

P2V、V2V迁移

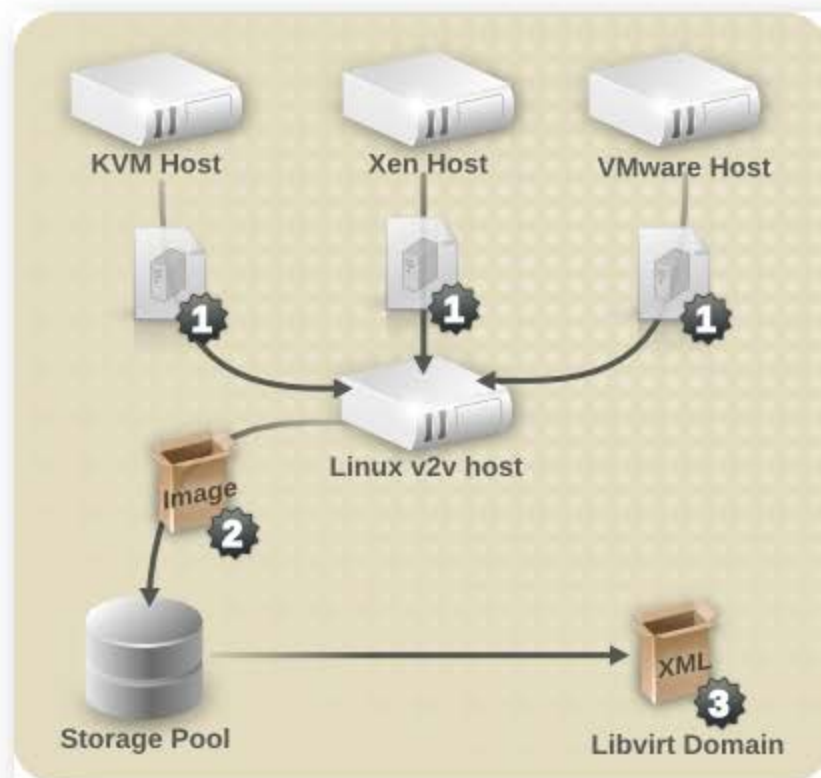


概述

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- ▶ 准备宿主机
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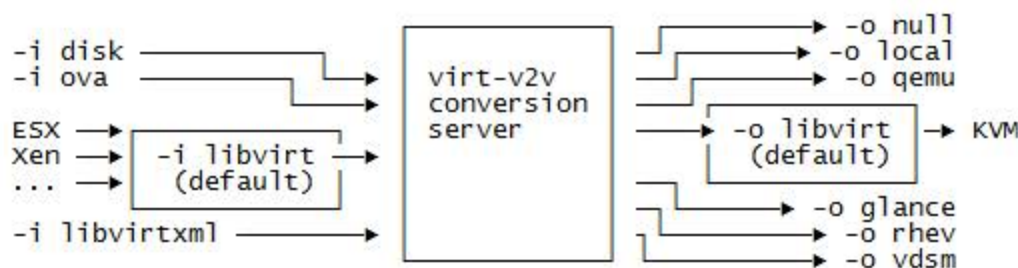
◆ 迁移方案概述

- ▶ 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>



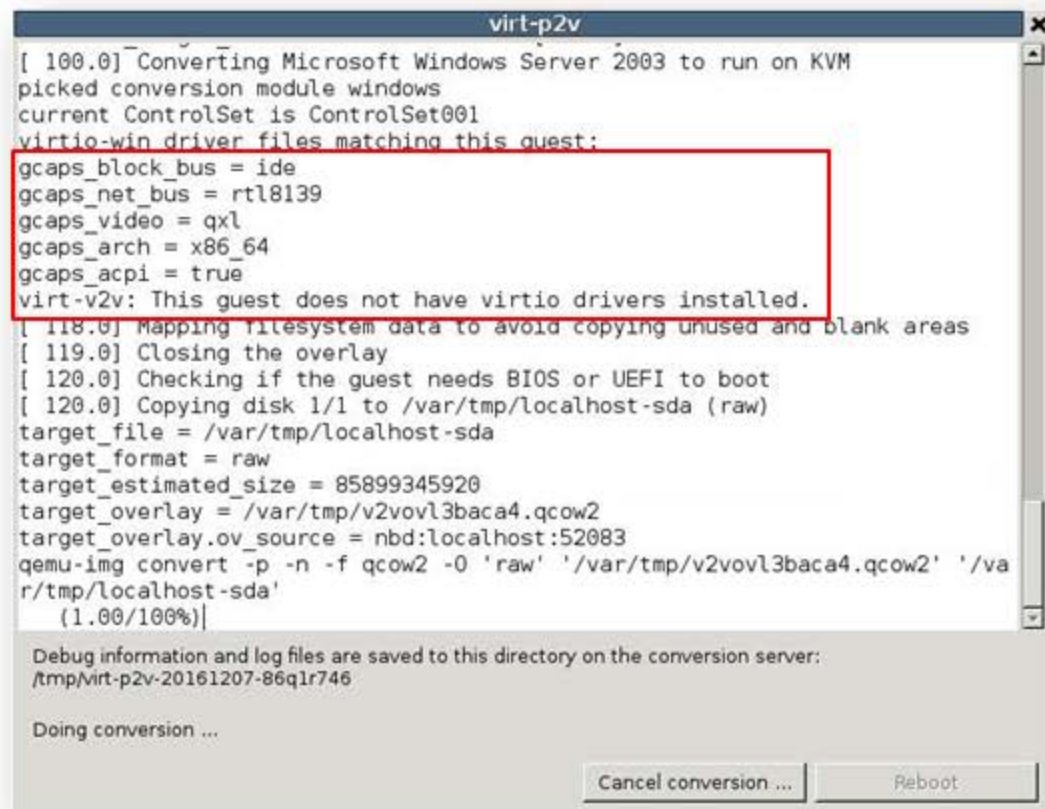
Index of /virt-p2v

| | 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

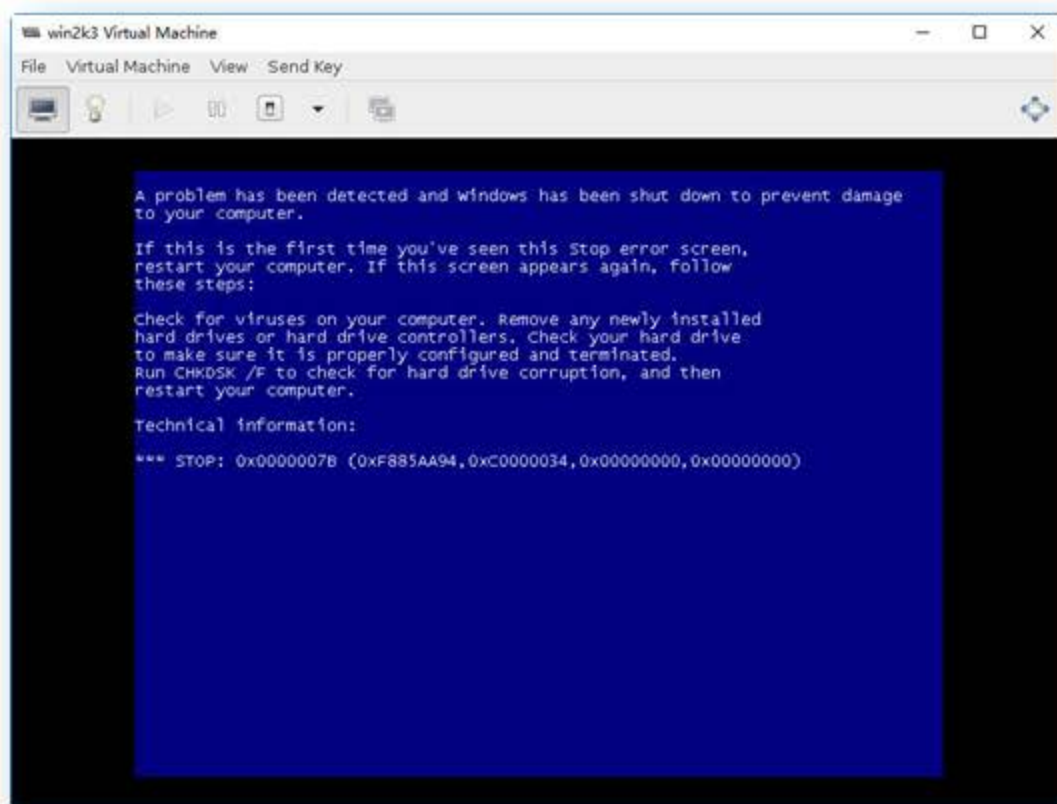
- ▶ 目标宿主主机上没有安装virtio-win软件包
- ▶ 迁移出来的配置中将磁盘接口设置为IDE、网卡为rtl8139



```
virt-p2v
[ 100.0] Converting Microsoft Windows Server 2003 to run on KVM
picked conversion module windows
current ControlSet is ControlSet001
virtio-win driver files matching this guest:
gcaps_block_bus = ide
gcaps_net_bus = rtl8139
gcaps_video = qxl
gcaps_arch = x86_64
gcaps_acpi = true
virt-v2v: This guest does not have virtio drivers installed.
[ 118.0] Mapping filesystem data to avoid copying unused and blank areas
[ 119.0] Closing the overlay
[ 120.0] Checking if the guest needs BIOS or UEFI to boot
[ 120.0] Copying disk 1/1 to /var/tmp/localhost-sda (raw)
target_file = /var/tmp/localhost-sda
target_format = raw
target_estimated_size = 85899345920
target_overlay = /var/tmp/v2vovl3baca4.qcow2
target_overlay.ov_source = nbd:localhost:52083
qemu-img convert -p -n -f qcow2 -O 'raw' '/var/tmp/v2vovl3baca4.qcow2' '/va
r/tmp/localhost-sda'
(1.00/100%)

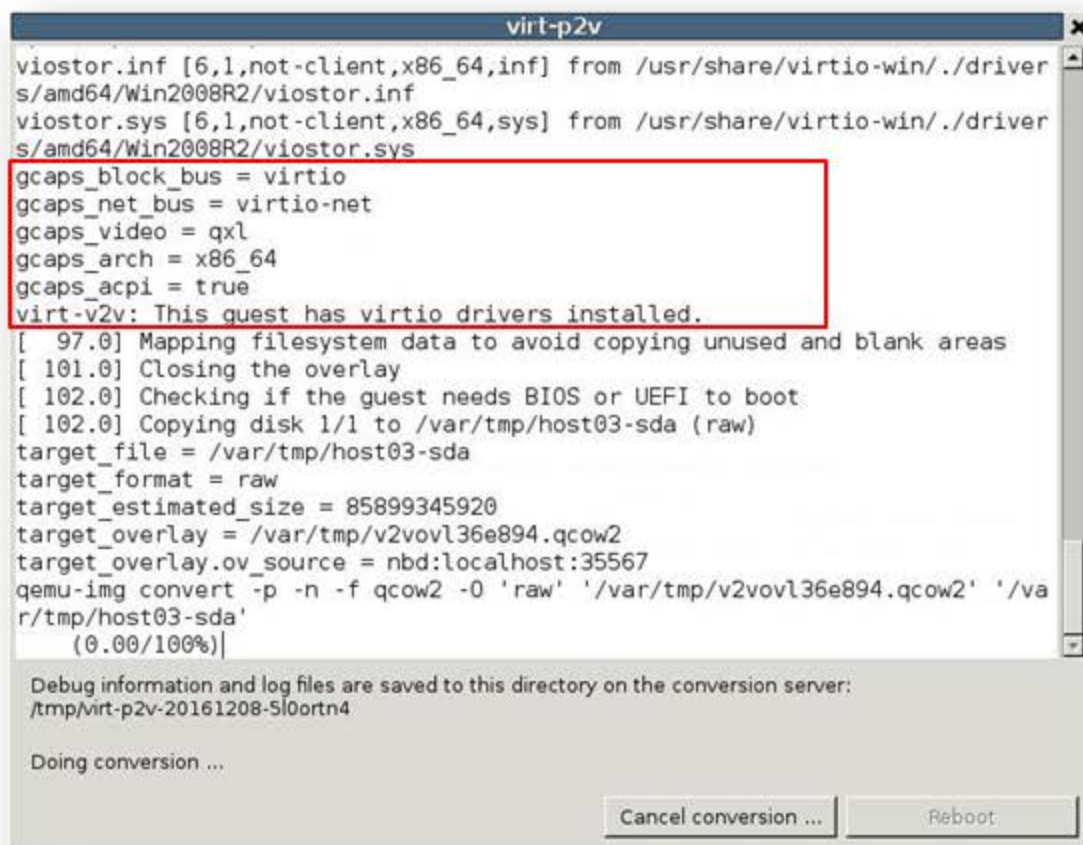
Debug information and log files are saved to this directory on the conversion server:
/tmp/virt-p2v-20161207-86qlr746

Doing conversion ...
```



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。



```
virt-p2v
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
gcaps_block_bus = virtio
gcaps_net_bus = virtio-net
gcaps_video = qxl
gcaps_arch = x86_64
gcaps_acpi = true
virt-v2v: This guest has virtio drivers installed.
[ 97.0] Mapping filesystem data to avoid copying unused and blank areas
[ 101.0] Closing the overlay
[ 102.0] Checking if the guest needs BIOS or UEFI to boot
[ 102.0] Copying disk 1/1 to /var/tmp/host03-sda (raw)
target_file = /var/tmp/host03-sda
target_format = raw
target_estimated_size = 85899345920
target_overlay = /var/tmp/v2vovl36e894.qcow2
target_overlay.ov_source = nbd:localhost:35567
qemu-img convert -p -n -f qcow2 -O 'raw' '/var/tmp/v2vovl36e894.qcow2' '/var/tmp/host03-sda'
(0.00/100%)

Debug information and log files are saved to this directory on the conversion server:
/tmp/virt-p2v-20161208-5l0ortn4

Doing conversion ...

Cancel conversion ... Reboot
```

P2V示例: CentOS 6.8→Libvirt

virt-p2v

properties

Name: centos68

vCPUs: 1

Memory (MB): 512

virt output options

Output to (-o): libvirt

Output conn. (-oc):

Output storage (-os): default

Output format (-of):

Allocation (-oa): sparse

Network interfaces

Fixed hard disks

| Convert | Device |
|-------------------------------------|--------------------------------|
| <input checked="" type="checkbox"/> | sda 16G Virtual disk s/n |

Removable media

| Convert | Device |
|--------------------------|--------|
| <input type="checkbox"/> | sr0 |

Network interfaces

| Convert | Device | Connect to virt |
|-------------------------------------|---|-----------------|
| <input checked="" type="checkbox"/> | eth0 00:50:56:b2:1b:97 VMware Identify interface | default |

Information

-p2v (client):
2.7.rhel=7,release=2.el7,libvirt

-v2v (conversion server):
8.1

```
# 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

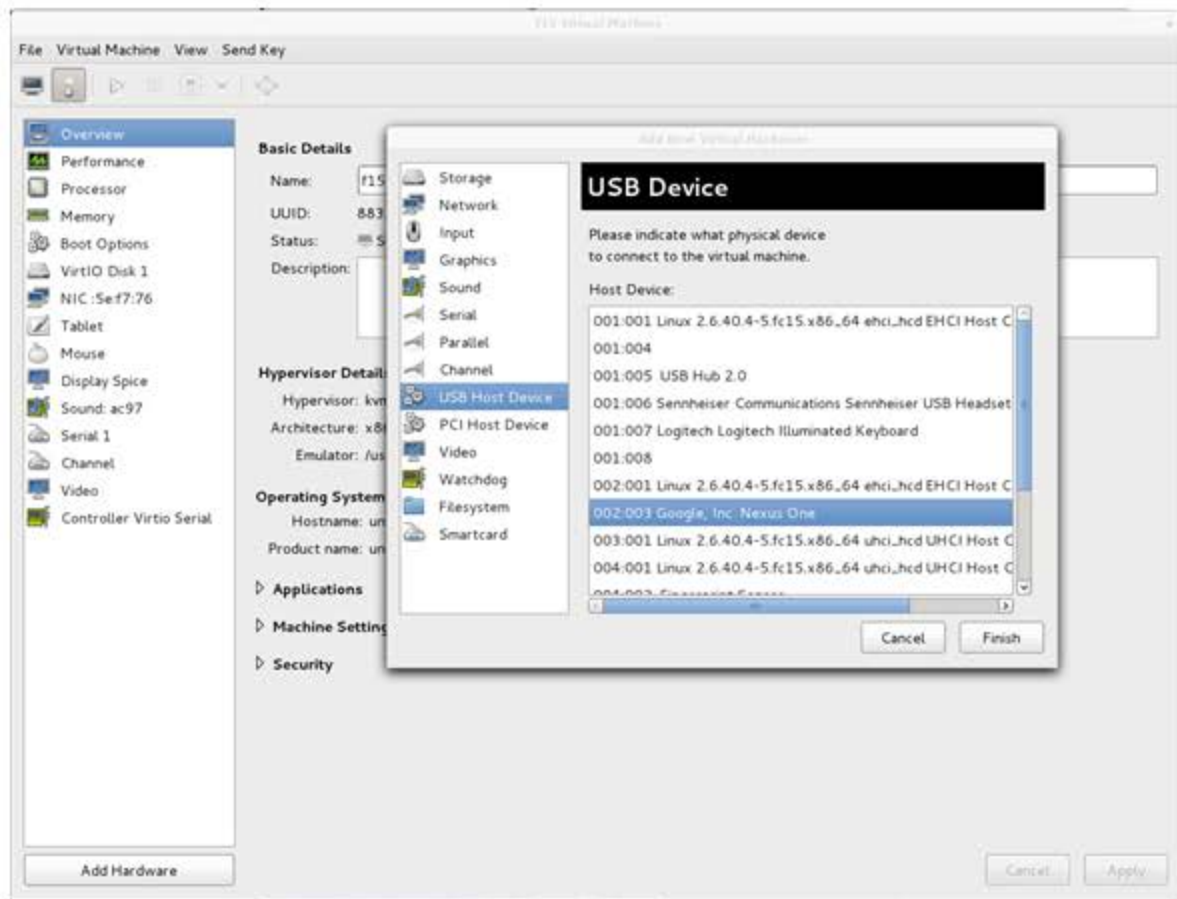
- ▶ 使用usb passthrough将宿主机的usb接口直接给虚拟机使用

```
# 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>
```

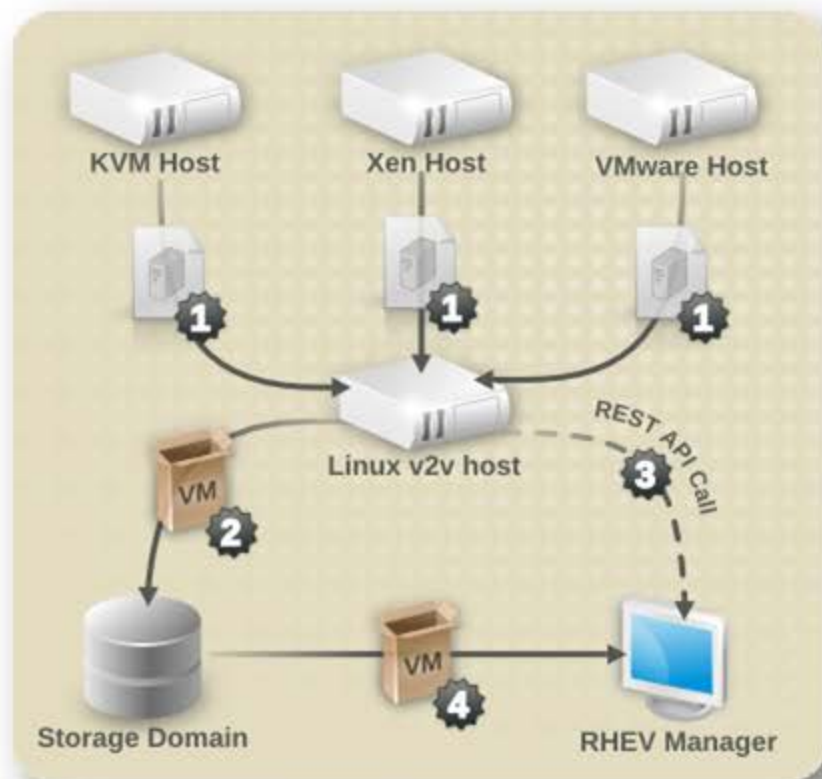


◆ 虚拟机 → 虚拟机 V2V

▶ 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

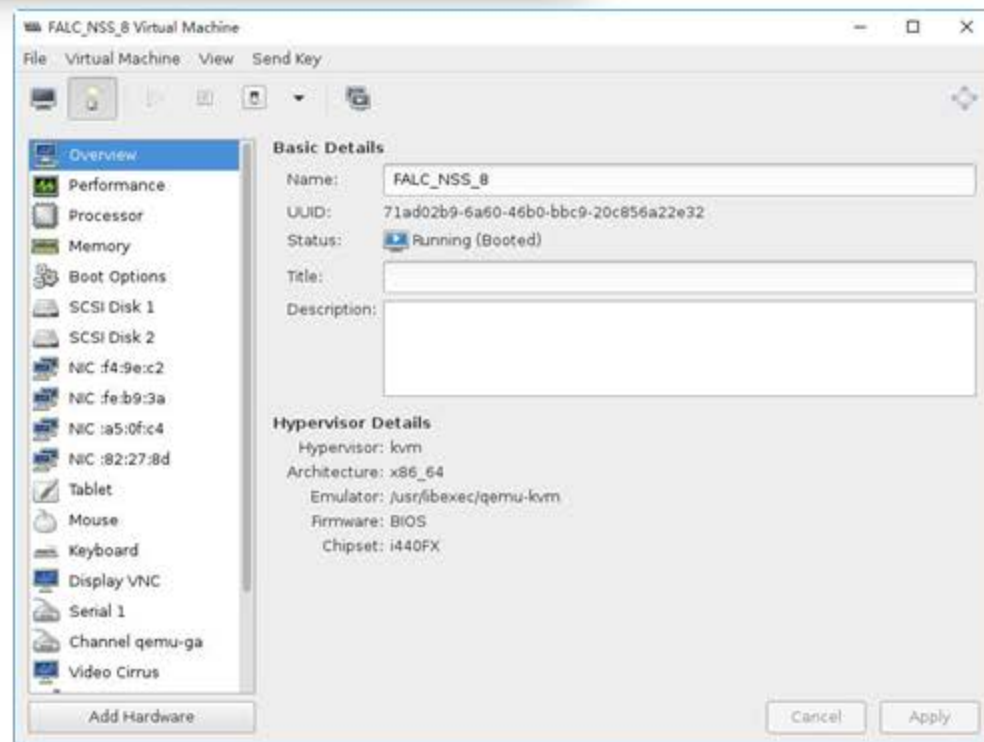
```
virtio-win driver files matching this guest:
netkvm.cat [6,1,not-client,x86_64,cat] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/netkvm.cat
netkvm.inf [6,1,not-client,x86_64,inf] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/netkvm.inf
netkvm.sys [6,1,not-client,x86_64,sys] from /usr/share/virtio-win/./drivers/amd64/Win2008R2/netkvm.sys
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\xff\xff\x00\x00\xb8\x00\x00\x00\x00\x00"
libguestfs: trace: internal_write "/Windows/System32/drivers/viostor.sys" "MZ\x90\x00\x03\x00\x00\x00\x04\x00\x00\xff\xff\x00\x00\xb8\x00\x00\x00\x00\x00"

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

| 名称 | 修改日期 | 类型 | 大小 |
|-------------------------------|---------------|---------------|--------------|
| FS6U5-NSSVA-800-MK.mf | 2015/5/2 0:14 | MF 文件 | 1 KB |
| FS6U5-NSSVA-800-MK.ovf | 2015/5/2 0:14 | 开放虚拟化格式程序包 | 33 KB |
| FS6U5-NSSVA-800-MK-disk1.vmdk | 2015/5/2 0:09 | VMware 虚拟磁盘文件 | 1,339,020... |
| FS6U5-NSSVA-800-MK-disk2.vmdk | 2015/5/2 0:10 | VMware 虚拟磁盘文件 | 680 KB |



总结

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