

Summary: Push notifications are a commonly used strategy to promote user engagement with mobile apps. Unfortunately, data show that many device owners respond negatively to push campaigns, which may lead to users disabling notifications and/or uninstalling the app.

The following paper addresses the challenges of implementing push notifications, including the most common user concerns regarding push messages. Specific strategies to improve acceptability and success of push notifications are described.

Recommendations include segmenting users to better target and personalize notifications, ensuring push notifications are sent on the most optimal days at appropriate times, and developing a plan to evaluate the success of push notification campaigns.



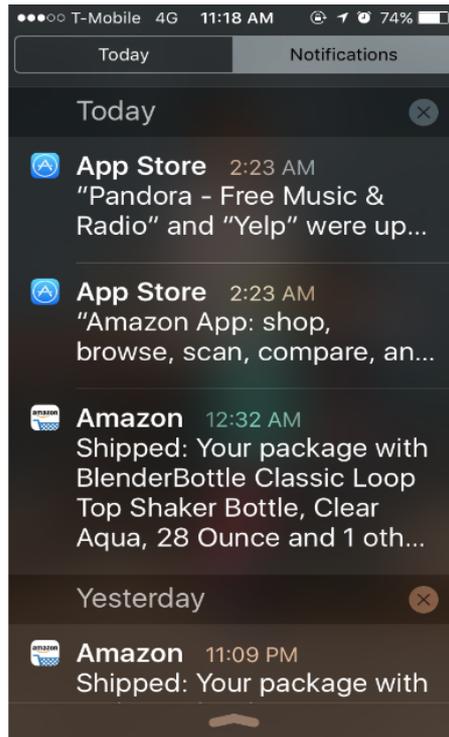
COUNTLY TEAM

Introduction: What are push notifications?

Push notifications are real-time notifications sent to product (e.g. app) users via brief messages that, when opened, direct the user to a specific screen, web page, or other location. The intention of push notifications is to make users aware of important, possibly time-sensitive information through a call to action (CTA) designed to promote user engagement.

These notifications appear on users' device lock screens and/or in the notifications center of the device, depending on the operating system and the notification settings users have enabled. Users of Apple devices have to opt-in to push notifications, while Android device settings automatically enable them. In either case, users may grant or revoke notification permissions by visiting the 'Settings' screen of their device.

A 2015 study suggests that the push notification opt-in rate averaged across both platforms is about 50%. Device-specific data from customer engagement software company Kahuna indicate a higher proportion of Android users (78%) opt in to push messages compared to iOS users (46%). The permitted length of the message text varies by operating system, but to maximize readability conventional notifications range from 60-90 characters (Android devices) to 120 characters (iOS devices).



An example of app push notifications displayed in an iOS device Notifications center.

Push notifications as methods of product promotion and user engagement

Typically, push notifications are one component of a product's broader user engagement strategy. Ideally, push messaging should be implemented in addition to, rather than in place of, emailing users and displaying in-app messages. Unlike email marketing campaigns, push notifications are intended to be short and succinct, as opening the notification will direct the user to the promoted content (e.g. an alert about a breaking news story will send the user to the app screen where the full story appears).

Push notifications differ from in-app messaging for a few reasons, the most significant being that they can be sent to the user at any

time, whereas in-app messages can only be displayed when the app is being used.

Apps (that is to say, app/product management teams) may send their users push notifications in order to:

- Highlight a new or updated product feature or content
- Remind user of an upcoming event (e.g. a birthday party) or task to complete (e.g. a to-do list item)
- Alert user to an important, time sensitive event (e.g. flight updates, breaking news)
- Inform user of commercial activity or event (e.g. concert tickets going on sale, retail promotions)
- Re-engage users who have not interacted with the product recently

Challenges with implementing push notifications

Given the wide scope of potential push notification content and the lure of immediate user engagement, it is no wonder that app managers are highly motivated to launch a push notification campaign.

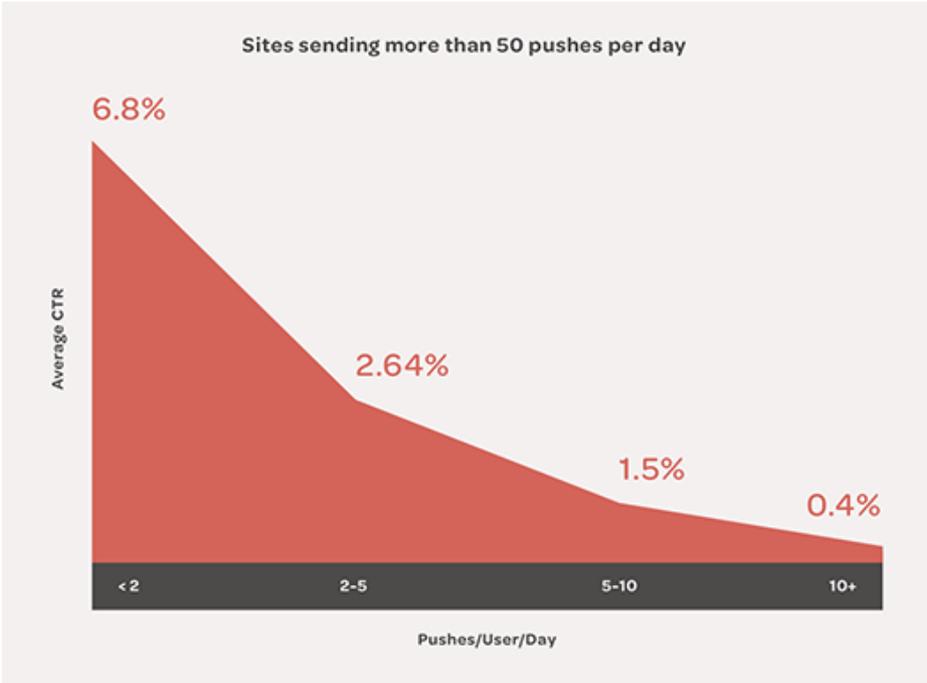
However, as eager as a team may be to send their users push notifications, most device owners are less than enthusiastic about opening them. In fact, survey data suggests that greater than 50% of app users consider push notifications “an annoying distraction.”

The goal of a push notification can be as specific as sharing a limited-time offer on a commercial product, or as broad as encouraging an absentee user to open and explore the app again.

Frequency of notifications

What makes a push notification annoying, rather than helpful? Frequency of notifications appears to be a meaningful factor - our surveys indicated that receiving up to 8 messages in one week causes more than 60% of respondents to disable push notifications.

Moreover, data from browser push messaging platform Roost suggest that not only are users driven away by too many messages, the notifications become less effective as frequency increases. Notice the steep decline in click-through rate (CTR) between the users who receive less than two push notifications per day and those who receive between two and five per day:



Lastly, the timing of push notifications is a major contributor to how acceptable (or not) users find the messages to be. As reported by [Kahuna](#), if you fail to take into account the typical schedule of your target user--not to mention their time zone--it is easy to deploy push notifications at a less-than-optimal or even disruptive time (e.g. when most users are asleep). Although there is no general rule regarding the best time of day to send push notifications, data from Kahuna suggest that the best time to send a push notification is 10pm, based on the time of day that most users open the app.

Additionally, not only is the hour of the day important to consider, the day of the week that push notifications are sent may also influence their acceptability and effectiveness (see Germany-based [study](#) by Westermann and colleagues).

Data suggest that push notifications are most frequently responded to on Thursdays relative to other days of the week

However, this data may not be generalizable to every app or every user base, thus it is important to monitor patterns of user engagement with your product in order to ensure push notifications are sent at the most optimal time.

Of course, the days and times that push notifications are sent must reflect the information provided in the messages' CTA. For example, if you are advertising for a Saturday-only retail sale, it is necessary to consider the optimal window of time in which to alert users to the event. The Monday before the sale is likely too

far in advance to notify potential customers (unless additional reminder notifications are sent out over the course of the week, which may irritate users) while announcing the sale on Saturday may not give the user enough time to browse the sale online or at the store.

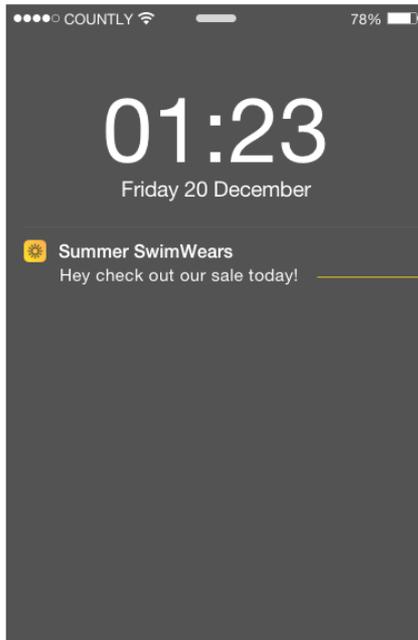
There is no uniform push notification schedule that will work for all apps, or even for all users of a single app. This is why it is critical to customize all elements of a push notification campaign, from start to finish.

Impersonal and unhelpful content

Even if push notifications arrive at the right time, to be truly effective the content of the messages must feel personal and engaging to the target user. This includes the CTA, i.e. your “ask” of the user, as well as the content/information the push notification directs the user to.

An effective push notification will clearly indicate what the user needs to know, why they should care, and what action they can take.

For example, compare these two hypothetical push notifications from a department store:



IMPERSONAL.

Opening push notification directs user to store website home page.



PERSONALIZED.

Opening push notification directs user to the swimwear section of the store website home page, where an in-browser notification reminds the user of the promotion and when the sale ends.

The first push notification is vague. It feels impersonal, as if it were automatically sent to thousands of potential customers (which it likely was). The user is encouraged to check out the store's sale, but it is not clear what products are on sale, how long the sale lasts, and why the user should go to their website today specifically.

The first push notification directs the user to the website's main home page, which is another missed opportunity for personalization. If the department store app collects data on users' purchasing behavior, this data can be used to customize the push notification and its linked content (i.e. via Dynamic Deep Linking) to better target the preferences and shopping patterns of a unique customer (or cohort of customers).

The second push notification is more personalized, which is indicated by calling the user by her name, and by recommending a specific section of the store to peruse. This message demonstrates insight into the user's shopping patterns, and by extension her lifestyle, without being invasive or pushy. The call to action is made clear by ending the message with "*Today only!*" which creates a sense of urgency in the user and encourages her to visit the website immediately.

Finally, the second push notification sends the user directly to the swimwear section of the store's website, instead of the home page; this enables the user to browse the products most relevant to her, without expending time and cognitive energy locating the correct page.

No two products, or product users, are alike. As such, every push messaging campaign must take into account the timing, frequency, and content of notifications that best meets the needs of targeted users.

Best practices for effective notifications

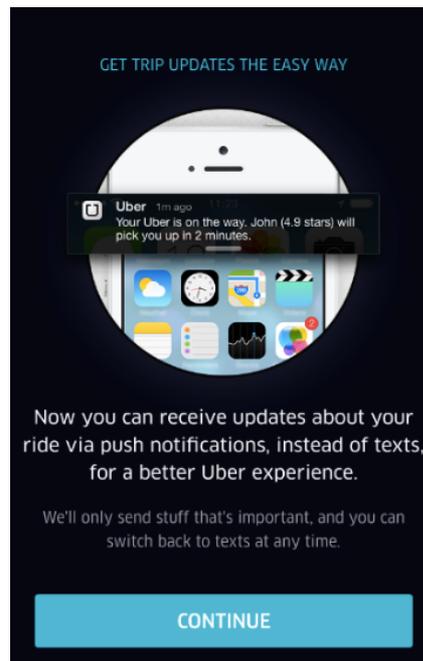
That said, there are several universal best practices we recommend following in order to promote the effective use of push notifications:

- Emphasize message content quality: The message copy, CTA (call to action), and linked information should be as personalized and specific to the user as possible. The above graphic demonstrates how a generic push notification can be transformed into a more tailored, engaging user experience.
 - Employ deep linking/Dynamic Deep Linking to direct users to specific pages/screens.
- Tailoring messages can be achieved by segmenting users according to characteristics of interest (e.g. demographics, geographic location, product use behavior patterns) and using this data to craft an appropriate CTA for each group.
- Employ user segmentation to determine target CTAs for different user groups. For example:
 - What do you want a user who has not been active lately to do?
 - What do you want a user who often browses the app, but never makes purchases, to do?
 - What should you say to a model user to promote retention?
- Know your average user's schedule. It is critical to understand when your users want to receive push notifications, and when receiving a message would be an irritation.

- Likewise, determine the appropriate frequency of push notifications for your product and users. Generally speaking, however, less is more when it comes to message frequency.
- Prior to launching a campaign, test push notifications (e.g. via A/B testing) to identify strengths and weaknesses of proposed messages, and adjust content accordingly.

Bonus best practices

- Consider how your push notification opt-in request is framed. For example, leading with ‘Do you want us to notify you of breaking news in your area?’ is more engaging than “Would you like to opt-in to push notifications?” Moreover, the first example demonstrates to the user how they will benefit from enabling push notifications (i.e. they will be kept informed of important news).
 - Ensure the user has the opportunity to opt-in/opt-out of push notifications either during or immediately after their initial session in the app.
 - Consider allowing the user to explore the app before displaying a push messaging opt-in message, in order to allow them time to become familiar with and invested in the product.
- Establish your product’s key performance indicators (KPIs) and regularly review progress towards success.
 - Ensure that push notifications are aligned with the product’s overall marketing and engagement strategy, and use KPI data to assess how push notification campaigns impact product engagement and success.



Uber, Inc. promotes push messaging opt-ins by promising the user a *'better Uber experience'* and emphasizing the importance of push message content.

Measure success of push notifications by examining pre- and post-campaign user data such as conversions, churn and drop-off, push messaging opt-ins and opt-outs, and app uninstalls.

Conclusion

When used correctly, push notifications are an excellent strategy to engage users with helpful information in real-time. A successful push notification campaign is personalized to the user, timed appropriately, and promotes measurable outcomes.

To get the most out of this engagement strategy, be thoughtful in crafting message content, and carefully monitor key performance indicators to assess campaign effectiveness. Finally (and perhaps most importantly), when it comes to push messaging, always prioritize quality over quantity!



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