

Qubes OS Cheatsheet

VM Management

qvm-block - *list/set VM PCI devices*

usage:

- **qvm-block -l** [options]
- **qvm-block -a** [options] <device> <vm-name>
- **qvm-block -d** [options] <device>
- **qvm-block -d** [options] <vm-name>

qvm-block -A personal dom0:/home/user/extradisks/data.img - *attaches an additional storage for the personal-vm*

qvm-clone - *clones an existing VM by copying all its disk files*

usage: **qvm-clone** [options] <existing-vm-name> <new-clone-vm-name>

qvm-clone fedora-21 fedora-21-dev - *create a clone of fedora-21 called fedora-21-dev*

qvm-firewall - *manage VM's firewall rules*

usage: **qvm-firewall -l** [-n] <vm-name>

qvm-firewall -l personal - *displays the firewall settings for the personal-vm*

qvm-firewall -l -n fedora-21 - *displays the firewall settings for the personal-vm with port numbers*

qvm-ls - *list VMs and various information about their state*

usage: **qvm-ls** [options] <vm-name>

qvm-ls - *lists all vms*

qvm-ls -n - *show network addresses assigned to VMs*

qvm-ls -d - *show VM disk utilization statistics*

qvm-prefs - *list/set various per-VM properties*

usage:

- **qvm-prefs -l** [options] <vm-name>
- **qvm-prefs -s** [options] <vm-name> <property> [...]

qvm-prefs win7-copy - *lists the preferences of the win7-copy*

qvm-prefs win7-copy -s mac 00:16:3E:5E:6C:05 - *sets a new mac for the network card*

qvm-prefs lab-win7 -s qrexec_installed true - *sets the qrexec to installed*

qvm-prefs lab-win7 -s qrexec_timeout 120 - *usefull for windows hvm based vms*

qvm-prefs lab-win7 -s default_user joanna - *sets the login user*

qvm-run - runs a specific command on a vm

usage: qvm-run [options] [<vm-name>] [<cmd>]

qvm-run personal xterm - runs xterm on personal

qvm-run personal xterm --pass-io - runs xterm and passes all sdtin/stdout/stderr to the terminal

qvm-run personal "sudo yum update" --pass-io --nogui - pass a specific command directly to the VM

qvm-start - starts a vm

usage: qvm-start [options] <vm-name>

qvm-start personal - starts the personal-vm

qvm-start ubuntu --cdrom personal:/home/user/Downloads/ubuntu-14.04.iso - starts the ubuntu-vm with the ubuntu installation CD

qvm-sync-appmenus - updates desktop file templates for given StandaloneVM or TemplateVM

usage: qvm-sync-appmenus [options] <vm-name>

qvm-sync-appmenus archlinux-template - useful for custom .desktop files or distributions not using yum

Dom0

qubes-dom0-update - updates software in dom0

usage: qubes-dom0-update [--clean][--check-only][--gui] [<yum opts>][<pkg list>]

sudo qubes-dom0-update - updates dom0

sudo qubes-dom0-update qubes-windows-tools - install the windows tools

sudo qubes-dom0-update --action=search qubes-template - search for all qubes templates

sudo qubes-dom0-update kernel-3.19* - install the official Fedora kernel-3.19* with Xen support

qubes-hcl-report - generates a report about the hardware information

usage: qubes-hcl-report [<vm-name>]

qubes-hcl-report - prints the hardware information on the console (terminal)

qubes-hcl-report personal - sends the hardware information to the personal-vm under /home/user

virsh - management user tool for libvirt (hypervisor abstraction)

usage: virsh -c xen:/// <command> [<vm-name>]

Example

Why? Connect if GUI/grexec does not work for any reason. This way you can restart/investigate a failed service.

- In Dom0 terminal: virsh -c xen:/// console personal
- username: **root** without a password

(and when #1130 would be implmented the same for “user”)

xl - Xen management tool, based on LibXenlight

usage: xl <subcommand> [<args>]

xl dmesg - Dom0 dmesg output (first place to look for warning or error messages)

xl top - Monitor host and domains in realtime

DomU

qvm-copy-to-vm - Copy file from one VM to another VM

usage: qvm-copy-to-vm <vm-name> <file> [<file+>] - *file* can be a single file or a folder

qvm-copy-to-vm work Documents - *copy the Documents folder to the work VM*

qvm-copy-to-vm personal text.txt - *copy the text.txt file to the personal VM*

Example

- Open a terminal in AppVM A (e. g. your personal vm)
- Let's assume we want to copy the Documents folder to AppVM B (e. g. your work VM)
- The command would be: qvm-copy-to-vm work Documents

DomU and Dom0

List installed qubes packages ---

Fedora

In VM or Dom0: rpm -qa *qubes-* - *list (qubes-) installed packages*

Copy from & to Dom0

Copy from: **Dom0 -> VM**

```
cat /path/to/file_in_dom0 |
qvm-run --pass-io <dst_domain>
'cat > /path/to/file_name_in_appvm'
```

Example:

```
@dom0 Pictures]$ cat my-screenshot.png |
qvm-run --pass-io personal
'cat > /home/user/my-screenshot.png'
```

Copy from: **VM -> Dom0**

```
qvm-run --pass-io <src_domain>
'cat /path/to/file_in_src_domain' >
/path/to/file_name_in_dom0
```

Copy text between VM A and B

On VM A (source):

1. CTRL+C
2. CTRL+SHIFT+C

On VM B (destination):

3. CTRL+SHIFT+V
4. CTRL+V

Grow disk

qvm-grow-private - *increase private storage capacity of a specified VM*

usage: qvm-grow-private <vm-name> <size>

Example

- In dom0 konsole: qvm-grow-private personal 40GB
- In the personal VM: sudo resize2fs /dev/xvdb

AppVMs and TMPFS

Enlarge /tmp if you run out of space on the default ~200MB

```
sudo mount -o remount,size=1024M /tmp - enlarge the space to 1024MB
```

Inter VM Networking

- *Does not expose services to the outside world!*

Make sure:

- Both VMs are connected to the same firewall VM
- Qubes IP addresses are assigned to both VMs
- Both VMs are started

In Firewall VM terminal:

```
$ sudo iptables -I FORWARD 2 -s <IP address of A> -d <IP address of B> -j ACCEPT
```

- The connection will be unidirectional A -> B
- Optional: Bidirectional A <-> B

In Firewall VM terminal:

```
$ sudo iptables -I FORWARD 2 -s <IP address of B> -d <IP address of A> -j ACCEPT
```

- Check your settings (e. g. using ping)
- Persist your settings:

Assume:

IP of A: 10.137.2.10

IP of B: 10.137.2.11

In Firewall VM terminal:

```
$ sudo bash
# echo "iptables -I FORWARD 2 -s 10.137.2.10 -d 10.137.2.11 -j ACCEPT" >> /rw/config/qubes_firewall_user_script
#chmod +x /rw/config/qubes_firewall_user_script
```

for bidirectional access:

```
# echo "iptables -I FORWARD 2 -s 10.137.2.10 -d 10.137.2.11 -j ACCEPT" >> /rw/config/qubes_firewall_user_script
```

Add USB Wifi card to sys-net VM * - *attach a USB Wifi card to sys-net VM*

The bus and device number can be different than shown in this example:

1. `qvm-pci -l sys-net` - *list all attached pci devices of sys-net*
2. `lsusb` - e. g. **Bus 003 Device 003: ID 148f:2870 Ralink Technology, Corp. RT2870 Wireless Adapter**
3. `readlink /sys/bus/usb/devices/003` - *Important Bus 003 -> 003*
4. The result of readlink: `../../../../devices/pci-0/pci0000:00/0000:00:12.2/usb3` - *Important 00:12.2*
5. `qvm-pci -a sys-net 00:12.2` - *attach USB device 00:12.2 to sys-net*
6. `qvm-pci -l sys-ne` - *check if device 00:12.2 is*

Templates

Fedora - *Fedora template specific*

Updating, Searching & Installing Packages

- installing packages: `yum install <package-name>`
- search for a package: `yum search <package-or-word>`
- updating template: `yum update`

Repositories

Repositories: Start Menu >> Template:Fedora 21 >> Package Sources >> Enable third party repositories

Start Menu >> Template:Fedora 21 >> Package Sources >> Enable RPMFusion - ENABLE RPMFusion, (already covers RPMFusion signing keys)

Fedora Minimal - *Fedora minimal template*

`sudo qubes-dom0-update qubes-template-fedora-21-minimal` - *installs the fedora-21-minimal template*

Debian - *Debian templates*

Installing the Template

- `sudo qubes-dom0-update qubes-template-debian-7` - *Debian 7 “Wheezy”*
- `sudo qubes-dom0-update qubes-template-debian-8` - *Debian 8 “Jessie”*

Updating, Searching & Installing Packages

- installing packages: `apt-get install <package-name>`
- search for a package: `apt-cache search <package-or-word>`
- updating template:
 1. `apt-get update`
 2. `apt-get dist-upgrade`

Qubes OS + Whonix - *Whonix is an debian based OS focused on anonymity, privacy and security*

Whonix has to parts:

1. Whonix-Gateway (uses TOR for all connections to the outside world)
2. Whonix-Workstation (for application)

Install Whonix

Whonix-Gateway TemplateVM Binary Install @Dom0:

`sudo qubes-dom0-update --enablerepo=qubes-templates-community qubes-template-whonix-gw-experimental`

Whonix-Workstation TemplateVM Binary Install @Dom0:

1. `export UPDATES_MAX_BYTES=$((4 * 1024 ** 3))`
2. `sudo qubes-dom0-update --enablerepo=qubes-templates-community qubes-template-whonix-ws`

Next Steps

1. Create a Whonix-gateway ProxyVM, through Qubes VM Manager
2. Create a Whonix-workstation AppVM, through Qubes VM Manager
3. Update your Whonix-Gateway and Whonix-Workstation TemplateVMs (how to -> see debian)
4. (Re)Start Whonix-Gateway ProxyVM
5. Start Whonix-Workstation AppVM

Archlinux Minimal - *Archlinux minimal template*

Installing the Template

1. In a VM: `~ wget http://olivier.medoc.free.fr/rpm/noarch/ qubes-template-archlinux-minimal-3.0.3-201507281153.noarch.rpm`
2. Copy RPM-Package to Dom0
3. In Dom0: `sudo rpm -i qubes-template-archlinux-minimal-3.0.3-201507281153.noarch.rpm`

Updating, Searching & Installing Packages

- installing packages: `pacman -S <package-name> [<package-name-2>...<package-name-n>]`
- search for a package: `pacman -Ss <package-or-word>`
- updating template: `pacman -Syuu`

Create VM from VMware or VirtualBox images

1. Download the image in an AppVM
2. Install `qemu-img` tools - *e. g. `yum install qemu-img` for fedora*
3. Convert the image to a raw format:
 - VMware: `qemu-img convert ReactOS.vmdk -O raw reactos.img`
 - VirtualBox: `qemu-img convert ReactOS.vdi -O raw reactos.img`