

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

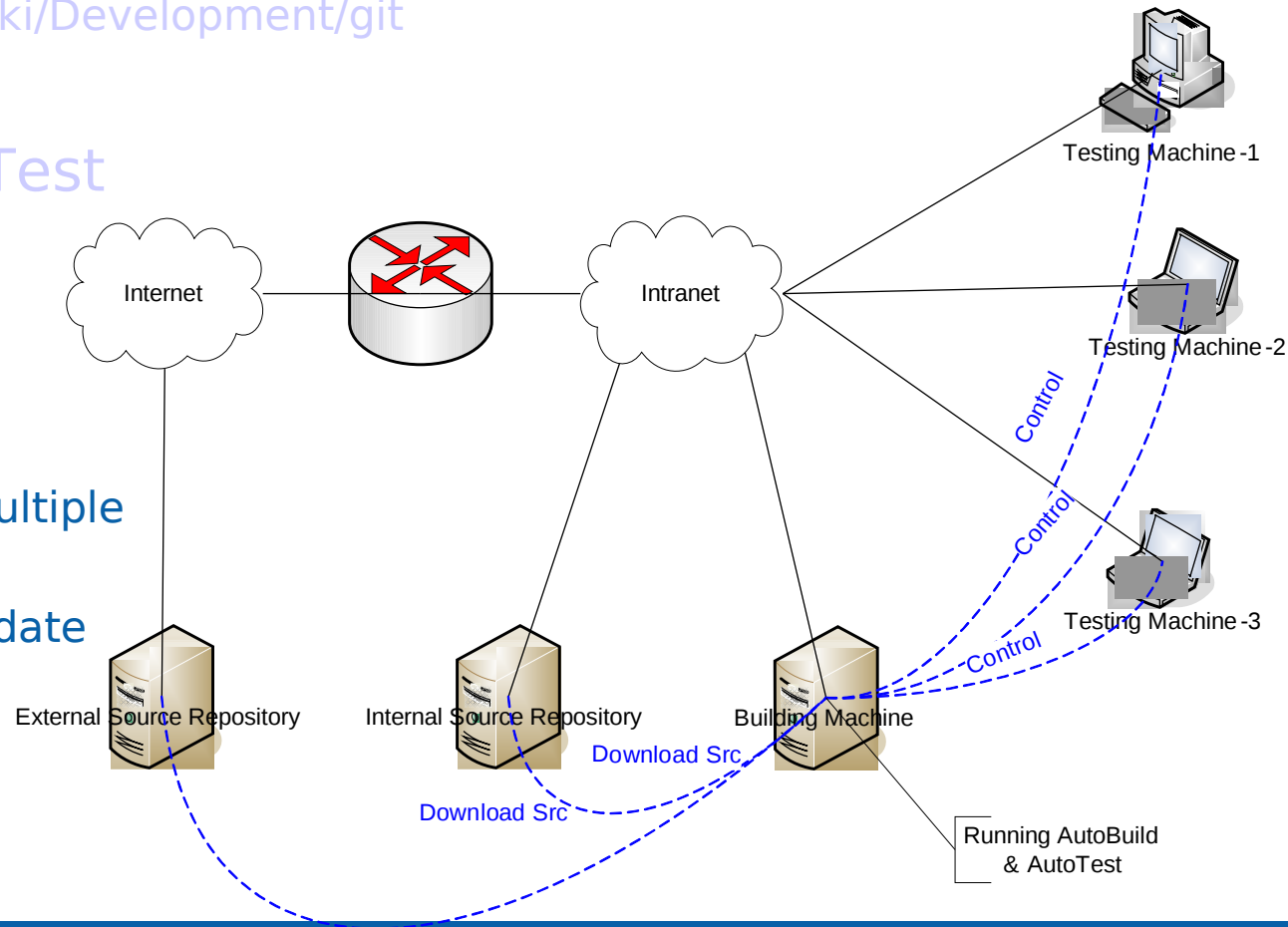
Test step 2: Building

- 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](#)

	P1	P2	P3	pass=Pass	fail=Fail	warn=Warning	nrn=Not Run	nfin=Not Finished	nspt=Not Support	skip=Not Applicable	subcases
All											
Build Status											
Xf86_video_intel											
Xf86_video_intel_stable											
Xorg											
Xserver											
Xserver_stable											
Drm											
Libdrm											
Libdrm_stable											
Drmmodule											
Drmmodule_stable											
Mesa											
Mesa_stable											
Abat											
Rendercheck											
Glean											
Oglconform											
abat											
abat											
rendercheck											
fill											
dcoords											

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
 - 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
- Mailing list
 - Subscribe 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/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