

TUTORIALS

EASY MAC OS X (MOUNTAIN) LION AND MAVERICKS 10.7, 10.8 AND 10.9 TIME MACHINE BACKUP USING AN UBUNTU LINUX SERVER [11.10, 12.04 LTS AND UP]

MARCH 3, 2012 | PWNTR | 71 COMMENTS

Maybe you always wanted to have an Apple Time Capsule for easy backup management of your Macs. One of the drawbacks that comes with a device like that is its price. You could also use any Mac for it, but those are also expensive and most likely don't wanna be hidden in a dusty closet. If you have an old PC somewhere that can run Linux (or BSD or any other UNIX) you already have everything you need to build a cheap, reliable "Time Capsule" yourself. Let's get started!

What you'll need:

- A PC running Linux (or BSD etc.) as the server
- A Mac (OS X 10.5 and above) that likes to use the Time Machine backup feature
- A hard drive or spare disk space on your server that is at least as big as the Mac's hard drive
- A fast network to make things smooth
- The latest version of [Netatalk](#) (\geq v. 2.2.0)

This guide will use Ubuntu Linux as an example as I tested it with Ubuntu Linux 11.10 and 12.04 LTS. The only critical part is that your Netatalk version has to be \geq 2.2.0 beta 4, else it won't work with Lion. Aside from that pre-requisite you can use any Linux/UNIX/BSD/... distribution you want. On the client side, every version since Mac OS X Leopard (10.5) will work. And yes, that includes Lion, Mountain Lion and the newest Mavericks!

[Step 0. Optional, but recommended]

If you are using Ubuntu 11.10 or earlier, add this ppa repository to easily install and update Netatalk to one of the most current versions:

```
1 sudo add-apt-repository ppa:jstrunk-math/ppa
```

If you tried to set up a Time Machine / Netatalk installation before and didn't succeed, completely remove Netatalk and all of its configuration files before you proceed:

```
1 sudo apt-get remove --purge netatalk
```

There is also no need for any additional Avahi setup since Netatalk 2.2.x comes with built-in Avahi/Bonjour/Zeroconf capabilities in case you were wondering.

Step 1: Install Netatalk

Log in to your server by SSH or open up a shell on it locally. To install Netatalk, type:

```
1 sudo apt-get install netatalk
```

Step 2: Configure the afpd server

Edit `/etc/netatalk/afpd.conf` with your favorite editor and add the following line at the end (comment out every other line that might be active):

```
1 - -tcp -noddp -uamlist uams_dhx.so,uams_dhx2_passwd.so -nosavepassword
```

This will define the afpd server (Netatalk).

Due to a [bug in Ubuntu 11.10's Netatalk version](#) you have to use `uams_dhx2_passwd.so` instead of the usual `uams_dhx2.so` as the authentication module. If you are using Ubuntu 12.04 or later you can use either module (my reader Brandon mentioned that `uams_dhx2_passwd.so` might still be needed in 12.10).

Next make sure your `/etc/default/netatalk` file shows `CNID_METAD_RUN=yes`. This will ensure that all the metadata that is needed by OS X is handled and saved by an extra daemon on the side, too.

Step 3: Create and prepare the Time Machine backup locations

First of all you should decide which directories you would like to share with your Macs and where you want to save your Time Machine backups. And which user on your server shall be in charge of which backup and directory etc. Here's an example setup with one user called `username`:

```
1 cd /home/username/  
2 mkdir tm_backup
```

Creating the backup directory in his home directory ensures that he has the necessary rights to read and write in it. If you want to keep the backups somewhere else, say on an external hard drive, make sure that the user has the correct rights to access it fully! Here's another example:

```
1 cd /media/backup_hdd/  
2 sudo mkdir tm_backup  
3 sudo chown -R username:username tm_backup
```

If you want to be really fancy and have a single directory for all backups of all your Macs and users, create a group for the Time Machine users:

```
1 sudo groupadd tmusers  
2 sudo usermod -a -G tmusers username  
3 cd /media/backup_hdd/  
4 sudo mkdir tm_backup  
5 sudo chown -R username:tmusers tm_backup  
6 sudo chmod 770 -R tm_backup
```

This will add a new group called `tmusers` to your systems, add the existing user `username` to it, create the backup directory and ensure that the owner `username` and the group `tmusers` have full access to it. However, it is also possible to skip this step and just use a single user on the server for all the Time Machine backups. Always keep in mind that the backups might be accessible by the other users if they're all saved to a common directory. Creating a directory and a share for each user separately is the safest method.

Step 4: Configure the shared directory in Netatalk's config

Now that we have the actual directory set up in the file system we can add the following line to the `/etc/netatalk/AppleVolumes.default` file:

```
1 /media/backup_hdd/tm_backup "Backup for username" allow:username cnidscheme:dk
```

Adjust the location of the directory and the username to your needs. The example above also limits the size shown to OS X as 200 GB (the number is given in MiB, so it's 200,000 times 1024 in the real world). Also note that the `tm` option is only option separating a Time Machine capable directory from a regular afp share.

Add a line like this for every user and directory that is supposed to make Time Machine backups. If you want to allow a whole group of users to access a directory for the purpose of Time Machine backups, use this line and make sure to edit the `@tmusers` option to be `@yourgroupname` (notice the `@` in front of the group name).

```
1 /media/backup_hdd/tm_backup "Backup for all users" allow:@tmusers cnidscheme:c
```

I made an adjustment to the `volsize` option since 200 GB might not be enough to backup multiple Macs.

I also added the following line at the beginning of my `/etc/netatalk/AppleVolumes.default` file:

```
1 :DEFAULT: cnidscheme:dbd options:upriv,usedots
```

This adds some useful default settings when handling more than just a backup share. Just fyi.

Restart the Netatalk daemon to make sure it uses the newly adjusted configurations:

```
1 sudo service netatalk restart
```

We are now done configuring the server. Congratulations! Continue on the client side.

Step 5: Configure the Macs to use the server as a Time Machine volume

Open up a terminal on your Mac (press `Command + Space`, then enter `Terminal` and hit `Enter`) and allow unsupported network volumes to be used as a Time Machine backup destination:

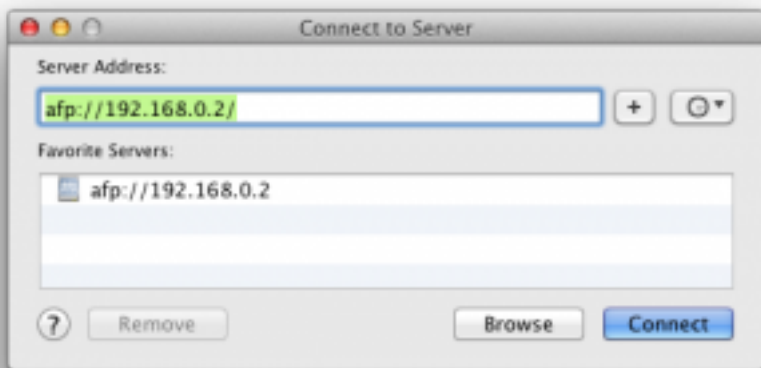
```
1 defaults write com.apple.systempreferences TMShowUnsupportedNetworkVolumes 1
```

Note: run this command as the user that is going to actually make the backup, don't put `sudo` in front of the command!

That is all for the command line work. From here on we can use the Mac OS X GUI to continue setting up the Time Machine backup.

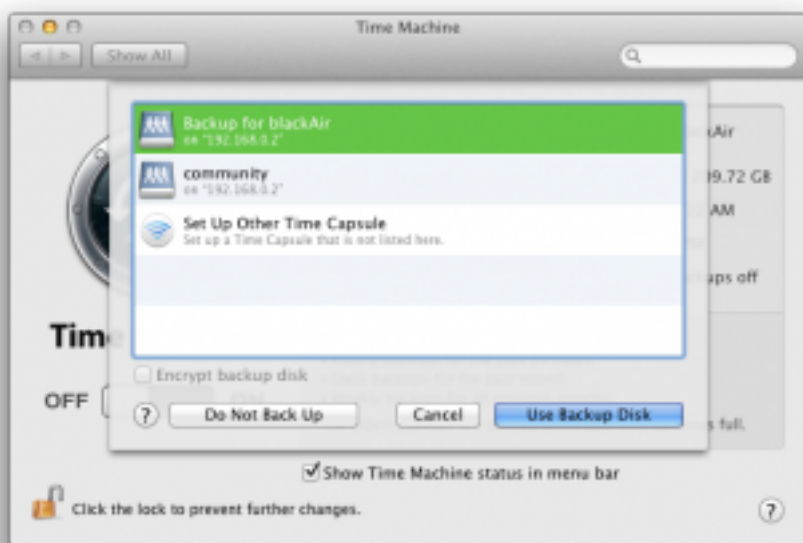
Before you do anything else, restart your Mac. Trust me on that one, for some reason it didn't work for me until I restarted my Mac. Save yourself some time and trouble.

After a fresh boot open up Finder and press `Command + K` to bring up the "Connect to Server" dialog.



Enter `afp://ip_address_of_your_server`, press Enter and select the according share from the list. Fill in username and password from the user on the server (not the one on the Mac) and see if you have access to the share. If everything works well, continue with the Time Machine preferences.

In the system preferences on your Mac, select Time Machine and click on “Select Disk...”



Select your share from the list, edit the other options like excluded directories and automatic backups to your liking and enjoy this cheap and reliable Time Machine solution! The first backup might take quite some time, depending on your network and hard drive speed. All the following backups will be incremental and a lot faster.

Bonus: you don't even have to manually connect to the server share before a backup. Time Machine will let its magic happen and auto-mount / un-mount the share whenever it is needed. Peace of mind in a box.

P.S.: You can even use this share and setup to easily restore your Mac from scratch after it has crashed or caught fire.

Here are some useful in-depth links for further reading:

[afpd.conf manpage](#)

[AppleVolumes.default manpage](#)

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71 THOUGHTS ON “EASY MAC OS X (MOUNTAIN) LION AND MAVERICKS 10.7, 10.8 AND 10.9 TIME MACHINE BACKUP USING AN UBUNTU LINUX SERVER [11.10, 12.04 LTS AND UP]”

 **William**

APRIL 25, 2012 AT 5:20 AM

I tried all your instruction my Lion still says The network disk does not support the required AFP features. I'm using Ubuntu 12.04

 ★ **pwntr**

APRIL 27, 2012 AT 10:51 AM

Did you make sure that you have “tm” at the end of your config line in /etc/netatalk/AppleVolumes.default?

... options:usedots,upriv,tm

 **maierch**

MAY 22, 2012 AT 4:01 AM

I use firefox to surf th web and the two long lines with the share are cut after cnid-scheme:dbd and therefore I had the same problem as William. Using “copy plain code” worked for me. Thank you, Christian

 **aquator**

JUNE 28, 2012 AT 9:32 AM

Same here. I've tried all tutorials I could find, but this is the most recent one. Config is fine, password is not checked (no matter what type, same error appears)



Steven

MAY 5, 2012 AT 9:14 AM

Thanks, this worked perfectly!



Justin

MAY 9, 2012 AT 7:29 AM

I had the same issue as pwntr, running a freshly updated Ubuntu 12.04, netatalk 2.2.1-1. I confirmed the share definition had "tm" in the options, as suggested. I found a post on the netatalk-devel mailing list (link below) that mentions a difference found in /etc/pam.d/common-auth between Ubuntu Desktop and Ubuntu Server. The poster suggested that in Server versions, there was an auth optional line for "pam_smbpass.so", and that removing/commenting that line got netatalk working with Lion. I didn't have that pam directive, but I did have a different optional entry for "pam_ecryptfs.so". Since I don't use an encrypted filesystem on my server, I decided to give it a shot and comment it out. I restarted the netatalk service and tried accessing the share from Lion again, and things started working as expected.

http://sourceforge.net/mailarchive/message.php?msg_id=29229826



Justin

MAY 9, 2012 AT 7:31 AM

Realized pwntr is the site operator, and the person reporting trouble was William, so I reposted the comment properly referencing William. Please delete this comment and the one it replies to. Thanks.



speralta

NOVEMBER 29, 2012 AT 10:28 PM

I was having a similar problem (I think) after entering my user name and password it said that it could not connect. I'm running Ubuntu 12.04 server and Mountain Lion (10.8.2). Found the "pam_ecryptfs.so" entry in the /etc/pam.d/common-auth. Commented it out, restarted the service and everything worked!



Justin

MAY 9, 2012 AT 7:29 AM

I had the same issue as William, running a freshly updated Ubuntu 12.04, netatalk 2.2.1-1. I confirmed the share definition had “tm” in the options, as suggested. I found a post on the netatalk-devel mailing list (link below) that mentions a difference found in /etc/pam.d/common-auth between Ubuntu Desktop and Ubuntu Server. The poster suggested that in Server versions, there was an auth optional line for “pam_smbpass.so”, and that removing/commenting that line got netatalk working with Lion. I didn’t have that pam directive, but I did have a different optional entry for “pam_ecryptfs.so”. Since I don’t use an encrypted filesystem on my server, I decided to give it a shot and comment it out. I restarted the netatalk service and tried accessing the share from Lion again, and things started working as expected. http://sourceforge.net/mailarchive/message.php?msg_id=29229826



Noah

DECEMBER 18, 2012 AT 9:15 PM

This is exactly what I needed! Thank you!!!



Wayne Redmon

JUNE 17, 2012 AT 8:25 AM

Have you performed a restore from an Ubuntu-based Time Machine sparsebundle restore point? If so, did you try a complete restore, and did the restore process perform as one would restore from a Time Capsule/Aiprot Extreme-USB based Time Machine?



aquator

JUNE 28, 2012 AT 10:26 AM

Okay, I got it. You have to edit the /etc/default/netatalk file
Uncomment the AFPD_UAMLIST= ... line, and set up the same uamlist.
Mine is: AFPD_UAMLIST="-U uams_dhx.so,uams_dhx2_passwd.so"
It is not perfect yet, but I can pass the not supported error.



Alex

JULY 6, 2012 AT 5:49 AM

How do your backup disk space on the ‘nix server formatted (i.e., HFS+, ext3)? Have you actually tried recovering from this backup setup, and how has it changed the process for you from just using a local external drive?



William

SEPTEMBER 6, 2012 AT 11:28 AM

Filesystem on the server doesn't matter. The Mac creates a disk image on the server and formats it with the correct filesystem. This is different from using an external drive but should cause no problems as it is being used exactly how Apple intended.



John

JULY 13, 2012 AT 1:58 PM

Great tutorial! This was very easy to follow. Unfortunately, I'm having the same problem as William above... when I try to connect to the afp service on my Mac, it doesn't connect. Ideas?



Jack

JULY 17, 2012 AT 11:03 AM

Thanks for this – seems to have worked a treat. It's running a bit slow though, got a 1Gb link between the two machines, anything I should be tweaking?

Thanks 😊



Alex

JULY 20, 2012 AT 6:22 PM

Great work. I followed your instructions exactly and it worked the first try.

Thanks for making the effort.



Tevic

JULY 25, 2012 AT 6:42 PM

Thanks for the nice write-up on Netatalk & Time Machine backups... it was one of the first tutorials to appear in my search. Looks like a project for tomorrow evening :).



Justin Davis

JULY 25, 2012 AT 10:56 PM

This worked great. The only problem, make sure your drive does not have any spaces in the drive name. ("My Drive" would not work as "My\ Drive") After reformatting a other drive and naming it "backup_drive". Everything worked like a charm 😊



AB

JULY 25, 2012 AT 11:42 PM

Worked perfectly for me. I used the first option (single user) and just changed the line in step 4 to have my own username instead of the generic “username” example that was used.
Thanks!



John Rooney

AUGUST 1, 2012 AT 3:16 AM

Thanks dude. Worked first time with my configuration of Lion and 12.04 Ubuntu. Keep up the good work 😊

Pingback: [A Coder's Life » Blog Archive » How to time machine](#)



Alex

AUGUST 16, 2012 AT 5:33 AM

This is exactly what I was looking for. *THANK YOU*



Steveorevo

AUGUST 16, 2012 AT 11:24 PM

Awesome. This works beautifully from Mountain Lion to an Ubuntu VM running on another Mountain Lion machine. Currently OS X 10.8 File Sharing inhibits Time Machine on shares; it still works but just at 1/100th the speed. Speculation is that Apple is “rate limiting” Time Machine to boost sales of OS X Server.

Before I could run a Snow Leopard to Lion file share doing an 80gig backup in about 2 hours, since ML upgrade, that dropped to 2days! Your solution brought it right back where it belongs. Thanks!

<http://iansutherland.ca/2012/08/15/slow-time-machine-network-backups-in-mountain-lion/>



Sam

SEPTEMBER 17, 2012 AT 4:05 PM

I'm sorry if I misread what you wrote, but did you have the slowdown after you utilized this method or was the slowdown using the out of the box method? I'm trying to do it this way and I have it working, but it wants 5 days for about 70GB!!



Steveorevo

SEPTEMBER 20, 2012 AT 6:26 PM

Before. Mountain Lion non-server edition inhibits Time Machine over the network to another Mountain Lion non-server edition.



lee

AUGUST 19, 2012 AT 2:55 PM

First let me say great tutorial! I had some frustration following a different tutorial a while back with a previous version of Netatalk on my linux server. It must have been that particular version because the tutorial was great(learned a lot) and It worked but was buggy. Now with a newer version of Netatalk This was smooth. Didn't even have to reboot, configured partition showed up immediately. F.Y.I: not using this for TM backups. just a "foundation". Now on to my idea...

'personal comic book cloud'



Graham Adams

SEPTEMBER 5, 2012 AT 1:06 AM

Great tutorial! Could someone please just help me? TimeMachine picks the Ubuntu 12.04 server and the backup drive but as soon as I try and authenticate then it seems to be incorrect. I have since removed the user, added it again and made sure the password is correct! Any ideas???



James

SEPTEMBER 29, 2012 AT 11:11 PM

Worked perfectly. Thanks !



Sebastian

OCTOBER 8, 2012 AT 11:13 AM

Thanx for this great tutorial. But I have littel problems getting it working. I'm using XBMCbuntu (11.10) and followed this tutorial step by step. AFP shares are working fine but there is no "time capsule" shown in TimeMachine.

Does anyone have an idea why this could be?

Is there something missing in XBMCbuntu so that it can't work?

 ★ **pwntr**

OCTOBER 10, 2012 AT 11:13 AM

Did you make sure that your Netatalk version is \geq v. 2.2.0? It didn't work with the version that came with 11.10, therefore I had to add the other repository (see step 0) to get the latest version. With this it worked perfectly.

Pingback: [Easy Mac OS X Lion 10.7 & 10.8 Time Machine backup on Ubuntu Linux server 11.x & 12.x](#)

 **MACscr**

OCTOBER 22, 2012 AT 1:42 PM

I've read that using this method is a recipe for disaster as Time Machine expects the destination server to perform the second-level checksums and integrity checks; something Macs and Time Capsules can do, but a linux server can't. Your thoughts?

 ★ **pwntr**

OCTOBER 23, 2012 AT 5:36 PM

What's your source for that fear? Usually the "tm" parameter should take care of that as well and make it different from a regular AFP share, just like a time capsule. There shouldn't be any difference to the Apple and Linux solution.

 **Dude2222**

NOVEMBER 1, 2012 AT 1:59 PM

Thanks for this – works great -except,...

About 20 or so GB into the backup – my Mountain Lion MacBook Pro (13" – Late 2008 Model) – reset's with an SFP Error.

I can not seem to get an initial backup to complete. Any ideas on what to try?

Also, the backup says it will take about a week to do.



Dude2222

NOVEMBER 1, 2012 AT 2:00 PM

Sorry – it's an AFP error – not SPF



Peter Cardoe

NOVEMBER 7, 2012 AT 9:58 AM

Has a restore been tested?



Emilio

NOVEMBER 13, 2012 AT 11:36 AM

Thk's work fine por me



Steve

NOVEMBER 20, 2012 AT 11:13 PM

Magnificent! Thank-you.



Mark

NOVEMBER 23, 2012 AT 7:58 AM

Nifty guide – thanks for sharing it 😊



Jarkko

DECEMBER 18, 2012 AT 10:53 PM

Thanks a lot! Guide worked perfectly with Ubuntu Server 12.10 😊



okor

DECEMBER 21, 2012 AT 2:14 PM

Perfect man. Took less than 10 minutes (with 12.04). Thanks for taking the time to write this post!



Dick

DECEMBER 27, 2012 AT 3:01 PM

Hi,

I like the simplicity of your how-to. But the real beauty and elegance is in the advertising of the disk itself, hence, abandoning the need for linking to the server yourself nor the need for adding unsupported drives.

Just to be clear on things: the “tm”-option DOES NOT, i repeat, DOES NOT guarantee integrity checking of the backups on unsupported media server-side (your work-around just switches this check off), which might leave you with an unusable backup when you need it the most.

Just follow this guide from “Install Avahi...” onwards, and see for yourself what that does. Just wanted to say thanks and keep up the good work.



Steve

DECEMBER 28, 2012 AT 11:51 AM

Fantastic!! This works flawlessly! Add NTOP and you can monitor network traffic for anticipated spikes as system(s) backup to the capsule. Thanks for posting this!



Michael Graf

JANUARY 9, 2013 AT 12:08 PM

Well done, this worked for me.

OSX lion -> Ubuntu LTS

Thank you.



Erik

JANUARY 12, 2013 AT 1:26 PM

Worked great. Took 5-10 minutes. Mac Mini -> Ubuntu 12.04 LTS.

I will do this on mi iMac as well. Can I use the same user I created on Ubuntu, and just add a new:

```
/media/backup_hdd/tm_backup "Backup for username" allow:username cnidscheme:dbd vol-  
sizelimit:200000 options:usedots,upriv,tm
```

```
to : /etc/netatalk/AppleVolumes.default ?
```



Chris

JANUARY 19, 2013 AT 12:40 PM

First of all let me say thanks for posting this it really helped me understand whats going on. After following this guide and a few others I run into an odd problem on my macbook air. After connecting the server and selecting it as a disk the time machine utility gets stuck at “looking for backup disk.” I have tried rebuilding all the server config files several times to no avail. Any ideas on what might be causing the problem? Thanks!

P.S. I am using ubuntu server 12.04 and mac osx lion



Andrew

JANUARY 29, 2013 AT 11:00 PM

I’m having trouble getting this to work with 12.04 Desktop. The first backup works fine but at some point the Desktop will suspend/hibernate and after that my mbp can’t find the disk even if I restart netatalk. Is there a way to configure Ubuntu so that the disk is always available or so that the mbp can find the disk again automatically when I wake up the desktop?

Pingback: [The ultimate backup-system | AndreMotz.com](#)



Firestone

FEBRUARY 23, 2013 AT 10:33 AM

Thanks for this tutorial!

I have managed to get this to work in the past, haven’t tried to complete this tutorial yet, but I will.

But one question... Usually I need access to my time machine-backups when I restore one of my Macs when the system is booted from the installation-discs. How can I make the system allow me to restore from an “unsupported” Time-Machine-volume when I’m at that point?

Pingback: [Ubuntu 12.04 Share with OSX 10.8 | Open Source Software Development](#)



Paulo Alves

MARCH 14, 2013 AT 2:51 AM

Friends, I have problem, I did the whole setup, but I have put in all User Mountain lion, he does not enter, already tried to change the usernames, but just does not come, what can I do



Omar Morales

MARCH 21, 2013 AT 6:55 PM

This worked great for me. The only problem I am running into is that my first time machine back up says it is going to take 25 days to back up 50gb. If possible, what can I do to speed this up?



Omar Morales

MARCH 21, 2013 AT 7:29 PM

i meant 500gb. not 50gb



j4ckripp3r

APRIL 10, 2013 AT 3:50 PM

LDAP does not work with netatalk on Ubuntu 12.04. Do I need to install from source to get LDAP to work?

Pingback: [New Tech Toys | Transience](#)



yuso08

MAY 12, 2013 AT 6:02 AM

Thanks guys, had the exact same problem all working now!



Steven

MAY 31, 2013 AT 4:06 PM

Great tutorial. I tried a few others that had a similar walkthrough but had no luck, so thanks!



Glenn

JUNE 4, 2013 AT 4:33 AM

This:

```
defaults write com.apple.systempreferences TMShowUnsupportedNetworkVolumes 1
```

is not needed when using netatalk, neither recommended!

It will not tell TimeMachine when the disk is full, so you can end up taking false backups, eventually being without backups, and not knowing it unless you check the servers storage.

Just test it without this parameter setting, then you will have a fully 100% compatible Time Capsule server.

Tested and working on Ubuntu Server 12.04 and OS X 10.8.3.

Thanks for your guide!



Ad

JULY 29, 2013 AT 1:35 AM

I think the problem you're having here is that Mountain Lion no longer allows some of the older authentication methods as they are less secure. You need to add or edit a config line in your Mac to allow the older types of authentication over AFP.



Ad

JULY 29, 2013 AT 1:39 AM

Ok I found it, here's the link which probably solves it for you:

<http://support.apple.com/kb/ht4700>



Bamoto

AUGUST 3, 2013 AT 1:03 AM

It worked flawlessly. Thanks.



Clayton Smith

SEPTEMBER 13, 2013 AT 10:24 AM

Fantastic instructions – worked like a charm. Thanks!



Casey Friday

OCTOBER 29, 2013 AT 8:05 AM

Thank you SO MUCH! I have been at this for about a week now, and simply changing my RAID

mount's folder's name from **Casey's Time Machine** to **casey_tm** enabled the backups to start working! Awesome!



Max Trancemind

DECEMBER 8, 2013 AT 11:08 AM

Really THANK YOU very much!

Your manual was very useful for me...

In first time I found another manual about setup afp under Linux, but those was with much of difficult changes in afpd.conf. Your recommendation easiest and it WORKS!

Thank you, ones more!



Bryon Lape

DECEMBER 21, 2013 AT 12:06 PM

This sorta worked for me. Users can see their home directories, but the area I made specifically for backups does not.



Fredy

DECEMBER 26, 2013 AT 1:25 PM

Thanks a lot for this tutorial... great help for me 😊

Pingback: [Perché GNU/Linux comincia a piacermi meno - Stefano Marinelli's Blog](#)



Jim

JANUARY 25, 2014 AT 7:16 AM

Nice guide. Worth setting up as a clean alternative to SAMBA or CIFS, whether or not you need/want the networked Time Machine drive. Runs fine for me on OS X Mavericks 10.9.1 to access shares on Mint 13 (equivalent to Ubuntu 12.04 LTS).



Chris

JANUARY 29, 2014 AT 6:32 AM

Hi, I'm having a hard time getting this to work and was hoping for some help.

It is my understanding that drives that use Time Machine must be formatted as HFS+ (Journaled). Is this not the case?

So I have a drive in my Ubuntu server(12.04) that is HFS+ Journaled (it was an old external that was my primary source for TM backups previously), however, I can not write to the drive to even make backup folders because Ubuntu does not support writing to HFS+ Journaled drives. I have tried many mount options “force, rw, auto” etc etc to no avail, it always mounts as read-only.

So I guess my question is this: Does the drive I am using not need to be in HFS+ Journaled format? Does Netatalk “take care of this” in some way?

Pingback: [CentOS: Instalar o Netatalk 3.1.0 \(Time Machine\) | Blog do TadeuCruz](#)