the JMOL, Akamai presented no substantial evidence that Limelight or its customers perform the "tagging" limitation as properly construed.

1. This Court Should Affirm the Judgment that Limelight and Its Customers Did Not Jointly Infringe the '703 Patent as a Matter of Law

A defendant is liable for the combined actions of multiple parties only when it "exercises control or direction over the entire process such that every step [of the claims of the method patent] is attributable to the controlling party." *Muniauction*, 532 F.3d at 1329. In this case, Limelight does not exercise the relevant "control or direction" over every step in the accused method. The district court therefore correctly concluded that the jury's verdict of joint infringement could not stand.

In *Muniauction*, steps of a method claim for Internet auctions were performed by the auction bidders or by the auctioneer (Thomson), but neither performed them all. *Id.* at 1328-29. No single party performed every step of the asserted claims, so the plaintiff argued that Thomson should be liable for direct infringement based on the combined actions of Thomson and the bidders. *See id.* at 1329. After a jury verdict of infringement, the district court denied Thomson's JMOL motion, finding that Thomson could still be liable for direct infringement because there was evidence of a "connection" between Thomson and the bidders. *See id.* at 1329.

This Court reversed, holding that "arms-length cooperation" among multiple parties does not establish control or direction. *Id.* at 1329-30 (citing *BMC Res., Inc. v. Paymentech, L.P.*, 498 F.3d 1373 (Fed. Cir. 2007)). Further, this Court held

that the fact that "Thomson controls access to its system and instructs bidders on its use is not sufficient to incur liability for direct infringement." *Id.* at 1330. The plaintiff "identified no legal theory under which Thomson might be vicariously liable for the actions of the bidders." *Id*.

As the district court concluded here, Akamai's evidence is indistinguishable from that found legally insufficient in *Muniauction*. (A58.) The method claims in both cases include multiple steps, some of which are performed by the provider of an Internet-based system (Thomson and Limelight, respectively) while others are allegedly performed by customers (bidders and content providers). Thomson developed its on-line auction system there, just as Limelight created its CDN here. In both cases, the system providers simply made their systems available and provided instructions to customers on how to use those systems; in both, customers paid the system provider for use of the system. But Thomson did not input bids as the *Muniauction* patent claims required, just as it is undisputed that Limelight never performs the "tagging" or "serving the page" steps in the '703 patent claims.

Like in *Muniauction*, Limelight's customers decided for themselves whether to use the Limelight CDN to deliver content embedded in their web pages. If a customer chose to have Limelight deliver the content, the customer had to change the hostname in the URL for that content (or modify a CNAME record) in order for requests for the content to be directed to the Limelight CDN. (A569-71:57-62;

A586:119.) Akamai contended that this act by a Limelight customer — changing a hostname or modifying a CNAME record — constituted "tagging" attributable to Limelight.

There was no evidence that customers did this on behalf of, or as agents of, Limelight. Rather, customers changed hostnames in their URLs or modified CNAME records as a result of their choices to use the Limelight CDN. (A587.) Because customers control who delivers their content on an object-by-object basis, they could and did direct requests for content alternatively to Limelight and to competing CDNs, such as Akamai. (A570-571:60-65; A442:39-40.)

Similarly, Limelight did not control or direct how customers served their web pages. The first step in making content available is the customer serving a web page in response to a user's request. As shown at trial, Limelight customers used their own servers to serve their pages, or utilized commercially available web hosting services. (A573:71-73.) In all cases, however, it was the customer's decision and responsibility. Limelight had no role in serving the customer's web page. (A573-74:71-74.) Indeed, a document that Akamai relies on confirms the sovereignty of the customer over its own web page:

> Customer shall be solely responsible for maintaining and operating its web sites, the availability of its web sites, the connectivity of its web sites to the Internet, IP addresses, domain names, hyperlinks, databases and other resources used by Customer to operate and maintain its web sites.

(A17807.) Furthermore, customers do not (and cannot) serve the page unless and until an Internet user makes a request for it, an act that is indisputably beyond any control or direction by Limelight.

Akamai's attempts to distinguish these facts from those in *Muniauction* are unpersuasive.

1. Akamai argues that Limelight exerts "control or direction" by instructing customers to use a particular hostname in a URL if they want Limelight to deliver content; in other words, Akamai argues that Limelight is liable because it teaches or instructs its customers how to use Limelight's system. (Akamai Br. at 42.) However, that argument was expressly rejected in *Muniauction*. There, the jury instructions listed factors to consider in determining whether there was joint infringement:

> Consider whether the parties are acting jointly or together in relation to the electronic auction process. Are they aware of each other's existence and interacting with each other in relation to the electronic auction process? Is there one party teaching, instructing, or facilitating the other party's participation in the electronic auction process?

Muniauction, 532 F.3d at 1329. This Court ruled that

> none of the questions identified by the jury instructions are relevant to whether Thomson satisfies the 'control or direction' standard of *BMC Resources*.

Id. at 1330.

Akamai also asserts that the level of instruction in *Muniauction* was materially different from that in the present case. (Akamai Br. at 49.) This is both unsupported and irrelevant. The *Muniauction* holding did not depend on the extent of the instructions from Thomson. Rather, the Court held that the fact that "Thomson controls access to its system and instructs bidders on its use" was not the *type* of activity that is "sufficient to incur liability for direct infringement." *Muniauction*, 532 F.3d at 1330.

Similarly, Akamai argues that *Muniauction* is distinguishable because Thomson's instructions were "only tangentially related to the claimed process." (Akamai Br. at 44.) Again, no basis exists for this assertion, and no valid distinction exists between how Thomson instructed its bidders to access its system to place bids and how Limelight instructs its customers to use its CDN system. Just as Thomson could not tell its bidders when or what to bid, Limelight cannot tell its customers when or what content should be delivered via Limelight's CDN. In each instance, that is the customer's prerogative. (A587.)

Akamai emphasizes that Limelight tells customers they "need to" change the hostname in URLs or modify CNAME records and they "need to" serve a page with embedded objects if Limelight's CDN is to deliver content for them. (Akamai Br. at 42.) These instructions are indistinguishable from those in *Muniauction*. There, the bidders needed to access Thomson's system and needed

to follow Thomson's instructions if they wanted to submit a bid. *See Muniauction*, 532 F.3d at 1323. If those bidders failed to use the correct password or did not follow Thomson's instructions for submitting bids, they could not successfully use Thomson's system. Nevertheless, this ability to control access to its system was insufficient to establish that Thomson had control or direction over its customers. *See id.* at 1330.

2. Akamai raises, for the first time on appeal, the argument that Limelight asserts control or direction because Limelight Technical Account Managers supposedly assist customers in modifying their URLs or CNAME records. (Akamai Br. at 43) (citing a single Limelight document entitled "Installation Guidelines") (A17787-95). Akamai waived that argument by not raising it to the district court. *Sage Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420, 1426 (Fed. Cir. 1997). It is also incorrect.

Limelight's Installation Guidelines state that Limelight Technical Account Managers will:

> process the order . . . . [and] complete quality assurance (QA) testing of the service *prior to* providing the customer with the account information.

(A17790.) The Guidelines continue:

> Once installation and QA is complete, you [the customer] will receive a Welcome Letter from Limelight Networks (LLNW) outlining all applicable items from the

> following list: . . . CNAME or Prepend URL to integrate into your webpages.

(*Id.*) Thus, the work of the Technical Account Managers takes place *before* the customer is given the instructions on how to use Limelight's CDN. Nothing in the document indicates that Limelight personnel participate in the customer's subsequent modification of its URLs or CNAME records. Moreover, the fact that Limelight personnel are available to answer customer questions is no different from providing teaching and instruction, which this Court has held are insufficient to establish control or direction. *See Muniauction*, 532 F.3d at 1329-30.

Similarly, no evidence exists that Limelight participates in modifying customer URLs or CNAME records other than via instructions. That Limelight also provides a hostname to the customer (or approves the customer's choice of a name) for use in modifying the customer's URLs is no different from Thomson providing a password to a prospective bidder to be used to input bids. Thomson creates the password and assigns it to the bidder, but the bidder must use the password in order to place a bid. Likewise, Limelight provides a hostname that the customer may use in modifying its URLs for embedded content, but the customer alone makes the decision whether or not to use the hostname to modify its URL.

3. Finally, Akamai contends that Limelight controls its customers through its contracts with them. (Akamai Br. at 46-47.) Again, Akamai is wrong.

As the district court recognized, the parties in *Muniauction* expressly discussed contracts between Thomson and the bidders. (A55; *see also* A20831, Brief of Plaintiff-Appellee Muniauction, 2007 WL 4693007, at *48 ("[A]ll users are told how to use the software and are held in an interlocking network of contractual obligations . . . ."); Brief of Defendants-Appellants Thomson, 2007 WL 4203415, at *24 ("Thomson enters into contracts with bidders permitting them to use BidComp/Parity for a relatively small fee . . . .").) As here, those contracts did not compel the customers to undertake any step of the accused method claim; it just gave them the opportunity to do so. Thus, Limelight's contracts do not form a basis to distinguish *Muniauction*.

Moreover, Akamai failed to establish a factual foundation for the contract arguments it now makes. It offered an exhibit that included an unsigned contract *excerpt* — but did not establish if, with whom, or when this excerpt was actually used. (A587:120-22; A17796.) Akamai questioned only one Limelight witness about this exhibit, who testified that he did not know what the document was. (A587:120.) Upon being shown the excerpt on which it now relies, the witness testified: "Looks like an [sic] contract. I don't believe it's the complete contract." (*Id.*) While Akamai asked several more questions about this exhibit (A17796), that testimony simply confirmed that if a customer wants Limelight to deliver content,

the customer needs to use a Limelight-assigned hostname, either in its URLs or in a CNAME record. (A587.)

In any event, the excerpt that Akamai relies upon is not a contractual promise by the customer to modify URLs on Limelight's behalf and does not constitute an attempt by Limelight to "contract out" those acts. Rather, it states:

> Customer shall be responsible for identifying via the then current Company process all uniform resource locators ("URLs") of the Customer Content to enable such Customer Content to be delivered by the Company Network.

(A17807.) This language does not compel the customer to do anything. To the contrary, this language puts the customer in control. If the customer wishes to have its content served by Limelight's CDN, the customer is "responsible for identifying" that content via a particular hostname in its URLs. (A587:121.) It is uncontested that the customer alone decides if, when, and for which content it will change the hostname in URLs (or modify CNAME records) in order to direct user requests for embedded content to the Limelight CDN. (A569-571, A573-74, A587.)

Similar language from that same document designates the customer as being "solely responsible" for its own web site, IP addresses, domain names, hyperlinks, data bases and other resources used to operate the customer's web site. (A17807.) These provisions do not obligate the customer to maintain web sites or IP

addresses. Likewise, the contract does not require the customer to change the hostname in URLs (or modify CNAME records), and even Akamai does not argue that Limelight could sue a customer for breach of contract if the customer did not do so. Rather, Limelight and its customers are engaged in an arms-length transaction in which customers promise to pay Limelight for delivery of their content, but make no promise to use Limelight's service. (A570-571:60-65, A442:39-40.)

Akamai's argument fundamentally mischaracterizes the business relationship between Limelight and its customers. Limelight's customers are separate entities that act for their own benefit, not agents working on Limelight's behalf. Even Akamai admits that "Limelight and content providers may be related as independent contractors." (Akamai Br. at 47.) The goal of their contractual relationship is to have Limelight deliver selected content on the customers' behalf, if and when the customer chooses. In return, these separate entities promise to pay Limelight for delivery of their content. A customer, however, makes no promise that it will use Limelight to deliver content, that it will change the hostname in its URLs (or modify its CNAME records) to identify content, or anything else associated with the claim requirements.

Rather, the customer retains total control over whether or not to use Limelight to deliver content from its web page. This is no different from

Muniauction, where Thomson informed bidders how to use Thomson's auction system if they wanted to do so, and bidders decided for themselves whether to do so. That type of arms-length relationship with customers was legally insufficient to establish control or direction in *Muniauction* and is legally insufficient here as well.

In sum, the decisions whether to use Limelight's CDN services for particular content, whether to modify a customer's hostnames and how to serve the customer's web page, all rest with the customer, not with Limelight. Limelight's relationship with its customers mirrors the facts of *Muniauction*, and Limelight cannot be held responsible for joint infringement.

2. Under the District Court's Claim Construction, Neither Limelight Nor Its Customers Perform "Tagging" and JMOL of No Infringement Is Required as a Matter of Law

Neither Limelight nor its customers prepend a virtual server hostname to an object's original URL. This is an alternative basis for affirming the JMOL of no infringement.

a. The District Court Correctly Determined the Scope of "The Invention" of the Akamai Patents

The district court held that "the specification describes the invention as associating a particular object of a content provider with an alphanumeric string consisting of a virtual server hostname prepended onto the URL for the object." (A69, emphasis in original; *see also supra* at 10-13; A269-70, 6:41-44; 7:24-26.)

The cited portion is from the beginning of the court's claim construction order and applies equally to all asserted patents. Each patent's specification is identical. Thus, the holding about the scope of "the invention" applies equally to each patent. *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1293 (Fed. Cir. 2005) (because patents all derive from same parent application, claims must be interpreted consistently).

The only method described in the patents for "tagging" is prepending a virtual server hostname to an object's original URL. The patents contain no disclosure of removing the original hostname from that original URL and replacing it with the virtual server hostname (as Akamai contends) or any other method. Therefore, the invention of the '703 patent, for all patents-in-suit, requires prepending a virtual server hostname to the object's original URL.

b. The Inventors Confirmed a Claim Scope Consistent with the District Court's Construction

During prosecution of the '703 patent, Akamai added the tagging limitation in an amendment, stating:

> [T]his functionality [referring to the present invention] is achieved by modifying the embedded object URL that is normally sent with the base HTML of the web page when that page is served from the content provider server. In particular, the embedded object URL is modified (e.g., at the content provider server) *to prepend given data to the domain name and path normally used to retrieve the embedded object*.

(A20155; *see* A20134-35) (application claims 47 and 53 are issued claims 19 and 34).)

By these representations to the PTO, Akamai confirmed that the '703 patent was limited to use of the object's original URL (the URL "normally used to retrieve the embedded object"). *Regents of Univ. of Cal. v. Dakocytomation Cal., Inc.*, 517 F.3d 1364, 1373-74 (Fed. Cir. 2008) (limiting claims to description of invention in file history where applicant stated "newly added claims are directed to this embodiment of the invention"). The inventors admitted that all claims were so limited:

> [T]o simplify prosecution of this case, the undersigned (as promised) has gone back through the pending claims and cancelled certain claims and modified others where appropriate so that *all independent claims now emphasize the above-described aspects of the present invention*.

(A20156.)

Because the inventors added the "tagging" limitation to the claims after the application filing date, those claims cannot be broader than "the invention" as described in the original application. *Watts v. XL Sys., Inc.*, 232 F.3d 877, 882-84 (Fed. Cir. 2000) (limiting later-added claims to the invention as described in the specification and prosecution history).

c. Akamai's Infringement Theory Contradicted the District Court's Claim Construction

Akamai asserted an interpretation of the invention at trial that directly contradicted what the district court held the invention to require. Akamai argued that "tagging" did not require prepending a virtual hostname to an object's original URL, but could be satisfied by removing the original hostname from that URL and replacing it with a "CDN virtual hostname." (A15283-85; A342-43:53-54; A380:113.)

Akamai's trial proofs — that tagging could be satisfied without using the object's original URL — directly contradicted what the inventors described as "the invention" and the district court's claim construction order. This was not an innocuous error. Without it, Akamai could not prove infringement. It is undisputed that neither Limelight nor any customer ever prepends a virtual server hostname to any object's original URL, as required by "the invention" of the '703 patent. (A570:58-59; A609:46.)

Accordingly, an alternative basis for affirming JMOL is that no substantial evidence exists to support a finding that Limelight meets the "tagging" requirement.

B. If JMOL is Not Affirmed, a New Trial is Required

In the event the Court disrupts the JMOL, it should remand the case for a new trial because of the district court's erroneous jury instruction on "control or

direction" and its inconclusive and erroneous interpretation of "optimal" from the stipulated claim construction, both of which substantially prejudiced Limelight. The district court's denial of Limelight's new trial motion under these circumstances constituted an abuse of discretion. *See Air Safety, Inc. v. Roman Catholic Archbishop of Boston,* 94 F.3d 1, 4 (1st Cir. 1996) (denial of new trial reviewed for abuse of discretion); *Seachange Int'l Inc. v. C-COR Inc.*, 413 F.3d 1361, 1367-68 (Fed. Cir. 2005) (applying regional circuit standard for denial of new trial motion).

1. A New Trial is Required Because the Jury was Not Correctly Instructed on "Control or Direction"

Akamai wrongly contends that "the jury was properly instructed on the 'control or direction' test." (Akamai Br. at 33.) Even if this Court were to conclude that a reasonable jury *could* find Limelight liable for joint direct infringement, the jury's infringement verdict should not be reinstated.

This Court reviews a district court's jury instructions on issues of patent law without deference to the district court. *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000). A verdict should be vacated if it is based on legally erroneous jury instructions that had a prejudicial effect when the instructions were properly objected to and a requested alternative instruction would have remedied the error. *Id.* at 1281. Prejudicial legal error exists when the "error is inconsistent with substantial justice." *Id.* at 1283. Over Limelight's timely

objection regarding "control or direction" and proper alternative instruction (A20902; A20862; A736-37:43-48), the jury instructions here included a critical legal error that substantially prejudiced Limelight, requiring a new trial with proper instructions on "control or direction" if the district court's JMOL is not affirmed.

The district court instructed the jury that the relevant question was: "does Limelight direct and control the modifications or does the content provider carry out these tasks *entirely independently*." (A818:21.) This instruction improperly directed the jury to find that Limelight exercised "control or direction" unless the jury concluded that customers acted "entirely independently" from Limelight. That instruction is wholly inconsistent with the "control or direction" standard articulated in both *BMC Resources* and *Muniauction*.

As this Court held in *BMC*, it is improper to measure joint infringement based on whether there is "participation and combined actions" of the parties. *BMC Resources*, 498 F.3d at 1380. Yet that is precisely what the district court's "entirely independent" instruction required, at great prejudice to Limelight.

Moreover, the trial in this case took place before *Muniauction* was decided. Thus, the jury instructions did not take into account the additional guidance on "control or direction" set out in *Muniauction*. Specifically, the instructions failed to explain that controlling customer access to a system and providing instructions to customers on use of the system are insufficient to show direct infringement by

the system operator. *Muniauction*, 532 F.3d at 1330. Similarly, the instructions did not inform the jury that teaching, instructing or facilitating a customer's participation in a system is irrelevant to the question of whether the system provider has "control or direction" over the customer's actions. *Id*. at 1329-30.

Because the jury instructions on "control or direction" were legally erroneous and unfairly prejudiced Limelight, this case at minimum must be remanded for a new trial.

2. A New Trial is Required Because of the District Court's Interpretation of "Optimal"

As a second conditional ground for a new trial, the district court erred by introducing ambiguity and inconsistency into the parties' stipulated claim construction of "tagging," which the parties agreed required selection of an "optimal" server. The court failed to give "optimal" its ordinary meaning of "best," even though Akamai had utilized that ordinary meaning in previous litigation. Rather than hold Akamai to its prior position, the district court's eve of trial order included portions of the parties' mutually inconsistent positions on this important question and did not provide a concise and workable definition of optimal. This prejudiced Limelight by permitting Akamai to assert infringement based on evidence that Limelight selects merely good servers, while ignoring the plain meaning of optimal and its prior admissions that an optimal server means the "best" server. Moreover, this left a claim construction dispute for the jury to

resolve. This was error and requires remand for a new trial. *See e.g.*, *Ecolab Inc. v. Paraclipse Inc.*, 285 F.3d 1362, 1373-76 (Fed. Cir. 2002) (remanding for new trial based on erroneous claim construction).

a. Based on the District Court's Construction in a Prior Case, the Parties Stipulated to a Construction Requiring an "Optimal" Server

In the previous case against *C&W*, Akamai advocated a claim construction for the '703 patent requiring selection of an optimal server, persuaded the district court to accept it, and ultimately used it to vacate the jury's invalidity finding, all the while arguing that an "optimal" server is the *best* server.

For example, during the *C&W* claim construction hearing, Akamai agreed that the claims required selection of the "*best computer or server*." (A20327.) During the *C&W* trial, Dr. Leighton, an inventor of the '703 patent, likewise testified that his invention required identification of a group of servers "*from which the best server will be selected later*," and that it would select a "*single best computer*." (A20571-73.) After the *C&W* jury invalidated certain claims of the '703 patent, Akamai successfully moved the district court to vacate that invalidity finding, arguing that the prior art did not "'disclose or fairly suggest' *selection of a best server* 'during the resolving process.'" (A20672.)

During summary judgment briefing in the present case, Akamai also admitted that "optimal" in the parties' stipulated construction required selection of "a best server," using "best" interchangeability with "optimal." (A20242, fn.7.)

b. The District Court's Inconclusive Interpretation of "Optimal" was Erroneous

Akamai changed positions before trial and argued that an "optimal server" need not be the best server after all. Limelight protested that the term should be given the plain and ordinary meaning that Akamai had always ascribed to the word; namely that "optimal" meant "best." Rather than resolve this dispute by ruling that optimal had its ordinary meaning of "best," the district court interpreted the stipulated construction in a way that included portions of the parties' competing positions. The district court stated that optimal is ordinarily defined as "'[m]ost favorable or desirable.'" But the court did not stop there. Instead, it equated "most favorable or desirable" with servers that are "better than other possible choices" and "meet some or all of the criteria described in the specification." (A63-64.) Because the order did not provide a concise and consistent definition of "optimal," the district court read multiple pages from its ruling to the jury in an attempt to interpret this commonly understood word. (A396-97:34-39.)

The district court's order allowed Akamai to present an infringement theory to the jury that Limelight selected "optimal" servers because it chose merely

"good" servers, i.e., ones that meet some of the criteria described in the specification and are preferred over at least some other servers. (A381:117; A382:121; A383:122-23, 125; A385:133; A390:11; A398:43; A402:61; A404:68; A406:75; A428:157-59.) This was in stark contrast to the more exacting standard of "best," which Akamai had previously obtained and successfully utilized. For example, Akamai's expert testified that if one server could return content 10,000 times faster than other servers, all servers were nevertheless "optimal" and not just the much faster server. (A428:157-58.) Justifying his opinion, the expert claimed that the patent "teach[es] specific criteria to use to choose a *good* server . . . ." (A458:100.)

The jury should not have been left to resolve the many ambiguities in the court's claim construction: Did "optimal" mean "best"? Did it mean "most favorable"? Or did it simply mean "good"? If optimal servers are "better than other possible choices," must they be better than *some* other choices, *many* other choices or *all* other choices? How many of the five criteria are "some" criteria that optimal servers must meet? *See O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008).

This was not an academic question; there was no evidence that Limelight selected a content server that was the best or more favorable than all other servers. Rather, Limelight specifies a group of servers — sometimes as many as all

available servers — and then rotates among those servers through a "round robin" process. (A561-63:24-31.) It was particularly unfair to allow Akamai to profit from ambiguity in the court's interpretation when Akamai was responsible for the ambiguity through its shifting meanings of "optimal." The district court should have held Akamai to its prior position and ruled that "optimal" had its plain and ordinary meaning of "best," which the parties had previously agreed upon. Accordingly, if this Court disturbs the judgment of no infringement, then Limelight is entitled to a new trial.

C. Akamai's Lost Profits Evidence was Fatally Defective as a Matter of Law

Limelight conditionally cross-appeals the award of $40.1 million in lost profits because Akamai failed to present sound economic proof of a causal link between Limelight's infringement and any Akamai lost sales. Whether lost profits are legally compensable is a question of law, subject to *de novo* review by the Court. *Weschler v. Macke Int'l Trade, Inc.*, 486 F.3d 1286, 1293 (Fed. Cir. 2007) (*citing Poly-Am, L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1311 (Fed. Cir. 2004)).

It is undisputed that the price for Akamai's CDN service was double that of Limelight's accused service, higher than Limelight's prior unaccused service, and higher than the rest of the market. Without applying any principled methodology, Akamai's damages expert simply conjectured via a "judgment call" that 75% of

Limelight's customers would have gone to Akamai — at twice the price — had Limelight not offered its accused service. Akamai's failure to establish by sound economic proof that its lost profits are compensable requires reversal of the jury's verdict as a matter of law.

The burden rests on Akamai to show by a reasonable probability that "but for" the infringing activity, the patentee would have made the infringer's sales. To show causation and entitlement to lost profits, a patentee must reconstruct the market to show "likely outcomes with infringement factored out of the economic picture." *Grain Processing Corp. v. Am. Maize-Prods. Co.*, 185 F.3d 1341, 1350 (Fed. Cir. 1999). Reconstruction of the market must be based on "sound economic proof of the nature of the market" in order to "prevent the hypothetical from lapsing into pure speculation . . . ." *Id.* "While damages analysis invariably invokes hypothetical reconstruction of a 'but for' marketplace, that reconstruction must include some footing in economic principle . . . ." *DSU Med. Corp. v. JMS Co.*, 471 F.3d 1293, 1309 (Fed. Cir. 2006).

Thus, Akamai had the burden of proving "a causal relation between the infringement and its loss of profits. [Akamai] must show that 'but for' the infringement, it would have made [Limelight's] sales." *BIC Leisure Prods., Inc. v. Windsurfing Int'l, Inc.*, 1 F.3d 1214, 1218 (Fed. Cir. 1993) (*citing Water Techs. Corp. v. Calco Ltd.*, 850 F.2d 660, 671 (Fed. Cir. 1988), *cert denied*, 488 U.S. 968

(1988)). In the leading *BIC* case, the accused sailboards sold at a drastically lower price than the patent-holder's sailboards and "[t]he record contain[ed] uncontradicted evidence that demand for sailboards is relatively elastic." *Id.* This Court held that "without BIC in the market, BIC's customers would have likely sought boards in the same price range." *Id.* Therefore, this Court reversed the lost profit award because the patentee "did not show 'but for' causation." *Id.* at 1219.

The present case is strikingly similar to *BIC*. Here, the undisputed facts show: (1) the price of Akamai's service was twice as high as Limelight's accused service (A504:111); (2) Limelight offered a prior service that was not accused of infringement at trial; (3) the price of Akamai's service was higher than the price of Limelight's prior unaccused service and the price of other non-infringing competitors (A530:86); and (4) the market is price sensitive, so that in the "but for" world some amount of Limelight's business would go to other competitors or to Limelight's prior service because of customers' unwillingness to pay Akamai's much higher prices. (A505:117.) As the patentee did in *BIC*, Akamai failed to show the requisite but-for causation.

Nor does *BIC* stand alone. This Court has repeatedly reversed lost profits awards when the patent holder did not tie its lost profits to the infringer's activities. *See*, *e.g.*, *Shockley v. Arcan, Inc.*, 248 F.3d 1349, 1363-64 (Fed. Cir. 2001) (reversing jury award where expert's testimony was "derived from speculative

assumptions," including a "benchmark without any basis in economic reality"); *Oiness v. Walgreen Co.*, 88 F.3d 1025, 1030 (Fed. Cir. 1996) (reversing jury award of lost profits where patentee's analysis "invites the jury to engage in rapt speculation"); *Water Techs. Corp.,* 850 F.2d at 673-74 (reversing lost profits where patentee's product cost significantly more than infringer's product).

Rejecting sound economic analysis, Akamai's damages expert simply asserted that 75% of Limelight's accused business would have gone to Akamai in the but-for world, despite Akamai's price being double Limelight's and higher than the rest of the price-sensitive market. (A505-06:116-18.) Even though he admitted that he could have used standard economic techniques to calculate the elasticity of demand, including using regression analysis or the Lerner Index, Akamai's expert chose not to. (A527-28:77-78; A506:118.)

Akamai's expert asserted that a 75% share in the but-for market was correct because Akamai has 75% of today's CDN market. (A523:59, A529-530:85-86.) According to this argument, if 75% of the *total market* is willing to purchase the higher-priced Akamai service, then 75% of *Limelight's customers* would buy Akamai's higher-priced service in the "but for" world. Yet Limelight customers already indicated an *unwillingness* to pay the higher price by the fact they are Limelight customers. Akamai's approach lacks any economic or logical basis.

Akamai's approach was rejected by this Court in *BIC*. There, the patentee made exactly the same argument: "that BIC's customers would have purchased from [the patentee] in proportion with [patentee's] market share." *BIC Leisure Prods., Inc.*, 1 F.3d at 1218. This Court stated that such an assumption only makes sense if "the patent owner's and the infringer's products were similar in price and product characteristics," otherwise "the infringer's customers would not necessarily transfer their demand to the patent owner's product in the absence of the infringer's product." *Id.* at 1219; *see also Dobson v. Dornan*, 118 U.S. 10, 17-18 (1886) (reversing patent infringement award because "[t]here was no satisfactory testimony that those who bought the cheap carpets from the defendants would have bought the higher priced ones from the plaintiffs").

Here, Akamai's expert admitted that CDN customers were sensitive to price and that there was a substantial price differential in the market. (A504:111; A530:86.) Thus, no basis exists in the record to suggest that any — much less 75% — of Limelight's customers would have gone to Akamai, but for Limelight's infringement. Attempting to ameliorate the prejudice from Akamai's speculative theory, Limelight proposed an instruction that the jury could not base an award of lost profits on speculation. (A20884.) The district court, however, failed to give this black-letter instruction and made no mention to the jury of the particular need for non-speculative evidence of lost profits. (A821-23:32-40.)

Accordingly, in the event that this Court overturns the district court's judgment that Limelight does not infringe the '703 patent, this Court should reverse the award of lost profits because Akamai failed to present sound economic proof that its lost profits were caused by Limelight's infringement. Alternatively, the Court should remand for a new trial because the jury's lost-profits award was not substantiated by the evidence, was based on speculation and was unfairly tainted by the district court's refusal to instruct the jury that it should reject a lost profits claim based on speculative evidence. *See Air Safety Inc.*, 94 F.3d at 4 (granting new trial on damages, stating "[u]nder Massachusetts law . . . a plaintiff must establish its claim upon a solid foundation in fact, and cannot recover when any essential element is left to conjecture, surmise or hypothesis"); *see also Lucent Techs., Inc. v. Gateway Inc.*, 580 F.3d 1301, 1335 (Fed. Cir. 2009) (granting new trial on damages where verdict against clear weight of evidence).

D. The District Court Correctly Construed the '645 and '413 Patent Claim Terms.

1. Claim 1 of the '645 Patent Requires Associating an Object With an Alphanumeric String that Contains the Object's Original URL

The district court correctly construed the term "a given object of a participating content provider is associated with an alphanumeric string" in claim 1 to require that the alphanumeric string "includes the URL used to identify the object in the absence of a content delivery network" (i.e., the object's original URL

is included). (A68.) That construction is confirmed by the '645 patent's explicit description of "the invention" as associating an object with an alphanumeric string by using the URL that identifies the object in the absence of the content delivery network.

Akamai challenges the district court's construction, but fails to propose any alternative construction. Importantly, Akamai ignores the construction it proposed to the district court: that the object "has some type of relationship with an alphanumeric string." (*See* A15136.)

a. The District Court's Construction Appropriately Incorporates the Patentee's Definition of "The Invention"

This Court has repeatedly held that when a patent describes an embodiment as "the invention," the claims are so limited. *Chimie v. PPG Indus. Inc.*, 402 F.3d 1371, 1379-80 (Fed. Cir. 2005) (district court properly limited the claim scope "when the preferred embodiment is described in the specification as the invention itself …."); *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys.*, 242 F.3d 1337, 1341-44 (Fed. Cir. 2001) (the specification's references to "the present invention" and referring to embodiments as "the invention" define the scope of the claims); *Honeywell Int'l Inc. v. ITT Indus., Inc.*, 452 F.3d 1312, 1318 (Fed. Cir. 2006) ("the public is entitled to take the patentee at his word" when the written description refers to a feature as "the invention" or "the present invention");

Edwards Lifesciences LLC. v. Cook Inc., 582 F.3d 1322, 1330 (Fed. Cir. 2009) (where the specification describes the preferred embodiment as "the invention," and the only devices described in the specification are consistent with that description, the claims are properly limited).

Here, the patents consistently describe "the invention" as a way for content providers to designate objects embedded in a web page, such as pictures, for the CDN to deliver by associating that object with an alphanumeric string in a prescribed manner. Specifically, the invention associates such a string with the object by prepending a virtual server hostname to the original URL that identifies the object in the absence of the CDN. For example, the specification states:

> According to *the invention*, the embedded object URL is first modified, preferably in an off-line process, to condition the URL to be served by the global hosting servers. . . . Thus, according to *the present invention*, a virtual server hostname is prepended into the URL for a given embedded object . . . .

(A254, 6:54-57; A255, 7:36-38.) "[T]he URL for a given embedded object" is the URL used to identify the object without the CDN (i.e., the object's original URL). The inventors describe "the invention" as prepending a virtual server hostname to the object's original URL.

Further, the patents state that "*the inventive* global hosting framework is now described in the context of a specific example," (A255, 7:50-52), that explains how the inventive framework is able to retrieve an object from the content provider and

serve it to Internet users because "the ghost knows who the original server was because the name was encoded into the URL that was passed to the ghost from the browser." (A257, 12:54-60.) The name "encoded into the URL" is the object's original URL to which the virtual server hostname is prepended. Similarly, the specification states that "according to *the invention*, the Web site returns a page with embedded object URLs that are modified according to the method illustrated in the flowchart of FIG. 4." (A255, 7:66–8:2.) Figure 4 includes the step to "prepend virtual server host name" — meaning that the virtual server hostname is added to the object's original URL. (A251.)

Prepending a virtual server hostname to the object's original URL is not merely a preferred embodiment in the patents; it is a necessity. Otherwise, the CDN does not know where to get the object. Because "the invention" requires the object's original URL to be included in the modified URL, a content server in the CDN that does not have a copy of the requested object knows where to retrieve it. (A257, 12:54-60.) An example from the patents explains why this association is pivotal.

The object's original URL from a content provider may be:

www.provider.com/TECH/images/space.story.gif
[object's original URL]

(A255, 8:16-20.) This URL identifies the content provider's site "from where the object is *conventionally* served, i.e., without reference to the present invention." (A254, 6:51-54.) Per the invention, the object (space.story.gif) is associated with an alphanumeric string by prepending a virtual server hostname to the object's original URL, thereby forming a modified URL:

ghost1467.ghosting.akamai.com/www.provider.com/TECH/images/space.story.gif
[virtual server hostname] [object's original URL]

(A255, 8:20-26.) This virtual server hostname in the modified URL alphanumeric string causes a request for the object to be directed to the CDN domain "akamai.com." And, because the object's original URL is included in the alphanumeric string, the CDN content server in the "akamai.com" domain knows where to retrieve the object if it does not have a copy.

All other examples in the patents contain the *same* required modified URL alphanumeric string structure for the same reason. (A256, 9:25-26.) If they did not, the claimed network would not know how to find the object.

In sum, the patents define the invention to be prepending a virtual server hostname to the object's original URL. The district court correctly recognized this by finding that "the specification describes the invention as associating a particular object of a content provider with an alphanumeric string consisting of a virtual server hostname prepended onto the URL for the object." (A69.)

b. Akamai's Arguments Challenging the District Court's Construction are Illogical and Contradict the Patent

The district court did not improperly import limitations from the specification into the claim. Instead, the district court properly followed the principle that claims cannot enlarge what the inventors describe as "their invention." *Netword, LLC v. Centraal Corp.*, 242 F.3d 1347, 1352 (Fed. Cir. 2001) ("Although the specification need not present every embodiment or permutation of the invention and the claims are not limited to the preferred embodiment of the invention, . . . neither do the claims enlarge what is patented beyond what the inventor described as the invention").

As the district court here held, "[t]he specification discloses no other way that an object is associated with an alphanumeric string, nor is there any suggestion or teaching that an association which did not include" the object's original URL could be used in the invention. (A69-70.) This is what the inventors represented as their invention in their patent, and the claims were properly construed consistent with that representation. As perhaps this Court best stated in *Honeywell Int'l*, when a patentee declares "the invention" in the specification, then "[t]he public is entitled to take the patentee at his word . . . ." *Honeywell Int'l*, 452 F.3d at 1318; *see also Edwards Lifesciences*, 582 F.3d at 1330 (the specification's description of a feature as the invention "indicat[ed] an intent to limit the invention to [that feature]").

Next, Akamai asserts that the patent specifies that a CDN content server may retrieve the requested object from either the original server (via the object's original URL) or from a different content server in the CDN — trying to eliminate the need for the original URL in the alphanumeric string. (*See* Akamai Br. at 57-58.) Akamai is wrong.

While a content server may check a neighbor for a copy of the object, this does not negate the need for the object's original URL in the alphanumeric string. When no content server has the object (for example, the first time the object is requested), the content server *must* retrieve the object using the object's original URL. The fact that in some circumstances a server may also look elsewhere does not eliminate the requirement for the object's original URL in the alphanumeric string. The specification confirms this:

> Step 6: If, however, no copy of the data on the ghost exists, a copy is retrieved from the original server or another ghost server. *Note that the ghost knows who the original server was because the name was encoded into the URL that was passed to the ghost from the browser.*

(A257, 12:54-58.)

Finally, Akamai argues that an alphanumeric string must consist of *only* a hostname and thereby cannot include the object's original URL. This is also wrong.

First, Akamai argues that the alphanumeric strings must be only a hostname because only the hostname portion is used during actual DNS resolution. (Akamai

Br. at 54-55.) The claims of the parent '703 patent and Akamai's expert's testimony negate Akamai's argument.

The claims require "resolving a URL" and "resolving the client request" (A275-76, claims 17 and 34). But "a URL" and "a client request" contain more than just a hostname, e.g., also a path and a file name. Thus "resolving" as used in the patents cannot mean only a hostname; it expressly references more. Indeed, Akamai's expert used the term "resolve" in this same way — referring to resolving a URL. (A398:42; A401:54.) Thus, as Akamai's '703 patent claims and expert confirm, a string that contains more than just a hostname (like a URL, a client request, or an alphanumeric string) is still "resolved," even though only a hostname is used by the DNS.

Second, although Akamai cites examples of alphanumeric strings in the file history that are only hostnames (Akamai Br. at 53), this argument fails because the file history does not and cannot change what is plainly stated regarding "resolving" a URL or a client request, which is the same as "resolving" an alphanumeric string. *Biogen, Inc. v. Berlex Labs., Inc.*, 318 F.3d 1132, 1140 (Fed. Cir. 2003) (representations during prosecution do not trump the claims or specification). Also, the fact that Akamai can point to hostnames as examples of names that are resolved does not logically mean that *other* alphanumeric strings *cannot* be resolved, as that term is used in Akamai's patents.

Third, while Akamai argues that the claim requirement that the alphanumeric string is "resolved without reference to a filename" supports its position (Akamai Br. at 55), the opposite is true. This language requires that the alphanumeric string *must* include the filename (which is part of the original URL). If not, the phrase "resolved without reference to a filename" would be superfluous.

Fourth, the claim requires "a given object" to be associated with an alphanumeric string. Akamai's argument that the alphanumeric string must be *only* a hostname is facially untenable because then the string would not have *any* association with the object. The district court's construction properly recognizes that the claims require "the given object" to be associated with an alphanumeric string with the object's original URL that includes the object's filename. If all that was required was a hostname, there would be no association.

Fifth, Akamai's argument that an alphanumeric string including the object's original URL does not point to a content server in the CDN (Akamai Br. at 54) is a non sequitur. As the patents explain, the object's original URL is used to retrieve the object when the content server does not have a copy; the object's original URL is not used to find a content server in the CDN. The virtual server hostname portion of the string — not the object's original URL portion — is what is used to find a content server. (A257, 11:4-8.)

As a final point, Akamai inexplicably asserts that claim 1 is limited to situations where the content server already has the object (and therefore does not require the object's original URL). Akamai's argument is unsupported and ignores the claim language. If the CDN's content server has no means to retrieve the object the first time requested, then the server will *never* have the object. Moreover, the claim states "*if* the given object is available for delivery," then serve the object. (A260, 18:27.) Akamai ignores the word "if" in the claim (Akamai Br. at 58), which negates Akamai's argument that the claim is limited only to "when" the object is already there. Nothing in the claim supports Akamai's assertion that claim 1 is limited to situations when the object is already saved on a content server and thus there is no need to ever retrieve it by using the object's original URL.

The district court's construction of "associated with an alphanumeric string" is the only construction that makes sense given the patent's explicit teaching of what constitutes "the invention."

2. Claim 1 of the '645 Patent Requires That the Alternative Domain Name System Select the Name Server

The district court correctly held that the phrase "the given name server that receives the DNS query being close to the client local name server as determined by given location information" in claim 1 requires that the name server that receives the DNS query be selected by the CDN's alternative domain name system. As above, this construction is compelled by the patent's description of this

selection process as "the invention." Again, Akamai challenges the district court's construction without providing its own proposed construction, ignoring its previously proposed construction that the claim merely requires that the given name server is closer than some other name server. (A15146.)

a. The District Court's Construction Appropriately Incorporates What the Inventors Defined As "The Present Invention"

The specification consistently describes "the present invention" as incorporating an alternate domain name system using location information to select a name server close to the client that, in turn, selects a content server.

For example, the patent states:

> As will be seen, the global hosting architecture of *the present invention* manipulates the DNS system so that the name is resolved to one of the ghosts that is near the client and is likely to have the page already.

(A256, 9:41-44.) The specification similarly requires that the "inventive system" includes a top level name server that "include[s] appropriate control routines that are used to determine where in the network a user is located," which then selects the low level name server that will later resolve the content request. (A256, 9:47-55.) Moreover, the specification discloses only a single method for selecting a close-by name server as the "invention." *See supra* at 13-15. The specification discloses no other method to select a name server.

Because the patent says "the invention" must include an alternative domain name system that selects the name server to resolve the DNS query, the claims must be construed to contain such a system. *Edwards Lifesciences*, 582 F.3d at 1329 ("the only devices described in the specification are intraluminal, supporting an interpretation that is consistent with that description"); *Nystrom*, 424 F.3d at 1143-45 (claim limited because specification consistently used the term board to refer to wood cut from a log).

b. Akamai's Attacks on the District Court's Construction Fail

Akamai argues that the district court's construction imports a limitation into the claim, relying on *Agfa Corp. v. Creo Prods. Inc.*, 451 F.3d 1366 (Fed. Cir. 2006). (Akamai Br. at 59-60.) *Agfa* stands for the unremarkable proposition that a single embodiment does not necessarily limit a claim. *Agfa*, 451 F.3d at 1376. But *Agfa* simply does not apply here. In *Agfa*, the patent did nothing "to suggest limiting the invention to [the] single embodiment." *Id.* at 1377. Here, the '645 patent describes a particular embodiment as "the present invention" — a critical fact not present in *Agfa*.

Akamai also contends that the district court's construction imports a structural limitation ("DNS") into the method claim. (Akamai Br. at 59.) However, claim 1 already expressly requires that structure — "an alternative domain name system (DNS)." (A260, 17:50-51.) Thus, the district court did not

import anything; that structure is already expressly required by the claim. Additionally, the *DSW, Inc. v. Shoe Pavilion, Inc.* case cited by Akamai is inapposite. In *DSW*, the Court found error in the district court's construction because the claim language was unambiguous, not because it imported structural limitations into a method claim. *DSW* ,537 F.3d 1342, 1347 (Fed. Cir. 2008).

Finally, Akamai complains that the district court's construction improperly limits the claim to a two-level DNS system. The district court expressly addressed and refuted this argument. The court noted that the specification states that "'the functionality of the top and low-level servers' may be combined in 'a single DNS level'" and explained how such a one-level system could work based on the specification. (A79.)

Akamai's challenge to the district court's explanation of a one-level system (Akamai Br. at 60-61) is unavailing. Nothing in the patent supports Akamai's new challenge or conflicts with the court's description. The specification states that the *functionality* of a two-level system may be incorporated into a single level. (*See* A254, 6:2-4.) Thus, the district court explained how a one-level system could combine the *functionality* of both levels, work in a manner consistent with the specification, and accomplish the "same steps as the described embodiment." (A79.)

Akamai also conjures up hypothetical, undisclosed embodiments using Anycast or routers and then complains that the district court's construction does not cover such embodiments. (Akamai Br. at 60-61.) To that end, Akamai wrongly relies on *BJ Servs. Co. v. Halliburton Energy Servs., Inc.*, arguing that all prior art should be encompassed in a patent specification for purposes of claim construction. (Akamai Br. at 61.) That is not what this Court held in *BJ Servs. Co.*, nor is it the law. In that case, this Court considered the knowledge of one of ordinary skill in the art to determine if a patent was enabled or indefinite, not to add hypothetical embodiments to the specification for claim construction purposes. *BJ Servs. Co.*, 338 F.3d 1368, 1371-74 (Fed. Cir. 2003). To the contrary, a patent specification does not encompass undisclosed concepts from the prior art for claim construction purposes. *Abbot Labs. v. Sandoz, Inc.*, 566 F.3d 1282, 1289 (Fed. Cir. 2009) (limiting claim to disclosed compound because specification "offers no suggestion" to produce other compounds even though they "were known in the art"). It is the specification, not what the inventors now wish they had conceived and included in the specification, that is relevant for claim construction.

3. The '413 Patent Claims Require That the CDN Domain Name System Select the Name Server

The district court's construction of the phrase "in response to a DNS query, selecting a given one of the name servers in the content delivery network" in the

claims of the ’413 patent requires that the CDN domain name system select the name server that will then select a content server for the Internet user’s request.

Akamai again argues that this construction improperly incorporates the preferred embodiment. But, once again, this embodiment is described in the patent as “the invention.” *See supra* at 13-15. And again, Akamai fails to provide its own construction while ignoring what it proposed to the district court: “[i]n reaction to, or as a result of, a DNS query, choosing, or causing the choice of, a name server.” (A15157.) Akamai’s proposal, divorced from the claim language and not supported in the specification, was properly rejected.

a. The District Court’s Construction Appropriately Incorporates What the Patentees Defined to be “The Present Invention”

Akamai’s argument generally mimics its position on the comparable term in the ’645 patent. For the same reasons articulated above, the district court’s construction is correct — supported by what the inventors declared in their patents to be “the invention.” *See supra* at 68-69. The patents describe *the invention* to include a CDN DNS system that, in turn, selects a name server that will then identify a content server to serve the requested object. (A287, 9:35-50; A284, 3:38-45; A287, 10:23-26.) The district court’s construction properly incorporates this express description of “the invention.”

Further, the claims require selecting a name server "responsive to a DNS query." The *only* disclosure in the patents of a system that both responds to a DNS query and selects a name server is the CDN domain name system. Thus, the claims are properly limited to that disclosure. *Edwards Lifesciences*, 582 F.3d at 1329-30; *Nystrom v. Trex Co*., 424 F.3d 1136, 1143-45 (Fed. Cir. 2005).

b. Akamai's Repeated Arguments Attacking the District Court's Construction Again Fail

Akamai again argues that the court's construction wrongly excludes a one-level DNS system. (Akamai Br. at 62.) As explained above, Akamai is wrong. The district court refuted this argument when it explained how its construction applies to a one-level system. (*See supra* at 70; A79-80.)

Akamai complains that the district court's example is not supported by the specification. (Akamai Br. at 63.) But the district court's example is consistent with the specification's description of the invention because the one level system combines the *functionality* of two levels — which is the only teaching in the specification on this issue.

Akamai tries using the prosecution history to support its position, arguing that the examiner allowed the '413 claims after Akamai added the "one or more DNS levels" language. (Akamai Br. at 62.) But this added language cannot expand the disclosure of "the invention." Moreover, this claim amendment (and subsequent allowance) occurred after an interview in which Akamai provided a

PowerPoint presentation to the examiner. (A16474.) That PowerPoint presentation shows Akamai's "high-level" and "low-level" DNS servers, but nothing about a one-level system. (A16865-67.) Akamai amended the claim to include the "one or more DNS levels" language, plus a host of other amendments affecting more than half of the claims and adding new claims 18 and 20. (A16495-96 showing application claim 20; A16486-88 adding new claims.) Thus, even if — contrary to fact — the district court's construction were limited to two-tier systems, the prosecution history does not support Akamai's criticism of that construction. To the contrary, the PowerPoint presentation provided to the examiner confirms that the CDN domain name system selects a name server, and no other embodiment is disclosed or contemplated by the specification or prosecution history.

Lastly, Akamai again contends that the district court improperly added a structural limitation (DNS) to the method claim. (Akamai Br. at 62.) However, claims 8, 18, and 20 already require a "domain name system (DNS)." (A291, 18:23; A292, 19:45, 20:26.) The district court did not add any structure — it already existed in the claim.

VI. CONCLUSION

For the above reasons, Limelight respectfully requests that this Court affirm the district court's JMOL of no infringement of the '703 patent and affirm the

judgment in Limelight's favor based on the district court's construction of the '645 and '413 patents.

Alternatively, if this Court does not affirm the JMOL on the grounds determined by the district court, Limelight respectfully requests that it affirm JMOL on the alternative ground presented here. Further, if JMOL of no infringement is not sustained on any ground, Limelight requests that this Court grant JMOL on the lost profits award (or remand for a new trial on this issue) and order a new trial due to the flawed jury instructions on joint infringement and the erroneous interpretation of "optimal."

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CERTIFICATE OF COMPLIANCE

I certify that the foregoing PRINCIPAL AND RESPONSE BRIEF OF DEFENDANT-CROSS-APPELLANT LIMELIGHT NETWORKS, INC. contains 16,490 words as measured by the word processing software used to prepare this brief and a manual count of words in the images imported into the brief.

Dated: December 9, 2009

Respectfully submitted,

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing PRINCIPAL AND RESPONSE BRIEF OF DEFENDANT-CROSS-APPELLANT LIMELIGHT NETWORKS, INC. was served by Federal Express on this 9th day of December, 2009, on the following counsel of record:

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