Support oVirt on Ubuntu

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Agenda

oVirt

- Why Ubuntu?
- Our focus and status
- Support VDSM on Ubuntu
- Support oVirt Guest Agent on Ubuntu
- Support Spice-XPI on Ubuntu
- Q&A

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- **Why Ubuntu?**
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Why Ubuntu?

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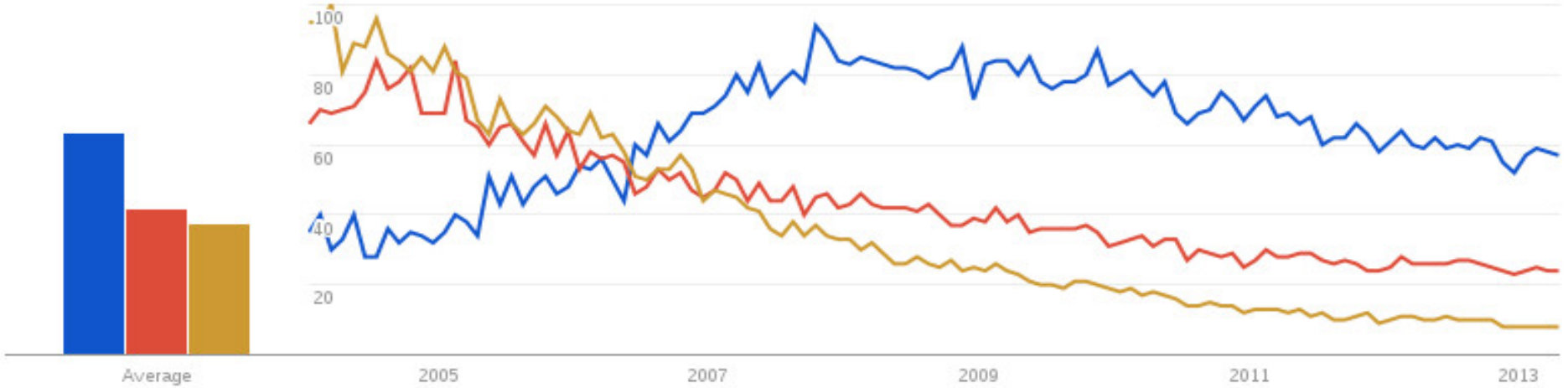
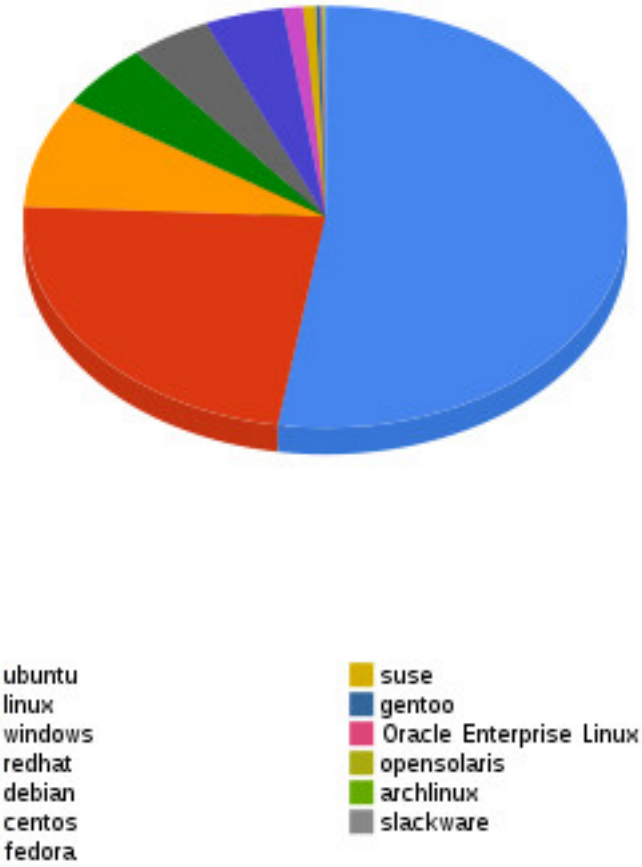
- Google Trends
  - Blue: Linux Debian Server + Linux Ubuntu Server
  - Red: Linux Red Hat Server + Linux Fedora Server + Linux CentOS Server
  - Yellow: Linux Slackware Server + Linux SUSE Server



- Trends data do not necessary mean Ubuntu is a better server distribution or gets more market share on servers, but it means that Ubuntu is really popular and is a big Linux player.

Why Ubuntu? - Benefit to oVirt

- Ubuntu is also popular as a guest OS in cloud (Link)



- Benefit to oVirt:
- Attract Ubuntu users
- Attract developers works on Ubuntu
- Make oVirt easier to deploy for novice
- Optimize user experience of Ubuntu guests
- Make oVirt easier to run on other systems
  - SUSE, Debian, ...
- Involve the Debian/Ubuntu community
- Improve oVirt community diversity

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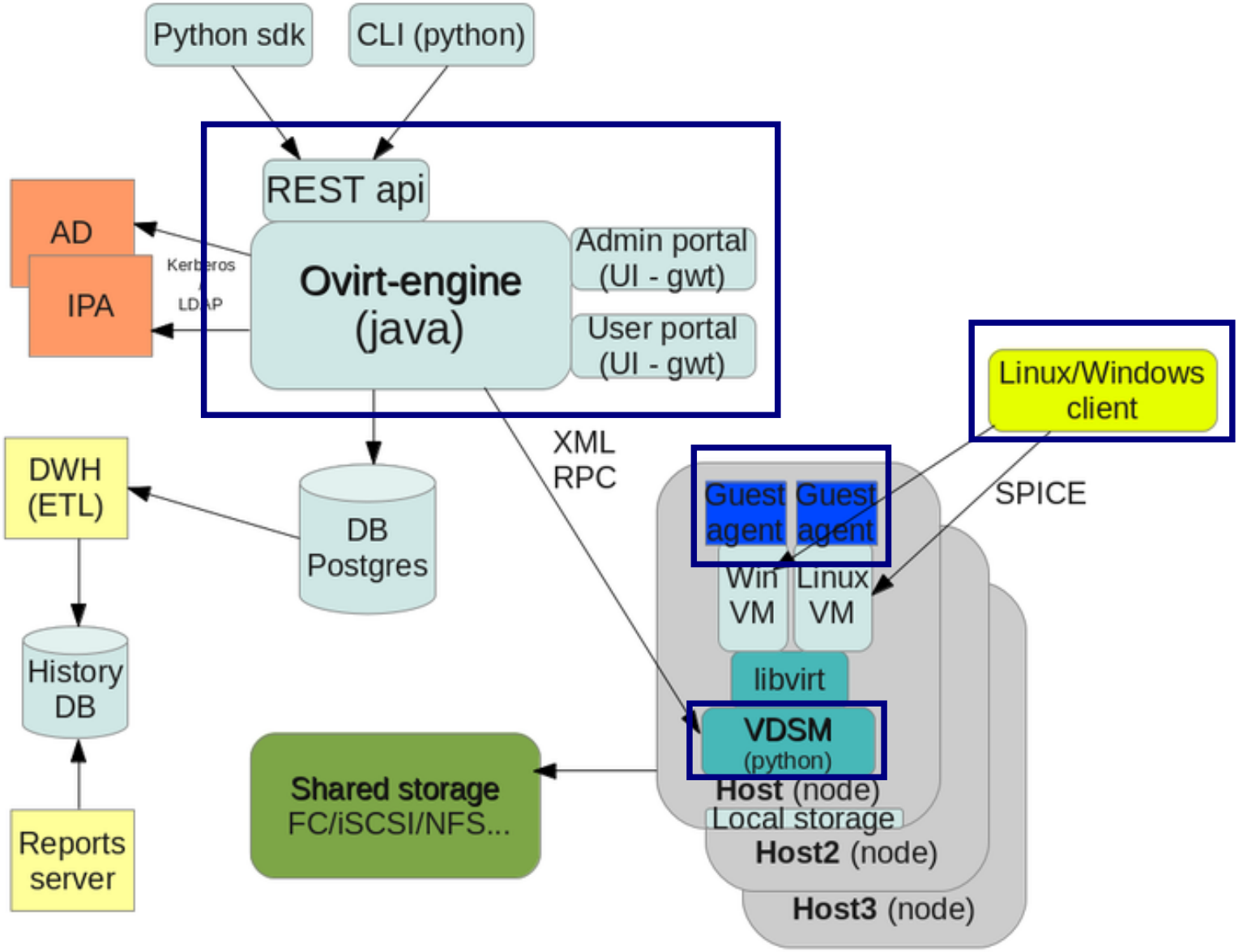
Our Focus and Status - Overview



Our Focus and Status - Detail

- Targeted Ubuntu Release: 12.10 and 13.04
- VDSM
  - Build and install manually with hacks.
  - Pass most unit and functional tests (VM, NFS, iSCSI, LocalFS, GlusterFS). Upstream patches under review.
  - Add Ubuntu host to oVirt Engine with hacks.
- oVirt Guest Agent
  - Build and install manually with hacks.
  - Basic features are OK. Single Sign On does not work yet.
- Spice
  - Spice client in Ubuntu works well.
  - Spice-XPI
    - Build on Fedora and install on Ubuntu.

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Support VDSM on Ubuntu - Overview

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- Storage
  - LocalFS, NFS, iSCSI, GlusterFS
- VM Life-cycle, Snapshot, Migration
- Network
- Detailed Incompatibilities
  - http://www.ovirt.org/VDSM_on_Ubuntu
- Working snapshot
  - https://github.com/edwardbadboy/vdsm-ubuntu
- Patches under review
  - http://gerrit.ovirt.org/#/q/status:open+project:vdsm+branch:master+topic:ubuntu,n,z

Support VDSM on Ubuntu - Service Management

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- Complexity comes from
  - SysV init script does provide conflicting service declaration. VDSM init script have to shutdown them.
  - No respawn mechanism in SysV init system, VDSM provide its own.
  - Configure and reconfigure libvirt in the VDSM init script.
  - In RHEL6, configure libvirt to use Upstart rather than SysV. This is done in the VDSM init script.
  - Controls other service using Upstart and SysV commands.
  - Different service names, paths and command in Ubuntu.

Support VDSM on Ubuntu - Service Management

- Can not change it too dramatically, otherwise break existing products.
- Proposal
  - Implement an service management utility that covers SysV, Systemd, Upstart. Called by Init script.
    - vdsm-tool service-start XXX
    - Patches merged
  - Implement a vdsm-tool command to configure libvirt using augtool.
    - vdsm-tool reconfigure
  - Distro specific initiate/cleanup operations can be put VDSM hooks.
  - Make the service names configurable.

Support VDSM on Ubuntu - Packaging

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- Complexity comes from
  - Some dependencies (build time) are in configure.ac, some (run time) in vdsm.spec.in .
  - make install can not install VDSM properly, have to run the post install scripts in the vdsm.spec.in .
  - Names of dependency packages are different in different systems.
- Proposal
  - List the common dependencies in configure.ac, then override the default dependencies in respective spec files. The spec files are managed by downstream distribution packagers.
  - Extract the post install actions out of vdsm.spec.in and put them in vdsm-tool, then port them to Ubuntu.

Support VDSM on Ubuntu - Packaging

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- Missing dependencies in Ubuntu
  - sanlock-python and libvirt sanlock plugin
  - mom, sos, policycoreutils-python, vhostmd, python-pthreading, tuned
- Dependencies in Ubuntu aren't new enough
  - sanlock, python-rtslib, M2Crypto
- Proposal
  - Ubuntu should provide all the dependency packages
  - Setup a Jenkins slave and run functional tests on Ubuntu host.

Step by Step - Build and Install VDSM on Ubuntu

- Prerequisites
  - Install Ubuntu server 12.10
    - aptitude install git git-email git-completion git-review git-man git-doc autoconf automake genisoimage gcc gdb make libtool libguestfs-tools policycoreutils sasl2-bin sysv-rc python-parted python-nose pep8 pyflakes python-libvirt python-dev python-ethtool python-pip python-m2crypto python-selinux python-rpm python-libguestfs selinux-utils fence-agents ntp iproute nfs-server nfs-client lvm2 e2fsprogs open-iscsi psmisc bridge-utils dosfstools glusterfs-client glusterfs-common multipath-tools libsanlock-dev libsanlock-client sanlock qemu-kvm-spice qemu-kvm qemu-utils python-rtslib libvirt0 libvirt-bin gnutls-bin augeas-tools
    - pip install pthreading rtslib-fb ; sudo add-apt-repository ppa:debugmonkeys/sosreport ; sudo apt-get update ; sudo apt-get install sosreport
- Build and install sanlock
  - Uninstall existing sanlock and install libaio-dev libblkid-dev
  - git clone git://github.com/edwardbadboy/sanlock-ubuntu.git
  - run ubuntuInstall.sh to build and install sanlock.
- Build and install VDSM
  - git clone git://github.com/edwardbadboy/vdsm-ubuntu.git
  - run ubuntuInstall.sh

Step by Step - Build and Install GlusterFS

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- **Alternative 1**: Build and Install GlusterFS from Source
- Uninstall existing glusterfs and install prerequisites
  - apt-get remove 'glusterfs.*'
  - apt-get install build-essential pkg-config 'autoconf.*' 'automake.*' 'make' '.*libtool.*' flex bison libssl-dev libreadline6-dev lvm2 liblvm2-dev libfuse-dev libxml2-dev
- Build and Install from Source
  - wget http://download.gluster.org/pub/gluster/glusterfs/3.4/3.4.0beta1/glusterfs-3.4.0beta1.tar.gz
  - ./autogen.sh && ./configure --prefix=/usr --sysconfdir=/etc --localstatedir=/var –enable-bd-xlator && make && make install
  - update-rc.d glusterd defaults && service glusterd start
- **Alternative 2**: Install from GlusterFS Official PPA
  - Currently GlusterFS packaged in this PPA does not enable XML, but VDSM need this. You can use this PPA once it enables XML support.
- Import the GlusterFS PPA
  - apt-get install software-properties-common
  - add-apt-repository ppa:semiosis/ubuntu-glusterfs-3.4
- Install or Upgrade to Latest GlusterFS
  - apt-get update
  - apt-get install 'glusterfs.*'
  - initctl status glusterfs-server

Step by Step - Setup GlusterFS Testing Volume

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- Backend of the Brick
  - mkdir /testGlusterBrick && chmod 777 /testGlusterBrick
- Start gluster shell
  - gluster> volume create testvol YOUR_HOST_NAME:/testGlusterBrick
  - gluster> volume start testvol
  - gluster> volume set testvol server.allow-insecure on
- Edit /etc/glusterfs/glusterd.vol
  - add "option rpc-auth-allow-insecure on"

Step by Step - Run VDSM Functional Tests on Ubuntu

- Make a dumb NFS export in /etc/exports then start nfs-kernel-server, otherwise the nfs server shutdown automatically when there is nothing to export.
- chmod a+r /boot/vmlinuz-* /boot/initrd.img-*
- Start VDSM service, cd /usr/share/vdsm/tests
- Storage Domain V1 Tests
  - ./run_tests.sh functional/xmlrpcTests.py
- Storage Domain V3 Tests with sanlock
  - Edit /usr/share/vdsm/tests/functional/xmlrpcTests.py, find “def _createStorageDomain”, change “createStorageDomain(..., 0)” to “3” in the function body
- Cover iSCSI domain, NFS domain, LocalFS domain, GlusterFS domain, VM creation with storage. (WIKI)

Step by Step - Add Ubuntu Host to Engine

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- Build and install VDSM on Ubuntu
  - Edit /usr/share/vdsm/dsaversion.py, add 3.2 to supported engine list, restart vdsmd.
- Prerequisites
  - aptitude install iproute dmidecode python-dmidecode openssl m2crypto
  - Edit /etc/hosts add your Engine host name.
  - Enable root: sudo passwd root
- Tuned
  - aptitude install python-decorator python-dbus python-gobject python-pyudev
  - git clone git://github.com/edwardbadboy/tuned-ubuntu.git
  - make install

Step by Step - Add Ubuntu Host to Engine

- Add ovirtmgmt bridge
  - Edit /etc/network/interfaces
  - Comment out the lines like follow

    # auto eth0

    # iface eth0 inet dhcp
  - Add following lines

    auto ovirtmgmt

    iface ovirtmgmt inet dhcp

        bridge_ports eth0

        bridge_stp off
  - service networking restart
  - “brctl show” will list the ovirtmgmt and eth0 is the slave.

Step by Step - Add Ubuntu Host to Engine

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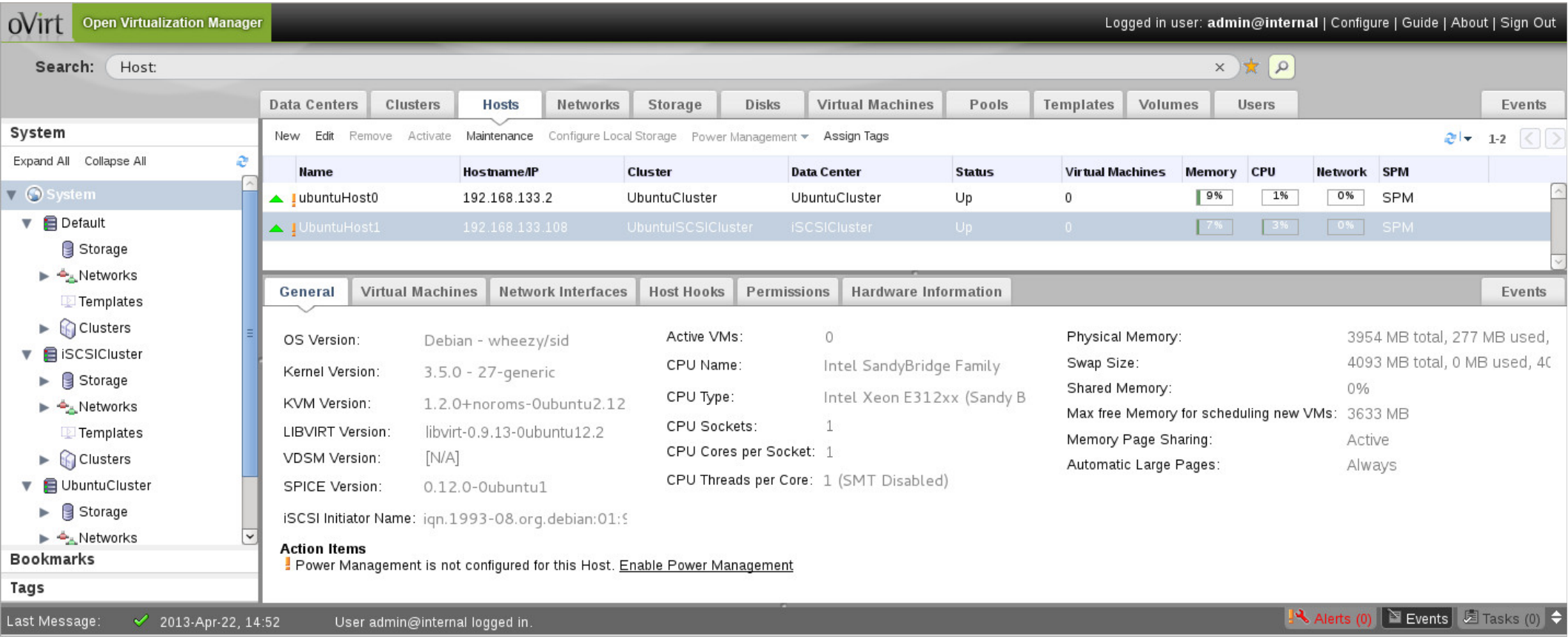
- Unpack the hacked ovirt-host-deploy.
- Provision a cluster, add the Ubuntu host to Engine in the web admin GUI as usual.
- Manage Storage
  - Create storage domain, attach ISO domain as usual.
- Manage VM
  - Create a VM with disk, attach ISO image, and install guest OS as usual.
  - After upload guest OS .iso, add a+r to the uploaded images in the ISO_DOMAIN, otherwise VDSM ignores it. (A Bug ?)
  - Create disk snapshot, live migrate VM

Support VDSM on Ubuntu - Screen Capture

- Two Ubuntu host respectively manage iSCSI and NFS storage domains.



Support VDSM on Ubuntu - Summary

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- VDSM
  - Lots of hacks, will submit long term solution patches to upstream.
- Tuned
  - Modify the Makefile. Add a script to build and install Tuned. Write an Upstart job.
  - Maybe I can submit patches to upstream.
- oVirt-host-deploy
  - Lots of hacks to skip package checking, service management and bridge management.
  - Lots of works to do. Need to add new backend plugins to otopi then port ovirt-host-deploy. Need help from the upstream developers.

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- **Support oVirt Guest Agent on Ubuntu**
- Support Spice-XPI on Ubuntu
- Q&A

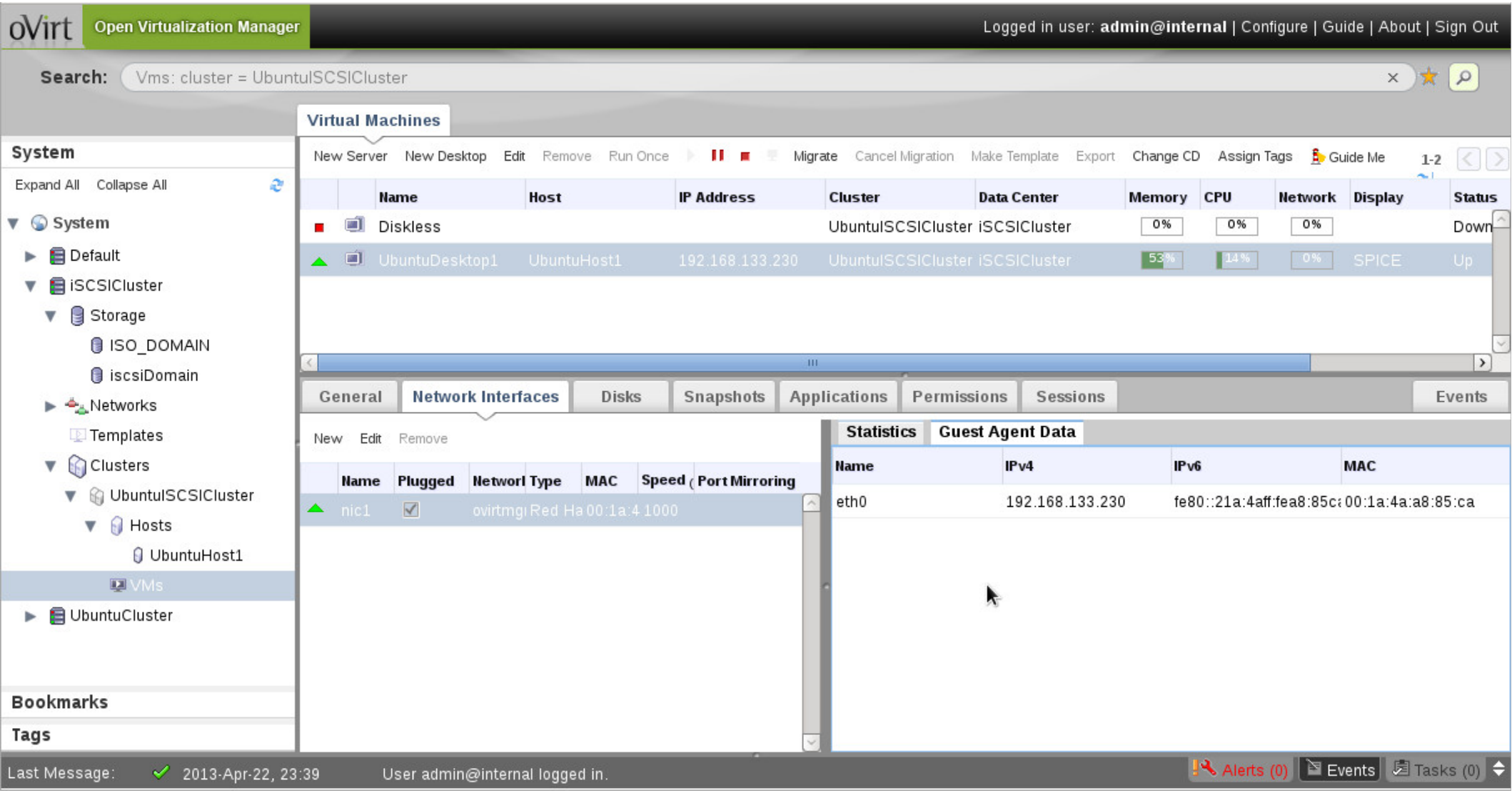
Support oVirt Guest Agent on Ubuntu - Overview

- Guest Information Collecting and Sampling
  - All works.
- Actions
  - Lock screen and shutdown work.
  - Single Sign On: Need to implement a LightDM plugin.
- Notifications
  - Heartbeat, user information work.
- Detailed Status
  - http://www.ovirt.org/Ubuntu/GuestAgent
- Working snapshot
  - https://github.com/edwardbadboy/ovirtagent-ubuntu

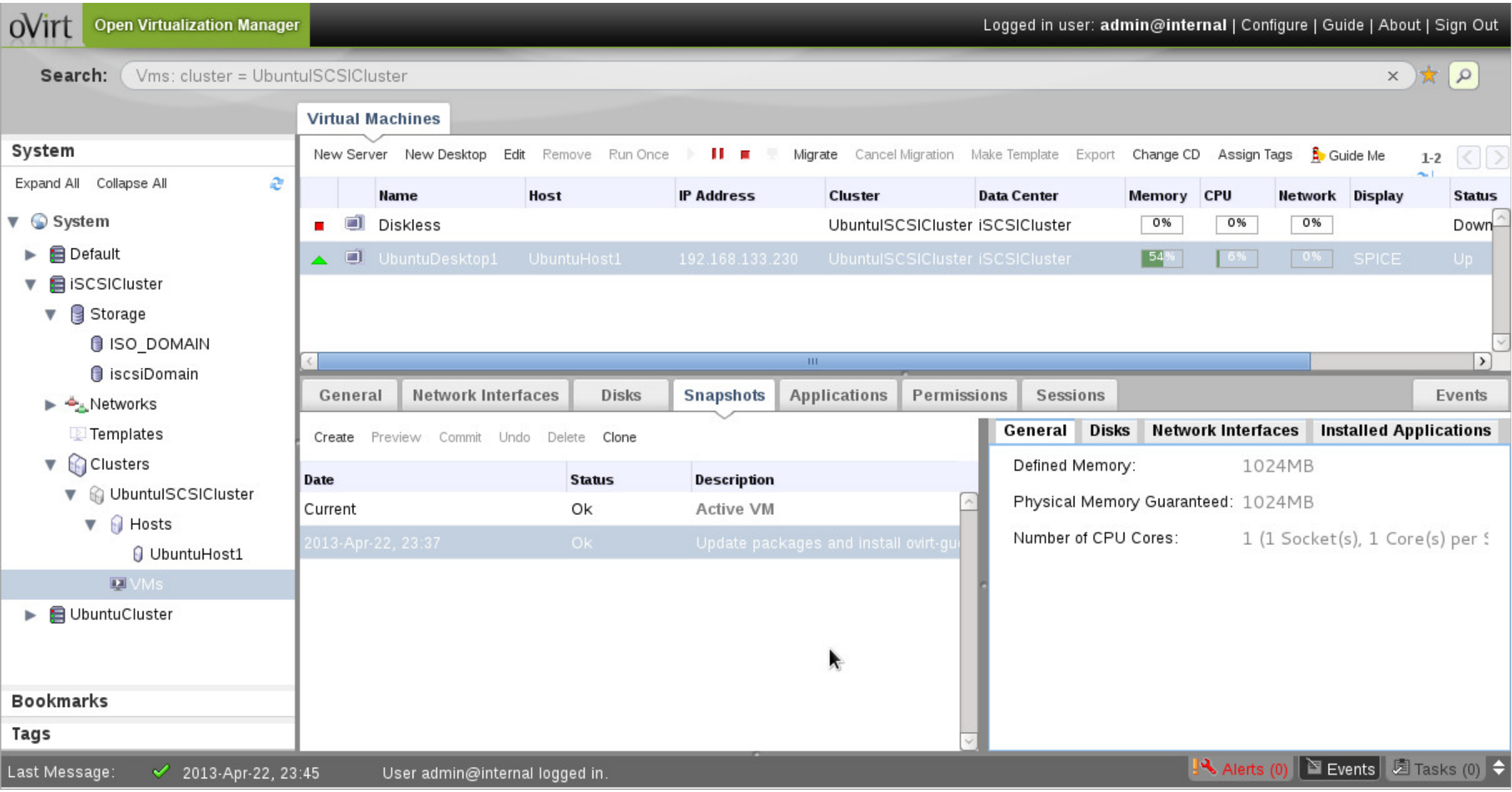
Step by Step - Build and Install oVirt Guest Agent on Ubuntu Guest

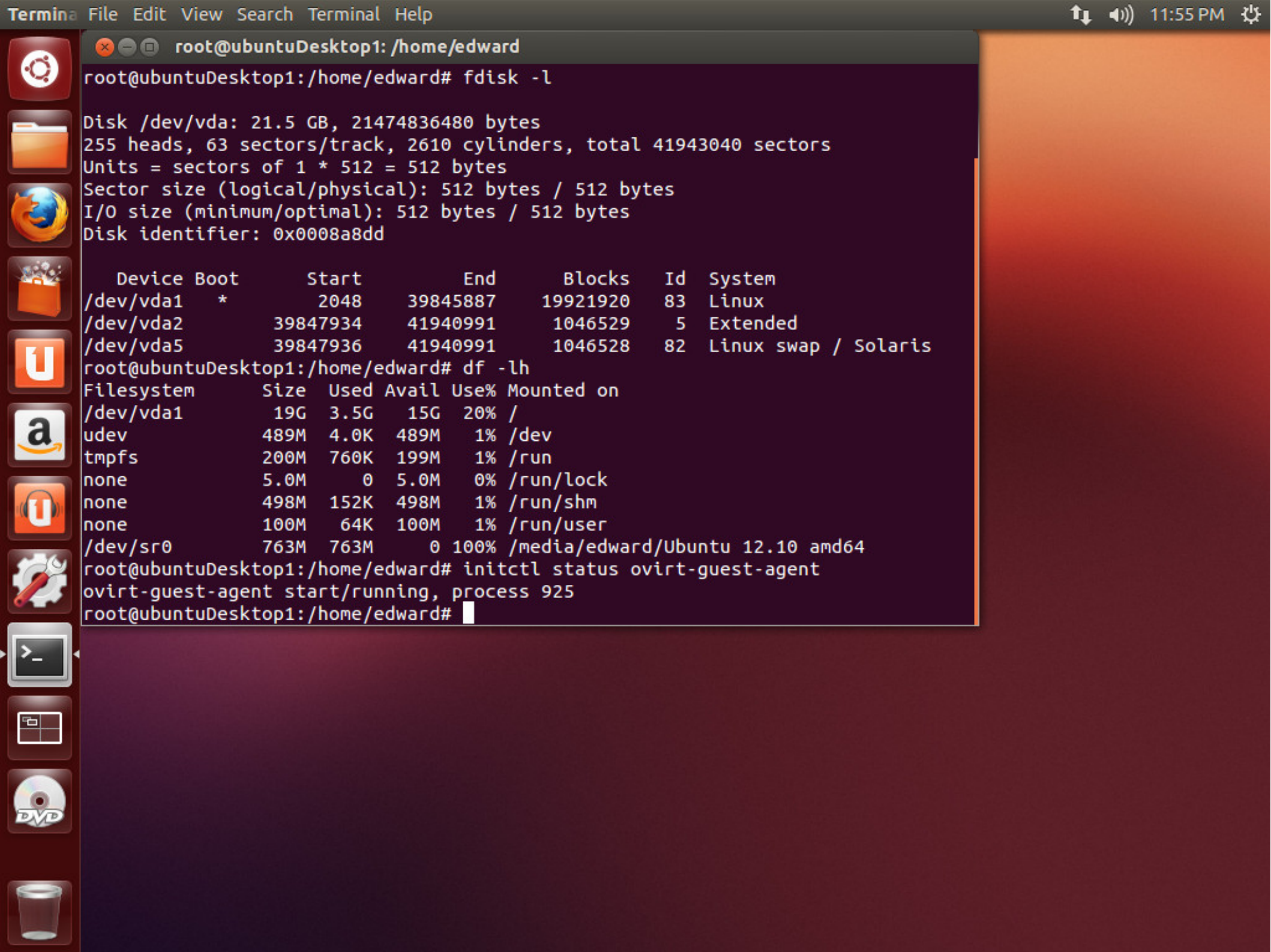
- apt-get install openssh-server screen spice-vdagent
- apt-get install git git-doc git-man git-completion gitk git-gui make gcc libtool autoconf automake libpam-dev pep8 usermode python-ethtool python-dev python-dbus
- git clone git://github.com/edwardbadboy/ovirtagent-ubuntu.git
- git checkout ubuntu
- Run ubuntuInstall.sh to build and install the guest-agent.
- After a few minutes, you can see the guest IP address and login user name from Engine web GUI.

Support oVirt Guest Agent on Ubuntu – Screen Capture



Support oVirt Guest Agent on Ubuntu – Screen Capture




Terminal File Edit View Search Terminal Help
11:55 PM
root@ubuntuDesktop1: /home/edward
root@ubuntuDesktop1:/home/edward# fdisk -l
Disk /dev/vda: 21.5 GB, 21474836480 bytes
255 heads, 63 sectors/track, 2610 cylinders, total 41943040 sectors
Units = sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x0008a8dd
Device Boot Start End Blocks Id System
/dev/vda1 * 2048 39845887 19921920 83 Linux
/dev/vda2 39847934 41940991 1046529 5 Extended
/dev/vda5 39847936 41940991 1046528 82 Linux swap / Solaris
root@ubuntuDesktop1:/home/edward# df -lh
Filesystem Size Used Avail Use% Mounted on
/dev/vda1 19G 3.5G 15G 20% /
udev 489M 4.0K 489M 1% /dev
tmpfs 200M 760K 199M 1% /run
none 5.0M 0 5.0M 0% /run/lock
none 498M 152K 498M 1% /run/shm
none 100M 64K 100M 1% /run/user
/dev/sr0 763M 763M 0 100% /media/edward/Ubuntu 12.10 amd64
root@ubuntuDesktop1:/home/edward# initctl status ovirt-guest-agent
ovirt-guest-agent start/running, process 925
root@ubuntuDesktop1:/home/edward#

Support oVirt Guest Agent on Ubuntu - Summary

- Modify Makefile.am, the install-exec-hook target, to let make install works properly.
- Modify shell scripts, change the interpreter from /bin/sh to /bin/bash.
  - Ubuntu default shell is dash, it's faster than bash but lacks some bashism.
- Write an Upstart job .conf file.
- Write a script to build and install oVirt guest agent.
- Maybe submit upstream patches in future.
- Proposal
  - Some installation actions are in RPM .spec file, need split it out to be made use in .deb spec file.

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Support Spice-XPI on Ubuntu - Overview

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- xulrunner is missing from Ubuntu.
- Download xulrunner-sdk, build and install on Ubuntu
  - A bit tedious
- Build Spice-XPI on Fedora, copy .xpi file to Ubuntu
  - Install .xpi from the Firefox extension dialog.
  - aptitude install spice-client virt-viewer
    - Spice-XPI invokes spicec or spice-xpi-client, which are packaged in spice-client and virt-viewer.

Step by Step – Build and install Spice-XPI on Ubuntu

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- Prerequisites
  - aptitude install build-essential automake autoconf libtool git git-doc git-man git-completion gitk git-gui spice-client virt-viewer libglib2.0-dev libnspr4-dev
- Download xulrunner-sdk
  - cat /usr/lib/firefox/platform.ini to find the milestone version
  - Download xulrunner-sdk that is the same version as firefox milestone version
  - For 13.04
    - wget https://ftp.mozilla.org/pub/mozilla.org/xulrunner/releases/20.0/sdk/xulrunner-20.0.en-US.linux-x86_64.sdk.tar.bz2
  - Extract the contents to /root/src

Step by Step – Build and install Spice-XPI on Ubuntu

- Create pkg-config files manually

```
cat <<EOF > /usr/lib/x86_64-linux-gnu/pkgconfig/libxul-embedding.pc
prefix=/root/src
sdkdir=/root/src/xulrunner-sdk
includedir=/root/src/xulrunner-sdk/include
idldir=/root/src/xulrunner-sdk/idl
libdir=/root/src/xulrunner-sdk/lib

Name: libxul-embedding
Description: Static library for of the Mozilla runtime
Version: 20.0
Requires: nspr >= 4.9.5
Libs: -L\${sdkdir}/lib -lxpcomglue -ldl
Cflags: -DXPCOM_GLUE -I\${includedir}
EOF
```

Step by Step – Build and install Spice-XPI on Ubuntu

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- Create pkg-config files manually

```
cat <<EOF > /usr/lib/x86_64-linux-gnu/pkgconfig/libxul.pc
prefix=/root/src
sdkdir=/root/src/xulrunner-sdk
includedir=/root/src/xulrunner-sdk/include
idldir=/root/src/xulrunner-sdk/idl
libdir=/root/src/xulrunner-sdk/lib

Name: libxul
Description: The Mozilla Runtime and Embedding Engine
Version: 20.0
Requires: nspr >= 4.9.5
Libs: -L\${sdkdir}/lib -lxpcomglue_s -lxul -lxpcom -lmozalloc
Cflags: -I\${includedir}
EOF
```

Step by Step – Build and install Spice-XPI on Ubuntu

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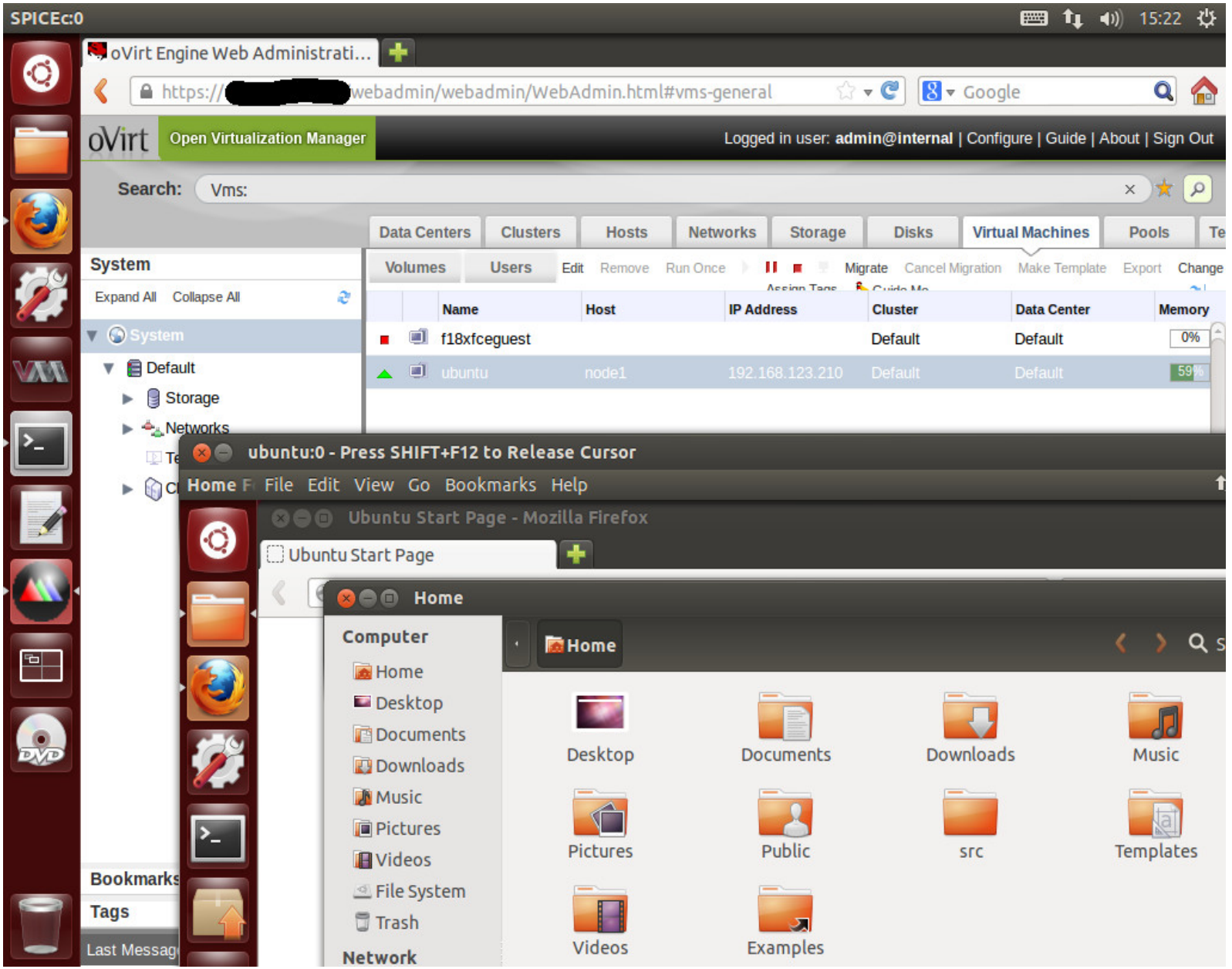
- wget http://spice-space.org/download/releases/spice-xpi-2.8.tar.bz2
- autoreconf -if
- ./configure --prefix=/usr
- make
- make install

Support Spice-XPI on Ubuntu – Screen Capture



Q&A

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- Thanks for attending!
- Thanks reviewers and maintainers!
- About me
  - VDSM developer
  - Contribute bug fixes, functional tests and Ubuntu compatibility patches.
  - My Gerrit Dashboard
    - http://gerrit.ovirt.org/#/dashboard/1000174
  - Github
    - https://github.com/edwardbadboy