

Images and the Android Resources Pipeline

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Fundamental Complication

- Lots of devices.
- Different price points.
- Different physical sizes.
- Different resolutions.

Four “Abstract Densities”

- 1dpi: 75% of base
- mdpi: base image size (iOS “1x”)
- hdpi: 150% of base
- xhdpi: 200% of base (iOS “2x”)



1dpi
48×48



mdpi
64×64



hdpi
96×96



xhdpi
128×128

Measurement Units

- px — physical device pixels
- dp — “density-independent pixel”

On `mdpi`, $1 \text{ px} = 1 \text{ dp}$. Not so on other densities!

Devices vary both in their density and in their size in dp.

Examples

- Phones

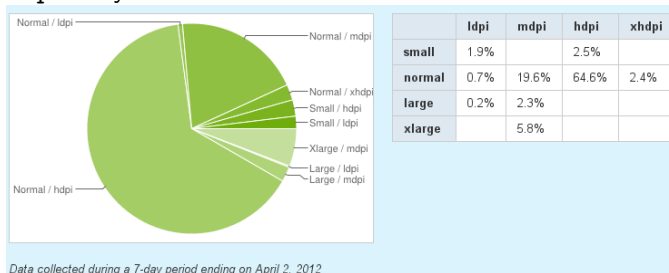
- HTC G1: 480x320px, mdpi = 480x320dp (medium, notlong)
- Motorola Droid: 854x480px, hdpi = 570x320dp (medium, long)
- Samsung Dart: 320x240px, ldpi = 427x320dp (small, notlong)
- Galaxy Nexus: 1280x720px, xhdpi = 640x360dp (medium, long)

- Tablets

- Kindle Fire: 1024x600px, mdpi = 1024x600dp (large)
- Motorola Xoom: 1280x800px, mdpi = 1280x800dp (xlarge)

But!

- Android will automatically scale if you don't have appropriate files.
- `ldpi` maybe irrelevant.



- Maybe just `xhdpi` if you're feeling brave.

Directory structure

The screenshot shows the Android Studio interface with the 'bwm-android' project open. The 'res' directory is selected, displaying a list of resources. The table below represents the data shown in the interface.

Name	Size	Type	Date Modified
assets	0 items	folder	Tue 27 Sep 2011 05:52:31 PM EDT
bin	5 items	folder	Tue 11 Oct 2011 12:30:35 PM EDT
gen	2 items	folder	Tue 11 Oct 2011 12:30:19 PM EDT
libs	3 items	folder	Wed 14 Sep 2011 12:06:16 PM EDT
res	16 items	folder	Thu 04 Aug 2011 04:41:32 PM EDT
anim	6 items	folder	Thu 26 May 2011 12:53:33 PM EDT
color	6 items	folder	Tue 27 Sep 2011 12:16:15 PM EDT
drawable	38 items	folder	Tue 27 Sep 2011 12:16:15 PM EDT
drawable-hdpi	156 items	folder	Tue 27 Sep 2011 12:16:15 PM EDT
drawable-hdpi-v9	1 item	folder	Fri 17 Jun 2011 11:56:05 AM EDT
drawable-mdpi	156 items	folder	Tue 27 Sep 2011 12:16:15 PM EDT
drawable-mdpi-v9	1 item	folder	Fri 17 Jun 2011 11:56:12 AM EDT
drawable-nodpi	3 items	folder	Wed 15 Jun 2011 02:05:15 PM EDT
drawable-xhdpi	29 items	folder	Tue 27 Sep 2011 12:16:15 PM EDT
categories_button...	4.8 kB	PNG image	Thu 04 Aug 2011 04:41:31 PM EDT
categories_button...	4.7 kB	PNG image	Thu 04 Aug 2011 04:41:31 PM EDT
categories_divider...	259 bytes	PNG image	Thu 04 Aug 2011 04:41:31 PM EDT
category_choice_a...	1.7 kB	PNG image	Thu 04 Aug 2011 04:41:31 PM EDT
category_choice_a...	1.7 kB	PNG image	Thu 04 Aug 2011 04:41:31 PM EDT
category_choice_al...	1.6 kB	PNG image	Thu 04 Aug 2011 04:41:31 PM EDT
category_choice_al...	1.6 kB	PNG image	Thu 04 Aug 2011 04:41:31 PM EDT
"res" selected (containing 16 items)	1.8 kB	PNG image	Thu 04 Aug 2011 04:41:31 PM EDT

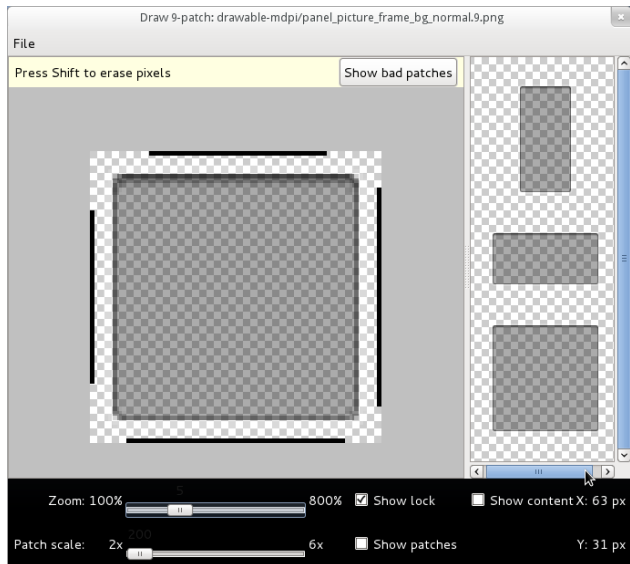
Additional qualifiers

Rarely need to use more than one of these at a time, but they can be helpful:

- OS Version: `v9` etc.
- Screen size: `small`, `medium` (phones); `large`, `xlarge` (tablets)
- Language (and country): `en`, `es`, `en-rCA`
- Portrait/landscape: `port`, `land`
- Many others, see SDK docs if interested.

Note! This applies not just to images but also, strings, layout files, etc.

9-Patch Images



Thank You

Questions?