

UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF MASSACHUSETTS

CABLE & WIRELESS INTERNET § Civil Action No. 02-11430 RWZ  
SERVICES, INC. (formerly known as §  
DIGITAL ISLAND, INC.), § Judge Rya W. Zobel  
and § JURY TRIAL REQUESTED  
KINETECH, INC., §  
Plaintiffs, §  
vs. §  
AKAMAI TECHNOLOGIES, INC., §  
Defendant. §

**CWIS' OPENING MARKMAN BRIEF CONSTRUING THE TERMS  
AT ISSUE IN U.S. PATENT NO. 6,415,280**

Pursuant to the Order of this Court, plaintiff Cable & Wireless Internet Services, Inc. ("CWIS") submits this claim construction brief, construing the seven terms at issue in U.S. Patent No. 6,415,280 ("the '280 patent"). The terms are *data files*, *data identifier*, *given function*, *comprises*, *cached versions of data files*, *hash*, and *value*.

**THE TECHNOLOGY OF THE CLAIMS AT ISSUE**

The claims of the '280 patent at issue in this case are directed at various methods for using a *data identifier* to ensure that a fresh, rather than stale, data file is served by the cache server of a Content Delivery Network ("CDN").<sup>1</sup>

<sup>1</sup> The claims at issue in this case are claims 9, 18, 19, 20, 21, 23, 24, 25, 35, 36, 37, 38 and 39 of the '280 patent. The claims generally refer to the method described therein as a "content delivery method" that involves "cached" data files. See *Declaration of Tim Walker* ("Walker Decl."), Tab A: '280 patent.

EXHIBIT

tabbles

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The '280 patent is a continuation of U.S. Patent No. 5,978,791 ("791 patent"), which was the subject of a previous trial before Your Honor. The claims at issue in the '791 trial were directed broadly to identifying a data item throughout an entire data processing system using an "identifier depending on and being determined using all of the data in the data item and only the data in the data item." *Declaration of Timothy Walker* ("Walker Decl."), Tab B: '791 patent, claims 30, 31, 33 and 41.<sup>2</sup> The claims at issue in this case are different. They are directed to serving fresh data files from a CDN cache server, not identifying data items throughout an entire data processing system.<sup>3</sup> The claims in this case describe using "data identifiers" to ensure that the cached data files are fresh, where the "data identifiers" are determined using at least the contents of the data file.

In everyday terms, suppose that the *Washington Post* website is maintained on an origin server in Boston, you are at a computer terminal in Cambridge, there is a late-breaking news story in Washington, D.C., and you want to see the front-page, lead picture from the *Post's* website. You send a request from your computer in Cambridge to get the *Post's* front-page, lead picture. If the data file that includes that lead picture is on a cache server in Boston, your computer's browser can retrieve the data more quickly from the nearby cache server, rather than having to send the request all the way to the *Post's* origin server in Northern Virginia. This quicker retrieval, however, is dependent upon the cache server in Boston having a data file that contains the current front-page lead picture, and not the lead picture from 4 hours ago. The '280

<sup>2</sup> The claims at issue in the '791 trial were claims 30, 31, 33 and 41, and each claim required an "identifier depending on and being determined using all of the data in the data item and only the data in the data item."

<sup>3</sup> The patentee, in response to a request from the Examiner to explain the claimed invention, described the '280 patent as involving a "content delivery method" that uses "cached versions" of data files. *Walker Decl.*, Tab C: Amendment, 8/22/01, at p. 46.

patent is directed to using *data identifiers* to ensure that the data file served by the cache server is fresh, and contains the current picture that exists on the *Post's* origin server.

In a CDN system, data is typically stored in data files on the origin server, and a copy of the data files may be stored on a cache server. *Declaration of Robert Dewar* ("Dewar Decl."), ¶ 20. Ordinarily, a data file is identified using a Uniform Resource Locator ("URL") that typically includes a pathname. For example, the *Washington Post* front-page lead picture may be identified as "http://media.washingtonpost.com/wp-srv/photo/homepage/hp7-25-03b.jpg." The '280 patent explains that when data is simply identified by a URL, any change to the data on the origin server may not be reflected on the CDN cache server. To ensure that the cache data is fresh, the CDN system typically uses a costly "synchronization" process. The '280 patent describes this "synchronization" process:

Before using a cached item, a cache client must either reload the cached item, be informed of changes to the cached item, or confirm that the master item corresponding to the cached item has not changed. In other words, a cache client must synchronize its data items with those on the cache server. This synchronization may involve reloading data items onto the cache client. The need to keep the cache synchronized or reload it adds significant overhead to existing caching mechanisms.

*Walker Decl.*, Tab A: 2:63-3:4.<sup>4</sup> The claims at issue in the '280 patent use a *data identifier* to avoid this costly "synchronization" process.

The '280 patent explains that when a *data identifier* "is being used to cache data items, the problems of maintaining cache consistency are avoided." 37:24-26; 3:58-60.<sup>5</sup> The

<sup>4</sup> Throughout this brief, the '280 patent is referred to by column and line numbers. The '280 patent is attached as Exhibit A to the Walker Declaration.

<sup>5</sup> For example, the '280 patent explains the *data identifier*, in the context of a key, as follows:

To access a cache and to fill it from its server, a key is required to identify the data item desired. Ordinarily, the key is a name or address [in this case, it would be the pathname of a file]. If the data associated with such a key is changed, the client's cache

consistency problems are avoided because the *data identifier* is determined using at least the contents of the data file. As a result, when the underlying data changes (*i.e.*, the *Post's* lead picture changes) a new data file is created on the origin server and a new *data identifier* is determined using at least the contents of that new data file. According to the '280 patent, the *data identifier* is created using a "given function of the data," and the "data used by the given function comprises the contents of the particular data file." 41:11-14, 41:49-52, 42:10-13.

The '280 patent further explains that the *data identifier* is a "substantially unique" identifier for a data file. 6:8-9. The '280 patent does not require absolute uniqueness of the *data identifier*, but only "sufficient uniqueness" for the application. 13:49-50. The '280 patent recognizes that, in the context of a CDN cache, the actual number of cached data files "form a very sparse subset of all possible inputs." 13:7-10. Accordingly, the likelihood of a *data identifier* collision (*i.e.*, the same *data identifier* for different data files) in the context of a CDN is extremely remote. 13:19-29. Given this small subset of cached data files, the '280 patent recognizes that "lower probabilities of uniqueness may be acceptable." 13:31-33.

The '280 patent also contemplates combining the *data identifier* with other information to provide an additional level of uniqueness, if necessary. According to the '280 patent, the *data identifier* may "use tagged, typed, categorized or classified data items and use a combination of both the [data identifier] and the tag, type, category or class of the data item as an identifier."

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becomes inconsistent; when the cache client refers to that name, it will retrieve the wrong data...

By using an embodiment of the present invention, the cache key uniquely identifies the data it represents. When the data associated with a name changes, the key itself changes. Thus, when a cache client wishes to access the modified data associated with a given file name, it will use a new key [the True Name of the new file] rather than the key to the old file contents in its cache.

37:27-44.

13:41-44. The patent explains that these "tags provide an additional level of uniqueness."

13:50-51.

#### THE TERMS AT ISSUE

The seven terms at issue in this case are: (1) *data files*; (2) *data identifier*; (3) *given function*; (4) *comprises*; (5) *cached versions*; (6) *hash*; and (7) *value*. The terms appear repeatedly in the 13 separate claims that CWIS asserts, and Claims 9 and 35 are illustrative. The text of Claim 9 provides as follows (with the terms at issue in italicized red):

9. In a system in which a set of *data files* are distributed across a network of servers, some of the *data files* being cached from a source server distinct from the servers in the network, a content delivery method comprising:

determining a *data identifier* for a particular *data file* on the source server, the *data identifier* being determined using a *given function* of the data, wherein said data used by the *given function* to determine the *data identifier* comprises the contents of the particular *data file*;  
and  
responsive to a request for the particular *data file*, the request including at least the *data identifier* of the particular *data file*, causing a copy of the particular *data file* to be provided from a given one of the servers of the network of servers.

The text of Claim 35 provides as follows (with the terms at issue in italicized red):

35. A content delivery method, comprising:

distributing a set of *data files* across a network of servers, at least some of the *data files* being *cached versions* of *data files* from another server, said other server being distinct from the network of servers;

determining a *data identifier* for a particular *data file*, the *data identifier* including a *hash* of the contents of the particular *data file*;  
and

in response to a request for the particular *data file*, the request including at least the *data identifier* of the particular *data file*, providing the particular *data file* from a given one of the servers of the network of servers.

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