By Falko Timme
Published: 2008-12-22 18:21

How To Back Up MySQL Databases With mylvmbackup On Ubuntu 8.10

Version 1.0
Author: Falko Timme <ft [at] falkotimme [dot] com>
Last edited 12/04/2008

mylvmbackup is a Perl script for quickly creating MySQL backups. It uses LVM's snapshot feature to do so. To perform a backup, mylvmbackup obtains a read lock on all tables and flushes all server caches to disk, creates a snapshot of the volume containing the MySQL data directory, and unlocks the tables again. This article shows how to use it on an Ubuntu 8.10 server.

I do not issue any guarantee that this will work for you!

1 Preliminary Note

I'm assuming that MySQL is already set up and running on your system. The system must use LVM, and the MySQL data directory (`/var/lib/mysql`) should have an LVM partition of its own (althouth that is optional).

If you have read **Back Up (And Restore) LVM Partitions With LVM Snapshots** you know that LVM snapshots require some unused LVM partition for the snapshot. My test system has a second, currently unused hard drive `/dev/sdb` that will be used by mylvmbackup to create a temporary logical volume for the backup.

This is my current situation:

```
root@server1:~# df -h
Filesystem            Size  Used Avail Use% Mounted on
/dev/mapper/server1-root
                       20G  808M   18G   5% /
tmpfs                 252M     0  252M   0% /lib/init/rw
```

```
varrun                    252M    56K   251M    1% /var/run
varlock                   252M      0   252M    0% /var/lock
udev                      252M   2.6M   249M    2% /dev
tmpfs                     252M      0   252M    0% /dev/shm
/dev/sda1                 471M    23M   425M    6% /boot
/dev/mapper/server1-mysql
                          8.9G   170M   8.3G    2% /var/lib/mysql
root@server1:~#
```

As you see, I have two LVM partitions, `/` and `/var/lib/mysql` (plus an LVM swap partition not shown here). The volume group is named `server1`, and the volumes are named `swap`, `root`, and `mysql`:

```
root@server1:~# pvdisplay
  --- Physical volume ---
  PV Name               /dev/sda5
  VG Name               server1
  PV Size               29.52 GB / not usable 3.66 MB
  Allocatable           yes (but full)
  PE Size (KByte)       4096
  Total PE              7557
  Free PE               0
  Allocated PE          7557
  PV UUID               0gCmpE-FGel-9ayg-E2yg-kkEu-B72X-kFvaye

root@server1:~#


root@server1:~# vgdisplay
  --- Volume group ---
  VG Name               server1
  System ID
  Format                lvm2
  Metadata Areas        1
```

```
  Metadata Sequence No  4
  VG Access             read/write
  VG Status             resizable
  MAX LV                0
  Cur LV                3
  Open LV               3
  Max PV                0
  Cur PV                1
  Act PV                1
  VG Size               29.52 GB
  PE Size               4.00 MB
  Total PE              7557
  Alloc PE / Size       7557 / 29.52 GB
  Free  PE / Size       0 / 0
  VG UUID               PH5Hpc-jqeP-BFYs-wWlA-hu03-qwuQ-0cNIu3


root@server1:~#



root@server1:~# lvdisplay
  --- Logical volume ---
  LV Name                /dev/server1/swap
  VG Name                server1
  LV UUID                RCeLCK-MO5p-xoMq-SwTT-n2NV-GaP6-GaemDp
  LV Write Access        read/write
  LV Status              available
  # open                 2
  LV Size                1.00 GB
  Current LE             256
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     256
```

```
Block device           254:0


--- Logical volume ---
LV Name                /dev/server1/root
VG Name                server1
LV UUID                5Wen7n-xYmh-MQz1-fKH5-0XXa-1y2t-V3PYbb
LV Write Access        read/write
LV Status              available
# open                 1
LV Size                19.53 GB
Current LE             5000
Segments               1
Allocation             inherit
Read ahead sectors     auto
- currently set to     256
Block device           254:1


--- Logical volume ---
LV Name                /dev/server1/mysql
VG Name                server1
LV UUID                wk8yb6-fDl8-4tg3-tneT-1dDe-wWdy-AfGZ5I
LV Write Access        read/write
LV Status              available
# open                 1
LV Size                8.99 GB
Current LE             2301
Segments               1
Allocation             inherit
Read ahead sectors     auto
- currently set to     256
Block device           254:2


root@server1:~#
```

Here's an overview of my two hard drives:

```
root@server1:~# fdisk -l

Disk /dev/sda: 32.2 GB, 32212254720 bytes
255 heads, 63 sectors/track, 3916 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Disk identifier: 0x0009353f

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1   *           1          62      497983+  83  Linux
/dev/sda2              63        3916    30957255    5  Extended
/dev/sda5              63        3916    30957223+  8e  Linux LVM

Disk /dev/sdb: 10.7 GB, 10737418240 bytes
255 heads, 63 sectors/track, 1305 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Disk identifier: 0x00000000

Disk /dev/sdb doesn't contain a valid partition table
root@server1:~#
```

2 Preparing /dev/sdb

Before we can create snapshots on `/dev/sdb`, we must partition it (Linux LVM) and add it to our volume group (`server1`).

I will now create the partition `/dev/sdb1` and add it to the `server1` volume group:

```
fdisk /dev/sdb
```

```
server1:~# fdisk /dev/sdb
  Device contains neither a valid DOS partition table, nor Sun, SGI or OSF disklabel
```

```
 Building a new DOS disklabel. Changes will remain in memory only,
 until you decide to write them. After that, of course, the previous
 content won't be recoverable.


 The number of cylinders for this disk is set to 1305.
 There is nothing wrong with that, but this is larger than 1024,
 and could in certain setups cause problems with:
 1) software that runs at boot time (e.g., old versions of LILO)
 2) booting and partitioning software from other OSs
  (e.g., DOS FDISK, OS/2 FDISK)
 Warning: invalid flag 0x0000 of partition table 4 will be corrected by w(rite)

 Command (m for help): <-- n
Command action
   e    extended
   p    primary partition (1-4)
<-- p
Partition number (1-4): <-- 1
First cylinder (1-1305, default 1): <-- [ENTER]
Using default value 1
 Last cylinder or +size or +sizeM or +sizeK (1-1305, default 1305): <-- [ENTER]
Using default value 1305

 Command (m for help): <-- t
Selected partition 1
 Hex code (type L to list codes): <-- 8e
Changed system type of partition 1 to 8e (Linux LVM)

 Command (m for help): <-- w
The partition table has been altered!

 Calling ioctl() to re-read partition table.
```

```
Syncing disks.
```

```
pvcreate /dev/sdb1
```

```
vgextend server1 /dev/sdb1
```

That's it - we don't need to create any volumes on it - this will be done by mylvmbackup automatically.

3 Installing And Using mylvmbackup

Ubuntu 8.10 provides a package for mylvmbackup, therefore we can simply install it as follows:

```
apt-get install mylvmbackup
```

Take a look at

```
man mylvmbackup
```

to learn how to use it (read the part about InnoDB tables carefully if you're using InnoDB).

The mylvmbackup configuration file is */etc/mylvmbackup.conf*, so you can either specify your options on the command line or in that file (command line options will override the options in */etc/mylvmbackup.conf*).

The default backup directory is */var/cache/mylvmbackup/backup* (unless you specify another location).

A sample command for backing up MyISAM tables would be:

```
mylvmbackup --user=root --password=yourrootsqlpassword --mycnf=/etc/mysql/my.cnf --vgname=server1 --lvname=mysql --backuptype=tar
```

And for InnoDB:

```
mylvmbackup  --user=root  --password=yourrootsqlpassword  --innodb_recover  --skip_flush_tables  --mycnf=/etc/mysql/my.cnf  --vgname=server1
--lvname=mysql --backuptype=tar
```

Make sure you fill in the right password, volume group name (`server1` here) and the volume name of the volume that contains the MySQL data (the volume is `/dev/server1/mysql`, therefore the name is `mysql`).

I everything goes well, you should see lots of output:

```
root@server1:~# mylvmbackup --user=root --password=yourrootsqlpassword --mycnf=/etc/mysql/my.cnf --vgname=server1 --lvname=my
sql --backuptype=tar
20081204 19:16:58 Info: Connecting to database...
20081204 19:16:58 Info: Flushing tables with read lock...
20081204 19:16:58 Info: Taking position record...
20081204 19:16:58 Info: Taking snapshot...
File descriptor 3 left open
  Logical volume "mysql_snapshot" created
20081204 19:16:58 Info: Unlocking tables...
20081204 19:16:58 Info: Disconnecting from database...
20081204 19:16:58 Info: Mounting snapshot...
20081204 19:16:59 Info: Copying my.cnf...
20081204 19:16:59 Info: Taking actual backup...
20081204 19:16:59 Info: Creating tar archive /var/cache/mylvmbackup/backup/backup-20081204_191658_mysql.tar.gz
backup/
backup/mydb/
backup/mydb/sys_modules.MYI
backup/mydb/dns_a.frm
backup/mydb/isp_dienste.MYD
backup/mydb/isp_server_ip.frm
backup/mydb/dns_spf.frm
backup/mydb/dns_a.MYI
```

```
backup/mydb/isp_fakt_dep.frm
backup/mydb/multidoc_dep.frm
backup/mydb/isp_isp_web_template.MYI
backup/mydb/sys_nodes.MYD
backup/mydb/listtype.MYD
backup/mydb/help_documents.MYD
backup/mydb/help_tickets.MYI
backup/mydb/doctype.frm
backup/mydb/login.MYI
backup/mydb/isp_com.frm
backup/mydb/help_documents.MYI
backup/mydb/isp_dep.MYD
backup/mydb/help_documents.frm
backup/mydb/isp_server.MYD
backup/mydb/isp_fakt_nodes.MYD
backup/mydb/sys_config.MYD
backup/mydb/dns_nodes.MYI
backup/mydb/sys_config.MYI
backup/mydb/isp_monitor.frm
backup/mydb/isp_server_ip.MYI
backup/mydb/isp_isp_datenbank.frm
backup/mydb/dns_secondary.frm
backup/mydb/isp_nodes.MYI
backup/mydb/dns_isp_dns.MYI
backup/mydb/help_nodes.frm
backup/mydb/isp_fakt_nodes.frm
backup/mydb/isp_server.MYI
backup/mydb/isp_isp_domain.frm
backup/mydb/dns_dep.frm
backup/mydb/session.frm
backup/mydb/isp_isp_cron.MYD
backup/mydb/isp_fakt_record.MYI
backup/mydb/isp_monitor.MYI
```

```
backup/mydb/isp_fakt_rechnung.MYI
backup/mydb/listtype.MYI
backup/mydb/isp_fakt_rechnung.MYD
backup/mydb/isp_traffic.frm
backup/mydb/isp_fakt_dep.MYI
backup/mydb/user_groups.frm
backup/mydb/isp_fakt_record.frm
backup/mydb/isp_fakt_artikel.MYD
backup/mydb/isp_htaccess.MYD
backup/mydb/sys_nodes.frm
backup/mydb/groups.frm
backup/mydb/login.MYD
backup/mydb/isp_firewall.MYD
backup/mydb/isp_server.frm
backup/mydb/help_tickets.frm
backup/mydb/multidoc_dep.MYD
backup/mydb/dns_nodes.frm
backup/mydb/dns_a.MYD
backup/mydb/sys_config.frm
backup/mydb/dns_isp_dns.frm
backup/mydb/dns_mx.MYI
backup/mydb/isp_isp_web.MYD
backup/mydb/isp_serverstatus.MYI
backup/mydb/isp_serverstatus.MYD
backup/mydb/sys_dep.MYD
backup/mydb/isp_isp_cron.MYI
backup/mydb/session.MYD
backup/mydb/isp_isp_admin.MYD
backup/mydb/dns_ptr.frm
backup/mydb/dns_mx.frm
backup/mydb/isp_isp_domain.MYD
backup/mydb/sys_dep.MYI
backup/mydb/dns_spf.MYD
```

```
backup/mydb/user_groups.MYD
backup/mydb/sys_news.frm
backup/mydb/isp_isp_actions.MYI
backup/mydb/doctype.MYD
backup/mydb/multidoc_nodes.frm
backup/mydb/isp_fakt_artikel.frm
backup/mydb/sys_news.MYD
backup/mydb/isp_traffic.MYD
backup/mydb/user_groups.MYI
backup/mydb/sys_news.MYI
backup/mydb/listtype.frm
backup/mydb/del_status.frm
backup/mydb/isp_fakt_nodes.MYI
backup/mydb/isp_isp_kunde.MYD
backup/mydb/isp_dienste.frm
backup/mydb/dns_mx.MYD
backup/mydb/doctype.MYI
backup/mydb/help_tickets.MYD
backup/mydb/dns_secondary.MYI
backup/mydb/dns_ptr.MYD
backup/mydb/isp_isp_reseller.frm
backup/mydb/isp_dienste.MYI
backup/mydb/isp_isp_datenbank.MYD
backup/mydb/isp_isp_actions.MYD
backup/mydb/isp_isp_web.frm
backup/mydb/db.opt
backup/mydb/isp_server_ip.MYD
backup/mydb/multidoc_nodes.MYI
backup/mydb/dns_nodes.MYD
backup/mydb/isp_fakt_rechnung.frm
backup/mydb/isp_isp_reseller.MYI
backup/mydb/isp_nodes.MYD
backup/mydb/isp_htaccess.MYI
```

```
backup/mydb/isp_isp_web_template.frm
backup/mydb/isp_isp_domain.MYI
backup/mydb/dns_secondary.MYD
backup/mydb/dns_dep.MYD
backup/mydb/isp_firewall.MYI
backup/mydb/help_nodes.MYI
backup/mydb/isp_isp_admin.frm
backup/mydb/isp_isp_cron.frm
backup/mydb/isp_isp_datenbank.MYI
backup/mydb/isp_traffic_ip.frm
backup/mydb/isp_fakt_dep.MYD
backup/mydb/isp_dep.MYI
backup/mydb/dns_dep.MYI
backup/mydb/isp_isp_reseller.MYD
backup/mydb/dns_isp_dns.MYD
backup/mydb/isp_fakt_artikel.MYI
backup/mydb/multidoc_dep.MYI
backup/mydb/multidoc_nodes.MYD
backup/mydb/del_status.MYD
backup/mydb/groups.MYD
backup/mydb/isp_isp_web_template.MYD
backup/mydb/isp_htaccess.frm
backup/mydb/isp_dep.frm
backup/mydb/isp_isp_web.MYI
backup/mydb/isp_isp_user.frm
backup/mydb/session.MYI
backup/mydb/isp_isp_admin.MYI
backup/mydb/isp_isp_kunde.MYI
backup/mydb/isp_isp_user.MYI
backup/mydb/isp_fakt_record.MYD
backup/mydb/isp_nodes.frm
backup/mydb/groups.MYI
backup/mydb/del_status.MYI
```

```
backup/mydb/dns_spf.MYI
backup/mydb/isp_com.MYD
backup/mydb/isp_isp_user.MYD
backup/mydb/dns_cname.frm
backup/mydb/isp_com.MYI
backup/mydb/dns_cname.MYD
backup/mydb/sys_modules.MYD
backup/mydb/isp_traffic_ip.MYI
backup/mydb/help_nodes.MYD
backup/mydb/sys_user.frm
backup/mydb/isp_traffic_ip.MYD
backup/mydb/sys_user.MYD
backup/mydb/sys_modules.frm
backup/mydb/isp_serverstatus.frm
backup/mydb/sys_dep.frm
backup/mydb/isp_firewall.frm
backup/mydb/isp_monitor.MYD
backup/mydb/isp_isp_kunde.frm
backup/mydb/dns_cname.MYI
backup/mydb/isp_isp_actions.frm
backup/mydb/sys_user.MYI
backup/mydb/sys_nodes.MYI
backup/mydb/dns_ptr.MYI
backup/mydb/isp_traffic.MYI
backup/mydb/login.frm
backup/ib_logfile0
backup/mysql_upgrade_info
backup/debian-5.0.flag
backup/mysql/
backup/mysql/host.MYD
backup/mysql/procs_priv.MYD
backup/mysql/time_zone_transition.MYD
backup/mysql/proc.MYI
```

```
backup/mysql/time_zone_name.frm
backup/mysql/time_zone_name.MYD
backup/mysql/help_relation.MYI
backup/mysql/user.MYD
backup/mysql/help_category.MYI
backup/mysql/time_zone.frm
backup/mysql/func.MYD
backup/mysql/help_category.MYD
backup/mysql/time_zone_transition.frm
backup/mysql/time_zone_name.MYI
backup/mysql/help_category.frm
backup/mysql/time_zone_leap_second.frm
backup/mysql/time_zone_transition.MYI
backup/mysql/help_relation.MYD
backup/mysql/host.frm
backup/mysql/db.frm
backup/mysql/db.MYI
backup/mysql/columns_priv.frm
backup/mysql/time_zone.MYI
backup/mysql/time_zone_leap_second.MYD
backup/mysql/func.frm
backup/mysql/columns_priv.MYI
backup/mysql/help_topic.MYD
backup/mysql/host.MYI
backup/mysql/proc.frm
backup/mysql/user.MYI
backup/mysql/help_topic.MYI
backup/mysql/help_relation.frm
backup/mysql/tables_priv.frm
backup/mysql/help_keyword.frm
backup/mysql/user.frm
backup/mysql/time_zone_transition_type.MYI
backup/mysql/procs_priv.frm
```

```
backup/mysql/help_topic.frm
backup/mysql/procs_priv.MYI
backup/mysql/time_zone_transition_type.MYD
backup/mysql/func.MYI
backup/mysql/proc.MYD
backup/mysql/tables_priv.MYD
backup/mysql/help_keyword.MYI
backup/mysql/help_keyword.MYD
backup/mysql/time_zone_leap_second.MYI
backup/mysql/tables_priv.MYI
backup/mysql/db.MYD
backup/mysql/time_zone_transition_type.frm
backup/mysql/time_zone.MYD
backup/mysql/columns_priv.MYD
backup/lost+found/
backup/ibdata1
backup/ib_logfile1
backup-pos/backup-20081204_191658_mysql.pos
backup-pos/backup-20081204_191658_my.cnf
20081204 19:17:00 Info: DONE
20081204 19:17:00 Info: Cleaning up...
20081204 19:17:00 Info: LVM Usage stats:
20081204 19:17:00 Info:    LV              VG      Attr   LSize Origin Snap%  Move Log Copy%  Convert
20081204 19:17:00 Info:    mysql_snapshot server1 swi-a- 5.00G mysql     0.00
  Logical volume "mysql_snapshot" successfully removed
root@server1:~#
```

Afterwards you can find the backup in the */var/cache/mylvmbackup/backup* directory (unless you have specified another location):

```
ls -l /var/cache/mylvmbackup/backup
```

```
root@server1:~# ls -l /var/cache/mylvmbackup/backup
```

```
total 248
-rw-r--r-- 1 root root 246847 2008-12-04 19:17 backup-20081204_191658_mysql.tar.gz
root@server1:~#
```

The *tar.gz* file contains two directories, *backup* (with the databases and tables from */var/lib/mysql* which you can simply copy back after a database crash - the database should be stopped when you do this) and *backup-pos* which contains your *my.cnf* file (a backup of */etc/mysql/my.cnf*):

```
cd /var/cache/mylvmbackup/backup


tar xvfz backup-20081204_191658_mysql.tar.gz


ls -l
```

```
root@server1:/var/cache/mylvmbackup/backup# ls -l
total 256
drwxr-xr-x 5 mysql mysql   4096 2008-12-04 19:10 backup
-rw-r--r-- 1 root  root  246847 2008-12-04 19:17 backup-20081204_191658_mysql.tar.gz
drwxr-xr-x 2 root  root    4096 2008-12-04 19:24 backup-pos
root@server1:/var/cache/mylvmbackup/backup#
```

4 Links

- mylvmbackup: **http://lenz.homelinux.org/mylvmbackup/**
- MySQL: **http://www.mysql.com/**
- Ubuntu: **http://www.ubuntu.com/**