

PostPath How-To: XFS on Redhat/CentOS



XFS on RedHat/CentOS

PostPath HowTo

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I. Introduction

PostPath recommends that the message store partition use the XFS file system. This HowTo will cover the steps required to install and enable XFS on system running CentOS 4.X and RedHat 4.x. Note that there are different ways to accomplish this task such as building a new kernel, making the modules manually, but this document covers what I believe to be the easiest method to obtain the goal: Enable XFS support on my RedHat/CentOS 4.X system with quota support.

II. XFS Requirements

II.1 RPMs

There are three required RPMS to accomplish our goal; xfsprogs, xfsprogs-devel, and the kernel-module-xfs.

Get xfsprogs RPMs (as root):

You need the the xfs-progs packages if they're not already on your machine.

Goto: <ftp://ftp.postpath.com/pub/ThirdParty/v2.1/RHCentOS4Kernel>

and download:

```
xfsprogs-[Version].i386.rpm
xfsprogs-devel-[Version].i386.rpm
```

Note: these RPMs work on both CentOS or RedHat

Then to install these RPMS do the following:

CentOS:

```
yum install --enablerepo=centosplus xfsprogs xfsprogs-devel
```

RedHat:

```
rpm -Uvh xfsprogs-2.5.6-1.i386.rpm
```

```
rpm -Uvh xfsprogs-devel-2.5.6-1.i386.rpm
```

Get kernel modules (as root)

Now we need to download and install the XFS RPM for your system (kernel version). You can learn the current kernel-version of your system by running "uname -r".

Example:

```
[root@linux113]# uname -r  
2.6.9-34.0.1.EL
```

In this example, the system is running kernel version "2.6.9-34.0.1.EL". The RPM packages have a naming convention of "kernel-module-xfs-[kernel-version]-[rpm-version].rpm". For example, this is the RPM available for this kernel (system):

```
kernel-module-xfs-2.6.9-34.0.1.EL-0.1-3.i686.rpm 06-Jun-2006 08:36 3.2M
```

Goto: <ftp://ftp.postpath.com/pub/ThirdParty/v2.1/RHCentOS4Kernel>

and download the appropriate kernel-module-xfs for your system. To install the RPM issue the following command:

```
[root@linux113]# rpm -ivh kernel-module-xfs-[kernel-version][rpm-version].rpm
```

Now your CentOS or RedHat kernel will supports XFS with quota support.

II.2 Preparing the Partitions

Now that the kernel can support XFS, the next step is to decide where this data is going to reside. This data is the users' mail, contacts, and calendar information; basically it's the most important data. PostPath recommends this information at least be on its own partition, and in most cases dedicated storage. However, for the sake of this document your situation should fall into one of three options:

- A) A partition already exists and you simply need to re-format it to XFS.
- B) Add new storage and format with XFS
- C) Resize an existing partition to make space for a new partition

First we need to get information on the system. Use "mount" to show existing partition mounts. Note that PostPath will default to /var/opt for an installation location, so this document will assume this location for the message store path. Two examples of how you might see /var/opt listed:

Examples:

```
[root@linux113]# mount
/dev/sdb1 on / type ext3 (rw)
none on /proc type proc (rw)
none on /sys type sysfs (rw)
none on /dev/pts type devpts (rw,gid=5,mode=620)
usbfs on /proc/bus/usb type usbfs (rw)
none on /dev/shm type tmpfs (rw)
/dev/mapper/VolGroup00-LogVol02 on /var/opt type ext3 (rw)
none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)
sunrpc on /var/lib/nfs/rpc_pipefs type rpc_pipefs (rw)
```

or

```
[root@linux113]# mount
/dev/sdb1 on / type ext3 (rw)
none on /proc type proc (rw)
none on /sys type sysfs (rw)
none on /dev/pts type devpts (rw,gid=5,mode=620)
usbfs on /proc/bus/usb type usbfs (rw)
none on /dev/shm type tmpfs (rw)
/dev/sdb3      /var/opt      ext3 (rw)
none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)
sunrpc on /var/lib/nfs/rpc_pipefs type rpc_pipefs (rw)
```

You may also want to view your partitions and/or logical volumes to determine how and where you are going to setup your message store. Note that the concepts here remain universal, but you can use any tool that you want to get the task accomplished. Below is an example of what you might see on a using parted, but you can use fdisk, graphical tools, etc. Note that all of these partitions in this example are on a single hard drive, which is always ok for testing, but may not be right for your environment/requirements. Please consult PostPath Sales for more information.

Example:

```
[root@linux113]# parted
(parted) select /dev/sdb
Using /dev/sdb
(parted) print
```

```
Disk geometry for /dev/sda: 0.000-10240.000 megabytes
Disk label type: msdos
```

Minor	Start	End	Type	Filesystem	Flags
1	0.031	4604.567	primary	ext3	boot
2	4604.568	5632.163	primary	linux-swap	
3	5632.163	10236.730	primary	xfs	

II.2.A. If a partition already exists where you want to put the XFS file system, then unmount the drive/partition that is to be formatted with xfs:

Example:

```
[root@linux113]# umount /var/opt
```

Again, /var/opt is a good option because this is where the message store is installed by default. If you can't unmount because "device is busy", and you can't work out what is using the device, comment the mount line out of your /etc/fstab (with a #) and reboot to bring up the machine with the drive unmounted.

II.2.B. If you add a hard drive or storage you may need to create a partition before you can format the drive with XFS. Again, use the parted command to accomplish the task of creating a partition to format.

Example:

```
[root@linux113]#parted
(parted) select /dev/sdc
(parted) mklabel msdos
(parted) print
```

```
Disk geometry for /dev/sdc: 0.000-114473.460 megabytes
Disk label type: msdos
```

```
Minor  Start   End   Type   Filesystem  Flags
(parted)
```

II.2.C. If you need to resize a partition you can use parted as well. While in parted, type help, and look at the "resize" option. Once you have made an existing partition smaller, you can then add another partition using the "mkpart" option. Example:

```
(parted) help
check MINOR                do a simple check on the filesystem
cp [FROM-DEVICE] FROM-MINOR TO-MINOR  copy filesystem to another partition
help [COMMAND]             prints general help, or help on COMMAND
mklabel LABEL-TYPE         create a new disklabel (partition table)
mkfs MINOR FS-TYPE         make a filesystem FS-TYPE on partition MINOR
mkpart PART-TYPE [FS-TYPE] START END   make a partition
mkpartfs PART-TYPE FS-TYPE START END   make a partition with a filesystem
move MINOR START END       move partition MINOR
name MINOR NAME             name partition MINOR NAME
print [MINOR]              display the partition table, or a partition
quit                       exit program
rescue START END           rescue a lost partition near START and END
resize MINOR START END     resize filesystem on partition MINOR
rm MINOR                   delete partition MINOR
select DEVICE              choose the device to edit
set MINOR FLAG STATE       change a flag on partition MINOR
```

Again the tool you use is unimportant, so applying the concept of shrinking an existing partition to make space for a new partition is the end goal.

II.3 Formatting the Partition for XFS

Now that we have setup/confirmed the partition we want to use, we can format the partition for XFS:

```
/sbin/mkfs.xfs -f -i size=512,maxpct=0 <device-name>
```

Examples for each mount example given previously:

```
/sbin/mkfs.xfs -f -i size=512,maxpct=0 /dev/mapper/VolGroup00-LogVol02
```

```
/sbin/mkfs.xfs -f -i size=512,maxpct=0 /dev/sdb3
```

II.4 Mounting the XFS Partition

To mount the newly formatted XFS partition we need to modify `/etc/fstab` to mount drive with xfs options:

```
<device-name> <target-dir>    xfs  defaults,noatime    1 2
```

Examples:

```
/dev/sdb3                /var/opt            xfs  defaults,noatime    1 2
/dev/VolGroup00/LogVol02  var/opt            xfs  defaults            1 2
```

We can then mount the drive:

```
mount <target-dir>
```

or

```
mount -a
```

You're done! Then check to make sure you mounted properly.

Example:

```
[root@linux113]# mount
/dev/sdb1 on / type ext3 (rw)
none on /proc type proc (rw)
none on /sys type sysfs (rw)
none on /dev/pts type devpts (rw,gid=5,mode=620)
usbfs on /proc/bus/usb type usbfs (rw)
none on /dev/shm type tmpfs (rw)
/dev/sdb3 on /var/opt type xfs (rw,noatime,grpquota)
none on /proc/sys/fs/binfmt_misc type binfmt_misc (rw)
sunrpc on /var/lib/nfs/rpc_pipefs type rpc_pipefs (rw)
nfsshare:/usr/shares/shared on /usr/shares/shared type nfs (rw,addr=192.168.1.14)
nfsshare:/usr/shares/users/sowens on /home/sowens/thorhome type nfs (rw,soft,intr,addr=192.168.1.14)
/dev/mapper/VolGroup00-LogVol00 on /mnt type ext3 (rw)
```

II.5 Enabling Quota Support for XFS (optional)

There are two steps to enabling quota support for XFS. One is you need to change the settings in the `/etc/fstab`, but you also need to add setting for the kernel, which are passed at boot time.

II.5.A Modify `/etc/fstab`, your entries will be slightly different from above.

```
<device-name> <target-dir>    xfs  defaults,noatime,grpquota    1 2
```

Examples:

```
/dev/sdb3                /var/opt            xfs  defaults,noatime,grpquota    1 2 <br>
```

```
/dev/VolGroup00/LogVol02 /var/opt          xfs  defaults,noatime,grpquota    1 2
```

II.5.B Modify `/etc/grub.conf`, add a `"rootflags=quota"` line to each stanza of any kernel that might be used. Often it makes sense to add the line to each stanza in `grub.conf`. Note: This step requires a reboot for the changes to take effect.

Example:

```
title Red Hat Enterprise Linux ES (2.6.9-34.0.1.EL)
    root (hd0,1)
    kernel /boot/vmlinuz-2.6.9-34.0.1.EL ro root=LABEL=/ rhgb quiet
    initrd /boot/initrd-2.6.9-34.0.1.EL.img
    rootflags=quota

title Red Hat Enterprise Linux ES-up (2.6.9-34.EL)
    root (hd0,1)
    kernel /boot/vmlinuz-2.6.9-34.EL ro root=LABEL=/ rhgb quiet
    initrd /boot/initrd-2.6.9-34.EL.img
    rootflags=quota

title CentOS (2.6.9-34.0.1.EL)
    root (hd0,1)
    kernel /boot/vmlinuz-2.6.9-34.0.1.EL ro root=/dev/VolGroup00/LogVol00 rhgb quiet
    initrd /initrd-2.6.9-34.0.1EL.img
    rootflags=quota

title CentOS (2.6.9-34.EL)
    root (hd0,1)
    kernel /boot/vmlinuz-2.6.9-34.EL ro root=/dev/VolGroup00/LogVol00 rhgb quiet
    initrd /initrd-2.6.9-34.EL.img
    rootflags=quota
```

After you reboot your system, you should have an XFS partition with Quota support.