

FreeRadiusClient 认证客户端
安装与使用
(v1.1.7)

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版本管理

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1 概述

Freeradius-client 客户端是 Radius 认证服务器测试客户端，本文简称客户端。客户端可以直接与认证服务器进行认证测试。客户端将消息发送给认证服务器，认证服务器收到客户端信息后返回认证判断信息，如果成功返回认证成功，否则返回失败。

客户端与服务器之间采用 Radius 协议通信，因此客户端与服务器端 Radius 共享密钥必须一致。

安盟多因素身份认证系统本身支持 Radius 协议认证。本文对于认证使用描述，可以将安盟认证服务器视为 Radius 服务器，FreeRadius-client 可以作为认证测试客户端。

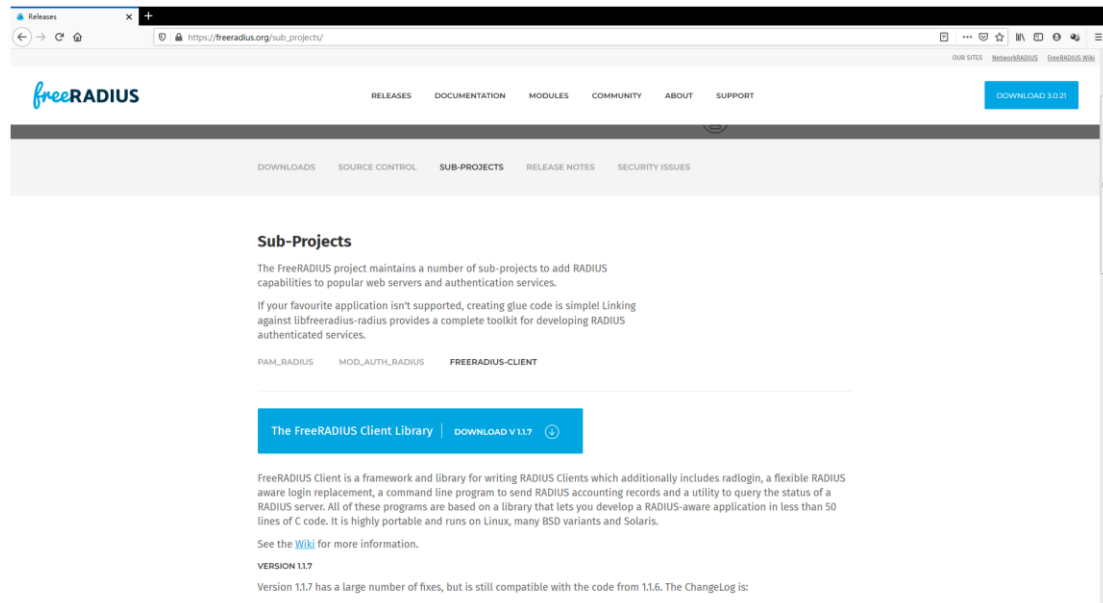
2 安装准备

Freeradiusclient 安装包为交叉编译安装包，可以在多种 linux 系统平台编译安装。假设认证服务器已经安装完成，并创建测试用户和密码，具体的操作过程请查看《安盟多因素身份认证系统 v9.0-管理员手册_vX.XX.docx》。

资源连接 <http://www.anmeng.com.cn/ace90lix>

2.1 文件

客户端可以直接从官网下载，安装包文件 `freeradius-client-release_1_1_7.tar.gz`



2.2 位置

使用工具软件把安装包上传到服务器，建议把安装包放置到根目录下。

```
# mkdir /freeradius  
# cd /freeradius
```

修改安装包权限

```
chmod 777 freeradius-client-release_1_1_7.tar.gz
```

```
freeradius-client-release_1_1_7.tar.gz
```

解压安装包 freeradius-client-release_1_1_7.tar.gz

```
tar xvf freeradius-client-release_1_1_7.tar.gz
```

```
[root@radiusclient freeradius]# tar xvf freeradius-client-release_1_1_7.tar.gz
freeradius-client-release_1_1_7/
freeradius-client-release_1_1_7/.gitignore
freeradius-client-release_1_1_7/.travis.yml
freeradius-client-release_1_1_7/BUGS
freeradius-client-release_1_1_7/COPYRIGHT
freeradius-client-release_1_1_7/Makefile.am
freeradius-client-release_1_1_7/Makefile.in
freeradius-client-release_1_1_7/README.radexample
freeradius-client-release_1_1_7/README.rst
freeradius-client-release_1_1_7/aclocal.m4
freeradius-client-release_1_1_7/config.guess
freeradius-client-release_1_1_7/config.h.in
freeradius-client-release_1_1_7/config.sub
freeradius-client-release_1_1_7/configure
freeradius-client-release_1_1_7/configure.in
freeradius-client-release_1_1_7/debian/
freeradius-client-release_1_1_7/debian/Makefile.am
freeradius-client-release_1_1_7/debian/Makefile.in
freeradius-client-release_1_1_7/debian/README.debian
freeradius-client-release_1_1_7/debian/changelog
freeradius-client-release_1_1_7/debian/conffiles
freeradius-client-release_1_1_7/debian/control
freeradius-client-release_1_1_7/debian/copyright
freeradius-client-release_1_1_7/debian/dirs
freeradius-client-release_1_1_7/debian/docs
freeradius-client-release_1_1_7/debian/examples
freeradius-client-release_1_1_7/debian/files
```

```
[root@radiusclient freeradius]# ls
freeradius-client-release_1_1_7
freeradius-client-release_1_1_7.tar.gz
```

3 安装与卸载

安装包为标准的交叉编译安装包，需要经过 `configure`，`make` 和 `make install` 才能正常安装。为了能与安盟服务器正常认证通信，我们需要指定安装路径。需要在 `/opt` 目录下创建 `pamrad` 目录，然后将编译好的应用程序，统一安装到该目录下。

```
mkdir /opt/pamace
cd /freeradius/freeradius-client-release_1_1_7
```

```
[root@radiusclient freeradius-client-release_1_1_7]# ls
aclocal.m4  config.status  depcomp  libtool  man  release.mak
BUGS       config.sub     doc      login.radius  missing  rpm
config.guess  configure     etc      ltmain.sh    mkinstalldirs  src
config.h     configure.in  include  Makefile     patches    stamp-h
config.h.in  COPYRIGHT    install-sh  Makefile.am  README.radexample  stamp-h1
config.log   debian       lib      Makefile.in  README.rst  stamp-h.in
[root@radiusclient freeradius-client-release_1_1_7]#
```

3.1 安装

3.1.1 configure

```
./configure --prefix=/opt/pamrad
```

注意，等号后边没有空格

```
[root@radiusclient freeradius-client-release_1_1_7]# ./configure --prefix=/opt/pamrad
checking whether to enable maintainer-specific portions of Makefiles... no
checking build system type... x86_64-unknown-linux-gnu
checking host system type... x86_64-unknown-linux-gnu
checking target system type... x86_64-unknown-linux-gnu
checking for a BSD-compatible install... /usr/bin/install -c
checking whether build environment is sane... yes
checking for a thread-safe mkdir -p... /usr/bin/mkdir -p
checking for gawk... gawk
checking whether make sets $(MAKE)... yes
checking whether make supports nested variables... yes
checking how to print strings... printf
checking for style of include used by make... GNU
checking for gcc... gcc
checking whether the C compiler works... yes
checking for C compiler default output file name... a.out
checking for suffix of executables...
checking whether we are cross compiling... no
checking for suffix of object files... o
checking whether we are using the GNU C compiler... yes
checking whether gcc accepts -g... yes
checking for gcc option to accept ISO C89... none needed
checking whether gcc understands -c and -o together... yes
checking dependency style of gcc... gcc3
checking for a sed that does not truncate output... /usr/bin/sed
checking for grep that handles long lines and -e... /usr/bin/grep
```

注意，不指定 `prefix`，则可执行文件默认放在 `/usr/local/bin`，库文件默认放在 `/usr/local/lib`，配置文件默认放在 `/usr/local/etc`。其它的资源文件放在 `/usr/local/share`。后期卸载客户端，需要在原来的 `make` 目录下再用一次 `make uninstall`，就不用去上述目录里面把相关的文件一个个手工删掉。指定 `prefix`，直接删掉一个文件夹就够了。

3.1.2 make

```
make
```

```
[root@radiusclient freeradius-client-release_1_1_7]# make
make all-recursive
make[1]: Entering directory `/freeradius/freeradius-client-release_1_1_7'
Making all in include
make[2]: Entering directory `/freeradius/freeradius-client-release_1_1_7/include'
make[2]: Nothing to be done for `all'.
make[2]: Leaving directory `/freeradius/freeradius-client-release_1_1_7/include'
Making all in lib
make[2]: Entering directory `/freeradius/freeradius-client-release_1_1_7/lib'
make[2]: Nothing to be done for `all'.
make[2]: Leaving directory `/freeradius/freeradius-client-release_1_1_7/lib'
Making all in src
make[2]: Entering directory `/freeradius/freeradius-client-release_1_1_7/src'
make[2]: Nothing to be done for `all'.
make[2]: Leaving directory `/freeradius/freeradius-client-release_1_1_7/src'
Making all in etc
make[2]: Entering directory `/freeradius/freeradius-client-release_1_1_7/etc'
make[2]: Nothing to be done for `all'.
make[2]: Leaving directory `/freeradius/freeradius-client-release_1_1_7/etc'
Making all in man
make[2]: Entering directory `/freeradius/freeradius-client-release_1_1_7/man'
make[2]: Nothing to be done for `all'.
make[2]: Leaving directory `/freeradius/freeradius-client-release_1_1_7/man'
Making all in doc
```

3.1.3 make install

make install

```
[root@radiusclient freeradius-client-release_1_1_7]# make install
Making install in include
make[1]: Entering directory `/freeradius/freeradius-client-release_1_1_7/include'
make[2]: Entering directory `/freeradius/freeradius-client-release_1_1_7/include'
make[2]: Nothing to be done for `install-exec-am'.
/usr/bin/mkdir -p '/opt/pamrad/include'
/usr/bin/install -c -m 644 freeradius-client.h '/opt/pamrad/include'
make[2]: Leaving directory `/freeradius/freeradius-client-release_1_1_7/include'
make[1]: Leaving directory `/freeradius/freeradius-client-release_1_1_7/include'
Making install in lib
make[1]: Entering directory `/freeradius/freeradius-client-release_1_1_7/lib'
make[2]: Entering directory `/freeradius/freeradius-client-release_1_1_7/lib'
/usr/bin/mkdir -p '/opt/pamrad/lib'
/bin/sh ../libtool --mode=install /usr/bin/install -c libfreeradius-client.la '/opt/pamrad/lib'
libtool: install: /usr/bin/install -c .libs/libfreeradius-client.so.2.0.0 /opt/pamrad/lib/libfreeradius-client.so.2.0.0
libtool: install: (cd /opt/pamrad/lib && { ln -s -f libfreeradius-client.so.2.0.0 libfreeradius-client.so.2 || { rm -f libfreeradius-client.so.2 && ln -s libfreeradius-client.so.2.0.0 libfreeradius-client.so.2; }; })
libtool: install: (cd /opt/pamrad/lib && { ln -s -f libfreeradius-client.so.2.0.0 libfreeradius-client.so || { rm -f libfreeradius-client.so && ln -s libfreeradius-client.so.2.0.0 libfreeradius-client.so; }; })
libtool: install: /usr/bin/install -c .libs/libfreeradius-client.lai /opt/pamrad/lib/libfreeradius-client.la
libtool: install: /usr/bin/install -c .libs/libfreeradius-client.a /opt/pamrad/lib/libfreeradius-client.a
libtool: install: chmod 644 /opt/pamrad/lib/libfreeradius-client.a
libtool: install: ranlib /opt/pamrad/lib/libfreeradius-client.a
```

到此，安装完成。

3.2 卸载

客户端卸载比较简单，由于本客户端属于测试客户端，可以直接卸载。

3.2.1 make uninstall

```
cd /freeradius/freeradius-client-release_1_1_7
make uninstall
```

```
[root@radiusclient freeradius-client-release_1_1_7]# make uninstall
Making uninstall in include
make[1]: Entering directory `/freeradius/freeradius-client-release_1_1_7/include'
( cd '/opt/pamrad/include' && rm -f freeradius-client.h )
make[1]: Leaving directory `/freeradius/freeradius-client-release_1_1_7/include'
Making uninstall in lib
make[1]: Entering directory `/freeradius/freeradius-client-release_1_1_7/lib'
/bin/sh ../libtool --mode=uninstall rm -f '/opt/pamrad/lib/libfreeradius-client.la'
libtool: uninstall: rm -f /opt/pamrad/lib/libfreeradius-client.la /opt/pamrad/lib/libfreeradius-client.so.2.0.0 /opt/pamrad/lib/libfreeradius-client.so.2 /opt/pamrad/lib/libfreeradius-client.so /opt/pamrad/lib/libfreeradius-client.a
make[1]: Leaving directory `/freeradius/freeradius-client-release_1_1_7/lib'
Making uninstall in src
make[1]: Entering directory `/freeradius/freeradius-client-release_1_1_7/src'
( cd '/opt/pamrad/sbin' && rm -f radlogin radstatus radacct radexample radiusclient radembedded )
make[1]: Leaving directory `/freeradius/freeradius-client-release_1_1_7/src'
Making uninstall in etc
make[1]: Entering directory `/freeradius/freeradius-client-release_1_1_7/etc'
rm -f /opt/pamrad/etc/radiusclient/servers
( cd '/opt/pamrad/etc/radiusclient' && rm -f issue port-id-map radiusclient.conf dictionary dictionary.ascend dictionary.compat dictionary.merit dictionary.sip )
make[1]: Leaving directory `/freeradius/freeradius-client-release_1_1_7/etc'
Making uninstall in man
make[1]: Entering directory `/freeradius/freeradius-client-release_1_1_7/man'
make[1]: Nothing to be done for `uninstall'.
make[1]: Leaving directory `/freeradius/freeradius-client-release_1_1_7/man'
Making uninstall in doc
```

3.2.2 删除 pamrad

```
cd /opt
rm -rf pamrad
```

注意，目录 pamrad 是安装之前的指定目录，具体的来由请看安装小节。

4 客户端配置

4.1 指定认证服务器地址

4.1.1 编辑 radiusclient.conf

```
cd /opt/pamrad/etc/radiusclient
vim radiusclient.conf
```

注销 authserver localhost

增加 authserver 192.168.0.200

指定具体认证服务器地址

```
# RADIUS settings

# RADIUS server to use for authentication requests. this config
# item can appear more then one time. if multiple servers are
# defined they are tried in a round robin fashion if one
# server is not answering.
# optionally you can specify a the port number on which is remote
# RADIUS listens separated by a colon from the hostname. if
# no port is specified /etc/services is consulted of the radius
# service. if this fails also a compiled in default is used.
#authserver    localhost
authserver     192.168.0.200

# RADIUS server to use for accouting requests. All that I

38,24-29 Top
```

保存退出

4.1.2 编辑 servers

```
cd /opt/pamrad/etc/radiusclient
vim servers
```

设置 radius 共享密钥

增加认证服务器地址，设置共享密钥为 testing123

192.168.0.200 testing123

```
## Server Name or Client/Server pair      Key
## -----
#
#portmaster.elemental.net                hardlyasecret
#portmaster2.elemental.net              donttellanyone
#
## uncomment the following line for simple testing of radlogin
## with freeradius-server
#
#localhost/localhost                    testing123
192.168.0.200                          testing123
~
```

保存并退出。

到此，配置完成。接下来客户端测试。

5 客户端测试

客户端直接测试，需要把认证消息发送给认证服务器；认证服务器收到消息后，返回认证结果，认证完成。

5.1 Radlogin

直接测试

```
cd /opt/pamrad/sbin
./radlogin
($Id: radlogin.c,v 1.9 2008/01/09 07:04:18 sobomax Exp $)
-----
Linux 3.10.0-1160.6.1.el7.x86_64 (radiusclient) (port 1)
-----

login: anmeng
Password:
RADIUS: PASSCODE Accept
This is the dummy login.radius script. If you want that this script
does something useful you'll have to replace it.

The following RADIUS environment variables are set:
RADIUS_REPLY_MESSAGE='PASSCODE Accept'
RADIUS_USER_NAME=anmeng

Bye, bye.
```

```
[root@radiusclient sbin]# ./radlogin
($Id: radlogin.c,v 1.9 2008/01/09 07:04:18 sobomax Exp $)
-----
Linux 3.10.0-1160.6.1.el7.x86_64 (radiusclient) (port 1)
-----
login: anmeng
Password: 123456788234
RADIUS: PASSCODE Accept
This is the dummy login.radius script. If you want that this script
does something useful you'll have to replace it.

The following RADIUS environment variables are set:
RADIUS_REPLY_MESSAGE='PASSCODE Accept'
RADIUS_USER_NAME=anmeng

Bye, bye.
```

登录名，正常输入用户名；

密码部分，依次输入 PIN 码+动态码。

回车，模拟普通认证

安盟认证系统会记录认证结果

认证时间	认证用户	认证主机	受影响对象	认证结果	认证来源	租户名称
2020-12-26 14:17:37	anmeng	192.168.0.178	静态口令	登录成功	radius	公共资源区
2020-12-23 14:59:55	anmeng	192.168.0.178	静态口令	登录成功	securid	公共资源区
2020-12-23 14:58:28	anmeng	192.168.0.178	静态口令	登录成功	securid	公共资源区

模拟认证命令 radlogin 和 radexample 命令相似，二者区别是 login 是一次完整的登录模拟，登录和退出一次完成。

```
[root@radiusclient sbin]# ./radexample
login: anmeng
Password:
"anmeng" RADIUS Authentication OK
```

另一种带参数的命令就是 radiusclient 命令

5.2 Radiusclient

命令 radiusclient 格式

usage: radiusclient [-f config_file] [-p nas_port] [-s | [-a] a1=v1 [a2=v2[...[aN=vN]...]]]

5.2.1 用户名密码认证

假设需要认证的内容只有两个一个是用户名一个是密码，直接测试应该写成

```
cd /opt/pamrad/sbin
./radiusclient -f ../etc/radiusclient/radiusclient.conf User-Name=anmeng
password=Anmeng12#$
```

```
[root@radiusclient sbin]# ./radiusclient -f ../etc/radiusclient/radiusclient.conf User-Name
=anmeng password=Anmeng12#$
Reply-Message = 'PASSCODE Accept'
[root@radiusclient sbin]#
```

配置文件就是前文指定的认证服务器的配置文件，参数就是 User-Name=anmeng password=Anmeng12#\$

5.2.2 验证 VPN 返回属性

日常工作中，VPN 登录成功后，会挂接资源标签，一般需要认证返回一个组名。在认证服务器设置返回组名后，直接测试就会提示返回的组名。

```
[root@radiusclient sbin]# ./radiusclient -f ../etc/radiusclient/radiusclient.conf User-Name
=xiaoran password=123456594785
Reply-Message = 'PASSCODE Accept'
Class = 'users'
[root@radiusclient sbin]#
```

返回的认证组名

返回结果认证成功。市场上多数认证服务器不具备此功能，安盟认证服务器具有定制返回属性的功能。

5.2.3 附加校验用户手机号码

面向终端用户的认证，除了问用户名和密码之外，还有可能问到手机号码。例如快递系统，经常会校验手机号码。

最直接的方式就是验证一下是否有效，那么验证信息只要再增加一个手机号码，就可以判断用户是否有效。更近一层，既定时间内，用户能主动回馈下发的验证码，证明手机号有效。我们模拟测试认证信息增加手机号码验证。

```
cd /opt/pamrad/sbin  
./radiusclient -f ../etc/radiusclient/radiusclient.conf User-Name=xiaoan  
password=123456399408 Connect-Info=13511111111
```

```
[root@radiusclient sbin]# ./radiusclient -f ../etc/radiusclient/radiusclient.conf User-Name  
=xiaoan password=123456399408 Connect-Info=13511111111  
Reply-Message = 'PASSCODE-Accept' 增加手机号码校验认证  
Class = 'users'
```

返回结果提示认证成功。

认证完成。