UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
TEXARKANA DIVISION

OPTIMORPHIX, INC., ***Plaintiff,*** v. **MICROSOFT CORPORATION,** ***Defendant.***	**Civil Action No._____** **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

OptiMorphix, Inc. ("OptiMorphix" or "Plaintiff") brings this action and makes the following allegations of patent infringement relating to U.S. Patent Nos.: 7,031,314 (the "'314 patent"); 7,444,418 (the "'418 patent"); 7,586,871 (the "'871 patent"); 7,616,559 (the "'559 patent"); 7,987,285 (the "'285 patent"); 8,230,105 (the "'105 patent"); 8,429,169 (the "'169 patent"); 8,769,141 (the "'141 patent"); 9,191,664 (the "'664 patent"); and 10,412,388 (the "'388 patent") (collectively, the "patents-in-suit"). Defendant Microsoft Corporation ("Microsoft" or "Defendant") infringes the patents-in-suit in violation of the patent laws of the United States of America, 35 U.S.C. § 1 *et seq*.

THE PARTIES

1. Plaintiff OptiMorphix, Inc. ("Plaintiff" or "OptiMorphix") is a Delaware corporation that holds a portfolio of over 250 patent assets that were developed at Citrix Systems, Inc. ("Citrix") and Bytemobile, Inc.

2. Bytemobile, Inc. ("Bytemobile") was a global leader in mobile internet solutions for network operators. The company was founded in 2000. Bytemobile's mission was to optimize

video and web content services for mobile network operators to improve users' experiences while maximizing the efficiency of network infrastructure.

3. Bytemobile was established during a time when the mobile landscape was evolving rapidly. The advent of 3G technology, coupled with increasingly sophisticated smartphones, led to a surge in demand for data services. However, mobile networks at the time were not optimized to handle this influx, particularly for data-rich services like video streaming. Recognizing this opportunity, Bytemobile sought to create solutions that would enable network operators to deliver high-quality, consistent mobile data services. By 2011, Bytemobile was a "market leader in video and web optimization, with more than 125 cumulative operator deployments in 60 countries.[1]

Andrew Zipern, *Vodafone in Deal with Start-Up Bytemobile,* NYTimes at C4 (January 29, 2002) ("Bytemobile, a wireless data start-up . . . reached a deal with Vodafone, Britain's largest mobile phone operator"); *NTT DoCoMo Launches Bytemobile Optimization Solution in its Core Network,* WIRELESSWATCH IP (October 5, 2004) ("NTT DoCoMo has deployed Bytemobile's optimization solution in its core network"); *China Mobile Selects Bytemobile for Nationwide Web Gateway Project*, BUSINESS WIRE (July 8, 2009) ("A Bytemobile customer since 2004, CMCC has deployed its web optimization solutions"); *Bytemobile Juices Up Orange*, ESPICOM TELECOMMUNICATION

[1] *Bytemobile: Importance of Video and Web Optimizations*, TELECOM REVIEW at 58 (2011); *see also Bytemobile Secures Its 36th Video Optimisation Win for MNO Deployment,* TOTAL TELECOM & TOTAL TELECOM MAGAZINE (March 21, 2011).

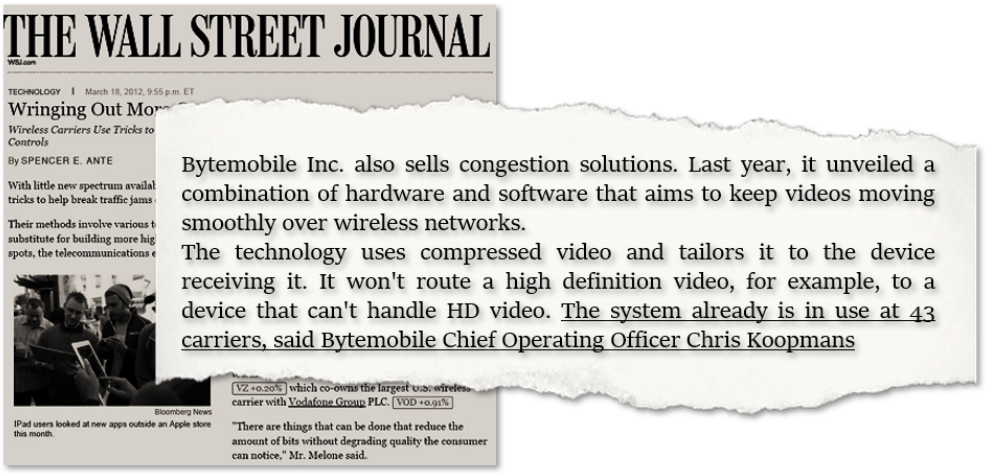
NEWS (October 10, 2002) ("Orange customers will experience faster application performance and Web page downloads"); *ByteMobile Wins 2013 LTE Award for Best LTE Traffic Management Product*, MARKETSCREENER (July 1, 2013) ("ByteMobile technology has been deployed . . . in networks serving nearly two billion subscribers.").

4. Bytemobile products, such as the Unison platform and the T3100 Adaptive Traffic Manager, were designed to optimize mobile data traffic in real-time, ensuring a high-quality mobile internet experience for end-users. This approach was groundbreaking at the time and set the stage for many of the mobile data optimization techniques used today.

5. Bytemobile's innovative technologies and customer-centric approach led to rapid growth and success. Bytemobile's innovative product portfolio included: the T3100 Adaptive Traffic Manager which was designed to handle high volumes of traffic efficiently and provide real-time optimization, compression, and management of mobile data; Bytemobile's T2000 Series Video Cache, which supported transparent caching of content; and Bytemobile's T1000 Series Traffic Director, which enabled traffic steering and load balancing for high availability of applications.

Bytemobile Adaptive Traffic Management Product Family, BYTEMOBILE DATA SHEET at 1-2 (2014).

6. Bytemobile's groundbreaking technologies also included products for data optimization. Bytemobile's data optimization solutions were designed to compress and accelerate data transfer. By reducing the size of data packets without compromising quality, these technologies allowed faster data transmission and minimized network congestion. Bytemobile also offered solutions to analyze and manage network traffic, allowing network operators to identify patterns, allocate bandwidth intelligently, and prioritize different types of content.



THE WALL STREET JOURNAL

WSJ.com

TECHNOLOGY | March 18, 2012, 9:55 p.m. ET

Wringing Out Mor…

Wireless Carriers Use Tricks to … Controls

By SPENCER E. ANTE

With little new spectrum availab… tricks to help break traffic jams …

Their methods involve various t… substitute for building more hig… spots, the telecommunications …

Bloomberg News

IPad users looked at new apps outside an Apple store this month.

Bytemobile Inc. also sells congestion solutions. Last year, it unveiled a combination of hardware and software that aims to keep videos moving smoothly over wireless networks.

The technology uses compressed video and tailors it to the device receiving it. It won't route a high definition video, for example, to a device that can't handle HD video. The system already is in use at 43 carriers, said Bytemobile Chief Operating Officer Chris Koopmans

VZ +0.20% which co-owns the largest U.S. wireless carrier with Vodafone Group PLC. VOD +0.91%

"There are things that can be done that reduce the amount of bits without degrading quality the consumer can notice," Mr. Melone said.

Spencer E. Ante, *Wringing Out More Capacity*, WALL STREET JOURNAL at B3 (March 19, 2012) (emphasis added).

7. In July 2012, Bytemobile was acquired by Citrix Systems, Inc. ("Citrix") for $435 million. Bytemobile "became part of [Citrix's] Enterprise division and extend[ed] [Citrix's] industry reach into the mobile and cloud markets."[2]

8. OptiMorphix owns a portfolio of patents developed at Bytemobile and later Citrix. Highlighting the importance of the patents-in-suit is the fact that the OptiMorphix's patent portfolio has been cited by over 4,800 U.S. and international patents and patent applications assigned to a wide variety of the largest companies operating in the networking, content delivery, and cloud computing fields. OptiMorphix's patents have been cited by companies such as:

[2] CITRIX SYSTEMS, INC. 2012 ANNUAL REPORT at 33 (2013).

- Amazon.com, Inc. (263 citing patents and applications)[3]
- Oracle (59 citing patents and applications)[4]
- Alphabet, Inc. (103 citing patents and applications)[5]
- Broadcom Ltd. (93 citing patents and applications)[6]
- Cisco Systems, Inc. (277 citing patents and applications)[7]
- Lumen Technologies, Inc. (77 citing patents and applications)[8]
- Intel Corporation (45 citing patents and applications)[9]
- ***Microsoft Corporation*** (150 citing patents and applications)[10]
- AT&T, Inc. (93 citing patents and applications)[11]
- Verizon Communications, Inc. (31 citing patents and applications)[12]
- Juniper Networks, Inc. (29 citing patents and applications)[13]

9. Defendant Microsoft Corporation ("Microsoft") is a Washington corporation with its principal place of business at One Microsoft Way, Redmond, Washington. Microsoft is registered to do business in the State of Texas and has been since at least March 13, 1995.

10. Microsoft conducts business operations within the Eastern District of Texas where it sells, develops, and/or markets its products.

11. Microsoft operates Microsoft Windows Stores within Best Buy retail locations. In this District, Microsoft maintains regular and established places of business in at least the following locations:

- 5885 Eastex Fwy, Beaumont, TX 77706
- 190 E Stacy Rd, Bldg 3000, Allen, TX 75002
- 1800 S Loop 288, Ste 102 Bldg 1, Denton, TX 76205
- 5299 Eldorado Pkwy, Frisco, TX 75033

[3] *See e.g.*, U.S. Patent Nos. 7,817,563; 9,384,204; 9,462,019; 11,343,551; and 11,394,620.
[4] *See e.g.,* U.S. Patent Nos. 7,475,402; 7,574,710; 8,589,610; 8,635,185; and 11,200,240.
[5] *See e.g.,* U.S. Patent Nos. 7,743,003; 8,458,327; 9,166,864; 9,665,617; and 10,733,376.
[6] *See e.g.,* U.S. Patent Nos. 7,636,323; 8,448,214; 9,083,986; 9,357,269; and 10,091,528.
[7] *See e.g.,* U.S. Patent Nos. 7,656,800; 7,930,734; 8,339,954; 9,350,822; and 10,284,484.
[8] *See e.g.,* U.S. Patent Nos. 7,519,353; 8,315,179; 8,989,002; 10,511,533; and 11,233,740.
[9] *See e.g.,* U.S. Patent Nos. 7,394,809; 7,408,932; 9,515,942; 9,923,821; and 10,644,961.
[10] *See e.g.,* U.S. Patent Nos. 8,248,944; 9,071,841; 9,852,118; 10,452,748; and 11,055,47.
[11] *See e.g.,* U.S. Patent Nos. 8,065,374; 8,429,302; 9,558,293; 9,800,638; and 10,491,645.
[12] *See e.g.,* U.S. Patent Nos. 8,149,706; 8,930,559; 9,253,231; 10,003,697; and 10,193,942.
[13] *See e.g.,* U.S. Patent Nos. 8,112,800; 8,509,071; 8,948,174; 9,407,726; and 11,228,631.

- 3333 Preston Rd, Ste 200, Frisco, TX 75034
- 2601 S Stemmons Fwy, Ste 300, Lewisville, TX 75067
- 1751 N Central Expressway, Ste C, McKinney, TX 75070
- 2800 N Central Expressway, Plano, TX 75074
- 422 W Loop 281, Ste 100, Longview, TX 75605
- 823 N Creek Dr, Sherman, TX 75092
- 5514 S Broadway Ave, Tyler, TX 75703

12. Besides serving as Microsoft Windows Store locations, these eleven established business sites are also recognized on Microsoft's website as authorized service centers for the repair and support of Microsoft devices. *See Microsoft Surface Support In-Person Locations (Texas)*, MICROSOFT WEBSITE (last visited December 2023), available at: https://support.microsoft.com/en-us/surface/.

13. Microsoft owns and maintains property at these eleven locations including Microsoft branded signage, Microsoft products, and Microsoft marketing materials. The total assessed value of the Microsoft property at these locations is more than one hundred thousand dollars. For example, at 1800 S Loop 288 in Denton, Texas, Microsoft has property with an assessed value of $14,351 dollars. *See Denton County Central Appraisal District Property Record*, DENTON CAD WEBSITE (last visited December 2023), available at: https://esearch.dentoncad.com/Search. At 3333 Preston Rd, Ste 200, Frisco, Texas, Microsoft maintains property with an assessed value of $14,049 dollars. *See Collin County Central Appraisal District Property Record*, COLLIN CAD WEBSITE (last visited December 2023), available at: https://www.collincad.org/propertysearch.

14. Microsoft maintains an agency relationship with the Microsoft Windows Stores situated in the District. As an example of this relationship, Microsoft rents space from Best Buy at these locations to operate its Microsoft Windows Stores.

> That's where store-within-a-store concepts come in handy. Microsoft and Samsung are essentially leasing their spaces from Best Buy and each manufacturer controls their own pricing and merchandise decisions. That frees up Best Buy to concentrate on areas of the store, but it also benefits from Samsung and Microsoft's investments in terms of sales and rent.

Thomas Lee, *Store Within A Store Concept,* MINNEAPOLIS STAR TRIBUNE (July 19, 2013) (emphasis added).

15. Within the District, the Microsoft Windows Stores feature dedicated sections marked by Microsoft signage. This exclusive area showcases only Microsoft products and is staffed by "Microsoft Experts," who are specially trained in selling Microsoft products.

MICROSOFT WINDOWS STORE IMAGE (showing the distinct area for selling Microsoft Products within a Best Buy location).

16. Microsoft maintains a regular and established place of business in this District via its Microsoft Windows Stores within Best Buy locations. Best Buy acts as Microsoft's agent with respect to the operation of the Microsoft Windows Stores in this District. Microsoft possesses the authority to give interim instructions to Best Buy and the staff at the Microsoft Windows Store locations. Primarily, these stores are utilized to cater to Microsoft customers. The job descriptions for Best Buy employees at the Microsoft Windows Stores specify that their objective is to "[a]chieve sales targets in revenue, margin, and solutions within the Microsoft Brand." *Microsoft*

Expert, Best Buy Job Description For Frisco Texas Store, BEST BUY WEBSITE (last visited December 2023), available at: https://jobs.bestbuy.com/bby?id=job_details&sys_id=da803caa473ab598056b0775d36d43c4.

17. Microsoft exercises extensive control over store operations, such as providing training, selecting products for sale, and overseeing the Microsoft Windows Store's activities. Additionally, Microsoft employs "Partner Store Specialists," each responsible for managing 3-5 Microsoft Windows Stores within a specific geographic region. These Partner Store Specialists ensure that each store adheres to Microsoft's merchandising standards and follows the brand guidelines set by Microsoft. *See Microsoft Partner Stores Specialist – Best Buy (Job Description)*, MICROSOFT CAREERS WEBSITE (last visited December 2023), available at: https://jobs.careers.microsoft.com/global/en/job/1622416/Partner-Stores-Specialist ("Maintain Microsoft merchandising standards in accordance with Microsoft brand guidelines.").

18. Microsoft Windows Stores are managed by Microsoft. Specifically, the Best Buy Stores located in this District are managed by a Windows Stores Microsoft Specialist who is an employee of Microsoft. For example, the job description posted on the Microsoft Careers website describes that the Microsoft Partner Store Specialists will "support and manage the Microsoft business for up to 5 stores."

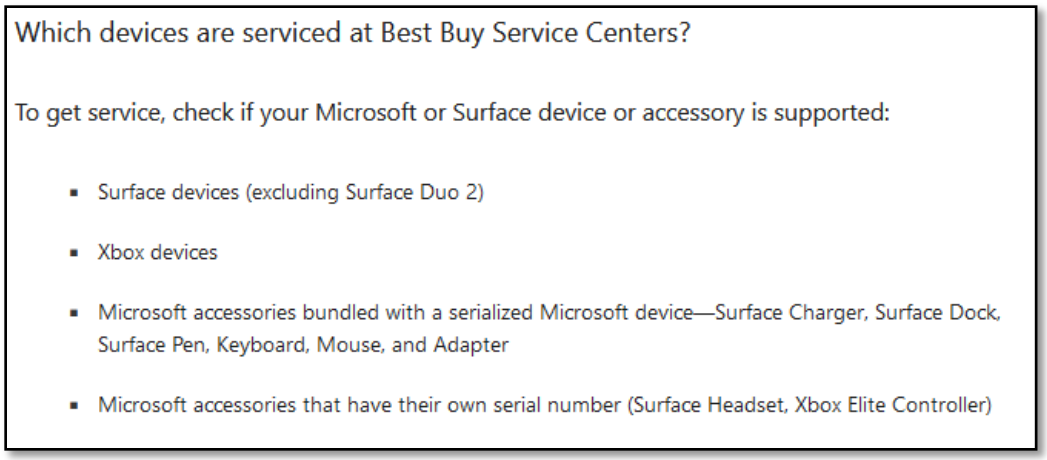

Transfer Microsoft evangelism of products through in-person group presentations, training events, and conference calls.
Support and manage the Microsoft business for up to 5 stores; including aligning training and other store business needs
A typical work week would run Sunday-Saturday, with Tuesday and Wednesday off.
Assisting Microsoft Experts/Consultants, in side-by-side sales interactions, as well as individualized

Retail Partner Store Specialist – Windows Stores Microsoft Specialist, MICROSOFT CAREERS WEBSITE (last visited December 2023), available at: https://jobs.careers.microsoft.com/us/en/job/1385093/.

19. Microsoft controls the day-to-day operations of the Microsoft Windows Stores that are located in this District. For example, Microsoft controls the design of the Windows Stores. *See, e.g., Microsoft Best Buy Partner Activations & Readiness Lead Job Description*, MICROSOFT CAREERS WEBSITE (last visited December 2023), available at: https://jobs.careers.microsoft.com/us/en/job/1417570/Partner-Activations-Readiness-Lead ("Deliver store design updates from strategy phase to full execution. Ensure proper planning, prototype, shakedown, and training steps are taken to deliver near-flawless execution for large-scale transformations.").

20. Microsoft and Best Buy have established agreements permitting Microsoft to oversee the Microsoft Windows Stores. Under these agreements, Best Buy commits to showcasing Microsoft-branded product displays and providing service and repair for both new and existing customers' Microsoft products. Additionally, Best Buy has agreed to offer repair and support services to Microsoft customers, including purchasing specific parts from Microsoft and servicing products under Microsoft warranty. Furthermore, Best Buy is obligated to adhere to Microsoft's branding standards.

21. Best Buy acts as Microsoft's agent conducting Microsoft's business from Best Buy locations (including the Microsoft Windows Stores) in this District. The agreements between Microsoft and Best Buy establish Microsoft has the right to direct and control Best Buy's provision of services. For example, Microsoft directs the trainings that Best Buy employees receive and what products will be serviced by Best Buy. The following is an excerpt from the Microsoft website showing what products Best Buy is directed to provide service for.


Which devices are serviced at Best Buy Service Centers?

To get service, check if your Microsoft or Surface device or accessory is supported:

- Surface devices (excluding Surface Duo 2)
- Xbox devices
- Microsoft accessories bundled with a serialized Microsoft device—Surface Charger, Surface Dock, Surface Pen, Keyboard, Mouse, and Adapter
- Microsoft accessories that have their own serial number (Surface Headset, Xbox Elite Controller)

Find a participating Best Buy Service Center for in-person support in the US, MICROSOFT WEBSITE (last visited December 2023), available at: https://support.microsoft.com/en-us/surface/find-a-participating-best-buy-service-center-for-in-person-support-in-the-us-9c30c2ba-a8d3-4657-b9df-9c00239751a2.

22. Microsoft has manifested consent that Best Buy act on its behalf in providing services such as Microsoft Product in-person support. Specifically, Microsoft directs its customers to Best Buy Service Centers as the exclusive provider of in-person support for certain Microsoft products and states that "Best Buy Service Centers provide a premium, in-person one-stop-shop for your technology needs. Such as in and out-of-warranty support for Microsoft accessories, software, Surface, and Xbox devices." *Id.* Best Buy has likewise consented to act on behalf of Microsoft in providing in-warranty product support and repairs for Microsoft products. The agreements and actions of Microsoft and Best Buy show that Best Buy is an agent of Microsoft.

23. Best Buy monitors, installs, and repairs equipment obtained from and on behalf of Microsoft for customers in this District. Those activities involve storage, transport, and exchange of goods and services and are part of Microsoft's business.

24. Microsoft has established and/or ratified the Microsoft Windows Stores and Best Buy Service Centers as a place of business of Microsoft. Specifically, Microsoft exercises the requisite level of control over the Best Buy by providing Best Buy with "step-by-step" instructions for selling Microsoft products and providing support/repair services. The agreements between

Best Buy and Microsoft affect how Best Buy performs support and repairs, what products are supported, the timing and location for product displays, and compliance with Microsoft branding. Microsoft also provides Best Buy with applications accessible at Best Buy locations for managing support services (e.g., applications for determining products are covered by warranty).

25. Microsoft also maintains a regular and established place of business in the District arising from its employment of Retail Store Specialists who are tasked with managing 3-5 Microsoft Window Store Locations. These Microsoft employees are required to physically visit the Microsoft Window Store locations within the District on a regular basis, engage with Microsoft customers, conducting trainings, etc.

> Best Buy Retail Pros and management staff. Microsoft Windows Store Specialist will be training and partnering with Best Buy's in stores within an assigned District. You'll also be responsible inspecting what we expect and funneling feedback to corporate for overall improvement ideas, maintaining visual merchandising excellence to represent the Microsoft Brand while engaging customers through exciting and powerful product demonstrations and Retail Pro's trainings. You will manage the Microsoft business in the Windows Store within Best Buy and be accountable for driving performance at the store level.

Retail Partner Store Specialist – Windows Stores Microsoft Specialist, MICROSOFT CAREER WEBSITE (last visited December 2023), available at: https://jobs.careers.microsoft.com/us/en/job/1385093/ (emphasis added).

26. In addition, Microsoft maintains a regular and established place of business at 6901 Windcrest Dr., Plano, Texas. Specifically, Microsoft has maintained property at this location with a value assessed at between $146,428 and $44,485 dollars over the past five years. *See Collin County Central Appraisal District Property Record*, COLLIN CAD WEBSITE (last visited December 2023), available at: https://www.collincad.org/propertysearch.

27. Microsoft also maintains a regular and established place of business at 2800 Summit Ave., Plano, Texas. Specifically, Microsoft has maintained property at this location with an assessed value of $2,481,252 dollars in 2023. *See Collin County Central Appraisal District Property Record*, COLLIN CAD WEBSITE (last visited December 2023), available at:

https://www.collincad.org/propertysearch. Microsoft maintains its discreet servers at this data center location. This data center features "Dedicated office & Storage Space." *See Aligned Data Center Property Brochure,* ALIGNED DOCUMENTATION (January 13, 2022). The data center where the Microsoft property is located keeps its clients' (*e.g.*, Microsoft) data center servers in a discrete "customer pod," segregated from other clients' servers.

Dave Montgomery, *Texas Lures Data Centers, Not for Jobs but for Revenue,* N.Y. TIMES (April 26, 2016) ("a customizable customer pod containing servers at Aligned Data Centers in Plano, Tex.").

28. Further, Microsoft has identified this Plano, Texas location as being a "point of presence location . . . for Azure Content Delivery Network (CDN) products."

Azure CDN Coverage by Metro, MICROSOFT AZURE LEARN WEBSITE (May 31, 2023), available at: https://learn.microsoft.com/en-us/azure/cdn/cdn-pop-locations (annotation added).

29. Microsoft also maintains a regular and established place of business at 1501 Summit Ave, Plano, Texas and 8375 Dominion Pkwy, Plano, Texas where it maintains property with an assessed value of $36,607 dollars and $100,000 dollars, respectively. *See Collin County Central Appraisal District Property Record*, COLLIN CAD WEBSITE (last visited December 2023), available at: https://www.collincad.org/propertysearch.

JURISDICTION AND VENUE

30. This action arises under the patent laws of the United States, Title 35 of the United States Code. Accordingly, this Court has exclusive subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338(a).

31. This Court has personal jurisdiction over Microsoft in this action because Microsoft has committed acts within the Eastern District of Texas giving rise to this action and has established minimum contacts with this forum such that the exercise of jurisdiction over Microsoft would not offend traditional notions of fair play and substantial justice. Defendant Microsoft, directly and/or through subsidiaries or intermediaries (including distributors, retailers, and others), has committed and continues to commit acts of infringement in this District by, among other things, offering to sell and selling products and/or services that infringe the patents-in-suit. Moreover, Microsoft is registered to do business in the State of Texas, has offices and facilities in the State of Texas, and actively directs its activities to customers located in the State of Texas.

32. Venue is proper in this District under 28 U.S.C. §§ 1391(b)-(d) and 1400(b). Defendant Microsoft is registered to do business in the State of Texas, maintains retail stores, data centers, and other regular and established places of business in the State of Texas, has transacted business in the Eastern District of Texas and has committed acts of direct and indirect infringement in the Eastern District of Texas.

33. Microsoft has a regular and established place of business in this District and has committed acts of infringement in this District. Microsoft has also committed acts of infringement in this District by commercializing, marketing, selling, distributing, testing, and servicing certain Accused Products.

34. This Court has personal jurisdiction over Microsoft. Microsoft has conducted and does conduct business within the State of Texas. Microsoft, directly or through subsidiaries or intermediaries (including distributors, retailers, and others), ships, distributes, makes, uses, offers for sale, sells, imports, and/or advertises (including by providing an interactive web page) its products and/or services in the United States and the Eastern District of Texas and/or contributes to and actively induces its customers to ship, distribute, make, use, offer for sale, sell, import, and/or advertise (including the provision of an interactive web page) infringing products and/or services in the United States and the Eastern District of Texas. Microsoft, directly and through subsidiaries or intermediaries (including distributors, retailers, and others), has purposefully and voluntarily placed one or more of its infringing products and/or services, as described below, into the stream of commerce with the expectation that those products will be purchased and used by customers and/or consumers in the Eastern District of Texas. These infringing products and/or services have been and continue to be made, used, sold, offered for sale, purchased, and/or imported by customers and/or consumers in the Eastern District of Texas. Microsoft has committed acts of patent infringement within the Eastern District of Texas. Microsoft interacts with customers in Texas, including through visits to customer sites in Texas. Through these interactions and visits, Microsoft directly infringes the patents-in-suit. Microsoft also interacts with customers who sell the Accused Products into Texas, knowing that these customers will sell the Accused Products into Texas, either directly or through intermediaries.

35. Microsoft has minimum contacts with this District such that the maintenance of this action within this District would not offend traditional notions of fair play and substantial justice. Thus, the Court therefore has both general and specific personal jurisdiction over Microsoft.

THE ASSERTED PATENTS

U.S. PATENT NO. 7,031,314

36. U.S. Patent No. 7,031,314 (the "'314 patent") entitled, *Systems and Methods for Providing Differentiated Services Within a Network Communication System*, was filed on April 19, 2002. The '314 patent claims priority to U.S. Provisional Patent Application No. 60/291,918, which was filed on May 16, 2001, and U.S. Provisional Patent Application No. 60/309,213 filed on July 31, 2001. The '314 patent is subject to a 35 U.S.C. § 154(b) term extension of 625 days. A true and correct copy of the '314 patent is attached hereto as Exhibit 1.

37. The '314 patent has been in full force and effect since its issuance. OptiMorphix, Inc. owns by assignment the entire right, title, and interest in and to the '314 patent.

38. The '314 patent is directed to solving the problem of deploying differentiated services within existing network infrastructure. The patent identifies that existing network infrastructure was generally not designed to support a wide variety of application-specific and subscriber-specific services as the corresponding data flowed through a network. "Consequently, the different and potentially incompatible requirements of the increasingly diverse applications, Subscribers and networking environments has placed demands on the existing network infrastructure for which the network infrastructure was not originally designed to handle." '314 patent, col. 1:37-42.

39. The '314 patent addresses the issue of identifying the data streams on which to perform the differentiated services, which may involve a significant processing penalty. "The problem with deploying these differentiated services within the existing network infrastructure is

that the network infrastructure was not designed to support a wide variety application-specific and subscriber specific services as the corresponding data flows through the network." '314 patent, col. 1:47-52.

40. The inventions disclosed in the '314 patent provide significant benefits and improvements to the function of the hardware in a computer network by enabling differentiated services within the network infrastructure. By incorporating a service module within the network infrastructure that can intercept packets, determine whether the connection corresponds to a service application, and then break and reestablish the connection for application-specific processing, the invention allows for a more efficient and flexible network communication system.

41. The inventions taught by the '314 patent solves discrete, technological problems associated with computer systems, specifically those related to network communication systems. The patent addresses the limitations of existing network infrastructures that were not designed to support a wide variety of application-specific and subscriber-specific services as data flows through the network. It also solves the problem of the significant processing penalty associated with identifying the data streams on which to perform the differentiated services.

42. The '314 patent family has been cited by 1,466 United States and international patents and patent applications as relevant prior art. Specifically, 141 United States and international patents and patent applications have cited the '314 patent itself as relevant prior art. The following companies and research institutions have cited the '314 patent as relevant prior art:

- Cisco Technology, Inc.
- Alphabet Inc.
- Oracle Corporation
- International Business Machines Corp.
- ***Microsoft Corporation***
- Qualcomm, Inc.
- Telefonaktiebolaget Lm Ericsson
- Intel Corporation

- Check Point Software Technologies Ltd.
- Hitachi, Ltd.
- Open Text Corporation
- Fujitsu Limited
- Broadcom Limited
- Samsung Electronics Co., Ltd.

U.S. PATENT NO. 7,444,418

43. U.S. Patent No. 7,444,418 (the "'418 patent") entitled, *Transcoding Multimedia Information Within a Network Communication System*, was filed on May 9, 2002. The '418 patent claims priority to Provisional Application No. 60/290,269, which was filed on May 11, 2001. The '418 patent is subject to a 35 U.S.C. § 154(b) term extension of 766 days. A true and correct copy of the '418 patent is attached hereto as Exhibit 2.

44. The '418 patent has been in full force and effect since its issuance. OptiMorphix, Inc. owns by assignment the entire right, title, and interest in and to the '418 patent.

45. The '418 patent describes a method for transcoding multimedia information, which involves intercepting the multimedia data transmitted between a sender and a receiver. "Embodiments of the present invention alleviate many of the foregoing problems by providing systems and methods for transcoding multimedia information within a network communications system." '418 patent, col. 2:45-48.

46. The '418 patent is directed to solving the problem of transmitting multimedia information over network communication systems, particularly in scenarios where the transmission rate at which the multimedia information is encoded is greater than the available transmission rate. "As a result, these bandwidth constrained networks are susceptible to a mismatch between the required transmission rate of the multimedia information and the available transmission rate of the communication channel." '418 patent, col. 1:56-60. This problem is

especially pronounced in wireless and other bandwidth-constrained networks, which have physical limitations on the maximum bandwidth that the communication channel can support.

47. The inventions disclosed in the '418 patent provide significant benefits and improvements to the function of the hardware in a computer network by enabling more efficient transmission of multimedia information. By transcoding the multimedia information to match the available transmission rate of the downlink channel, the '418 patent teaches methods that prevent the receiver from being overloaded with data transmitted at a rate higher than it can handle. This can help to prevent disruptions and degradation in the performance of multimedia applications, leading to a better functioning of computer hardware.

48. The '418 patent family has been cited by 166 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies and research institutions have cited the '418 patent family as relevant prior art:

- Apple, Inc.
- Verizon Communications Inc.
- Siemens Ag
- ***Microsoft Corporation***
- Cisco Systems, Inc.
- Alphabet Inc.
- Amazon.com, Inc.
- Broadcom Limited
- Qualcomm, Inc.
- Koninklijke Philips Nv

U.S. PATENT NO. 7,586,871

49. U.S. Patent No. 7,586,871 (the "'871 patent") entitled, *Platform and Method for Providing Data Services in a Communication Network*, was filed on January 11, 2006. The '871 patent claims priority to U.S. Application Ser. No. 10/061,953, which was filed on February 2, 2002, which claims the benefit of U.S. Provisional Applications No. 60/292,564, which was filed on May 22, 2001, and No. 60/293,756, which was filed on May 25, 2001. The '871 patent also

claims the benefit of U.S. Provisional Application No. 60/654,730, which was filed on February 18, 2005. The '871 patent is subject to a 35 U.S.C. § 154(b) term extension of 748 days. A true and correct copy of the '871 patent is attached hereto as Exhibit 3.

50. The '871 patent has been in full force and effect since its issuance. OptiMorphix, Inc. owns by assignment the entire right, title, and interest in and to the '871 patent.

51. The '871 patent generally relates to a communication node and corresponding method for processing data communications passing through the node between a first data network and a second data network. The method includes detecting an event associated with data communication arriving at the node from the first data network, determining whether the data communication is to be suspended for service at the node based on the detected event, and processing suspended data communication based on information in the data communication. The patent also covers the detection of return data communication arriving at the node from the second data network in response to the processed data communication from the first data network. The detected return data communication is allowed to pass through the node without processing the detected return data communication.

52. The '871 patent is directed to solving the problem of efficiently providing data services, such as content filtering, in a communication network. This includes the ability to determine whether a packet flow should be suspended for filtering a content request based on packet flow characteristics detected at the layers implemented in hardware, without the need for assistance from higher layers in the architecture implemented in software.

53. The '871 patent teaches the use of a communication node that processes data communication between two networks. This node detects an event associated with data communication from the first network, determines whether the data communication should be

suspended for service at the node based on the detected event, and processes suspended data communication based on information in the data communication. The '871 patent also teaches the detection of return data communication from the second network in response to the processed data communication from the first network, allowing this return data communication to pass through the node without further processing. This approach allows for more efficient processing of data communication, reducing the need to inspect every packet in a flow and avoiding the need to terminate or establish a communication session associated with the data communication.

54. The inventions disclosed in the '871 patent provide significant benefits and improvements to the function of the hardware in a computer network. Specifically, the inventions taught by the '871 patent can determine whether a packet flow should be suspended for filtering a content request based on packet flow characteristics detected at the layers implemented in hardware. This improves the efficiency and scalability of content filtering and other services, particularly for mobile data networks that carry delay-sensitive traffic such as voice or video streaming traffic.

55. The '871 patent family has been cited by 962 United States and international patents and patent applications as relevant prior art. 166 United States and international patents and patent applications have cited the '871 patent itself as relevant prior art. The following companies and research institutions have cited the '871 patent as relevant prior art:

- A10 Networks, Inc.
- Thoma Bravo, LLC
- AT&T, Inc.
- NEC Corporation
- Nokia Corporation
- Cisco Systems, Inc.
- Juniper Networks, Inc.
- Fujitsu Limited

U.S. PATENT NO. 7,616,559

56. U.S. Patent No. 7,616,559 (the "'559 patent") entitled, *Multi-Link Network Architecture, Including Security, In Seamless Roaming Communications Systems And Methods*, was filed on September 2, 2004. The '559 patent claims priority to Provisional Application No. 60/499,648, which was filed on September 3, 2003. The '559 patent is subject to a 35 U.S.C. § 154(b) term extension of 638 days. A true and correct copy of the '559 patent is attached hereto as Exhibit 4.

57. The '559 patent has been in full force and effect since its issuance. OptiMorphix, Inc. owns by assignment the entire right, title, and interest in and to the '559 patent.

58. The '559 patent generally relates to a communications system that provides secure communications of information over multiple communication links. This system includes a client device, a server device, and at least one communication channels, elements, modes, and links for connecting the devices for communication of information between them. The system includes a link detector for determining the existence and usability of the communication links for communication of the information, a pathfinder for selecting one or more of the communication links for communication of at least some of the information, a link handover for switching to the selected one or more communication links for communication of the information or portion thereof, and an auto reconnector for re-connecting to detected and selected one or more communication links for communication of the information or portions of it in the event that any communication is hindered, terminated, or upset.

59. The '559 patent is directed to solving the problem of ensuring secure and reliable communication over multiple communication links, especially in environments that include mobile or other roaming devices capable of communicating over multiple channels and with channel switching characteristics.

60. The '559 patent identifies the shortcomings of the prior art. Specifically, the specification describes that when multiple links, both physical elements and the bands or channels within each such element, are employed for communications in data networks, substantial coordination of communicated information, as well as security of the information, is exponentially complicated. In wireless communications, concurrent or sequential operations can occur over cellular or wireless LAN technologies. Each of these wireless communications methods experiences substantially greater complexity in timing, security, packet sequencing, data loss, and connectivity, over wired communications conditions.

61. The '559 patent teaches the use of a system that includes a link detector for determining the existence and usability of the communication links for communication of the information, a pathfinder for selecting one or more of the communication links for communication of at least some of the information, a link handover for switching to the selected one or more communication links for communication of the information or portion thereof, and an auto reconnector for re-connecting to detected and selected one or more communication links for communication of the information or portions of it in the event that any communication is hindered, terminated, or upset.

62. The inventions disclosed in the '559 patent provide significant benefits and improvements to the function of the hardware in a computer network by ensuring secure and reliable communication over multiple communication links. This is particularly beneficial in environments that include mobile or other roaming devices capable of communicating over multiple channels and with channel switching characteristics. The system's ability to detect usable communication links, select the most suitable ones, switch between them as needed, and reconnect

in the event of communication disruption greatly enhances the reliability and efficiency of data transmission in a computer network.

63. The '559 patent family has been cited by 17 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies and research institutions have cited the '559 patent family as relevant prior art:

- International Business Machines Corporation
- Samsung Electronics Co., Ltd
- Alphabet Inc.
- Research In Motion Limited
- BT Group plc

U.S. PATENT NO. 7,987,285

64. U.S. Patent No. 7,987,285 (the "'285 patent") entitled, *Adaptive Bitrate Management for Streaming Media Over Packet Networks*, was filed on July 9, 2008. The '285 patent claims priority to U.S. Provisional Application No. 60/948,917, which was filed on July 10, 2007. The '285 patent is subject to a 35 U.S.C. § 154(b) term extension of 105 days. A true and correct copy of the '285 patent is attached hereto as Exhibit 5.

65. The '285 patent has been in full force and effect since its issuance. OptiMorphix, Inc. owns by assignment the entire right, title, and interest in and to the '285 patent.

66. The '285 patent relates to adaptive bitrate management for streaming media over packet networks. It teaches a method that includes receiving a receiver report from a terminal, estimating network conditions of a media network based on the receiver report, determining an optimal session bitrate based on the estimated network conditions, and providing media data to the terminal based on the optimal session bitrate.

67. The '285 patent is directed to solving the problem of delivering bandwidth-intensive content like multimedia over capacity-limited, shared links, particularly in wireless

networks. The challenge is to quickly respond to changes in network conditions by adjusting the bitrate and media encoding scheme to optimize the user's viewing and listening experience. This includes addressing issues like network buffer overflow, packet loss, playback stall, sudden adjustment of nominal transmission rate, packet loss due to link transmission errors or network congestion, reduction of effective bandwidth, and limited capacity in wireless networks.

68. The '285 patent identifies the shortcomings of the prior art. Specifically, existing rate control protocols and recommendations were insufficient for delivering multimedia sessions over wireless networks. Issues included sudden adjustments in nominal transmission rates, packet loss, reduction of effective bandwidth, limited capacity, infrequent and incomplete network state information, handling different media streams separately, and low bitrates available for wireless multimedia sessions. These challenges made it difficult to set up a consistent streaming media session.

69. The inventions disclosed in the '285 patent provide significant benefits and improvements to the function by enabling more efficient and responsive control over the bitrate of streaming media sessions according to instantaneous network capacity. This leads to better user experience in streaming media over wireless packet networks, minimizing issues like buffer overflow, packet loss, and playback stall. The adaptive bitrate management system can work with existing media players and networks, providing a more robust and flexible solution for streaming media, especially in challenging wireless environments.

70. The inventions disclosed in the '285 patent solve discrete, technological problems associated with computer systems, particularly in the context of streaming media over packet networks. These problems include managing bitrate in fluctuating network conditions, handling different types of media streams, optimizing the viewing and listening experience, and addressing

specific challenges in wireless networks such as interference, fading, link transmission errors, network congestion, and limited capacity. The patent provides technical solutions through adaptive bitrate management, network state estimation, control algorithms, and specific encoding and packetization methods.

71. The '285 patent family has been cited by 357 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies and research institutions have cited the '285 patent family as relevant prior art:

- Alphabet Inc.
- Cisco Systems, Inc.
- Nokia Corporation
- Tencent Holdings Ltd.
- Hitachi Ltd.
- Oracle Corporation
- ***Microsoft Corporation***
- DISH Network Corp.
- Broadcom Limited
- Amazon.com, Inc.
- Samsung Electronics Co., Ltd.
- Comcast Corporation
- Canon Inc.
- Qualcomm, Inc.
- CommScope, Inc.
- Intel Corporation
- Meta Platforms, Inc.
- Verizon Communications Inc.

U.S. PATENT NO. 8,230,105

72. U.S. Patent No. 8,230,105 (the "'105 patent") entitled, *Adaptive Bitrate Management for Streaming Media Over Packet Networks*, was filed on July 25, 2011. The '105 patent is a continuation of U.S. Patent Application No. 12/170,347, which was filed July 9, 2008 and issued as U.S. Patent No. 7,987,285, and which claims the benefit of U.S. Provisional

Application No. 60/948,917, which was filed July 10, 2007. A true and correct copy of the '105 patent is attached hereto as Exhibit 6.

73. The '105 patent has been in full force and effect since its issuance. OptiMorphix, Inc. owns by assignment the entire right, title, and interest in and to the '105 patent.

74. The '105 patent relates to a method for adaptive bitrate management in streaming media over packet networks. It discloses receiving a receiver report from a terminal, estimating network conditions based on the report, determining an optimal session bitrate according to the estimated network conditions, and providing media data to the terminal based on the optimal session bitrate. The patent emphasizes the need for rate control in delivering bandwidth-intensive content like multimedia over capacity-limited, shared links, and the challenges faced in wireless networks.

75. The '105 patent is directed to solving the problem of delivering consistent and optimized streaming media sessions over packet networks, particularly in wireless networks. The challenges include sudden adjustments in nominal transmission rates, packet loss, reduction of effective bandwidth, limited capacity, and difficulties in setting up a consistent streaming media session.

76. The '105 patent identifies the shortcomings of the prior art. Specifically, existing protocols and methods were inadequate in handling network buffer overflow, playback stall, interference, fading, and other challenges in wireless networks. The existing solutions were not efficient in responding to changes in network conditions, and the typical wireless media player support was limited and sporadic, leading to difficulties in providing a good streaming experience.

77. The '105 patent teaches the use of adaptive bitrate management, which includes an adaptive bitrate controller and a variable bitrate encoder. This framework enables the delivery of

self-adjusting streaming sessions to media players, such as standard 3GPP-compliant media players. It adjusts the bitrate according to instantaneous network capacity, optimizes performance by adjusting the streaming media bitrate, and implements joint session bitrate management for audio, video, and other streams simultaneously.

78. The inventions disclosed in the '105 patent provide significant benefits and improvements to the function of the hardware in a computer network by enabling more efficient and adaptive control of streaming media sessions. By dynamically adjusting the bitrate according to network conditions, the invention minimizes issues like buffer overflow, packet loss, and playback stall. It enhances the user's viewing and listening experience, particularly in wireless networks where traditional methods were inadequate.

79. The inventions taught by the '105 patent solves discrete, technological problems associated with computer systems and networks, particularly in the context of streaming media over packet networks. These problems include network buffer management, bitrate optimization, handling of packet loss, and adjustments to sudden changes in network conditions. The invention addresses these technical challenges through a comprehensive framework that adapts to the network's instantaneous capacity, ensuring a consistent and optimized streaming experience.

80. The '105 patent family has been cited by 357 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies and research institutions have cited the '105 patent family as relevant prior art:

- Amazon.com, Inc.
- Hulu LLC
- Tencent Holdings Ltd.
- Cisco Systems, Inc.
- Oracle Corporation
- ***Microsoft Corporation***
- Comcast Corporation
- Alphabet Inc.

- International Business Machines Corp.
- Hitachi, Ltd.
- Electronics And Telecommunications Research Institute
- EchoStar Technologies LLC
- Samsung Electronics Co., Ltd.
- Qualcomm, Inc.
- CommScope, Inc.
- Intel Corporation
- Meta Platforms, Inc.
- Verizon Communications Inc.
- Broadcom Limited

U.S. PATENT NO. 8,429,169

81. U.S. Patent No. 8,429,169 (the "'169 patent") entitled, *Systems and Methods For Video Cache Indexing*, was filed on July 29, 2011. The '169 patent claims priority to U.S. Provisional Patent Application No. 61/369,513, which was filed on July 30, 2010. A true and correct copy of the '169 patent is attached hereto as Exhibit 7.

82. The '169 patent has been in full force and effect since its issuance. OptiMorphix, Inc. owns by assignment the entire right, title, and interest in and to the '169 patent.

83. The '169 patent is directed to solving the problem of inefficient caching of content, particularly when dynamic URLs are used to refer to the content. Traditional caching methods that index content based on URLs can lead to multiple cache entries for the same content or entries with expired references, reducing the efficiency and capacity of the cache. The technologies taught in the '169 patent overcomes these inefficiencies by indexing the content cache based on a characterization of the content rather than the URL.

84. The '169 patent identifies the shortcomings of the prior art. Specifically, that conventional content caching methods, especially those employing dynamic URLs, lead to two main inefficiencies: (a) multiple cache entries corresponding to the same video content, thereby reducing the cache's capacity to serve unique content, and (b) content cache entries with expired

references to content, reducing the useful capacity of the content cache. These inefficiencies hinder the performance of middleware services and website performance.

85. The '169 patent teaches the use of a novel approach to cache video content by indexing the content cache based on a characterization of the video content rather than the URL. This method involves identifying characterization data related to the content request and using a hash function to generate an index. This index is then used to identify the corresponding entry in the cache data structure. By avoiding the use of dynamic URLs in the indexing process, the patent's method allows for more efficient caching, eliminating redundancies and invalid entries, and improving the overall efficiency of content delivery.

86. The inventions disclosed in the '169 patent provide significant benefits and improvements to the function of the hardware in a computer network by enabling more efficient caching of video content. By indexing the content cache based on the characterization of the content rather than the URL, the patented method avoids the problems of redundant and invalid cache entries. This leads to better utilization of cache capacity, reduced burden on network infrastructure and web servers, and faster content delivery to users. The invention also allows for distinguishing between similar but non-identical videos, avoiding content aliasing, and ensuring that the correct content is delivered to the user.

87. The '169 patent family has been cited by 92 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies and research institutions have cited the '169 patent family as relevant prior art:

- Akamai Technologies, Inc.
- AMC Networks Inc.
- AT&T Inc.
- Atlassian Pty Ltd
- Canon Inc.
- Charter Communications, Inc.

- China Mobile Communications Corporation
- EchoStar Corporation
- Huawei Investment & Holding Co., Ltd.
- Interdigital, Inc.
- Juniper Networks, Inc.
- Koninklijke Philips Nv
- ***Microsoft Corporation***
- Open Text Corporation
- SK Telecom Co., Ltd.
- Skyfire Labs, Inc., California
- ZTE Corporation

U.S. PATENT NO. 8,769,141

88. U.S. Patent No. 8,769,141 (the "'141 patent") entitled, *Adaptive Bitrate Management for Streaming Media Over Packet Networks*, was filed on March 14, 2013. The '141 patent is a continuation of U.S. Application Ser. No. 13/183,317, which was filed July 14, 2011 and issued as U.S. Patent No. 8,255,551, which is a continuation of U.S. Patent Application No. 12/416,085, which was filed March 31, 2009 and issued as U.S. Patent No. 7,991,904, which is a continuation-in-part of U.S. Patent Application No. 12/170,347, which was filed July 9, 2008 and issued as U.S. Patent. No. 7,987,285, which claims the benefit of U.S. Provisional Application No. 60/948,917, which was filed July 10, 2007. A true and correct copy of the '141 patent is attached hereto as Exhibit 8.

89. The '141 patent has been in full force and effect since its issuance. OptiMorphix, Inc. owns by assignment the entire right, title, and interest in and to the '141 patent.

90. The '141 patent discloses a method for adaptive bitrate management in streaming media over packet networks. It includes providing pseudo-streaming media data to a terminal, receiving a TCP acknowledgment, estimating network conditions based on the acknowledgment, determining an optimal session bitrate, and providing pseudo-streaming media data based on the optimal bitrate. The patent encompasses a comprehensive framework that enables the delivery of

self-adjusting streaming or pseudo-streaming sessions to media players, such as standard 3GPP-compliant media players or Flash plugins used for web-embedded video.

91. The '141 patent is directed to solving the problem of rate control for media streaming over packet networks, particularly in bandwidth-limited and shared links. The challenge is to quickly respond to changes in network conditions by adjusting the bitrate and media encoding scheme to optimize the user's viewing and listening experience. The patent addresses issues like network buffer overflow, packet loss, playback stall, and the challenges encountered in delivering multimedia sessions over packet wireless networks.

92. The inventions disclosed in the '141 patent provide significant benefits and improvements to the function of the hardware in a computer network by enabling adaptive bitrate management. This ensures optimal user experience by dynamically adjusting the bitrate according to network conditions. It minimizes undesirable effects like packet loss, buffer overflow, and playback stall. The system's ability to implement joint session bitrate management for audio, video, and other streams simultaneously, and its applicability to all media transports that provide transmission progress report mechanisms, make it a versatile solution.

93. The '141 patent family has been cited by 357 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies and research institutions have cited the '141 patent family as relevant prior art:

- Alphabet Inc.
- Oracle Corporation
- AT&T Inc.
- Telefonaktiebolaget LM Ericsson
- International Business Machines Corp.
- ***Microsoft Corporation***
- Cisco Systems, Inc.
- DISH Network Corp.
- Broadcom Limited
- Amazon.com, Inc.

- Adobe Inc.
- Samsung Electronics Co., Ltd.
- Comcast Corporation
- Canon Inc.
- Technicolor S.A.
- Qualcomm, Inc.
- CommScope, Inc.
- Intel Corporation
- Meta Platforms, Inc.
- Hitachi, Ltd.
- Verizon Communications Inc.

U.S. PATENT NO. 9,191,664

94. U.S. Patent No. 9,191,664 (the "'664 patent") entitled, *Adaptive Bitrate Management for Streaming Media Over Packet Networks*, was filed on November 11, 2013. The '664 patent claims priority to U.S. Provisional patent Application No. 60/948,917, which was filed on July 10, 2007. A true and correct copy of the '664 patent is attached hereto as Exhibit 9.

95. The '664 patent has been in full force and effect since its issuance. OptiMorphix, Inc. owns by assignment the entire right, title, and interest in and to the '664 patent.

96. The '664 patent is generally directed to adaptive bitrate management for streaming media over packet networks. Specifically, it aims to solve the problem of delivering multimedia content over capacity-limited, shared wireless links. Challenges like sudden bandwidth fluctuations, packet loss, reduction in effective capacity, and limited total bitrate budgets make consistent high-quality streaming difficult over wireless networks. Further, the '664 patent teaches ways to quickly respond to changes in network conditions by adjusting the bitrate and the media encoding scheme to optimize the viewing and listening experience of the user. It addresses the issue of transferring a fixed bitrate over a connection that cannot provide the necessary throughput, which can lead to undesirable effects such as network buffer overflow, packet loss, and media player buffer underflow.

97. The prior art has several shortcomings that the '664 patent identifies. Specifically, existing protocols for rate control in media streaming over packet networks were not fully equipped to handle the challenges posed by wireless networks. These challenges include sudden adjustments of nominal transmission rate, packet loss, reduction of effective bandwidth, and limited capacity.

98. To address these issues, the '664 patent teaches in one embodiment an adaptive bitrate manager that monitors feedback information to estimate network conditions. The media is encoded according to the optimal bitrates and provided as encoded streams for transmission.

99. Several benefits and improvements to computer network functionality are provided by the inventions disclosed in the '664 patent. Quickly responding to changes in available network bandwidth allows maintaining consistent streaming quality. Encoding audio and video based on network estimations optimizes the media performance within constrained wireless capacity. Avoiding underflows and overflows through bitrate adaptation enables stable streaming.

100. The '664 patent solves technical problems rooted in streaming multimedia over wireless networks. Challenges like packet loss and volatile transmission rates present discrete technological issues. The '664 patent teaches specific techniques for dynamic adaptation of media encoding in response to feedback-based network estimates. This constitutes an improvement to computer network technology by addressing these streaming challenges.

101. The '664 patent family has been cited by 357 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies and research institutions have cited the '664 patent family as relevant prior art:

- Alphabet Inc.
- Oracle Corporation
- AT&T Inc.
- Telefonaktiebolaget LM Ericsson

- International Business Machines Corp.
- ***Microsoft Corporation***
- Cisco Systems, Inc.
- DISH Network Corp.
- Broadcom Limited
- Amazon.com, Inc.
- Adobe Inc.
- Samsung Electronics Co., Ltd.
- Comcast Corporation
- Canon Inc.
- Technicolor S.A.
- Qualcomm, Inc.
- CommScope, Inc.
- Intel Corporation
- Meta Platforms, Inc.
- Hitachi, Ltd.
- Verizon Communications Inc.

U.S. PATENT NO. 10,412,388

102. U.S. Patent No. 10,412,388 (the "'388 patent") entitled, *Framework for Quality-Aware Video Optimization*, was filed on January 8, 2018. The '388 patent claims priority to U.S. Patent Application No. 12/751,951, which was filed on March 31, 2010, and which claims priority to U.S. Provisional Patent Application No. 61/165,224, which was filed on March 31, 2009. A true and correct copy of the '388 patent is attached hereto as Exhibit 10.

103. The '388 patent has been in full force and effect since its issuance. OptiMorphix, Inc. owns by assignment the entire right, title, and interest in and to the '388 patent.

104. The '388 patent generally relates to a method and system for quality-aware video optimization. It teaches receiving an encoded video frame, decompressing it, extracting a first quantization parameter (QP), and acquiring a delta QP based on the first QP. The method also includes acquiring a second QP based on the delta QP and the first QP, compressing the decompressed video frame based on the second QP, and providing the compressed video frame.

The process allows for fine control of quality degradation in byte-reduced content and can be applied to transcoding scenarios where the input and output compression formats are different.

105. The '388 patent identifies the shortcomings of the prior art. Specifically, existing single-pass rate control techniques had a problem in that the relationship between the compressed byte size of a video frame and its quantization parameter were only known after the frame is encoded. This made it challenging to achieve byte reduction and controllable quality degradation in a single pass.

106. The '388 patent teaches the use of a quality-aware video optimization technique that modifies a video frame sequence to reduce the byte size while limiting perceptual quality degradation to a controllable level.

107. The inventions disclosed in the '388 patent provide significant benefits and improvements to the function of hardware in a computer network by enabling efficient video optimization. The method allows for single-pass, on-the-fly quality-aware optimization, making it well-suited for various environments, including live video feeds and storage arrays.

108. The '388 patent family has been cited by 30 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies and research institutions have cited the '388 patent family as relevant prior art:

- Interdigital, Inc.
- Tencent Holdings Ltd
- ***Microsoft Corporation***
- Qualcomm, Inc.
- Lattice Semiconductor
- Openwave Mobility, Inc.
- Samsung Electronics Co., Ltd.
- Beijing Dajia Interconnection Information Technology Co., Ltd.

COUNT I
INFRINGEMENT OF U.S. PATENT NO. 7,031,314

109. Plaintiff references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

110. Microsoft designs, makes, uses, sells, and/or offers for sale in the United States products for providing differentiated services within a network communication system.

111. Microsoft designs, makes, sells, offers to sell, imports, and/or uses the following products: Microsoft Azure (including Microsoft Azure Application Gateway functionality) (collectively, the "Microsoft '314 Product(s)").

112. One or more Microsoft subsidiaries and/or affiliates use the Microsoft '314 Products in regular business operations.

113. The Microsoft '314 Products comprise a processing unit.

114. The Microsoft '314 Products comprise a storage component, functionally connected to the processor, responsible for retaining data and instructions that, upon execution by the processor, direct the processor's operations.

115. The memory unit in the Microsoft '314 Products stores data related to connections, service applications, and other system elements. In addition, the Microsoft '314 Products store in memory instructions that guide the processor in classifying connections, forming connections, and redirecting data.

116. The Microsoft '314 Products contain functionality for requesting a connection between the client and server to ascertain if it aligns with predefined service criteria, where the predetermined service criteria are linked to at least one of the multiple service applications.

117. The Microsoft '314 Products perform differentiated services within a network communication system. Specifically, The Microsoft '314 Products contain functionality for

classifying a connection that has been requested between the client and the server to determine whether the connection matches predetermined service criteria. When a connection is requested, various attributes of the request are analyzed by the Microsoft '314 Products. These attributes could include the source, destination, requested service type, priority, or other data associated with the connection.

118. The Microsoft '314 Products compare attributes associated with a connection against predetermined service criteria. Specifically, the predetermined service criteria can include a set of rules or conditions associated with various service applications.

119. The Microsoft '314 Products contain functionality for establishing an initial connection between the client and the service module, and a subsequent connection between the service module and the server when the connection aligns with the predefined service requirements.

120. The Microsoft '314 Products include functionality that enables forming two connections: a first connection between the client and the service module, and a second connection between the service module and a server. The forming of a first and second connection is done by the Microsoft '314 Products in response to a connection matching the predetermined service criteria.

121. The Microsoft '314 Products orchestrate the formation of a connection between the client and the service module, following the protocols and parameters that relate to the classified service criteria.

122. The Microsoft '314 Products establish a connection between the service module and a server.

123. The Microsoft '314 Products comprise functionality that utilizes the initial and secondary connections to redirect a portion or more of the data communication between the client and a server towards the service application related to the pre-established service parameters.

124. The Microsoft '314 Products comprise a service module that manages the flow of data between the client and the server, directing a portion or all of the data to specific service applications based on the matched criteria.

125. Microsoft has directly infringed and continues to directly infringe the '314 patent by, among other things, making, using, offering for sale, and/or selling technology comprising a system for performing differentiated services within a network communication system, including but not limited to the Microsoft '314 Products.

126. The Microsoft '314 Products are available to businesses and individuals throughout the United States.

127. The Microsoft '314 Products are provided to businesses and individuals located in this District.

128. By making, using, testing, offering for sale, and/or selling products and services comprising a system for performing differentiated services within a network communication system, including but not limited to the Microsoft '314 Products, Microsoft has injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the '314 patent, including at least claim 27 pursuant to 35 U.S.C. § 271(a).

129. Microsoft also indirectly infringes the '314 patent by actively inducing infringement under 35 U.S.C. § 271(b).

130. Microsoft has had knowledge of the '314 patent since at least service of this Complaint or shortly thereafter, and Microsoft knew of the '314 patent and knew of its infringement, including by way of this lawsuit.

131. Alternatively, Microsoft has had knowledge of the '314 patent and/or the application preceding the issuance of the '314 patent since at least May 2002 based on Microsoft's knowledge and understanding of patents and patent applications owned by Citrix Systems, Inc. throughout the decade of the 2000s arising from Microsoft and Citrix's collaboration and patent cross-licensing relationship. Microsoft and Citrix executed a "technology collaboration and licensing agreement" in May 2002. CITRIX SYSTEMS, INC., ANNUAL REPORT (FORM 10-K) at 33 (Dec. 31, 2004). This May 2002 agreement was replaced in December 2004 with "a five-year technology collaboration and licensing agreement" that included "a new technology initiative for closer collaboration on terminal server functionality in future server operating systems" and "a patent cross-licensing agreement." *Id*. On information and belief, Microsoft does not presently possess a license to practice the technology disclosed in the '314 patent; however, on information and belief, Microsoft has knowledge of the '314 patent and its ongoing infringement of the '314 patent due to its nearly decade long close collaboration and licensing agreements with Citrix.

132. Alternatively, Microsoft Corporation has had knowledge of the '314 patent since at least May 18, 2010, based on its citation of the '314 patent as relevant prior art in at least 3 patents that are assigned to and owned by Microsoft Corporation:

- U.S. Patent No. 7,853,593 (granted December 14, 2010)
- U.S. Patent No. 7,817,647 (granted October 19, 2010)
- U.S. Patent No. 7,720,962 (granted May 18, 2010)

133. In addition, Microsoft Corporation has had knowledge of the '314 patent since at least June 27, 2006, based on its citation of the '314 patent family as relevant prior art in at least 23 patents that are assigned to and owned by Microsoft Corporation:

- U.S. Patent No. 9,442,622 (granted September 13, 2016)
- U.S. Patent No. 9,542,066 (granted January 10, 2017)
- U.S. Patent No. 9,678,619 (granted June 13, 2017)
- U.S. Patent No. 9,083,708 (granted July 14, 2015)
- U.S. Patent No. 7,397,759 (granted July 08, 2008)
- U.S. Patent No. 7,444,384 (granted October 28, 2008)
- U.S. Patent No. 7,310,694 (granted December 18, 2007)
- U.S. Patent No. 7,308,711 (granted December 11, 2007)
- U.S. Patent No. 7,664,067 (granted February 16, 2010)
- U.S. Patent No. 7,519,916 (granted April 14, 2009)
- U.S. Patent No. 7,509,673 (granted March 24, 2009)
- U.S. Patent No. 7,069,326 (granted June 27, 2006)
- U.S. Patent No. 8,441,930 (granted May 14, 2013)
- U.S. Patent No. 8,248,944 (granted August 21, 2012)
- U.S. Patent No. 8,229,091 (granted July 24, 2012)
- U.S. Patent No. 8,176,157 (granted May 08, 2012)
- U.S. Patent No. 8,484,577 (granted July 09, 2013)
- U.S. Patent No. 8,171,157 (granted May 01, 2012)
- U.S. Patent No. 7,869,353 (granted January 11, 2011)
- U.S. Patent No. 7,747,801 (granted June 29, 2010)
- U.S. Patent No. 8,079,073 (granted December 13, 2011)
- U.S. Patent No. 8,122,492 (granted February 21, 2012)
- U.S. Patent No. 7,975,071 (granted July 05, 2011)

134. Microsoft intended to induce patent infringement by third-party customers and users of the Microsoft '314 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Microsoft specifically intended and was aware that the normal and customary use

of the accused products would infringe the '314 patent. Microsoft performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '314 patent and with the knowledge that the induced acts would constitute infringement. For example, Microsoft provides the Microsoft '314 Products that have the capability of operating in a manner that infringe one or more of the claims of the '314 patent, including at least claim 27, and Microsoft further provides documentation and training materials that cause customers and end users of the Microsoft '314 Products to utilize the products in a manner that directly infringe one or more claims of the '314 patent.[14] By providing instruction and training to customers and end-users on how to use the Microsoft '314 Products in a manner that directly infringes one or more claims of the '314 patent, including at least claim 27, Microsoft specifically intended to induce infringement of the '314 patent. Microsoft engaged in such inducement to promote the sales of

[14] *See e.g., Rewrite HTTP Headers with Azure Application Gateway,* MICROSOFT AZURE BLOG (April 16, 2019), available at: https://azure.microsoft.com/en-us/blog/rewrite-http-headers-with-azure-application-gateway/, *Taking Advantage of the new Azure Application Gateway v2,* MICROSOFT AZURE BLOG (June 11, 2019), available at: https://azure.microsoft.com/en-us/blog/taking-advantage-of-the-new-azure-application-gateway-v2/; *Introduction to Azure Application Gateway,* MICROSOFT AZURE TRAINING MODULE (last visited December 2023), available at: https://learn.microsoft.com/en-us/training/modules/intro-to-azure-application-gateway/; *Application Gateway Infrastructure Configuration*, MICROSOFT LEARN WEBSITE (November 20, 2023), available at: https://learn.microsoft.com/en-us/azure/application-gateway/configuration-infrastructure; *What is Azure Application Gateway v2?*, MICROSOFT LEARN WEBSITE (April 19, 2023), available at: https://learn.microsoft.com/en-us/azure/application-gateway/overview-v2?source=recommendations; *How an application gateway works*, MICROSOFT LEARN WEBSITE (August 23, 2023), available at: https://learn.microsoft.com/en-us/azure/application-gateway/how-application-gateway-works; *Application gateway components*, MICROSOFT LEARN WEBSITE (March 14, 2023), available at: https://learn.microsoft.com/en-us/azure/application-gateway/application-gateway-components?source=recommendations; *Deliver secure and scalable web applications with Azure Application Gateway*, MICROSOFT AZURE YOUTUBE CHANNEL (November 11, 2020), available at: https://www.youtube.com/watch?v=ZMJwG5nLFN4; and *Architect hybrid networking with Azure Virtual WAN and SD-WAN*, MICROSOFT AZURE YOUTUBE CHANNEL (November 10, 2020), available at: https://www.youtube.com/watch?v=2g-_empU0GU; *Frequently asked questions about Application Gateway,* MICROSOFT LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/application-gateway/application-gateway-faq; *Configure App Service with Application Gateway*, MICROSOFT LEARN WEBSITE (March 8, 2023), available at: https://learn.microsoft.com/en-us/azure/application-gateway/configure-web-app; and *ILB ASE and Application Gateway*, AZURE FRIDAY VIDEO EPISODE (October 13, 2017), available at: https://learn.microsoft.com/en-us/shows/azure-friday/ilb-ase-application-gateway.

the Microsoft '314 Products, e.g., through Microsoft user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '314 patent. Accordingly, Microsoft has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '314 patent, knowing that such use constitutes infringement of the '314 patent.

135. The '314 patent is well-known within the industry as demonstrated by multiple citations to the '314 patent in published patents and patent applications assigned to technology companies and academic institutions. Microsoft is utilizing the technology claimed in the '314 patent without paying a reasonable royalty. Microsoft is infringing the '314 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

136. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '314 patent.

137. As a result of Microsoft's infringement of the '314 patent, Plaintiff has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Microsoft's infringement, but in no event less than a reasonable royalty for the use made of the invention by Microsoft together with interest and costs as fixed by the Court.

COUNT II
INFRINGEMENT OF U.S. PATENT NO. 7,444,418

138. Plaintiff references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

139. Microsoft designs, makes, uses, sells, and/or offers for sale in the United States products that transcode multimedia information within a network communication system.

140. Microsoft designs, makes, sells, offers to sell, imports, and/or uses the following products: Microsoft Azure (including Microsoft Azure Encoding, Microsoft Azure AI Video Indexer, Microsoft Azure Media Player, Microsoft Azure Content Delivery Network, Microsoft Azure Front Door, Microsoft Azure Live and On-Demand Streaming, Microsoft Azure Arc, and Microsoft Azure Media Services functionality) (collectively, the "Microsoft '418 Product(s)").

141. One or more Microsoft subsidiaries and/or affiliates use the Microsoft '418 Products in regular business operations.

142. The Microsoft '418 Products intercept digital multimedia information transmitted between a sender and a recipient, where the data is encoded at the sender using a primary transmission rate.

143. The Microsoft '418 Products contain functionality that performs the step of intercepting digital multimedia information communicated between a transmitter and a receiver, with the digital multimedia information encoded at the transmitter at a first transmission rate. Specifically, the multimedia information is captured by the Microsoft '418 Products as it is encoded at the transmitter side at a specific first transmission rate. This rate denotes the speed at which the data is being sent and is related to the compression methods used to make the data suitable for transmission.

144. The Microsoft '418 Products calculate the accessible transmission rate for a connection on the recipient end, in which the estimation process involves determining the round-trip time for data packets exchanged between the service module and the recipient through the secondary communication channel.

145. The Microsoft '418 Products contain functionality for estimating an available transmission rate of a receiver-side connection. This step is critical for dynamically adapting the

multimedia stream to match the capabilities of the receiving end and the conditions of the network. The estimation process performed by the Microsoft '418 Products involves measuring the trip time of data packets communicated between the service module and the receiver via the second channel. By accurately gauging the available bandwidth, the Microsoft '418 Products can dynamically adapt to the multimedia stream.

146. The Microsoft '418 Products contain functionality wherein if the initial transmission rate exceeds the transmission rate, the digital multimedia information is transcoded to adapt it to the available transmission rate, ensuring compatibility.

147. The Microsoft '418 Products contain functionality that, if the first transmission rate is greater than the available transmission rate, transcodes the digital multimedia information to conform the digital multimedia information to the available transmission rate. Specifically, the Microsoft '418 Products determine if there is a need for transcoding by comparing the first transmission rate (original encoding rate) with the estimated available transmission rate.

148. If the Microsoft '418 Products determine there is a need for transcoding, the Microsoft '418 Products convert the media data from one format and/or bitrate to another. Specifically, the Microsoft '418 Products alter the bit rate of the media data to match the estimated available transmission rate.

149. The Microsoft '418 Products contain functionality for performing conditional transcoding based on real-time network conditions.

150. The Microsoft '418 Products convey transcoded multimedia data to the recipient via the receiver-end connection, utilizing a transmission rate derived from the estimated accessible transmission rate.

151. The Microsoft '418 Products transmit transcoded multimedia information to the receiver over the receiver-side connection at a transmission rate determined from the estimated available transmission rate.

152. The Microsoft '418 Products enable packaging multimedia information into suitable data packets for transmission.

153. The Microsoft '418 Products transmit encoded data packets over a network to the receiver via transmission protocols.

154. Microsoft has directly infringed and continues to directly infringe the '418 patent by, among other things, making, using, offering for sale, and/or selling technology that transcode multimedia information within a network communication system, including but not limited to the Microsoft '418 Products.

155. The Microsoft '418 Products are available to businesses and individuals throughout the United States.

156. The Microsoft '418 Products are provided to businesses and individuals located in this District.

157. By making, using, testing, offering for sale, and/or selling products and services that transcode multimedia information within a network communication system, including but not limited to the Microsoft '418 Products, Microsoft has injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the '418 patent, including at least claim 23 pursuant to 35 U.S.C. § 271(a).

158. Microsoft is in the process of migrating its Azure Media Services functionality to Microsoft partners. Microsoft has announced that the migration will be completed by June 30, 2024. *See Microsoft Azure Media Services Retirement*, MICROSOFT AZURE LEARN WEBSITE (last

visited December 2023), available at: https://learn.microsoft.com/en-us/azure/media-services/latest/azure-media-services-retirement. However, to the extent any Microsoft partners are currently performing any portion of the infringing Azure Media Services functionality, Microsoft remains liable for direct infringement pursuant to 35 U.S.C. § 271(a) because Microsoft is directing or controlling its partners' performance of such infringing functionality and/or Microsoft and its partners form a joint enterprise with respect to the operation of Azure Media Services. For example, Microsoft has selected its partners, including "Harmonic and MediaKind, [which] are [Microsoft's] featured partners." *Id.* Microsoft's featured partners are able to access Microsoft's Azure Media Services content. *Id*. ("Both MediaKind and Harmonic offer dynamic packaging of existing AMS content without requiring the content to be reprocessed."). Microsoft's featured partners' Azure Media Services product offerings are advertised by Microsoft on Microsoft's website. *See, e.g.*, *Microsoft Azure MediaKind Offering*, MICROSOFT AZURE MARKETPLACE (last visited December 2023), available at: https://azuremarketplace.microsoft.com/en-us/marketplace/apps/mksystemsusainc.mediakind (Microsoft advertising MediaKind's Video Streaming at Scale product and advertising its "[n]ear-parity with Azure Media Services."). Accordingly, to the extent Microsoft's partners perform any portion of Azure Media Services' infringing functionality, it is at the direction and control of Microsoft. Microsoft's partners are hoping to obtain access to certain benefits they can only receive by performing functionality identified by Microsoft in the manner Microsoft prescribes. Specifically, Microsoft's partners offer products as prescribed by Microsoft to gain access to Microsoft's Azure Media Services clients and the resulting revenue. Microsoft controls the functionality of its partners' "near parity" products, and Microsoft has the right and ability to stop or limit its partners' ability to practice the infringing functionality.

159. Microsoft also indirectly infringes the '418 patent by actively inducing infringement under 35 U.S.C. § 271(b).

160. Microsoft has had knowledge of the '418 patent since at least service of this Complaint or shortly thereafter, and Microsoft knew of the '418 patent and knew of its infringement, including by way of this lawsuit.

161. Alternatively, Microsoft has had knowledge of the '418 patent and/or the application preceding the issuance of the '418 patent since at least May 2002 based on Microsoft's knowledge and understanding of patents and patent applications owned by Citrix Systems, Inc. throughout the decade of the 2000s arising from Microsoft and Citrix's collaboration and patent cross-licensing relationship. Microsoft and Citrix executed a "technology collaboration and licensing agreement" in May 2002. CITRIX SYSTEMS, INC., ANNUAL REPORT (FORM 10-K) at 33 (Dec. 31, 2004). This May 2002 agreement was replaced in December 2004 with "a five-year technology collaboration and licensing agreement" that included "a new technology initiative for closer collaboration on terminal server functionality in future server operating systems" and "a patent cross-licensing agreement." *Id*. On information and belief, Microsoft does not presently possess a license to practice the technology disclosed in the '418 patent; however, on information and belief, Microsoft has knowledge of the '418 patent and its ongoing infringement of the '418 patent due to its nearly decade long close collaboration and licensing agreements with Citrix.

162. Alternatively, Microsoft Corporation has had knowledge of the '418 patent since at least December 14, 2010, based on its citation of the '418 patent as relevant prior art in at least U.S. Patent No. 7,853,593 (granted December 14, 2010) that is assigned to and owned by Microsoft Corporation.

163. Microsoft intended to induce patent infringement by third-party customers and users of the Microsoft '418 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Microsoft specifically intended and was aware that the normal and customary use of the accused products would infringe the '418 patent. Microsoft performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '418 patent and with the knowledge that the induced acts would constitute infringement. For example, Microsoft provides the Microsoft '418 Products that have the capability of operating in a manner that infringe one or more of the claims of the '418 patent, including at least claim 23, and Microsoft further provides documentation and training materials that cause customers and end users of the Microsoft '418 Products to utilize the products in a manner that directly infringe one or more claims of the '418 patent.[15] By providing instruction and training to customers and end-

[15] *See e.g., Build 2018: What's new in Azure video processing and video AI,* MICROSOFT AZURE BLOG (May 7, 2018), available at: https://azure.microsoft.com/en-us/blog/build-2018-what-s-new-in-azure-video-processing-and-video-ai/; *Six Things to Consider When Using Video Indexer at Scale,* MICROSOFT AZURE BLOG (January 27, 2020), available at: https://azure.microsoft.com/en-us/blog/six-things-to-consider-when-using-video-indexer-at-scale/; *The Developer's Guide to Azure 2nd Edition*, MICROSOFT AZURE E-BOOK (2022); *Video-on-demand digital media,* MICROSOFT AZURE ARCHITECTURE CENTER (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/architecture/solution-ideas/articles/digital-media-video; *VideoEncoderBase Class,* MICROSOFT AZURE API DOCUMENTATION (last visited December 2023), available at: https://learn.microsoft.com/en-us/java/api/com.azure.resourcemanager.videoanalyzer.models.videoencoderbase; *Azure AI Video Indexer overview,* MICROSOFT AZURE LEARN WEBSITE (October 11, 2023), available at: https://learn.microsoft.com/en-us/azure/azure-video-indexer/video-indexer-overview; *Quickstart: How to sign up and upload your first video*, MICROSOFT AZURE LEARN WEBSITE (October 11, 2023), available at: https://learn.microsoft.com/en-us/azure/azure-video-indexer/video-indexer-get-started; *Azure Media Services Libraries for .Net*, MICROSOFT AZURE LEARN WEBSITE (October 12, 2023), available at: https://learn.microsoft.com/en-us/dotnet/api/overview/azure/media-services; *Optimize Your Content Delivery with Azure CDN,* AZURE FRIDAY VIDEO EPISODE (August 17, 2017), available at: https://learn.microsoft.com/en-us/shows/azure-friday/optimize-your-content-delivery-azure-cdn; *Media Architecture Design*, MICROSOFT AZURE LEARN WEBSITE (June 13, 2023), available at: https://learn.microsoft.com/en-us/azure/architecture/guide/media/start-here; and *VideoEncoderBase interface*, MICROSOFT AZURE LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/javascript/api/%40azure/arm-videoanalyzer/videoencoderbase.

users on how to use the Microsoft '418 Products in a manner that directly infringes one or more claims of the '418 patent, including at least claim 23, Microsoft specifically intended to induce infringement of the '418 patent. Microsoft engaged in such inducement to promote the sales of the Microsoft '418 Products, e.g., through Microsoft user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '418 patent. Accordingly, Microsoft has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '418 patent, knowing that such use constitutes infringement of the '418 patent.

164. The '418 patent is well-known within the industry as demonstrated by multiple citations to the '418 patent in published patents and patent applications assigned to technology companies and academic institutions. Microsoft is utilizing the technology claimed in the '418 patent without paying a reasonable royalty. Microsoft is infringing the '418 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

165. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '418 patent.

166. As a result of Microsoft's infringement of the '418 patent, Plaintiff has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Microsoft's infringement, but in no event less than a reasonable royalty for the use made of the invention by Microsoft together with interest and costs as fixed by the Court.

COUNT III
INFRINGEMENT OF U.S. PATENT NO. 7,586,871

167. Plaintiff references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

168. Microsoft designs, makes, uses, sells, and/or offers for sale in the United States products that process data communications passing through a node between a first data network and a second data network.

169. Microsoft designs, makes, sells, offers to sell, imports, and/or uses the following products: Microsoft Azure (including Microsoft Azure Network Watcher and Microsoft Azure Firewall functionality) (collectively, the "Microsoft '871 Product(s)").

170. One or more Microsoft subsidiaries and/or affiliates use the Microsoft '871 Products in regular business operations.

171. The Microsoft '871 Products detect an event associated with a data communication arriving at the node from a first data network.

172. The Microsoft '871 Products monitor incoming data packets at the node from a first data network.

173. The Microsoft '871 Products determine whether the data communication is to be suspended for service at the node based on the detected event. Specifically, once an event associated with the data communication is detected by the Microsoft '871 Products, the system evaluates the nature and severity of the event. The decision to suspend or allow the communication is based on rules and policies configured by the Microsoft '871 Products.

174. The Microsoft '871 Products determine (based on a detected event) whether the data communication should be suspended at the node.

175. The Microsoft '871 Products process one or more suspended data communications using information in the suspended data communication. Specifically, the Microsoft '871 Products isolate the suspended data communication for (at least in part) the purpose of processing the

suspended data communication. Based on the analysis and processing, the Microsoft '871 Products determine how to handle the suspended data communication.

176. The Microsoft '871 Products detect a return data communication arriving at the node from the second data network in response to the processed data communication from the first data network. Further, the Microsoft '871 Products allow the detected return data communication to pass through the node without processing.

177. The Microsoft '871 Products monitor the incoming data communication from the second data network. If the detected return data communication is associated with prior processed data communication from the first network the Microsoft '871 Products determine that the return data communication does not need further processing at the node.

178. The Microsoft '871 Products process a suspended data communication based on information in the data communication.

179. Microsoft has directly infringed and continues to directly infringe the '871 patent by, among other things, making, using, offering for sale, and/or selling technology that process data communications passing through a node between a first data network and a second data network, including but not limited to the Microsoft '871 Products.

180. The Microsoft '871 Products are available to businesses and individuals throughout the United States.

181. The Microsoft '871 Products are provided to businesses and individuals located in this District.

182. By making, using, testing, offering for sale, and/or selling products and services that process data communications passing through a node between a first data network and a second data network, including but not limited to the Microsoft '871 Products, Microsoft has

injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the '871 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

183. Microsoft also indirectly infringes the '871 patent by actively inducing infringement under 35 U.S.C. § 271(b).

184. Microsoft has had knowledge of the '871 patent since at least service of this Complaint or shortly thereafter, and Microsoft knew of the '871 patent and knew of its infringement, including by way of this lawsuit.

185. Alternatively, Microsoft has had knowledge of the '871 patent and/or the application preceding the issuance of the '871 patent since at least May 2002 based on Microsoft's knowledge and understanding of patents and patent applications owned by Citrix Systems, Inc. throughout the decade of the 2000s arising from Microsoft and Citrix's collaboration and patent cross-licensing relationship. Microsoft and Citrix executed a "technology collaboration and licensing agreement" in May 2002. CITRIX SYSTEMS, INC., ANNUAL REPORT (FORM 10-K) at 33 (Dec. 31, 2004). This May 2002 agreement was replaced in December 2004 with "a five-year technology collaboration and licensing agreement" that included "a new technology initiative for closer collaboration on terminal server functionality in future server operating systems" and "a patent cross-licensing agreement." *Id*. On information and belief, Microsoft does not presently possess a license to practice the technology disclosed in the '871 patent; however, on information and belief, Microsoft has knowledge of the '871 patent and its ongoing infringement of the '871 patent due to its nearly decade long close collaboration and licensing agreements with Citrix.

186. Alternatively, Microsoft Corporation has had knowledge of the '871 patent since at least December 22, 2009, based on its citation of the '871 patent family as relevant prior art in at least 15 patents that are assigned to and owned by Microsoft Corporation:

- U.S. Patent No. 11121921 (granted September 14, 2021)
- U.S. Patent No. 11032378 (granted June 08, 2021)
- U.S. Patent No. 10856134 (granted December 01, 2020)
- U.S. Patent No. 10855645 (granted December 01, 2020)
- U.S. Patent No. 11051201 (granted June 29, 2021)
- U.S. Patent No. 11212343 (granted December 28, 2021)
- U.S. Patent No. 10554598 (granted February 04, 2020)
- U.S. Patent No. 10701562 (granted June 30, 2020)
- U.S. Patent No. 11516113 (granted November 29, 2022)
- U.S. Patent No. 10028145 (granted July 17, 2018)
- U.S. Patent No. 11038841 (granted June 15, 2021)
- U.S. Patent No. 7856484 (granted December 21, 2010)
- U.S. Patent No. 7636509 (granted December 22, 2009)
- U.S. Patent No. 8683050 (granted March 25, 2014)
- U.S. Patent No. 8099548 (granted January 17, 2012)

187. Microsoft intended to induce patent infringement by third-party customers and users of the Microsoft '871 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Microsoft specifically intended and was aware that the normal and customary use of the accused products would infringe the '871 patent. Microsoft performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '871 patent and with the knowledge that the induced acts would constitute infringement. For example, Microsoft provides the Microsoft '871 Products that have the capability of operating in a manner that infringe one or more of the claims of the '871 patent, including at least claim 1, and Microsoft further provides documentation and training materials that cause customers and end users of the Microsoft '871 Products to utilize the products in a manner that directly infringe one

or more claims of the '871 patent.[16] By providing instruction and training to customers and end-users on how to use the Microsoft '871 Products in a manner that directly infringes one or more claims of the '871 patent, including at least claim 1, Microsoft specifically intended to induce infringement of the '871 patent. Microsoft engaged in such inducement to promote the sales of the Microsoft '871 Products, e.g., through Microsoft user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '871 patent. Accordingly, Microsoft has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '871 patent, knowing that such use constitutes infringement of the '871 patent.

[16] *See e.g., What is Azure Network Watcher?,* MICROSOFT LEARN WEBSITE (September 15, 2023), available at: https://learn.microsoft.com/en-us/azure/network-watcher/network-watcher-overview; *Microsoft Azure Network Security,* Microsoft Azure White Paper (February 2015); *Microsoft Public Sector Cloud Design White Paper Version 1.4,* Microsoft Documentation (2022); *Microsoft Security Management in Microsoft Azure,* MICROSOFT WHITE PAPER (2014); *Firewall and Application Gateway for virtual networks;* MICROSOFT LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/architecture/example-scenario/gateway/firewall-application-gateway; *Configure Azure Firewall rules*, MICROSOFT LEARN WEBSITE (August 30, 2023), available at: https://learn.microsoft.com/en-us/azure/firewall/rule-processing; *Deploy and configure Azure Firewall Premium*, MICROSOFT LEARN WEBSITE (February 28, 2022), available at: https://learn.microsoft.com/en-us/azure/firewall/premium-deploy; *Network Watcher frequently asked questions (FAQ)*, MICROSOFT LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/network-watcher/frequently-asked-questions?source=recommendations; Manage traffic analytics using Azure Policy, MICROSOFT LEARN WEBSITE (May 30, 2023), available at: https://learn.microsoft.com/en-us/azure/network-watcher/traffic-analytics-policy-portal; *Manage NSG flow logs using Azure Policy,* MICROSOFT LEARN WEBSITE (May 30, 2023), available at: https://learn.microsoft.com/en-us/azure/network-watcher/nsg-flow-logs-policy-portal?source=recommendations; *Tutorial: Log Network Traffic To And From A Virtual Machine Using Azure Portal,* MICROSOFT LEARN WEBSITE (September 26, 2023), available at: https://learn.microsoft.com/en-us/azure/network-watcher/nsg-flow-logs-tutorial?source=recommendations; *Traffic analytics overview,* MICROSOFT LEARN WEBSITE (October 27, 2023), available at: https://learn.microsoft.com/en-us/azure/network-watcher/traffic-analytics?source=recommendations; *Learn Live - Azure Networking Fundamentals,* MICROSOFT DEVELOPER YOUTUBE CHANNEL (October 4, 2022), available at: https://www.youtube.com/watch?v=Rrc7TlH7G4g; *Deep dive into managing and monitoring your Azure networks | BRK217H,* MICROSOFT IGNITE YOUTUBE CHANNEL (October 19, 2022), available at: https://www.youtube.com/watch?v=htzaJ2xc9EM; and *June 2017 Azure Partner call: Azure Network Watcher,* MICROSOFT US PARTNER COMMUNITY YOUTUBE CHANNEL (June 12, 2017), available at: https://www.youtube.com/watch?v=LxtF1bBm1UY.

188. The '871 patent is well-known within the industry as demonstrated by multiple citations to the '871 patent in published patents and patent applications assigned to technology companies and academic institutions. Microsoft is utilizing the technology claimed in the '871 patent without paying a reasonable royalty. Microsoft is infringing the '871 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

189. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '871 patent.

190. As a result of Microsoft's infringement of the '871 patent, Plaintiff has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Microsoft's infringement, but in no event less than a reasonable royalty for the use made of the invention by Microsoft together with interest and costs as fixed by the Court.

COUNT IV
INFRINGEMENT OF U.S. PATENT NO. 7,616,559

191. Plaintiff references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

192. Microsoft designs, makes, uses, sells, and/or offers for sale in the United States products that communicate information over multiple communications links.

193. Microsoft designs, makes, sells, offers to sell, imports, and/or uses the following products: Microsoft Azure (including Microsoft Azure VPN Gateway and Microsoft Azure Express Route functionality) (collectively, the "Microsoft '559 Product(s)").

194. One or more Microsoft subsidiaries and/or affiliates use the Microsoft '559 Products in regular business operations.

195. The Microsoft '559 Products identify an initial communication path with a specific security protocol for the transmission of data between a client system and a server system.

196. The Microsoft '559 Products detect a first communications link having a first security feature for communicating data between a client device and a server device. The Microsoft '559 Products utilize algorithms to ensure the first security level's parameters, such as encryption and authentication protocols are met. By identifying the presence of this first communications link, the Microsoft '559 Products can prioritize a communications link for use based on predefined security requirements or other criteria.

197. The Microsoft '559 Products contain functionality for identifying an alternate communication pathway that possesses a different level of security for exchanging data between a client and a server.

198. The Microsoft '559 Products detect a second communications link having a second security feature. The second communications link enables data to be sent between a client and server. Further, the Microsoft '559 Products monitor network channels and enable security protocols to evaluate the parameters of the second communications link. The security features used by the Microsoft '559 Products include encryption standards and/or authentication technology. The second communications link serves to ensure continuous data transfer by the Microsoft '559 Products if the first communications link is unavailable.

199. The Microsoft '559 Products determine if the initial communication path is inaccessible, opting for the alternate communication pathway with its distinct security level, to facilitate data transmission between a client and server.

200. The Microsoft '559 Products select the first communications link, having first security, for communicating between a client device and a server. After the detection of both the

first and second communications links, the Microsoft '559 Products prioritize the link with the higher security features (e.g., first link) for data transmission. This prioritization by the Microsoft '559 Products is based on pre-established security criteria and network conditions. If the first link meets the requirements, it is selected by the Microsoft '559 Products to provide enhanced security and reliability.

201. The Microsoft '559 Products maintain a connection with one of either the initial or alternate communication pathways, to ensure uninterrupted data exchange between the client system and the server system.

202. If the first communications link is not available, the Microsoft '559 Products select the second communications link having second security, for communicating between the client device and the server device. This action is prompted when the preferred first link, typically with higher security, is unavailable or fails to meet a criteria. The Microsoft '559 Products switch to the second link, ensuring continuous communication. While generally considered less secure, the second link serves as a contingency, allowing uninterrupted information flow between a client and server.

203. If the data transmission is interrupted over the alternate communication pathway, the Microsoft '559 Products contain functionality for restoring the connection to the initial communication link to continue exchanging information between the client and the server.

204. The Microsoft '559 Products enable linking to one of either the first communications link and the second communications link, to maintain communicative connectivity during communications between the client and server. The Microsoft '559 Products establish a dynamic link management process, maintaining an active connection by continuously evaluating both communication links.

205. The Microsoft '559 Products contain functionality where if communication disruption occurs over the primary communication link, the alternate communication link is reestablished to facilitate the exchange of information between the client and server.

206. The Microsoft '559 Products enable reconnecting to the first communications link for communicating information between the client and server if communications are hindered over the second communications link. This step is a part of a resilient communication strategy that actively monitors both links and switches back to the first link when issues are detected with the second communications link.

207. The Microsoft '559 Products enable reconnecting to the second communications link for communicating information between the client device and the server device, if communications are hindered over the first communications link. If issues are detected on the primary link, the Microsoft '559 Products automatically switch to the secondary link, maintaining the communication while also adhering to the security protocols.

208. Microsoft has directly infringed and continues to directly infringe the '559 patent by, among other things, making, using, offering for sale, and/or selling technology comprising a method of communicating information over multiple communications links, including but not limited to the Microsoft '559 Products.

209. The Microsoft '559 Products are available to businesses and individuals throughout the United States.

210. The Microsoft '559 Products are provided to businesses and individuals located in this District.

211. By making, using, testing, offering for sale, and/or selling products and services comprising a method of communicating information over multiple communications links,

including but not limited to the Microsoft '559 Products, Microsoft has injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the '559 patent, including at least claim 5 pursuant to 35 U.S.C. § 271(a).

212. Microsoft also indirectly infringes the '559 patent by actively inducing infringement under 35 U.S.C. § 271(b).

213. Microsoft has had knowledge of the '559 patent since at least service of this Complaint or shortly thereafter, and Microsoft knew of the '559 patent and knew of its infringement, including by way of this lawsuit.

214. Alternatively, Microsoft has had knowledge of the '559 patent and/or the application preceding the issuance of the '559 patent since at least September 2004 based on Microsoft's knowledge and understanding of patents and patent applications owned by Citrix Systems, Inc. throughout the decade of the 2000s arising from Microsoft and Citrix's collaboration and patent cross-licensing relationship. Microsoft and Citrix executed a "technology collaboration and licensing agreement" in May 2002. CITRIX SYSTEMS, INC., ANNUAL REPORT (FORM 10-K) at 33 (Dec. 31, 2004). This May 2002 agreement was replaced in December 2004 with "a five-year technology collaboration and licensing agreement" that included "a new technology initiative for closer collaboration on terminal server functionality in future server operating systems" and "a patent cross-licensing agreement." *Id*. On information and belief, Microsoft does not presently possess a license to practice the technology disclosed in the '559 patent; however, on information and belief, Microsoft has knowledge of the '559 patent and its ongoing infringement of the '559 patent due to its nearly decade long close collaboration and licensing agreements with Citrix.

215. Microsoft intended to induce patent infringement by third-party customers and users of the Microsoft '559 Products and had knowledge that the inducing acts would cause

infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Microsoft specifically intended and was aware that the normal and customary use of the accused products would infringe the '559 patent. Microsoft performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '559 patent and with the knowledge that the induced acts would constitute infringement. For example, Microsoft provides the Microsoft '559 Products that have the capability of operating in a manner that infringe one or more of the claims of the '559 patent, including at least claim 5, and Microsoft further provides documentation and training materials that cause customers and end users of the Microsoft '559 Products to utilize the products in a manner that directly infringe one or more claims of the '559 patent.[17] By providing instruction and training to customers and end-users on how to use the Microsoft '559 Products in a manner that directly infringes one or more claims of the '559 patent, including at least claim 5, Microsoft specifically intended to induce infringement of the '559 patent. Microsoft engaged in such inducement to promote the sales of

[17] *See e.g., Azure networking services overview,* MICROSOFT AZURE LEARN WEBSITE (July 28, 2023), available at: https://learn.microsoft.com/en-us/azure/networking/fundamentals/networking-overview; *Connect an on-premises network to Azure,* MICROSOFT AZURE ARCHITECTURE CENTER (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/architecture/reference-architectures/hybrid-networking/; *Troubleshoot VPN Gateways in Microsoft Azure*, MICROSOFT TRAINING DOCUMENTATION (last visited December 2023), available at: https://learn.microsoft.com/en-us/training/modules/troubleshoot-vpn-gateways/; *Highly Available cross-premises and VNet-to-VNet connectivity,* MICROSOFT AZURE LEARN WEBSITE (June 23, 2023), available at: https://learn.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-highlyavailable; *VPN Gateway FAQ*, MICROSOFT AZURE LEARN WEBSITE (November 29, 2023), available at: https://learn.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-vpn-faq; *Create a route-based VPN gateway using PowerShell,* MICROSOFT AZURE LEARN WEBSITE (December 7, 2023), available at: https://learn.microsoft.com/en-us/azure/vpn-gateway/create-routebased-vpn-gateway-powershell; *Architect network infrastructure in Azure,* MICROSOFT AZURE TRAINING DOCUMENTATION (last visited December 2023), available at: https://learn.microsoft.com/en-us/training/paths/architect-network-infrastructure/; *Verify a connection for VPN Gateway*, Microsoft Azure Learn Website (March 30, 2023), available at: https://learn.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-verify-connection-resource-manager; and *Tutorial: Create and manage a VPN gateway using the Azure portal*, MICROSOFT AZURE LEARN WEBSITE (November 20, 2023), available at: https://learn.microsoft.com/en-us/azure/vpn-gateway/tutorial-create-gateway-portal.

the Microsoft '559 Products, e.g., through Microsoft user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '559 patent. Accordingly, Microsoft has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '559 patent, knowing that such use constitutes infringement of the '559 patent.

216. The '559 patent is well-known within the industry as demonstrated by multiple citations to the '559 patent in published patents and patent applications assigned to technology companies and academic institutions. Microsoft is utilizing the technology claimed in the '559 patent without paying a reasonable royalty. Microsoft is infringing the '559 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

217. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '559 patent.

218. As a result of Microsoft's infringement of the '559 patent, Plaintiff has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Microsoft's infringement, but in no event less than a reasonable royalty for the use made of the invention by Microsoft together with interest and costs as fixed by the Court.

COUNT V
INFRINGEMENT OF U.S. PATENT NO. 7,987,285

219. Plaintiff references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

220. Microsoft designs, makes, uses, sells, and/or offers for sale in the United States products comprising technology for adaptive bitrate management for streaming media over packet networks.

221. Microsoft designs, makes, sells, offers to sell, imports, and/or uses the following products: Microsoft Azure (including Microsoft Azure Encoding, Microsoft Azure AI Video Indexer, Microsoft Azure Media Player, Microsoft Azure Content Delivery Network, Microsoft Azure Front Door, Microsoft Azure Live and On-Demand Streaming, Microsoft Azure Arc, and Microsoft Azure Media Services functionality) (collectively, the "Microsoft '285 Product(s)").

222. One or more Microsoft subsidiaries and/or affiliates use the Microsoft '285 Products in regular business operations.

223. The Microsoft '285 Products obtain a best-suited session bitrate.

224. The Microsoft '285 Products initiate a session by leveraging an adaptive bitrate algorithm (e.g., Dynamic Adaptive Streaming over HTTP (DASH)), to fetch the optimal session bitrate. This involves network probing to converge to an optimal bitrate that maximizes Quality of Experience (QoE) while minimizing re-buffering events and latency.

225. The Microsoft '285 Products allocate the optimal session bitrate among audio and video streams to yield ideal bitrates for both, with the allocation partially based on giving precedence to either the audio or video data.

226. The Microsoft '285 Products partition the optimal session bitrate into audio and video components. This allocation is computed by accounting not only the intrinsic complexities of each media stream but also the current contextual priorities.

227. The Microsoft '285 Products compress the audio and video content in accordance with the derived optimal audio and video bitrates.

228. The Microsoft '285 Products use specialized codecs for each media type—including the AAC (Advanced Audio Codec) for audio and H.264/AVC for video. These codecs utilize entropy coding, quantization, and transform techniques to compress the raw audio and video

streams according to the pre-determined optimal bitrates. The encoding process employs CABAC (Context-Adaptive Binary Arithmetic Coding) for entropy coding and employing spatial and temporal prediction for further compression.

229. The Microsoft '285 Products deliver compressed audio and video information for transmission to an end device.

230. The Microsoft '285 Products encapsulate the encoded audio and video streams into a container format such as MPEG-4 Part 14 (.mp4) or Matroska (.mkv). This container is then chunked and packetized for delivery.

231. Microsoft has directly infringed and continues to directly infringe the '285 patent by, among other things, making, using, offering for sale, and/or selling technology for adaptive bitrate management for streaming media over packet networks, including but not limited to the Microsoft '285 Products.

232. The Microsoft '285 Products are available to businesses and individuals throughout the United States.

233. The Microsoft '285 Products are provided to businesses and individuals located in this District.

234. By making, using, testing, offering for sale, and/or selling products and services comprising technology for adaptive bitrate management for streaming media over packet networks, including but not limited to the Microsoft '285 Products, Microsoft has injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the '285 patent, including at least claim 9 pursuant to 35 U.S.C. § 271(a).

235. Microsoft is in the process of migrating its Azure Media Services functionality to Microsoft partners. Microsoft has announced that the migration will be completed by June 30,

2024. *See Microsoft Azure Media Services Retirement*, MICROSOFT AZURE LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/media-services/latest/azure-media-services-retirement. However, to the extent any Microsoft partners are currently performing any portion of the infringing Azure Media Services functionality, Microsoft remains liable for direct infringement pursuant to 35 U.S.C. § 271(a) because Microsoft is directing or controlling its partners' performance of such infringing functionality and/or Microsoft and its partners form a joint enterprise with respect to the operation of Azure Media Services. For example, Microsoft has selected its partners, including "Harmonic and MediaKind, [which] are [Microsoft's] featured partners." *Id.* Microsoft's featured partners are able to access Microsoft's Azure Media Services content. *Id*. ("Both MediaKind and Harmonic offer dynamic packaging of existing AMS content without requiring the content to be reprocessed."). Microsoft's featured partners' Azure Media Services product offerings are advertised by Microsoft on Microsoft's website. *See, e.g.*, *Microsoft Azure MediaKind Offering*, MICROSOFT AZURE MARKETPLACE (last visited December 2023), available at: https://azuremarketplace.microsoft.com/en-us/marketplace/apps/mksystemsusainc.mediakind (Microsoft advertising MediaKind's Video Streaming at Scale product and advertising its "[n]ear-parity with Azure Media Services."). Accordingly, to the extent Microsoft's partners perform any portion of Azure Media Services' infringing functionality, it is at the direction and control of Microsoft. Microsoft's partners are hoping to obtain access to certain benefits they can only receive by performing functionality identified by Microsoft in the manner Microsoft prescribes. Specifically, Microsoft's partners offer products as prescribed by Microsoft to gain access to Microsoft's Azure Media Services clients and the resulting revenue. Microsoft controls the functionality of its partners' "near parity"

products, and Microsoft has the right and ability to stop or limit its partners' ability to practice the infringing functionality.

236. Microsoft also indirectly infringes the '285 patent by actively inducing infringement under 35 U.S.C. § 271(b).

237. Microsoft has had knowledge of the '285 patent since at least service of this Complaint or shortly thereafter, and Microsoft knew of the '285 patent and knew of its infringement, including by way of this lawsuit.

238. Alternatively, Microsoft has had knowledge of the '285 patent and/or the application preceding the issuance of the '285 patent since at least July 2008 based on Microsoft's knowledge and understanding of patents and patent applications owned by Citrix Systems, Inc. throughout the decade of the 2000s arising from Microsoft and Citrix's collaboration and patent cross-licensing relationship. Microsoft and Citrix executed a "technology collaboration and licensing agreement" in May 2002. CITRIX SYSTEMS, INC., ANNUAL REPORT (FORM 10-K) at 33 (Dec. 31, 2004). This May 2002 agreement was replaced in December 2004 with "a five-year technology collaboration and licensing agreement" that included "a new technology initiative for closer collaboration on terminal server functionality in future server operating systems" and "a patent cross-licensing agreement." *Id*. On information and belief, Microsoft does not presently possess a license to practice the technology disclosed in the '285 patent; however, on information and belief, Microsoft has knowledge of the '285 patent and its ongoing infringement of the '285 patent due to its nearly decade long close collaboration and licensing agreements with Citrix.

239. Alternatively, Microsoft Corporation has had knowledge of the '285 patent since at least June 30, 2015, based on its citation of the '285 patent family as relevant prior art in at least 4 patents that are assigned to and owned by Microsoft Corporation:

- U.S. Patent No. 10,116,724 (granted October 30, 2018)
- U.S. Patent No. 10,917,700 (granted February 09, 2021)
- U.S. Patent No. 9,252,916 (granted February 02, 2016)
- U.S. Patent No. 9,071,841 (granted June 30, 2015)

240. Microsoft intended to induce patent infringement by third-party customers and users of the Microsoft '285 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Microsoft specifically intended and was aware that the normal and customary use of the accused products would infringe the '285 patent. Microsoft performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '285 patent and with the knowledge that the induced acts would constitute infringement. For example, Microsoft provides the Microsoft '285 Products that have the capability of operating in a manner that infringe one or more of the claims of the '285 patent, including at least claim 9, and Microsoft further provides documentation and training materials that cause customers and end users of the Microsoft '285 Products to utilize the products in a manner that directly infringe one or more claims of the '285 patent.[18] By providing instruction and training to customers and end-

[18] *See e.g., Build 2018: What's new in Azure video processing and video AI,* MICROSOFT AZURE BLOG (May 7, 2018), available at: https://azure.microsoft.com/en-us/blog/build-2018-what-s-new-in-azure-video-processing-and-video-ai/; *Six Things to Consider When Using Video Indexer at Scale,* MICROSOFT AZURE BLOG (January 27, 2020), available at: https://azure.microsoft.com/en-us/blog/six-things-to-consider-when-using-video-indexer-at-scale/; *The Developer's Guide to Azure 2nd Edition*, MICROSOFT AZURE E-BOOK (2022); *Video-on-demand digital media,* MICROSOFT AZURE ARCHITECTURE CENTER (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/architecture/solution-ideas/articles/digital-media-video; *VideoEncoderBase Class,* MICROSOFT AZURE API DOCUMENTATION (last visited December 2023), available at: https://learn.microsoft.com/en-us/java/api/com.azure.resourcemanager.videoanalyzer.models.videoencoderbase; *Azure AI Video Indexer overview,* MICROSOFT AZURE LEARN WEBSITE (October 11, 2023), available at: https://learn.microsoft.com/en-us/azure/azure-video-indexer/video-indexer-overview; *Quickstart: How to sign up and upload your first video*, MICROSOFT AZURE LEARN WEBSITE (October 11, 2023), available at: https://learn.microsoft.com/en-us/azure/azure-video-indexer/video-indexer-get-started; *Azure Media Services Libraries for .Net*, MICROSOFT AZURE LEARN WEBSITE (October 12, 2023), available at: https://learn.microsoft.com/en-us/dotnet/api/overview/azure/media-services; *Optimize Your Content Delivery with Azure CDN,* AZURE FRIDAY VIDEO EPISODE

users on how to use the Microsoft '285 Products in a manner that directly infringes one or more claims of the '285 patent, including at least claim 9, Microsoft specifically intended to induce infringement of the '285 patent. Microsoft engaged in such inducement to promote the sales of the Microsoft '285 Products, e.g., through Microsoft user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '285 patent. Accordingly, Microsoft has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '285 patent, knowing that such use constitutes infringement of the '285 patent.

241. The '285 patent is well-known within the industry as demonstrated by multiple citations to the '285 patent in published patents and patent applications assigned to technology companies and academic institutions. Microsoft is utilizing the technology claimed in the '285 patent without paying a reasonable royalty. Microsoft is infringing the '285 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

242. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '285 patent.

243. As a result of Microsoft's infringement of the '285 patent, Plaintiff has suffered monetary damages, and seek recovery in an amount adequate to compensate for Microsoft's infringement, but in no event less than a reasonable royalty for the use made of the invention by Microsoft together with interest and costs as fixed by the Court.

(August 17, 2017), available at: https://learn.microsoft.com/en-us/shows/azure-friday/optimize-your-content-delivery-azure-cdn; *Media Architecture Design*, MICROSOFT AZURE LEARN WEBSITE (June 13, 2023), available at: https://learn.microsoft.com/en-us/azure/architecture/guide/media/start-here; and *VideoEncoderBase interface*, MICROSOFT AZURE LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/javascript/api/%40azure/arm-videoanalyzer/videoencoderbase.

COUNT VI
INFRINGEMENT OF U.S. PATENT NO. 8,230,105

244. Plaintiff references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

245. Microsoft designs, makes, uses, sells, and/or offers for sale in the United States products comprising streaming technology that optimizes audio-video bitrate allocation.

246. Microsoft designs, makes, sells, offers to sell, imports, and/or uses the following products: Microsoft Azure (including Microsoft Azure Encoding, Microsoft Azure AI Video Indexer, Microsoft Azure Media Player, Microsoft Azure Content Delivery Network, Microsoft Azure Front Door, Microsoft Azure Live and On-Demand Streaming, Microsoft Azure Arc, Microsoft Azure Communication Services, and Microsoft Azure Media Services functionality) and Microsoft Teams (collectively, the "Microsoft '105 Product(s)").

247. One or more Microsoft subsidiaries and/or affiliates use the Microsoft '105 Products in regular business operations.

248. The Microsoft '105 Products obtain an optimal session bitrate for media streaming.

249. The Microsoft '105 Products receive an optimal session bitrate. Specifically, this determination is based on one or more factors including network conditions, available bandwidth, and device capabilities.

250. The Microsoft '105 Products divide this optimal session bitrate between audio and video data to yield the best-suited bitrates for each.

251. The Microsoft '105 Products allocate the optimal session bitrate between audio and video media data to produce an optimal audio bitrate and an optimal video bitrate, wherein allocating the optimal session bitrate between audio and video media data is based on a metric selected from a group including a predetermined allocation, a user preference, an optimal

performance data, privileging one type of data over the other, and an amount of audio and video media data to be provided.

252. In accordance with MPEG-DASH standard, the Microsoft '105 Products are responsible for calculating or receiving an optimal session bitrate based on network conditions and/or the client's capabilities.

253. The Microsoft '105 Products base the bitrate allocation on criteria chosen from a set that includes pre-defined ratios, user settings, performance metrics, prioritizing one media type over the other, and the volume of audio and video data to be delivered.

254. The bitrate allocation used by the Microsoft '105 Products is based on a metric selected from a group including a predetermined allocation, a user preference, an optimal performance data, privileging one type of data over the other, and an amount of audio and video media data to be provided.

255. The Microsoft '105 Products compress the audio and video content as per the determined optimal audio and video bitrates.

256. The Microsoft '105 Products encode audio and video media data according to the optimal audio bitrate and the optimal video bitrate.

257. The Microsoft '105 Products make available the compressed audio and video streams for forwarding to an end device.

258. The Microsoft '105 Products encode audio and video media data according to the optimal audio bitrate and the optimal video bitrate. This is achieved through utilizing encoding algorithms that are tailored to the bitrates allocated for each type of media. By compressing the media data according to these specific bitrates, the system ensures that the audio and video streams are packaged in a way that maximizes quality while adhering to the bandwidth limitations.

259. Microsoft has directly infringed and continues to directly infringe the '105 patent by, among other things, making, using, offering for sale, and/or selling streaming technology that optimizes audio-video bitrate allocation, including but not limited to the Microsoft '105 Products.

260. The Microsoft '105 Products are available to businesses and individuals throughout the United States.

261. The Microsoft '105 Products are provided to businesses and individuals located in this District.

262. By making, using, testing, offering for sale, and/or selling products and services comprising streaming technology that optimizes audio-video bitrate allocation, including but not limited to the Microsoft '105 Products, Microsoft has injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the '105 patent, including at least claim 16 pursuant to 35 U.S.C. § 271(a).

263. Microsoft is in the process of migrating its Azure Media Services functionality to Microsoft partners. Microsoft has announced that the migration will be completed by June 30, 2024. *See Microsoft Azure Media Services Retirement*, MICROSOFT AZURE LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/media-services/latest/azure-media-services-retirement. However, to the extent any Microsoft partners are currently performing any portion of the infringing Azure Media Services functionality, Microsoft remains liable for direct infringement pursuant to 35 U.S.C. § 271(a) because Microsoft is directing or controlling its partners' performance of such infringing functionality and/or Microsoft and its partners form a joint enterprise with respect to the operation of Azure Media Services. For example, Microsoft has selected its partners, including "Harmonic and MediaKind, [which] are [Microsoft's] featured partners." *Id.* Microsoft's featured partners are able to access Microsoft's

Azure Media Services content. *Id*. ("Both MediaKind and Harmonic offer dynamic packaging of existing AMS content without requiring the content to be reprocessed."). Microsoft's featured partners' Azure Media Services product offerings are advertised by Microsoft on Microsoft's website. *See, e.g.*, *Microsoft Azure MediaKind Offering*, MICROSOFT AZURE MARKETPLACE (last visited December 2023), available at: https://azuremarketplace.microsoft.com/en-us/marketplace/apps/mksystemsusainc.mediakind (Microsoft advertising MediaKind's Video Streaming at Scale product and advertising its "[n]ear-parity with Azure Media Services."). Accordingly, to the extent Microsoft's partners perform any portion of Azure Media Services' infringing functionality, it is at the direction and control of Microsoft. Microsoft's partners are hoping to obtain access to certain benefits they can only receive by performing functionality identified by Microsoft in the manner Microsoft prescribes. Specifically, Microsoft's partners offer products as prescribed by Microsoft to gain access to Microsoft's Azure Media Services clients and the resulting revenue. Microsoft controls the functionality of its partners' "near parity" products, and Microsoft has the right and ability to stop or limit its partners' ability to practice the infringing functionality.

264. Microsoft also indirectly infringes the '105 patent by actively inducing infringement under 35 U.S.C. § 271(b).

265. Microsoft has had knowledge of the '105 patent since at least service of this Complaint or shortly thereafter, and Microsoft knew of the '105 patent and knew of its infringement, including by way of this lawsuit.

266. Alternatively, Microsoft has had knowledge of the '105 patent and/or the application preceding the issuance of the '105 patent since at least July 2008 based on Microsoft's knowledge and understanding of patents and patent applications owned by Citrix Systems, Inc.

throughout the decade of the 2000s arising from Microsoft and Citrix's collaboration and patent cross-licensing relationship. Microsoft and Citrix executed a "technology collaboration and licensing agreement" in May 2002. CITRIX SYSTEMS, INC., ANNUAL REPORT (FORM 10-K) at 33 (Dec. 31, 2004). This May 2002 agreement was replaced in December 2004 with "a five-year technology collaboration and licensing agreement" that included "a new technology initiative for closer collaboration on terminal server functionality in future server operating systems" and "a patent cross-licensing agreement." *Id*. On information and belief, Microsoft does not presently possess a license to practice the technology disclosed in the '105 patent; however, on information and belief, Microsoft has knowledge of the '105 patent and its ongoing infringement of the '105 patent due to its nearly decade long close collaboration and licensing agreements with Citrix.

267. Alternatively, Microsoft Corporation has had knowledge of the '105 patent since at least June 30, 2015, based on its citation of the '105 patent family as relevant prior art in at least 4 patents that are assigned to and owned by Microsoft Corporation:

- U.S. Patent No. 10,116,724 (granted October 30, 2018)
- U.S. Patent No. 10,917,700 (granted February 09, 2021)
- U.S. Patent No. 9,252,916 (granted February 02, 2016)
- U.S. Patent No. 9,071,841 (granted June 30, 2015)

268. Microsoft intended to induce patent infringement by third-party customers and users of the Microsoft '105 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Microsoft specifically intended and was aware that the normal and customary use of the accused products would infringe the '105 patent. Microsoft performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '105 patent and with the knowledge that the induced acts would constitute infringement. For example, Microsoft provides the Microsoft '105 Products that have the capability of operating in

a manner that infringe one or more of the claims of the '105 patent, including at least claim 16, and Microsoft further provides documentation and training materials that cause customers and end users of the Microsoft '105 Products to utilize the products in a manner that directly infringe one or more claims of the '105 patent.[19] By providing instruction and training to customers and end-users on how to use the Microsoft '105 Products in a manner that directly infringes one or more claims of the '105 patent, including at least claim 16, Microsoft specifically intended to induce infringement of the '105 patent. Microsoft engaged in such inducement to promote the sales of the Microsoft '105 Products, e.g., through Microsoft user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '105 patent. Accordingly, Microsoft has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '105 patent, knowing that such use constitutes infringement of the '105 patent.

[19] *See e.g., Build 2018: What's new in Azure video processing and video AI,* MICROSOFT AZURE BLOG (May 7, 2018), available at: https://azure.microsoft.com/en-us/blog/build-2018-what-s-new-in-azure-video-processing-and-video-ai/; *Six Things to Consider When Using Video Indexer at Scale,* MICROSOFT AZURE BLOG (January 27, 2020), available at: https://azure.microsoft.com/en-us/blog/six-things-to-consider-when-using-video-indexer-at-scale/; *The Developer's Guide to Azure 2nd Edition*, MICROSOFT AZURE E-BOOK (2022); *Video-on-demand digital media,* MICROSOFT AZURE ARCHITECTURE CENTER (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/architecture/solution-ideas/articles/digital-media-video; *VideoEncoderBase Class,* MICROSOFT AZURE API DOCUMENTATION (last visited December 2023), available at: https://learn.microsoft.com/en-us/java/api/com.azure.resourcemanager.videoanalyzer.models.videoencoderbase; *Azure AI Video Indexer overview,* MICROSOFT AZURE LEARN WEBSITE (October 11, 2023), available at: https://learn.microsoft.com/en-us/azure/azure-video-indexer/video-indexer-overview; *Quickstart: How to sign up and upload your first video*, MICROSOFT AZURE LEARN WEBSITE (October 11, 2023), available at: https://learn.microsoft.com/en-us/azure/azure-video-indexer/video-indexer-get-started; *Azure Media Services Libraries for .Net*, MICROSOFT AZURE LEARN WEBSITE (October 12, 2023), available at: https://learn.microsoft.com/en-us/dotnet/api/overview/azure/media-services; *Optimize Your Content Delivery with Azure CDN,* AZURE FRIDAY VIDEO EPISODE (August 17, 2017), available at: https://learn.microsoft.com/en-us/shows/azure-friday/optimize-your-content-delivery-azure-cdn; *Media Architecture Design*, MICROSOFT AZURE LEARN WEBSITE (June 13, 2023), available at: https://learn.microsoft.com/en-us/azure/architecture/guide/media/start-here; and *VideoEncoderBase interface*, MICROSOFT AZURE LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/javascript/api/%40azure/arm-videoanalyzer/videoencoderbase.

269. The '105 patent is well-known within the industry as demonstrated by multiple citations to the '105 patent in published patents and patent applications assigned to technology companies and academic institutions. Microsoft is utilizing the technology claimed in the '105 patent without paying a reasonable royalty. Microsoft is infringing the '105 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

270. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '105 patent.

271. As a result of Microsoft's infringement of the '105 patent, Plaintiff has suffered monetary damages, and seek recovery in an amount adequate to compensate for Microsoft's infringement, but in no event less than a reasonable royalty for the use made of the invention by Microsoft together with interest and costs as fixed by the Court.

COUNT VII
INFRINGEMENT OF U.S. PATENT NO. 8,429,169

272. Plaintiff references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

273. Microsoft designs, makes, uses, sells, and/or offers for sale in the United States products comprising technology for video cache indexing.

274. Microsoft designs, makes, sells, offers to sell, imports, and/or uses the following products: Microsoft Azure (including Microsoft Azure Content Delivery Network, Microsoft Azure Front Door, Microsoft Azure Arc, and Microsoft Azure Cache for Redis functionality) (collectively, the "Microsoft '169 Product(s)").

275. One or more Microsoft subsidiaries and/or affiliates use the Microsoft '169 Products in regular business operations.

276. The Microsoft '169 Products receive a request for content from a device connected to the Internet. Specifically, when a user makes a request to the Microsoft '169 Products, an HTTP request is sent over the Internet. This HTTP request is received by the Microsoft '169 Products, which are listening for incoming connections on the specific IP address and port number assigned (usually port 80 for HTTP and 443 for HTTPS). The request includes details such as the requested URL, HTTP method (e.g., GET, POST), headers, and any additional data.

277. The Microsoft '169 Products query a web server for a specific segment of content related to the user's content request. Once the Microsoft '169 Products have received and parsed the request, the Microsoft '169 Products determine how to handle the request based on its configuration rules. If the requested content is not available in the Microsoft '169 Products' caches, the Microsoft '169 Products may act as a reverse proxy and forward the request to the appropriate origin server. The web server processes this request and returns the requested content back to the Microsoft '169 Products.

278. The Microsoft '169 Products identify one or more descriptors for the content corresponding to the user's request, where these descriptors include the particular content segment associated with the initial request.

279. The Microsoft '169 Products compute an index related to the requested content by applying the identified descriptors to a hashing function, wherein this computed index aids in locating a corresponding entry in a cache data structure by matching against indices tied to existing entries.

280. The Microsoft '169 Products, acting as a reverse proxy, receive a request and processes it according to the rules defined in the Microsoft '169 Products' configuration files. The Microsoft '169 Products use the HTTP protocol to communicate with client devices and web

servers. When a request is received, the Microsoft '169 Products extract the request line, headers, and body from the request packet. The request line contains the request method (such as GET, POST, PUT, or DELETE), the request URL, and any query string or fragment identifier. The headers contain metadata about the request, such as the client's IP address, browser type, and any authentication credentials. The body contains the data sent with the request, such as form data or file uploads.

281. The Microsoft '169 Products then use the request line and headers to determine how to process the request. For example, if the request method is GET, the Microsoft '169 Products will retrieve the requested content from a web server and return it to the client. If the request method is POST, the Microsoft '169 Products will pass the request body to a web server for processing and return the server's response to the client. Characterization data includes data such as URL, Content-Type, ETag, Last-Modified date, etc. When the Microsoft '169 Products receive content from the origin server, it also receives headers that contain this metadata. This metadata can be used to characterize the content for caching purposes.

282. When storing a response in the cache, the Microsoft '169 Products generate a key using a hash function. The key can be modified using the proxy_cache_key directive. This key is used to store and retrieve the cached content efficiently.

283. Once the Microsoft '169 Products have determined that it needs to retrieve content from a web server, the Microsoft '169 Products send a request to the server using the HTTP protocol. The request includes the request line, headers, and any data from the client's request that needs to be passed to the server. The Microsoft '169 Products can be configured to use different algorithms to choose the web server that will receive the request. For example, the Microsoft '169 Products can use a round-robin algorithm to distribute requests across multiple servers, or the

Microsoft '169 Products can use a least-connections algorithm to send requests to the server with the fewest active connections.

284. Once the request is sent to the web server, the Microsoft '169 Products wait for the server's response. The response includes a status line, headers, and a body containing the requested content. The Microsoft '169 Products then extract the content from the response body and store it in a cache.

285. The Microsoft '169 Products process the content to identify characterization data that can be used to cache the content. The characterization data is a compact representation of the content that allows the Microsoft '169 Products to quickly determine whether it has a cached copy of the content that is identical to the requested content. The Microsoft '169 Products can use various algorithms to generate characterization data, such as a checksum, a hash function, or a compression algorithm. For example, a checksum can be used for small pieces of data, while a hash function can be used for larger pieces of data. The characterization data is then stored in the Microsoft '169 Products cache, along with the content, so that it can be quickly retrieved when a subsequent request for the same content is received.

286. The Microsoft '169 Products generate an index corresponding to content associated with the received content request by inputting the at least one identified characterization data into a hash function, wherein the generated index is used for identifying, in the cache data structure, an entry associated with the content by comparing the generated index to one or more index fields associated with one or more entries within the cache data structure.

287. The Microsoft '169 Products use a hash function to generate an index that corresponds to the content. The hash function takes the characterization data as input and generates a unique output that can be used to identify the content in the Microsoft '169 Products' cache. The

hash function used by the Microsoft '169 Products can be a simple hash function, such as the Jenkins hash function, or a more complex hash function, such as the SHA-256 hash function.

288. Microsoft has directly infringed and continues to directly infringe the '169 patent by, among other things, making, using, offering for sale, and/or selling technology comprising video cache indexing, including but not limited to the Microsoft '169 Products.

289. The Microsoft '169 Products are available to businesses and individuals throughout the United States.

290. The Microsoft '169 Products are provided to businesses and individuals located in this District.

291. By making, using, testing, offering for sale, and/or selling products and services comprising technology for video cache indexing, including but not limited to the Microsoft '169 Products, Microsoft has injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the '169 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

292. Microsoft also indirectly infringes the '169 patent by actively inducing infringement under 35 U.S.C. § 271(b).

293. Microsoft has had knowledge of the '169 patent since at least service of this Complaint or shortly thereafter, and Microsoft knew of the '169 patent and knew of its infringement, including by way of this lawsuit.

294. Alternatively, Microsoft has had knowledge of the '169 patent and/or the application preceding the issuance of the '169 patent since at least July 2011 based on Microsoft's knowledge and understanding of patents and patent applications owned by Citrix Systems, Inc. throughout the decade of the 2000s arising from Microsoft and Citrix's collaboration and patent cross-licensing relationship. Microsoft and Citrix executed a "technology collaboration and

licensing agreement" in May 2002. CITRIX SYSTEMS, INC., ANNUAL REPORT (FORM 10-K) at 33 (Dec. 31, 2004). This May 2002 agreement was replaced in December 2004 with "a five-year technology collaboration and licensing agreement" that included "a new technology initiative for closer collaboration on terminal server functionality in future server operating systems" and "a patent cross-licensing agreement." *Id*. On information and belief, Microsoft does not presently possess a license to practice the technology disclosed in the '169 patent; however, on information and belief, Microsoft has knowledge of the '169 patent and its ongoing infringement of the '169 patent due to its nearly decade long close collaboration and licensing agreements with Citrix.

295. Microsoft intended to induce patent infringement by third-party customers and users of the Microsoft '169 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Microsoft specifically intended and was aware that the normal and customary use of the accused products would infringe the '169 patent. Microsoft performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '169 patent and with the knowledge that the induced acts would constitute infringement. For example, Microsoft provides the Microsoft '169 Products that have the capability of operating in a manner that infringe one or more of the claims of the '169 patent, including at least claim 1, and Microsoft further provides documentation and training materials that cause customers and end users of the Microsoft '169 Products to utilize the products in a manner that directly infringe one or more claims of the '169 patent.[20] By providing instruction and training to customers and end-

[20] *See e.g., How to configure Azure Cache for Redis*, MICROSOFT AZURE LEARN WEBSITE (September 29, 2023), available at: https://learn.microsoft.com/en-us/azure/azure-cache-for-redis/cache-configure; *Caching Guidance – Azure Architecture Center,* MICROSOFT AZURE LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/architecture/best-practices/caching; *AZ-204: Implement caching for solutions,* MICROSOFT AZURE LEARN WEBSITE (last visited December 2023), available at:

users on how to use the Microsoft '169 Products in a manner that directly infringes one or more claims of the '169 patent, including at least claim 1, Microsoft specifically intended to induce infringement of the '169 patent. Microsoft engaged in such inducement to promote the sales of the Microsoft '169 Products, e.g., through Microsoft user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '169 patent. Accordingly, Microsoft has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '169 patent, knowing that such use constitutes infringement of the '169 patent.

296. The '169 patent is well-known within the industry as demonstrated by multiple citations to the '169 patent in published patents and patent applications assigned to technology companies and academic institutions. Microsoft is utilizing the technology claimed in the '169 patent without paying a reasonable royalty. Microsoft is infringing the '169 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

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https://learn.microsoft.com/en-us/training/paths/az-204-integrate-caching-content-delivery-within-solutions/; *VideoSink.LocalMediaCacheMaximumSizeMiB Property,* AZURE SDK FOR .NET PREVIEW DOCUMENTATION (last visited December 2023), available at: https://learn.microsoft.com/en-us/dotnet/api/azure.media.videoanalyzer.edge.models.videosink.localmediacachemaximumsizemib; *CDN Guidance - Azure Architecture Center,* MICROSOFT AZURE LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/architecture/best-practices/cdn; *VideoSink Class,* AZURE SDK DOCUMENTATION (last visited December 2023), available at: https://learn.microsoft.com/en-us/python/api/azure-media-videoanalyzer-edge/azure.media.videoanalyzeredge.videosink; *Quickstart: Use Azure Cache for Redis in .NET Framework,* MICROSOFT AZURE LEARN WEBSITE (April 8, 2022), available at: https://learn.microsoft.com/en-us/azure/azure-cache-for-redis/cache-dotnet-how-to-use-azure-redis-cache; *StreamingEndpointData.MaxCacheAge Property*, AZURE SDK DOCUMENTATION (last visited December 2023), available at: https://learn.microsoft.com/en-us/dotnet/api/azure.resourcemanager.media.streamingendpointdata.maxcacheage; *Create, configure, provision, and deploy the cache node in Azure portal*, MICROSOFT AZURE LEARN WEBSITE (May 9, 2023), available at: https://learn.microsoft.com/en-us/windows/deployment/do/mcc-isp-create-provision-deploy; and *Optimize Your Content Delivery with Azure CDN,* AZURE FRIDAY VIDEO EPISODE (August 17, 2017), available at: https://learn.microsoft.com/en-us/shows/azure-friday/optimize-your-content-delivery-azure-cdn.

297. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '169 patent.

298. As a result of Microsoft's infringement of the '169 patent, Plaintiff has suffered monetary damages, and seek recovery in an amount adequate to compensate for Microsoft's infringement, but in no event less than a reasonable royalty for the use made of the invention by Microsoft together with interest and costs as fixed by the Court.

COUNT VIII
INFRINGEMENT OF U.S. PATENT NO. 8,769,141

299. Plaintiff references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

300. Microsoft designs, makes, uses, sells, and/or offers for sale in the United States products comprising technology for encoding media data using optimal audio and video bitrates and multiplexing the data for transmission.

301. Microsoft designs, makes, sells, offers to sell, imports, and/or uses the following products: Microsoft Azure (including Microsoft Azure Encoding, Microsoft Azure AI Video Indexer, Microsoft Azure Media Player, Microsoft Azure Content Delivery Network, Microsoft Azure Front Door, Microsoft Azure Live and On-Demand Streaming, Microsoft Azure Arc, and Microsoft Azure Media Services functionality) (collectively, the "Microsoft '141 Product(s)").

302. One or more Microsoft subsidiaries and/or affiliates use the Microsoft '141 Products in regular business operations.

303. The Microsoft '141 Products receive both audio and video data.

304. The Microsoft '141 Products receive media streams, which include both audio and video data. Specifically, the Microsoft '141 Products use a manifest and segment retrieval process based on the products implementation of MPEG-DASH.

305. The Microsoft '141 Products obtain an optimal session bitrate.

306. The Microsoft '141 Products employ an ABR algorithm to determine an optimal session bitrate. Specifically, the Microsoft '141 Products implement MPEG-DASH and an optimal session bitrate is on metadata, like bitrates and resolutions of available segments, that are used to determine the optimal session bitrate.

307. The Microsoft '141 Products apportion the recommended session bitrate among audio and video streams, favoring either audio or video for a higher bitrate as needed.

308. The Microsoft '141 Products partition the optimal session bitrate between audio and video components. Specifically, through incorporation of MPEG-DASH adaptive bitrate management, the Microsoft '141 Products utilize a manifest that contains information on the available bitrates for both audio and video, enabling the allocation of bitrates between the audio and video data.

309. The Microsoft '141 Products compress the audio stream according to its optimal bitrate.

310. The Microsoft '141 Products compress the video stream using its designated optimal bitrate.

311. The Microsoft '141 Products multiplex the compressed audio and video data.

312. The Microsoft '141 Products prepare the multiplexed audio and video data for dispatch to a terminal device.

313. Microsoft has directly infringed and continues to directly infringe the '141 patent by, among other things, making, using, offering for sale, and/or selling technology for encoding media data using optimal audio and video bitrates and multiplexing the data for transmission, including but not limited to the Microsoft '141 Products.

314. The Microsoft '141 Products are available to businesses and individuals throughout the United States.

315. The Microsoft '141 Products are provided to businesses and individuals located in this District.

316. By making, using, testing, offering for sale, and/or selling products and services comprising technology for encoding media data using optimal audio and video bitrates and multiplexing the data for transmission, including but not limited to the Microsoft '141 Products, Microsoft has injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the '141 patent, including at least claim 20 pursuant to 35 U.S.C. § 271(a).

317. Microsoft is in the process of migrating its Azure Media Services functionality to Microsoft partners. Microsoft has announced that the migration will be completed by June 30, 2024. *See Microsoft Azure Media Services Retirement*, MICROSOFT AZURE LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/media-services/latest/azure-media-services-retirement. However, to the extent any Microsoft partners are currently performing any portion of the infringing Azure Media Services functionality, Microsoft remains liable for direct infringement pursuant to 35 U.S.C. § 271(a) because Microsoft is directing or controlling its partners' performance of such infringing functionality and/or Microsoft and its partners form a joint enterprise with respect to the operation of Azure Media Services. For example, Microsoft has selected its partners, including "Harmonic and MediaKind, [which] are [Microsoft's] featured partners." *Id.* Microsoft's featured partners are able to access Microsoft's Azure Media Services content. *Id*. ("Both MediaKind and Harmonic offer dynamic packaging of existing AMS content without requiring the content to be reprocessed."). Microsoft's featured partners' Azure Media Services product offerings are advertised by Microsoft on Microsoft's

website. *See, e.g.*, *Microsoft Azure MediaKind Offering*, MICROSOFT AZURE MARKETPLACE (last visited December 2023), available at: https://azuremarketplace.microsoft.com/en-us/marketplace/apps/mksystemsusainc.mediakind (Microsoft advertising MediaKind's Video Streaming at Scale product and advertising its "[n]ear-parity with Azure Media Services."). Accordingly, to the extent Microsoft's partners perform any portion of Azure Media Services' infringing functionality, it is at the direction and control of Microsoft. Microsoft's partners are hoping to obtain access to certain benefits they can only receive by performing functionality identified by Microsoft in the manner Microsoft prescribes. Specifically, Microsoft's partners offer products as prescribed by Microsoft to gain access to Microsoft's Azure Media Services clients and the resulting revenue. Microsoft controls the functionality of its partners' "near parity" products, and Microsoft has the right and ability to stop or limit its partners' ability to practice the infringing functionality.

318. Microsoft also indirectly infringes the '141 patent by actively inducing infringement under 35 U.S.C. § 271(b).

319. Microsoft has had knowledge of the '141 patent since at least service of this Complaint or shortly thereafter, and Microsoft knew of the '141 patent and knew of its infringement, including by way of this lawsuit.

320. Alternatively, Microsoft has had knowledge of the '141 patent and/or the application preceding the issuance of the '141 patent since at least March 2009 based on Microsoft's knowledge and understanding of patents and patent applications owned by Citrix Systems, Inc. throughout the decade of the 2000s arising from Microsoft and Citrix's collaboration and patent cross-licensing relationship. Microsoft and Citrix executed a "technology collaboration and licensing agreement" in May 2002. CITRIX SYSTEMS, INC., ANNUAL REPORT (FORM 10-K) at

33 (Dec. 31, 2004). This May 2002 agreement was replaced in December 2004 with "a five-year technology collaboration and licensing agreement" that included "a new technology initiative for closer collaboration on terminal server functionality in future server operating systems" and "a patent cross-licensing agreement." *Id*. On information and belief, Microsoft does not presently possess a license to practice the technology disclosed in the '141 patent; however, on information and belief, Microsoft has knowledge of the '141 patent and its ongoing infringement of the '141 patent due to its nearly decade long close collaboration and licensing agreements with Citrix.

321. Alternatively, Microsoft Corporation has had knowledge of the '141 patent since at least June 30, 2015, based on its citation of the '141 patent family as relevant prior art in at least 4 patents that are assigned to and owned by Microsoft Corporation:

- U.S. Patent No. 10,116,724 (granted October 30, 2018)
- U.S. Patent No. 10,917,700 (granted February 09, 2021)
- U.S. Patent No. 9,252,916 (granted February 02, 2016)
- U.S. Patent No. 9,071,841 (granted June 30, 2015)

322. Microsoft intended to induce patent infringement by third-party customers and users of the Microsoft '141 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Microsoft specifically intended and was aware that the normal and customary use of the accused products would infringe the '141 patent. Microsoft performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '141 patent and with the knowledge that the induced acts would constitute infringement. For example, Microsoft provides the Microsoft '141 Products that have the capability of operating in a manner that infringe one or more of the claims of the '141 patent, including at least claim 20, and Microsoft further provides documentation and training materials that cause customers and end users of the Microsoft '141 Products to utilize the products in a manner that directly infringe one

or more claims of the '141 patent.[21] By providing instruction and training to customers and end-users on how to use the Microsoft '141 Products in a manner that directly infringes one or more claims of the '141 patent, including at least claim 20, Microsoft specifically intended to induce infringement of the '141 patent. Microsoft engaged in such inducement to promote the sales of the Microsoft '141 Products, e.g., through Microsoft user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '141 patent. Accordingly, Microsoft has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '141 patent, knowing that such use constitutes infringement of the '141 patent.

323. The '141 patent is well-known within the industry as demonstrated by multiple citations to the '141 patent in published patents and patent applications assigned to technology companies and academic institutions. Microsoft is utilizing the technology claimed in the '141

[21] *See e.g., Build 2018: What's new in Azure video processing and video AI,* MICROSOFT AZURE BLOG (May 7, 2018), available at: https://azure.microsoft.com/en-us/blog/build-2018-what-s-new-in-azure-video-processing-and-video-ai/; *Six Things to Consider When Using Video Indexer at Scale,* MICROSOFT AZURE BLOG (January 27, 2020), available at: https://azure.microsoft.com/en-us/blog/six-things-to-consider-when-using-video-indexer-at-scale/; *The Developer's Guide to Azure 2nd Edition*, MICROSOFT AZURE E-BOOK (2022); *Video-on-demand digital media,* MICROSOFT AZURE ARCHITECTURE CENTER (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/architecture/solution-ideas/articles/digital-media-video; *VideoEncoderBase Class,* MICROSOFT AZURE API DOCUMENTATION (last visited December 2023), available at: https://learn.microsoft.com/en-us/java/api/com.azure.resourcemanager.videoanalyzer.models.videoencoderbase; *Azure AI Video Indexer overview,* MICROSOFT AZURE LEARN WEBSITE (October 11, 2023), available at: https://learn.microsoft.com/en-us/azure/azure-video-indexer/video-indexer-overview; *Quickstart: How to sign up and upload your first video*, MICROSOFT AZURE LEARN WEBSITE (October 11, 2023), available at: https://learn.microsoft.com/en-us/azure/azure-video-indexer/video-indexer-get-started; *Azure Media Services Libraries for .Net*, MICROSOFT AZURE LEARN WEBSITE (October 12, 2023), available at: https://learn.microsoft.com/en-us/dotnet/api/overview/azure/media-services; *Optimize Your Content Delivery with Azure CDN,* AZURE FRIDAY VIDEO EPISODE (August 17, 2017), available at: https://learn.microsoft.com/en-us/shows/azure-friday/optimize-your-content-delivery-azure-cdn; *Media Architecture Design*, MICROSOFT AZURE LEARN WEBSITE (June 13, 2023), available at: https://learn.microsoft.com/en-us/azure/architecture/guide/media/start-here; and *VideoEncoderBase interface*, MICROSOFT AZURE LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/javascript/api/%40azure/arm-videoanalyzer/videoencoderbase.

patent without paying a reasonable royalty. Microsoft is infringing the '141 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

324. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '141 patent.

325. As a result of Microsoft's infringement of the '141 patent, Plaintiff has suffered monetary damages, and seek recovery in an amount adequate to compensate for Microsoft's infringement, but in no event less than a reasonable royalty for the use made of the invention by Microsoft together with interest and costs as fixed by the Court.

COUNT IX
INFRINGEMENT OF U.S. PATENT NO. 9,191,664

326. Plaintiff references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

327. Microsoft designs, makes, uses, sells, and/or offers for sale in the United States products for adaptive bitrate management.

328. Microsoft designs, makes, sells, offers to sell, imports, and/or uses the following products: Microsoft Azure (including Microsoft Azure Encoding, Microsoft Azure AI Video Indexer, Microsoft Azure Media Player, Microsoft Azure Content Delivery Network, Microsoft Azure Front Door, Microsoft Azure Live and On-Demand Streaming, Microsoft Azure Arc, and Microsoft Azure Media Services functionality) (collectively, the "Microsoft '664 Product(s)").

329. One or more Microsoft subsidiaries and/or affiliates use the Microsoft '664 Products in regular business operations.

330. The Microsoft '664 Products accept and/or gather media data, which comprises both elements of audio and video information.

331. The Microsoft '664 Products perform the step of receiving media data that includes both audio media data and video media data. In this stage of the method, the computer system ingests or collects media data, which might come from various sources like a live broadcast, stored files, or a streaming service. The data is then parsed or separated into audio and video components for further processing,

332. The Microsoft '664 Products take in an ideal session bitrate, which is the preferred data transfer rate for the media session.

333. The Microsoft '664 Products perform the step of receiving an optimal session bitrate. This step entails obtaining a pre-calculated or pre-defined bitrate that is considered optimal for the media session. This optimal bitrate is a crucial parameter that affects the quality and efficiency of both audio and video transmission.

334. The Microsoft '664 Products distribute the received ideal session bitrate between the audio and video media data, resulting in an optimal audio bitrate and an optimal video bitrate.

335. The Microsoft '664 Products perform the step of allocating the optimal session bitrate between the audio media data and the video media data to produce an optimal audio bitrate and an optimal video bitrate. In this process, the total available optimal session bitrate is divided into two portions, aligning with the requirements for audio and video quality.

336. The Microsoft '664 Products transform the audio media data using the determined optimal audio bitrate through a process of encoding.

337. The Microsoft '664 Products perform the step of encoding the audio media data using the optimal audio bitrate. This process involves compressing the raw audio data according to a specific encoding algorithm while adhering to the predetermined optimal audio bitrate.

338. The Microsoft '664 Products transmit the video media data with the use of the optimal video bitrate through encoding.

339. The Microsoft '664 Products perform the step of encoding the video media data using the optimal video bitrate. Similar to audio encoding, this step involves compressing raw video data into a specific format using the allocated optimal video bitrate.

340. The Microsoft '664 Products make the encoded audio media data and the encoded video media data available for dispatch to a device.

341. The Microsoft '664 Products perform the step of providing the encoded audio media data and the encoded video media data for transmittal to a device. This final step involves packaging the encoded audio and video data into a suitable transmission format and sending it to the receiving device, such as a user's device or a downstream processing system. The process may involve using specific transmission protocols and considering network conditions, latency requirements, and compatibility with the receiving device.

342. Microsoft has directly infringed and continues to directly infringe the '664 patent by, among other things, making, using, offering for sale, and/or selling technology comprising a method of adaptive bitrate management, including but not limited to the Microsoft '664 Products.

343. The Microsoft '664 Products are available to businesses and individuals throughout the United States.

344. The Microsoft '664 Products are provided to businesses and individuals located in this District.

345. By making, using, testing, offering for sale, and/or selling products and services comprising a method of adaptive bitrate management, including but not limited to the Microsoft

'664 Products, Microsoft has injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the '664 patent, including at least claim 9 pursuant to 35 U.S.C. § 271(a).

346. Microsoft is in the process of migrating its Azure Media Services functionality to Microsoft partners. Microsoft has announced that the migration will be completed by June 30, 2024. *See Microsoft Azure Media Services Retirement*, MICROSOFT AZURE LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/media-services/latest/azure-media-services-retirement. However, to the extent any Microsoft partners are currently performing any portion of the infringing Azure Media Services functionality, Microsoft remains liable for direct infringement pursuant to 35 U.S.C. § 271(a) because Microsoft is directing or controlling its partners' performance of such infringing functionality and/or Microsoft and its partners form a joint enterprise with respect to the operation of Azure Media Services. For example, Microsoft has selected its partners, including "Harmonic and MediaKind, [which] are [Microsoft's] featured partners." *Id.* Microsoft's featured partners are able to access Microsoft's Azure Media Services content. *Id*. ("Both MediaKind and Harmonic offer dynamic packaging of existing AMS content without requiring the content to be reprocessed."). Microsoft's featured partners' Azure Media Services product offerings are advertised by Microsoft on Microsoft's website. *See, e.g.*, *Microsoft Azure MediaKind Offering*, MICROSOFT AZURE MARKETPLACE (last visited December 2023), available at: https://azuremarketplace.microsoft.com/en-us/marketplace/apps/mksystemsusainc.mediakind (Microsoft advertising MediaKind's Video Streaming at Scale product and advertising its "[n]ear-parity with Azure Media Services."). Accordingly, to the extent Microsoft's partners perform any portion of Azure Media Services' infringing functionality, it is at the direction and control of Microsoft. Microsoft's partners are hoping to obtain access to certain benefits they can only receive by performing functionality

identified by Microsoft in the manner Microsoft prescribes. Specifically, Microsoft's partners offer products as prescribed by Microsoft to gain access to Microsoft's Azure Media Services clients and the resulting revenue. Microsoft controls the functionality of its partners' "near parity" products, and Microsoft has the right and ability to stop or limit its partners' ability to practice the infringing functionality.

347. Microsoft also indirectly infringes the '664 patent by actively inducing infringement under 35 U.S.C. § 271(b).

348. Microsoft has had knowledge of the '664 patent since at least service of this Complaint or shortly thereafter, and Microsoft knew of the '664 patent and knew of its infringement, including by way of this lawsuit.

349. Alternatively, Microsoft has had knowledge of the '664 patent and/or the application preceding the issuance of the '664 patent since at least November 2013 based on Microsoft's knowledge and understanding of patents and patent applications owned by Citrix Systems, Inc. throughout the decade of the 2000s arising from Microsoft and Citrix's collaboration and patent cross-licensing relationship. Microsoft and Citrix executed a "technology collaboration and licensing agreement" in May 2002. CITRIX SYSTEMS, INC., ANNUAL REPORT (FORM 10-K) at 33 (Dec. 31, 2004). This May 2002 agreement was replaced in December 2004 with "a five-year technology collaboration and licensing agreement" that included "a new technology initiative for closer collaboration on terminal server functionality in future server operating systems" and "a patent cross-licensing agreement." *Id*. On information and belief, Microsoft does not presently possess a license to practice the technology disclosed in the '664 patent; however, on information and belief, Microsoft has knowledge of the '664 patent and its ongoing infringement of the '664 patent due to its nearly decade long close collaboration and licensing agreements with Citrix.

350. Alternatively, Microsoft Corporation has had knowledge of the '664 patent since at least June 30, 2015, based on its citation of the '664 patent family as relevant prior art in at least 4 patents that are assigned to and owned by Microsoft Corporation:

- U.S. Patent No. 10,116,724 (granted October 30, 2018)
- U.S. Patent No. 10,917,700 (granted February 09, 2021)
- U.S. Patent No. 9,252,916 (granted February 02, 2016)
- U.S. Patent No. 9,071,841 (granted June 30, 2015)

351. Microsoft intended to induce patent infringement by third-party customers and users of the Microsoft '664 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Microsoft specifically intended and was aware that the normal and customary use of the accused products would infringe the '664 patent. Microsoft performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the '664 patent and with the knowledge that the induced acts would constitute infringement. For example, Microsoft provides the Microsoft '664 Products that have the capability of operating in a manner that infringe one or more of the claims of the '664 patent, including at least claim 9, and Microsoft further provides documentation and training materials that cause customers and end users of the Microsoft '664 Products to utilize the products in a manner that directly infringe one or more claims of the '664 patent.[22] By providing instruction and training to customers and end-

[22] *See e.g., Build 2018: What's new in Azure video processing and video AI,* MICROSOFT AZURE BLOG (May 7, 2018), available at: https://azure.microsoft.com/en-us/blog/build-2018-what-s-new-in-azure-video-processing-and-video-ai/; *Six Things to Consider When Using Video Indexer at Scale,* MICROSOFT AZURE BLOG (January 27, 2020), available at: https://azure.microsoft.com/en-us/blog/six-things-to-consider-when-using-video-indexer-at-scale/; *The Developer's Guide to Azure 2nd Edition*, MICROSOFT AZURE E-BOOK (2022); *Video-on-demand digital media,* MICROSOFT AZURE ARCHITECTURE CENTER (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/architecture/solution-ideas/articles/digital-media-video; *VideoEncoderBase Class,* MICROSOFT AZURE API DOCUMENTATION (last visited December 2023), available at: https://learn.microsoft.com/en-us/java/api/com.azure.resourcemanager.videoanalyzer.models.videoencoderbase; *Azure AI Video*

users on how to use the Microsoft '664 Products in a manner that directly infringes one or more claims of the '664 patent, including at least claim 9, Microsoft specifically intended to induce infringement of the '664 patent. Microsoft engaged in such inducement to promote the sales of the Microsoft '664 Products, e.g., through Microsoft user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '664 patent. Accordingly, Microsoft has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '664 patent, knowing that such use constitutes infringement of the '664 patent.

352. The '664 patent is well-known within the industry as demonstrated by multiple citations to the '664 patent in published patents and patent applications assigned to technology companies and academic institutions. Microsoft is utilizing the technology claimed in the '664 patent without paying a reasonable royalty. Microsoft is infringing the '664 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

353. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '664 patent.

Indexer overview, MICROSOFT AZURE LEARN WEBSITE (October 11, 2023), available at: https://learn.microsoft.com/en-us/azure/azure-video-indexer/video-indexer-overview; *Quickstart: How to sign up and upload your first video*, MICROSOFT AZURE LEARN WEBSITE (October 11, 2023), available at: https://learn.microsoft.com/en-us/azure/azure-video-indexer/video-indexer-get-started; *Azure Media Services Libraries for .Net*, MICROSOFT AZURE LEARN WEBSITE (October 12, 2023), available at: https://learn.microsoft.com/en-us/dotnet/api/overview/azure/media-services; *Optimize Your Content Delivery with Azure CDN,* AZURE FRIDAY VIDEO EPISODE (August 17, 2017), available at: https://learn.microsoft.com/en-us/shows/azure-friday/optimize-your-content-delivery-azure-cdn; *Media Architecture Design*, MICROSOFT AZURE LEARN WEBSITE (June 13, 2023), available at: https://learn.microsoft.com/en-us/azure/architecture/guide/media/start-here; and *VideoEncoderBase interface*, MICROSOFT AZURE LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/javascript/api/%40azure/arm-videoanalyzer/videoencoderbase.

354. As a result of Microsoft's infringement of the '664 patent, Plaintiff has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Microsoft's infringement, but in no event less than a reasonable royalty for the use made of the invention by Microsoft together with interest and costs as fixed by the Court.

COUNT X
INFRINGEMENT OF U.S. PATENT NO. 10,412,388

355. Plaintiff references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

356. Microsoft designs, makes, uses, sells, and/or offers for sale in the United States products comprising technology for video compression using adaptive re-quantization using extracted and derived quantization parameters.

357. Microsoft designs, makes, sells, offers to sell, imports, and/or uses the following products: Microsoft Azure (including Microsoft Azure Encoding, Microsoft Azure AI Video Indexer, Microsoft Azure Media Player, Microsoft Azure Content Delivery Network, Microsoft Azure Front Door, Microsoft Azure Live and On-Demand Streaming, Microsoft Azure Arc, and Microsoft Azure Media Services functionality), HEVC Video Extension for Windows 10, and Media Foundation H.265 Video Encoder (collectively, the "Microsoft '388 Product(s)").

358. Microsoft designs, makes, sells, offers to sell, imports, and/or uses Microsoft '388 products that comply with the H.265 video encoding standard.

359. The Microsoft '388 Products perform video processing compliant with the High Efficiency Video Coding (HEVC) standard, which is also often referred to as the H.265 standard.

360. One or more Microsoft subsidiaries and/or affiliates use the Microsoft '388 Products in regular business operations.

361. The Microsoft '388 Products identify an initial quantization parameter employed to compress a previously decoded frame.

362. The Microsoft '388 Products, as part of the encoding process use an initial quantization parameter (QP) for encoding each frame or coding unit (CU). In conforming to the HEVC standard, the Microsoft '388 Products must set an initial QP value that serves as the baseline for encoding the decoded frame.

363. The Microsoft '388 Products calculate a delta quantization parameter as influenced by the initial quantization parameter, where the function is designed to yield this delta parameter at least in part to achieve a bitrate reduction while sustaining a given quality threshold.

364. The Microsoft '388 Products calculate a delta QP based on the initial quantization parameter. This function aims to minimize bitrate while retaining the required video quality.

365. The Microsoft '388 Products ascertain a subsequent quantization parameter for the purpose of compressing the decoded frame, based on both the initial and delta quantization parameters.

366. The Microsoft '388 Products determine a second quantization parameter using the initial QP and the delta QP. The Microsoft '388 Products calculate the second quantization parameter as QP1 + Delta QP. This second quantization parameter is the one used for encoding either the entire frame or specific coding units within the frame.

367. The Microsoft '388 Products compress the decoded frame utilizing the second quantization parameter.

368. The Microsoft '388 Products encode the video frames using the newly derived second quantization parameter.

369. By complying with the HEVC standard, the Microsoft '388 Products necessarily infringe the '388 patent. Mandatory sections of the HEVC standard require the elements required by certain claims of the '388 patent, including but not limited to claim 1. High Efficiency Video Coding, Series H: Audiovisual and Multimedia Systems: Infrastructure Of Audiovisual Services – Coding Of Moving Video Rec. ITU-T H.265 (August 2021). The following sections of the HEVC Standard are relevant to Microsoft's infringement of the '388 patent: "7.3.2.2.3 Sequence parameter set screen content coding extension syntax;" "7.3.8.4 Coding quadtree syntax;" "7.3.8.14 Delta QP syntax;" "7.4.3.3.1 General picture parameter set RBSP semantics;" "7.4.7.1 General slice segment header semantics;" "7.4.9.14 Delta QP semantics;" "8.6.1 Derivation process for quantization parameters;" and "9.3.3.10 Binarization process for cu_qp_delta_abs."

370. All implementations of the HEVC standard necessarily infringe the '388 patent as every implementation of the standard requires compliant devices to carry out the following: Each frame or coding unit (CU) is encoded using a pre-defined initial Quantization Parameter (QP) which serves as a baseline for various optimizations. The standard mandates that a first QP (QP1) be identified before any encoding can occur. The Microsoft '388 Products are, therefore, required to have mechanisms to set this initial QP1 for the to-be-encoded (or re-encoded) frame. Further, the HEVC standard sets out a structured way to adjust this initial QP based on a delta value. The objective of introducing a delta QP is generally to adapt to the complexity variations within a video sequence and to optimize rate-distortion performance. The HEVC encoding standard sets forth calculating a new QP (QP2) after determining the delta QP. This is done by adding the initial QP (QP1) and the delta QP. This step is essential for maintaining granular control over the rate-distortion tradeoff during encoding. Finally, the final encoding of the frame or CU takes place using QP2. The HEVC standard specifies that this is a requisite step for the encoding process to

be considered compliant. The Microsoft '388 Products must, therefore, encode frames using this newly computed QP2 to meet the standard's rate and quality stipulations.

371. Microsoft has directly infringed and continues to directly infringe the '388 patent by, among other things, making, using, offering for sale, and/or selling technology for video compression using adaptive re-quantization using extracted and derived quantization parameters, including but not limited to the Microsoft '388 Products.

372. The Microsoft '388 Products are available to businesses and individuals throughout the United States.

373. The Microsoft '388 Products are provided to businesses and individuals located in this District.

374. By making, using, testing, offering for sale, and/or selling products and services comprising technology for video compression using adaptive re-quantization using extracted and derived quantization parameters, including but not limited to the Microsoft '388 Products, Microsoft has injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the '388 patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

375. Microsoft is in the process of migrating its Azure Media Services functionality to Microsoft partners. Microsoft has announced that the migration will be completed by June 30, 2024. *See Microsoft Azure Media Services Retirement*, MICROSOFT AZURE LEARN WEBSITE (last visited December 2023), available at: https://learn.microsoft.com/en-us/azure/media-services/latest/azure-media-services-retirement. However, to the extent any Microsoft partners are currently performing any portion of the infringing Azure Media Services functionality, Microsoft remains liable for direct infringement pursuant to 35 U.S.C. § 271(a) because Microsoft is directing or controlling its partners' performance of such infringing functionality and/or Microsoft and its

partners form a joint enterprise with respect to the operation of Azure Media Services. For example, Microsoft has selected its partners, including "Harmonic and MediaKind, [which] are [Microsoft's] featured partners." *Id.* Microsoft's featured partners are able to access Microsoft's Azure Media Services content. *Id*. ("Both MediaKind and Harmonic offer dynamic packaging of existing AMS content without requiring the content to be reprocessed."). Microsoft's featured partners' Azure Media Services product offerings are advertised by Microsoft on Microsoft's website. *See, e.g.*, *Microsoft Azure MediaKind Offering*, MICROSOFT AZURE MARKETPLACE (last visited December 2023), available at: https://azuremarketplace.microsoft.com/en-us/marketplace/apps/mksystemsusainc.mediakind (Microsoft advertising MediaKind's Video Streaming at Scale product and advertising its "[n]ear-parity with Azure Media Services."). Accordingly, to the extent Microsoft's partners perform any portion of Azure Media Services' infringing functionality, it is at the direction and control of Microsoft. Microsoft's partners are hoping to obtain access to certain benefits they can only receive by performing functionality identified by Microsoft in the manner Microsoft prescribes. Specifically, Microsoft's partners offer products as prescribed by Microsoft to gain access to Microsoft's Azure Media Services clients and the resulting revenue. Microsoft controls the functionality of its partners' "near parity" products, and Microsoft has the right and ability to stop or limit its partners' ability to practice the infringing functionality.

376. Microsoft also indirectly infringes the '388 patent by actively inducing infringement under 35 U.S.C. § 271(b).

377. Microsoft has had knowledge of the '388 patent since at least service of this Complaint or shortly thereafter, and Microsoft knew of the '388 patent and knew of its infringement, including by way of this lawsuit.

378. Alternatively, Microsoft has had knowledge of the '388 patent and/or the application preceding the issuance of the '388 patent since at least March 2010 based on Microsoft's knowledge and understanding of patents and patent applications owned by Citrix Systems, Inc. throughout the decade of the 2000s arising from Microsoft and Citrix's collaboration and patent cross-licensing relationship. Microsoft and Citrix executed a "technology collaboration and licensing agreement" in May 2002. CITRIX SYSTEMS, INC., ANNUAL REPORT (FORM 10-K) at 33 (Dec. 31, 2004). This May 2002 agreement was replaced in December 2004 with "a five-year technology collaboration and licensing agreement" that included "a new technology initiative for closer collaboration on terminal server functionality in future server operating systems" and "a patent cross-licensing agreement." *Id*. On information and belief, Microsoft does not presently possess a license to practice the technology disclosed in the '388 patent; however, on information and belief, Microsoft has knowledge of the '388 patent and its ongoing infringement of the '388 patent due to its nearly decade long close collaboration and licensing agreements with Citrix.

379. Alternatively, Microsoft Corporation has had knowledge of the '388 patent since at least February 4, 2020, based on its citation of the '388 patent family as relevant prior art in at least 2 patents that are assigned to and owned by Microsoft Corporation:

- U.S. Patent No. 11,330,276 (granted May 10, 2022)
- U.S. Patent No. 10,554,984 (granted February 4, 2020)

380. Microsoft intended to induce patent infringement by third-party customers and users of the Microsoft '388 Products and had knowledge that the inducing acts would cause infringement or was willfully blind to the possibility that its inducing acts would cause infringement. Microsoft specifically intended and was aware that the normal and customary use of the accused products would infringe the '388 patent. Microsoft performed the acts that constitute induced infringement, and would induce actual infringement, with knowledge of the

'388 patent and with the knowledge that the induced acts would constitute infringement. For example, Microsoft provides the Microsoft '388 Products that have the capability of operating in a manner that infringe one or more of the claims of the '388 patent, including at least claim 1, and Microsoft further provides documentation and training materials that cause customers and end users of the Microsoft '388 Products to utilize the products in a manner that directly infringe one or more claims of the '388 patent.[23] By providing instruction and training to customers and end-users on how to use the Microsoft '388 Products in a manner that directly infringes one or more claims of the '388 patent, including at least claim 1, Microsoft specifically intended to induce infringement of the '388 patent. Microsoft engaged in such inducement to promote the sales of the Microsoft '388 Products, e.g., through Microsoft user manuals, product support, marketing materials, and training materials to actively induce the users of the accused products to infringe the '388 patent. Accordingly, Microsoft has induced and continues to induce users of the accused products to use the accused products in their ordinary and customary way to infringe the '388 patent, knowing that such use constitutes infringement of the '388 patent.

381. The '388 patent is well-known within the industry as demonstrated by multiple citations to the '388 patent in published patents and patent applications assigned to technology

[23] *See e.g., H.265 / HEVC Video Encoder,* WINDOWS MEDIA FOUNDATION DOCUMENTATION (August 19, 2023), available at: https://learn.microsoft.com/en-us/windows/win32/medfound/h-265---hevc-video-encoder; *Media Foundation Transforms,* WINDOWS MEDIA FOUNDATION DOCUMENTATION (March 3, 2021), available at: https://learn.microsoft.com/en-us/windows/win32/medfound/media-foundation-transforms; *H265Video Class,* MICROSOFT AZURE SDK (last visited December 2023), available at: https://learn.microsoft.com/en-us/java/api/com.azure.resourcemanager.mediaservices.models.h265video; *Microsoft Azure AI Fundamentals: AI Overview*, MICROSOFT AZURE TRAINING (last visited December 2023), available at: https://learn.microsoft.com/en-us/training/paths/get-started-with-artificial-intelligence-on-azure/; *Encoding video and audio with Media Services*, MICROSOFT AZURE DOCUMENTATION (February 2, 2023), available at: https://learn.microsoft.com/en-us/azure/media-services/latest/encode-concept; and *Encode with an auto-generated bitrate ladder,* MICROSOFT AZURE DOCUMENTATION (February 2, 2023), available at: https://learn.microsoft.com/en-us/azure/media-services/latest/encode-autogen-bitrate-ladder.

companies and academic institutions. Microsoft is utilizing the technology claimed in the '388 patent without paying a reasonable royalty. Microsoft is infringing the '388 patent in a manner best described as willful, wanton, malicious, in bad faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate.

382. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '388 patent.

383. As a result of Microsoft's infringement of the '388 patent, Plaintiff has suffered monetary damages, and seek recovery in an amount adequate to compensate for Microsoft's infringement, but in no event less than a reasonable royalty for the use made of the invention by Microsoft together with interest and costs as fixed by the Court.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff OptiMorphix, Inc. respectfully requests that this Court enter:

A. A judgment in favor of Plaintiff that Microsoft has infringed, either literally and/or under the doctrine of equivalents, the '314, '418, '871, '559, '285, '105, '169, '141, '664, and '388 patents;

B. An award of damages resulting from Microsoft's acts of infringement in accordance with 35 U.S.C. § 284;

C. A judgment and order finding that Microsoft's infringement was willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, flagrant, or characteristic of a pirate within the meaning of 35 U.S.C. § 284 and awarding to Plaintiff enhanced damages.

D. A judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Plaintiff reasonable attorneys' fees against Microsoft.

E. Any and all other relief to which Plaintiff may show themselves to be entitled.

JURY TRIAL DEMANDED

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Plaintiff OptiMorphix, Inc. requests a trial by jury of any issues so triable by right.

Dated: December 20, 2023

Respectfully submitted,

/s/ Daniel P. Hipskind

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