# Toolbar Compatibility

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**In this article**

## Overview

This section explains how to use `Toolbar` on versions of Android earlier than Android 5.0 Lollipop. If your app does not support versions of Android earlier than Android 5.0, you can skip this section.

Because `Toolbar` is part of the Android v7 support library, it can be used on devices running Android 2.1 (API level 7) and higher. However, the Android Support Library v7 AppCompat NuGet must be installed and the code modified so that it uses the `Toolbar` implementation provided in this library. This section explains how to install this NuGet and modify the **ToolbarFun** app from Adding a Second Toolbar so that it runs on versions of Android earlier than Lollipop 5.0.

To modify an app to use the AppCompat version of Toolbar:

1. Set the Minimum and Target Android versions for the app.

2. Install the AppCompat NuGet Package.

3. Use an AppCompat theme instead of a built-in Android theme.

4. Modify `MainActivity` so that it subclasses `AppCompatActivity` rather than `Activity`.

Each of these steps is explained in detail in the following sections.

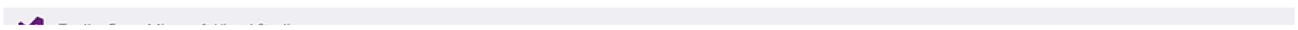
## Set the Minimum and Target Android Version

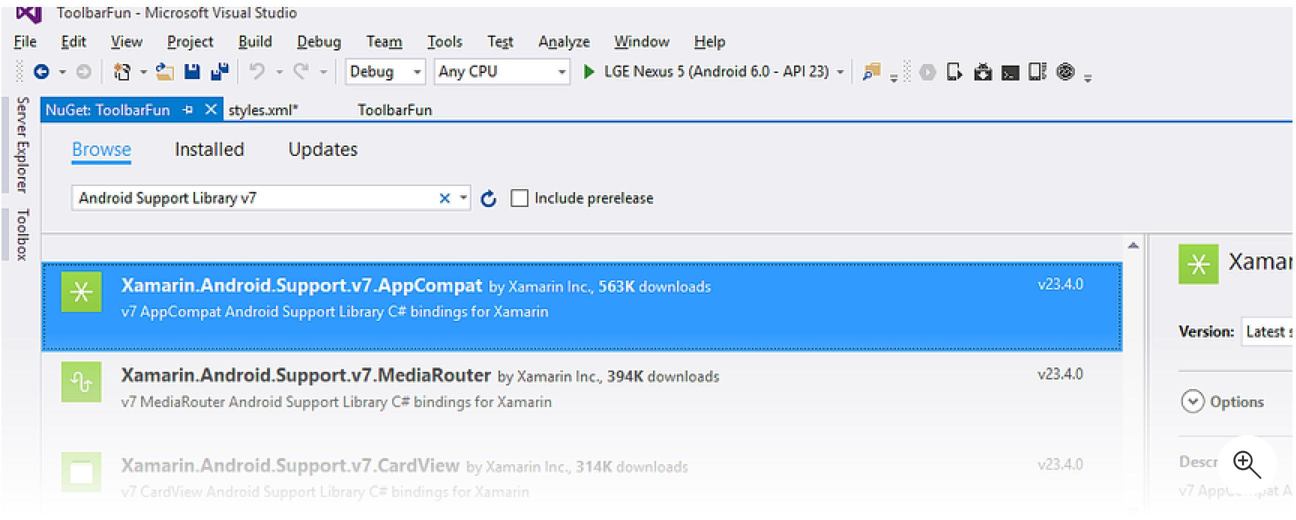
The app's Target Framework must be set to API Level 21 or greater or the app will not deploy properly. If an error such as **No resource identifier found for attribute 'tileModeX' in package 'android'** is seen while deploying the app, this is because the Target Framework is not set to **Android 5.0 (API Level 21 - Lollipop)** or greater.

Set the Target Framework level to API Level 21 or greater and set the Android API level project settings to the minimum Android Version that the app is to support. For more information about setting Android API levels, see Understanding Android API Levels. In the `ToolbarFun` example, the Minimum Android Version is set to KitKat (API Level 4.4).

## Install the AppCompat NuGet Package

Next, add the Android Support Library v7 AppCompat package to the project. In Visual Studio, right-click **References** and select **Manage NuGet Packages...**. Click **Browse** and search for **Android Support Library v7 AppCompat**. Select **Xamarin.Android.Support.v7.AppCompat** and click **Install**:




ToolbarFun - Microsoft Visual Studio
File Edit View Project Build Debug Team Tools Test Analyze Window Help
Debug
Any CPU
LGE Nexus 5 (Android 6.0 - API 23)
NuGet: ToolbarFun
styles.xml*
ToolbarFun
Server Explorer
Toolbox
Browse
Installed
Updates
Include prerelease
Options

Android Support Library v7

**Xamarin.Android.Support.v7.AppCompat** by Xamarin Inc., 563K downloads v23.4.0
v7 AppCompat Android Support Library C# bindings for Xamarin

**Xamarin.Android.Support.v7.MediaRouter** by Xamarin Inc., 394K downloads v23.4.0
v7 MediaRouter Android Support Library C# bindings for Xamarin

**Xamarin.Android.Support.v7.CardView** by Xamarin Inc., 314K downloads v23.4.0
v7 CardView Android Support Library C# bindings for Xamarin

Version: Latest s

When this NuGet is installed, several other NuGet packages are also installed if not already present (such as **Xamarin.Android.Support.Animated.Vector.Drawable**, **Xamarin.Android.Support.v4**, and **Xamarin.Android.Support.Vector.Drawable**). For more information about installing NuGet packages, see Walkthrough: Including a NuGet in your project.

## Use an AppCompat Theme and Toolbar

The AppCompat library comes with several `Theme.AppCompat` themes that can be used on any version of Android supported by the AppCompat library. The `ToolbarFun` example app theme is derived from `Theme.Material.Light.DarkActionBar`, which is not available on Android versions earlier than Lollipop. Therefore, `ToolbarFun` must be adapted to use the AppCompat counterpart for this theme, `Theme.AppCompat.Light.DarkActionBar`. Also, because `Toolbar` is not available on versions of Android earlier than Lollipop, we must use the AppCompat version of `Toolbar`. Therefore, layouts must use `android.support.v7.widget.Toolbar` instead of `Toolbar`.

### Update Layouts

Edit **Resources/layout/Main.axml** and replace the `Toolbar` element with the following XML:

XML

```xml
<android.support.v7.widget.Toolbar
    android:id="@+id/edit_toolbar"
    android:minHeight="?attr/actionBarSize"
    android:background="?attr/colorAccent"
    android:theme="@style/ThemeOverlay.AppCompat.Dark.ActionBar"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" />
```

Edit **Resources/layout/toolbar.xml** and replace its contents with the following XML:

XML

```xml
<?xml version="1.0" encoding="utf-8"?>
<android.support.v7.widget.Toolbar xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/toolbar"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:minHeight="?attr/actionBarSize"
    android:background="?attr/colorPrimary"
    android:theme="@style/ThemeOverlay.AppCompat.Dark.ActionBar"/>
```

Note that the `?attr` values are no longer prefixed with `android:` (recall that the `?` notation references a resource in the current theme). If `?android:attr` were still used here, Android would reference the attribute value from the currently running platform rather than from the AppCompat library. Because this example uses the `actionBarSize` defined by the AppCompat library, the `android:`

prefix is dropped. Similarly, `@android:style` is changed to `@style` so that the `android:theme` attribute is set to a theme in the AppCompat library – the `ThemeOverlay.AppCompat.Dark.ActionBar` theme is used here rather than `ThemeOverlay.Material.Dark.ActionBar`.

## Update the Style

Edit **Resources/values/styles.xml** and replace its contents with the following XML:

XML Copy

```xml
<?xml version="1.0" encoding="utf-8" ?>
<resources>
  <style name="MyTheme" parent="MyTheme.Base"> </style>
  <style name="MyTheme.Base" parent="Theme.AppCompat.Light.DarkActionBar">
    <item name="windowNoTitle">true</item>
    <item name="windowActionBar">false</item>
    <item name="colorPrimary">#5A8622</item>
    <item name="colorAccent">#A88F2D</item>
  </style>
</resources>
```

The item names and parent theme in this example are no longer prefixed with `android:` because we are using the AppCompat library. Also, the parent theme is changed to the AppCompat version of `Light.DarkActionBar`.

## Update Menus

To support earlier versions of Android, the AppCompat library uses custom attributes that mirror the attributes of the `android:` namespace. However, some attributes (such as the `showAsAction` attribute used in the `<menu>` tag) do not exist in the Android framework on older devices – `showAsAction` was introduced in Android API 11 but is not available in Android API 7. For this reason, a custom namespace must be used to prefix all of the attributes defined by the support library. In the menu resource files, a namespace called `local` is defined for prefixing the `showAsAction` attribute.

Edit **Resources/menu/top_menus.xml** and replace its contents with the following XML:

XML Copy

```xml
<?xml version="1.0" encoding="utf-8" ?>
<menu xmlns:android="http://schemas.android.com/apk/res/android"
      xmlns:local="http://schemas.android.com/apk/res-auto">
  <item
       android:id="@+id/menu_edit"
       android:icon="@mipmap/ic_action_content_create"
       local:showAsAction="ifRoom"
       android:title="Edit" />
  <item
       android:id="@+id/menu_save"
       android:icon="@mipmap/ic_action_content_save"
       local:showAsAction="ifRoom"
       android:title="Save" />
  <item
       android:id="@+id/menu_preferences"
       local:showAsAction="never"
       android:title="Preferences" />
</menu>
```

The `local` namespace is added with this line:

XML Copy

```xml
xmlns:local="http://schemas.android.com/apk/res-auto">
```

The `showAsAction` attribute is prefaced with this `local:` namespace rather than `android:`

Copy

C#

```
local:showAsAction="ifRoom"
```

Similarly, edit **Resources/menu/edit_menus.xml** and replace its contents with the following XML:

XML

```xml
<?xml version="1.0" encoding="utf-8" ?>
<menu xmlns:android="http://schemas.android.com/apk/res/android"
      xmlns:local="http://schemas.android.com/apk/res-auto">
  <item
       android:id="@+id/menu_cut"
       android:icon="@mipmap/ic_menu_cut_holo_dark"
       local:showAsAction="ifRoom"
       android:title="Cut" />
  <item
       android:id="@+id/menu_copy"
       android:icon="@mipmap/ic_menu_copy_holo_dark"
       local:showAsAction="ifRoom"
       android:title="Copy" />
  <item
       android:id="@+id/menu_paste"
       android:icon="@mipmap/ic_menu_paste_holo_dark"
       local:showAsAction="ifRoom"
       android:title="Paste" />
</menu>
```

How does this namespace switch provide support for the `showAsAction` attribute on Android versions prior to API Level 11? The custom attribute `showAsAction` and all of its possible values are included in the app when the AppCompat NuGet is installed.

## Subclass AppCompatActivity

The final step in the conversion is to modify `MainActivity` so that it is a subclass of `AppCompactActivity`. Edit **MainActivity.cs** and add the following `using` statements:

C#

```csharp
using Android.Support.V7.App;
using Toolbar = Android.Support.V7.Widget.Toolbar;
```

This declares `Toolbar` to be the AppCompat version of `Toolbar`. Next, change the class definition of `MainActivity`:

C#

```csharp
public class MainActivity : AppCompatActivity
```

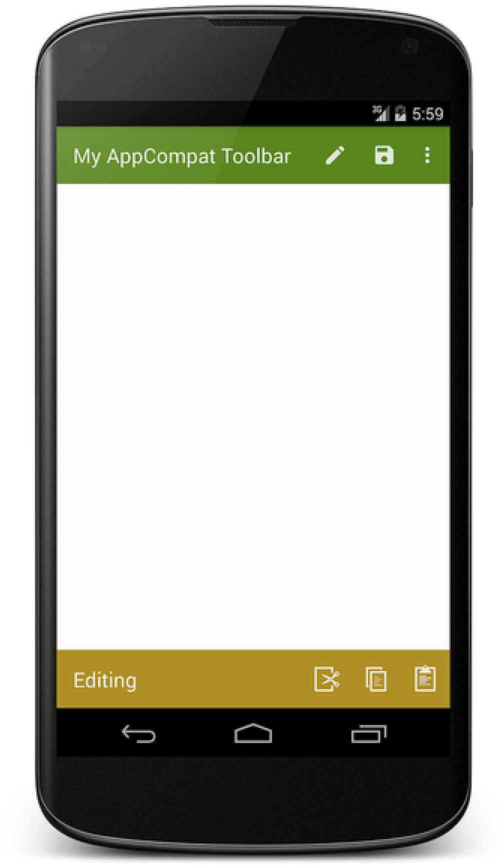
To set the action bar to the AppCompat version of `Toolbar`, substitute the call to `SetActionBar` with `SetSupportActionBar`. In this example, the title is also changed to indicate that the AppCompat version of `Toolbar` is being used:

C#

```csharp
SetSupportActionBar (toolbar);
SupportActionBar.Title = "My AppCompat Toolbar";
```

Finally, change the Minimum Android level to the pre-Lollipop value that is to be supported (for example, API 19).

Build the app and run it on a pre-Lollipop device or Android emulator. The following screenshot shows the AppCompat version of **ToolbarFun** on a Nexus 4 running KitKat (API 19):



When the AppCompat library is used, themes do not have to be switched based on the Android version – the AppCompat library makes it possible to provide a consistent user experience across all supported Android versions.

## Related Links

- Lollipop Toolbar (sample)
- AppCompat Toolbar (sample)