

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

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U.S. DISTRICT COURT
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TX EASTERN-MARSHALL

SEVEN NETWORKS, INC.,

Plaintiff,

v.

VISTO CORPORATION

Defendant.

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BY _____

Civil Action No. 2-05CV-365
(Jury Trial Demanded) *TJW*

**COMPLAINT FOR PATENT INFRINGEMENT; INJUNCTIVE RELIEF;
DAMAGES; DEMAND FOR JURY TRIAL**

Plaintiff, Seven Networks, Inc. (“Seven”), for its Complaint herein, alleges that:

JURISDICTION AND VENUE

1. This case is a civil action for patent infringement in violation of 35 U.S.C. § 271, *et seq.*

2. This Court has jurisdiction over this action pursuant to 28 U.S.C. § 1331 and 28 U.S.C. § 1338(a) and (b), as it involves substantial claims arising under the patent laws of the United States.

3. Venue for the action is proper in the Eastern District of Texas, Marshall Division, pursuant to 28 U.S.C. § 1391(b) and (c); and 28 U.S.C. § 1400(b), because the asserted claims arose in this district and, on information and belief, defendant, at all times material hereto, has done business in this district.

PARTIES

4. Plaintiff Seven Networks, Inc. (“Seven”) is a Delaware corporation having its principal place of business at 901 Marshall Street, Redwood City, CA 94063.

COMPLAINT

5. Defendant Visto Corporation (“Visto”) is a Delaware corporation having its principal place of business at 275 Shoreline Drive, Suite 300, Redwood Shores, CA 94065.

GENERAL ALLEGATIONS

6. Seven holds all right, title and interest in and to United States Patent No. 5,857,201 entitled, “Enterprise Connectivity To Handheld Devices” (the “’201 patent”), filed on June 18, 1996. The ‘201 patent was duly and properly issued on January 5, 1999. A copy of the ‘201 patent is attached as Exhibit A to this Complaint.

7. Seven holds all right, title and interest in and to United States Patent No. 6,324,542 B1 entitled, “Enterprise Connectivity To Handheld Devices” (the “’542 patent”), filed on December 23, 1998. The ‘542 patent was duly and properly issued on November 27, 2001. A copy of the ‘542 patent is attached as Exhibit B to this Complaint. The ‘542 patent and the ‘201 patent are collectively referred to as the “patents-in-suit.”

8. Defendant Visto provides messaging products and services under the name “Visto Mobile” (the “Accused Products”). The activities of defendant in marketing its products and services infringe, contributorily infringe, and/or induce infringement of at least one claim of each of the Seven patents-in-suit.

COUNT I

(Infringement of U.S. Patent Nos. 5,857,201 and 6,324,542)

9. Seven incorporates paragraphs 1 through 8 as though fully restated herein.

10. Visto has infringed and continues to infringe the ‘201 and ‘542 patents under 35 U.S.C. § 271 in this judicial district and elsewhere in the United States, by Visto’s manufacture, sale, offering for sale, and use, without authority or license of Seven, of the Accused Products.

11. Visto has contributorily infringed and continues to contributorily infringe and induce others to infringe the ‘201 and ‘542 patents under 35 U.S.C. § 271 in this judicial district and elsewhere in the United States, by Visto’s manufacture, sale, offering for sale, and use, without authority of license of Seven, of the Accused Products.

12. Visto's acts have caused, and unless restrained and enjoined, will continue to cause, irreparable injury and damage to Seven for which Seven has no adequate remedy at law. Unless preliminarily and permanently enjoined by this Court, Visto will continue to so infringe and induce others to infringe the patents-in-suit.

PRAYER FOR RELIEF

WHEREFORE, plaintiff Seven prays for:

1. That defendant Visto, and its parents, affiliates, subsidiaries, officers, agents, servants, employees, attorneys, successors and assigns and all those persons in active concert or participation with them, or any of them, be permanently enjoined and restrained from making, using, offering for sale, selling or causing to be sold any product falling within, or designed to conduct a method falling within, the scope of United States Patent Nos. 6,324,542 and 5,857,201; or otherwise infringing or contributing to or inducing infringement of any claims of these patents.

2. That defendant Visto, and its parents, affiliates, subsidiaries, officers, agents, servants, employees, attorneys, successors and assigns and all those persons in active concert or participation with them, or any of them, be ordered to destroy or offer up to Seven for destruction any and all products within the scope of United States patent Nos. 6,324,542 and 5,857,201 in their possession, custody, or control.

3. That Seven be awarded its lost profits, and/or other damages, in an amount not less than a reasonable royalty, to be assessed by or under the Court's discretion, adequate to compensate Seven for infringement of Seven's patents-in-suit, together with pre-judgment interest.

4. That the Court declare this case an exceptional case pursuant to 35 U.S.C. § 285 and award Seven its attorney's fees.

5. That Seven recover from defendant Visto increased damages in the amount of three times the amount of Seven's actual damages pursuant to 35 U.S.C. § 284

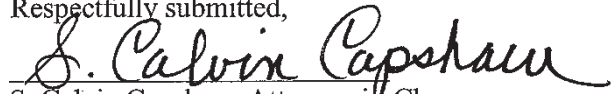
6. That Seven recover from defendant Visto, Seven's costs and disbursements in preparing for and pursuing this action.

7. That Seven be awarded such other and further relief as the Court deems just and proper.

DEMAND FOR A JURY TRIAL

Plaintiff Seven requests under Federal Rule of Civil Procedure 38 a trial by jury on all issues triable by right to a jury as declared by the Seventh Amendment or as given by a statute of the United States.

Respectfully submitted,


S. Calvin Capshaw, Attorney-in-Charge
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ATTORNEYS FOR PLAINTIFF
SEVEN NETWORKS, INC.

**UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

SEVEN NETWORKS, LLC,

Plaintiff,

v.

ZTE (USA) INC. and
ZTE CORPORATION,

Defendants.

Civil Action No. 2:17-cv-440

PATENT CASE

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff SEVEN Networks, LLC (“SEVEN”) files this Complaint for Patent Infringement of several United States patents as identified below (collectively, the “Patents-in-Suit”) and alleges as follows:

PARTIES

1. SEVEN is a company formed under the laws of Delaware with its principal place of business at 2660 East End Boulevard South, Marshall, Texas 75672.

2. Defendant ZTE (USA) Inc., is a subsidiary of ZTE Corporation and is formed under the laws of New Jersey with its principal place of business at 2425 North Central Expressway, Suite 800, Richardson, Texas 75080. ZTE (USA) Inc. may be served through its agent Jing Li at 2425 North Central Expressway, Suite 323, Richardson, Texas 75080.

3. Defendant ZTE Corporation is a Chinese corporation with a principal place of business located at ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen Prefecture, Guangdong Province, People’s Republic of China 518057.

JURISDICTION AND VENUE

4. SEVEN brings this civil action for patent infringement under the Patent Laws of

the United States, 35 U.S.C. § 1 *et. seq.*, including 35 U.S.C. §§ 271, 281-285. This Court has subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338.

5. ZTE Corporation and ZTE (USA) Inc. (collectively “ZTE”) transact and conduct business in this District and the State of Texas, and are subject to the personal jurisdiction of this Court. For example, ZTE (USA) Inc. maintains its corporate headquarters in Richardson, Texas. Further, ZTE markets and sells mobile products, such as smartphones and tablets, throughout the United States including the State of Texas and this District. For example, ZTE markets and sells its mobile products through its website <https://www.zteusa.com/>.

6. ZTE has recognized that this Court has personal jurisdiction over it in a number of other patent infringement matters, including but not limited to *Hitachi Maxell, Ltd. v. ZTE Corp. et al.*, Case No. 5:16-cv-00179.

7. SEVEN’s causes of action arise, at least in part, from ZTE’s business contacts and activities in this District and elsewhere within the State of Texas. ZTE has committed acts of infringement in this District and within Texas by making, using, selling, offering for sale, or importing into the United States products that infringe one or more claims of the Patents-in-Suit as set forth herein. Further, ZTE encourages others within this District to use its mobile products and thereby infringe one or more claims of the Patents-in-Suit. For example, ZTE advertises its mobile devices, such as its smart phones, through its website: <https://www.zteusa.com/products/all-phones/>.

8. ZTE actively solicits customers within this District and the State of Texas, and has sold many of its infringing mobile products to residents of Texas and this District.

9. Venue is proper in this District under 28 U.S.C. §§ 1391 and 1400.

10. In other patent infringement matters involving ZTE’s mobile products, such as

Hitachi Maxell, Ltd., ZTE has acknowledged that for patent infringement actions involving its mobile products venue is proper in this District.

THE PATENTS-IN-SUIT

11. On August 19, 2014, the United States Patent and Trademark Office (“USPTO”) duly and legally issued U.S. Patent No. 8,811,952, titled “Mobile Device Power Management in Data Synchronization Over a Mobile Network With or Without a Trigger Notification,” to inventors Trevor Fiatal *et al.* (“the ’952 Patent”). A true and correct copy of the ’952 Patent is attached as Exhibit A to this Complaint.

12. On January 26, 2016, the USPTO duly and legally issued U.S. Patent No. 9,247,019, titled “Mobile Application Traffic Optimization,” to inventors Michael Luna *et al.* (“the ’019 Patent”). A true and correct copy of the ’019 Patent is attached as Exhibit B to this Complaint.

13. On April 26, 2016, the USPTO duly and legally issued U.S. Patent No. 9,325,600, titled “Offloading Application Traffic to a Shared Communication Channel for Signal Optimization in a Wireless Network for Traffic Utilizing Proprietary and Non-Proprietary Protocols,” to inventors Rami Alisawi *et al.* (“the ’600 Patent”). A true and correct copy of the ’600 Patent is attached as Exhibit C to this Complaint.

14. On May 24, 2016, the USPTO duly and legally issued U.S. Patent No. 9,351,254, titled “Method for Power Saving in Mobile Devices by Optimizing Wakelocks,” to inventors Ari Backholm *et al.* (“the ’254 Patent”). A true and correct copy of the ’254 Patent is attached as Exhibit D to this Complaint.

15. On December 6, 2016, the USPTO duly and legally issued U.S. Patent No. 9,516,127, titled “Intelligent Alarm Manipulator and Resource Tracker,” to inventors Abhay

Nirantar *et al.* (“the ’127 Patent”). A true and correct copy of the ’127 Patent is attached as Exhibit E to this Complaint.

16. On December 6, 2016, the USPTO duly and legally issued U.S. Patent No. 9,516,129, titled “Mobile Application Traffic Optimization,” to inventors Michael Luna *et al.* (“the ’129 Patent”). A true and correct copy of the ’129 Patent is attached as Exhibit F to this Complaint.

17. On January 24, 2017, the USPTO duly and legally issued U.S. Patent No. 9,553,816, titled “Optimizing Mobile Network Traffic Coordination Across Multiple Applications Running on a Mobile Device,” to inventors Michael Luna *et al.* (“the ’816 Patent”). A true and correct copy of the ’816 Patent is attached as Exhibit G to this Complaint.

18. SEVEN owns the entire right and title to each of the Patents-in-Suit.

BACKGROUND

19. For nearly two decades, SEVEN has researched and developed innovative software solutions for mobile devices to enhance the user experience. For example, SEVEN has developed software technologies to manage mobile traffic in order to conserve network and battery resources. Software applications on mobile devices are frequently signaling the network for a variety of reasons. Much of the signaling from these software applications is unnecessary and simply consumes precious bandwidth and remaining battery power. This needless mobile traffic negatively impacts the user’s overall experience by creating service overloads and outages or draining the limited battery of the mobile device. SEVEN’s technologies are able to optimize mobile traffic to conserve both network and battery resources.

20. SEVEN has been recognized in the industry for its innovative technologies and products. For example, at the Mobile World Congress in 2011, the GSMA awarded SEVEN with

its Global Mobile Award for Best Technology Breakthrough. Further, in 2013 SEVEN won the Mobile Merit Award for its outstanding innovations in the mobile industry and was identified as one of fifty mobile companies to watch by AlwaysOn. SEVEN was also awarded the Best Free Android App in 2013 by TechRadar. Additionally, and among other industry recognition, Telecoms.com identified SEVEN in its Best LTE Traffic Management Product Short List.

21. Battery life for mobile devices is a major driver for consumer purchasing decisions. In a 2014 poll by Ubergizmo of 50,000 participants, battery life was rated as a smartphone's most important feature. ZTE recognizes the importance of battery life, and advertises its products' ability to optimize energy efficiency on its website <https://www.zteusa.com/blade/>.

22. ZTE utilizes software technologies for conserving battery and extending the battery life of its mobile devices. As described below, these mobile devices infringe SEVEN's innovative and patented technologies to manage mobile traffic and save battery power.

COUNT 1

(Infringement of U.S. Pat. No. 8,811,952)

23. ZTE infringes at least claim 26 of the '952 Patent under 35 U.S.C. §271(a) and (b). ZTE makes, uses, sells, offers to sell, or imports into the United States products, such as the ZTE Blade v8 Pro, that meet every limitation of at least claim 26.

24. Claim 26 of the '952 Patent is directed to a mobile device with a processor configured to: (1) exchange transactions with a client operating in a network through a connection provided through a server coupled to the client; (2) automatically send synchronization requests from the mobile device to the network on a periodic basis, wherein the periodicity of the synchronization requests occur at a frequency determined according to the

remaining battery power on the mobile device; and (3) exchange synchronization communications with the client over the connection after sending each synchronization request.

25. ZTE's products infringe at least claim 26 of the '952 Patent. For example, the ZTE Blade v8 Pro ("Blade") includes a Qualcomm Snapdragon processor and can operate in a variety of networks such as GSM, UMTS, LTE, and WiFi. It also includes a touch screen user interface. Further, the Blade includes internal memory for storing the device's operating system and other software applications. For example, it uses the Android software operating system, such as Android 6.0 (also known as Marshmallow). The Blade also includes a number of mobile applications that communicate with the applications' respective servers through the various networks to exchange communications between the mobile application and the application server. One example is the Gmail application. The mobile device, through its communications interface including the device's network antenna, exchanges communications between the Gmail application and the email servers using mobile or WiFi networks. To keep its information up-to-date and fresh, the Gmail application synchronizes with its respective email servers periodically, such as every 5, 10, 15, 30, or 60 minutes. In synchronizing, the Gmail application will request that the Blade communicate—through the communications interface and network—a synchronization message to the email server. The email server will respond to the synchronization message from the Gmail application and return information back to the Blade to be routed to the Gmail application. But through one or more of the device's power saving modes, when the remaining battery power on the Blade falls below some threshold amount, such as 15% or 5% remaining battery power, Gmail will stop synchronizing periodically.

26. Other ZTE products similarly infringe one or more claims of the '952 Patent. Such other products include ZTE's Axon, ZMAX, ZPAD, and Trek devices.

27. ZTE also induces infringement by end users of ZTE's mobile devices of at least claim 26 of the '952 Patent. ZTE promotes and advertises the use of its products, especially the products' capability to preserve remaining battery and avoid battery drain from background applications. The infringing power saving functionality is included in ZTE's mobile devices by default. Examples of ZTE's promotional materials appear on the company's website, such as <https://www.zteusa.com/blade/>.

28. ZTE has had notice of the '952 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, ZTE's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of ZTE's specific intent to induce others to infringe the '952 Patent. Further, despite having knowledge of its infringement, ZTE continues to intentionally and willfully infringe at least claim 26 of the '952 patent.

COUNT 2

(Infringement of U.S. Pat. No. 9,247,019)

29. ZTE infringes at least claim 1 of the '019 Patent under at least 35 U.S.C. §271(a) and (b). ZTE makes, uses, sells, offers to sell, or imports into the United States products, such as the Blade, that meet every limitation of at least claim 1.

30. Claim 1 of the '019 Patent is directed to a mobile device configured to: (1) delay content requests made by multiple applications; (2) align content request using observed activity of a user of the mobile device that includes a time since a last key press and mobile device properties; (3) poll in accordance with the aligned content requests to satisfy content requests of at least some of the multiple mobile applications; (4) monitor the time since a last key press, and, when the time exceeds a predetermined time period, locally adjust the mobile device by

suppressing the aligned content requests at the mobile device for a first suppression period, and after expiration of the first suppression period, transmit any aligned content requests; and (5) suppress subsequent content request at the mobile device for a second suppression period, where the second suppression period is longer than the first suppression period.

31. In addition to the features described in previous paragraphs, ZTE's products, such as its Blade, are capable of delaying and aligning content requests from mobile applications based on observed user activity. For example, the Blade has multiple applications that send content requests. The Blade also has a touch screen that a user can press to interact with the phone and other applications. The Blade also includes the Android software operating system, such as Marshmallow. Further, Blade includes a Doze mode that reduces traffic from the mobile device when the device is not actively in use, thereby reducing battery drain by mobile applications that are frequently signaling to their respective application servers. The Blade is able to monitor the time since a button was last pressed, for example through the auto-off timer and last user activity time to determine when to turn the screen of the device off. Further, when the Blade device detects that the screen is off, the device is unplugged and stationary for some time, it enters Doze mode. Once in Doze mode, the Blade is able to conserve battery resources by restricting mobile applications' access to the network, and defers the mobile applications' requests until a maintenance window. As the requests from the mobile applications are deferred, the requests are also aligned such that when a maintenance window occurs the multiple mobile applications are allowed to communicate using the network. Following the maintenance window, the mobile applications' are once again restricted from accessing the network, this time for a period longer than the first. The figure below illustrates the reduction in traffic from the Blade provided by Doze.

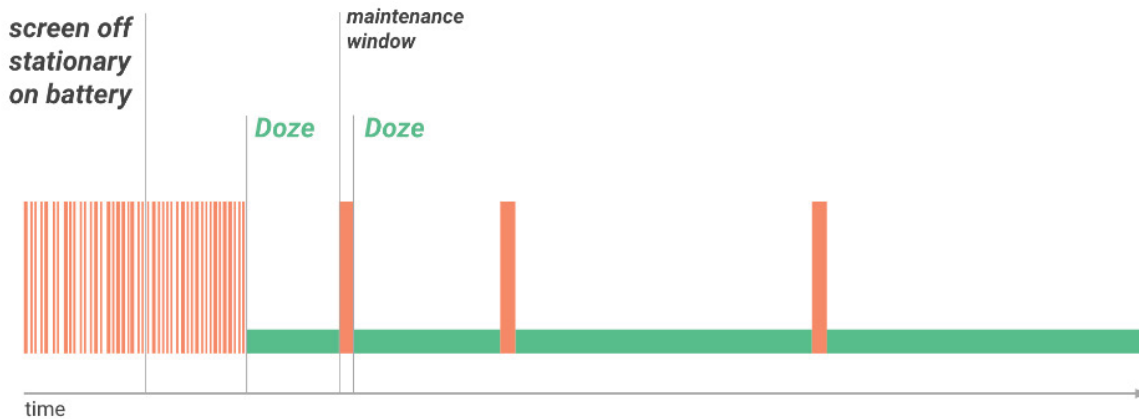


Figure 1. Doze provides a recurring maintenance window for apps to use the network and handle pending activities.

32. Other ZTE products similarly infringe one or more claims of the '019 Patent.

Such other products include ZTE's Axon, ZMAX, ZPAD, and Trek devices.

33. ZTE also induces infringement by end users of its mobile devices of at least claim 1 of the '019 Patent. ZTE promotes and advertises the use of its products, especially the products' capability to preserve remaining battery and avoid battery drain from background applications. Further, the Doze functionality is enabled on ZTE's mobile devices by default. Examples of ZTE's promotional materials appear on the company's website, such as <https://www.zteusa.com/blade/>.

34. ZTE has had notice of the '019 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, ZTE's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of ZTE's specific intent to induce others to infringe the '019 Patent. Despite having knowledge of its infringement, ZTE continues to intentionally and willfully infringe at least claim 1 of the '019 patent.

COUNT 3

(Infringement of U.S. Pat. No. 9,325,600)

35. ZTE infringes at least claim 7 of the '600 Patent under at least 35 U.S.C. §271(a) and (b). ZTE makes, uses, sells, offers to sell, or imports into the United States products, such as the Blade, that meet every limitation of at least claim 7.

36. Claim 7 of the '600 Patent is directed to memory and code to implement a processor controlled system for reducing network traffic, comprising: (1) blocking a first channel such that network signaling and battery consumption are reduced, wherein the first channel includes a non-common channel; (2) offloading application traffic of an application onto a second channel, wherein the second channel includes a common channel; (3) monitoring the application traffic of the application over the second channel; (4) unblocking the first channel based on the monitored application traffic over the second channel so that the application can perform an action; and (5) re-blocking the first channel after the action has been completed.

37. In addition to features described in previous paragraphs, ZTE's products, such as its Blade, have memory and code to utilize common and non-common channels for application traffic and are capable of reducing network traffic by blocking the non-common channel to prevent applications from frequently communicating in the background using the non-common channels and draining battery resources. For example, mobile applications communicate with their respective servers by establishing application-specific connections to transmit information between the application on the mobile device and the application server in the network. Software applications on the mobile device are not able to utilize the application-specific connections established by other applications. To conserve battery by reducing network traffic, the Blade is able to block the application-specific connections. For example, the Blade includes the Doze

functionality that restricts a mobile application's access to the network. But to avoid users missing critical information, the Blade allows applications to receive messages using a common channel when the application-specific channels are blocked. For example, when in Doze, the Blade offloads application traffic onto the Google Cloud Messaging ("GCM") channel or Firebase Cloud Messaging channel ("FCM"), which is shared among all applications on the Blade. Through GCM/FCM high priority messages directed to the applications may be delivered even when the application-specific channels are blocked. The Blade monitors traffic over the GCM/FCM channel such that when messages are received for particular applications, the system unblocks the application-specific channels so that the application may respond to the received message. After the application has performed the task associated with the received message, the application-specific channel is once again blocked to conserve battery and reduce network traffic.

38. Other ZTE products similarly infringe one or more claims of the '600 Patent. Such other products include ZTE's Axon, ZMAX, ZPAD, and Trek devices.

39. ZTE also induces the infringement by end users of its mobile devices of at least claim 7 of the '600 Patent. ZTE promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. The Doze functionality is enabled on ZTE's mobile devices by default. Examples of ZTE's promotional materials appear on the company's website, such as <https://www.zteusa.com/blade/>.

40. ZTE has had notice of the '600 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, ZTE's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and

avoid battery drain from background applications is evidence of ZTE's specific intent to induce others to infringe the '600 Patent. Despite having knowledge of its infringement, ZTE continues to intentionally and willfully infringe at least claim 7 of the '600 patent.

COUNT 4

(Infringement of U.S. Pat. No. 9,351,254)

41. ZTE infringes at least claim 1 of the '254 Patent under at least 35 U.S.C. §271(a) and (b). ZTE makes, uses, sells, offers to sell, or imports into the United States products, such as the Blade, that meet every limitation of at least claim 1.

42. Claim 1 of the '254 Patent is directed to a mobile device comprising a screen, memory, and processor configured to: (1) acquire a system wakelock in response to an application wakelock acquisition request; (2) detect an activity state of the mobile device based on a status of the display screen; (3) enter a power optimization state based on the detected activity state; (4) release the system wakelock based upon entering the power optimization state when the application that made the acquisition request is not critical to user experience, wherein the application is non-critical when the application is not identified on a whitelist; and (5) acquire the system wakelock in response to a subsequent wakelock request from another application on the mobile device when the another application making the subsequent wakelock acquisition request is identified on the whitelist.

43. In addition to features described in previous paragraphs, ZTE's products, such as its Blade, include a screen, memory, and processor. The devices also manage the use of the central processing unit ("CPU") by software applications on the mobile device. For example, even when the Blade is sleeping or otherwise in a power saving state, certain software applications are able to use the CPU. Software applications are able to use the CPU by utilizing a

wakelock or other request to the system that allows the CPU to stay on for certain purposes. For example, the alarm application or the phone functionality needs to work even when the device is sleeping or in a power saving state and accordingly requires the CPU to process certain tasks. These applications issue a request to the system to use the CPU even when the device is sleeping. The system then issues a wakelock that allows the CPU to continue working when it would otherwise be put to sleep, such as when the user is not actively using the mobile device. Some applications take advantage of these wakelock requests and use the CPU for actions that are not critical to the user experience, such as background communications when the device is not actively being used. Such misbehaving applications unnecessarily drain battery resources. The Blade manages which applications have permission to use the CPU and battery resources when the device is sleeping or in a power saving state. As an example, the Blade may acquire a system wakelock when an application, such as the alarm application, issues a wakelock request. The Blade also detects whether the device is in use by, among other things, monitoring the screen, whether the device is unplugged, and whether the device has been stationary for some time. The Blade enters Doze mode based on this monitored activity. In Doze mode, the Blade will release the system wakelock when the application that made the wakelock request does not have permission to use CPU resources during this power saving state. The Blade can issue another system wakelock in response to another wakelock request when the application making the request is identified as having the necessary permissions to utilize the CPU.

44. Other ZTE products similarly infringe one or more claims of the '254 Patent.

Such other products include ZTE's Axon, ZMAX, ZPAD, and Trek devices.

45. ZTE also induces infringement by end users of its mobile devices of at least claim 1 of the '254 Patent. ZTE promotes and advertises the use of its products, especially the

products' capability to preserve remaining battery and avoid battery drain from background applications. Further, the Doze functionality is enabled on ZTE's mobile devices by default. Examples of ZTE's promotional materials appear on the company's website, such as <https://www.zteusa.com/blade/>.

46. ZTE has had notice of the '254 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, ZTE's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of ZTE's specific intent to induce others to infringe the '254 Patent. Despite having knowledge of its infringement, ZTE continues to intentionally and willfully infringe at least claim 1 of the '254 patent.

COUNT 5

(Infringement of U.S. Pat. No. 9,516,127)

47. ZTE infringes at least claim 10 of the '127 Patent under at least 35 U.S.C. §271(a) and (b). ZTE makes, uses, sells, offers to sell, or imports into the United States products, such as its Blade, that meet every limitation of at least claim 10.

48. Claim 10 of the '127 Patent is directed to a mobile device with a memory and processor configured to: (1) enter a power save mode based on a backlight status and sensed motion of a mobile device; (2) delay a timing of one or more triggers for multiple applications on the mobile device, wherein the timing is delayed such that the triggers execute within a window of time and wherein at least a subset of the triggers are associated with wakelocks; and (3) exit the power save mode when the backlight of the mobile device turns on or motion of the mobile device is sensed.

49. In addition to features described in previous paragraphs, ZTE's products, such as

the Blade, enter a power save mode such as Doze, when the device is unplugged and stationary for some time with the screen off. Doze conserves remaining battery resources of the Blade by, among other things, deferring jobs and alarms for the software applications on the device. The jobs and alarms from the software applications on the Blade are delayed until a maintenance window. During the maintenance window, the Blade will run all the delayed jobs and alarms for the software applications. At least a subset of the jobs and alarms are associated with wakelocks, such as those scheduled through AlarmManager. The Blade will exit Doze mode when, among other things, the device detects movement of the device or the screen is turned on.

50. Other ZTE products similarly infringe one or more claims of the '127 Patent. Such other products include ZTE's Axon, ZMAX, ZPAD, and Trek devices.

51. ZTE also induces infringement by end users of ZTE's mobile devices of at least claim 10 of the '127 Patent. ZTE promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. Further, the Doze functionality is enabled on ZTE's mobile devices by default. Examples of ZTE's promotional materials appear on the company's website, such as <https://www.zteusa.com/blade/>.

52. ZTE has had notice of the '127 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, ZTE's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of ZTE's specific intent to induce others to infringe the '127 Patent. Despite having knowledge of its infringement, ZTE continues to intentionally and willfully infringe at least claim 10 of the '127 patent.

COUNT 6

(Infringement of U.S. Pat. No. 9,516,129)

53. ZTE infringes at least claim 1 of the '129 Patent at least under 35 U.S.C. §271(a) and (b). ZTE makes, uses, sells, offers to sell, or imports into the United States products, such as the Blade, that meet every limitation of at least claim 1.

54. Claim 1 of the '129 Patent is directed to a mobile device comprising a radio, user interface, memory, and processor configured to: (1) enter a first power management mode, wherein to enter the first power management mode is based on input from a user; (2) while in the first power management mode, block transmission of outgoing application data requests for at least one application executing in a background of the mobile device and allow transmission of outgoing application data requests for at least one application executing in a foreground of the mobile device; (3) enter a second power management mode, wherein entry into the second power management mode is based on a detected activity status, wherein the detected activity status is based on a backlight status of the mobile device being off; and (4) while in the second power management mode, block transmission of outgoing application data requests for at least one application executing in background of the mobile device for a predetermined period of time.

55. In addition to the features described in previous paragraphs, ZTE's products, such as the Blade, have a radio, user interface, memory, and processor. Additionally, these products have several power management modes which help to extend battery life and conserve network resources. For example, the Blade has a Power Saving mode that blocks communications from applications running in the background of the device. The user may enter this Power Saving mode by input through the touch screen interface of the device. This Power Saving mode, however, will allow certain applications to continue accessing the network when

the application is being actively used by the user. Additionally, ZTE's products include other power saving modes, such as Doze. When in Doze, the Blade blocks outgoing messages from applications until a maintenance window when those applications may temporarily communicate with the network. The Blade will enter Doze when the device is unplugged, stationary, and the screen of the device is off.

56. Other ZTE products similarly infringe one or more claims of the '129 Patent. Such other products include ZTE's Axon, ZMAX, ZPAD, and Trek devices.

57. ZTE also induces infringement by end users of its mobile products of at least claim 1 of the '129 Patent. ZTE promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. The infringing power saving functionalities are included in ZTE's mobile devices by default. Examples of ZTE's promotional materials appear on the company's website, such as <https://www.zteusa.com/blade/>.

58. ZTE has had notice of the '129 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, ZTE's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of ZTE's specific intent to induce others to infringe the '129 Patent. Despite having knowledge of its infringement, ZTE continues to intentionally and willfully infringe at least claim 1 of the '129 patent.

COUNT 7

(Infringement of U.S. Pat. No. 9,553,816)

59. ZTE infringes at least claim 9 of the '816 Patent under at least 35 U.S.C. §271(a) and (b). ZTE makes, uses, sells, offers to sell, or imports into the United States products, such as

the Blade, that meet every limitation of at least claim 9.

60. Claim 9 of the '816 Patent is directed to a mobile device with memory and processor configured for: (1) determining a time a first application on the mobile device was last accessed; (2) determining whether the first application is inactive based on the time the application was last accessed, wherein when the application is determined to be inactive the processor can (3) adjust behavior of the mobile device for traffic from the first application by blocking outgoing network traffic from the first application for a first period of time and allowing outgoing network traffic from the first application after the first period of time for a second period of time while allowing outgoing network traffic for a second application; (4) receive a message directed towards the first application during the first period of time, wherein the message is received from an intermediary server that provides connectivity between an application server for the first application and the mobile device; (5) allow outgoing network traffic from the application when the mobile device is plugged into an external power source; and (6) wherein a frequency of communications directed toward the first application is altered by the adjusting behavior of the mobile device for traffic from the first application.

61. In addition to the features described in previous paragraphs, ZTE's products, such as the Blade, have a memory and a processor, and manage traffic from individual mobile applications. For example, when individual applications have not been accessed by the user after some time, those applications will be placed in a standby mode. Mobile applications frequently communicate with the network even when such applications are not actively in use by the user. Such background communications drain battery and network resources. To conserve these resources, the Blade determines when an application was last accessed by a user, and determines that an application is inactive based on that last access. When an application is determined to be

inactive, or idle, the Blade will block any jobs or syncs that the application may attempt to perform. For example, by blocking synchronization messages, the frequency of communications directed to the first application is altered. But to ensure that the information for the mobile application does not become stale, the Blade will allow the inactive mobile application to temporarily access the network. During this temporary access time, the Blade will allow multiple applications to communicate with the network. Doing so allows the Blade to use battery and network resources efficiently. Further, to avoid missing important messages directed to the inactive application, the Blade is still able to receive messages for the inactive application even when the application is in standby mode. For example, the Blade will receive a message directed toward the inactive application through GCM or FCM, which are intermediary servers that can connect application servers to the mobile device. The Blade will allow the inactive mobile application to exit standby mode when the mobile device is plugged into an external power source, such as the wall outlet.

62. Other ZTE products similarly infringe one or more claims of the '816 Patent. Such other products include ZTE's Axon, ZMAX, ZPAD, and Trek devices.

63. ZTE also induces infringement by end users of its mobile devices of at least claim 9 of the '816 Patent. ZTE promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. Further, the application standby feature in ZTE's mobile devices is enabled by default. Examples of ZTE's promotional materials appear on the company's website, such as <https://www.zteusa.com/blade/>.

64. ZTE has had notice of the '816 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, ZTE's continued promotion, advertisement, and

encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of ZTE's specific intent to induce others to infringe the '816 Patent. Despite having knowledge of its infringement, ZTE continues to intentionally and willfully infringe at least claim 9 of the '816 patent.

PRAYER FOR RELIEF

SEVEN requests that judgment be entered in its favor and against ZTE as follows:

- a. Entering judgment declaring that ZTE has infringed one or more claims of the Patents-in-Suit in violation of 35 U.S.C. §271;
- b. Ordering that SEVEN be awarded damages in an amount no less than a reasonable royalty for each asserted patent arising out of ZTE's infringement of the Patents-in-Suit, together with any other monetary amounts recoverable by SEVEN, such as treble damages;
- c. Declaring that ZTE's infringement has been willful;
- d. Declaring this an exceptional case under 35 U.S.C. §285 and awarding SEVEN its attorneys' fees; and
- e. Awarding SEVEN such other costs and further relief as the Court deems just and proper.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, SEVEN demands a trial by jury on all issues so triable.

Dated: May 17, 2017

Respectfully submitted by:

/s/ Bruce Sostek

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**ATTORNEYS FOR PLAINTIFF SEVEN
NETWORKS LLC.**

**UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

SEVEN NETWORKS, LLC,

Plaintiff,

v.

SAMSUNG ELECTRONICS AMERICA, INC. and
SAMSUNG ELECTRONICS CO., LTD.,

Defendants.

Civil Action No. 2:17-cv-441

PATENT CASE

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff SEVEN Networks, LLC (“SEVEN”) files this Complaint for Patent Infringement of several United States patents as identified below (collectively, the “Patents-in-Suit”) and alleges as follows:

PARTIES

1. SEVEN is a company formed under the laws of Delaware with its principal place of business at 2660 East End Boulevard South, Marshall, Texas 75672.

2. Defendant Samsung Electronics America, Inc. is a corporation formed under the laws of New York with its principal place of business at 105 Challenger Road, Ridgefield Park, New Jersey 07660, and may be served through its agent C T Corporation System, 1999 Bryan Street, Suite 900, Dallas, Texas 75201-3136.

3. Defendant Samsung Electronics Co., Ltd. is a corporation formed under the laws of Korea with its principal place of business at 416 Maetan-3dong, Yeongtong-gu, Suwon-City, Gyeonggi-do, Korea 443-742.

JURISDICTION AND VENUE

4. SEVEN brings this civil action for patent infringement under the Patent Laws of

the United States, 35 U.S.C. § 1 *et. seq.*, including 35 U.S.C. §§ 271, 281-285. This Court has subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338.

5. Samsung Electronics America, Inc. (“SEA”) and Samsung Electronics Co., Ltd. (“SEC”) (also referred to collectively “Samsung”) transact and conduct business in this District and the State of Texas, and are subject to the personal jurisdiction of this Court. For example, SEA designs, markets, and sells mobile products, such as smartphones and tablets, throughout the United States including the State of Texas and this District. SEA maintains a major corporate office in Richardson, Texas that was formerly the principal place of business for Samsung Telecommunications America LLC (“STA”). STA was previously responsible for the design, marketing and sale of Samsung’s mobile products, but is now merged into SEA. SEC manufactures Samsung’s mobile devices and imports those products into the United States. For example, SEC has imported such mobile products into the United States through Dallas, Texas, and then products are distributed by SEA or SEC to other parts of the country, including to this District.

6. Samsung has admitted that this Court has personal jurisdiction over it in a number of other patent infringement matters, including but not limited to *Image Processing Technologies, LLC v. Samsung Electronics Co., Ltd. et al.*, C.A. No. 2:16-cv-505.

7. SEVEN’s causes of action arise, at least in part, from Samsung’s business contacts and activities in this District and elsewhere within the State of Texas. Samsung has committed acts of infringement in this District and within Texas by making, using, selling, offering for sale, or importing into the United States products that infringe one or more claims of the Patents-in-Suit as set forth herein. Further, Samsung encourages others within this District to use its mobile products and thereby infringe one or more claims of the Patents-in-Suit. For

example, Samsung advertises its mobile devices, such as its smart phones, through its website: <http://www.samsung.com/us/mobile/phones/>. Further, Samsung provides its customers with information regarding the use of the devices features, such as its various battery saving modes: <http://www.samsung.com/us/support/answer/ANS00038729/>.

8. Samsung actively solicits customers within this District and the State of Texas, and has sold many of its infringing mobile products to residents of Texas and this District.

9. Venue is proper in this District under 28 U.S.C. §§ 1391 and 1400.

10. In other patent infringement matters involving Samsung's mobile products, such as *Image Processing Technologies*, Samsung has admitted that for patent infringement actions involving its mobile products venue is proper in this District.

THE PATENTS-IN-SUIT

11. On August 19, 2014, the United States Patent and Trademark Office ("USPTO") duly and legally issued U.S. Patent No. 8,811,952, titled "Mobile Device Power Management in Data Synchronization Over a Mobile Network With or Without a Trigger Notification," to inventors Trevor Fiatal *et al.* ("the '952 Patent"). A true and correct copy of the '952 Patent is attached as Exhibit A to this Complaint.

12. On January 26, 2016, the USPTO duly and legally issued U.S. Patent No. 9,247,019, titled "Mobile Application Traffic Optimization," to inventors Michael Luna *et al.* ("the '019 Patent"). A true and correct copy of the '019 Patent is attached as Exhibit B to this Complaint.

13. On April 26, 2016, the USPTO duly and legally issued U.S. Patent No. 9,325,600, titled "Offloading Application Traffic To A Shared Communication Channel For Signal Optimization In A Wireless Network For Traffic Utilizing Proprietary and Non-Proprietary

Protocols,” to inventors Rami Alisawi *et al.* (“the ’600 Patent”). A true and correct copy of the ’600 Patent is attached as Exhibit C to this Complaint.

14. On May 24, 2016, the USPTO duly and legally issued U.S. Patent No. 9,351,254, titled “Method For Power Saving in Mobile Devices By Optimizing Wakelocks,” to inventors Ari Backholm *et al.* (“the ’254 Patent”). A true and correct copy of the ’254 Patent is attached as Exhibit D to this Complaint.

15. On December 6, 2016, the USPTO duly and legally issued U.S. Patent No. 9,516,127, titled “Intelligent Alarm Manipulator and Resource Tracker,” to inventors Abhay Nirantar *et al.* (“the ’127 Patent”). A true and correct copy of the ’127 Patent is attached as Exhibit E to this Complaint.

16. On December 6, 2016, the USPTO duly and legally issued U.S. Patent No. 9,516,129, titled “Mobile Application Traffic Optimization,” to inventors Michael Luna *et al.* (“the ’129 Patent”). A true and correct copy of the ’129 Patent is attached as Exhibit F to this Complaint.

17. On January 24, 2017, the USPTO duly and legally issued U.S. Patent No. 9,553,816, titled “Optimizing Mobile Network Traffic Coordination Across Multiple Applications Running on a Mobile Device,” to inventors Michael Luna *et al.* (“the ’816 Patent”). A true and correct copy of the ’816 Patent is attached as Exhibit G to this Complaint.

18. SEVEN owns the entire right and title to each of the Patents-in-Suit.

BACKGROUND

19. For nearly two decades, SEVEN has researched and developed innovative software solutions for mobile devices directed to enhancing the user experience. For example, SEVEN has developed software technologies to manage mobile traffic in order to conserve

network and battery resources. Software applications on mobile devices are frequently signaling the network for a variety of reasons. Much of the signaling from these software applications is unnecessary and simply consumes precious bandwidth and remaining battery power. This needless mobile traffic negatively impacts the user's overall experience by creating service overloads and outages or draining the limited battery of the mobile device. SEVEN's technologies are able to optimize mobile traffic to conserve both network and battery resources.

20. SEVEN has been recognized in the industry for its innovative technologies and products. For example, at the Mobile World Congress in 2011, the GSMA awarded SEVEN with its Global Mobile Award for Best Technology Breakthrough. Further, in 2013 SEVEN won the Mobile Merit Award for its outstanding innovations in the mobile industry and was identified as one of fifty mobile companies to watch by AlwaysOn. SEVEN was also awarded the Best Free Android App in 2013 by TechRadar. Additionally, and among other industry recognition, Telecoms.com identified SEVEN in its Best LTE Traffic Management Product Short List.

21. Samsung is aware of SEVEN's innovative products and technologies for traffic management. As a trusted supplier, SEVEN provided products and services to Samsung for several years. The technologies provided to Samsung included SEVEN's push-enabled mobile email and messaging solutions. Among other things, SEVEN's technologies helped to power Samsung's Premium Social Hub.

22. Samsung recognizes that the design of a smartphone's user experience must reflect what users want most from their devices. In a 2015 poll conducted by Samsung, a majority of those polled identified the battery as the most important feature in a mobile device. Accordingly, advances in technologies to improve battery life are of utmost importance to users. While both hardware and software advancements are being pursued in the industry, there can be

significant consequences for failures in battery hardware. For example, Samsung's Galaxy Note 7 handsets experienced catastrophic failures from defects in the device's battery. These defects in battery hardware led to devices spontaneously catching fire, and ultimately to one of the largest recalls for consumer products. Several sources estimate that the recall of the Note 7 handsets cost Samsung at least \$5.3 billion.

23. Samsung currently utilizes software technologies for conserving battery and extending the battery life of its mobile devices. As described below, Samsung's mobile devices implement software to manage mobile traffic to save battery power. These mobile devices infringe SEVEN's innovative and patented technology.

COUNT 1

(Infringement of U.S. Pat. No. 8,811,952)

24. Samsung infringes at least claim 26 of the '952 Patent under 35 U.S.C. §271(a) and (b). Samsung makes, uses, sells, offers to sell, or imports into the United States products, such as the Samsung Galaxy S7, that meet every limitation of at least claim 26.

25. Claim 26 of the '952 Patent is directed to a mobile device with a processor configured to: (1) exchange transactions with a client operating in a network through a connection provided through a server coupled to the client; (2) automatically send synchronization requests from the mobile device to the network on a periodic basis, wherein the periodicity of the synchronization requests occur at a frequency determined according to the remaining battery power on the mobile device; and (3) exchange synchronization communications with the client over the connection after sending each synchronization request.

26. Samsung's products infringe at least claim 26 of the '952 Patent. For example, the Samsung Galaxy S7 includes a "2.15 GHz, 1.6 Ghz, Quad-Core" processor and can operate

in a variety of networks such as 2G GSM, 3G UMTS, 3G TD-SCDMA, 4G FDD LTE, 4G TDD LTE, and WiFi. The Galaxy S7 also includes a touch screen user interface. Further, the Galaxy S7 includes internal memory for storing the device's operating system and other software applications. For example, it uses the Android software operating system, such as Android 6.0 (also known as Marshmallow). The Galaxy S7 also includes a number of mobile applications that communicate with the applications' respective servers through various networks to exchange communications between the mobile application and the application server. One example is the Gmail application. The mobile device, through its communications interface including the device's network antenna, exchanges communications between the Gmail application and the email servers using mobile or WiFi networks. To keep its information up-to-date and fresh, the Gmail application synchronizes with its respective email servers periodically, such as every 5, 10, 15, 30, or 60 minutes. In synchronizing, the Gmail application will request that the Galaxy S7 communicate—through the communications interface and network—a synchronization message to the email server. The email server will respond to the synchronization message from the Gmail application and return information back to the Galaxy S7 to be routed to the Gmail application. But through one or more of the device's power saving modes, when the remaining battery power on the Galaxy S7 falls below some threshold amount, such as 50%, 20%, 15% or 5% remaining battery power, Gmail will stop synchronizing periodically.

27. Other Samsung products similarly infringe one or more claims of the '952 Patent. Such other products include Samsung's Galaxy Note and Galaxy Tab devices.

28. Samsung also induces infringement by end users of Samsung's mobile devices of at least claim 26 of the '952 Patent. Samsung promotes and advertises the use of its products, especially the products' capability to preserve remaining battery and avoid battery drain from

background applications. The infringing power saving functionality is included in Samsung's mobile devices by default. Examples of Samsung's promotional materials appear on the company's website, such as <http://www.samsung.com/us/explore/galaxy-s7-features-and-specs/>.

29. Samsung has had notice of the '952 Patent since at least October 2014. Accordingly, Samsung's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Samsung's specific intent to induce others to infringe the '952 Patent. Further, despite having knowledge of its infringement, Samsung continues to intentionally and willfully infringe at least claim 26 of the '952 patent.

COUNT 2

(Infringement of U.S. Pat. No. 9,247,019)

30. Samsung infringes at least claim 1 of the '019 Patent under at least 35 U.S.C. §271(a) and (b). Samsung makes, uses, sells, offers to sell, or imports into the United States products, such as the Galaxy S7, that meet every limitation of at least claim 1.

31. Claim 1 of the '019 Patent is directed to a mobile device configured to: (1) delay content requests made by multiple applications; (2) align content request using observed activity of a user of the mobile device that includes a time since a last key press and mobile device properties; (3) poll in accordance with the aligned content requests to satisfy content requests of at least some of the multiple mobile applications; (4) monitor the time since a last key press, and, when the time exceeds a predetermined time period, locally adjust the mobile device by suppressing the aligned content requests at the mobile device for a first suppression period, and after expiration of the first suppression period, transmit any aligned content requests; and (5)

suppress subsequent content request at the mobile device for a second suppression period, where the second suppression period is longer than the first suppression period.

32. In addition to the features described in previous paragraphs, Samsung's products, such as its Galaxy S7, are capable of delaying and aligning content requests from mobile applications based on observed user activity. For example, the Galaxy S7 has multiple applications that send content requests. The Galaxy S7 also has a touch screen and other keys that a user can press to interact with the phone and other applications. The Galaxy S7 also includes an Android software operating system, such as Marshmallow. The Samsung Galaxy S7 products include a Doze mode that reduces traffic from the mobile device when the device is not actively in use, thereby reducing battery drain by mobile applications that are frequently signaling to their respective application servers. The Galaxy S7 is able to monitor the time since a key was last pressed, for example through the auto-off timer and last user activity time to determine when to turn the screen of the device off. Further, when the Galaxy S7 device detects that the screen is off, the device is unplugged and stationary for a period of time, it enters Doze mode. Once in Doze mode, the Galaxy S7 is able to conserve battery resources by restricting the mobile applications' access to the network, and defers the mobile applications' requests until a maintenance window. As the requests from the mobile applications are deferred, the requests are also aligned such that when a maintenance window occurs the multiple mobile applications are allowed to communicate using the network. Following the maintenance window, the mobile applications' are once again restricted from accessing the network, this time for a period longer than the first. The figure below illustrates the reduction in traffic from the Galaxy S7 provided by Doze.

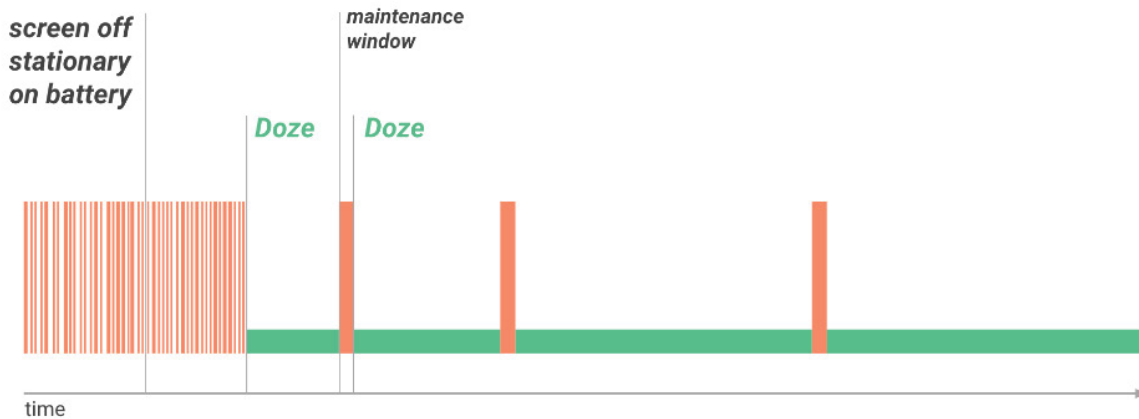


Figure 1. Doze provides a recurring maintenance window for apps to use the network and handle pending activities.

33. Other Samsung products similarly infringe one or more claims of the '019 Patent.

Such other products include Samsung's Galaxy Note and Galaxy Tab devices.

34. Samsung also induces infringement by end users of its mobile devices of at least claim 1 of the '019 Patent. Samsung promotes and advertises the use of its products, especially the products' capability to preserve remaining battery and avoid battery drain from background applications. Further, the Doze functionality is enabled on Samsung's mobile devices by default. Examples of Samsung's promotional materials appear on the company's website, such as <http://www.samsung.com/us/explore/galaxy-s7-features-and-specs/>.

35. Samsung has had notice of the '019 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Samsung's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Samsung's specific intent to induce others to infringe the '019 Patent. Further, despite having knowledge of its infringement, Samsung continues to intentionally and willfully infringe at least claim 1 of the '019 patent.

COUNT 3

(Infringement of U.S. Pat. No. 9,325,600)

36. Samsung infringes at least claim 7 of the '600 Patent under at least 35 U.S.C. §271(a) and (b). Samsung makes, uses, sells, offers to sell, or imports into the United States products, such as the Galaxy S7, that meet every limitation of at least claim 7.

37. Claim 7 of the '600 Patent is directed to memory and code to implement a processor controlled system for reducing network traffic, comprising: (1) blocking a first channel such that network signaling and battery consumption are reduced, wherein the first channel includes a non-common channel; (2) offloading application traffic of an application onto a second channel, wherein the second channel includes a common channel; (3) monitoring the application traffic of the application over the second channel; (4) unblocking the first channel based on the monitored application traffic over the second channel so that the application can perform an action; and (5) re-blocking the first channel after the action has been completed.

38. In addition to features described in previous paragraphs, Samsung's products, such as its Galaxy S7, have memory and code to utilize common and non-common channels for application traffic and are capable of reducing network traffic by blocking the non-common channel to prevent applications from frequently communicating in the background using the non-common channels and draining battery resources. For example, mobile applications communicate with their respective servers by establishing application-specific connections to transmit information between the application on the mobile device and the application server in the network. Software applications on the mobile device are not able to utilize the application-specific connections established by other applications. To conserve battery by reducing network traffic, the Galaxy S7 is able to block the application-specific connections. For example, the

Galaxy S7 includes the Doze functionality that restricts a mobile applications' access to the network. But to avoid users missing critical information, the Galaxy S7 allows applications to receive messages using a common channel when the application-specific channels are blocked. For example, when in Doze, the Galaxy S7 offloads application traffic onto the Google Cloud Messaging ("GCM") channel or Firebase Cloud Messaging channel ("FCM"), which is shared among all applications on the Galaxy S7. Through GCM/FCM high priority messages directed to the applications may be delivered even when the application-specific channels are blocked. The Galaxy S7 monitors traffic over the GCM/FCM channel such that when messages are received for particular applications, the system unblocks the application-specific channels so that the application may respond to the received message. After the application has performed the task associated with the received message, the application-specific channel is once again blocked to conserve battery and reduce network traffic.

39. Other Samsung products similarly infringe one or more claims of the '600 Patent. Such other products include Samsung's Galaxy Note and Galaxy Tab devices.

40. Samsung also induces infringement by end users of its mobile devices of at least claim 7 of the '600 Patent. Samsung promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. Further, the Doze functionality is enabled on Samsung's mobile devices by default. Examples of Samsung's promotional materials appear on the company's website, such as <http://www.samsung.com/us/explore/galaxy-s7-features-and-specs/>.

41. Samsung has had notice of the '600 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Samsung's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and

avoid battery drain from background applications is evidence of Samsung's specific intent to induce others to infringe the '600 Patent. Further, despite having knowledge of its infringement, Samsung continues to intentionally and willfully infringe at least claim 7 of the '600 patent.

COUNT 4

(Infringement of U.S. Pat. No. 9,351,254)

42. Samsung infringes at least claim 1 of the '254 Patent under at least 35 U.S.C. §271(a) and (b). Samsung makes, uses, sells, offers to sell, or imports into the United States products, such as the Galaxy S7, that meet every limitation of at least claim 1.

43. Claim 1 of the '254 Patent is directed to a mobile device comprising a screen, memory, and processor configured to: (1) acquire a system wakelock in response to an application wakelock acquisition request; (2) detect an activity state of the mobile device based on a status of the display screen; (3) enter a power optimization state based on the detected activity state; (4) release the system wakelock based upon entering the power optimization state when the application that made the acquisition request is not critical to user experience, wherein the application is non-critical when the application is not identified on a whitelist; and (5) acquire the system wakelock in response to a subsequent wakelock request from another application on the mobile device when the another application making the subsequent wakelock acquisition request is identified on the whitelist.

44. In addition to features described in previous paragraphs, Samsung's products, such as its Galaxy S7, include a screen, memory, and processor. The devices also manage the use of the central processing unit ("CPU") by software applications on the mobile device. For example, even when the Galaxy S7 is sleeping or otherwise in a power saving state, certain software applications are able to use the CPU. Software applications are able to use the CPU by

utilizing a wakelock or other request to the system that allows the CPU to stay on for certain purposes. For example, the alarm application or the phone functionality needs to work even when the device is sleeping or in a power saving state and accordingly requires the CPU to process certain tasks. These applications would issue a request to the system to use the CPU even when the device is sleeping. The system then issues a wakelock that allows the CPU to continue working when it would otherwise be put to sleep, such as when the user is not actively using the mobile device. Some applications take advantage of these wakelock requests and use the CPU for actions that are not critical to the user experience, such as background communications when the device is not actively being used. Such misbehaving applications unnecessarily drain battery resources. The Galaxy S7 manages which applications have permission to use the CPU and battery resources when the device is sleeping or in a power saving state. As an example, the Galaxy S7 may acquire a system wakelock when an application, such as the alarm application, issues a wakelock request. The Galaxy S7 also detects whether the device is in use by, among other things, monitoring the screen, whether the device is unplugged, and whether the device has been stationary for a period of time. The Galaxy S7 enters Doze mode based on this monitored activity. In Doze mode, the Galaxy S7 will release the system wakelock when the application that made the wakelock request does not have permission to use CPU resources during this power saving state. The Galaxy S7 can issue another system wakelock in response to another wakelock request when the application making the request is identified as having the necessary permissions to utilize the CPU.

45. Other Samsung products similarly infringe one or more claims of the '254 Patent. Such other products include Samsung's Galaxy Note and Galaxy Tab devices.

46. Samsung also induces infringement by end users of its mobile devices of at least

claim 1 of the '254 Patent. Samsung promotes and advertises the use of its products, especially the products' capability to preserve remaining battery and avoid battery drain from background applications. The Doze functionality is enabled on Samsung's mobile devices by default. Examples of Samsung's promotional materials appear on the company's website, such as <http://www.samsung.com/us/explore/galaxy-s7-features-and-specs/>.

47. Samsung has had notice of the '254 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Samsung's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Samsung's specific intent to induce others to infringe the '254 Patent. Further, despite having knowledge of its infringement, Samsung continues to intentionally and willfully infringe at least claim 1 of the '254 patent.

COUNT 5

(Infringement of U.S. Pat. No. 9,516,127)

48. Samsung infringes at least claim 10 of the '127 Patent under at least 35 U.S.C. §271(a) and (b). Samsung makes, uses, sells, offers to sell, or imports into the United States products, such as its Galaxy S7, that meet each and every limitation of at least claim 10.

49. Claim 10 of the '127 Patent is directed to a mobile device with a memory and processor configured to: (1) enter a power save mode based on a backlight status and sensed motion of a mobile device; (2) delay a timing of one or more triggers for multiple applications on the mobile device, wherein the timing is delayed such that the triggers execute within a window of time and wherein at least a subset of the triggers are associated with wakelocks; and (3) exit the power save mode when the backlight of the mobile device turns on or motion of the mobile device is sensed.

50. In addition to features described in previous paragraphs, Samsung's products, such as the Galaxy S7, have a memory and a processor, and enter a power save mode such as Doze, when the device is unplugged and stationary for a period of time, with the screen off. Doze conserves remaining battery resources of the Galaxy S7 by, among other things, deferring jobs and alarms for the software applications on the device. The jobs and alarms from the software applications on the Galaxy S7 are delayed until a maintenance window. During the maintenance window, the Galaxy S7 will run all the delayed jobs and alarms for the software applications. At least a subset of the jobs and alarms are associated with wakelocks, such as those scheduled through AlarmManager. The Galaxy S7 will exit Doze mode when, among other things, the device detects movement of the device or the screen is turned on.

51. Other Samsung products similarly infringe one or more claims of the '127 Patent. Such other products include Samsung's Galaxy Note and Galaxy Tab devices.

52. Samsung also induces infringement by end users of its mobile devices of at least claim 10 of the '127 Patent. Samsung promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. The Doze functionality is enabled on Samsung's mobile devices by default. Examples of Samsung's promotional materials appear on the company's website, such as <http://www.samsung.com/us/explore/galaxy-s7-features-and-specs/>.

53. Samsung has had notice of the '127 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Samsung's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Samsung's specific intent to induce others to infringe the '127 Patent. Further, despite having knowledge of its infringement,

Samsung continues to intentionally and willfully infringe at least claim 10 of the '127 patent.

COUNT 6

(Infringement of U.S. Pat. No. 9,516,129)

54. Samsung infringes at least claim 1 of the '129 Patent at least under 35 U.S.C. §271(a) and (b). Samsung makes, uses, sells, offers to sell, or imports into the United States products, such as the Galaxy S7, that meet every limitation of at least claim 1.

55. Claim 1 of the '129 Patent is directed to a mobile device comprising a radio, user interface, memory, and processor configured to: (1) enter a first power management mode, wherein to enter the first power management mode is based on input from a user; (2) while in the first power management mode, block transmission of outgoing application data requests for at least one application executing in a background of the mobile device and allow transmission of outgoing application data requests for at least one application executing in a foreground of the mobile device; (3) enter a second power management mode, wherein entry into the second power management mode is based on a detected activity status, wherein the detected activity status is based on a backlight status of the mobile device being off; and (4) while in the second power management mode, block transmission of outgoing application data requests for at least one application executing in background of the mobile device for a predetermined period of time.

56. In addition to the features described in previous paragraphs, Samsung's products, such as the Galaxy S7, have a radio, user interface, memory, and processor. Additionally, these products have several power management modes which help to extend battery life and conserve network resources. For example, the Galaxy S7 has a Power Saving mode and an Ultra Power Saving mode that block communications from applications running in the background of the device. The user may enter either mode by input through the touch screen interface of the

device. Both modes, however, will allow certain applications to continue accessing the network when the application is being actively used by the user. Additionally, Samsung's products include other power saving modes, such as Doze. When in Doze, the Samsung Galaxy S7 blocks outgoing messages from applications until a maintenance window when those applications may temporarily communicate with the network. The Galaxy S7 will enter Doze when the device is unplugged, stationary, and the screen of the device is off.

57. Other Samsung products similarly infringe one or more claims of the '129 Patent. Such other products include Samsung's Galaxy Note and Galaxy Tab devices.

58. Samsung also induces infringement by end users of Samsung's mobile devices of at least claim 1 of the '129 Patent. Samsung promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. Further, the infringing power saving functionalities are included on Samsung's mobile devices by default. Examples of Samsung's promotional materials appear on the company's website, such as <http://www.samsung.com/us/explore/galaxy-s7-features-and-specs/>.

59. Samsung has had notice of the '129 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Samsung's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Samsung's specific intent to induce others to infringe the '129 Patent. Further, despite having knowledge of its infringement, Samsung continues to intentionally and willfully infringe at least claim 1 of the '129 patent.

COUNT 7

(Infringement of U.S. Pat. No. 9,553,816)

60. Samsung infringes at least claim 9 of the '816 Patent under at least 35 U.S.C. §271(a) and (b). Samsung makes, uses, sells, offers to sell, or imports into the United States products, such as the Galaxy S7, that meet every limitation of at least claim 9.

61. Claim 9 of the '816 Patent is directed to a mobile device with memory and processor configured for: (1) determining a time a first application on the mobile device was last accessed; (2) determining whether the first application is inactive based on the time the application was last accessed, wherein when the application is determined to be inactive the processor can (3) adjust behavior of the mobile device for traffic from the first application by blocking outgoing network traffic from the first application for a first period of time and allowing outgoing network traffic from the first application after the first period of time for a second period of time while allowing outgoing network traffic for a second application; (4) receive a message directed towards the first application during the first period of time, wherein the message is received from an intermediary server that provides connectivity between an application server for the first application and the mobile device; (5) allow outgoing network traffic from the application when the mobile device is plugged into an external power source; and (6) wherein a frequency of communications directed toward the first application is altered by the adjusting behavior of the mobile device for traffic from the first application.

62. In addition to the features described in previous paragraphs, Samsung's products, such as the Galaxy S7, have a memory and a processor, and manage traffic from individual mobile applications. For example, when individual applications have not been accessed by the user after some time, those applications will be placed in a standby mode. The mobile applications

frequently communicate with the network even when such applications are not actively in use by the user. Such background communications drain battery and network resources. To conserve these resources, the Galaxy S7 determines when an application was last accessed by a user, and determines that an application is inactive based on that last access. When an application is determined to be inactive, or idle, the Galaxy S7 will block any jobs or syncs that the application may attempt to perform. For example, by blocking synchronization messages, the frequency of communications directed to the first application is altered. But to ensure that the information for the mobile application does not become stale, the Galaxy S7 will allow the inactive mobile application to temporarily access the network. During this temporary access time, the Galaxy S7 will allow multiple applications to communicate with the network. Doing so allows the Galaxy S7 to use battery and network resources efficiently. Further, to avoid missing important messages directed to the inactive application, the Galaxy S7 is still able to receive messages for the inactive application even when the application is in standby mode. For example, the Galaxy S7 will receive a message directed toward the inactive application through GCM or FCM, which are intermediary servers that can connect application servers to the mobile device. The Galaxy S7 will allow the inactive mobile application to exit standby mode when the mobile device is plugged into an external power source, such as the wall outlet.

63. Other Samsung products similarly infringe one or more claims of the '816 Patent. Such other products include Samsung's Galaxy Note and Galaxy Tab devices.

64. Samsung also induces infringement by end users of its mobile devices of at least claim 9 of the '816 Patent. Samsung promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. The infringing application standby feature is enabled on Samsung's

mobile devices by default. Examples of Samsung's promotional materials appear on the company's website, such as <http://www.samsung.com/us/explore/galaxy-s7-features-and-specs/>.

65. Samsung has had notice of the '816 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Samsung's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Samsung's specific intent to induce others to infringe the '816 Patent. Further, despite having knowledge of its infringement, Samsung continues to intentionally and willfully infringe at least claim 9 of the '816 patent.

PRAYER FOR RELIEF

SEVEN requests that judgment be entered in its favor and against Samsung as follows:

- a. Entering judgment declaring that Samsung has infringed one or more claims of the Patents-in-Suit in violation of 35 U.S.C. §271;
- b. Ordering that SEVEN be awarded damages in an amount no less than a reasonable royalty for each asserted patent arising out of Samsung's infringement of the Patents-in-Suit, together with any other monetary amounts recoverable by SEVEN, such as treble damages;
- c. Declaring that Samsung's infringement has been willful;
- d. Declaring this an exceptional case under 35 U.S.C. §285 and awarding SEVEN its attorneys' fees; and
- e. Awarding SEVEN such other costs and further relief as the Court deems just and proper.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, SEVEN demands a trial by jury on all issues so triable.

Dated: May 17, 2017

Respectfully submitted by:

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**ATTORNEYS FOR PLAINTIFF SEVEN
NETWORKS LLC.**

**UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

SEVEN NETWORKS, LLC,

Plaintiff,

v.

GOOGLE INC.,

Defendant.

Civil Action No. 2:17-cv-442

PATENT CASE

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff SEVEN Networks, LLC (“SEVEN”) files this Complaint for Patent Infringement of several United States patents as identified below (collectively, the “Patents-in-Suit”) and alleges as follows:

PARTIES

1. SEVEN is a company formed under the laws of Delaware with its principal place of business at 2660 East End Boulevard South, Marshall, Texas 75672.
2. Google Inc. is a corporation formed under the laws of Delaware with its principle place of business at 1600 Amphitheatre Parkway, Mountain View, California 94043 and may be served through its agent Corporation Service Company, 211 East 7th Street, Suite 620, Austin, Texas 78701-3218.

JURISDICTION AND VENUE

3. SEVEN brings this civil action for patent infringement under the Patent Laws of the United States, 35 U.S.C. § 1 *et. seq.*, including 35 U.S.C. §§ 271, 281-285. This Court has subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338.
4. Google transacts and conducts business in this District and the State of Texas, and

is subject to the personal jurisdiction of this Court. For example, Google maintains offices in Dallas and Austin. Additionally, Google promotes and sells its products, such as its Pixel smartphone, through its online store (<https://store.google.com/>) that is available and accessed by residents of this District and the State of Texas. Google had previously sold other products such as the Nexus smartphone through this website as well.

5. SEVEN's causes of action arise, at least in part, from Google's business contacts and activities in this District and elsewhere within the State of Texas. Google has committed acts of infringement in this District and within Texas by making, using, selling, offering for sale, or importing into the United States products that infringe one or more claims of the Patents-in-Suit as set forth herein. Further, Google encourages others within this District to use, sell, offer to sell, or import certain mobile products that infringe one or more claims of the Patents-in-Suit. For example, Google advertises its mobile devices, such as its smart phones, through its websites: https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem; <https://www.google.com/nexus/>. Further, Google provides its customers with information regarding the various functionalities offered by its products and software, such as its various battery saving modes: <https://support.google.com/pixelphone/answer/6187458>, <https://developer.android.com/training/monitoring-device-state/index.html>.

6. Google actively solicits customers within this District and the State of Texas and has sold many of its infringing mobile products to residents of Texas and this District.

7. Venue is proper in this District under 28 U.S.C. §§ 1391 and 1400.

THE PATENTS-IN-SUIT

8. On December 13, 2011, the United States Patent and Trademark Office ("USPTO") duly and legally issued U.S. Patent No. 8,078,158, titled "Provisioning Applications

for a Mobile Device,” to inventor Ari Backholm (“the ’158 Patent”). A true and correct copy of the ’158 Patent is attached as Exhibit A to this Complaint.

9. On August 19, 2014, the USPTO duly and legally issued U.S. Patent No. 8,811,952, titled “Mobile Device Power Management in Data Synchronization Over a Mobile Network With or Without a Trigger Notification,” to inventors Trevor Fiatal *et al.* (“the ’952 Patent”). A true and correct copy of the ’952 Patent is attached as Exhibit B to this Complaint.

10. On January 26, 2016, the USPTO duly and legally issued U.S. Patent No. 9,247,019, titled “Mobile Application Traffic Optimization,” to inventors Michael Luna *et al.* (“the ’019 Patent”). A true and correct copy of the ’019 Patent is attached as Exhibit C to this Complaint.

11. On April 26, 2016, the USPTO duly and legally issued U.S. Patent No. 9,325,600, titled “Offloading Application Traffic to a Shared Communication Channel for Signal Optimization in a Wireless Network for Traffic Utilizing Proprietary and Non-Proprietary Protocols,” to inventors Rami Alisawi *et al.* (“the ’600 Patent”). A true and correct copy of the ’600 Patent is attached as Exhibit D to this Complaint.

12. On May 24, 2016, the USPTO duly and legally issued U.S. Patent No. 9,351,254, titled “Method for Power Saving in Mobile Devices by Optimizing Wakelocks,” to inventors Ari Backholm *et al.* (“the ’254 Patent”). A true and correct copy of the ’254 Patent is attached as Exhibit E to this Complaint.

13. On July 5, 2016, the USPTO duly and legally issued U.S. Patent No. 9,386,433 titled “System and Method for Providing a Network Service in a Distributed Fashion to a Mobile Device,” to inventor Trevor Fiatal (“the ’433 Patent”). A true and correct copy of the ’433 Patent is attached as Exhibit F to this Complaint.

14. On September 13, 2016, the USPTO duly and legally issued U.S. Patent No. 9,444,812, titled “Systems and Methods for Authenticating a Service,” to inventors Jay Sutaria *et al.* (“the ’812 Patent”). A true and correct copy of the ’812 Patent is attached as Exhibit G to this Complaint.

15. On December 6, 2016, the USPTO duly and legally issued U.S. Patent No. 9,516,127, titled “Intelligent Alarm Manipulator and Resource Tracker,” to inventors Abhay Nirantar *et al.* (“the ’127 Patent”). A true and correct copy of the ’127 Patent is attached as Exhibit H to this Complaint.

16. On December 6, 2016, the USPTO duly and legally issued U.S. Patent No. 9,516,129, titled “Mobile Application Traffic Optimization,” to inventors Michael Luna *et al.* (“the ’129 Patent”). A true and correct copy of the ’129 Patent is attached as Exhibit I to this Complaint.

17. On January 24, 2017, the USPTO duly and legally issued U.S. Patent No. 9,553,816, titled “Optimizing Mobile Network Traffic Coordination Across Multiple Applications Running on a Mobile Device,” to inventors Michael Luna *et al.* (“the ’816 Patent”). A true and correct copy of the ’816 Patent is attached as Exhibit J to this Complaint.

18. SEVEN owns the entire right and title to each of the Patents-in-Suit.

BACKGROUND

19. For nearly two decades, SEVEN has researched and developed innovative software solutions for mobile devices directed to enhancing the user experience. For example, SEVEN has developed software technologies to manage mobile traffic in order to conserve network and battery resources. Software applications on mobile devices frequently signal the network for a variety of reasons. Much of the signaling from these software applications is

unnecessary and simply consumes precious bandwidth and remaining battery power. This needless mobile traffic negatively impacts the user's overall experience by creating service overloads and outages and draining the limited battery of the mobile device. SEVEN's technologies are able to optimize mobile traffic to conserve both network and battery resources. Other technologies developed by SEVEN include systems to provide device-ready mobile applications and authentication mechanisms to protect user information.

20. SEVEN has been recognized in the industry for its innovative technologies and products. For example, at the Mobile World Congress in 2011, the GSMA awarded SEVEN with its Global Mobile Award for Best Technology Breakthrough. Further, in 2013 SEVEN won the Mobile Merit Award for its outstanding innovations in the mobile industry and was identified as one of fifty mobile companies to watch by AlwaysOn. SEVEN was also awarded the Best Free Android App in 2013 by TechRadar. Additionally, and among other industry recognition, Telecoms.com identified SEVEN in its Best LTE Traffic Management Product Short List.

21. Battery life for mobile devices is a major driver for consumer purchasing decisions. In a 2014 poll by Ubergizmo of 50,000 participants, battery life was rated as a smartphone's most important feature. Google recognizes the importance of battery life in mobile devices and has incorporated software technologies for conserving battery life in its devices and operating systems. As described below, Google's mobile devices and operating systems also implement software to manage mobile traffic to save battery power. These devices and systems infringe SEVEN's innovative and patented technology.

22. Additionally, Google has implemented other technologies that infringe SEVEN's patents. For example, Google's systems provide users with device-ready mobile applications, rather than require users to configure such applications to meet the specific requirements of their

respective devices. With the number of devices having different sizes, speed, and software, streamlining the process of providing the appropriate mobile applications to a particular device is important to enhancing user experience. Further, Google also provides 2-Step Verification mechanisms to protect a user's personal information. As described below, Google infringes SEVEN's patents which are directed to these enhancements to the user's experience.

COUNT 1

(Infringement of U.S. Pat. No. 8,078,158)

23. Google infringes at least claim 10 of the '158 Patent under at least 35 U.S.C. §271(a). The Google practices every step of at least claim 10 in the United States.

24. Claim 10 of the '158 Patent is directed to a method for provisioning an application for a mobile device comprising: (1) responsive to detecting selection of the application made at the mobile device, identifying, from the mobile device, user information and the mobile device information of the mobile device; (2) wherein, the user information and mobile device information concerning the mobile device are provided to a network server for use in determining requirements for operating the application on the mobile device; (3) wherein, the user information is stored in device memory or on a SIM card of the mobile device; (4) provisioning the application on the mobile device based on the requirements for operating the application; and (5) wherein, the requirements for operating the application, specifies components to be installed to provision the application on the mobile device.

25. Google, through its Google Play Store, practices each step of at least claim 10 of the '158 Patent. Google Play is a service that allows users to download mobile applications to their mobile devices. After registering an account, Google Play identifies certain user authentication information and the mobile device's identification number when a user selects an

application for downloading. For example, the user's login information and mobile device information is stored in the mobile device's memory and provided to Google Play during communications with the store. Google Play utilizes the user and device information to determine requirements for operating the software application on the user's mobile device. From the user and device information, Google Play is able to determine certain specifications of the mobile device, such as screen size or the version of operating system used by the mobile device, among other user and device characteristics that may impact the operation of the application on the mobile device. For example, Google Play applies "Filters" to determine only those applications that are compatible with the mobile device. Google Play uses the requirements for operating the software application to identify the appropriate software components for the mobile devices to be installed to provision the application. Google Play provisions the application on the mobile device based on the determined requirements.

26. Google has had notice of the '158 Patent and its infringement since at least as early as the filing of this lawsuit. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 10 of the '158 patent.

COUNT 2

(Infringement of U.S. Pat. No. 8,811,952)

27. Google infringes at least claim 26 of the '952 Patent under 35 U.S.C. §271(a), (b), and (c). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Pixel, that meet every limitation of at least claim 26.

28. Claim 26 of the '952 Patent is directed to a mobile device with a processor configured to: (1) exchange transactions with a client operating in a network through a connection provided through a server coupled to the client; (2) automatically send

synchronization requests from the mobile device to the network on a periodic basis, wherein the periodicity of the synchronization requests occur at a frequency determined according to the remaining battery power on the mobile device; and (3) exchange synchronization communications with the client over the connection after sending each synchronization request.

29. Google's products infringe at least claim 26 of the '952 Patent. For example, the Pixel includes a Qualcomm Snapdragon processor and can operate in a variety of networks such as 3G, LTE, and WiFi. The Pixel also includes a touch screen user interface. Further, the Pixel includes internal memory for storing the device's operating system and other software applications. The Pixel utilizes the Android software operating system, such as Android 7.1 (also known as Nougat). The Pixel also includes a number of mobile applications that communicate with the applications' respective servers through the various networks to exchange communications between the mobile application and the application server. One example is the Gmail application. The mobile device, through its communications interface including the devices network antenna, exchanges communications between the Gmail application and the email servers using mobile or WiFi networks. To keep its information up-to-date and fresh, the Gmail application synchronizes with its respective email servers periodically, such as every 5, 10, 15, 30, or 60 minutes. In synchronizing, the Gmail application will request that the Pixel communicate—through the communications interface and network—a synchronization message to the email server. The email server will respond to the synchronization message from the Gmail application and return information back to the Pixel to be routed to the Gmail application. But through one or more of the devices' power saving modes, when the remaining battery power on the Pixel falls below some threshold amount, such as 15% or 5% remaining battery power, Gmail will stop synchronizing periodically.

30. Other Google products, including at least the Google Nexus 5X or 6P (referred to herein as “Nexus”) and the Pixel C, similarly infringe one or more claims of the ’952 Patent.

31. Google also induces infringement by end users of its mobile devices of at least claim 26 of the ’952 Patent. Google promotes and advertises the use of its mobile products, such as the Pixel, and especially the products’ capability to preserve remaining battery and avoid battery drain from background applications. Examples of Google’s promotional materials appear on the company’s website, such as <https://support.google.com/nexus/answer/6187458?hl=en>, and <https://support.google.com/pixelphone/answer/6187458?hl=en>. Further, Google actively encourages other mobile device providers such as Samsung to incorporate the infringing battery saving functionality in Samsung’s mobile devices that Samsung makes, uses, sells, or offers for sale within the United States, or imports into the United States.

32. Google contributes to the infringement by others of at least claim 26 of the ’952 Patent by offering to sell or selling within the United States its Android operating system. For example, in exchange for consideration, Google provides its Android operating system to companies, such as Samsung, that use the operating system on mobile products. The Android operating system includes the infringing power saving functionality to reduce battery drain from background applications. Google advertises these features on the company’s website, such as: <https://www.android.com/versions/lollipop-5-0/>, <https://www.android.com/versions/marshmallow-6-0/>, and <https://www.android.com/versions/nougat-7-0/>. Samsung, for example, includes the infringing functionality along with the Android operating systems on its mobile devices, such as the Galaxy S7, that are made, used, sold, or offered for sale within the United States, or imported into the United States. Similar to the Pixel, the Galaxy S7 manages traffic through the power saving

functionality of the Android operating system to conserve battery power and infringes at least claim 26 of the '952 Patent. The power saving functionality in the Android operating system is designed to save power by managing mobile traffic and has no substantial noninfringing uses.

33. Google has had notice of the '952 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to indirectly infringe the '952 Patent. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 26 of the '952 patent.

COUNT 3

(Infringement of U.S. Pat. No. 9,247,019)

34. Google infringes at least claim 1 of the '019 Patent under at least 35 U.S.C. §271(a), (b) and (c). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Pixel, that meet every limitation of at least claim 1.

35. Claim 1 of the '019 Patent is directed to a mobile device configured to: (1) delay content requests made by multiple applications; (2) align content request using observed activity of a user of the mobile device that includes a time since a last key press and mobile device properties; (3) poll in accordance with the aligned content requests to satisfy content requests of at least some of the multiple mobile applications; (4) monitor the time since a last key press, and, when the time exceeds a predetermined time period, locally adjust the mobile device by suppressing the aligned content requests at the mobile device for a first suppression period, and after expiration of the first suppression period, transmit any aligned content requests; and (5) suppress subsequent content request at the mobile device for a second suppression period, where

the second suppression period is longer than the first suppression period.

36. In addition to the features described in previous paragraphs, Google's products, such as its Pixel, are capable of delaying and aligning content requests from mobile applications based on observed user activity. The Pixel includes a Qualcomm Snapdragon processor and can operate in a variety of networks such as 3G, LTE, and WiFi. The Pixel also includes a touch screen user interface. Further, the Pixel includes internal memory for storing the device's operating system and other software applications. The Pixel includes the Android 7.1 (also known as Nougat) operating system, and applications such as Gmail. The Pixel has multiple applications that send content requests. Additionally, the Pixel includes a Doze mode that reduces traffic from the mobile device when the device is not actively being used by its user, thereby reducing battery drain by mobile applications that are constantly signaling to their respective application servers. The Pixel is able to monitor the time since a button was last pressed, for example through the auto-off timer and last user activity time to determine when to turn the screen of the device off. Further, when the Pixel device detects that the screen is off and the device is unplugged for a certain amount of time, it enters Doze mode. Once in Doze mode, the Pixel is able to conserve battery resources by restricting the mobile applications' access to the network, and defers the mobile applications' requests until a maintenance window. As the requests from the mobile applications are deferred, the requests are also aligned such that when a maintenance window occurs the multiple mobile applications are allowed to communicate using the network. Following the maintenance window, the mobile applications' are once again restricted from accessing the network. When the device is stationary for a certain amount of time the system applies the restrictions to network access for longer and longer periods between maintenance windows. The figure below illustrates the reduction in traffic from the Pixel

provided by Doze.

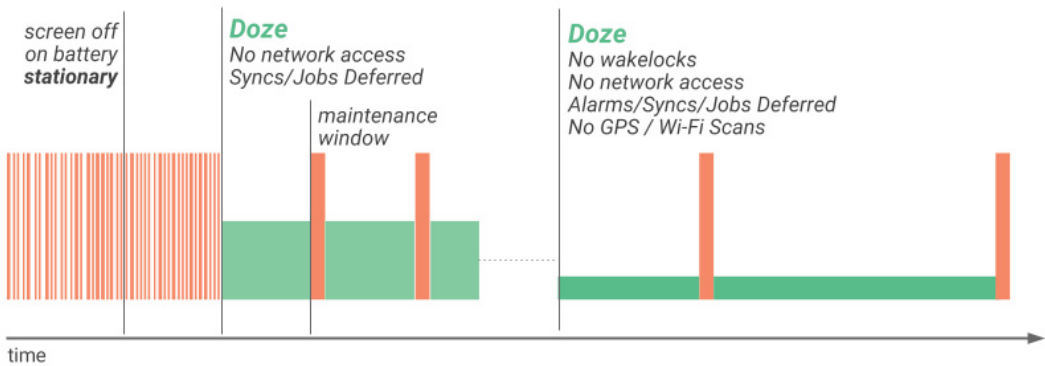


Figure 2. Illustration of how Doze applies a second level of system activity restrictions after the device is stationary for a certain time.

37. Other Google products similarly infringe one or more claims of the '019 Patent. Such other products include Google's Nexus and Pixel C devices.

38. Google also induces infringement by end users of its mobile devices of at least claim 1 of the '019 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery and avoid battery drain from background applications. The Doze feature is enabled in Google's devices by default. Examples of Google's promotional materials appear on the company's website, such as

<https://www.android.com/versions/marshmallow-6-0/>,

<https://www.android.com/versions/nougat-7-0/>, and

https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem. Further, Google actively encourages other mobile device providers such as Samsung to incorporate the above-described infringing functionality in Samsung's mobile devices that Samsung makes, uses, sells, or offers for sale within the United States, or imports into the United States.

39. Additionally, Google contributes to the infringement by others of at least claim 1 of the '019 Patent by offering to sell or selling within the United States its Android operating system. For example, in exchange for consideration, Google provides its Android operating

system to companies such as Samsung that use the operating system on their products such as the Galaxy S7. The Android operating system includes infringing power saving functionalities such as Doze to avoid battery drain from background applications, especially when the device is not being actively used by the user. Google advertises these features on the company's website, such as: <https://www.android.com/versions/marshmallow-6-0/> and <https://www.android.com/versions/nougat-7-0/>. Samsung includes the above-described infringing functionality along with the Android operating systems on its mobile devices, such as the Galaxy S7, that are made, used, sold, or offered for sale within the United States, or imported into the United States. Similar to the Pixel, the Galaxy S7 utilizes Doze to manage mobile traffic from the device, thereby conserving battery power, and infringes at least claim 1 of the '019 Patent. The Doze functionality in the Android operating system is enabled by default, designed to conserve battery resources by managing mobile traffic, and has no substantial noninfringing uses.

40. Google has had notice of the '019 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to indirectly infringe the '019 Patent. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 1 of the '019 patent.

COUNT 4

(Infringement of U.S. Pat. No. 9,325,600)

41. Google infringes at least claim 7 of the '600 Patent under at least 35 U.S.C. §271(a), (b) and (c). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Pixel, that meet every limitation of at least claim 7.

42. Claim 7 of the '600 Patent is directed to memory and code to implement a processor controlled system for reducing network traffic, comprising: (1) blocking a first channel such that network signaling and battery consumption are reduced, wherein the first channel includes a non-common channel; (2) offloading application traffic of an application onto a second channel, wherein the second channel includes a common channel; (3) monitoring the application traffic of the application over the second channel; (4) unblocking the first channel based on the monitored application traffic over the second channel so that the application can perform an action; and (5) re-blocking the first channel after the action has been completed.

43. In addition to features described in previous paragraphs, Google's products, such as its Pixel, have memory and code to utilize common and non-common channels for application traffic and are capable of reducing network traffic by blocking the non-common channel to prevent applications from constantly communicating in the background using the non-common channels and draining battery resources. For example, mobile applications communicate with their respective servers by establishing application-specific connections to transmit information between the application on the mobile device and the application server in the network. Software applications on the mobile device are not able to utilize the application-specific connections established by other applications. To conserve battery by reducing network traffic, the Pixel is able to block the application-specific connections. For example, the Pixel includes the Doze functionality that restricts a mobile application's access to the network. But to avoid users missing critical information, the Pixel allows applications to receive messages using a common channel when the application-specific channels are blocked. For example, when in Doze, the Pixel offloads application traffic onto the Google Cloud Messaging ("GCM") channel or Firebase Cloud Messaging channel ("FCM"), which is shared among all applications on the

Pixel. Through GCM/FCM high priority messages directed to the applications may be delivered even when the application-specific channels are blocked. The Pixel monitors traffic over the GCM/FCM channel such that when messages are received for particular applications, the system unblocks the application-specific channels so that the application may respond to the received message. After the application has performed the task associated with the received message, the application-specific channel is once again blocked to conserve battery and reduce network traffic.

44. Other Google products similarly infringe one or more claims of the '600 Patent. Such other products include Google's Nexus and Pixel C devices.

45. Google also induces infringement by end users of its mobile products of at least claim 7 of the '600 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. The Doze functionality is enabled on Google's devices by default. Examples of Google's promotional materials appear on the company's website, such as <https://www.android.com/versions/marshmallow-6-0/>, <https://www.android.com/versions/nougat-7-0/>, and https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem. Further, Google actively encourages other mobile device providers such as Samsung to incorporate the above-described infringing functionality in Samsung's mobile devices that Samsung makes, uses, sells, or offers for sale within the United States, or imports into the United States.

46. Google contributes to the infringement by others of at least claim 7 of the '600 Patent by offering to sell or selling within the United States its Android operating system. For example, in exchange for consideration, Google provides its Android operating system to

companies such as Samsung that use the operating system on their products such as the Galaxy S7. The Android operating system includes power saving functionalities such as Doze to avoid against battery drain from background applications, especially when the device is not being actively used by the user. Google advertises these features on the company's website, such as: <https://www.android.com/versions/marshmallow-6-0/> and <https://www.android.com/versions/nougat-7-0/>. Samsung includes the above-described infringing functionality along with Android operating systems on its mobile devices, such as the Galaxy S7, that Samsung makes, uses, sells, or offers to sell within the United States, or imports into the United States. Similar to the Pixel, the Galaxy S7 utilizes Doze to manage mobile traffic application specific channels but also is capable of offloading certain traffic to common channels and infringes at least claim 7 of the '600 Patent. The Doze functionality in the Android operating system is enabled by default, is designed to manage mobile traffic and has no substantial noninfringing uses.

47. Google has had notice of the '600 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to indirectly infringe at least claim 7 of the '600 Patent. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 7 of the '600 patent.

COUNT 5

(Infringement of U.S. Pat. No. 9,351,254)

48. Google infringes at least claim 1 of the '254 Patent under at least 35 U.S.C.

§271(a), (b), and (c). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Pixel, that meet every limitation of at least claim 1.

49. Claim 1 of the '254 Patent is directed to a mobile device comprising a screen, memory, and processor configured to: (1) acquire a system wakelock in response to an application wakelock acquisition request; (2) detect an activity state of the mobile device based on a status of the display screen; (3) enter a power optimization state based on the detected activity state; (4) release the system wakelock based upon entering the power optimization state when the application that made the acquisition request is not critical to user experience, wherein the application is non-critical when the application is not identified on a whitelist; and (5) acquire the system wakelock in response to a subsequent wakelock request from another application on the mobile device when the another application making the subsequent wakelock acquisition request is identified on the whitelist.

50. As described in previous paragraphs, Google's products, such as its Pixel, include a screen, memory, and processor. The devices also manage the use of the central processing unit ("CPU") by software applications on the mobile device. For example, even when the Pixel is sleeping or otherwise in a power saving state, certain software applications are able to use the CPU. Software applications are able to use the CPU by utilizing a wakelock or other request to the system that allows the CPU to stay on for certain purposes. For example, the alarm application or the phone functionality needs to work even when the device is sleeping or in a power saving state and accordingly requires the CPU to process certain tasks. These applications would issue a request to the system to use the CPU even when the device is sleeping. The system then issues a wakelock that allows the CPU to continue working when it would otherwise be put to sleep, such as when the user is not actively using the mobile device. Some applications

take advantage of these wakelock requests and use the CPU for actions that are not critical to the user experience, such as background communications when the device is not actively being used. Such misbehaving applications unnecessarily drain battery resources. The Pixel manages which applications have permission to use the CPU and battery resources when the device is sleeping or in a power saving state. As an example, the Pixel may acquire a system wakelock when an application, such as the alarm application, issues a wakelock request. The Pixel also detects whether the device is in use by, among other things, monitoring the screen, whether the device is unplugged, and whether the device has been stationary for a certain amount of time. The Pixel enters Doze mode based on one or more of these monitored activities. In Doze mode, the Pixel will release the system wakelock when the application that made the wakelock request does not have permission to use CPU resources during this power saving state. The Pixel can issue another system wakelock in response to another wakelock request when the application making the request is identified as having the necessary permissions to utilize the CPU.

51. Other Google products similarly infringe one or more claims of the '254 Patent. Such other products include Google's Nexus and Pixel C devices.

52. Google also induces infringement by end customers of its mobile products of at least claim 1 of the '254 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery and avoid battery drain from background applications. The Doze functionality is enabled on Google's mobile devices by default. Examples of Google's promotional materials appear on the company's website, such as <https://www.android.com/versions/marshmallow-6-0/>, <https://www.android.com/versions/nougat-7-0/>, and https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem. Further, Google actively

encourages other mobile device providers such as Samsung to incorporate the above-described infringing functionality in Samsung's mobile devices that Samsung makes, uses, sells, or offers for sale within the United States, or imports into the United States.

53. Google contributes to the infringement by others of at least claim 1 of the '254 Patent by offering to sell or selling within the United States its Android operating system. For example, in exchange for consideration, Google provides its Android operating system to companies such as Samsung that use the operating system on their products such as the Galaxy S7. The Android operating system includes power saving functionalities such as Doze to avoid against battery drain from background applications, especially when the device is not being actively used by the user. Google advertises these features on the company's website, such as: <https://www.android.com/versions/marshmallow-6-0/> and <https://www.android.com/versions/nougat-7-0/>. Samsung includes the above-described infringing functionality along with the Android operating systems on its mobile devices, such as the Galaxy S7, that Samsung makes, uses, sells, or offers to sell within the United States, or imports into the United States. Similar to the Pixel, the Galaxy S7 utilizes Doze to manage mobile applications when the device is not actively being used such as through the management of wakelock requests, and infringes at least claim 1 of the '254 Patent. The Doze functionality in the Android operating system is enabled by default, designed to manage mobile traffic when the device is not actively being used and has no substantial noninfringing uses.

54. Google has had notice of the '254 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to

indirectly infringe at least claim 1 of the '254 Patent. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 1 of the '254 patent.

COUNT 6

(Infringement of U.S. Pat. No. 9,386,433)

55. Google infringes at least claim 1 of the '433 Patent under at least 35 U.S.C. §271(a). Google makes, uses, sells, offers to sell, or imports into the United States the Google Play store which meets every limitation of at least claim 1.

56. Claim 1 of the '433 Patent is directed to a system for providing mobile network services comprising: (1) a first server communicatively coupled to a mobile device over a mobile network, the first server configured to: receive a unique authentication token from the mobile device over the mobile network; and provide a service to the mobile device via the mobile network, wherein the service is associated with the unique authentication token and branded by an entity other than an entity that operates the mobile network; (2) wherein the service is provided by: the first server transmitting a list of available digital content stored at the first server to the mobile device, and transferring a representation of at least a portion of the digital content to the mobile device in response to a user selection; (3) a second server configured to monitor usage of the mobile network by the mobile device, the usage related to the service associated with the unique authentication token and provided to the mobile device by the first server; and (4) wherein the second server is controlled by an entity other than an entity that operates the mobile network.

57. Google Play provides Google's customers with digital content services including providing software applications, music, and other digital media. Google Play consists of a number

of servers. When using the Google Play app, one or more of these servers are communicatively coupled to a user's mobile device over a mobile network such as 3G, LTE, or WiFi. The server is configured to receive a unique authentication token from a user's mobile device and provide a service to the mobile device associated with that authentication token. For example, Google's users register an account with Google Play. Google uses the login information, or a login authorization number unique to the user, when providing the digital content services to the user. Google's Play service is available using a number of different mobile networks, including those operated by Sprint, AT&T, Verizon, or other Internet Service Providers. An example of Google's service includes its Entertainment section where users can download certain movies and other video content. After logging in, Google Play provides the user with a list of available digital content that is stored on the Google Play servers. The servers are also capable of providing a portion of the digital content to the mobile device after a user makes a particular selection. For example, clips of available movies are provided to the users. Certain Google Play servers are configured to monitor the use of the mobile network by the mobile device when using the Google Play service. As a few examples, in addition to monitoring active downloads, Google Play also maintains a history of the user's searches, downloads, and purchases made through Google Play. The servers for monitoring network usage are part of Google Play and not controlled by entities that operate the mobile network, such as the ISPs.

58. Google has had notice of the '433 Patent and its infringement since at least as early as the filing of this lawsuit. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 1 of the '433 patent.

COUNT 7

(Infringement of U.S. Pat. No. 9,444,812)

59. Google infringes at least claim 1 of the '812 Patent under at least 35 U.S.C. §271(a). Google's practices every step of at least claim 1 in the United States.

60. Claim 1 of the '812 Patent is directed to a method for authenticating a user to provide a service, the method comprising: (1) storing information associated with a user of a first device on a server, wherein the stored information includes a phone number associated with a second device of the user and is stored during an event; (2) wherein additional information is needed to authenticate the first device to provide a service; (3) querying the user for additional information to authenticate the first device to provide the service; (4) wherein the additional information has a length of time in which the additional information is valid; (5) querying the user to verify the phone number associated with the second device provided during the event before sending one or more communications associated with providing the service to the first device; and (6) sending, based on the stored information and the additional information, the one or more communications to provide the service.

61. Google practices each step of at least claim 1 of the '812 Patent through its registration and 2-Step Verification process. For example, when a user registers an account with Google, Google stores information associated with the user. In its servers, Google stores the user's name, username, password, mobile device number, among other information. Users are able to use the stored username and password to access certain Google services, such as Gmail, Google Play, or other services, from their computers or mobile devices. Additionally, Google provides 2-Step Verification, which further safeguards users. During the 2-Step Verification, in addition to the username and password entered using, for example the user's computer or tablet,

Google requests an additional code from the user to access Google services. This code is sent by Google to the user's smartphone using the phone number associated with the user's account. This code is valid for only a certain amount of time. Additionally, Google queries the user to verify the phone number associated with the second device provided during the initial registration when turning on 2-Step Verification. This query is done before Google sends communications associated with the service the user is attempting to access using 2-Step Verification. Once Google has verified the user through the 2-Step process, Google will send communications associated with the service to the user.

62. Google has had notice of the '812 Patent and its infringement since at least as early as the filing of this lawsuit. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 1 of the '812 patent.

COUNT 8

(Infringement of U.S. Pat. No. 9,516,127)

63. Google infringes at least claim 10 of the '127 Patent under at least 35 U.S.C. §271(a), (b) and (c). Google makes, uses, sells, offers to sell, or imports into the United States products, such as its Pixel, that meet every limitation of at least claim 10.

64. Claim 10 of the '127 Patent is directed to a mobile device with a memory and processor configured to: (1) enter a power save mode based on a backlight status and sensed motion of a mobile device; (2) delay a timing of one or more triggers for multiple applications on the mobile device, wherein the timing is delayed such that the triggers execute within a window of time and wherein at least a subset of the triggers are associated with wakelocks; and (3) exit the power save mode when the backlight of the mobile device turns on or motion of the mobile device is sensed.

65. In addition to features described in previous paragraphs, Google's products, such as the Pixel, enter a power save mode such as Doze, when the device is unplugged and stationary for a period of time, with the screen off. Doze conserves remaining battery resources of the Pixel by, among other things, deferring jobs and alarms for the software applications on the device. The jobs and alarms from the software applications on the Pixel are delayed until a maintenance window. During the maintenance window, the Pixel will run all the delayed jobs and alarms for the software applications. At least a subset of the jobs and alarms are associated with wakelocks, such as those scheduled through AlarmManager. The Pixel will exit Doze mode when, among other things, the device's screen is turned on.

66. Other Google products similarly infringe one or more claims of the '127 Patent. Such other products include Google's Nexus and Pixel C devices.

67. Google also induces infringement by end users of its mobile products of at least claim 10 of the '127 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. The Doze functionality is enabled on Google's mobile devices by default. Examples of Google's promotional materials appear on the company's website, such as <https://www.android.com/versions/marshmallow-6-0/>, <https://www.android.com/versions/nougat-7-0/>, and https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem. Further, Google actively encourages other mobile device providers such as Samsung to incorporate the above-described infringing functionality in Samsung's mobile devices that Samsung makes, uses, sells, or offers for sale within the United States, or imports into the United States.

68. Additionally, Google contributes to the infringement by others of at least claim 10

of the '127 Patent by offering to sell or selling within the United States its Android operating system. For example, in exchange for consideration, Google provides its Android operating system to companies such as Samsung that use the operating system on their products such as the Galaxy S7. The Android operating system includes power saving functionalities such as Doze to avoid against battery drain from background applications, especially when the device is not being actively used by the user. Google advertises these features on the company's website, such as: <https://www.android.com/versions/marshmallow-6-0/> and <https://www.android.com/versions/nougat-7-0/>. Samsung includes the above-described infringing functionality along with the Android operating systems on its mobile devices such as the Galaxy S7 that Samsung makes, uses, sells, or offers to sell within the United States, or imports into the United States. Similar to the Pixel, the Galaxy S7 utilizes Doze to manage mobile traffic from the device, thereby conserving battery power, and infringes at least claim 10 of the '127 Patent. The Doze functionality in the Android operating system is enabled by default, designed to manage mobile traffic and has no substantial noninfringing uses.

69. Google has had notice of the '127 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to induce others to infringe at least claim 10 of the '127 Patent. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 10 of the '127 patent.

COUNT 9

(Infringement of U.S. Pat. No. 9,516,129)

70. Google infringes at least claim 1 of the '129 Patent at least under 35 U.S.C. §271(a), (b), and (c). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Pixel, that meet every limitation of at least claim 1.

71. Claim 1 of the '129 Patent is directed to a mobile device comprising a radio, user interface, memory, and processor configured to: (1) enter a first power management mode, wherein to enter the first power management mode is based on input from a user; (2) while in the first power management mode, block transmission of outgoing application data requests for at least one application executing in a background of the mobile device and allow transmission of outgoing application data requests for at least one application executing in a foreground of the mobile device; (3) enter a second power management mode, wherein entry into the second power management mode is based on a detected activity status, wherein the detected activity status is based on a backlight status of the mobile device being off; and (4) while in the second power management mode, block transmission of outgoing application data requests for at least one application executing in background of the mobile device for a predetermined period of time.

72. As described in previous paragraphs, Google's products, such as the Pixel, have a user interface, memory, and processor. The Pixel also has a radio or antenna to allow for communications to the network. Additionally, these products have several power management modes which help to extend battery life and conserve network resources. For example, the Pixel has a Battery Saver mode that blocks communications from applications running in the background of the device. A user may enter the Battery Saver mode by input through the touch screen interface of the device. This Battery Saver mode, however, will allow certain applications

to continue accessing the network when the application is being used directly by the user. Additionally, Google's products include other power saving modes, such as Doze. When in Doze, the Pixel stops outgoing messages from applications until a maintenance window when those applications may temporarily communicate with the network. The Pixel will enter Doze when the device is unplugged and the screen of the device is off.

73. Other Google products similarly infringe one or more claims of the '129 Patent. Such other products include Google's Nexus and Pixel C devices.

74. Google also induces infringement by end users of its mobile products of at least claim 1 of the '129 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. The Doze and battery saver functionalities are included in Google's mobile devices by default. Examples of Google's promotional materials appear on the company's website, such as <https://www.android.com/versions/marshmallow-6-0/>, <https://www.android.com/versions/nougat-7-0/>, and https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem. Further, Google actively encourages other mobile device providers such as Samsung to incorporate the above-described infringing functionality in Samsung's mobile devices that Samsung makes, uses, sells, or offers for sale within the United States, or imports into the United States.

75. Additionally, Google contributes to the infringement by others of at least claim 1 of the '129 Patent by offering to sell or selling within the United States its Android operating system. For example, in exchange for consideration, Google provides its Android operating system to companies, such as Samsung that use the operating system on their products such as the Galaxy S7. The Android operating system includes power saving functionalities to avoid

against battery drain from background applications. Google advertises these features on the company's website, such as: <https://www.android.com/versions/marshmallow-6-0/> and <https://www.android.com/versions/nougat-7-0/>. Samsung includes the above-described infringing functionality with the Android operating systems on its mobile devices, such as the Galaxy S7, that Samsung makes, uses, sells, or offers to sell within the United States, or imports into the United States. Similar to the Pixel, the Galaxy S7 manages traffic through the power saving functionalities of the Android operating system, such as Battery saver and Doze, to conserve battery power, and infringes at least claim 1 of the '129 Patent. The power saving functionalities in the Android operating system are included by default, designed to manage mobile traffic and have no substantial noninfringing use.

76. Google has had notice of the '129 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to induce others to infringe at least claim 1 the '129 Patent. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 1 of the '129 patent.

COUNT 10

(Infringement of U.S. Pat. No. 9,553,816)

77. Google infringes at least claim 9 of the '816 Patent under at least 35 U.S.C. §271(a), (b), and (c). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Pixel, that meet every limitation of at least claim 9.

78. Claim 9 of the '816 Patent is directed to a mobile device with memory and

processor configured for: (1) determining a time a first application on the mobile device was last accessed; (2) determining whether the first application is inactive based on the time the application was last accessed, wherein when the application is determined to be inactive the processor can (3) adjust behavior of the mobile device for traffic from the first application by blocking outgoing network traffic from the first application for a first period of time and allowing outgoing network traffic from the first application after the first period of time for a second period of time while allowing outgoing network traffic for a second application; (4) receive a message directed towards the first application during the first period of time, wherein the message is received from an intermediary server that provides connectivity between an application server for the first application and the mobile device; (5) allow outgoing network traffic from the application when the mobile device is plugged into an external power source; and (6) wherein a frequency of communications directed toward the first application is altered by the adjusting behavior of the mobile device for traffic from the first application.

79. In addition to the features described in previous paragraphs, Google's products, such as the Pixel, manage traffic from individual mobile applications. For example, when individual applications have not been accessed by the user after a period of time, those applications will be placed in a standby mode. Mobile applications communicate with the network even when such applications are not actively in use by the user. Such background communications drain battery and network resources. To conserve these resources, the Pixel determines when an application was last accessed by a user, and determines that an application is inactive based on that last access. When an application is determined to be inactive, or idle, the Pixel will block any jobs or syncs that the application may attempt to perform. For example, by blocking synchronization messages, the frequency of communications directed to the first

application is altered. But to ensure that the information for the mobile application does not become stale, the Pixel will allow the inactive mobile application to temporarily access the network. During this temporary access time, the Pixel will allow multiple applications to communicate with the network. Doing so allows the Pixel to use battery and network resources efficiently. Further, to avoid missing important messages directed to the inactive application, the Pixel is still able to receive messages for the inactive application even when the application is in standby mode. For example, the Pixel will receive a message directed toward the inactive application through GCM or FCM, which are intermediary servers that can connect application servers to the mobile device. The Pixel will allow the inactive mobile application to exit standby mode when the mobile device is plugged into an external power source, such as the wall outlet.

80. Other Google products similarly infringe one or more claims of the '816 Patent. Such other products include Google's Nexus and Pixel C devices.

81. Google also induces infringement by end users of its mobile products of at least claim 9 of the '816 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. The application standby functionality is enabled on Google's mobile devices by default. Examples of Google's promotional materials appear on the company's website, such as <https://www.android.com/versions/marshmallow-6-0/>, <https://www.android.com/versions/nougat-7-0/>, and https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem. Further, Google actively encourages other mobile device providers such as Samsung to incorporate the above-described infringing functionality in Samsung's mobile devices that Samsung makes, uses, sells, or offers for sale within the United States, or imports into the United States.

82. Additionally, Google contributes to the infringement by others of at least claim 9 of the '816 Patent by offering to sell or selling within the United States its Android operating system. For example, in exchange for consideration, Google provides its Android operating system to companies, such as Samsung that use the operating system on their products such as the Galaxy S7. The Android operating system includes power saving functionalities to avoid against battery drain from background applications, such as App Standby. Google advertises these features on the company's website, such as:

<https://www.android.com/versions/marshmallow-6-0/> and

<https://www.android.com/versions/nougat-7-0/>. Samsung includes the above-described infringing functionality with the Android operating systems on its mobile devices, including the Galaxy S7, that Samsung makes, uses, sells, or offers to sell within the United States, or imports into the United States. Similar to the Pixel, the Galaxy S7 manages traffic for inactive applications through the power saving functionalities of the Android operating system to conserve battery power, and infringes at least claim 9 of the '816 Patent. This power saving functionality in the Android operating system is enabled by default, is designed to manage mobile traffic and have no substantial noninfringing use.

83. Google has had notice of the '816 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to induce others to infringe at least claim 9 of the '816 Patent. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 9 of the '816 patent.

PRAYER FOR RELIEF

SEVEN requests that judgment be entered in its favor and against Google as follows:

- a. Entering judgment declaring that Google has infringed one or more claims of the Patents-in-Suit in violation of 35 U.S.C. §271;
- b. Ordering that SEVEN be awarded damages in an amount no less than a reasonable royalty for each asserted patent arising out of Google's infringement of the Patents-in-Suit, together with any other monetary amounts recoverable by SEVEN, such as treble damages;
- c. Declaring that Google's infringement has been willful;
- d. Declaring this an exceptional case under 35 U.S.C. §285 and awarding SEVEN its attorneys' fees; and
- e. Awarding SEVEN such other costs and further relief as the Court deems just and proper.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, SEVEN demands a trial by jury on all issues so triable.

Dated: May 17, 2017

Respectfully submitted by:

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**ATTORNEYS FOR PLAINTIFF SEVEN
NETWORKS LLC.**

**UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

SEVEN NETWORKS, LLC,

Plaintiff,

v.

GOOGLE INC.,

Defendant.

Civil Action No. 2:17-cv-442

PATENT CASE

JURY TRIAL DEMANDED

FIRST AMENDED COMPLAINT

Plaintiff SEVEN Networks, LLC (SEVEN) files this Complaint for Patent Infringement of several United States patents as identified below (collectively, the Patents-in-Suit) and alleges as follows:

PARTIES

1. SEVEN is a company formed under the laws of Delaware with its principal place of business at 2660 East End Boulevard South, Marshall, Texas 75672.

2. Google Inc. is a corporation formed under the laws of Delaware with its principal place of business at 1600 Amphitheatre Parkway, Mountain View, California 94043 and may be served through its agent Corporation Service Company, 211 East 7th Street, Suite 620, Austin, Texas 78701-3218.

3. Google is a self-described “information company” that is in the business of storing, organizing, and distributing data. Its stated mission is to “organize the world’s information and make it universally accessible and useful.” Its stated vision is “to provide access to the world’s information in one click.”

JURISDICTION

4. SEVEN brings this civil action for patent infringement under the Patent Laws of the United States, 35 U.S.C. § 1 *et. seq.*, including 35 U.S.C. §§ 271, 281–85. This Court has

subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338.

5. Google transacts and conducts business in this District and the State of Texas, and is subject to the personal jurisdiction of this Court. For example, Google maintains offices in Dallas and Austin. Additionally, Google promotes and sells its products, such as its Pixel smartphone, through its online store (<https://store.google.com/>), which is available to and accessed by residents of this District and the State of Texas. Google has also sold other products, such as the Nexus smartphone, through this website.

6. SEVEN's causes of action arise, at least in part, from Google's business contacts and activities in this District and elsewhere within the State of Texas. Google has committed acts of infringement in this District and within Texas by making, using, selling, offering for sale, or importing into the United States products that infringe one or more claims of the Patents-in-Suit. Further, Google encourages others within this District to use, sell, offer to sell, or import certain mobile products that infringe one or more claims of the Patents-in-Suit. For example, Google advertises its mobile devices, such as its smart phones, through its websites:

https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem;

<https://www.google.com/nexus/>. Further, Google provides its customers with information regarding the various functionalities offered by its products and software, such as its various battery saving modes:

[https://support.google.com/pixelphone/answer/6187458,](https://support.google.com/pixelphone/answer/6187458)

[https://developer.android.com/training/monitoring-device-state/index.html.](https://developer.android.com/training/monitoring-device-state/index.html)

7. Google actively solicits customers within this District and the State of Texas and has sold many of its infringing mobile products to residents of Texas and this District.

VENUE

8. Venue is proper under 28 U.S.C. § 1400(b) because Google has committed acts of

infringement in this District and has a regular and established place of business in this District.

9. On information and belief, Google provides Software-as-a-Service applications, including email and server space, to universities in this District.

10. On information and belief, Google is in a data-sharing partnership with the Genesis Group in Tyler, Texas, that provides a tool for optimizing response times for emergency responders in this District.

11. On information and belief, Google does business in this District through software owned and controlled by Google that has been downloaded onto devices of residents of this District.

12. On information and belief, Google does business in this District through Google Play stores that: (i) are located in the form of applications—which are owned and controlled by Google—on computers and mobile devices of residents of this District; and (ii) are served by servers located in this District that are owned and controlled by Google. On information and belief, residents of this District have purchased content from the Google Play stores on their computers and mobile devices, including, for example, software applications, video, and music. Under the Google Play Terms of Service, Google retains control over both the Google Play store applications and content purchased from the Google Play stores. Google, for example, has the right and ability to prevent a person from accessing the Google Store through his or her Google Play store application and to remove content purchased from the Google Store from purchasers' computers and mobile devices.

13. On information and belief, Google tracks the location of individuals in this District using software owned and controlled by Google that is located on computers and mobile devices located in this District.

14. On information and belief, Google provides telephone services to individuals in this District through Google Voice and Google Hangouts, including through software owned and controlled by Google that is located on computers and mobile devices located in this District.

15. On information and belief, Google provides on-demand video-rental services to residents of this District through its Google Play Movies and YouTube services, including through software owned and controlled by Google that is located on servers, computers, and mobile devices located in this District.

16. On information and belief, Google provides services to businesses and schools in this District, including email services, word-processing software, electronic file-storage services, and video-conferencing services, including through software owned and controlled by Google that is located on computers and mobile devices located in this District.

17. On information and belief, Google provides advertising services in this district, including through servers owned and controlled by Google that are located in this District, and including through software owned and controlled by Google that is located on computers and mobile devices located in this District.

18. On information and belief, Google operates its Waze business in this District by monitoring and reporting traffic conditions in this District, including through software owned and controlled by Google that is located on computers and mobile devices located in this District.

19. On information and belief, Google operates its Google Maps services in this District by monitoring and reporting traffic conditions in this District, including through software owned and controlled by Google that is located on computers and mobile devices located in this District.

20. On information and belief, Google is operating its Project Fi cellular network in

this District through base stations located in this District as well as through software owned and controlled by Google that is located on mobile devices located in this District.

21. On information and belief, from January 2017 through December 2017, Google is collecting and will continue to collect images and data in this District for its Google Maps Street View business and services, including by having its automobiles and equipment present in this District to capture images and data for use by Google in conducting its business. Further, Google recruits local residents to review, edit, update, and add data and local photos for its Google Maps business.

22. On information and belief, Google operates its Google Express business and services in this District by making deliveries of products from stores in this District, in vehicles stored and operated in this District, to residents of this District.

23. On information and belief, Google does business in this District through software owned and controlled by Google that is present in Google Home devices located in the homes and offices of residents of this District.

24. On information and belief, Google owns and controls servers, including servers located in this District, that provide Google services, including infringing services, to users, including users in this District.

25. On information and belief, Google owns and controls software that is located in this District, including software in Google Home devices, Google Play software on mobile devices, and software in servers, that Google uses to conduct and transact business in this District with residents of this District.

26. On information and belief, Google uses the hardware and software located in this District that it owns and controls to conduct and transact business in this District with residents

of this District.

27. On information and belief, Google uses hardware and software it owns and controls in this District for content caching, video streaming, and reverse proxy.

28. On information and belief, Google uses hardware and software it owns and controls in this District to provide data and advertising to residents of this District.

29. On information and belief, Google interacts in a targeted way with existing and potential customers, consumers, users, and entities within this District, including but not limited to through localized customer support, ongoing contractual relationships with internet service providers, and targeted marketing efforts.

30. On information and belief, Google has employees who live and conduct business for Google in this District.

31. On information and belief, Google derives benefits, including but not limited to sales revenues, from its presence in this District as set forth in Paragraphs 9–30, above.

THE PATENTS-IN-SUIT

32. On December 13, 2011, the United States Patent and Trademark Office (USPTO) duly and legally issued U.S. Patent No. 8,078,158, titled “Provisioning Applications for a Mobile Device,” to inventor Ari Backholm (the ’158 Patent). A true and correct copy of the ’158 Patent is attached as Exhibit A to this First Amended Complaint.

33. On August 19, 2014, the USPTO duly and legally issued U.S. Patent No. 8,811,952, titled “Mobile Device Power Management in Data Synchronization Over a Mobile Network With or Without a Trigger Notification,” to inventors Trevor Fiatal *et al.* (the ’952 Patent). A true and correct copy of the ’952 Patent is attached as Exhibit B to this First Amended Complaint.

34. On January 26, 2016, the USPTO duly and legally issued U.S. Patent No. 9,247,019, titled “Mobile Application Traffic Optimization,” to inventors Michael Luna *et al.* (the ’019 Patent). A true and correct copy of the ’019 Patent is attached as Exhibit C to this First Amended Complaint.

35. On April 26, 2016, the USPTO duly and legally issued U.S. Patent No. 9,325,600, titled “Offloading Application Traffic to a Shared Communication Channel for Signal Optimization in a Wireless Network for Traffic Utilizing Proprietary and Non-Proprietary Protocols,” to inventors Rami Alisawi *et al.* (the ’600 Patent). A true and correct copy of the ’600 Patent is attached as Exhibit D to this First Amended Complaint.

36. On May 24, 2016, the USPTO duly and legally issued U.S. Patent No. 9,351,254, titled “Method for Power Saving in Mobile Devices by Optimizing Wakelocks,” to inventors Ari Backholm *et al.* (the ’254 Patent). A true and correct copy of the ’254 Patent is attached as Exhibit E to this First Amended Complaint.

37. On July 5, 2016, the USPTO duly and legally issued U.S. Patent No. 9,386,433 titled “System and Method for Providing a Network Service in a Distributed Fashion to a Mobile Device,” to inventor Trevor Fiatal (the ’433 Patent). A true and correct copy of the ’433 Patent is attached as Exhibit F to this First Amended Complaint.

38. On September 13, 2016, the USPTO duly and legally issued U.S. Patent No. 9,444,812, titled “Systems and Methods for Authenticating a Service,” to inventors Jay Sutaria *et al.* (the ’812 Patent). A true and correct copy of the ’812 Patent is attached as Exhibit G to this First Amended Complaint.

39. On December 6, 2016, the USPTO duly and legally issued U.S. Patent No. 9,516,127, titled “Intelligent Alarm Manipulator and Resource Tracker,” to inventors Abhay

Nirantar *et al.* (the '127 Patent). A true and correct copy of the '127 Patent is attached as Exhibit H to this First Amended Complaint.

40. On December 6, 2016, the USPTO duly and legally issued U.S. Patent No. 9,516,129, titled "Mobile Application Traffic Optimization," to inventors Michael Luna *et al.* (the '129 Patent). A true and correct copy of the '129 Patent is attached as Exhibit I to this First Amended Complaint.

41. On January 24, 2017, the USPTO duly and legally issued U.S. Patent No. 9,553,816, titled "Optimizing Mobile Network Traffic Coordination Across Multiple Applications Running on a Mobile Device," to inventors Michael Luna *et al.* (the '816 Patent). A true and correct copy of the '816 Patent is attached as Exhibit J to this First Amended Complaint.

42. SEVEN owns the entire right and title to each of the Patents-in-Suit.

BACKGROUND

43. For nearly two decades, SEVEN has researched and developed innovative software solutions for mobile devices directed to enhancing the user experience. For example, SEVEN has developed software technologies to manage mobile traffic to conserve network and battery resources. Software applications on mobile devices frequently signal the network for a variety of reasons. Much of the signaling from these software applications is unnecessary and simply consumes precious bandwidth and remaining battery power. This needless mobile traffic negatively impacts the user's overall experience by creating service overloads and outages and draining the limited battery of the mobile device. SEVEN's technologies are able to optimize mobile traffic to conserve both network and battery resources. Other technologies developed by SEVEN include systems to provide device-ready mobile applications and authentication mechanisms to protect user information.

44. SEVEN has been recognized in the industry for its innovative technologies and products. For example, at the Mobile World Congress in 2011, the GSMA awarded SEVEN with its Global Mobile Award for Best Technology Breakthrough. Further, in 2013 SEVEN won the Mobile Merit Award for its outstanding innovations in the mobile industry and was identified as one of fifty mobile companies to watch by AlwaysOn. SEVEN was also awarded the Best Free Android App in 2013 by TechRadar. Additionally, and among other industry recognition, Telecoms.com identified SEVEN in its Best LTE Traffic Management Product Short List.

45. Battery life for mobile devices is a major driver for consumer purchasing decisions. In a 2014 poll by Ubergizmo of 50,000 participants, battery life was rated as a smartphone's most important feature. Google recognizes the importance of battery life in mobile devices and has incorporated software technologies for conserving battery life in its devices and operating systems. As described below, Google's mobile devices and operating systems also implement software to manage mobile traffic to save battery power. These devices and systems infringe SEVEN's innovative and patented technology.

46. Additionally, Google has implemented other technologies that infringe SEVEN's patents. For example, Google's systems provide users with device-ready mobile applications, rather than require users to configure such applications to meet the specific requirements of their respective devices. With the number of devices having different sizes, speed, and software, streamlining the process of providing the appropriate mobile applications to a particular device is important to enhancing user experience. Further, Google also provides 2-Step Verification mechanisms to protect a user's personal information. As described below, Google infringes SEVEN's patents which are directed to these enhancements to the user's experience.

COUNT 1
(INFRINGEMENT OF U.S. PAT. NO. 8,078,158)

47. Google infringes at least claim 10 of the '158 Patent under at least 35 U.S.C. § 271(a). Google, for example, practices every step of at least claim 10 in the United States, including steps that it practices in this District.

48. Claim 10 of the '158 Patent is directed to a method for provisioning an application for a mobile device comprising: (1) responsive to detecting selection of the application made at the mobile device, identifying, from the mobile device, user information and the mobile device information of the mobile device; (2) wherein, the user information and mobile device information concerning the mobile device are provided to a network server for use in determining requirements for operating the application on the mobile device; (3) wherein, the user information is stored in device memory or on a SIM card of the mobile device; (4) provisioning the application on the mobile device based on the requirements for operating the application; and (5) wherein, the requirements for operating the application, specifies components to be installed to provision the application on the mobile device.

49. Google practices each step of at least claim 10 of the '158 Patent through hardware and software that implement its Google Play Store, some of which is in this District. Google Play is a service that allows users to download mobile applications to their mobile devices. After registering an account, Google Play identifies certain user authentication information and the mobile device's identification number when a user selects an application for downloading. For example, the user's login information and mobile device information is stored in the mobile device's memory and provided to Google Play during communications with the store. Google Play utilizes the user and device information to determine requirements for operating the software application on the user's mobile device. From the user and device information, Google

Play is able to determine certain specifications of the mobile device, such as screen size or the version of operating system used by the mobile device, among other user and device characteristics that may impact the operation of the application on the mobile device. For example, Google Play applies “Filters” to determine only those applications that are compatible with the mobile device. Google Play uses the requirements for operating the software application to identify the appropriate software components for the mobile devices to be installed to provision the application. Google Play provisions the application on the mobile device, for example on a mobile device in this District, based on the determined requirements.

50. Google has had notice of the '158 Patent and its infringement since at least as early as the filing of this lawsuit. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 10 of the '158 patent.

COUNT 2
(INFRINGEMENT OF U.S. PAT. NO. 8,811,952)

51. Google infringes at least claim 26 of the '952 Patent under 35 U.S.C. § 271(a), (b), and (c). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Pixel, that meet every limitation of at least claim 26. At least some of that infringing activity takes place in this District.

52. Claim 26 of the '952 Patent is directed to a mobile device with a processor configured to: (1) exchange transactions with a client operating in a network through a connection provided through a server coupled to the client; (2) automatically send synchronization requests from the mobile device to the network on a periodic basis, wherein the periodicity of the synchronization requests occur at a frequency determined according to the remaining battery power on the mobile device; and (3) exchange synchronization communications with the client over the connection after sending each synchronization request.

53. Google's products infringe at least claim 26 of the '952 Patent. For example, the Pixel includes a Qualcomm Snapdragon processor and can operate in a variety of networks such as 3G, LTE, and WiFi. The Pixel also includes a touchscreen user interface. Further, the Pixel includes internal memory for storing the device's operating system and other software applications. The Pixel utilizes the Android software operating system, such as Android 7.1 (also known as Nougat). The Pixel also includes a number of mobile applications that communicate with the applications' respective servers through the various networks to exchange communications between the mobile application and the application server. One example is the Gmail application. The mobile device, through its communications interface including the device's network antenna, exchanges communications between the Gmail application and the email servers using mobile or WiFi networks. To keep its information up-to-date and fresh, the Gmail application synchronizes with its respective email servers periodically, such as every 5, 10, 15, 30, or 60 minutes. In synchronizing, the Gmail application will request that the Pixel communicate—through the communications interface and network—a synchronization message to the email server. The email server will respond to the synchronization message from the Gmail application and return information back to the Pixel to be routed to the Gmail application. But through one or more of the device's power saving modes, when the remaining battery power on the Pixel falls below some threshold amount, such as 15% or 5% remaining battery power, Gmail will stop synchronizing periodically.

54. Other Google products, including at least the Google Nexus 5X or 6P (collectively, Nexus) and the Pixel C, similarly infringe one or more claims of the '952 Patent.

55. Google also induces infringement by end users, including end users in this District, of its mobile devices of at least claim 26 of the '952 Patent. Google promotes and

advertises the use of its mobile products, such as the Pixel, and especially the products' capability to preserve remaining battery and avoid battery drain from background applications. Examples of Google's promotional materials appear on the company's website, such as <https://support.google.com/nexus/answer/6187458?hl=en>, and <https://support.google.com/pixelphone/answer/6187458?hl=en>. Further, Google actively encourages other mobile device providers such as Samsung to incorporate the infringing battery saving functionality in Samsung's mobile devices that Samsung makes, uses, sells, or offers for sale within the United States, or imports into the United States.

56. Google contributes to the infringement by others, including others in this District, of at least claim 26 of the '952 Patent by offering to sell or selling within the United States its Android operating system. For example, in exchange for consideration, Google provides its Android operating system to companies, such as Samsung, that use the operating system on mobile products. The Android operating system includes the infringing power saving functionality to reduce battery drain from background applications. Google advertises these features on the company's website, such as: <https://www.android.com/versions/lollipop-5-0/>, <https://www.android.com/versions/marshmallow-6-0/>, and <https://www.android.com/versions/nougat-7-0/>. Samsung, for example, includes the infringing functionality along with the Android operating systems on its mobile devices, such as the Galaxy S7, that are made, used, sold, or offered for sale within the United States, or imported into the United States. Similar to the Pixel, the Galaxy S7 manages traffic through the power saving functionality of the Android operating system to conserve battery power and infringes at least claim 26 of the '952 Patent. The power saving functionality in the Android operating system is designed to save power by managing mobile traffic and has no substantial noninfringing uses.

57. Google has had notice of the '952 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to indirectly infringe the '952 Patent. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 26 of the '952 patent.

COUNT 3
(INFRINGEMENT OF U.S. PAT. NO. 9,247,019)

58. Google infringes at least claim 1 of the '019 Patent under at least 35 U.S.C. § 271(a), (b) and (c). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Pixel, that meet every limitation of at least claim 1. At least some of that infringing activity takes place in this District.

59. Claim 1 of the '019 Patent is directed to a mobile device configured to: (1) delay content requests made by multiple applications; (2) align content request using observed activity of a user of the mobile device that includes a time since a last key press and mobile device properties; (3) poll in accordance with the aligned content requests to satisfy content requests of at least some of the multiple mobile applications; (4) monitor the time since a last key press, and, when the time exceeds a predetermined time period, locally adjust the mobile device by suppressing the aligned content requests at the mobile device for a first suppression period, and after expiration of the first suppression period, transmit any aligned content requests; and (5) suppress subsequent content request at the mobile device for a second suppression period, where the second suppression period is longer than the first suppression period.

60. In addition to the features described in previous paragraphs, Google's products, such as its Pixel, are capable of delaying and aligning content requests from mobile applications

based on observed user activity. The Pixel includes a Qualcomm Snapdragon processor and can operate in a variety of networks such as 3G, LTE, and WiFi. The Pixel also includes a touchscreen user interface. Further, the Pixel includes internal memory for storing the device's operating system and other software applications. The Pixel includes the Android 7.1 (also known as Nougat) operating system, and applications such as Gmail. The Pixel has multiple applications that send content requests. Additionally, the Pixel includes a Doze mode that reduces traffic from the mobile device when the device is not actively being used by its user, thereby reducing battery drain by mobile applications that are constantly signaling to their respective application servers. The Pixel is able to monitor the time since a button was last pressed, for example through the auto-off timer and last user activity time to determine when to turn the screen of the device off. Further, when the Pixel device detects that the screen is off and the device is unplugged for a certain amount of time, it enters Doze mode. Once in Doze mode, the Pixel is able to conserve battery resources by restricting the mobile applications' access to the network, and defers the mobile applications' requests until a maintenance window. As the requests from the mobile applications are deferred, the requests are also aligned such that when a maintenance window occurs the multiple mobile applications are allowed to communicate using the network. Following the maintenance window, the mobile applications' are once again restricted from accessing the network. When the device is stationary for a certain amount of time the system applies the restrictions to network access for longer and longer periods between maintenance windows. The figure below illustrates the reduction in traffic from the Pixel provided by Doze.

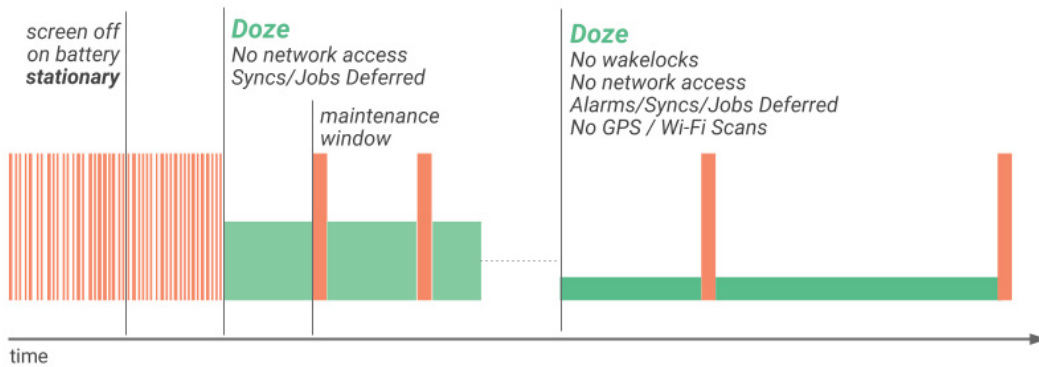


Figure 2. Illustration of how Doze applies a second level of system activity restrictions after the device is stationary for a certain time.

61. Other Google products similarly infringe one or more claims of the '019 Patent.

Such other products include Google's Nexus and Pixel C devices.

62. Google also induces infringement by end users, including end users in this District, of its mobile devices of at least claim 1 of the '019 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery and avoid battery drain from background applications. The Doze feature is enabled in Google's devices by default. Examples of Google's promotional materials appear on the company's website, such as <https://www.android.com/versions/marshmallow-6-0/>, <https://www.android.com/versions/nougat-7-0/>, and https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem. Further, Google actively encourages other mobile device providers such as Samsung to incorporate the above-described infringing functionality in Samsung's mobile devices that Samsung makes, uses, sells, or offers for sale within the United States, or imports into the United States.

63. Additionally, Google contributes to the infringement by others, including others in this District, of at least claim 1 of the '019 Patent by offering to sell or selling within the United States its Android operating system. For example, in exchange for consideration, Google provides its Android operating system to companies such as Samsung that use the operating

system on their products such as the Galaxy S7. The Android operating system includes infringing power saving functionalities such as Doze to avoid battery drain from background applications, especially when the device is not being actively used by the user. Google advertises these features on the company's website, such as:

<https://www.android.com/versions/marshmallow-6-0/> and

<https://www.android.com/versions/nougat-7-0/>. Samsung includes the above-described infringing functionality along with the Android operating systems on its mobile devices, such as the Galaxy S7, that are made, used, sold, or offered for sale within the United States, or imported into the United States. Similar to the Pixel, the Galaxy S7 utilizes Doze to manage mobile traffic from the device, thereby conserving battery power, and infringes at least claim 1 of the '019 Patent. The Doze functionality in the Android operating system is enabled by default, designed to conserve battery resources by managing mobile traffic, and has no substantial noninfringing uses.

64. Google has had notice of the '019 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to indirectly infringe the '019 Patent. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 1 of the '019 patent.

COUNT 4

(INFRINGEMENT OF U.S. PAT. NO. 9,325,600)

65. Google infringes at least claim 7 of the '600 Patent under at least 35 U.S.C. § 271(a), (b) and (c). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Pixel, that meet every limitation of at least claim 7. At least some of that infringing activity takes place in this District.

66. Claim 7 of the '600 Patent is directed to memory and code to implement a processor controlled system for reducing network traffic, comprising: (1) blocking a first channel such that network signaling and battery consumption are reduced, wherein the first channel includes a non-common channel; (2) offloading application traffic of an application onto a second channel, wherein the second channel includes a common channel; (3) monitoring the application traffic of the application over the second channel; (4) unblocking the first channel based on the monitored application traffic over the second channel so that the application can perform an action; and (5) re-blocking the first channel after the action has been completed.

67. In addition to features described in previous paragraphs, Google's products, such as its Pixel, have memory and code to utilize common and non-common channels for application traffic and are capable of reducing network traffic by blocking the non-common channel to prevent applications from constantly communicating in the background using the non-common channels and draining battery resources. For example, mobile applications communicate with their respective servers by establishing application-specific connections to transmit information between the application on the mobile device and the application server in the network. Software applications on the mobile device are not able to utilize the application-specific connections established by other applications. To conserve battery by reducing network traffic, the Pixel is able to block the application-specific connections. For example, the Pixel includes the Doze functionality that restricts a mobile application's access to the network. But to avoid users missing critical information, the Pixel allows applications to receive messages using a common channel when the application-specific channels are blocked. For example, when in Doze, the Pixel offloads application traffic onto the Google Cloud Messaging ("GCM") channel or Firebase Cloud Messaging channel ("FCM"), which is shared among all applications on the

Pixel. Through GCM/FCM high priority messages directed to the applications may be delivered even when the application-specific channels are blocked. The Pixel monitors traffic over the GCM/FCM channel such that when messages are received for particular applications, the system unblocks the application-specific channels so that the application may respond to the received message. After the application has performed the task associated with the received message, the application-specific channel is once again blocked to conserve battery and reduce network traffic.

68. Other Google products similarly infringe one or more claims of the '600 Patent. Such other products include Google's Nexus and Pixel C devices.

69. Google also induces infringement by end users, including end users in this District, of its mobile products of at least claim 7 of the '600 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. The Doze functionality is enabled on Google's devices by default. Examples of Google's promotional materials appear on the company's website, such as <https://www.android.com/versions/marshmallow-6-0/>, <https://www.android.com/versions/nougat-7-0/>, and https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem. Further, Google actively encourages other mobile device providers such as Samsung to incorporate the above-described infringing functionality in Samsung's mobile devices that Samsung makes, uses, sells, or offers for sale within the United States, or imports into the United States.

70. Google contributes to the infringement by others, including others in this District, of at least claim 7 of the '600 Patent by offering to sell or selling within the United States its Android operating system. For example, in exchange for consideration, Google provides its

Android operating system to companies such as Samsung that use the operating system on their products such as the Galaxy S7. The Android operating system includes power saving functionalities such as Doze to avoid against battery drain from background applications, especially when the device is not being actively used by the user. Google advertises these features on the company's website, such as: <https://www.android.com/versions/marshmallow-6-0/> and <https://www.android.com/versions/nougat-7-0/>. Samsung includes the above-described infringing functionality along with Android operating systems on its mobile devices, such as the Galaxy S7, that Samsung makes, uses, sells, or offers to sell within the United States, or imports into the United States. Similar to the Pixel, the Galaxy S7 utilizes Doze to manage mobile traffic application specific channels but also is capable of offloading certain traffic to common channels and infringes at least claim 7 of the '600 Patent. The Doze functionality in the Android operating system is enabled by default, is designed to manage mobile traffic and has no substantial noninfringing uses.

71. Google has had notice of the '600 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to indirectly infringe at least claim 7 of the '600 Patent. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 7 of the '600 patent.

COUNT 5
(INFRINGEMENT OF U.S. PAT. NO. 9,351,254)

72. Google infringes at least claim 1 of the '254 Patent under at least 35 U.S.C. § 271(a), (b), and (c). Google makes, uses, sells, offers to sell, or imports into the United States

products, such as the Pixel, that meet every limitation of at least claim 1. At least some of that infringing activity takes place in this District.

73. Claim 1 of the '254 Patent is directed to a mobile device comprising a screen, memory, and processor configured to: (1) acquire a system wakelock in response to an application wakelock acquisition request; (2) detect an activity state of the mobile device based on a status of the display screen; (3) enter a power optimization state based on the detected activity state; (4) release the system wakelock based upon entering the power optimization state when the application that made the acquisition request is not critical to user experience, wherein the application is non-critical when the application is not identified on a whitelist; and (5) acquire the system wakelock in response to a subsequent wakelock request from another application on the mobile device when the another application making the subsequent wakelock acquisition request is identified on the whitelist.

74. As described in previous paragraphs, Google's products, such as its Pixel, include a screen, memory, and processor. The devices also manage the use of the central processing unit ("CPU") by software applications on the mobile device. For example, even when the Pixel is sleeping or otherwise in a power saving state, certain software applications are able to use the CPU. Software applications are able to use the CPU by utilizing a wakelock or other request to the system that allows the CPU to stay on for certain purposes. For example, the alarm application or the phone functionality needs to work even when the device is sleeping or in a power saving state and accordingly requires the CPU to process certain tasks. These applications would issue a request to the system to use the CPU even when the device is sleeping. The system then issues a wakelock that allows the CPU to continue working when it would otherwise be put to sleep, such as when the user is not actively using the mobile device. Some applications take

advantage of these wakelock requests and use the CPU for actions that are not critical to the user experience, such as background communications when the device is not actively being used. Such misbehaving applications unnecessarily drain battery resources. The Pixel manages which applications have permission to use the CPU and battery resources when the device is sleeping or in a power saving state. As an example, the Pixel may acquire a system wakelock when an application, such as the alarm application, issues a wakelock request. The Pixel also detects whether the device is in use by, among other things, monitoring the screen, whether the device is unplugged, and whether the device has been stationary for a certain amount of time. The Pixel enters Doze mode based on one or more of these monitored activities. In Doze mode, the Pixel will release the system wakelock when the application that made the wakelock request does not have permission to use CPU resources during this power saving state. The Pixel can issue another system wakelock in response to another wakelock request when the application making the request is identified as having the necessary permissions to utilize the CPU.

75. Other Google products similarly infringe one or more claims of the '254 Patent. Such other products include Google's Nexus and Pixel C devices.

76. Google also induces infringement by end customers, including end customers in this District, of its mobile products of at least claim 1 of the '254 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery and avoid battery drain from background applications. The Doze functionality is enabled on Google's mobile devices by default. Examples of Google's promotional materials appear on the company's website, such as <https://www.android.com/versions/marshmallow-6-0/>, <https://www.android.com/versions/nougat-7-0/>, and https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem. Further, Google actively

encourages other mobile device providers such as Samsung to incorporate the above-described infringing functionality in Samsung's mobile devices that Samsung makes, uses, sells, or offers for sale within the United States, or imports into the United States.

77. Google contributes to the infringement by others, including others in this District, of at least claim 1 of the '254 Patent by offering to sell or selling within the United States its Android operating system. For example, in exchange for consideration, Google provides its Android operating system to companies such as Samsung that use the operating system on their products such as the Galaxy S7. The Android operating system includes power saving functionalities such as Doze to avoid against battery drain from background applications, especially when the device is not being actively used by the user. Google advertises these features on the company's website, such as: <https://www.android.com/versions/marshmallow-6-0/> and <https://www.android.com/versions/nougat-7-0/>. Samsung includes the above-described infringing functionality along with the Android operating systems on its mobile devices, such as the Galaxy S7, that Samsung makes, uses, sells, or offers to sell within the United States, or imports into the United States. Similar to the Pixel, the Galaxy S7 utilizes Doze to manage mobile applications when the device is not actively being used such as through the management of wakelock requests, and infringes at least claim 1 of the '254 Patent. The Doze functionality in the Android operating system is enabled by default, designed to manage mobile traffic when the device is not actively being used and has no substantial noninfringing uses.

78. Google has had notice of the '254 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to

indirectly infringe at least claim 1 of the '254 Patent. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 1 of the '254 patent.

COUNT 6
(INFRINGEMENT OF U.S. PAT. NO. 9,386,433)

79. Google infringes at least claims 1 and 16 of the '433 Patent under at least 35 U.S.C. § 271(a) and (b). Google makes, uses, sells, offers to sell, or imports into the United States the Google Play store which meets every limitation of at least claim 1. Further, Google, for example, practices every step of claim 16 in the United States, including steps that it practices in this District.

80. Claim 1 of the '433 Patent is directed to a system for providing mobile network services comprising: (1) a first server communicatively coupled to a mobile device over a mobile network, the first server configured to: receive a unique authentication token from the mobile device over the mobile network and provide a service to the mobile device via the mobile network, wherein the service is associated with the unique authentication token and branded by an entity other than an entity that operates the mobile network; (2) wherein the service is provided by: the first server transmitting a list of available digital content stored at the first server to the mobile device, and transferring a representation of at least a portion of the digital content to the mobile device in response to a user selection; (3) a second server configured to monitor usage of the mobile network by the mobile device, the usage related to the service associated with the unique authentication token and provided to the mobile device by the first server; and (4) wherein the second server is controlled by an entity other than an entity that operates the mobile network.

81. Google Play provides Google's customers with digital content services including

providing software applications, music, and other digital media. Google Play consists of a number of servers. When using the Google Play app, one or more of these servers are communicatively coupled to a user's mobile device over a mobile network such as 3G, LTE, or WiFi. The server is configured to receive a unique authentication token from a user's mobile device and provide a service to the mobile device associated with that authentication token. For example, Google's users register an account with Google Play. Google uses the login information, or a login authorization number unique to the user, when providing the digital content services to the user. Google's Play service is available using a number of different mobile networks, including those operated by Sprint, AT&T, Verizon, or other Internet Service Providers. An example of Google's service includes its Entertainment section where users can download certain movies and other video content. After logging in, Google Play provides the user with a list of available digital content that is stored on the Google Play servers. The servers are also capable of providing a portion of the digital content to the mobile device after a user makes a particular selection. For example, clips of available movies are provided to the users. Certain Google Play servers are configured to monitor the use of the mobile network by the mobile device when using the Google Play service. As a few examples, in addition to monitoring active downloads, Google Play also maintains a history of the user's searches, downloads, and purchases made through Google Play. The servers for monitoring network usage are part of Google Play and not controlled by entities that operate the mobile network, such as the ISPs.

82. Google also induces infringement of claim 1 of the '433 Patent by end users of Google Play, including end users in this District, by encouraging them to put the system into use. Google promotes and advertises the use of the system. Google's promotional materials appear on the company's website at, for example, <https://support.google.com/googleplay/>

?hl=en#topic=3364260.

83. Claim 16 of the '433 Patent is directed to a method of providing a service on a mobile network, comprising: (1) receiving a unique authentication token from a mobile device at a server that is communicatively coupled to the mobile device over the mobile network; (2) providing a service associated with the unique authentication token to the mobile device via the mobile network wherein the service is branded by an entity other than an entity that operates the mobile network; (3) monitoring usage of the mobile network by the mobile device, the usage related to the service associated with the unique authentication token and provided to the mobile device via the mobile network; (4) transmitting a list of available digital content to the mobile device; (5) transferring a representation of at least a portion of the digital content to the mobile device over the mobile network in response to a user selection; wherein (6) the monitoring is controlled by an entity other than an entity that operates the mobile network.

84. Google practices each step of at least claim 16 of the '433 Patent. For example, when an end user registers an account with Google Play, Google receives a unique authentication token from the user's mobile device at a server that is communicatively coupled to the mobile device over a mobile network such as 3G, LTE, or WiFi. Further, Google provides services associated with the unique authentication token to the mobile device via the mobile network wherein the services are branded by an entity other than an entity that operates the mobile network. Google monitors the mobile device's usage of the mobile network related to the services associated with the unique authentication tokens and provided to the mobile devices via the mobile network. Google transmits a list of available digital content to the mobile device. Google transfers a representation of at least a portion of the digital content to the mobile device over the mobile network in response to the user's selections. Google owns and operates servers in this

District that perform at least this step of the method.

85. Google has had notice of the '433 Patent and its infringement since at least as early as the filing of this lawsuit. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 1 of the '433 patent.

COUNT 7
(INFRINGEMENT OF U.S. PAT. NO. 9,444,812)

86. Google infringes at least claims 1 and 10 of the '812 Patent under at least 35 U.S.C. § 271(a) and (b). Google, for example, practices every step of at least claim 1 in the United States, including steps that it practices in this District. Further, Google makes, uses, sells, offers to sell, or imports into the United States servers that meet every limitation of at least claim 10.

87. Claim 1 of the '812 Patent is directed to a method for authenticating a user to provide a service, the method comprising: (1) storing information associated with a user of a first device on a server, wherein the stored information includes a phone number associated with a second device of the user and is stored during an event; (2) wherein additional information is needed to authenticate the first device to provide a service; (3) querying the user for additional information to authenticate the first device to provide the service; (4) wherein the additional information has a length of time in which the additional information is valid; (5) querying the user to verify the phone number associated with the second device provided during the event before sending one or more communications associated with providing the service to the first device; and (6) sending, based on the stored information and the additional information, the one or more communications to provide the service.

88. Google practices each step of at least claim 1 of the '812 Patent through its registration and 2-Step Verification process. For example, when a user registers an account with Google, Google stores information associated with the user. In its servers, Google stores the

user's name, username, password, mobile device number, among other information. Users, including users in this District, are able to use the stored username and password to access certain Google services, such as Gmail, Google Play, or other services, from their computers or mobile devices, for a limited time. Additionally, Google provides 2-Step Verification, which further safeguards users. During the 2-Step Verification, in addition to the username and password entered using, for example the user's computer or tablet, Google requests an additional code from the user to access Google services. This code is sent by Google to the user's smartphone, for example a user's smartphone in this District, using the phone number associated with the user's account. This code is valid for only a certain time. Additionally, Google queries the user, including queries in this District, to verify the phone number associated with the second device provided during the initial registration when turning on 2-Step Verification. This query is done before Google sends communications associated with the service the user is attempting to access using 2-Step Verification. Once Google has verified the user through the 2-Step process, Google will send communications associated with the service to the user, for example to a user in this District.

89. Claim 10 of the '812 Patent is directed to an apparatus for authenticating a device to provide a service. The apparatus comprises: (1) a memory to store information associated with a user of a first device, wherein the stored information includes a phone number associated with a second device of the user and the phone number is stored during an event; (2) a processor to execute instructions stored in memory, wherein the processor is operable to: (a) determine additional information is needed to authenticate the first device to provide a service; (b) query the user for additional information to authenticate the first device to provide the service, wherein the additional information has a length of time in which the additional information is valid; and

(c) query the user to verify the phone number associated with the second device before sending one or more communications associated with providing the service to the first device; and (3) an interface to send, based on the stored information and the additional information, the one or more communications to provide the service.

90. Google owns, operates, and controls servers that have memories that store information associated with a user of a first device, wherein the stored information includes a phone number associated with a second device of the user and the phone number is stored during an event. The servers also have processors that execute instructions stored in memory, wherein the processors are operable to: (a) determine additional information is needed to authenticate the first device to provide a service; (b) query the user for additional information to authenticate the first device to provide the service, wherein the additional information has a length of time in which the additional information is valid; and (c) query the user to verify the phone number associated with the second device before sending one or more communications associated with providing the service to the first device. Further, the servers have interfaces that send, based on the stored information and the additional information, the one or more communications to provide the service.

91. Google also induces infringement of claim 10 of the '812 Patent by users of devices, including such users in this District, by encouraging them to use the claimed apparatus. Google promotes and advertises the use of the apparatus. Google's promotional materials appear on the company's website at, for example, <https://support.google.com/accounts/answer/185839?hl=en>.

92. Google has had notice of the '812 Patent and its infringement since at least as early as the filing of this lawsuit. Despite having knowledge of its infringement, Google continues

to intentionally and willfully infringe at least claim 1 of the '812 patent.

COUNT 8
(INFRINGEMENT OF U.S. PAT. NO. 9,516,127)

93. Google infringes at least claim 10 of the '127 Patent under at least 35 U.S.C. § 271(a), (b) and (c). Google makes, uses, sells, offers to sell, or imports into the United States products, such as its Pixel, that meet every limitation of at least claim 10. At least some of that infringing activity takes place in this District.

94. Claim 10 of the '127 Patent is directed to a mobile device with a memory and processor configured to: (1) enter a power save mode based on a backlight status and sensed motion of a mobile device; (2) delay a timing of one or more triggers for multiple applications on the mobile device, wherein the timing is delayed such that the triggers execute within a window of time and wherein at least a subset of the triggers are associated with wakelocks; and (3) exit the power save mode when the backlight of the mobile device turns on or motion of the mobile device is sensed.

95. In addition to features described in previous paragraphs, Google's products, such as the Pixel, enter a power save mode such as Doze, when the device is unplugged and stationary for a period of time, with the screen off. Doze conserves remaining battery resources of the Pixel by, among other things, deferring jobs and alarms for the software applications on the device. The jobs and alarms from the software applications on the Pixel are delayed until a maintenance window. During the maintenance window, the Pixel will run all the delayed jobs and alarms for the software applications. At least a subset of the jobs and alarms are associated with wakelocks, such as those scheduled through AlarmManager. The Pixel will exit Doze mode when, among other things, the device's screen is turned on.

96. Other Google products similarly infringe one or more claims of the '127 Patent.

Such other products include Google's Nexus and Pixel C devices.

97. Google also induces infringement by end users, including end users in this District, of its mobile products of at least claim 10 of the '127 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. The Doze functionality is enabled on Google's mobile devices by default. Examples of Google's promotional materials appear on the company's website, such as <https://www.android.com/versions/marshmallow-6-0/>, <https://www.android.com/versions/nougat-7-0/>, and https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem. Further, Google actively encourages other mobile device providers such as Samsung to incorporate the above-described infringing functionality in Samsung's mobile devices that Samsung makes, uses, sells, or offers for sale within the United States, or imports into the United States.

98. Additionally, Google contributes to the infringement by others, including others in this District, of at least claim 10 of the '127 Patent by offering to sell or selling within the United States its Android operating system. For example, in exchange for consideration, Google provides its Android operating system to companies such as Samsung that use the operating system on their products such as the Galaxy S7. The Android operating system includes power saving functionalities such as Doze to avoid against battery drain from background applications, especially when the device is not being actively used by the user. Google advertises these features on the company's website, such as: <https://www.android.com/versions/marshmallow-6-0/> and <https://www.android.com/versions/nougat-7-0/>. Samsung includes the above-described infringing functionality along with the Android operating systems on its mobile devices such as the Galaxy S7 that Samsung makes, uses, sells, or offers to sell within the United States, or

imports into the United States. Similar to the Pixel, the Galaxy S7 utilizes Doze to manage mobile traffic from the device, thereby conserving battery power, and infringes at least claim 10 of the '127 Patent. The Doze functionality in the Android operating system is enabled by default, designed to manage mobile traffic and has no substantial noninfringing uses.

99. Google has had notice of the '127 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to induce others to infringe at least claim 10 of the '127 Patent. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 10 of the '127 patent.

COUNT 9
(INFRINGEMENT OF U.S. PAT. NO. 9,516,129)

100. Google infringes at least claim 1 of the '129 Patent at least under 35 U.S.C. § 271(a), (b), and (c). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Pixel, that meet every limitation of at least claim 1. At least some of that infringing activity takes place in this District.

101. Claim 1 of the '129 Patent is directed to a mobile device comprising a radio, user interface, memory, and processor configured to: (1) enter a first power management mode, wherein to enter the first power management mode is based on input from a user; (2) while in the first power management mode, block transmission of outgoing application data requests for at least one application executing in a background of the mobile device and allow transmission of outgoing application data requests for at least one application executing in a foreground of the mobile device; (3) enter a second power management mode, wherein entry into the second power

management mode is based on a detected activity status, wherein the detected activity status is based on a backlight status of the mobile device being off; and (4) while in the second power management mode, block transmission of outgoing application data requests for at least one application executing in background of the mobile device for a predetermined period of time.

102. As described in previous paragraphs, Google's products, such as the Pixel, have a user interface, memory, and processor. The Pixel also has a radio or antenna to allow for communications to the network. Additionally, these products have several power management modes which help to extend battery life and conserve network resources. For example, the Pixel has a Battery Saver mode that blocks communications from applications running in the background of the device. A user may enter the Battery Saver mode by input through the touchscreen interface of the device. This Battery Saver mode, however, will allow certain applications to continue accessing the network when the application is being used directly by the user. Additionally, Google's products include other power saving modes, such as Doze. When in Doze, the Pixel stops outgoing messages from applications until a maintenance window when those applications may temporarily communicate with the network. The Pixel will enter Doze when the device is unplugged and the screen of the device is off.

103. Other Google products similarly infringe one or more claims of the '129 Patent. Such other products include Google's Nexus and Pixel C devices.

104. Google also induces infringement by end users, including end users in this District, of its mobile products of at least claim 1 of the '129 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. The Doze and battery saver functionalities are included in Google's mobile devices by default. Examples of Google's

promotional materials appear on the company's website, such as <https://www.android.com/versions/marshmallow-6-0/>, <https://www.android.com/versions/nougat-7-0/>, and https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem. Further, Google actively encourages other mobile device providers such as Samsung to incorporate the above-described infringing functionality in Samsung's mobile devices that Samsung makes, uses, sells, or offers for sale within the United States, or imports into the United States.

105. Additionally, Google contributes to the infringement by others, including others in this District, of at least claim 1 of the '129 Patent by offering to sell or selling within the United States its Android operating system. For example, in exchange for consideration, Google provides its Android operating system to companies, such as Samsung that use the operating system on their products such as the Galaxy S7. The Android operating system includes power saving functionalities to avoid against battery drain from background applications. Google advertises these features on the company's website, such as:

<https://www.android.com/versions/marshmallow-6-0/> and <https://www.android.com/versions/nougat-7-0/>. Samsung includes the above-described infringing functionality with the Android operating systems on its mobile devices, such as the Galaxy S7, that Samsung makes, uses, sells, or offers to sell within the United States, or imports into the United States. Similar to the Pixel, the Galaxy S7 manages traffic through the power saving functionalities of the Android operating system, such as Battery saver and Doze, to conserve battery power, and infringes at least claim 1 of the '129 Patent. The power saving functionalities in the Android operating system are included by default, designed to manage mobile traffic and have no substantial noninfringing use.

106. Google has had notice of the '129 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to induce others to infringe at least claim 1 the '129 Patent. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 1 of the '129 patent.

COUNT 10
(INFRINGEMENT OF U.S. PAT. NO. 9,553,816)

107. Google infringes at least claim 9 of the '816 Patent under at least 35 U.S.C. § 271(a), (b), and (c). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Pixel, that meet every limitation of at least claim 9. At least some of that infringing activity takes place in this District.

108. Claim 9 of the '816 Patent is directed to a mobile device with memory and processor configured for: (1) determining a time a first application on the mobile device was last accessed; (2) determining whether the first application is inactive based on the time the application was last accessed, wherein when the application is determined to be inactive the processor can (3) adjust behavior of the mobile device for traffic from the first application by blocking outgoing network traffic from the first application for a first period of time and allowing outgoing network traffic from the first application after the first period of time for a second period of time while allowing outgoing network traffic for a second application; (4) receive a message directed towards the first application during the first period of time, wherein the message is received from an intermediary server that provides connectivity between an application server for the first application and the mobile device; (5) allow outgoing network

traffic from the application when the mobile device is plugged into an external power source; and (6) wherein a frequency of communications directed toward the first application is altered by the adjusting behavior of the mobile device for traffic from the first application.

109. In addition to the features described in previous paragraphs, Google's products, such as the Pixel, manage traffic from individual mobile applications. For example, when individual applications have not been accessed by the user after a period of time, those applications will be placed in a standby mode. Mobile applications communicate with the network even when such applications are not actively in use by the user. Such background communications drain battery and network resources. To conserve these resources, the Pixel determines when an application was last accessed by a user, and determines that an application is inactive based on that last access. When an application is determined to be inactive, or idle, the Pixel will block any jobs or syncs that the application may attempt to perform. For example, by blocking synchronization messages, the frequency of communications directed to the first application is altered. But to ensure that the information for the mobile application does not become stale, the Pixel will allow the inactive mobile application to temporarily access the network. During this temporary access time, the Pixel will allow multiple applications to communicate with the network. Doing so allows the Pixel to use battery and network resources efficiently. Further, to avoid missing important messages directed to the inactive application, the Pixel is still able to receive messages for the inactive application even when the application is in standby mode. For example, the Pixel will receive a message directed toward the inactive application through GCM or FCM, which are intermediary servers that can connect application servers to the mobile device. The Pixel will allow the inactive mobile application to exit standby mode when the mobile device is plugged into an external power source, such as the wall outlet.

110. Other Google products similarly infringe one or more claims of the '816 Patent. Such other products include Google's Nexus and Pixel C devices.

111. Google also induces infringement by end users, including end users in this District, of its mobile products of at least claim 9 of the '816 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. The application standby functionality is enabled on Google's mobile devices by default. Examples of Google's promotional materials appear on the company's website, such as <https://www.android.com/versions/marshmallow-6-0/>, <https://www.android.com/versions/nougat-7-0/>, and https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem. Further, Google actively encourages other mobile device providers such as Samsung to incorporate the above-described infringing functionality in Samsung's mobile devices that Samsung makes, uses, sells, or offers for sale within the United States, or imports into the United States.

112. Additionally, Google contributes to the infringement by others, including others in this District, of at least claim 9 of the '816 Patent by offering to sell or selling within the United States its Android operating system. For example, in exchange for consideration, Google provides its Android operating system to companies, such as Samsung that use the operating system on their products such as the Galaxy S7. The Android operating system includes power saving functionalities to avoid against battery drain from background applications, such as App Standby. Google advertises these features on the company's website, such as: <https://www.android.com/versions/marshmallow-6-0/> and <https://www.android.com/versions/nougat-7-0/>. Samsung includes the above-described

infringing functionality with the Android operating systems on its mobile devices, including the Galaxy S7, that Samsung makes, uses, sells, or offers to sell within the United States, or imports into the United States. Similar to the Pixel, the Galaxy S7 manages traffic for inactive applications through the power saving functionalities of the Android operating system to conserve battery power, and infringes at least claim 9 of the '816 Patent. This power saving functionality in the Android operating system is enabled by default, is designed to manage mobile traffic and have no substantial noninfringing use.

113. Google has had notice of the '816 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to induce others to infringe at least claim 9 of the '816 Patent. Despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 9 of the '816 patent.

PRAYER FOR RELIEF

SEVEN requests that judgment be entered in its favor and against Google as follows:

- a. Entering judgment declaring that Google has infringed one or more claims of the Patents-in-Suit in violation of 35 U.S.C. § 271;
- b. Ordering that SEVEN be awarded damages in an amount no less than a reasonable royalty for each asserted patent arising out of Google's infringement of the Patents-in-Suit, together with any other monetary amounts recoverable by SEVEN, such as treble damages;
- c. Declaring that Google's infringement has been willful;
- d. Declaring this an exceptional case under 35 U.S.C. § 285 and awarding SEVEN its attorneys' fees; and
- e. Awarding SEVEN such other costs and further relief as the Court deems just and proper.

DEMAND FOR JURY TRIAL

SEVEN demands a trial by jury on all issues so triable.

Dated: August 22, 2017

Respectfully submitted by:

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NETWORKS LLC.**

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing document was filed electronically on August 23, 2017, in compliance with Local Rule CV-5(a) and has been served on all counsel who have consented to electronic service.

/s/ Max Ciccarelli
Max Ciccarelli

**UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

SEVEN NETWORKS, LLC,

Plaintiff,

v.

SAMSUNG ELECTRONICS AMERICA, INC. and
SAMSUNG ELECTRONICS CO., LTD.,

Defendants.

Civil Action No. 2:18-cv-474

PATENT CASE

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff SEVEN Networks, LLC (“SEVEN”) files this Complaint for Patent Infringement of several United States patents as identified below (collectively, the “Patents-in-Suit”) and alleges as follows:

PARTIES

1. SEVEN is a company formed under the laws of Delaware with its principal place of business at 2660 East End Boulevard South, Marshall, Texas 75672.

2. Defendant Samsung Electronics America, Inc. is a corporation formed under the laws of New York with its principal place of business at 85 Challenger Road, Ridgefield Park, New Jersey 07660, and may be served through its agent C T Corporation System, 1999 Bryan Street, Suite 900, Dallas, Texas 75201-3136.

3. Defendant Samsung Electronics Co., Ltd. is a corporation formed under the laws of Korea with its principal place of business at 129 Samsung-Ro, Yeongtong-Gu, Suwon, Gyeonggi-Do, Korea 443-742.

JURISDICTION AND VENUE

4. SEVEN brings this civil action for patent infringement under the Patent Laws of

the United States, 35 U.S.C. § 1 *et. seq.*, including 35 U.S.C. §§ 271, 281-285. This Court has subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338.

5. Samsung Electronics America, Inc. (“SEA”) and Samsung Electronics Co., Ltd. (“SEC”) (also referred to collectively “Samsung”) transact and conduct business in this District and the State of Texas, and are subject to the personal jurisdiction of this Court. For example, SEA designs, markets, and sells mobile products, such as smartphones and tablets, throughout the United States including the State of Texas and this District. SEA maintains a major corporate office in Richardson, Texas that was formerly the principal place of business for Samsung Telecommunications America LLC (“STA”). STA was previously responsible for the design, marketing and sale of Samsung’s mobile products, but is now merged into SEA. SEC manufactures Samsung’s mobile devices and imports those products into the United States. For example, SEC has imported such mobile products into the United States through Dallas, Texas, and then products are distributed by SEA or SEC to other parts of the country, including to this District.

6. Samsung has admitted that this Court has personal jurisdiction over it in a number of other patent infringement matters, including but not limited to *Image Processing Technologies, LLC v. Samsung Electronics Co., Ltd. et al.*, C.A. No. 2:16-cv-505. Similarly, Samsung did not contest whether person jurisdiction over Samsung properly lies in this District in prior litigation between the Parties. See *SEVEN Networks, LLC v. Samsung Electronics America, Inc. et al.*, Case No. 2:17-cv-441-JRG, Doc. No. 53.

7. SEVEN’s causes of action arise, at least in part, from Samsung’s business contacts and activities in this District and elsewhere within the State of Texas. Samsung has committed acts of infringement in this District and within Texas by making, using, selling,

offering for sale, or importing into the United States products that infringe one or more claims of the Patents-in-Suit as set forth herein. Further, Samsung encourages others within this District to use its mobile products and thereby infringe one or more claims of the Patents-in-Suit. For example, Samsung advertises its mobile devices, such as its smart phones, through its website: <http://www.samsung.com/us/mobile/phones/> (last visited Oct. 4, 2018). Further, Samsung provides its customers with information regarding the use of the devices' features, such as its various battery saving modes: <https://www.samsung.com/us/support/mobile/phones/galaxy-s> (last visited Oct. 4, 2018).

8. Samsung actively solicits customers within this District and the State of Texas, and has sold many of its infringing mobile products to residents of Texas and this District.

9. Venue is proper in this District under 28 U.S.C. §§ 1391 and 1400.

10. In other patent infringement matters involving Samsung's mobile products, such as *Image Processing Technologies*, Samsung has admitted that for patent infringement actions involving its mobile products venue is proper in this District. Similarly, Samsung did not contest whether venue in this District is proper in prior litigation between the Parties.

THE PATENTS-IN-SUIT

11. On November 8, 2016, the United States Patent and Trademark Office ("USPTO") duly and legally issued U.S. Patent No. 9,491,703, titled "Dynamic Adjustment of Keep-Alive Messages for Efficient Battery Usage in a Mobile Network," to inventors Ari Backholm *et al.* ("the '703 Patent"). A true and correct copy of the '703 Patent is attached as Exhibit A to this Complaint.

12. On March 21, 2017, the USPTO duly and legally issued U.S. Patent No. 9,603,056, titled "Mobile Application Traffic Optimization," to inventors Michael Luna *et al.*

(“the ’056 Patent”). A true and correct copy of the ’056 Patent is attached as Exhibit B to this Complaint.

13. On May 23, 2017, the USPTO duly and legally issued U.S. Patent No. 9,661,103, titled “Mobile Device Having Improved Polling Characteristics for Background Applications,” to inventors Michael Luna *et al.* (“the ’103 Patent”). A true and correct copy of the ’103 Patent is attached as Exhibit C to this Complaint.

14. On June 13, 2017, the USPTO duly and legally issued U.S. Patent No. 9,681,387, titled “Mobile Traffic Optimization and Coordination and User Experience Enhancement,” to inventors Michael Luna *et al.* (“the ’387 Patent”). A true and correct copy of the ’387 Patent is attached as Exhibit D to this Complaint.

15. On August 8, 2018, the USPTO duly and legally issued U.S. Patent No. 10,063,486, titled “Offloading Application Traffic to a Shared Communication Channel for Signal Optimization in a Wireless Network for Traffic Utilizing Proprietary and Non-Proprietary Protocols,” to inventors Rami Alisawi *et al.* (“the ’486 Patent”). A true and correct copy of the ’486 Patent is attached as Exhibit E to this Complaint.

16. On October 2, 2018, the USPTO duly and legally issued U.S. Patent No. 10,091,734, titled “Optimizing Mobile Network Traffic Coordination Across Multiple Applications Running on a Mobile Device,” to inventors Michael Luna *et al.* (“the ’734 Patent”). A true and correct copy of the ’734 Patent is attached as Exhibit F to this Complaint.

17. SEVEN owns the entire right and title to each of the Patents-in-Suit.

BACKGROUND

18. For nearly two decades, SEVEN has researched and developed innovative software solutions for mobile devices directed to enhancing the user experience. For example,

SEVEN has developed software technologies to manage mobile traffic in order to conserve network and battery resources. Software applications on mobile devices are frequently signaling the network for a variety of reasons. Much of the signaling from these software applications is unnecessary and simply consumes precious bandwidth and remaining battery power. This needless mobile traffic negatively impacts the user's overall experience by creating service overloads and outages or draining the limited battery of the mobile device. SEVEN's technologies are able to optimize mobile traffic to conserve both network and battery resources.

19. SEVEN has been recognized in the industry for its innovative technologies and products. For example, at the Mobile World Congress in 2011, the GSMA awarded SEVEN with its Global Mobile Award for Best Technology Breakthrough. Further, in 2013 SEVEN won the Mobile Merit Award for its outstanding innovations in the mobile industry and was identified as one of fifty mobile companies to watch by AlwaysOn. SEVEN was also awarded the Best Free Android App in 2013 by TechRadar. Additionally, and among other industry recognition, Telecoms.com identified SEVEN in its Best LTE Traffic Management Product Short List.

20. Samsung is aware of SEVEN's innovative products and technologies for traffic management. As a trusted supplier, SEVEN provided products and services to Samsung for several years. The technologies provided to Samsung included SEVEN's push-enabled mobile email and messaging solutions. Among other things, SEVEN's technologies helped to power Samsung's Premium Social Hub.

21. Samsung recognizes that the design of a smartphone's user experience must reflect what users want most from their devices. In a 2015 poll conducted by Samsung, a majority of those polled identified the battery as the most important feature in a mobile device. Accordingly, advances in technologies to improve battery life are of utmost importance to users.

While both hardware and software advancements are being pursued in the industry, there can be significant consequences for failures in battery hardware. For example, Samsung's Galaxy Note 7 handsets experienced catastrophic failures from defects in the device's battery. These defects in battery hardware led to devices spontaneously catching fire, and ultimately to one of the largest recalls for consumer products. Several sources estimate that the recall of the Note 7 handsets cost Samsung at least \$5.3 billion.

22. Samsung currently utilizes software technologies for conserving battery and extending the battery life of its mobile devices. As described below, Samsung's mobile devices implement software to manage mobile traffic to save battery power. These mobile devices infringe SEVEN's innovative and patented technology.

COUNT 1

(Infringement of U.S. Pat. No. 9,491,703)

23. Samsung infringes at least claim 15 of the '703 Patent under 35 U.S.C. §271(a) and (b). Samsung makes, uses, sells, offers to sell, or imports into the United States products, such as the Samsung Galaxy S9, that meet every limitation of at least claim 15.

24. Claim 15 of the '703 Patent is directed to a mobile device comprising a communications interface and a battery, the mobile terminal in conjunction with the communications interface is configured for: (1) establishing a first connection over a network between a mobile terminal and a remote entity; (2) sending, from the mobile terminal, keep-alive messages at varying intervals via the first connection in response to inactivity in the first connection; wherein the first connection is disconnected after a first period of inactivity; (3) establishing a second connection over the network between the mobile terminal and the remote entity; (4) sending, from the mobile terminal, keep-alive messages at varying intervals via the

second connection in response to inactivity in the second connection; wherein the second connection is disconnected after a second period of inactivity; and (5) sending, from the mobile terminal with a processor keep-alive messages at a safe interval via a subsequent connection over the network in response to inactivity in the subsequent connection, wherein the safe interval is based on the first disconnection and the second disconnection.

25. Samsung's products infringe at least claim 15 of the '703 Patent. For example, the Samsung Galaxy S9 is a mobile terminal that includes a 3000mAh battery and communications interfaces for multiple wireless networks, including Enhanced 4x4 MIMO/CA, LAA, LTE and Wi-Fi 802.11 a/b/g/n/ac interfaces. Samsung's Galaxy S9 includes the Android 8.0 operating system, which includes the Adaptive Heartbeat feature for sending keep-alive messages to Google's Firebase Cloud Messaging (FCM) servers. Samsung's Galaxy S9, and Samsung's other products including the Adaptive Heartbeat feature, are configured to establish a connection to Google's FCM servers and send keep-alive messages at varying intervals when that connection is idle. The interval for sending keep-alive messages varies, with the interval increasing based on the number of successfully returned keep-alive messages. If the first connection is lost after a period of inactivity, Samsung's Galaxy S9 is configured to establish a second connection to Google's FCM servers, and to send keep-alive messages according to the same varying interval scheme. However, if the second connection is lost after a period of inactivity, Samsung's Galaxy S9 is configured to send keep-alive messages over a subsequent connection at a safe interval based on the first and second disconnections.

26. Other Samsung products similarly infringe one or more claims of the '703 Patent. Such other products include Samsung's Galaxy S, Galaxy Note, and Galaxy Tab devices.

27. Samsung also induces infringement by end users of Samsung's mobile devices of

at least claim 15 of the '703 Patent. Samsung promotes and advertises the use of its products, especially the products' capability to preserve remaining battery support applications requiring network connectivity. The Adaptive Heartbeat feature embodying claim 15 as described above contributes to this capability by allowing Samsung Products' to efficiently discover keep-alive intervals that minimize keep-alive signaling while avoiding connection loss and the battery and service loss that results. The infringing power saving functionality is included in Samsung's mobile devices by default. Examples of Samsung's promotional materials appear on the company's website, such as <https://www.samsung.com/us/smartphones/galaxy-s9/specs/> (last visited Oct. 4, 2018).

28. Samsung has had notice of the '703 Patent since at least the filing of this suit. Accordingly, Samsung's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Samsung's specific intent to induce others to infringe the '703 Patent. Further, despite having knowledge of its infringement, Samsung continues to intentionally and willfully infringe at least claim 15 of the '703 patent.

COUNT 2

(Infringement of U.S. Pat. No. 9,603,056)

29. Samsung infringes at least claim 1 of the '056 Patent under at least 35 U.S.C. §271(a) and (b). Samsung makes, uses, sells, offers to sell, or imports into the United States products, such as the Galaxy S9, that meet every limitation of at least claim 1.

30. Claim 1 of the '056 Patent is directed to a mobile device configured to optimize connections made by the mobile device in a wireless network, the mobile device comprising a memory, a radio, and a processor, the mobile device configured to: (1) batch data from a first

application and a second application for transmission to a respective first application server and a second application server over the wireless network, wherein the batched data from the first application and the second application is batched while a backlight of the mobile device is off in response to inactivity of the mobile device; (2) allow a first message from a remote server distinct from the first application server and the second application server to be received while the batched data from the first application and the second application is batched; wherein the first message from the remote server is directed to the first application and contains data from the first application server and is associated with the mobile device and the first application; (3) transmit a second message associated with the first application to the remote server or the first application server in response to receipt of the first message from the remote server; and (4) transmit the batched data to the respective first application server and the second application server over the wireless network while the backlight of the mobile device remains off; wherein the batching of data for the first application and the second application can be enabled or disabled by a user of the mobile device on an application-by-application basis.

31. Samsung's products infringe at least claim 1 of the '056 Patent. For example, Samsung's Galaxy S9 is a mobile device comprising a memory (at least 4 GB of RAM and 64 GB of NAND Flash), a radio (at least an LTE and an 802.11 a/b/g/n/ac radio), and a processor (Qualcomm Snapdragon 845). The Galaxy S9 also includes an AMOLED screen, which includes a backlight. Samsung's Galaxy S9 has Google's Android 8.0 (Oreo) loaded into its memory, and is configured by that operating system and its pre-loaded apps to perform the functions detailed below. For example, Samsung's Galaxy S9 is configured to batch data from applications for transmission to their corresponding application servers over a wireless network through Android's JobScheduler API. JobScheduler collects information about jobs that need to run

across all apps and uses that information to schedule jobs to run at or around the same time, allowing the device to enter and stay in sleep states longer and preserving battery life.¹ Samsung's Galaxy S9 is configured to batch data from applications and transmit that batched data while a backlight of the device is off in response to inactivity of the mobile device: JobScheduler batches and executes jobs regardless of screen or backlight status, subject to other device restrictions (e.g., Doze mode). The Galaxy S9 is also configured to allow a message (a first message) from Google's FCM server (remote server distinct from the first application server and second application server) while data is batched. Messages from Google's FCM server are specifically associated with both the mobile device and a specific application on each device, and contain data from the application's corresponding application server.² The Galaxy S9 is configured to transmit a second message associated with the first application to its corresponding application server in response to the message from the FCM server—for example, the pre-loaded Gmail app on the Samsung Galaxy S9 is configured to send a message to its application server to initiate synchronization in response to receiving an FCM message. Samsung's Galaxy S9 is configured to permit the above-described batching to be enabled or disabled on an application by application basis—the “allow background activity” option permits users to disable background activity for applications, which prevents the batching described above.

32. Other Samsung products similarly infringe one or more claims of the '056 Patent. Such other products include Samsung's Galaxy S, Galaxy Note, and Galaxy Tab devices.

33. Samsung also induces infringement by end users of its mobile devices of at least claim 1 of the '056 Patent. Samsung promotes and advertises the use of its products, especially the products' capability to preserve remaining battery and avoid battery drain from background

¹ <https://developer.android.com/topic/performance/scheduling> (Last visited Oct. 4, 2018)

² <https://firebase.google.com/docs/cloud-messaging/> (Last visited Oct. 4, 2018)

applications. Further, the JobScheduler functionality is enabled on Samsung's mobile devices by default. Examples of Samsung's promotional materials appear on the company's website, such as <https://www.samsung.com/us/smartphones/galaxy-s9/specs/> (last visited Oct. 4, 2018).

34. Samsung has had notice of the '056 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Samsung's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Samsung's specific intent to induce others to infringe the '056 Patent. Further, despite having knowledge of its infringement, Samsung continues to intentionally and willfully infringe at least claim 1 of the '056 patent.

COUNT 3

(Infringement of U.S. Pat. No. 9,661,103)

35. Samsung infringes at least claim 1 of the '103 Patent under at least 35 U.S.C. §271(a) and (b). Samsung makes, uses, sells, offers to sell, or imports into the United States products, such as the Galaxy S9, that meet every limitation of at least claim 1.

36. Claim 1 of the '103 Patent is directed to a mobile device configured for aligning data transfer from the mobile device to optimize connections made by the mobile device in a wireless network, the mobile device comprising a memory; a backlight; a radio; and a processor; the mobile device configured to: while the backlight of the mobile device is on, (1) detect that a first application is executing in the background of the mobile device; (2) detect that a second application is executing in the foreground of the mobile device; (3) batch a first set of data for the first application; (4) transmit the first set of batched data for the first application; and (5) transmit data for the second application at a time when the second application requests transmission; and, while the backlight of the mobile device is off in response to inactivity of the

mobile device: (1) detect that the second application is executing in the background of the mobile device; (2) batch a second set of data for the first application and the second application; and (3) transmit the second set of batched data for the first application and the second application, wherein the transmission of the second set of batched data occurs after at least a predetermined period of time.

37. Samsung's products infringe at least claim 1 of the '103 Patent. For example, Samsung's Galaxy S9 is a mobile device comprising a memory (at least 4 GB of RAM and 64 GB of NAND Flash), a radio (at least an LTE and an 802.11 a/b/g/n/ac radio), and a processor (Qualcomm Snapdragon 845). The Galaxy S9 also includes an AMOLED screen, which includes a backlight. Samsung's Galaxy S9 has Google's Android 8.0 (Oreo) loaded into its memory, and is configured by that operating system and its pre-loaded apps to perform the functions detailed below. Samsung's Galaxy S9 is configured to, while the backlight of the device is on, detect whether an application is executing in a background or a foreground of the device—Android gives different privileges to background and foreground applications, and must therefore be able to detect whether an application is executing in the foreground or the background. Samsung's Galaxy S9 is configured to, while the backlight of the device is on, batch data from applications, including background applications. JobScheduler, part of the Android operating system on Samsung's Galaxy S9, is configured to batch data received from applications for transmission over the wireless network, and may be invoked by a foreground or background application. While the backlight is on, Samsung's Galaxy S9 is configured to allow an application executing in the foreground to transmit data when the application requests transmission. Samsung's Galaxy S9 is further configured, while its backlight is off due to inactivity, to detect that applications are executing in the background and batch data for those applications. Samsung's Galaxy S9 is

configured to enter Doze mode while the device's backlight is off in response to inactivity of the mobile device. While in Doze mode, Samsung's Galaxy S9 is configured to detect applications executing in the background, to batch data from those applications, and to transmit that batched data after at least a predetermined period of time. Doze mode on Samsung's Galaxy S9 is configured to batch data from applications during predetermined doze periods and then transmit that batched data during maintenance windows between the doze periods, as illustrated below:



Figure 1. Doze provides a recurring maintenance window for apps to use the network and handle pending activities.

<https://developer.android.com/training/monitoring-device-state/doze-standby> (last visited Oct. 4, 2018).

38. Other Samsung products similarly infringe one or more claims of the '103 Patent. Such other products include Samsung's Galaxy S, Galaxy Note, and Galaxy Tab devices.

39. Samsung also induces infringement by end users of its mobile devices of at least claim 1 of the '103 Patent. Samsung promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. Further, the Doze and JobScheduler functionalities are enabled on Samsung's mobile devices by default. Examples of Samsung's promotional materials appear on the company's website, such as <https://www.samsung.com/us/smartphones/galaxy-s9/specs/> (last visited Oct. 4, 2018).

40. Samsung has had notice of the '103 Patent and its infringement since at least as

early as the filing of this lawsuit. Accordingly, Samsung's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Samsung's specific intent to induce others to infringe the '103 Patent. Further, despite having knowledge of its infringement, Samsung continues to intentionally and willfully infringe at least claim 1 of the '103 patent.

COUNT 4

(Infringement of U.S. Pat. No. 9,681,387)

41. Samsung infringes at least claim 16 of the '387 Patent under at least 35 U.S.C. §271(a) and (b). Samsung makes, uses, sells, offers to sell, or imports into the United States products, such as the Galaxy S9, that meet every limitation of at least claim 16.

42. Claim 16 of the '387 Patent is directed to a mobile device comprising a radio, a memory, and a processor configured to allow the mobile device to: (1) monitor at least one characteristic of user activity on the mobile device, wherein one of the at least one characteristic of user activity is a determined inactivity of the user; and (2) locally adjust behavior of the mobile device to optimize battery consumption on the mobile device by entering the mobile device into a power save mode, wherein entry into the power save mode occurs in response to a duration of determined inactivity of the user exceeding a first predetermined amount of time, and, when in the power save mode, (3) suppress outgoing network communications to a first application server from the mobile device for a first suppression period for a first application while user activity is not detected, (4) suppress outgoing network communications to a second application server from the mobile device for the first suppression period for a second application while user activity is not detected, (5) receive a message during the first suppression period directed towards the first application, wherein the message is received from a remote server distinct from the first

application server, wherein the message contains data from the first application server, and (6) transmit communications after expiration of the first suppression period while user activity is not detected; and when user activity is detected after entry into the power save mode, exit the power save mode and transmit communications.

43. Samsung's products infringe at least claim 16 of the '387 Patent. For example, Samsung's Galaxy S9 is a mobile device comprising a memory (at least 4 GB of RAM and 64 GB of NAND Flash), a radio (at least an LTE and an 802.11 a/b/g/n/ac radio), and a processor (Qualcomm Snapdragon 845). Samsung's Galaxy S9 has Google's Android 8.0 (Oreo) loaded into its memory, and is configured by that operating system and its pre-loaded apps to perform the functions detailed below. Samsung's Galaxy S9 is configured to monitor indicators of user activity, including the time since the screen turned off, and whether the device is stationary, and to enter Doze mode in response to a duration of determined inactivity of the user (e.g., the device being stationary with its screen off) exceeding a first predetermined amount of time. When in doze (power save) mode, while user activity is not detected, Samsung's Galaxy S9 is configured to suppress communications from its applications to their respective application servers for suppression periods, e.g., doze periods. During those doze periods, while in power save mode, Samsung's Galaxy S9 is configured to receive messages from Google's Firebase Cloud Messaging (FCM) and/or Google Cloud Messaging (GCM) servers. FCM messages are directed towards individual applications and contain information from the application's respective application server, e.g., FCM messages for the pre-loaded Gmail application contain information from Gmail's servers to that new email has been received. When in Doze mode, Samsung's Galaxy S9 is configured to transmit communications during maintenance windows after each suppression period. The diagram below illustrates this behavior:



Figure 1. Doze provides a recurring maintenance window for apps to use the network and handle pending activities.

<https://developer.android.com/training/monitoring-device-state/doze-standby> (last visited Oct. 4, 2018). Samsung’s Galaxy S9 is further configured to exit Doze mode (power save mode) when user activity is detected. Once Samsung’s Galaxy S9 exits Doze mode, applications whose communications were suppressed by Doze mode are permitted to transmit communications.

44. Other Samsung products similarly infringe one or more claims of the ’387 Patent. Such other products include Samsung’s Galaxy S, Galaxy Note, and Galaxy Tab devices.

45. Samsung also induces infringement by end users of its mobile devices of at least claim 16 of the ’387 Patent. Samsung promotes and advertises the use of its products, especially the products’ capability to preserve remaining battery and avoid battery drain from background applications. The Doze functionality is enabled on Samsung’s mobile devices by default. Examples of Samsung’s promotional materials appear on the company’s website, such as <https://www.samsung.com/us/smartphones/galaxy-s9/specs/> (last visited Oct. 4, 2018).

46. Samsung has had notice of the ’387 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Samsung’s continued promotion, advertisement, and encouragement of its customers to utilize the products’ capability to preserve battery life and avoid battery drain from background applications is evidence of Samsung’s specific intent to induce others to infringe the ’387 Patent. Further, despite having knowledge of its infringement, Samsung continues to intentionally and willfully infringe at least claim 16 of the ’387 patent.

COUNT 5

(Infringement of U.S. Pat. No. 10,063,486)

47. Samsung infringes at least claim 11 of the '486 Patent under at least 35 U.S.C. §271(a) and (b). Samsung makes, uses, sells, offers to sell, or imports into the United States products, such as its Galaxy S9, that meet each and every limitation of at least claim 11.

48. Claim 11 of the '486 Patent is directed to a mobile device comprising a memory and processor configured for: (1) detecting user inactivity on a mobile device; and, in response to detected inactivity, (2) blocking a first channel to reduce network signaling in a network and to reduce battery consumption, wherein the first channel is a channel specific to a first application executing on the mobile device; wherein the first application is configured to receive communications over a second channel that is established over the network, wherein a second application executing on the mobile device also receives communications over the second channel; (3) monitoring the application traffic for receipt of a message for the first application over the second channel, wherein the message informs the mobile device that there is new data for receipt at an application server associated with the first application; (4) unblocking the first channel based on the monitored application traffic so that the first application can perform an action over the first channel; and (5) re-blocking the first channel after a predetermined period of time; and (6) unblocking the first channel when user activity is detected, wherein the user activity is based on of whether the mobile device is being interacted with by a user.

49. Samsung's products infringe at least claim 11 of the '486 Patent. For example, Samsung's Galaxy S9 is a mobile device comprising a memory (at least 4 GB of RAM and 64 GB of NAND Flash) and a processor (Qualcomm Snapdragon 845). Samsung's Galaxy S9 has Google's Android 8.0 (Oreo) loaded into its memory, and is configured by that operating system

and its pre-loaded apps to perform the functions detailed below. Samsung's Galaxy S9 is configured for detecting user inactivity on the device, including, for example, the time since the screen turned off and whether the device is stationary. Samsung's Galaxy S9 is configured for detecting inactivity (e.g., when the device is not moved and the screen not turned on for a period of time), and, in response to that detected inactivity, entering into Doze mode. In Doze mode, Samsung's Galaxy S9 is configured to block a first channel to reduce signaling in a network and to reduce battery consumption, where the first channel is a channel specific to a first application executing on the device. For example, during the doze period in Doze mode, applications are not permitted to transmit information to their respective application servers – those communications are blocked until the maintenance window. This reduces signaling in the network and battery use by the device. While in Doze mode, Samsung's Galaxy S9 and the applications on it are configured to receive communications over a second channel that is established over the network, e.g., the connection between Samsung's Galaxy S9 and Google's Firebase Cloud Messaging (FCM) or Google Cloud Messaging (GCM) servers. Multiple applications on Samsung's Galaxy S9 are configured to receive communications via the FCM channel, including Gmail, Google Play, Google Play Video, Google Play Music, YouTube, GoogleNow/Google App, Chrome, Google Maps, Google News, and Flipboard. Samsung's Galaxy S9 is configured for monitoring communications on the FCM channel (second channel) to at least each of the above applications. Such communications include high priority FCM messages, and inform the mobile device, and the receiving application, that the application server associated with the application has new data for the application. In response to receiving a high priority FCM message during Doze, Samsung's Galaxy S9 is configured for unblocking the channel between the application and its corresponding application server (the first channel) so that the application can perform an action

over the channel (e.g., request the new data from the application server). Samsung's Galaxy S9 unblocks the first channel by adding the first application to a temporary whitelist, which allows the application to access the network and communicate with its application server, after which the application is removed from the temporary whitelist and the channel is, again, blocked. Samsung's Galaxy S9 is configured to exit Doze mode (thereby unblocking the first channel) when the user interacts with the device by, e.g., moving the device or turning on its screen.

50. Other Samsung products similarly infringe one or more claims of the '486 Patent. Such other products include Samsung's Galaxy S, Galaxy Note, and Galaxy Tab devices.

51. Samsung also induces infringement by end users of its mobile devices of at least claim 11 of the '486 Patent. Samsung promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. The Doze functionality is enabled on Samsung's mobile devices by default. Examples of Samsung's promotional materials appear on the company's website, such as <https://www.samsung.com/us/smartphones/galaxy-s9/specs/> (last visited Oct. 4, 2018).

52. Samsung has had notice of the '486 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Samsung's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Samsung's specific intent to induce others to infringe the '486 Patent. Further, despite having knowledge of its infringement, Samsung continues to intentionally and willfully infringe at least claim 11 of the '486 patent.

COUNT 6

(Infringement of U.S. Pat. No. 10,091,734)

53. Samsung infringes at least claim 1 of the '734 Patent at least under 35 U.S.C.

§271(a) and (b). Samsung makes, uses, sells, offers to sell, or imports into the United States products, such as the Galaxy S9, that meet every limitation of at least claim 1.

54. Claim 1 of the '734 Patent is directed to a mobile device which improves network resource utilization in a wireless network, the mobile device, comprising: a memory; a radio; and a processor coupled to the memory and configured to: (1) receive instructions from a user to enter a power save mode; while in power save mode (2) block transmission of outgoing application data requests, wherein the outgoing application data requests are background application requests for more than one application; and, while in the power save mode, (2) allow transmission of additional outgoing application data requests in response to occurrence of receipt of data transfer from a remote entity, user input in response to a prompt displayed to the user, and a change in a background status of an application executing on the mobile device, wherein the additional outgoing application data requests are foreground application requests, wherein the remote entity is an intermediary server that provides connectivity between an application server for the application and the mobile device; and exit the power save mode based on received instructions from the user to exit the power save mode, wherein, when the power save mode is exited, the outgoing application data requests occurring while the mobile device is not in the power save mode are blocked by user selection on an application-by-application basis, wherein the user selection instructs the mobile device whether to block the outgoing application data requests for each application that is selected by the user for blocking.

55. Samsung's products infringe at least claim 1 of the '734 Patent. For example, Samsung's Galaxy S9 is a mobile device comprising a memory (at least 4 GB of RAM and 64 GB of NAND Flash), a radio (at least an LTE and an 802.11 a/b/g/n/ac radio), and a processor (Qualcomm Snapdragon 845). Samsung's Galaxy S9 has Google's Android 8.0 (Oreo) loaded

into its memory, and is configured by that operating system and its pre-loaded apps to perform the functions detailed below. Samsung's Galaxy S9 permits a user to manually enter or exit a power save mode to improve battery life. As part of that power saving mode, background data usage is disabled, blocking background application data requests from being transmitted. However, Samsung's Galaxy S9 is configured to allow transmission of additional outgoing application data requests (foreground application requests) in response to occurrence of receipt of data transfer (e.g., a message) from a Google Firebase Cloud Messaging (FCM) server (a remote entity), user input in response to a prompt displayed to a user (e.g., a user tapping a notification resulting from the FCM message), and a change in a background status of an application executing on the mobile device (e.g., tapping the notification to bring the application to the foreground). Google's FCM server (remote entity) is an intermediary server that provides connectivity between an application server for the application and the mobile device in the form of a push channel. Samsung's Galaxy S9 is also configured, outside of the power save mode, to allow a user to block background application data requests on an application-by-application basis: the user can allow or disallow background data usage for each application. Disallowing background data usage blocks outgoing data requests for that application.

56. Other Samsung products similarly infringe one or more claims of the '734 Patent. Such other products include Samsung's Galaxy S, Galaxy Note, and Galaxy Tab devices.

57. Samsung also induces infringement by end users of Samsung's mobile devices of at least claim 1 of the '734 Patent. Samsung promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. Further, the infringing power saving functionalities are included on Samsung's mobile devices by default. Examples of Samsung's promotional materials appear

on the company's website, such as <https://www.samsung.com/us/smartphones/galaxy-s9/specs/> (last visited Oct. 4, 2018).

58. Samsung has had notice of the '734 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Samsung's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Samsung's specific intent to induce others to infringe the '734 Patent. Further, despite having knowledge of its infringement, Samsung continues to intentionally and willfully infringe at least claim 1 of the '734 patent.

PRAYER FOR RELIEF

SEVEN requests that judgment be entered in its favor and against Samsung as follows:

- a. Entering judgment declaring that Samsung has infringed one or more claims of the Patents-in-Suit in violation of 35 U.S.C. §271;
- b. Ordering that SEVEN be awarded damages in an amount no less than a reasonable royalty for each asserted patent arising out of Samsung's infringement of the Patents-in-Suit, together with any other monetary amounts recoverable by SEVEN, such as treble damages;
- c. Declaring that Samsung's infringement has been willful;
- d. Declaring this an exceptional case under 35 U.S.C. §285 and awarding SEVEN its attorneys' fees; and
- e. Awarding SEVEN such other costs and further relief as the Court deems just and proper.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, SEVEN demands a trial by jury on all issues so triable.

Dated: November 7, 2018

Respectfully submitted,

/s/ Vishal Patel

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**ATTORNEYS FOR PLAINTIFF
SEVEN NETWORKS LLC**

**UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

SEVEN NETWORKS, LLC,

Plaintiff,

v.

GOOGLE LLC

Defendant.

Civil Action No. 2:18-cv-477

PATENT CASE

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff SEVEN Networks, LLC (“SEVEN”) files this Complaint for Patent Infringement of several United States patents as identified below (collectively, the “Patents-in-Suit”) and alleges as follows:

PARTIES

1. SEVEN is a company formed under the laws of Delaware with its principal place of business at 2660 East End Boulevard South, Marshall, Texas 75672.

2. Defendant Google LLC is a limited liability company formed under the laws of Delaware with its principal place of business at 1600 Amphitheatre Parkway, Mountain View, California 94043, and may be served through its agent Corporation Service Company, 211 East 7th Street, Suite 620, Austin, Texas 78701-3218.

3. Google is a self-described “information company” that is in the business of storing, organizing, and distributing data. Its stated mission is to “organize the world’s information and make it universally accessible and useful.” Its stated vision is “to provide access to the world’s information in one click.”

JURISDICTION

4. SEVEN brings this civil action for patent infringement under the Patent Laws of the United States, 35 U.S.C. § 1 *et. seq.*, including 35 U.S.C. §§ 271, 281-285. This Court has subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338.

5. Google transacts and conducts business in this District and the State of Texas, and is subject to the personal jurisdiction of this Court. For example, Google maintains offices in Dallas and Austin. Additionally, Google promotes and sells its products, such as its Pixel smartphone, through its online store (<https://store.google.com/>), which is available to and accessed by residents of this District and the State of Texas. Google has also sold other products, such as the Nexus smartphone, through this website.

6. SEVEN's causes of action arise, at least in part, from Google's business contacts and activities in this District and elsewhere within the State of Texas. Google has committed acts of infringement in this District and within Texas by making, using, selling, offering for sale, or importing into the United States products that infringe one or more claims of the Patents-in-Suit. Further, Google encourages others within this District to use, sell, offer to sell, or import certain mobile products that infringe one or more claims of the Patents-in-Suit. For example, Google advertises its mobile devices, such as its smart phones, through its websites:

https://madeby.google.com/phone/?utm_source=ads-en-ha-na-sem;

<https://www.google.com/nexus/>. Further, Google provides its customers with information regarding the various functionalities offered by its products and software, such as its various battery saving modes: <https://support.google.com/pixelphone/answer/6187458>,

<https://developer.android.com/training/monitoring-device-state/index.html>.

7. Google actively solicits customers within this District and the State of Texas and

has sold many of its infringing mobile products to residents of Texas and this District.

Venue

8. Venue is proper in this District under 28 U.S.C. §§ 1391 and 1400. Venue is proper under 28 U.S.C. § 1400(b) because Google has committed acts of infringement in this district and has a regular and established place of business in this district. *See Seven Networks, LLC v. Google LLC*, C.A. No. 2:17-cv-00442-JRG, D.I. 235 (E.D. Tex. July 19, 2018) (finding venue proper as to Google in the Eastern District of Texas).

9. On information and belief, Google conducts at least the following activities by and through its regular and established locations within this district:

- a. Google does business in this District through Google Play stores that: (i) are located in the form of applications—which are owned and controlled by Google—on computers and mobile devices of residents of this District; and (ii) are served by servers located in this District that are owned and controlled by Google;
- b. Google provides on-demand video-rental services to residents of this District through its Google Play Movies and YouTube services, including through software owned and controlled by Google that is located on servers, computers, and mobile devices located in this District;
- c. Google provides advertising services in this district, including through servers owned and controlled by Google that are located in this District, and including through software owned and controlled by Google that is located on computers and mobile devices located in this District;
- d. Google owns and controls servers, including servers located in this District, that provide Google services to users, including users in this District;

- e. Google uses the hardware and software located in this District that it owns and controls to conduct and transact business in this District with residents of this District;
- f. Google uses hardware and software it owns and controls in this District for content caching, video streaming, and reverse proxy;
- g. Google uses hardware and software it owns and controls in this District to provide data and advertising to residents of this District;
- h. Google interacts in a targeted way with existing and potential customers, consumers, users, and entities within this District, including but not limited to targeted marketing efforts;
- i. Google derives benefits, including but not limited to sales revenues, from its presence in this District as set forth in Paragraphs 9a-9i, above

THE PATENTS-IN-SUIT

10. On November 8, 2016, the United States Patent and Trademark Office (“USPTO”) duly and legally issued U.S. Patent No. 9,491,703, titled “Dynamic Adjustment of Keep-Alive Messages for Efficient Battery Usage in a Mobile Network,” to inventors Ari Backholm *et al.* (“the ’703 Patent”). A true and correct copy of the ’703 Patent is attached as Exhibit A to this Complaint.

11. On March 21, 2017, the USPTO duly and legally issued U.S. Patent No. 9,603,056, titled “Mobile Application Traffic Optimization,” to inventors Michael Luna *et al.* (“the ’056 Patent”). A true and correct copy of the ’056 Patent is attached as Exhibit B to this Complaint.

12. On May 23, 2017, the USPTO duly and legally issued U.S. Patent No. 9,661,103,

titled “Mobile Device Having Improved Polling Characteristics for Background Applications,” to inventors Michael Luna *et al.* (“the ’103 Patent”). A true and correct copy of the ’103 Patent is attached as Exhibit C to this Complaint.

13. On June 13, 2017, the USPTO duly and legally issued U.S. Patent No. 9,681,387, titled “Mobile Traffic Optimization and Coordination and User Experience Enhancement,” to inventors Michael Luna *et al.* (“the ’387 Patent”). A true and correct copy of the ’387 Patent is attached as Exhibit D to this Complaint.

14. On August 8, 2018, the USPTO duly and legally issued U.S. Patent No. 10,063,486, titled “Offloading Application Traffic to a Shared Communication Channel for Signal Optimization in a Wireless Network for Traffic Utilizing Proprietary and Non-Proprietary Protocols,” to inventors Rami Alisawi *et al.* (“the ’486 Patent”). A true and correct copy of the ’486 Patent is attached as Exhibit E to this Complaint.

15. On October 2, 2018, the USPTO duly and legally issued U.S. Patent No. 10,091,734, titled “Optimizing Mobile Network Traffic Coordination Across Multiple Applications Running on a Mobile Device,” to inventors Michael Luna *et al.* (“the ’734 Patent”). A true and correct copy of the ’734 Patent is attached as Exhibit F to this Complaint.

16. SEVEN owns the entire right and title to each of the Patents-in-Suit.

BACKGROUND

17. For nearly two decades, SEVEN has researched and developed innovative software solutions for mobile devices directed to enhancing the user experience. For example, SEVEN has developed software technologies to manage mobile traffic in order to conserve network and battery resources. Software applications on mobile devices are frequently signaling the network for a variety of reasons. Much of the signaling from these software applications is

unnecessary and simply consumes precious bandwidth and remaining battery power. This needless mobile traffic negatively impacts the user's overall experience by creating service overloads and outages or draining the limited battery of the mobile device. SEVEN's technologies are able to optimize mobile traffic to conserve both network and battery resources.

18. SEVEN has been recognized in the industry for its innovative technologies and products. For example, at the Mobile World Congress in 2011, the GSMA awarded SEVEN with its Global Mobile Award for Best Technology Breakthrough. Further, in 2013 SEVEN won the Mobile Merit Award for its outstanding innovations in the mobile industry and was identified as one of fifty mobile companies to watch by AlwaysOn. SEVEN was also awarded the Best Free Android App in 2013 by TechRadar. Additionally, and among other industry recognition, Telecoms.com identified SEVEN in its Best LTE Traffic Management Product Short List.

19. Battery life for mobile devices is a major driver for consumer purchasing decisions. In a 2014 poll by Ubergizmo of 50,000 participants, battery life was rated as a smartphone's most important feature. Google recognizes the importance of battery life in mobile devices and has incorporated software technologies for conserving battery life in its devices and operating systems. As described below, Google's mobile devices and operating systems also implement software to manage mobile traffic to save battery power. These devices and systems infringe SEVEN's innovative and patented technology.

COUNT 1

(Infringement of U.S. Pat. No. 9,491,703)

20. Google infringes at least claim 15 of the '703 Patent under 35 U.S.C. §271(a) and (b). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Google Pixel 2, that meet every limitation of at least claim 15.

21. Claim 15 of the '703 Patent is directed to a mobile device comprising a communications interface and a battery, the mobile terminal in conjunction with the communications interface is configured for: (1) establishing a first connection over a network between a mobile terminal and a remote entity; (2) sending, from the mobile terminal, keep-alive messages at varying intervals via the first connection in response to inactivity in the first connection; wherein the first connection is disconnected after a first period of inactivity; (3) establishing a second connection over the network between the mobile terminal and the remote entity; (4) sending, from the mobile terminal, keep-alive messages at varying intervals via the second connection in response to inactivity in the second connection; wherein the second connection is disconnected after a second period of inactivity; and (5) sending, from the mobile terminal with a processor keep-alive messages at a safe interval via a subsequent connection over the network in response to inactivity in the subsequent connection, wherein the safe interval is based on the first disconnection and the second disconnection.

22. Google's products infringe at least claim 15 of the '703 Patent. For example, the Google Pixel 2 is a mobile terminal that includes a 2700mAh battery and communications interfaces for multiple wireless networks, including LTE and Wi-Fi 802.11 a/b/g/n/ac interfaces. Google's Pixel 2 includes the Android 8.0 operating system, which includes the Adaptive Heartbeat feature for sending keep-alive messages to Google's Firebase Cloud Messaging (FCM) servers. Google's Pixel 2, and Google's other products including the Adaptive Heartbeat feature, are configured to establish a connection to Google's FCM servers and send keep-alive messages at varying intervals when that connection is idle. The interval for sending keep-alive messages varies, with the interval increasing based on the number of successfully returned keep-alive messages. If the first connection is lost after a period of inactivity, Google's Pixel 2 is configured

to establish a second connection to Google's FCM servers, and to send keep-alive messages according to the same varying interval scheme. However, if the second connection is lost after a period of inactivity, Google's Pixel 2 is configured to send keep-alive messages over a subsequent connection at a safe interval based on the first and second disconnections.

23. Other Google products similarly infringe one or more claims of the '703 Patent. Such other products include at least Google's Pixel 3 devices.

24. Google also induces infringement by end users of Google's mobile devices of at least claim 15 of the '703 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery support applications requiring network connectivity. The Adaptive Heartbeat feature embodying claim 15 as described above contributes to this capability by allowing Google Products' to efficiently discover keep-alive intervals that minimize keep-alive signaling while avoiding connection loss and the battery and service loss that results. The infringing power saving functionality is included in Google's mobile devices by default. Examples of Google's promotional materials appear on the company's website, such as https://store.google.com/us/product/pixel_2_specs?hl=en-US (last visited Oct. 28, 2018).

25. Google has had notice of the '703 Patent since at least the filing of this suit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to induce others to infringe the '703 Patent. Further, despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 15 of the '703 patent.

COUNT 2

(Infringement of U.S. Pat. No. 9,603,056)

26. Google infringes at least claim 1 of the '056 Patent under at least 35 U.S.C. §271(a) and (b). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Google Pixel 2, that meet every limitation of at least claim 1.

27. Claim 1 of the '056 Patent is directed to a mobile device configured to optimize connections made by the mobile device in a wireless network, the mobile device comprising a memory, a radio, and a processor, the mobile device configured to: (1) batch data from a first application and a second application for transmission to a respective first application server and a second application server over the wireless network, wherein the batched data from the first application and the second application is batched while a backlight of the mobile device is off in response to inactivity of the mobile device; (2) allow a first message from a remote server distinct from the first application server and the second application server to be received while the batched data from the first application and the second application is batched; wherein the first message from the remote server is directed to the first application and contains data from the first application server and is associated with the mobile device and the first application; (3) transmit a second message associated with the first application to the remote server or the first application server in response to receipt of the first message from the remote server; and (4) transmit the batched data to the respective first application server and the second application server over the wireless network while the backlight of the mobile device remains off; wherein the batching of data for the first application and the second application can be enabled or disabled by a user of the mobile device on an application-by-application basis.

28. Google's products infringe at least claim 1 of the '056 Patent. For example,

Google's Pixel 2 is a mobile device comprising a memory (at least 4 GB of RAM and 64 GB of NAND Flash), a radio (at least an LTE and an 802.11 a/b/g/n/ac radio), and a processor (Qualcomm Snapdragon 835). The Pixel 2 also includes an AMOLED screen, which includes a backlight. Google's Pixel 2 has Google's Android 8.0 (Oreo) loaded into its memory, and is configured by that operating system and its pre-loaded apps to perform the functions detailed below. For example, Google's Pixel 2 is configured to batch data from applications for transmission to their corresponding application servers over a wireless network through Android's JobScheduler API. JobScheduler collects information about jobs that need to run across all apps and uses that information to schedule jobs to run at or around the same time, allowing the device to enter and stay in sleep states longer and preserving battery life.¹ Google's Pixel 2 is configured to batch data from applications and transmit that batched data while a backlight of the device is off in response to inactivity of the mobile device: JobScheduler batches and executes jobs regardless of screen or backlight status, subject to other device restrictions (e.g., Doze mode). The Pixel 2 is also configured to allow a message (a first message) from Google's FCM server (remote server distinct from the first application server and second application server) while data is batched. Messages from Google's FCM server are specifically associated with both the mobile device and a specific application on each device, and contain data from the application's corresponding application server.² The Pixel 2 is configured to transmit a second message associated with the first application to its corresponding application server in response to the message from the FCM server—for example, the pre-loaded Gmail app on the Google Pixel 2 is configured to send a message to its application server to initiate synchronization in response to receiving an FCM message. Google's Pixel 2 is configured to permit the above-

¹ <https://developer.android.com/topic/performance/scheduling> (Last visited Oct. 4, 2018)

² <https://firebase.google.com/docs/cloud-messaging/> (Last visited Oct. 4, 2018)

described batching to be enabled or disabled on an application by application basis—the “allow background activity” option permits users to disable background activity for applications, which prevents the batching described above.

29. Other Google products similarly infringe one or more claims of the '056 Patent. Such other products include at least Google's Pixel 3 devices.

30. Google also induces infringement by end users of its mobile devices of at least claim 1 of the '056 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery and avoid battery drain from background applications. Further, the JobScheduler functionality is enabled on Google's mobile devices by default. Examples of Google's promotional materials appear on the company's website, such as https://store.google.com/us/product/pixel_2_specs?hl=en-US (last visited Oct. 28, 2018).

31. Google has had notice of the '056 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to induce others to infringe the '056 Patent. Further, despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 1 of the '056 patent.

COUNT 3

(Infringement of U.S. Pat. No. 9,661,103)

32. Google infringes at least claim 1 of the '103 Patent under at least 35 U.S.C. §271(a) and (b). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Pixel 2, that meet every limitation of at least claim 1.

33. Claim 1 of the '103 Patent is directed to a mobile device configured for aligning

data transfer from the mobile device to optimize connections made by the mobile device in a wireless network, the mobile device comprising a memory; a backlight; a radio; and a processor; the mobile device configured to: while the backlight of the mobile device is on, (1) detect that a first application is executing in the background of the mobile device; (2) detect that a second application is executing in the foreground of the mobile device; (3) batch a first set of data for the first application; (4) transmit the first set of batched data for the first application; and (5) transmit data for the second application at a time when the second application requests transmission; and, while the backlight of the mobile device is off in response to inactivity of the mobile device: (1) detect that the second application is executing in the background of the mobile device; (2) batch a second set of data for the first application and the second application; and (3) transmit the second set of batched data for the first application and the second application, wherein the transmission of the second set of batched data occurs after at least a predetermined period of time.

34. Google's products infringe at least claim 1 of the '103 Patent. For example, Google's Pixel 2 is a mobile device comprising a memory (at least 4 GB of RAM and 64 GB of NAND Flash), a radio (at least an LTE and an 802.11 a/b/g/n/ac radio), and a processor (Qualcomm Snapdragon 835). The Pixel 2 also includes an AMOLED screen, which includes a backlight. Google's Pixel 2 has Google's Android 8.0 (Oreo) loaded into its memory, and is configured by that operating system and its pre-loaded apps to perform the functions detailed below. Google's Pixel 2 is configured to, while the backlight of the device is on, detect whether an application is executing in a background or a foreground of the device—Android gives different privileges to background and foreground applications, and must therefore be able to detect whether an application is executing in the foreground or the background. Google's Pixel 2 is

configured to, while the backlight of the device is on, batch data from applications, including background applications. JobScheduler, part of the Android operating system on Google's Pixel 2, is configured to batch data received from applications for transmission over the wireless network, and may be invoked by a foreground or background application. While the backlight is on, Google's Pixel 2 is configured to allow an application executing in the foreground to transmit data when the application requests transmission. Google's Pixel 2 is further configured, while its backlight is off due to inactivity, to detect that applications are executing in the background and batch data for those applications. Google's Pixel 2 is configured to enter Doze mode while the device's backlight is off in response to inactivity of the mobile device. While in Doze mode, Google's Pixel 2 is configured to detect applications executing in the background, to batch data from those applications, and to transmit that batched data after at least a predetermined period of time. Doze mode on Google's Pixel 2 is configured to batch data from applications during predetermined doze periods and then transmit that batched data during maintenance windows between the doze periods, as illustrated below:



Figure 1. Doze provides a recurring maintenance window for apps to use the network and handle pending activities.

<https://developer.android.com/training/monitoring-device-state/doze-standby> (last visited Oct. 4, 2018)

35. Other Google products similarly infringe one or more claims of the '103 Patent.

Such other products include at least Google's Pixel 3 devices.

36. Google also induces infringement by end users of its mobile devices of at least claim 1 of the '103 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. Further, the Doze and JobScheduler functionalities are enabled on Google's mobile devices by default. Examples of Google's promotional materials appear on the company's website, such as https://store.google.com/us/product/pixel_2_specs?hl=en-US (last visited Oct. 28, 2018).

37. Google has had notice of the '103 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to induce others to infringe the '103 Patent. Further, despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 1 of the '103 patent.

COUNT 4

(Infringement of U.S. Pat. No. 9,681,387)

38. Google infringes at least claim 16 of the '387 Patent under at least 35 U.S.C. §271(a) and (b). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Pixel 2, that meet every limitation of at least claim 16.

39. Claim 16 of the '387 Patent is directed to a mobile device comprising a radio, a memory, and a processor configured to allow the mobile device to: (1) monitor at least one characteristic of user activity on the mobile device, wherein one of the at least one characteristic of user activity is a determined inactivity of the user; and (2) locally adjust behavior of the mobile device to optimize battery consumption on the mobile device by entering the mobile device into a

power save mode, wherein entry into the power save mode occurs in response to a duration of determined inactivity of the user exceeding a first predetermined amount of time, and, when in the power save mode, (3) suppress outgoing network communications to a first application server from the mobile device for a first suppression period for a first application while user activity is not detected, (4) suppress outgoing network communications to a second application server from the mobile device for the first suppression period for a second application while user activity is not detected, (5) receive a message during the first suppression period directed towards the first application, wherein the message is received from a remote server distinct from the first application server, wherein the message contains data from the first application server, and (6) transmit communications after expiration of the first suppression period while user activity is not detected; and when user activity is detected after entry into the power save mode, exit the power save mode and transmit communications.

40. Google's products infringe at least claim 16 of the '387 Patent. For example, Google's Pixel 2 is a mobile device comprising a memory (at least 4 GB of RAM and 64 GB of NAND Flash), a radio (at least an LTE and an 802.11 a/b/g/n/ac radio), and a processor (Qualcomm Snapdragon 835). Google's Pixel 2 has Google's Android 8.0 (Oreo) loaded into its memory, and is configured by that operating system and its pre-loaded apps to perform the functions detailed below. Google's Pixel 2 is configured to monitor indicators of user activity, including the time since the screen turned off, and whether the device is stationary, and to enter Doze mode in response to a duration of determined inactivity of the user (e.g., the device being stationary with its screen off) exceeding a first predetermined amount of time. When in doze (power save) mode, while user activity is not detected, Google's Pixel 2 is configured to suppress communications from its applications to their respective application servers for suppression

periods, e.g., doze periods. During those doze periods, while in power save mode, Google's Pixel 2 is configured to receive messages from Google's Firebase Cloud Messaging (FCM) and/or Google Cloud Messaging (GCM) servers. FCM messages are directed towards individual applications and contain information from the application's respective application server, e.g., FCM messages for the pre-loaded Gmail application contain information from Gmail's servers to that new email has been received. When in Doze mode, Google's Pixel 2 is configured to transmit communications during maintenance windows after each suppression period. The diagram below illustrates this behavior:



Figure 1. Doze provides a recurring maintenance window for apps to use the network and handle pending activities.

<https://developer.android.com/training/monitoring-device-state/doze-standby> (last visited Oct. 4, 2018). Google's Pixel 2 is further configured to exit Doze mode (power save mode) when user activity is detected. Once Google's Pixel 2 exits Doze mode, applications whose communications were suppressed by Doze mode are permitted to transmit communications.

41. Other Google products similarly infringe one or more claims of the '387 Patent.

Such other products include at least Google's Pixel 3 devices.

42. Google also induces infringement by end users of its mobile devices of at least claim 16 of the '387 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery and avoid battery drain from background applications. The Doze functionality is enabled on Google's mobile devices by default. Examples

of Google's promotional materials appear on the company's website, such as

https://store.google.com/us/product/pixel_2_specs?hl=en-US (last visited Oct. 28, 2018).

43. Google has had notice of the '387 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to induce others to infringe the '387 Patent. Further, despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 16 of the '387 patent.

COUNT 5

(Infringement of U.S. Pat. No. 10,063,486)

44. Google infringes at least claim 11 of the '486 Patent under at least 35 U.S.C. §271(a) and (b). Google makes, uses, sells, offers to sell, or imports into the United States products, such as its Pixel 2, that meet each and every limitation of at least claim 11.

45. Claim 11 of the '486 Patent is directed to a mobile device comprising a memory and processor configured for: (1) detecting user inactivity on a mobile device; and, in response to detected inactivity, (2) blocking a first channel to reduce network signaling in a network and to reduce battery consumption, wherein the first channel is a channel specific to a first application executing on the mobile device; wherein the first application is configured to receive communications over a second channel that is established over the network, wherein a second application executing on the mobile device also receives communications over the second channel; (3) monitoring the application traffic for receipt of a message for the first application over the second channel, wherein the message informs the mobile device that there is new data for receipt at an application server associated with the first application; (4) unblocking the first

channel based on the monitored application traffic so that the first application can perform an action over the first channel; and (5) re-blocking the first channel after a predetermined period of time; and (6) unblocking the first channel when user activity is detected, wherein the user activity is based on whether the mobile device is being interacted with by a user.

46. Google's products infringe at least claim 11 of the '486 Patent. For example, Google's Pixel 2 is a mobile device comprising a memory (at least 4 GB of RAM and 64 GB of NAND Flash) and a processor (Qualcomm Snapdragon 835). Google's Pixel 2 has Google's Android 8.0 (Oreo) loaded into its memory, and is configured by that operating system and its pre-loaded apps to perform the functions detailed below. Google's Pixel 2 is configured for detecting user inactivity on the device, including, for example, the time since the screen turned off and whether the device is stationary. Google's Pixel 2 is configured for detecting inactivity (e.g., when the device is not moved and the screen not turned on for a period of time), and, in response to that detected inactivity, entering into Doze mode. In Doze mode, Google's Pixel 2 is configured to block a first channel to reduce signaling in a network and to reduce battery consumption, where the first channel is a channel specific to a first application executing on the device. For example, during the doze period in Doze mode, applications are not permitted to transmit information to their respective application servers – those communications are blocked until the maintenance window. This reduces signaling in the network and battery use by the device. While in Doze mode, Google's Pixel 2 and the applications on it are configured to receive communications over a second channel that is established over the network, e.g., the connection between Google's Pixel 2 and Google's Firebase Cloud Messaging (FCM) or Google Cloud Messaging (GCM) servers. Multiple applications on Google's Pixel 2 are configured to receive communications via the FCM channel, including Gmail, Google Play, Google Play Video, Google

Play Music, YouTube, GoogleNow/Google App, Chrome, Google Maps, Google News, and Flipboard. Google's Pixel 2 is configured for monitoring communications on the FCM channel (second channel) to at least each of the above applications. Such communications include high priority FCM messages, and inform the mobile device, and the receiving application, that the application server associated with the application has new data for the application. In response to receiving a high priority FCM message during Doze, Google's Pixel 2 is configured for unblocking the channel between the application and its corresponding application server (the first channel) so that the application can perform an action over the channel (e.g., request the new data from the application server). Google's Pixel 2 unblocks the first channel by adding the first application to a temporary whitelist, which allows the application to access the network and communicate with its application server, after which the application is removed from the temporary whitelist and the channel is, again, blocked. Google's Pixel 2 is configured to exit Doze mode (thereby unblocking the first channel) when the user interacts with the device by, e.g., moving the device or turning on its screen.

47. Other Google products similarly infringe one or more claims of the '486 Patent. Such other products include at least Google's Pixel 3 devices.

48. Google also induces infringement by end users of its mobile devices of at least claim 11 of the '486 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. The Doze functionality is enabled on Google's mobile devices by default. Examples of Google's promotional materials appear on the company's website, such as https://store.google.com/us/product/pixel_2_specs?hl=en-US (last visited Oct. 28, 2018).

49. Google has had notice of the '486 Patent and its infringement since at least as

early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to induce others to infringe the '486 Patent. Further, despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 11 of the '486 patent.

COUNT 6

(Infringement of U.S. Pat. No. 10,091,734)

50. Google infringes at least claim 1 of the '734 Patent at least under 35 U.S.C. §271(a) and (b). Google makes, uses, sells, offers to sell, or imports into the United States products, such as the Pixel 2, that meet every limitation of at least claim 1.

51. Claim 1 of the '734 Patent is directed to a mobile device which improves network resource utilization in a wireless network, the mobile device, comprising: a memory; a radio; and a processor coupled to the memory and configured to: (1) receive instructions from a user to enter a power save mode; while in power save mode (2) block transmission of outgoing application data requests, wherein the outgoing application data requests are background application requests for more than one application; and, while in the power save mode, (2) allow transmission of additional outgoing application data requests in response to occurrence of receipt of data transfer from a remote entity, user input in response to a prompt displayed to the user, and a change in a background status of an application executing on the mobile device, wherein the additional outgoing application data requests are foreground application requests, wherein the remote entity is an intermediary server that provides connectivity between an application server for the application and the mobile device; and exit the power save mode based on received instructions from the user to exit the power save mode, wherein, when the power save mode is

exited, the outgoing application data requests occurring while the mobile device is not in the power save mode are blocked by user selection on an application-by-application basis, wherein the user selection instructs the mobile device whether to block the outgoing application data requests for each application that is selected by the user for blocking.

52. Google's products infringe at least claim 1 of the '734 Patent. For example, Google's Pixel 2 is a mobile device comprising a memory (at least 4 GB of RAM and 64 GB of NAND Flash), a radio (at least an LTE and an 802.11 a/b/g/n/ac radio), and a processor (Qualcomm Snapdragon 835). Google's Pixel 2 has Google's Android 8.0 (Oreo) loaded into its memory, and is configured by that operating system and its pre-loaded apps to perform the functions detailed below. Google's Pixel 2 permits a user to manually enter or exit a power save mode to improve battery life. As part of that power saving mode, background data usage is disabled, blocking background application data requests from being transmitted. However, Google's Pixel 2 is configured to allow transmission of additional outgoing application data requests (foreground application requests) in response to occurrence of receipt of data transfer (e.g., a message) from a Google Firebase Cloud Messaging (FCM) server (a remote entity), user input in response to a prompt displayed to a user (e.g., a user tapping a notification resulting from the FCM message), and a change in a background status of an application executing on the mobile device (e.g., tapping the notification to bring the application to the foreground). Google's FCM server (remote entity) is an intermediary server that provides connectivity between an application server for the application and the mobile device in the form of a push channel. Google's Pixel 2 is also configured, outside of the power save mode, to allow a user to block background application data requests on an application-by-application basis: the user can allow or disallow background data usage for each application. Disallowing background data usage blocks

outgoing data requests for that application.

53. Other Google products similarly infringe one or more claims of the '734 Patent. Such other products include at least Google's Pixel 3 devices.

54. Google also induces infringement by end users of Google's mobile devices of at least claim 1 of the '734 Patent. Google promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. Further, the infringing power saving functionalities are included on Google's mobile devices by default. Examples of Google's promotional materials appear on the company's website, such as https://store.google.com/us/product/pixel_2_specs?hl=en-US (last visited Oct. 28, 2018).

55. Google has had notice of the '734 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, Google's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of Google's specific intent to induce others to infringe the '734 Patent. Further, despite having knowledge of its infringement, Google continues to intentionally and willfully infringe at least claim 1 of the '734 patent.

PRAYER FOR RELIEF

SEVEN requests that judgment be entered in its favor and against Google as follows:

- a. Entering judgment declaring that Google has infringed one or more claims of the Patents-in-Suit in violation of 35 U.S.C. §271;
- b. Ordering that SEVEN be awarded damages in an amount no less than a reasonable royalty for each asserted patent arising out of Google's infringement of the Patents-in-Suit, together with any other monetary amounts recoverable by SEVEN, such as treble damages;
- c. Declaring that Google's infringement has been willful;
- d. Declaring this an exceptional case under 35 U.S.C. §285 and awarding SEVEN its attorneys' fees; and
- e. Awarding SEVEN such other costs and further relief as the Court deems just and proper.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, SEVEN demands a trial by jury on all issues so triable.

Dated: November 7, 2018

Respectfully submitted,

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11 Attorneys for Plaintiffs
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12 SEVEN NETWORKS INTERNATIONAL OY

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RICHARD W. WIEKING
CLERK U.S. DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

E-Filing

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14 UNITED STATES DISTRICT COURT
15 NORTHERN DISTRICT OF CALIFORNIA

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17 SEVEN NETWORKS, INC., a Delaware
corporation, and SEVEN NETWORKS
18 INTERNATIONAL OY,
19 Plaintiffs,
20 vs.
21 VISTO CORPORATION, a Delaware
corporation,
22 Defendant.
23

C 06 3650 RS
) Case No.
) **COMPLAINT FOR DECLARATORY**
) **JUDGMENT**

24
25 Plaintiffs Seven Networks, Inc. and Seven Networks International OY (collectively, "Seven"),
26 for their complaint against Defendant Visto Corporation ("Visto"), allege and aver:
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HOWREY LLP

Case No.
COMPLAINT FOR DECLARATORY JUDGMENT

1 **PARTIES**

2 1. Seven Networks, Inc. is a Delaware corporation having its principal place of business at
3 901 Marshall Street, Redwood City, California 94063.

4 2. Seven Networks International OY is a Finnish corporation having its principal place of
5 business in Helsinki, Finland.

6 3. Visto is a Delaware corporation having its principal place of business at 275 Shoreline
7 Drive, Suite 300, Redwood Shores, California 94065.

8 **JURISDICTION AND VENUE**

9 4. This is an action for the resolution of an existing conflict under the Declaratory
10 Judgment Act, 28 U.S.C. §§ 2201 and 2202. The underlying causes of action arise under the patent
11 laws of the United States. A case or controversy exists between Plaintiffs and Visto. The amount in
12 controversy between the parties exceeds \$75,000. This Court therefore has subject matter jurisdiction
13 under 28 U.S.C. §§ 1331, 1332, and 1338(a).

14 5. On information and belief, this Court has personal jurisdiction over Visto because Visto
15 is found in this District.

16 6. Venue for this action is proper in this District under 38 U.S.C. §§ 1391(b) and 1400(b)
17 because Visto resides in this District and because a substantial part of the events giving rise to this
18 claim occurred in this District.

19 7. In August 2005, Seven Networks, Inc. filed suit against Visto in the Eastern District of
20 Texas in the case captioned *Seven Networks, Inc. v. Visto Corporation*, Civil Action No. 2:05-CV-365-
21 TJW, alleging infringement by Visto of a patent owned by Seven Networks. Visto has indicated its
22 intention to try and amend its Answer in that case to assert the patents that are the subject of this
23 Complaint. Because the patents that are the subject of this complaint are not asserted in that action, do
24 not share a common nucleus of operative fact with the allegations of that case and Seven Networks'
25 own case against Visto is so advanced, Seven Networks does not believe that the cases are related
26 (e.g., no products of Seven have been accused of infringing any patents owned by Visto in the *Seven*
27 *Networks v. Visto* case).

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HOWREY LLP

Case No.
COMPLAINT FOR DECLARATORY JUDGMENT

-2-

1 8. Likewise pending in the Eastern District of Texas is a case captioned *Visto Corporation*
2 *v. Smartner Information Systems, Ltd.*, Civil Action No. 2:05-CV-91-TJW. Smartner Information
3 Systems, Ltd. is Seven Networks International OY's former name. Visto has previously indicated its
4 intention to try and amend its Complaint in that case to assert one of the patents that is the subject of
5 this suit (the '679 patent). However, Visto has not done so. In addition, that case was filed in
6 February 2005 and is well advanced. Because this Court will be faced with the '679 patent as a result
7 of Seven Networks, Inc.'s own action, Seven Networks International OY does not believe that this case
8 is related as there would be no savings if the case was consolidated with the action pending in the
9 Eastern District of Texas. Further, because of its advanced state, it does not appear likely that the
10 patents in this case could practically be considered in that case.

11 **SEVEN'S REASONABLE APPREHENSION OF SUIT**

12 9. This action is brought to resolve the apprehension under which Seven is forced to
13 conduct its business in the United States as a result of Visto's threats to sue Seven for infringement of
14 certain patents purportedly owned by Visto.

15 10. Seven is a leading designer, manufacturer, and marketer of innovative wireless
16 solutions for the worldwide mobile communications market. Seven's portfolio of award-winning
17 products is used by thousands of organizations around the world and include the Always-on-Mail and
18 Duality wireless platforms, software development tools, and software/hardware licensing agreements.

19 11. On information and belief, counsel for Visto have stated that Visto intends to sue Seven
20 Networks for alleged patent infringement of two patents purportedly owned by Visto (U.S. Patent No.
21 6,151,606 (the " '606 patent) and U.S. Patent No. 7,039,679 (the " '679 patent"). Counsel for Visto
22 have also stated that Visto intends to sue Seven Networks International Oy for alleged infringement of
23 the '679 patent. Copies of the '606 and '679 patents are attached hereto as Exhibits A and B,
24 respectively.

25 12. Visto's stated goal of bringing a patent infringement suit against Seven has created in
26 Seven a reasonable apprehension that Visto will sue Seven for patent infringement of the '606 and
27 '679 Visto patents. Seven believes that failure to determine the issues presented by this case at this
28 point in time will lead to substantial commercial injury to Seven.

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COUNT IV

Declaratory Judgment of Invalidity of the '679 Patent

23. Seven repeats and realleges paragraphs 1 through 22 of this Complaint as if the same were full set forth herein.

24. The claims of the '679 patent are invalid for failure to meet the requirements specified in Title 35 of the United States Code, including, but not limited to, 35 U.S.C. §§ 101, 102, 103, and 112.

25. Seven is therefore entitled to a declaratory judgment that the '679 patent is invalid.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs Seven Networks, Inc. and Seven Networks International OY pray that the Court enter judgment that:

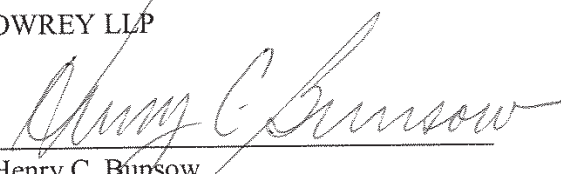
- a) U.S. Patent No. 6,151,606 is not infringed by Seven's products;
- b) The claims of U.S. Patent No. 6,151,606 are invalid;
- c) U.S. Patent No. 7,039,679 is not infringed by Seven's products; and
- d) The claims of U.S. Patent No. 7,039,679 are invalid.

Dated: June 8, 2006

Respectfully submitted,

HOWREY LLP

By:


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 K.T. Cherian
 James C. Pistorino
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E-filing

13 UNITED STATES DISTRICT COURT
14 NORTHERN DISTRICT OF CALIFORNIA

EMC

16 SEVEN NETWORKS INTERNATIONAL OY
(formerly Smartner Information Systems, Ltd.),
17 a Finnish corporation,

18 Plaintiff,

19 vs.

20 VISTO CORPORATION, a Delaware
corporation,

21 Defendant.

Case No. 07

0783

COMPLAINT FOR DECLARATORY
JUDGMENT

24 Plaintiff Seven Networks International OY ("SNIO") (formerly Smartner Information Systems,
25 Ltd.), for its complaint against Defendant Visto Corporation ("Visto"), alleges and avers:
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HOWREY LLP

Case No.
COMPLAINT FOR DECLARATORY JUDGMENT

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PARTIES

1. Seven Networks International OY (SNIO) is a Finnish corporation having its principal place of business in Helsinki, Finland. Until April 2005, SNIO was known as Smartner Information Systems, Ltd. In order to avoid confusion with another company, SNIO will be referred to herein as “Smartner/SNIO.”

2. Visto is a Delaware corporation having its principal place of business at 275 Shoreline Drive, Suite 300, Redwood Shores, California 94065.

JURISDICTION AND VENUE

3. This is an action for the resolution of an existing conflict under the Declaratory Judgment Act, 28 U.S.C. §§ 2201 and 2202. The underlying causes of action arise under the patent laws of the United States. A case or controversy exists between Plaintiff and Visto. The amount in controversy between the parties exceeds \$75,000. This Court therefore has subject matter jurisdiction under 28 U.S.C. §§ 1331, 1332, and 1338(a).

4. On information and belief, this Court has personal jurisdiction over Visto because Visto is found in this District.

5. Venue for this action is proper in this District under 38 U.S.C. §§ 1391(b) and 1400(b) because Visto resides in this District and because a substantial part of the events giving rise to this claim occurred in this District.

PRIOR LITIGATION BETWEEN SMARTNER/SNIO AND VISTO

6. Pending in the Eastern District of Texas are two related cases captioned *Visto Corporation v. Smartner Information Systems, Ltd.*, Civil Action No. 2:05-CV-91-TJW, filed on February 25, 2005 (hereinafter, “the *Smartner* case” or “*Smartner*”) and *Seven Networks, Inc. v. Visto Corporation*, Civil Action No. 2:05-CV-365-TJW, filed on August 10, 2005 (“the *Seven* case” or “*Seven*”). In the *Smartner* case, Visto is accusing Smartner/SNIO of infringing three United States Patents. In the *Seven* case, Seven is accusing Visto of infringing two United States Patents owned by Seven.

1 7. In June 2006, Visto threatened to amend its complaint in the *Smartner* case and its
2 answer in the *Seven* case to allege infringement of Visto’s U.S. Patent Nos. 6,151,606 (the “‘606
3 patent”) and 7,039,679 (the “‘679 patent”) by Smartner/SNIO and Seven. (*See* Exhibits A and B
4 hereto.) In anticipation of Visto’s motion for leave to amend, Smartner/SNIO and Seven filed a
5 declaratory judgment action in this Court seeking a declaration that the ‘606 and ‘679 patents were not
6 infringed by either company and were unenforceable and invalid. (*See Seven Networks, Inc. v. Visto*
7 *Corporation*, N.D. Cal. Case No. 3:06-CV-03650-WHA, Docket Entry No. 1.) Subsequently, Visto
8 did move for leave to amend in both of the Eastern District of Texas cases, which both Smartner/SNIO
9 and Seven opposed.

10 8. Visto then filed a motion to dismiss or transfer the case pending in this Court in favor of
11 the pending cases in the Eastern District of Texas. (*See Seven v. Visto*, 3:06-CV-03650-WHA, Docket
12 Entry Nos. 10-12.)

13 9. On August 17, 2006, Judge Ward granted Visto’s motion for leave to amend in the
14 *Seven* case on the grounds that Visto was the first to file because it sought a meet and confer prior to
15 the time that Seven filed its declaratory judgment action in this Court. (*See* Exhibit C.)

16 10. In light of Judge Ward’s reasoning and the potential for a conflict among the Districts
17 on the “first to file rule,” Seven and Smartner/SNIO informed this Court that they did not oppose
18 Visto’s motion to dismiss or transfer. Accordingly, on August 29, 2006, this Court dismissed the
19 actions. (*See Seven v. Visto*, 3:06-CV-03650-WHA, Docket Entry No. 14.)

20 11. However, on January 26, 2007, Visto served notice that it was withdrawing its motion
21 for leave to assert the ‘606 and ‘679 patents in the *Smartner* case mentioning that the court had already
22 completed its *Markman* proceedings on the patents originally asserted. On January 31, 2007, in light
23 of Visto’s notice, Judge Ward denied Visto’s motion for leave to amend to assert the ‘606 and ‘679
24 patents against Smartner/SNIO. (*See* Exhibit D.) Accordingly, there is no presently filed case where
25 Visto’s allegation of infringement by Smartner/SNIO is at issue, and Smartner/SNIO seeks a
26 determination of that issue.

1 **SMARTNER/SNIO’S REASONABLE APPREHENSION OF SUIT**

2 12. This action is brought to resolve the apprehension under which Smartner/SNIO is
3 forced to conduct its business as a result of Visto’s threats to sue Smartner/SNIO for infringement of
4 certain patents (the ‘606 and ‘679 patents) purportedly owned by Visto.

5 13. Smartner/SNIO is a leading designer, manufacturer, and marketer of innovative wireless
6 solutions for the worldwide mobile communications market. Smartner/SNIO’s portfolio of award-
7 winning products is used by numerous organizations around the world and includes the Always-on-
8 Mail and Duality wireless platforms, software development tools, and software/hardware licensing
9 agreements.

10 14. As detailed above, Visto has actually accused Smartner/SNIO of infringing the ‘606 and
11 ‘679 patents. Visto’s allegations of infringement of the ‘606 and ‘679 patents have created in
12 Smartner/SNIO a reasonable apprehension that Visto will again sue Smartner/SNIO for patent
13 infringement of the ‘606 and ‘679 Visto patents. Smartner/SNIO believes that failure to determine the
14 issues presented by this case at this point in time will lead to substantial commercial injury to
15 Smartner/SNIO.

16 15. Smartner/SNIO therefore seeks a declaration by this Court that Smartner/SNIO’s
17 products and services do not infringe the ‘606 and ‘679 Visto patents, and that the ‘606 and ‘679 Visto
18 patents are invalid and unenforceable.

19 **COUNT I**

20 **Declaratory Judgment of Noninfringement of the ‘606 Patent**

21 16. Smartner/SNIO repeats and realleges paragraphs 1 through 15 of this Complaint as if
22 the same were full set forth herein.

23 17. Smartner/SNIO’s products (including its Duality and Always-on-Mail products) do not
24 infringe any valid claim of the ‘606 patent, either directly, indirectly, contributorily, or otherwise.
25 Seven has not induced others to infringe the ‘606 patent.

26 18. Smartner/SNIO is therefore entitled to a declaratory judgment that it does not infringe
27 the ‘606 patent.

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COUNT II

Declaratory Judgment of Invalidity of the ‘606 Patent

19. Smartner/SNIO repeats and realleges paragraphs 1 through 18 of this Complaint as if the same were full set forth herein.

20. The claims of the ‘606 patent are invalid for failure to meet the requirements specified in Title 35 of the United States Code, including, but not limited to, 35 U.S.C. §§ 101, 102, 103, and 112.

21. Smartner/SNIO is therefore entitled to a declaratory judgment that the ‘606 patent is invalid.

COUNT III

Declaratory Judgment of Unenforceability of the ‘606 Patent

22. Smartner/SNIO repeats and realleges paragraphs 1 through 21 of this Complaint as if the same were full set forth herein.

23. The claims of the ‘606 patent are unenforceable by reason of their having been procured through inequitable conduct and fraud. Particularly, the applicants failed to advise the Examiner for the ‘606 patent that U.S. Patent Nos. 6,023,708 (the “‘708 patent”), 5,961,590 (the “‘590 patent”), 5,968,131 (the “‘131 patent”), and 6,131,116 (the “‘116 patent”), patents of which the ‘679 claims priority, had been rejected, and the bases for the prior rejection by the Examiners for those patents. As such, the applicants knew of and were guilty of intentionally concealing material information from the USPTO concerning the prosecution histories of the ‘708, ‘590, ‘131, and ‘116 patents. The rejected claims of the ‘708, ‘590, ‘131, and ‘116 applications and the claims of the ‘679 application are similar claims in a similar technology. On October 15, 1998, the USPTO rejected all of the claims in the ‘708 application in light of various pieces of prior art. Those pieces of prior art included U.S. Patent No. 5,790,790 to Smith et al. (“Smith”), U.S. Patent No. 5,721,908 to Lagarde et al. (“Lagarde”), U.S. Patent No. 5,799,318 to Cardinal et al. (“Cardinal”), and U.S. Patent No. 5,875,159 to Cary et al. (“Cary”). On February 24, 1998, the USPTO rejected all the claims in the ‘590 application in light of U.S. Patent No. 5,647,022 to Brunson (“Brunson”). On April 14, 1998, the USPTO rejected all of the

1 claims in the '116 application in light of various pieces of prior art. Those pieces of prior art included
2 U.S. Patent No. 5,706,502 to Foley et al. ("Foley") and Using Netscape 2. The USPTO further
3 rejected all of the claims in the '116 application on October 27, 1998, in light of U.S. Patent No.
4 5,812,668 to Weber ("Weber") and U.S. Patent No. 5,768,510 to Gish ("Gish"), and on April 12, 1999,
5 in light of U.S. Patent No. 5,828,840 to Cowan et al. ("Cowan"). On January 25, 1999, the USPTO
6 rejected claims 28-46 of the '131 application in light of U.S. Patent No. 5,758,355 to Buchanan
7 ("Buchanan"). On October 26, 1998, the attorney of record for the patentee submitted an Information
8 Disclosure Statement ("IDS") for the '606 patent to the USPTO. The IDS listed the Smith, Lagarde,
9 Cardinal, and Cary art. On October 27, 1998, a supplemental IDS for the '606 patent was submitted to
10 the USPTO, listing the Foley art. The Brunson and Buchanan art was disclosed to the USPTO via
11 supplemental IDS's on January 11, 1999, and February 16, 1999, respectively. However, the attorney
12 of record failed to apprise the Examiner that the cited art was used in the rejection of the '708, '116,
13 '131, and '590 applications. Therefore, Visto had knowledge of information material to the
14 patentability of the '606 application and failed to disclose that information to the USPTO.

15 24. Furthermore, during the prosecution of the '606 patent, the applicants failed to disclose
16 to the Examiner the Lotus Notes software program, literature related to Lotus Notes, and the
17 Intellink/IntelliSync software programs and literature. The inventors (*e.g.*, David Cowan) and those
18 associated with the prosecution of the applications of the patents-in-suit were aware of the Lotus Notes
19 prior art and failed to disclose it to the Examiner. Likewise, the inventors (*e.g.*, Daniel Méndez) and
20 those associated with the prosecution of the applications of the patents-in-suit were aware of prior art
21 synchronizing translators and failed to disclose them to the Examiner. U.S. Patent Nos. 5,812,668,
22 5,768,510, 5,828,840, and Using Netscape 2, references cited by Examiners in co-pending
23 applications, were likewise not disclosed to the Examiner of the '606 patent. Each of these references
24 (and the other art mentioned above) is material prior art that could have been used to form the basis for
25 a rejection of the claims and that was not disclosed.

26 25. Smartner/SNIO is therefore entitled to a declaratory judgment that the claims of the
27 '606 patent are unenforceable.

1 **COUNT IV**

2 **Declaratory Judgment of Noninfringement of the ‘679 Patent**

3 26. Smartner/SNIO repeats and realleges paragraphs 1 through 25 of this Complaint as if
4 the same were full set forth herein.

5 27. Smartner/SNIO’s products do not infringe any valid claim of the ‘679 patent, either
6 directly, indirectly, contributorily, or otherwise. Smartner/SNIO has not induced others to infringe the
7 ‘679 patent.

8 28. Smartner/SNIO is therefore entitled to a declaratory judgment that it does not infringe
9 the ‘679 patent.

10 **COUNT V**

11 **Declaratory Judgment of Invalidity of the ‘679 Patent**

12 29. Smartner/SNIO repeats and realleges paragraphs 1 through 28 of this Complaint as if
13 the same were full set forth herein.

14 30. The claims of the ‘679 patent are invalid for failure to meet the requirements specified
15 in Title 35 of the United States Code, including, but not limited to, 35 U.S.C. §§ 101, 102, 103, and
16 112.

17 31. Smartner/SNIO is therefore entitled to a declaratory judgment that the ‘679 patent is
18 invalid.

19 **COUNT VI**

20 **Declaratory Judgment of Unenforceability of the ‘679 Patent**

21 32. Smartner/SNIO repeats and realleges paragraphs 1 through 31 of this Complaint as if
22 the same were full set forth herein.

23 33. The claims of the ‘679 patent are unenforceable by reason of their having been procured
24 through inequitable conduct and fraud. Particularly, the applicants failed to advise the Examiner for
25 the ‘679 patent that the ‘708 patent, the ‘590 patent, the ‘131 patent, and the ‘116 patent, patents of
26 which the ‘679 claims priority, had been rejected, and the bases for the prior rejection by the
27 Examiners for those patents. As such, the applicants knew of and were guilty of intentionally
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1 concealing material information from the USPTO concerning the prosecution histories of the ‘708,
2 ‘590, ‘131, and ‘116 patents. The rejected claims of the ‘708, ‘590, ‘131, and ‘116 applications and
3 the claims of the ‘679 application are similar claims in a similar technology. On October 15, 1998, the
4 USPTO rejected all of the claims in the ‘708 application in light of various pieces of prior art. Those
5 pieces of prior art included Smith, Lagarde, Cardinal, and Cary. On February 24, 1998, the USPTO
6 rejected all the claims in the ‘590 application in light of Brunson. On April 14, 1998, the USPTO
7 rejected all of the claims in the ‘116 application in light of various pieces of prior art. Those pieces of
8 prior art included Foley and Using Netscape 2. The USPTO further rejected all of the claims in the
9 ‘116 application on October 27, 1998, in light of Weber and Gish, and on April 12, 1999, in light of
10 Cowan. On January 25, 1999, the USPTO rejected claims 28-46 of the ‘131 application in light of
11 Buchanan. On January 21, 2005, the attorney of record for the ‘679 patent submitted 14 IDS’s
12 encompassing 208 pieces of art to the USPTO. The IDS’s listed the Smith, Lagarde, Cardinal, Cary,
13 Foley, Brunson, and Buchanan art. However, the attorney of record failed to apprise the Examiner that
14 the cited art was used in the rejection of the ‘708, ‘116, ‘131, and ‘590 applications. Therefore, Visto
15 had knowledge of information material to the patentability of the ‘679 application and failed to
16 disclose that information to the USPTO.

17 34. Additionally, the applicants for the ‘679 patent were also guilty of other deceptions,
18 concealments, and misrepresentations before the USPTO. Particularly, during the prosecution of the
19 ‘679 patent, applicants failed to advise the Examiner that U.S. Patent No. 6,085,192 (the “‘192”
20 patent), a patent of which the ‘679 claims priority, had been rejected during reexamination, and the
21 bases for the prior rejection by the Examiners. As such, the applicants knew of and were guilty of
22 intentionally concealing material information from the USPTO concerning the prosecution histories of
23 the ‘192 patent. The rejected claims of the ‘192 application and the claims of the ‘679 application are
24 similar claims in a similar technology. On February 7, 2005, the USPTO rejected claims 1, 9-11, and
25 20-25 in the ‘192 application in light of various pieces of prior art. Those pieces of prior art included
26 U.S. Patent No. 5,857,201 to Wright et al. (“Wright”) and U.S. Patent No. 6,006,274 to Hawkins et al.
27 (“Hawkins”). On January 21, 2005, the attorney of record for the ‘679 patent submitted 14 IDS’s

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1 encompassing 208 pieces of art to the USPTO. Although the IDS's listed the Wright and Hawkins art,
2 the attorney of record failed to apprise the Examiner that the cited art was used in the rejection of the
3 '192 application. Therefore, Visto had knowledge of information material to the patentability of the
4 '679 application and failed to disclose that information to the USPTO.

5 35. Furthermore, the applicants for the '679 patent were also guilty of deceptions,
6 concealments, and misrepresentations before the USPTO for failing to advise the Examiner that the
7 request for reexamination of the 708 patent, a patent of which the '679 claims priority, had been
8 granted. In response to the request for reexamination of the '708 patent, the Examiner concluded that a
9 substantial question of patentability existed in light of U.S. Patent No. 5,727,202 to Kucala ("Kucala").
10 As such, the applicants knew of and were guilty of intentionally concealing material information from
11 the USPTO concerning the grant of reexamination of the '708 patent. Visto had knowledge of
12 information material to the patentability of the '679 application and failed to disclose that information
13 to the USPTO.

14 36. Additional acts of inequitable conduct were committed during the prosecution of the
15 '679 patent. Despite its continuing duty of disclosure, the applicants never directed the Examiner to
16 the relevant features of Lotus Notes (e.g., "replication"). Instead, Lotus Notes references were merely
17 included in a long list of prior art, without directing the Examiner to any relevant aspect of them.

18 37. Two references (K. Brown, et al., *Mastering Lotus Notes* published by Cybex Inc.
19 (1995); P. Grous, "Creating and Managing a Web Site with Lotus' InterNotes Web Publisher," *The*
20 *View* Vol. 1, Issue 4 (September/October 1995)), produced to Visto on August 8, 2005, were not
21 brought to the attention of the Examiner of the '679 patent. Failure to point out the relevant features of
22 the Lotus Notes references and relevant patents is further evidence that the '679 patent is
23 unenforceable due to Visto's inequitable conduct. The applicants failed to disclose the above material
24 information or comply with M.P.E.P. § 2001.6(c) with an intent to deceive. Accordingly, the '679
25 patent is invalid.

26 38. Smartner/SNIO is therefore entitled to a declaratory judgment that the claims of the
27 '679 patent are unenforceable.

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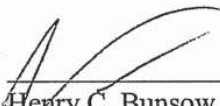
PRAYER FOR RELIEF

WHEREFORE, Plaintiff Seven Networks International OY prays that the Court enter judgment that:

- a) U.S. Patent No. 6,151,606 is not infringed by Smartner/SNIO's products;
- b) The claims of U.S. Patent No. 6,151,606 are invalid;
- c) U.S. Patent No. 6,151,606 is unenforceable;
- d) U.S. Patent No. 7,039,679 is not infringed by Smartner/SNIO's products;
- e) The claims of U.S. Patent No. 7,039,679 are invalid; and
- f) U.S. Patent No. 7,039,679 is unenforceable.

Dated: February 6, 2007

Respectfully submitted,
HOWREY LLP

By: 
Henry C. Bunsow
K.T. Cherian
James C. Pistorino
James F. Valentine

Attorneys for Plaintiff SEVEN
NETWORKS INTERNATIONAL OY

8433026

EXHIBIT A

United States Patent [19]
Mendez

[11] **Patent Number:** **6,151,606**
 [45] **Date of Patent:** **Nov. 21, 2000**

[54] **SYSTEM AND METHOD FOR USING A WORKSPACE DATA MANAGER TO ACCESS, MANIPULATE AND SYNCHRONIZE NETWORK DATA**

5,701,423 12/1997 Crozier 395/335
 5,706,502 1/1998 Foley et al. 707/10

(List continued on next page.)

[75] **Inventor:** Daniel J. Mendez, Menlo Park, Calif.

OTHER PUBLICATIONS

[73] **Assignee:** Visto Corporation, Mountain View, Calif.

Article by Bellovin et al., entitled: "Network Firewalls" Published by IEEE Communications Magazine Sep. 1994, pp. 50-57.

[21] **Appl. No.:** 09/008,354

Article by Steffen Stempel, entitled: "IPAccess—An Internet Service Access System for Firewall Installations" Published by IEEE Communications Magazine Feb. 16, 1995, pp. 31-41.

[22] **Filed:** Jan. 16, 1998

(List continued on next page.)

[51] **Int. Cl.⁷** **G06F 17/30**

[52] **U.S. Cl.** **707/201; 707/8; 707/10; 707/202; 707/203**

[58] **Field of Search** 707/8, 10, 202, 707/203, 506, 511; 709/103, 201, 204, 224, 228, 302, 303; 706/14, 45; 345/302, 340; 320/257, 463; 705/35; 395/500.32

Primary Examiner—Thomas G. Black
Assistant Examiner—Diane D. Mizrahi
Attorney, Agent, or Firm—Graham & James LLP

[56] **References Cited**

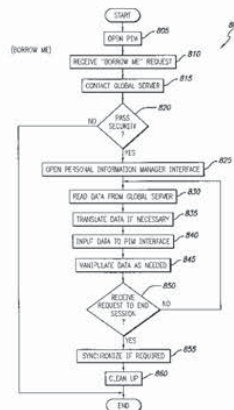
[57] **ABSTRACT**

U.S. PATENT DOCUMENTS

4,831,582	5/1989	Miller et al.	707/104
4,875,159	10/1989	Cary et al.	364/200
4,897,781	1/1990	Chang	364/200
5,263,157	11/1993	Janis	707/9
5,386,564	1/1995	Shearer et al.	707/500
5,392,390	2/1995	Crozier	395/161
5,572,643	11/1996	Judson	395/793
5,581,749	12/1996	Hossain et al.	707/1
5,600,834	2/1997	Howard	395/617
5,613,012	3/1997	Hoffman et al.	382/115
5,623,601	4/1997	Vu	395/187.01
5,627,658	5/1997	Connors et al.	358/407
5,634,053	5/1997	Noble et al.	707/4
5,647,002	7/1997	Brunson	380/49
5,652,884	7/1997	Palevich	395/651
5,666,530	9/1997	Clark et al.	395/617
5,666,553	9/1997	Crozier	395/803
5,678,039	10/1997	Hinks et al.	395/604
5,680,542	10/1997	Mulchandani	395/183.04
5,682,524	10/1997	Freund et al.	395/605
5,684,990	11/1997	Boothby	707/203
5,687,322	11/1997	Deaton	705/14
5,701,400	12/1997	Amado	706/45

A system includes a communications module for downloading workspace data from a remote site, an application program interface coupled to the communications module for communicating with a workspace data manager to enable manipulation of the downloaded workspace data and thereby create manipulated data, and a general synchronization module coupled to the communications module for synchronizing the manipulated data with the workspace data stored at the remote site. An instantiator requests the workspace data manager to provide an interface for enabling manipulation of the downloaded workspace data. The workspace data manager may create another instance of the interface or may provide access to its only interface to enable manipulation of the data. A data reader may translate the downloaded workspace data from the format used by the remote site to the format used by the workspace data manager. Upon logout, a de-instantiator synchronizes the data with the global server and deletes the workspace data. The system handles the situation where the data stored at the remote site has not changed and therefore includes the downloaded data, and the situation the data stored at the remote site has been modified and therefore is different than the downloaded data.

21 Claims, 6 Drawing Sheets



U.S. PATENT DOCUMENTS

5,710,918	1/1998	Lagarde et al.	395/610
5,713,019	1/1998	Keaten	395/610
5,715,403	2/1998	Stefik	705/44
5,717,925	2/1998	Harper et al.	395/613
5,721,908	2/1998	Lagarde et al.	395/610
5,721,914	2/1998	DeVries	707/104
5,729,735	3/1998	Meyering	395/610
5,745,360	4/1998	Leone et al.	364/140
5,757,916	5/1998	MacDoran et al.	380/25
5,758,150	5/1998	Bell et al.	395/610
5,758,354	5/1998	Huang et al.	707/201
5,758,355	5/1998	Buchanan	707/201
5,765,171	6/1998	Gehani et al.	707/203
5,778,346	7/1998	Frid-Nielsen et al.	395/208
5,790,425	8/1998	Wagle	364/551.01
5,790,790	8/1998	Smith et al.	395/200.36
5,799,318	8/1998	Cardinal et al.	707/104
5,832,483	11/1998	Barker	707/8
5,862,325	1/1999	Reed	395/200.31
5,870,759	2/1999	Bauer et al.	707/201
5,951,652	9/1999	Ingrassia et al.	709/248
5,966,714	10/1999	Huang et al.	707/201
5,999,947	12/1999	Zollinger et al.	707/203

OTHER PUBLICATIONS

Article by Braun et al., entitled: "Web Traffic Characterization: an assessment of the impact of caching documents from NCSA's web server" Published by Elsevier Science B.V. 1995 pp. 37-51.

Article by Nelson et al., entitled: "Security for Infinite Networks" Published by IEEE Communications Magazine on Aug. 22, 1995, pp. 11-19.

Article by Greenwald et al., entitled: "Designing an Academic Firewall: Policy, Practice, and Experience with SURF" Published by IEEE Communications Magazine on Feb. 22, 1996, pp. 79-92.

Article by Kiuchi et al., entitled: "C-HTTP—The Development of a Secure, Closed HTTP-based Network on the Internet" Published by IEEE Proceedings of SNDSS on Feb. 22, 1996, pp. 64-75.

Article by S. Cobb, entitled: "Establishing Firewall Policy" Published by National Computer Security Assn. on Jun. 25-27, 1996, pp. 198-205.

Margaret J. Brown, "The Visto Briefcase Pro Puts Your PIM On The Internet", URL:http://www.zdnet.com/zdnn/stories/zdnn_display/0,3440,341892,00.html, Aug. 13, 1998, 1 page.

Web site entitled "Bookmark Translator 2.0: This Utility transform Microsoft Internet Explore's bookmarks in the format valid for Netscape Navigator and viceversa," Enzo Marinacci, Rome-Jul. 1997, URL=<http://www.bns.it/emware/BookmarkTranslator-uk.htm>, pp. 1-4.

FIG. 1
(NETWORK SYSTEM)

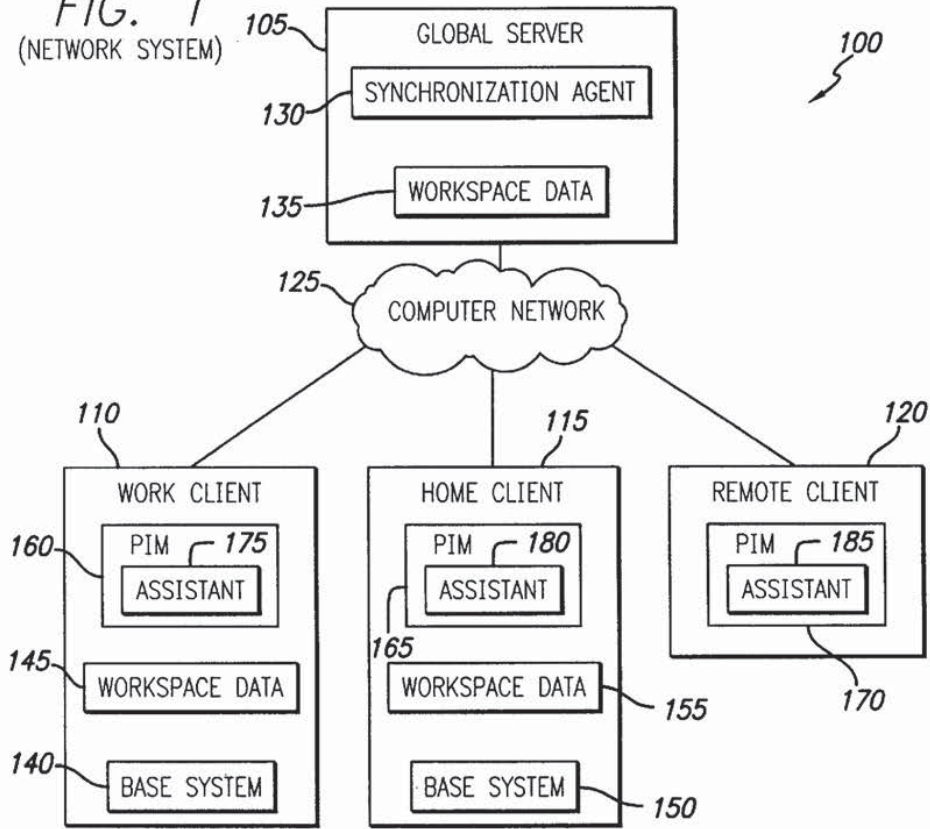
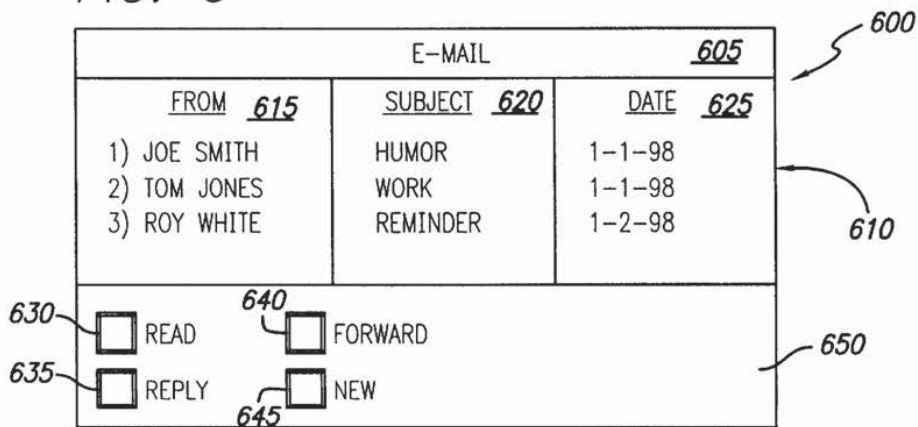
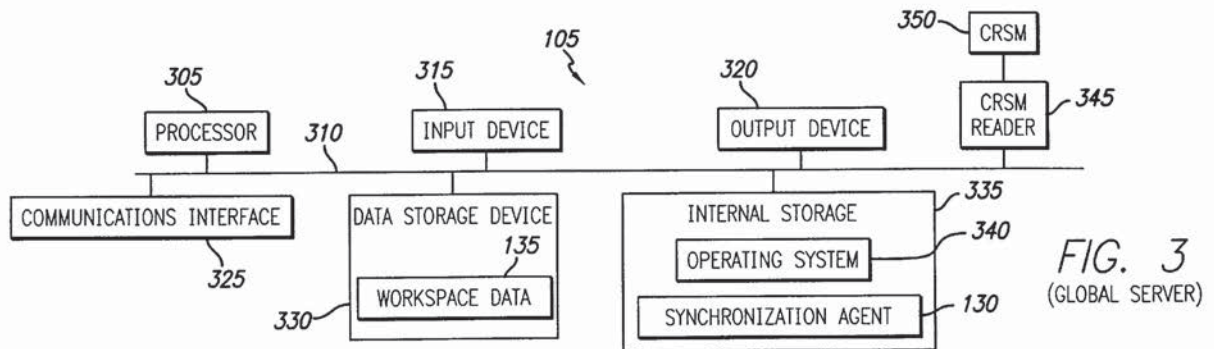
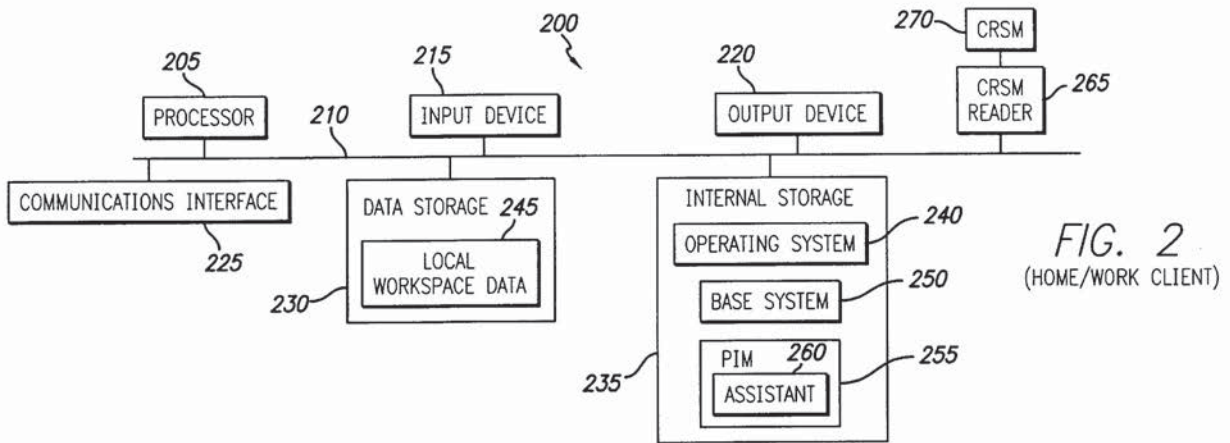


FIG. 6





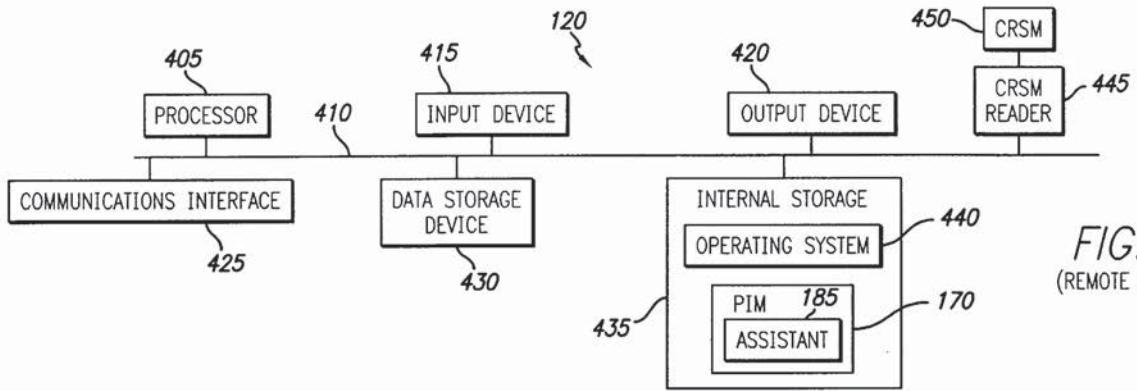


FIG. 4
(REMOTE CLIENT)

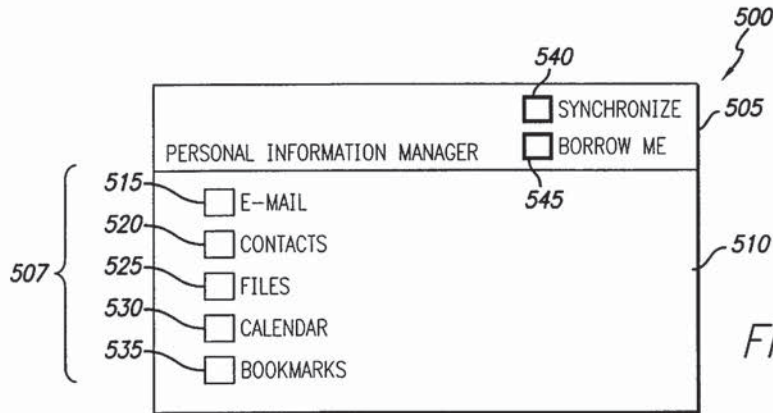


FIG. 5

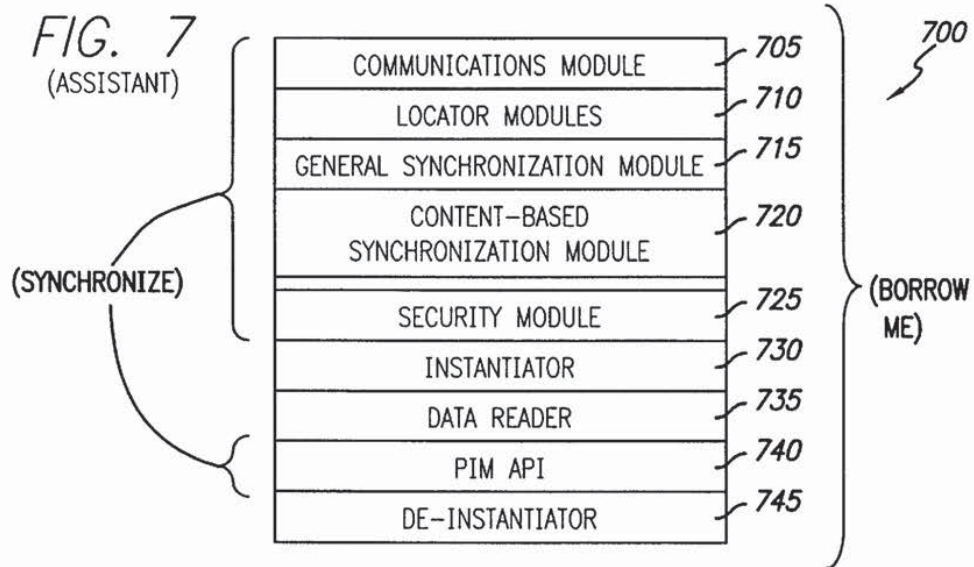
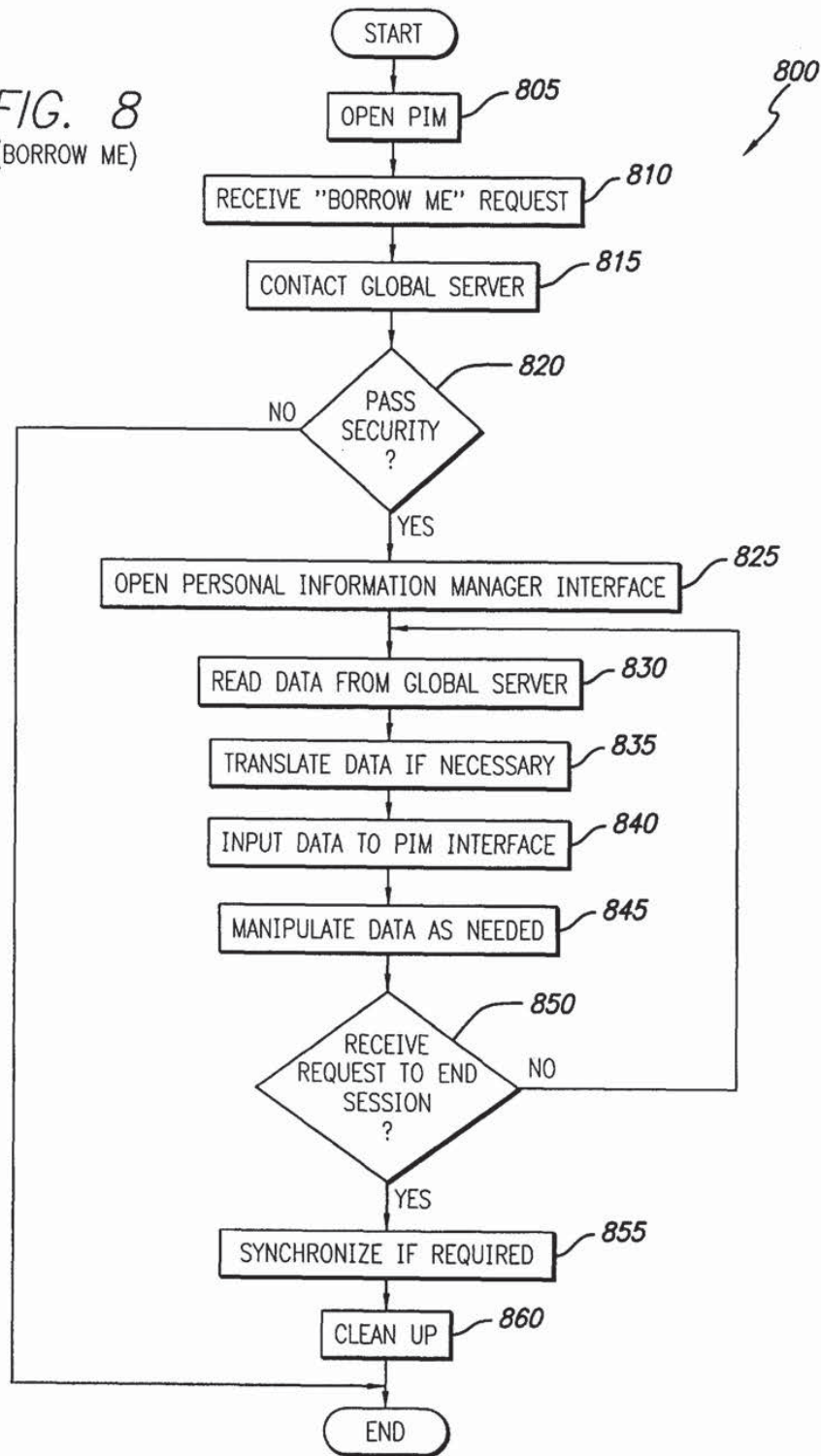


FIG. 8
(BORROW ME)



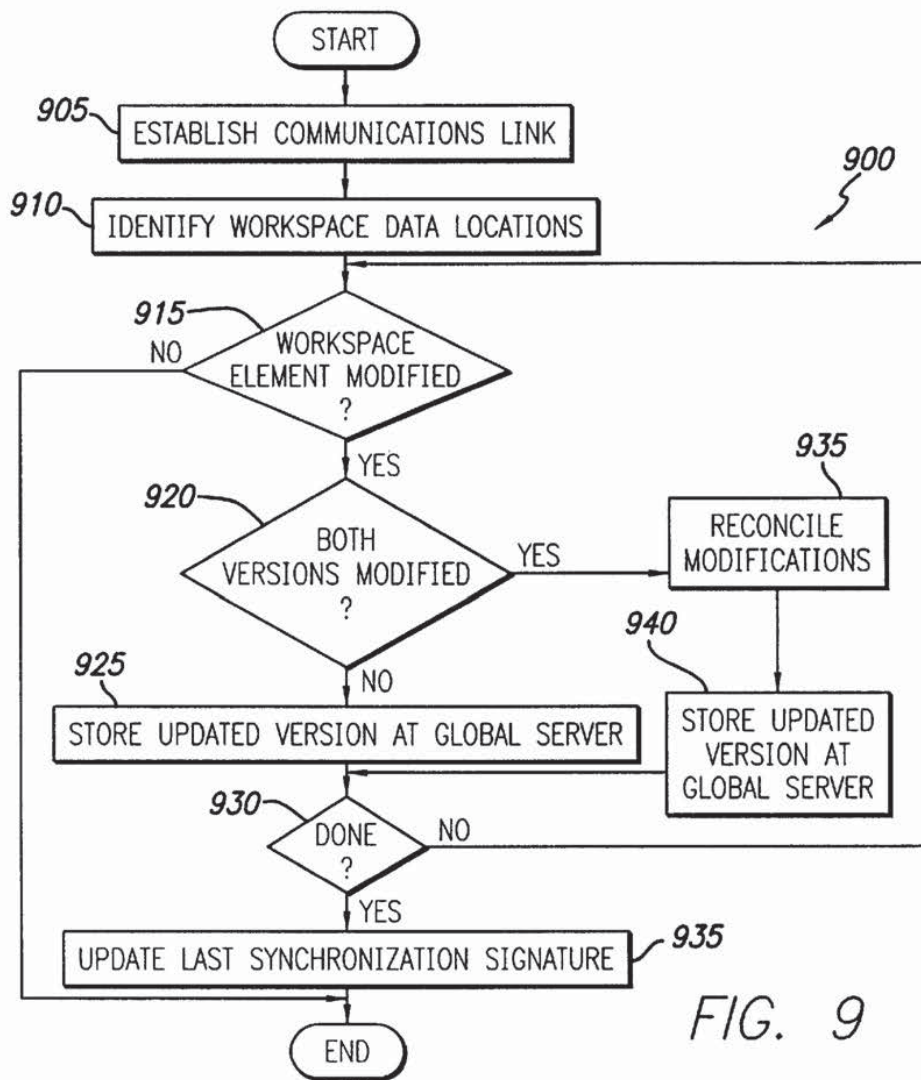


FIG. 9

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**SYSTEM AND METHOD FOR USING A
WORKSPACE DATA MANAGER TO ACCESS,
MANIPULATE AND SYNCHRONIZE
NETWORK DATA**

PRIORITY REFERENCES

This application claims priority of and hereby incorporates by reference U.S. patent application Ser. No. 08/766,307 pending, entitled "System and Method for Globally Accessing Computer Services," filed on Dec. 13, 1996, by inventors Mark D. Riggins, et al; U.S. patent application Ser. No. 08/841,950 pending, entitled "System and Method for Enabling Secure Access to Services in a Computer Network," filed on Apr. 8, 1997, by inventor Mark D. Riggins; U.S. patent application Ser. No. 08/865,075, and now U.S. Pat. No. 6,023,708 entitled "System and Method for Using a Global Translator to Synchronize Workspace Elements Across a Network," filed on May 29, 1997, by inventors Daniel J. Mendez, et al.; U.S. patent application Ser. No. 08/835,997 pending, entitled "System and Method for Securely Synchronizing Multiple Copies of a Workspace Element in a Network," filed on Apr. 11, 1997, by inventors Daniel J. Mendez, et al.; U.S. patent application Ser. No. 08/897,888 pending and now U.S. Pat. No. 5,961,590, entitled "System and Method for Synchronizing Electronic Mail Across a Network," filed on Jul. 22, 1997, by inventors Daniel J. Mendez, et al.; U.S. patent application Ser. No. 08/899,277, entitled "System and Method for Using an Authentication Applet to Identify and Authenticate a User in a Computer Network," filed on Jul. 23, 1997, by inventor Mark D. Riggins; and U.S. patent application Ser. No. 08/903,118 pending, entitled "System and Method for Globally and Securely Accessing Unified Information in a Computer Network," filed on Jul. 30, 1997, by inventors Daniel J. Mendez, et al.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to computer networks, and more particularly provides a system and method for using a workspace data manager to access network data.

2. Description of the Background Art

Data accessibility and consistency are significant concerns for computer users. For example, when a roaming user, i.e., a user who travels to a remote location, needs to review or manipulate data such as an e-mail or prepared document, the roaming user must either carry the data to the remote location or access a workstation remotely. Maintaining a true copy of a database is a cumbersome process. Accordingly, system designers have developed an array of techniques for connecting a remote terminal across a computer network to the workstation storing the data.

To guarantee readability of the downloaded data, the user must carry a laptop computer containing all the applications needed to present and enable manipulation of the downloaded data, or find a network-connected computer that contains the needed application programs. Further, when maintaining multiple independently modifiable copies of particular data, a user risks using an outdated version. By the time the user notices an inconsistency, interparty miscommunication or data loss may already have resulted. The user must then spend more time reconciling the inconsistent versions.

The problems of data accessibility and inconsistency are exacerbated when multiple copies of a document are main-

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tained at different network locations. For example, due to network security systems such as conventional firewall technology, a user may have access only to a particular one of these network locations. Without access to the other sites, the user cannot confirm that the version on the accessible site is the most recent draft.

SUMMARY OF THE INVENTION

The present invention provides a system for using a workspace data manager to access, manipulate and synchronize workspace data. A workspace data manager may include a Personal Information Manager (PIM), a word processing program, a spreadsheet program, or any application program that enables manipulation of workspace data. Workspace data includes at least one workspace element, such as an e-mail, a day of calendar data, a word document, a bookmark, a sheet of spreadsheet data, or a portion thereof. Workspace data may include e-mails, calendar data, word documents, bookmarks, spreadsheet data, or portions thereof.

The system includes a communications module for downloading workspace data from a remote site, an application program interface coupled to the communications module for communicating with a workspace data manager to enable manipulation of the downloaded workspace data and thereby create manipulated data, and a general synchronization module coupled to the communications module for synchronizing the manipulated data with the workspace data stored at the remote site. An instantiator requests the workspace data manager to provide an interface for enabling manipulation of the downloaded workspace data. The workspace data manager may create another instance of the interface or may provide access to its only interface to enable manipulation of the data. A data reader translates the downloaded workspace data from the format used by the remote site to the format used by the workspace data manager. For example, data stored at the global server site in a canonical format may be translated to Organizer™, Outlook™ or other workspace element manager format. Upon logout, a de-instantiator initiates synchronization and deletes the data stored locally. It will be appreciated that the system handles the situation where the data stored at the remote site has not changed and therefore includes the downloaded data, and the situation the data stored at the remote site has been modified and therefore is different than the downloaded data.

The present invention further provides a method of using a workspace data manager to enable access, manipulate and synchronize workspace data. The method comprises the steps of downloading data from a remote site, requesting a workspace data manager to enable manipulation of the data and thereby create manipulated data, and synchronizing the manipulated data with the data stored at the remote site.

The system and method of the present invention advantageously enable the use of an integral interface, instead of using an interface for the synchronization software, an interface for the workspace data manager and an interface for the communication engine downloading the workspace data. Accordingly, the user need not become familiar with multiple interfaces. The user need only find a remote site that includes a workspace data manager that includes assistant-like functionality. Assistant-like functionality includes services for interfacing between the workspace data manager and the global server. Because the system and method substitute the global data for the local data, or create an instance for the global data, the system and method further advantageously enable a workspace data manager to provide

an interface for manipulating workspace data without compromising the local data.

Further, the system and method advantageously provide a simple graphical user interface for enabling borrowing of the workspace data manager and synchronization of manipulated data. The system and method also advantageously delete downloaded data and all interfaces from the local client, so that no traces are left on the local client for unprivileged users to review. Using the technology described in the applications incorporated by reference above, the system and method of the present invention further enable access and synchronization of data across different workspace data manager formats and across network firewalls.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram illustrating a network system, in accordance with the present invention;

FIG. 2 is a block diagram illustrating details of the home or work client of FIG. 1;

FIG. 3 is a block diagram illustrating details of the global server of FIG. 1;

FIG. 4 is a block diagram illustrating details of the remote client of FIG. 1;

FIG. 5 is a block diagram illustrating details of an assistant of FIG. 1;

FIG. 6 illustrates a personal information manager interface;

FIG. 7 illustrates a second personal information manager interface incorporating an assistant interface;

FIG. 8 is a flowchart illustrating a method of accessing network data from a remote site in accordance with the present invention; and

FIG. 9 is a flowchart illustrating a method of synchronizing network data from a remote site.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 is a block diagram illustrating a network system 100 for using a workspace data manager to access, manipulate and synchronize workspace data in accordance with the present invention. A workspace data manager may include a Personal Information Manager (PIM), a word processing program, a spreadsheet program, or any application program that enables manipulation of workspace data. Workspace data includes at least one workspace element, such as an e-mail, a day of calendar data, a word document, a bookmark, a sheet of spreadsheet data, or a portion thereof. Workspace data may include e-mails, calendar data, word documents, bookmarks, spreadsheet data, or portions thereof. Although the network system 100 is described with reference to PIM's, one skilled in the art will recognize that the system 100 will work with any workspace data manager.

Network system 100 includes a global server 105 coupled via a computer network 125 to a work client 110, to a home client 115 and to a remote client 120. The global server 105 includes a synchronization agent 130 and workspace data 135. The work client 110 includes a base system 140 and workspace data 145. The home client 115 includes a base system 150 and workspace data 155.

Each of the base system 140 and the base system 150 cooperate with the synchronization agent 130 to synchronize workspace data 135, workspace data 145 and workspace data 155 between the work client 110, the home client 115

and the global server 105. Synchronization of workspace data 135, 145 and 155 is described in detail in the patent applications incorporated by reference above. However, a brief example of synchronization is provided for completeness.

First, the base system 140 on the work client 110 site negotiates a secure communications channel via any firewalls with the synchronization agent 130, for example, using Secure Sockets Layer (SSL) technology. The base systems 140 examines version information and if necessary the content of a workspace to determine the most updated version. The most updated version is then stored at the client 110 site and at the global server 105 site. The base system 140 repeats these operations for all workspace elements selected for synchronization. Second, the base system 150 on the home client 115 site uses similar steps to synchronize its workspace data 155 with the workspace data 135 on the global server 105 site. Accordingly, the most updated versions of the workspace data 135, 140 and 145 are stored at all three sites.

Each of the work client 110, the home client 115 and the remote client 120 includes a respective workspace data manager, e.g., a Personal Information Manager (PIM) 160, 165 and 170 such as Outlook™ 98 developed by Microsoft Corporation, Organizer 97 developed by Lotus Development Corporation or Sidekick 98 developed by Starfish Software. Each PIM 160, 165 and 170 includes an assistant 175, 180 and 185 that adds data access and synchronization functions to the PIM 160, 165 and 170. Accordingly, a user can transparently use an assistant 175, 180 or 185 via a PIM 160, 165 or 170 to access workspace data 135 from the global server 105, to present and enable manipulation of downloaded workspace data 135, and to synchronize manipulated downloaded data 135 with the workspace data 135 stored on the global server 105. Components and operations of the assistant 175, 180 or 185 are described in detail with reference to FIGS. 7-9.

FIG. 2 is a block diagram illustrating details of a data-synchronizing client 200, in a generic embodiment which exemplifies each of the work client 110 and the home client 115. The client 200 includes a processor 205, such as an Intel Pentium® microprocessor or a Motorola Power PC® microprocessor, coupled to a communications channel 210. The client 200 further includes an input device 215 such as a keyboard and mouse, an output device 220 such as a Cathode Ray Tube (CRT) display, data storage 230 such as a magnetic disk, and internal storage 235 such as Random-Access Memory (RAM), each coupled to the communications channel 210. A communications interface 225 couples the communications channel 210 to the computer network 125.

An operating system 240 controls processing by processor 205, and is typically stored in data storage 230 and loaded into internal storage 235 (as illustrated) for execution. A base system 250, which cooperates with the synchronization agent 130 for synchronizing local workspace data 245 with workspace data 135, also may be stored in data storage 230 and loaded into internal storage 235 (as illustrated) for execution by processor 205. The local workspace data 245 exemplifies workspace data 145 or workspace data 150, and may be stored in data storage 230.

A PIM 255 includes an assistant 260, which enables a user to download workspace data 135 from the global server 105, and to use the PIM 255 for displaying and manipulating the workspace data 135. The assistant 260 further enables the PIM 255 to synchronize the manipulated data 135 with the

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workspace data 135 on the global server 105. The PIM 255 exemplifies each of the PIM 160 on the work client 110 and the PIM 165 on the home client 115. The assistant 260 exemplifies each of the assistant 175 on the work client 110 and the assistant 180 on the home client 115. The PIM 255 may be stored in data storage 230, and loaded into internal storage 235 (as illustrated) for execution by the processor 205.

One skilled in the art will recognize that the system 100 may also include additional information, such as network connections, additional memory, additional processors, LANs, input/output lines for transferring information across a hardware channel, the Internet or an intranet, etc. One skilled in the art will also recognize that the programs and data may be received by and stored in the system 100 in alternative ways. For example, a computer-readable storage medium (CRSM) reader 265 such as a magnetic disk drive, hard disk drive, magneto-optical reader, CPU, etc. may be coupled to the signal bus 210 for reading a computer-readable storage medium (CRSM) 270 such as a magnetic disk, a hard disk, a magneto-optical disk, RAM, etc. Accordingly, the system 100 may receive programs and data via the CRSM reader 265.

FIG. 3 is a block diagram illustrating details of the global server 105. The global server 105 includes a processor 305, such as an Intel Pentium® microprocessor or a Motorola Power PC® microprocessor, coupled to a communications channel 310. The global server 105 further includes an input device 315 such as a keyboard and mouse, an output device 320 such as a CRT display, data storage 325 such as a magnetic disk, and internal storage 330 such as RAM, each coupled to the communications channel 310. A communications interface 325 couples the communications channel 310 to the computer network 125.

An operating system 340 controls processing by processor 305, and is typically stored in data storage 330 and loaded into internal storage 335 (as illustrated) for execution. The synchronization agent 130, which cooperates with the base system 250 (FIG. 2) for synchronizing local workspace data 245 with workspace data 135, also may be stored in data storage 330 and loaded into internal storage 335 (as illustrated) for execution by processor 305. The workspace data 135 may be stored in data storage 230.

One skilled in the art will recognize that the system 100 may also include additional information, such as network connections, additional memory, additional processors, LANs, input/output lines for transferring information across a hardware channel, the Internet or an intranet, etc. One skilled in the art will also recognize that the programs and data may be received by and stored in the system 100 in alternative ways. For example, a CRSM reader 345 such as a magnetic disk drive, hard disk drive, magneto-optical reader, CPU, etc. may be coupled to the signal bus 310 for reading a CRSM 350 such as a magnetic disk, a hard disk, a magneto-optical disk, RAM, etc. Accordingly, the system 100 may receive programs and data via the CRSM reader 345.

FIG. 4 is a block diagram illustrating details of the remote client 120. The client 120 includes a processor 405, such as an Intel Pentium® microprocessor or a Motorola Power PC® microprocessor, coupled to a communications channel 410. The client 120 further includes an input device 415 such as a keyboard and mouse, an output device 420 such as a CRT display, data storage 425 such as a magnetic disk, and internal storage 430 such as RAM, each coupled to the communications channel 410. A communications interface

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425 couples the communications channel 410 to the computer network 125.

An operating system 440 controls processing by processor 405, and is typically stored in data storage 430 and loaded into internal storage 435 (as illustrated) for execution. The PIM 170 and assistant 185 may be stored in data storage 430, and loaded into internal storage 435 (as illustrated) for execution by the processor 405.

One skilled in the art will recognize that the system 100 may also include additional information, such as network connections, additional memory, additional processors, LANs, input/output lines for transferring information across a hardware channel, the Internet or an intranet, etc. One skilled in the art will also recognize that the programs and data may be received by and stored in the system 100 in alternative ways. For example, a CRSM reader 445 such as a magnetic disk drive, hard disk drive, magneto-optical reader, CPU, etc. may be coupled to the signal bus 310 for reading a CRSM 450 such as a magnetic disk, a hard disk, a magneto-optical disk, RAM, etc. Accordingly, the system 100 may receive programs and data via the CRSM reader 445.

FIG. 5 is a block diagram illustrating a PIM interface 500, which includes a header 505 and a selection window 510.

The header 505 includes a synchronize button 540 and a "borrow me" button 545, which are presented by the assistant 175, 180 or 185 incorporated in the PIM 160, 165 or 170. Invoking the synchronize button 540 causes the assistant 175, 180 or 185 to enable synchronization of data entered into the PIM 160, 165 or 170 with the workspace data 135 on the global server 135. The synchronize button 540 may enable the user to configure a preference file that indicates when automatic synchronization is to initiate and may also enable a user to effect manual synchronization.

The "borrow me" button 545 enables a user to use a PIM 160, 165 or 170 for viewing and manipulating workspace data 135 downloaded from the global server 105. That is, invoking the "borrow me" button 545 causes the corresponding assistant 175, 180 or 185 to communicate with the global server 105, to provide user identification and authentication information to the global server 105, to download workspace data 135 from the global server 105, to display and enable manipulation of the downloaded data 135 using the PIM interface 500, and to synchronize the manipulated downloaded data 135 upon logout. Since the PIM interface 500 is provided by the pre-existing PIM, the assistant 175, 180 or 185 need not provide its own data interface. Only a single interface is needed.

It will be appreciated that upon logout, the base systems 140 and 150 will cooperate with the synchronization agent 130 to synchronize automatically the workspace data 135 on the global server 105 with the workspace data 145 and 155. Accordingly, the user always has access to the most updated versions of workspace data from any site that executes a PIM 160, 165 or 170 having an assistant 175, 180 or 185 embodied therein.

It will be appreciated that the synchronize button 540 is most helpful to the work client 110 and the home client 115, since typically the work client 110 and home client 115 will set the preference file to configure automatic synchronization. Synchronization of the manipulated workspace data 135 at the remote client 120 will most often be effected through the automatic logout procedures of the "borrow me" button. Logout is described in greater detail with reference to the Outlook™ and Lotus Organizer examples shown and described below with reference to FIG. 7. Accordingly, the borrow me button 545 is most helpful to the remote client 120.

The selection window **510** provides a list of buttons **507**, wherein each button **507** corresponds to a set of workspace elements, e.g., e-mails **515**, contacts **520**, files **525**, calendar data **530** and bookmarks **535**. A mouse-down on a virtual button **507** causes the selection of a corresponding workspace element set and the selection of a corresponding user interface for displaying and enabling manipulation of the workspace elements included in the set. For example, selection of button **515** selects the e-mail set, and selects a corresponding user interface for displaying, writing, forwarding, etc. e-mails. Selecting a button **507** causes the assistant **175**, **180** or **185** to download the corresponding workspace data **135**, and causes the PIM **160**, **165** or **170** to display and enable manipulation of the downloaded data **135** on a workspace element set interface (shown and described with reference to FIG. 6).

FIG. 6 illustrates an example e-mail workspace element set user interface **600** (commonly referred to as the "In-Box") for displaying received e-mails. The user interface **600** includes a header **605**, an e-mail list window **610** and a manipulation command window **650**.

The header **605** lists the name of the workspace element set, namely, "E-Mail." The e-mail list window **610** comprises three columns, including an origin column **615** which provides the origin of each e-mail, a subject column **620** which provides the subject of each e-mail, and a date column **625** which provides the date each e-mail was received. The e-mail list window **610** may display e-mails stored in a local e-mail database (not shown), e-mails stored in the e-mail server (not shown) or e-mails downloaded from the global server **105**. The e-mails shown include a first e-mail from Joe Smith, a second e-mail from Tom Jones, and a third e-mail from Roy White. If the user depressed the "borrow me" button **545** shown in FIG. 5, then the e-mail list displayed would be the e-mails stored and downloaded from the global server **105**.

The manipulation window **650** includes available functions such as the conventional e-mail read function **630**, e-mail reply function **635**, e-mail forward function **640** and new e-mail write function **645**. It will be appreciated that the columns and functions will vary based on the PIM.

FIG. 7 is a block diagram illustrating details of a generic assistant **700**, which exemplifies each of the assistant **175**, **180** and **185**. The generic assistant **700** includes a communications module **705**, locator modules **710**, a general synchronization module **715**, a content-based synchronization module **720**, a security module **725**, an instantiator **730**, a data reader **735**, a PIM Application Program Interface (API) **740** and a de-instantiator **745**. The synchronization function of the assistant **700** uses the communications module **705**, the locator modules **710**, the general synchronization module **715**, the content-based synchronization module **720**, the security module **725** and the PIM API **740**. The "borrow me" function of the assistant **700** uses the communications module **705**, the locator modules **710**, the security module **725**, the instantiator **730**, the data reader **735**, the PIM API **740** and the de-instantiator **745**.

The communications module **705** includes routines for compressing and decompressing data, and routines for communicating with the synchronization agent **130**. The communications module **705** may apply Secure Socket Layer (SSL) technology to establish a secure communication channel. Examples of communications modules **705** may include TCP/IP stacks or the AppleTalk protocol.

The locator modules **710** include routines for identifying the memory locations of the workspace elements in the

workspace data **135**. Workspace element memory location identification may be implemented using intelligent software, i.e., preset memory addresses or the system's registry, or using dialogue boxes to query the user. Accordingly, the locator modules **710** determine the memory addresses of the workspace elements in e-mail workspace data **135**, in file workspace data **135**, in calendar workspace data **135**, etc.

The general synchronization module **715** examines the workspace data **135** on the global server **105** to determine whether it had been modified while the user manipulated the data on the client **110**, **115** or **120**. Further, the general synchronization module **715** determines whether the user manipulated any data on the client **110**, **115** or **120**. If the general synchronization module **715** determines that only the data on the client **110**, **115** or **120** was manipulated, then the general synchronization module **715** computes and sends the changes to the synchronization agent **130** of the global server **105**. The general synchronization module **715** is initiated when the synchronization button **540** is depressed and during the logout procedures of the "borrow me" function.

The synchronization agent **130** then updates a last synchronization signature to indicate to all base systems **140** and **150** that synchronization with workspace data **145** and synchronization with workspace data **155** are needed. If the general synchronization module **715** determines that changes were made only to the workspace data **135** on the global server **105**, then the general synchronization module **715** instructs the synchronization agent **130** to compute and transmit the changes made to the client **110**, **115** or **120** at the client's request. The client **110** or **120** then updates its information. It will be appreciated that sending only the changes reduces processor load and increases transmission line efficiency, although alternatively an entire manipulated workspace element can be sent to the global server **105**.

If the general synchronization module **715** determines that the workspace data **135** on the global server **105** has been modified since download, and that the data on the client **110**, **115** or **120** has been modified, then the general synchronization module **715** instructs the content-based synchronization module **720** to perform its duties. The content-based synchronization module **720** includes routines for reconciling two or more modified versions of a workspace element. The content-based synchronization module **720** may request a user to select the preferred one of the modified versions or may respond based on preset preferences, i.e., by storing both versions in both stores or by integrating the changes into a single preferred version which replaces each modified version at both stores.

The security module **725** includes routines for obtaining user identification and authentication using such techniques as obtaining login and password information, obtaining a response to a challenge, obtaining a public key certificate, etc. The security module **725** performs identification and authentication techniques to confirm authorization by the user to access the workspace data **135** stored on the global server **105**. It will be appreciated that authorization may be granted only to portion of the workspace data **135** that belongs to the user.

The instantiator **730** is an application program interface **730** that creates a window for displaying and enabling manipulation of the workspace data **135** downloaded from the global server **105**. In an object-oriented environment, the instantiator **730** may create a new instance for the workspace data **135**. Alternatively, the instantiator **730** may store the

local data to a buffer (not shown) and use the current interface to display and enable manipulation of the workspace data 135.

The data reader 735 communicates with the synchronization agent 130 at the global server 105, and retrieves the workspace data 135 requested. For example, if the user depresses the "borrow me" button 545 (FIG. 5) and depresses the e-mail button 515, then the data reader 735 retrieves the e-mail workspace elements of the workspace data 135, and delivers them to the PIM API 740.

The PIM API 740 translates and transfers the workspace data 135 received from the global server 105 to the PIM 160, 165 or 170 for display and enabling manipulation thereto. The PIM API 740 further translates and transfers the workspace data manipulated on the client 110, 115 or 120 from the PIM 160, 165 or 170 back to the global server 105.

The de-instantiator 745 returns the PIM 160, 165 or 170 to the state before the user selected the "borrow me" button 545. The user may initiate operations of the de-instantiator 745 by depressing an "unborrow me" button (not shown) that is presented after selection of the "borrow me" button 545. The de-instantiator 745 deletes any instance created by the instantiator 730, deletes all workspace data 135 and data created by the user on the client 110, 115 or 120 and automatically initiated synchronization of any manipulated downloaded data 135 with the workspace data 135 stored at the global server 105.

Operations of the instantiator 730, the data reader 735, the PIM API 740 and the de-instantiator 745 are described in greater detail with reference to the following examples:

OUTLOOK EXAMPLE

Action	Global Data	Local Data
standby	—	local data → pst ^{local}
button depressed	—	pst ^{local}
enter login/ password	—	pst ^{local}
authenticate	—	pst ^{local}
send global data	global data → pst ^{local}	local data → pst ^{buffer}
manipulate data	global data → global data 2	pst ^{buffer}
logout	1) Compute Δglobal data 2) Synchronize Δglobal data with global server 3) Delete global data 2	local data → pst ^{local}
	4)	

As illustrated by the Outlook™ example above, during standby, the PIM 160, 165 or 170 stores the local data on the client 110, 115 or 120 in a personal folder store pst^{local}. The user then depresses the "borrow me" button 545. The security module 725 requests the user to enter a login and password, which the global server 105 authenticates. During these steps, it will be appreciated that the local data remains stored in pst^{local}. Upon user identification and authentication, the global server 105 sends the workspace data 135 (global data) to the requesting client 110, 115 or 120. The instantiator 730 on the client 110, 115 or 120 transfers the local data from pst^{local} to a buffer pst^{buffer}, and stores the received global data into pst^{local}. The data reader 745 and PIM API 740 enable the user to manipulate the global data, the manipulated data being referred to herein as "global data 2." Upon logout, for example, after an "unborrow me" button (not shown) is depressed, the global data 2 is synchronized with the workspace data 135. Namely, the general synchronization module 715 determines the changes

made (Δglobal data), and synchronizes Δglobal data with the workspace data 135. The de-instantiator 745 deletes global data 2 and Δglobal data, and returns the local data to pst^{local}.

LOTUS ORGANIZER EXAMPLE

Action	Global Data	Local Data
standby	—	local.org
button	—	local.org
enter login/password	—	local.org
authenticate	new instance	local.org
send global data	open with global.org	local.org
manipulate data	global.org → global.org?	local.org
logout	1) compute Δglobal.org 2) Synchronize Δglobal.org with global server 3) delete global.org?	local.org

As illustrated by the Lotus Organizer example above, during standby, the PIM 160, 165 or 170 stores the local data on the client 110, 115 or 120 in local.org. The user then depresses the "borrow me" button 545. The security module 725 requests the user to enter a login and password, which the global server 105 authenticates. During these steps, it will be appreciated that the local data remains stored in local.org. Upon user identification and authentication, the global server 105 sends the workspace data 135 (global data) to the requesting client 110, 115 or 120. The instantiator 730 on the client 110, 115 or 120 creates a new instance, e.g., a new window, of PIM API 740 and stores the received global data into another file, i.e., global.org. The data reader 745 and PIM API 740 enable the user to manipulate the global data, the manipulated data being referred to herein as "global data 2." Upon logout, the global data 2 is synchronized with the workspace data 135. Namely, the general synchronization module 715 determines the changes made (Δglobal data), and synchronizes Δglobal data with the workspace data 135. The de-instantiator 745 deletes global data 2, Δglobal data and global.org.

FIG. 8 is a flowchart illustrating a method 800 of accessing data remotely in accordance with the present invention. The method 800 begins with the processor 405 in step 805 opening the PIM 160, 165 or 170 per user request, and the PIM 160, 165 or 170 opening a PIM interface 500 (FIG. 5). The PIM 160, 165 or 170 in step 810 receives a "borrow me" request from the user, i.e., the user depresses the "borrow me" button 545. The PIM API 740 in step 815 recognizes the request, and instructs the communications module 705 to create a communications link with the global server 105.

The security module 725 in step 820 requests and transmits identification and authentication information such as login and password information from the user to the global server 105 for examination. If the global server 105 fails to identify or authenticate the user, then the method 800 ends. Otherwise, the instantiator 730 in step 825 opens a PIM interface 500 to display and enable manipulation of the workspace data 135 downloaded from the global server 105. The data reader 735 in step 830 reads the workspace data 135 downloaded from the global server 105, and in step 835 translates the data to the appropriate format if necessary. That is, the data reader 735 translates the workspace data 135 from the format implemented by the global server 105 to the format implemented by the PIM 160, 165 or 170. The PIM API 740 in step 840 passes the translated workspace data 135 to the PIM interfaces 500 and 600.

The PIM 160, 165 or 170 enables the user in step 845 to manipulate the workspace data 135 as necessary. Manipu-

lation includes adding new data, deleting workspace data 135, editing workspace data 135, etc. For example, the user can depress the e-mail button 515 in interface 500 to select, review and manipulate e-mail in interface 600, and then can depress the calendar button 530 in interface 500 to select, review and manipulate calendar information (not shown) in an interface similar to the e-mail interface 600. In step 850, the PIM API 740 waits to receive an "end session" request. Until an "end session" request is received, the method 800 returns to step 830 to enable continued data review and manipulation.

Upon receiving an "end session" or "unborrow me" request, the de-instantiator 745 initiates the general synchronization module 715 in step 855 to synchronize the manipulated workspace data on the client 110, 115 or 120 with the workspace data 135 on the global server 105, if required. Synchronization is described in greater detail with reference to FIG. 9. The de-instantiator 745 in step 860 deletes the workspace data on the client 110, 115 or 120, and deletes all records of the matter. Method 800 then ends.

FIG. 9 is a flowchart illustrating a method 900 for synchronizing workspace data in a computer network 100. Method 900 begins with the communications module 705 in step 905 establishing a communications link with the synchronization agent 130 of the global server 105. The locator modules 710 in step 910 identify the memory locations of the workspace elements in the workspace data 135. It will be appreciated that workspace element memory location identification may be implemented using intelligent software or dialogue boxes.

The general synchronization module 715 in step 915 compares version information (not shown) for each workspace element in the workspace data (on the client 110, 115 or 120 and on the global server 105) against a last synchronization signature to determine which workspace elements have been modified. In this embodiment, a workspace element may have been modified if the date and time of the last modification is after the date and time of the downloading.

If the general synchronization module 715 locates no modified workspace elements in the workspace data on the client 110, 115 or 120, then the method 900 ends. Otherwise, the general synchronization module in step 920 determines whether the version of the same workspace element of the workspace data 135 on the global server 105 has been modified since the data 135 was downloaded.

If only the version on the client 110, 115 or 120 has been modified, then the general synchronization module 715 in step 925 stores the updated version of the workspace element at the global server 105. To store the updated version on the global server 105, the general synchronization module 715 may compute the changes made and forward the changes to the synchronization agent 130. The synchronization agent 130 enters the changes into the global server 105 version. The general synchronization module 715 in step 930 determines whether all workspace elements downloaded to the client 110, 115 or 120 have been examined. If not, then method 900 returns to step 915. Otherwise, the synchronization agent 130 in step 935 updates the last synchronization signature, and method 900 ends. Updating the last synchronization signature will instruct the base systems 140 and 150 to synchronize the workspace data 145 and 155 with the workspace data 135 on the global server 105, as described in the patent applications incorporated by reference above.

If the general synchronization module 715 in step 920 determines that both the version on the client 110, 115 or 120

and the version on the global server 105 have been modified, then the general synchronization module in step 935 instructs the content-based synchronization module 729 to reconcile the modified versions. Reconciliation may include requesting instructions from the user, or performing based on pre-selected preferences responsive actions such as storing both versions at the global server 105. The general synchronization module 715 in step 940 stores the preferred version on the global server 105. Method 900 then proceeds to step 930.

The foregoing description of the preferred embodiments of the present invention is by way of example only, and other variations and modifications of the above-described embodiments and methods are possible in light of the foregoing teaching. Although the network sites are being described as separate and distinct sites, one skilled in the art will recognize that these sites may be a part of an integral site, may each include portions of multiple sites, or may include combinations of single and multiple sites. Further, components of this invention may be implemented using a programmed general purpose digital computer, using application specific integrated circuits, or using a network of interconnected conventional components and circuits. Connections may be wired, wireless, modem, etc. The embodiments described herein are not intended to be exhaustive or limiting. The present invention is limited only by the following claims.

What is claimed is:

1. A computer-based method, comprising the steps of:

executing a workspace data manager on an untrusted client site;

requesting the workspace data manager to access data temporarily from a remote site, the remote being connected via a network to untrusted client site;

initiating a communications channel with the remote site;

downloading data from the remote site;

placing the data in temporary storage on the untrusted client site;

using the workspace data manager to present the downloaded data; and

automatically disabling the untrusted client site from accessing at least a portion of the downloaded data after a user has finished using the data.

2. The method of claim 1, further comprising the step of requesting the workspace data manager to provide an interface for enabling presentation of the downloaded data.

3. The method of claim 2, further comprising the steps of using the workspace data manager to manipulate the downloaded data, thereby creating manipulated data, using the workspace data manager interface to request synchronization, and synchronizing the manipulated data with the data at the remote site.

4. The method of claim 3, wherein the data at the remote site has not been modified after the step of downloading and before the step of synchronizing and therefore includes the downloaded data.

5. The method of claim 3, wherein the data at the remote site has been modified after the step of downloading and before the step of synchronizing, and therefore is different than the downloaded data.

6. The method of claim 2, wherein the workspace data manager provides an interface by creating an instance.

7. The method of claim 2, wherein the workspace data manager provides an interface by providing access to its only interface.

8. The method of claim 1, further comprising the step of translating the downloaded data from the format used by the remote site and the format used by the workspace data manager.

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9. The method of claim 1, further comprising the step of deleting the workspace data manager interface after it is no longer needed.

10. A system on an untrusted client site, comprising:
a communications module for download data from a remote site, the remote site being connected via a network to the untrusted client site;
program code for placing the downloaded data in temporary storage on the untrusted client site;
an application program interface coupled to the communications module for communicating with a workspace data manager to present the downloaded data; and
program code coupled to the application program interface for automatically disabling the untrusted client site from accessing at least a portion of the downloaded data after a user has finished using the data.

11. The system of claim 10, further comprising an instantiator for requesting the workspace data manager to provide an interface for enabling presentation of the downloaded data.

12. The system of claim 11, wherein the workspace manager enables manipulation of the downloaded data to create manipulated data and the data manipulation interface enables a request to synchronize the data, and further comprising a synchronization module coupled to the communications module for enabling synchronization of the manipulated data with the data at the remote site.

13. The system of claim 12, wherein the data stored at the remote site has not been modified and therefore includes the downloaded data.

14. The system of claim 12, wherein the data stored at the remote site has been modified, and therefore is different than the downloaded data.

15. The system of claim 14, further comprising a content-based synchronization module for synchronizing the data stored at the remote site with the manipulated data.

16. The system of claim 11, wherein the workspace data manager creates another instance of the interface to enable presentation of the downloaded data.

17. The system of claim 11, wherein the workspace data manager provides access to its only interface to enable presentation of the downloaded data.

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18. The system of claim 11, further comprising a deinstantiator for deleting the interface after it is no longer required.

19. The system of claim 10, further comprising a data reader for translating the downloaded workspace data from the format used by the remote site to the format used by the workspace data manager.

20. A system comprising:
means for executing a workspace data manager on an untrusted client site;
means for requesting the workspace data manager to access data temporarily from a remote site, the remote site being connected via a network to the untrusted client site;
means for initiating a communications channel with the remote site;
means for downloading data from the remote site;
means for placing the data in storage on the untrusted client site;
means for using the workspace data manager to present the downloaded data; and
means for disabling the untrusted client site from accessing at least a portion of the downloaded data after a user has finished using the data.

21. A computer-readable storage medium storing program code for causing a computer to perform the steps of:
executing a workspace data manager on an untrusted client site;
requesting the workspace data manager to access data temporarily from a remote site, the remote site being connected via a network to the untrusted client site;
initiating a communications channel with the remote site;
downloading data from the remote site;
placing the data in temporary storage on the untrusted client site;
using the workspace data manager to present the downloaded data; and
automatically disabling the untrusted client site from accessing at least a portion of the downloaded data after a user has finished using the data.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,151,606
DATED : November 21, 2000
INVENTOR(S) : Daniel J. Mendez

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 12, line 47, after "manipulate the" change the word "dow" to -- downloaded --
Column 13, line 5, after "module for" change the word "download" to -- downloading --
Column 13, line 23, before "manager" insert -- data --
Column 14, line 18, after "placing the data in" insert -- temporary --

Signed and Sealed this
Eighth Day of May, 2001

Attest:



NICHOLAS P. GODICI

Attesting Officer

Acting Director of the United States Patent and Trademark Office

EXHIBIT B



US007039679B2

(12) **United States Patent**
Mendez et al.

(10) **Patent No.:** **US 7,039,679 B2**
(45) **Date of Patent:** **May 2, 2006**

(54) **SYSTEM AND METHOD FOR GLOBALLY AND SECURELY ACCESSING UNIFIED INFORMATION IN A COMPUTER NETWORK**

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(73) Assignee: **Visto Corporation**, Redwood Shores, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/741,113**

(22) Filed: **Dec. 19, 2003**

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Related U.S. Application Data

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(51) **Int. Cl.**
G06F 15/15 (2006.01)

(52) **U.S. Cl.** **709/206; 709/248**

(58) **Field of Classification Search** **709/206, 709/248, 202, 203, 100; 713/400; 370/350**
See application file for complete search history.

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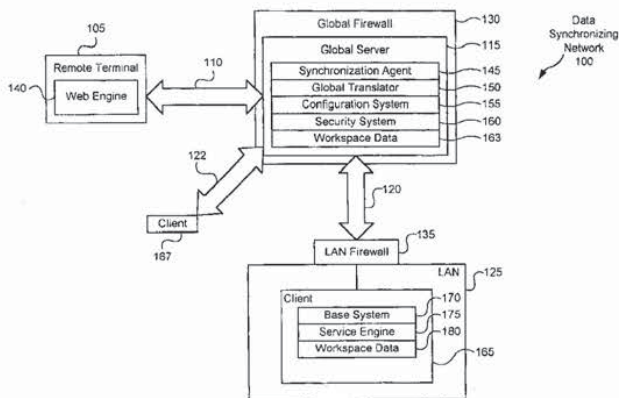
Primary Examiner—Mehmet B. Geckill

(74) *Attorney, Agent, or Firm*—Manatt Phelps & Phillips

(57) **ABSTRACT**

A client stores a first set of workspace data, and is coupled via a computer network to a global server. The client may be configured to synchronize portions of the first set of workspace data with the global server, which stores independently modifiable copies of the portions. The global server may also store workspace data which is not downloaded from the client, and thus stores a second set of workspace data. The global server may be configured to identify and authenticate a user seeking global server access from a remote terminal, and is configured to provide access to the first set or to the second set. Further, services may be stored anywhere in the computer network. The global server may be configured to provide the user with access to the services. The system may further include a synchronization-start module at the client site (which may be protected by a firewall) that initiates interconnection and synchronization with the global server when predetermined criteria have been satisfied.

18 Claims, 15 Drawing Sheets



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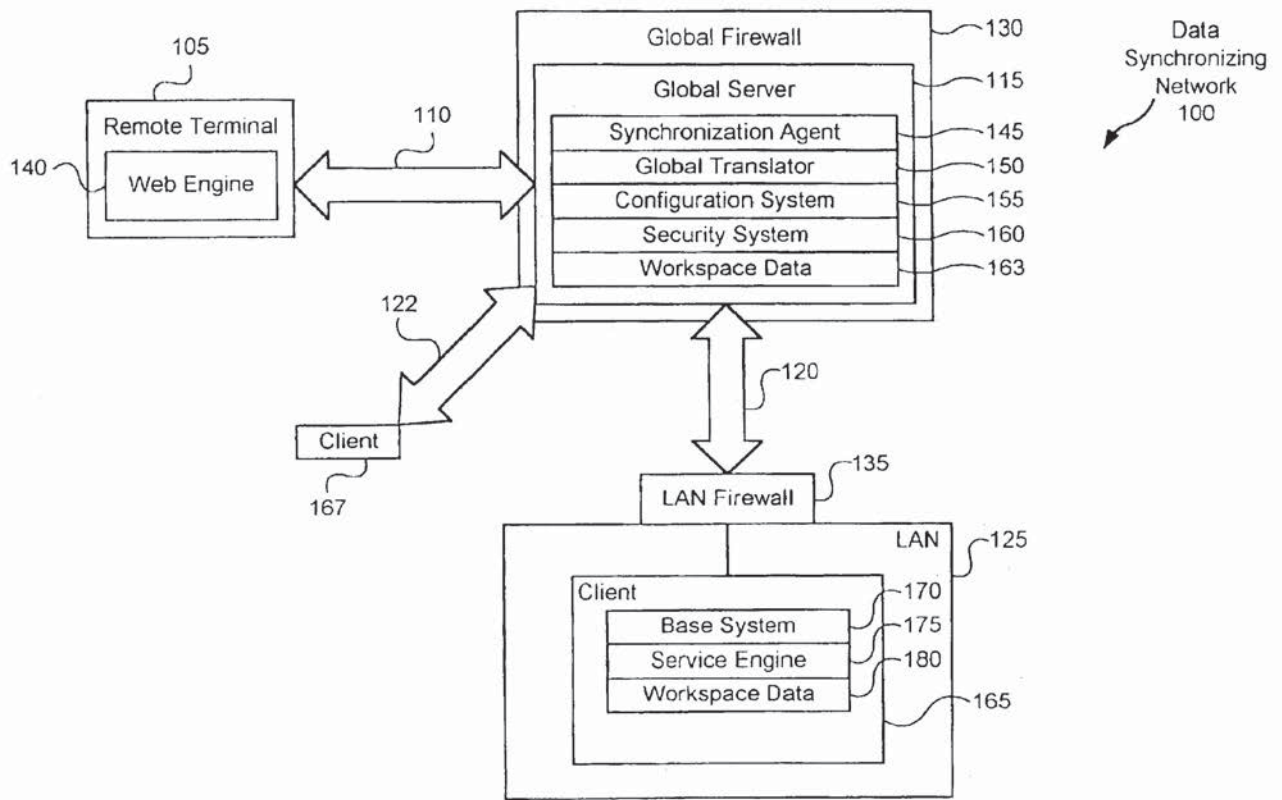


FIG. 1

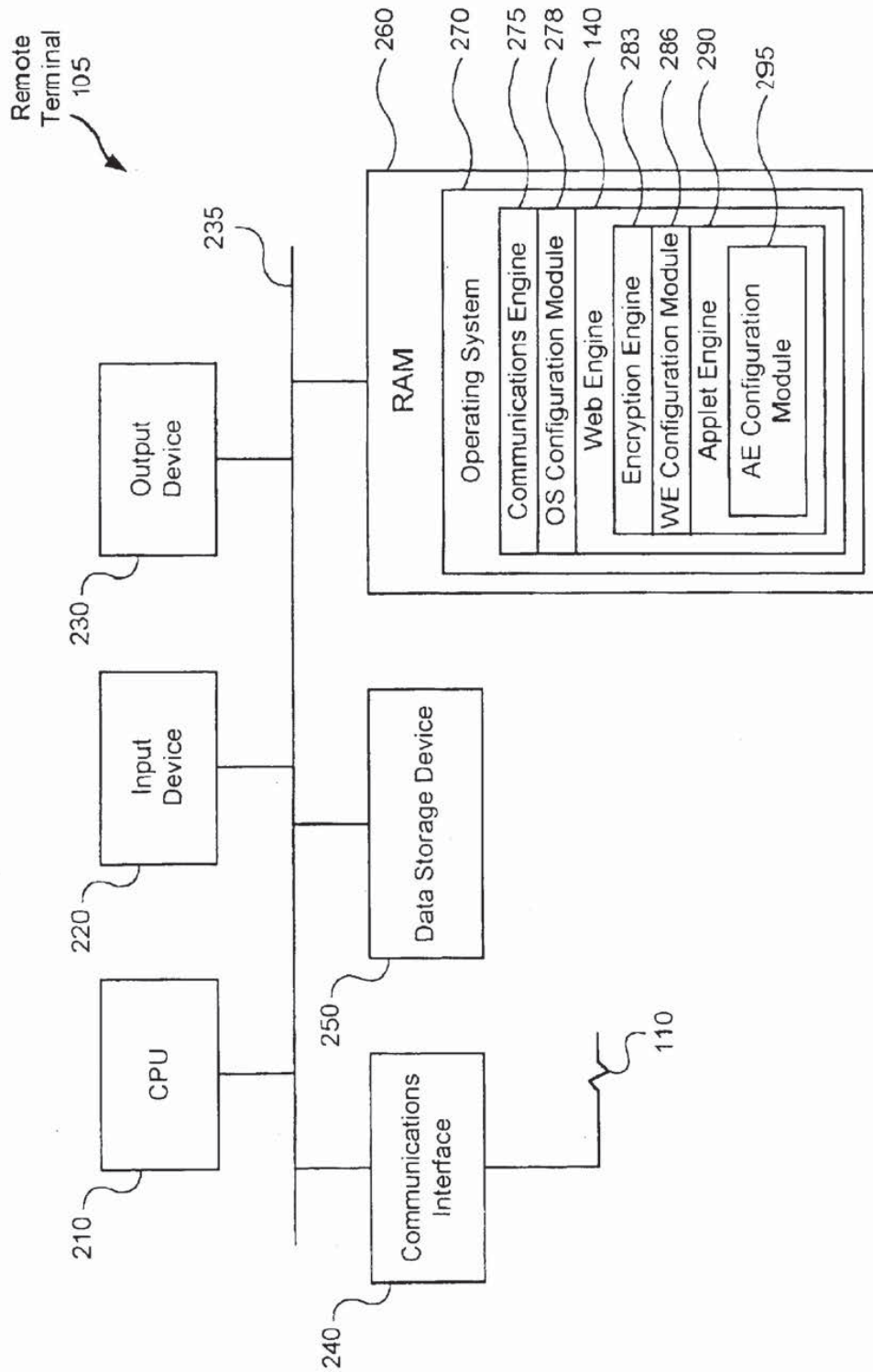


FIG. 2

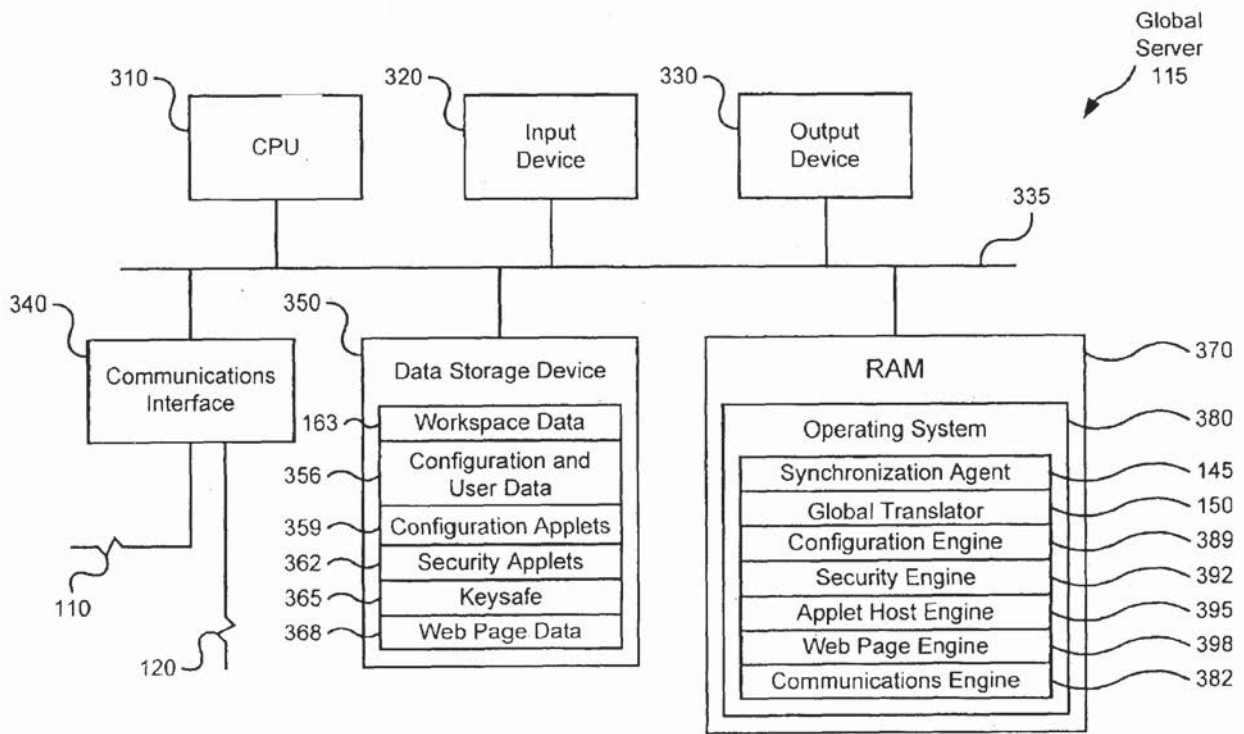


FIG. 3

Synchronization
Agent
145

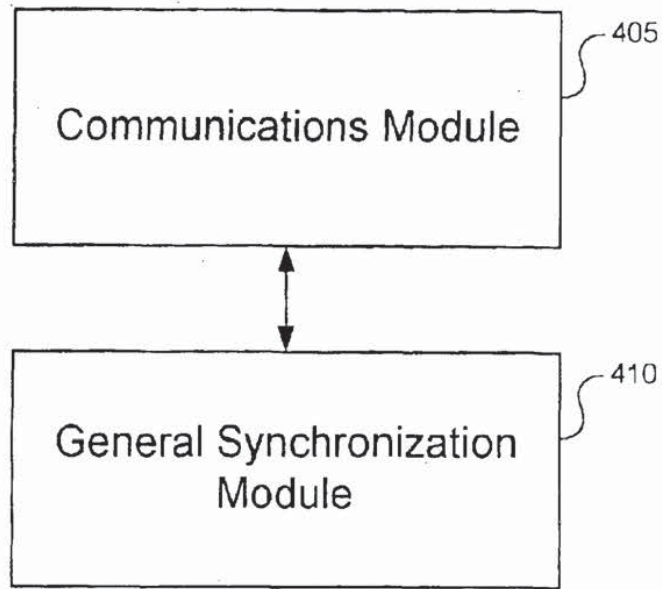


FIG. 4

Global Format
Bookmark
(example)
500

User ID	505
Entry ID	510
Parent ID	515
Is Folder?	520
Name	525
Description	530
URL	535
Position	540
Is Deleted	545
Last Modified Date	550
Created Date	555
Separation After?	560

FIG. 5

Configuration
and user data
356

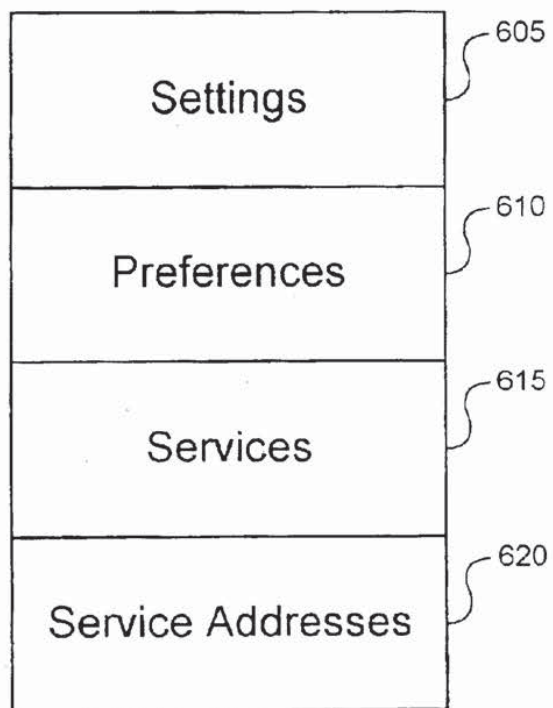


FIG. 6

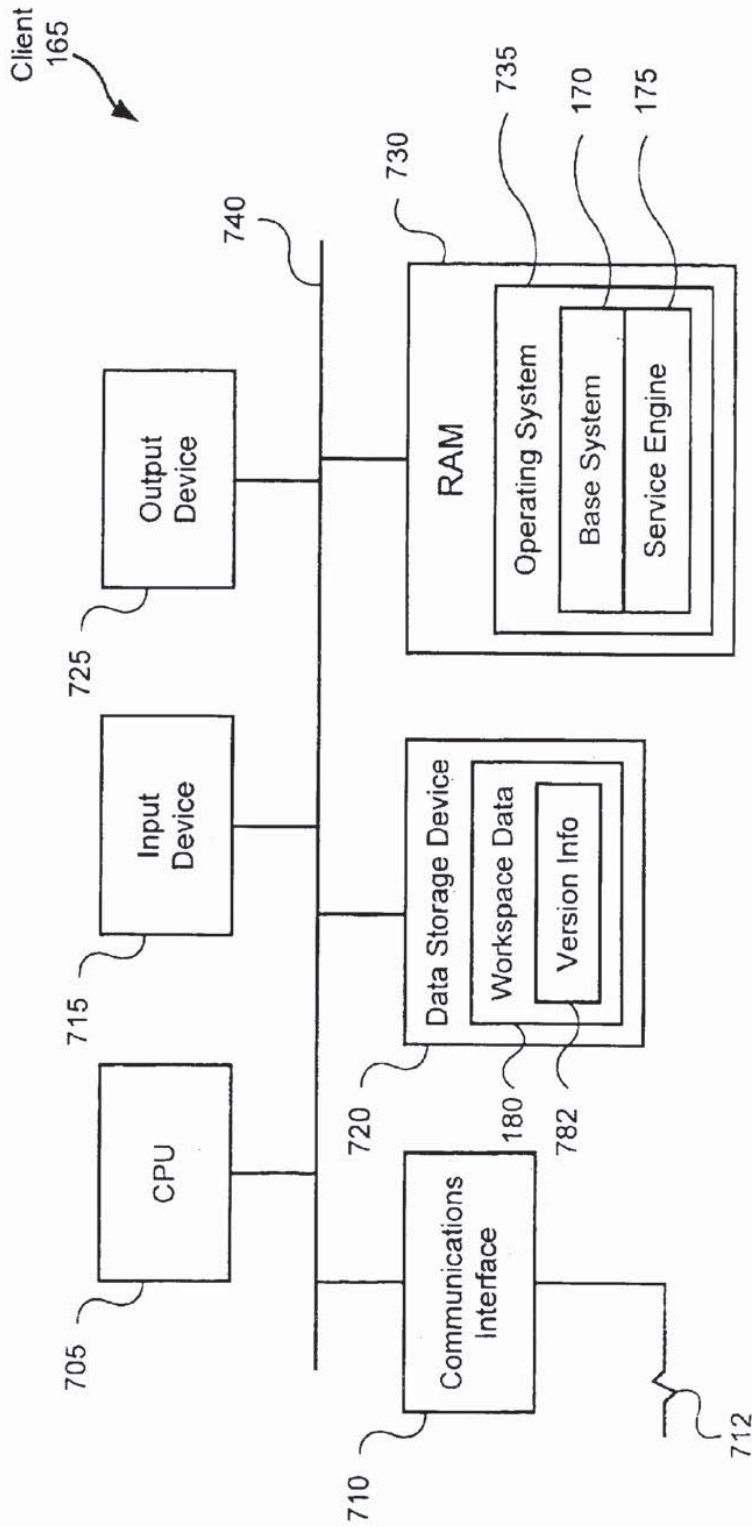


FIG. 7

Base System
170

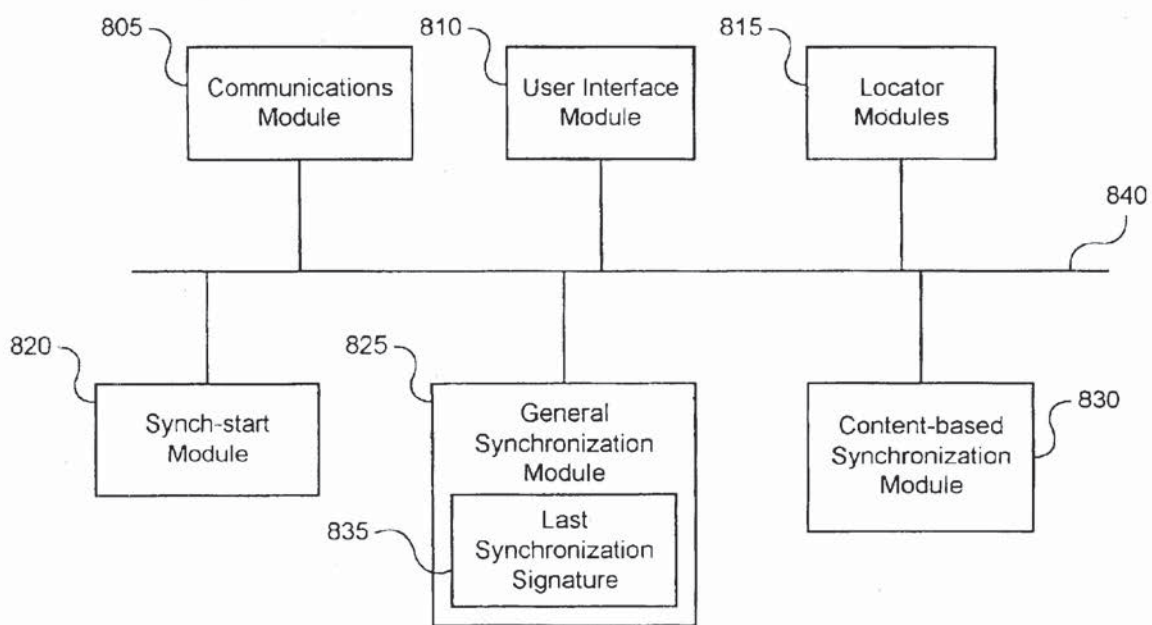


FIG. 8

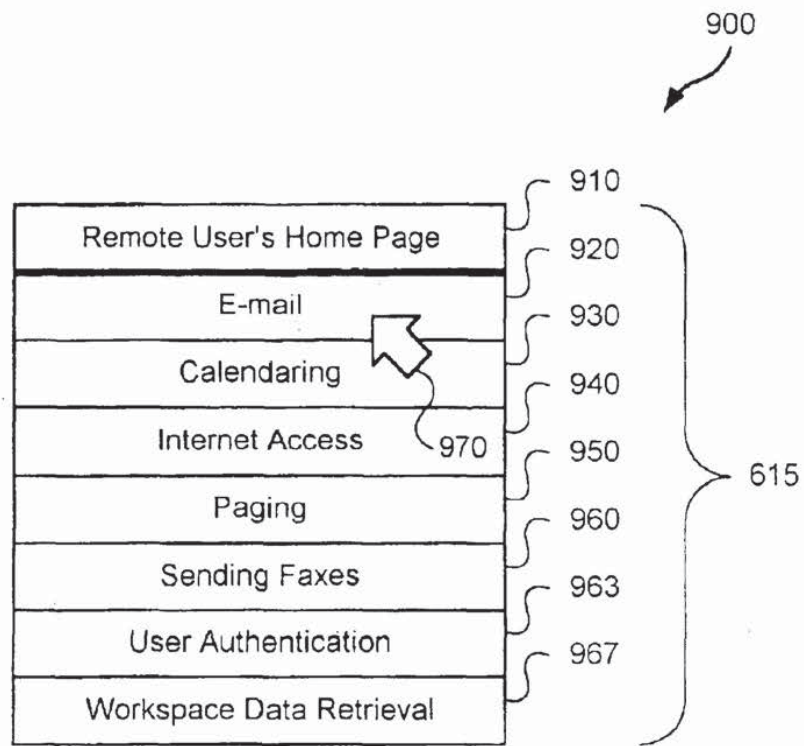


FIG. 9

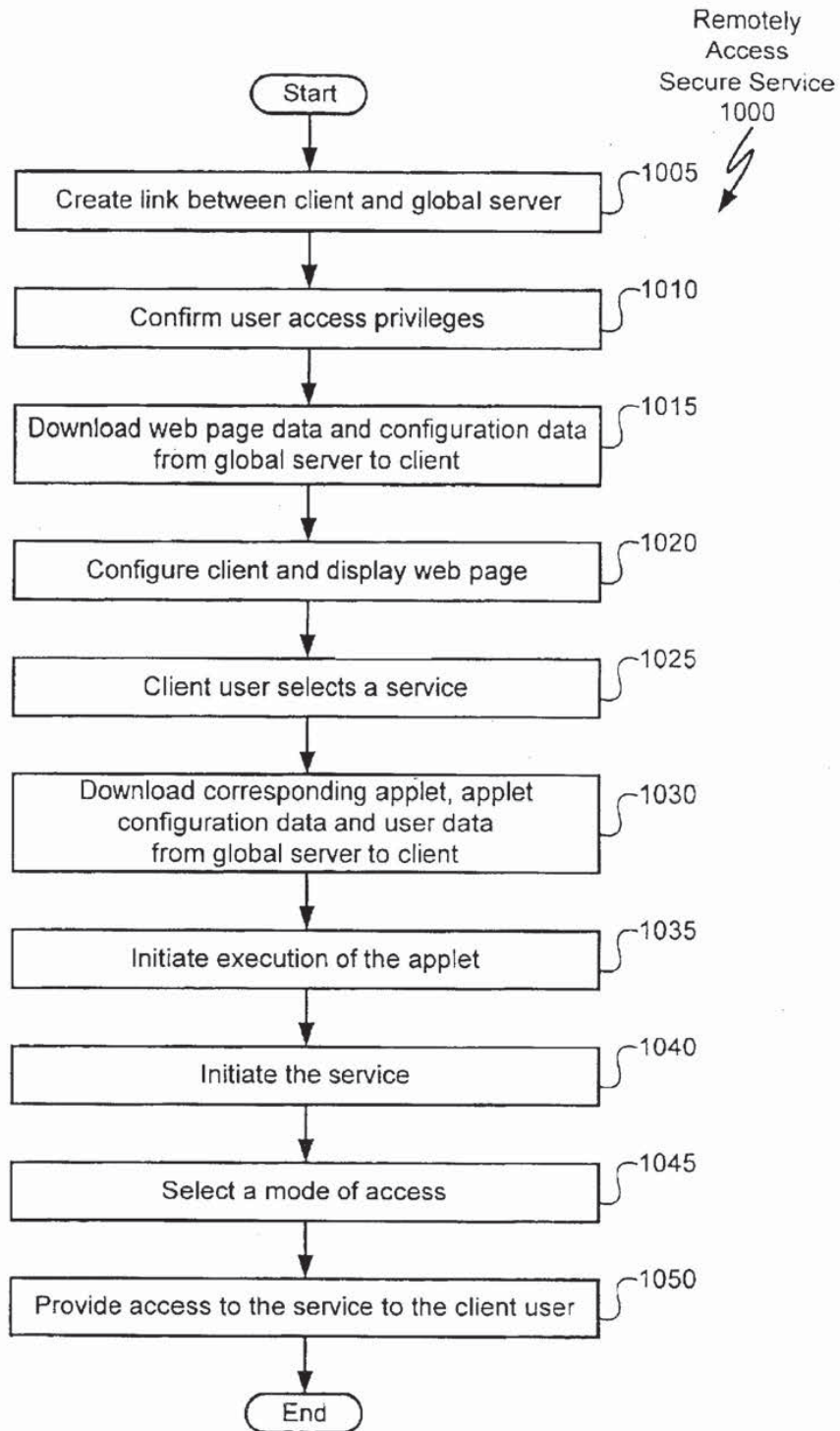


FIG. 10

Create link
between client
& server
1005

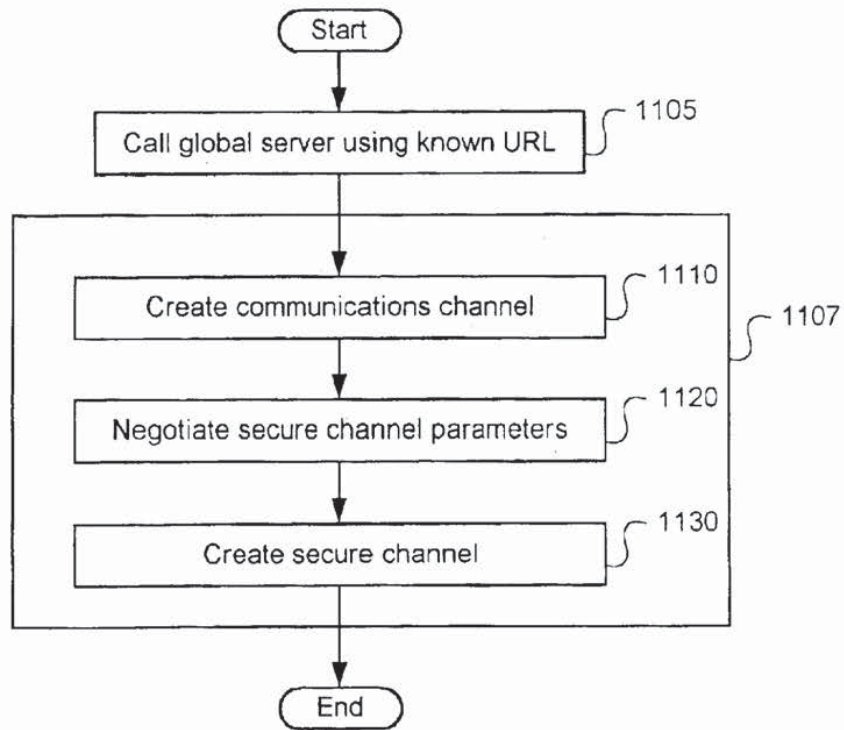


FIG. 11

Method of
accessing service
1050a

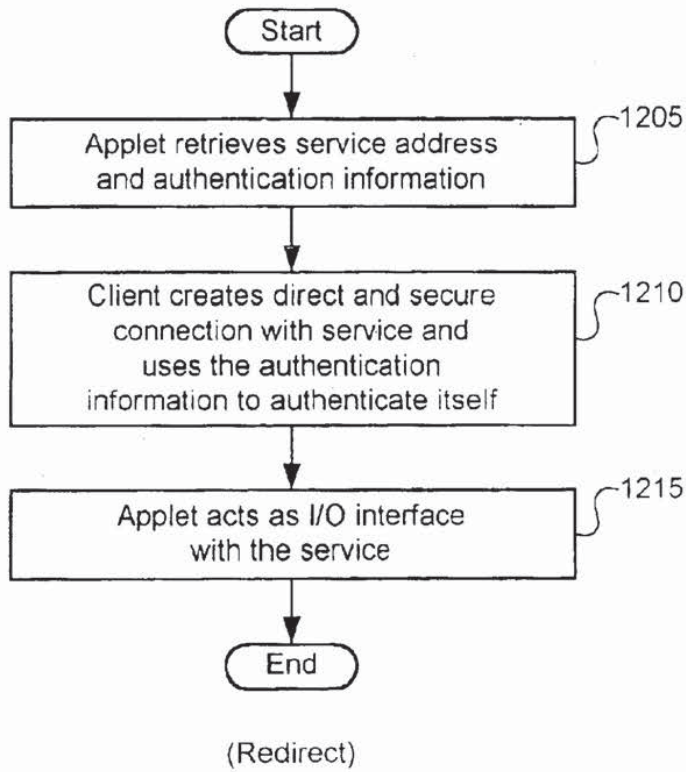


FIG. 12

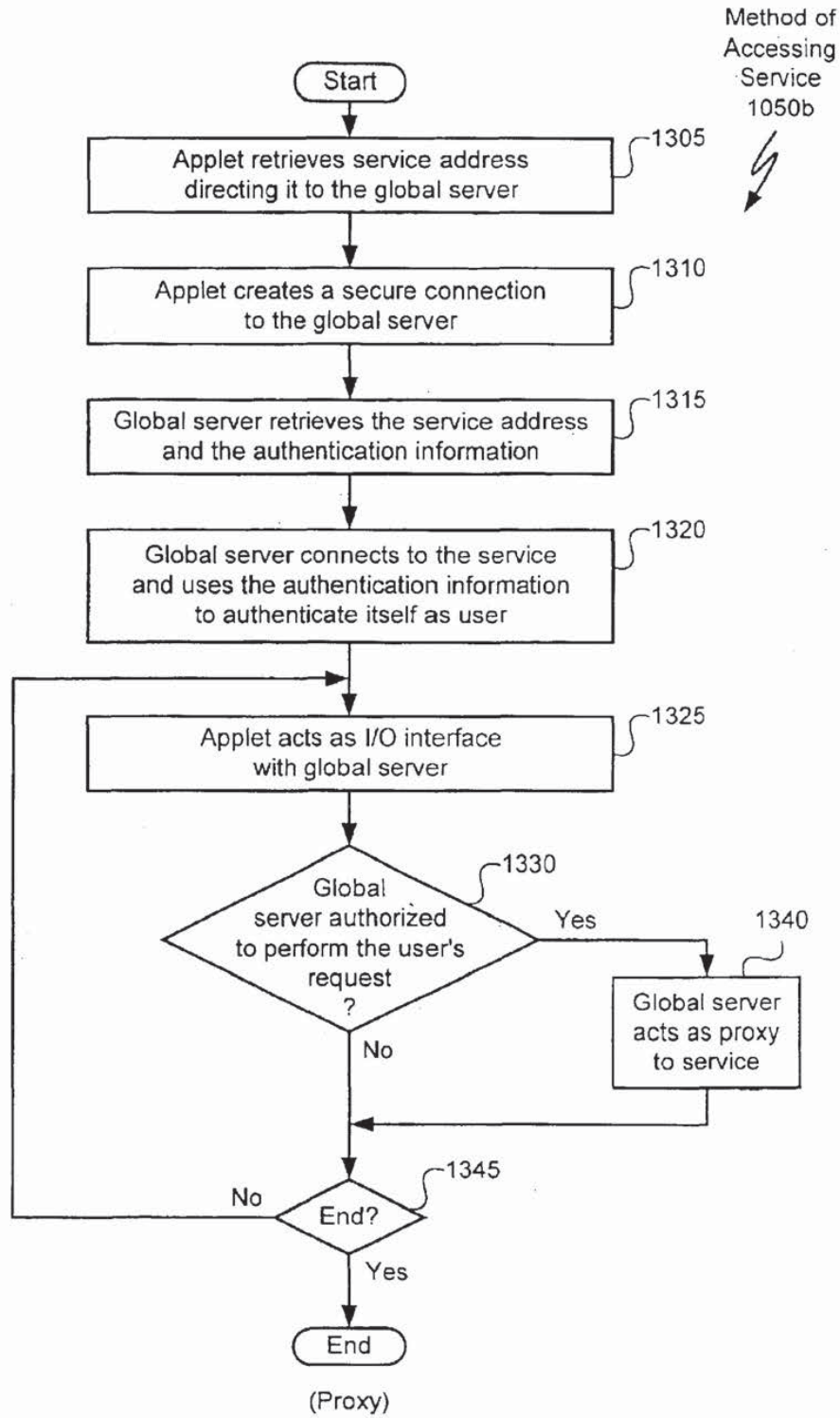


FIG. 13

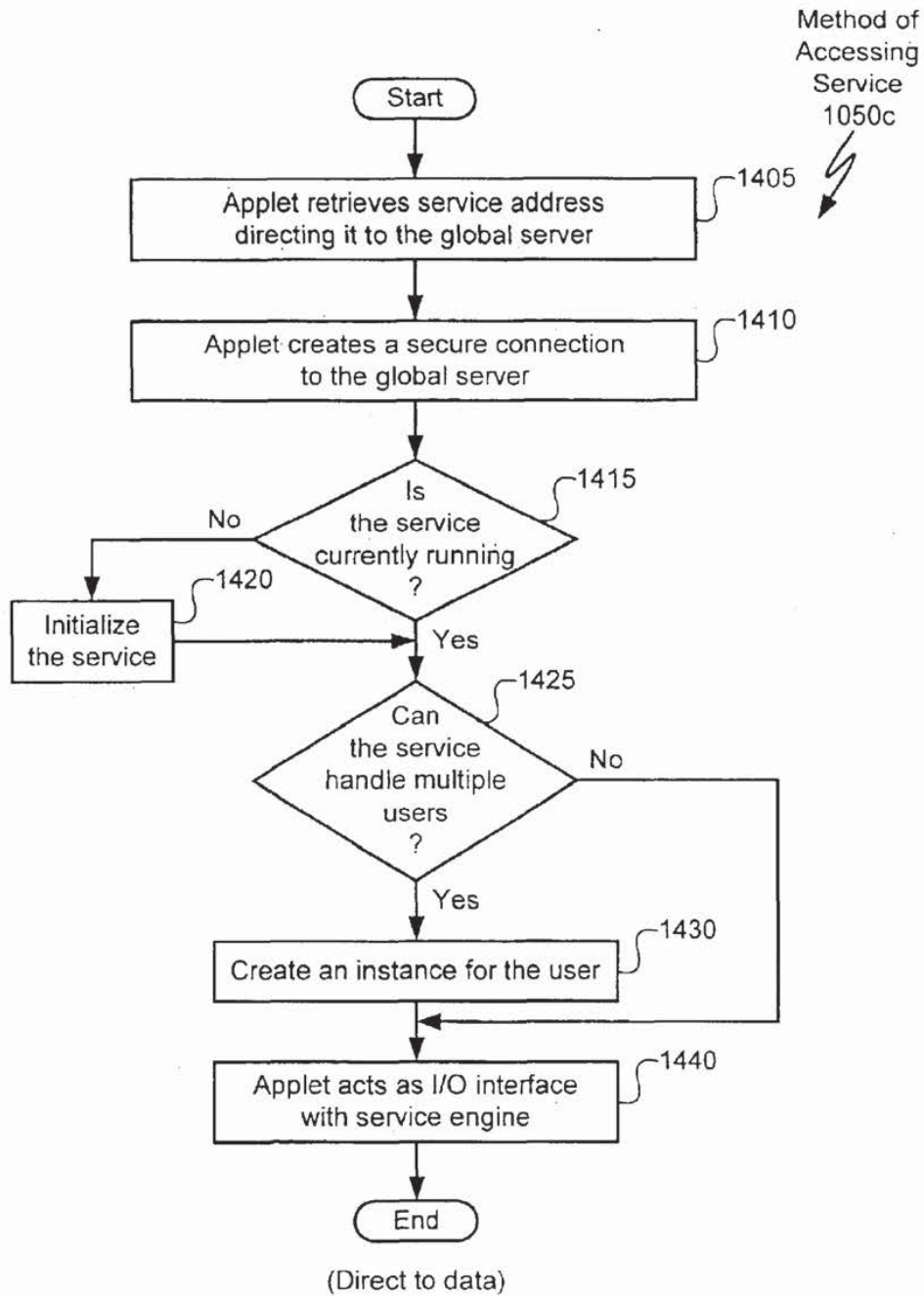


FIG. 14

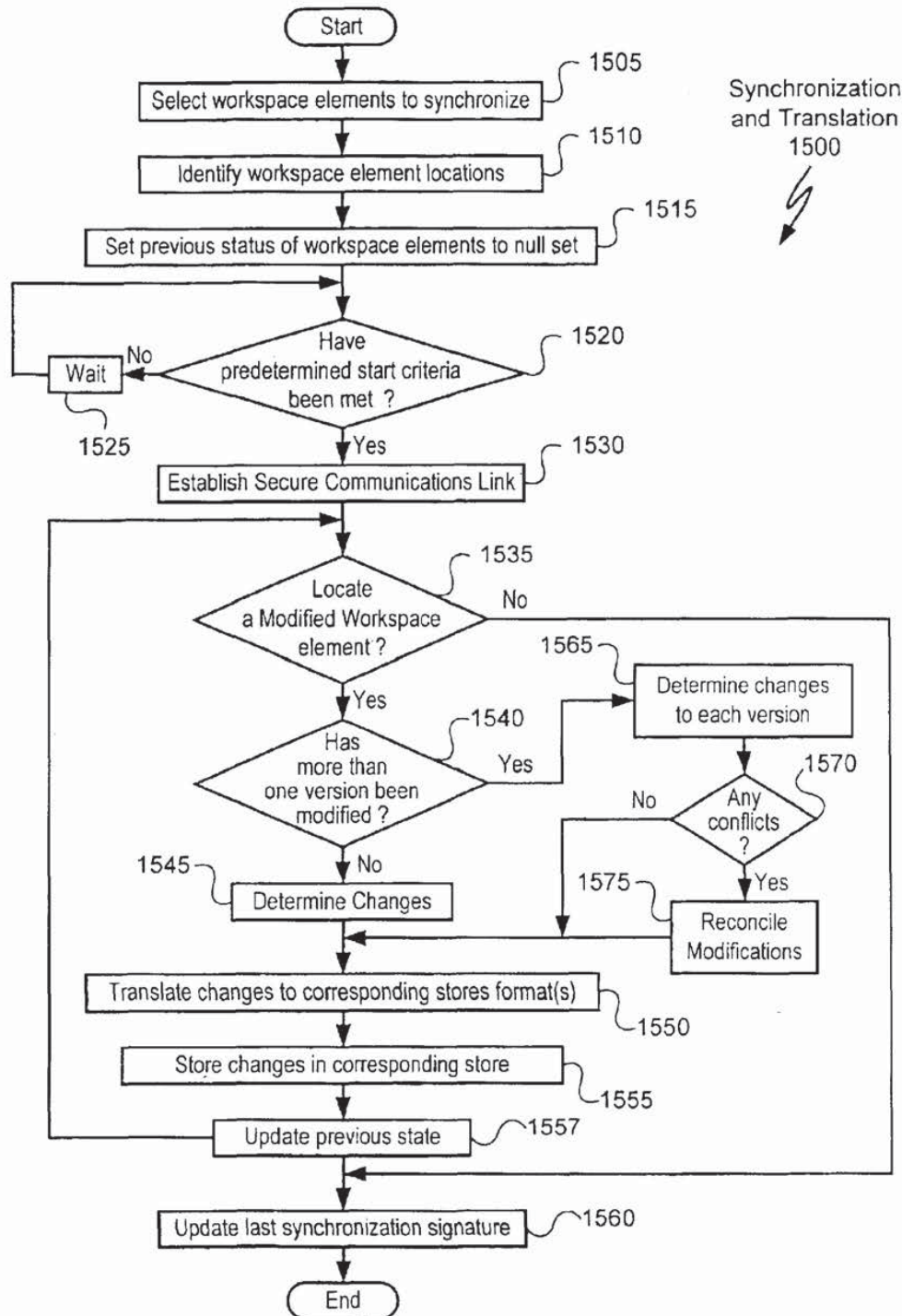


FIG. 15

**SYSTEM AND METHOD FOR GLOBALLY
AND SECURELY ACCESSING UNIFIED
INFORMATION IN A COMPUTER
NETWORK**

CROSS-REFERENCE TO RELATED
APPLICATIONS

This application is a continuation of and incorporates by reference patent application Ser. No. 09/666,877, entitled "System and Method for Globally and Securely Accessing Unified Information in a Computer Network" filed on Sep. 20, 2000, now U.S. Pat. No. 6,708,221, by inventors Daniel J. Mendez, Mark D. Riggins, Prasad Wagle, Hong Q. Bui, Mason Ng, Sean Michael Quinlan, Christine C. Ying, Christopher R. Zuleeg, David J. Cowan, Joanna A. Aptekar-Strober and R. Stanley Bailes, which application is a continuation of and incorporates by reference parent application U.S. patent application Ser. No. 08/903,118 entitled "System and Method for Globally and Securely Accessing Unified Information in a Computer Network" of Daniel J. Mendez, Mark D. Riggins, Prasad Wagle, Hong Q. Bui, Mason Ng, Sean Michael Quinlan, Christine C. Ying, Christopher R. Zuleeg, David J. Cowan, Joanna A. Aptekar-Strober and R. Stanley Bailes, filed Jul. 30, 1997, now abandoned, which is a continuation-in-part of patent application entitled "System and Method for Globally Accessing Computer Services," Ser. No. 08/766,307, now issued as Pat. No. 6,131,116, filed on Dec. 13, 1996, by inventors Mark D. Riggins, R. Stanley Bailes, Hong Q. Bui, David J. Cowan, Daniel J. Mendez, Mason Ng, Sean Michael Quinlan, Prasad Wagle, Christine C. Ying, Christopher R. Zuleeg and Joanna A. Aptekar-Strober; and of co-pending patent application entitled "System and Method for Enabling Secure Access to Services in a Computer Network," Ser. No. 08/841,950, filed on Apr. 8, 1997, by inventor Mark Riggins; and of patent application entitled "System and Method for Securely Synchronizing Multiple Copies of a Workspace Element in a Network," Ser. No. 08/835,997, now issued as Pat. No. 6,085,192, filed on Apr. 11, 1997, by inventors Daniel J. Mendez, Mark D. Riggins, Prasad Wagle and Christine C. Ying; and of patent application entitled "System and Method for Using a Global Translator to Synchronize Workspace Elements Across a Network," Ser. No. 08/865,075, now issued as Pat. No. 6,023,708, filed on May 29, 1997, by inventors Daniel J. Mendez, Mark D. Riggins, Prasad Wagle and Christine C. Ying. These applications have been commonly assigned to Visto Corporation, and are incorporated herein by reference as if copied verbatim hereafter. Benefit of the earlier filing dates is claimed on all common subject matter.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to computer networks, and more particularly provides a system and method for globally and securely accessing unified information in a computer network.

2. Description of the Background Art

The internet currently interconnects about 100,000 computer networks and several million computers. Each of these computers stores numerous application programs for providing numerous services, such as generating, sending and receiving e-mail, accessing World Wide Web sites, generating and receiving facsimile documents, storing and retrieving data, etc.

A roaming user, i.e., a user who travels and accesses a workstation remotely, is faced with several problems. Pro-

gram designers have developed communication techniques for enabling the roaming user to establish a communications link and to download needed information and needed service application programs from the remote workstation to a local computer. Using these techniques, the roaming user can manipulate the data on the remote workstation and, when finished, can upload the manipulated data back from the remote workstation to the local computer. However, slow computers and slow communication channels make downloading large files and programs a time-consuming process. Further, downloading files and programs across insecure channels severely threatens the integrity and confidentiality of the downloaded data.

Data consistency is also a significant concern for the roaming user. For example, when maintaining multiple independently modifiable copies of a document, a user risks using an outdated version. By the time the user notices an inconsistency, interparty miscommunication or data loss may have already resulted. The user must then spend more time attempting to reconcile the inconsistent versions and addressing any miscommunications.

The problem of data inconsistency is exacerbated when multiple copies of a document are maintained at different network locations. For example, due to network security systems such as conventional firewall technology, a user may have access only to a particular one of these network locations. Without access to the other sites, the user cannot confirm that the version on the accessible site is the most recent draft.

Data consistency problems may also arise when using application programs from different vendors. For example, the Netscape Navigator™ web engine and the Internet Explorer™ web engine each store bookmarks for quick reference to interesting web sites. However, since each web engine uses different formats and stores bookmarks in different files, the bookmarks are not interchangeable. In addition, one web engine may store a needed bookmark, and the other may not. A user who, for example, runs the Internet Explorer™ web engine at home and runs the Netscape Navigator™ web engine at work risks having inconsistent bookmarks at each location.

Therefore, a system and method are needed to enable multiple users to access computer services remotely without consuming excessive user time, without severely threatening the integrity and confidentiality of the data, and without compromising data consistency.

SUMMARY OF THE INVENTION

The present invention provides a system and methods for providing global and secure access to services and to unified (synchronized) workspace elements in a computer network. A user can gain access to a global server using any terminal, which is connected via a computer network such as the Internet to the global server and which is enabled with a web engine.

A client stores a first set of workspace data, and is coupled via a computer network to a global server. The client is configured to synchronize selected portions of the first set of workspace data (comprising workspace elements) with the global server, which stores independently modifiable copies of the selected portions. The global server may also store workspace data not received from the client, such as e-mail sent directly to the global server. Accordingly, the global server stores a second set of workspace data. The global server is configured to identify and authenticate a user attempting to access it from a remote terminal, and is

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configured to provide access based on the client configuration either to the first set of workspace data stored on the client or to the second set of workspace data stored on the global server. It will be appreciated that the global server can manage multiple clients and can synchronize workspace data between clients.

Service engines for managing services such as e-mail management, accessing bookmarks, calendaring, network access, etc. may be stored anywhere in the computer network, including on the client, on the global server or on any other computer. The global server is configured to provide the user with access to services, which based on level of authentication management or user preferences may include only a subset of available services. Upon receiving a service request from the client, the global server sends configuration information to enable access to the service.

Each client includes a base system and the global server includes a synchronization agent. The base system and synchronization agent automatically establish a secure connection therebetween and synchronize the selected portions of the first set of workspace data stored on the client and the second set of workspace data stored on the global server. The base system operates on the client and examines the selected portions to determine whether any workspace elements have been modified since last synchronization. The synchronization agent operates on the global server and informs the base system whether any of the workspace elements in the second set have been modified. Modified version may then be exchanged so that an updated set of workspace elements may be stored at both locations, and so that the remote user can access an updated database. If a conflict exists between two versions, the base system then performs a responsive action such as examining content and generating a preferred version, which may be stored at both locations. The system may further include a synchronization-start module at the client site (which may be protected by a firewall) that initiates interconnection and synchronization when predetermined criteria have been satisfied.

A method of the present invention includes establishing a communications link between the client and the global server. The method includes establishing a communications link between the client and a service based upon user requests. The method receives configuration data and uses the configuration data to configure the client components such as the operating system, the web engine and other components. Configuring client components enables the client to communicate with the service and provides a user-and-service-specific user interface on the client. Establishing a communications link may also include confirming access privileges.

Another method uses a global translator to synchronize workspace elements. The method includes the steps of selecting workspace elements for synchronization, establishing a communications link between a client and a global server, examining version information for each of the workspace elements on the client and on the global server to determine workspace elements which have been modified since last synchronization. The method continues by comparing the corresponding versions and performing a responsive action. Responsive actions may include storing the preferred version at both stores or reconciling the versions using content-based analysis.

The system and methods of the present invention advantageously provide a secure globally accessible third party, i.e. the global server. The system and methods provide a

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secure technique for enabling a user to access the global server and thus workspace data remotely and securely. Because of the global firewall and the identification and security services performed by the global server, corporations can store relatively secret information on the global server for use by authorized clients. Yet, the present invention also enables corporations to maintain only a portion of their secret information on the global server, so that there would be only limited loss should the global server be compromised. Further, the global server may advantageously act as a client proxy for controlling access to services, logging use of keys and logging access of resources.

A client user who maintains a work site, a home site, an off-site and the global server site can securely synchronize the workspace data or portions thereof among all four sites. Further, the predetermined criteria (which control when the synchronization-start module initiates synchronization) may be set so that the general synchronization module synchronizes the workspace data upon user request, at predetermined times during the day such as while the user is commuting, or after a predetermined user action such as user log-off or user log-on. Because the system and method operate over the Internet, the system is accessible using any connected terminal having a web engine such as an internet-enabled smart phone, television settop (e.g., web TV), etc. and is accessible over any distance. Since the system and method include format translation, merging of workspace elements between different application programs and different platforms is possible. Further, because synchronization is initiated from within the firewall, the typical firewall, which prevents in-bound communications and only some protocols of out-bound communications, does not act as an impediment to workspace element synchronization.

Further, a roaming user may be enabled to access workspace data from the global server or may be enabled to access a service for accessing workspace data from a client. For example, a user may prefer not to store personal information on the global server but may prefer to have remote access to the information. Further, the user may prefer to store highly confidential workspace elements on the client at work as added security should the global server be compromised.

The present invention may further benefit the roaming user who needs emergency access to information. The roaming user may request a Management Information Systems (MIS) director controlling the client to provide the global server with the proper keys to enable access to the information on the client. If only temporary access is desired, the keys can then be later destroyed either automatically or upon request. Alternatively, the MIS director may select the needed information as workspace elements to be synchronized and may request immediate synchronization with the global server. Accordingly, the global server and the client can synchronize the needed information, and the user can access the information from the global server after it has completed synchronization.

The present invention also enables the system and methods to synchronize keys, available services and corresponding service addresses to update accessibility of workspace data and services. For example, if the user of a client accesses a site on the Internet which requires a digital certificate and the user obtains the certificate, the system and methods of the present invention may synchronize this newly obtained certificate with the keys stored on the global server. Thus, the user need not contact the global server to provide it with the information. The synchronization means will synchronize the information automatically.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram illustrating a secure data-synchronizing remotely accessible network in accordance with the present invention;

FIG. 2 is a block diagram illustrating details of a FIG. 1 remote terminal;

FIG. 3 is a block diagram illustrating details of a FIG. 1 global server;

FIG. 4 is a block diagram illustrating details of a FIG. 1 synchronization agent;

FIG. 5 is a graphical representation of an example bookmark in global format;

FIG. 6 is a graphical representation of the FIG. 3 configuration data;

FIG. 7 is a block diagram illustrating the details of a FIG. 1 client;

FIG. 8 is a block diagram illustrating the details of a FIG. 1 base system;

FIG. 9 illustrates an example services list;

FIG. 10 is a flowchart illustrating a method for remotely accessing a secure server;

FIG. 11 is a flowchart illustrating details of the FIG. 10 step of creating a link between a client and global server;

FIG. 12 is a flowchart illustrating details of the FIG. 10 step of providing access to a service in a first embodiment;

FIG. 13 is a flowchart illustrating details of the FIG. 10 step of providing access to a service in a second embodiment;

FIG. 14 is a flowchart illustrating details of the FIG. 10 step of providing access to a service in a third embodiment; and

FIG. 15 is a flowchart illustrating a method for synchronizing multiple copies of a workspace element over a secure network.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 is a block diagram illustrating a network 100, comprising a first site such as a remote computer terminal 105 coupled via a communications channel 110 to a global server 115. The global server 115 is in turn coupled via a communications channel 120 to a second site such as a Local Area Network (LAN) 125 and via a communications channel 122 to a third site such as client 167. Communications channel 110, communications channel 120 and communications channel 122 may be referred to as components of a computer network such as the Internet. The global server 115 is protected by a global firewall 130, and the LAN 125 is protected by a LAN firewall 135.

The LAN 125 comprises a client 165, which includes a base system 170 for synchronizing workspace data 180 (e-mail data, file data, calendar data, user data, etc.) with the global server 115 and may include a service engine 175 for providing computer services such as scheduling, e-mail, paging, word-processing or the like. Those skilled in the art will recognize that workspace data 180 may include other types of data such as application programs. It will be further appreciated that workspace data 180 may each be divided into workspace elements, wherein each workspace element may be identified by particular version information 782 (FIG. 7). For example, each e-mail, file, calendar, etc. may be referred to as "a workspace element in workspace data."

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For simplicity, each workspace element on the client 165 is referred to herein as being stored in format A. It will be further appreciated that the workspace data 180 or portions thereof may be stored at different locations such as locally on the client 165, on other systems in the LAN 125 or on other systems (not shown) connected to the global server 115.

The client 167 is similar to the client 165. However, workspace data stored on the client 167 is referred to as being stored in format B, which may be the same as or different than format A. All aspects described above and below with reference to the client 165 are also possible with respect to the client 167. For example, client 167 may include services (not shown) accessible from remote terminal 105, may include a base system (not shown) for synchronizing workspace elements with the global server 115, etc.

The global server 115 includes a security system 160 for providing only an authorized user with secure access through firewalls to services. The security system 160 may perform identification and authentication services and may accordingly enable multiple levels of access based on the level of identification and authentication. The global server 115 further includes a configuration system 155 that downloads configuration data 356 (FIGS. 3 and 6) to the remote terminal 105 to configure remote terminal 105 components such as the operating system 270 (FIG. 2), the web engine 283 (FIG. 2), the applet engine 290 (FIG. 2), etc. The configuration system 155 uses the configuration data 356 to enable the remote terminal 105 to access the services provided by the service engine 175 and to provide a user-and-service-specific user interface.

The global server 115 stores workspace data 163, which includes an independently modifiable copy of each selected workspace element in the selected portions of the workspace data 180. Accordingly, the workspace data 163 includes an independently modifiable copy of each corresponding version information 782 (FIG. 7). The workspace data 163 may also include workspace elements which originate on the global server 115 such as e-mails sent directly to the global server 115 or workspace elements which are downloaded from another client (not shown). The global server 115 maintains the workspace data 163 in a format, referred to as a "global format," which is selected to be easily translatable by the global translator 150 to and from format A and to and from format B. As with format A and format B, one skilled in the art knows that the global format actually includes a global format for each information type. For example, there may be a global format for bookmarks (FIG. 5), a global format for files, a global format for calendar data, a global format for e-mails, etc.

The global server 115 also includes a synchronization agent 145 for examining the workspace elements of workspace data 163. More particularly, the base system 170 and the synchronization agent 145, collectively referred to herein as "synchronization means," cooperate to synchronize the workspace data 163 with the selected portions of the workspace data 180. The synchronization means may individually synchronize workspace elements (e.g., specific word processor documents) or may synchronize workspace element folders (e.g., a bookmark folder). Generally, the base system 170 manages the selected portions of the workspace data 180 within the LAN 125 and the synchronization agent 145 manages the selected portions of workspace data 163 within the global server 115. It will be appreciated that the global translator 150 cooperates with the synchronization means to translate between format A (or

format B) and the global format. It will be further appreciated that the global server 115 may synchronize the workspace data 163 with workspace data 180 and with the workspace data (not shown) on the client 167. Accordingly, the workspace data 163 can be easily synchronized with the workspace data (not shown) on the client 167.

The remote terminal 105 includes a web engine 140, which sends requests to the global server 115 and receives information to display from the global server 115. The web engine 140 may use HyperText Transfer Protocol (HTTP) and HyperText Markup Language (HTML) to interface with the global server 115. The web engine 140 may be enabled to run applets, which when executed operate as the security interface for providing access to the global server 115 and which operate as the application interface with the requested service. Using the present invention, a user can operate any remote client 105 connected to the Internet to access the global server 115, and thus to access the services and the workspace data on or accessible by the global server 115.

FIG. 2 is a block diagram illustrating details of the remote terminal 105, which includes a Central Processing Unit (CPU) 210 such as a Motorola Power PC™ microprocessor or an Intel Pentium™ microprocessor. An input device 220 such as a keyboard and mouse, and an output device 230 such as a Cathode Ray Tube (CRT) display are coupled via a signal bus 235 to CPU 210. A communications interface 240, a data storage device 250 such as Read Only Memory (ROM) and a magnetic disk, and a Random-Access Memory (RAM) 260 are further coupled via signal bus 235 to CPU 210. The communications interface 240 is coupled to a communications channel 110 as shown in FIG. 1.

An operating system 270 includes a program for controlling processing by CPU 210, and is typically stored in data storage device 250 and loaded into RAM 260 (as shown) for execution. Operating system 270 further includes a communications engine 275 for generating and transferring message packets via the communications interface 240 to and from the communications channel 110. Operating system 270 further includes an Operating System (OS) configuration module 278, which configures the operating system 270 based on OS configuration data 356 (FIG. 3) such as Transmission Control Protocol (TCP) data, Domain Name Server (DNS) addresses, etc. received from the global server 115.

Operating system 270 further includes the web engine 140 for communicating with the global server 115. The web engine 140 may include a web engine (WE) configuration module 286 for configuring elements of the web engine 140 such as home page addresses, bookmarks, caching data, user preferences, etc. based on the configuration data 356 received from the global server 115. The web engine 140 may also include an encryption engine 283 for using encryption techniques to communicate with the global server 115. The web engine 140 further may include an applet engine 290 for handling the execution of downloaded applets including applets for providing security. The applet engine 290 may include an Applet Engine (AE) configuration module 295 for configuring the elements of the applet engine 290 based on configuration data 356 received from the global server 115.

FIG. 3 is a block diagram illustrating details of the global server 115, which includes a Central Processing Unit (CPU) 310 such as a Motorola Power PC™ microprocessor or an Intel Pentium™ microprocessor. An input device 320 such as a keyboard and mouse, and an output device 330 such as a Cathode Ray Tube (CRT) display are coupled via a signal

bus 335 to CPU 310. A communications interface 340, a data storage device 350 such as Read Only Memory (ROM) and a magnetic disk, and a Random-Access Memory (RAM) 370 are further coupled via signal bus 335 to CPU 310. As shown in FIG. 1, the communications interface 340 is coupled to the communications channel 110 and to the communications channel 120.

An operating system 380 includes a program for controlling processing by CPU 310, and is typically stored in data storage device 359 and loaded into RAM 370 (as illustrated) for execution. The operating system 380 further includes a communications engine 382 for generating and transferring message packets via the communications interface 340 to and from the communications channel 345. The operating system 380 also includes a web page engine 398 for transmitting web page data 368 to the remote terminal 105, so that the remote terminal 105 can display a web page 900 (FIG. 9) listing functionality offered by the global server 115. Other web page data 368 may include information for displaying security method selections.

The operating system 380 may include an applet host engine 395 for transmitting applets to the remote terminal 105. A configuration engine 389 operates in conjunction with the applet host engine 395 for transmitting configuration applets 359 and configuration and user data 356 to the remote terminal 105. The remote terminal 105, executes the configuration applets 359 and uses the configuration and user data 356 to configure the elements (e.g., the operating system 270, the web engine 140 and the applet engine 290) of the remote terminal 105. Configuration and user data 356 is described in greater detail with reference to FIG. 6.

The operating system 380 also includes the synchronization agent 145 described with reference to FIG. 1. The synchronization agent 145 synchronizes the workspace data 163 on the global server 115 with the workspace data 180 on the client 165. As stated above with reference to FIG. 1, the global translator 150 translates between format A used by the client 165 and the global format used by the global server 115.

The operating system 380 may also include a security engine 392 for determining whether to instruct a communications engine 382 to create a secure communications link with a client 165 or terminal 105, and for determining the access rights of the user. For example, the security engine 392 forwards to the client 165 or remote terminal 105 security applets 362, which when executed by the receiver poll the user and respond back to the global server 115. The global server 115 can examine the response to identify and authenticate the user.

For example, when a client 165 attempts to access the global server 115, the security engine 384 determines whether the global server 115 accepts in-bound communications from a particular port. If so, the security engine 392 allows the communications engine 382 to open a communications channel 345 to the client 165. Otherwise, no channel will be opened. After a channel is opened, the security engine 392 forwards an authentication security applet 362 to the remote terminal 105 to poll the user for identification and authentication information such as for a user ID and a password. The authentication security applet 362 will generate and forward a response back to the global server 115, which will use the information to verify the identity of the user and provide access accordingly.

It will be appreciated that a "request-servicing engine" may be the configuration engine 389 and the applet host engine 395 when providing services to a remote terminal

105 or client 165. The request-servicing engine may be the web page engine 398 when performing workspace data 163 retrieval operations directly from the global server 115. The request-servicing engine may be the configuration engine 389 and the applet host engine 395 when performing workspace data 180 retrieval operations from the client 165 or from any other site connected to the global server 115. The request-servicing engine may be security engine 392 when performing security services such as user identification and authentication. The request-servicing engine may be the synchronization agent when performing synchronization with the client 165. Further, the request-servicing engine may be any combination of these components.

FIG. 4 is a block diagram illustrating details of the synchronization agent 145, which includes a communications module 405 and a general synchronization module 410. The communications module 405 includes routines for compressing data and routines for communicating via the communications channel 120 with the base system 170. The communications module 405 may further include routines for communicating securely channel through the global firewall 130 and through the LAN firewall 125.

The general synchronization module 410 includes routines for determining whether workspace elements have been synchronized and routines for forwarding to the base system 170 version information (not shown) of elements determined to be modified after last synchronization. The general synchronization module 410 may either maintain its own last synchronization signature (not shown), receive a copy of the last synchronization signature with the request to synchronize from the base system 170, or any other means for insuring that the workspace data has been synchronized. The general synchronization module 410 further includes routines for receiving preferred versions of workspace data 180 workspace elements from the base system 170 and routines for forwarding preferred versions of workspace data 180 workspace elements to the base system 170.

FIG. 5 illustrates an example bookmark workspace element in the global format. The translator 150 incorporates all the information needed to translate between all incorporated formats. For example, if for a first client a bookmark in format A needs elements X, Y and Z and for a second client a bookmark in format B needs elements W, X and Y, the global translator 150 incorporates elements W, X, Y and Z to generate a bookmark in the global format. Further, the translator 150 incorporates the information which is needed by the synchronization means (as described below in FIG. 4) such as the last modified date. Accordingly, a bookmark in the Global Format may include a user identification (ID) 505, an entry ID 510, a parent ID 515, a folder ID flag 520, a name 525, a description 530, the Uniform Resource Locator (URL) 535, the position 540, a deleted ID flag 545, a last modified date 550, a created date 555 and a separation ID flag 560.

FIG. 6 is a block diagram illustrating details of the configuration and user data 356. Configuration data 356 includes settings 605 such as TCP data and the DNS address, web browser settings such as home page address, bookmarks and caching data, applet engine settings, and applet configuration data such as the user's e-mail address, name and signature block. It will be appreciated that applet-specific configuration and user data 356 is needed, since the service may not be located on the user's own local client 165. Configuration and user data 356 further includes predetermined user preferences 610 such as font, window size, text size, etc.

Configuration data 356 further includes the set of services 615, which will be provided to the user. Services 615 include

a list of registered users and each user's list of user-preferred available services 615. Services may also include a list of authentication levels needed to access the services 615. Configuration and user data 137 further includes service addresses 620 specifying the location of each of the services 615 accessible via the global server 115.

FIG. 7 is a block diagram illustrating details of the client 165, which includes a CPU 705, an input device 710, an output device 725, a communications interface 710, a data storage device 720 and RAM 730, each coupled to a signal bus 740.

An operating system 735 includes a program for controlling processing by the CPU 705, and is typically stored in the data storage device 720 and loaded into the RAM 730 (as illustrated) for execution. A service engine 175 includes a service program for managing workspace data 180 that includes version information (not shown). The service engine 175 may be also stored in the data storage device 720 and loaded into the RAM 730 (as illustrated) for execution. The workspace data 180 may be stored in the data storage device 330. As stated above with reference to FIG. 1, the base system 170 operates to synchronize the workspace data 180 on the client 165 with the workspace data 163 on the global server 115. The base system 170 may be also stored in the data storage device 720 and loaded into the RAM 730 (as shown) for execution. The base system 170 is described in greater detail with reference to FIG. 8.

FIG. 8 is a block diagram illustrating details of the base system 170, which includes a communications module 805, a user interface module 810, locator modules 815, a synchronization-start ("synch-start") module 820, a general synchronization module 825 and a content-based synchronization module 830. For simplicity, each module is illustrated as communicating with one another via a signal bus 840. It will be appreciated that the base system 170 includes the same components as included in the synchronization agent 145.

The communications module 805 includes routines for compressing data, and routines for communicating via the communications interface 710 (FIG. 7) with the synchronization agent 145 (FIG. 1). The communications module 805 may include routines for applying Secure Socket Layer (SSL) technology and user identification and authentication techniques (i.e., digital certificates) to establish a secure communication channel through the LAN firewall 135 and through the global firewall 130. Because synchronization is initiated from within the LAN firewall 135 and uses commonly enabled protocols such as HyperText Transfer Protocol (HTTP), the typical firewall 135 which prevents in-bound communications in general and some outbound protocols does not act as an impediment to e-mail synchronization. Examples of communications modules 805 may include TCP/IP stacks or the AppleTalk™ protocol.

The user interface 810 includes routines for communicating with a user, and may include a conventional Graphical User Interface (GUI). The user interface 810 operates in coordination with the client 165 components as described herein.

The locator modules 815 include routines for identifying the memory locations of the workspace elements in the workspace data 180 and the memory locations of the workspace elements in the workspace data 163. Workspace element memory location identification may be implemented using intelligent software, i.e., preset memory addresses or the system's registry, or using dialogue boxes to query a user. It will be appreciated that the locator

modules **815** may perform workspace element memory location identification upon system boot-up or after each communication with the global server **115** to maintain updated memory locations of workspace elements.

The synchronization-start module **820** includes routines for determining when to initiate synchronization of workspace data **163** and workspace data **180**. For example, the synchronization-start module **820** may initiate data synchronization upon user request, at a particular time of day, after a predetermined time period passes, after a predetermined number of changes, after a user action such as user log-off or upon like criteria. The synchronization-start module **820** initiates data synchronization by instructing the general synchronization module **825** to begin execution of its routines. It will be appreciated that communications with synchronization agent **145** preferably initiate from within the LAN **125**, because the typical LAN firewall **125** prevents in-bound communications and allows out-bound communications.

The general synchronization module **825** includes routines for requesting version information from the synchronization agent **145** (FIG. 1) and routines for comparing the version information against a last synchronization signature **835** such as a last synchronization date and time to determine which versions have been modified. The general synchronization module **825** further includes routines for comparing the local and remote versions to determine if only one or both versions of a particular workspace element have been modified and routines for performing an appropriate synchronizing responsive action. Appropriate synchronizing responsive actions may include forwarding the modified version (as the preferred version) of a workspace element in workspace data **180** or forwarding just a compilation of the changes to the other store(s). Other appropriate synchronizing responsive actions may include, if reconciliation between two modified versions is needed, then instructing the content-based synchronization module **830** to execute its routines (described below).

It will be appreciated that the synchronization agent **145** preferably examines the local version information **124** and forwards only the elements that have been modified since the last synchronization signature **835**. This technique makes efficient use of processor power and avoids transferring unnecessary data across the communications channel **712**. The general synchronization module **825** in the LAN **135** accordingly compares the data elements to determine if reconciliation is needed. Upon completion of the data synchronization, the general synchronization module **825** updates the last synchronization signature **835**.

The content-based synchronization module **830** includes routines for reconciling two or more modified versions of workspace data **163**, **180** in the same workspace element. For example, if the original and the copy of a user workspace element have both been modified independently since the last synchronization, the content-based synchronization module **830** determines the appropriate responsive action. The content-based synchronization module **830** may request a user to select the preferred one of the modified versions or may respond based on preset preferences, i.e., by storing both versions in both stores or by integrating the changes into a single preferred version which replaces each modified version at both stores. When both versions are stored at both stores, each version may include a link to the other version so that the user may be advised to select the preferred version.

It will be appreciated that any client **165** that wants synchronization may have a base system **170**. Alternatively,

one base system **170** can manage multiple clients **165**. It will be further appreciated that for a thin client **165** of limited computing power such as a smart telephone, all synchronization may be performed by the global server **115**. Accordingly, components of the base system **170** such as the user interface module **810**, the locator modules **815**, the general synchronization module **825** and the content-based synchronization module **830** may be located on the global server **115**. To initiate synchronization from the client **165**, the client **165** includes the communications module **805** and the synch-start module **820**.

FIG. 9 illustrates an example list **900** of accessible services provided by a URL-addressable HyperText Markup Language (HTML)-based web page, as maintained by the web page engine **398** of the global server **115**. The list **900** includes a title **910** "Remote User's Home Page," a listing of the provided services **615** and a pointer **970** for selecting one of the provided services **615**. As illustrated, the provided services may include an e-mail service **920**, a calendaring service **930**, an internet access service **940**, a paging service **950**, a fax sending service **960**, a user authentication service **963** and a workspace data retrieval service **967**. Although not shown, other services **615** such as bookmarking, QuickCard™, etc. may be included in the list **900**. Although the web page provides the services **615** in a list **900**, other data structures such as a pie chart or table may alternatively be used.

FIG. 10 is a flowchart illustrating a method **1000** for enabling a user to access the services **615** in the computer network system **100**. Method **1000** begins by the remote terminal **105** in step **1005** creating a communications link with the global server **115**. The global server **115** in step **1010** confirms that the user has privileges to access the functionality of the global server **115**. Confirming user access privileges may include examining a user certificate, obtaining a secret password, using digital signature technology, performing a challenge/response technique, etc. It will be appreciated that the security engine **392** may cause the applet host engine **395** to forward via the communications channel **345** to the remote terminal **105** an authentication security applet **362** which when executed communicates with the global server **115** to authenticate the user.

After user access privileges are confirmed, the web page engine **398** of the global server **115** in step **1015** transmits web page data **368** and configuration and user data **356** to the remote terminal **105**. The web engine **140** of the remote terminal **105** in step **1020** uses the web page data **368** and the configuration and user data **356** to display a web page service list **900** (FIG. 9) on the output device **230**, and to enable access to the services **615** which the global server **115** offers. An example service list **900** is shown and described with reference to FIG. 9. Configuration of the remote terminal **105** and of the web page **700** is described in detail in the cross-referenced patent applications.

From the options listed on the web page **900**, the user in step **1025** selects a service **615** via input device **220**. In response, the request-servicing engine (described with reference to FIG. 3) provides the selected service **615**. For example, the applet host engine **395** of the global server **115** in step **1030** may download to the remote terminal **105** a corresponding applet **359** and configuration and user data **356** for executing the requested service **615**. Alternatively, the web page engine **398** may use, for example, HTTP and HTML to provide the selected service **615**. As described above with reference to FIG. 6, the configuration and user data **356** may include user-specific preferences such as user-preferred fonts for configuring the selected service **615**.

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Configuration and user data 356 may also include user-specific and service-specific-information such as stored bookmarks, calendar data, pager numbers, etc. Alternatively, the corresponding applet 359 and the configuration and user data 356 could have been downloaded in step 1015. Providing access to the service by an applet 359 is described in greater detail below with reference to FIGS. 12-14.

The applet engine 290 of the remote terminal 105 in step 1035 initiates execution of the corresponding downloaded applet. The global server 115 in step 1040 initiates the selected service 615 and in step 1045 selects one of three modes described with reference to FIGS. 12-14 for accessing the service 615. For example, if the user selects a service 615 on a service server (e.g., the client 165) that is not protected by a separate firewall, then the global server 115 may provide the user with direct access. If the user selects a service 615 provided by a service server within the LAN 125, then the global server 115 may access the service 615 as a proxy for the user. It will be appreciated that each firewall 130 and 135 may store policies establishing the proper mode of access the global server 115 should select. Other factors for selecting mode of access may include user preference, availability and feasibility. The global server 115 in step 1050 uses the selected mode to provide the remote terminal 105 user with access to the selected service 615.

FIG. 11 is a flowchart illustrating details of step 1005, which begins by the remote terminal 105 in step 1105 using a known Uniform Resource Locator (URL) to call the global server 115. The global server 115 and the remote terminal 105 in step 1107 create a secure communications channel therebetween, possibly by applying Secure Sockets Layer (SSL) technology. That is, the security engine 392 of the global server 115 in step 1110 determines if in-bound secure communications are permitted and, if so, creates a communications channel with the remote terminal 105. The web engine 140 of the remote terminal 105 and the security engine 392 of the global server 115 in step 1115 negotiate secure communications channel parameters, possibly using public key certificates. An example secure communications channel is RSA with RC4 encryption. Step 1115 thus may include selecting an encryption protocol which is known by both the global server 115 and the remote terminal 105. The encryption engine 283 of the remote terminal 105 and secure communications engine 392 of the global server 115 in step 1120 use the secure channel parameters to create the secure communications channel. Method 505 then ends.

FIG. 12 is a flowchart illustrating details of step 1050 in a first embodiment, referred to as step 1050a, wherein the global server 115 provides the remote terminal 105 with a direct connection to a service 615. Step 1050a begins by the applet engine 290 in step 1205 running a configuration applet 359 for the selected service 615 that retrieves the service address 620 from data storage device 380 and the authentication information from the keysafe 365. The communications interface 340 in step 1210 creates a direct and secure connection with the communications interface 340 of the global server 115 at the retrieved service address 620, and uses the authentication information to authenticate itself. The applet in step 1215 acts as the I/O interface with the service 615. Step 1050a then ends.

FIG. 13 is a flowchart illustrating details of step 1050 in a second embodiment, referred to as step 1050b, wherein the global server 115 acts for the remote terminal 105 as a proxy to the service 615. Step 1050b begins with a configuration applet 359 in step 1305 requesting the service address 620 for the selected service 615, which results in retrieving the service address 620 directing the applet 359 to the global

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server 115. The applet 359 in step 1310 creates a connection with-communications interface 340 of the global server 115. The global server 115 in step 1315 retrieves the service address 620 of the selected service 615 and the authentication information for the selected service 615 from the keysafe 365. The communications interface 340 of the global server 115 in step 1320 negotiates secure channel parameters for creating a secure channel with the service server 1014. The communications interface 340 in step 1320 also authenticates itself as the user.

Thereafter, the applet 359 in step 1325 acts as the I/O interface with the communications interface 340 of the global server 115. If the global server 115 in step 1330 determines that it is unauthorized to perform a remote terminal 105 user's request, then the global server 115 in step 1345 determines whether the method 1050b ends, e.g., whether the user has quit. If so, then method 1050b ends. Otherwise, method 1050b returns to step 1325 to obtain another request. If the global server 115 in step 1330 determines that it is authorized to perform the remote terminal 105 user's request, then the global server 115 in step 1340 acts as the proxy for the remote terminal 105 to the service 615. As proxy, the global server 115 forwards the service request to the selected service 615 and forwards responses to the requesting applet 359 currently executing on the remote terminal 105. Method 1050b then jumps to step 1345.

FIG. 14 is a flowchart illustrating details of step 1050 in a third embodiment, referred to as step 1050c, wherein the service 615 being requested is located on the global server 115. Step 1050 begins with an applet in step 1405 retrieving the service address 620 for the selected service 615, which results in providing the configuration applet 359 with the service address 620 of the service 615 on the global server 115. Thus, the applet in step 1410 creates a secure connection with the global server 115. No additional step of identification and authentication is needed since the remote terminal 105 has already identified and authenticated itself to the global server 115 as described with reference to step 1010 of FIG. 10.

In step 1415, a determination is made whether the service 615 is currently running. If so, then in step 1425 a determination is made whether the service 615 can handle multiple users. If so, then the global server 115 in step 1430 creates an instance for the user, and the applet in step 1440 acts as the I/O interface with the service 615 on the global server 115. Method 1050c then ends. Otherwise, if the service 615 in step 1425 determines that it cannot handle multiple users, then method 1050c proceeds to step 1440. Further, if in step 1415 the global server 115 determines that the service 615 is not currently running, then the global server 115 in step 1420 initializes the service 615 and proceeds to step 1425.

FIG. 15 is a flowchart illustrating a method 1500 for using a global translator 150 to synchronize workspace data 163 and workspace data 180 in a secure network 100. Method 1500 begins with the user interface 900 in step 1505 enabling a user to select workspace elements of workspace data 163 and workspace data 180 for the synchronization means to synchronize. The locator modules 815 in step 1510 identify the memory locations of the workspace elements in workspace data 163 and workspace data 180. If a selected workspace element does not have a corresponding memory location, such as in the case of adding new workspace elements to the global server 115, then one is selected. The selected memory location may be a preexisting workspace element or a new workspace element. As stated above,

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workspace element memory location identification may be implemented using intelligent software or dialogue boxes. The general synchronization module 825 in step 1515 sets the previous status of the workspace elements equal to the null set, which indicates that all information of the workspace element has been added.

The synchronization-start module 820 in step 1520 determines whether predetermined criteria have been met which indicate that synchronization of the workspace elements selected in step 1505 should start. If not, then the synchronization-start module 820 in step 1525 waits and loops back to step 1520. Otherwise, the communications module 805 and the communications module 405 in step 1530 establish a secure communications channel therebetween.

The general synchronization module 825 in step 1535 determines whether any workspace elements have been modified. That is, the general synchronization module 825 in step 1535 examines the version information of each selected workspace element in the workspace data 180 against the last synchronization signature 435 to locate modified workspace elements. This comparison may include comparing the date of last modification with the date of last synchronization, or may include a comparison between the current status and the previous status as of the last interaction. Similarly, the general synchronization module 815 examines the version information of each corresponding workspace element in workspace data 163 and the last synchronization signature 435 to locate modified workspace elements.

If in step 1535 no modified workspace elements or folders are located, then the general synchronization module 825 in step 1560 updates the last synchronization signature 435 and method 1500 ends. Otherwise, the general synchronization module 825 in step 1540 determines whether more than one version of a workspace element has been modified since the last synchronization.

If only one version has been modified, then the corresponding general synchronization module 825 in step 1545 determines the changes made. As stated above, determining the changes made may be implemented by comparing the current status of the workspace element against the previous status of the workspace element as of the last interaction therebetween. If the changes were made only to the version in the workspace data 163, then the global translator 150 in step 1550 translates the changes to the format used by the other store, and the general synchronization module 410 in step 1555 forwards the translated changes to the general synchronization module 825 for updating the outdated workspace element in the workspace data 180. If the updated version is a workspace element in the workspace data 180, then the general synchronization module 825 sends the changes to the updated version to the global translator 150 for translation and then to the general synchronization module 410 for updating the outdated workspace element in the workspace data 163. The general synchronization module 825 and the general synchronization module 410 in step 1557 update the previous state of the workspace element to reflect the current state as of this interaction. Method 1500 then returns to step 1535.

If the general synchronization module 825 in step 1540 determines that multiple versions have been modified, then the general synchronization module 825 in step 1565 computes the changes to each version and in step 1570 instructs the content-based synchronization module 830 to examine content to determine if any conflicts exist. For example, the

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content-based synchronization module 830 may determine that a conflict exists if a user deletes a paragraph in one version and modified the same paragraph in another version. The content-based synchronization module 830 may determine that a conflict does not exist if a user deletes different paragraphs in each version. If no conflict is found, then method 1500 jumps to step 1550 for translating and forwarding the changes in each version to the other store. However, if a conflict is found, then the content-based synchronization module 830 in step 1575 reconciles the modified versions. As stated above, reconciliation may include requesting instructions from the user or based on previously selected preferences performing responsive actions such as storing both versions at both stores. It will be appreciated that a link between two versions may be placed in each of the two versions, so that the user will recognize to examine both versions to select the preferred version. Method 1500 then proceeds to step 1550.

It will be further appreciated that in step 1510 new workspace elements and preexisting workspace elements to which new workspace elements will be merged are set to "modified" and the previous status is set to the null set. Thus, the general synchronization module 825 in step 1540 will determine that more than one version has been modified and the content-based synchronization module 830 in step 1570 will determine that no conflict exists. The changes in each will be translated and forwarded to the other store. Accordingly, the two versions will be effectively merged and stored at each store.

For example, if a first bookmark folder was created by the web engine 140 on the client 165, a second folder was created by a web engine 140 on the remote terminal 105, no preexisting folder existed on the global server 115 and the user selected each of these folders for synchronization, then the synchronization means will effectively merge the first and second folders. That is, the general synchronization module 825 on the client 165, will determine that the first folder has been modified and the previous status is equal to the null set. The general synchronization module 825 will determine and send the changes, i.e., all the workspace elements in the first folder, to a new global folder on the global server 115. Similarly the general synchronization module (not shown) on the remote terminal 105 will determine that, as of its last interaction, the previous status of each of the second and the global folders is the null set. The general synchronization module 825 will instruct the content-based synchronization module 830 to examine the changes made to each folder to determine whether a conflict exists. Since no conflicts will exist, the general synchronization module 825 will forward the changes to the global folder and the general synchronization module 410 will forward its changes to the second store, thereby merging the workspace elements of the first and second folders in the global and second folders. The general synchronization module 410 will inform the general synchronization module 825 that the global folder has been modified relative to the last interaction, and will forward the new changes to the first folder. Thus, the first and second folders will be merged and stored at each store.

The foregoing description of the preferred embodiments of the invention is by way of example only, and other variations of the above-described embodiments and methods are provided by the present invention. For example, a server can be any computer which is polled by a client. Thus, the remote terminal 105 may be referred to as a type of client. Although the system and method have been described with reference to applets, other downloadable executables such as

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Java™ applets, Java™ applications or ActiveX™ control developed by the Microsoft Corporation can alternatively be used. Components of this invention may be implemented using a programmed general-purpose digital computer, using application specific integrated circuits, or using a network of interconnected conventional components and circuits. The embodiments described herein have been presented for purposes of illustration and are not intended to be exhaustive or limiting. Many variations and modifications are possible in light of the foregoing teaching. The invention is limited only by the following claims.

What is claimed is:

1. An e-mail system for providing synchronized communication of independently modifiable e-mails over an Internet between a local area network (LAN) server secured by a LAN firewall with at least one normally open LAN firewall port, and each of a plurality of smart-phone devices, said system comprising:

- a global server secured by a global server firewall having a global server firewall port therein;
- a first Internet communication channel coupling said LAN server to said global server through said open LAN firewall port and said global server firewall port;
- a plurality of second Internet communication channels, each coupling said global server to a respective one of said smart-phone devices;
- at least one translator for translating e-mail data of different formats such that e-mails transmitted to said global server and said smart-phone devices are of a format or formats which are acceptable thereto;
- at least one storage device for storing version information indicating differences between independently modifiable e-mails;
- a general synchronization module responsive to a synchronization start command to synchronize different independently modifiable e-mails; and
- a synchronization-start module coupled to said general synchronization module, said synchronization-start module being responsive to an existence of predetermined criteria to produce and send a synchronization start command to said general synchronization module.

2. A system according to claim 1 wherein the normally open port is an HTTP port.

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3. A system, according to claim 1, wherein the normally open port is an HTTPS (SSL).

4. A system, according to claim 1, wherein said storage device is located at the LAN server.

5. A system, according to claim 1, wherein said LAN includes a client device and wherein said storage device is located at said client device.

6. A system, according to claim 1, wherein said storage device is located at said global server.

7. A system, according to claim 1, wherein said storage device is located at one or more of said plurality of said smart-phone devices.

8. A system, according to claim 1, wherein said translator is located at said LAN server.

9. A system, according to claim 1, wherein said LAN includes a client device and wherein said translator is located at said client device.

10. A system, according to claim 1, wherein said translator is located at said global server.

11. A system, according to claim 1, wherein said translator is located at one or more of said plurality of said smart-phone devices.

12. A system, according to claim 1, wherein said general synchronization module is located at said LAN server.

13. A system, according to claim 1, wherein said LAN includes a client device and wherein said general synchronization module is located at said client device.

14. A system, according to claim 1, wherein said general synchronization module is located at said global server.

15. A system, according to claim 1, wherein said general synchronization module is located at one or more of said plurality of said smart-phone devices.

16. A system, according to claim 1, wherein said synchronization-start module is located at said LAN server.

17. A system, according to claim 1, wherein said LAN includes a client device and wherein said synchronization-start module is located at said client device.

18. A system, according to claim 1, wherein said synchronization-start module is located at one or more of said plurality of said smart-phone devices.

* * * * *

EXHIBIT C

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

SEVEN NETWORKS, INC.	§	
Vs.	§	CIVIL ACTION NO. 2:05-CV-365
VISTO CORPORATION	§	

ORDER

Visto's motion for leave to file an amended answer and counterclaims (#43) is granted. Despite Seven's arguments to the contrary, this court concludes that it is the first-filed court with jurisdiction over the dispute between these two parties. Seven's declaratory judgment action concerning the two Visto patents, although filed before Visto's motion for leave to amend its counterclaim, was instituted only after Visto approached Seven to meet and confer about the filing of the motion for leave to amend. As a result, this court will grant Visto's motion for leave to amend. This order is without prejudice to Seven's right to move to modify the scheduling order issued in this case or for separate trials of the issues raised by Visto's amended answer and counterclaims.

EXHIBIT D

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

VISTO CORPORATION,

Plaintiff,

v.

SMARTNER INFORMATION
SYSTEMS, LTD,

Defendant.

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Civil Action No. 2:05-CV-00091 (TJW)

ORDER

Having considered Visto's Notice Withdrawing Visto's Motion For Leave to Amend Complaint Pursuant to Fed. Rule Civ. Proc. 15(A) [Dkt. No. 44], the Court hereby DENIES Visto's Motion for Leave to Amend Complaint Pursuant to Fed. Rule Civ. Proc. 15(A) as moot.

**UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION**

SEVEN NETWORKS, LLC,

Plaintiff,

v.

ZTE (USA) INC. and
ZTE CORPORATION,

Defendants.

Civil Action No. 3:17-cv-1495

PATENT CASE

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff SEVEN Networks, LLC (“SEVEN”) files this Complaint for Patent Infringement of several United States patents as identified below (collectively, the “Patents-in-Suit”) and alleges as follows:

PARTIES

1. SEVEN is a company formed under the laws of Delaware with its principal place of business at 2660 East End Boulevard South, Marshall, Texas 75672.

2. Defendant ZTE (USA) Inc., is a subsidiary of ZTE Corporation and is formed under the laws of New Jersey with its principal place of business at 2425 North Central Expressway, Suite 800, Richardson, Texas 75080. ZTE (USA) Inc. may be served through its agent Jing Li at 2425 North Central Expressway, Suite 323, Richardson, Texas 75080.

3. Defendant ZTE Corporation is a Chinese corporation with a principal place of business located at ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen Prefecture, Guangdong Province, People’s Republic of China 518057.

JURISDICTION AND VENUE

4. SEVEN brings this civil action for patent infringement under the Patent Laws of the United States, 35 U.S.C. § 1 *et. seq.*, including 35 U.S.C. §§ 271, 281-285. This Court has

subject matter jurisdiction over this action under 28 U.S.C. §§ 1331 and 1338.

5. ZTE Corporation and ZTE (USA) Inc. (collectively “ZTE”) transact and conduct business in this District and the State of Texas, and are subject to the personal jurisdiction of this Court. For example, ZTE (USA) Inc. maintains its corporate headquarters in Richardson, Texas. Further, ZTE markets and sells mobile products, such as smartphones and tablets, throughout the United States including the State of Texas and this District. For example, ZTE markets and sells its mobile products through its website <https://www.zteusa.com/>.

6. SEVEN’s causes of action arise, at least in part, from ZTE’s business contacts and activities in this District and elsewhere within the State of Texas. ZTE has committed acts of infringement in this District and within Texas by making, using, selling, offering for sale, or importing into the United States products that infringe one or more claims of the Patents-in-Suit as set forth herein. Further, ZTE encourages others within this District to use its mobile products and thereby infringe one or more claims of the Patents-in-Suit. For example, ZTE advertises its mobile devices, such as its smart phones, through its website: <https://www.zteusa.com/products/all-phones/>.

7. ZTE actively solicits customers within this District and the State of Texas, and has sold many of its infringing mobile products to residents of Texas and this District.

8. Venue is proper in this District under 28 U.S.C. §§ 1391 and 1400.

9. ZTE (USA) Inc. has a regular and established place of business in this District. For example, ZTE (USA) Inc. maintains its 45,000 square-foot corporate headquarters in Richardson, Texas. Its corporate offices are located in Dallas County and are home to ZTE USA’s directors and officers, more than one hundred employees, and at least \$1.5 million dollars of business personal property. ZTE has maintained offices in Dallas County continuously since at least October 2001. As the fourth-largest supplier of mobile devices in the United States, and

the second-largest supplier of prepaid devices, ZTE regularly tests, markets, and sells mobile devices at its headquarters and within this District.

10. ZTE Corporation, which wholly owns ZTE (USA) Inc., is a Chinese corporation amenable to venue in any District in the United States, including in this District.

THE PATENTS-IN-SUIT

11. On August 19, 2014, the United States Patent and Trademark Office (“USPTO”) duly and legally issued U.S. Patent No. 8,811,952, titled “Mobile Device Power Management in Data Synchronization Over a Mobile Network With or Without a Trigger Notification,” to inventors Trevor Fiatal *et al.* (“the ’952 Patent”). A true and correct copy of the ’952 Patent is attached as Exhibit A to this Complaint.

12. On January 26, 2016, the USPTO duly and legally issued U.S. Patent No. 9,247,019, titled “Mobile Application Traffic Optimization,” to inventors Michael Luna *et al.* (“the ’019 Patent”). A true and correct copy of the ’019 Patent is attached as Exhibit B to this Complaint.

13. On April 26, 2016, the USPTO duly and legally issued U.S. Patent No. 9,325,600, titled “Offloading Application Traffic to a Shared Communication Channel for Signal Optimization in a Wireless Network for Traffic Utilizing Proprietary and Non-Proprietary Protocols,” to inventors Rami Alisawi *et al.* (“the ’600 Patent”). A true and correct copy of the ’600 Patent is attached as Exhibit C to this Complaint.

14. On May 24, 2016, the USPTO duly and legally issued U.S. Patent No. 9,351,254, titled “Method for Power Saving in Mobile Devices by Optimizing Wakelocks,” to inventors Ari Backholm *et al.* (“the ’254 Patent”). A true and correct copy of the ’254 Patent is attached as Exhibit D to this Complaint.

15. On December 6, 2016, the USPTO duly and legally issued U.S. Patent No.

9,516,127, titled “Intelligent Alarm Manipulator and Resource Tracker,” to inventors Abhay Nirantar *et al.* (“the ’127 Patent”). A true and correct copy of the ’127 Patent is attached as Exhibit E to this Complaint.

16. On December 6, 2016, the USPTO duly and legally issued U.S. Patent No. 9,516,129, titled “Mobile Application Traffic Optimization,” to inventors Michael Luna *et al.* (“the ’129 Patent”). A true and correct copy of the ’129 Patent is attached as Exhibit F to this Complaint.

17. On January 24, 2017, the USPTO duly and legally issued U.S. Patent No. 9,553,816, titled “Optimizing Mobile Network Traffic Coordination Across Multiple Applications Running on a Mobile Device,” to inventors Michael Luna *et al.* (“the ’816 Patent”). A true and correct copy of the ’816 Patent is attached as Exhibit G to this Complaint.

18. SEVEN owns the entire right and title to each of the Patents-in-Suit.

BACKGROUND

19. For nearly two decades, SEVEN has researched and developed innovative software solutions for mobile devices to enhance the user experience. For example, SEVEN has developed software technologies to manage mobile traffic in order to conserve network and battery resources. Software applications on mobile devices are frequently signaling the network for a variety of reasons. Much of the signaling from these software applications is unnecessary and simply consumes precious bandwidth and remaining battery power. This needless mobile traffic negatively impacts the user’s overall experience by creating service overloads and outages or draining the limited battery of the mobile device. SEVEN’s technologies are able to optimize mobile traffic to conserve both network and battery resources.

20. SEVEN has been recognized in the industry for its innovative technologies and products. For example, at the Mobile World Congress in 2011, the GSMA awarded SEVEN with

its Global Mobile Award for Best Technology Breakthrough. Further, in 2013 SEVEN won the Mobile Merit Award for its outstanding innovations in the mobile industry and was identified as one of fifty mobile companies to watch by AlwaysOn. SEVEN was also awarded the Best Free Android App in 2013 by TechRadar. Additionally, and among other industry recognition, Telecoms.com identified SEVEN in its Best LTE Traffic Management Product Short List.

21. Battery life for mobile devices is a major driver for consumer purchasing decisions. In a 2014 poll by Ubergizmo of 50,000 participants, battery life was rated as a smartphone's most important feature. ZTE recognizes the importance of battery life, and advertises its products' ability to optimize energy efficiency on its website

<https://www.zteusa.com/blade/>.

22. ZTE utilizes software technologies for conserving battery and extending the battery life of its mobile devices. As described below, these mobile devices infringe SEVEN's innovative and patented technologies to manage mobile traffic and save battery power.

COUNT 1

(Infringement of U.S. Pat. No. 8,811,952)

23. ZTE infringes at least claim 26 of the '952 Patent under 35 U.S.C. §271(a) and (b). ZTE makes, uses, sells, offers to sell, or imports into the United States products, such as the ZTE Blade v8 Pro, that meet every limitation of at least claim 26.

24. Claim 26 of the '952 Patent is directed to a mobile device with a processor configured to: (1) exchange transactions with a client operating in a network through a connection provided through a server coupled to the client; (2) automatically send synchronization requests from the mobile device to the network on a periodic basis, wherein the periodicity of the synchronization requests occur at a frequency determined according to the remaining battery power on the mobile device; and (3) exchange synchronization

communications with the client over the connection after sending each synchronization request.

25. ZTE's products infringe at least claim 26 of the '952 Patent. For example, the ZTE Blade v8 Pro ("Blade") includes a Qualcomm Snapdragon processor and can operate in a variety of networks such as GSM, UMTS, LTE, and WiFi. It also includes a touch screen user interface. Further, the Blade includes internal memory for storing the device's operating system and other software applications. For example, it uses the Android software operating system, such as Android 6.0 (also known as Marshmallow). The Blade also includes a number of mobile applications that communicate with the applications' respective servers through the various networks to exchange communications between the mobile application and the application server. One example is the Gmail application. The mobile device, through its communications interface including the device's network antenna, exchanges communications between the Gmail application and the email servers using mobile or WiFi networks. To keep its information up-to-date and fresh, the Gmail application synchronizes with its respective email servers periodically, such as every 5, 10, 15, 30, or 60 minutes. In synchronizing, the Gmail application will request that the Blade communicate—through the communications interface and network—a synchronization message to the email server. The email server will respond to the synchronization message from the Gmail application and return information back to the Blade to be routed to the Gmail application. But through one or more of the device's power saving modes, when the remaining battery power on the Blade falls below some threshold amount, such as 15% or 5% remaining battery power, Gmail will stop synchronizing periodically.

26. Other ZTE products similarly infringe one or more claims of the '952 Patent. Such other products include ZTE's Axon, ZMAX, ZPAD, and Trek devices.

27. ZTE also induces infringement by end users of ZTE's mobile devices of at least claim 26 of the '952 Patent. ZTE promotes and advertises the use of its products, especially the

products' capability to preserve remaining battery and avoid battery drain from background applications. The infringing power saving functionality is included in ZTE's mobile devices by default. Examples of ZTE's promotional materials appear on the company's website, such as <https://www.zteusa.com/blade/>.

28. ZTE has had notice of the '952 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, ZTE's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of ZTE's specific intent to induce others to infringe the '952 Patent. Further, despite having knowledge of its infringement, ZTE continues to intentionally and willfully infringe at least claim 26 of the '952 patent.

COUNT 2

(Infringement of U.S. Pat. No. 9,247,019)

29. ZTE infringes at least claim 1 of the '019 Patent under at least 35 U.S.C. §271(a) and (b). ZTE makes, uses, sells, offers to sell, or imports into the United States products, such as the Blade, that meet every limitation of at least claim 1.

30. Claim 1 of the '019 Patent is directed to a mobile device configured to: (1) delay content requests made by multiple applications; (2) align content request using observed activity of a user of the mobile device that includes a time since a last key press and mobile device properties; (3) poll in accordance with the aligned content requests to satisfy content requests of at least some of the multiple mobile applications; (4) monitor the time since a last key press, and, when the time exceeds a predetermined time period, locally adjust the mobile device by suppressing the aligned content requests at the mobile device for a first suppression period, and after expiration of the first suppression period, transmit any aligned content requests; and (5) suppress subsequent content request at the mobile device for a second suppression period, where

the second suppression period is longer than the first suppression period.

31. In addition to the features described in previous paragraphs, ZTE's products, such as its Blade, are capable of delaying and aligning content requests from mobile applications based on observed user activity. For example, the Blade has multiple applications that send content requests. The Blade also has a touch screen that a user can press to interact with the phone and other applications. The Blade also includes the Android software operating system, such as Marshmallow. Further, Blade includes a Doze mode that reduces traffic from the mobile device when the device is not actively in use, thereby reducing battery drain by mobile applications that are frequently signaling to their respective application servers. The Blade is able to monitor the time since a button was last pressed, for example through the auto-off timer and last user activity time to determine when to turn the screen of the device off. Further, when the Blade device detects that the screen is off, the device is unplugged and stationary for some time, it enters Doze mode. Once in Doze mode, the Blade is able to conserve battery resources by restricting mobile applications' access to the network, and defers the mobile applications' requests until a maintenance window. As the requests from the mobile applications are deferred, the requests are also aligned such that when a maintenance window occurs the multiple mobile applications are allowed to communicate using the network. Following the maintenance window, the mobile applications' are once again restricted from accessing the network, this time for a period longer than the first. The figure below illustrates the reduction in traffic from the Blade provided by Doze.

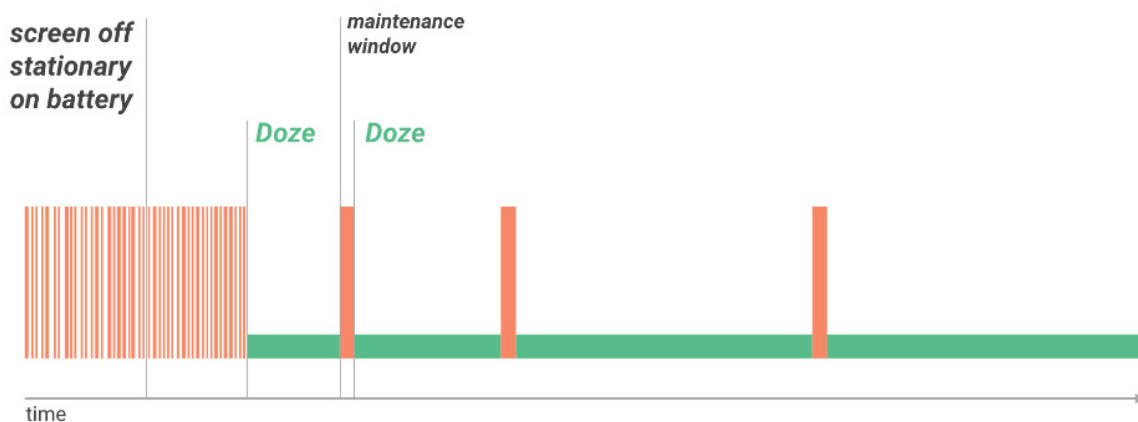


Figure 1. Doze provides a recurring maintenance window for apps to use the network and handle pending activities.

32. Other ZTE products similarly infringe one or more claims of the '019 Patent.

Such other products include ZTE's Axon, ZMAX, ZPAD, and Trek devices.

33. ZTE also induces infringement by end users of its mobile devices of at least claim 1 of the '019 Patent. ZTE promotes and advertises the use of its products, especially the products' capability to preserve remaining battery and avoid battery drain from background applications. Further, the Doze functionality is enabled on ZTE's mobile devices by default. Examples of ZTE's promotional materials appear on the company's website, such as <https://www.zteusa.com/blade/>.

34. ZTE has had notice of the '019 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, ZTE's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of ZTE's specific intent to induce others to infringe the '019 Patent. Despite having knowledge of its infringement, ZTE continues to intentionally and willfully infringe at least claim 1 of the '019 patent.

COUNT 3

(Infringement of U.S. Pat. No. 9,325,600)

35. ZTE infringes at least claim 7 of the '600 Patent under at least 35 U.S.C. §271(a)

and (b). ZTE makes, uses, sells, offers to sell, or imports into the United States products, such as the Blade, that meet every limitation of at least claim 7.

36. Claim 7 of the '600 Patent is directed to memory and code to implement a processor controlled system for reducing network traffic, comprising: (1) blocking a first channel such that network signaling and battery consumption are reduced, wherein the first channel includes a non-common channel; (2) offloading application traffic of an application onto a second channel, wherein the second channel includes a common channel; (3) monitoring the application traffic of the application over the second channel; (4) unblocking the first channel based on the monitored application traffic over the second channel so that the application can perform an action; and (5) re-blocking the first channel after the action has been completed.

37. In addition to features described in previous paragraphs, ZTE's products, such as its Blade, have memory and code to utilize common and non-common channels for application traffic and are capable of reducing network traffic by blocking the non-common channel to prevent applications from frequently communicating in the background using the non-common channels and draining battery resources. For example, mobile applications communicate with their respective servers by establishing application-specific connections to transmit information between the application on the mobile device and the application server in the network. Software applications on the mobile device are not able to utilize the application-specific connections established by other applications. To conserve battery by reducing network traffic, the Blade is able to block the application-specific connections. For example, the Blade includes the Doze functionality that restricts a mobile application's access to the network. But to avoid users missing critical information, the Blade allows applications to receive messages using a common channel when the application-specific channels are blocked. For example, when in Doze, the Blade offloads application traffic onto the Google Cloud Messaging ("GCM") channel or

Firebase Cloud Messaging channel (“FCM”), which is shared among all applications on the Blade. Through GCM/FCM high priority messages directed to the applications may be delivered even when the application-specific channels are blocked. The Blade monitors traffic over the GCM/FCM channel such that when messages are received for particular applications, the system unblocks the application-specific channels so that the application may respond to the received message. After the application has performed the task associated with the received message, the application-specific channel is once again blocked to conserve battery and reduce network traffic.

38. Other ZTE products similarly infringe one or more claims of the ’600 Patent. Such other products include ZTE’s Axon, ZMAX, ZPAD, and Trek devices.

39. ZTE also induces the infringement by end users of its mobile devices of at least claim 7 of the ’600 Patent. ZTE promotes and advertises the use of its products, especially the products’ capability to preserve remaining battery power and avoid battery drain from background applications. The Doze functionality is enabled on ZTE’s mobile devices by default. Examples of ZTE’s promotional materials appear on the company’s website, such as <https://www.zteusa.com/blade/>.

40. ZTE has had notice of the ’600 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, ZTE’s continued promotion, advertisement, and encouragement of its customers to utilize the products’ capability to preserve battery life and avoid battery drain from background applications is evidence of ZTE’s specific intent to induce others to infringe the ’600 Patent. Despite having knowledge of its infringement, ZTE continues to intentionally and willfully infringe at least claim 7 of the ’600 patent.

COUNT 4

(Infringement of U.S. Pat. No. 9,351,254)

41. ZTE infringes at least claim 1 of the '254 Patent under at least 35 U.S.C. §271(a) and (b). ZTE makes, uses, sells, offers to sell, or imports into the United States products, such as the Blade, that meet every limitation of at least claim 1.

42. Claim 1 of the '254 Patent is directed to a mobile device comprising a screen, memory, and processor configured to: (1) acquire a system wakelock in response to an application wakelock acquisition request; (2) detect an activity state of the mobile device based on a status of the display screen; (3) enter a power optimization state based on the detected activity state; (4) release the system wakelock based upon entering the power optimization state when the application that made the acquisition request is not critical to user experience, wherein the application is non-critical when the application is not identified on a whitelist; and (5) acquire the system wakelock in response to a subsequent wakelock request from another application on the mobile device when the another application making the subsequent wakelock acquisition request is identified on the whitelist.

43. In addition to features described in previous paragraphs, ZTE's products, such as its Blade, include a screen, memory, and processor. The devices also manage the use of the central processing unit ("CPU") by software applications on the mobile device. For example, even when the Blade is sleeping or otherwise in a power saving state, certain software applications are able to use the CPU. Software applications are able to use the CPU by utilizing a wakelock or other request to the system that allows the CPU to stay on for certain purposes. For example, the alarm application or the phone functionality needs to work even when the device is sleeping or in a power saving state and accordingly requires the CPU to process certain tasks. These applications issue a request to the system to use the CPU even when the device is

sleeping. The system then issues a wakelock that allows the CPU to continue working when it would otherwise be put to sleep, such as when the user is not actively using the mobile device. Some applications take advantage of these wakelock requests and use the CPU for actions that are not critical to the user experience, such as background communications when the device is not actively being used. Such misbehaving applications unnecessarily drain battery resources. The Blade manages which applications have permission to use the CPU and battery resources when the device is sleeping or in a power saving state. As an example, the Blade may acquire a system wakelock when an application, such as the alarm application, issues a wakelock request. The Blade also detects whether the device is in use by, among other things, monitoring the screen, whether the device is unplugged, and whether the device has been stationary for some time. The Blade enters Doze mode based on this monitored activity. In Doze mode, the Blade will release the system wakelock when the application that made the wakelock request does not have permission to use CPU resources during this power saving state. The Blade can issue another system wakelock in response to another wakelock request when the application making the request is identified as having the necessary permissions to utilize the CPU.

44. Other ZTE products similarly infringe one or more claims of the '254 Patent. Such other products include ZTE's Axon, ZMAX, ZPAD, and Trek devices.

45. ZTE also induces infringement by end users of its mobile devices of at least claim 1 of the '254 Patent. ZTE promotes and advertises the use of its products, especially the products' capability to preserve remaining battery and avoid battery drain from background applications. Further, the Doze functionality is enabled on ZTE's mobile devices by default. Examples of ZTE's promotional materials appear on the company's website, such as <https://www.zteusa.com/blade/>.

46. ZTE has had notice of the '254 Patent and its infringement since at least as early

as the filing of this lawsuit. Accordingly, ZTE's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of ZTE's specific intent to induce others to infringe the '254 Patent. Despite having knowledge of its infringement, ZTE continues to intentionally and willfully infringe at least claim 1 of the '254 patent.

COUNT 5

(Infringement of U.S. Pat. No. 9,516,127)

47. ZTE infringes at least claim 10 of the '127 Patent under at least 35 U.S.C. §271(a) and (b). ZTE makes, uses, sells, offers to sell, or imports into the United States products, such as its Blade, that meet every limitation of at least claim 10.

48. Claim 10 of the '127 Patent is directed to a mobile device with a memory and processor configured to: (1) enter a power save mode based on a backlight status and sensed motion of a mobile device; (2) delay a timing of one or more triggers for multiple applications on the mobile device, wherein the timing is delayed such that the triggers execute within a window of time and wherein at least a subset of the triggers are associated with wakelocks; and (3) exit the power save mode when the backlight of the mobile device turns on or motion of the mobile device is sensed.

49. In addition to features described in previous paragraphs, ZTE's products, such as the Blade, enter a power save mode such as Doze, when the device is unplugged and stationary for some time with the screen off. Doze conserves remaining battery resources of the Blade by, among other things, deferring jobs and alarms for the software applications on the device. The jobs and alarms from the software applications on the Blade are delayed until a maintenance window. During the maintenance window, the Blade will run all the delayed jobs and alarms for the software applications. At least a subset of the jobs and alarms are associated with wakelocks,

such as those scheduled through AlarmManager. The Blade will exit Doze mode when, among other things, the device detects movement of the device or the screen is turned on.

50. Other ZTE products similarly infringe one or more claims of the '127 Patent. Such other products include ZTE's Axon, ZMAX, ZPAD, and Trek devices.

51. ZTE also induces infringement by end users of ZTE's mobile devices of at least claim 10 of the '127 Patent. ZTE promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. Further, the Doze functionality is enabled on ZTE's mobile devices by default. Examples of ZTE's promotional materials appear on the company's website, such as <https://www.zteusa.com/blade/>.

52. ZTE has had notice of the '127 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, ZTE's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of ZTE's specific intent to induce others to infringe the '127 Patent. Despite having knowledge of its infringement, ZTE continues to intentionally and willfully infringe at least claim 10 of the '127 patent.

COUNT 6

(Infringement of U.S. Pat. No. 9,516,129)

53. ZTE infringes at least claim 1 of the '129 Patent at least under 35 U.S.C. §271(a) and (b). ZTE makes, uses, sells, offers to sell, or imports into the United States products, such as the Blade, that meet every limitation of at least claim 1.

54. Claim 1 of the '129 Patent is directed to a mobile device comprising a radio, user interface, memory, and processor configured to: (1) enter a first power management mode, wherein to enter the first power management mode is based on input from a user; (2) while in the

first power management mode, block transmission of outgoing application data requests for at least one application executing in a background of the mobile device and allow transmission of outgoing application data requests for at least one application executing in a foreground of the mobile device; (3) enter a second power management mode, wherein entry into the second power management mode is based on a detected activity status, wherein the detected activity status is based on a backlight status of the mobile device being off; and (4) while in the second power management mode, block transmission of outgoing application data requests for at least one application executing in background of the mobile device for a predetermined period of time.

55. In addition to the features described in previous paragraphs, ZTE's products, such as the Blade, have a radio, user interface, memory, and processor. Additionally, these products have several power management modes which help to extend battery life and conserve network resources. For example, the Blade has a Power Saving mode that blocks communications from applications running in the background of the device. The user may enter this Power Saving mode by input through the touch screen interface of the device. This Power Saving mode, however, will allow certain applications to continue accessing the network when the application is being actively used by the user. Additionally, ZTE's products include other power saving modes, such as Doze. When in Doze, the Blade blocks outgoing messages from applications until a maintenance window when those applications may temporarily communicate with the network. The Blade will enter Doze when the device is unplugged, stationary, and the screen of the device is off.

56. Other ZTE products similarly infringe one or more claims of the '129 Patent. Such other products include ZTE's Axon, ZMAX, ZPAD, and Trek devices.

57. ZTE also induces infringement by end users of its mobile products of at least claim 1 of the '129 Patent. ZTE promotes and advertises the use of its products, especially the

products' capability to preserve remaining battery power and avoid battery drain from background applications. The infringing power saving functionalities are included in ZTE's mobile devices by default. Examples of ZTE's promotional materials appear on the company's website, such as <https://www.zteusa.com/blade/>.

58. ZTE has had notice of the '129 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, ZTE's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of ZTE's specific intent to induce others to infringe the '129 Patent. Despite having knowledge of its infringement, ZTE continues to intentionally and willfully infringe at least claim 1 of the '129 patent.

COUNT 7

(Infringement of U.S. Pat. No. 9,553,816)

59. ZTE infringes at least claim 9 of the '816 Patent under at least 35 U.S.C. §271(a) and (b). ZTE makes, uses, sells, offers to sell, or imports into the United States products, such as the Blade, that meet every limitation of at least claim 9.

60. Claim 9 of the '816 Patent is directed to a mobile device with memory and processor configured for: (1) determining a time a first application on the mobile device was last accessed; (2) determining whether the first application is inactive based on the time the application was last accessed, wherein when the application is determined to be inactive the processor can (3) adjust behavior of the mobile device for traffic from the first application by blocking outgoing network traffic from the first application for a first period of time and allowing outgoing network traffic from the first application after the first period of time for a second period of time while allowing outgoing network traffic for a second application; (4) receive a message directed towards the first application during the first period of time, wherein

the message is received from an intermediary server that provides connectivity between an application server for the first application and the mobile device; (5) allow outgoing network traffic from the application when the mobile device is plugged into an external power source; and (6) wherein a frequency of communications directed toward the first application is altered by the adjusting behavior of the mobile device for traffic from the first application.

61. In addition to the features described in previous paragraphs, ZTE's products, such as the Blade, have a memory and a processor, and manage traffic from individual mobile applications. For example, when individual applications have not been accessed by the user after some time, those applications will be placed in a standby mode. Mobile applications frequently communicate with the network even when such applications are not actively in use by the user. Such background communications drain battery and network resources. To conserve these resources, the Blade determines when an application was last accessed by a user, and determines that an application is inactive based on that last access. When an application is determined to be inactive, or idle, the Blade will block any jobs or syncs that the application may attempt to perform. For example, by blocking synchronization messages, the frequency of communications directed to the first application is altered. But to ensure that the information for the mobile application does not become stale, the Blade will allow the inactive mobile application to temporarily access the network. During this temporary access time, the Blade will allow multiple applications to communicate with the network. Doing so allows the Blade to use battery and network resources efficiently. Further, to avoid missing important messages directed to the inactive application, the Blade is still able to receive messages for the inactive application even when the application is in standby mode. For example, the Blade will receive a message directed toward the inactive application through GCM or FCM, which are intermediary servers that can connect application servers to the mobile device. The Blade will allow the inactive

mobile application to exit standby mode when the mobile device is plugged into an external power source, such as the wall outlet.

62. Other ZTE products similarly infringe one or more claims of the '816 Patent.

Such other products include ZTE's Axon, ZMAX, ZPAD, and Trek devices.

63. ZTE also induces infringement by end users of its mobile devices of at least claim 9 of the '816 Patent. ZTE promotes and advertises the use of its products, especially the products' capability to preserve remaining battery power and avoid battery drain from background applications. Further, the application standby feature in ZTE's mobile devices is enabled by default. Examples of ZTE's promotional materials appear on the company's website, such as <https://www.zteusa.com/blade/>.

64. ZTE has had notice of the '816 Patent and its infringement since at least as early as the filing of this lawsuit. Accordingly, ZTE's continued promotion, advertisement, and encouragement of its customers to utilize the products' capability to preserve battery life and avoid battery drain from background applications is evidence of ZTE's specific intent to induce others to infringe the '816 Patent. Despite having knowledge of its infringement, ZTE continues to intentionally and willfully infringe at least claim 9 of the '816 patent.

PRAYER FOR RELIEF

SEVEN requests that judgment be entered in its favor and against ZTE as follows:

- a. Entering judgment declaring that ZTE has infringed one or more claims of the Patents-in-Suit in violation of 35 U.S.C. §271;
- b. Ordering that SEVEN be awarded damages in an amount no less than a reasonable royalty for each asserted patent arising out of ZTE's infringement of the Patents-in-Suit, together with any other monetary amounts recoverable by SEVEN, such as treble damages;
- c. Declaring that ZTE's infringement has been willful;
- d. Declaring this an exceptional case under 35 U.S.C. §285 and awarding SEVEN its attorneys' fees; and
- e. Awarding SEVEN such other costs and further relief as the Court deems just and proper.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, SEVEN demands a trial by jury on all issues so triable.

Dated: June 6, 2017

Respectfully submitted by:

s/ Bruce S. Sostek

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