Documentation of build errors faced on compiling hardware_qcom_display

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Contents

1 libcopybit

Error

```
hardware/qcom/display/libcopybit/copybit.cpp:133:
error: 'MDP_Y_CBCR_H2V2_ADRENO' was not declared in this scope
```

Solution

In B2G/hardware/qcom/display/libcopybit/copybit.cpp, change <linux/msm_mdp.h> to "msm_mdp.h", and copy msm_mdp.h from here.

Add "MDP_Y_CBCR_H2V2_ADRENO," to the enum below "MDP_Y_CRCB_H2V2," if it is not already there.

2 ashmem

Error

```
error: 'ASHMEM_CACHE_FLUSH_RANGE' was not declared in this scope
```

Solution

Take ashmem.h from here and place it in B2G/hardware/qcom/display/libgralloc/ directory. In B2G/hardware/qcom/display/lib
replace <linux/ashmem.h> with "ashmem.h".

3 _IOW

Error

```
error: '_IOW' was not declared in this scope
```

Solution

Add #include <linux/fs.h> to pmemalloc.cpp before #include <linux/android_pmem.h>

4 pmemalloc

Error

```
target thumb C++: libmemalloc <= hardware/qcom/display/libgralloc/pmemalloc.cpp
hardware/qcom/display/libgralloc/pmemalloc.cpp: In function 'int alignPmem(int, size_t, int)':
hardware/qcom/display/libgralloc/pmemalloc.cpp:88:
error: aggregate 'pmem_allocation allocation' has incomplete type and cannot be defined
hardware/qcom/display/libgralloc/pmemalloc.cpp:91:
error: 'PMEM_ALLOCATE_ALIGNED' was not declared in this scope
hardware/qcom/display/libgralloc/pmemalloc.cpp:
In function 'int cleanPmem(void*, size_t, int, int)':
hardware/qcom/display/libgralloc/pmemalloc.cpp:97:
error: aggregate 'pmem_addr pmem_addr' has incomplete type and cannot be defined
hardware/qcom/display/libgralloc/pmemalloc.cpp:101:
error: 'PMEM_CLEAN_INV_CACHES' was not declared in this scope
```

Solution

Take android_pmem.h from here and place it in hardware/qcom/display/libgralloc.

5 HWC

Error

```
hardware/qcom/display/libqcomui/qcom_ui.h: In member function 'void QCBaseLayer::setS3DComposeFormat(i
hardware/qcom/display/libqcomui/qcom_ui.h:173:
error: 'HWC_HINT_DRAW_S3D_SIDE_BY_SIDE' was not declared in this scope
hardware/qcom/display/libqcomui/qcom_ui.h:175:
error: 'HWC_HINT_DRAW_S3D_TOP_BOTTOM' was not declared in this scope
hardware/qcom/display/libgralloc/framebuffer.cpp:
In function 'int mapFrameBufferLocked(private_module_t*)':
hardware/qcom/display/libgralloc/framebuffer.cpp:
In function 'int fb_device_open(const hw_module_t*, const char*, hw_device_t**)':
hardware/qcom/display/libgralloc/framebuffer.cpp:967:
```

```
error: 'struct framebuffer_device_t' has no member named 'lockBuffer'
hardware/qcom/display/libgralloc/framebuffer.cpp:968:
error: 'struct framebuffer_device_t' has no member named 'perform'
hardware/qcom/display/libgralloc/framebuffer.cpp:984:
error: 'struct framebuffer_device_t' has no member named 'numFramebuffers'
```

Solution

Apply this diff on hardware/libhardware.

```
diff --git a/include/hardware/fb.h b/include/hardware/fb.h
index ba2f286..e2ccffa 100644
--- a/include/hardware/fb.h
+++ b/include/hardware/fb.h
@@ -143,6 +143,35 @@ typedef struct framebuffer_device_t {
void* reserved_proc[6];
+ /* -JCS start */
+ int numFramebuffers;
+
+ int
+ (*orientationChanged)
+ (
+ struct framebuffer_device_t* dev
+ , int orientation
+ );
+ int
+ (*setActionSafeWidthRatio)
+ (
+ struct framebuffer_device_t* dev
+ , float asWidthRatio
+ );
+ int
+ (*setActionSafeHeightRatio)
+ (
+ struct framebuffer_device_t* dev
+ , float asHeightRatio
+ );
+ int
+ (*lockBuffer)
+ (
+ struct framebuffer_device_t* dev
+ , int index
+ );
+ /* -JCS end */
+
} framebuffer_device_t;
diff --git a/include/hardware/hwcomposer.h b/include/hardware/hwcomposer.h
index 0fa3512..a69198f 100644
--- a/include/hardware/hwcomposer.h
+++ b/include/hardware/hwcomposer.h
@@ -66,7 +66,16 @@ enum {
* SurfaceFlinger will only honor this flag when the layer has no blending
*
*/
- HWC_HINT_CLEAR_FB = 0x00000002
+ HWC_HINT_CLEAR_FB = 0x00000002,
+
```

```
+ /*
+ * HWC sets the HWC_HINT_DRAW_S3D_SS or HWC_HINT_DRAW_S3D_TB to tell
+ * Surfaceflinger that currently a S3D video layer is being drawn so
+ * convert the other layers to S3D format of Video while composing
+ *
+ */
+ HWC_HINT_DRAW_S3D_SIDE_BY_SIDE = 0x00000004,
+ HWC_HINT_DRAW_S3D_TOP_BOTTOM = 0x00000008
};
/*
@@ -79,7 +88,19 @@ enum {
* shall not consider this layer for composition as it will be handled
* by SurfaceFlinger (just as if compositionType was set to HWC_OVERLAY).
*/
- HWC_SKIP_LAYER = 0x00000001,
+ HWC_SKIP_LAYER = 0x00000001,
+ /*
+ * HWC_LAYER_NOT_UPDATING is set by SurfaceFlnger to indicate that the HAL
+ * that this layer is not updating. The HAL can use this to determine if it
+ * needs to draw this layer.
+ */
+ HWC_LAYER_NOT_UPDATING = 0x00000002,
+
+ /* implementation-specific private usage flags */
+ HWC_FLAGS_PRIVATE_0 = 0x10000000,
+ HWC_FLAGS_PRIVATE_1 = 0x20000000,
+ HWC_FLAGS_PRIVATE_2 = 0x40000000,
+ HWC_FLAGS_PRIVATE_3 = 0x80000000,
};
/*
@@ -160,6 +181,9 @@ typedef struct hwc_layer {
/* blending to apply during composition */
int32_t blending;
+ /* alpha value of the layer */
+ int32_t alpha;
+
/* area of the source to consider, the origin is the top-left corner of
* the buffer */
hwc_rect_t sourceCrop;
@@ -187,6 +211,12 @@ enum {
* passed to (*prepare)() has changed by more than just the buffer handles.
*/
HWC_GEOMETRY_CHANGED = 0x00000001,
+
+ /*
+ * HWC_SKIP_COMPOSITION is set by the HWC to indicate to SurfaceFlinger to
+ * skip composition for this iteration.
+ */
+ HWC_SKIP_COMPOSITION = 0x00000002
};
/*
@@ -321,6 +351,12 @@ typedef struct hwc_composer_device {
void* reserved_proc[6];
+ /*
+ * This API is called by Surfaceflinger to inform the HWC about the
+ * HDMI status.
```

```
+ */
+ void (*enableHDMIOutput)(struct hwc_composer_device* dev, bool enable);
+
} hwc_composer_device_t;
```

Note that there should be two blank lines at the end of the diff for it to apply cleanly. In case there are merge conflicts (due to changes made to the repository after the compilation of this document), make the changes maually.

6 msm_rotator

Error

```
error: linux/genlock.h: no such file or directory
error: linux/msm_rotator.h: no such file or directory
error: conflicting declaration 'HWC_LAYER_NOT_UPDATING'
...
```

and therefore, a whole lot more.

Solution

Add genlock.h to bionic/libc/kernel/common/linux. In it, put contents from this.

Add a hardware/qcom/display/liboverlay/msm_rotator.h with this content and change the header file overlayLib.h accordingly (<linux/msm_rotator.h> => "msm_rotator.h").

Comment out the HWC_LAYER_NOT_UPDATING definition in hardware/qcom/display/libqcomui/qcom_ui.h to fix the conflicting definitions issue.

7 Add libgenlock to the kernel

Fix genalloc for the kernel from here.

8 framebuffer_device_t::perform

Error

```
'struct framebuffer_device_t' has no member named 'perform'
```

Solution

Add

```
int perform(struct framebuffer_device_t*, int, int);
```

as a member of B2G/hardware/libhardware/include/hardware/fb.h (this can also be found in cyanogenmod's version of the file).

9 eglGetRenderBufferANDROID

Error

```
hardware/qcom/display/libqcomui/qcom_ui.cpp:
In function 'int qcomuiClearRegion(android::Region, void*, void*)':
hardware/qcom/display/libqcomui/qcom_ui.cpp:440:
error: 'eglGetRenderBufferANDROID' was not declared in this scope
```

Solution:

Apply the opengl*.diff patches from this directory onto frameworks/base.

Some parts of the patches were got from here and others from cyanogenmod.

10 egl_window_surface_v2_t::getRenderBuffer

Error

```
error: undefined reference to 'android::egl_window_surface_v2_t::getRenderBuffer() const'
```

Solution

This issue is also solved by previous set of diffs.

11 Field has incomplete type

Error

```
hardware/qcom/display/liboverlay/msm_rotator.h:45: error: field 'src' has incomplete type
```

and many more similar errors...

Solution

This seems to be caused by make or ccache maintaining cached versions of some files and not detecting a change in them, possibly due to a copied timestamp. This can be fixed by clobbering and recompiling the whole thing. Possible untested fix may also be to "touch" the files in question - if it works, this would be much faster.

12 mdp_overlay

Error

```
hardware/qcom/display/liboverlay/overlayLib.h:158:
error: 'mdp_overlay' was not declared in this scope
```

Solution

Get msm_mdp.h from this folder. Alternately, try this.

13 MDP_BORDERFILL_SUPPORTED

Error

```
hardware/qcom/display/liboverlay/overlayLib.h:182:
error: 'MDP_BORDERFILL_SUPPORTED' was not declared in this scope
```

Solution

Added

```
#define MDP_BORDERFILL_SUPPORTED 0x00010000
```

in liboverlay/msm_mdp.h as given here.

14 hwcomposer perform

Error

```
hardware/qcom/display/libhwcomposer/hwcomposer.cpp:1934:
error: 'struct hwc_composer_device_t' has no member named 'perform'
```

Solution

Add

```
/*
* This API is called by Surfaceflinger to inform the HWC about the
* custom events(external display).
*/
void (*perform)(struct hwc_composer_device* dev, int event, int value);
```

under hwc_composer_device_t in hwcomposer.h