Technical Disclosure Commons

Defensive Publications Series

March 09, 2017

BURST NOTIFICATIONS

Michael Cardosa

BURST NOTIFICATIONS

ABSTRACT

A burst notification system can temporarily disable notifications at a user's electronic device. The burst notification system receives notification settings for an electronic device from the user of the electronic device. The system disables wireless communications notifications as well as any other notifications (in-app notifications) received from applications installed on the electronic device. For power savings, the system may temporarily disable the electronic device's onboard cell transceivers and WiFi transceivers which are used to receive incoming phone/voice calls, data packets, text messages, etc.

PROBLEM STATEMENT

Users frequently access portable electronic devices such as smartphones, tablets, and laptops, and, as a result, the devices often run low on battery power. For heavy users, the battery power of electronic devices drain significantly before they can be recharged. Current solutions provide warnings to a user whenever the battery of a device, such as a smartphone, reaches low levels. Users generally perform manual actions in response to the warnings in order to preserve the battery, such as: manually activating airplane mode which turns off one or more of the smartphone's transceivers (e.g., WiFi, 2G/3G/4G, and Bluetooth™ transceivers), powering down the smartphone, or disabling certain device applications. Sometimes, when the battery levels are low, the devices themselves perform power-saving actions such as putting transceivers into longer sleep modes, reducing display brightness, etc.

Electronic devices generate notifications by installed applications, as well as in response to received texts, emails, etc. Notifications on the electronic devices are generated whenever new messages or events are available for viewing, for example. Applications may be configured to generate frequent notifications, as much as one per minute per device application. The different SMS/texts, emails, and applications result in notifications, which when combined may be frequent interruptions for the user throughout the day.

These interruptions may bother the user and others within audible range of the device, such as the user's friends and coworkers. These interruptions may sometimes occur at particularly inconvenient times, such as during presentations or meetings. In addition to the auditory disruption of an alert, frequent user interaction with the device in response to a multitude of notifications leads to much high usage of electronic device and substantially increased current drain, which further contributes to the abovementioned problem of battery drain contributing to low battery power.

There is an opportunity for improving delivery of notifications to users of electronic devices while reducing current drain and notification interruptions.

DETAILED DESCRIPTION

The systems and techniques described in this disclosure relate to a burst notification system that can be used to disable notifications on a user’s electronic device for an adjustable, variable time period. The system can be implemented for use in an internet, an intranet, or another client and server environment. The system can be implemented locally on a client device or implemented across a client device and server environment. The client device can be any

portable electronic device, such as a mobile device, a smartphone, a tablet, a handheld electronic device, a wearable device, a laptop computer, etc.

Fig. 1 illustrates an example method 100 that can be used to disable notifications at a user's electronic device. The system receives 110 notification settings for an electronic device input by a user of the electronic device. The notification settings allow the user to define an adjustable time period for which the user wishes to disable notifications at the electronic device. The system can receive these settings through a settings menu at the user's electronic device. The adjustable time period received from the user may also be used to disable data transmission and reception at the electronic device. The system allows the adjustable time period to be configured for a single occurrence (a one-time use), or recurring occurrence repeated at scheduled times, such as, certain times of the day over a range of days in a week, or weekly, or monthly, etc. Also, the system may be configured by the user for more than one time period, such as a recurring time period as well as several one-time occurrences at different time periods. In another example, the system may configure multiple devices to apply the settings received from the user, for example when the system may configure any device the the user is logged into with a particular login account.

In another embodiment, the system may dynamically select on behalf of the user an adjustable time period during which notifications are disabled on one or more devices. The system may consider a user's usage pattern, a user's online calendar entries, data use on the devices, the devices unlock frequencies, data transmission/reception patterns, and/or a user's browsing history, to determine the adjustable time period. In an example, the system may set the

adjustable time period to be every 2 hours while the user sleeps and every 30 minutes while the user is at work.

The system disables 120 notifications at the electronic device based on the notification settings received from the user or system at step 110. The system disables presenting notifications, such as those generated in response to text messages, instant messenger notifications, incoming call notifications, preset reminders, gaming notifications, or shopping prompts, to the user for one or more applications during the adjustable time period. The system also optionally causes one or more of the electronic devices to disable 130 one or more data transmission and reception channels during the adjustable time period. For example, the system controls the device to disable incoming and outgoing data channels such as 4G, 3G, and 2G, incoming/outgoing SMS/text data channels, onboard cellular transceivers used to receive incoming phone/voice calls, or WiFi transceivers. The system may control one or more of the devices to maintain short range transceiver frequency communications, for example by leaving a Bluetooth™ transceiver on. In some embodiments, the system can control one or more devices to disable only certain data channel activity on communication networks operating WiFi and 3G networks, while maintaining active incoming call/voice channels during the adjustable time period. When data reception channels are disabled, applications relying on those channels are not able to receive new application data. As a result, the device applications do not interrupt the device users with new notifications while the user is engaged in other activities.

In an example implementation, in the notification settings menu of the electronic device, a user selects an adjustable time period of 60 minutes with a one time use configuration. The user may select such a time period in the situation of an upcoming business meeting or a client

presentation with a scheduled time of 60 minutes. In response to the user selection, the system disables the electronic device's data channels and application notifications for next 60 minutes. The user is not disturbed with any kind of notification, alert, or update during the meeting. The data channels and application notifications are enabled after the 60 minutes time period ends.

In an embodiment, the system may automatically select an adjustable time period (with a one-time setting) to turn off notifications on a user's electronic device based on a user's calendar settings. For example, if a user is scheduled to be in a meeting for the next 50 minutes, the system disables the electronic device application notifications and disables the electronic device's transceivers, such as 3G and WiFi, during that 50 minute calendared period of time.

The system enables 140 notifications at the electronic device based on the notification settings received from the user or system in step 110. After the adjustable time period elapses, the system enables the electronic device application notifications. If the system previously disabled at least one of the electronic device's transceivers (in step 130), the system enables 150 the electronic device's transceivers (3G, WiFi, etc.) to allow data transmission and reception.

In an example, the configuration for a burst notification system at an electronic device is set for a range of days in a week, such as Monday through Friday, and during a window of time such as from 9 AM - 6 PM, and with an adjustable cycle time of 1 hour. The system disables notifications and data transmission/reception at the electronic device for a 1 hour period starting from 9 AM. After every 1 hour period, the burst notification system enables the electronic device's transceivers and and notifications at the electronic device will be briefly enabled. This briefly enabled time period may for example be a fixed time period, such 10 seconds. The system may vary time period that alerts may be generated to accommodate automatically the time

required by the device's applications to processes the data downloaded including emails, texts, events, and application syncs, and the time required to display the recently-received application notifications on the electronic device.

Building upon the example above, where the device is a smartphone, a user may stop their current activity that did not involve the smartphone, e.g., engaged in a meeting, and start interacting with the smartphone during a the time period that the smartphone's notifications and transceivers are disabled by the system. User interaction can be, for example, launching a phone application, checking messages, or composing an email. The system can automatically suspend the smartphone's set behaviour (disabled transceivers and notifications) according to the notification settings and immediately enable the smartphone's notifications and transceivers. As soon as the user stops interacting with the smartphone, the system can again disables the smartphone's notifications and transceivers in accordance with the prescribed notification settings. In an example, the system may use an inactivity timer or pressing an on/off switch as a termination of the user interaction, and return the device to the prescribed state with the transceivers and notifications disabled until the end of the scheduled time period.

Similarly, if the user starts interacting with a smartphone during the brief time period (e.g., 10 seconds) during which the electronic device's notifications and transceivers are enabled, the system keeps the smartphone's notifications and transceivers enabled until the user stops interacting with the smartphone. User interaction can be, e.g., making a phone call, checking messages, writing an email, etc. As soon as the user ends the interaction, the system disables the smartphone's notifications and transceivers in accordance with the notification settings. In an

example, the system may use an inactivity time or pressing an on/off switch to indicate completion of the user interaction.

Fig. 2 illustrates an device with an exemplary graphical user interface 200 for a burst notification system. The GUI depicts a settings menu presented to a user at the user's electronic device, such as a smartphone. As depicted, a user turns on the burst notification settings on the smartphone using a soft toggle button 202.

The system can receive configuration settings for the burst notification system through user selection of a configuration option. As depicted, three configuration options are presented to the user.

The first option provided in the burst notification settings is "Always ON" 204. The system keeps the user's smartphone's notifications and transceivers disabled for an adjustable time period and only enables them for a brief time period such as 30 seconds at the end of each interval of adjustable time period. This behaviour remains active on a user's device until the time user decides to turn the option OFF.

The second option, "One Time Usage" 206, can be selected to use burst notification system once. The system keeps the user's smartphone's notifications and transceivers disabled for a user defined adjustable time period, e.g. 30 minutes. The system enables the smartphone's notifications and transceivers after the adjustable time period ends.

The third option, "Repeating Day & Time" 208, can be used to specify a number of days in a week (or day in a month or day in a year) and a daily time range, for which the burst notification system should remain active. Such a range can be, e.g., from 9AM to 6PM, Monday to Friday. The system keeps the user's smartphone's notifications and transceivers disabled for

an adjustable time period of, e.g. 40 minutes, starting from 9 AM and only enables them for a brief time period such as 20 seconds. After the brief time period ends, the system again disables the smartphone's notifications and transceivers for the adjustable time period. This behaviour remains active on a user's device until the daily time range ends, e.g., 6 PM, and the repeats the next scheduled day.

The burst notification system receives a user selection of an adjustable time period through a drop down menu 210. The user can specify their preferred time through a combination of minutes and hours. The system disables the smartphone's cellular and WiFi transceivers for this time period.

In other implementations, the user interface may include an option to link to one or more online calendars, configure multiple one-time usage time periods, or configure multiple repeating day and time periods.

Fig. 3 is a block diagram of an exemplary environment that shows components of a system for implementing the techniques described in this disclosure. The environment includes client devices 310, servers 330, and network 340. Network 340 connects client devices 310 to servers 330. Client device 310 is an electronic device. Client device 310 may be capable of requesting and receiving data/communications over network 340 and providing notifications to a user. Example client devices 310 are personal computers (e.g., laptops), mobile communication devices, (e.g. smartphones, tablet computing devices), set-top boxes, game-consoles, embedded systems, and other devices 310' that can send and receive data/communications over network 340. Client device 310 may execute an application, such as a web browser 312 or 314 or a native application 316. The native application may generate notifications that the user device

enunciates. Web applications 313 and 315 may be displayed via a web browser 312 or 314. Server 330 may be a web server capable of sending, receiving and storing web pages 332. Web page(s) 332 may be stored on or accessible via server 330. Web page(s) 332 may be associated with web application 313 or 315 and accessed using a web browser, e.g., 312. When accessed, web page(s) 332 may be transmitted and displayed on a client device, e.g., 310 or 310'. Resources 318 and 318' are resources available to the client device 310 and/or applications thereon, or server(s) 330 and/or web page(s) accessible therefrom, respectively. Resources 318' may be, for example, memory or storage resources; a text, image, video, audio, JavaScript, CSS, or other file or object; or other relevant resources. The burst notification system may be implemented using software stored at a memory resource 318 and executed at a processor resource 318 of the client device 310. Network 340 may be any network or combination of networks that can carry data communication.

The subject matter described in this disclosure can be implemented in software and/or hardware (for example, computers, circuits, or processors). The subject matter can be implemented on a single device or across multiple devices (for example, a client device and a server device). For example, the system can be fully implemented in a single device, such as a smartphone, or implemented across multiple devices, or implemented in a device and a server, or implemented across multiple devices and servers. Devices implementing the subject matter can be connected through a wired and/or wireless network. Such devices can receive inputs from a user (for example, from a mouse, keyboard, or touchscreen) and produce an output to a user (for example, through a display). Specific examples disclosed are provided for illustrative purposes and do not limit the scope of the disclosure.

DRAWINGS

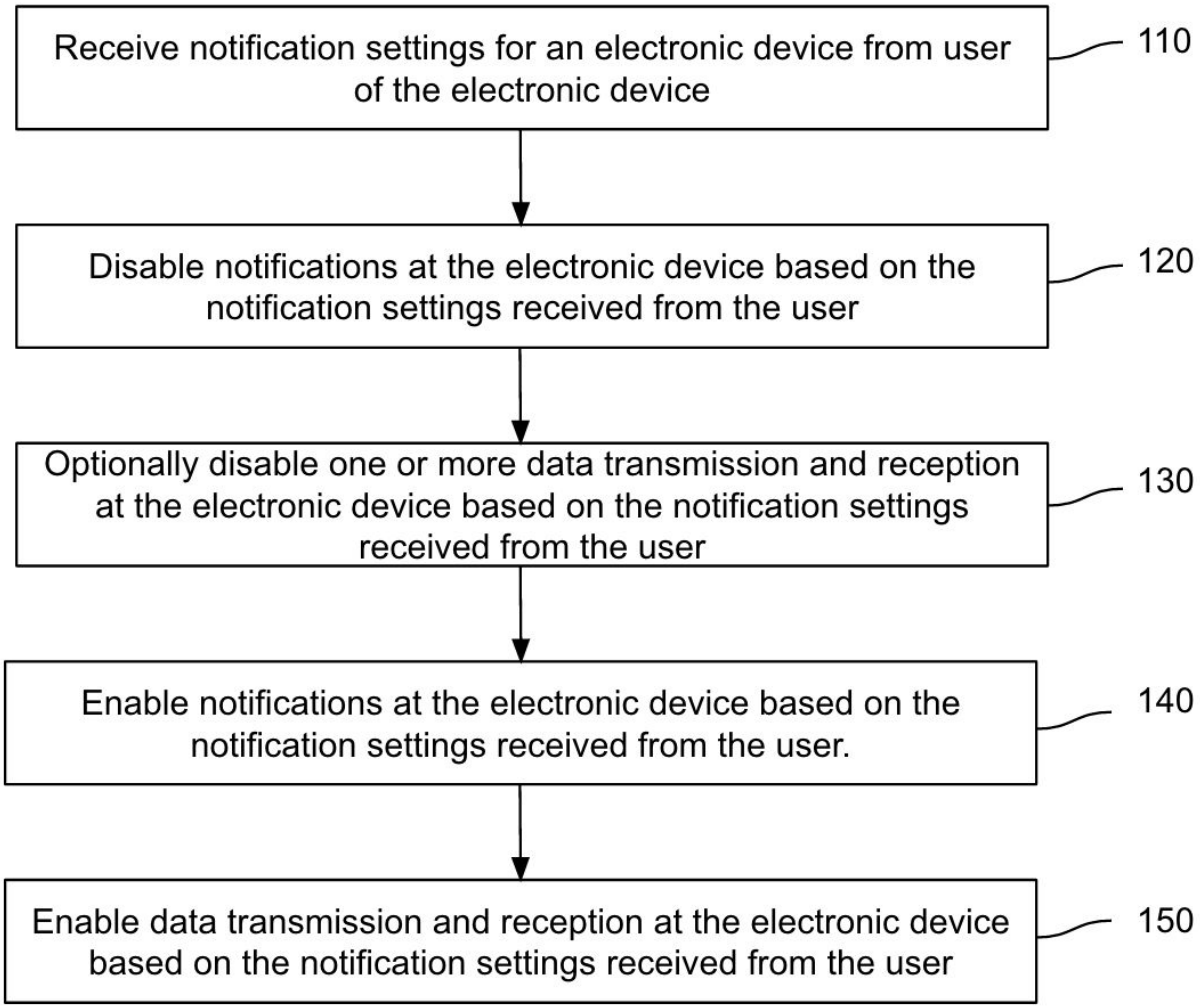

Fig. 1

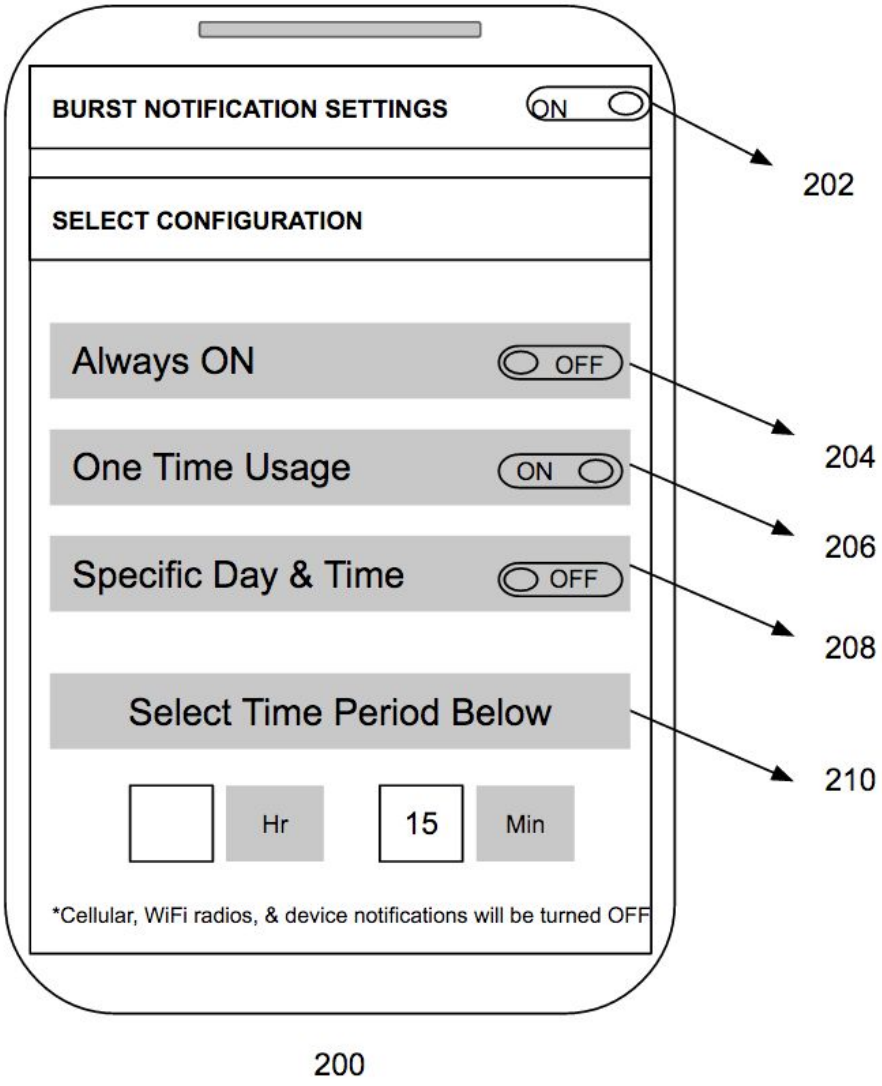
BURST NOTIFICATION SETTINGS
ON
202
SELECT CONFIGURATION
Always ON
OFF
204
One Time Usage
ON
206
Specific Day & Time
OFF
208
Select Time Period Below
210
Hr
15
Min
*Cellular, WiFi radios, & device notifications will be turned OFF
200

Fig. 2

Fig. 2

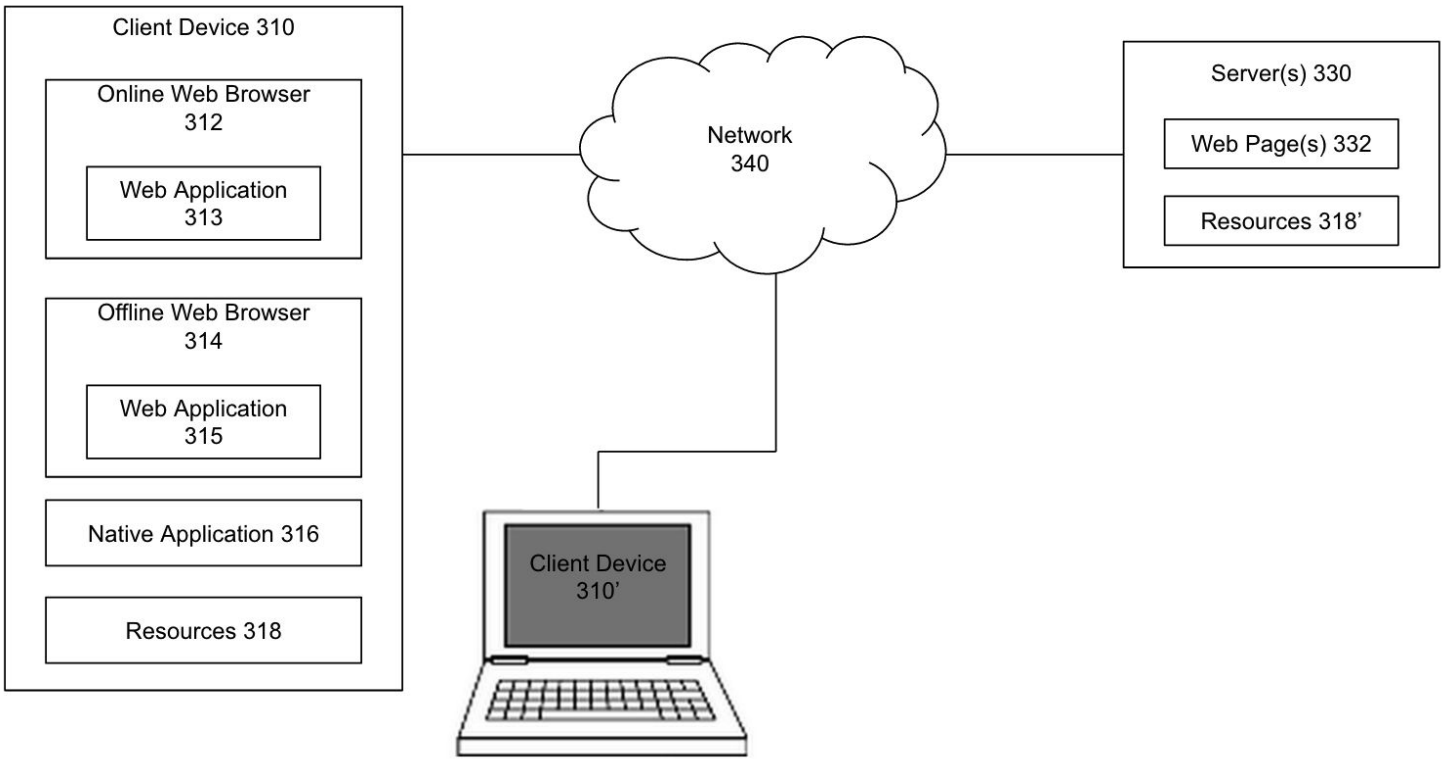
Client Device 310
Online Web Browser 312
Web Application 313
Offline Web Browser 314
Web Application 315
Native Application 316
Resources 318
Network 340
Server(s) 330
Web Page(s) 332
Resources 318'
Client Device 310'

Fig. 3