Android Developer Fundamentals V2

Alarms and Schedulers

Lesson 8

8.1 Notifications

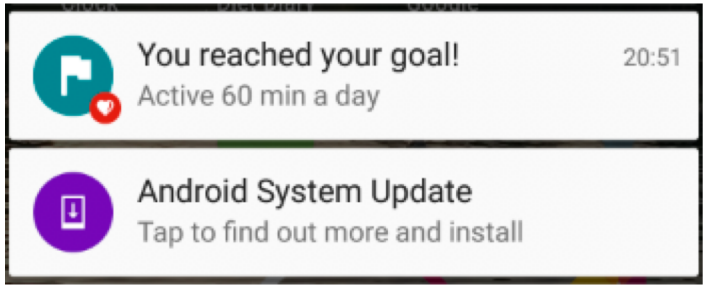
Contents

- What are notifications?
- Notification channels
- Creating a notification channel
- Creating notifications
- Tap action and action buttons
- Expanded view notifications
- Delivering notifications
- Managing Notifications

What Are Notifications?

What is a notification?

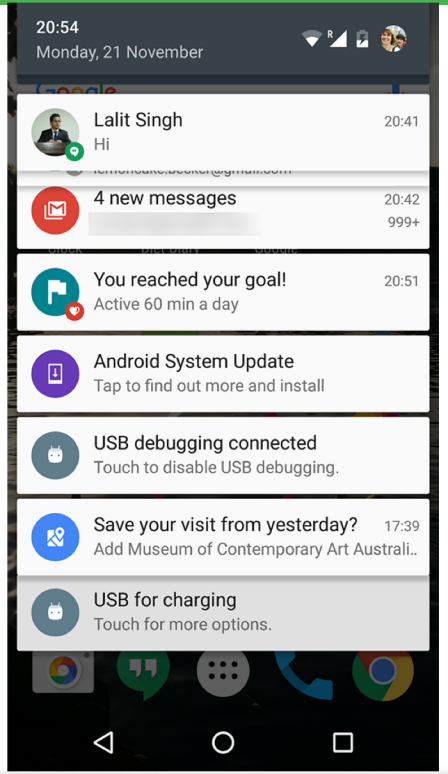
Message displayed to user outside regular app UI



- Small icon
- Title
- Detail text

How are notifications used?

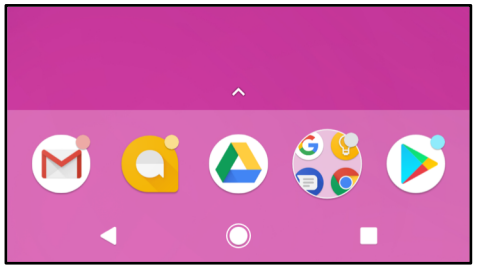
- Android issues a notification that appears as icon on the status bar.
- To see details, user opens the notification drawer.
- User can view notifications any time in the notification drawer.



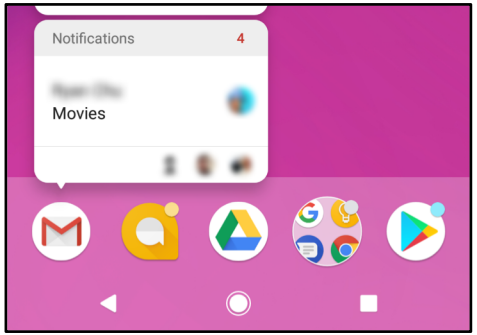
App icon badge

Available only on the devices running Android 8.0 (API level 26) and higher.

- New notifications are displayed as a colored "badge" (also known as a "notification dot") on the app icon.



- Users can long-press on an app icon to see the notifications for that app. Similar to the notification drawer.



Notification Channels

Notification channels

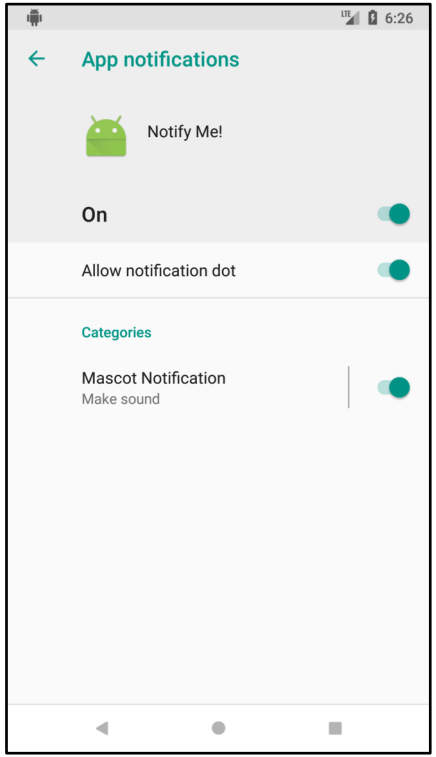
- Used to create a user-customizable channel for each type of notification to be displayed.
- More than one notification can be grouped in to a channel.
- Set notification behavior like sound, light, vibrate and so on, applied to all the notifications in that channel.

Notification channels are mandatory

- Notification channels are introduced in Android 8.0 (API level 26)
- All notifications must be assigned to a channel starting from Android 8.0 (API level 26), else your notifications will not be displayed.
- For the apps targeting lower than Android 8.0 (API level 26), no need to implement notification channels.

Notification channels in Settings

- Notification channels appear as **Categories** under **App notifications** in the device Settings.



Creating a Notification channel

Create a Notification channel

- Notification channel instance is created using `NotificationChannel` constructor.
- You must specify:
  - An ID that's unique within your package.
  - User visible name of the channel.
  - The importance level for the channel.

```
if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.O) {
    NotificationChannel notificationChannel =
            new NotificationChannel(CHANNEL_ID, "Mascot Notification",
            NotificationManager.IMPORTANCE_DEFAULT);
```

Importance level

- Available in Android 8.0 (API level 26) and higher.
- Sets the intrusion level, like the sound and visibility for all notifications posted in the channel.
- Range from `IMPORTANCE_NONE(0)` to `IMPORTANCE_HIGH(4)`.
- To support earlier versions of Android (Lower than API level 26), set the priority.

Notification priority

- Determines how the system displays the notification with respect to other notifications, in Android version Lower than API level 26.
- Set using the `setPriority()` method for each notification.
- Range from `PRIORITY_MIN` to `PRIORITY_MAX`.

```
setPriority(NotificationCompat.PRIORITY_HIGH)
```

Importance level and priority constants

User-visible importance level	Importance (Android 8.0 and higher)	Priority (Android 7.1 and lower)
Urgent Makes a sound and appears as a heads-up notification	IMPORTANCE_HIGH	PRIORITY_HIGH or PRIORITY_MAX
High Makes a sound	IMPORTANCE_DEFAULT	PRIORITY_DEFAULT
Medium No sound	IMPORTANCE_LOW	PRIORITY_LOW
Low No sound and doesn't appear in the status bar	IMPORTANCE_MIN	PRIORITY_MIN

Creating Notifications

Creating Notification

- Notification is created using `NotificationCompat.Builder` class.
- Pass the application context and notification channel ID to the constructor.
- The `NotificationCompat.Builder` constructor takes the notification channel ID, this is only used by Android 8.0 (API level 26) and higher, but this parameter is ignored by the older versions.

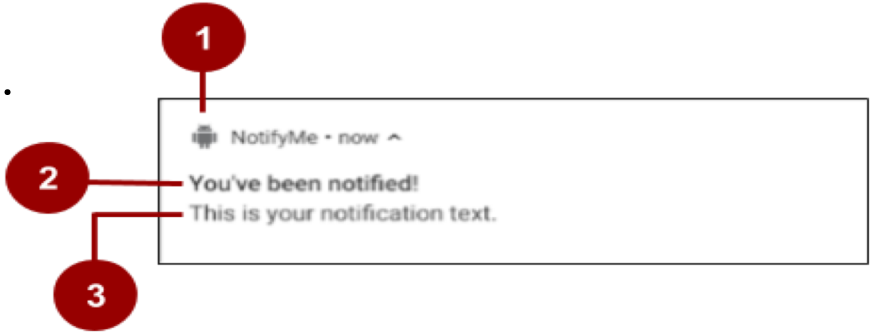
```
NotificationCompat.Builder mBuilder = new
        NotificationCompat.Builder(this, CHANNEL_ID);
```

Setting notification contents

1. A small icon, set by `setSmallIcon()`.

   This is the only content that's required.

1. A title, set by `setContentTitle()`.
2. The body text, set by `setContentText()`. This is the notification message.



Setting notification contents

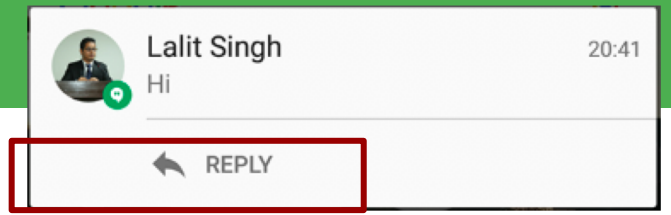
```
NotificationCompat.Builder mBuilder =
    new NotificationCompat.Builder(this, CHANNEL_ID)
            .setSmallIcon(R.drawable.android_icon)
            .setContentTitle("You've been notified!")
            .setContentText("This is your notification text.");
```

Tap action and Action buttons

Add notification tap action

- Every notification must respond when it is tapped, usually launching an Activity in your app.
- Set an content intent using `setContentIntent()` method.
- Pass the `Intent` wrapped in a `PendingIntent` object.

Notification action buttons



- Action buttons can perform a variety of actions on behalf of your app, such as starting a background task, placing a phone call and so on.
- Starting from Android 7.0 (API level 24) reply to messages directly from notifications.
- To add an action button, pass a `PendingIntent` to the `addAction()` method.

Pending intents

- A `PendingIntent` is a description of an intent and target action to perform with it.

- Give a `PendingIntent` to another application to grant it the right to perform the operation you have specified as if the other app was yourself.

Methods to create a PendingIntent

To instantiate a PendingIntent, use one of the following methods:

- `PendingIntent.getActivity()`
- `PendingIntent.getBroadcast()`
- `PendingIntent.getService()`

PendingIntent method arguments

1. Application context
2. Request code—constant integer id for the pending intent
3. Intent to be delivered
4. PendingIntent flag determines how the system handles multiple pending intents from same app

Step 1: Create intent

```
Intent notificationIntent =
        new Intent(this, MainActivity.class);
```

Step 2: Create PendingIntent

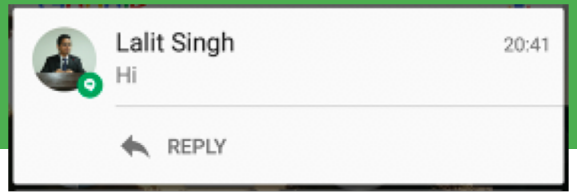
```
PendingIntent notificationPendingIntent =
    PendingIntent.getActivity(
                this,
                NOTIFICATION_ID,
                notificationIntent,
                PendingIntent.FLAG_UPDATE_CURRENT);
```

Step 3: Add to notification builder

To set tap action to the notification:

```
.setContentIntent(notificationPendingIntent);
```

Add action buttons



- Use NotificationCompat.Builder.addAction()
  — pass in icon, caption, PendingIntent

```
.addAction(R.drawable.ic_color_lens_black_24dp,
           "R.string.label",
           notificationPendingIntent);
```

Expanded view notifications

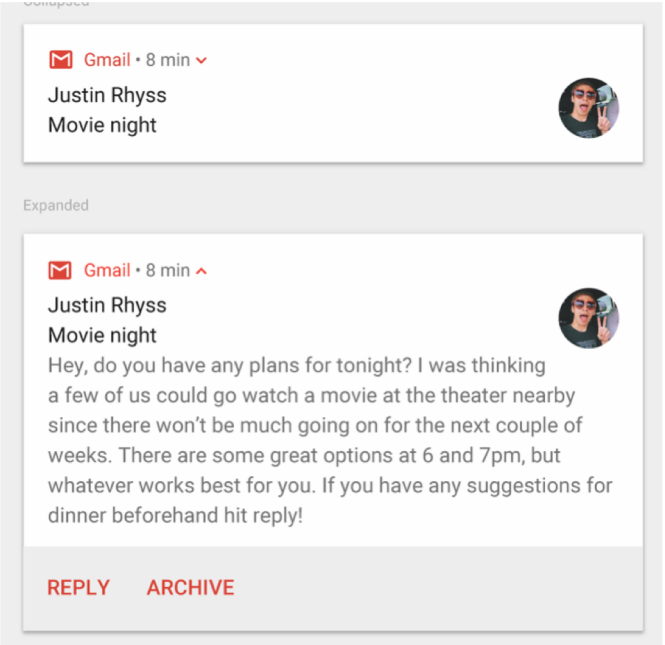
Expandable notifications

- Notifications in the notification drawer appear in two main layouts, normal view (which is the default) and expanded view.
- Expanded view notifications were introduced in Android 4.1.
- Use them sparingly -- they take up more space and attention.

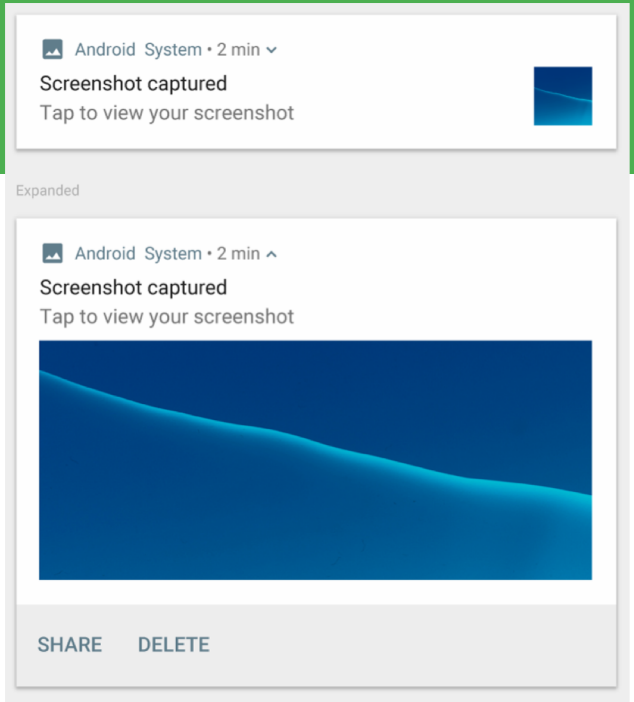
Big text

- For large-format notifications that include a lot of text.
- Fits more text than a standard view.
- Use the helper class:

  `NotificationCompat.BigTextStyle`



Big image

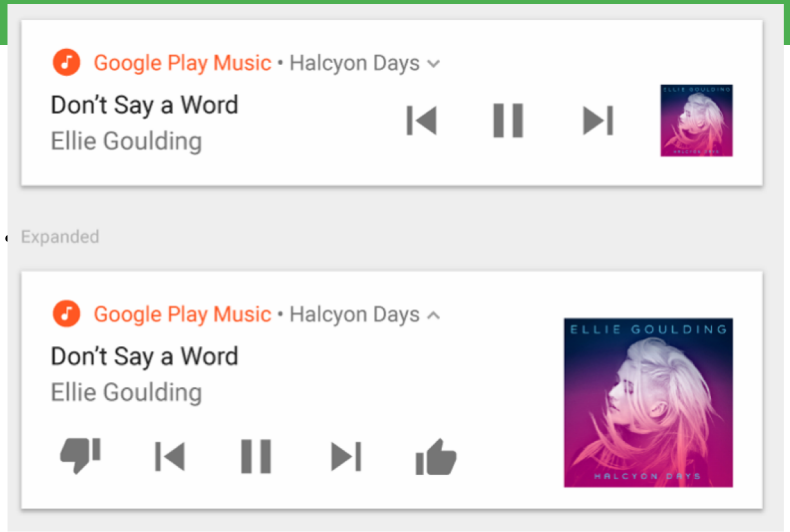


- For large-format notifications that include a large image attachment.

- Use the helper class:

`NotificationCompa.BigPictureStyle`

Media



- For media playback notifications.
- Actions for controlling media such as music
- Image for album cover
- Use the helper class:
- [`NotificationCompat.MediaStyle`]

Setting styles

To create expandable notification that appear, use one of the helper classes to set the style using the `setStyle()` method.

```
mNotifyBuilder
.setStyle(new NotificationCompat.BigPictureStyle()
        .bigPicture(myBitmapImage)
        .setBigContentTitle("Notification!"));
```

Delivering Notifications

Delivering notifications

- Use the `NotificationManager` class to deliver notifications.
  - Create an instance of `NotificationManager`
  - Call `notify()` to deliver the notification.

Instantiate NotificationManager

Call `getSystemService()`, passing in the `NOTIFICATION_SERVICE` constant.

```
mNotifyManager = (NotificationManager)
    getSystemService(NOTIFICATION_SERVICE);
```

Send notification

- Call `notify()` to deliver the notification, passing in these two values:
  - A notification ID, which is used to update or cancel the notification.
  - The `NotificationCompat` object that you created using the `NotificationCompat.Builder` object.

```
mNotifyManager.notify(NOTIFICATION_ID,  myNotification);
```

Managing Notifications

Updating notifications

1. Update a notification by changing and or adding some of its content.
2. Issue notification with updated parameters using builder.
3. Call `notify()` passing in the same notification ID.
    - If previous notification is still visible, system updates.
    - If previous notification has been dismissed, new notification is delivered.

Canceling notifications

Notifications remain visible until:

- User dismisses it by swiping or by using "**Clear All**".
- Calling `setAutoCancel()` when creating the notification, removes it from the status bar when the user clicks on it.
- App calls `cancel()` or `cancelAll()` on `NotificationManager`.

```
mNotifyManager.cancel(NOTIFICATION_ID);
```

Design guidelines

If your app sends too many notifications, users will disable notifications or uninstall the app.

- **Relevant:** Whether this information is essential for the user.
- **Timely:** Notifications need to appear when they are useful.
- **Short:** Use as few words as possible.
- Give users the power to choose -- Use appropriate notification channels to categorise your notifications.

What's Next?

- Concept Chapter: 8.1 Notifications
- Practical: 8.1 Notifications

The End