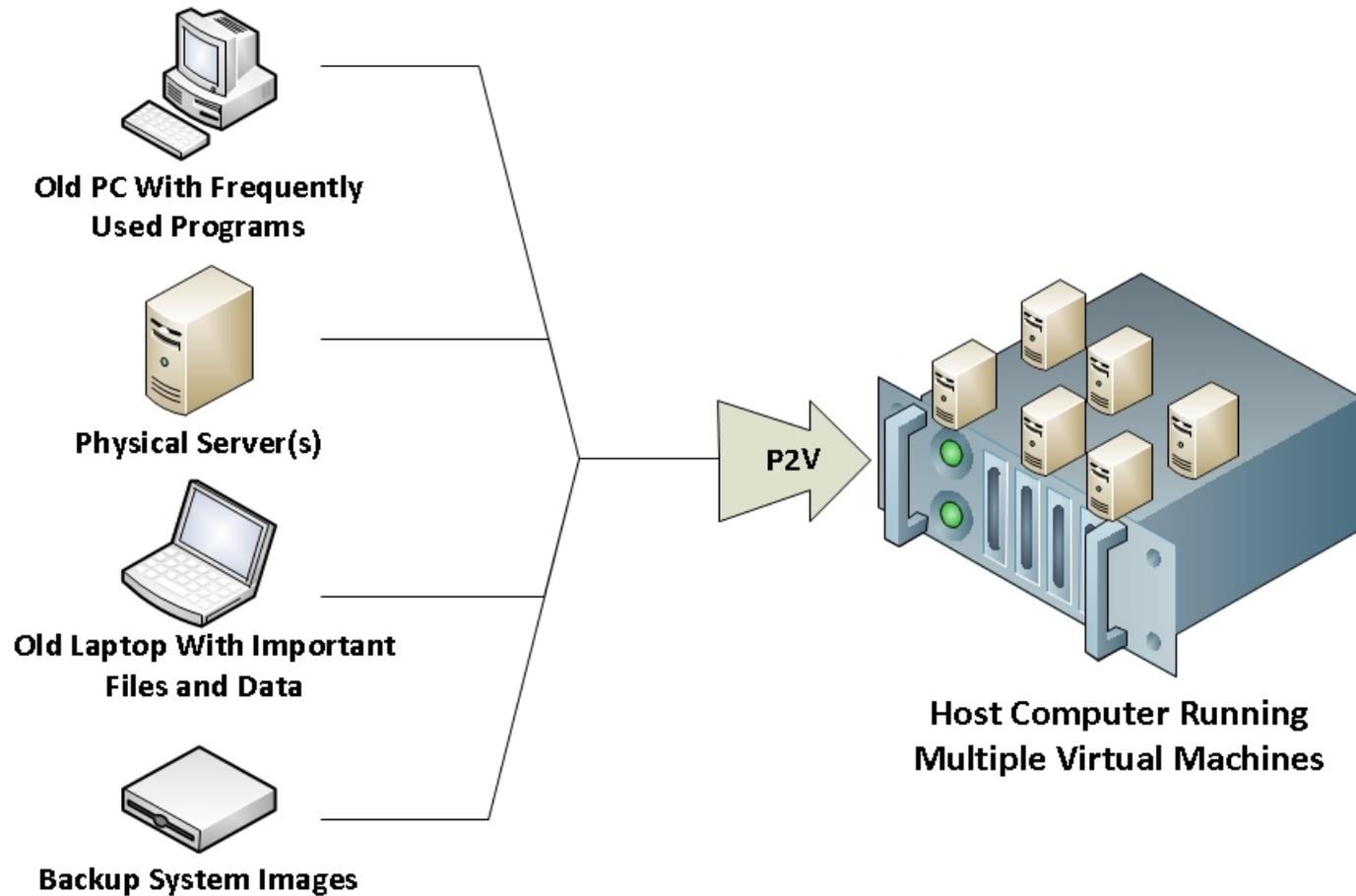


Physical to Virtual (P2V)

- Migrating a physical server's operating system (OS), applications, and data from that physical server to a virtual-machine guest hosted on a virtualized platform – wikipedia
 - Hot migration
 - Source system is in **running** state
 - Recommended for static data, not good for mail server, SQL server
 - Cold migration
 - Source system is **offline**
- Clonezilla only works for **cold migration**

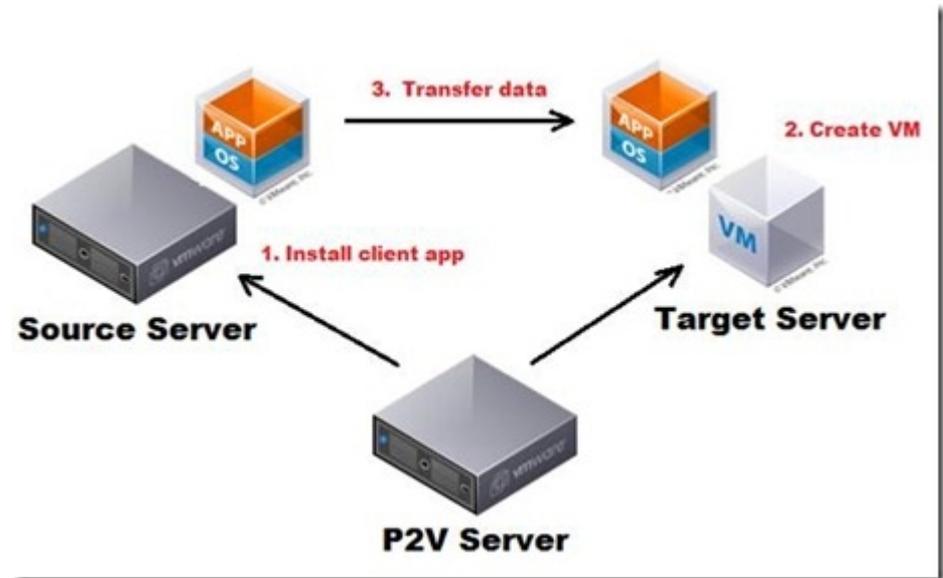
P2V



Source: <http://p2vsolutions.net/>

P2V – 3 steps

1. Decide the **destination VM**
 - Install the **required drivers of VM** on source machine (physical side)
2. **Create VM**
3. **Migrate**



Source <http://planetvm.net/blog/?p=2108>

Which Software Shall I Use?

- No clear answer, Every P2V software has its own strengths and weaknesses.
 - VMWare vCenter Convert
 - Virt-P2V
 - OpenQRM
 - ...
- Clonezilla can also be used to perform P2V, i.e. in the step 3 "migrate" in the previous page.

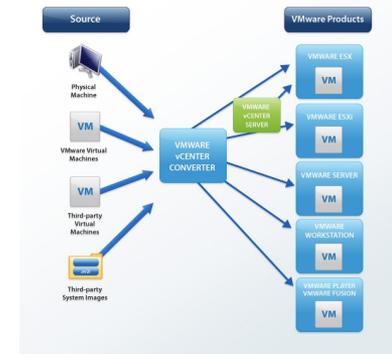


image sources: vmware.com, libguestfs.org, openqrm-enterprise.com/

P2V by Clonezilla live

Physical machine side

- Basic ideas
 - Before migrating, make sure the OS on the physical machine has the **required drivers for the virtual machine which you want to move to.**
- OS
 - GNU/Linux
 - Initrd is important
 - MS Windows
 - Sysprep

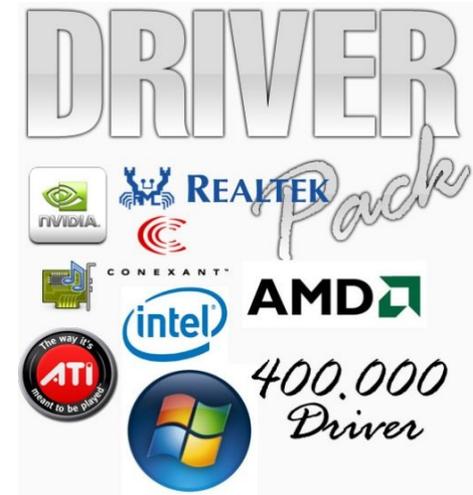


Image source: <http://img21.imageshack.us/img21/9902/400mildrivers.jpg>

Virtual Machine Side For x86/x86-64

- KVM/QEMU
- Xen
- VirtualBox



- https://www.virtualbox.org/wiki/Migrate_Windows
 - Make use of “MergeIDE” before migrating
- Enable “**CPU PAE**” and “**IO APIC**”

- VMWare (Workstation, Fusion, Player, ESX...)
- ...



vmware®

Image sources: linux-kvm.org, xenproject.org, www.virtualbox.org, vmware.com

“Migrate” by Clonezilla

- Once step 1 and step 2 are done, you can **migrate** the system by Clonezilla:

1. Imaging

Ref: <http://clonezilla.org/clonezilla-live-doc.php>

- Physical → Image → Restore to Virtual machine
- Recovery iso/zip → CD or USB flash drive

```
Clonezilla - Opensource Clone System (OCS): Select mode
*Clonezilla is free (GPL) software, and comes with ABSOLUTELY NO WARRANTY*
This software will overwrite the data on your hard drive when restoring! It is recommended to
backup important files before restoring!***
///Hint! From now on, if multiple choices are available, you have to press space key to mark
your selection. An asterisk (*) will be shown when the selection is done///

savedisk Save_local_disk_as_an_image
saveparts Save_local_partitions_as_an_image
exit      Exit. Enter command line prompt

<Ok>
```

```
Clonezilla - Opensource Clone System (OCS): Select mode
*Clonezilla is free (GPL) software, and comes with ABSOLUTELY NO WARRANTY*
This software will overwrite the data on your hard drive when restoring! It is recommended to
backup important files before restoring!***
///Hint! From now on, if multiple choices are available, you have to press space key to mark
your selection. An asterisk (*) will be shown when the selection is done///

savedisk      Save_local_disk_as_an_image
saveparts     Save_local_partitions_as_an_image
*restoredisk  Restore_an_image_to_local_disk
restoreparts  Restore_an_image_to_local_partitions
1-2-mdisks   Restore_an_image_to_multiple_local_disks
recovery-iso-zip Create_recovery_Clonezilla_live
chk-img-restorable Check_the_image_restorable_or_not
cvt-img-compression Convert_image_compression_format_as_another_image
exit          Exit. Enter command line prompt

<Ok>                                <Cancel>
```

P2V “migrate” by Clonezilla

- 2. **Cloning** Ref: <http://clonezilla.org/clonezilla-live-doc.php>
 - Physical A → local → Virtual B
 - Physical A → network → Virtual B

```
Clonezilla - Opensource Clone System (OCS)
*Clonezilla is free (GPL) software, and comes with ABSOLUTELY NO WARRANTY*
This software will overwrite the data on your hard drive when cloning! It is recommended to
backup important files on the target disk before you cloning!***

disk_to_local_disk local_disk_to_local_disk_clone
disk_to_remote_disk local_disk_to_remote_disk_clone
part_to_local_part local_partition_to_local_partition_clone
part_to_remote_part local_partition_to_remote_partition_clone
exit Exit. Enter command line prompt

<Ok> <Cancel>
```

- Disk size:
 - Expert mode, choose “-k1” to create the partition table proportionally
 - Make sure the disk size is big enough



P2V by Clonezilla on Youtube

- Clonezilla restore from ISO, P2V
 - <http://www.youtube.com/watch?v=EMT81bgZMPA>
- CentOS / RHEL Linux Virtualization Part 1/3 : Creating VMWare Disk Partition using Clonezilla
 - http://www.youtube.com/watch?v=21QTnVw_EHo
- CentOS / RHEL Linux Virtualization Part 2/3: image migration to VMWare using Clonezilla - NFS
 - <http://www.youtube.com/watch?v=olJSXttInEo>

P2V fails?

- Possible reasons
 - Missing required **drivers**
 - E.g. “**Kernel panic – not syncing : Attempted to kill init!**”
 - No required modules in initrd
 - Rescue mode then

```
mkinitrd -v -f initrd- $\{kver\}$ .img  $\{kver\}$ 
```
 - Wrong **arch**, e.g. AMD64 OS → i686 VM
 - **MAC address** of network card
 - Network is down. Service fails to start
 - **Serial number** of proprietary software depends on hardware.
 - ...