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the virtualization toolbox

virt-top - “top” for virtual machines

```
rjones@amd:/home/rjones
virt-top 16:07:00 - x86_64 4/4CPU 2814MHz 3965MB
4 domains, 2 active, 2 running, 0 sleeping, 0 paused, 2 inactive D:0 O:0 X:0
CPU: 0.7% Mem: 1000 MB (1000 MB by guests)
```

ID	S	RDRQ	WRRQ	RXBY	TXBY	%CPU	%MEM	TIME	NAME
6	R	0	0	104	0	0.3	12.0	0:43.61	f9x32kvm
5	R	0	0	104	0	0.3	12.0	0:40.95	rhel51x32kvm
-									(rhel51x64kvm)
-									(wui-appliance)

virt-top - “top” for virtual machines

```
virt-top 14:26:16 - x86_64 4/4CPU 2814MHz 3965MB 12.3% 25.1% 0.2% 0.2% 0.0% 0.2%  
4 domains, 2 active, 2 running, 0 sleeping, 0 paused, 2 inactive D:0 0:0 X:0  
CPU: 12.3% Mem: 1000 MB (1000 MB by guests)
```

ID	S	RDRQ	WRRQ	RXBY	TXBY	%CPU	%MEM	TIME	NAME
2	R	1767	176	52	160	12.1	12.0	0:33.13	f9x32kvm
1	R	0	0	52	0	0.2	12.0	0:35.65	rhel51x32kvm
-									(rhel51x64kvm)
-									(wui-appliance)

virt-top - network traffic

```
virt-top 14:31:54 - x86_64 4/4CPU 2814MHz 3965MB 0.2% 0.3% 0.2% 0.3% 0.2% 0.2% 0
4 domains, 2 active, 2 running, 0 sleeping, 0 paused, 2 inactive D:0 0:0 X:0
CPU: 0.2% Mem: 1000 MB (1000 MB by guests)
```

ID	S	RXBY	TXBY	RXPK	TXPK	DOMAIN	INTERFACE
1	R	520	0	10	0	rhel51x32kvm	vnet0
2	R	520	0	10	0	f9x32kvm	vnet1

virt-top - disk throughput

```
virt-top 14:33:31 - x86_64 4/4CPU 2814MHz 3965MB 0.3% 0.2% 0.2% 0.2% 0.2% 0.3% 0
4 domains, 2 active, 2 running, 0 sleeping, 0 paused, 2 inactive D:0 0:0 X:0
CPU: 0.3% Mem: 1000 MB (1000 MB by guests)
```

ID	S	RDBY	WRBY	RDRQ	WRRQ	DOMAIN	DEVICE
2	R	328K	0	51	0	f9x32kvm	hda
1	R	0	0	0	0	rhel51x32kvm	hda

virt-df - disk space used by virtual machines

```
$ virt-df -c qemu:///system -a -h
```

Filesystem	Size	Used	Available	Type
f9x32kvm:hda1	186.3 MiB	24.2 MiB	162.0 MiB	Linux ext2/3
f9x32kvm:VolGroup00/LogVol100	6.3 GiB	3.2 GiB	3.0 GiB	Linux ext2/3
f9x32kvm:VolGroup00/LogVol101	992.0 MiB			Linux swap
rhel151x32kvm:hda1	96.8 MiB	14.6 MiB	82.2 MiB	Linux ext2/3
rhel151x32kvm:VolGroup00/LogVol100	6.4 GiB	3.6 GiB	2.8 GiB	Linux ext2/3
rhel151x32kvm:VolGroup00/LogVol101	992.0 MiB			Linux swap
rhel151x64kvm:hda1	96.8 MiB	22.1 MiB	74.7 MiB	Linux ext2/3
rhel151x64kvm:VolGroup00/LogVol100	6.4 GiB	3.2 GiB	3.2 GiB	Linux ext2/3
rhel151x64kvm:VolGroup00/LogVol101	992.0 MiB			Linux swap

direct to database, spreadsheet or monitoring system

```
$ virt-df -c qemu:///system -a --csv > df.csv
```

	A	B	C	D	E
1	Filesystem	1K-blocks	Used	Available	Type
2	f9x32kvm:hda1	190740	24817	165923	Linux ext2/3
3	f9x32kvm:VolGroup00/LogVol00	6568348	3401064	3167284	Linux ext2/3
4	f9x32kvm:VolGroup00/LogVol01	1015808			Linux swap
5	rhel51x32kvm:hda1	99168	14977	84191	Linux ext2/3
6	rhel51x32kvm:VolGroup00/LogVol00	6692864	3775680	2917184	Linux ext2/3
7	rhel51x32kvm:VolGroup00/LogVol01	1015808			Linux swap
8	rhel51x64kvm:hda1	99168	22663	76505	Linux ext2/3
9	rhel51x64kvm:VolGroup00/LogVol00	6692864	3344568	3348296	Linux ext2/3
10	rhel51x64kvm:VolGroup00/LogVol01	1015808			Linux swap
11					

virt-uname - system info

```
$ virt-uname -c qemu:///system
```

```
f9x32kvm: Linux (none) 2.6.24-0.155.rc7.git6.fc9 #1 SMP
```

```
Tue Jan 15 17:52:31 EST 2008 i686 (none)
```

```
rhel51x32kvm: Linux (none) 2.6.18-53.el5 #1 SMP Wed Oct
```

```
10 16:34:02 EDT 2007 i686 (none)
```

virt-dmesg - kernel info

```
$ virt-dmesg -c qemu:///system f9x32kvm | tail
```

```
<6>Bluetooth: Core ver 2.11  
<6>NET: Registered protocol family 31  
<6>Bluetooth: HCI device and connection manager initialized  
<6>Bluetooth: HCI socket layer initialized  
<6>Bluetooth: L2CAP ver 2.9  
<6>Bluetooth: L2CAP socket layer initialized  
<6>Bluetooth: RFCOMM socket layer initialized  
<6>Bluetooth: RFCOMM TTY layer initialized  
<6>Bluetooth: RFCOMM ver 1.8  
<7>eth0: no IPv6 routers present
```

monitoring tools - goals

- simple command line operation
- scriptable
- CSV export for database, spreadsheet, monitoring
- nothing to install in guest
- no need to log in to guest
- work remotely

monitoring tools - roadmap

virt-ps

virt-loadavg

virt-free

virt-ifconfig

want to suggest a monitoring tool? email rjones@redhat.com

deeper integration with monitoring systems

wider range of Linux kernels and filesystems

better Windows support

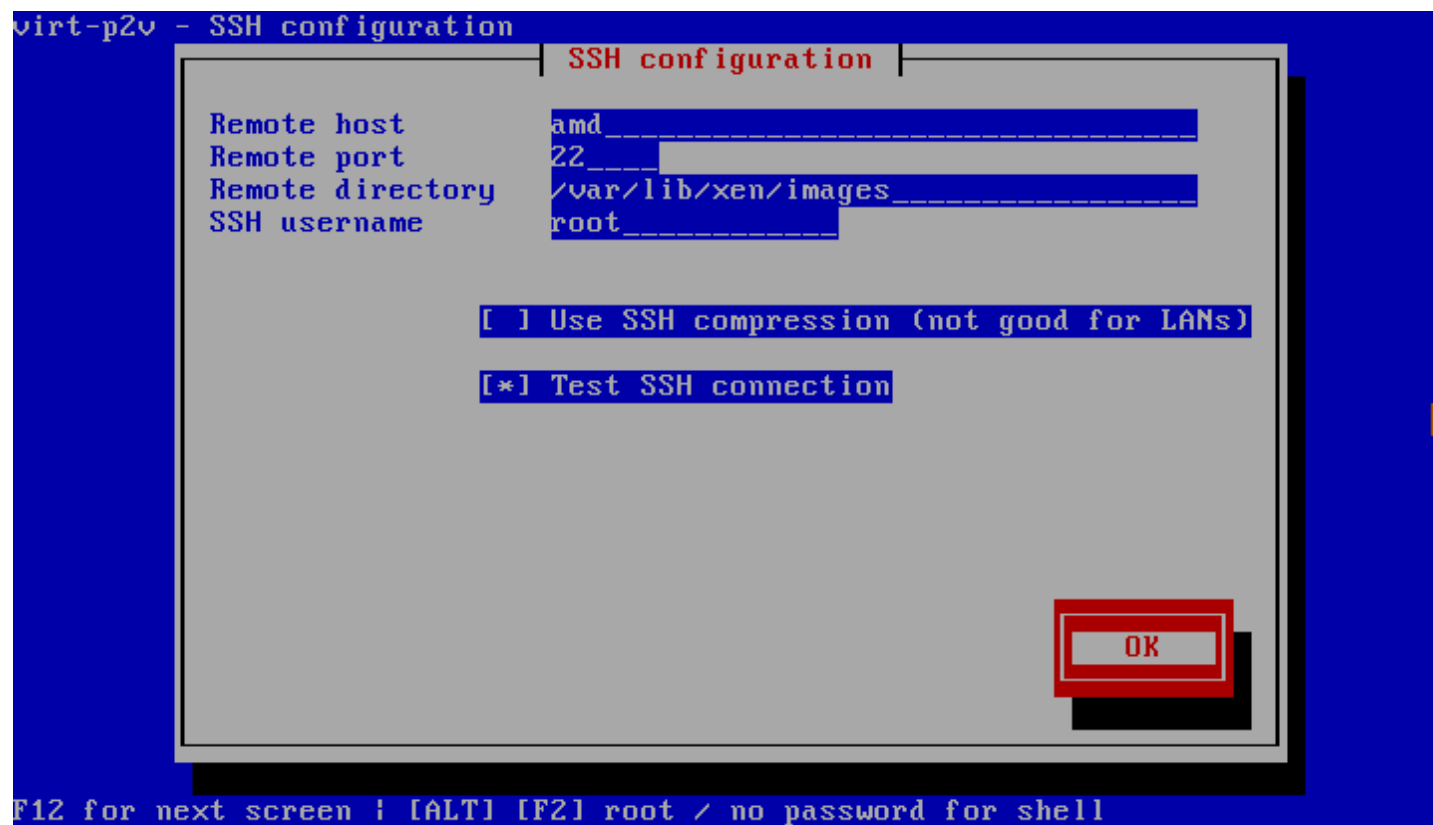
virt-p2v - Physical to Virtual migration

Live-CD, ISO or PXE boot

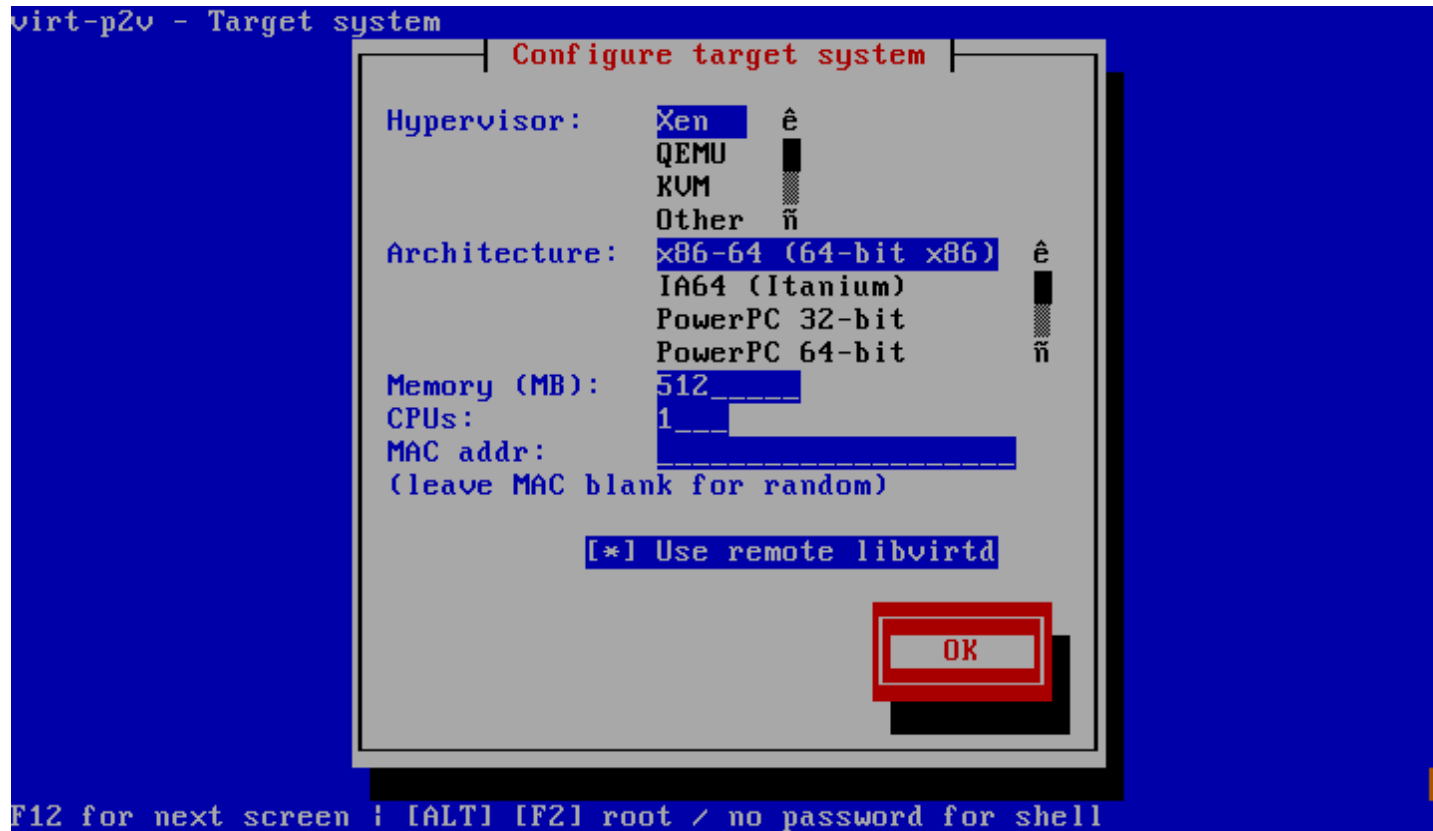
virt-p2v - Physical to Virtual migration



virt-p2v - select virt server



virt-p2v - configurables



virt-p2v - copies the image

```
Try to fetch remote hypervisor capabilities ...

root@192.168.2.128's password:
Performing LVM snapshots ...

  0 logical volume(s) in volume group "VolGroup00" now active
  Reading all physical volumes.  This may take a while...
  Found volume group "VolGroup00" using metadata type lvm2
  2 logical volume(s) in volume group "VolGroup00" now active

Writing configuration file ...

root@192.168.2.128's password:

Sending /dev/sda (3.906 GB) to remote machine

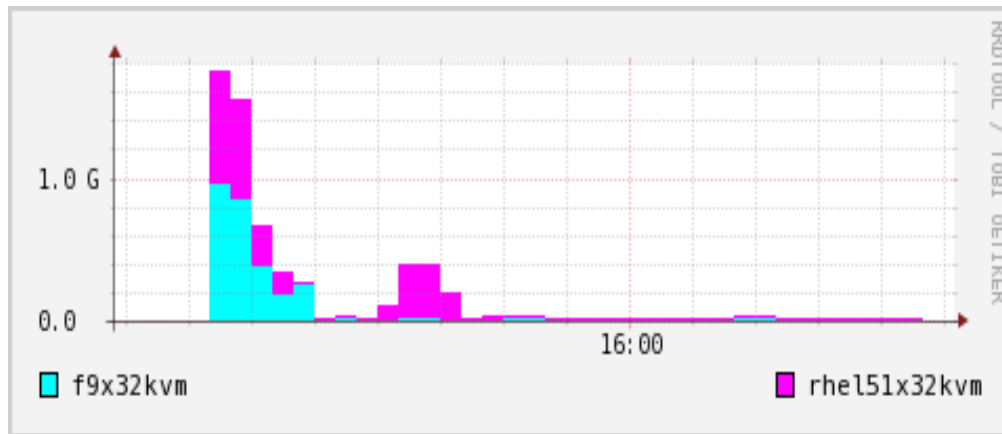
root@192.168.2.128's password:
1% - 9.7 Mbps
```

virt-p2v - result

```
/var/lib/xen/images/  
p2v-lappy-200806071410.conf  
p2v-lappy-200806071410-hda.img
```

























```
virsh define p2v-lappy-200806071410.conf  
virsh start lappy
```

collectd & nagios



Nagios®

Virtual hosts (virt-hostgroup)

Host	Status	Services	Actions
centos5gax64fv	UP	1 OK	  
debian32fv	UP	1 OK	  
f764pv	UP	1 OK	  
fc6_0	UP	1 CRITICAL	  
fc6_1	UP	1 CRITICAL	  
freebsd32fv	UP	1 CRITICAL	  
gentoo32fv	UP	1 CRITICAL	  
rhe15gax32fv	UP	1 OK	  

summary

command line tools:

- virt-top
- virt-df
- virt-uname
- virt-dmesg
- virt-ps
- virt-loadavg
- virt-free
- virt-ifconfig

P2V migration:

- virt-p2v

monitoring:

- collectd
- nagios-virt

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