

Technical Disclosure Commons

Defensive Publications Series

May 18, 2015

PRE-FETCHING BATCHED ADVERTISEMENTS ON MOBILE DEVICES

Russell Quong

Steve Osborn

Follow this and additional works at: http://www.tdcommons.org/dpubs_series

Recommended Citation

Quong, Russell and Osborn, Steve, "PRE-FETCHING BATCHED ADVERTISEMENTS ON MOBILE DEVICES", Technical Disclosure Commons, (May 18, 2015)
http://www.tdcommons.org/dpubs_series/76



This work is licensed under a [Creative Commons Attribution 4.0 License](https://creativecommons.org/licenses/by/4.0/).

This Article is brought to you for free and open access by Technical Disclosure Commons. It has been accepted for inclusion in Defensive Publications Series by an authorized administrator of Technical Disclosure Commons.

PRE-FETCHING BATCHED ADVERTISEMENTS ON MOBILE DEVICES

Abstract

A mobile device may include an advertisement subsystem that can transmit ad requests to an advertisement network to receive batched advertisements to be stored in an ad cache. When an application executing on the mobile device requests an advertisement from the advertisement subsystem, the advertisement subsystem can select and serve the pre-fetched advertisement even if the mobile device is offline. Impression and/or performance data may be transmitted to the advertisement network once the mobile device is online. In some implementations, the advertisement subsystem can combine signal data from multiple applications having differing permissions to create a more comprehensive ad request. In some instances, the advertisement subsystem may request batched advertisements only when network connectivity is strong and/or when connected via a wifi connection. In some instances, the advertisement subsystem may select and serve advertisements from an ad cache based on current signals for the device and/or an application executing on the device, such as a location, movement, recent applications, etc.

Detailed Description

In a networked environment, such as the Internet or other networks, first-party content providers can provide information for public presentation on resources, for example webpages, documents, applications, and/or other resources, such as website publishers or other publishers of first-party content. The first-party content can include text, video, and/or audio information provided by the first-party content providers via, for example, a resource

server for presentation on a client device over the Internet. The first-party content may be a webpage requested by the client device or a stand-alone application (e.g., a video game, a chat program, etc.) running on the client device. Additional third-party content, such as an advertisement, can also be provided by third-party content providers, such as an advertiser, for presentation on the client device together with the first-party content provided by the first-party content providers. For example, the third-party content may be a public service announcement or advertisement that appears in conjunction with a requested resource, such as a webpage (e.g., a search result webpage from a search engine, a webpage that includes an online article, a webpage of a social networking service, etc.) or with an application (e.g., an advertisement within a game). Thus, a person viewing a resource can access the first-party content that is the subject of the resource as well as the third-party content that may or may not be related to the subject matter of the resource.

In some instances, the third-party content may be mobile advertisements. Such mobile advertisements come in a wide variety of sizes, forms and formats. Mobile advertisements may be shown in the context of a current application or “app” executing on a mobile device and may conform to any policies and/or permissions a user of the mobile device has granted to the application and/or the phone operating system. In some implementations, location information may or may not be present in an ad request. For example, a map application may utilize location data and may include the location data in an ad request for that application. However, a simple solitaire game may not have permission to use location data so ad requests from that application may not include location data.

In some implementations, it may be useful to have a single advertisement subsystem for the mobile device that can utilize the data signals from multiple applications and/or utilize multiple data signals from the mobile device itself for ad requests such that the served advertisements are based on more comprehensive data and not limited by the permissions for each application. The data signals may be values indicative of information used for selecting and/or serving an advertisement that may be included in the ad request or derived from the ad request, such as keywords, a GPS coordinate, etc. In some further implementations, it may be useful to transmit a number of advertisements in a batch responsive to an ad request such that the advertisements may be served while the mobile device is offline (e.g., not connected via wifi and/or a cellular connection). Thus, advertisements may be served while an application is executing without needing to send ad requests to an advertisement server. In some implementations, the advertisements may be batched served even when the mobile device is online.

Figure 1 (shown below) depicts an example environment having an advertisement network and a mobile device having an advertisement subsystem and an example application (e.g., a search application). The advertisement network receives ad requests and responds with data for one or more advertisements. The advertisement subsystem of the mobile device is configured to request advertisements from the advertisement network, cache received advertisements, select one or more advertisements, display the one or more selected advertisements, and report advertisement usage and performance back to the ad network.

The advertisement subsystem can be configured to make an ad request to request a batch of advertisements and the received advertisements are stored in an ad cache. For

instance, the advertisement subsystem can request a batch of four advertisements from the advertisement network. The batch of advertisements can be stored in an ad cache. The advertisement subsystem can be configured to make the ad request when the mobile device is connected to a network either via a wifi connection or cellular connection. In some implementations, the advertisement subsystem can be configured to send the ad request only when connected via wifi. In some implementations, an ad request may also be transmitted when there is new or additional signal data to be included in the ad request (e.g., new location signal data, additional keyword terms, etc.). The additional signal data to be used for the ad request may be obtained from an executing application (e.g., additional signal data based on additional permissions and/or updated signal data) and/or from the advertisement subsystem. In some implementations, the advertisement subsystem can request more advertisements even if the ad cache contains viable advertisements. For example, additional advertisements may be requested if the ad request is likely to return better advertisements, such as due to more recent signal data, additional signal data, the cached advertisements are old, or if the ad request is via wifi. The advertisement subsystem may, if permitted, store and accumulate all the signal data received from various applications.

Figure 2 (shown below) depicts the advertisement subsystem selecting and serving an advertisement for an application while the mobile device is offline. The advertisement subsystem may receive ad serving requests from one or more applications executing on the mobile device. The advertisement subsystem selects an advertisement from the ad cache and returns the data for the advertisement to the application. In some instances, the mobile device may be offline when the ad serving request is received. In some implementations, the

advertisement may be randomly selected or the advertisement may be selected from the ad cache based on signal data received from the application with the ad serving request. In selecting the advertisement, the advertisement subsystem can use additional signal data from various applications to rank and select advertisements. In some implementations, if every advertisement in the ad cache has been shown, the advertisements can be recycled or no advertisement can be returned. In some instances, the advertisement subsystem may have additional permissions over other applications such that the advertisement subsystem may have access to and/or receive additional signal data over the other applications. Moreover, when the advertisement subsystem has its own permissions, other applications may not need to request those same permissions solely to serve higher quality advertisements, thereby reducing the number of permissions for such other applications. In some implementations, the advertisement subsystem can include local data signals that are not included in the ad requests to the advertisement network. For example, data signals for a location history, recently used applications, battery life, and/or other signal data may be used only for selecting an advertisement from the ad cache.

The advertisement subsystem can receive impression and/or performance information from an application for each advertisement that is selected and served. The received impression and/or performance information may then be transmitted to the advertisement network once the mobile device is online. In some implementations, the advertisements may have impression caps (i.e., how many times the advertisement can be shown in a period of time, such as a day) and/or spending caps. The advertisement subsystem can report which

advertisements were shown while the mobile device was offline and the resulting actions, if any, so the caps can be updated by the advertisement network.

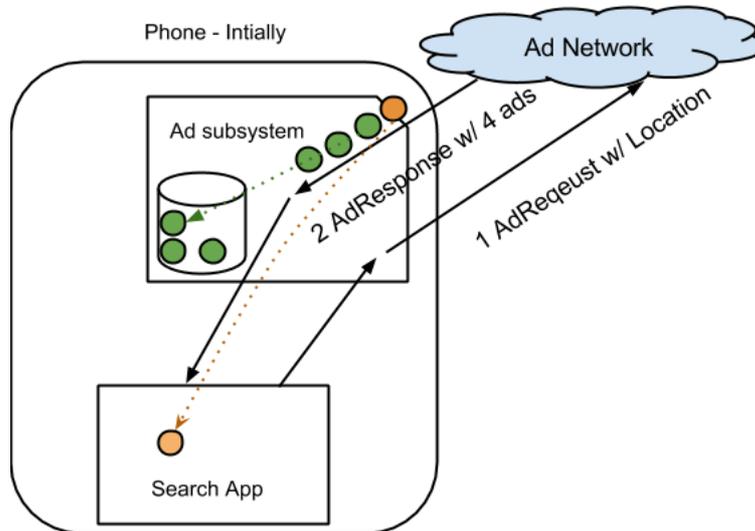


Figure 1

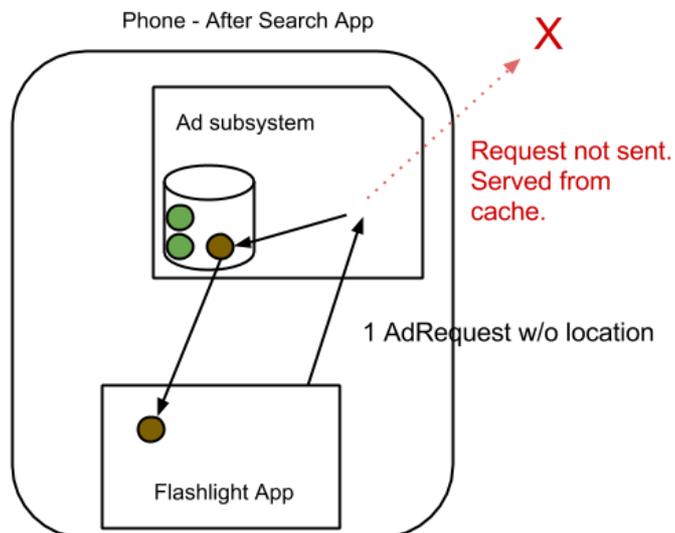


Figure 2