

# Intel Graphics Testing

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Software and Solutions Group



# Who are we

- Intel OTC Gfx SQA team (Shanghai, China)
  - Gordon Jin
  - Nian Wu
  - Shuang He
- <http://www.intellinuxgraphics.org/testing.html>



# Agenda

- Gfx test procedure
  - Getting source
  - Building drivers
  - Running tests
  - Checking results
  - Filing bugs
- What's the pain
- Community testing



# Test step 1: Getting source

- Multiple components
- Source
  - Stable branches: for release
    - Intel recommends quarterly release package
  - Unstable (master) branches
  - Topic branches
- Platform
  - 855GM
  - 915G, 915GM, 945G, 945GM, G33, Q35
  - G965, Q965, GM965, G35
  - GM45, G45, Q45

**Compatibility** needs to be considered

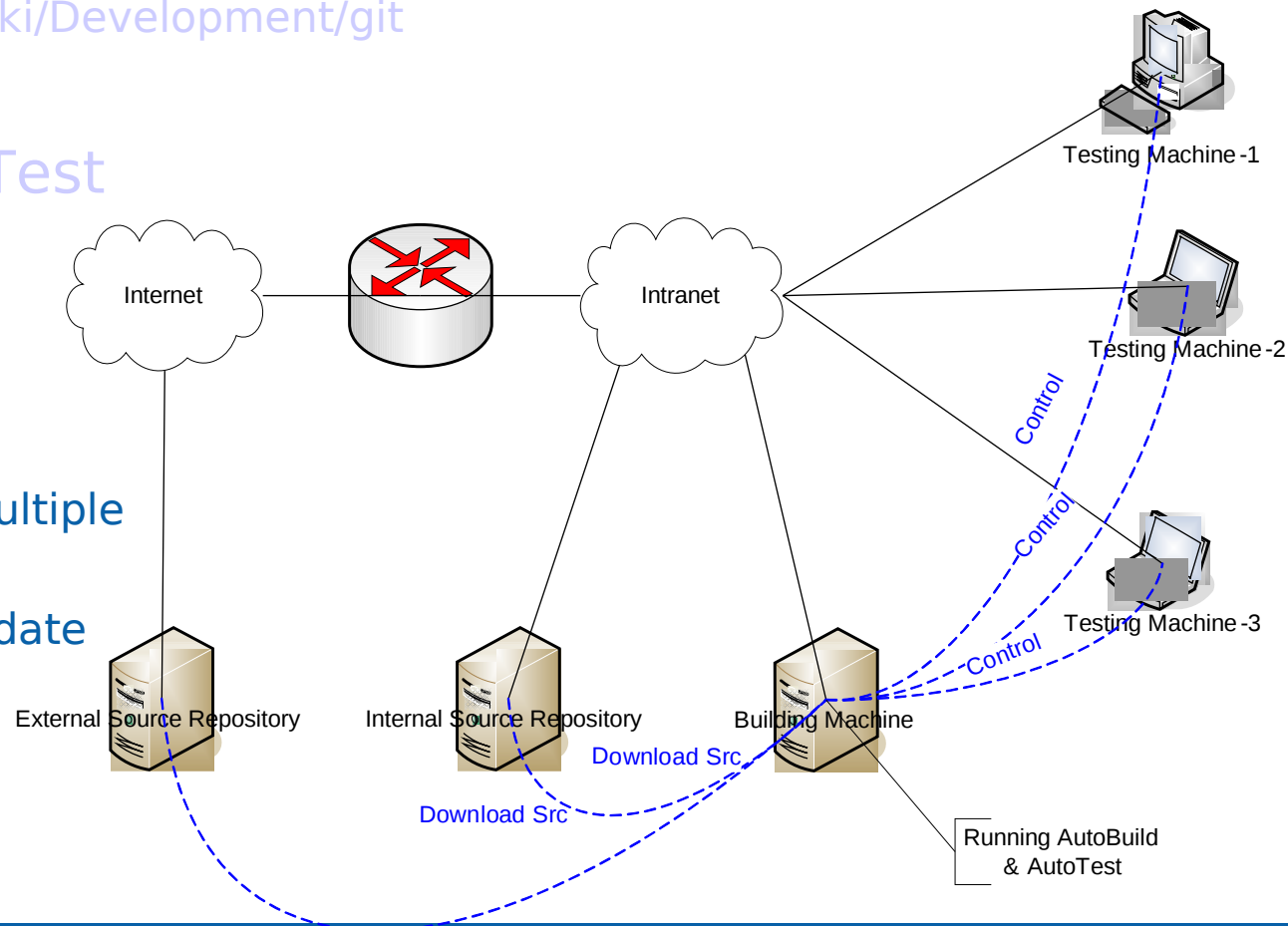
# Test step 2: Building

- Building from upstream git is recommended, but, not easy for new comers

- <http://wiki.x.org/wiki/Development/git>

- AutoBuild&AutoTest infrastructure

- download source
  - build drivers
  - update the testing environment on multiple test machines
  - download/build/update tests
  - run tests
  - report test results



# Test Step 3: Running tests

- Test strategy
  - Reuse test suites
    - Publish self-developed tests
  - Automate test suites and test process
    - **ABAT** (Automated Basic Acceptance Testing)
    - Enable auto regression/compatibility testing
      - rendercheck, glean, OGLConform, Auto Reliability Testing
    - Enable auto benchmark testing to find performance change
      - X11Perf, SpecViewPerf, 3D games
  - Manually run selected tests frequently
    - Mesa demos/xdemos/glsl/tests, Apps, Games

# Test Step 4: Checking results

- Web Report System

- piglit based
- 2 dimensions for comparison
  - Platform
  - Time

Show: all | [changes](#) | [problems](#)

	GM45-ia32e	G33-ia32e	945GM-ia32	915GM-ia32	855GM-ia32
<b>All</b>	132/281	67/282	45/90	44/89	51/283
<b>Build Status</b>	8/8	8/8	8/8	8/8	8/8
Xf86_video_intel	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>
Xf86_video_intel_stable	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>
Xorg	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>
Xserver	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>
Xserver_stable	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>
Drm	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>
Libdrm	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>
Libdrm_stable	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>
Drmmodule	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>
Drmmodule_stable	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>
Mesa	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>
Mesa_stable	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>	<a href="#">skip</a>
Abat	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>
Rendercheck	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>
Glean	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>
Oglconform	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>
<b>abat</b>	1/1	1/1	1/1	1/1	1/1
abat	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">#16244</a>
<b>rendercheck</b>	12/13	12/13	12/13	12/13	9/13
fill	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>
dcoords	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>	<a href="#">pass</a>



# Test step 5: Filing bugs

- Make sure a bug filed to track your issue, instead of just reporting to mailing list
- [http://www.intellinuxgraphics.org/how\\_to\\_report\\_bug.html](http://www.intellinuxgraphics.org/how_to_report_bug.html)
  - use template
- A sample:
  - [Bug#17310](#)

```
System environment:
-- chipset: 855GM
-- system architecture: i686
-- xf86-video-intel/xserver/mesa/drm version:
  -- xf86-video-intel: 2.4.1-1
  -- xorg-server: 1.4.99.906
  -- mesa: 7.1_rc3
  -- libdrm: 2.3.1
  -- x11-drm: 20080710
-- kernel version: 2.6.26-gentoo
-- Linux distribution: Gentoo
-- Machine or mobo model: Fujitsu-Siemens T3010 Laptop (Convertible TabletPC)
-- Display connector: Built-in LCD (VGA?)
3) Reproduce steps.
Install xf86-video-intel 2.4.1 or 2.4.1-r1 and start Xorg. Xorg refuses to
start and the following can be found in Xorg.0.log:
  (II) intel(0): using SSC reference clock of 66 MHz

  Fatal server error:
  Couldn't find PLL settings for mode!
```

```
It works fine with xf86-video-intel 2.4.0 even though it complains about:
  (II) intel(0): using SSC reference clock of 66 MHz
  (WW) intel(0): Chosen PLL clock of 66.5 Mhz more than 2% away from desired
64.2 Mhz
```

```
4) Additional info:
After upgrading to xf86-video-intel 2.4.1 or 2.4.1-r1 (Gentoo version for 2.4.1
plus xf86-video-i810-2.4.1-0001-Fix-reverted-LVDS-bios-capability-dword-
definition.patch) Xorg refuses to start. Downgrading to 2.4.0 makes Xorg start
again.
```





# Test step 5: Filing bugs (cont.)

- More than filing bugs, to help root cause
  - Debug info
    - ModeDebug yes
    - Gdb backtrace
    - Intel\_reg\_dumper
    - A picture says more than thousands of words
  - Comparison
    - Different chipsets: i915 v.s. i965
    - Different drivers: intel/ati/nv/vesa
    - Timeline: git-bisect to locate culprit commit
    - Different hw configurations
      - Single head v.s. dual head
      - Display connector: VGA/DVI/HDMI
    - Comparable methods:
      - EXA v.s. XAA v.s. noAccel
      - hw v.s. sw
      - textured video v.s. overlay
      - DRI v.s. noDRI
      - FBC v.s. noFBC

# Bugzilla Usage Suggestions

- For reporters
  - Avoid my bugs with NEEDINFO
  - Kick the ball back to assignees with **clearing NEEDINFO** in Keywords
  - RESOLVED -> VERIFIED/REOPENED
  - Don't attach **zipped**-files
  - Attach log with explicitly choosing content type as "plain text (**text/plain**)"
  - Only one issue per bug report
- For developers
  - Avoid **aging** bugs not updated
  - Kick the ball back to reporters with **adding NEEDINFO** in Keywords
  - NEW -> ASSIGNED
  - -> FIXED, with **commit id**.
- Bug management
  - Prefix [hw] or [feature] for classification
  - Priority

Responsive, responsive, responsive!

# What's the pain

- Too many configurations: need efficient combination
  - Various platforms
  - 32-bit v.s. 64-bit
  - Various connection configurations
  - Various display modes
- Hard to automate testing for most usage models
- Bugs cumulated
  - Developers like new features v.s. Users/OSVs prefer stabilization

# Community Testing

- Web Portal
  - [http://www.intellinuxgraphics.org/community\\_testing.html](http://www.intellinuxgraphics.org/community_testing.html)
- Mailing list
  - Subscribe [intel-gfx@lists.freedesktop.org](mailto:intel-gfx@lists.freedesktop.org)
- IRC
  - [irc.freenode.net: #intel-gfx](irc://irc.freenode.net/#intel-gfx)
- Members: ~70



# Top 10 active members

- Julien Cristau (Debian)
- Brice Goglin (Debian)
- Remi Cardona (Gentoo)
- Colin Guthrie (Mandriva)
- Lukas Hejtmanek
- Alexander E. Patrakov
- Johannes Engel
- Alan W. Irwin
- Clemens Eisserer
- Richard Goedeken



# Call for volunteers

- Join Intel community testing team
- Try the upstream driver
- File good bug reports (referring to the [guide](#))
- Helping root cause and contributing patches are appreciated



# Resources

- <http://www.intellinuxgraphics.org/testing.html>
- [http://www.intellinuxgraphics.org/how\\_to\\_report\\_bug.htm](http://www.intellinuxgraphics.org/how_to_report_bug.htm)
- [http://www.intellinuxgraphics.org/community\\_testing.htm](http://www.intellinuxgraphics.org/community_testing.htm)
- <http://bugs.freedesktop.org/>



# Backup

- Auto Tests

- ABAT (Automated Basic Acceptance Testing)
  - Check if startx gets error
  - Check if required kernel modules loaded
  - Check if xv supported
  - Check if direct rendering enabled
  - Check if simple 3d breaks
- Rendercheck
- Glean
- OGLConform
- Auto Reliability Testing
  - Repeated VT switch, render, rotation, xv, suspend/resume
- Auto Performance Testing
  - X11Perf
  - SpecViewPerf
  - 3D game benchmarks: OpenArena, UT2004, ...



# Backup

- Manual Tests

- Most common usage

- Startx with desktop environment (with and without Compiz)
    - VT switch
    - Suspend/resume
    - mplayer
    - xrandr

- Mesa

- demos, xdemos, glsl, tests

- Apps

- Compiz, GoogleEarth, Blender, SecondLife, Wine

- Games

- UT2004, OpenArena, Quake, Doom, EnemyTerritory, Torcs, ppracer, FlightGear, celestia