IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

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

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Sound View Innovations, LLC ("Sound View"), for its Complaint for Patent Infringement against QVC, Inc. ("QVC"), 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. QVC has used, and continues to use, Sound

View's patents without authorization. Moreover, despite Sound View's repeated attempts to negotiate, QVC 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. 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 QVC is a Delaware corporation, with its principal place of business at 1200 Wilson Drive, West Chester, PA 19380. QVC 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 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 '213 Patent

10. 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 A.

11. 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.

12. 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.

13. 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.

14. 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.

15. 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.

16. 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.

17. 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 B.

B. <u>The ’796 Patent</u>

18. 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 C.

19. 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.

20. 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.

21. 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.

22. 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.

23. 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.

24. 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.

25. 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 systems and 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.

26. 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.

C. The '074 Patent

27. 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 D.

28. 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.

29. 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.

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

31. 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.

32. 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 contact actually began playing (*i.e.*, high start-up latency) and unpredictable playback quality due to network congestion.

33. 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 to 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.

34. 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.

35. 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

36. On March 22, 2017, Sound View sent a letter notifying QVC of its infringement of the ’796, ’074, and ’213 patents. Sound View notified QVC of representative QVC offerings that infringe those patents and explained its intention to allow QVC 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.

37. QVC responded to this letter on May 8, 2017, requesting that Sound View provide additional details supporting QVC's infringement.

38. On June 9, 2017, Sound View wrote to QVC and provided further details regarding QVC's infringement of the '796, '074, and '213 patents. Sound View reiterated its desire to resolve this matter amicably, and explained its willingness to provide further details relating to additional patents identified in its March 22, 2017 letter during a meeting between QVC and Sound View.

39. QVC did not respond to Sound View's June 9, 2017 letter.

40. On June 13, 2017, Sound View again reiterated its desire to resolve this matter amicably, and again indicated its willingness to discuss the allegations during a meeting between QVC and Sound View.

41. On June 20, 2017, counsel for QVC wrote to Sound View, but did not substantively respond to Sound View's allegations or commit to a meeting with Sound View.

42. On June 21, 2017, Sound View expressed its desire to move licensing discussions along quickly, and noted that QVC continued to willfully infringe Sound View's patents.

43. On August 31, 2017, QVC agreed to a September 21, 2017, meeting with Sound View.

44. On September 15, 2017, counsel for QVC wrote to Sound View and identified a potential license to the patents-in-suit, but did not provide a copy of the license agreement that it later admitted would have already expired by June 2016 at the latest.

45. On September 21, 2017, Sound View met with QVC in West Chester, PA. At this

meeting, Sound View provided additional details regarding QVC's infringement of the Patents-In-Suit and reiterated its desire to execute a mutually beneficial licensing agreement.

46. On January 9, 2018, Sound View again wrote to QVC requesting continued licensing discussions.

47. QVC did not respond to Sound View's January 9, 2018 letter.

48. On January 30, 2018, Sound View once again wrote to QVC requesting continued licensing discussions. And then wrote once more on February 6, 2018, asking whether QVC intended to engage in further discussions.

49. On February 8, 2018, QVC wrote to Sound View refusing a license.

50. On February 14, 2018, Sound View explained in further detail how QVC infringed the '796, '074, and '213 patents. Sound View also explained that if QVC chose not to continue licensing discussions, Sound View would be left with little choice but to litigate.

51. On April 4, 2018, QVC responded to Sound View, claiming that it did not require a license to Sound View's patents.

52. On April 6, 2018, Sound View wrote to QVC, and, once again, explained QVC's infringement of the patents in suit, and that further discussions may allow litigation to be avoided.

53. QVC did not respond to Sound View's April 6, 2018 correspondence.

54. Despite Sound View's repeated efforts and lengthy correspondence, QVC has refused to engage in any meaningful discussion about reaching a licensing agreement to end its infringement of Sound View's patents. Instead, QVC 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 '213 PATENT

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

56. The '213 patent is valid and enforceable.

57. At least by June 9, 2017, Sound View informed QVC that its systems and applications infringe the '213 patent. However, QVC did not stop infringing.

58. 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 QVC, 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.

59. QVC provides and has provided streaming services, including at least QVC Live Stream and qvc.com (the "QVC '213 Services"), to allow users to watch streaming video. QVC provides streaming video services to its users utilizing content delivery networks, including at least Akamai Technologies Inc. ("Akamai") and Limelight Networks, Inc. ("Limelight") (collectively, "the CDNs"). The QVC '213 Services provide video that is encoded using certain protocols, including the HTTP Live Streaming ("HLS") protocol and the MPEG-DASH protocol.

60. 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.

61. 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.

62. The CDNs each support QVC's delivery of video content to users using MPEG-DASH and/or HLS. Moreover, each of the CDNs openly advertises and promotes the use of those protocols to deliver video content to users.

63. Knowing that each of the CDNs supports the delivery of video content using MPEG-DASH and/or HLS, and directing and controlling such support, QVC delivers video streams to its users, including the QVC '213 Services, using at least the CDNs by transcoding videos into MPEG-DASH segments with different bit rates, and providing those segments to each of the CDNs, 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 QVC users who request to view the video files.

64. QVC contracts or has contracted with each of the CDNs, so that when at least certain QVC 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.

65. On information and belief, QVC can and has configured and/or customized aspects of the operation of each of the CDNs in delivering content to its users. For example, QVC can customize the operation of the Akamai CDN through configuration tools, such as Akamai's Luna Control Center. As a further example, QVC can customize the operation of the Limelight CDN through configuration tools, such as Limelight Control.

66. At least through contracting with Akamai and configuring and/or customizing aspects of the operation of the Akamai CDN, QVC has knowledge of the operations of the Akamai CDN and the steps the Akamai systems will perform in order to deliver content to QVC's users. QVC 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.

67. 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, QVC knowingly intends for Akamai to do so, or directs and controls Akamai (either implicitly or explicitly) to do so. QVC 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 QVC users who view the video. Further, QVC 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.

68. 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." QVC intends for and contracts with Akamai to use pre-fetching so that its users can receive content without pauses for buffering. QVC 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 QVC, also allows QVC users to receive content without pauses for buffering by allowing end users to send byte range requests to the edge server.

69. 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. QVC 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.

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

71. For instance, utilizing Limelight's CDN requires storing segments in a local buffer on an edge server, and at least by entering into a contractual relationship with Limelight, QVC knowingly intends for Limelight to do so, or directs and controls Limelight (either implicitly or explicitly) to do so. QVC intends for, or directs, the Limelight edge server to request the MPEG-

DASH or HLS segments from a datacenter cache, store them in the local buffer, and send them to QVC users who view the video. Further, QVC 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.

72. While the Limelight 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. QVC intends for and contracts with (or has contracted with) Limelight to deliver content in this manner so that its users can receive content without pauses for buffering. QVC and other customers have the ability to configure the size of the segments to be fetched in the Limelight system. The Limelight CDN, as configured and customized by QVC, also allows QVC users to receive content without pauses for buffering by allowing end users to send byte range requests to the edge server.

73. While the content is being played back by an MPEG-DASH or HLS client, the client automatically selects from the alternatives 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. QVC intends for and controls the Limelight CDN to adjust the data rate by directing, controlling, and/or inducing Limelight to provide the content on its CDN at different data rates.

74. QVC 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 the CDNs to infringe the ’213 patent to deliver the QVC ’213 Services.

75. For example, QVC 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 QVC ’213 Services. For example, QVC 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 QVC ’213 Services). Further:

a. QVC 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 QVC ’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 QVC ’213 Services to watch a hosted video);

b. QVC 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. QVC 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. QVC 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).

76. As a further example, QVC also has directly infringed, and continues to directly infringe, 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 Limelight to infringe the '213 patent to deliver the QVC '213 Services. For example, QVC 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 Limelight (through at least contracting with Limelight and customizing the Limelight CDN) to infringe claim 16 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 Limelight cache or edge servers) to a plurality of clients (such as users of the QVC '213 Services). Further:

a. QVC directs and/or controls Limelight, at least via its contract with Limelight and/or its configuration and customization of Limelight'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 QVC '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 Limelight cache or edge servers to receive such a request from a user of one of the QVC '213 Services to watch a hosted video);

b. QVC directs and/or controls Limelight, at least via its contract with Limelight and/or its configuration and customization of Limelight'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 Limelight to allocate a local buffer to store portions of the stream as HLS or MPEG-DASH segments at the Limelight cache or edge servers);

c. QVC directs and/or controls Limelight, at least via its contract with Limelight and/or its configuration and customization of Limelight'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 Limelight 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 Limelight 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. QVC directs and/or controls Limelight, at least via its contract with Limelight and/or its configuration and customization of Limelight'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 Limelight 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)

77. In addition or in the alternative, QVC 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. QVC 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 QVC '213 Services; by contracting with the CDNs and customizing the CDNs with the specific intent to cause the CDNs to perform the steps claimed in the '213 patent to deliver video data, including the QVC '213 Services, to QVC's users, and with the knowledge that such actions infringe the '213 patent.

78. For example, at least through repeated correspondence from Sound View, QVC knows that at least Akamai and Limelight perform the claimed methods of the '213 patent to deliver the QVC '213 Services, and that QVC induces the infringement of each of those CDNs. (*See* Exhibit E, incorporated herein by reference.) Moreover, QVC specifically intends that infringement, at least by continuing to contract with and utilize the Akamai and Limelight CDNs

to offer the QVC '213 Services; configuring the Akamai and Limelight CDNs to perform the claimed methods of the '213 patent; and by encouraging and facilitating their infringement through the use of the QVC '213 Services by QVC's users and/or the creation and dissemination of documentation related to the QVC '213 Services, including by, for example, encouraging and instructing its agents and contractors, such as Akamai and Limelight, to provide video to QVC's users through the QVC '213 Services, causing the performance of the claimed methods with the knowledge that such actions infringe the '213 patent.

79. For example, QVC intends for and induces Akamai to infringe claim 16 to deliver the QVC '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 QVC '213 Services). QVC 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 QVC '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 QVC '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).

80. As a further example, QVC intends for and induces Limelight to infringe claim 16 to deliver the QVC '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 Limelight cache or edge servers) to a plurality of clients (such as users of the QVC '213 Services). QVC further intends for and induces Limelight to:

a. receive a request for an SM object from one of said plurality of clients (such as a user of one of the QVC '213 Services requesting to watch a hosted video) at one of said

plurality of helper servers (such as one of the Limelight cache or edge servers, with knowledge that Limelight's cache or edge servers will receive such a request from a user of one of the QVC '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 Limelight to allocate a local buffer to store portions of the stream as HLS or MPEG-DASH segments at the Limelight cache or edge servers, with knowledge that Limelight's CDN will allocate such a buffer at one of the Limelight 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 Limelight 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 Limelight'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 Limelight 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 Limelight CDN will provide alternate segments encoded at different data rates to the client)

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

82. In committing these acts of infringement, QVC 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.

83. QVC'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 TWO
INFRINGEMENT OF THE '796 PATENT

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

85. The '796 patent is valid and enforceable.

86. At least by June 9, 2017, Sound View informed QVC that its systems and applications infringe the '796 patent. However, QVC did not stop infringing.

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

88. The CDNs, including Akamai and Limelight, each support QVC's delivery of video content to users using MPEG-DASH and/or HLS. Moreover, each of the CDNs openly advertises

and promotes the use of those protocols to deliver video content to users. Knowing that each of the CDNs supports the delivery of video content using MPEG-DASH and/or HLS, and directing or controlling such support, QVC delivers the QVC '796 Services to its users using at least the Akamai and Limelight CDNs by transcoding videos into MPEG-DASH and/or HLS segments.

89. QVC contracts or has contracted with each of the CDNs, so that when at least certain QVC users request the QVC '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, QVC can and has configured and/or customized aspects of the operation of each of the CDNs in delivering content to its users. For example, QVC can customize the operation of the Akamai CDN through configuration tools, such as Akamai's Luna Control Center. As a further example, QVC can customize the operation of the Limelight CDN through configuration tools, such as Limelight Control.

90. For example, at least through contracting with Akamai and configuring and/or customizing aspects of the operation of the Akamai CDN, QVC has knowledge of the operations of the Akamai CDN and the steps the Akamai systems will perform in order to deliver content to QVC's users. QVC 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.

91. For example, QVC contracts with Akamai knowing that when at least certain QVC users request the QVC '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. QVC 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. QVC'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.

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

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

94. QVC 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 and Limelight to infringe the '796 patent to deliver the QVC '796 Services.

95. For example, QVC 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 QVC'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. QVC 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 QVC user to watch a live video at one of Akamai's edge servers);

b. QVC 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. QVC 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. QVC 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.

96. As a further example, QVC also has directly infringed, and continues to directly infringe, 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 Limelight (through at least contracting with Limelight and customizing the Limelight CDN) to infringe the '796 patent to deliver the QVC '796 Services. For example, QVC has directly infringed, and continues to directly 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 Limelight's edge servers) to a plurality of clients (such as QVC'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. QVC directs and/or controls Limelight, at least via its contract with Limelight and/or its configuration and customization of Limelight'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 Limelight to receive a first request from a QVC user to watch a live video at one of Limelight's edge servers);

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

c. QVC directs and/or controls Limelight, at least via its contract with Limelight and/or its configuration and customization of Limelight'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 Limelight to receive a second request for the same MPEG-DASH or HLS segments at the Limelight edge server); and

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

97. In addition or in the alternative, QVC 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. QVC 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 QVC '796 Services; by contracting with the CDNs and customizing the CDNs with the specific intent to cause the CDNs to perform the steps claimed in the '796 patent to deliver video data, including the QVC '796 Services, to QVC's users, and with the knowledge that such actions infringe the '796 patent.

98. For example, at least through repeated correspondence from Sound View, QVC knows that at least Akamai and Limelight perform the claimed methods of the '796 patent, and that QVC induces the infringement of each of those CDNs. (*See* Exhibit E, incorporated herein by reference.) Moreover, QVC specifically intends that infringement, at least by continuing to contract with and utilize the Akamai and Limelight CDNs to offer the QVC '796 Services; configuring or customizing the Akamai and Limelight CDNs to perform the claimed methods of the '796 patent; and by encouraging and facilitating their infringement through the use of the QVC '796 Services by QVC's users and/or the creation and dissemination of documentation related to the QVC '796 Services, including by, for example, encouraging and instructing its agents and contractors, such as Akamai and Limelight, to provide video to QVC's users through the QVC '796 Services, causing the performance of the claimed methods with the knowledge that such actions infringe the '796 patent

99. For example, QVC intends for and induces Akamai to infringe claim 27 to deliver the QVC '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 QVC'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 QVC 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.

100. As a further example, QVC intends for and induces Limelight to infringe claim 27 to deliver the QVC '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 Limelight's edge servers) to a plurality of clients (such as QVC'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 QVC user requesting to watch a live video) at one of said plurality of HSs (such as the Limelight 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 Limelight 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 Limelight 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 Limelight edge server) at a second data rate, wherein said second data rate is higher than said first data rate.

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

102. In committing these acts of infringement, QVC 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.

103. QVC'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 THREE
INFRINGEMENT OF THE '074 PATENT

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

105. The '074 patent is valid and enforceable.

106. At least by June 9, 2017, Sound View informed QVC that its systems and applications infringe the '074 patent. However, QVC did not stop infringing.

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

108. QVC contracts or has contracted with each of the CDNs, so that when at least certain QVC 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, QVC can and has the configured and/or customized aspects of the operation of each of the CDNs in delivering content to its users. For example, QVC can customize the operation of the Akamai CDN through configuration tools, such as Akamai's Luna Control Center. As a further example, QVC can and has customize the operation of the Limelight CDN through configuration tools, such as Limelight

Control.

109. At least through contracting with Akamai and configuring and/or customizing aspects of the operation of the Akamai CDN, QVC has knowledge of the operations of the Akamai CDN and the steps the Akamai systems will perform in order to deliver content to QVC's users. QVC 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.

110. For example, QVC contracts with Akamai knowing that when at least certain QVC 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. QVC 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.

111. The Akamai edge server utilizes caching algorithms to determine if there is sufficient disk space to store the requested portions. QVC 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 QVC's end users.

112. 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. QVC's contract with Akamai thus explicitly or implicitly directs and/or controls Akamai to delete the least recently used chunks. QVC 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 QVC's costs.

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

114. For instance, QVC contracts with Limelight so that when at least certain QVC end users request a stream, the Limelight edge server handling the request downloads portions of that stream (segments or chunks). The Limelight edge server then attempts to store portions of the stream. QVC intends for the Limelight edge server to store data in the buffer in order that its end users can receive content with a lower latency.

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

116. Limelight advertises that if there is insufficient disk space at a Limelight edge server, the Limelight 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. Limelight's edge servers delete the least recently used chunks of various streams in order to conserve bandwidth. QVC's contract with Limelight thus explicitly or implicitly directs and/or controls Limelight to delete the

least recently used chunks. QVC intends for and induces Limelight to delete the least recently used chunks of various streams in order to, among other things, more efficiently utilize disk space on the Limelight edge server, reducing QVC's costs.

117. QVC 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 and Limelight to infringe the '074 patent to deliver the QVC '074 Services.

118. For example, QVC 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 QVC '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 QVC's users). Further:

a. QVC 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. QVC 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. QVC 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. QVC 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.

119. As a further example QVC 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 Limelight (through at least contracting with Limelight and configuring the Limelight CDN) to infringe corrected claim 9 to deliver the QVC '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 Limelight's CDN with a plurality of edge servers) to a plurality of clients (such as QVC's users).

Further:

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

b. QVC directs and/or controls Limelight, at least via its contract with Limelight and/or its configuration and customization of Limelight'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 Limelight to use a caching algorithm to determine whether sufficient disk space is available on a storage device on the Limelight edge server);

c. QVC directs and/or controls Limelight, at least via its contract with Limelight and/or its configuration and customization of Limelight'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 Limelight to store the requested portion of the video on the Limelight edge server if it is determined that there is sufficient disk space available); and

d. QVC directs and/or controls Limelight, at least via its contract with Limelight and/or its configuration and customization of Limelight'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 Limelight to use a caching algorithm to delete the least recently used portion of a multimedia object from a storage device on the Limelight 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.

120. In addition or in the alternative, QVC 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. QVC 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 QVC '074 Services; by contracting with the CDNs and configuring the CDNs with the specific intent to cause the CDNs to perform the steps claimed in the '074 patent to deliver the QVC '074 Services to QVC's users, and with the knowledge that such actions infringe the '074 patent.

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

122. For example, QVC intends for and induces Akamai to infringe corrected claim 9 to deliver the QVC '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 QVC'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.

123. As a further example, QVC intends for and induces Limelight to infringe corrected claim 9 to deliver the QVC '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 Limelight's CDN with a plurality of edge servers) to a plurality of clients (such as QVC's users), said method comprising:

a. receiving said SM object (such as the Limelight 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 Limelight 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 Limelight 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 Limelight 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.

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

125. In committing these acts of infringement, QVC 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.

126. QVC'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 QVC as follows:

a) that QVC has infringed each of the Patents-in-Suit;

b) that QVC'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 QVC'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.

/s/ John C. Phillips, Jr.

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