SPICE* Roadmap

*or Spice or spice

Presentation for KVM Forum 2011

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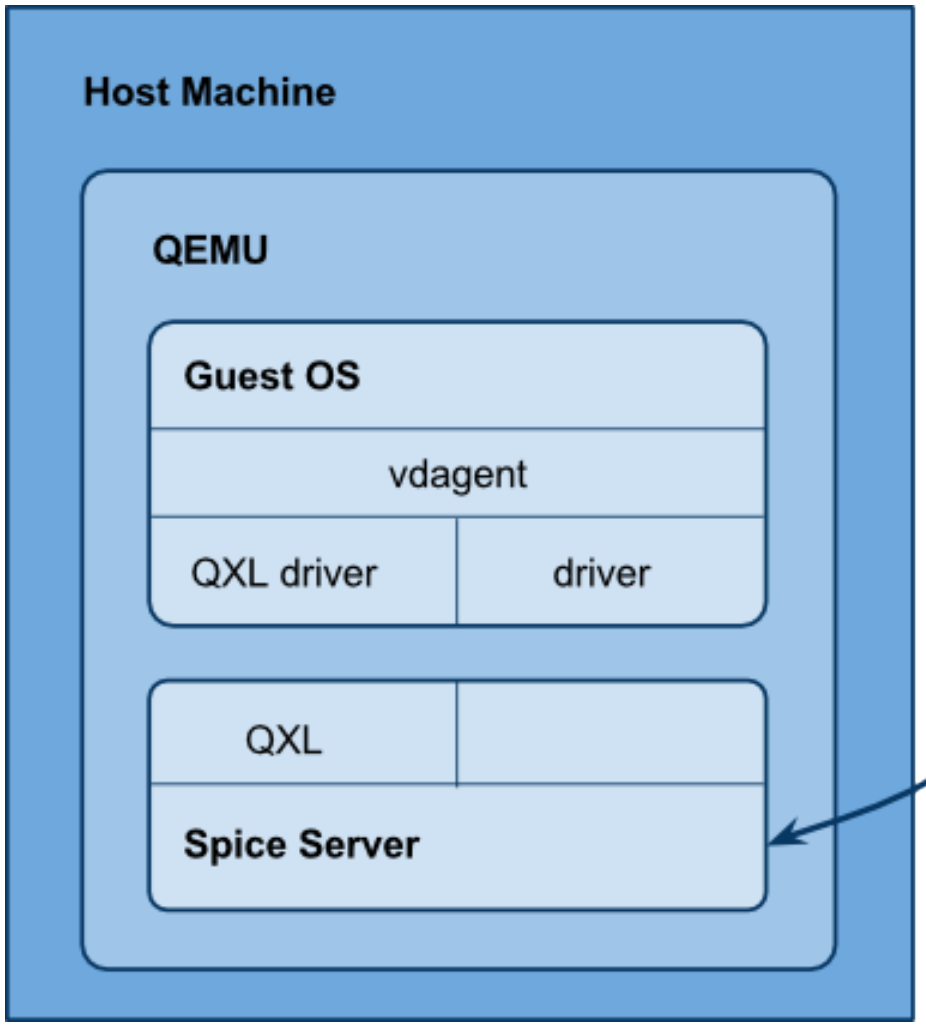
Overview

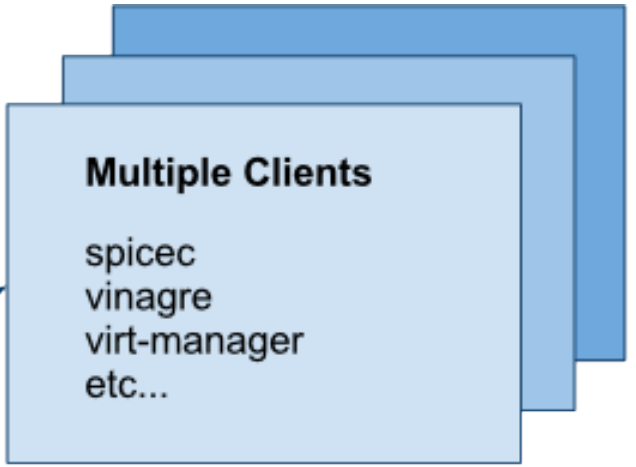
- Demo
- What is Spice
- Architecture
- Why Spice
- New stuff from last year
- Short term plan
- Long term plan

What is Spice?

- An Open Remote Computing / Virtual Desktop Interface protocol
  - Acquired by Red Hat from Qumranet in 2008
  - Relicensed as Free Software and opened in 2010 (presented last forum)
- Free LGPL implementation (@freedesktop.org)
  - http://cgit.freedesktop.org/spice/
  - spice-devel@freedesktop.org

Architecture





Host Packages

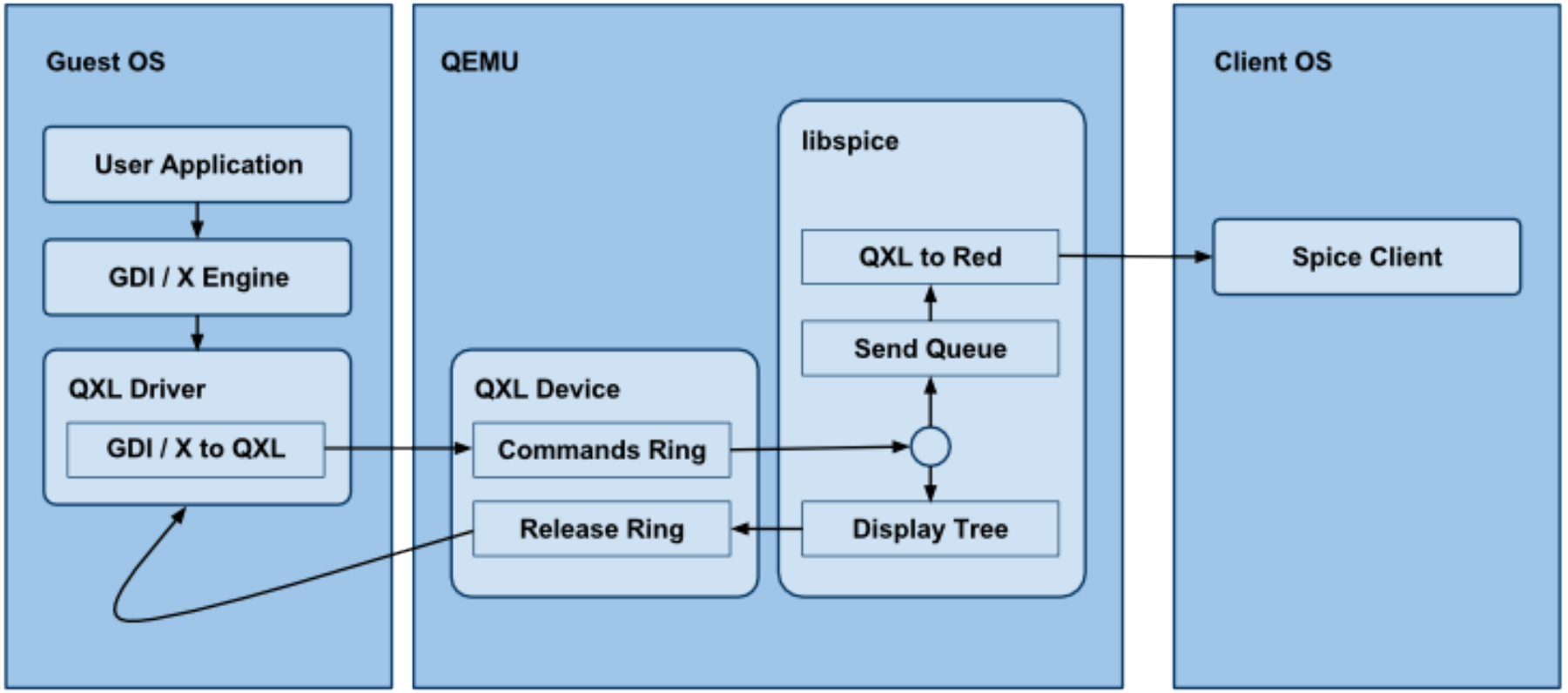
spice-server
qemu-kvm
libcacard
celt051
etc...

Guest Packages

xorg-x11-drv-qxl
spice-vdagent

vioserial-win
vdagent-win
qxl-win

QXL graphics workflow



Architecture - Recap

- QXL Paravirtual graphics device
  - Passes drawing commands (no screen scraping)
  - Fallback to VGA
- Spice server
  - Renders locally if needed
  - Occlusion tree of operations
  - pipe of commands
- Spice protocol
  - Display protocol optimized for low bandwidth usage and host side CPU usage
  - Video and audio special cased
  - Connection between client and host, not guest

Why Spice

- Performance
  - Use para-virtual device => natural API, not screen scraping
  - Minimize guest exits
  - Client side renders (Server if have to)
  - Multiple sockets
  - Display Tree
  - Audio and Video
- Integrated
  - Copy-paste
  - Sound
  - USB
  - Smartcard
  - From boot (full vga emulation)
- Open Source

Changes from 2010

- Wan support
  - bandwidth detection
  - Jpeg (tricky)
  - More compression
  - Guest feature reduction
- Copy paste (Text, images)
- Linux gtk client
  - Spice-gtk shared library, multiple clients
  - Virt-viewer, virt-manager
- Linux driver improvements
  - Reaching for XRANDR next
- Smartcard channel
- Standalone X server (Xspice)
- Use libjpeg-turbo
- Linux agent

Short term

Agenda here, show where we are from the start to finish
(do it manually if I have to)

- USB channel
  - Replace current proprietary solution
  - Isochronous + 2.0
- Multiple client support
  - Like VNC
  - Wishful: Multiple mouse + keyboard focus
- Suspend and Hibernate support for Windows
- Rootless windows / Desktop Integration

Long term - 1

- Spice-space.org/page/PlannedFeatures
- 3D Support
  - Better look
  - Performance benefits
  - You want to be involved? Come see me
- Video acceleration
  - Guest OS level API's
    - Gallium helps?
  - Gstreamer

Long Term - 2

- Testing infrastructure – autotest
- Agent consolidation
- Performance
  - No rate limiting
  - Better compression
  - Surfaces introduced, but not used correctly
- Flash passthrough
- More clients (android, mac)

Long Term - Discuss-able

- Virtio rewrite?
  - Support more architectures
  - Less driver work (but graphics is different)
- Use glib?
  - Remove NIH event loops, gain debugging, easy scriptability, gtk backend?
- Javascript client
  - Fabrice beat us to it
- Erlang (or pick your language)?
  - Really!

Questions?

Thanks for Listening!

<Url to slide>

Main Spice pain points

- No 3D support
  - Speaking of natural API
- No Automated testing
  - Except WHQL..
  - Performance regressions
  - Just regressions
- No single user experience
  - Was always part of RHEV-M