Secure CVS Pserver Mini–HOWTO

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Revision History

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Fixed a missing link and added a section on CVSGrab		
Revision 1.0	2003–02–01	Revised by: mk
Initial Release, reviewed by LDP.		

This document will help you set up a more secure CVS Pserver for anonymous CVS access.

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1. Introduction

CVS Pserver is, by definition, an insecure protocol. Among other things, passwords are transmitted in plain text, making it undesirable for much use. However, CVS Pserver is very good for providing anonymous CVS access to a repository.

In this document we will introduce you to setting up a CVS repository (although not intruding on the CVS HOWTO's space), and how to set up a chroot jail for the Pserver. We will also talk about using SSH for developer access to a repository.

---

2. Getting the tools

2.1. What you need

You'll need the following things in order to set up a secure Pserver:

CVS
: Of course, you will need to have CVS in order to be running it. You can get it here.

cvsd
: **cvsd** is a program that will run the CVS Pserver in a chroot jail. You can get it here.

SSHd
: If you want your developers to have secure access to the repository, you'll have to be running an SSH server. However, setting up that access is beyond the scope of this Mini−HOWTO. More information can be found at the CVS−RCS howto.

2.2. Compiling the tools

If you are compiling from the sources, follow these instructions. If you downloaded binaries, skip ahead to Section 2.2.2.

2.2.1. Compiling CVS

After you have downloaded the CVS sources, unpack them into a directory and **cd** into it. The default prefix is `/usr/local`; we've changed it to `/usr` for this example. You might want to change `mandir` to wherever your man pages reside (the default is `PREFIX/man`).

```
$ ./configure --prefix=/usr
$ make
# make install
```

2.2.2. Compiling cvsd

There are a few configure switches you should be aware of here. The default prefix is `/usr/local`, which in this document we are changing to `/usr`. You should also change `sysconfdir` to `/etc`, where the system config files usually reside. You might want to change `mandir` to wherever your manual pages reside as well.

```
$ ./configure --prefix=/usr --sysconfdir=/etc
$ make
# make install
```

Now lets go on to setting up these wonderful tools.

3. Setting up the tools

Now that CVS and cvsd are built, let's set them up.

3.1. Creating the CVS Repository

Before we begin, I strongly recommend you read the CVS manual that was installed with the rest of CVS. If the stand−alone info browser or the texinfo package is installed on your system, you can see this manual by typing the command **info cvs** at your shell.

First, plan out where you want your repository. Debian defaults to `/var/lib/cvs`. My repository is under the directory `/cvs/root`, and is on its own small partition. What you do depends on your needs and can vary widely.

Make sure that the repository is a subdirectory of an empty directory! For example, if you are installing it into `/var/lib/cvs`, put the repository in `/var/lib/cvs/root` (or whatever you want for the last directory). This is because we create a chroot jail for the Pserver!

After you have planned where you want to put your repository, made the necessary partitions, if desired, and run the following command (we assume that it will be at `/cvs/root`):

```
$ cvs -d /cvs/root init
```

That will initialize your repository and set up the necessary `CVSROOT` files.

3.2. Setting up the jail

Now that we have the `CVSROOT` set up, we need to copy the appropriate libraries and files for cvsd, which runs the Pserver in the chroot jail.

3.2.1. Transferring the necessary files

If you installed cvsd from a package management system like RPM, this may already be done for you. If that is the case, skip ahead to the next step.

Change your directory to `/cvs` (or whatever the directory before your root is) and enter the following commands:

```
$ cvsd-buildroot /cvs
$ mkdir -p var/lock
$ adduser cvsd
$ addgroup cvsd
```

Thankfully, cvsd comes with the script **cvsd−buildroot**, so we don't have to do all the necessary copying by

hand. However, you should edit the `/cvs/etc/passwd` file, and remove the entry for "root," as it's unneeded.

3.2.2. Configuring cvsd

The defaults in `/etc/cvsd/cvsd.conf` are okay, but can be less than desirable. Make sure that `RootJail` is set to wherever the chroot jail you built is, and the repository is the directory where the repository is *relative to the chroot jail*. Set `maxconnections` to whatever you desire, and make sure that Uid and Gid are set to cvsd. If you are lacking an already−built `cvsd.conf` file, here is mine:

Example 1. My `cvsd.conf`

```
Uid cvsd
Gid cvsd
PidFile /var/run/cvsd.pid
RootJail /cvs
MaxConnections 10
Nice 1
Listen * 2401
Repos /root
Limit coredumpsize 0
```

3.3. Adding anonymous access

It's back to configuring CVS, but don't worry, we are almost there! We have to edit a couple of necessary files to allow for anonymous access. First, making sure you aren't in the CVS directory, check out the CVSROOT module:

```
# cvs −d /cvs/root checkout CVSROOT
# cd CVSROOT
```

Now edit the file `READERS`. Create it if it isn't there, and add a line that reads "anonymous".

You NEED to have an extra line at the end of the file!

The file `READERS` is a list of users who have read−only access to the CVS repository. People with write access are listed in the file `WRITERS`. Read the cvs manual [1] for more information on these files.

Now commit the repository with the command below. We assume that your current working directory is `CVSROOT`. If it isn't, forget the **cd** step.

```
# cd ../
# cvs −d /cvs/root commit
```

You should now get a message that says something like `Re−building administrative files`,

which means that it was successful.

One last step and we're all done! Run the following command, and when prompted for a password, just press **ENTER**:

```
# cvsd-passwd /cvs/root anonymous
```

Congratulations! You now have secure, anonymous CVS Pserver access to the repository!

3.4. Not quite done yet! Changing lock file locations

There is one small feature here that is really beyond the scope of this Mini−HOWTO but is worth noting nonetheless. It is the ability to change the directory where the Pserver will place lock files.

Normally the Pserver will place lock files in the same directory as the files that you are trying to check out, but this can cause permissions mayhem. Step back to when we built the chroot jail for cvsd; we also created the directory `var/lock`. This is where we will place the lockfiles instead.

So use the following example, replacing `/cvs` with wherever your `chroot` environment is, and `var` with wherever the locks are going to be placed. Mine are placed in `var/lock`, and there is nothing else under `var`, so a **chown −R** is safe. Also, replace the cvsd user and group ids with the user and group ids that cvsd runs as.

```
# cd /cvs
# chown -R cvsd:cvsd var
# chmod -R 775 var
# cd
# cvs -d /cvs/root checkout CVSROOT
# cd CVSROOT
```

Now we want to edit the file `config`. Change lock dir to the directory you want the locks to be placed, in our case `/var/lock`.

Note that this applies to the Pserver *AS WELL AS THE NON−CHROOT SSH LOGIN METHOD!* Ensure that this directory is not only in existence, but that you can write to it as well, relative to your root directory. This is why I have chosen `/var/lock`, because it satisfies those conditions.

Now commit the changes:

```
# cd ../
# cvs -d /cvs/root commit
```

And that's it!

4. Alternatives to the Pserver

4.1. Access for developers

Pserver is not a very good method to implement for your fellow developers to access the repository. You can use CVS's SSH and ext method. Simply add the user to the server's list of users, add the user to the file WRITERS, and then they can do the following:

```
$ export CVS_RSH='/usr/bin/ssh'
$ cvs -d :ext:username@server.hostname:/cvs/root login
```

This is a much more secure way for developers to access the repository.

4.2. Anonymous CVS access by http

There is another way to allow anonymous access to CVS. If there is an http server and Python installed on the server, you can use a set of Python CGI scripts called viewcvs, which allow people to view the CVS repository over the web, and can generate tarballs for users to download.

There is also a set of Perl CGI scripts that do the same thing called cvsweb, but Viewcvs is more mature and is preferred (at least by me).

4.3. CVSGrab

CVSGrab is an end−user tool for downloading the CVS repository by a ViewCVS interface. It is very useful when you are behind a corporate firewall that blocks the Pserver, as you can just grab the repository over standard HTTP. The only problem is if it doesn't have a ViewCVS interface, but most free software repositories are now on the web, and the few that still use cvsweb seem to be switching over to ViewCVS.

CVSGrab is written in Java, which may at first be a turn−off to some people (it is to me), but it seems completely compilable using GCJ, the Java front−end to GCC.

CVSGrab is a tool that goes hand−in−hand with ViewCVS. It is an end−user tool, not one that you as a system administrator or repository administrator would set up and configure.

---

5. Acknowledgements

This Mini–HOWTO was written by Morgon Kanter, who is reachable at <morgon AT surgo DOT net>, public key available from http://www.surgo.net/pubkey.asc. Email all problems with this document to him, and they will be fixed ASAP.

My thanks goes out to all the people who contributed to CVS over the years, as well as the creators of Viewcvs, and in turn the creators of cvsweb who inspired it.

I would also like to thank Tabatha Persad for reviewing and helping me edit this monster, as well as putting up with me. Thanks!

Also thanks to the various email contributors who pointed out missing stuff. Thank you Y Giridhar Appaji Nag and Pasi Hirvonen!

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