IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

The CALIFORNIA INSTITUTE OF TECHNOLOGY, Plaintiff, v. ZOOM COMMUNICATIONS, INC., Defendant.	Civil Action No. _____ **JURY TRIAL DEMANDED**

COMPLAINT FOR PATENT INFRINGEMENT

This is an action for patent infringement in which plaintiff the California Institute of Technology ("Caltech" or "Plaintiff") makes the following allegations against defendant Zoom Communications, Inc. ("Zoom" or "Defendant"):

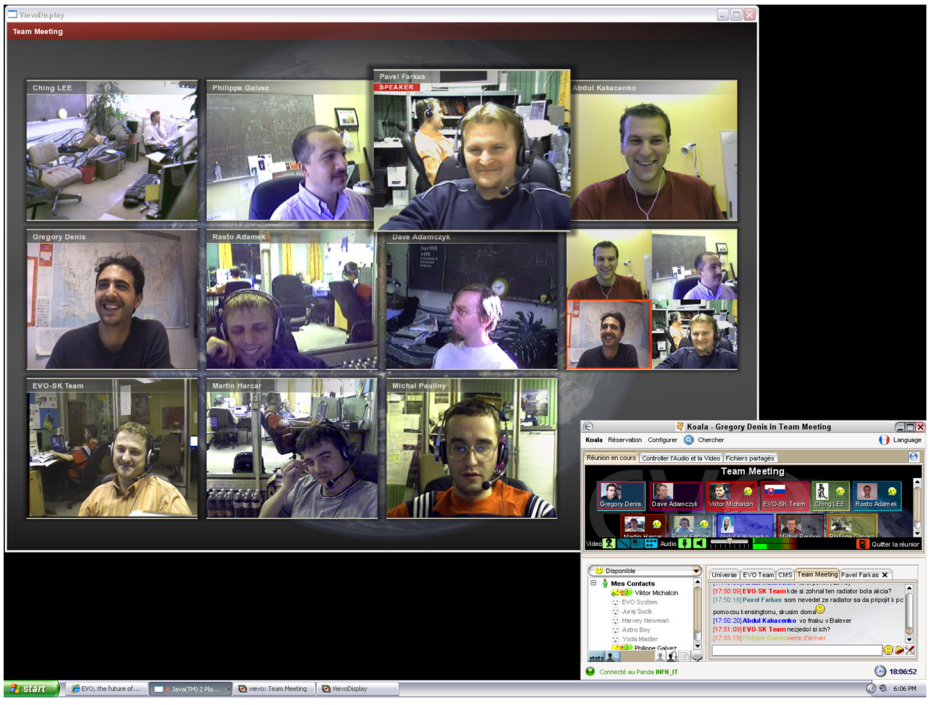
1. This is a civil action for infringement of U.S. Patent No. 8,316,104 (the "'104 patent" or "Asserted Patent") arising under the patent laws of the United States, 35 U.S.C. §§ 1 *et seq*.

2. The inventors of the '104 Patent are Dr. Harvey B. Newman and Philippe Galvez. At the time of the invention, Dr. Newman was a physics professor at Caltech who was involved in high-energy physics research with the Geneva-based European Organization for Nuclear Research (CERN), while Mr. Galvez was a staff scientist and networking systems engineer at Caltech who was also associated with CERN.

3. The inventions of the '104 Patent grew out of work to support the large-scale, multi-national collaborations essential to CERN's advanced research, including work on the Large Hadron Collider, the world's largest and highest-energy particle accelerator. CERN's projects

often involved thousands of researchers based across the globe. Prior work by the inventors included creation of a pioneering videoconferencing system called the Virtual Rooms Videoconferencing System (VRVS) that CERN researchers and others in the high-energy and nuclear physics communities used extensively. In 2006, VRVS served 26,500 registered users in 140 countries having over 1,400 meetings per month using a worldwide network of 85 reflectors interconnecting users to virtual rooms.

4. The VRVS system encountered growing pains as the number of clients and local reflectors increased. The inventors were able to address this issue, as the patent teaches, through the use of a "register/server" that helps clients connect to an appropriate reflector, obtains status information from clients and reflectors, and controls operations of those clients and reflectors. Among other things, this improves system performance, scalability, and reliability and reduces the need for manual intervention to manage the system. The inventors implemented such functionality in a successor system to VRVS called Enabling Virtual Organizations (EVO). The screenshot below shows what a meeting using the inventors' EVO system looked like in late 2006.



THE PARTIES

5. Caltech is a non-profit private university organized under the laws of the State of California, with its principal place of business at 1200 East California Boulevard, Pasadena, California 91125.

6. Caltech is a world-renowned science and engineering research and education institution, where extraordinary faculty and students seek answers to complex questions, discover new knowledge, lead innovation, and transform our future. To date, 48 Caltech alumni and faculty have won a total of 49 Nobel Prizes. The mission of Caltech is to expand human knowledge and benefit society through research integrated with education. Caltech investigates the most challenging, fundamental problems in science and technology in a singularly collegial, interdisciplinary atmosphere, while educating outstanding students to become creative members of society. Caltech's investment in research has led Caltech to have more inventions disclosed and patents granted per faculty member than any other university in the nation, and to be consistently ranked as having one of the top university patent portfolios in strength and number of patents issued.

7. Defendant Zoom Communications, Inc., is a corporation organized and existing under the laws of the State of Delaware with a principal place of business in San Jose, California. Zoom is registered to conduct business in the State of Delaware and has appointed The Corporation Trust Company, located in Wilmington, Delaware, as its agent for service of process. Zoom Communications, Inc., was formerly known as Zoom Video Communications, Inc.

8. Zoom is a multinational information technology company that develops and provides cloud-based communication and collaboration products and services, including the Zoom videoconferencing platform. Zoom sells and provides its products and services to customers and users around the world, including to customers and users in this District.

9. Zoom operates and owns the "zoom.us," "zoom.com," "support.zoom.com," and related websites through which it markets, offers, distributes, and provides technical support for its cloud-based communication and collaboration products and services, including the Zoom videoconferencing platform, throughout the United States including in this District.

10. Zoom places, has placed, and/or contributed to placing the products and services accused of infringement in this Complaint into the stream of commerce via an established distribution channel knowing or understanding that such products and services would be sold and/or used in the United States, including in this District. Zoom has also derived substantial revenues from infringing acts in this District, including from the sale of such products and services and inducing the use of such products and services by users in this District.

11. Zoom is engaged in making, using, selling, offering for sale, and/or importing, and/or inducing its subsidiaries, affiliates, retail partners, and customers in the making, using, selling, offering for sale, and/or importing throughout the United States, including within this District, the products and services accused of infringement in this Complaint.

12. Through offers to sell, sales, imports, distributions, and other related agreements relating to the products and services accused of infringement in this Complaint, Zoom does business in the United States and the State of Delaware.

JURISDICTION AND VENUE

13. This action arises under the patent laws of the United States, Title 35 of the United States Code, including in particular 35 U.S.C. § 271.

14. This Court has jurisdiction over the subject matter of this action under 28 U.S.C. §§ 1331 and 1338(a).

15. This Court has personal jurisdiction over Zoom because Zoom is organized and exists under the laws of Delaware; Zoom has engaged in continuous, systematic, and substantial

business in Delaware; and Zoom has committed, and continues to commit, acts of patent infringement in Delaware.

16. Venue is proper under 28 U.S.C. § 1391(b)–(c) and 28 U.S.C. § 1400(b) at least because Zoom is incorporated, conducts substantial business, and has committed and continues to commit acts of patent infringement in Delaware.

BACKGROUND

Caltech's Patent

17. On November 20, 2012, the United States Patent Office issued U.S. Patent No. 8,316,104, titled "Method and Apparatus for Collaborative System." The '104 Patent is subject to a Certificate of Correction issued on January 22, 2013. A true and accurate copy of the '104 Patent, including the Certificate of Correction, is attached hereto as Exhibit A.

18. The application for the '104 Patent was filed on November 14, 2006. The '104 Patent claims priority to U.S. Provisional Patent Application No. 60/737,043, which was filed on November 15, 2005.

19. Caltech is the owner of all right, title, and interest in and to the Asserted Patent with the full and exclusive right to bring suit to enforce the Asserted Patent, including the right to recover for past damages and royalties up until the expiration of the Asserted Patent.

20. The '104 Patent is valid and enforceable, was duly issued in full compliance with Title 35 of the United States Code after a full and fair examination, and enjoys a statutory presumption of validity under 35 U.S.C. § 282.

21. The claims of the '104 Patent are not directed to an abstract idea and are not limited to well-understood, routine, or conventional activity. Rather, the claimed inventions include inventive components that improve upon the function and operation of preexisting systems.

The Zoom Videoconferencing Platform

22. Zoom, founded in 2011, created and operates a leading videoconferencing platform that enables users to conduct virtual meetings, webinars, and collaborative sessions, supporting both individual and enterprise customers across a wide range of industries.

23. Zoom's videoconferencing platform (the "Accused Product") is or has been marketed under various names including "Zoom Workplace," "Zoom Meetings," and "Zoom One." The Accused Product includes functionality supported by the platform and potentially marketed under names such as "Zoom Rooms," "Zoom Sessions," and "Zoom Webinars." The Accused Product also includes Zoom products, services, and offerings that build on the platform, such as "Zoom Node" and "Zoom Meetings Hybrid."

24. Zoom's videoconferencing platform operates through Zoom's datacenters in multiple locations in the United States and others around the world.

25. Zoom's videoconferencing platform is accessible through a variety of Zoom-provided interfaces, including web-based portals and downloadable applications for computers, tablets, mobile devices, touchscreen displays, and conference room controllers.

COUNT ONE
Infringement of the '104 Patent

26. Caltech re-alleges and incorporates by reference the allegations of the preceding paragraphs of this Complaint as if fully set forth herein.

27. In violation of 35 U.S.C. § 271(a), Zoom has infringed the '104 Patent by making, using, selling, and/or offering for sale in the United States and/or importing into the United States, without authority, the Accused Product which practices each and every limitation of at least claims 1, 2, 5, 6, 7, 8, 9, 10, and 11 of the patent. Zoom has infringed literally and/or under the doctrine of equivalents. Zoom's liability for direct infringement of the '104 Patent includes Zoom's

provision, sale, offer to sell, and/or use of the Accused Product to serve outside customers and users, to serve Zoom's internal users, and to perform testing and improvement of the Accused Product.

28. Independent Claim 1 of the '104 Patent recites:

> 1. A system for enabling collaborative sessions comprising:
>
> a network of reflectors, each of the reflectors having a reflector monitoring agent which obtains status information comprising reflector to reflector communication performance and which provides the status information to a register/server;
>
> a first client which is in communication with only one of the reflectors that is chosen by the first client from a plurality of suggested reflectors identified by the register/server and whose identity was provided to the first client, the first client including a first monitoring agent which obtains first status information concerning the first client and which provides the first status information to the register/server, and wherein said one of the reflectors chosen by the first client is chosen based on a set of criteria comprising at least the proximity of the reflector chosen by the first client to the first client, and the current load on the reflector chosen by the first client, and quality of a network link to the reflector chosen by the first client; and
>
> a second client which is in communication with only one of the reflectors that is chosen by the second client from a plurality of suggested reflectors identified by the register/server and whose identity was provided to the second client, the second client having a second monitoring agent which obtains second status information concerning the second client and which provides the second status information to the register/server; and wherein
>
> the register/server is in communication with the network of reflectors and with the first and second client, and wherein the register/server receives status information from the first and second monitoring agents and from each of the reflector monitoring agents, and wherein the register/server controls operations of the clients and reflectors during a collaborative session based on the received status information; and wherein
>
> the register/server upon request from the first client identifies a plurality of reflectors with which the first client can communicate with and provides the identity of each of the identified reflectors to the first client; and wherein

the register/server upon request from the second client identifies a plurality of reflectors with which the second client can communicate with and provides the identity of each of the identified reflectors to the second client.

29. Dependent Claim 2 of the ’104 Patent recites:

2. The system of claim 1 wherein the collaborative session comprises a videoconference session.

30. Dependent Claims 5 through 11 of the ’104 Patent recite:

5. The system of claim 1 wherein the first monitoring agent monitors local system performance of the first client and communication performance with said one of the reflectors that was chosen by the first client from the plurality of suggested reflectors identified by the register/server.

6. The system of claim 5 wherein the first monitoring agent takes corrective action automatically when performance falls below desired parameters.

7. The system of claim 6 wherein the first monitoring agent reduces video processing when performance falls below desired parameters.

8. The system of claim 1 wherein the second monitoring agent monitors local system performance of the second client and communication performance with said one of the reflectors that was chosen by the second client from the plurality of suggested reflectors identified by the register/server.

9. The system of claim 8 wherein the second monitoring agent takes corrective action automatically when performance falls below desired parameters.

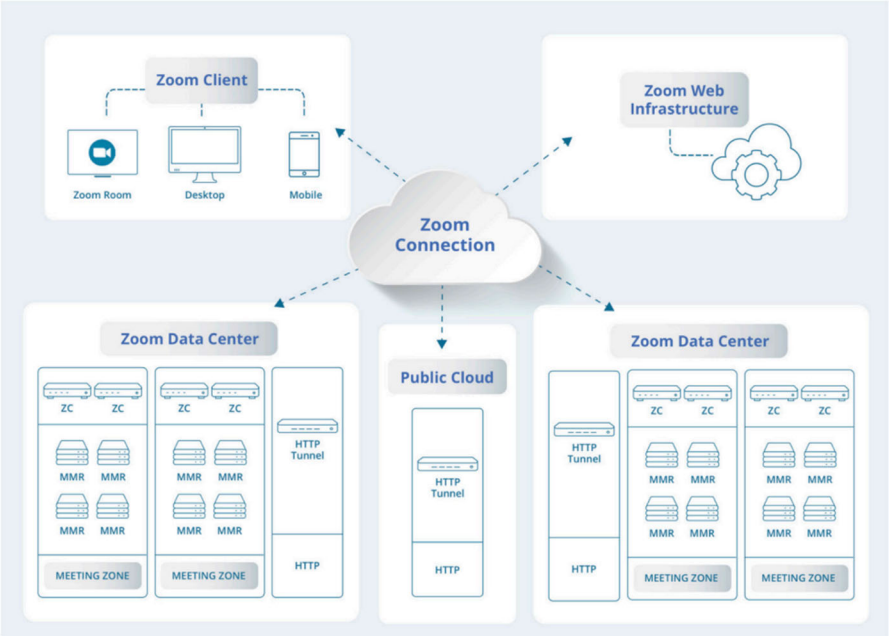
10. The system of claim 9 wherein the second monitoring agent reduces video processing when performance falls below desired parameters.

11. The system of claim 1, wherein said one of the reflectors chosen by the second client from the plurality of suggested reflectors identified and provided by the register/server was chosen by the second client based on a set of criteria comprising at least the proximity of the reflector chosen by the second client to the second client, and the current load on the reflector chosen by the second client, and quality of a network link to the reflector chosen by the second client.

31. The Accused Product provides a system for enabling collaborative sessions, including for audio/videoconferencing, meetings, webinars, and other collaborative functionality.

According to Zoom, "Zoom is the leader in modern enterprise video communications, with an easy, reliable cloud platform for video and audio conferencing, collaboration, chat, and webinars across mobile devices, desktop computers, telephones, and room systems."[1]

32. According to Zoom, key components of the Zoom videoconferencing platform's architecture are depicted in the figure below.[2] At least for purposes of serving users in the United States, all of these components are located in the United States.



33. Zoom's system includes a register/server in the form of (in one infringing scenario) the Zoom Web Infrastructure, which also may be referred to as the Zoom Cloud. According to Zoom, "The Web Infrastructure is a highly available web application that not only helps host the zoom.us website accessed by many individuals every day, but also helps service application requests through its extensive API resources that are leveraged by external developers and the

[1] Zoom Connection Process Whitepaper at 1, https://explore.zoom.us/docs/doc/Zoom%20Connection%20Process%20Whitepaper.pdf.

[2] Zoom Connection Process Whitepaper at 1.

various components of the Zoom infrastructure."[3] As illustrated by the "Zoom Connection" item in the figure above, the Zoom Web Infrastructure is in communication with the Zoom Clients and Zoom Meeting Zones. In alternative infringing scenarios, the register/server also includes Zoom's Global Cloud Controllers and/or monitoring and control functionality of the Zoom Zone Controllers (depicted as "ZC" in the figure above). According to Zoom, "Zone Controllers manage all of the MMRs and report their status to the Global Cloud Controller for each Meeting Zone. … The three layers (the MMR, Zoom Controller, and Global Cloud Controller), are used to balance resources in different locations."[4]

34. Zoom's system includes clients in the form of either Zoom software running on user devices or user devices with Zoom software running on them. Zoom refers to such software as the "Zoom Client." According to Zoom, "The Zoom Client is an individual's primary method for accessing the Zoom cloud. While available for multiple operating systems (macOS, Windows, Linux, Android, iOS, Chrome OS) and in a range of context-aware applications (mobile, desktop, Zoom Rooms), its interaction pattern with the Zoom cloud remains the same across all configurations."[5]

35. Zoom's system includes a network of reflectors, with each reflector (in one infringing scenario) taking the form of a Zoom Meeting Zone. According to Zoom, "A Zoom Meeting Zone is a logical association of servers that are typically physically co-located that can host a Zoom session. A Zoom Meeting Zone and its associated servers may be located within one of Zoom's global data centers or can be located within an organization's network if running

[3] Zoom Connection Process Whitepaper at 1–2.

[4] Zoom paper titled "Zoom: Architected for Reliability" at 3 (Sept. 2019), https://zoomgov.com/docs/doc/Zoom_Global_Infrastructure.pdf.

[5] Zoom Connection Process Whitepaper at 1.

Zoom's on-premise solution. The primary components of a Meeting Zone are Multimedia Routers and Zone Controllers."[6]

36. In Zoom's system, when clients seek to join a collaborative session, the connection process proceeds as follows. First, the register/server upon request from each client identifies a plurality of reflectors that the client can communicate with and provides the identity of each of the identified reflectors to the client. According to Zoom, "Upon receiving a request to join a given session, the first action taken by the Zoom Client is to contact the Zoom Web Infrastructure to obtain the applicable metadata required to access the meeting or webinar. … On the other side of the connection, the Zoom Web Infrastructure prepares a package of data optimized for that client. Through the use of Geo-IP and other Zoom service delivery technology, a list of optimum available Zoom Meeting Zones and associated Zoom Zone Controllers are returned to the client along with meeting details so it can proceed to the next phase in the connection process."[7]

37. Next, each client chooses a reflector from a plurality of suggested reflectors identified by the register/server and whose identity was provided to that client. According to Zoom, "With a list of Zoom Meeting Zones that could service the Zoom Client for the session, the connection process then enters the next phase of the workflow. To ensure the best connection is used, the Zoom Client attempts to connect to each of the Zoom Zone Controllers within the Zoom Meeting Zones provided in the previous phase and then conducts a network performance test. By comparing these results, the client is able to confirm there is a connectivity path in place to each Zoom Meeting Zone and select whichever one demonstrates the best performance."[8]

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[6] Zoom Connection Process Whitepaper at 2.

[7] Zoom Connection Process Whitepaper at 2.

[8] Zoom Connection Process Whitepaper at 3.

38. Each client chooses a reflector based on a set of criteria comprising at least the proximity of the reflector, the current load on the reflector, and quality of a network link to the reflector. Details about the Zoom Client's selection criteria for a Zoom Meeting Zone are internal to Zoom and subject to discovery. Upon information and belief, Zoom Clients choose a Zoom Meeting Zone based on information that includes, incorporates, and/or serves as a proxy for the proximity of the reflector, the current load on the reflector, and quality of a network link to the reflector. For example, each Zoom Client tracks network performance metrics including at least "RTT," "Send and Lose" (which, upon information and belief, refers to packet loss), and "Jitter."[9] In addition, the reflector options that the Zoom Web Infrastructure provides to the client are pre-optimized factoring in at least distance (including "the use of Geo-IP") and other criteria (including "the use of … other Zoom service delivery technology").[10] According to Zoom, "Zoom uses globally-distributed technology based on user geolocation and optimized network path. The meeting participants are always connected to a nearby data center and assigned to the least loaded server."[11] Further, to the extent that one of the reflectors is not literally chosen by Zoom Clients based on a set of criteria comprising at least the proximity of the reflector, the current load on the reflector, and the quality of a network link, Zoom Clients perform substantially the same function as claimed (evaluate reflectors based on performance criteria) in substantially same way (by relying on one or more measures of performance that relate to proximity, current load, and quality of network link) to achieve substantially the same result (selecting an appropriate reflector).

[9] Zoom webpage titled "Using the Zoom Network Connectivity Tool," https://support.zoom.com/hc/en/article?id=zm_kb&sysparm_article=KB0058114.

[10] Zoom Connection Process Whitepaper at 2.

[11] Zoom paper titled "Zoom: Architected for Reliability" at 3.

39. In an alternative infringing scenario, Zoom's system includes a network of reflectors, with each reflector taking the form of a Multimedia Router (MMR). According to Zoom, "A distributed network of low-latency multimedia software routers connects Zoom's communications infrastructure. With these Multimedia Routers (MMR), all session data originating from the host's device and arriving at the participants' devices is dynamically routed between endpoints."[12] According to Zoom, "A Zoom Multimedia Router is responsible for hosting Zoom meetings and webinars. As the name implies, these servers ensure that the rich offering of voice, video, and content are properly distributed between all participants in a given session."[13] According to Zoom, "A Zoom Zone Controller is responsible for the management and orchestration of all activity that occurs within a given Zoom Meeting Zone. Deployed in a highly available configuration, these systems track the load on all servers with the Zone and help broker requests for new connections into the zone."[14] According to Zoom, "MMR Selection" proceeds as follows: "With the ideal Zoom Meeting Zone selection from the previous phase, the client then requests details of the best Zoom Multimedia Router (MMR) from the Zoom Zone Controller. Once identified, the Zoom Client reaches out to the MMR directly to establish a control channel for the session."[15] Each client, potentially with assistance from the Zoom Zone Controller and/or the Zoom Web Infrastructure, chooses a reflector based on a set of criteria comprising at least the proximity of the reflector, the current load on the reflector, and quality of a network link to the reflector. Details about the Zoom Client's selection of a Zoom Meeting Zone and the Zoom Zone

[12] Zoom Security Guide Whitepaper at 2 (Aug. 2021), https://media.zoom.com/download/assets/Zoom-Security-White-Paper.pdf/86e2a7c69ac411efbc3f6ef18e316a3b.

[13] Zoom Connection Process Whitepaper at 2.

[14] Zoom Connection Process Whitepaper at 2.

[15] Zoom Connection Process Whitepaper at 3.

Controller's determination of a "best" MMR are internal to Zoom and subject to discovery. Further, to the extent the Zoom Clients do not literally choose a reflector from a plurality of suggested reflectors identified by the register/server based on a set of criteria comprising at least the proximity of the reflector, the current load on the reflector, and the quality of a network link, Zoom Clients perform substantially the same function as claimed (evaluate Zoom Zones identified by the register/server containing reflectors based on performance criteria) in substantially same way (by relying on one or more measures of performance that relate to proximity, current load, and quality of network link) to achieve substantially the same result (selecting an appropriate reflector).

40. In Zoom's system, each client includes a client monitoring agent that obtains status information about the client and provides it to the register/server. Zoom Clients, in addition to providing meeting and collaboration functionality, include monitoring functionality that obtains, among other things, status information concerning the Zoom Client. For example, as reflected in the "Statistics" tab of the "Settings" panel of the Zoom Client, the Zoom Client monitors information including various indicators of communication performance (such as "bandwidth," "latency," "jitter," and "packet loss"), connectivity (including "network type," "proxy," "connection type," and "data center"), local system performance (including "CPU" and "memory" usage), security (including "encryption"), video quality (such as "resolution" and "frames per second," for both sending and receiving), and audio quality (such as "frequency"). Upon information and belief, including as set forth in paragraphs 43 and 44 below, other information about the Zoom Client is also monitored. As evidenced by the information made available via a

dashboard to customer administrators, the client monitoring agent provides such status information about the Zoom Client to the register/server.[16]

41. In Zoom's system, each reflector includes a reflector monitoring agent that obtains status information comprising reflector-to-reflector communication performance and provides it to the register/server. Zoom Meeting Zones include a Zoom Zone Controller that serves, among other things, as a reflector monitoring agent. According to Zoom, "A Zoom Zone Controller is responsible for the management and orchestration of all activity that occurs within a given Zoom Meeting Zone. Deployed in a highly available configuration, these systems track the load on all servers with the Zone and help broker requests for new connections into the zone."[17] Details about the information exchanged between reflectors and the register/server are internal to Zoom and subject to discovery. Upon information and belief, the Zoom Controller of the Zoom Meeting Zone obtains and provides to the register/server status information that includes reflector-to-reflector communication performance. For example, Zoom's "Zoom Node" offering with "Zoom Meetings Hybrid" functionality allows an organization essentially to host an in-house or on-premises Zoom Meeting Zone. As a result, documentation relating to the operation of Zoom Node is illustrative of the operation of other Zoom Meeting Zones. According to Zoom, "The Zoom Meetings Hybrid (ZMH) enables customers to deploy Zoom meeting components into their network (behind their firewall) and keep either all or most of the meeting media on-premises, using the Zoom Node platform. This allows internal users to connect to a local hybrid server, while external users can

[16] Zoom webpage titled "Getting started using the Zoom Dashboard," https://support.zoom.com/hc/en/article?id=zm_kb&sysparm_article=KB0061622; Zoom webpage titled "Dashboard for meetings and webinars," https://support.zoom.com/hc/en/article?id=zm_kb&sysparm_article=KB0063135.

[17] Zoom Connection Process Whitepaper at 2.

still join via the Zoom Cloud in most scenarios."[18] As this passage reflects, different clients in a meeting may choose different reflectors, and such reflectors must communicate with other reflectors in the network of reflectors to facilitate a Zoom collaborative session.

42. As a sophisticated operator of a leading and mission-critical conferencing system, Zoom obtains and tracks performance metrics relevant to the management of its system. For example, according to Zoom, the Zoom Node offering includes this functionality: "Real-time insights: Leverage the Zoom cloud management and analytics interface for Zoom Node and all supported modules, with granular logging as well as an alerting and notification service enabling frictionless troubleshooting."[19] According to Zoom, "Zoom monitors the zone level with multiple VMs, and if a zone is approaching a threshold or fails, it will move to the next zone."[20] As these passages reflect, Zoom reflectors report performance metrics to the register/server. Further, according to Zoom, "Zoom . . . continuously evaluates our data centers and Internet Service Providers (ISPs) to optimize bandwidth, latency, and disaster recovery isolation performance."[21] Tracking information relating to reflector-to-reflector communication performance is critical to the management of a system with the scale, reliability, quality, and operational requirements of Zoom's system. As a result, the information Zoom tracks necessarily includes information relating

[18] Zoom webpage titled "Zoom Meetings Hybrid module," https://support.zoom.com/hc/en/article?id=zm_kb&sysparm_article=KB0058495.

[19] Zoom Node Platform Information and Architecture White Paper at 2, https://media.zoom.com/download/assets/zoom_node_platform_info.pdf/44bb1ee8e85d11ed864c5a93b3992720.

[20] Zoom paper titled "Zoom: Architected for Reliability" at 4.

[21] Zoom Phone Datasheet titled "Architected for Reliability," https://explore.zoom.us/media/zp-architected-for-reliability-2022-12-13.pdf (discussing operations in support of Zoom Phone service, explaining "Zoom Phone was built in the cloud and for the cloud, using the same audio quality and application-layer-switching technology already available in our Zoom Meetings").

to reflector-to-reflector communication performance. The details about such information tracking are internal to Zoom and subject to discovery.

43. In Zoom's system, the register/server controls operations of the clients during a collaborative session based on the status information received from client monitoring agents and/or reflector monitoring agents. For example, based on testing of the Zoom system, the resolution of video transmitted by a Zoom Client is controlled at least in part based on the window size of other Zoom Clients in a meeting, such that if other Zoom Clients have small window sizes, the transmitted resolution may be reduced to avoid sending unnecessary video data. Zoom Clients provide size- and/or resolution-related information to the register/server, and the register/server controls the operation of the clients with respect to the resolution of their transmitted video. Details about such control are internal to Zoom and subject to discovery.

44. Other examples of such control by the Zoom Web Infrastructure are myriad. Details about such control and the status information sent by the Zoom Clients are internal to Zoom and subject to discovery.

a. For example, Zoom's register/server will direct a first Zoom Client to stop sending audio in response to a mute request sent from a second Zoom Client with meeting-moderation privileges, where the status information sent from the second Zoom Client includes that muting was requested.

b. For example, Zoom's register/server will direct a first Zoom Client to display a request to unmute in response to an unmute request sent from a second Zoom Client with meeting-moderation privileges, where the status information sent from the second Zoom Client includes that unmuting was requested.

c. For example, Zoom's register/server will direct a first Zoom Client to show certain notifications and/or change what participants the client shows in response to a request from a second Zoom Client with meeting-moderation privileges to move the first Zoom Client to or from a waiting room or breakout room, where the status information sent from the second Zoom Client includes that such a move was requested.

d. For example, Zoom's register/server will direct a first Zoom Client to cease displaying a frame representing a second Zoom Client when that second Zoom Client has departed a meeting, where the status information sent from the second Zoom Client includes that the second Zoom Client is departing the meeting.

e. For example, Zoom's register/server will direct a first Zoom Client to exit a meeting when a second Zoom Client with host privileges for the meeting has sent a request to end the meeting for all participants, where the status information sent from the second Zoom Client includes that such ending was requested.

f. For example, Zoom's register/server will direct a first Zoom Client to display a notification that cloud recording has started when a second Zoom Client with recording privileges for the meeting has sent a request to start recording, where the status information sent from the second Zoom Client includes that recording was requested.

g. For example, Zoom's register/server will direct a first Zoom Client to display a virtual whiteboard when a second Zoom Client has sent a request

to use the whiteboard functionality, where the status information sent from the second Zoom Client includes that such a request was made.

45. In Zoom's system, Zoom's register/server controls operations of the reflectors during a collaborative session based on the status information received from client monitoring agents and/or reflector monitoring agents. Such control is necessary to meet the Zoom system's operational and quality-assurance requirements. For example, Zoom's register/server must control operations of the reflectors using reflector-to-reflector performance information because not using such information would preclude Zoom from responding to situations where reflector-to-reflector performance has degraded and from taking necessary actions, such as changing routing decisions to optimize paths or switching to other servers when certain nodes fail or when communication links become overloaded. According to Zoom, "Zoom Node is a unified hybrid platform designed to consolidate present and future Zoom on-prem and hybrid solutions. While Zoom Node is deployed and installed within an organization's premises, module/service deployment and management are controlled from the Zoom Cloud, effectively extending Zoom Cloud functionalities to customer data centers."[22] Also, according to Zoom, "if a zone is approaching a threshold or fails, it will move to the next zone. Similarly, at the VM level, if a VM fails or is approaching threshold, the connection moves to the next VM."[23] Further, according to Zoom, "The Meeting Zones are duplicated for each data center with the exact same architecture and we can easily add more zones on-the-fly for added capacity in each region."[24] As these passages reflect, the register/server manages and controls operations of Zoom's reflectors. Zoom is a sophisticated

[22] Zoom webpage titled "What is Zoom Node," https://support.zoom.com/hc/en/article?id=zm_kb&sysparm_article=KB0058800.

[23] Zoom paper titled "Zoom: Architected for Reliability" at 4.

[24] Zoom paper titled "Zoom: Architected for Reliability" at 3.

operator of a leading and mission-critical conferencing system, and failure to control the operation of Zoom's reflectors based on the status information available would be substantially detrimental to the performance of Zoom's system. Accordingly, upon information and belief, Zoom's register/server utilizes such information to control the operation of the reflectors. Details about such control are internal to Zoom and subject to discovery.

46. As a sophisticated operator of a leading and mission-critical conferencing system, Zoom prioritizes, invests in, and touts the performance and reliability of its videoconferencing platform. According to Zoom, "Zoom is the most reliable and innovative video conferencing solution available, largely because we have the world's most experienced engineering team in collaboration technology."[25] According to Zoom, Zoom's architecture "allows Zoom to maintain meeting services availability of 99.99% uptime and deliver the most reliable video service."[26] According to Zoom, "IT managers are assured that the solution is globally available and designed to scale with security and dependability."[27] Further, Zoom touts the results of testing by its vendor TestDevLab (TDL), stating: "TDL's extensive testing highlights significant differences in performance among Zoom, Microsoft Teams, Google Meet, and Cisco Webex under various network conditions and meeting scenarios." Among the key conclusions Zoom notes are that "Zoom consistently delivers the best overall experience, excelling in video quality, resource utilization, and maintaining performance under network strain" and "Zoom's leading performance, particularly in high-quality video and efficient resource use, positions it as the top choice for robust

[25] Zoom paper titled "Zoom: Architected for Reliability" at 1.

[26] Zoom paper titled "Zoom: Architected for Reliability" at 4.

[27] Zoom paper titled "Zoom: Architected for Reliability" at 5.

and reliable virtual meetings."[28] In addition, according to Zoom, "Zoom maintains 50% excess capacity in all aspects of our infrastructure to accommodate our growing business and to meet peak usage requirements."[29] Zoom also touts its disaster recovery measures: "Disaster recovery (DR) tests are performed quarterly. Because Zoom uses Active/Active architecture for the meeting service with redundancy in each scope or layer, there is virtually no risk of interrupted service. All data centers are also fully redundant with power, cooling and network carriers. Multiple power feeds, fiber links, backup generators and battery systems provide reliability."[30]

47. Upon information and belief, including based on testing of the Zoom system as described below, the client monitoring agent of a Zoom Client is configured to take corrective action automatically when performance falls below desired parameters. According to Zoom, part of the Zoom system's architecture is "the Reactive Quality of Service Layer. Zoom is the only service to have this, and it is a critically important layer in the stack because it reacts to real time network and device status. This layer not only monitors the client's bandwidth, packet loss, latency and Jitter, but also collects the client's CPU usage, memory and network I/O. It notifies the up layer to take the best action within adaptive technology."[31] Details about the Zoom Client's client monitoring agent are internal to Zoom and subject to discovery.

a. For a first example, when computer performance (at least in the form of CPU load and memory usage) is sufficiently burdened, the Zoom Client takes corrective action automatically by reducing outbound video resolution

[28] Zoom blog post titled "Zoom Video and Audio Performance Report 2024," https://www.zoom.com/en/resources/video-audio-quality-report/.

[29] Zoom paper titled "Zoom: Architected for Reliability" at 4.

[30] Zoom paper titled "Zoom: Architected for Reliability" at 5.

[31] Zoom paper titled "Zoom: Architected for Reliability" at 2.

or frames per second. The Zoom Client also may display a message such as: "High CPU usage maybe affecting your meeting experience; please close other applications."

b. For a second example, when inbound network performance (at least in the form of packet loss) is sufficiently degraded, the Zoom Client takes corrective action automatically by requesting reduced inbound video resolution or frames per second. According to Zoom, "Zoom uses multiple streams, allowing the application to toggle between streams to ensure that the best quality video gets delivered to end users. Because of Zoom's compression technology, the system can operate well in an environment with up to 45% packet loss. In these instances, Zoom will prioritize audio over video, because audio is more crucial in business discussions and collaboration. Zoom's multi-stream technology handles bandwidth adjustments for the end user to improve their quality based upon their ability to receive data."[32]

c. For a third example, when outbound network performance (at least in the form of packet loss as reported to the Zoom Client) is sufficiently degraded, the Zoom Client takes corrective action automatically by reducing outbound video resolution or frames per second.

d. In last two examples, the Zoom Client also may display a message such as: "Poor Internet connection maybe affecting your meeting experience; please close other applications or check your network bandwidth."

[32] Zoom paper titled "Zoom: Architected for Reliability" at 3.

48. Zoom requires users of its videoconferencing platform to provide or configure a device with Zoom Client software and to use such a device to be able to participate in collaborative sessions using the Zoom videoconferencing platform. Zoom users generally cannot use client software of competing videoconferencing platforms, such as Microsoft Teams or Cisco Webex, to participate in collaborative sessions on the Zoom videoconferencing platform. As a result, to the extent the infringing act of making the claimed system requires the customer or user to provide or configure a client machine, such acts are legally attributable to Zoom.

49. Zoom earns revenue from offering a videoconferencing platform that enables connections to Zoom Clients. Zoom benefits from the presence of each client because having that client as part of the system allows Zoom to connect others in a videoconference to it. Further, Zoom controls the entire platform, including, *inter alia*, as described above. As a result, Zoom controls the claimed system as a whole and benefits from it.

50. Zoom also indirectly infringes the '104 Patent under 35 U.S.C. § 271(b) and/or 35 U.S.C. § 271(c). Zoom, at a minimum, has known of the '104 Patent at least as early as the filing date of the Complaint. Since at least that date, Zoom has been on notice of its infringement, and Zoom has actively induced, under 35 U.S.C. § 271(b), its customers and users of the Accused Product that includes all of the limitations of one or more claims of the '104 Patent to directly infringe the '104 Patent by using the Accused Product. Since at least that date, Zoom does so with knowledge, or with willful blindness of the fact, that the induced acts constitute infringement of the '104 Patent. Zoom intends to cause, and has taken affirmative steps to induce infringement by its customers and users by at least creating or continuing to run advertisements that promote the infringing use of the Accused Product, creating and maintaining established distribution channels for the Accused Product into and within the United States, distributing or making available the

Zoom Client and instructions or manuals for the Accused Product to customers and users, testing the Accused Product, and/or providing technical support or services for the Accused Product to customers and users in the United States. For example, Zoom advertises and provides technical support to its customers and users of the Accused Product at zoom.us, zoom.com, and support.zoom.com.

51. Zoom is not licensed or otherwise authorized to practice the claims of the '104 Patent.

52. By reason of Zoom's infringement, Caltech has suffered substantial damages. Caltech is entitled to recover the damages sustained as a result of Zoom's wrongful acts in an amount subject to proof at trial.

53. Zoom's infringement of Caltech's exclusive rights under the '104 Patent will continue to damage Caltech, causing irreparable harm for which there is no adequate remedy at law unless enjoined by this Court.

54. Caltech has complied with the requirements of 35 U.S.C. § 287(a). Caltech has not made, offered for sale, or sold any products in the United States and has not imported any products into the United States that are subject to the marking requirements of 35 U.S.C. § 287(a) with respect to the '104 Patent. Moreover, to the extent that any party that has held a license to the '104 Patent has made, offered for sale, or sold any products in the United States or has imported any products into the United States subject to the marking requirements of 35 U.S.C. § 287(a) and did not mark such products, Caltech took reasonable efforts to ensure marking by such licensee.

DEMAND FOR JURY TRIAL

55. Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Caltech hereby demands a trial by jury as to all issues so triable.

FEES AND COSTS

56. To the extent that Zoom's litigation conduct supports a finding that this is an "exceptional case," an award of attorneys' fees and costs to Caltech is justified pursuant to 35 U.S.C. § 285.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully prays for the following relief:

a. A judgment that Zoom has infringed the Asserted Patent;

b. Damages adequate to compensate Caltech for Zoom's infringement of the Asserted Patent pursuant to 35 U.S.C. § 284;

c. An order that Zoom and its affiliates, employees, agents, officers, directors, attorneys, successors, and assigns and all those acting on behalf of or in concert with Zoom be permanently enjoined from infringement, inducement of infringement, and contributory infringement of the Asserted Patent;

d. Pre-judgment interest;

e. Post-judgment interest;

f. A declaration that this action is exceptional pursuant to 35 U.S.C. § 285, and an award to Caltech of its attorneys' fees, costs, and expenses incurred in connection with this action; and

g. Such other costs and relief as the Court deems just and equitable.

DATED: March 2, 2026

Respectfully submitted,

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