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AMAZON WEB SERVICES, INC., and
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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

BSD CROWN, LTD.,

Plaintiff,

v.

AMAZON.COM, INC.,
AMAZON WEB SERVICES, INC., and
AMAZON.COM SERVICES LLC,

Defendants.

Case No. 3:24-cv-03503-JD

DEFENDANTS' INVALIDITY CONTENTIONS

Pursuant to Patent L.R. 3-3 and 3-4 and the schedule in the October 1, 2024 Scheduling Order (ECF. No. 35), Defendants Amazon.com, Inc., Amazon Web Services, Inc., and Amazon.com Services LLC (collectively, "Defendants") hereby provide their Invalidity Contentions for U.S. Patent No. 8,934,887 (the "'887 patent" or the "asserted patent").

Plaintiff BSD Crown, LTD ("Plaintiff" or "BSD") has asserted claims 11, 15, 16, 17, 20, 23, 24, and 25 of the '887 patent (together, the "asserted claims").

Defendants provide the following invalidity contentions based upon their current knowledge, their current understanding of Plaintiff's infringement contentions served on October 15, 2024, and their investigations to date. Defendants have not completed their investigation of the facts relating to this case, discovery in this action, or their preparation for trial. In particular, Defendants have served third party subpoenas on Sony Interactive Entertainment LLC, Activision-Blizzard, Inc., Valve Corporation, Citrix Systems, Inc., VMWare LLC and GenyMobile, Inc. seeking discovery into prior art systems. As of the date of these invalidity contentions, only GenyMobile, Inc. has produced documents. This disclosure is without prejudice to Defendants' right to produce evidence of additional prior art references, including evidence received in response to Defendants' third-party subpoenas, or their right to supplement or amend these disclosures.

Further, these disclosures, including the accompanying claim charts, are prepared prior to the Court's claim construction ruling and disclosure of claim construction positions from Plaintiff. Defendants' positions on the invalidity of particular claims may depend on how the claims are construed by the Court. Defendants therefore reserve all rights to amend or supplement their invalidity positions following the Court's ruling on claim constructions.

Defendants' contentions herein are not, and should in no way be seen as, admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular element is met in any particular way. Defendants object to any attempt to imply particular claim constructions from the charts attached hereto. These contentions are made out of an abundance of caution to reflect the potential scope of the claims that Plaintiff appears to be advocating or could advocate, as suggested in Plaintiff's infringement contentions. Defendants reserve the right to amend or supplement their invalidity contentions should Plaintiff modify its infringement theories.

Defendants' contentions should not be seen as a suggestion that Plaintiff's readings of the asserted patent claims are correct, and Defendants apply the prior art in light of Plaintiff's improper assertion of infringement and improper application of the asserted claims. Defendants reserve the right to supplement or amend the disclosures made herein following disclosure by Plaintiff of its positions regarding claim construction and following receipt of the Court's claim construction order construing the claims of the asserted patent.

Defendants have endeavored to cite to the most relevant portions of the identified prior art. Other portions of the identified prior art may additionally disclose, either expressly or inherently, and/or render obvious one or more elements or limitations of the asserted claims. Defendants reserve the right to rely on uncited portions of the identified prior art to establish the invalidity of the asserted claims. Moreover, Defendants reserve the right to rely on, for example, and without limitation, uncited portions of the identified prior art, other art, or testimony to provide context to or aid in understanding the cited portions of the identified prior art. Defendants also reserve the right to rely upon treatises, published industry standards, and similar documents to demonstrate the knowledge of one of ordinary skill in the relevant art and/or the background of the technology. Where Defendants cite to a particular drawing or figure, the citation encompasses the description of the drawing or figure, as well as any text associated with the drawing or figure. Similarly, where Defendants cite to particular text concerning a drawing or figure, the citation encompasses that drawing or figure as well. Also, where Defendants cite to any portion of prior art as disclosing a particular limitation, that citation applies with equal force to all similar or identical limitations in each of the asserted claims.

Defendants are currently unaware of the extent to which Plaintiff may contend that limitations of the claims at issue are not disclosed in the art identified by Defendants as anticipatory. To the extent that an issue arises with any such limitation, Defendants reserve the right to identify other references disclosed herein which make obvious the addition of the allegedly missing limitation to the disclosed system, computer-readable medium, or method.

I. IDENTIFICATION OF PRIOR ART

Defendants identify the following prior art references that anticipate and/or render obvious the asserted claims of the asserted patent. The following patents and publications are prior art under at least 35 U.S.C. §§ 102(a), (b), (e), (f), (g), and/or 103. Whether a prior art reference anticipates or renders obvious the asserted claims may depend upon claim construction. Defendants have identified each prior art patent by its inventor, number, country of origin, date of issue, and, where applicable, the relevant priority date. Each prior art publication is identified by its title, date of publication, and, where feasible, author and publisher.

For prior art under 35 U.S.C. § 102(b), Defendants have identified the item offered for sale or publicly used or known, the date by which the offer or use took place or the information became known, and the identity of the person or entity that made the use or that made and received the offer, or the person or entity that made the information known or to whom it was made known, to the full extent currently known. To the extent any prior art reference is found not to anticipate any of the asserted claims or Plaintiff contends that the reference is not anticipatory, Defendants contend that the reference nevertheless renders all of the asserted claims obvious either individually or in combination with other references disclosed herein and/or in view of the general knowledge in the art and/or common sense.

A. Prior Art Patent Publications

Defendants contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on the following prior art patent publications. These patent publications constitute prior art under 35 U.S.C. § 102, and their patent numbers, countries of origin, and dates of publication and/or issue are included on the face of those documents. Defendants reserve the right to supplement this list as they learn in the course of discovery of other prior art patent publications that would anticipate and/or render the asserted claims obvious.

Prior Art	Date of Issue	Country of Origin
Christfort et al. – 7,127,705	Oct. 24, 2006	US
Relan et al. – 2013/0013671	Jan. 10, 2013	US
Danford et al. – 2009/0036111	Feb. 5, 2009	US
Hobbs et al. – 8,345,768	Jan. 1, 2013	US
Cook et al. – 8,1665,558	Apr. 24, 2012	US
Danford et al. - 8,060,074	Nov. 15, 2011	US
Min et al. – 2011/0302302	Dec. 8, 2011	US
Rogel et al. – 2010/0333088	Dec. 30, 2010	US
Jeon et al. – 2011/0093567	Apr. 21, 2011	US

Prior Art	Date of Issue	Country of Origin
Ekstrom et al. – 2011/0161404	Jun. 30, 2011	US
Perry et al. – 2010, 0306813	Dec. 2, 2010	US
Coleman et al. – 2010/0131966	May 27, 2010	US
Cidon – 2011/0252071	Oct. 13, 2011	US
Tang – 2010/0146504	Jun. 10, 2010	US
Yun – 2012-0046807	May 11, 2012	KR
Overton – 9,424,052	May 24, 2011	US
Lu – 2009/0305790	Dec. 10, 2009	US
Nix et al. – 2006/0098619	May 11, 2006	US
Rinne et al. – 2001/0052012	June 29, 2001	US
Makavy et al. – 2010/0087179	Apr. 8, 2010	US
Arthur et al. – 2002/0165630	Nov. 7, 2002	US
Levine et al. – 2003/0177187	Sept. 18, 2003	US
Terebilo – 2007/0099703	May 3, 2007	US
Hancock – 2007/0189280	Aug. 16, 2007	US
Ferren et al. – 2013/0321570	Dec. 5, 2013	US
Niemeyer et al – 2013/0096906	Apr. 18, 2013	US
Brakensiek et al. – 2011/0271198	Nov. 3, 2011	US
Hunt – 10,338,947	Jul. 2, 2019	US
Brandwine et al. – 8,954,978	Feb. 10, 2015	US
Kamay – 2010/0306306	Dec. 2, 2010	US
Perlman et al. – 2010/0166064	Jul. 1, 2010	US
Kamble et al. – 8,789,164	Jul. 11, 2014	US
Gault et al. – 2010/0304860	Dec. 2, 2010	US
Pahlavan et al. – 2010/0268828	Oct. 21, 2010	US
Kamay et al. – 2010/0138744	Junc. 3, 2010	US

Prior Art	Date of Issue	Country of Origin
Das et al. – 9,292,248	Mar. 22, 2016	US
Rege et al. – 8,340,633	Dec. 25, 2012	US
김유석박창현 – 20120011579A	Sept. 10, 2012	KR
윤용진양장모 - 20120046807A	May 11, 2012	KR

B. Prior Art Non-Patent Publications

Defendants contend that the asserted claims are invalid under 35 U.S.C. §§ 102 and/or 103 based on the following published works of prior art. These publications constitute additional prior art under 35 U.S.C. § 102, and their titles, primary authors, publishers, and dates of publication are included on the face of those documents. In addition to the references listed below, Defendants hereby disclose as prior art publications all references disclosed below in Section I.C (regarding on sale/public use), such as press releases, users' manuals, and other related documentation about such prior art products. Defendants reserve the right to supplement this list as they learn in the course of discovery of other references, prior art public use, and/or sale that would anticipate and/or render the asserted claims obvious.

Prior Art	Date of Publication	Primary Author	Publisher
An Adaptation Architecture to Improve QoS of Multimedia Services for Enterprise Remote Desktop Protocols	2005	M. Lubonski	Next Generation Internet Networks
WebRTC 1.0: Real-Time Communication Between Browsers	Oct 27, 2011	A. Bergkvist	World Wide Web Consortium
The H.264 Advanced Video Compression Standard	2010	Richardson	Wiley Publishing
Augmented Smartphone Applications Through Clone Cloud Execution	2009	B. Chun	Intel Research Berkeley
Survey of Virtual Machine Research	1974	R. Goldberg	IEEE Computer Magazine

Prior Art	Date of Publication	Primary Author	Publisher
The Origin of the VM/370 Time-Sharing System	1981	R.J. Creasy	IBM Journal of Research and Development
VMware Celebrates Sevel Years of Continual Innovation and Execution	2005	VMWare	VMWare
Hyper-V Made Available	2008		ADTMag
Guide to Security for Full Virtualization Technologies	2011	K. Scarfone	National Institute of Standard and Technology
Review: OnLive -- The What, Why and Who of Gaming in the Cloud	2011	M. Venables	Wired
Gaikai is Live!	2011	D. Perry	David Perry
Research on mobile cloud computing: Review, trend and perspectives	2012	H. Qi et al.	IEEE
Cloud computing for mobile users: Can offloading computation save energy?	2010	K. Kumar et al.	Purdue University
A survey of mobile cloud computing: architecture, applications, and approaches	2013	H.T. Dinh et al.	Wireless Communications and Mobile Computing
Executing mobile applications on the cloud: Framework and issues	2011	S. Hung et al.	Computers and Mathematics with Applications
Content-Aware Adaptive Video Streaming System	2005	M. Talat et al.	Information Technology Institute, Ministry of Communications and Information Technology, Egypt
Adaptable client-server architecture for mobile multi-player games	2010	A. Khan	3rd International ICST Conference on Simulation Tools and Techniques

C. Prior Art Items and/or Knowledge

Defendants contend that the asserted claims of the asserted patent are invalid under 35 U.S.C. §§ 102 and/or 103 based on the following items offered for sale or publicly used or known. Defendants incorporate by reference and reserve the right to rely upon any prior art items and/or

knowledge disclosed by or referred to in any of the prior art patents or prior art publications identified above in Sections I.A and I.B. Because Defendants have not yet completed discovery in this case, Defendants reserve the right to supplement this disclosure with facts, documents, or other information learned at a later point through third-party discovery or other further investigation, including as to public disclosure, public use, and offer for sale under 35 U.S.C. § 102 and/or 103.

1. **Gaikai.** Gaikai's cloud gaming system was publicly known and used in the United States by, at the latest, November 2010. Gaikai publicly demonstrated its cloud gaming platform in June 2009. In or before November 2010, Gaikai's platform was made available to the public in a beta program whereby users could sign up to play games on Gaikai's platform. At this time, Gaikai restricted access to its platform to users who lived within a certain geographic radius of its data centers. On information and belief, it imposed no other limitations on who could participate in its beta program. By November 26, 2010, Gaikai had more than 11,000 users in its beta program. Gaikai was fully launched on or before February 17, 2011. At least individuals associated with Gaikai, Inc. (now Sony Interactive Entertainment LLC) were involved in the creation of Gaikai and are knowledgeable regarding its operation. Gaikai is described in at least the following documents:

- Gaikai – Video Demo, June 30, 2009, https://dperry.com/2009/06/30/gaikai_-_video/ (last accessed 11/26/2024) (AMAZON_BSDII_PA_00001471-1482);
- Gaikai: Cloud Gaming Platform and Services (05/06/2012), at 2 (available at https://web.archive.org/web/20120506093107/http://www.gaikai.com/services) (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000486-487);
- "What is Gaikai" page of www.gaikai.com (dated September 14, 2010) https://web.archive.org/web/20100914071214/http://www.gaikai.com/about#affiliates (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000766-769);
- Gaikai, Feb, 8, 2012 Press Release (available at https://web.archive.org/web/20120421202940/http://www.gaikai.com:80/press/article/the-darkness-tm-ii-demo-now-available-on-gaikai-cloud-gaming-service (last accessed 11/26/2024) (AMAZON_BSDII_PA_00001945-1946);
- Face-Off: Gaikai vs. OnLive, *Eurogamer.net* (March 24, 2012) (available at: https://www.eurogamer.net/digitalfoundry-face-off-gaikai-vs-onlive) (last accessed 11/26/2024). (AMAZON_BSDII_PA_00001822-1836);
- Gaikai Cloud-Based Games Service Enters Open Beta with 11,000 Public Users, *Game Developer* (11/16/2010), at 2 (available at https://www.gamedeveloper.com/game-platforms/gaikai-cloud-based-games-service-enters-open-beta-with-11-000-public-users) (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000355-364); and
- Gaikai and InstantAction team up for Streaming, Embeddable Games, *EndGaget* (March 3, 2010) (available at: https://www.engadget.com/2010-03-11-gaikai-and-instantaction-

team-up-for-streaming-embeddable-games.html) (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000121-127).

2. **Blizzard Battle.net Servers.** Blizzard Battle.net Servers were publicly known and used in the United States as of at least August 1997. Specifically, Battle.net servers as they operated with at least the following games are prior art to the '887 patent: (1) Diablo II (released on June 29, 2000); (2) StarCraft II: Wings of Liberty (released on July 27, 2010); (3) World of Warcraft: Cataclysm (released on December 7, 2010); and (3) Diablo III (released May 15, 2012). At least individuals associated with Activision-Blizzard, Inc., which has since been acquired by Microsoft Corporation, were involved in the creation of Blizzard Battle.net Servers and are knowledgeable regarding its operation. Blizzard Battle.Net Servers are described in at least the following documents:

- Battle.Net Diablo II FAQ – The Arreat Summit (https://web.archive.org/web/20100826062406/https://classic.battle.net/diablo2exp/faq/multiplayer.shtml) (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000006-7);
- IMFreedom Knowledge Base – Battle.Net (https://kb.imfreedom.org/protocols/battle.net/) (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000001-5); and
- Battle.Net Support – StarCraft II System Requirements (https://web.archive.org/web/20120217214917/http://us.battle.net/support/en/article/starcraft-ii-system-requirements) (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000228-229).

3. **Citrix System.** Citrix XenDesktop and XenApp (formerly Citrix Receiver) (together, the "Citrix System") version 12.1.0.30 and earlier versions are prior art to the '887 patent. Version 12.1.0.30 was released in November 2010. At least individuals associated with Citrix Systems, Inc. and its parent entity, TIBCO Software, were involved in the creation of the Citrix System and will be knowledgeable regarding its operation. The Citrix System is described in at least the following documents:

- Citrix Receiver for Enterprise Apps | White Paper (AMAZON_BSDII_PA_00001619-1624);
- Citrix Receiver for Enterprise Applications | Technical White Paper (AMAZON_BSDII_PA_00000130-141);

- Citrix Receiver Overview - https://web.archive.org/web/20110821214503/http://www.citrix.com:80/English/ps2/products/feature.asp?contentID=2304431 (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000451-452);
- Citrix Receiver How it Helps, Mobility - https://web.archive.org/web/20110815205448/http://www.citrix.com/English/ps2/products/subfeature.asp?contentID=2304435 (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000021-22);
- How it Helps, iPad for Business - https://web.archive.org/web/20110815205033/http://www.citrix.com/English/ps2/products/subfeature.asp?contentID=2300386 (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000797-798);
- Citrix Receiver – What's new with Citrix Receiver (dated December 14, 2010) https://web.archive.org/web/20101214031144/http://citrix.com/English/ps2/products/subfeature.asp?contentID=2306035 (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000799-800);
- Citrix Receiver How it Helps, Bring Your Own - https://web.archive.org/web/20110815205503/http://www.citrix.com/English/ps2/products/subfeature.asp?contentID=2304436 (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000093-94);
- Citrix Receiver How It Works - https://web.archive.org/web/20110815205245/http://www.citrix.com/English/ps2/products/feature.asp?contentID=2300362 (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000198-199);
- Citrix Receiver How It Works, Features - https://web.archive.org/web/20110815205440/http://www.citrix.com/English/ps2/products/subfeature.asp?contentID=2304432 (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000472-473); and
- Citrix Receiver How It Works, Platforms - https://web.archive.org/web/20110815205252/http://www.citrix.com/English/ps2/products/subfeature.asp?contentID=2300390 (last accessed 11/26/2024) (AMAZON_BSDII_PA_00001040-1041).

4. **VMWare System**. VMWare Workstation 7.1 and earlier versions, together with associated servers (collectively "VMWare"), are prior art for the '887 patent. VMWare WorkStation 7.1 was available for purchase as of at least November 2010. At least individuals associated with VMWare LLC and its parent entity, Broadcom Corporation, were involved in the creation of the VMWare System and will be knowledgeable regarding its operation. The VMWare System is described in at least the following documents:

- Workstation User's Manual, VMWare workstation v. 7.1 (AMAZON_BSDII_PA_00002024-2537);
- VMware Celebrates Seven Years of Continual Innovation and Execution,

https://news.broadcom.com/releases/7year (last accessed 12/4/2024) (AMAZON_BSDII_PA_00000592-594); and

- VMware Workstation from 1999 to 2015, https://www.virten.net/2015/12/vmware-workstation-from-1999-to-2015/ (last accessed 12/4/2024) (AMAZON_BSDII_PA_00002018-2023).

5. **Valve Corporation.** Valve Corporation had several server-based gaming systems that are prior art to the '887 patent. For example, Team Fortress 2 was released in October 2007. In addition, Valve released a browser-based cloud gaming platform. In 2008, Valve released Counter-Strike Online, a cloud-based version of Counter-Strike hosted on Valve's servers. On information and belief, Team Fortress 2 and Counterstrike Online are representative of the operation Valve's server-based gaming ("Valve Systems"). At least individuals associated with Valve Corporation were involved in the creation of the Valve Systems and will be knowledgeable regarding its operation. The Valve Systems are described in at least the following documents:

- How to set up a Team Fortress 2 dedicated server on Ubunto -- https://web.archive.org/web/20101129203352/http://stevenbenner.com/2010/11/how-to-set-up-a-team-fortress-2-dedicated-server-on-ubuntu/ (last accessed 12/4/2024) (AMAZON_BSDII_PA_00000345-354);
- Source Dedicated Server install -- https://web.archive.org/web/20100722071125/http://www.srcds.com/db/engine.php?subaction=showfull&id=1097362093 (last accessed 12/4/2024) (AMAZON_BSDII_PA_00000625);
- Source Dedicated Server -- https://web.archive.org/web/20090112060853/https://srcds.com/ (AMAZON_BSDII_PA_00000095);
- Counter Strike Online review and overview -- https://web.archive.org/web/20130612061146/http://nogamenotalk.com:80/2010/11/11/counter-strike-online-overview-and-review (last accessed 12/4/2024) (AMAZON_BSDII_PA_00002538-2541);
- Khan, Abdul Malik et al, "Adaptable client-server architecture for mobile multi-player games," DISIO, March 15, 2010 (AMAZON_BSDII_PA_00001878-1885).

6. **OnLive.** OnLive operated a cloud gaming platform that launched to the public on or before June 17, 2010 ("OnLive Game System"). Users could play cloud-based games directly from their browsers or from televisions with an OnLive Wireless Controller. Users could also connect game controllers to the OnLive system. At least individuals associated with Sony Interactive Entertainment LLC, which acquired OnLive in 2015, were involved in the creation of the OnLive Game System and will be knowledgeable regarding its operation. The OnLive Game

System is described in at least the following documents:

- OnLive: It's Live!, *Technologize*r (June 17, 2010), https://technologizer.com/2010/06/17/onlive-its-live/index.html (last accessed 11/30/2024) (AMAZON_BSDII_PA_00000341-344);
- OnLive Cloud Gaming Service Goes Live June 17, *TechCrunch* (June 15, 2010), https://techcrunch.com/2010/06/15/onlive-cloud-gaming-service-goes-live-june-17/ (last accessed 11/30/2024) (AMAZON_BSDII_PA_00000085-92);
- OnLive's Gaming Cloud Powered by Custom Dell Servers (June 15, 2010), *Barton Blog*, https://bartongeorge.io/2010/06/15/onlives-gaming-cloud-powered-by-custom-dell-servers/ (last accessed 11/30/2024) (AMAZON_BSDII_PA_00000763-765);
- Dell Lands Customer Gaming Server Deal, *The Register* (June 15, 2010), https://www.theregister.com/2010/06/15/dell_dcs_server_onlive/ (last accessed 11/30/2010) (AMAZON_BSDII_PA_00001947-1948);
- How OnLive Works page of www.onlive.com (dated Oct. 11, 2010), available at: https://web.archive.org/web/20101110005536/http://www.onlive.com/service/cloudgaming (last accessed 11/30/2010) (AMAZON_BSDII_PA_00001677-1678);
- OnLive Blog page of www.onlive.com (dated Oct. 11, 2010), available at https://web.archive.org/web/20101110005411/http://blog.onlive.com/ (last accessed 11/30/2010) (AMAZON_BSDII_PA_00001498-1504);
- Review: OnLive-The What, Why and Who of Gaming in the Cloud, *Wired* (Jun. 2, 2011), https://www.wired.com/2011/06/review-onlive-the-what-why-and-who-of-gaming-in-the-cloud/ (last accessed 11/30/2010) (AMAZON_BSDII_PA_00000430-450);
- Dr. R. Ranjan, *OnLive Cloud Gaming Service* (May 2011) (AMAZON_BSDII_PA_00001837-1850); and
- Reviews: OnLive Universal Wireless Controller Review, *The Verge* (Feb. 23, 2012)) (available at https://www.theverge.com/2012/2/23/2814926/onlive-universal-wireless-controller-review (last accessed 11/26/2024) (AMAZON_BSDII_PA_00000646-663).

Defendants have not yet completed discovery in this case, including but not limited to taking depositions of the alleged inventors of the asserted patent, reviewing Plaintiff's productions, and seeking discovery of prior inventions by third parties. Defendants have served third-party discovery requests on Sony Interactive Entertainment LLC, Activision-Blizzard, Inc., Valve Corporation, Citrix, and VMWare to seek discovery of each of the prior art references listed above. Defendants reserve the right to supplement this disclosure with facts, documents, or other information learned at a later point through discovery, including discovery provided in response to its third-party subpoenas, or other further investigation.

II. STATEMENT OF ANTICIPATION AND OBVIOUSNESS

Below are the grounds on which the claims of the asserted patent are invalid for failure to meet the requirements of both 35 U.S.C. § 102 and 35 U.S.C. § 103. Plaintiff's asserted claims are neither novel nor non-obvious.

A. Anticipation of the Asserted Claims

Defendants contend the asserted claims are invalid under 35 U.S.C. § 102 as being anticipated by the individual prior art references presented in these contentions. Single items of prior art that anticipate the asserted claims of the '887 patent are cited and described in the claim charts attached hereto as Exhibits 1-10. These claim charts provide citations to portions of the above references, illustrating how the prior art explicitly discloses every element of the asserted claims. To the extent any element is not provided by an express disclosure by the referenced prior art, all elements of the asserted claims would still be the inherent result of putting into practice the systems and methods described by the prior art referenced herein, as set forth below.

B. Obviousness of the Asserted Claims

In addition to the discussion above, and to the extent not anticipated, the asserted claims are invalid under 35 U.S.C. § 103 as being obvious to a person having ordinary skill in the art of the relevant technology. In the event a particular prior art reference identified above in Section I does not anticipate one of the asserted claims, the reference, alone or in combination with one or more of the other references disclosed herein and/or with the knowledge of a person of ordinary skill in the art, renders the claim obvious. Items of prior art that render obvious the asserted claims of the asserted patent are cited and described in the claim charts attached hereto as Exhibits 1-10. The identification of certain combinations of prior art does not exclude other combinations and is without prejudice to Defendants' right to rely on additional specific combinations as well as to detail and explain such combinations.

Defendants further believe that no showing of a specific motivation to combine prior art is required to combine the references disclosed above, as each combination of prior art would have no unexpected result, and at most would simply represent a known alternative to one of ordinary skill in the art. *See KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1739-40 (2007) (rejecting Federal

Circuit's "rigid" application of teaching, suggestion, or motivation to combine test, instead espousing "expansive and flexible" approach). The Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id*. at 1742. Nevertheless, in addition to the other information contained herein, Defendants hereby identify various motivations and reasons to combine the cited art.

Clear and logical rationale to combine any of the references identified together in Section I, above, exists from the prior art references themselves, as well as from common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obviousness to try, the nature of the problem faced, and/or knowledge possessed by a person of ordinary skill. Defendants reserve the right to rely on the knowledge of those skilled in the art, the testimony of expert witnesses, and/or other prior art, to show that it would have been obvious to include any allegedly missing limitations and to explain the motivation to combine the prior art elements.

For example, to the extent any reference identified above does not disclose transmitting different data types (*e.g.* audio and video) in different streams, it would have been obvious to a person of ordinary skill in the art at the time of the '887 patent to transmit different types of data in different data streams. Splitting data into separate streams was known in the art and was a common technique used to, for example, decrease latency, decrease jitter, and increase resolution in multimedia streams. It was explicitly disclosed in several prior art references, including Rinne, which predates the earliest claimed priority date of the '887 patent by nearly a decade. *See*, *e.g.*, Rinne at ¶ 19 ("different QoS parameters may thus be applied for audio data stream [sic] than for video data stream from one and the same application (*e.g.* a web browser)."). A POSITA therefore would have known to transmit different types of data in different streams, and it would have yielded predictable results.

In another example, to the extent that any reference identified above does not disclose varying quality of service between different data streams, it would have been obvious to a person of ordinary skill in the art at the time of the '887 patent to do so. Under Plaintiff's apparent

infringement theory, this limitation is met by transmitting different streams (*e.g.* audio and video data) at different rates. *See*, *e.g.* Infr. Cont. Ex. 1 at 46-47. Doing so would have been obvious to a person of ordinary skill in the art, especially in the context of streaming multimedia in real time, because audio and video data is not the same size. Therefore, to keep audio and video data synced at the client device, it would necessarily have to be transmitted at different rates. More generally, to the extent this limitation discloses having different quality of service metrics for different streams, this was well-known in the art at the time of the '887 patent and was widely used at the time to increase quality of service (*e.g.* decrease lag and increase transmission speed) for multimedia streams. This is particularly true because quality of service concerns are different across data types (*e.g.* resolution is a more significant concern for video than it is for audio). For example, Rinne, which was published nearly a decade before the earliest claimed priority date of the '887 patent, discloses varying quality of service metrics for audio and video streams. *See, e.g.*, Rinne at ¶ 19 ("different QoS parameters may thus be applied for audio data stream [sic] than for video data stream from one and the same application (*e.g.* a web browser)."). A POSITA therefore would have known to apply a different quality of service to different types of data in different streams, and it would have yielded predictable results.

In another example, to the extent any reference does not disclose a system where different types of data are encoded using different encoding methods and transmitted at different bandwidths, it would have been obvious to a person of ordinary skill in the art at the time of the '887 patent to do so. As noted above, sending different types of data in different streams was a known technique used to increase quality of service, particularly for multimedia streaming. *See* Rinne at ¶ 19. It would have been obvious to encode such streams using different encoding methods, since different encoding methods are commonly used for audio and video data. *See*, *e.g.*, Overton at 31:39 ("The wrapper may include various types of media encoders 120, such as, for example, Moving Pictures Experts Group (MPEG) encoders, H.264 encoders, FlashR) video encoders, etc. Such media encoders 120 may be selected according to factors such as, for example, data reduction, encoding quality, latency"); R. Rangan, *OnLive Cloud Gaming Service* at 6*ff* (canvassing different video encoding methods that can be used as alternatives). A POSITA would have known that using

different encoding methods for audio and video streams would have allowed them to apply different quality of service parameters to each. *See* Rinne at ¶ 19. Moreover, as noted above, audio and video streams transmit different quantities of data. Therefore, in a real-time multimedia stream—such as cloud-based gaming, or streaming video with audio—separate audio and video streams would necessarily be transmitted at different bandwidths. A POSITA seeking to address quality of service concerns therefore would have known to apply different encoding methods to streams of different types of data (*e.g.* audio and video) increase quality of service. In the context of a real-time multimedia stream, such a technique would have necessarily resulted in the audio and video streams being transmitted at different bandwidths.

In another example, to the extent any reference identified above does not disclose a system where input data is not processed to produce a display, audio or hardware action at the mobile device before being sent to the server, it would have been obvious to a person of ordinary skill in the art at the time of the '887 patent to do so. At the time of the '887 patent, several systems used a "thin client" model where input data would be sent directly to a server for processing instead of being processed on the mobile device. Thin clients avoided common problems associated with mobile devices, such as (1) running demanding processes (*e.g.* gaming) on mobile devices with limited computing capability; and (2) addressing interoperability concerns by allowing applications to run on mobile devices regardless of the operating system or specific programs installed on them. To this end, several prior art references disclose a thin client. For example, Gaikai and OnLive used a thin-client model where users did not have to "install[] anything" on their mobile device to play cloud-based games. Gaikai – Video Demo at 1 (AMAZON_BSDII_PA_00001471). *Also see* "What is Gaikai" at 1 (AMAZON_BSDII_PA_00000766) ("Gaikai is a cloud-based gaming technology that allows users to play major PC and console games like Call Of Duty or World Of Warcraft instantly, with one click. No download or install required."); How OnLive Works page (11/10/2010) (AMAZON_BSDII_PA_00001677); Dr. R. Ranjan, OnLive Cloud Gaming Service, at 5 (May 2011) (AMAZON_BSDII_PA_00001837). Khan disclosed a similar system for cloud-based gaming. Khan at 1, 2 (AMAZON_BSDII_PA_00001878). *Also see* Lu at ¶ 3; claim 1. Likewise, the Citrix System offered browser-based access whereby, on information and belief,

input data was transmitted directly to the server before being processed by the mobile device. *See* Citrix Receiver – What's new with Citrix Receiver (AMAZON_BSDII_PA_00000799). A POSITA therefore would have known not to process input data at a mobile device to produce a display, audio or hardware action before it is sent to the server, and doing so would have yielded predictable results. It would have been obvious to try such a combination or modification in order to: (1) stream multimedia data to devices with limited computing capabilities; and (2) to stream multimedia data to mobile devices, regardless of the specific operating systems or applications installed on them.

In another example, to the extent any reference identified above does not disclose a system where user interface information is streamed to a plurality of mobile devices, it would have been obvious to a person of ordinary skill in the art at the time of the '887 patent to do so. At the time of the '887 patent, distributed system processing was a common technique used to overcome the limited computing power of mobile devices. As noted above, processing data on servers—as opposed to mobile devices—allowed users on mobile devices to run complex, data-intensive processes that mobile devices alone were unable to carry out. To that end, several prior art references discuss streaming multimedia data from a server to a plurality of mobile devices. *See*, *e.g.*, Gaikai – Video Demo at 1 (noting Gaikai supported multiplayer gaming) (AMAZON_BSDII_PA_00001471); Lu at ¶ 180 (disclosing streaming from a server "to one or multiple client systems"); ¶ 202 (delivering stream "to one or multiple client systems through local network" (e.g. local area network, metropolitan area network, local wireless network, or mobile network"); claims 10, 18 (disclosing transmission to "at least one client system"); Battle.Net, Diablo II The Arreat Summit FAQ at 1-2 (disclosing multiplayer cloud-based gaming) (AMAZON_BSDII_PA_00000006); Rinne at ¶ 13 ("Multiple clients can use a Single Server Socket."). For similar reasons, prior art disclosed servers receiving inputs from a plurality of clients. *See*, *e.g.*, Lu at ¶ 26 (disclosing an embodiment that can "retrieve game appliance and execute game appliance for one or a collection of client systems"); ¶ 99 (disclosing server "receiv[ing[input from one or multiple client systems"); Overton at Fig. 1 (disclosing multiple clients). A POSITA therefore would have known to create a system where the server is capable of (1) receiving input

from more than one client device and (2) sending data processed by the server to more than one client device. Doing so would have yielded predictable results, such as supporting multiplayer cloud-based gaming, or allowing multiple devices to simultaneously execute functions on a remote desktop application.

In another example, to the extent any reference identified above does not disclose (1) receiving input information from mobile devices; (2) processing it into "user interface information"; and (3) and sending the "user interface information" to mobile devices "based on the same instance of a mobile operating system" that is "executed at the server," it would have been obvious to a person of ordinary skill in the art at the time of the '887 patent to do so. Under Plaintiff's apparent infringement theory, these limitations are met where the operating system installed on the server performs each of these steps, and the operating system installed on the end-user's mobile device "reproduces" it on the mobile device. *See* Infr. Cont. Ex. 1 at 22, 29, 75-77. To the extent any of the references identified above do not disclose the server's operating system (1) receiving data; (2) processing it; and (3) sending it to mobile devices, it would have been obvious to a POSITA to build a system where it does so. As noted above, distributed computer systems whereby servers were used to remotely process data sent by mobile devices were well-known at the time of the '887 patent. In this context, it would have been obvious to a POSITA to use the server's operating system to carry out these processes, as it would have allowed the server to carry out distributed computing processes without implementing more complex processes that virtualize or emulate the mobile device's operating system. In other words, receiving, processing, and sending data "based on the same instance" of the server's operating system was the most rudimentary solution to implement a distributed computing model. In fact, multiplayer cloud gaming—where a single server would use its operating system to process inputs from multiple end-users and transmit processed game data back to a plurality of users—was well-known at the time of the '887 patent and discussed in numerous publications. *See*, *e.g.*, Dr. R. Ranjan, OnLive Cloud Gaming Service, at 5 (May 2011) (AMAZON_BSDII_PA_00001837); Khan at 1, 2 (AMAZON_BSDII_PA_00001878). R. Suselbeck et. al., Peer-to-Peer Support for Low-Latency Massively Multiplayer Online Games in the Cloud, *IEEE Xplore* (2009); M. Bredel et. al, A

Measurement Study Regarding Quality of Service and Its Impact on Multiplayer Online Games, *IEEE Explore* (2009). By the time of the '887 patent, several systems had moved beyond this, proposing various ways of virtualization or emulating the operating system installed on the mobile device at the server to carry out data processing tasks. *See*, *e.g.*, Yun at Abstract (disclosing "a method and apparatus for providing a virtual environment of a mobile operating system [at a server] whereby a "virtualization server generates a virtual environment of a mobile OS, and operates a mobile application in the virtual mobile OS"); Overton at Abstract (disclosing "various embodiments that facilitate remote emulation of computing devices" on servers); Lu at Abstract (disclosing a method and apparatus to "execute a game appliance [at a server] using emulation or virtualization" of a mobile device); Citrix System (generally disclosing a system that virtualizes a mobile desktop on a server). A POSITA therefore would have known to create a system where the server's operating system receives input information, processes it, and sends it back to mobile devices. A POSITA also would have known to create a similar system that relies on a virtualized or emulated mobile operating systems at the server to perform those functions. Doing so would have yielded predictable results.

For similar reasons, to the extent any reference identified above does not disclose "processing, by a same instance of a mobile device operating system (OS) executed at the server, the input information from each of the plurality of different mobile devices," it would have been obvious to a person of ordinary skill in the art at the time of the '887 patent to do so. Under Plaintiff's apparent infringement theory, this limitation is met where the operating system installed on the server processes data received from a plurality of mobile devices. *See* Infr. Cont. Ex. 1 at 32, 55-62. As noted above, distributed computer systems whereby servers were used to remotely process data sent by mobile devices were well-known at the time of the '887 patent. In this context, it would have been obvious to a POSITA to use the server's operating system to process data from multiple mobile devices, as it would have been the most rudimentary solution available at the time. As such, several prior art references disclose this limitation. *See*, *e.g.*, Gaikai – Video Demo at 3 (noting Gaikai supported multiplayer gaming) (AMAZON_BSDII_PA_00001471); Rinne at ¶ 13 (processing data from "[m]ultiple clients [at] a Single Server Socket."); Battle.Net, Diablo II The

Arreat Summit FAQ at 1-2 (disclosing multiplayer cloud-based gaming) (AMAZON_BSDII_PA_00000006). In fact, multiplayer cloud gaming—where a single server would use its operating system to process inputs from multiple end-users and transmit processed game data back to a plurality of users—was well-known at the time of the '887 patent and discussed in numerous publications. *See*, *e.g.* R. Suselbeck et. al., Peer-to-Peer Support for Low-Latency Massively Multiplayer Online Games in the Cloud, *IEEE Xplore* (2009); M. Bredel et. al, A Measurement Study Regarding Quality of Service and Its Impact on Multiplayer Online Games, *IEEE Explore* (2009). To that end, by the time of the '887 patent, several prior art references disclosed more complex systems, where a single mobile device's operating system was emulated or virtualized on a server to process input data from a plurality of mobile devices. *See*, *e.g.*, Yun at Abstract ("virtualization server generates a virtual environment of a mobile OS, and operates a mobile application in the virtual mobile OS" capable of processing input data from more than one mobile device); Overton at Abstract (disclosing "various embodiments that facilitate remote emulation of computing devices" on servers, including embodiments receiving input from multiple client devices); Lu at Abstract (disclosing method and apparatus to "execute a game appliance [at a server] using emulation or virtualization" of a mobile device, and receiving input from multiple client systems); Citrix System (generally disclosing system that virtualizes mobile desktop on server that can be accessed by multiple mobile devices). A POSITA therefore would have known to create a system where the server's operating system processes input information from multiple mobile devices. A POSITA also would have known to create a similar system that relies on a virtualized or emulated mobile operating system to process input data from multiple mobile devices. Doing so would have yielded predictable results.

At most, the claimed invention of the asserted patent is nothing more than the obvious combination of familiar elements, yielding entirely predictable results. If and to the extent Plaintiff challenges the correspondence of any of these references to particular elements of the respective asserted claims, Defendants reserve the right to supplement these contentions to identify with additional particularity motivation to combine particular references identified together in specific combinations with one another. Defendants may rely upon a subset of combined references

depending upon the Court's claim construction and upon further investigation.

C. Plaintiff's Failure to Substantiate Its Position Regarding a December 2010 Conception Date for Claims 11 and 17 of the '877 Patent

BSD has alleged a December 2010 conception date for claims 11 and 17 of the '887 patent. BSD has failed, however, to substantiate its claim with supporting evidence, in contravention of Patent L.R. 3-2 and despite multiple requests by Defendants, including Interrogatory No. 1 requiring BSD to "describe in detail the date and circumstances of the conception" of the asserted claims, including "all facts and evidence that corroborate" its position. *See* BSD's Objections and Responses to Defendants' First Set of Interrogatories (Nos. 1-13), served on September 26, 2024, at 1, and follow-up correspondence.

BSD was required to produce all documents supporting its priority date claim with its infringement contentions on October 15, 2024. *See* Patent L.R. 3-2(b). Despite that, BSD waited until December 6, 2024—one business day before these Invalidity Contentions were due to be served—to produce a document dated December 23, 2010 and supplement its response to Interrogatory No. 1 to cite to that document. *See* BSD's Supplemental Objections and Responses to Defendants' First Set of Interrogatories (Nos. 1-13), served on December 6, 2024, at 6; BSD2_00000950; Patent L.R. 3-2 (requiring all documents supporting an earlier conception date to be produced with infringement contentions). At the same time, BSD removed any reference to the alleged December 2010 conception date from its response to Interrogatory No. 2 (seeking BSD's positions regarding priority date). BSD's Supplemental Objections and Responses to Defendants' First Set of Interrogatories (Nos. 1-13), served on December 6, 2024, at 7-8.

BSD's failure to substantiate its position regarding the conception of claims 11 and 17, its failure to clearly articulate a position regarding the priority date of those claims, and its production of the only document from 2010 seemingly in support of its position nearly two months late and a single business day before these contentions were due violates the Patent Local Rules and has prejudiced Defendants' ability to prepare these Invalidity Contentions. BSD's failure to substantiate its position has prevented Defendants from being able to assess BSD's claim of a December 2010 priority date, severely affecting Defendants' ability to select prior art to assert

through these contentions. Defendants reserve the right to amend these Invalidity Contentions based on any additional information BSD provides regarding the purported conception of claims 11 and 17 before May 31, 2012, which is the date on which Provisional Application 61/653,819, to which the '887 patent claims priority, was filed.

III. CLAIM CHARTS WITH SPECIFIC REFERENCES TO THE PRIOR ART

Defendants attach their claim charts for the '887 patent as Exhibits 1-10.

The claim charts identify the prior art that anticipates and/or, alone or in combination with other identified prior art, renders obvious the asserted claims and where in each item of prior art each element of the asserted claims is found. In instances where Defendants cite to a particular figure in a prior art reference, the citation should be understood to encompass the caption and description of the figure, and any text relating to the figure in addition to the figure itself. Conversely, where a cited portion of text refers to a figure, the citation should be understood to include the figure as well. Defendants contend that each identified prior art reference alone or in combination with the knowledge of a POSITA and/or other identified prior art references or a group of identified prior art references renders the asserted claims obvious. Without prejudice to Defendants' right to cite additional combinations of prior art, Exhibits 1-10 demonstrate that the asserted claims of the '887 patent are invalid in view of the following:

- Battle.Net Servers, alone or in combination with Richardson, Lubonski, Rinne, Lu, WebRTC, Gaikai, OnLive, Khan, and/or the knowledge of a person or ordinary skill in the art.
- The Citrix System, alone or in combination with Lubonski, Rinne, and/or the knowledge of a person or ordinary skill in the art.
- VMWare, alone or in combination with Lubonski, Rinne, and/or the knowledge of a person or ordinary skill in the art.
- Overton, alone or in combination with Richardson, Lubonski, Rinne, and/or the knowledge of a person or ordinary skill in the art.
- Das, alone or in combination with Lubonski, Rinne, and/or the knowledge of a person or ordinary skill in the art.

- Gaikai, alone or in combination with Richardson, Lubonski, Rinne, Lu, WebRTC, and/or the knowledge of a person or ordinary skill in the art.
- OnLive Game System, alone or in combination with Richardson, Lubonski, Rinne, Lu, WebRTC, and/or the knowledge of a person or ordinary skill in the art.
- Lu, alone or in combination with Richardson, Lubonski, Rinne, and/or the knowledge of a person or ordinary skill in the art.
- Yun, alone or in combination with Richardson, Lubonski, Rinne, and/or the knowledge of a person or ordinary skill in the art.
- The Valve System, alone or in combination with Richardson, Lubonski, Rinne, WebRTC and/or the knowledge of a person or ordinary skill in the art.

To the extent that any prior art reference disclosed in these contentions is not cited in the attached claim charts, Defendants also reserve the right to rely on the disclosed references, either alone or in combination with one or more of the other references disclosed herein.

IV. GROUNDS FOR INVALIDITY

Below are the grounds on which the claims of the asserted patent are invalid for failure to meet the requirements of 35 U.S.C. § 101 and 35 U.S.C. § 112 ¶ 1.

A. 35 U.S.C. § 101 – Patent Ineligibility

Under 35 U.S.C. § 101, "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of [Title 35]." "This provision, however, contains longstanding judicial exceptions, which provide that laws of nature, natural phenomena, and abstract ideas are not eligible for patenting." *ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 765 (Fed. Cir. 2019). To determine if claims are patent eligible, the first step is to "determine whether the claims at issue are directed to one of those patent-ineligible concepts." *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 217 (2014). If so, the second step is to "search for an 'inventive concept'—*i.e.*, an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself." *Id.* at 217-18 (internal quotation marks omitted).

Here, the '887 patent's asserted claims are ineligible under § 101 because they (a) are directed to the abstract idea of processing data from a mobile device at a server and (b) add only non-inventive elements (such as generic data transmission techniques to transmit server-processed data) to that abstract idea.

1. The Asserted Claims Are Directed to the Abstract Idea of Processing Data From a Mobile Device at a Server

The '887 patent's asserted claims are ineligible under § 101 because they are directed to the abstract idea of processing data from a mobile device at a server. This is evident from the claim language and the specification.

a. The Claims Recite Results-Oriented Functional Language

The asserted claims recite highly generic terms, focusing on an "abstract end result" rather than a "specific means or method for improving technology." *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1326 (Fed. Cir. 2017) (cleaned up).

Independent claim 11 recites a method for "emulating a mobile device at a server" that consists of the generic steps of (1) receiving input data from a mobile device; (2) processing it into "user interface information"; and (3) transmitting processed "user interface information" data back to the mobile device using conventional techniques. *Adaptive Streaming Inc. v. Netflix, Inc.*, 836 F. App'x 900, 903 (Fed. Cir. 2020) ("encoding and decoding image data and . . . converting formats, including when data is received from one medium and sent along through another, are by themselves abstract ideas"). Requiring the server to process data with a "mobile device OS executed at the server" and sending it to the mobile device to produce an action "based on the same instance of the mobile OS"—is purely functional. Claim 11 is "directed to an abstract concept rather than a technical improvement." *Aftechmobile Inc. v. Salesforce.com, Inc.*, No. 19-CV-05903-JST, 2020 WL 6129139, at *6 (N.D. Cal. Sept. 2, 2020), *aff'd*, 853 F. App'x 669 (Fed. Cir. 2021). The only other asserted independent claim—claim 20—is equally generic. Independent claim 20 is identical to claim 11, except it recites a server communicating with a plurality of mobile devices, which the '887 specification itself admits was possible using conventional systems at the time of the invention. *Also see* Claim 15 (adding the requirement of receiving data from a plurality of mobile

devices to claim 11).[1]

The remaining dependent claims fare no better. They merely recite techniques to transmit processed data from the server to one or more mobile devices, again in purely functional terms. For example, claims 16 and 24 add nothing to the independent claims, apart from requiring that "at least one of [the] separate data streams comprises a quality of service different from a quality of service of another of [the] data streams." Neither the claims nor the specification provides any detail as to what this quality of service might be, nor how to achieve this outcome. *Aftechmobile*, 2020 WL 6129139, at *6 (claims providing no details explaining how to implement claimed software functions directed to abstract idea). Moreover, the basic concept of using different quality of service metrics for different data streams was conventional. *See*, *e.g.*, Rinne at ¶ 19. Claims 16 and 24 do not recite any specific techniques for assigning different quality of service to different streams, let alone techniques that improve upon conventional knowledge at the time of the '887 patent.

Likewise, claims 17 and 25 recite different data streams being encoded using "different encoding method[s]" and being transmitted at "different bandwidth[s]." Again, this generic disclosure recites nothing more than a functional result, divorced from any real technological improvement or anything non-conventional at the time of the '887 patent. For example, the '887 specification makes clear that conventional encoding methods can be used. *See*, *e.g.*, 9:47-67. It states that the *goal* of this limitation is to "achieve minimal latency for user interface related messages and data stream encoding." *Id*. at 9:48-49. But it does not explain how to achieve said goal, other than through the use of conventional encoding methods. *See, e.g.*, *id*. at 9:60-61 (noting that "bandwidth (BW) may be automatically calculated based on a bandwidth required for the type of stream," but providing no details as to how that calculation is performed)[2]; *see also RecogniCorp*, 855 F.3d at 1326 ("generalized steps [for encoding and decoding information] to be performed on

[1] For similar reasons, requiring different types of data to be sent "in separate data streams" does not make the claims any less abstract. *See* '887 patent, cls. 11 and 23. To begin with, sending different types of data in different streams was conventional at the time of the '887 patent. *See, e.g.*, Rinne, ¶ 19. Moreover, "converting formats" of data is an abstract idea. *Adaptive Streaming*, 836 F. App'x at 903.

[2] Nor does the requirement for streams to have "different bandwidths" add anything inventive. For example, because audio and video streams have different quantities of data per unit of time, they would necessarily be transmitted at "different bandwidths."

a computer using conventional computer activity" were abstract).

The specification confirms that the claims' central purported advance is the abstract idea of processing data from a mobile device at a server. *See e.g.*, '887 patent at 1:15-18 (describing invention as "systems and methods in which a mobile device acts as an input/output interface for a user, and actual processing, storage, and network interfaces are performed by a remote server"). There is nothing novel about that idea. "[I]t is undisputed that, [by 1994], distributed processing was [a] well-understood, routine, conventional activity." *Eolas Techs. Inc. v. Amazon.com, Inc.*, 2024 WL 371959, at *6 (Fed. Cir. Feb. 1, 2024). For this reason, the Federal Circuit has consistently found similar claims abstract and patent ineligible. *See*, *e.g.*, *Dropbox, Inc. v. Synchronoss Techs., Inc.*, 815 F. App'x 529, 537 (Fed. Cir. 2020) (claim directed to uploading and downloading data from a mobile device to a server by way of a mobile network was directed to abstract idea); *Two-Way Media Ltd. v. Comcast Cable Commc'ns, LLC*, 874 F.3d 1329, 1337 (Fed. Cir. 2017) (claims that purportedly provided "an improved scalable architecture for delivering real-time information" over a network abstract and ineligible); *Free Stream Media Corp. v. Alphonso Inc.*, 996 F.3d 1355 (Fed. Cir. 2021) (claims reciting a "television," various servers, and a "mobile device" that could "process an embedded object, constrain an executable environment in a security sandbox, and execute a sandboxed application in the executable environment" did not "identify 'how' [its] functional result is achieved"); *Eolas*, 2024 WL 371959 at *6 (claims reciting to distributing processing between an application and remote computer were directed to an abstract idea where they "merely describe a desired function without providing details of the claimed distributed processing."); *Device Enhancement LLC v. Amazon.com, Inc.*, 189 F. Supp. 3d 392, 403-04 n.15 (D. Del. 2016) (claims for "[u]sing distributed architecture to enable remote adaptation of applications beyond the capabilities and an individual device" directed to an abstract idea).

The claims at issue here are directed to the abstract idea of processing data from a mobile device at a server. They simply use the recited components in a conventional manner. Requiring the data to be processed "by a mobile device OS executed at the server" does not make the claims any less abstract, because these limitations are described in purely functional terms.

b. The Claims' Use of Remote Processing is Akin to Basic Human Teamwork or Project Management

The asserted claims' use of remote data processing is akin to a concept as old as humanity: many hands make light work. A basic tenet of human teamwork is to distribute discrete tasks amongst team members. *See*, *e.g.*, '887 patent at 1:12-18 (describing embodiments as distributing tasks of "act[ing] as input/output interface for a user" and "actual processing, storage, and network interfaces" between a mobile device and remote server); *Appistry, Inc. v. Amazon.com, Inc.*, 195 F. Supp. 3d 1176, 1178-80 (W.D. Wash. 2016) (claims directed to "the abstract idea of distributed processing akin to the military's command and control system"), *aff'd*, 676 F. App'x 1008 (Fed. Cir. 2017). Employing such a concept in the "particular technological environment" of cloud computing for mobile devices does not make it "any less abstract." *Symantec*, 838 F.3d at 1314 (cleaned up); *see, e.g.*, *id*. at 1313-14 (claims for "filtering e-mails that have unwanted content" were akin to human activities and abstract despite "the particular technological environment of the Internet.") (cleaned up).

The claims here have far fewer specific limitations related to the remote processing of data than distributed processing claims found to be abstract in other cases. For example, there is no recitation of "executable instruction sets" (which could teach, for example, how to execute a mobile device operating system at a server) as in *Coho Licensing LLC v. Glam Media, Inc.*, No. C14-01576 (JSW), 2017 WL 6210882, at *5 (N.D. Cal. Jan. 23, 2017) (distributed processing claims abstract despite including "executable instruction sets"). Instead, the asserted claims merely recite unspecified "processing" of input information at a server to generate "user interface information" using a mobile device operating system executed at the server. *See* '887 patent at cls. 11, 20. The claims and specification merely rely on distributed processing between a mobile device and a server for their conventional use: enhancing processing power through division of labor. *See*, *e.g.*, '887 patent at 19-24; *Simio, LLC v. FlexSim Software Prods., Inc.*, 983 F.3d 1353, 1361 (Fed. Cir. 2020) (improved processing power does not render claim patent eligible).

c. The Asserted Claims are Unlike Claims Found Eligible at Step One

The asserted claims are nothing like the type of "specific improvement[s] to the way computers operate" or network functionality that the Federal Circuit has found eligible at *Alice* step one. *Enfish, LLC v. Microsoft Corp*., 822 F.3d 1327, 1336 (Fed. Cir. 2016). For example, in *Enfish*, the claims recited a specific improvement in database technology—a "self-referential" data structure. *Id*. at 1336-37. The Court found that "the self-referential table recited in the claims on appeal is a specific type of data structure designed to improve the way a computer stores and retrieves data in memory." *Id*. at 1339. By contrast, here, the claims provide no specific type of data structure or programming, or any specific technological improvement, to process data from a mobile device at a server in an improved way. And unlike *Enfish*, where the benefits taught in the patent flowed from the self-referential table recited in the claims themselves, here, any alleged benefits do not lead to improvements in the functioning of any claimed computer or networking. Rather, they are nothing more than "benefits that flow from performing an abstract idea in conjunction with a well-known" distributed architecture. *BSG Tech LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1288 (Fed. Cir. 2018). There is nothing in the claims that improves the functioning of the recited "mobile device," "mobile device OS," "server," or the transmission of data between them. This is evident from the fact that the specification admits the claims require only conventional computers (such as off-the-shelf "mobile devices" and "servers"), with generic operating systems (such as "Google's Android OS"), conventional computer networks (such as the "Internet"), and conventional data processing and transmission techniques (such as use of known encoding methods). '887 patent at 9:57; 10:9-18.

At *Alice* step one, the asserted claims are directed to the abstract idea of processing data from a mobile device at a server.

2. The Asserted Claims Add Nothing Inventive

At *Alice* step two, the Court must determine whether the claims add something "significant" "apart from" the abstract idea-an inventive concept that "transform[s] the abstract idea . . . into a patent-eligible application." *Chamberlain Grp. v. Techtronic Indus. Co.*, 935 F.3d 1341, 1348-49

(Fed. Cir. 2019); *see ChargePoint*, 920 F.3d at 774 (must add "significantly more" than the "use of [the abstract idea] itself"). BSD's asserted claims do not.

BSD's claims recite only generic computing components (mobile devices and servers), software (mobile device operating systems) and generic computing functions (processing and transmitting). *See* '887 patent at cls. 11, 15, 16, 17, 20, 23, 24, 25. The claimed functions are the same "basic functions of a computer" and "purely functional and generic" computer and network components that courts have found merely automate the abstract idea in a "particular technological environment" (*i.e.* mobile devices), which is insufficient to add an inventive concept. *Alice*, 573 U.S. at 225-26; *Two-Way Media*, 874 F.3d at 1339 (multiple network components and protocols for sending and receiving packetized data are non-inventive); *PersonalWeb Techs. LLC v. Google LLC*, 8 F.4th 1310, 1319 (Fed. Cir. 2021) ("merely adding computer functionality to increase the speed or efficiency of the process" or "mak[ing] more efficient traditional ... methods is non-inventive") (cleaned up); *Intell. Ventures I LLC v. Cap. One Bank (USA)*, 792 F.3d 1363, 1369-70 (Fed. Cir. 2015) ("merely adding computer functionality to increase the speed or efficiency of the process does not confer patent eligibility on an otherwise abstract idea" at step two); *Aflechmobile*, 2020 WL 6129139, at *3-5, *8-9 (compiling in user interface multiple software components from network is non-inventive).

Even when viewed "as an ordered combination," the claims "ad[d] nothing ... that is not already present when the steps are considered separately." *Alice*, 573 U.S. at 225 (cleaned up). The claims' arrangement is like those in *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350, 1355 (Fed. Cir. 2016), which likewise did not "require any nonconventional computer, network, or display components" and had no "non-generic arrangement." And like the claims here, those in *Electric Power* "merely call[ed] for performance of the claimed . . . functions" without explaining "how the desired result is achieved." *Id*. Similarly, the claims in *British Telecommunications* recited the terms "remote" "data visualization software" that "must allow for selecting and controlling presentation of the data," and be "downloadable onto a browser." *Brit. Telecomm. PLC v. IAC/InterActiveCorp*, 381 F. Supp. 3d 293, 314, 317 (D. Del. 2019). But "such software functionality was already well known." *Id*. at 317. The claims provided no "inventive

programming, and no inventive data monitoring tool" and no "inventive component." *Id*. The Court thus found that the claims "fail[ed] to limit the data visualization software tool to a 'specific, discrete implementation' featuring a technological improvement." *Id*. (cleaned up). So too here. The asserted claims provide no specific or discrete implementation, and instead merely claim functions and results. At bottom, the claims use only functional language without sufficiently describing how to achieve the results, confirming that they add nothing inventive. *Two-Way Media*, 874 F.3d at 1338-39 ("inventive concept" must be in "the claim" not just "in the specification"); *Aflechmobile*, 2020 WL 6129139, at *8-9.

B. 35 U.S.C. § 112 ¶ 1 – Enablement

To comply with the enablement requirement of 35 U.S.C. § 112 ¶ 1, the patent specification must teach those skilled in the art how to make and use the full scope of the claimed invention without undue experimentation. *In re Wright*, 999 F.2d 1557, 1561 (Fed. Cir. 1993). Courts consider multiple factors to determine whether experimentation is undue, including: "(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims." *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

Asserted claims 11 and 20, and all dependent claims, are invalid for failure to enable the alleged full scope of the alleged invention as required under 35 U.S.C. § 112 ¶ 1. Claim 11 requires "processing, by a mobile device operating system (OS) executed at the server." The patent specification does not disclose how the server executes a mobile device operating system. Specifically, claim 11 discloses "a method for emulating a mobile device at a server," but nowhere does it disclose how an emulated mobile operating system is executed at the server. The '887 patent does not contain sufficient information to enable a person of ordinary skill in the art to implement the method of claim 11 of the '887 patent.

Similarly, claims 11 and 20, and all dependent claims, are invalid for failure to enable the full scope of the invention under 35 U.S.C. § 112 ¶ 1 for failing to disclose how input data can be "process[ed] by a mobile device operating system (OS) executed at the server" to create user

interface information "for use in reproduction at the mobile device…. based on the same instance of the mobile device OS." The limitation requiring that reproduction on the mobile device be "based on the same instance of the mobile device OS" was added following a non-final rejection during the prosecution history to overcome prior art. *See* BSD2_00000042 at 77-78. Yet nothing in the '887 patent discusses how this is achieved. Without additional disclosure, a person of ordinary skill in the art would not understand how to process input data into user interface information based on a mobile operating system executed at the server, and then reproduce it on a mobile device based on the same instance of the mobile device operating system. Claims 11 and 20 are invalid because they are not enabled.

Likewise, claims 16 and 24, which require different data streams to "have a different quality of service," are invalid for failure to enable the full scope of the invention under 35 U.S.C. § 112 ¶ 1. A POSITA would understand Quality of Service to capture a nearly limitless category of techniques and technologies that, broadly speaking, manage network traffic to prioritize certain types of data or applications. No such techniques are discussed in the patent or file history, nor is there any indication of the particular techniques or outcomes claimed. The '887 patent does not contain sufficient information to enable a person of ordinary skill in the art to implement the method of claim 11 of the '887 patent.

C. 35 U.S.C. § 112 ¶ 1 – Written Description

To comply with the written description requirement of 35 U.S.C. § 112 ¶ 1, the patent specification must describe an invention in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention. *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1566 (Fed. Cir. 1997). Further, to satisfy the written description requirement, the disclosure of the patent must "convey with reasonable clarity to those skilled in the art that, as of the filing date sought, [the inventor] was in possession *of the invention*." *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991) (italics in original). "An applicant demonstrates that he was in possession of the invention by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the invention." *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572

(Fed. Cir. 1997). "[T]he written description inquiry looks to the four corners of the specification to discern the extent to which the inventor(s) had possession of the invention as broadly claimed. The knowledge of ordinary artisans may be used to inform what is actually in the specification, but not to teach limitations that are not in the specification, even if those limitations would be rendered obvious by the disclosure in the specification." *Rivera v. Int'l Trade Comm'n*, 857 F.3d 1315, 1322-23 (Fed. Cir. 2017) (citations omitted). In other words, even if something reflects an obvious variation of the invention disclosed in the specification, the claims are invalid for lack of written description.

The asserted claims are invalid for failure to provide a written description of the alleged inventions as required by 35 U.S.C. § 112 ¶ 1. In particular, the original disclosures do not contain sufficient information to show that the inventor, at the time of the original filing, possessed the alleged invention of processing and reproducing data based on the same instance of a mobile device operating system executed at a server.

Claims 11 and 20 require input data to be "process[ed] by a mobile device operating system (OS) executed at the server" to create user interface information "for use in reproduction at the mobile device…. based on the same instance of the mobile device OS." As noted above, the requirement that reproduction on the mobile device be "based on the same instance of the mobile device OS" was added following a non-final rejection during the prosecution history to overcome prior art. *See* BSD2_00000042 at 77-78. Yet nothing in the '887 patent discusses how this is achieved. As such, a POSITA would not "clearly conclude" that, based on the specification, the inventors were in possession of the claimed inventions as of the filing date of the '887 patent.

Likewise, claims 16 and 24 require different data streams to "have a different quality of service." A POSITA would understand Quality of Service to capture a nearly limitless category of techniques and technologies that, broadly speaking, manage network traffic to prioritize certain types of data or applications. No such techniques are discussed in the patent or file history, nor is there any indication of the particular techniques or outcomes claimed. As such, a POSITA would not "clearly conclude" that, based on the specification, the inventors were in possession of the claimed inventions as of the filing date of the '887 patent.

D. 35 U.S.C. § 112 ¶ 2 – Failure to Define the Scope of the Invention with Reasonable Certainty

To comply with the requirement of 35 U.S.C. § 112 ¶ 2, a patent's claims, read in light of the specification delineating the patent, and the prosecution history, must inform those skilled in the art about the scope of the invention with reasonable certainty. *Nautilus, Inc. v. Biosig Instruments, Inc*., 572 U.S. 898, 901 (2014). Several claims fail to meet this standard.

For example, as noted above, claims 11 and 20 require input data to be "process[ed] by a mobile device operating system (OS) executed at the server" to create user interface information "for use in reproduction at the mobile device…. based on the same instance of the mobile device OS." This limitation was added to overcome a non-final rejection, and is not discussed anywhere in the patent, specification, or file history. For example, the patent does not explain whether the mobile device OS must be installed on a mobile device and emulated at the server, and if so, the specific process by which this occurs. Nor does the patent explain whether this limitation is met by processing data using an operating system that is pre-installed on the server or—if this meets the requirements—the process by which that should occur. Claims 11 and 20 of the '887 patent are therefore invalid because the specification and prosecution history fail to inform a POSITA of the scope of "based on the same instance of the mobile device operating system (OS)" with reasonable certainty.

Likewise, claims 16 and 24 require different data streams to "have a different quality of service." A POSITA would understand Quality of Service to capture a nearly limitless category of techniques and technologies that, broadly speaking, manage network traffic to prioritize certain types of data or applications. None of these techniques are discussed in the patent or file history, nor is there any indication of the particular techniques or outcomes claimed. Claims 16 and 24 of the '887 patent are invalid because the specification and prosecution history fail to inform a POSITA of the scope of "hav[ing] a different quality of service" amongst data streams.

Claims 17 and 25 also fail to meet the *Nautilus* standard. Claims 17 and 25 recite different streams to comprise "an encoding method and a bandwidth different from an encoding method and a bandwidth of any other of said separate data streams." Claims 11 and 23—which claims 17 and

23 depend from—teach that each stream must comprise a different data type. A POSITA would know that different data types would necessarily have different bandwidths because they transmit a different amount of data per unit of time (*e.g.* video streams have more data than audio streams). Without more context, the "different bandwidths" limitation is meaningless in the context of the claim, which recites different data streams transmitting different types of data. Yet neither the specification nor the prosecution history shed any light on what is meant by this term. Claims 17 and 25 of the '887 patent are invalid because the specification and prosecution history fail to inform a POSITA of the scope of "hav[ing] a different quality of service" amongst data streams.

V. DOCUMENT PRODUCTION ACCOMPANYING CONTENTIONS

Pursuant to Patent Local Rule 3-4 of the Northern District of California, Defendants identify the following documents corresponding to the required categories of production by Bates number:

(a) Source code, specifications, schematics, flow charts, artwork, formulas, or other documentation sufficient to show the operation of any aspects or elements of an Accused Instrumentality identified by the patent claimant in its Patent L.R. 3-1(c) chart.

AMAZON_BSDII_00000115-560.

Additionally, source code sufficient to show the operation of the elements of Amazon Luna, the only instrumentality BSD put at issue in compliance with the requirements of Patent L.R. 3-1, is available for inspection pursuant to the Protective Order in this case at the offices of Perkins Coie LLP, 505 Howard St., San Francisco, CA 94105.

(b) A copy or sample of the prior art identified pursuant to Patent L.R. 3-3(a) which does not appear in the file history of the patent(s) at issue. To the extent any such item is not in English, an English translation of the portion(s) relied upon shall be produced.

AMAZON_BSDII_PA_00000001-2541.

(c) All agreements that the party opposing infringement contends are comparable to a license that would result from a hypothetical reasonable royalty negotiation.

BSD2_00000939; AMAZON_BSDII_00000693-803; AMAZON_BSDII_00000805-1785.

(d) Documents sufficient to show the sales, revenue, cost, and profits for accused instrumentalities identified pursuant to Patent L.R. 3-1(b) for any period of alleged infringement.

AMAZON_BSDII_00000804.

(e) All agreements that may be used to support the party denying infringement's damages case.

BSD2_00000939; AMAZON_BSDII_00000693-803; AMAZON_BSDII_00000805-1785.

Amazon reserves the right to rely on any additional agreements that may be produced by BSD or third parties in this litigation.

Dated: December 9, 2024

PERKINS COIE LLP

By: */s/ Mathieu A. Swiderski*
Mathieu A. Swiderski

Attorney for Defendants
AMAZON.COM, INC.,
AMAZON WEB SERVICES, INC., and
AMAZON.COM SERVICES LLC

CERTIFICATE OF SERVICE

I hereby certify that the on this 9th day of December, 2024, a true and correct copy of Defendants' Invalidity Contentions and Exhibits 1-10 thereto were served by email on Plaintiff's counsel of record.

/s/ Antonio Ramos
Antonio Ramos
Senior Paralegal