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MOBILE NETWORKING SOLUTIONS, LLC

UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

SOUTHERN DIVISION

MOBILE NETWORKING SOLUTIONS, LLC,

Plaintiff,

v.

EXPERIAN INFORMATION SOLUTIONS, INC. and MAPR TECHNOLOGIES, INC.,

Defendants.

Case No. 8:17-cv-00884-DOC-JCG

FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Mobile Networking Solutions, LLC ("Plaintiff" or "MNS"), by way of this First Amended Complaint against Defendants Experian Information Solutions, Inc. ("Experian") and MapR Technologies, Inc. ("MapR") (collectively Experian and MapR are referred to as "Defendants" herein), alleges as follows:

THE PARTIES

1. Plaintiff MNS is a limited liability company organized and existing under the laws of the State of Texas, having its principal place of business at 1400 Preston Road, Suite 483, Plano, TX 75093.

2. On information and belief, Defendant Experian is a corporation organized and existing under the laws of the State of Ohio, having its principal place of business at 475 Anton Boulevard, Costa Mesa, CA 92626.

3. On information and belief, Defendant MapR is a corporation organized and existing under the laws of the Delaware, having its principal place of business at 350 Holger Way, San Jose, CA 95134.

JURISDICTION AND VENUE

4. This is an action under the patent laws of the United States, 35 U.S.C. §§ 1, et seq., for infringement by each of the Defendants of claims of U.S. Patent No. 7,197,662 (the "'662 Patent"); U.S. Patent No. 7,543,177 (the "'177 Patent"); and U.S. Patent No. 7,958,388 (the "'388 Patent") (collectively, the '662 Patent, '177 Patent, and '388 Patent are referred to as the "Patents-in-Suit" herein).

5. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

6. Experian is subject to personal jurisdiction of this Court because, inter alia, upon information and belief, (i) Experian is headquartered in the State of California, (ii) Experian regularly conducts business in the State of California, (iii) Experian is registered to do business in the State of California, (iv) Experian has committed and continues to commit acts of patent infringement in the State of California, including by making, using,

offering to sell, and/or selling accused products and services in California, and upon information belief, Experian has hundreds of employees in the State of California.

7. MapR is subject to the personal jurisdiction of this Court because, inter alia, upon information and belief, (i) MapR is headquartered in the State of California, (ii) MapR regularly conducts business in the State of California, (iii) MapR is registered to do business in the State of California, (iv) MapR has committed and continues to commit acts of patent infringement in the State of California, including by making, using, offering to sell, and/or selling accused products and services in California.

8. Venue is proper in this judicial district under 28 U.S.C. § 1400(b) as to Experian because, inter alia, on information and belief, Experian has committed acts of infringement of the Patents-in-Suit in this judicial district, and Experian has a regular and established place of business in this judicial district. Experian has a regular and established place of business in this district because its headquarters are located in Costa Mesa, California. On information and belief, Experian has committed acts of infringement of the Patents-in-Suit pursuant to 35 U.S.C. § 271(a) in this judicial district.

9. On information and belief, Experian has committed acts of infringement of the Patents-in-Suit pursuant to 35 U.S.C. § 271(a) by using the accused Experian/MapR system in this judicial district, including exercising control and obtaining beneficial use of the system at its Costa Mesa headquarters for the company as a whole. In 2014, Experian's director of the Data Development Technology Group "summarize[d] the benefits of the upgraded [MapR Hadoop] system to both the company and its customers: 'We are realizing increased processing speed which leads to shorter delivery times. In addition, reduced storage expenses means that we can store more, not acquire less. Both the company's internal operations and our clients have access to deeper data supporting and aiding insights into their business areas.'" Coping with Big Data at Experian – "Don't Wait, Don't Stop" (www.datanami.com/2014/09/01/datanami-announcing-2014-big-data-star-awards/, Exhibit A). In another example, LinkedIn profiles for Experian software developers in the Orange

County, California Area include "[h]ands on experience in Cloudera/Hortonworks/MapR Hadoop distribution." (Exhibit B) (emphasis added).

10. On information and belief, Experian has committed acts of infringement of the Patents-in-Suit pursuant to 35 U.S.C. § 271(a) by offering to sell and/or selling the accused Experian/MapR system in this judicial district. For example, as of 2014, with respect to the accused Experian/MapR systems, Experian had "a single customer solution right now. But as we get new customers who can use this kind of capability, we can add additional nodes and storage and processing capacity at the same time." Coping with Big Data at Experian – "Don't Wait, Don't Stop" (www.datanami.com/2014/09/01/datanami-announcing-2014-big-data-star-awards/, Exhibit A). The Corporate Fact Sheet states that Experian's "North America annual sales are more than $2 billion." (http://www.experian.com/corporate/experian-corporate-factsheet.html) (Exhibit C). On further information and belief, Experian has also committed acts of infringement of the Patents-in-Suit pursuant to 35 U.S.C. § 271(a) by making the accused Experian/MapR system in this judicial district.

11. Venue is proper in this judicial district under 28 U.S.C. § 1400(b) as to MapR because, inter alia, on information and belief, MapR has committed acts of infringement of the Patents-in-Suit in this judicial district, and MapR has a regular and established place of business in this judicial district. MapR has a regular and established place of business in this district because: (i) MapR currently employs at least six engineers and sales professionals in the "Greater Los Angeles" area (*see* Exhibit D); (ii) MapR has been hiring professionals in the Los Angeles area for several years ("Territory Systems Engineer-Multiple Locations in Los Angeles at MapR Technology" [June 8, 2014], "Territory Sales Director at Mapr Technologies (Los Angeles, CA)" [August 8, 2014], "Territory Sales Engineer – at Mapr (Los Angeles, CA) [October 6, 2014], "Territory Sales Engineer in Los Angeles at MapR Technology" [March 8, 2016], "Territory Systems Engineer – Los Angeles in Los Angeles at MapR Technology" [July 25, 2016], "MapR is hiring for Territory Sales Director – Los Angeles" [August 10, 2016], "MapR is hiring for Territory

Sales director – Los Angeles!" [April 9, 2017], and "MapR is looking for: Solutions Engineer – Los Angeles" [June 17, 2017] (*see* Exhibit E); and (iii) MapR continuously markets the accused systems in this judicial district, including attending and sponsoring presentations and meetups (*see* "Ted Dunning #MapR Chief Architect to speak Los Angeles Los Angeles HUG Also DataMeer + WibiData Meet-up" [February 6, 2012] (Exhibit E), "MapR Technologies to Speak on Hadoop Topics at Multiple Big Data Events in September [at the Los Angeles Convention Center on September 20, 2014]" (Exhibit F), "Tomorrow: Los Angeles #ApacheSpark Panel Discussion with MapR, Cloudera, and Pivotal" [September 29, 2014] (Exhibit E), "Twofer - Mac Moore of Gridgain & Dale Kim of MapR - Los Angeles Big Data Users Group (Los Angeles, CA)" [November 7, 2014] (Exhibit E), "Digital Transformation in Big Data" at Fairmont Newport Beach [Dec. 7, 2016] (Exhibit G), and "LA Data: Cities Ponder Responsible Use of Big Data" ("Big data companies like IBM, Cloudera and MapR have been courting city, county and state governments…") (emphasis added) (Exhibit H).

12. On information and belief, MapR has committed acts of infringement of the Patents-in-Suit pursuant to 35 U.S.C. § 271(a) by using the accused systems in this judicial district, including exercising control and obtaining beneficial use of the system in this judicial district. *See*, for example, MapR's demonstration of MapR functionality in Los Angeles on March 25, 2017 entitled "Self-Service Data Exploration & Stateful Micro-Services" (video available at www.youtube.com/watch?v=evXmBWYvktk):

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(Exhibit I). On information and belief, the MapR system demonstrated in Los Angeles as noted above included the MapR distribution including Hadoop features accused of infringement in this action. In addition, MapR's job posting for a "Solutions Engineer – Los Angeles" states that the "Territory Solutions Engineer is responsible for the following prospect and customer-related activities: …Facilitate validation of the MapR Converged Data Platform …via product demonstration…Proofs of Concept, performance benchmarking, application integration and other related technical activities" and "[d]emonstration and utilization of the MapR Control System ('MCS') to provision and manage prospect and customer workloads." Exhibit J.

13. On information and belief, MapR has also committed acts of infringement of the Patents-in-Suit pursuant to 35 U.S.C. § 271(a) by making the accused systems in this judicial district. *See, e.g.*, MapR job posting in Exhibit J listed above requiring solutions engineers to integrate the MapR system with customers' existing systems for which "[e]xperience selling and deploying Linux-based solutions to Enterprise customers is a prerequisite" (emphasis added). Further, on information and belief, MapR makes the accused systems in this judicial district by offering "Implementation" services whereby MapR "will assess your current environment, and then install and configure the MapR

Converged Data Platform cluster for optimal service levels for your particular infrastructure." Exhibit K (emphasis added).

14. On information and belief, MapR has also committed acts of infringement of the Patents-in-Suit pursuant to 35 U.S.C. § 271(a) by selling and/or offering to sell the accused systems in this judicial district. *See, e.g.*, MapR's website explaining its Sales and Professional Services Careers ("At MapR, we offer sales professionals top-rated products, excellent compensation, professional growth, a dynamic team environment, a strong leadership team, and the opportunity to help solve big data problems by selling the best big data platform with Hadoop/Spark, NoSQL and Streaming technologies available. …You'll have the opportunity to sell acclaimed products" (Exhibit L)) and listing a "Territory Sales Director – Los Angeles" position in which MapR is "looking for a Sales leader who is experienced in selling solutions to C-level decision makers" with responsibilities of "[m]eeting with key stakeholders CIOs, IT execs, LOB execs" and "[m]eeting/exceeding activity, pipeline, and revenue targets." (Exhibit M).

SINGLE ACTION

15. This suit is commenced against Defendants Experian and MapR pursuant to 35 U.S.C. § 299 in a single action because, inter alia, upon information and belief, Defendant MapR designs, manufactures, and provides technology used in Experian products and services accused of infringement in this action.

16. Accordingly, Experian and MapR's infringement arises out of the same transaction, occurrence, or series of transactions or occurrences relating to the making, using, importing into the United States, offering for sale, or selling of the same accused product or process, and questions of fact common to both Defendants will arise in this action pursuant to 35 U.S.C. § 299.

BACKGROUND

17. On March 27, 2007, the United States Patent and Trademark Office duly and lawfully issued the '662 Patent, entitled "Methods and Systems for a Storage System" based upon an application filed by the inventors Melvin James Bullen, Steven Louis Dodd,

William Thomas Lynch, and David James Herbison. A true and correct copy of the '662 Patent is attached hereto as Exhibit N.

18. On June 2, 2009, the United States Patent and Trademark Office duly and lawfully issued the '177 Patent, entitled "Methods and Systems for a Storage System" based upon an application filed by the inventors Melvin James Bullen, Steven Louis Dodd, William Thomas Lynch, and David James Herbison. A true and correct copy of the '177 Patent is attached hereto as Exhibit O.

19. On June 7, 2011, the United States Patent and Trademark Office duly and lawfully issued the '388 Patent, entitled "Methods and Systems for a Storage System" based upon an application filed by the inventors Melvin James Bullen, Steven Louis Dodd, William Thomas Lynch, and David James Herbison. A true and correct copy of the '388 Patent is attached hereto as Exhibit P.

20. MNS is the owner by assignment of the Patents-in-Suit, and has the right to sue and recover damages for infringement thereof.

NOTICE

21. MapR and Experian have received notice of the Patents-in-Suit, and of their infringement thereof, at least as early as May 19, 2017, when the original complaint in this action for patent infringement was filed.

22. In addition, the Patents-in-Suit were previously asserted against EMC Corporation ("EMC") by Parallel Iron, LLC, a prior assignee of the Patents-in-Suit. *See, e.g.*, Parallel Iron LLC v. EMC Corp., C.A. No. 12-cv-00764 (D. Del.); EMC Corp. v. Parallel Iron, LLC, C.A. No. 12-cv-11096 (D. Mass.); and EMC Corp. v. Parallel Iron, LLC, C.A. No. 13-cv-00916 (D. Del.) (collectively referred to as the "EMC Actions").

23. On information and belief, in the EMC Actions the Patents-in-Suit were asserted against EMC's "Hadoop Distributed File System ('HDFS')." Exhibit Q at 3-7. EMC's Hadoop offerings during the time of the EMC Actions included the EMC Greenplum HD Enterprise Edition, which included MapR technology at issue in the present action. *See, e.g.*, Exhibit R ("MapR Technologies, Inc. today announced a software

licensing agreement with EMC Corporation … in which MapR Technologies will be part of the recently announced …EMC® Greenplum® HD Enterprise Edition, a 100 percent interface-compatible implementation of the Apache Hadoop software stack. The new EMC system will incorporate MapR Technologies' pre-integrated, tested and hardened distribution for Apache Hadoop.")

24. In a separate action between Parallel Iron and EMC involving an unrelated patent, EMC identified several witnesses as having knowledge with respect to EMC's Greenplum HD product, which incorporated MapR technology. EMC identified "Susheel Kaushik" of EMC Corporation as having knowledge as to "Technical aspects of EMC's Greenplum HD," "Joshua Klahr" of EMC Corporation as having knowledge as to "Business aspects of EMC's Greenplum HD," "Joseph Otto" of EMC Corporation as having knowledge as to "Sales aspects of EMC's Greenplum HD," and "Peter David Wittenkamp" of EMC Corporation as having knowledge as to "Financial, business, and marketing information related to EMC's Greenplum HD." Exhibit S at 2-4 (Exhibit 2 to the Decl. of Josef B. Schenker, Counsel for EMC in a prior action against Parallel Iron).

25. On information and belief, EMC employees, including Mr. Susheel Kaushik, were knowledgeable about the details of MapR's distribution including Hadoop, and in constant communication with MapR. For example, Mr. Susheel Kaushik, then Senior Director, Product Management at Greenplum EMC, stated in 2012 that "We have two flavors of Hadoop for you. The first one is the open source version, which we are calling…the Apache version certified and supported for our enterprise customers, and the second one is the MapR version, which is much more faster, it is two to three times faster than Apache Hadoop, so if you are looking for extreme performance, that's where basically we direct our customers to":

Presentation titled Greenplum Database and Hadoop Overview by Susheel Kaushik, Senior Director, Product Management, Greenplum, EMC (Grand Hyatt, Mumbai, November 29-30, 2012) (video available at www.youtube.com/watch?v=ph4bFhzqBKU) (Screenshot at Exhibit T).

26. On further information and belief, Mr. Susheel Kaushik also gave a "[b]riefing session on MapR (GreenPlumHD)" in Tokyo, Japan, on January 19, 2012. *See, e.g.*, Google-translated event description at Exhibit U. Mr. Kaushik's presentation was "an explanation of MapR contents and QA meeting." *Id.* On information and belief, Mr. Kaushik demonstrated MapR, including its control interface. *See, e.g.*, Google-translated "Summary of content briefing session of MapR (GreenPlumHD)" at Exhibit V, including comments as to Mr. Kaushik's presentation and a screenshot of a GreenPlumHD/MapR control panel.

27. On further information and belief, MapR's license agreement with EMC included an indemnification provision for patent infringement by MapR technology of third-party patents. For example, MapR's standard End-User License Agreement states that:

> MapR shall defend at its own expense any legal action brought against Customer to the extent that it is based on a claim or allegation that the Proprietary Software or the MapR Materials infringes a U.S. patent or copyright of a third party . . . subject to the conditions that (a) Customer gives MapR prompt written notice of such claim . . .

Exhibit W at 4.

28. In view of the above, on information and belief, EMC communicated with MapR to (i) notify MapR of infringement allegations by a prior assignee of the Patents-in-Suit against MapR technology incorporated in EMC's Greenplum HD products; (ii) discuss the technical aspects of the applicability of the Patents-in-suit to MapR products incorporated by EMC, including to prepare witnesses identified by EMC for testimony in the EMC Actions; (iii) discuss the financial implications of the assertion of the Patents-in-Suit against EMC's and MapR's technologies, and/or (iv) discuss the indemnification obligations, if any, of MapR to EMC for the alleged infringement by EMC of the Patents-in-Suit. Accordingly, MapR was aware of the existence of the Patents-in-Suit, and the infringement thereof by MapR's products.

29. On further information and belief, the law firm of Perkins Coie, including attorneys from its Palo Alto office, previously represented Cloudera, Inc., Netflix, Inc., LinkedIn Corp., and Amazon Web Services, LLC in connection with the Patents-in-Suit.

30. On information and belief, the law firm of Perkins Coie, including attorneys from its Palo Alto office, also represent Defendant MapR in connection with the prosecution of MapR's patents relating to MapR's products and services accused of infringement in this action.

31. In addition, the Patents-in-Suit and their relationship to the Hadoop framework underlying the MapR and Experian systems accused of infringement in this action were subject to media coverage, including articles in the New York Times and several technology-related publications.

32. Accordingly, on information and belief, MapR was aware of the existence of the Patents-in-Suit based at least on communications with counsel, communications with industry partners and affiliates, and publications, and of their infringement thereof.

COUNT I: INFRINGEMENT OF THE '662 PATENT BY MAPR

33. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

34. On information and belief, MapR has infringed at least claim 1 of the '662 Patent by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States computer storage systems based on the MapR Distribution including Hadoop, up to, and including, Version 5.2. On information and belief, MapR's infringing activities include at least, sales and offers for sale of the accused computer storage systems; making, including manufacture, assembly, and testing of the accused computer storage systems; and use, including testing, demonstration, and operation of the accused computer storage systems. On information and belief, MapR's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

35. On information and belief, MapR infringes claim 1 of the '662 Patent, by, for example, using and/or making a storage system, such as a MapR cluster. Exhibit X. MapR's cluster comprises one or more memory sections, referred to as storage pools by MapR. *Id.* MapR's cluster also comprises one or more memory devices having storage locations for storing data, such as disks. *Id.* MapR's cluster also comprises one or more switches, such as the combination of networking hardware and software components that provide connectivity and facility to read and write data onto and from storage pools and disks on various MapR nodes. Exhibit Y. MapR's switches also include one or more interfaces for connecting to one or more external devices, such as a hardware, software, or protocol interface, for example, a port or an API for connecting to external devices, such as MapR client computers. Exhibit Z. MapR clusters further comprise a switch fabric, such as combination of node buses, backplanes, storage array connectors, network interface cards, network wiring, network switches, routers, and other networking devices included in a switch, connected to one or more memory sections, such as MapR storage pools, and the

external device interfaces, such as the interfaces described above. Exhibit X and Y. MapR's switch fabric interconnects the memory sections and the external device interfaces based on an algorithm, such as rules for directing read and write requests and data in the MapR cluster to the appropriate destination, including, for example, CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers. Exhibit X and AA. The MapR cluster further comprises a management system, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster. *Id.* MapR's management system is capable of receiving fault messages from the memory section controllers, such as status and heartbeat messages indicating disk failures, and removing from service the memory section (storage pool) from which the fault message was received. Exhibit BB and CC. MapR's management system is further capable of determining an algorithm for use by a switch fabric in interconnecting the memory sections and the external device interfaces, and instructing the switch to execute the determined algorithm. Exhibit X. For example, if containers in the CLDB volume fall below the minimum replication factor, aggressive re-replication restores the minimum level of replication. Exhibit AA. If a disk failure is detected, data stored on the failed disk is re-replicated to other disks. *Id.* MapR's management system determines the appropriate storage algorithm for use by a switch fabric in interconnecting the MapR storage pools (memory sections) and the external device interface described above, and instructs the switch to execute the determined algorithm, including the routing of read or write requests to appropriate container locations throughout the cluster. Exhibit X and AA. In a MapR cluster, an interface of the switch is connected to a non-volatile storage device, such as a disk. Exhibit X. MapR's MapR-FS and CLDB update service components described above (the management system) are further capable of instructing the non-volatile storage device (disk) to load data into one or more of the memory sections via the switch, such as, for example, when a disk storing data is instructed to replicate or re-replicate the stored data to other storage pools. Exhibit X and AA.

36. On information and belief, MapR has infringed at least claim 14 of the '662 Patent by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States computer storage systems based on the MapR Distribution including Hadoop. On information and belief, MapR's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

37. On information and belief, MapR infringes claim 14 of the '662 Patent by, for example, performing a method for use in a storage system. MapR stores data in storage locations in a memory device, such as a disk. *See* Exhibit X. MapR's memory devices are included in a memory section, which are referred to as storage pools by MapR. *Id.* MapR's management system, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster, determines an algorithm, such as the rules for directing read and write requests and data in the MapR cluster to the appropriate destination, including, for example, CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers, including the routing of read or write requests to appropriate container locations throughout the cluster. Exhibit X and AA. The algorithm is used by MapR's switch, such as the combination of networking hardware and software components that provide connectivity and facility to read and write data onto and from storage pools and disks on various MapR nodes and storage pools, in connecting the memory section (storage pool) and an external device interface, such as a hardware, software, or protocol interface, for example, a port or an API. Exhibits Y and Z. MapR's management system, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster, instructs the switch described above to execute the determined algorithm, such as, for example, by updating the CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers. Exhibit X and AA. The switch connects the memory section, such as a storage pool, to the external device interfaces described above based on the algorithm. *Id.* MapR's memory section controller,

such as MapR software running on a storage node, detects a fault in regard to the data stored in the memory device, such as disk failure and/or CRC errors. Exhibit BB and CC. MapR's memory section controller transmits a fault message, such as an alarm, a heartbeat message including information about the fault in response to the detected fault to the management system, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster. *Id.* MapR receives the fault message at the management system. MapR's management system removes from service the memory section from which the fault message was received, such as the storage pool that raised the alarm. Exhibit CC. MapR's management system instructs a non-volatile storage device, such as a disk storing data, to load the stored data into a memory section via the switch, such as, for example, to create a new replica of an under replicated container. Exhibit X and AA. MapR then stores the data in a memory device in the memory section, such as a disk or buffer in the storage pool. *Id.*

38. On information and belief, MapR has induced infringement of at least the foregoing claims of the '662 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, their partners, software developers, customers, and end users, to make, use, sell, and/or offer to sell in the United States, and/or import into the United States, data storage systems based on the MapR Distribution including Hadoop, by, among other things, providing instructions, manuals, and technical assistance relating to the installation, set up, use, operation, and maintenance of said data storage systems. For example, despite having knowledge of the '662 Patent, and of the infringement of the '662 Patent to MapR products, as described in ¶¶21-32, MapR has persisted in encouraging customers to adopt infringing MapR products, and, in fact, assists clients in making and using the systems accused of infringement in this action. *See, e.g.*, MapR job posting in Exhibit J listed above requiring solutions engineers to integrate the MapR system with customers' existing systems for which "[e]xperience selling and deploying Linux-based solutions to Enterprise customers is a prerequisite" (emphasis added). Further, on information and belief, MapR

makes the accused systems by offering "Implementation" services whereby MapR "will assess your current environment, and then install and configure the MapR Converged Data Platform cluster for optimal service levels for your particular infrastructure." Exhibit K (emphasis added). Moreover, MapR's standard End User License Agreement includes a provision whereby MapR indemnifies its customers for patent infringement (*see, e.g.*, ¶27), further demonstrating that MapR is aware of the existence of, and risks of infringing, third-party patents, including the '662 Patent. Yet by offering indemnification, MapR encourages customers to adopt infringing MapR products. In addition, despite having knowledge of the '662 Patent, and of the infringement of the '662 Patent to MapR products, MapR publishes customer case studies, such as the Experian case study available on MapR's website, which heralds, among other things, the financial and technical advantages to adopting MapR products, which are accused of infringement in this action. Exhibit DD. In further addition, MapR continues to provide documentation and instructions to customers to assemble and operate MapR based systems, including documentation and instructions found at doc.mapr.com, maprdocs.mapr.com, and community.mapr.com, such that following the above instructions and documentations results in systems, and use thereof, that infringe the '662 Patent. *See* Exhibits X, Y, Z, AA, BB, and CC. Upon information and belief, MapR's inducement of infringement pursuant to 35 U.S.C. § 271(b) is ongoing.

39. On information and belief, MapR has committed the foregoing infringing activities without license from MNS.

40. On information and belief, MapR knew the '662 Patent existed while committing the foregoing infringing acts, thereby willfully, wantonly and deliberately infringing the '662 Patent. For example, despite having knowledge of the '662 Patent, and of the infringement of the '662 Patent to MapR products, as described in ¶¶21-32, MapR has persisted in encouraging customers to adopt infringing MapR products, and, in fact, assists clients in making and using the systems accused of infringement in this action. *See, e.g.*, MapR job posting in Exhibit J listed above requiring solutions engineers to integrate

the MapR system with customers' existing systems for which "[e]xperience selling and deploying Linux-based solutions to Enterprise customers is a prerequisite" (emphasis added). Further, on information and belief, MapR makes the accused systems by offering "Implementation" services whereby MapR "will assess your current environment, and then install and configure the MapR Converged Data Platform cluster for optimal service levels for your particular infrastructure." Exhibit K (emphasis added). Moreover, MapR's standard End User License Agreement includes a provision whereby MapR indemnifies its customers for patent infringement (*see, e.g.*, ¶27), further demonstrating that MapR is aware of the existence of, and risks of infringing, third-party patents, including the '662 Patent. Further, MapR has continued to demonstrate its products nationwide, and to update and test its product offerings, recently releasing Version 5.2 of the accused MapR Hadoop product. In addition, despite having knowledge of the '662 Patent, and of the infringement of the '662 Patent by MapR products, MapR continues to publish customer case studies, such as the Experian case study available on MapR's website, which heralds, among other things, the financial and technical advantages to adopting MapR products, which are accused of infringement in this action. Exhibit DD. In further addition, MapR continues to provide documentation and instructions to customers to assemble and operate MapR based systems, including documentation and instructions found at doc.mapr.com, maprdocs.mapr.com, and community.mapr.com, such that following the above instructions and documentations results in systems, and use thereof, that infringe the '662 Patent. *See* Exhibits X, Y, Z, AA, BB, and CC. MNS's damages should be trebled pursuant to 35 U.S.C. § 284 because of MapR's willful infringement of the '662 Patent.

41. The acts of infringement by MapR will continue unless enjoined by this Court.

42. MNS has been and will continue to be irreparably harmed and damaged by MapR's acts of infringement of the '662 Patent and has no adequate remedy at law.

COUNT II: INFRINGEMENT OF THE '177 PATENT BY MAPR

43. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

44. On information and belief, MapR has infringed at least claim 1 of the '177 Patent by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States computer storage systems based on the MapR Distribution including Hadoop, up to, and including, Version 5.2. On information and belief, MapR's infringing activities include at least, sales and offers for sale of the accused computer storage systems; making, including manufacture, assembly, and testing of the accused computer storage systems; and use, including testing, demonstration, and operation of the accused computer storage systems. On information and belief, MapR's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

45. On information and belief, MapR infringes claim 1 of the '177 Patent, by, for example, using and/or making a storage system, such as a MapR cluster. Exhibit X. MapR's cluster comprises one or more memory sections, referred to as storage pools by MapR. *Id.* MapR's cluster also comprises one or more memory devices having storage locations for storing data, such as disks. *Id.* MapR's cluster also includes a memory section controller, such as MapR software running on a storage node, which is capable of detecting faults in the memory section, such as a disk failure in a storage pool, and transmitting a fault message in response to the detected faults, such as a status or heartbeat message indicating disk failure. Exhibit X, AA, and BB. MapR's cluster also comprises one or more switches, such as the combination of networking hardware and software components that provide connectivity and facility to read and write data onto and from disks on various MapR nodes and storage pools. Exhibit Y. MapR's switches also include one or more interfaces for connecting to one or more external devices, such as a hardware, software, or protocol interface, for example, a port or an API, for connecting to external devices, such as MapR client computers. Exhibit Z. MapR's cluster also includes a switch controller that executes software, including a routing algorithm. For example, components of the CLDB service running on CLDB-enabled nodes and/or processing cores that control

the routing of data through the switch by providing directions as to the identification and location of data in the MapR cluster and/or caching copies of the CLDB data on other nodes and client computers are the switch controller, which executes a routing algorithm, such as rules for directing read and write requests and data in the MapR cluster to the appropriate destination, including, for example, CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers. Exhibit X and AA. MapR's cluster further comprises a selectively configurable switch fabric, such as combination of node buses, backplanes, storage array connectors, network interface cards, network wiring, network switches, routers, and other networking devices included in a switch, which are connected to one or more memory sections, such as MapR storage pools, and the one or more interfaces described above. Exhibit X and Y. MapR's selectively configurable switch fabric interconnects the memory sections, such as the storage pools, and the one or more interfaces described above, based on the routing algorithm stored in the switch controller. *Id.* MapR's cluster further comprises a management system, such as components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster. Exhibit X and AA. MapR's management system is capable of receiving fault messages from the memory section controllers, such as status and heartbeat messages indicating disk failures, and inactivating the memory section (storage pool) corresponding to the fault message received by changing the routing algorithm described above. *Id.* In a MapR cluster, the management system is further capable of determining and changing the routing algorithm for use by the selectively configurable switch fabric in interconnecting the memory sections and the one or more interfaces. *Id.* For example, if containers in the CLDB volume fall below the minimum replication factor, aggressive re-replication restores the minimum level of replication. *Id.* If a disk failure is detected, data stored on the failed disk is re-replicated to other disks. *Id.* MapR's management system determines and changes the CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers for use by the selectively configurable switch

fabric in interconnecting the MapR storage pools (memory sections) and the interfaces described above, provides the routing algorithm to the switch controller, and instructs the switch controller to execute the determined algorithm, including the routing of read or write requests to appropriate container locations throughout the cluster. *Id.*

46. On information and belief, MapR has infringed at least claim 13 of the '177 Patent by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States data storage systems based on the MapR Distribution including Hadoop. On information and belief, MapR's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

47. On information and belief, MapR infringes claim 13 of the '177 Patent by, for example, performing a method for use in a storage system, such as a MapR cluster. Exhibit X. MapR stores data in storage locations in a memory device, such as a disk. *Id.* MapR's memory devices are included in a memory section, which are referred to as storage pools by MapR. *Id.* MapR's management system, the components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster, determines a routing algorithm, such as the rules for directing read and write requests and data in the MapR cluster to the appropriate destination, including, for example, CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers. Exhibits X and AA. The routing algorithm is used by MapR's switch controller, such as components of the CLDB service running on CLDB-enabled nodes and/or processing cores that control the routing of data through the switch by providing directions as to the identification and location of data in the MapR cluster and/or caching copies of the CLDB data on other nodes and client computers, which executes software, including the routing algorithm, to configure a selectively configurable switch, such as the combination of networking hardware and software components that provide connectivity and facility to read and write data onto and from disks on various MapR nodes and storage pools, in connecting the memory section (storage pool) and an interface, such as a hardware, software, or protocol interface, such as

a port or an API. Exhibits X, Y, Z, and AA. MapR's management system, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster, provides the determined routing algorithm to the switch controller described above, and instructs the switch controller to execute the determined routing algorithm. *Id.* MapR's selectively configurable switch connects the memory section (storage pool) to the interface described above, based on the routing algorithm. *Id.* MapR's memory section controller described above detects a fault in regard to the data stored in the memory device, such as a CRC error, and transmits a fault message, such as an alarm or a heartbeat message including information about the fault. *Id.* MapR's management system receives the fault message and removes from service the memory section, such as the storage pool from which the fault message was received, by changing the routing algorithm, such that requests to write or read data that was previously stored on the storage pool that was removed from service are no longer routed to the pool and are routed to different locations. Exhibits X, AA, and CC.

48. On information and belief, MapR has induced infringement of at least the foregoing claims of the '177 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, their partners, software developers, customers, and end users, to make, use, sell, and/or offer to sell in the United States, and/or import into the United States, data storage systems based on the MapR Distribution including Hadoop, by, among other things, providing instructions, manuals, and technical assistance relating to the installation, set up, use, operation, and maintenance of said data storage systems. For example, despite having knowledge of the '177 Patent, and of the infringement of the '177 Patent to MapR products, as described in ¶¶21-32, MapR has persisted in encouraging customers to adopt infringing MapR products, and, in fact, assists clients in making and using the systems accused of infringement in this action. *See, e.g.*, MapR job posting in Exhibit J listed above requiring solutions engineers to integrate the MapR system with customers' existing

systems for which "[e]xperience selling and deploying Linux-based solutions to Enterprise customers is a prerequisite" (emphasis added). Further, on information and belief, MapR makes the accused systems by offering "Implementation" services whereby MapR "will assess your current environment, and then install and configure the MapR Converged Data Platform cluster for optimal service levels for your particular infrastructure." Exhibit K (emphasis added). Moreover, MapR's standard End User License Agreement includes a provision whereby MapR indemnifies its customers for patent infringement (*see, e.g.*, ¶27), further demonstrating that MapR is aware of the existence of, and risks of infringing, third-party patents, including the '177 Patent. Yet by offering indemnification, MapR encourages customers to adopt infringing MapR products. In addition, despite having knowledge of the '177 Patent, and of the infringement of the '177 Patent to MapR products, MapR publishes customer case studies, such as the Experian case study available on MapR's website, which heralds, among other things, the financial and technical advantages to adopting MapR products, which are accused of infringement in this action. Exhibit DD. In further addition, MapR continues to provide documentation and instructions to customers to assemble and operate MapR based systems, including documentation and instructions found at doc.mapr.com, maprdocs.mapr.com, and community.mapr.com, such that following the above instructions and documentations results in systems, and use thereof, that infringe the '177 Patent. *See* Exhibits X, Y, Z, AA, BB, and CC. Upon information and belief, MapR's inducement of infringement pursuant to 35 U.S.C. § 271(b) is ongoing.

49. On information and belief, MapR has committed the foregoing infringing activities without license from MNS.

50. On information and belief, MapR knew the '177 Patent existed while committing the foregoing infringing acts, thereby willfully, wantonly and deliberately infringing the '177 Patent. For example, despite having knowledge of the '177 Patent, and of the infringement of the '177 Patent to MapR products, as described in ¶¶21-32, MapR has persisted in encouraging customers to adopt infringing MapR products, and, in fact,

assists clients in making and using the systems accused of infringement in this action. *See, e.g.*, MapR job posting in Exhibit J listed above requiring solutions engineers to integrate the MapR system with customers' existing systems for which "[e]xperience selling and deploying Linux-based solutions to Enterprise customers is a prerequisite" (emphasis added). Further, on information and belief, MapR makes the accused systems by offering "Implementation" services whereby MapR "will assess your current environment, and then install and configure the MapR Converged Data Platform cluster for optimal service levels for your particular infrastructure." Exhibit K (emphasis added). Moreover, MapR's standard End User License Agreement includes a provision whereby MapR indemnifies its customers for patent infringement (*see, e.g.*, ¶27), further demonstrating that MapR is aware of the existence of, and risks of infringing, third-party patents, including the '177 Patent. Further, MapR has continued to demonstrate its products nationwide, and to update and test its product offerings, recently releasing Version 5.2 of the accused MapR Hadoop product. In addition, despite having knowledge of the '177 Patent, and of the infringement of the '177 Patent by MapR products, MapR continues to publish customer case studies, such as the Experian case study available on MapR's website, which heralds, among other things, the financial and technical advantages to adopting MapR products, which are accused of infringement in this action. Exhibit DD. In further addition, MapR continues to provide documentation and instructions to customers to assemble and operate MapR based systems, including documentation and instructions found at doc.mapr.com, maprdocs.mapr.com, and community.mapr.com, such that following the above instructions and documentations results in systems, and use thereof, that infringe the '177 Patent. *See* Exhibits X, Y, Z, AA, BB, and CC. MNS's damages should be trebled pursuant to 35 U.S.C. § 284 because of MapR's willful infringement of the '177 Patent.

51. The acts of infringement by MapR will continue unless enjoined by this Court.

52. MNS has been and will continue to be irreparably harmed and damaged by MapR's acts of infringement of the '177 Patent and has no adequate remedy at law.

COUNT III: INFRINGEMENT OF THE '388 PATENT BY MAPR

53. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

54. On information and belief, MapR has infringed at least claim 1 of the '388 Patent by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States data storage systems based on the MapR Distribution including Hadoop, up to, and including, Version 5.2. On information and belief, MapR's infringing activities include at least, sales and offers for sale of the accused computer storage systems; making, including manufacture, assembly, and testing of the accused computer storage systems; and use, including testing, demonstration, and operation of the accused computer storage systems. On information and belief, MapR's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

55. On information and belief, MapR infringes claim 1 of the '388 Patent by, for example, using and/or making a storage system, such as a MapR cluster. Exhibit X. MapR's cluster comprises one or more memory sections, referred to as storage pools by MapR. *Id.* MapR's cluster also comprises one or more memory devices having storage locations for storing data, such as disks. *Id.* MapR's cluster also includes a memory section controller, such as MapR software running on a storage node, which is capable of detecting faults in the memory section, such as a disk failure in a storage pool, and transmitting a fault message in response to the detected faults, such as a status or heartbeat message indicating node failure. Exhibit X, AA, and BB. MapR's cluster also comprises one or more switches, such as the combination of networking hardware and software components that provide connectivity and facility to read and write data onto and from storage pools and disks on various MapR nodes and storage pools. Exhibit Y. MapR's switches also include one or more interfaces for connecting to one or more external devices, such as a hardware, software, or protocol interface, for example, a port or an API for connecting to external devices, such as MapR client computers. Exhibit Z. MapR's cluster also includes a switch controller that executes software, including a routing algorithm. For example, components of the CLDB service running on CLDB-enabled

nodes and/or processing cores that control the routing of data through the switch by providing directions as to the identification and location of data in the MapR cluster and/or caching copies of the CLDB data on other nodes and client computers are the switch controller, which executes a routing algorithm, such as the rules for directing read and write requests and data in the MapR cluster to the appropriate destination, including, for example, CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers. Exhibit X and AA. MapR's cluster further comprises a selectively configurable switch fabric, such as combination of node buses, backplanes, storage array connectors, network interface cards, network wiring, network switches, routers, and other networking devices included in a switch, which are connected to one or more memory sections, such as MapR storage pools, and the one or more interfaces described above. Exhibit X and Y. MapR's selectively configurable switch fabric interconnects the memory sections, such as the storage pools, and the one or more interfaces, described above, based on the routing algorithm. *Id.* For example, based on the data and container location and routing information algorithm described above, the selectively configurable switch fabric interconnects memory sections (storage pools) and one or more interfaces. *Id.* MapR's cluster further comprises a management system, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster. Exhibit X and AA. MapR's management system is capable of receiving fault messages from the memory section controllers, such as status and heartbeat messages indicating disk failures, and inactivating the memory section (storage pool) corresponding to the fault message received by changing the routing algorithm described above. Exhibit X, AA, and CC. In a MapR cluster, the management system is further capable of determining and changing the routing algorithm for use by the selectively configurable switch fabric in interconnecting the memory sections and the one or more interfaces. *Id.* For example, if containers in the CLDB volume fall below the minimum replication factor, aggressive re-replication restores the minimum level of replication. *Id.* If a disk failure is detected, data

stored on the failed disk is re-replicated to other disks. *Id.* MapR's management system described above determines the rules for directing read and write requests and data in the MapR cluster to the appropriate destination, including, for example, CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers for use by the selectively configurable switch fabric in interconnecting the MapR storage pools (memory sections) and the interfaces described above, and provides the routing algorithm to the switch controller described above. *Id.*

56. On information and belief, MapR has infringed at least claim 2 of the '388 Patent by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States data storage systems based on the MapR Distribution including Hadoop. On information and belief, MapR's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

57. On information and belief, MapR infringes claim 2 of the '388 Patent by, for example, performing a method for use in a storage system. Exhibit X. MapR stores data in storage locations in a memory device, such as a disk. *Id.* MapR's memory devices are included in a memory section, which are referred to as storage pools by MapR. *Id.* MapR's management system, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster, determines a routing algorithm, such as the rules for directing read and write requests and data in the MapR cluster to the appropriate destination, including, for example, CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers. Exhibits X and AA. The routing algorithm is used by MapR's switch controller, such as components of the CLDB service running on CLDB-enabled nodes and/or processing cores that control the routing of data through the switch by providing directions as to the identification and location of data in the MapR cluster and/or caching copies of the CLDB data on other nodes and client computers, which executes software, including the routing algorithm. *Id.* MapR's management system, such as the CLDB and MapR-FS update components described

above, provides the routing algorithm to the switch controller described above. MapR's switch controller, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster, executes the routing algorithm to configure a configurable switch, such as the combination of networking hardware and software components that provide connectivity and facility to read and write data onto and from storage pools and disks on various MapR nodes and storage pools, connecting the memory section (storage pool) to an interface, such as a hardware, software, or protocol interface, for example, a port or an API. Exhibit X, Y, Z, and AA. MapR detects a fault associated with the data in the storage locations in the memory device, such as a CRC error. Exhibit X, Y, and CC. MapR's management system described above determines in response to the detecting of a fault, a new routing algorithm that redirects data for the memory device to a replacement memory device. For example, if containers in the CLDB volume fall below the minimum replication factor, aggressive re-replication restores the minimum level of replication. *Id.* If a disk failure is detected, data stored on the failed disk is re-replicated to other disks. *Id.* Upon detecting a fault, MapR also provides the new routing algorithm to the switch controller described above. *Id.*

58. On information and belief, MapR has induced infringement of at least the foregoing claims of the '388 Patent pursuant to 35 U.S.C. § 271(b), by actively and knowingly inducing, directing, causing, and encouraging others, including, but not limited to, their partners, software developers, customers, and end users, to make, use, sell, and/or offer to sell in the United States, and/or import into the United States, data storage systems based on the MapR Distribution including Hadoop, by, among other things, providing instructions, manuals, and technical assistance relating to the installation, set up, use, operation, and maintenance of said data storage systems. For example, despite having knowledge of the '388 Patent, and of the infringement of the '388 Patent to MapR products, as described in ¶¶21-32, MapR has persisted in encouraging customers to adopt infringing MapR products, and, in fact, assists clients in making and using the systems accused of infringement in this action. *See, e.g.*, MapR job posting in Exhibit J listed

above requiring solutions engineers to integrate the MapR system with customers' existing systems for which "[e]xperience selling and deploying Linux-based solutions to Enterprise customers is a prerequisite" (emphasis added). Further, on information and belief, MapR makes the accused systems by offering "Implementation" services whereby MapR "will assess your current environment, and then install and configure the MapR Converged Data Platform cluster for optimal service levels for your particular infrastructure." Exhibit K (emphasis added). Moreover, MapR's standard End User License Agreement includes a provision whereby MapR indemnifies its customers for patent infringement (*see, e.g.*, ¶27), further demonstrating that MapR is aware of the existence of, and risks of infringing, third-party patents, including the '388 Patent. Yet by offering indemnification, MapR encourages customers to adopt infringing MapR products. In addition, despite having knowledge of the '388 Patent, and of the infringement of the '388 Patent to MapR products, MapR publishes customer case studies, such as the Experian case study available on MapR's website, which heralds, among other things, the financial and technical advantages to adopting MapR products, which are accused of infringement in this action. Exhibit DD. In further addition, MapR continues to provide documentation and instructions to customers to assemble and operate MapR based systems, including documentation and instructions found at doc.mapr.com, maprdocs.mapr.com, and community.mapr.com, such that following the above instructions and documentations results in systems, and use thereof, that infringe the '388 Patent. *See* Exhibits X, Y, Z, AA, BB, and CC. Upon information and belief, MapR's inducement of infringement pursuant to 35 U.S.C. § 271(b) is ongoing.

59. On information and belief, MapR has committed the foregoing infringing activities without license from MNS.

60. On information and belief, MapR knew the '388 Patent existed while committing the foregoing infringing acts, thereby willfully, wantonly and deliberately infringing the '388 Patent. For example, despite having knowledge of the '388 Patent, and of the infringement of the '388 Patent to MapR products, as described in ¶¶21-32, MapR

has persisted in encouraging customers to adopt infringing MapR products, and, in fact, assists clients in making and using the systems accused of infringement in this action. *See, e.g.*, MapR job posting in Exhibit J listed above requiring solutions engineers to integrate the MapR system with customers' existing systems for which "[e]xperience selling and deploying Linux-based solutions to Enterprise customers is a prerequisite" (emphasis added). Further, on information and belief, MapR makes the accused systems by offering "Implementation" services whereby MapR "will assess your current environment, and then install and configure the MapR Converged Data Platform cluster for optimal service levels for your particular infrastructure." Exhibit K (emphasis added). Moreover, MapR's standard End User License Agreement includes a provision whereby MapR indemnifies its customers for patent infringement (*see, e.g.*, ¶27), further demonstrating that MapR is aware of the existence of, and risks of infringing, third-party patents, including the '662 Patent. Further, MapR has continued to demonstrate its products nationwide, and to update and test its product offerings, recently releasing Version 5.2 of the accused MapR Hadoop product. In addition, despite having knowledge of the '388 Patent, and of the infringement of the '388 Patent by MapR products, MapR continues to publish customer case studies, such as the Experian case study available on MapR's website, which heralds, among other things, the financial and technical advantages to adopting MapR products, which are accused of infringement in this action. Exhibit DD. In further addition, MapR continues to provide documentation and instructions to customers to assemble and operate MapR based systems, including documentation and instructions found at doc.mapr.com, maprdocs.mapr.com, and community.mapr.com, such that following the above instructions and documentations results in systems, and use thereof, that infringe the '388 Patent. *See* Exhibits X, Y, Z, AA, BB, and CC. MNS's damages should be trebled pursuant to 35 U.S.C. § 284 because of MapR's willful infringement of the '388 Patent.

61. The acts of infringement by MNS will continue unless enjoined by this Court.

62. MNS has been and will continue to be irreparably harmed and damaged by MapR's acts of infringement of the '388 Patent and has no adequate remedy at law.

COUNT IV: INFRINGEMENT OF THE '662 PATENT BY EXPERIAN

63. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

64. On information and belief, Experian has infringed at least claim 1 of the '662 Patent by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States computer storage systems based on the MapR Distribution including Hadoop. On information and belief, Experian's infringing activities include at least, sales and offers for sale of the accused computer storage systems; making, including manufacture, assembly, and testing of the accused computer storage systems; and use, including testing, demonstration, and operation of the accused computer storage systems. On information and belief, Experian's infringement pursuant to 35 U.S.C. § 271(a) is ongoing. According to Experian, "Experian chose the MapR Distribution including Hadoop to move beyond the restraints of their in-house database while increasing processing power, lowering costs, and devising new ways to store more easily accessible data." Exhibit DD.

65. On information and belief, Experian infringes claim 1 of the '662 Patent, by, for example, using and/or making a storage system incorporating a MapR cluster. Exhibit DD and X. Experian's MapR cluster comprises one or more memory sections, referred to as storage pools by MapR. *Id.* Experian's MapR cluster also comprises one or more memory devices having storage locations for storing data, such as disks. *Id.* Experian's MapR cluster also comprises one or more switches, such as the combination of networking hardware and software components that provide connectivity and facility to read and write data onto and from storage pools and disks on various MapR nodes. Exhibit Y. Experian's switches also include one or more interfaces for connecting to one or more external devices, such as a hardware, software, or protocol interface, for example, a port or an API for connecting to external devices, such as Experian/MapR client computers. Exhibit Z. Experian's MapR cluster further comprises a switch fabric, such as combination of node buses, backplanes, storage array connectors, network interface cards, network wiring, network switches, routers, and other networking devices included in a switch, connected to

one or more memory sections, such as MapR storage pools, and the external device interfaces, such as the interfaces described above. Exhibit X and Y. Experian's switch fabric interconnects the memory sections and the external device interfaces based on an algorithm, such as rules for directing read and write requests and data in the Experian MapR cluster to the appropriate destination, including, for example, CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers. Exhibit X and AA. Experian's MapR cluster further comprises a management system, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the cluster. *Id.* Experian's management system is capable of receiving fault messages from the memory section controllers, such as status and heartbeat messages indicating disk failures, and removing from service the memory section (storage pool) from which the fault message was received. Exhibit BB and CC. Experian's management system is further capable of determining an algorithm for use by a switch fabric in interconnecting the memory sections and the external device interfaces, and instructing the switch to execute the determined algorithm. Exhibit X. For example, if containers in the CLDB volume fall below the minimum replication factor, aggressive re-replication restores the minimum level of replication. Exhibit AA. If a disk failure is detected, data stored on the failed disk is re-replicated to other disks. *Id.* Experian's management system determines the appropriate storage algorithm for use by a switch fabric in interconnecting the storage pools (memory sections) and the external device interface described above, and instructs the switch to execute the determined algorithm, including the routing of read or write requests to appropriate container locations throughout the cluster. Exhibit X and AA. In an Experian MapR cluster, an interface of the switch is connected to a non-volatile storage device, such as a disk. Exhibit X. Experian's MapR-FS and CLDB update service components described above (the management system) are further capable of instructing the non-volatile storage device (disk) to load data into one or more of the memory sections via the

switch, such as, for example, when a disk storing data is instructed to replicate or re-replicate the stored data to other storage pools. Exhibit X and AA.

66. On information and belief, Experian has infringed at least claim 14 of the '662 Patent by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States computer storage systems based on the MapR Distribution including Hadoop. On information and belief, Experian's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

67. On information and belief, Experian infringes claim 14 of the '662 Patent by, for example, performing a method for use in a storage system. Exhibit DD and X. Experian stores data in storage locations in a memory device, such as a disk. Exhibit X. Experian's memory devices are included in a memory section, which are referred to as storage pools by MapR. *Id.* Experian's management system, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the Experian cluster, determines an algorithm, such as the rules for directing read and write requests and data in the Experian cluster to the appropriate destination, including, for example, CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers, including the routing of read or write requests to appropriate container locations throughout the cluster. Exhibit X and AA. The algorithm is used by Experian's switch, such as the combination of networking hardware and software components that provide connectivity and facility to read and write data onto and from storage pools and disks on various MapR nodes and storage pools, in connecting the memory section (storage pool) and an external device interface, such as a hardware, software, or protocol interface, for example, a port or an API. Exhibits Y and Z. Experian's management system, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the Experian cluster, instructs the switch described above to execute the determined algorithm, such as, for example, by updating the CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes

storing the containers. Exhibit X and AA. The switch connects the memory section, such as a storage pool, to the external device interfaces described above based on the algorithm. *Id.* Experian's memory section controller, such as MapR software running on a storage node, detects a fault in regard to the data stored in the memory device, such as disk failure and/or CRC errors. Exhibit BB and CC. Experian's memory section controller transmits a fault message, such as an alarm, a heartbeat message including information about the fault in response to the detected fault to the management system, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster. *Id.* Experian receives the fault message at the management system. Experian's management system removes from service the memory section (storage pool) from which the fault message was received. Exhibit CC. Experian's management system instructs a non-volatile storage device, such as a disk storing data, to load the stored data into a memory section via the switch, such as, for example, to create a new replica of an under replicated container. Exhibit X and AA. Experian then stores the data in a memory device in the memory section, such as a disk or buffer in the storage pool. *Id.*

68. On information and belief, Experian has committed the foregoing infringing activities without license from MNS.

69. The acts of infringement by Experian will continue unless enjoined by this Court.

70. MNS has been and will continue to be irreparably harmed and damaged by Experian's acts of infringement of the '662 Patent and has no adequate remedy at law.

COUNT V: INFRINGEMENT OF THE '177 PATENT BY EXPERIAN

71. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

72. On information and belief, Experian has infringed at least claim 1 of the '177 Patent by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States computer storage systems based on the MapR Distribution including Hadoop. On information and belief, Experian's infringing activities include at

least, sales and offers for sale of the accused computer storage systems; making, including manufacture, assembly, and testing of the accused computer storage systems; and use, including testing, demonstration, and operation of the accused computer storage systems. On information and belief, Experian's infringement pursuant to 35 U.S.C. § 271(a) is ongoing. According to Experian, "Experian chose the MapR Distribution including Hadoop to move beyond the restraints of their in-house database while increasing processing power, lowering costs, and devising new ways to store more easily accessible data." Exhibit DD.

73. On information and belief, Experian infringes claim 1 of the '177 Patent, by, for example, using and/or making a storage system incorporating a MapR cluster. Exhibit DD and X. Experian's MapR cluster comprises one or more memory sections, referred to as storage pools by MapR. *Id.* Experian's MapR cluster also comprises one or more memory devices having storage locations for storing data, such as disks. *Id.* Experian's MapR cluster also includes a memory section controller, such as MapR software running on a storage node, which is capable of detecting faults in the memory section, such as a disk failure in a storage pool, and transmitting a fault message in response to the detected faults, such as a status or heartbeat message indicating disk failure. Exhibit X, AA, and BB. Experian's MapR cluster also comprises one or more switches, such as the combination of networking hardware and software components that provide connectivity and facility to read and write data onto and from disks on various MapR nodes and storage pools. Exhibit Y. Experian's switches also include one or more interfaces for connecting to one or more external devices, such as a hardware, software, or protocol interface, for example, a port or an API, for connecting to external devices, such as Experian/MapR client computers. Exhibit Z. Experian's MapR cluster also includes a switch controller that executes software, including a routing algorithm. For example, components of the CLDB service running on CLDB-enabled nodes and/or processing cores that control the routing of data through the switch by providing directions as to the identification and location of data in the MapR cluster and/or caching copies of the CLDB data on other

nodes and client computers are the switch controller, which executes a routing algorithm, such as rules for directing read and write requests and data in the MapR cluster to the appropriate destination, including, for example, CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers. Exhibit X and AA. Experian's MapR cluster further comprises a selectively configurable switch fabric, such as combination of node buses, backplanes, storage array connectors, network interface cards, network wiring, network switches, routers, and other networking devices included in a switch, which are connected to one or more memory sections, such as MapR storage pools, and the one or more interfaces described above. Exhibit X and Y. Experian's selectively configurable switch fabric interconnects the memory sections, such as the storage pools, and the one or more interfaces described above, based on the routing algorithm stored in the switch controller. *Id.* Experian's MapR cluster further comprises a management system, such as components of the MapR-FS and CLDB service which update data and container identification and location information for the cluster. Exhibit X and AA. Experian's management system is capable of receiving fault messages from the memory section controllers, such as status and heartbeat messages indicating disk failures, and inactivating the memory section (storage pool) corresponding to the fault message received by changing the routing algorithm described above. *Id.* In Experian's MapR cluster, the management system is further capable of determining and changing the routing algorithm for use by the selectively configurable switch fabric in interconnecting the memory sections and the one or more interfaces. *Id.* For example, if containers in the CLDB volume fall below the minimum replication factor, aggressive re-replication restores the minimum level of replication. *Id.* If a disk failure is detected, data stored on the failed disk is re-replicated to other disks. *Id.* Experian's management system determines and changes the CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers for use by the selectively configurable switch fabric in interconnecting the MapR storage pools (memory sections) and the interfaces described above, provides the routing algorithm to the switch controller,

and instructs the switch controller to execute the determined algorithm, including the routing of read or write requests to appropriate container locations throughout the cluster. *Id.*

74. On information and belief, Experian has infringed at least claim 13 of the '177 Patent by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States data storage systems based on the MapR Distribution including Hadoop. On information and belief, Experian's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

75. On information and belief, Experian infringes claim 13 of the '177 Patent by, for example, performing a method for use in a storage system incorporating a MapR cluster. Exhibit X. Experian stores data in storage locations in a memory device, such as a disk. *Id.* Experian's memory devices are included in a memory section, which are referred to as storage pools by MapR. *Id.* Experian's management system, the components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster, determines a routing algorithm, such as the rules for directing read and write requests and data in the MapR cluster to the appropriate destination, including, for example, CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers. Exhibits X and AA. The routing algorithm is used by Experian's switch controller, such as components of the CLDB service running on CLDB-enabled nodes and/or processing cores that control the routing of data through the switch by providing directions as to the identification and location of data in the MapR cluster and/or caching copies of the CLDB data on other nodes and client computers, which executes software, including the routing algorithm, to configure a selectively configurable switch, such as the combination of networking hardware and software components that provide connectivity and facility to read and write data onto and from disks on various MapR nodes and storage pools, in connecting the memory section (storage pool) and an interface, such as a hardware, software, or protocol interface, such as a port or an API. Exhibits X, Y, Z, and AA.

Experian's management system, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster, provides the determined routing algorithm to the switch controller described above, and instructs the switch controller to execute the determined routing algorithm. *Id.* Experian's selectively configurable switch connects the memory section (storage pool) to the interface described above, based on the routing algorithm. *Id.* Experian's memory section controller described above detects a fault in regard to the data stored in the memory device, such as a CRC error, and transmits a fault message, such as an alarm or a heartbeat message including information about the fault. *Id.* Experian's management system receives the fault message and removes from service the memory section (storage pool) from which the fault message was received, by changing the routing algorithm, such that requests to write or read data that was previously stored on the storage pool that was removed from service are no longer routed to the pool and are routed to different locations. Exhibits X, AA, and CC.

76. On information and belief, Experian has committed the foregoing infringing activities without license from MNS.

77. The acts of infringement by Experian will continue unless enjoined by this Court.

78. MNS has been and will continue to be irreparably harmed and damaged by Experian's acts of infringement of the '177 Patent and has no adequate remedy at law.

COUNT VI: INFRINGEMENT OF THE '388 PATENT BY EXPERIAN

79. Plaintiff incorporates the preceding paragraphs as if fully set forth herein.

80. On information and belief, Experian has infringed at least claim 1 of the '388 Patent by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States data storage systems based on the MapR Distribution including Hadoop. On information and belief, Experian's infringing activities include at least, sales and offers for sale of the accused computer storage systems; making, including manufacture, assembly, and testing of the accused computer storage systems; and use,

including testing, demonstration, and operation of the accused computer storage systems. On information and belief, Experian's infringement pursuant to 35 U.S.C. § 271(a) is ongoing. According to Experian, "Experian chose the MapR Distribution including Hadoop to move beyond the restraints of their in-house database while increasing processing power, lowering costs, and devising new ways to store more easily accessible data." Exhibit DD.

81. On information and belief, Experian infringes claim 1 of the '388 Patent by, for example, using and/or making a storage system incorporating a MapR cluster. Exhibit DD and X. Experian's MapR cluster comprises one or more memory sections, referred to as storage pools by MapR. *Id.* Experian's MapR cluster also comprises one or more memory devices having storage locations for storing data, such as disks. *Id.* Experian's MapR cluster also includes a memory section controller, such as MapR software running on a storage node, which is capable of detecting faults in the memory section, such as a disk failure in a storage pool, and transmitting a fault message in response to the detected faults, such as a status or heartbeat message indicating node failure. Exhibit X, AA, and BB. Experian's MapR cluster also comprises one or more switches, such as the combination of networking hardware and software components that provide connectivity and facility to read and write data onto and from storage pools and disks on various MapR nodes and storage pools. Exhibit Y. Experian's switches also include one or more interfaces for connecting to one or more external devices, such as a hardware, software, or protocol interface, for example, a port or an API for connecting to external devices, such as Experian/MapR client computers. Exhibit Z. Experian's MapR cluster also includes a switch controller that executes software, including a routing algorithm. For example, components of the CLDB service running on CLDB-enabled nodes and/or processing cores that control the routing of data through the switch by providing directions as to the identification and location of data in the Experian MapR cluster and/or caching copies of the CLDB data on other nodes and client computers are the switch controller, which executes a routing algorithm, such as the rules for directing read and write requests and

data in the Experian MapR cluster to the appropriate destination, including, for example, CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers. Exhibit X and AA. Experian's MapR cluster further comprises a selectively configurable switch fabric, such as combination of node buses, backplanes, storage array connectors, network interface cards, network wiring, network switches, routers, and other networking devices included in a switch, which are connected to one or more memory sections, such as MapR storage pools, and the one or more interfaces described above. Exhibit X and Y. Experian's selectively configurable switch fabric interconnects the memory sections, such as the storage pools, and the one or more interfaces, described above, based on the routing algorithm. *Id.* For example, based on the data and container location and routing information algorithm described above, the selectively configurable switch fabric interconnects memory sections (storage pools) and one or more interfaces. *Id.* Experian's MapR cluster further comprises a management system, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster. Exhibit X and AA. Experian's management system is capable of receiving fault messages from the memory section controllers, such as status and heartbeat messages indicating disk failures, and inactivating the memory section (storage pool) corresponding to the fault message received by changing the routing algorithm described above. Exhibit X, AA, and CC. In Experian's MapR cluster, the management system is further capable of determining and changing the routing algorithm for use by the selectively configurable switch fabric in interconnecting the memory sections and the one or more interfaces. *Id.* For example, if containers in the CLDB volume fall below the minimum replication factor, aggressive re-replication restores the minimum level of replication. *Id.* If a disk failure is detected, data stored on the failed disk is re-replicated to other disks. *Id.* Experian's management system described above determines the rules for directing read and write requests and data in the cluster to the appropriate destination, including, for example, CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers

for use by the selectively configurable switch fabric in interconnecting the MapR storage pools (memory sections) and the interfaces described above, and provides the routing algorithm to the switch controller described above. *Id.*

82. On information and belief, Experian has infringed at least claim 2 of the '388 Patent by making, using, offering to sell, and/or selling in the United States, and/or importing into the United States data storage systems based on the MapR Distribution including Hadoop. On information and belief, Experian's infringement pursuant to 35 U.S.C. § 271(a) is ongoing.

83. On information and belief, Experian infringes claim 2 of the '388 Patent by, for example, performing a method for use in a storage system. Exhibit DD and X. Experian stores data in storage locations in a memory device, such as a disk. *Id.* Experian's memory devices are included in a memory section, referred to as a storage pool by MapR. *Id.* Experian's management system, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for Experian's MapR cluster, determines a routing algorithm, such as the rules for directing read and write requests and data in cluster to the appropriate destination, including, for example, CLDB's identification of containers storing data, and locations of those containers, such as IP addresses of nodes storing the containers. Exhibits X and AA. The routing algorithm is used by Experian's switch controller, such as components of the CLDB service running on CLDB-enabled nodes and/or processing cores that control the routing of data through the switch by providing directions as to the identification and location of data in Experian's MapR cluster and/or caching copies of the CLDB data on other nodes and client computers, which executes software, including the routing algorithm. *Id.* Experian's management system, such as the CLDB and MapR-FS update components described above, provides the routing algorithm to the switch controller, described above. Experian's switch controller, such as the components of the MapR-FS and CLDB service which update data and container identification and location information for the MapR cluster, executes the routing algorithm to configure a configurable switch,

such as the combination of networking hardware and software components that provide connectivity and facility to read and write data onto and from storage pools and disks on various MapR nodes and storage pools, connecting the memory section (storage pool) to an interface, such as a hardware, software, or protocol interface, for example, a port or an API. Exhibit X, Y, Z, and AA. Experian detects a fault associated with the data in the storage locations in the memory device, such as a CRC error. Exhibit X, Y, and CC. Experian's management system described above determines in response to the detecting of a fault, a new routing algorithm that redirects data for the memory device to a replacement memory device. For example, if containers in the CLDB volume fall below the minimum replication factor, aggressive re-replication restores the minimum level of replication. *Id.* If a disk failure is detected, data stored on the failed disk is re-replicated to other disks. *Id.* Upon detecting a fault, Experian also provides the new routing algorithm to the switch controller described above. *Id.*

84. On information and belief, Experian has committed the foregoing infringing activities without license from MNS.

85. The acts of infringement by MapR will continue unless enjoined by this Court.

86. MNS has been and will continue to be irreparably harmed and damaged by Experian's acts of infringement of the '388 Patent and has no adequate remedy at law.

PRAYER FOR RELIEF

WHEREFORE, MNS prays for the judgment in its favor against Defendants, individually and jointly and severally, granting MNS the following relief:

A. Entry of judgment in favor of MNS against Defendants on all counts;

B. Entry of judgment that Defendants have infringed the Patents-in-Suit;

C. An order permanently enjoining Defendants together with their officers, directors, agents, servants, employees, and attorneys, and upon those persons in active concert or participation with them from infringing the Patents-in-Suit;

D. Award of compensatory damages adequate to compensate MNS for Defendants' infringement of the Patents-in-Suit, in no event less than a reasonable royalty trebled as provided by 35 U.S.C. § 284;

E. MNS's costs;

F. Pre-judgment and post-judgment interest on MNS's award; and

G. All such other and further relief as the Court deems just or equitable.

Dated: July 31, 2017

ONE LLP

By: /s/ Stephen M. Lobbin
Stephen M. Lobbin
Attorneys for Plaintiff,
MOBILE NETWORKING SOLUTIONS, LLC

DEMAND FOR JURY TRIAL

Pursuant to Rule 38 of the Fed. R. Civ. P., Plaintiff MNS hereby demands trial by jury in this action of all claims so triable.

Dated: July 31, 2017

ONE LLP

By: /s/ Stephen M. Lobbin
Stephen M. Lobbin
Attorneys for Plaintiff,
MOBILE NETWORKING SOLUTIONS, LLC