

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

SOUND VIEW INNOVATIONS, LLC,)
)
) Plaintiff,
)
) v.) C.A. No. _____
))
HSN, INC.,) **JURY TRIAL DEMANDED**
)
) Defendant.
)
)

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Sound View Innovations, LLC (“Sound View”), for its Complaint for Patent Infringement against HSN, Inc. (“HSN”), alleges as follows:

INTRODUCTION

1. Sound View is an intellectual property licensing company with a patent portfolio including more than 550 active and pending patents worldwide, approximately 350 of which are active U.S. Patents. Those patents were developed by researchers at Alcatel Lucent (“Lucent”) and its predecessors. Lucent was home to the world-renowned Bell Laboratories, which has a long and storied history of innovation. Researchers at Lucent’s Bell Laboratories developed a wide variety of key innovations that have greatly enhanced the capabilities and utility of computer systems and networks. This has resulted in benefits such as better and more efficient computer networking, computer security, and user experiences.

2. Patents enjoy the same fundamental protections as real property. Sound View, like any property owner, is entitled to insist that others respect its property and to demand compensation from those who take that property for their own use. HSN has used, and continues to use, Sound

View's patents without authorization. Moreover, despite Sound View's repeated attempts to negotiate, HSN refuses to take a license though it continues to use Sound View's property.

NATURE OF THE CASE

3. This action arises under 35 U.S.C. § 271 for Defendant's infringement of Sound View's United States Patent Nos. 5,806,062 (the "'062 patent"), 6,708,213 (the "'213 patent"), 6,757,796 (the "'796 patent"), and 9,462,074 (the "'074 patent") (collectively the "Patents-In-Suit").

THE PARTIES

4. Plaintiff Sound View is a Delaware limited liability company with its principal place of business at 2001 Route 46, Waterview Plaza, Suite 310, Parsippany, New Jersey 07054.

5. On information and belief, Defendant HSN is a Delaware corporation, with its principal place of business at 1 HSN Drive, Saint Petersburg, FL 33729. HSN may be served with process by serving its registered agent, Corporation Service Company, 251 Little Falls Drive, Wilmington, Delaware 19808.

JURISDICTION AND VENUE

6. This action arises under the patent laws of the United States, including 35 U.S.C. § 271 *et seq.* The jurisdiction of this Court over the subject matter of this action is proper under 28 U.S.C. §§ 1331 and 1338(a).

7. Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391(b) and (c) and 1400(b), at least because the defendant resides in this judicial district.

8. This Court has personal jurisdiction over the defendant because it, among other things: is incorporated under the laws of the State of Delaware and has placed services that practice the claims of the Patents-in-Suit into the stream of commerce with the knowledge, or reasonable expectation, that actual or potential users of such services were located within this judicial district.

THE PATENTS-IN-SUIT

9. Sound View incorporates by reference the preceding paragraphs as if fully set forth herein.

A. The '062 Patent

10. The '062 patent, titled "Data Analysis System Using Virtual Databases," was duly and properly issued by the United States Patent and Trademark Office ("USPTO") on September 8, 1998. A copy of the '062 patent is attached hereto as Exhibit A.

11. Sound View is the owner and assignee of the '062 patent and holds the right to sue for and recover all damages for infringement thereof, including past infringement.

12. The '062 patent generally relates to customizable data processing applications that rely on a combination of reusable software operators, such as initial operators, query operators, terminal operators, and/or external operators, to process source information from a virtual database in a particular schema, such as HTML or XML, and transform that source information into another virtual database having the same schema.

13. Various types of documents may be stored in a computer system, such as word processing files, computer programs, HTML documents, financial files, employee files, etc. When dealing with large or complex files, it is often desirable to analyze or alter the structure and content of the documents; for example, comparing a first version to a second version, or analyzing dependency relationships between various sections of computer code.

14. In order to aid such analysis, a database may be constructed which contains information describing the structure of the documents. Various database queries may be performed to extract and process information describing the structure of the source documents. A collection of source documents, along with an associated database that describes the structure of the documents, is called a repository.

15. To analyze source document information, it is necessary to process information contained in the repository. A computer program that extracts or converts information from a repository is called an operator. Thus, an operator receives a source document and/or a database as input, processes the input, and produces some output. A simple example of an operator is a program that takes a source document as input and counts the number of occurrences of a particular word, and outputs a number containing the number of times the particular word occurs. The overall function of the analysis—in the above example, a count of the number of occurrences of a particular word—is called an application.

16. At the time of the invention of the '062 patent, in existing repository analysis systems, operators were designed for single applications. Thus, the user indicated which operator he/she wished to apply to the repository, and the system processed the repository accordingly. The user was presented with the output when the processing was finished. Different operators processed the repository in different manners, but there was no convenient mechanism for combining the various operators to create new applications. Thus, when a new application was desired, a new operator would need to be designed from scratch.

17. Prior art repository analysis systems generally were closed systems, in that all operators were applied within the confines of the system, and all database accesses were performed within the system. For example, a repository analysis system operator may have produced as output a file containing information about the structure of a computer program. In conventional closed systems, this output could not be further processed by, for example, an external graphics program that would format the output in a desired manner. Instead, the output could only be formatted according to operators that were internal to the repository system. There was no

convenient mechanism to allow the repository analysis system to communicate with operators that were external to the system.

18. The inventors of the '062 patent solved these discrete computer-based problems by providing, inter alia, a method for creating data analysis applications using reusable software operators. For example, query operators receive data in a particular virtual database format, process the data in the virtual database, and output the results of the processing in another virtual database that has the same format as the original virtual database. A plurality of query operators can be combined to customize the processing of the data. In addition, initial operators convert source information into the virtual database format so that the query operators can analyze the source data. External operators take an external format as input and create another external format as output. Also, terminal operators are used to convert a virtual database into an external format. A user can combine initial, query, terminal, and external operators to create customizable data processing applications.

19. The '062 Patent is directed to a technical improvement in software technology over the rigid general purpose data analysis applications and expensive custom applications that existed in the 1990s. The novel software structure of the claimed inventions enabled users to engineer their own purpose-built data analysis applications with reusable interoperable software operators.

20. Creating data analysis applications using reusable software operators, as described in the '062 patent, is particularly useful in that the external format data may be processed in various ways, thus allowing flexible presentation of the analysis results.

B. The '213 Patent

21. The '213 patent, titled "Method for Streaming Multimedia Information Over Public Networks," was duly and properly issued by the USPTO on March 16, 2004. A copy of the '213 patent is attached hereto as Exhibit B.

22. Sound View is the owner and assignee of the '213 patent and holds the right to sue for and recover all damages for infringement thereof, including past infringement.

23. The '213 patent generally relates to streaming multimedia data (*e.g.*, audio and video data) over the Internet and other networks, and, more specifically, to methods to improve caching of streaming multimedia data from a content provider over a network to a client's computer.

24. At the time of the invention of the '213 patent, multimedia data could either be downloaded by the client or streamed over the network to the client. Streaming eliminated the need for the client to wait for the downloading to complete before watching or listening to the multimedia data. However, with conventional unicast connections, streaming posed problems to content providers in that server load increased linearly with the number of clients, to Internet service providers in that streaming caused network congestion problems, and to clients in that streaming often resulted in high start-up latency and unpredictable playback quality.

25. Conventional caching systems attempted to address network congestion, but these were unsuitable for streaming multimedia data: (1) video files were typically too large to be cached in their entirety, so only a few streams could be stored at a cache; (2) breaking video files into smaller pieces was not feasible because the caching systems would treat different chunks from the same video object independently; and (3) streaming multimedia has temporal characteristics, like the transmission rate, while conventional caching was only capable of handling static web objects.

26. The inventors of the '213 patent solved those discrete computer-based problems and improved upon conventional caching techniques by providing a novel architecture and method for supporting high quality live and on-demand streaming multimedia on network systems using helper servers.

27. The techniques described in the '213 patent advantageously reduce server and network loads by employing helper servers with dynamic data transfer rate control to overcome arrival time and range heterogeneity in client requests, thereby improving the quality perceived by end users making requests for streaming media objects.

28. The '213 patent has been recognized with the 2013 Edison Patent Award in Multimedia Technology for inventing “fundamental concepts and techniques to design content distribution networks and caching systems originally built for text and images to better support streaming media over the Internet.” A press release regarding the award is attached as Exhibit C.

C. The '796 Patent

29. The '796 patent, titled “Method and System for Caching Streaming Live Broadcasts Transmitted Over a Network,” was duly and properly issued by the USPTO on June 29, 2004. A copy of the '796 patent is attached hereto as Exhibit D.

30. Sound View is the owner and assignee of the '796 patent and holds the right to sue for and recover all damages for infringement thereof, including past infringement.

31. The '796 patent generally relates to real-time multimedia applications, and more specifically, to methods for decreasing the playback delay at a client computer of a live streaming broadcast transmitted over a network.

32. At the time of the invention of the '796 patent, live broadcasting of streaming multimedia over the Internet (including through movie broadcasts, television, sports, talk and music radio, business events, seminars, and tutorials) was becoming increasingly popular.

33. Streaming data involves sending a continuous transmission of data from the server to a client. At the client computer, received data is buffered in a cache memory and continuously processed as soon as, or soon after, being received by the client. The client computer creates a multimedia output from the received multimedia data. The advantage of streaming is that the

client computer does not have to wait until all data is downloaded from the server before some of the data is processed and the multimedia output is created.

34. Because multimedia applications involve transferring large amounts of information, such systems place a considerable load on the resources of the network, server, and client. As more people accessed network-based multimedia applications, there was an increased demand for longer, more complicated, more flexible multimedia applications.

35. Multicast technology was developed for scaling live broadcasts. However, one problem that such technology did not address was that of start-up latency, *i.e.*, the delay between the client requesting multimedia playback and the beginning of the playback on the client.

36. The techniques described in the '796 patent solve that discrete computer-based problem and improve upon prior caching systems to better support the live broadcasting of streaming multimedia over the Internet and other network systems. In particular, the '796 patent provides novel methods for supporting high quality live streaming multimedia broadcasts on a network by using helper servers which operate as caching and streaming agents inside the network to enhance caching and reduce playback delay without sacrificing perceived playback quality. To allow the client's buffer to be filled faster (and thus allow playback to start faster), a playout history buffer is allocated and maintained at the helper server in response to a client request for a particular live streaming media broadcast. The playout history buffer operates as a moving window of fixed size that advances with the live broadcast stream, storing the last few seconds of the datastream. An advantage of utilizing playout history buffers is that as subsequent client requests are received at the helper server for a live streaming media broadcast which is currently being stored in a previously allocated playout history buffer in response to a former request, each subsequent request can be serviced directly from the playout history buffer thereby reducing start up latency.

An advantage in streaming data packets to each client is realized by virtue of having some number of them pre-stored in the playout history buffer. When a request is received at the helper server, the stored packets are immediately available for distribution to the requesting client.

37. Servicing subsequent requests from the playout history buffer prevents the need to individually service each subsequent request from the content server as a unicast datastream, which reduces network congestion by redirecting requests to the helper server. Also, the playout history buffer (which may be considered a form of short term dynamic cache) allows the cached data to be made immediately available to a requesting client to fill the client's playout buffer as rapidly as possible.

D. The '074 Patent

38. The '074 patent, titled "Method and System for Caching Streaming Multimedia on the Internet," was duly and properly issued by the USPTO on October 4, 2016. A copy of the '074 patent is attached hereto as Exhibit E.

39. Sound View is the owner and assignee of the '074 patent and holds the right to sue for and recover all damages for infringement thereof, including past infringement.

40. The '074 patent generally relates to network systems, and more particularly to methods for improving the caching of streaming multimedia data from a content provider over a network to a client.

41. At the time of the invention of the '074 patent, broadcasting of streaming multimedia over the Internet was becoming increasingly popular.

42. Streaming data involves sending a continuous transmission of data from the server to a client. The client computer begins to present the information as it arrives, rather than waiting for the entire data set to arrive before beginning the presentation of the data. The client computer creates a multimedia output from the received multimedia data. The advantage of streaming is

that the client computer does not have to wait until all data is downloaded from the server before some of the data is processed and the multimedia output is created.

43. Problems arose when users began to expect instantaneous streaming data on demand, particularly for video data, because streaming multimedia objects were generally delivered over the Internet and other data networks via unicast connections. Such architectures had many shortcomings, both from the content provider's and user's points of view. For content providers, such architectures put increased demand on networks and servers, as the server load increased linearly with the number of clients. For users, there were often long delays between requesting the video content and the time when the video content actually began playing (*i.e.*, high start-up latency) and unpredictable playback quality due to network congestion.

44. Web caching technology had been implemented on the Internet to reduce network load, server load, and high start-up latency. However, caching systems that existed at the time were restricted to supporting static web objects such as HTML documents or images, and did not adequately support streaming multimedia data such as video and audio streaming multimedia objects. While larger objects could be broken into smaller pieces for caching, then-existing caching systems would treat different chunks of the same video object independently, rather than considering the logical relationship among the various pieces. Also, given the larger size of streaming multimedia objects relative to static web objects, streaming multimedia objects do not lend themselves to being cached in their entirety, as disk space limitations made it not feasible to statically store more than a few complete streaming multimedia objects.

45. The '074 Patent is directed to an improved network architecture for the delivery of streaming media over the Internet. As the patent describes, conventional architectures were designed to deliver web objects (like static web pages) to client computers, but were inadequate to

deliver streaming media (like audio and video), which were larger in size and required delivery to the user in a specific order (such as beginning, middle, and end). The claimed inventions solved these problems by introducing a new architecture with “helper servers” and specific storage replacement policies to ensure efficient storage and delivery of streaming media files to users.

46. The techniques described in the '074 patent solve that discrete computer-based problem and improve upon prior caching systems by providing novel systems and methods for supporting high quality streaming multimedia on a network that use helper servers that operate as caching and streaming agents inside the network. The helper servers implement several methods specifically designed to support streaming multimedia, including segmentation of streaming multimedia objects into smaller units, cooperation of the helper servers, and novel cache placement and replacement policies of the constituent units which make up the streaming multimedia objects. The helper servers reduce a content provider's memory and processing requirements by reducing the server load, reduce congestion problems, and reduce high start-up latency.

BACKGROUND FACTS

47. On March 24, 2017, Sound View sent a letter notifying HSN of its infringement of the '796, '074, and '213 patents. Sound View identified representative HSN offerings that infringe those patents and explained its intention to allow HSN to continue to use the inventions covered in those patents through a license from Sound View. Sound View further requested a meeting to discuss the matter in more detail.

48. On October 2, 2017, Sound View provided HSN with further details regarding its infringement of the '796, '074, and '213 patents.

49. On October 11, 2017, counsel for HSN responded that HSN was still reviewing the materials provided by Sound View but would contact Sound View in November.

50. After HSN failed to contact Sound View in November, on December 12, 2017,

Sound View wrote counsel for HSN to request a meeting and an opportunity to present Sound View's positions.

51. HSN did not respond to Sound View's December 12, 2017 letter.

52. On January 11, 2018, Sound View once again wrote counsel for HSN requesting a meeting and an opportunity to present Sound View's positions.

53. On January 12, 2018, counsel for HSN responded to Sound View's January 11, 2018 letter with a request for information about agreements with Sound View's other licensees.

54. On January 15, 2018, Sound View wrote counsel for HSN and explained that, as is standard for such agreements, it was not permitted to disclose the terms of agreements to prospective licensees due to confidentiality obligations. Sound View once again requested a meeting to discuss its positions.

55. Not having heard from HSN's counsel about the substance of Sound View's allegations or to schedule a meeting to discuss Sound View's positions, on March 28, 2018, Sound View wrote counsel for HSN to ask how HSN would like to proceed with licensing discussions.

56. HSN did not respond to Sound View's March 28, 2018 letter.

57. On April 23, 2018, Sound View wrote counsel for HSN and again requested a clear indication of how HSN would like to proceed with licensing discussions.

58. HSN did not respond to Sound View's April 23, 2018 letter.

59. Still not having heard from HSN's counsel, on May 30, 2018, Sound View explained that it intended to enforce its patents against HSN and that although Sound View preferred a negotiated settlement, it would file suit if necessary.

60. HSN did not respond to Sound View's May 30, 2018 letter.

61. Despite Sound View's repeated efforts and lengthy correspondence, HSN has

refused to engage in any meaningful discussion about reaching a licensing agreement to end its infringement of Sound View's patents. Instead, HSN continues to knowingly, intentionally, and willfully infringe Sound View's patents so as to obtain their significant benefits without paying any compensation to Sound View. Sound View thus has no other choice but to seek relief through litigation.

COUNT ONE
INFRINGEMENT OF THE '062 PATENT

62. Sound View incorporates by reference the preceding paragraphs as if fully set forth herein.

63. The '062 patent is valid and enforceable.

64. HSN's platforms, web pages, and servers, including at least the webpage hsn.com (the "HSN DOM Services"), have used the Document Object Model ("DOM") to create and process customizable data analysis and processing applications. The DOM is an application programming interface ("API") that allows documents to be modelled using objects of a variety of data formats, including HTML and XML. It defines the logical structure of documents and the way a document is accessed and manipulated.

65. Using the DOM, the nodes (or objects) of every document are organized in a tree structure, called the "DOM tree," and can be manipulated individually using the DOM methods (or operators). With the DOM, programmers can build documents, navigate their structure, and add, modify, or delete elements and content. Anything found in an HTML or XML document can be manipulated in this way using the DOM, with a few exceptions.

66. As an object model, the DOM identifies: (1) the interfaces and objects used to represent and manipulate a document; (2) the semantics of these interfaces and objects – including

both behavior and attributes of the relationships; and (3) collaborations among these interfaces and objects.

67. jQuery is a DOM manipulation library that makes it easier to use JavaScript on a website by taking more complex code needed to manipulate the DOM and wrapping the code into simpler methods that can be called with smaller amounts of JavaScript.

68. On information and belief, HSN has used jQuery throughout its products and services, including at least HSN DOM Services.

69. HSN has infringed one or more claims of the '062 patent under 35 U.S.C. § 271(a), literally and/or under the doctrine of equivalents, by making, using, selling, and/or offering for sale in the United States, and/or importing into the United States, products and/or methods encompassed by those claims, including for example, by making, using, selling, offering for sale, and/or importing its HSN platforms, web pages, and servers, including for example its web pages and servers that use and have used jQuery.

70. For example, HSN has infringed claim 14 by using a method for processing information (such as HSN DOM Services) comprising the steps of:

- a. providing a plurality of software operators (such as jQuery methods, including, for example, “.append(),” “.removeAttribute(),” “.insertBefore(),” and “.remove()”) each configured to receive a virtual database (such as DOM nodes (or objects) or web pages, describing the structure of a document) having a first schema (such as HTML or XML), for processing information contained in said virtual database (such as by applying a jQuery method to a node in the DOM tree), and for outputting a virtual database having said first schema; and
- b. combining at least two of said software operators to create an application (such as that used to construct and serve HSN DOM Services).

71. Sound View has been damaged by HSN's infringement of the '062 patent and is entitled to recover from HSN the damages sustained by Sound View as a result of HSN's wrongful acts in an amount adequate to compensate Sound View for HSN's infringement subject to proof at trial.

COUNT TWO
INFRINGEMENT OF THE '213 PATENT

72. Sound View incorporates by reference the preceding paragraphs as if fully set forth herein.

73. The '213 patent is valid and enforceable.

74. A content delivery network, also called a content distribution network (CDN), is a network of connected computers that delivers internet content, such as streaming video, to end users. When a service, such as HSN, uses a CDN, the content comes from an "origin server" and is replicated on numerous "edge servers." When an end user requests particular content, the CDN provides the content from an edge server near to the end user. This arrangement has numerous benefits, such as: faster response time (lower latency) because the content is served from a nearby edge server, instead of a potentially distant origin server; greater throughput because the edge server will be less loaded than a single origin server would be; and greater availability because the multiplicity of servers allows for a request to be failed over to another server if an edge server crashes.

75. HSN provides and has provided streaming services, including at least HSN Live, HSN Now, and hsn.com (the "HSN '213 Services"), to allow users to watch streaming video. HSN provides streaming video services to its users utilizing content delivery networks, including at least Akamai Technologies Inc. ("Akamai"). The HSN '213 Services provide video that is encoded using certain protocols, including the HTTP Live Streaming ("HLS") protocol and the MPEG-

DASH protocol.

76. HLS is an HTTP-based media streaming communications protocol. It works by breaking the overall stream into a sequence of small HTTP-based file downloads; each download is one short chunk that is part of an overall potentially unbounded transport stream. As the stream is played, the client may select from a number of different alternate chunks containing the same material encoded at a variety of data rates.

77. MPEG-DASH is an adaptive bitrate streaming technique that enables high quality streaming of media content over the Internet delivered from conventional HTTP web servers. Similar to HLS, MPEG-DASH works by breaking the content into a sequence of small HTTP-based file segments, each segment containing a short interval of playback time of content that is potentially many hours in duration, such as a live broadcast of a sports event. The content is made available at a variety of different bit rates, with alternative segments encoded at different bit rates covering aligned short intervals of playback time.

78. Akamai supports HSN's delivery of video content to users using MPEG-DASH and/or HLS. Moreover, Akamai openly advertises and promotes the use of those protocols to deliver video content to users.

79. Knowing that Akamai supports the delivery of video content using MPEG-DASH and/or HLS, and directing and controlling such support, HSN delivers video streams to its users, including the HSN '213 Services, using at least the CDNs by transcoding videos into MPEG-DASH segments with different bit rates, and providing those segments to Akamai, and/or by transcoding, packaging, and delivering live and on-demand streams into segments at different data rates with HLS. The CDNs store those MPEG-DASH or HLS segments in caches, and send them to HSN users who request to view the video files.

80. HSN contracts or has contracted with Akamai, so that when at least certain HSN users request a video stream, the request is routed to one of the edge servers of the CDN, which receives the request. The edge server then allocates a local buffer to store portions of the stream.

81. On information and belief, HSN can and has configured and/or customized aspects of the operation of Akamai in delivering content to its users. For example, HSN can customize the operation of the Akamai CDN through configuration tools, such as Akamai's Luna Control Center.

82. At least through contracting with Akamai and configuring and/or customizing aspects of the operation of the Akamai CDN, HSN has knowledge of the operations of the Akamai CDN and the steps the Akamai systems will perform in order to deliver content to HSN's users. HSN thus knowingly causes and specifically intends for Akamai to perform those steps, or directs and controls Akamai's performance of these steps by means of at least its contractual relationship with Akamai and by configuring and customizing Akamai's CDN.

83. For example, utilizing Akamai's CDN requires storing segments in a local buffer on an edge server, and at least by entering into a contractual relationship with Akamai, HSN knowingly intends for Akamai to do so, or directs and controls Akamai (either implicitly or explicitly) to do so. HSN intends for, or directs, the Akamai edge server to request the MPEG-DASH or HLS segments from a datacenter cache, store them in the local buffer, and send them to HSN users who view the video. Further, HSN intends for, or directs, the edge server to store data in the buffer so that its end users can receive content with a lower latency.

84. While the Akamai edge server sends the requested segments to the user, it concurrently requests the next few segments in the stream from the datacenter cache or from the cache of another server. By doing so, the content can be streamed smoothly without pauses for

buffering. Akamai advertises this process as “pre-fetching.” HSN intends for and contracts with Akamai to use pre-fetching so that its users can receive content without pauses for buffering. HSN and other customers have the ability to configure the size of the segments to be fetched in the Akamai system. The Akamai CDN, as configured and customized by HSN, also allows HSN users to receive content without pauses for buffering by allowing end users to send byte range requests to the edge server.

85. While the content is being played back by an MPEG-DASH or HLS client, the client automatically selects the next segment to download and play based on current network conditions. The streaming server then provides the requested alternate segment, resulting in the server adjusting the data rate. HSN intends for and controls the Akamai CDN to adjust the data rate by directing, controlling, and/or inducing Akamai to provide the content on its CDN at different data rates.

86. HSN directly infringes one or more claims of the '213 patent (including at least claim 16) under 35 U.S.C. § 271(a), literally and/or under the doctrine of equivalents, at least by directing and/or controlling at least the performance of the claimed steps by Akamai to infringe the '213 patent to deliver the HSN '213 Services.

87. For example, HSN has directly infringed, and continues to directly infringe, claim 16 of the '213 patent under 35 U.S.C. § 271(a), literally and/or under the doctrine of equivalents, at least by directing and/or controlling Akamai to deliver the HSN '213 Services. For example, HSN has directly infringed, and continues to directly infringe, claim 16 of the '213 patent under 35 U.S.C. § 271(a) literally and/or under the doctrine of equivalents, at least by directing and/or controlling Akamai (through at least contracting with Akamai and customizing the Akamai CDN) to infringe claim 16 by using a method of reducing latency in a network having a content server

which hosts streaming media (“SM”) objects (such as videos) which comprise a plurality of time-ordered segments (such as HLS or MPEG-DASH segments) for distribution over said network through a plurality of helpers (“HSs”) (such as Akamai cache or edge servers) to a plurality of clients (such as users of the HSN ’213 Services). Further:

a. HSN directs and/or controls Akamai, at least via its contract with Akamai and/or its configuration and customization of Akamai’s CDN, to receive a request for an SM object from one of said plurality of clients (such as a user of one of the HSN ’213 Services requesting to watch a hosted video) at one of said plurality of helper servers (such as by directing and/or controlling one of the Akamai cache or edge servers to receive such a request from a user of one of the HSN ’213 Services to watch a hosted video);

b. HSN directs and/or controls Akamai, at least via its contract with Akamai and/or its configuration and customization of Akamai’s CDN, to allocate a buffer at one of said plurality of HSs to cache at least a portion of said requested SM object (such as by directing and/or controlling Akamai to allocate a local buffer to store portions of the stream as HLS or MPEG-DASH segments at the Akamai cache or edge servers);

c. HSN directs and/or controls Akamai, at least via its contract with Akamai and/or its configuration and customization of Akamai’s CDN, to download said portion of said requested SM object to said requesting client, while concurrently retrieving a remaining portion of said requested SM object from one of another HS and said content server (such as by directing and/or controlling the Akamai cache or edge server to pre-fetch the next segment of video content by requesting the next HLS or MPEG-DASH segments in the stream from the datacenter cache, and/or by directing and/or controlling the Akamai cache or edge server to be capable of receiving

a byte range request in order to download a segment of a requested video stream to a client while concurrently downloading the next segments from another server); and

d. HSN directs and/or controls Akamai, at least via its contract with Akamai and/or its configuration and customization of Akamai's CDN and/or its provision of content encoded at multiple bitrates, to adjust a data transfer rate at said one of said plurality of HSs for transferring data from said one of said plurality of helper servers to said one of said plurality of clients (such as by directing and/or controlling Akamai to provide alternate segments encoded at different data rates to the client to accommodate the current network conditions (*e.g.*, the client's current bandwidth), such that providing the requested alternate segment results in an adjusted data rate).

88. At least by October 2, 2017, Sound View informed HSN that its systems and applications infringe the '213 patent. However, HSN did not stop infringing.

89. In addition or in the alternative, HSN has induced infringement, and continues to induce infringement, of one or more claims of the '213 patent under 35 U.S.C. § 271(b), literally and/or under the doctrine of equivalents. HSN has actively, knowingly, and intentionally induced (and continues to induce) infringement of the '213 patent by making, using, offering for sale, selling, supplying, maintaining, and/or supporting the HSN '213 Services; by contracting with Akamai and customizing the Akamai CDN with the specific intent to cause Akamai to perform the steps claimed in the '213 patent to deliver video data, including the HSN '213 Services, to HSN's users, and with the knowledge that such actions infringe the '213 patent.

90. For example, at least through repeated correspondence from Sound View, HSN knows that at least Akamai performs the claimed methods of the '213 patent to deliver the HSN '213 Services, and that HSN induces the infringement of each of those CDNs. (*See* Exhibit F,

incorporated herein by reference.) Moreover, HSN specifically intends that infringement, at least by continuing to contract with and utilize the Akamai CDN to offer the HSN '213 Services; configuring the Akamai CDN to perform the claimed methods of the '213 patent; and by encouraging and facilitating their infringement through the use of the HSN '213 Services by HSN's users and/or the creation and dissemination of documentation related to the HSN '213 Services, including by, for example, encouraging and instructing its agents and contractors, such as Akamai, to provide video to HSN's users through the HSN '213 Services, causing the performance of the claimed methods with the knowledge that such actions infringe the '213 patent.

91. For example, HSN intends for and induces Akamai to infringe claim 16 to deliver the HSN '213 Services by using a method of reducing latency in a network having a content server which hosts SM objects (such as videos) which comprise a plurality of time-ordered segments (such as HLS or MPEG-DASH segments) for distribution over said network through a plurality of HSs (such as Akamai cache or edge servers) to a plurality of clients (such as users of the HSN '213 Services). HSN further intends for and induces Akamai to:

a. receive a request for an SM object from one of said plurality of clients (such as a user of one of the HSN '213 Services requesting to watch a hosted video) at one of said plurality of helper servers (such as one of the Akamai cache or edge servers, with knowledge that Akamai's cache or edge servers will receive such a request from a user of one of the HSN '213 Services to watch a hosted video);

b. allocate a buffer at one of said plurality of HSs to cache at least a portion of said requested SM object (such as by inducing Akamai to allocate a local buffer to store portions of the stream as HLS or MPEG-DASH segments at the Akamai cache or edge servers, with

knowledge that Akamai's CDN will allocate such a buffer at one of the Akamai cache or edge servers to store portions of the stream as HLS or MPEG-DASH segments);

c. download said portion of said requested SM object to said requesting client, while concurrently retrieving a remaining portion of said requested SM object from one of another HS and said content server (such as the Akamai cache or edge server pre-fetching the next segment of video content by requesting the next HLS or MPEG-DASH segments in the stream from the datacenter cache, with knowledge that Akamai's cache or edge servers will pre-fetch the next segment of video by requesting the next HLS or MPEG-DASH segment in the stream from the datacenter cache, and/or by directing and/or controlling the Akamai cache or edge server to be capable of receiving a byte range request in order to download a segment of a requested video stream to a client while concurrently downloading the next segments from another server); and

d. adjust a data transfer rate at said one of said plurality of HSs for transferring data from said one of said plurality of helper servers to said one of said plurality of clients (such as providing alternate segments encoded at different data rates to the client to accommodate the current network conditions (*e.g.*, the client's current bandwidth), and then providing the requested alternate segment resulting in an adjusted data rate, with knowledge that the Akamai CDN will provide alternate segments encoded at different data rates to the client).

92. Sound View has been and continues to be damaged by HSN's infringement of the '213 patent and is entitled to recover from HSN the damages sustained by Sound View as a result of HSN's wrongful acts in an amount adequate to compensate Sound View for HSN's infringement subject to proof at trial.

93. In committing these acts of infringement, HSN committed egregious misconduct including, for example, acting despite knowing that its actions constituted infringement of a valid

patent, or recklessly disregarding the fact that its actions constituted an unjustifiably high risk of infringement of a valid and enforceable patent.

94. HSN's infringement of the '213 patent was and is deliberate and willful, entitling Sound View to increased damages under 35 U.S.C. § 284 and to attorney fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

COUNT THREE
INFRINGEMENT OF THE '796 PATENT

95. Sound View incorporates by reference the preceding paragraphs as if fully set forth herein.

96. The '796 patent is valid and enforceable.

97. HSN provides and has provides live streaming services, including at least HSN Live (the "HSN '796 Services"), to allow users to watch live streaming video.

98. CDNs, including at least Akamai, support HSN's delivery of video content to users using MPEG-DASH and/or HLS. Moreover, Akamai openly advertises and promotes the use of those protocols to deliver video content to users. Knowing that Akamai supports the delivery of video content using MPEG-DASH and/or HLS, and directing or controlling such support, HSN delivers the HSN '796 Services to its users using at least the Akamai CDN by transcoding videos into MPEG-DASH and/or HLS segments.

99. HSN contracts or has contracted with Akamai, so that when at least certain HSN users request the HSN '796 Services video stream, the request is routed to one of the edge servers of the CDN, which receives the request. On information and belief, HSN can and has configured and/or customized aspects of the operation of Akamai in delivering content to its users. For example, HSN can customize the operation of the Akamai CDN through configuration tools, such as Akamai's Luna Control Center.

100. For example, at least through contracting with Akamai and configuring and/or customizing aspects of the operation of the Akamai CDN, HSN has knowledge of the operations of the Akamai CDN and the steps the Akamai systems will perform in order to deliver content to HSN's users. HSN thus knowingly causes and specifically intends for Akamai to perform those steps, or directs and controls Akamai's performance of these steps by means of at least its contractual relationship with Akamai and by configuring and customizing Akamai's CDN.

101. For example, HSN contracts with Akamai knowing that when at least certain HSN users request the HSN '796 Services live stream, the request is routed to an Akamai edge server, which receives the request, and that the Akamai edge server allocates a local buffer to store portions of the stream. HSN contracts with Akamai also knowing that when a second user requests the same video stream, the Akamai edge server will provide the stream from the same local buffer, because Akamai's edge servers serve the second request from the same local buffer because doing so saves space and bandwidth. HSN's contract with Akamai thus implicitly or explicitly directs and controls Akamai to serve a second request for the same stream from the same local buffer. Because the Akamai edge server already has the requested stream in a local buffer, it takes less time to send it to the second user.

102. HSN directly infringes one or more claims of the '796 patent (including at least claim 27) under 35 U.S.C. § 271(a), literally and/or under the doctrine of equivalents, at least by directing and/or controlling at least the performance of the claimed steps by Akamai to infringe the '796 patent to deliver the HSN '796 Services.

103. For example, HSN has directly infringed, and continues to directly infringe, claim 27 of the '796 patent under 35 U.S.C. § 271(a), literally and/or under the doctrine of equivalents, at least by directing and/or controlling Akamai (through at least contracting with Akamai and

customizing the Akamai CDN) to infringe claim 27 by using, in a network having a content server (such as a web content server) which hosts a plurality of live SM broadcast objects (such as live video) for distribution over said network through a plurality of HSs (such as Akamai's edge servers) to a plurality of clients (such as HSN's users), a method of reducing start-up latency associated with distributing said plurality of live SM broadcast objects from said content server and said plurality of HSs to said plurality of clients. Further:

a. HSN directs and/or controls Akamai, at least via its contract with Akamai and/or its configuration and customization of Akamai's CDN, to receive a first request for one of said plurality of live SM broadcast objects at one of said plurality of HSs (such as by directing and/or controlling Akamai to receive a first request from a HSN user to watch a live video at one of Akamai's edge servers);

b. HSN directs and/or controls Akamai, at least via its contract with Akamai and/or its configuration and customization of Akamai's CDN, to service said first request from a non pre-configured playout history ("PH") buffer (such as by directing and/or controlling Akamai to contact a content server, retrieve and cache the requested MPEG-DASH or HLS segments at the Akamai edge server in a local buffer, and deliver the requested content to the client) at a first data rate;

c. HSN directs and/or controls Akamai, at least via its contract with Akamai and/or its configuration and customization of Akamai's CDN, to receive a second request for said one of said plurality of live SM broadcast objects at said one of said plurality of HSs (such as by directing and/or controlling Akamai to receive a second request for the same MPEG-DASH or HLS segments at the Akamai edge server); and

d. HSN directs and/or controls Akamai, at least via its contract with Akamai and/or its configuration and customization of Akamai's CDN, to partially service said second request from said non pre-configured PH buffer (such as by directing and/or controlling Akamai to deliver the requested MPEG-DASH or HLS segments to the client from the same local buffer on the Akamai edge server) at a second data rate, wherein said second data rate is higher than said first data rate.

104. At least by October 2, 2017, Sound View informed HSN, that its systems and applications infringe the '796 patent. However, HSN did not stop infringing.

105. In addition or in the alternative, HSN has induced infringement, and continues to induce infringement, of one or more claims of the '796 patent under 35 U.S.C. § 271(b), literally and/or under the doctrine of equivalents. HSN has actively, knowingly, and intentionally induced (and continues to induce) infringement of the '796 patent by making, using, offering for sale, selling, supplying, maintaining, and/or supporting the HSN '796 Services; by contracting with and customizing CDNs with the specific intent to cause CDNs to perform the steps claimed in the '796 patent to deliver video data, including the HSN '796 Services, to HSN's users, and with the knowledge that such actions infringe the '796 patent.

106. For example, at least through repeated correspondence from Sound View, HSN knows that at least Akamai performs the claimed methods of the '796 patent, and that HSN induces the infringement of Akamai. (*See* Exhibit F, incorporated herein by reference.) Moreover, HSN specifically intends that infringement, at least by continuing to contract with and utilize the Akamai CDN to offer the HSN '796 Services; configuring or customizing the Akamai CDN to perform the claimed methods of the '796 patent; and by encouraging and facilitating their infringement through the use of the HSN '796 Services by HSN's users and/or the creation and dissemination of

documentation related to the HSN '796 Services, including by, for example, encouraging and instructing its agents and contractors, such as Akamai, to provide video to HSN's users through the HSN '796 Services, causing the performance of the claimed methods with the knowledge that such actions infringe the '796 patent

107. For example, HSN intends for and induces Akamai to infringe claim 27 to deliver the HSN '796 Services by using, in a network having a content server (such as a web content server) which hosts a plurality of live SM broadcast objects (such as live video) for distribution over said network through a plurality of HSs (such as Akamai's edge servers) to a plurality of clients (such as HSN's users), a method of reducing start-up latency associated with distributing said plurality of live SM broadcast objects from said content server and said plurality of HSs to said plurality of clients, said method comprising:

a. receiving a first request for one of said plurality of live SM broadcast objects (such as a HSN user requesting to watch a live video) at one of said plurality of HSs (such as the Akamai edge servers);

b. servicing said first request from a non pre-configured PH buffer (such as by contacting a content server, retrieving and caching the requested MPEG-DASH or HLS segments at the Akamai edge server in a local buffer, and delivering the requested content to the client) at a first data rate;

c. receiving a second request for said one of said plurality of live SM broadcast objects at said one of said plurality of HSs (such as receiving a second request for the same MPEG-DASH or HLS segments at the Akamai edge server); and

d. partially servicing said second request from said non pre-configured PH buffer (such as by delivering the requested MPEG-DASH or HLS segments to the client from the

same local buffer on the Akamai edge server) at a second data rate, wherein said second data rate is higher than said first data rate.

108. Sound View has been and continues to be damaged by HSN's infringement of the '796 patent and is entitled to recover from HSN the damages sustained by Sound View as a result of HSN's wrongful acts in an amount adequate to compensate Sound View for HSN's infringement subject to proof at trial.

109. In committing these acts of infringement, HSN committed egregious misconduct including, for example, acting despite knowing that its actions constituted infringement of a valid patent, or recklessly disregarding the fact that its actions constituted an unjustifiably high risk of infringement of a valid and enforceable patent.

110. HSN's infringement of the '796 patent was and is deliberate and willful, entitling Sound View to increased damages under 35 U.S.C. § 284 and to attorney fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

COUNT FOUR
INFRINGEMENT OF THE '074 PATENT

111. Sound View incorporates by reference the preceding paragraphs as if fully set forth herein.

112. The '074 patent is valid and enforceable.

113. CDNs, including Akamai, support HSN's delivery of video content, including at least through HSN Live, HSN Now, and hsn.com (the "HSN '074 Services"), to users using MPEG-DASH and/or HLS. Moreover, Akamai openly advertises and promotes the use of those protocols to deliver video content to users. Knowing that Akamai supports the delivery of video content using MPEG-DASH and/or HLS, and directing and controlling such support, HSN delivers video streams to its users, including the HSN '074 Services, using at least the Akamai CDN.

114. HSN contracts or has contracted with Akamai, so that when at least certain HSN end users request a stream, the CDN's edge server handling the request downloads portions of that stream (segments or chunks). On information and belief, HSN can and has the configured and/or customized aspects of the operation of Akamai in delivering content to its users. For example, HSN can customize the operation of the Akamai CDN through configuration tools, such as Akamai's Luna Control Center.

115. At least through contracting with Akamai and configuring and/or customizing aspects of the operation of the Akamai CDN, HSN has knowledge of the operations of the Akamai CDN and the steps the Akamai systems will perform in order to deliver content to HSN's users. HSN thus knowingly causes and specifically intends for Akamai to perform those steps, or directs and controls Akamai's performance of these steps by means of its contractual relationship with Akamai and by configuring and customizing Akamai's CDN.

116. For example, HSN contracts with Akamai knowing that when at least certain HSN end users request a stream, Akamai's edge server handling the request downloads portions of that stream (segments or chunks), and that the Akamai edge server then attempts to store portions of the stream. HSN knows and intends for the Akamai edge server to store data in the buffer in order that its end users can receive content with a lower latency.

117. The Akamai edge server utilizes caching algorithms to determine if there is sufficient disk space to store the requested portions. HSN intends for and induces Akamai to determine if there is sufficient disk space because the Akamai edge server will not be able to store portions of a stream if there is insufficient space, resulting in service interruption to HSN's end users.

118. Akamai advertises that if there is insufficient disk space at an Akamai edge server,

the Akamai edge server will delete the least recently used chunks of various streams stored on the server rather than delete all of any one stream's content. Akamai's edge servers delete the least recently used chunks of various streams in order to conserve bandwidth. HSN's contract with Akamai thus explicitly or implicitly directs and/or controls Akamai to delete the least recently used chunks. HSN intends for and induces Akamai to delete the least recently used chunks of various streams in order to, among other things, more efficiently utilize disk space on the Akamai edge server, reducing HSN's costs.

119. HSN directly infringes one or more claims of the '074 patent (including at least the corrected version of claim 9) under 35 U.S.C. § 271(a), literally and/or under the doctrine of equivalents, at least by directing and/or controlling the performance of the claimed steps by Akamai to infringe the '074 patent to deliver the HSN '074 Services.

120. For example, HSN has directly infringed, and continues to directly infringe, one or more claims of the '074 patent (including at least corrected claim 9) under 35 U.S.C. § 271(a), literally and/or under the doctrine of equivalents, at least by directing and/or controlling Akamai (through at least contracting with Akamai and configuring the Akamai CDN) to infringe corrected claim 9 to deliver the HSN '074 Services by using a method for managing storage of a streaming media (SM) object (such as videos) in a network having a content server which hosts SM objects for distribution over said network through a plurality of servers (such as Akamai's CDN with a plurality of edge servers) to a plurality of clients (such as HSN's users). Further:

a. HSN directs and/or controls Akamai, at least via its contract with Akamai and/or its configuration and customization of Akamai's CDN, to receive said SM object (such as by directing and/or controlling Akamai to receive the requested portion of a video at an Akamai edge server);

b. HSN directs and/or controls Akamai, at least via its contract with Akamai and/or its configuration and customization of Akamai's CDN, to determine whether there is a disk space available on one of said plurality of servers (such as by directing and/or controlling Akamai to use a caching algorithm to determine whether sufficient disk space is available on a storage device on the Akamai edge server);

c. HSN directs and/or controls Akamai, at least via its contract with Akamai and/or its configuration and customization of Akamai's CDN, to store said SM object at said one of said plurality of servers if it is determined that there is sufficient disk space available (such as by directing and/or controlling Akamai to store the requested portion of the video on the Akamai edge server if it is determined that there is sufficient disk space available); and

d. HSN directs and/or controls Akamai, at least via its contract with Akamai and/or its configuration and customization of Akamai's CDN, to, if it is determined that there is insufficient disk space available to store the received SM object, for each of a plurality of SM objects stored in said disk space, delete only a portion of said SM object (such as by directing and/or controlling Akamai to use a caching algorithm to delete the least recently used portion of a multimedia object from a storage device on the Akamai edge server), whereby the deletion of said portions of said SM objects results in sufficient disk space being available for storage of the received SM object.

121. At least by October 2, 2017, Sound View informed HSN that its systems and applications infringe the '074 patent. However, HSN did not stop infringing.

122. In addition or in the alternative, HSN has induced infringement, and continues to induce infringement, of one or more claims of the '074 patent under 35 U.S.C. § 271(b), literally and/or under the doctrine of equivalents. HSN has actively, knowingly, and intentionally induced

(and continues to induce) infringement of the '074 patent by making, using, offering for sale, selling, supplying, maintaining, and/or supporting the HSN '074 Services; by contracting with Akamai and configuring the Akamai CDN with the specific intent to cause Akamai to perform the steps claimed in the '074 patent to deliver the HSN '074 Services to HSN's users, and with the knowledge that such actions infringe the '074 patent.

123. For example, at least through repeated correspondence from Sound View, HSN knows that at least Akamai performs the claimed methods of the '074 patent, and that HSN induces the infringement of Akamai. (*See* Exhibit F, incorporated herein by reference.) Moreover, HSN specifically intends that infringement, at least by continuing to contract with and utilize the Akamai CDN to offer the HSN '074 Services; configuring or customizing the Akamai CDN to perform the claimed methods of the '074 patent; and encouraging and facilitating their infringement through the use of the HSN '074 Services by HSN's users and/or the creation and dissemination of documentation related to the HSN '074 Services, including by, for example, encouraging and instructing its agents and contractors, such as Akamai, to provide video to HSN's users through the HSN '074 Services, causing the performance of the claimed methods with the knowledge that such actions infringe the '074 patent.

124. For example, HSN intends for and induces Akamai to infringe corrected claim 9 to deliver the HSN '074 Services by using a method for managing storage of an SM object (such as videos) in a network having a content server which hosts SM objects for distribution over said network through a plurality of servers (such as Akamai's CDN with a plurality of edge servers) to a plurality of clients (such as HSN's users), said method comprising:

a. receiving said SM object (such as the Akamai edge server retrieving the requested portion of a video);

b. determining whether there is a disk space available on one of said plurality of servers (such as by using a caching algorithm to determine whether sufficient disk space is available on a storage device on the Akamai edge server);

c. storing said SM object at said one of said plurality of servers if it is determined that there is sufficient disk space available (such as by storing the requested portion of the video on the Akamai edge server if it is determined that there is sufficient disk space available); and

d. if it is determined that there is insufficient disk space available to store the received SM object, for each of a plurality of SM objects stored in said disk space, deleting only a portion of said SM object (such as by using a caching algorithm to delete the least recently used portion of a multimedia object from a storage device on the Akamai edge server), whereby the deletion of said portions of said SM objects results in sufficient disk space being available for storage of the received SM object.

125. Sound View has been and continues to be damaged by HSN's infringement of the '074 patent and is entitled to recover from HSN the damages sustained by Sound View as a result of HSN's wrongful acts in an amount adequate to compensate Sound View for HSN's infringement subject to proof at trial.

126. In committing these acts of infringement, HSN committed egregious misconduct including, for example, acting despite knowing that its actions constituted infringement of a valid patent, or recklessly disregarding the fact that its actions constituted an unjustifiably high risk of infringement of a valid and enforceable patent.

127. HSN's infringement of the '074 patent was and is deliberate and willful, entitling Sound View to increased damages under 35 U.S.C. § 284 and to attorney fees and costs incurred

in prosecuting this action under 35 U.S.C. § 285.

RELIEF REQUESTED

Wherefore, Sound View respectfully requests that this Court enter judgment against HSN as follows:

- a) that HSN has infringed each of the Patents-in-Suit;
- b) that HSN's infringement of the '213, '796, and '074 patents is and has been willful;
- c) that Sound View be awarded damages in accordance with 35 U.S.C. § 284, including treble damages and, if necessary to adequately compensate Sound View for HSN's infringement, an accounting;
- d) that this case is exceptional under 35 U.S.C. § 285;
- e) that Sound View be awarded the attorney's fees, costs, and expenses that it incurs in prosecuting this action; and
- f) that Sound View be awarded further relief at law or in equity as the Court deems just and proper.

DEMAND FOR JURY TRIAL

Sound View demands a trial by jury on all claims and issues so triable.

Dated: January 30, 2019

PHILLIPS, GOLDMAN, MCLAUGHLIN &
HALL, P.A.

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