

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

**OPTIMORPHIX, INC.,**

*Plaintiff,*

v.

**SALESFORCE, INC.; SLACK TECHNOLOGIES,  
LLC; AND MULESOFT, LLC,**

*Defendants.*

**Civil Action No.** \_\_\_\_\_

**JURY TRIAL DEMANDED**

**COMPLAINT FOR PATENT INFRINGEMENT**

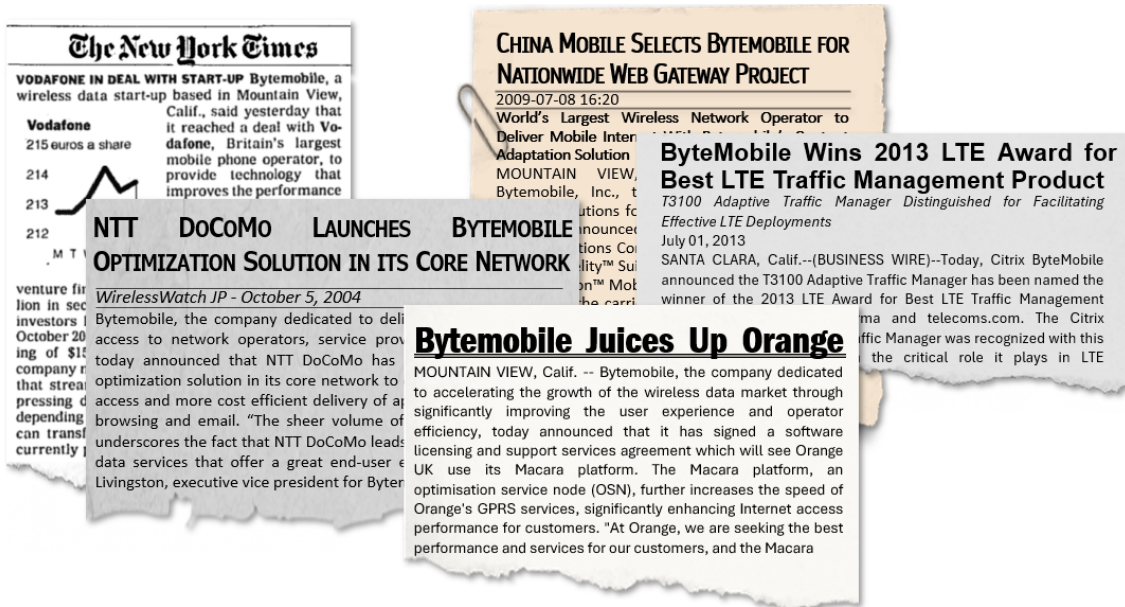
OptiMorphix, Inc. (“OptiMorphix” or “Plaintiff”) brings this action and makes the following allegations of patent infringement relating to U.S. Patent Nos.: 9,275,167 (the “167 Patent”); 9,292,618 (the “618 Patent”); 9,191,664 (the “664 Patent”); 7,987,285 (the “285 Patent”); 7,991,904 (the “904 Patent”); 8,230,105 (the “105 Patent”); and 8,521,901 (the “901 Patent”) (collectively, the “Patents-in-Suit”). Defendants Salesforce, Inc.; Slack Technologies, LLC; and MuleSoft, LLC (collectively, “Salesforce” or “Defendant”) infringe 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.”<sup>1</sup>



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 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.”).

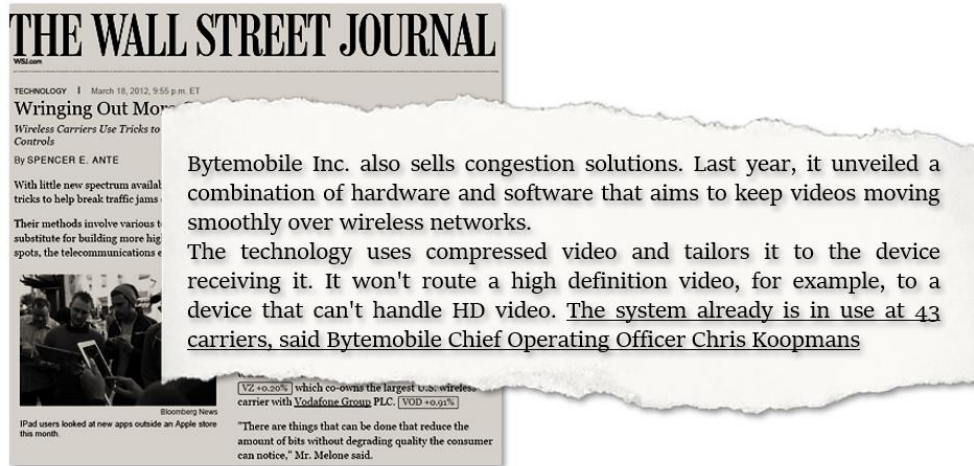
<sup>1</sup> *Bytemobile: Importance of Video and Web Optimizations*, TELECOM REVIEW at 58 (2011); see also *Bytemobile Secures Its 36th Video Optimisation Win for MNO Deployment*, TOTAL TELECOM & TOTAL TELECOM MAGAZINE (March 21, 2011).

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.



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.”<sup>2</sup>

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:

<sup>2</sup> CITRIX SYSTEMS, INC. 2012 ANNUAL REPORT at 33 (2013).

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

9. Defendant Salesforce, Inc. is a Delaware corporation with its principal place of business at 415 Mission Street, 3<sup>rd</sup> Floor, San Francisco, CA 94105. Defendant Salesforce, Inc. resides in this judicial District because it is incorporated under the laws of the State of Delaware. Salesforce, Inc. may be served with process through its registered agent for service of process in Delaware at The Corporation Trust Company, located at Corporation Trust Center, 1209 Orange Street, Wilmington, Delaware 19801.

10. Defendant Slack Technologies, LLC is a Delaware limited liability company with its principal place of business at 60 R801, North Dock, Dublin, Ireland. Slack Technologies, LLC resides in this judicial District because it was formed and exists under the laws of the State of Delaware. Slack Technologies, LLC may be served with process through its registered agent for service of process in Delaware at The Corporation Trust Company, located at Corporation Trust

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<sup>3</sup> See e.g., U.S. Patent Nos. 7,817,563; 9,384,204; 9,462,019; 11,343,551; and 11,394,620.

<sup>4</sup> See e.g., U.S. Patent Nos. 7,475,402; 7,574,710; 8,589,610; 8,635,185; and 11,200,240.

<sup>5</sup> See e.g., U.S. Patent Nos. 7,743,003; 8,458,327; 9,166,864; 9,665,617; and 10,733,376.

<sup>6</sup> See e.g., U.S. Patent Nos. 7,636,323; 8,448,214; 9,083,986; 9,357,269; and 10,091,528.

<sup>7</sup> See e.g., U.S. Patent Nos. 7,656,800; 7,930,734; 8,339,954; 9,350,822; and 10,284,484.

<sup>8</sup> See e.g., U.S. Patent Nos. 7,519,353; 8,315,179; 8,989,002; 10,511,533; and 11,233,740.

<sup>9</sup> See e.g., U.S. Patent Nos. 7,394,809; 7,408,932; 9,515,942; 9,923,821; and 10,644,961.

<sup>10</sup> See e.g., U.S. Patent Nos. 8,248,944; 9,071,841; 9,852,118; 10,452,748; and 11,055,47.

<sup>11</sup> See e.g., U.S. Patent Nos. 8,065,374; 8,429,302; 9,558,293; 9,800,638; and 10,491,645.

<sup>12</sup> See e.g., U.S. Patent Nos. 8,149,706; 8,930,559; 9,253,231; 10,003,697; and 10,193,942.

<sup>13</sup> See e.g., U.S. Patent Nos. 8,112,800; 8,509,071; 8,948,174; 9,407,726; and 11,228,631.

Center, 1209 Orange Street, Wilmington, Delaware 19801. Slack Technologies, LLC is a wholly-owned subsidiary of Defendant Salesforce, Inc.

11. Defendant MuleSoft, LLC is a Delaware limited liability company with its principal place of business at 415 Mission Street, 3<sup>rd</sup> Floor, San Francisco, CA 94105. MuleSoft, LLC resides in this judicial District because it was formed and exists under the laws of the State of Delaware. MuleSoft, LLC may be served with process through its registered agent for service of process in Delaware at The Corporation Trust Company, located at Corporation Trust Center, 1209 Orange Street, Wilmington, Delaware 19801. MuleSoft, LLC is a wholly-owned subsidiary of Defendant Salesforce, Inc.

#### **JURISDICTION AND VENUE**

12. 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).

13. This Court has personal jurisdiction over Salesforce in this action because Defendants have committed acts within the State of Delaware giving rise to this action and has established minimum contacts with this forum such that the exercise of jurisdiction over Defendants would not offend traditional notions of fair play and substantial justice. Salesforce, 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, Defendants actively direct their activities to customers located in the State of Delaware.

14. Venue is proper in this District under 28 U.S.C. §§ 1391(b)-(d) and 1400(b). Defendants are organized and existing under the laws of the State of Delaware.



15. This Court has personal jurisdiction over Salesforce, Inc.; Slack Technologies, LLC; and MuleSoft, LLC because each corporate entity is organized under the laws of the State of Delaware and each maintains a registered agent in Delaware.

### **THE ASSERTED PATENTS**

#### **U.S. PATENT NO. 9,275,167**

16. U.S. Patent No. 9,275,167 entitled, *Content Adaptation*, was filed on May 14, 2012. The '167 Patent claims priority to U.S. Provisional Patent Application No. 11/636,033, which was filed on December 8, 2006. The '167 Patent is subject to a 35 U.S.C. § 154(b) term extension of 607 days. A true and correct copy of the '167 Patent is attached hereto as Exhibit 1.

17. The '167 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 '167 Patent.

18. The '167 Patent is directed to solving the problem of efficient data management in a distributed storage system. In distributed storage systems, data is spread across multiple nodes, which can be geographically dispersed. This presents challenges in terms of ensuring data availability, redundancy, and efficient retrieval. The '167 Patent addresses these shortcomings in existing systems by providing methods and systems that can manage data in a distributed storage system more effectively.

19. The '167 Patent identifies the shortcomings of the prior art. The specification describes that traditional methods of data management in distributed storage systems often suffer from inefficiencies and limitations. For instance, they may not provide sufficient data redundancy, which can lead to data loss if a node fails. Additionally, they may not distribute data evenly across the nodes, leading to some nodes being overloaded while others are underutilized. Furthermore, data retrieval can be slow and inefficient in these systems.

20. The inventions taught by the '167 Patent solves discrete, technological problems associated with computer systems, specifically those related to data management in distributed storage systems. These are technical problems because they involve the design and operation of computer systems, including how data is stored, distributed, and retrieved in a network of computers.

21. The '167 Patent family has been cited by 539 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 '167 Patent family as relevant prior art:

- Cisco Systems, Inc.
- Microsoft Corporation
- International Business Machines Corp.
- Amazon.com, Inc.
- Alphabet Inc.
- Meta Platforms, Inc.
- Apple Inc.
- Broadcom Limited
- Xerox Corporation
- Samsung Electronics Co., Ltd.
- AT&T Inc.
- NEC Corporation
- Telefonaktiebolaget LM Ericsson
- Verizon Communications Inc.
- Qualcomm, Inc.
- Brunoco, Inc.
- Nokia Corporation
- LG Electronics Inc.
- Adobe Inc.
- Oracle Corporation
- Fujitsu Limited

**U.S. PATENT NO. 9,292,618**

22. U.S. Patent No. 9,292,618 entitled, *Content Adaptation*, was filed on May 14, 2012. The '618 Patent claims priority based on a division of U.S. Patent Application No. 11/636,033, which was filed on December 8, 2006 and issued as U.S. Patent No. 8,181,107. The '618 Patent



is subject to a 35 U.S.C. § 154(b) term extension of 745 days. A true and correct copy of the '618 Patent is attached hereto as Exhibit 2.

23. The '618 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 '618 Patent.

24. The '618 Patent teaches optimizing the flow of network packets between a user agent (e.g., web browser) on the mobile device, an optimization server, and content servers hosting web pages.

25. The '618 Patent identifies the shortcomings of the prior art related to mobile web browsing. The '618 Patent points out that conventional web browsing techniques designed for typical computers (e.g., laptops, personal computers, etc.) are not suitable for mobile devices due to their limited resources and diverse capabilities. Prior technological approaches did not effectively handle the challenges faced in mobile web browsing, such as slow load times, inadequate support for rich media content, and usability issues due to differences in screen sizes.

26. The '618 Patent teaches the use of an optimization server that interacts with mobile devices, content servers, and user agents to improve mobile web browsing. The optimization server adapts web content based on the device's capabilities and network conditions. It optimizes data transmission, dynamically adjusts webpage layouts for small screens, and compresses data to reduce download times. The server identifies the device and user agent properties through adaptation parameters and uses this information to tailor the content accordingly.

27. The inventions disclosed in the '618 Patent provide significant benefits and improvements to the function of the hardware in a computer network by enabling more efficient utilization of network resources and improving the browsing experience for mobile users. The optimization server reduces data transmission overhead, resulting in reduced network load and

faster download times. By adapting web content to suit the device and user agent capabilities, the patent enhances the usability of mobile web browsing and renders rich media content that was previously inaccessible on certain devices.

28. The '618 Patent family has been cited by 539 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies and Cisco Systems, Inc.

- Microsoft Corporation
- International Business Machines Corp.
- Amazon.com, Inc.
- eBay Inc.
- Alphabet Inc.
- Meta Platforms, Inc.
- Apple Inc.
- Broadcom Limited
- Blackberry Limited
- Xerox Corporation
- Samsung Electronics Co., Ltd.
- AT&T Inc.
- Verizon Communications Inc.
- Qualcomm, Inc.
- Nokia Corporation
- LG Electronics Inc.
- Adobe Inc.
- Oracle Corporation

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

29. U.S. Patent No. 9,191,664 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 3.

30. 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.

31. 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.

32. 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.

33. 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.

34. 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.

35. 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.

36. 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. 7,987,285**

37. 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 4.

38. 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.

39. 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.

40. 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.

41. 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.

42. 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.

43. 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.

44. 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. 7,991,904**

45. U.S. Patent No. 7,991,904 entitled, *Adaptive Bitrate Management for Streaming Media Over Packet Networks*, was filed on March 31, 2009. The ‘904 patent claims priority to U.S. Provisional Patent Application No. 60/948,917, which was filed on July 10, 2007. The ‘904 Patent is subject to a 35 U.S.C. § 154(b) term extension of 39 days. A true and correct copy of the ‘904 Patent is attached hereto as Exhibit 5.

46. The ‘904 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 ‘904 Patent.

47. The ‘904 Patent relates to adaptive bitrate management for streaming media over packet networks. The patent includes a comprehensive framework for adjusting the bitrate of streaming media sessions according to instantaneous network capacity, particularly in wireless packet networks.

48. The ‘904 Patent is directed to solving the problem of rate control for media streaming over packet networks, particularly in wireless environments. The challenge lies in delivering bandwidth-intensive content like multimedia over capacity-limited, shared links and quickly responding to changes in network conditions. The patent addresses issues such as network buffer overflow, packet loss, playback stall, and challenges in implementing bitrate management for pseudo-streaming.

49. The '904 Patent identifies the shortcomings of the prior art. Specifically, existing mechanisms for multimedia transport over packet networks, such as streaming protocols (e.g., RTP) and pseudo-streaming (e.g., TCP), had limitations. For example, TCP's acknowledgment packets are unaware of the media time being transferred, making it difficult to implement a bitrate management algorithm for pseudo-streaming. The prior art also lacked efficient solutions for challenges encountered in delivering multimedia sessions over packet wireless networks, such as sudden adjustments in transmission rate, packet loss, reduction of effective bandwidth, and limited capacity.

50. The inventions disclosed in the '904 Patent provide significant benefits and improvements to the function of the hardware in a computer network by enabling adaptive bitrate management for streaming media. This allows for more efficient utilization of network resources, minimizes issues like buffer overflow and packet loss, and enhances the user experience by optimizing the viewing and listening experience. The patent's approach to adaptive bitrate management can be applied to various media transports and provides a comprehensive framework for delivering streaming media over wireless packet networks, particularly in fluctuating network conditions.

51. The '904 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 '904 Patent family as relevant prior art:

- Oracle Corporation
- Microsoft Corporation
- Comcast Corporation
- Alphabet Inc.
- International Business Machines Corp.
- Hitachi, Ltd.
- Electronics And Telecommunications Research Institute
- EchoStar Technologies LLC

- Amazon Technologies, Inc.
- Samsung Electronics Co., Ltd.
- Qualcomm, Inc.
- CommScope, Inc.
- Intel Corporation
- Meta Platforms, Inc.
- Verizon Communications Inc.
- Broadcom Limited

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

52. U.S. Patent No. 8,230,105 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.

53. 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.

54. 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.

55. 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.

56. 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.

57. 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.

58. 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.

59. 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.

60. 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. 8,521,901**

61. U.S. Patent No. 8,521,901 entitled, *TCP Burst Avoidance*, was filed on December 22, 2008. The '901 Patent claims priority to Provisional Patent Application No. 61/017,275, filed on December 28, 2007. The '901 Patent is subject to a 35 U.S.C. § 154(b) term extension of 525 days. A true and correct copy of the '901 Patent is attached hereto as Exhibit 7.

62. The '901 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 '901 Patent.

63. The '901 Patent generally relates to methods and systems for minimizing packet bursts. The '901 Patent teaches implementing a packet scheduler layer between the network layer and the transport layer of a device, which smooths the delivery of TCP packets by delaying their delivery, thus addressing the challenges posed by the rapid and bursty transmission of data packets in network communications.

64. The '901 Patent is directed to solving the problem of TCP packet bursts in high-speed data networks, which can result from the buffering of TCP acknowledgment packets. These bursts can cause packet loss and inefficient use network bandwidth.

65. The '901 Patent identifies the shortcomings of the prior art. Specifically, the specification describes that the prior art does not adequately address the issues of packet loss and inefficient bandwidth utilization resulting from the bursty nature of TCP packet transmission in data networks. The prior technologies do not effectively manage the sudden bursts of TCP acknowledgment packets, which can be caused by buffering, leading to suboptimal utilization of available bandwidth and undesirable packet loss.

66. The '901 Patent teaches the use of a packet scheduler layer, which is positioned between the network and transport layers of a device. This layer receives, smoothens (by delaying), and sends TCP packets to ensure that the delivery of these packets is managed in a manner that mitigates the issues of packet bursts. The packet scheduler layer manages both incoming and outgoing packets, ensuring that the transmission of these packets is smoothed out, thereby minimizing packet loss and ensuring more efficient use of available bandwidth. This approach provides benefits that differ from conventional methods by ensuring that TCP packet transmission is managed in a way that minimizes packet loss and ensures efficient bandwidth



utilization, thereby addressing the specific challenges posed by TCP packet bursts in high-speed data networks.

67. The invention taught by the '901 Patent solves discrete, technological problems associated with computer systems; specifically, it addresses the issues of packet loss and inefficient bandwidth utilization in high-speed data networks by managing the transmission of TCP packets in a manner that smoothens their delivery, thereby ensuring that the available bandwidth is utilized efficiently, and that packet loss is minimized.

68. The '901 Patent family has been cited by 21 United States and international patents and patent applications as relevant prior art. Specifically, patents issued to the following companies have cited the '901 Patent family as relevant prior art:

- Lenovo Group Limited
- Telefonaktiebolaget Lm Ericsson
- Qualcomm, Inc.
- Nippon Telegraph & Telephone Corp.
- Hitachi, Ltd.
- Cisco Systems, Inc.
- Akamai Technologies, Inc.
- Huawei Technologies Co., Ltd.

**COUNT I**  
**INFRINGEMENT OF U.S. PATENT NO. 9,275,167**

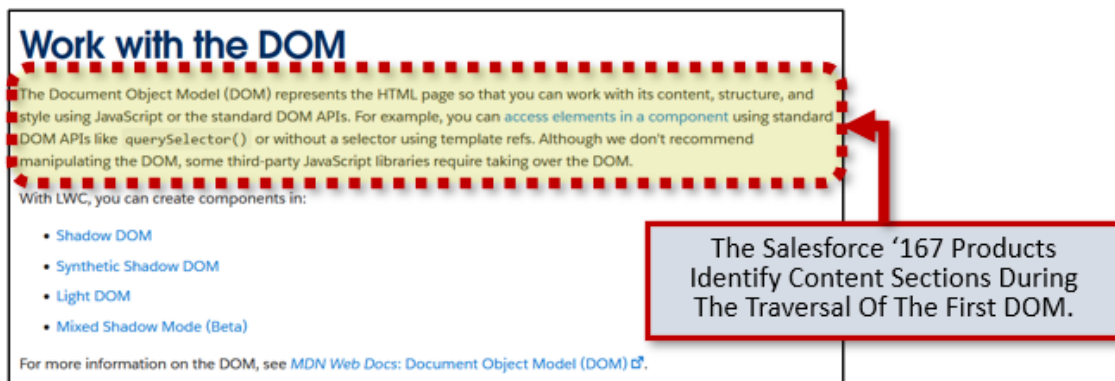
69. Plaintiff references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

70. Salesforce designs, makes, uses, sells, and/or offers for sale in the United States products for rendering a webpage.

71. Salesforce designs, makes, sells, offers to sell, imports, and/or uses the following products: the Salesforce Lightning for the Salesforce Platform (including Salesforce Lightning Web Components) (collectively, the "Salesforce '167 Product(s)").

72. One or more Salesforce subsidiaries and/or affiliates use the Salesforce ‘167 Products in regular business operations.

73. The Salesforce ‘167 Products carry out the step of identifying content sections during a traversal of a first Document Object Model (DOM) representing a webpage. Specifically, the Salesforce ‘167 Products identify content sections during the traversal of the first DOM. Salesforce Lightning Web Components (LWC) using shadow and light DOM approaches for identifying and working with DOM elements. Salesforce LWC documentation explains how components like <template> can be used for DOM manipulation, including identifying specific elements during a traversal. For example, the `querySelector()` and `querySelectorAll()` methods are standard DOM APIs used in LWC for locating and interacting with DOM elements.



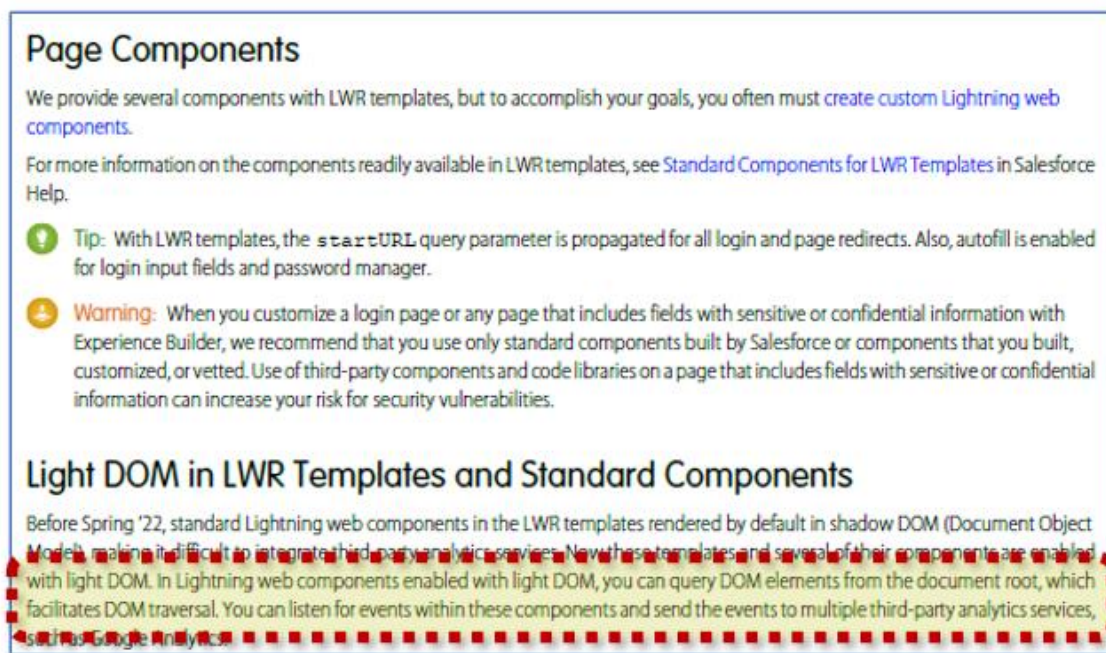
*Work with the DOM*, LIGHTNING WEB COMPONENTS DEVELOPER GUIDE, available at: <https://developer.salesforce.com/docs/platform/lwc/guide/create-dom-intro.html> (last visited October 2024) (annotation added).

74. Further, the Salesforce ‘167 Products perform a systematic visitation of the nodes in the DOM tree to identify particular content sections, such as headers, paragraphs, images, or other elements.

75. The Salesforce ‘167 Products transform the initial Document Object Model (DOM) to a subsequent DOM, guided by an adaptation criterion detailing characteristics of a mobile

device. The transformation of the DOM by the Salesforce '167 Products involves identifying and maintaining nodes associated with a tab box in the revised DOM.

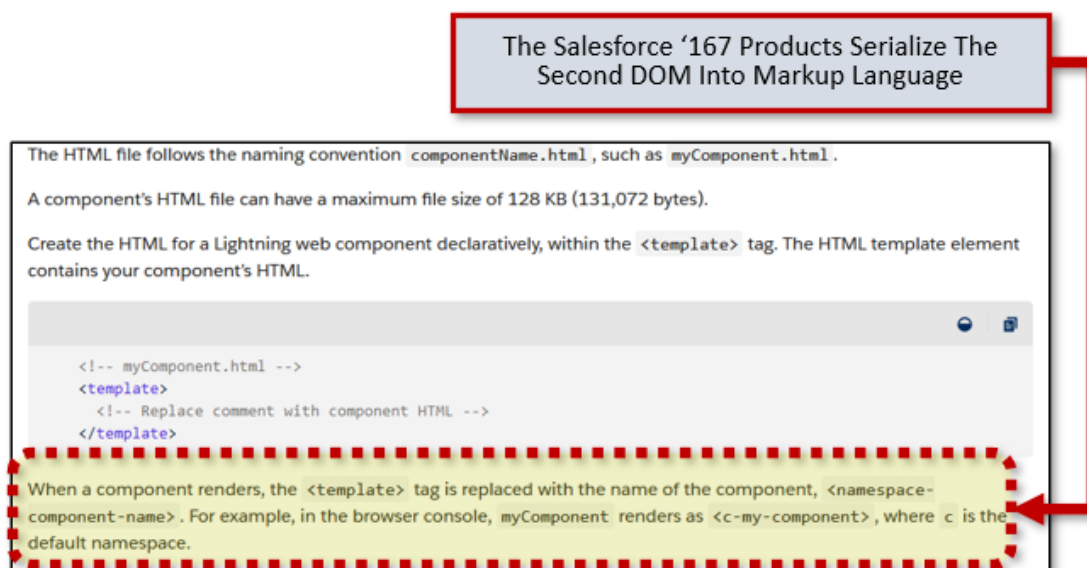
76. The Salesforce '167 Products perform the step wherein the first DOM is transformed into a second DOM based on an adaptation parameter that describes features of a mobile device, wherein the transforming includes detecting a tab box and preserving nodes corresponding to the tab box for the second DOM. Specifically, the Salesforce '167 Products transform the first DOM into a second DOM. The Salesforce '167 Products use templates that render in the shadow DOM and facilitate DOM transformations. Light DOM performs DOM traversal and programmatic access to DOM elements, allowing for the transformation of a first DOM structure to a second.



*LWR Sites for Experience Cloud Version 62.0*, SALESFORCE DOCUMENTATION (September 20, 2024) (emphasis added).

77. The Salesforce '167 Products serialize the second DOM by transforming it into modified source code using markup language and then preparing the second DOM for further processing and adaptation.

78. The Salesforce '167 Products perform the method of serializing the second DOM by converting the second DOM into adapted markup language source code. Specifically, the Salesforce '167 Products serialize the second DOM into markup language source code. For example, with Lightning Web Components, serialization occurs when components render and convert the second DOM structure into markup for the adapted page. The `<template>` element in LWC is replaced by actual component code, such as `<c-my-component>` during this serialization.



*Component HTML File*, LIGHTNING WEB COMPONENTS DEVELOPER GUIDE, available at: <https://developer.salesforce.com/docs/platform/lwc/guide/create-components-html-file.html> (last visited October 2024) (annotation added).

79. The Salesforce '167 Products use the transformed markup language source code to generate an adapted version of the original webpage. This newly created webpage (generated by Salesforce '167 Products) is designed for compatibility with characteristics of a mobile device.

80. The Salesforce '167 Products perform the method of constructing an adapted webpage from the markup language source code, wherein the adapted webpage is provided to the mobile device for downloading. Specifically, the Salesforce '167 Products construct the adapted webpage and provide it for mobile device downloading. The Salesforce '167 Products use LWR

templates to construct webpages dynamically, transforming the second DOM into the final adapted webpage served to mobile devices. This transformation includes preserving nodes such as tab boxes and ensuring efficient rendering for mobile devices.

The screenshot shows a document with the following text:

For enhanced LWR sites, you can assign separate values for the desktop, mobile, and tablet versions of certain properties in custom Lightning web components. With screen-responsive properties, the component uses the correct property value based on the end user's screen size.

To make your custom Lightning web component screen responsive, follow these general steps.

**1. Declare a Property as Screen-Size Responsive**

In the component's configuration file, `componentName.js-meta.xml`, declare an integer, string, or both properties as screen-size responsive by using the `screenResponsive` attribute with a value of `true`, and the `exposedTo` attribute with a value of `css`.

For example, here's the code for the maximum height of a custom button component.

```
<targetConfig targets="lightningCommunity_Default">  
  <property name="test" type="String" default="Button"/>  
  <property name="url" type="String"/>  
  <property name="maxHeight" type="Integer" min="0" max="20" default="0"  
  screenResponsive="true" exposedTo="css"/></targetConfig>
```

Here's the code for the alignment of a child component on a custom banner component.

```
<targetConfig targets="lightningCommunity_Default">  
  <property type="Color" name="borderColor" default="" />  
  <property name="url" type="String"/>  
  <property type="String" name="bannerAlignment" default="center" screenResponsive="true"  
  exposedTo="css"/>  
</targetConfig>
```

An annotation box with a red border and a red arrow points to the `screenResponsive="true" exposedTo="css"` attribute in the first code block. The text in the annotation box reads: "The Salesforce '167 Products Construct An Adapted Webpage From The Markup Language Source Code".

*LWR Sites for Experience Cloud Version 62.0*, SALESFORCE DOCUMENTATION at 25 (September 20, 2024) (emphasis added) (annotation added).

81. The resulting adapted webpage is made available by the Salesforce '167 Products for downloading by a mobile device.

82. Salesforce has directly infringed and continues to directly infringe the '167 Patent by, among other things, making, using, offering for sale, and/or selling technology for rendering a webpage, including but not limited to the Salesforce '167 Products.

83. The Salesforce '167 Products are available to businesses and individuals throughout the United States.

84. The Salesforce '167 Products are provided to businesses and individuals located in this District.

85. By making, using, testing, offering for sale, and/or selling products and services comprising a method of rendering a webpage, including but not limited to the Salesforce '167 Products, Salesforce has injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the '167 Patent, including at least claim 14 pursuant to 35 U.S.C. § 271(a).

86. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '167 Patent.

87. As a result of Salesforce's infringement of the '167 Patent, Plaintiff has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Salesforce's infringement, but in no event less than a reasonable royalty for the use made of the invention by Salesforce together with interest and costs as fixed by the Court.

**COUNT II**  
**INFRINGEMENT OF U.S. PATENT NO. 9,292,618**

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

89. Salesforce designs, makes, uses, sells, and/or offers for sale in the United States products for adapting a webpage for a mobile device.

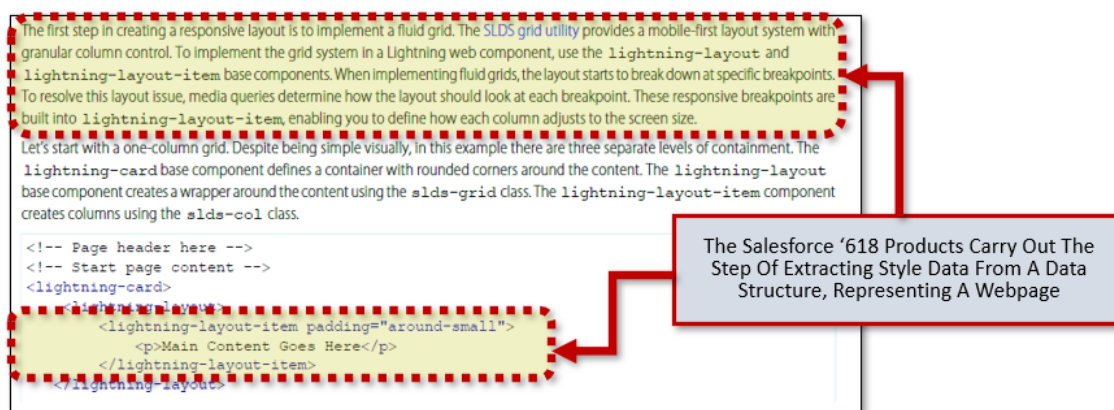
90. Salesforce designs, makes, sells, offers to sell, imports, and/or uses the following products: Salesforce Lightning for the Salesforce Platform (including Salesforce Lightning Web Components) (collectively, the "Salesforce '618 Product(s)").

91. One or more Salesforce subsidiaries and/or affiliates use the Salesforce '618 Products in regular business operations.

92. The Salesforce '618 Products carry out the step of extracting style data from a data structure representing a webpage, wherein the style data corresponds to the style of content on the webpage, and wherein the extracted style data includes a subset of style properties that are defined



as being essential style data. Specifically, the Salesforce ‘618 Products extract style data that includes essential style properties for the webpage. Further, Salesforce Lightning components use the SLDS grid utility for layout control, which involves extracting layout and style information for different screen sizes.



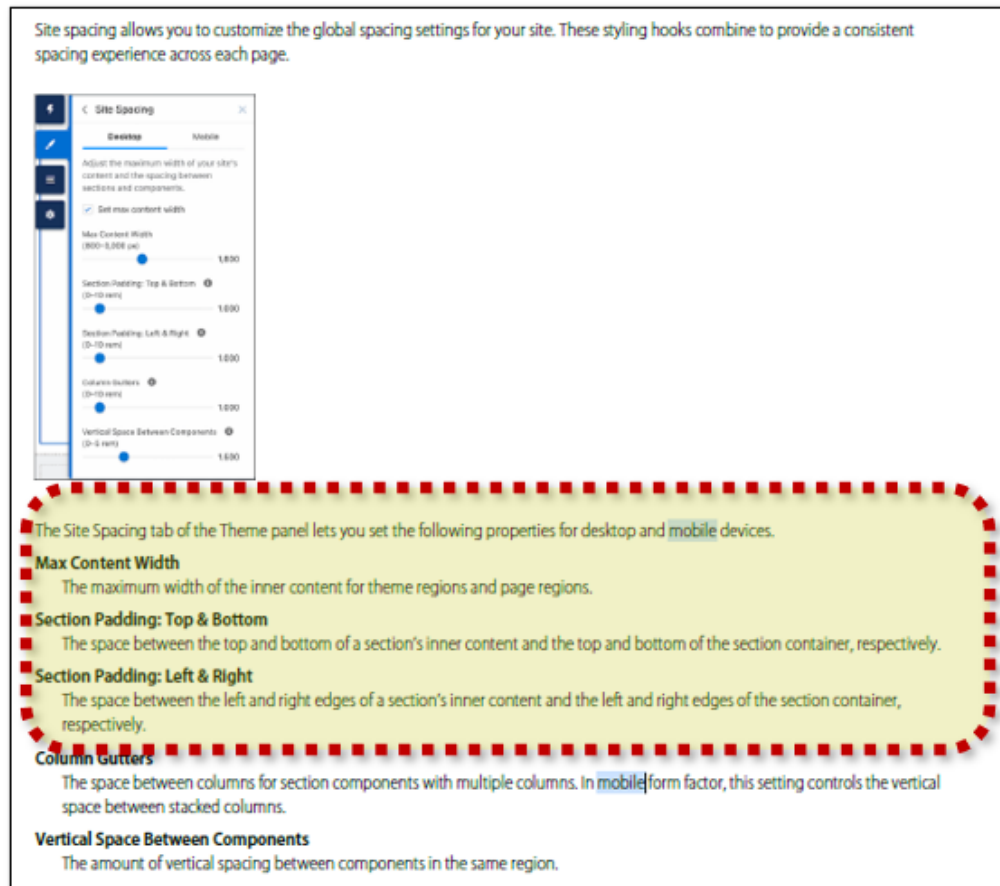
*Mobile and Offline Developer Guide Version 62.0*, SALESFORCE DOCUMENTATION AT 12 (October 18, 2024) (annotation added).

93. The Salesforce ‘618 Products obtain style data from a data structure that represents a webpage. Specifically, this involves the Salesforce ‘618 Products obtaining style information corresponding to the content on the webpage, including a particular subset of style properties defined as being essential.

94. The Salesforce ‘618 Products contain functionality for disregarding any layout-specific style data that is part of the subset of style properties defined as essential style data, which was extracted from the data structure.

95. The Salesforce ‘618 Products perform the step wherein, from the subset of style properties defined as being essential style data, layout-specific style data extracted from the data structure is discarded. Specifically, the Salesforce ‘618 Products discard layout-specific style data from the essential style properties. Unused properties are filtered out and layout-specific

properties are adjusted based on device types. For example, the “--dpx” styling hooks adapt according to different screen resolutions.

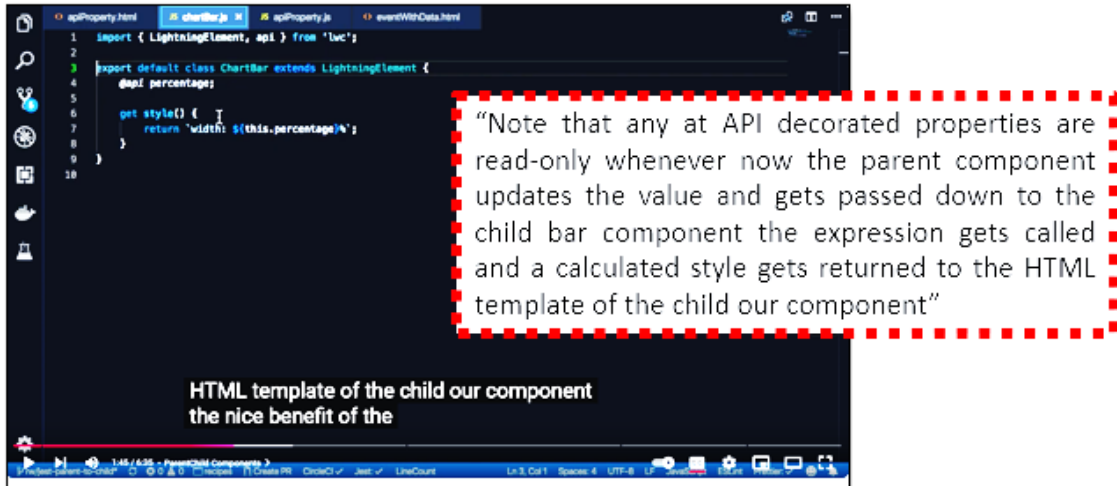


*LWR Sites for Experience Cloud Version 62.0*, SALESFORCE DOCUMENTATION at 41 (September 20, 2024) (emphasis added).

96. The Salesforce ‘618 Products analyze the essential style data of a parent node in comparison to the essential style data of its one or more child nodes, evaluating any similarities in the essential style data between these elements.

97. The Salesforce ‘618 Products compare a parent node’s essential style data with the essential style data of one or more child nodes. Specifically, the Salesforce ‘618 Products compare the essential style data of parent and child nodes. Salesforce documentation outlines how components use parent-child relationships within the DOM structure to inherit or override style

data from their parent nodes, where child nodes compare their styles against those of the parent nodes for responsiveness.



*Lightning Web Components: Parent-Child Components*, SALESFORCE DEVELOPERS YOUTUBE CHANNEL (January 24, 2019), available at: <https://www.youtube.com/watch?v=s-EbUAiccn4> (quotation excerpted above).

98. The Salesforce ‘618 Products encapsule any nodes with identical essential style data within an enclosure tag, this action being driven by the comparison results of the essential style data between the parent node and its child nodes.

99. After identifying nodes with matching essential style data, the Salesforce ‘618 Products encapsulate them within a common enclosure, thereby grouping elements with similar styling. This encapsulation by the Salesforce ‘618 Products enables more efficient rendering and can allow for optimizations like CSS class reuse.

100. The Salesforce ‘618 Products contain functionality for rebuilding a new version of the webpage intended for mobile device delivery, this reconstruction process relies on the essential style data encapsulated by the enclosure tags.

101. The Salesforce ‘618 Products wrap one or more nodes that share the same essential style data into an enclosure tag based on the comparison. Specifically, the Salesforce ‘618

Products wrap nodes with matching essential style data into an enclosure tag. In the Lightning Web Component guidelines, components that share similar styles are often wrapped using standard enclosure elements like lightning-card, and other enclosure tags that group content sharing similar styles.

With shadow DOM, CSS styles defined in a **parent** component don't apply to a child component. Contrastingly, light DOM enables styling from the root document to target a DOM node and style it.

The styles on the following native shadow component cascades into the child component's light DOM. In this case, the light DOM component is within the native shadow component and is mounted at the nearest native shadow root level, which is scoped locally within that entire shadow root and impact any light DOM components inside of that root.

```

<template>
  <my-app>
    #shadow-root
    | <style> p { color: green; }</style>
    | <p>This is a paragraph in shadow DOM</p>
    | <my-container>
    | <p>This is a paragraph in light DOM</p>
    | </my-container>
  </my-app>
</template>

```

Similarly, the styles on a child component rendered in light DOM are applied to its parent components until a shadow boundary is encountered when using native shadow DOM.

The Salesforce '618 Products Wrap Nodes With Matching Essential Style Data

*Light DOM*, LIGHTNING WEB COMPONENTS DEVELOPER GUIDE, available at: <https://developer.salesforce.com/docs/platform/lwc/guide/create-light-dom.html> (last visited October 2024) (annotation added).

102. The Salesforce '618 Products perform the method of reconstructing an adapted webpage to be sent to a mobile device, wherein the reconstruction is based on the essential style data provided by the enclosure tag. Specifically, the Salesforce '618 Products reconstruct the adapted webpage using the essential style data from the enclosure tag. Salesforce provides functionality for reconstructing webpages dynamically based on essential style data extracted and adjusted for mobile devices.

103. Salesforce has directly infringed and continues to directly infringe the '618 Patent by, among other things, making, using, offering for sale, and/or selling technology for adapting a webpage, including but not limited to the Salesforce '618 Products.

104. The Salesforce '618 Products are available to businesses and individuals throughout the United States.

105. The Salesforce '618 Products are provided to businesses and individuals located in this District.

106. By making, using, testing, offering for sale, and/or selling products and services for adapting a webpage, including but not limited to the Salesforce '618 Products, Salesforce has injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the '618 Patent, including at least claim 7 pursuant to 35 U.S.C. § 271(a).

107. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the '618 Patent.

108. As a result of Salesforce's infringement of the '618 Patent, Plaintiff has suffered monetary damages, and seeks recovery in an amount adequate to compensate for Salesforce's infringement, but in no event less than a reasonable royalty for the use made of the invention by Salesforce together with interest and costs as fixed by the Court.

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

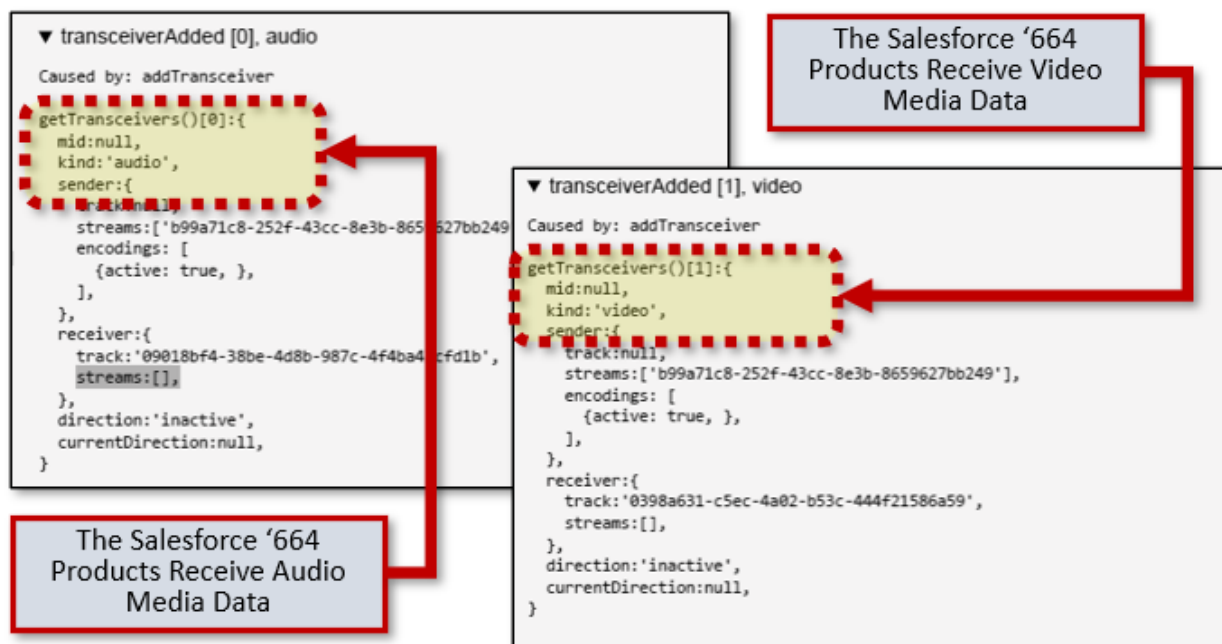
109. Plaintiff references and incorporates by reference the preceding paragraphs of this Complaint as if fully set forth herein.

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

111. Salesforce designs, makes, sells, offers to sell, imports, and/or uses the following products: the Slack Communication Platform (including Slack Huddles) (collectively, the “Salesforce ‘664 Product(s)”).

112. One or more Salesforce subsidiaries and/or affiliates use the Salesforce ‘664 Products in regular business operations.

113. The Salesforce ‘664 Products perform the step of receiving media data that includes audio media data and video media data. Specifically, the Salesforce ‘664 Products show the receiving of media data that is comprised of audio (kind: ‘audio’) and video (kind: ‘video’) data.



SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

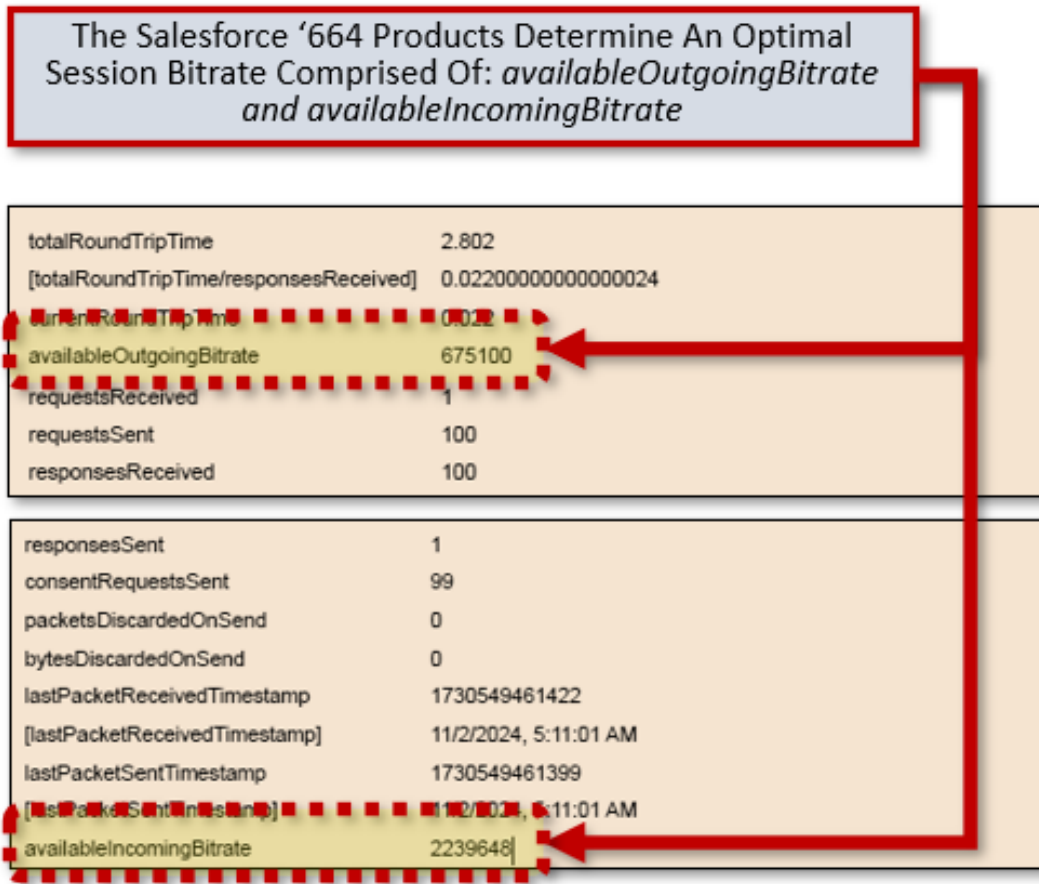
114. The Salesforce ‘664 Products receive feedback information from a terminal including Jitter, PacketLost, and RoundTripTime data. The receipt of this feedback information by the Salesforce ‘664 Products is shown below.



SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

115. The Salesforce '664 Products estimate network conditions of the media network using this feedback information (Jitter, PacketLost, and, RoundTripTime). Specifically, the Salesforce '664 Products generate an availableOutgoingBitrate and availableIncomingBitrate value based on the network conditions.





SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

116. The Salesforce '664 Products determine an optimal audio bitrate and an optimal video bitrate using the estimated one or more network conditions. The Salesforce '664 Products generate a target bitrate for audio and video data.



The Salesforce '664 Products Determine An Optimal Audio And Video Bitrate Using The Estimated Network Conditions

headerBytesSent	260400
[headerBytesSent_in_bits/s]	8008.328516241991
retransmittedBytesSent	0
[retransmittedBytesSent_in_bits/s]	0
targetBitrate	32000
totalPacketSendDelay	0.031456
[totalPacketSendDelay/packetsSent_in_ms]	0
nackCount	0
active	true

mediaSourceId	SV21
mid	1
retransmittedPacketsSent	23
[retransmittedPacketsSent/s]	0
headerBytesSent	378180
[headerBytesSent_in_bits/s]	12108.59271655789
retransmittedBytesSent	21972
[retransmittedBytesSent_in_bits/s]	0
targetBitrate	500000
framesEncoded	6270

SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

117. The Salesforce '664 Products encode the audio data using the optimal audio bitrate.

The Salesforce '664 Products use the Opus audio codec for encoding audio with a targetBitrate of 32000.

kind	audio
transportId	T01
codeclId	COT01_111_minptime=10;useinbandfec=1
[codec]	opus (111, minptime=10;useinbandfec=1)
packetsSent	13020
[packetsSent/s]	50.05205322651244
bytesSent	468747
[bytesSent_in_bits/s]	14414.991329235583
mediaSourceId	SA20
mid	0
retransmittedPacketsSent	0
[retransmittedPacketsSent/s]	0
headerBytesSent	260400
[headerBytesSent_in_bits/s]	8008.328516241991
retransmittedBytesSent	0
[retransmittedBytesSent_in_bits/s]	0
targetBitrate	32000

The Sales '664 Products Encode The Audio Data Using The Optimal Audio Bitrate

SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

118. The Salesforce '664 Products encode video data using the optimal video bitrate. The Salesforce '664 Products use the VP9 video codec for encoding video with a targetBitrate of 500000.

[codec]	VP9 (98, profile-id=0)
packetsSent	15575
[packetsSent/s]	63.06558706540568
bytesSent	14760018
[bytesSent_in_bits/s]	490285.88842136716
mediaSourceId	SV21
mid	1
retransmittedPacketsSent	23
[retransmittedPacketsSent/s]	0
headerBytesSent	378180
[headerBytesSent_in_bits/s]	12108.59271655789
retransmittedBytesSent	21972
[retransmittedBytesSent_in_bits/s]	0
targetBitrate	500000
framesEncoded	6270
[framesEncoded/s]	24.024985548725972

The Sales '664 Products Encode The Video Data Using The Optimal Video Bitrate

SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

119. The Salesforce ‘664 Products make the encoded audio media data and the encoded video media data available for dispatch to a terminal.

120. The Salesforce ‘664 Products perform the step of providing the encoded audio media data and the encoded video media data for transmittal to a terminal. This final step involves packaging the encoded audio and video data into a suitable transmission format and sending it to the receiving terminal, 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.

121. Salesforce 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 Salesforce ‘664 Products.

122. The Salesforce ‘664 Products are available to businesses and individuals throughout the United States.

123. The Salesforce ‘664 Products are provided to businesses and individuals located in this District.

124. 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 Salesforce ‘664 Products, Salesforce has injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the ‘664 Patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

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

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

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

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

128. Salesforce 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.

129. Salesforce designs, makes, sells, offers to sell, imports, and/or uses the following products: the Slack Communication Platform (including Slack Huddles) (collectively, the “Salesforce ‘285 Product(s)”).

130. One or more Salesforce subsidiaries and/or affiliates use the Salesforce ‘285 Products in regular business operations.

131. The Salesforce ‘285 Products receive a receiver report from a client during the WebRTC session. Specifically, the transceivers for both audio and video streams are added during a video conferencing session, showing a “receiver” with attributes such as ‘track’ and ‘streams’ (e.g., ”receiver”: {“track”: “09018bf4-38be-4d8b-987c-4f4ba43cfd1b”, “streams”}). The presence of a “receiver” object in the transceivers is consistent with WebRTC’s capability to receive RTCP receiver reports.

```

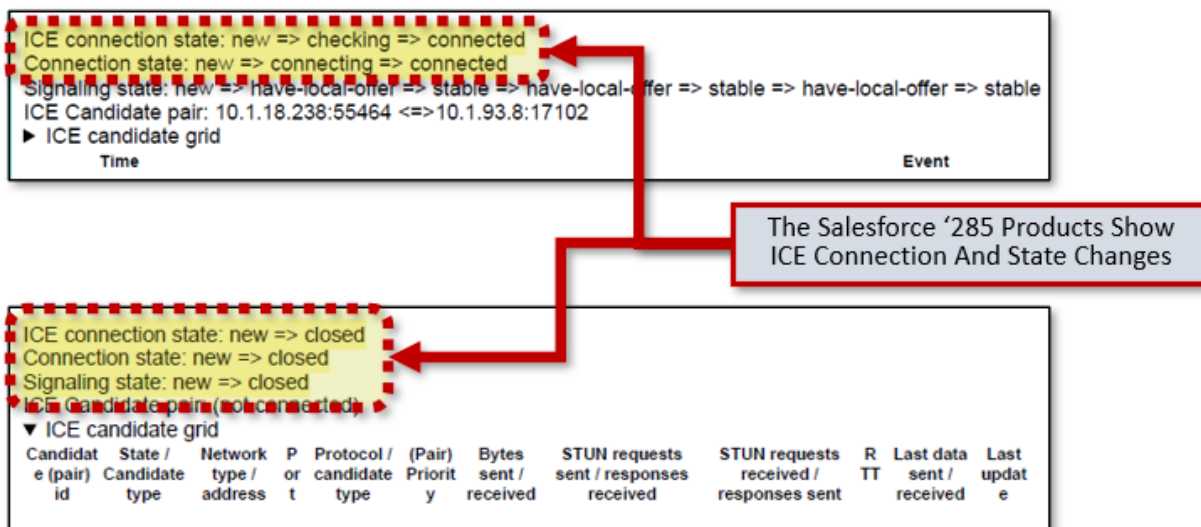
▼ transceiverAdded [0], audio
  Caused by: addTransceiver
  getTransceivers()[0]:{
    mid:null,
    kind:'audio',
    sender:{
      track:null,
      streams:['b99a71c8-252f-43cc-8e3b-8659627bb249'],
      encodings: [
        {active: true, },
      ],
    },
    receiver:{
      track:'09018bf4-38be-4d8b-987c-4f4ba43cfd1b',
      streams:[],
    },
    direction:'inactive',
    currentDirection:null,
  }
  
```

```

▼ transceiverAdded [1], video
  Caused by: addTransceiver
  getTransceivers()[1]:{
    mid:null,
    kind:'video',
    sender:{
      track:null,
      streams:['b99a71c8-252f-43cc-8e3b-8659627bb249'],
      encodings: [
        {active: true, },
      ],
    },
    receiver:{
      track:'0398a631-c5ec-4a02-b53c-444f21586a59',
      streams:[],
    },
    direction:'inactive',
    currentDirection:null,
  }
  
```

SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

132. The Salesforce ‘285 Products show multiple state changes in the Interactive Connectivity Establishment (ICE) process, progressing from “new” to “connected” and later to “closed.” Each transition signals the progression of the WebRTC session, aligning with the expected flow of RTCP reports that track and control media stream quality during active connections.



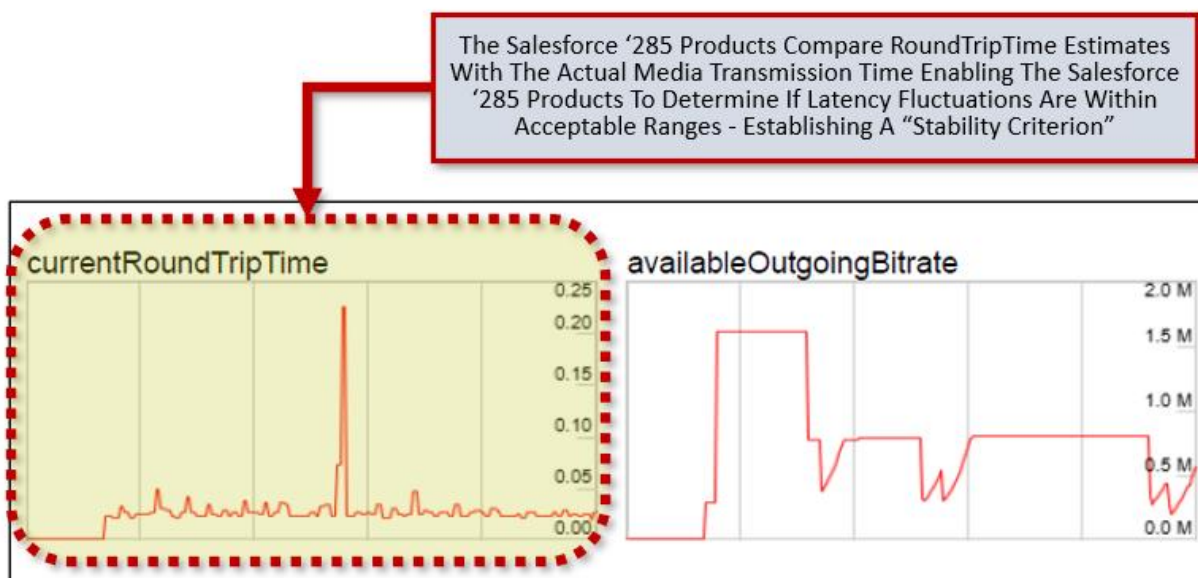
SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

133. The Salesforce ‘285 Products estimate network conditions using receiver reports during a video conferencing session. Receiver reports used by the Salesforce ‘285 Products provide feedback on media quality, specifically for metrics such as packet loss, delay, and jitter, which the Salesforce ‘285 Products use to gauge network conditions and adjust media transmission as necessary. For example, the Salesforce ‘285 Products generate and utilize data such as jitter, packetsLost, and roundTripTime. The below documentation shows how the Salesforce ‘285 Products track the roundTripTime, Jitter, and PacketsLost.





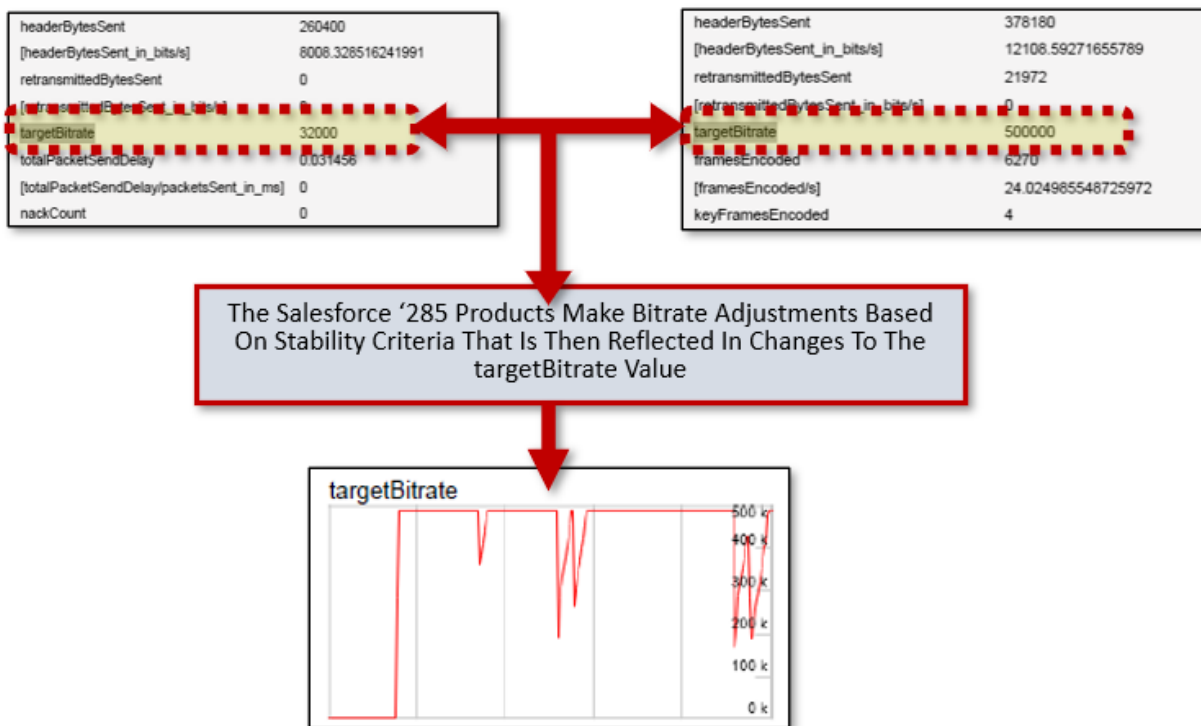
135. The Salesforce '285 Products determine an optimal session bitrate by estimating network conditions and applying stability criteria. This process includes comparing media time in transit with round-trip time, evaluating received bitrate against current session bitrate, assessing media network stability, and adjusting the session bitrate accordingly. For example, the Salesforce '285 Products use round-trip time (RTT) as a measure for network latency. RTT values are logged across the session, showing fluctuations that inform the Salesforce '285 Products about network delays.



SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

136. The Salesforce '285 Products apply network feedback from receiver reports to adjust the session's bitrate. For example, targetBitrate values adjust alongside changes in RTT and packet loss, showing the optimal session bitrate determined by the Salesforce '285 Products is set in response to network conditions.





SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

137. The Salesforce '285 Products output an adjusted bitrate based on network stability. Specifically, "availableOutgoingBitrate" is based on network condition estimations. The Salesforce '285 Products use roundtrip time, packet loss, and current bitrate data to determine an optimal session bitrate that reflects network conditions.



SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

138. The Salesforce ‘285 Products maintain or incrementally increase the current bitrate when a media network is stable. Specifically, the Salesforce ‘285 Products perform adaptive bitrate adjustment, wherein stable network conditions allow for a steady or slightly increasing bitrate to optimize media quality. The Salesforce ‘285 Products maintain or increase incrementally the current bitrate when packet loss and jitter metrics remain low (the media network is stable). For example, the Salesforce ‘285 Products will set or incrementally adjust the `availableOutgoingBitrate` when packet loss is minimal.

139. The Salesforce ‘285 Products will maintain or incrementally increase the bitrate of a session where round-trip time (RTT) measurements are stable. For example, where “roundTripTime” is stable at 0.03 seconds, with no significant spikes (indicators the network is stable), the Salesforce ‘285 Products will maintain a consistent bitrate for sending and receiving media data.

140. Salesforce 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 Salesforce ‘285 Products.

141. The Salesforce ‘285 Products are available to businesses and individuals throughout the United States.

142. The Salesforce ‘285 Products are provided to businesses and individuals located in this District.

143. 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 Salesforce ‘285 Products, Salesforce has injured Plaintiff

and is liable to Plaintiff for directly infringing one or more claims of the '285 Patent, including at least claim 2 pursuant to 35 U.S.C. § 271(a).

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

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

**COUNT V**  
**INFRINGEMENT OF U.S. PATENT NO. 7,991,904**

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

147. Salesforce 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.

148. Salesforce designs, makes, sells, offers to sell, imports, and/or uses the following products: the Slack Communication Platform (including Slack Huddles) (collectively, the "Salesforce '904 Product(s)").

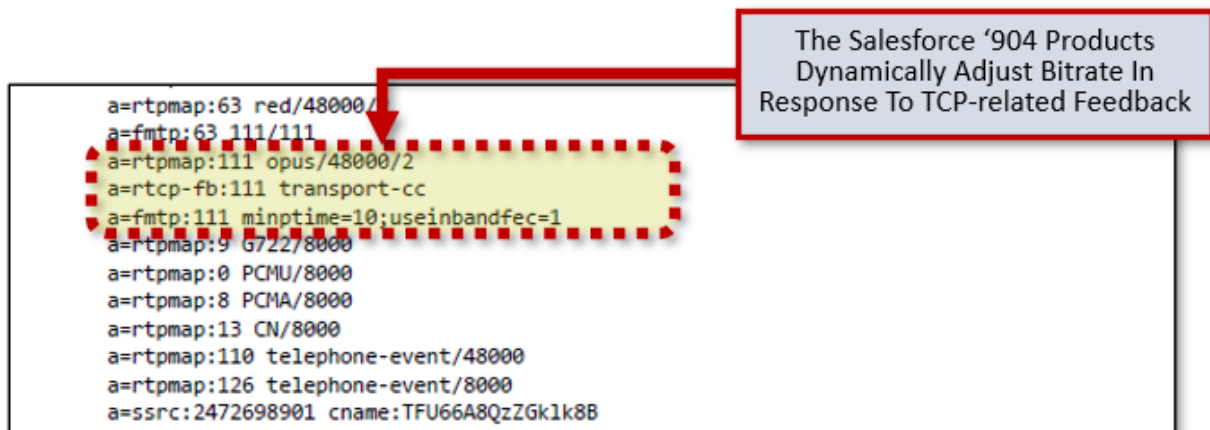
149. One or more Salesforce subsidiaries and/or affiliates use the Salesforce '904 Products in regular business operations.

150. The Salesforce '904 Products acquire the best-suited session bitrate guided by the feedback from a TCP acknowledgement.

151. The Salesforce '904 Products divide the acquired session bitrate between audio and video channels to yield ideal bitrates for both, where the division is partially based on giving a higher weight to either the audio or video stream.

152. The Salesforce '904 Products utilize specified codecs to compress audio and video streams in accordance with the determined optimal audio and video bitrates.

153. The Salesforce '904 Products receive an optimal session bitrate based on information provided by a transport control protocol (TCP) acknowledgement. Specifically, the Salesforce '904 Products make a software defined parameter (SDP) offer that includes an explicit transport control protocol feedback mechanism. This appears repeatedly in the session description for both audio and video streams which show the Salesforce '904 Products use a TCP acknowledgment for bitrate optimization. The Salesforce '904 Products use rtp-fb for transport-cc (transport congestion control) on audio and video streams. This feedback mechanism allows for the Salesforce '904 Product to adjust session bitrates dynamically based on RTCP feedback, which includes acknowledgments of packet delivery status.

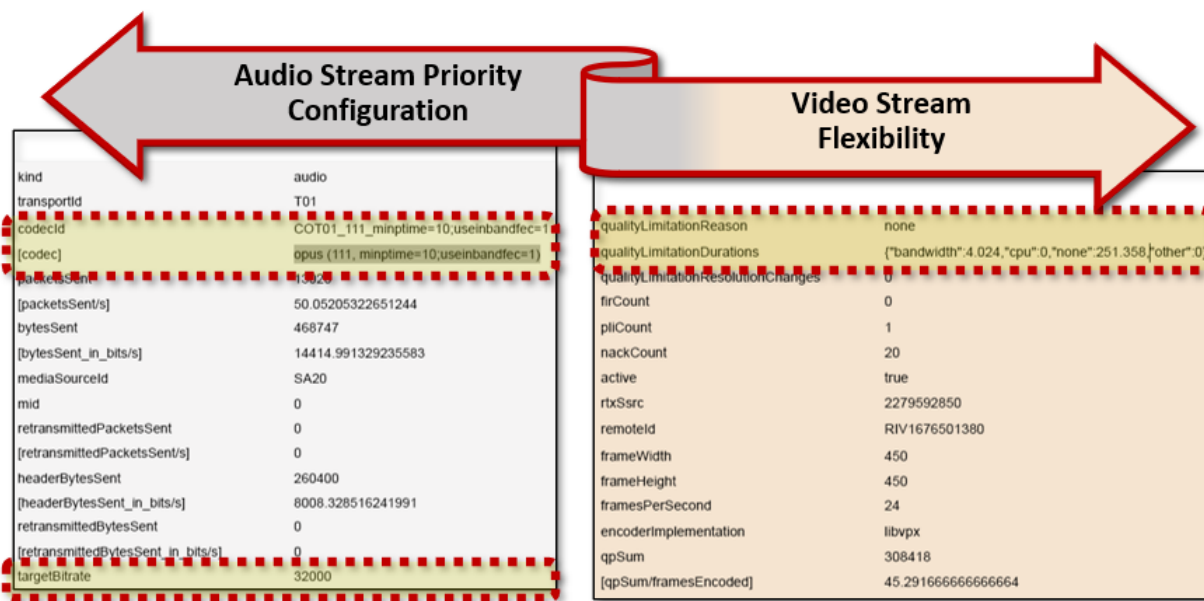


SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

154. The Salesforce '904 Products allocate a session bitrate dynamically between audio and video media, prioritizing one over the other when necessary. Specifically, the audio stream

maintains a consistent bitrate allocation and higher quality of service parameters than the video stream. The video stream has a variable bitrate allocation and adaptive quality.

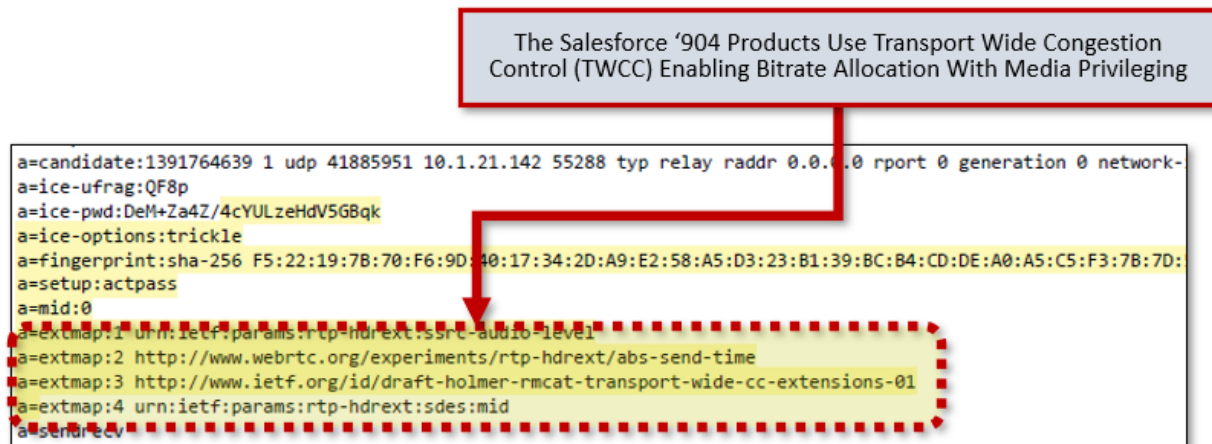
155. The audio settings of the Salesforce ‘904 Products (opus/48000/2 for audio with transport congestion control feedback) support lower latency audio transmission, which is essential when audio is prioritized. Video encoding, on the other hand, includes frame rate and resolution constraints, enabling downscaling or bitrate reduction when video quality is secondary to audio quality. This selective allocation of bitrate for audio (*e.g.*, using `minptime=10; useinbandfec=1` for error resilience in audio) shows the Salesforce ‘904 Products are adjusting allocation between audio and video data.



SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

156. The Salesforce ‘904 Products perform changing bandwidth allocation patterns between video and audio data. The stable, lower bitrate allocation for audio versus the more variable video bitrate show the Salesforce ‘904 Products prioritize either the audio media or the video media over the other.

157. The Salesforce '904 Products perform Transport Wide Congestion Control (TWCC) functionality which allows for bitrate allocation with audio or video privileging.



SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

158. The Salesforce '904 Products combine the compressed audio and video streams through a multiplexing operation.

159. The Salesforce '904 Products prepare the multiplexed audio and video streams for forwarding to an end terminal.

160. The Salesforce '904 Products apply a bitrate allocation mechanism subject to the constraint of the optimal session bitrate. The allocation is adaptive to contextual elements to privilege either the audio or video stream.

161. Salesforce has directly infringed and continues to directly infringe the '904 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 Salesforce '904 Products.

162. The Salesforce '904 Products are available to businesses and individuals throughout the United States.

163. The Salesforce ‘904 Products are provided to businesses and individuals located in this District.

164. 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 Salesforce ‘904 Products, Salesforce has injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the ‘904 Patent, including at least claim 11 pursuant to 35 U.S.C. § 271(a).

165. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the ‘904 Patent.

166. As a result of Salesforce’s infringement of the ‘904 Patent, Plaintiff has suffered monetary damages, and seek recovery in an amount adequate to compensate for Salesforce’s infringement, but in no event less than a reasonable royalty for the use made of the invention by Salesforce together with interest and costs as fixed by the Court.

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

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

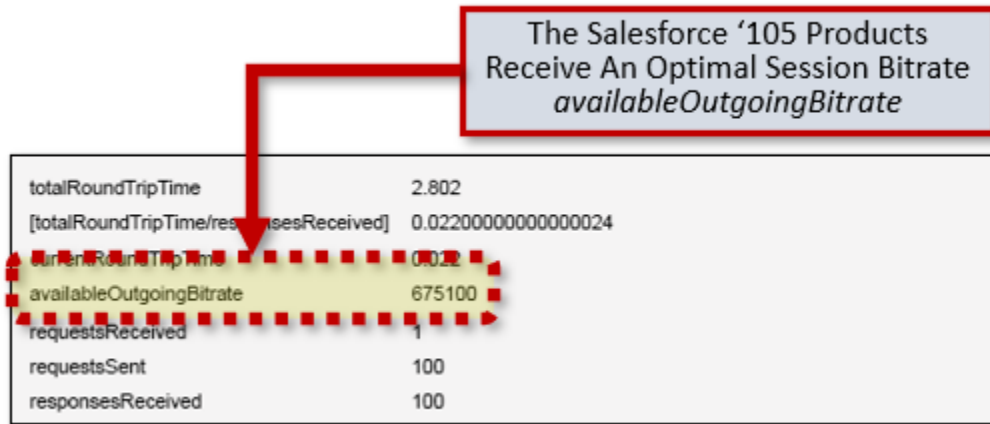
168. Salesforce designs, makes, uses, sells, and/or offers for sale in the United States products comprising streaming technology that optimizes audio-video bitrate allocation.

169. Salesforce designs, makes, sells, offers to sell, imports, and/or uses the following products: the Slack Communication Platform (including Slack Huddles) (collectively, the “Salesforce ‘105 Product(s)”).

170. One or more Salesforce subsidiaries and/or affiliates use the Salesforce ‘105 Products in regular business operations.

171. The Salesforce ‘105 Products obtain an optimal session bitrate for media streaming.

172. The Salesforce ‘105 Products receive an optimal session bitrate. Specifically, the Salesforce ‘105 Products track incoming and outgoing bitrates with specific allocations. The total session bitrate is automatically optimized based on network conditions.



SALESFORCE-SLACK PLATFORM HUDDLES, available at: <https://app.slack.com/client> (November 2024) (annotation added).

173. The Salesforce ‘105 Products allocate this optimal session bitrate between audio and video data to yield the best-suited bitrates for each.

174. The Salesforce ‘105 Products receive an optimal session bitrate that is tracked by the Salesforce ‘105 Products and is adjusted based on network conditions. For example, the below excerpt from, Salesforce ‘105 Product documentation shows that the “availableOutgoingBitrate” is adjusted based on network conditions. The below shows that the value for “availableOutgoingBitrate” is updated numerous times in a session.





176. The Salesforce '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.

177. The Salesforce '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.

178. The bitrate allocation used by the Salesforce '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.

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

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

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

182. The Salesforce '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.

183. Salesforce 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 Salesforce '105 Products.

184. The Salesforce '105 Products are available to businesses and individuals throughout the United States.

185. The Salesforce '105 Products are provided to businesses and individuals located in this District.

186. 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 Salesforce '105 Products, Salesforce 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).

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

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

**COUNT VII**  
**INFRINGEMENT OF U.S. PATENT NO. 8,521,901**

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

190. Salesforce designs, makes, uses, sells, and/or offers for sale in the United States products comprising the MuleSoft Anypoint Platform and MuleSoft Cloudhub 2.0 (collectively, the “Salesforce ‘901 Product(s)”).

191. Salesforce designs, makes, uses, sells, and/or offers for sale in the United States products comprising technology for a data packet scheduler that reduces packet bursts.

192. One or more Salesforce subsidiaries and/or affiliates use the Salesforce ‘901 Products in regular business operations.

193. The Salesforce ‘901 Products receive a transmission control protocol (TCP) packet from a sending layer on the first device. The sending layer is one of the network interface layer or the transport layer and the TCP packet is sent over a connection between the first device and a second device.

194. The Salesforce ‘901 Products receive a TCP packet from the sending layer on a first device. Specifically, the Salesforce ‘901 Products enable both the receipt of UDP and TCP packets as shown in the below excerpt from Salesforce documentation.

Parameters				
Name	Type	Description	Default Value	Required
Name	String	The name for this configuration. Connectors reference the configuration with this name.		x
Connection	<ul style="list-style-type: none"> <li>• <a href="#">Tcp Requester</a></li> <li>• <a href="#">Udp Requester</a></li> </ul>	The connection types to provide to this configuration.		x
Expiration Policy	<a href="#">Expiration Policy</a>	Configures the minimum amount of time that a dynamic configuration instance can remain idle before Mule considers it eligible for expiration. This does not mean that the platform expires the instance at the exact moment that it becomes eligible. Mule purges the instances as appropriate.		

*Sockets Connector Reference – Mule 4*, MULESOFT DOCUMENTATION, available at: <https://docs.mulesoft.com/sockets-connector/latest/sockets-documentation> (last visited October 2024).

195. The Salesforce '901 Products determine whether a TCP packet is part of a bursty transmission over a connection. To do this the Salesforce '901 Products check if the burst count for that connection is greater than a specified threshold.

A single SLA tier named gold can offer a limit of 100 requests per second as well as a limit of 10,000 requests per day. This ensures that applications registered on a gold tier don't exceed a bursting limit of 100 request per second. Traffic bottlenecks are avoided, while ensuring that registered applications get the advertised SLA of 10,000 request per day. By unchecking the visible flag, the first limit of 100 requests is not exposed to application developers at registration time. When you configure only one limit, that limit must be visible.

### Response Headers

Three headers are included in request responses that inform users about the SLA restrictions and inform them when nearing the threshold. When the SLA enforces multiple policies that limit request throughput, a single set of headers pertaining to the most restrictive of the policies provides this information.

For example, a user of your API may receive a response that includes these headers:

```
X-RateLimit-Limit: 20
X-RateLimit-Remaining: 14
X-RateLimit-Reset: 19100
```

*Rate Limited and Throttling – SLA-Based Policies*, MULESOFT DOCUMENTATION, available at: <https://docs.mulesoft.com/mule-gateway/policies-mule3-rate-limiting-and-throttling-sla-based-policies> (last visited October 2024).

196. Salesforce '901 Products contain functionality for receiving and sending TCP packets and comprise functionality for optimizing the flow of data between devices over various network paths.

197. Salesforce '901 Products store information about the connection between a first device and the second device. The information stored by the Salesforce '901 Products include a last packet delivery time for a specific connection/link. Specifically, the Salesforce '901 Products store information about the network connection, such as metrics regarding packet delivery, latency, and jitter, to optimize the path selection and improve performance.

198. Salesforce '901 Products determine if a TCP packet is part of a bursty transmission on the connection by looking at whether a burst count for the connection is greater than a burst-count threshold.

199. Salesforce '901 Products calculate a delay time for a connection using the last packet delivery time after determining that the TCP packet is part of a bursty transmission. Specifically, the Salesforce '901 Products measure latency and jitter for each connection/link. This measurement is then used to determine the burstiness of a TCP packet transmission.

200. The Salesforce '901 Products contain functionality for delivering the TCP packet to a receiving layer based on the calculated delay time, wherein the receiving layer is either the network interface layer or the transport layer that is not the sending layer. Specifically, the Salesforce '901 Products manage packet transmission times and delays as part of the Salesforce '901 Product's traffic optimization and prioritization functionality.

201. The Salesforce '901 Products enable sending the TCP packet to the receiving layer.

202. Salesforce has directly infringed and continues to directly infringe the '901 Patent by, among other things, making, using, offering for sale, and/or selling technology for a data packet scheduler that reduces packet bursts, including but not limited to the Salesforce '901 Products.

203. The Salesforce '901 Products are available to businesses and individuals throughout the United States.

204. The Salesforce '901 Products are provided to businesses and individuals located in this District.

205. By making, using, testing, offering for sale, and/or selling products and services comprising technology for a data packet scheduler that reduced packet bursts, including but not limited to the Salesforce '901 Products, Salesforce has injured Plaintiff and is liable to Plaintiff for directly infringing one or more claims of the '901 Patent, including at least claim 1 pursuant to 35 U.S.C. § 271(a).

206. To the extent applicable, the requirements of 35 U.S.C. § 287(a) have been met with respect to the ‘901 Patent.

207. As a result of Salesforce’s infringement of the ‘901 Patent, Plaintiff has suffered monetary damages, and seek recovery in an amount adequate to compensate for Salesforce’s infringement, but in no event less than a reasonable royalty for the use made of the invention by Salesforce 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 Salesforce has infringed, either literally and/or under the doctrine of equivalents, the ‘167, ‘618, ‘664, ‘285, ‘904, ‘105, and ‘901 Patents;
- B. An award of damages resulting from Salesforce’s acts of infringement in accordance with 35 U.S.C. § 284;
- C. 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 Salesforce.
- D. 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: November 21, 2024

BAYARD, P.A.

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