

Adventures with NIS*

Andrea Leofreddi

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1 About this document

I was setting up a little NIS server on FreeBSD to share accounts to some Linux workstation, but I found more problems than expected so I decided to write this little document, maybe someone could find it useful.

This document should briefly explain how did I:

1. made FreeBSD and Linux NIS work without shadow
2. made FreeBSD and Linux NIS work with shadow

2 Prerequisites and version

You should have the FreeBSD server configured as NIS master server, and the Linux client configured as NIS client. In this howto, I will use these names:

Hostname	OS	Service
lynx	FreeBSD 5.1-RELEASE	NIS Server
aries	Debian GNU/Linux Sarge (testing)	NIS Client

So, you should have NIS properly working on both sides. You can easily check using the following commands: NIS server:

```
root@lynx:~# rpcinfo -p | grep yp
100009 1 udp 994 yppasswdd
100009 1 tcp 956 yppasswdd
100007 2 udp 757 ypbind
100007 2 tcp 941 ypbind
100004 1 udp 739 ypserv
```

*Using FreeBSD as NIS master server and Linux as client

```

100004 2 udp 739 ypserv
100004 1 tcp 938 ypserv
100004 2 tcp 938 ypserv
root@lynx:~# domainname
home
root@lynx:~# ypwhich
lynx
root@lynx:~# ypcat master.passwd.byname
andrea:gs8t3XG5vJZ6.:5000:5000::0:0:Andrea Leofreddi:/home/andrea:/usr/local/bin/bas
root@lynx:~# cat /etc/nsswitch.conf
passwd:          files nis
group:           files nis
root@lynx:~#

NIS client:

aries:~# rpcinfo -p | grep yp
100007 2 udp 778 ypbind
100007 1 udp 778 ypbind
100007 2 tcp 781 ypbind
100007 1 tcp 781 ypbind
aries:~# domainname
home
aries:~# ypwhich
lynx.cyberz.lupo.rm.it
aries:~# ypcat master.passwd.byname
andrea:gs8t3XG5vJZ6.:5000:5000::0:0:Andrea Leofreddi:/home/andrea:/usr/local/bin/bas
aries:~# cat /etc/nsswitch.conf
# /etc/nsswitch.conf
#
# Example configuration of GNU Name Service Switch functionality.
# If you have the 'glibc-doc' and 'info' packages installed, try:
# 'info libc "Name Service Switch"' for information about this file.

passwd:          files nis
group:           files nis
shadow:          files nis

hosts:           files dns
networks:        files

protocols:       db files
services:        db files
ethers:          db files
rpc:             db files

```

```
netgroup:      nis
aries:~#
```

Right now, we have NIS client talking to NIS server and server synchronizing maps, so we can jump to next jumper and configure a passwd-based NIS share.

3 NIS without shadow

Since FreeBSD and Linux have got different shadowing system (Linux puts passwords hashes in /etc/shadow, FreeBSD uses /etc/master.passwd) we can easily use NIS putting passwords in passwd map. This is done by /var/yp/Makefile, that we are going to change as follows:

```
-passwd.byuid: $(PASSWD)
+passwd.byuid: $(MASTER)
    @echo "Updating $@"
-    $(CAT) $(PASSWD) | \
+    $(CAT) $(MASTER) | \
    $(AWK) -F: '{ if ($$1 != "" && $$1 !~ "^#.*" && $$1 != "+") \
        print $$3"\t"$$0 }' $^ \
+    print $$3" "$$1":"$$2":"$$3":"$$4":"$$8":"$$9":"$$10}' $^ \
    | $(DBLOAD) -f -i $(PASSWD) -o $(YPMAPDIR)/$@ - $(TMP); \
    $(RMV) $(TMP) $@
    @$(DBLOAD) -c
    @if [ ! $(NOPUSH) ]; then $(YPPUSH) -d $(DOMAIN) $@; fi
    @if [ ! $(NOPUSH) ]; then echo "Pushed $@ map." ; fi
    @$(MAKE) -f ../Makefile netid
```

As you can see, we just change the source to MASTER (we want to send password hash), and then rebuild passwd (same for passwd.byname). After a make in /var/yp, you should be able to obtain something like that:

```
root@lynx:/var/yp# cat master.passwd
andrea::5000:5000::0:0:Andrea Leofreddi:/home/andrea:/usr/local/bin/bash
```

```
root@lynx:/var/yp# make
NIS Map update started on Wed Jul 23 14:39:37 CEST 2003 for domain home
Updating passwd.byname...
Updating passwd.byuid...
Creating new /var/yp/passwd file from /var/yp/master.passwd...
Updating netid.byname...
Updating master.passwd.byname...
```

```
Updating master.passwd.byuid...
NIS Map update completed.
root@lynx:/var/yp# ypcat passwd.byname
andrea::5000:5000:Andrea Leofreddi:/home/andrea:/usr/local/bin/bash
root@lynx:/var/yp# ypcat passwd.byuid
andrea::5000:5000:Andrea Leofreddi:/home/andrea:/usr/local/bin/bash
root@lynx:/var/yp#
```

This means that everything worked fine. Check if the nis user is able to change its password:

```
root@lynx:/var/yp# su - andrea
andrea@lynx:~$ yppasswd
Changing NIS password for andrea
Old Password:
New Password:
Retype New Password:
andrea@lynx:~$ ypcat passwd.byname
andrea:$1$au7prIbx$UQcS1SIZRxlteCoBrlfzT1:5000:5000:Andrea Leofreddi:/home/andrea:/usr/local/bin/bash
andrea@lynx:~$
```

Of course if you configured your Linux client to support MD5 password, the test user should be able to login also from your clients

```
Debian GNU/Linux testing/unstable aries tty5
```

```
aries login: andrea
Password:
Last login: Wed Jul 23 15:42:22 2003 on tty5
Linux aries 2.4.21 #1 Fri Jun 13 19:08:16 CEST 2003 i686 GNU/Linux
```

The programs included with the Debian GNU/Linux system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/*/copyright.

```
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
You have new mail.
andrea@aries:~$
```

3.1 The rpc.yppasswdd failure

If you get yppasswd failing and rpc.yppasswdd reporting something like:

```
Jul 23 02:19:51 lynx rpc.yppasswdd[2204]: pw_mkdb() failed
```

in your logs, that means that you haven't built password databases in /var/yp. You can do that simply issuing:

```
pwd_mkdb -p -d /var/yp/ /var/yp/master.passwd
```

4 NIS with shadow

Similarly to how we did before, you can explain to make in /var/yp/Makefile how to build also shadow maps from master.passwd. Password field is similar to the original one, except for an added sed line that substitutes second field with an 'x' as Linux wants:

```
passwd.byname: $(PASSWD)
    @echo "Updating $@..."
    $(CAT) $(PASSWD) | \
    $(AWK) -F: '{ if ($$1 != "" && $$1 !~ "^#.*" && $$1 != "+") \
        print $$1"\t"$$0 }' $^ \
+    | $(SED) 's/^\([^:]*\):[^\:]*:/\1:x:/' \
    | $(DBLOAD) -f -i $(PASSWD) -o $(YPMAPDIR)/$@ - $(TMP); \
    $(RMV) $(TMP) $@
    @$ (DBLOAD) -c
```

Then shadow targets are defined and added to TARGET:

```
shadow.byname: $(MASTER)
    @echo "Updating $@..."
    $(CAT) $(MASTER) | \
    $(AWK) -F: '{if ($$1 != "" && $$1 !~ "^#.*" && $$1 != "+") \
        print $$1" "$$1:"$$2":12000:0:99999:7:::" }' $^ \
    | $(DBLOAD) -s -f -i $(PASSWD) -o $(YPMAPDIR)/$@ - $(TMP); \
    $(RMV) $(TMP) $@
    @$ (DBLOAD) -c
    @if [ ! $(NOPUSH) ]; then $(YPPUSH) -d $(DOMAIN) $@; fi
    @if [ ! $(NOPUSH) ]; then echo "Pushed $@ map." ; fi
```

A lot important is the -s flag for DBLOAD (yp_mkdb), because it assure that shadow maps are built with YP_SECURE flag, and only root users (from the server or client) can display them:

```
root@lynx:~# ypcat shadow.byname
andrea:$1$Iu0dbSqI$4WbwPxt256GcokSPCujSr1:12000:0:99999:7:::
root@lynx:~# su - andrea
andrea@lynx:~$ ypcat shadow.byname
ypcat: no such map shadow.byname. reason: YP server error
andrea@lynx:~$
```

If you have compiled ypserv without DB_CACHE (by default it is enabled), you must patch yp_access.c with this little patch:

```
diff -uhr ypserv.orig/yp_access.c ypserv/yp_access.c
--- ypserv.orig/yp_access.c      Wed Jul 23 13:39:43 2003
+++ ypserv/yp_access.c          Wed Jul 23 13:43:14 2003
@@ -260,7 +260,7 @@
     #ifdef DB_CACHE
         if ((yp_testflag((char *)map, (char *)domain, YP_SECURE) ||
     #else
-        if ((strstr(map, "master.passwd.") ||
+        if ((strstr(map, "master.passwd.") || strstr(map, "shadow.") ||
     #endif
                 (rqstp->rq_prog == YPPROG &&
                 rqstp->rq_proc == YPPROC_XFR) ||
```

As you can guess, without DB_CACHE the protected map name (master.passwd.*) is hardcoded, so you should add shadow by hand.