

EXHIBIT F

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17 UNITED STATES DISTRICT COURT
18 NORTHERN DISTRICT OF CALIFORNIA
19 SAN JOSE DIVISION

20 ENTANGLED MEDIA, LLC,

21 Plaintiff,

22 v.

23 DROPBOX, INC.,

24 Defendant.

Case No. 5:23-cv-03264-PCP

**DECLARATION OF PATRICK
MCDANIEL REGARDING
CLAIM CONSTRUCTION**

1 I, Patrick McDaniel, declare:

2 **I. QUALIFICATIONS**

3 1. My qualifications are set forth in my curriculum vitae, a copy of which is attached
4 as an Exhibit A. Exhibit A also includes a list of my publications and the cases in which I have
5 testified at deposition, hearing, or trial within the past four years. As set forth in my curriculum
6 vitae:

7
8 2. I earned my Ph.D. in Computer Science from the Computer Science and Engineering
9 Department at University of Michigan, Ann Arbor in 2001. I earned my Bachelor of Science degree
10 in Computer Science from Ohio University in 1989, and my Master of Science degree, also in
11 Computer Science, from Ball State University in 1991.

12 3. Since 2022, I have been Tsun-Ming Shih Professor of Computer Sciences in the
13 School of Computer, Data and Information Sciences at the University of Wisconsin-Madison. Prior
14 to my move to Wisconsin, I was the William L. Weiss Professor of Information and
15 Communications Technology in the School of Electrical Engineering and Computer Science at the
16 Pennsylvania State University in University Park, PA. I was also the director of the Institute for
17 Network and Security Research, and founder and co-director of the Systems and Internet
18 Infrastructure Security Laboratory, a research laboratory focused on the study of security in diverse
19 network and computer environments. My research efforts primarily involve computer systems,
20 network management and authentication, systems security, and technical public policy.
21

22
23 4. I frequently teach and do research on filesystems and storage, particularly as it
24 relates to security. For example, Chapter 6 of my PhD dissertation, "Case Studies: Virtual Private
25 Filesystems in AMirD", described a peer-to-peer distributed file system that allowed multiple
26 devices to synchronize and share metadata indices and file data blocks amongst devices. I continue
27 to do research in filesystems to this day, and in my most recent work (appearing in the technical
28

1 report Securing Cloud File Systems using Shielded Execution) has developed techniques for
2 securing filesystem metadata on untrusted hardware. I also frequently teach filesystems design in
3 my systems programming course.

4 5. Prior to 2017, I was an Assistant Professor (2004-2007), Associate Professor (2007-
5 2011), Full Professor (2011-2015), and Distinguished Professor (2016-2017) of Computer Science
6 and Engineering and the William L. Weiss Professor of Information and Communications
7 Technology (2017-2022) at the Pennsylvania State University. Since 2004, I have taught courses
8 in the field of computer systems, systems programming, mobile device security, networks, and
9 network and computer security at both the undergraduate and graduate level. I created and
10 maintained several of these courses at Penn State University. I have begun teaching courses at the
11 University of Wisconsin-Madison in the Fall of 2023 teaching network and systems security.

12 6. From 2003-2009, I was also an Adjunct Professor at the Stern School of Business at
13 New York University in New York, NY. At the Stern School of Business, I taught courses in
14 computer and network security and online privacy.

15 7. I am a Fellow of the Association for Computing Machinery (ACM, the leading
16 professional association for computer science), a Fellow Institute for Electrical and Electronics
17 Engineering (IEEE, the leading professional association for engineering), and Fellow of the
18 American Association for the Advancement of Science (AAAS, the leading professional
19 association for science).

20 8. I am the director of the NSF Frontier Center for Trustworthy Machine Learning
21 (CTML), a research organization exploring security and privacy of machine learning (and AI in
22 general). Funded by the US National Science Foundation, the CTML is led by the University of
23 Wisconsin-Madison and has members from Stanford, the University of California, Berkeley, The
24 University of California-San Diego, and the University of Virginia.

1 9. I was the Program Manager (PM) and lead scientist for the Cyber Security
2 Collaborative Research Alliance (CRA). The CRA is led by Penn State University and includes
3 faculty and researchers the Army Research Laboratory, Carnegie Mellon University, Indiana
4 University, the University of California-Davis, and the University of California-Riverside. This
5 initiative is a major research project aimed at developing a new science of cyber-security for
6 military networks, computers, and installations.

7
8 10. I have served as an advisor to several Ph.D. and master's degree candidates, several
9 of whom have gone on to become professors at various institutions such as North Carolina State
10 University, Purdue University, the University of Toronto, the University of Oregon, and the
11 Georgia Institute of Technology and the University of Florida. I am currently an advisor to seven
12 Ph.D. students.

13
14 11. Before joining Pennsylvania State University as a professor, I was a software
15 developer and project manager for companies in the networking industry including Applied
16 Innovation, Inc., and Primary Access Corporation. I was also a senior researcher at AT&T
17 Research-Labs. As part of my duties in these industrial positions, I informed, reviewed, and formed
18 corporate policies and practices relating to the security of mobile devices, networks, and software
19 systems (including filesystems)

20
21 12. I have published extensively in the field of mobile security, network and security
22 management, computer systems, authentication, storage and filesystems systems security, applied
23 cryptography and network security. In addition to writing several articles for industry journals and
24 conferences, I have authored portions of numerous books related to computer systems, applied
25 cryptography and network security. I have served on the editorial boards of several peer-reviewed
26 journals including ACM Transactions on Internet Technology, for which I was the Editor-in-Chief.
27 I was also an Associate Editor for ACM Transactions on Information and System Security and
28

IEEE Transactions of Software Engineering, two highly regarded journals in the field.

13. Additional information regarding my background, qualifications, publications, and presentations is provided in my CV, attached as Exhibit A.

II. SUBJECT MATTER OF OPINIONS

14. I have been asked by Morgan, Lewis & Bockius LLP, counsel for Dropbox, Inc. (“Defendant” or “Dropbox”) to provide my opinion on certain issues related to claim construction. Specifically, I have been asked to provide an opinion on certain terms identified by Defendant and Plaintiff Entangled Media, LLC (“Plaintiff”) for construction in U.S. Patent Nos. 8,296,338 (the “’338 Patent”) and 8,484,260 (the “’260 Patent”) (collectively, the “Patents-in-Suit”).

15. I have been asked to offer my opinion on the meaning to a person of ordinary skill in the art of the following terms, which I understand are disputed by the parties:

- “providing by the at least one server the single master meta-index and meta-indices for each of the other multiple devices to each of the multiple devices via the individual software clients” (’338 Patent claim 1)
- “virtual files indistinguishable from the local files by the local file system at each of the multiple devices” (’338 Patent claim 1)
- “continually updating the single master meta-index on the at least one server and each of the multiple devices in response to changes to the data indexed thereon” (’338 Patent claim 1)
- “visual representation of the virtual files on a remote one of each of the multiple devices that is indistinguishable from a visual representation of an actual file that is located on a local one of the multiple devices.”
- “singular file system” (’338 Patent claim 1; ’260 Patent claims 1, 4)
- “modifying the singular file system on the first device to make local files and virtual files appear indistinguishable to the singular file system.” (’260 Patent claim 1)
- “a visual representation of the singular file system on the first device is identical to a visual representation of the singular file system on the second device” (’206 Patent claim 1)
- “requesting by a software client on the first device that a peer-to-peer connection be brokered by a server-based web service between the first and second device” / “if the peer-to-peer connection is brokered” (’260 Patent claim 1)

- “transferring the corresponding physical file from the second device to the first device” (’260 Patent claim 1)
- “pushing the physical file back to the second device” (’260 Patent claim 6)

16. I understand that the parties identified the above terms as the top ten significant terms for claim construction as this stage of the case. I reserve the right to offer a declaration in response to any additional terms that may be disputed by the Parties throughout this litigation.

III. COMPENSATION

17. I am being compensated for time spent on this matter at my usual and customary rate of \$650 per hour. My compensation is not dependent on the outcome of this proceeding or the content or specifics of any of my opinions, statements, or testimony.

IV. MATERIALS REVIEWED

18. In considering and forming my opinions, I have reviewed and considered all of the information and materials identified in this report as well as the following information:

- (1) the ’338 and ’260 Patents;
- (2) the ’338 and ’260 Patent’s prosecution histories; and
- (3) all facts, data, or material identified herein.

19. In considering and forming my opinions, I have also relied upon my over 30 years of general experience in the field, along with my education, training, research, and knowledge, though the testimony I offer is from the perspective of a person of ordinary skill in the art (“PHOSITA”).

V. CLAIM CONSTRUCTION PRINCIPLES

20. I am not an attorney and do not have formal training in the law regarding patents. This section sets forth my understanding of currently applicable legal principles which I have used in forming the opinions set forth herein. I have used my understanding of these legal principles, as set forth in this section, to analyze the ’338 and ’260 Patents.

1 21. I understand that claim construction is the process by which a court determines, as
2 a matter of law, the scope and meaning of terms used in the claims of a patent. I further understand
3 that the goal of this process is to give claim terms the ordinary and customary meaning they would
4 have had to a PHOSITA at the time of the invention, after reading the entire patent and prosecution
5 history.
6

7 22. I am informed that the words of a claim are generally given their ordinary and
8 customary meaning. I understand that the ordinary and customary meaning is the meaning that the
9 term would have to a person of ordinary skill in the art in question at the time of the invention.
10

11 23. I understand that the specification may aid in interpreting the meaning of disputed
12 claim language, but particular embodiments and examples appearing in the specification will not
13 generally be read into the claims. I further understand that it is improper to read limitations from a
14 preferred embodiment described in the specification (even if it is the only embodiment) into the
15 claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so
16 limited.

17 24. I understand that there are two exceptions to the general rule that claim terms are
18 construed according to their plain and ordinary meaning. First, a patentee can become his or her
19 own “lexicographer” by clearly setting forth a definition of the disputed term and clearly expressing
20 an intent to define the term. Second, a patentee may disavow the full scope of the claim term either
21 in the specification or during prosecution. To disavow the full scope of a claim term, the patentee’s
22 statements in the specification or prosecuting history must represent a clear disavowal of claim
23 scope. When an applicant’s statements are amenable to multiple reasonable interpretations, they
24 cannot be deemed clear and unmistakable.
25

26 25. I understand that, in some cases, the court may consider extrinsic evidence, such as
27 technical dictionaries, treatises, and expert opinions, to understand the underlying technology and
28

1 the way in which claim terms would be understood by a PHOSITA at the relevant time.

2 26. I understand that patent claims must particularly point out and distinctly claim the
3 subject matter regarded as the invention. I am further informed and understand that a claim, when
4 viewed in light of the intrinsic evidence, must inform those skilled in the art about the scope of the
5 invention with reasonable certainty. I understand that if it does not, then the claim is invalid as
6 indefinite. Whether a claim is indefinite is determined from the perspective of one of ordinary skill
7 in the art as of the time the application for the patent was filed.

9 VI. OVERVIEW OF THE PATENTS-IN-SUIT

10 A. The '338 Patent

11 27. The '338 Patent is titled "Method for a cloud-based meta-file system to virtually
12 unify remote and local files across a range of devices' local file systems." The '338 Patent shares
13 the same specification as the '260 Patent.

14 28. The '338 patent discusses "[a] system and process that establish a singular shared
15 file system among devices." Ex. B ('338 Patent) at Abstract. The patent describes a system that
16 "create[s] a virtual representation of data on all of the devices via metadata indexing." *Id.* For
17 example, "[t]he system will differentiate data on a Local Device from data on a Remote Device"
18 and "each client can create the virtual representation of the remote data within its local device file
19 system." *Id.* at 5:14-18. "This allows for significant amounts of data to be virtually stored on each
20 device, even if there is no physical storage room available for the data on each device." *Id.* at
21 Abstract.

22 29. The '338 patent discloses that the concept of a "singular file system" with a "master
23 index" for files on multiple user devices. *Id.* at Abstract; *see also id.* at 6:13-16 ("all of the
24 individual meta-indices for all of the user's registered devices [are integrated] into a database" and
25 "[t]his **master index of metadata thus becomes the singular file system** that all devices use").

26 30. In my opinion, claims 1 and 5 (as reproduced below) are representative for purposes

of this overview. The disputed terms and phrases in **bold**:

Claim 1. A process for establishing a singular file system across multiple devices comprising:

receiving user information to open an account for establishing a **singular file system** across multiple devices via a web-based system that includes at least one server;

installing an individual software client on each of the multiple devices via the web-based system;

accepting registration of multiple devices via the web-based system;

scanning each of the multiple devices by each of the individual software clients to inventory data on each of the multiple devices and create a meta-index of the files for the inventoried data;

providing by the individual software clients via the multiple devices individual meta-indices of the inventoried data for each of the multiple devices to the at least one server;

integrating by the at least one server the individual meta-indices to create a single master meta-index;

providing by the at least one server the single master meta-index and meta-indices for each of the other multiple devices to each of the multiple devices via the individual software clients;

integrating metadata from the meta-indices of each of the other multiple devices into a local file system of each of the multiple devices to generate virtual files stored in the same locations as local files of the local file system, the virtual files indistinguishable from the local files by the local file system at each of the multiple devices; and

continually updating the single master meta-index on the at least one server and each of the multiple devices in response to changes to the data indexed thereon,

wherein the individual software clients facilitate storage of the data within each of the multiple devices in accordance with the single meta-data index by modifying file systems of each of the multiple devices to include virtual files for data from the single meta-data index that is not local to a multiple device.

Claim 5. The process according to claim 1, wherein the individual software clients facilitate creation of a **visual representation of the virtual files on a remote one of each of the multiple devices that is indistinguishable from a visual representation of an actual file that is located on a local one of the multiple devices.**

B. The '260 Patent

1 31. Like the '338 Patent, the '260 Patent is tilted "Method For a Cloud-Based Meta-File
2 System to Virtually Unify Remote and Local Files Across a Range of Devices' Local File Systems."
3 The patent generally relates to a distributed file system across multiple devices. *See, e.g.*, Ex. C
4 ('260 Patent), claim 1, Abstract.

5 32. The patent specification describes "a process for operating on files located on
6 multiple devices using a singular file system." Ex. C at 3:13-15. It also describes "creat[ing] a
7 unified representation of all data on all registered devices," and in doing so "virtual representation
8 of data means that the files are not actually stored on all devices and thus, with the exception of a
9 single physical location, they take up limited space (i.e. storage) on any additional device's hard
10 drive." *Id.* at 2:16-30.

11 33. The representative claims of the '260 Patent in which the disputed terms first appear
12 are recited below, with the disputed terms and phrases in **bold**:
13

14 **'260 Patent, Claim 1.** A process for operating on files located on
15 multiple devices using a **singular file system** comprising:

16 accepting a request to operate on a file at a first device,
17 wherein the file is selected from the **singular file system** on the first
18 device;

19 **modifying the singular file system on the first device to**
20 **make local files and virtual files appear indistinguishable to the**
21 **singular file system**, the local files and virtual files sharing a same
22 location on the first device;

23 intercepting the request by a software client on the first
24 device;

25 determining by the software client if the file is physically
26 located on the first device or if the file is a virtual file of a
27 corresponding file physically stored on a second device by reviewing
28 file metadata, wherein **a visual representation of the singular file**
system on the first device is identical to a visual representation
of the singular file system on the second device; and

 if the file is the virtual file of the corresponding file physically
located on the second device, **requesting by the software client on**
the first device that a peer-to-peer connection be brokered by a
server-based web service between the first device and the second
device;

1 after storing the archive file in the first temporary storage
 2 location, updating a database to indicate that the archive file is
 located in the first temporary storage location;

3 **if the peer-to-peer connection is brokered, transferring**
 4 **the corresponding physical file from the second device to the first**
device; and

5 performing the operation on the transferred corresponding
 6 physical file at the first device.

7 **'260 Patent, Claim 4.** The process according to claim 1, further
 comprising updating metadata of the **singular file system** on the first
 8 device and the second device to reflect a change in physical location
 of the file from the second device to the first device.

9 **'260 Patent, Claim 6.** The process according to claim 1, further
 10 comprising: upon completing the operation, **pushing the physical**
 11 **file back to the second device;** and retaining the virtual file at the
 first device.

12 VII. LEVEL OF SKILL IN THE ART

13 34. I understand that several factors are relevant to determining the level of ordinary
 14 skill in the art at the time of the claimed invention. I understand that those factors include: (1) the
 15 educational level of the inventor(s); (2) type of problems encountered in the art; (3) prior art
 16 solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the
 17 technology; and (6) educational level of active workers in the field.

18 35. The relevant filed of art concerning the Patents-in-Suit is networking and file
 19 systems. For the purposes of this Declaration, I understand the time frame of the claimed inventions
 20 to be May 5, 2009, which is the filing date of the provisional application to which the Patents-in-
 21 Suit purportedly claim priority (provisional application no. 61/175,489). I am not offering an
 22 opinion on the propriety of the May 9, 2009 priority date in this Declaration. I have considered the
 23 Patents-in-Suit and the state of the art during that time, including the level of skill of the persons
 24 with whom I worked.

25 36. Having reviewed the Patents-in-Suit and their prosecution histories, considered the
 26 factors above, and considered the level of skill of the persons with whom I have worked in the
 27

1 industry, it is my opinion that a PHOSITA would have had at least a Bachelor's or Master's degree
 2 in computer science or electrical engineering or a related degree and with at least two years training
 3 or experience with networking and file systems. Additional work or research experience can
 4 substitute for less or a different education, and vice-versa.

5
 6 37. **Types of problems.** My opinion on the level of skill in the art takes into account the
 7 types of problems encountered in the art and the prior art solutions to those problems. In my
 8 opinion, the types of problems encountered in the art include problems related to the amount of
 9 storage space required or available, cost or expense, degree of user involvement required, data
 10 integrity, risk of data loss, system dependability, user error, incomplete or inaccurate storage, peer
 11 discoverability (if working with peer-to-peer networks), synchronization (i.e., identity of file
 12 contents), interfaces with the operating system, and the like.

13
 14 38. **Prior art solutions.** My opinion on the level of skill in the art takes into account the
 15 prior art solutions to those problems, which include a variety of solutions that have evolved over
 16 the years. It is challenging to lay out the history of file systems since many of the earliest file
 17 systems were tightly coupled with the operating system (that is, it would be hard to treat the
 18 operating system and file systems as different entities, which is a paradigm that started in roughly
 19 the 1970s). Nonetheless, the evolution of files systems can be characterized through three epochs:
 20 migration from a flat to hierarchical file organization scheme, the ability to retrieve data remotely,
 21 and the seamless sharing of data across multiple devices.
 22

- 23 a. **Migration from a flat to hierarchical file organization scheme.** The earliest file system
 24 may be traced back to the DECTape (1964) and CP/M (1973) operating systems. The
 25 file systems inside of these operating systems organized files in a flat manner, *i.e.*, there
 26 were no directories or folders to organize files within. This design was partially due to
 27 the storage capacities of computers at that time. Because storage space was scarce, as a
 28 matter of practical limits, directories would not be particularly useful given the small
 number of files that could be saved to storage. However, as storage sizes increased, flat
 file systems rapidly became unwieldly from the sheer number of files applications,
 users, and operating systems would create. This led to introduction of hierarchical file
 systems (e.g., Multics operating system dating back to 1965) to better manage an ever-
 growing number of files. To support this organization schema, file metadata would be

augmented to include where a file existed within the hierarchy, so that users and applications could focus on a desired set of files.

- b. ***Ability to retrieve data remotely.*** Thereafter, file systems were further extended to allow access to storage over a network (e.g., Sun Microsystem's Network File System in 1984). File systems using network protocols, such as NFS, are "distributed" in the sense that the methods to retrieve data are identical for both local and remote storage mediums. Thus, many distributed file systems are "transparent" in that users are not readily aware if files are retrieved via local or remote storage mediums. Specifically, such remote files are called *virtual files*, files whose content is stored remotely, with metadata such as file names, path, size, *etc.* stored locally. These files support the transparency features provided by distributed file systems, in that virtual files appear structurally identical to all other local files in the file system.

Such distributed file systems using simple network protocols are limited by the following: (1) files must be transferred over the network when a user or application uses them, which may be slow, and (2) the accessibility of files stored remotely is dependent on the connection to the remote computing device; a loss in connectivity implies users will no longer have access to the remote files (in other words, a single point of failure).

As networking technology improved, many computing technologies became increasingly reliant on accessing data remotely. The sheer amount of available data was problematic for modern computers for at least two reasons: (1) storage mediums simply did not scale to the vast amount of desirable data (thus necessitating remote access via protocols such as NFS), and (2) the traditional client-server model, wherein multiple computers (clients) connected to a central computer (the server) for a particular service, became cost-prohibitive, as serving many clients mandated powerful (and expensive) computers to act as servers. One solution was to distribute work evenly (as much as possible) across clients, wherein clients would also serve the requests of others.

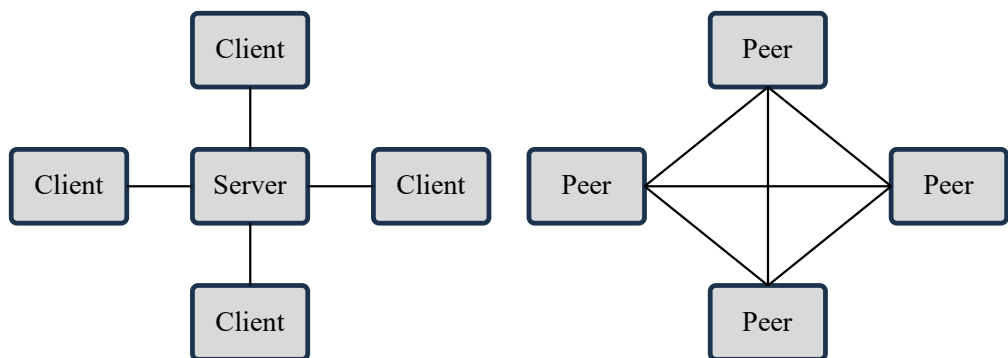


Figure 1 - Client-Server vs. Peer-to-Peer Models

- c. ***Seamless sharing of data across multiple devices.*** Then came the solution of sharing files with peers or "peer-to-peer" (P2P) computing wherein all participating computers are considered "peers", as shown in the Figure above (e.g., Napster in 1999). Many file-system-like applications (such as PAST and IgorFs) rapidly emerged in the early 2000s with the popularity of P2P, offering the ability to store, retrieve, and use data much like classical distributed network protocols like NSF that relied on the client-server model.

Perhaps the largest assumption made in any P2P application was that all peers are accessible to all other peers (that is, even if two peers are across the planet, their traffic will eventually be routed to one another). As the Internet matured, this assumption was found to rarely hold true. New techniques for providing security to computers connected to the Internet, such as firewalls, network address translation (NAT), dynamic IP addresses, among others, implied an asymmetry broadly incompatible with P2P: a host that can connect to others does not necessarily mean that others can connect to the host.

Because such asymmetry assumption is detrimental to P2P protocols functioning properly, many P2P applications adapted to this maturation of the Internet to include networking techniques to allow computers to send data to one another even in circumstances where they cannot be directly connected to. For example, a proxy server (i.e., a computer that acts as an intermediary between other computers by relaying messages across computers) in the context of P2P file system would allow, for example, two clients to send and receive files from one another even in circumstances where they may not be able to directly connect to one another (e.g., firewalls, NAT, dynamic IPs, etc.).

One type of proxy-server-based solution is *relay servers* that relay data between peers (which can be general or application-specific). Relay-based proxies often used the *Hypertext Transfer Protocol (Secure)* (HTTP(S)), which is one of the most common protocols used across Internet. In the context of P2P networks, peers (who were unable to directly communicate with one another) would connect to the proxy server via HTTPS wherein communications between the peers would be relayed via the proxy server. This architecture is a hybrid between the traditional client-server model and peer-to-peer model in that the central server is leveraged only when a peer-to-peer connection is not possible.

39. ***Rapidity of innovation and sophistication of technology.*** My opinion on the level of skill in the art also takes into account the rapidity with which innovations are made and sophistication of the technology. In my experience, the rapidity with which innovations are made and the sophistication of the technology varies depending on the complexity of the particular system, application, and end goals. For example, if a PHOSITA is developing an innovative distributed file system in a peer-to-peer network, he or she would need to rely on some form of a networking protocol (to retrieve data stored remotely), and a design for retrieving data from arbitrary computers in the network (that is, data is not exclusively provided by a privileged set of computers, instead all computers in the network both provide and request data). Or if a PHOSITA were developing a more general secure filesystem, the designers would need to design, develop, and test, among other things, a storage structure, network protocols, cryptographic constructions, and consistency algorithms to ensure the system operated correctly, efficiently, robustly, and

1 securely. In general, this would require a multistage process that includes several stages of design
 2 (including feature selection, high level design, interface design, specification, low-level design),
 3 development (including coding interfaces, procedural logic, inter-procedural, and unit and system
 4 test harnesses), testing (including unit, alpha, beta, user and field testing), and deployment. This
 5 would take a team of 2-5 developers 6 months or more to design, no less than a year for
 6 development, and 6 months for testing.

8 40. *Educational level of the inventor and active workers in the field.* My opinion on
 9 the level of skill in the art also takes into account the educational level of the inventor and the
 10 educational level of active workers in the field. For example, in my career, I have had the
 11 opportunity to work with persons having a broad range of education and experience in connection
 12 with designing, developing, and commercializing networking and file systems. I have worked with
 13 1 PhD student and 1 Professor on developing novel distributed file systems by leveraged Trusted
 14 Execution Environments (TEEs) to provide guarantees on the data integrity of filesystems when
 15 operating on (potentially untrusted) cloud providers. This work involved resolving many of the
 16 challenges of distributed file systems, including data synchronization among peers, fault tolerance
 17 for intermittent connections, efficient data transfers, among others. Those two persons have a
 18 master's degree and doctoral degrees, respectively, and I worked with them when they had
 19 approximately two years training or experience with networking and file systems. I have acted as
 20 a supervisor, advisor, or coworker to these 2 persons, and I am intimately aware of their knowledge
 21 of and skill in the art over the course of their careers. I have also worked with persons that have a
 22 degree in electrical and mechanical engineering, and I have garnered an appreciation for their
 23 knowledge base and ability to address the types of problems encountered in the art.

26 41. Based on this experience, the factors listed above, the Patents-in-Suit (including
 27 their prosecution histories), it is my opinion that a person with ordinary skill in the art at the time
 28

of the alleged invention would have had at least a Bachelor's or Master's degree in computer science or electrical engineering or a related degree and with at least two years training or experience with networking and file systems. Additional work or research experience can substitute for less or a different education, and vice-versa. But I reserve the right to address any alternative or different level of skill that may be offered by Plaintiff or any other expert, and I reserve the right to address the matters set forth in this Declaration based on any such alternative or different level of skill that may be offered.

42. I have used this level of ordinary skill in the art in forming my opinions as set forth in this declaration. My opinions are from the perspective of this level of ordinary skill in the art. I meet or exceed this level of skill in the art because I have at least a Bachelor's degree in computer science and more than two years of experience with networking and file systems.

VIII. DISPUTED TERMS OF THE '338 PATENT

A. **“providing by the at least one server the single master meta-index and meta-indices for each of the other multiple devices to each of the multiple devices via the individual software clients” (claim 1)**

Dropbox's Proposed Construction	Entangled Media's Proposed Construction
The at least one server provides to each of the multiple devices via the individual software clients both (1) the single master meta-index and (2) each of the separate, individual meta-indices of each of the other devices.	No construction needed; plain and ordinary meaning. However, to the extent the Court determines that a specific construction is warranted: “The at least one server provides to each of the multiple devices via the individual software clients the single master meta-index with each of the meta-indices of each of the other devices.”

43. Claim 1 recites the following limitations that provide context for the disputed term:

scanning each of the multiple devices by each of the individual software clients to inventory data on each of the multiple devices and create a meta-index of the files for the inventoried data;

providing by the individual software clients via the multiple devices individual meta-indices of the inventoried data for each of the multiple devices to the at least one server;

1 integrating by the at least one server the individual meta-indices to
2 create a single master meta-index;

3 ***providing by the at least one server the single master meta-index***
4 ***and meta-indices for each of the other multiple devices to each of***
5 ***the multiple devices via the individual software clients;***

6 44. In my opinion, the claim's plain language would make clear to a PHOSITA that the
7 at least one server provides to each of the multiple devices: (1) the single master meta-index, and
8 (2) meta-indices for each of the other multiple devices. A PHOSITA would understand this from
9 the plain language of the claim. For example, the use of "and" indicates that what is being
10 "provided by the at least one server" is "the single master meta-index **and** meta-indices for each of
11 the other multiple devices." The plain language of the claim further confirms that each of the "the
12 single master meta-index **and** meta-indices for each of the other multiple devices" is specifically
13 provided "to each of the multiple devices," and they are provided "by the at least one server"
14 specifically "via the individual software clients."

15 45. Regarding (1) the single master meta-index, as shown in the above limitations of
16 claim 1, the single master meta-index is created by "integrating by the at least one server the
17 individual meta-indices," and "the individual meta-indices" are created by "scanning each of the
18 multiple devices... to inventories data" thereon.

19 46. Regarding (2) meta-indices for each of the other multiple devices, while the term
20 "meta-indices for each of the other multiple devices" is not preceded with "the," it is my opinion
21 that a PHOSITA would have understood "meta-indices" in the disputed term to refer to the
22 "individual meta-indices" recited in earlier limitations. In my opinion, this is at least because (i)
23 the language of "meta-indices **for each of** the other multiple devices" indicates that the recited
24 "meta-indices" are "individual" meta-indices for multiple devices, and (ii) neither the '338 Patent
25 specification nor the claims recite any "meta-indices" other than the "individual meta-indices."
26 Entangled Media appears to agree, as indicated by the bolded "the" in its proposed construction.
27
28

1 Therefore, based on claim 1's language, the "meta-indices" in the disputed term are the "individual
 2 meta-indices" created by "scanning each of the multiple devices by each of the individual software
 3 clients to inventory data on each of the multiple devices" and are integrated by the at least one
 4 server to create the single master meta-index. Because such individual meta-indices come from
 5 each of the individual devices, a PHOSITA would have understood that they remain separate,
 6 individual meta-indices when provided by the at least one server to each of the multiple devices.
 7

8 47. In my opinion, the '338 Patent specification supports Dropbox's proposed
 9 construction. For example, the '338 Patent describes on the one hand "providing by the at least
 10 one server **the single master meta-index** to each of the multiple devices via the individual software
 11 clients." Ex. B, 3:4-5. Separately, the '338 Patent describes how "[t]he web service then sends **the**
 12 **meta-indices of each of the registered devices** to each of the other individual registered user
 13 devices S20." *Id.*, 6:17-20. In my opinion, the way in which the specification separately discusses
 14 providing the single master meta-index and providing individual meta-indices would comport with
 15 a PHOSITA's understanding that the at least one server provides to each of the multiple devices
 16 via the individual software clients both (1) the single master meta-index and (2) each of the separate,
 17 individual meta-indices of each of the other devices.
 18

19 48. In my opinion, the prosecution history of the '338 Patent also confirms a
 20 PHOSITA's understanding of this disputed term. For example, in response to the only Office
 21 Action, the Applicant of the '338 Patent amended claim 1 as follows, specifically adding "and
 22 meta-indices for each of the other multiple devices" as shown with a red box:
 23
 24
 25
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 27
 28

1 providing by the individual software clients via the multiple devices individual meta-
 2 indices of the inventoried data for each of the multiple devices to the at least one server;
 3 integrating by the at least one server the individual meta-indices to create a single master
 4 meta-index;
 5 providing by the at least one server the single master meta-index and meta-indices for
each of the other multiple devices to each of the multiple devices via the individual software
 6 clients;
 7 integrating metadata from the meta-indices of each of the other multiple devices into a
local file system of each of the multiple devices to generate virtual files stored in the same
locations as local files of the local file system, the virtual files indistinguishable from the local
files by the local file system at each of the multiple devices; and
 8 continually updating the single master meta-index on the at least one server and each of
 9 the multiple devices in response to changes to the data indexed thereon.

10 Ex. D ('338 Patent File History) at 43. The Applicant relied on that amendment, which added “and
 11 meta-indices for each of the other multiple devices,” to distinguish the prior art. Specifically, the
 12 Applicant argued that the prior art

13 ...fail[s] to suggest the recited limitation of “providing by the at least
 14 one server the single master meta-index and meta-indices *for each of*
 15 *the other multiple devices to each of the multiple devices* via the
 16 individual software clients; at *each of the multiple devices,*
 17 *integrating metadata from the meta-indices of each of the other*
 18 *multiple devices into a local file system of each of the multiple*
 19 *devices to generate virtual files stored in the same locations as local*
 20 *files of the local file system, the virtual files indistinguishable from*
 21 *the local files by the local file system at each of the multiple devices.”*
 22 (emphasis added) as recited in claim 1, and similarly in claims 13
 23 and 16.

24 *Id.* at 51.

25 49. In my opinion, this addition of “and meta-indices for each of the other multiple
 26 devices” after the “single master meta-index” in the limitation-at-issue would confirm for a
 27 PHOSITA that (1) the “single master meta-index” is provided by the at least one server, and (2)
 28 “meta-indices for each of the other multiple devices” are provided by the at least one server.

50. In my opinion, Entangled Media’s proposed construction—“[t]he at least one server
 provides to each of the multiple devices via the individual software clients the single master meta-
 index with each of the meta-indices of each of the other devices”—does not properly reflect a

PHOSITA’s understanding of the disputed term based on the intrinsic and extrinsic evidence. In particular, by changing the claim language to reference “the single master meta-index with each of the meta-indices of each of the other devices,” a PHOSITA would understand this to change the term’s scope. For example, this language could be misconstrued to mean that sending the single master meta-index *alone* constitutes sending both the single master meta-index and the individual meta-indices—which would not reflect a PHOSITA’s understanding. Although the claimed single master meta-index is created by “integrating... the individual meta-indices,” the single master meta-index may not contain all the information in the individual meta-indices from which it is created. Thus, a PHOSITA would understand that sending the single master meta-index alone does not send all the information contained in the individual meta-indices. In other words, a PHOSITA would understand that providing individual meta-indices has its own significance.

B. “virtual files indistinguishable from the local files by the local file system at each of the multiple devices” (claim 1)

Dropbox’s Proposed Construction	Entangled Media’s Proposed Construction
Plain and ordinary meaning.	In light of Plaintiff’s proffered construction for “the virtual files indistinguishable from the local files,” no additional construction is needed; plain and ordinary meaning for the remainder of this phrase Accordingly, the proposed construction for the specifically identified phrase is: The virtual files manageable as if they were local files by the local file system at each of the multiple devices

51. Claim 1 recites the following limitations that provide context for the disputed term:

integrating metadata from the meta-indices of each of the other multiple devices into a local file system of each of the multiple devices to generate virtual files stored in the same locations as local files of the local file system, the **virtual files indistinguishable from the local files by the local file system at each of the multiple devices**;

52. In my opinion, the disputed term is used in the ’338 Patent according to its plain and ordinary meaning as understood by a PHOSITA. In my opinion, no further clarification is needed

1 to properly reflect that plain and ordinary meaning.

2 53. From the claim's plain language, it is my opinion that a PHOSITA would have
3 understood that (1) the virtual files and the local files are indistinguishable (2) by the local file
4 system at each of the multiple devices. For example, the claim language makes clear to a PHOSITA
5 that there are "virtual files" on the one hand and "local files" on the other hand—i.e., they are
6 distinct types of "files." A PHOSITA would further understand from the claim language that the
7 "virtual files" and "local files" are to be "stored in the same location" in "the local file system."
8 And a PHOSITA would understand that "the local files system" shall not be able to distinguish
9 between "the virtual files" and "the local files."

11 54. This understanding comports with the ordinary meaning of the words used in the
12 claim to a PHOSITA. For example, Oxford English Dictionary defines "indistinguishable" as
13 "[n]ot distinguishable; that cannot be distinguished... Incapable of being discriminated or
14 recognized as different from something else, or from each other; of which the difference cannot be
15 perceived."). Ex. E.

17 55. In my opinion, the specification would confirm the same for a PHOSITA, as it uses
18 the words in the disputed term according to their plain and ordinary meaning to a PHOSITA. For
19 example, the '338 Patent's specification explains that "[t]he virtual files **appear in essentially all**
20 **ways the same as a local file, making them indistinguishable** unless such a distinction is enabled
21 as a separate option." Ex. B at 6:34-36. The specification further explains:

23 **The virtual files appear to the user exactly as local files.** For example, each virtual
24 file includes a thumb nail with an icon, it would have the file name, the file size, the
25 file type, the date it was created, the date it was modified, all that the physical file
26 has except that it doesn't take any space on the local device with the exception of
27 the space required for meta-data storage (less than 1 kilobyte per file). The virtual
files act as mock files and mock the properties of the physical file... **[R]egardless
of a user interacting with the physical or virtual version of a file, they are
treated as if they were the same.**

28 *Id.* at 7:62-8:22.

1 56. Thus, in my opinion, a PHOSITA would have understood the '338 Patent to teach
2 that its local file system cannot distinguish virtual and local files at least because the virtual files
3 mock the properties of the physical (or local) files. Accordingly, a PHOSITA would also have
4 understood that if a virtual file has any file property that is different from that of its corresponding
5 local file, that virtual file cannot be said to be indistinguishable from the local file by the local file
6 system.

7
8 57. The prosecution history for the related '260 Patent (a divisional of the '338 Patent)
9 also confirms this understanding of a PHOSITA. For example, the Applicant argued that the prior
10 art reference known as "Aboulhosn" did not teach or suggest "modify[ing] the singular file system
11 on the first device to make local files and virtual files appear **indistinguishable to the singular file**
12 **system...**" because it "uses the **file name extension 'vf' to discriminate and distinguish** between
13 virtual files and local files." Ex. F ('260 Patent File History) at 55. Thus, a PHOSITA would have
14 understood that file attributes or properties indicate whether a file is local or virtual.
15

16 58. It is my opinion that Entangled Media's proposed construction—"The virtual files
17 manageable as if they were local files by the local file system at each of the multiple devices"—
18 does not reflect a PHOSITA's understanding of the term based on the intrinsic evidence.

19 59. For example, the only instance where the '338 Patent specification uses the term
20 "indistinguishable" states: "The virtual files appear in essentially all ways the same as a local file,
21 making them indistinguishable unless such a distinction is enabled as a separate option." Ex. B at
22 6:34-36. In contrast, Entangled Media's proposed construction requires **only** "the virtual files" be
23 "**manageable** as if they were local files by the local file system at each of the multiple devices,"
24 not "**essentially all ways** the same as a local file." I am unaware at this time of any intrinsic
25 evidence that would support concluding that a PHOSITA would understand the disputed term in
26 this way.
27
28

60. If anything, it is my opinion that a PHOSITA would not be able to determine the scope of Entangled Media’s proposed construction with reasonable certainty. For example, although the ’338 Patent discusses the invention’s alleged ability to “enabl[e] **the local operating system** to manage **remote and local files** as if they are all stored in the same location” (Ex. B at 5:31-33), it does not discuss “virtual files” being “manageable as if they were local files by the local file system at each of the multiple devices.” Nor does that statement speak to the surrounding claim language, which makes clear that it is the “local file system” that cannot be able to distinguish between “the virtual files” and “the local files.” Moreover, use of the word “manageable” is ambiguous as used Entangled Media’s proposed construction. A PHOSITA would understand that virtual and local files can be managed in several ways such that a PHOSITA would not be able to determine the scope of the term with reasonable certainty.

C. “continually updating the single master meta-index on the at least one server and each of the multiple devices in response to changes to the data indexed thereon” (claim 1)

Dropbox’s Proposed Construction	Entangled Media’s Proposed Construction
Running update software without interruption to immediately update in response to changes to the data indexed on each of the multiple devices (1) the single master meta-index on the at least one server, and (2) the single master meta-index on each of the multiple devices.	No construction needed; plain and ordinary meaning However, to the extent the Court determines that a specific construction is warranted: While the software client is running, updating the single master meta-index on the at least one server and each of the multiple devices in response to changes to the data indexed thereon

61. Claim 1 recites the following limitations that provide context for the disputed term:

integrating by the at least one server the individual meta-indices to create a single master meta-index;

providing by the at least one server the single master meta-index and meta-indices for each of the other multiple devices to each of the multiple devices via the individual software clients;

integrating metadata from the meta-indices of each of the other multiple devices into a local file system of each of the multiple

1 devices to generate virtual files stored in the same locations as local
 2 files of the local file system, the virtual files indistinguishable from
 3 the local files by the local file system at each of the multiple devices;
 and

4 *continually updating the single master meta-index on the at least*
 5 *one server and each of the multiple devices in response to changes*
to the data indexed thereon, ...

6 62. In my opinion, the plain language of the claim makes clear to a PHOSITA that the
 7 software is run without interruption in order to immediately update (1) the single master meta-index
 8 on the at least one server, and (2) the single master meta-index on each of the multiple devices, and
 9 that such updates are in response to changes to data indexed on each of the multiple devices.

10 63. In my opinion, this understanding of the disputed term is confirmed by the '338
 11 Patent's specification, which describes the following:

12 **Upon completion of any modification to the file**, all changes are
 13 propagated back to the remote device and the local file is restored to
 14 its 'virtual' state. At this point the local device removes the
 15 aforementioned file from memory, so that it is stored only in the
 16 single location/device on which it was originally kept. Additionally,
 17 **the aforementioned file's metadata is updated (such as "date last**
modified") and propagated to all other devices.

18 Ex. B at 6:62-7:2. In other words, updates to the single master meta-index is performed "upon
 19 completion of any modification to the file," *i.e.*, as soon as a file is modified. To do so, it is my
 20 opinion that a PHOSITA would understand the update software needs to continually run—*i.e.*,
 21 without interruption—in order for this to be near real-time. Near-real time means that the system
 22 will handle an event (and in this case updates) as they happen and without delay. This is different
 23 from real time (also called hard real time), which makes guarantees on the time it takes to
 24 completely process in some specified time, e.g., computer based automotive braking systems
 25 provide millisecond scale guarantees on engaging the physical brake (for safety). Lastly, best effort
 26 time systems process as they can, which may involve arbitrary delays in processing. A PHOSITA
 27 would understand that the updates in the '338 would require near real time processing to prevent
 28

1 file data from becoming inconsistent across devices.

2 64. In addition, the specification describes “providing by **the at least one server** the
3 single master meta-index to each of the multiple devices **via the individual software clients**; and
4 **continually updating** the single master meta-index on the at least one server and each of the
5 multiple devices in response to changes to the data indexed thereon.” Ex. B at 3:4-8. It further
6 describes that “**the web-accessible server**... provides the single master meta-index to each of the
7 multiple devices via the **individual software clients**, and **continually updates** the single master
8 meta-index on each of the multiple devices in response to operations on the files indexed thereon.”
9 *Id.* at 3:43-50. And the specification defines “Software Client (or the Client)” as “a piece of
10 software that is installed **and runs continuously on the device.**” *Id.* at 4:41-42. Therefore, in my
11 opinion, a PHOSITA would understand the specification to confirm his or her understanding that
12 the software is run without interruption in order to immediately update (1) the single master meta-
13 index on the at least one server, and (2) the single master meta-index on each of the multiple
14 devices, and that such updates are in response to changes to data indexed on each of the multiple
15 devices.

16 65. In my opinion, Entangled Media’s proposed construction is incorrect at least
17 because it fails to address the “continually updating” aspect of the disputed term. Updating “while
18 the software client is running” (as Entangled Media proposes) does not mean that the updates are
19 performed continually, *i.e.*, without interruption, because the software client performing the updates
20 may stop running for a certain time period, interrupting the updates during such time period. Near-
21 real time means that the system will handle an event (and in this case updates) as they happen and
22 without delay. This is different from real time (also called hard real time), which makes guarantees
23 on the time it takes to completely process in some specified time, e.g., computer based automotive
24 braking systems provide millisecond scale guarantees on engaging the physical brake (for safety).
25
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1 Lastly, best effort time systems process as they can, which may involve arbitrary delays in
 2 processing. A PHOSITA would understand that the updates in the '338 would require near real
 3 time processing to prevent file data from becoming inconsistent across devices.

4 **D. “singular file system” (claim 1)**

Dropbox’s Proposed Construction	Entangled Media’s Proposed Construction
A system with a common, unified view of all data across more than one device so that all of a user’s devices appear to share one single native file system containing all of the user’s files across all devices.	System wherein local and virtual files are shown in the same directories/folders

6 66. Claim 1 recites “[a] process for establishing *a singular file system* across multiple
 7 devices comprising” a series of steps, including:

8 receiving user information to open an account for establishing a
 9 *singular file system* across multiple devices via a web-based system
 10 that includes at least one server...

11 67. Claim 7 recites “[a] system for establishing *a singular file system* across multiple
 12 devices comprising,” among other things:

13 wherein the web-accessible server receives user information to open
 14 an account for establishing *a singular file system* across multiple
 15 devices, installs the at least one software plug-in on each of the
 16 multiple devices, accepts registration of the multiple devices,
 17 wherein the at least one software plug-in varies in accordance with
 18 an operating system of each of the multiple devices...

19 68. Claim 10 recites “[a] non-transitory computer-readable storage medium storing a set
 20 of instructions that, when executed by a processor, cause the processor to perform operations,
 21 comprising,” among other things:

22 registering multiple devices with an account for establishing *a*
 23 *singular file system* across the multiple devices...

24 69. In my opinion, there is not much that a PHOSITA would understand from these uses
 25 of the term in isolation except that “a single file system” is a file system that is established by the
 26 claimed invention and for use “across multiple devices.”

1 70. Looking to the specification then, the '338 Patent states that “the present solution
 2 creates **a unified representation** of all data on all registered devices—it ensures that all a user’s
 3 devices appear to **share one single native file system** containing all the user’s files across all
 4 devices, and that **this file system is that of the device operating system**, instead of any third party
 5 solution or secondary representation.” Ex. B at 2:12-18. Moreover, the '338 Patent’s “method of
 6 **data unification** does not rely on file replication or cloning, but instead creates ‘virtual’ file
 7 unification using a proprietary technique of differentiating local, physically stored data files versus
 8 remote data files and creating a **unified, virtual representation of remote data** on a local device.”
 9 *Id.* at 5:6-11.

11 71. In my opinion, these descriptions in the specification when combined with the plain
 12 language of the claims confirm for a PHOSITA a “singular file system” is the “**one single native**
 13 **file system** containing all the user’s files” that is shared by all the user’s devices and provides a
 14 common, unified view for all the user’s files across all the user’s devices.

16 72. In my opinion, Entangled Media’s proposed construction—“system wherein local
 17 and virtual files are shown in the same directories/folders”—does not reflect the term’s meaning to
 18 a PHOSITA. For example, merely showing local and virtual files “in the same directories/folders”
 19 would not constitute a “singular file system.” This is confirmed by the applicant’s statements in
 20 response to an *ex parte* reexamination of the '260 Patent, in which the applicant stated that “[t]he
 21 disadvantage of prior art mounting or mapping systems is that they do not provide a singular file
 22 system in which the local files and virtual files share the same directory or folder on the first device,
 23 nor a visual representation of the singular file system on the first device that is identical to a visual
 24 representation of the singular file system on the second device.” Ex. G (Entangled Media Response
 25 in Reexamination) at 7. In other words, the applicants made clear that “prior art mounting or
 26 mapping systems...do not provide a singular file system.” Such prior art mounting systems use

“mount points,” which allow users to extend their file systems to include additional files that, for example, are retrievable over a network. Within these mount points, local and virtual files may be “in the same directory,” but the data within the mountpoint is a clear extension of the file system and thus, is not part of the “single, native file system” that is local to the user. As such, a PHOSITA would understand that merely showing local and virtual files “in the same directories/folders” (as in a prior art mounting system) would not constitute a “singular file system.”

E. **“visual representation of the virtual files on a remote one of each of the multiple devices that is indistinguishable from a visual representation of an actual file that is located on a local one of the multiple devices” (claim 5)**

Dropbox’s Proposed Construction	Entangled Media’s Proposed Construction
plain and ordinary meaning	The same list of files is shown on multiple devices regardless whether those files include both virtual and actual files.

73. The limitation of Claim 5 that includes the disputed term is as follows:

The process according to claim 1, wherein the individual software clients facilitate creation of a ***visual representation of the virtual files on a remote one of each of the multiple devices that is indistinguishable from a visual representation of an actual file that is located on a local one of the multiple devices.***

74. In my opinion, the disputed term is used in the ’338 Patent according to its plain and ordinary meaning as understood by a PHOSITA. In my opinion, no further clarification is needed to properly reflect that plain and ordinary meaning.

75. In my opinion, the claim’s plain language alone would make clear to a PHOSITA that the disputed term requires the **visual representation** of virtual files being indistinguishable from the **visual representation** of an actual file, *i.e.*, local file. A PHOSITA would also have understood that, in contrast with claim 1 that requires the virtual files to be “**indistinguishable** from the local files **by the local file system** at each of the multiple devices,” claim 5 specifically requires the **visual representations** of the virtual and local files being **indistinguishable to the user**.

76. As I have explained in Section VIII(B) above, a PHOSITA would not have had any

1 difficulty in understanding the plain and ordinary meaning of the term “indistinguishable,” and a
 2 PHOSITA would have understood that the virtual representations of the virtual and local files being
 3 indistinguishable means that the virtual files and local files **appear same to the user** at each of the
 4 multiple devices, *i.e.*, the user at each of the multiple devices cannot tell the difference between the
 5 virtual and local files. This is exactly how the ’338 Patent describes this feature and uses the term
 6 “indistinguishable”: “The virtual files **appear** in essentially all ways **the same as a local file**,
 7 **making them indistinguishable** unless such a distinction is enabled as a separate option.” Ex. B
 8 at 6:34-36; *see also id.* at 7:62 (“The virtual files **appear to the user exactly as local files.**”).

10 77. In my opinion, Entangled Media’s proposed construction—“the same list of files is
 11 shown on multiple devices regardless whether those files include both virtual and actual files”—
 12 does not reflect a PHOSITA’s understanding of the term’s meaning based on the intrinsic and
 13 extrinsic evidence.

15 78. For example, the ’338 Patent specification never mentions a “same list of files,”
 16 and it would have been unclear to a PHOSITA as to what the “same list of files” means. In
 17 particular, it would have been unclear to a PHOSITA whether the **files** in the “same list of files”
 18 refer to virtual files, local files, or both. Moreover, it would have been unclear to a PHOSITA
 19 whether the “same list of files” requires all files shown in the exact same directories and
 20 subdirectories across all devices, or merely requires all the files exist on all devices regardless of
 21 the directories in which these files are located. And Entangled Media’s proposed construction does
 22 not address the term’s use of “indistinguishable” to address the nature of “visual representation of
 23 the virtual files” in comparison to the nature of “a visual representation of an actual file.”

25 79. In addition, Entangled Media’s proposed construction contradicts the intrinsic
 26 evidence of the ’338 Patent. For example, in the prosecution history for the related ’260 Patent (a
 27 divisional of the ’338 Patent), the Applicant argued that the prior art did not disclose “modifying
 28

the singular file system on the first device to make local files and virtual files appear indistinguishable to the singular file system, the local files and virtual files sharing a same location on the first device” **because it “uses the file name extension ‘vf’ to discriminate and distinguish between virtual files and local files.”** Ex. F at 55. For this scenario, a PHOSITA would understand that even if both virtual files and local files are shown in the same list of files (per Entangled Media’s proposed construction), they could still have different file extensions, which is a distinction that is visible to the user according to the Applicant’s own arguments.

IX. DISPUTED TERMS OF THE ’260 PATENT

A. “modifying the singular file system on the first device to make local files and virtual files appear indistinguishable to the singular file system” (claim 1)

Dropbox’s Proposed Construction	Entangled Media’s Proposed Construction
Indefinite In the alternative, plain and ordinary meaning.	In light of Plaintiff’s proffered constructions for “singular file system” and “appear indistinguishable to the singular file system,” no additional construction is needed; plain and ordinary meaning for the remainder of this phrase. Accordingly, the proposed construction for the specifically identified phrase is: Modifying the system wherein local and virtual files are shown in the same directories/folders on the first device to make local files and virtual files manageable by the system wherein local and virtual files are shown in the same directories/folders as if they are stored in the same location

80. In my opinion, claim 1 is invalid as indefinite because the limitations of claim 1 are incompatible with one another.

81. As discussed above, it is my understanding that a patent must “conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as [the] invention.” 35 U.S.C. § 112 ¶ 2. For this requirement, I further understand that a patent’s claims, viewed in light of the specification and prosecution history must

1 inform those skilled in the art about the scope of the invention with reasonable certainty.

2 82. It is also my understanding that each and every limitation of a claim must be
3 practiced, and if the requirements of a limitation are incompatible with the requirements of another
4 limitation of the claim, then the claim is indefinite.

5 83. Claim 1 requires “modifying the singular file system on the first device to make
6 local files and virtual files **appear indistinguishable to the singular file system.**” Claim 1 also
7 requires “determining by the software client if the file is physically located on the first device or if
8 the file is a virtual file on a corresponding file physically stored on a second device by **reviewing**
9 **file metadata.**”
10

11 84. A PHOSITA would thus understand that that the invention requires local and virtual
12 files to contain metadata indicating whether the file is local or virtual. While claim 1 requires that
13 the *software client* reviews file metadata to determine a file’s local or virtual status, thereby
14 distinguishing between a local and virtual file, the file system necessarily also distinguishes
15 between a local and virtual file because the metadata of a file is stored on the file system. A
16 PHOSITA would have understood that the metadata of a particular file is typically stored alongside
17 the file in the file system in which the file resides. In fact, the ’260 specification states that “[a]ll
18 file metadata is integrated into the local device” and therefore integrated into the file system. Ex.
19 C at 5:31-34. Dependent claim 4 also recites “updating metadata **of the singular file system** on
20 the first device and the second device to reflect a change in physical location of the file from the
21 second device to the first device,” which further indicates that metadata is integrated into the file
22 system. Thus, local and virtual files cannot be indistinguishable to a file system while
23 simultaneously containing metadata that identifies the local or virtual status of the file.
24

25 85. The prosecution history confirms that a PHOSITA would not understand the scope
26 of the claim with reasonable certainty given the disputed term. Applicant amended independent
27
28

1 claim 1 to include the limitation “modify[ing] the singular file system on the first device to make
 2 local files and virtual files appear indistinguishable to the singular file system, the local files and
 3 virtual files sharing a same location on the first device” to overcome prior art Clarke. Applicant
 4 then argued that Clarke did not teach this limitation because “the client system in Clarke
 5 distinguishes and discriminates locally stored object [sic] and shared objects” by “explicitly
 6 determin[ing] whether the object being accessed is a shared object.” Ex. F at 54. In other words,
 7 according to Applicant’s arguments, Clarke’s local and virtual files were not “indistinguishable” to
 8 the file system because the client system was able to determine whether a file is local or not. A
 9 PHOSITA would understand, however, that is exactly what claim 1 requires in “determining by the
 10 software client if the file is physically located on the first device or if the file is a virtual file on a
 11 corresponding file physically stored on a second device by reviewing file metadata.”

12
 13 86. Moreover, it is my opinion that Entangled Media’s proposed construction does not
 14 reflect a PHOSITA’s understanding of the term in light of the intrinsic evidence. Putting aside
 15 Entangled Media’s improper construction of “singular file system”, Entangled Media’s
 16 construction replaces “appear indistinguishable to the file system” with “manageable by the system
 17 wherein local and virtual files are shown in the same directories/folder as if they are stored in the
 18 same location.” In my opinion, this is incorrect.

19
 20 87. As I note above, “manageable” is ambiguous and a PHOSITA would not be able to
 21 determine the scope of “manageable” virtual and local files with reasonable certainty. Further, in
 22 my opinion, a PHOSITA would not equate “appear indistinguishable to the file system” with
 23 “manageable by the system...as if they are stored in the same location.” Specifically, a PHOSITA
 24 would understand from the specification and the prosecution history that for local and virtual files
 25 to “*appear* indistinguishable to the file system,” they must lack file attributes that distinguish the
 26 files. For example, the ’260 specification explains that “virtual files **appear in essentially all ways**
 27
 28

1 as the local file, making them **indistinguishable**, unless such a distinction is enabled as a separate
 2 option.” Ex. C at 6:38-40. Even more, the specification further explains that “virtual files act as
 3 mock files and mock the properties of the physical file” and virtual files “would have the file name,
 4 the file size, the file type, the date it was created, the date it was modified, **all that the physical file**
 5 **has** except that it doesn’t take any space on the local device with the exception of the space required
 6 for meta-data storage.” *Id.* at 7:66-8:6. The prosecution history similarly shows that file attributes
 7 determine whether local and virtual files appear indistinguishable to the system. For example, to
 8 overcome the Aboulhosn reference, the Applicant argued that “Aboulhosn uses the file name
 9 extension ‘vf’ to discriminate and distinguish between virtual files and local files.” Ex. F at 54-55.

11 88. Although portions of the ’260 Patent’s specification discuss the file system’s
 12 management of local and virtual files,¹ a PHOSITA would not understand the claim to be limited
 13 to such embodiment. For example, because of Applicant’s arguments during prosecution, a
 14 PHOSITA would understand that differing file attributes can make local and virtual files appear
 15 distinguishable to the file system. Thus, the prosecution history confirms the term’s indefiniteness
 16 because, as required by claim 1, file attributes such as metadata are used to determine (*i.e.*,
 17 “distinguish and discriminate”) whether a file is local or virtual.

19 89. Thus, because local and virtual files cannot appear indistinguishable to the file
 20 system while simultaneously containing file attributes within their respective metadata to indicate
 21 whether the files are local or virtual, it is my opinion that a PHOSITA would not understand the
 22 scope of the claim with reasonable certainty.

24 90. I reserve the right to offer additional opinions regarding Entangled Media’s

26 ¹ See, e.g., Ex. C at 5:34-37 (“In essence, each device file system then acts as if it is a shared file
 27 system; enabling the local operating system to manage remote and local file[s] as if they are all
 28 stored in the same location.”), 6:34-38 (“Further, the software client facilitates the creation of a
 visual representation of the remote or virtual files on the local device, as if the files were indeed
 local, allowing the user to operate on them as if they were local to the device.”).

proposed construction for this term based on its arguments, the evidence it cites, and any opinions offered by any other expert in these proceedings.

B. “a visual representation of the singular file system on the first device is identical to a visual representation of the singular file system on the second device” (claim 1)

Dropbox’s Proposed Construction	Entangled Media’s Proposed Construction
“a visual representation of the singular file system on the first device is exactly the same as and does not differ in any way from a visual representation of the singular file system on the second device”	In light of Plaintiff’s proffered constructions for “singular file system” and “is identical to,” no additional construction is needed; plain and ordinary meaning for the remainder of this phrase. Accordingly, the proposed construction for the specifically identified phrase is: “A visual representation of the system wherein local and virtual files are shown in the same directories/folders on the first device shows the same list of files as a visual representation of the system wherein local and virtual files are shown in the same directories/folders on the second device”

91. In my opinion, the plain and ordinary meaning to a PHOSITA of this term is “a visual representation of the singular file system on the first device is exactly the same as and does not differ in any way from a visual representation of the singular file system on the second device.”

92. In my opinion, this construction comports with the plain, unambiguous meaning of the word “identical” to a PHOSITA in the context of the claims. Specifically, a PHOSITA would readily understand “identical” to mean “exactly the same as and does not differ in any way.” In my opinion, the specification supports this construction because it explains that “[t]he client creates the virtual representation of all remote files using the **same ‘path’** or storage location on the remove device, resulting in a **common, single view** of all data across all devices that is consistent with the formatting and structure of the local file system.” Ex. C at 5:23-27. The specification further explains that “virtual files appear to the user **exactly as** local files” and virtual files have “all that the physical file has” such as “a thumb nail with an icon...the file name, the file size, the file type,

1 the date it was created, [and] the date it was modified.” *Id.* 7:66-5, *see also id.* 6:38-40 (“The virtual
 2 files appear in **essentially all ways the same** as a local file.”). In my opinion, a PHOSITA would
 3 have understood that for visual representation of the singular file system to be “identical” across
 4 devices, each visual representation of the singular file system not only requires that local and virtual
 5 files appear to have the “same path” across devices, but also requires that the visual appearance
 6 (e.g., thumb nails or icons, file name, file size, and other file properties) of the local and virtual
 7 files of the singular file system also appear the same across devices. Thus, a PHOSITA’s
 8 understanding comports with Dropbox’s proposed construction because the singular file system of
 9 a first device “is exactly the same and does not differ in any way” from the singular file system of
 10 a second device when both the file paths and visual appearance of local and virtual files are the
 11 same.
 12

13
 14 93. In my opinion, the common dictionary definition of the word “identical” also
 15 comports with a PHOSITA’s understanding of the word’s meaning in the context of the claims.
 16 For example, Oxford English Dictionary defines “identical” as “the **same; the very same: said of**
 17 **one thing (or set of things)** viewed at different times or in different relations.” Ex. I.
 18

19 94. In my opinion, Entangled Media’s proposed construction does not reflect the term’s
 20 meaning to a PHOSITA based on the intrinsic and extrinsic evidence. Specifically, it is my opinion
 21 that Entangled Media’s rewrites the meaning of “identical” as used in the disputed term. For
 22 instance, Entangled Media’s construction suggests that the visual representations of the singular
 23 file system across devices are identical when “same directories/folders” across devices merely
 24 “show[] the same list of files.” But, in my opinion, this is not supported by the evidence discussed
 25 above. Specifically, a PHOSITA would not understand merely showing the “same list of files”
 26 amounts to identity of the visual representations. Instead, the intrinsic and extrinsic evidence
 27 confirms a PHOSITA’s understanding of the term’s meaning: a visual representation of the singular
 28

1 file system on the first device must be “identical to” (that is, exactly the same as and does not differ
2 in any way from) a visual representation of the singular file system on the second device.

3 95. I reserve the right to offer additional opinions regarding Entangled Media’s
4 proposed construction for this term based on its arguments, the evidence it cites, and any opinions
5 offered by any other expert in these proceedings.
6

7 **C. “requesting by a software client on the first device that a peer-to-peer**
8 **connection be brokered by server-based web service between the first and**
9 **second device” / “if the peer-to-peer connection is brokered.” (claim 1)**

Dropbox’s Proposed Construction	Entangled Media’s Proposed Construction
“a software client on the first device requests that a server-based web service establish a peer-to-peer connection between the first and second device.”	No construction needed; plain and ordinary meaning However, to the extent the Court determines that a specific construction is warranted: “A software client on the first device requesting that a server-based web service facilitate a file transfer from the second device to the first device / If a file transfer channel is established.” Alternatively: “a software client on the first device requests that a server-based web service provide communication parameters for a peer-to-peer connection between the first and second device.” ²

19 96. In my opinion, the plain and ordinary meaning to a PHOSITA of this term is “a
20 software client on the first device requests that a server-based web service establish a peer-to-peer
21 connection between the first and second device.”

22 97. Dropbox’s proposed construction particularly provides clarity to the use of the word
23 “broker” in this term by providing a construction that is consistent with a PHOSITA’s
24 understanding and the patent’s lexicography. A PHOSITA would have understood that “brokering”
25

26
27 ² I understand that Entangled Media provided this alternative construction yesterday (Feb. 4, 2024)
28 and only confirmed that it would be pursuing this construction this afternoon (Feb. 5, 2024). As
such, I reserve the right to further develop and offer my complete opinions on this alternative
proposal.

1 a connection means **establishing** a peer-to-peer connection between the first and second device.
 2 For example, the '260 specification explains that the software client “asks the web service to
 3 **broker** a connection between Device A and B.” Ex. C at 8:41-45. Then, “the web service
 4 **determines** what type of connection is possible between Device A and Device B and **instructs**
 5 both devices of the communication protocol and parameters to be used for the transfer.” *Id.* And,
 6 “[i]nitially, the web service **determines if a peer-to-peer connection is available.**” *Id.* at 8:48-
 7 49.

9 98. Moreover, the '260 patent lexicography defines “web service”—which performs the
 10 requisite “brokering” of the claim—as “an information manager that coordinates information,
 11 communication and activities with the clients [and] also coordinates the transfer of files between
 12 devices by **establishing** a transfer protocol.” Ex. C at 4:48-58. Therefore, Dropbox’s proposed
 13 construction provides clarity to the term while comports with the guidance provided by the
 14 specification and patent lexicography.

16 99. In addition, this understanding of a PHOSITA is supported by technical and ordinary
 17 dictionary definitions for peer-to-peer connections. For example, the Oxford English Dictionary
 18 defines “peer-to-peer” in relevant part as follows: “2. *Computing*. Designating a computer network
 19 or mode of networking in which each user can **initiate a direct connection** with other computers
 20 on the same network, as opposed to communicating or interacting via a centralized server; of,
 21 relating to, or involving a network of this kind.” Ex. J. The Microsoft Computer Dictionary (5th
 22 ed.) defines “peer-to-peer communications” as “[i]nteraction between devices that operate on the
 23 same communications level on a network based on a layered architecture.” Ex. K at 397. In turn,
 24 the Microsoft Computer Dictionary (5th ed.) defines “layered architecture” as follows: “The
 25 division of a network model into multiple discrete layers, or levels, through which messages pass
 26 as they are prepared for transmission. In a layered architecture, **protocols at each layer provide**
 27
 28

1 **specific services or functions** and rely on protocols in the layers above and below them for other
 2 needed services.” Ex. K at 306. These definitions are consistent with the understanding that peer-
 3 to-peer connections must be (i) initiated and (ii) subject to a protocol to provide for such connection.
 4 Thus, consistent with a PHOSITA’s understanding, to have “a peer-to-peer connection be brokered
 5 by server-based web service between the first and second device” is to have “a server-based web
 6 service establish a peer-to-peer connection between the first and second device.”

8 100. In contrast, in my opinion, Entangled Media’s proposed construction—“a software
 9 client on the first device requesting that a server-based web service facilitate a file transfer from
 10 the second device to the first device / If a file transfer channel is established”—does not comport
 11 with a PHOSITA’s understanding of the term, including because it vastly broadens the scope of the
 12 claim. Entangled Media’s construction essentially replaces “broker” with “facilitate.” However,
 13 “facilitate” is much broader than “broker” because it can mean *any* process that leads to a peer-to-
 14 peer connection. For example, a PHOSITA would understand that a “server-based web service”
 15 can generally “facilitate” a peer-to-peer connection even if it is not responsible for establishing the
 16 connection. If the server-based web service made clients aware of one another (*e.g.*, by providing
 17 clients with their IP addresses) or maintained a list of files available on each peer, among others,
 18 would all be scenarios in which a PHOSITA would understand the server-based web service to be
 19 (passively) “facilitating” a connection between clients. Put differently, a PHOSITA would
 20 understand “facilitate” to mean a number of passive processes in which the server-based web
 21 service is not “establishing a transfer protocol.” But the specification and patent lexicography
 22 would be clear to a PHOSITA: the web service brokers a peer-to-peer connection by taking an
 23 active role in establishing the connection.

26 101. Entangled Media’s alternative proposed construction—“a software client on the first
 27 device requests that a server-based web service provide communication parameters for a peer-to-
 28

peer connection between the first and second device”—does not clearly comport with a PHOSITA’s understanding of the term either. Although a server-based web service “provid[ing] communication parameters” connotes something more active than a server-based web service merely “facilitating” a connection, a PHOSITA would understand that providing communication parameters for a peer-to-peer connection is not enough to “broker” the connection. For example, “provid[ing] communication parameters” would unduly limit the term to exclude a peer-to-peer connection where the communication is routed through the server-based web service—i.e., the server-based web service is an intermediate.

102. I reserve the right to offer additional opinions regarding Entangled Media’s proposed construction for this term based on its arguments, the evidence it cites, and any opinions offered by any other expert in these proceedings.

D. “transferring the corresponding physical file from the second device to the first device” (claim 1)

Dropbox’s Proposed Construction	Entangled Media’s Proposed Construction
“relocating the content of the corresponding file off of the second device and to the first device”	No construction needed; plain and ordinary meaning However, to the extent the Court determines that a specific construction is warranted: “Transmitting the data of the corresponding physical file from the second device to the first device.”

103. In my opinion, the plain and ordinary meaning to a PHOSITA of the term “transferring the corresponding physical file from the second device to the first device” in light of the intrinsic and extrinsic evidence is “relocating the content of the corresponding file off the second device and to the first device.”

104. A PHOSITA would understand the use of “transferring” in this term to mean “relocating” from the claim’s plain language. For example, the claim states that the physical file is transferred “*from*” the second device to the first. In my opinion, a PHOSITA would understand

1 that this language indicates the physical file is relocated or moved from one location (e.g., second
2 device) to another (e.g., first device).

3 105. In my opinion, this understanding of a PHOSITA is also consistent with the
4 technical definition of “transfer.” For example, the Microsoft Computer Dictionary defines
5 “transfer” as “[t]he movement of data **from one location to another.**” Ex. K at 527.
6

7 106. The specification further supports Dropbox’s proposed construction. For example,
8 the specification explains that the prior art typically “requires that ALL designated data is stored
9 online and is then in turn **replicated** across all devices that are connected to the online storage
10 server. These services **duplicate** all designated data between devices being synchronized AND
11 store an **additional copy** on their servers. Each file stored on N devices results in **N+1 duplicates**
12 **of the same file.**” Ex. C at 1:44-50. However, “the most obvious shortcoming” of the prior art “is
13 the amount of storage space that is required.” *Id.* at 1:54-56. To overcome this, the ’260 invention
14 “do[es] not require physical data replication across multiple devices. Instead, the present solution
15 creates a virtual representation of data on all of the devices...and the files are not actually stored
16 on all devices and thus, with the exception of a **single physical location**, they take up limited space
17 (i.e. storage) on any additional device’s hard drive.” *Id.* at 2:22-30.
18

19 107. Moreover, the context of dependent claims of the ’260 Patent also supports
20 Dropbox’s proposed construction. For example, dependent claim 6 recites “[t]he process according
21 to claim 1, further comprising: upon completing the operation, **pushing the physical file back to**
22 **the second device**; and retaining the virtual file at the first device.” A PHOSITA would have
23 understood that because claim 6 requires the physical file be *pushed back* to the second device, the
24 physical file necessarily no longer is stored at the second device after it is transferred (i.e., relocated)
25 to the first device as required by claim 1.
26

27 108. In my opinion, Entangled Media’s proposed construction does not comport with a
28

1 PHOSITA's understanding of the term. *First*, Entangled Media replaces "transferring" with
 2 "transmitting." But the '260 Patent never once uses the word "transmit" or any variation thereof
 3 in the specification. In contrast, "transfer" is used throughout. *See, e.g.*, Ex. C at 3:28-31 ("if the
 4 peer-to-peer connection is brokered, transferring the physical file from the second device to the
 5 first device"), 6:57-59 ("The file is then transferred from the remote device to the local device and
 6 the operation is performed on the file at the local device."), 6:64-66 ("Once the file has been
 7 transferred from the remote device to the local device, it can be viewed, edited, or modified in any
 8 way by the user."), 8:54-60 ("During the time that the request to Device B for the file transfer to
 9 Device A is happening, the operating system, and in turn the requesting application (Adobe Reader)
 10 has no idea that the requested file is not local to Device A and is simply waiting for that command
 11 to return the number of bytes that it requested so that it can display them.").

12
 13 109. *Second*, in my opinion, a PHOSITA would recognize "transmitting" as a term in the
 14 art that is broader than "transferring." For example, the Microsoft Computer Dictionary identifies
 15 the technical definition for "transmit" as "[t]o *send* information over a communication line or
 16 circuit." Ex. K at 528. This is distinct from the technical definition for "transfer" which requires
 17 "[t]o *move* data from one place to another." *Id.* at 527.

18
 19 110. *Third*, as discussed above, the specification makes clear that the purported novelty
 20 of the '260 Patent avoids the creation of duplicate physical files across multiple devices in order to
 21 save storage space. However, Entangled Media's construction contradicts this novelty because, by
 22 replacing "transferring" with "transmitting," the second device can merely "send information" or a
 23 copy of the physical file to the first device while retaining the physical file at the second device,
 24 thus creating duplicate files across devices. In my opinion, the duplicate files would decrease the
 25 cumulative available storage space among the devices, therefore, falling into the exact pitfall that
 26 the '260 Patent sought to avoid.
 27
 28

111. I reserve the right to offer additional opinions regarding Entangled Media's proposed construction for this term based on its arguments, the evidence it cites, and any opinions offered by any other expert in these proceedings.

E. "pushing the physical file back to the second device" (claim 6)

Dropbox's Proposed Construction	Entangled Media's Proposed Construction
"pushing the content of the file off of the first device and back to the second device"	No construction needed; plain and ordinary meaning However, to the extent the Court determines that a specific construction is warranted: "Transmitting the data of the physical file to the second device at the instigation of the first device."

112. In my opinion, the plain and ordinary meaning to a PHOSITA of the term "pushing the physical file back to the second device" in light of the intrinsic and extrinsic evidence is "pushing the content of the file off of the first device and back to the second device."

113. Dependent claim 6 recites "[t]he process according to claim 1, further comprising: upon completing the operation, **pushing the physical file back to the second device**; and retaining the virtual file at the first device."

114. As I explained in Section IX(D), which I fully incorporate herein, a PHOSITA would have understood claim 1 to require that when a physical file is "transferred" from a second device to a first device, the physical file that was originally located on the second device is "relocated" to the first device such that the physical file is no longer stored on the second device. This context for claim 1 informs a PHOSITA's understanding of the disputed term in claim 6 (and vice versa): claim 6 requires the physical file be **pushed back** to the second device. Specifically, the disputed term recites "pushing...back to the second device," which would indicate to a PHOSITA that the physical file is not on second device at that time. Otherwise, if the physical file's contents are already located on the second device, pushing **back** the physical file's contents

1 to the second device would be a redundant and unnecessary step. Therefore, in my opinion,
2 Dropbox's proposed construction comports with a PHOSITA's understanding of the term.

3 115. In contrast, it is my opinion that Entangled Media's proposed construction is
4 inconsistent with a PHOSITA's understanding of the term. For instance, "transmitting the data of
5 the physical file to the second device" fails to give meaning to the words "pushing" and "back to."
6 A PHOSITA would understand "pushing" in the context of claim 6 to mean moving the physical
7 file away from the first device, and a PHOSITA would further understand "back to" in this context
8 to mean that the physical file is to be returned to its original location. Thus, "pushing the physical
9 file back to the second device" connotes that the physical file's contents are removed off and away
10 from the first device and returned back to the second device.

11 116. But "transmitting," as Entangled Media proposes, ignores the claim's plan language
12 and an understanding of that language to a PHOSITA. For the same reasons I discussed in Section
13 IX(D), "transmitting" is overbroad and can merely mean the transmission of a *copy* of a file, which
14 is contrary to the purported novelty of the '260 patent's claimed invention. Likewise, the remainder
15 of Entangled Media's proposed construction—"without the transfer having been requested by the
16 second device"—does not comport with a PHOSITA's understanding of "pushing the physical file
17 back to the second device." Specifically, "pushing the physical file back to the second device"
18 informs a PHOSITA about the directional flow of a physical file's transfer between devices—i.e.,
19 from the first device "back to" the second device. A PHOSITA would not understand anything in
20 the disputed term to inform whether such flow is "requested by" a certain device.

21 117. I reserve the right to offer additional opinions regarding Entangled Media's
22 proposed construction for this term based on its arguments, the evidence it cites, and any opinions
23 offered by any other expert in these proceedings.

24 **F. "singular file system" (claims 1, 4)**

Dropbox's Proposed Construction	Entangled Media's Proposed Construction
A system with a common, unified view of all data across more than one device so that all of a user's devices appear to share one single native file system containing all of the user's files across all devices.	System wherein local and virtual files are shown in the same directories/folders

118. It is my understanding that the '338 and '260 patents are related patents, share the same specification, and directed to the same subject matter. In my opinion, the term "singular file system" is used synonymously across the '338 and '260 claims. Therefore, I fully incorporate by reference my opinion in Section VIII(E) above, and "singular file system" should be construed in accordance with Dropbox's proposed construction for the reasons stated therein.

X. SUPPLEMENTATION

119. I reserve the right to supplement this declaration based on additional information, including but not limited to Entangled Media's claim construction arguments and any opinions offered by any other expert in these proceedings.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct. Executed in Madison, WI this 5th day of February, 2024.



Patrick McDaniel