

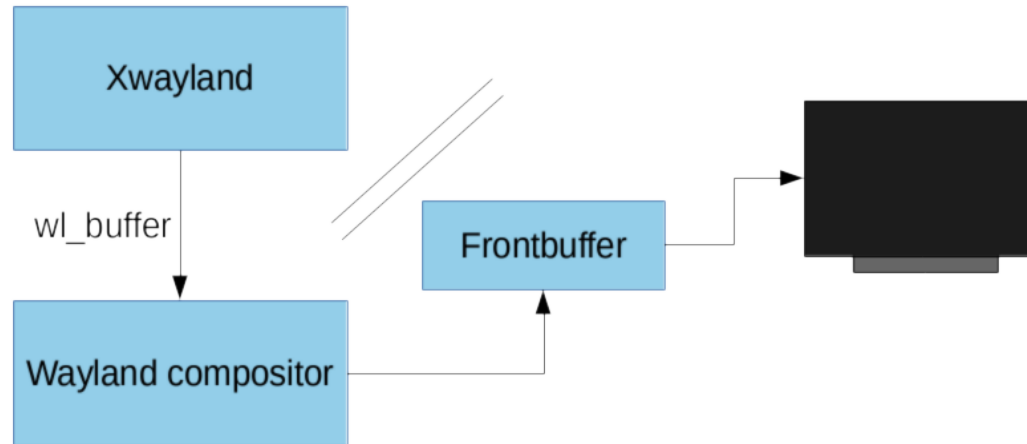


# Present buffer flips in Xwayland

GSOC 2017, landed in Xserver 1.20

# Problem statement

- Tearing with Xwayland clients trying to use Present extension.
- Additional copy from Pixmap.





# Solution overview

- Idea: flip Pixmaps on separate wl\_buffers.
- New Present “mode“, does flips per window, not per screen:
  - minimal change to old screen flip code,
  - also available on multi-monitor systems and in parallel,
  - complete notify event waits for second driver call.
- Xwayland integration:
  - listens for frame and release events,
  - timer fallback when no frame callbacks incoming.

# present/...

- Window flip mode:
  - flips per window,
  - waits for additional call from driver before telling client, that it can reuse the Pixmap,
  - switches parent Pixmap to flipped one (currently only does flips if child window same rect as parent).
- Split screen and window mode into sub routines via function pointers, asks driver for support.



# hw/xwayland/...

- Commits flipped Pixmaps as separate wl\_buffers.
- On buffer release event tells Present that the flip completed.
- Aligns msc with frame callbacks (or a fallback timer).
- Currently only flips if child window rectangle matches parent window rectangle (might be possible with subsurfaces).
- First come first serve: first child window only requesting flips is allowed to do it.



# Bug squashing

- Priv struct per Window, not only per xwl\_window.
- Remove fake crtc.
- Fix freed pointer access.
- Open bug: failed assert on Window reparent, patch by Olivier Fourdan posted to mailing list yesterday.



# Future work

- Present window mode on arbitrary child windows:
  - In Present copy back to parent window Pixmap?
  - In Xwayland probably with subsurfaces.



# Thank you

- Daniel Stone, GSOC mentor
- Michel Dänzer, patch series review + feedback
- Adam Jackson, testing + feedback
- Olivier Fourdan, bug hunting
- Lionel Landwerlin, bug hunting





Thank you for listening.