

Preparing Xen guest filesystems

Xen guest are using filesystems exported to them via Xen hypervisor Virtual Block Devices (VBDs). Currently there are three methods of preparing such filesystems for Xen.

File-backed VBDs

This is the least-performant Xen VBD type: all disk I/O must pass in hypervisor via loop-mounted filesystem (hence the significant performance drop). However these are the easiest to implement and still suitable for no-I/O-intensive guests.

In order to prepare a file-backed VBD use dd:

```
/bin/dd if=/dev/zero of=/somefile_somewhere.img bs=1024M count=20
```

will prepare 20GB VBD for the guest.

NOTE: Please avoid creating sparse VBDs for use with SLC3/SLC4 guests (the *skip* dd option): system installer will get confused about these and most likely crash.

Such prepared VBD should be then exported to guest system in its config file in following way:

```
disk = [ 'file:/somefile_somewhere.img,sda,w' ]
```

Physical (Raw) device VBDs

Physical device VBDs will offer much better performance than file-based but are less convenient for the management (these reside on real device / partition).

In order to prepare a physical-device backed VBD use parted:

```
# /sbin/parted /dev/sda
GNU Parted 1.6.19
...
Using /dev/sda
(parted) p
Disk geometry for /dev/sda: 0.000-152627.835 megabytes
Disk label type: msdos
Minor      Start        End          Type          Filesystem    Flags
1           0.031       1027.595     primary       ext3          boot
2          1027.595     21030.402    primary       ext3
3          21030.403    25125.095    primary       linux-swap
(parted) mkpart extended 25125.095 152627.835
(parted) mkpart logical 25125.095 55125.095
(parted) mkpart logical 55121.462 85121.462
(parted) p
Disk geometry for /dev/sda: 0.000-152627.835 megabytes
Disk label type: msdos
Minor      Start        End          Type          Filesystem    Flags
1           0.031       1027.595     primary       ext3          boot
2          1027.595     21030.402    primary       ext3
3          21030.403    25125.095    primary       linux-swap
4          25125.095    152625.344    extended
5          25125.126    55121.462    logical
6          55121.493    85117.829    logical
(parted) q
```

Above illustrates an example parted session where two VBDs were created for use by Xen guests: *sda5* (minor 5) and *sda6* (minor 6).

NOTE: fdisk can be used to partition your devices too, but with current Xen Domain 0 kernels it will be necessary to reboot the hypervisor as fdisk fails to notify the kernel about partition table changes.

Such prepared VBD should be then exported to guest system in its config file in following way:

```
disk = [ 'phy:sda5,sda,w' ]
```

LVM based VBDs

LVM based VBDs offer at the same time good performance and management flexibility: because of LVM device management flexibility

resize existing root file system

Unless you have set aside space for the virtual machines when installing the hypervisor, you'll need to liberate some space that is currently taken up by the hypervisor's root filesystem. In this example, we'll restrict the hypervisor to 10G (original post[↗](#)).

Reboot into rescue mode (sorry, resizing the "/" filesystem cannot be done while it is mounted, so you'll need to boot from floppy/network/USB/..) and run

```
# lvm vgchange -a y
# e2fsck -f /dev/VolGroup00/LogVol00
# resize2fs -f /dev/VolGroup00/LogVol00 10G
# lvm lvreduce -L10G /dev/VolGroup00/LogVol00
```

This assumes that your physical volume group is called *VolGroup00* and the logical volume for "/" is *LogVol00* (compare with what the first lines spits out). Which seem to be the default for anaconda-generated LVs.

Create new Volume Group for the guest

Create a Volume Group for the new machine (5GB in this case):

```
# lvm lvcreate -L5G -ndomU1 VolGroup00
Logical volume "domU1" created
```

This can be done both from the rescue system or from the running hypervisor.

Configure Xen to use the new Volume Group

Export the new "device" to the guest via the config file:

```
...
disk = [ 'phy:VolGroup00/domU1,sda,w' ]
```

-- JaroslavPolok - 23 Nov 2006

This topic: LinuxSupport > PreparingXenGuestFilesystems

Topic revision: r4 - 2006-11-29 - JanIven



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