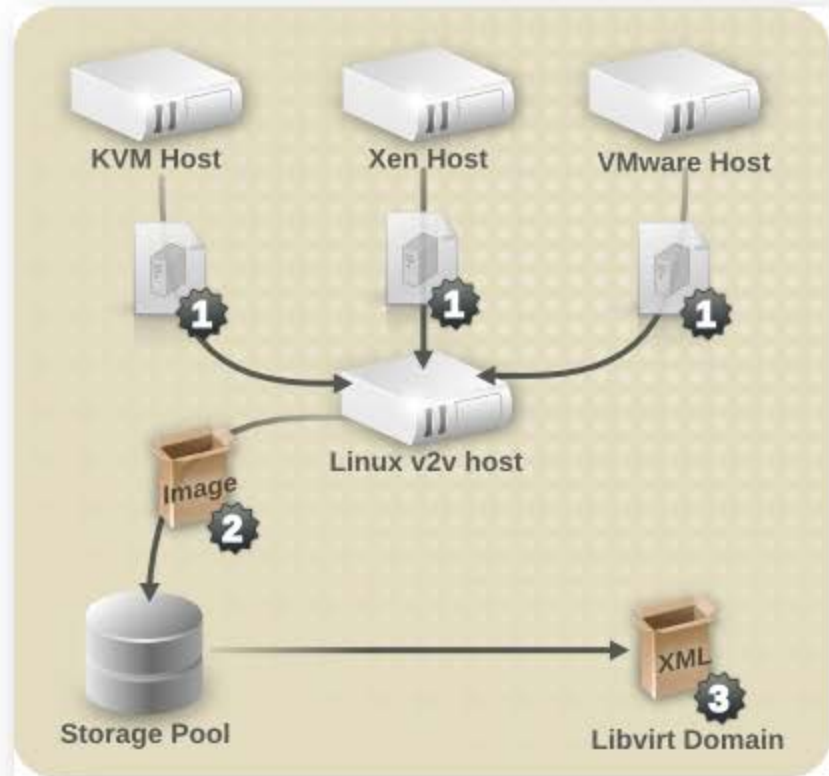
P2V、V2V迁移

概述

- 迁移方案概述
- 准备宿主机
- 物理机→虚拟机 P2V
  - 示例：Windows 2003、Windows 2008R2、CentOS 6.8
  - USB加密狗的问题
- 虚拟机→虚拟机 V2V
  - 示例：Windows 2003、Windows 2008R2、CentOS 6.8
- 导入OVF到KVM环境

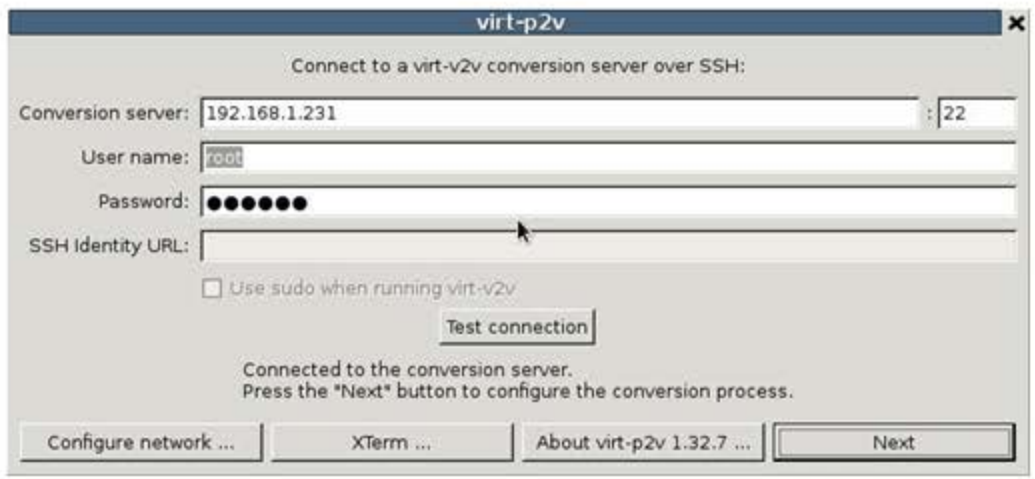
迁移方案概述

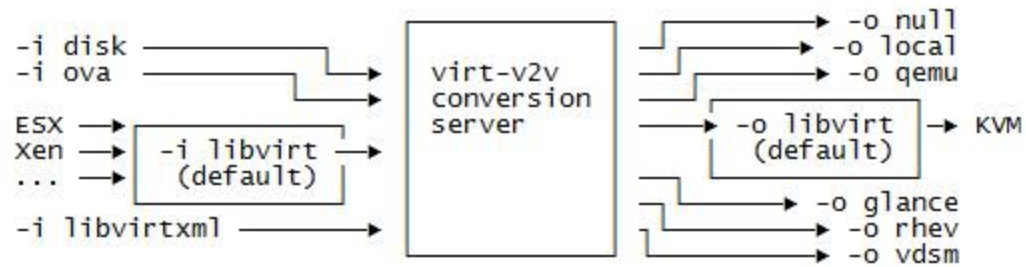
- libguestfs.org
  - virt-p2v 物理机→KVM虚拟机
  - virt-v2v 虚拟机（Xen、VMware）→KVM虚拟机
- 工程师的做法
  - ghost
  - 再生龙



libguestfs.org 作法

- 作者：Matthew Booth和Richard Jones
- Watch Matt在Red Hat Summit 2011上第一次进行的演示。
- 2014年起，是virt-p2v and virt-v2v是libguestfs的一个组成部分。





准备宿主机

- 安装libguestfs-winsupport
- 安装virtio-win

安装libguestfs-winsupport

- 提供了对NTFS的支持
- 如果没有此软件包，在转换使用 NTFS 的虚拟机会失败

```
# yum -y install libguestfs-winsupport

# rpm -qi libguestfs-winsupport
……
Source RPM  : libguestfs-winsupport-7.2-1.el7.src.rpm
……
URL         : http://www.ntfs-3g.org/
Summary     : Add support for Windows guests to virt-v2v and virt-p2v
Description :
This optional package adds support for Windows guests (NTFS) to the virt-v2v and
virt-p2v programs.
```

安装virtio-win

- 为Windows虚拟机提供了准虚拟化的块设备、网络设备的驱动
  - 没有virtio-win的情况下，会自动将虚拟机配置为使用设置IDE接口
  - 有virtio-win的情况下，会自动将虚拟机配置为使用虚拟化 驱动
- RHEL的订阅用户
  - 从RHN中获得virtio-win 软件包
- CentOS用户
  - 使用第三方的源

```
# wget https://fedorapeople.org/groups/virt/virtio-win/virtio-win.repo \
    -O /etc/yum.repos.d/virtio-win.repo

# yum -y install virtio-win
```

物理机→ 虚拟机 P2V

- 启动介质
- 示例：
  - Windows 2003
  - Windows 2008R2
  - CentOS 6.8

启动介质

- 原理及制作方法
  - http://libguestfs.org
- 源代码
  - http://libguestfs.org上提供源代码的tar包和git repository
- 二进制
  - virt-p2v ISO：http://oirase.annexia.org/virt-p2v

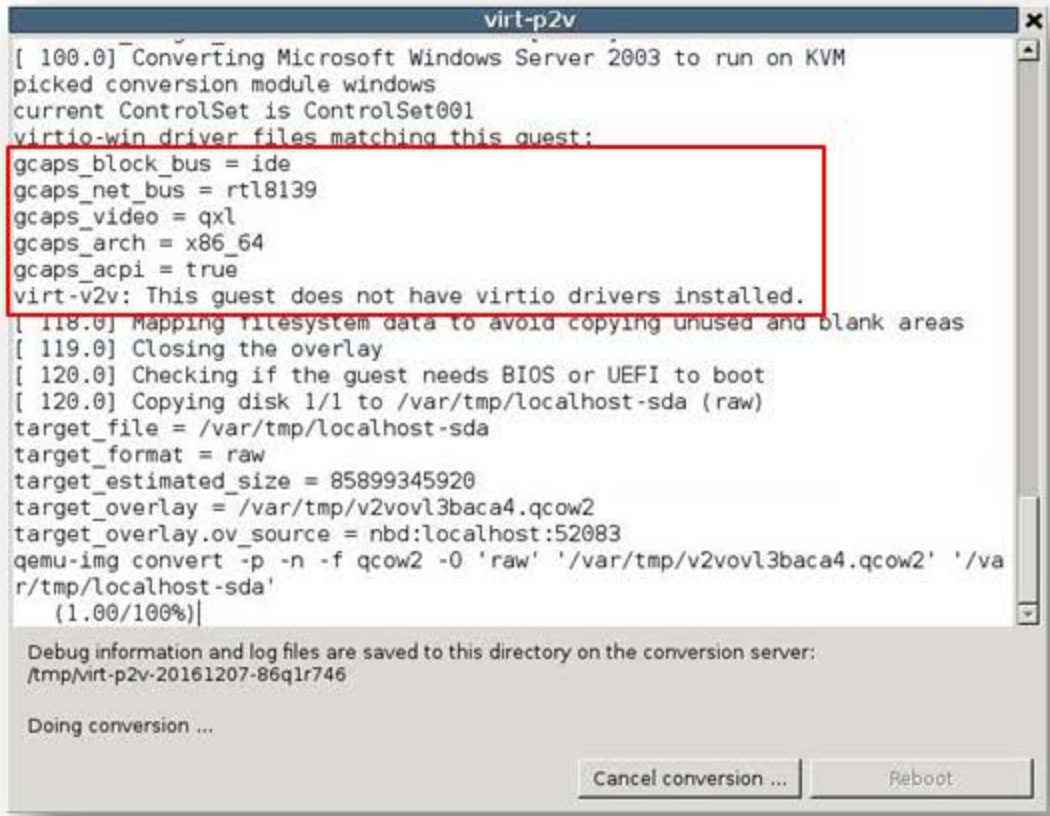
Index of /virt-p2v

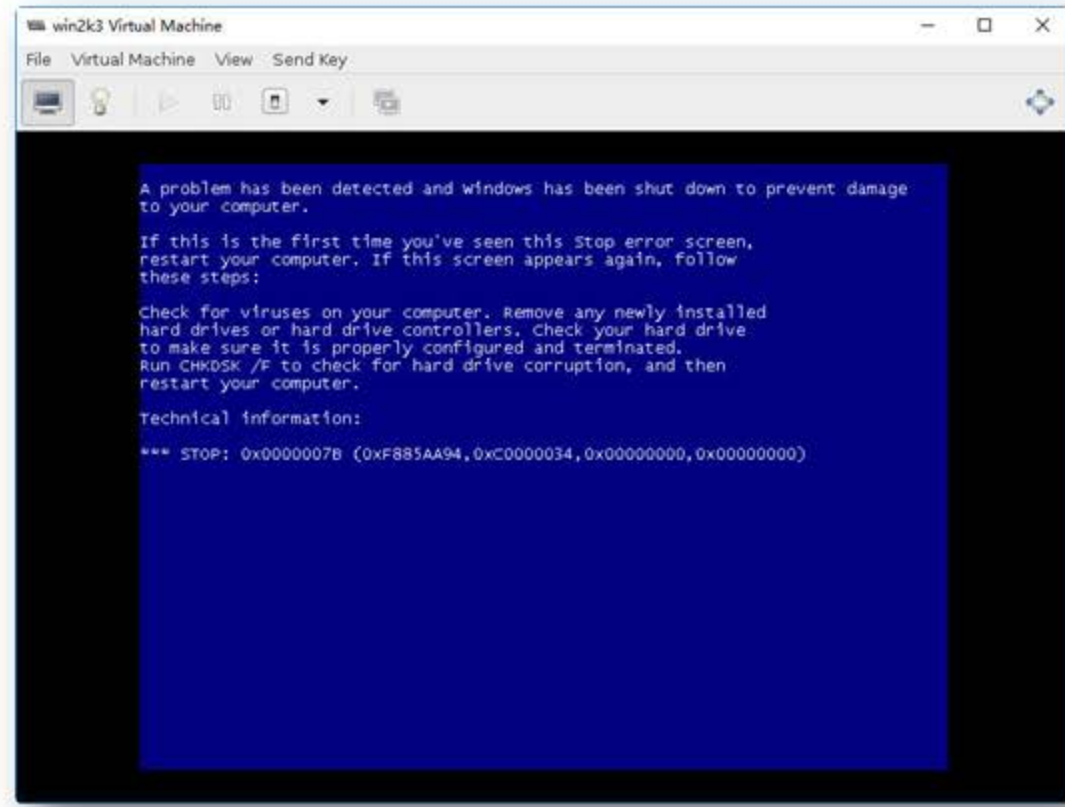
Name	Last modified	Size	Description
Parent Directory		-	
readme.txt	28-May-2016 11:23	565	
virt-p2v-1.32.7-2.el7.iso	09-Sep-2016 09:07	286M	
virt-p2v-1.32.7-2.el7.noarch.rpm	09-Sep-2016 09:08	284M	
virt-p2v-1.32.7-2.el7.src.rpm	09-Sep-2016 09:08	285M	

Apache/2.2.15 (Red Hat) Server at oirase.annexia.org Port 80

P2V示例: Windows 2003 → Local

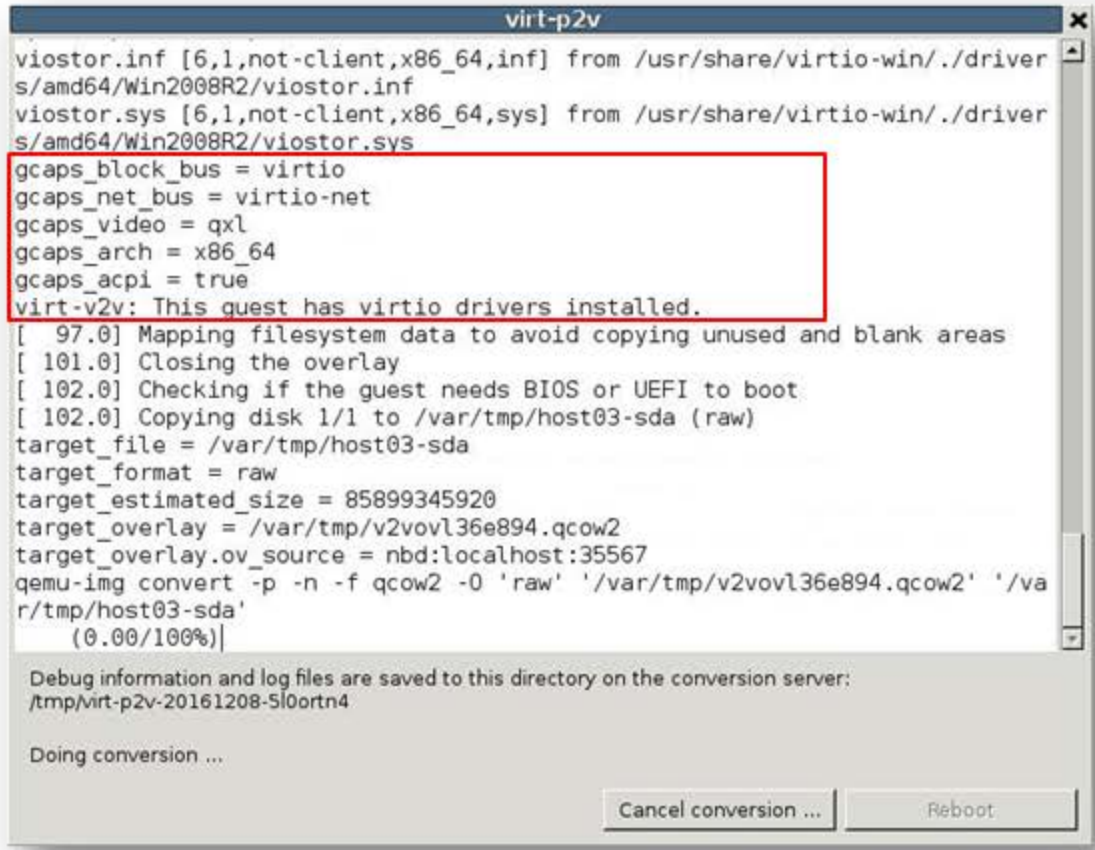
- 目标宿主机上没有安装virtio-win软件包
- 迁移出来的配置中将磁盘接口设置为IDE、网卡为rtl8139



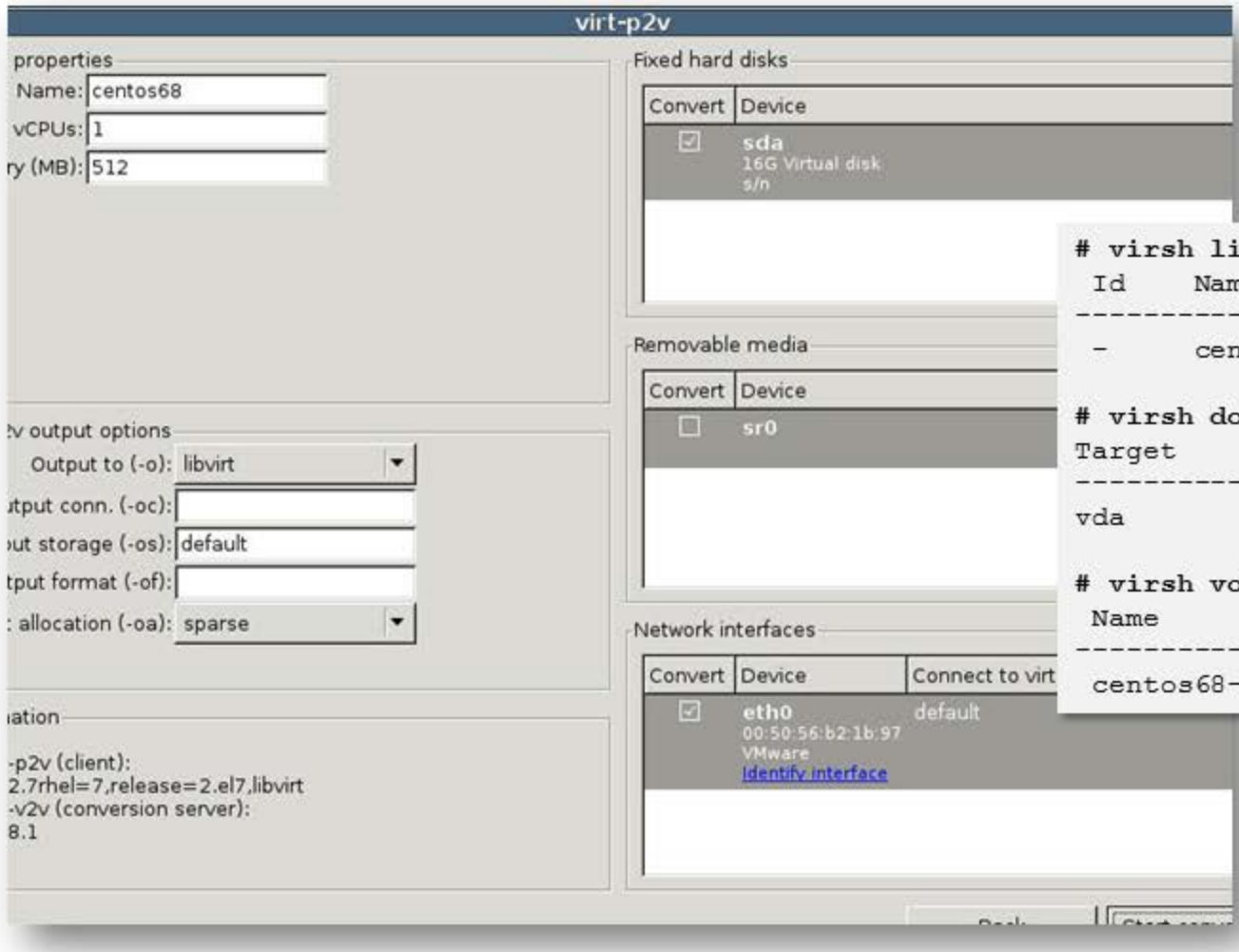


P2V示例: Windows 2008 R2 →Local

- 宿主机有virtio-win，p2v程序会自动将viostor.sys驱动打入到磁盘镜像中，这样Windows系统就可以采用virtio接口。



P2V示例: CentOS 6.8→Libvirt

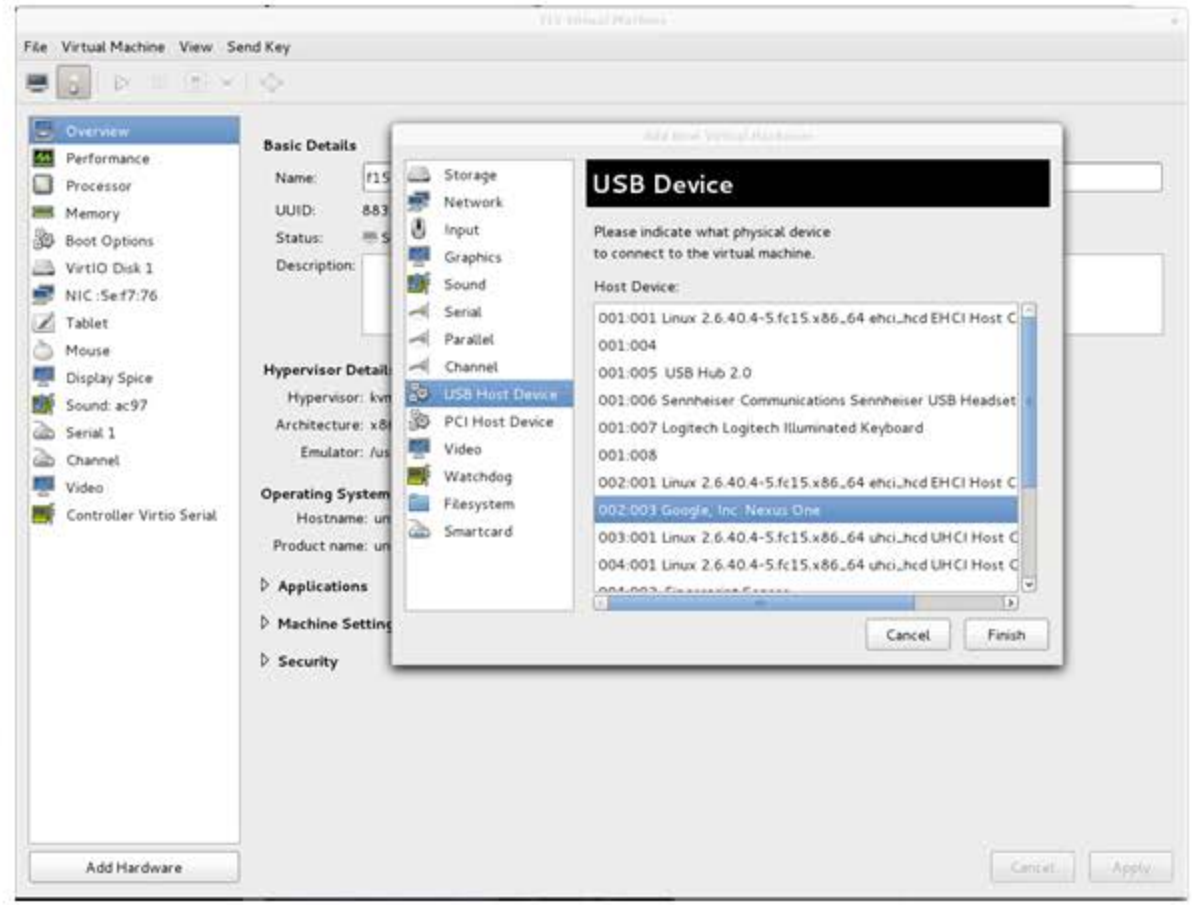



```
# virsh list --all
 Id    Name                                   State
----------------------------------------------------
 -     centos68

# virsh domblklist centos68
Target     Source
------------------------------------------------
vda        centos68-sda

# virsh vol-list default
 Name                 Path
-----------------------------------------------------------
 centos68-sda         /var/lib/libvirt/images/centos68-sda
```

USB加密狗的问题

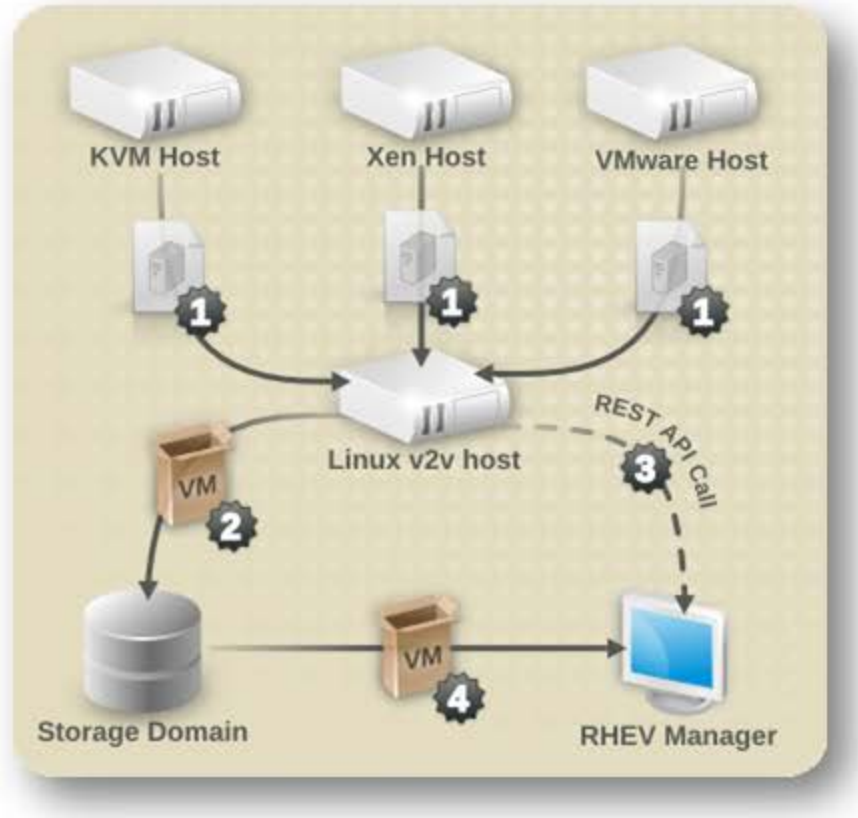
- 使用usb passthrough将宿主机的usb接口直接给虚拟机使用

```
# lsusb
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 003 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 004 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 005 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 006 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 006 Device 002: ID 03f0:1027 DELL Virtual keyboard and mouse
Bus 005 Device 007: ID 08e2:0002

# virsh edit cms
#增加下面的内容并关闭启动虚拟机：
<hostdev mode='subsystem' type='usb' managed='no'>
  <source>
 <vendor id='0x08e2'/>
 <product id='0x0002'/>
 </source>
</hostdev>
```



虚拟机→ 虚拟机 V2V

- VMware ESX/ESX(i) → KVM
- 示例：
  - Windows 2003
  - Windows 2008R2



VMware ESX/ESX(i) → KVM

- 在转换前卸载VMware Tools
- 运行v2v前，需要关闭虚拟机。
- 不支持有快照虚拟机

先测试一下连接

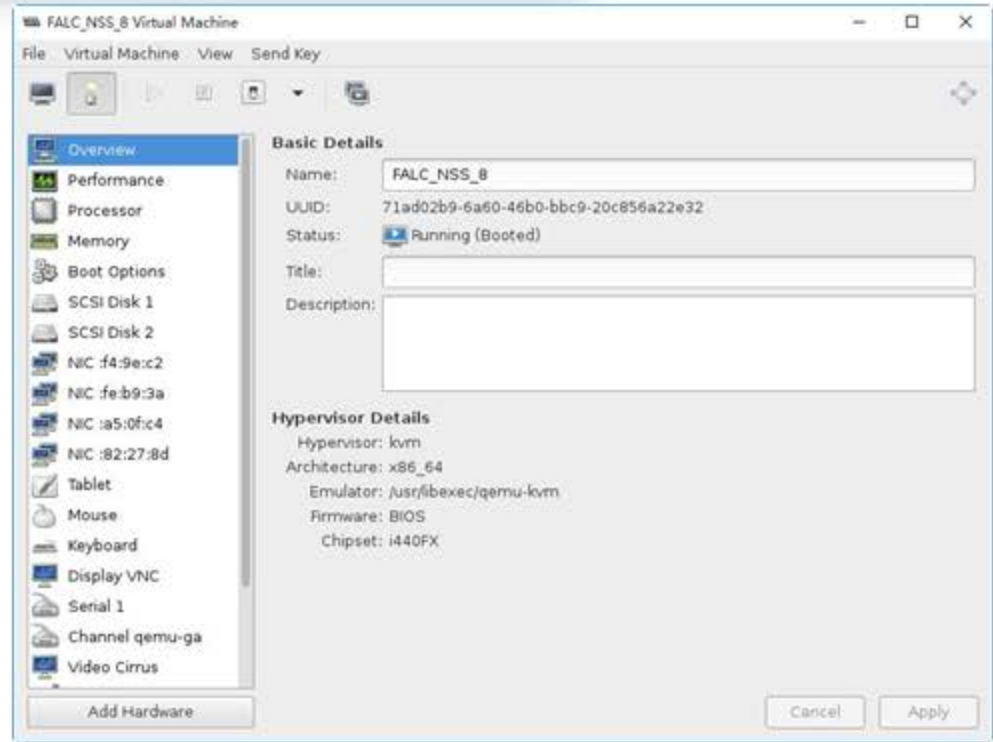
```
[root@labkvm1 ~]# virsh -c 'vpx://192.168.1.20/ZZ/192.168.1.21?no_verify=1' list --all
Enter username for 192.168.1.20 [administrator]: yunhedata\chentao
Enter yunhedata\chentao's password for 192.168.1.20:
 Id    Name                           State
----------------------------------------------------
……
-     CT_Test_CentOS6.81             shut off
 -     TEMP                           shut off
 -     TESTWIN7                       shut off
……
```

示例： Windows 2003、2008R2

- 通过日志可以看到v2v向磁盘文件中添加文件及修改注册表的操作

```
virtio-win driver files matching this guest:
netkvm.cat [6,1,not-client,x86_64,cat] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/netkvm.cat
netkvm.inf [6,1,not-client,x86_64,inf] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/netkvm.inf
netkvm.sys [6,1,not-client,x86_64,sys] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/netkvm.sys
qxl.cat [6,1,not-client,x86_64,cat] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/qxl.cat
qxl.inf [6,1,not-client,x86_64,inf] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/qxl.inf
qxl.sys [6,1,not-client,x86_64,sys] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/qxl.sys
vioscsi.cat [6,1,not-client,x86_64,cat] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/vioscsi.cat
vioscsi.inf [6,1,not-client,x86_64,inf] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/vioscsi.inf
vioscsi.sys [6,1,not-client,x86_64,sys] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/vioscsi.sys
viostor.cat [6,1,not-client,x86_64,cat] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/viostor.cat
viostor.inf [6,1,not-client,x86_64,inf] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/viostor.inf
viostor.sys [6,1,not-client,x86_64,sys] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/viostor.sys
libguestfs: trace: case_sensitive_path "/Windows/system32/drivers/viostor.sys"
guestfsd: main_loop: new request, len 0x54^M
guestfsd: main_loop: proc 197 (case_sensitive_path) took 0.18 secondslibguestfs: trace: case_sensitive_path = "/Windows/System32/drivers/viostor.sys"
libguestfs: trace: write "/Windows/System32/drivers/viostor.sys" "MZ\x90\x00\x03\x00\x00\x00\x04\x00\x00\x00\xff\xff\x00\x00\xb8\x00\x00\x00\x00\x00\x0
libguestfs: trace: internal_write "/Windows/System32/drivers/viostor.sys" "MZ\x90\x00\x03\x00\x00\x00\x04\x00\x00\x00\xff\xff\x00\x00\xb8\x00\x00\x00\x0

libguestfs: trace: hivex_node_get_child 4560 "viostor"
guestfsd: main_loop: new request, len 0x3c^M


libguestfs: trace: write "/Windows/Drivers/VirtIO/viostor.cat" "
```

导入OVF到KVM环境



总结

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