

# freeRADIUS

A High Performance, Open Source, Pluggable, Scalable  
(but somewhat complex)  
RADIUS Server

Aurélien Geron, Wifirst, 7 janvier 2011

# Roadmap

- Multiple protocols :  
RADIUS, EAP...
- **An Open-Source  
(GPLv2) server**
- A powerful configuration system
- Many expansion modules
- Writing your own modules



Source image: <http://crshare.com/abstract-backgrounds-vector-clipart/>



# The freeRADIUS project

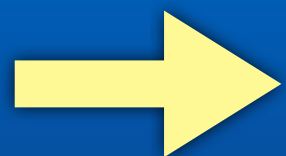
- FreeRADIUS (GPLv2) is a fork of Cistron (GPL), which is itself inspired by Livingston (BSD)
- It was started in 1999 by Alan DeKok and Miquel van Smoorenburg (author of Cistron)
- It is available on all platforms, Un\*x, MacOSX, and Windows (but the Windows version is a bit old)
- It is now far ahead its competitors (in terms of performance, fonctionnalités, modularity...)

# Documentation

- The entry point to the documentation is:  
<http://freeradius.org/doc/>
- Some useful info is available on the Wiki, but some of it is outdated or incomplete:  
<http://wiki.freeradius.org/>
- A lot of useful info is available in the man pages:  
<http://freeradius.org/radiusd/man/index.html>
- It is also good to read the comments in the configuration files located in `/etc/freeradius` on Debian, and `/etc/raddb` on other platforms

# Documentation

- The mailing list is active and responsive:  
<http://freeradius.org/list/users.html>
- All in all, the documentation is a bit too spread apart, and sometimes outdated
- Moreover, the information that can be found on the Internet (in blogs, forums...) is more often than not outdated or just wrong



Beware of the info found in forums and blogs: always check the version of freeRADIUS that the info is about



# Installation

## On Debian Squeeze

```
# the base
aptitude update
aptitude install freeradius

# then add the desired modules,
# for example:
aptitude install freeradius-mysql
```

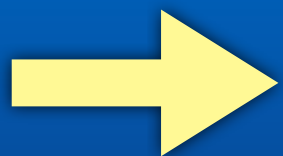
# Packages on Debian

```
$ aptitude search freeradius
```

```
p   freeradius           - a high-performance and highly configurable RADIUS server
p   freeradius-common    - FreeRadius common files
p   freeradius-dbg       - ...; debug symbols
p   freeradius-dialupadmin - set of PHP scripts for administering a FreeRADIUS server
p   freeradius-iodbc     - iODBC module for FreeRADIUS server
p   freeradius-krb5      - kerberos module for FreeRADIUS server
p   freeradius-ldap      - LDAP module for FreeRADIUS server
p   freeradius-mysql     - MySQL module for FreeRADIUS server
p   freeradius-postgresql - PostgreSQL module for FreeRADIUS server
p   freeradius-utils     - FreeRadius client utilities
p   libfreeradius-dev    - FreeRADIUS shared library development files
p   libfreeradius2       - FreeRADIUS shared library
```

# What about Debian Lenny?

- Unfortunately, due to a licensing issue, Debian did not provide a freeRADIUS package compiled with OpenSSL
- This problem was solved in freeRADIUS version 2.1.8
- But the freeRADIUS version included in Debian Lenny is 2.0.4 (Squeeze is at 2.1.9)



In order to use EAP/TLS, PEAP or TTLS on Lenny: use the backports



# Backports for Lenny

See: <http://www.backports.org/>

## 1. Add this line

```
deb http://www.backports.org/debian lenny-backports main contrib non-free
```

to your `/etc/apt/sources.list`.

## 2. Run `apt-get update`

3. All backports are deactivated by default (i.e. the packages are pinned to 1 by using `NotAutomatic: yes` in the Release files, just as in experimental). If you want to install something from backports run:

```
apt-get -t lenny-backports install "package"
```

Of course, you can use `aptitude` as well:

```
aptitude -t lenny-backports install "package"
```

---

You can also use pinning:

Then you have to set a higher priority for each backport, yes that means every backport, also for every dependency. For `mutt`, you have to add these lines:

```
Package: mutt
Pin: release a=lenny-backports
Pin-Priority: 999
```

to your `/etc/apt/preferences` (if you haven't use pinning before, the file has to be created).

After running `apt-get update` run `apt-get install mutt` as usual.

---

If you want `apt` to verify the downloaded backports you can import backports.org archive's key into `apt`:

```
apt-get install debian-backports-keyring
```

or

```
gpg --keyserver hkp://subkeys.pgp.net --recv-keys 16BA136C
gpg --export 16BA136C | apt-key add -
```

or

```
wget -O - http://backports.org/debian/archive.key | apt-key add -
```

---

If you want to get your packages from backports upgraded automatically the following entry in `/etc/apt/preferences` should be sufficient:

```
Package: *
Pin: release a=lenny-backports
Pin-Priority: 200
```

# Compiling freeRADIUS

- To use experimental modules or on platforms that do not have a package for freeRADIUS  $\geq 2.1.8$
- Download the sources and compile them:  
<http://freeradius.org/download.html>

```
$ tar zxvf freeradius-[version].tar.gz
$ ./configure # add the desired options here
$ make
$ su - root
# make install
```

- For more info, for example to build your own clean freeRADIUS package for Debian (or other distributions):  
<http://wiki.freeradius.org/Build>

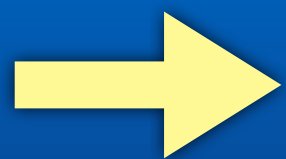


# Creating your own Debian package

```
$ wget http://ftp.de.debian.org/debian/pool/main/f/freeradius/freeradius_2.1.9+dfsg-1.dsc
$ wget http://ftp.de.debian.org/debian/pool/main/f/freeradius/freeradius_2.1.9+dfsg.orig.tar.gz
$ wget http://ftp.de.debian.org/debian/pool/main/f/freeradius/freeradius_2.1.9+dfsg-1.diff.gz
$ tar xvzf freeradius_2.1.9+dfsg.orig.tar.gz
$ cd freeradius-server-2.1.9
$ zcat ../freeradius_2.1.9+dfsg-1.diff.gz | patch -p1
$ rm debian/patches/lt_dladvise.diff # => pour éviter une dépendance vers libtool 2.2
$ sed -i -e '/lt_dladvise.diff/d' debian/patches/series
$ dch -i # => préciser la version 2.1.9+dfsg-1~bpo50+1, des commentaires et coordonnées
$ dpkg-buildpackage -rfakeroot -uc -us -S
$ cd ..
$ sudo pbuilder --build freeradius_2.1.9+dfsg-1~bpo50+1.dsc
$ ls /var/cache/pbuilder/result/*freeradius*2.1.9*
```

# freeRADIUS 2

- Version 1 lacked clarity and flexibility (config files were confusing)
- Config files in version 2 are now better organized and clearer
- The python module (which allows you to write your own modules in python rather than in C) is not experimental anymore, so it is included by default in the packages (it used to be necessary to recompile)



Use freeRADIUS 2 rather than 1, and if possible a version  $\geq 2.1.8$



# Installed files

This directory only contains symbolic links to the desired files located in `sites-available` (just like in Apache, for example)

freeRADIUS is installed with a pam module  
(see [http://fr.wikipedia.org/wiki/Pluggable\\_Authentication\\_Modules](http://fr.wikipedia.org/wiki/Pluggable_Authentication_Modules))

This binary is the freeRADIUS server itself

```
$ dpkg -L freeradius | sort # then shortened a bit
/etc/freeradius
/etc/freeradius/eap.conf
/etc/freeradius/...
/etc/freeradius/modules
/etc/freeradius/modules/sql
/etc/freeradius/modules/...
/etc/freeradius/sites-available
/etc/freeradius/sites-available/default
/etc/freeradius/sites-available/inner-tunnel
/etc/freeradius/sites-available/...
/etc/freeradius/sites-enabled
/etc/freeradius/sites-enabled/default
/etc/freeradius/...
/etc/init.d/freeradius
/etc/logrotate.d/freeradius
/etc/pam.d/radiusd
/usr/lib/freeradius
/usr/lib/freeradius/rlm_sql-2.1.8.so
/usr/lib/freeradius/rlm_sql.so
/usr/lib/freeradius/...
/usr/sbin/checkrad
/usr/sbin/freeradius
/usr/sbin/raddebug
/usr/sbin/radmin
/usr/sbin/radwatch
/usr/share/doc/freeradius/...
/var/log/freeradius
```

`ln -s`

This script starts or stops the server

Modules binaries

# Installed files

RADIUS dictionary (this file can be personalized)

Entry point to the configuration of the server

The manuals. List them using the following command:

```
dpkg -L freeradius-common
```

then, for example:

```
man 5 acct_users
```

```
$ dpkg -L freeradius-common | sort # then shortened
/etc/freeradius
/etc/freeradius/dictionary
/etc/freeradius/radiusd.conf
/usr/share/doc/freeradius-common/...
/usr/share/freeradius
/usr/share/freeradius/dictionary
/usr/share/freeradius/dictionary.3com
/usr/share/freeradius/dictionary.3gpp
/usr/share/freeradius/dictionary.3gpp2
/usr/share/freeradius/dictionary.acme
/usr/share/freeradius/dictionary.airespace
/usr/share/freeradius/dictionary.alcatel
/usr/share/freeradius/dictionary...
/usr/share/man/man1
/usr/share/man/man1/radclient.1.gz
/usr/share/man/man1/radeapclient.1.gz
/usr/share/man/man1/...
/usr/share/man/man5
/usr/share/man/man5/acct_users.5.gz
/usr/share/man/man5/clients.conf.5.gz
/usr/share/man/man5/...
/usr/share/man/man8
/usr/share/man/man8/freeradius.8.gz
/usr/share/man/man8/raddebug.8.gz
/usr/share/man/man8/...
```

\$INCLUDE

\$INCLUDE

These files must *not* be modified



# Starting / stopping

```
$ /etc/init.d/freeradius
```

```
Usage: /etc/init.d/freeradius start|stop|restart|force-reload
```

# Debugging

```
$ /etc/init.d/freeradius stop
```

```
Stopping FreeRADIUS daemon: freeradius.
```

```
$ freeradius -X
```

```
FreeRADIUS Version 2.1.8, for host x86_64-pc-linux-gnu, built on Jan 3 2010 at 14:14:04
```

```
Copyright (C) 1999-2009 The FreeRADIUS server project and contributors.
```

```
There is NO warranty; not even for MERCHANTABILITY or FITNESS FOR A  
PARTICULAR PURPOSE.
```

```
You may redistribute copies of FreeRADIUS under the terms of the  
GNU General Public License v2.
```

```
Starting - reading configuration files ...
```

```
including configuration file /etc/freeradius/radiusd.conf
```

```
including configuration file /etc/freeradius/proxy.conf
```

```
...
```

```
listen {
```

```
    type = "auth"
```

```
    ipaddr = 10.1.2.3
```

```
    port = 0
```

```
}
```

```
listen {
```

```
    type = "acct"
```

```
    ipaddr = 10.1.2.3
```

```
    port = 0
```

```
}
```

```
Listening on authentication address 10.1.2.3 port 1812
```

```
Listening on accounting address 10.1.2.3 port 1813
```

```
Listening on proxy address 10.1.2.3 port 1814
```

```
Ready to process requests.
```





Questions?