UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK
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CAPITOL RECORDS, LLC,

Plaintiff,

Civil Action No: 12 CIV 0095 (RJS)

- against -

REDIGI, INC. ,

Defendant.
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DECLARATION LARRY RUDOLPH (aka Lawrence S. Rogel)
IN SUPPORT OF DEFENDANT'S MOTION FOR SUMMARY JUDGMENT

I, **LARRY RUDOLPH** (aka Lawrence S. Rogel), pursuant to 28 U.S.C. § 1746, declare under the penalty of perjury, as follows:

1. I am Chief Technical Officer and a founder of ReDigi Inc.

2. I received my PhD in Computer Science from the Courant Institute of Mathematical Science, NYU in 1981. After a post-doc at University of Toronto, I joined the Computer Science faculty at Carnegie-Mellon University and then the Hebrew University, Jerusalem, Israel.

3. After attaining the rank of full professor, I moved to the Massachusetts Institute of Technology as a Principle Research Scientist. After 12 years, I joined VMWare as a Senior Staff Engineer in 2007.

4. In 2009, I co-founded a startup which eventually became ReDigi Inc., where I serve as the CTO. I also remain an Affiliate for the MIT Lab for Computer Science and Artificial Intelligence and frequently teach Computer Systems Engineering (6.033). This course covers the detailed organization of computer file systems, Cloud Computing, and file transfer protocols.

WHAT REDIGI DOES

(A) The migration and storage process

5. After signing up for a ReDigi account, accepting ReDigi's terms of service, downloading and installing ReDigi's proprietary "Media Manager" software ("Media Manager"), and logging into the account using secure login information, a ReDigi user may migrate an eligible music file ("Eligible File") from the user's computer to the user's personal storage locker ("Cloud Locker") in ReDigi's cloud-based storage system (the "ReDigi Cloud"). "Eligible File(s) solely refers to the original source file purchased from iTunes by the user as determined by the Media Manager.

6. Once installed on the user's desktop computer, either Windows or Macintosh, the Media Manager scans all the connected storage devices for music files, validates each, records the results in a local database, displays the Eligible Files to the user, enables the user to offer for sale music files in the Cloud Locker or cancel such actions, and continually watches for music files of songs that have already been offered for sale or sold. It also can migrate Eligible Files, and store new iTune purchased music files, as well as download files from Cloud Locker,

7. From the ReDigi website, a user can download, stream, or offer for sale Eligible Files in their Locker. A user can cancel a sale offer, order or buy a music file, purchase credit, browse inventory, check account, or open a window with YouTube or iTunes.

8. The ReDigi Server maintains the database, serves as the backend to the website, accepts file migrations, file store actions from the Media Manager, performs secondary validations of Eligible Files, streams Eligible Files, manages all the bookkeeping, logging functions, etc.

9. The only Eligible Files are ones legally acquired from iTunes, thereby excluding music tracks copied from CDs, or downloaded from other online vendors or file sharers, or obtained

from any other source. Only one instance of an Eligible File can ever be sold on ReDigi.

10. Before an Eligible File can be migrated to the Cloud Locker, the user must agree to permit the Media Manger to delete all other copies stored on the user's computer, attached storage and synchronization devices. The user must delete any and all copies stored in any external cloud storages.

11. After the installation of the Media Manager, a music file downloaded by iTunes is automatically stored in the user's Cloud Locker. Afterwards, a copy from the Cloud Locker may be downloaded to the user's computer. The file remains in the user's Cloud Locker provided it passes the validation tests by the ReDigi Server. There is an option to turn off this automatic service.

12. A user can do the following actions with an Eligible File in the Locker: offer it for sale, privately listen to it by "streaming", download it leaving the Eligible File in the Locker, or delete it from the Locker.

(B) The sale process

13. A user can choose to offer an Eligible File stored in his or her Locker for resale to other ReDigi users through the ReDigi marketplace. *No copy of the file in the ReDigi Cloud is made when the Eligible File is sold by one ReDigi user to another ReDigi user.*

14. After such a sale, the selling user no longer has any access to the file sold. The Eligible File is in the purchasing user's Locker where he or she can continue to store, listen, offer for sale, download, or delete it.

15. ReDigi earns a transaction fee on the sales.

16. For each Eligible File in the user's Cloud Locker that has been offered for sale or sold, the Media Manager automatically and continually scans for instances of copies of said Eligible File. If a copy of such Eligible File is detected, the user is prompted to authorize the deletion of such file from that device. If the user fails to provide such authorization, his or her account is suspended.

(C) Streaming of 30 second clips and linking to artwork

17. ReDigi's website has links to 30-second clips which are streamed by iTunes and if not available, by YouTube. A separate window is opened to either iTunes or YouTube based on the metadata of the selected song. A user's ReDigi "memory bank" keeps track of links to which a user has listened. All that is stored in the memory bank are these bookmarks.

HOW IT WORKS

(A) Verification of unique files

18. The Media Manager maintains a database on the user's machine that contains a record of every music file it encounters. Music files that are the same are grouped together in the database and the original file of the group is identified.

19. Media Manager performs a validation process on each music file which includes analyzing file ownership, source, purchase dates, UITS code, metadata, and indications of tampering. The file metadata must contain bought-by, bought-from, and purchase date fields in the metadata. The bought-from must be iTunes directly or indirectly when bought from another ReDigi user. Files that pass the initial validation stage, are displayed to the user as Eligible Files. Only music files that have been validated as Eligible Files can be uploaded for storage or sale.

(B) Locker storage

20. The advent of inexpensive, nearly pervasive, highspeed, and continually accessible internet access has given rise to the rental of network storage, sometimes referred to as cloud storage.

21. In addition to the cloud storage locker for mp3 and mp3-type aac (collectively "MP3") files ReDigi (a) offers a used digital music marketplace, and (b) provides technology and has adopted a business model which prevents users from maintaining duplicates, even on their home computers and connected devices, of recordings deemed eligible for ReDigi's services.

22. The locker is a conceptual idea involving a collection of actual files. Each file is assigned a unique number as the name under which it is accessed in the ReDigi Cloud. An Eligible File can be accessed only its owner. Ownership is signified by database records which associates a file with a particular user. The database record can be thought of containing a "key" to the file in the user's Cloud Locker. The Locker, file names (pointers to files), ownership, and other details are realized through the values stored in the database.

23. The Cloud Locker can be thought of as the "final resting place for unwanted music files." A user might not want to offer a particular song for sale, but no longer wants it to take up space on his or her local computer. ReDigi is also a "rebirth" place where the purchased file can reside before being downloaded by the new owner. It is, to the best of our knowledge, unique in that all the songs in the locker have passed verification. Many cloud storage systems tell their users to only upload items they own but, unlike ReDigi, offer no mechanism for verifying such ownership.

24. The Eligible File is the only instance of that unique file in the ReDigi Cloud. The entire ReDigi cloud may contain multiple, unique copies of the same recording, although each will have certain identifiable differences in the metadata, as each was uploaded by a different user.

(C) Getting a music file into the cloud locker without copying

25. There are three ways on ReDigi to get an Eligible File into a user's Cloud Locker: migrate it from a user's computer, intercept it from iTunes download, and transfer ownership between two ReDigi users. None of the ways involves copying or reproduction. No copy or reproduction of the Eligible File is made during the migration process.

26. An Eligible File is migrated to the ReDigi Cloud using a unique process based, in part, on very old techniques employed when storage was very limited.

27. The last block of the file is read into a buffer and the file size is reduced by the size of

this block, using the "truncate" command (Macintosh) or "Set End Of File" command (Windows). This has the effect of removing the last block from the file. The bytes in the buffer are then transferred over the internet to the ReDigi Cloud. The process of reading into a temporary buffer and removing the last file block by truncating the file, and transferring the buffer to the ReDigi Cloud continues until the entire file is migrated and no longer exists on the user's computer.

28. Since the blocks are removed from the end of the file and then transmitted, the ReDigi Cloud receives them in reverse order. Before transmission, the block of data is reversed as well, so that the ReDigi Cloud receives the file in reverse order. By analogy, if the blocks are cars of a train and the file is a train with the engine at the front and the caboose at the end, then the process is as follows. Remove the caboose, turn it around and then send it. The block must be reversed, so that the very last byte of the file will become the very first byte of the file at the ReDigi Cloud, similarly, the caboose must be reversed so its back arrives first at the destination.

29. The ReDigi Server is informed that a migration is about to take place for this particular user and the length of the file. A file transfer stream is then setup with the operating system on the user's computer to transfer the file to the ReDigi Cloud. The ReDigi Cloud receives files from the Media Manager, however, metadata associated with the file is set to indicate it has been stored in reverse order as indicated by the initial transmission from the Media Manager. The file on the user's machine continually shrinks in size while the file on the server grows in size. The sum of the sizes of these two files plus the pieces that are in transit is the size of the original music file. When the server reads the file in the future, if the metadata indicates a reversed file, then the file is first read to a buffer, the bytes are reversed and the file is stored to the desired destination. When all of the blocks, have reached the ReDigi cloud server they are assembled into a format that is perceivable and can be played using an Mp3 player or other program.

30. A disruption of the communication between user's computer and ReDigi Server or a

crash of either side causes the Eligible File that is being migrated to be lost. When there are no other copies of the Eligible File on the user's machine, other systems, make a temporary archival copy for the duration of the migration prevents file loss. However, since it has been ReDigi's experience that the archival copy has never been needed in practice, ReDigi does not use an archival copy and instead chooses to reimburse the user for a new file in the rare event of file loss. Before migration begins, Media Manager notes the title, artist, and album of the track in a special file on the user's machine as well as informing the ReDigi Server. However, prior to March, 2012, upon the successful completion of the migration of the Eligible File, which takes seconds, any archival copy that might have been made would be deleted. Any other instances of the file previously existing on the user's hard drive and connected devices would also be deleted.

31. The user cannot see this file migration but can see that the file size shrinks during the migration. At no time does the Eligible file exist both on the user's machine and in the ReDigi Cloud.

32. Files that are "downloaded" by iTunes after the installation of Media Manager are stored in the ReDigi Cloud rather than on the storage device attached to the user's machine. The Media Manager installs a special user level file system, ReDigi File System Intercept (RFSI), into the operating system, using Fuse4X on the Macintosh Computers and the Dokan library on the Windows computers. RFSI intercepts all file operations to the files in the directory tree for the user's music library. Nearly all the time, RFSI is passive and passes all the music file actions to the real file system. The purpose of RFSI comes into play when iTunes downloads a legally acquired file from Apple to the user's computer. The iTunes program reads the transmitted data packets from Apple via the operating system internet stream. After some processing, it creates the music file by writing blocks of data into the music file. However, RFSI intercepts such create, read, write, rename, and other operations associated with the download file and writes them to or reads them from the ReDigi Cloud. The

iTunes application believes it is storing the music file locally, but in reality, the file is first stored in the storage Cloud in the ReDigi Server. RFSI understands how iTunes stores such files and only transfers the data associated with the final, user playable file. The move and rename operations by iTunes at the end of the download process are also intercepted by RFSI and sent to the ReDigi Server. Finally, RFSI downloads the file from the ReDigi server and places it at the appropriate location with the appropriate file name on the user's machine. The original legally acquired music file is thus first stored in ReDigi Cloud while somewhat later a copy may be downloaded to the user's machine. No copy or reproduction is made during the original download from iTunes to the Redigi server.

(D) Offering music for sale or to purchase

33. The ReDigi marketplace only allows songs to be offered for sale that meet two criteria. First, they must be in a user's locker. Second, they must be the only instance of the file that the user has. The marketplace also allows a user to place an offer to purchase a song. Such a purchase request is either satisfied immediately or is queued until some other user offers that song for sale. Media Manager communicates with the ReDigi server to synchronize its local information with the centralized information on the ReDigi database. A user may offer one of the songs for sale, in which case it can no longer be downloaded or streamed. The user may also at any time choose to cancel the offer for sale. In this case, it could then be downloaded, kept in storage, or re-offered for sale at a later time.

34. Part of the Media Manager is a continually running background "service" that constantly monitors music file creation, deletion, and renaming, as well as the files on removable devices when they become attached to ensure that the files sold, offered for sale, or residing in the locker, do not reappear on the computer or attached devices at any time. It automatically starts each time the user's machine is rebooted.

35. The purchase and sale orders for a recording are organized on a first-in first-out basis.

It may be the case that there are no outstanding orders, in which case the offer for sale is placed at the end of a queue of offers for sale for this particular recording. Database records are used to maintain the desire-to-purchase and the offer-to-sell queues.

(E) Performing a transfer of ownership

36. The transfer of ownership is accomplished without making a copy of the Eligible File recording. There is never a time when both seller and buyer have access to, or ownership of the Eligible File. The record locator to the file that is in the seller's ReDigi Locker is deleted and a new record locator to the file is added to the buyer's ReDigi Locker (the "Key"). The transaction is, in computer parlance, an "atomic transaction." A "transaction" is a set of actions, insertions, deletions, modifications, on the records of a database, perhaps contained in different tables. In an "atomic" transaction, there is a guarantee that either all the transactions occur or none of them do. All the actions happen at the exact same moment the transaction commits. The transfer of ownership involves several actions. The Eligible File is transferred between the buyer and seller through the actions of modifying the user identifier of the records in "box items", "fingerprints" "market sell items" and "market by items" database tables. At no point is the copyrighted music file touched. Money or credit is transferred between the buyer and the seller, and a log of the transaction. These transfers happen simultaneously with the transfer of ownership. They are all part of the atomic transaction.

(F) Violations

37. A ReDigi Server database contains records that specify details about each Eligible File, such as: the source, the track title, artist, album, year produced, as well as the user name of the file owner and the date of purchase, copyright information, instance id or UITS code, and a hash code for the acoustic portion. Once a file is stored in the ReDigi Cloud, several things happen: (a) the metadata and the acoustics are checked for validity; (b) the metadata are checked to ensure that no other ReDigi

user has sold, has offered for sale, or is storing, a file with the same relevant metadata; (c) if the file fails either of these tests, it is scheduled to be discarded in three hours so that it can be downloaded by the Media Manger; (e) if it passes, then the user's locker is updated to include the relevant metadata of the file and a "pointer" to the 'location' of the file; and (f) a record is made of the file's relevant metadata to ensure no other user attempts to upload a file with this same relevant metadata.

38. Whenever Media Manager finds a file matching a Eligible File that is for sale or has been sold, it signals a "violation", and requires the user to delete the file from the client or delete it from the locker (and cancel any pending offer for sale); the user's failure to comply would mean suspension of the user's account.

39. Media Manager checks the user's machine for the presence of other music cloud services, such as Apple's iCloud and Google's Music Player. Before any Eligible Song is allowed to be offered for sale, these services are checked to see if the song is also there. The track title, album name, and artist are compared and if there is a match, the offer for sale is blocked. The user is requested to first delete the file from the cloud service. Moreover, the Media Manager periodically scans these services for the presence of offer for sale or sold tracks and demands the user delete the tracks or the account will be suspended. With iTunes, iMatch, when a music file is removed from the local computer's iTunes library, there is an indication that the music file is in the user's iCloud. Media Manager uses this information to detect violations. In the case of Google Play, Media Manger logs into the service as the user and lists all the music files in the Google Music Cloud to check for violations.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on July 20, 2012 in Cambridge, Massachusetts.

LARRY RUDOLPH (aka Lawrence S. Rogel)

July 20, 2012