

Virtual Hosting With vsftpd And MySQL On Debian Etch

By Falko Timme

Published: 2007-06-24 19:02

Virtual Hosting With vsftpd And MySQL On Debian Etch

Version 1.0

Author: Falko Timme <ft [at] falkotimme [dot] com>

Last edited 06/23/2007

Vsftpd is one of the most secure and fastest FTP servers for Linux. Usually vsftpd is configured to work with system users. This document describes how to install a vsftpd server that uses virtual users from a MySQL database instead of real system users. This is much more performant and allows to have thousands of ftp users on a single machine.

For the administration of the MySQL database you can use web based tools like phpMyAdmin which will also be installed in this howto. phpMyAdmin is a comfortable graphical interface which means you do not have to mess around with the command line.

This tutorial is based on Debian Etch (Debian 4.0). You should already have set up a basic Debian Etch system, as described in the first six chapters of this tutorial: http://www.howtoforge.com/perfect_setup_debian_etch

This howto is meant as a practical guide; it does not cover the theoretical backgrounds. They are treated in a lot of other documents in the web.

This document comes without warranty of any kind! I want to say that this is not the only way of setting up such a system. There are many ways of achieving this goal but this is the way I take. I do not issue any guarantee that this will work for you!

1 Preliminary Note

In this tutorial I use the hostname *server1.example.com* with the IP address *192.168.0.100*. These settings might differ for you, so you have to replace them where appropriate.

2 Install vsftpd, MySQL And phpMyAdmin

Vsftpd has no built-in MySQL support, therefore we must use PAM to authenticate against the MySQL database. So we install libpam-mysql in addition to vsftpd, MySQL, and phpMyAdmin:

```
apt-get install vsftpd libpam-mysql mysql-server mysql-client phpmyadmin
```

Create a password for the MySQL user *root* (replace *yourrootsqlpassword* with the password you want to use):

```
mysqladmin -u root password yourrootsqlpassword
```

Then check with

```
netstat -tap | grep mysql
```

on which addresses MySQL is listening. If the output looks like this:

```
tcp        0      0 localhost.localdo:mysql *:*          LISTEN      2713/mysqld
```

which means MySQL is listening on *localhost.localdomain* only, then you're safe with the password you set before. But if the output looks like this:

```
tcp        0      0 *:mysql *:*          LISTEN      2713/mysqld
```

you should set a MySQL password for your hostname, too, because otherwise anybody can access your database and modify data:

```
mysqladmin -h server1.example.com -u root password yourrootsqlpassword
```

3 Create The MySQL Database For vsftpd

Now we create a database called *vsftpd* and a MySQL user named *vsftpd* which the vsftpd daemon will use later on to connect to the *vsftpd* database:

```
mysql -u root -p
```

```
CREATE DATABASE vsftpd;

GRANT SELECT, INSERT, UPDATE, DELETE, CREATE, DROP ON vsftpd.* TO 'vsftpd'@'localhost' IDENTIFIED BY 'ftpdpass';

GRANT SELECT, INSERT, UPDATE, DELETE, CREATE, DROP ON vsftpd.* TO 'vsftpd'@'localhost.localdomain' IDENTIFIED BY 'ftpdpass';

FLUSH PRIVILEGES;
```

Replace the string *ftpdpass* with whatever password you want to use for the MySQL user *vsftpd*. Still on the MySQL shell, we create the database table we need (yes, there is only one table!):

```
USE vsftpd;
```

```
CREATE TABLE `accounts` (

`id` INT NOT NULL AUTO_INCREMENT PRIMARY KEY ,

`username` VARCHAR( 30 ) NOT NULL ,

`pass` VARCHAR( 50 ) NOT NULL ,

UNIQUE (

`username`

)

) ENGINE = MYISAM ;
```

```
quit;
```

As you may have noticed, with the `quit;` command we have left the MySQL shell and are back on the Linux shell.

BTW, (I'm assuming that the hostname of your ftp server system is `server1.example.com`) you can access phpMyAdmin under `http://server1.example.com/phpmyadmin/` (you can also use the IP address instead of `server1.example.com`) in a browser and log in as the user `vsftpd`. Then you can have a look at the database. Later on you can use phpMyAdmin to administrate your vsftpd server.

4 Configure vsftpd

First we create a non-privileged user called `vsftpd` (with the homedir `/home/vsftpd`) belonging to the group `nogroup`. We will run vsftpd under this user, and the FTP directories of our virtual users will be in the `/home/vsftpd` directory (e.g. `/home/vsftpd/user1`, `/home/vsftpd/user2`, etc.).

```
useradd --home /home/vsftpd --gid nogroup -m --shell /bin/false vsftpd
```

Then we make a backup of the original `/etc/vsftpd.conf` file and create our own:

```
cp /etc/vsftpd.conf /etc/vsftpd.conf_orig  
  
cat /dev/null > /etc/vsftpd.conf  
  
vi /etc/vsftpd.conf
```

The file should have the following contents:

```
listen=YES  
anonymous_enable=NO  
local_enable=YES  
write_enable=YES
```

```
local_umask=022
dirmmessage_enable=YES
xferlog_enable=YES
connect_from_port_20=YES
nopriv_user=vsftpd
chroot_local_user=YES
secure_chroot_dir=/var/run/vsftpd
pam_service_name=vsftpd
rsa_cert_file=/etc/ssl/certs/vsftpd.pem
guest_enable=YES
guest_username=vsftpd
local_root=/home/vsftpd/$USER
user_sub_token=$USER
virtual_use_local_privs=YES
user_config_dir=/etc/vsftpd_user_conf
```

The configuration options are explained on http://vsftpd.beasts.org/vsftpd_conf.html. The important options for our virtual setup are *chroot_local_user*, *guest_enable*, *guest_username*, *user_sub_token*, *local_root*, and *virtual_use_local_privs*.

With the *user_config_dir* option you can specify a directory for per-user configuration files that override parts of the global settings. This is totally optional and up to you if you want to use this feature. However, we should create that directory now:

```
mkdir /etc/vsftpd_user_conf
```

Now we must configure PAM so that it uses the MySQL database to authenticate our virtual FTP users instead of */etc/passwd* and */etc/shadow*. The PAM configuration for vsftpd is in */etc/pam.d/vsftpd*. We make a backup of the original file and create a new one like this:

```
cp /etc/pam.d/vsftpd /etc/pam.d/vsftpd_orig

cat /dev/null > /etc/pam.d/vsftpd
```

```
vi /etc/pam.d/vsftpd
```

```
auth required pam_mysql.so user=vsftpd passwd=ftpdpass host=localhost db=vsftpd table=accounts usercolumn=username passwdcolumn=pass crypt=2
account required pam_mysql.so user=vsftpd passwd=ftpdpass host=localhost db=vsftpd table=accounts usercolumn=username passwdcolumn=pass crypt=2
```

Please make sure that you replace the MySQL password with your own one!

Afterwards, we restart vsftpd:

```
/etc/init.d/vsftpd restart
```

5 Create The First Virtual User

To populate the database you can use the MySQL shell:

```
mysql -u root -p
```

```
USE vsftpd;
```

Now we create the virtual user *testuser* with the password *secret* (which will be stored encrypted using MySQL's *PASSWORD* function):

```
INSERT INTO accounts (username, pass) VALUES('testuser', PASSWORD('secret'));
```

```
quit;
```

testuser's homedir is */home/vsftpd/testuser*; unfortunately vsftpd doesn't create that directory automatically if it doesn't exist. Therefore we create it

manually now and make it owned by the *vsftpd* user and the *nogroup* group:

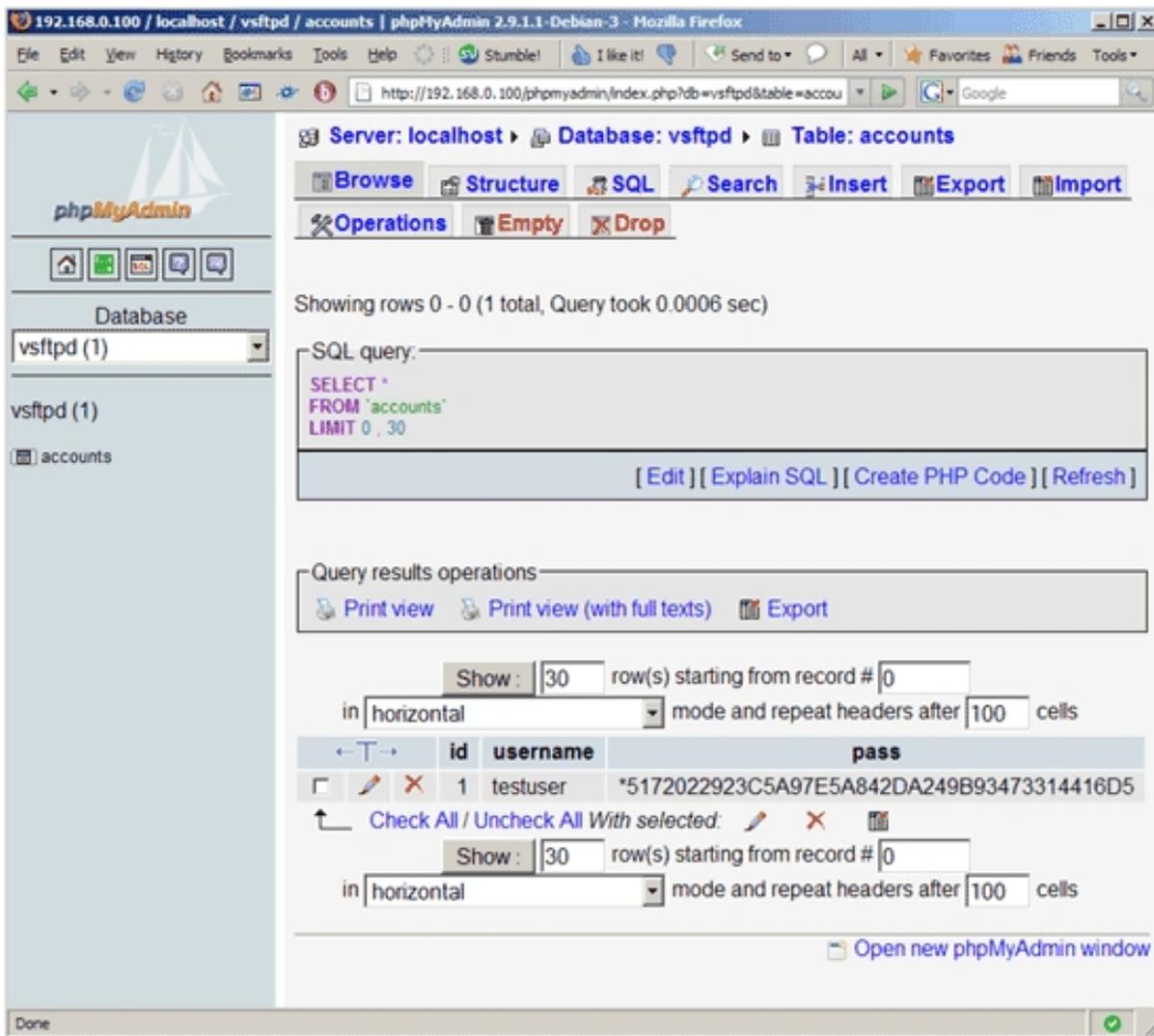
```
mkdir /home/vsftpd/testuser  
  
chown vsftpd:nogroup /home/vsftpd/testuser
```

Now open your FTP client program on your work station (something like WS_FTP or SmartFTP if you are on a Windows system or gFTP on a Linux desktop) and try to connect. As hostname you use *server1.example.com* (or the IP address of the system), the username is *testuser*, and the password is *secret*.

If you are able to connect - congratulations! If not, something went wrong.

6 Database Administration

For most people it is easier if they have a graphical front-end to MySQL; therefore you can also use phpMyAdmin (in this example under <http://server1.example.com/phpmyadmin/>) to administrate the vsftpd database.



Whenever you create or modify a user, make sure that you use MySQL's `PASSWORD` function to encrypt that user's password. Also, when you create a new virtual user, please don't forget to create that user's homedir on the shell, as shown at the end of the previous chapter.

Server: localhost Database: vsftpd Table: accounts

Operations Empty Drop

Field	Type	Function	Null	Value
id	int(11)			1
username	varchar(30)			testuser
pass	varchar(50)			secret

Save

previous page Go Reset

Open new phpMyAdmin window

7 Links

- vsftpd: <http://vsftpd.beasts.org>

- Debian: <http://www.debian.org>