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#####: [43126](#)

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Version française de Clément Mathieu <cykl@mAdchAt.org>.

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1. #####	2
2. #####	2
3. #####	6
4. #####	10
5. #####	13
6. #####	16
7. #####	16
#. #####	16
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2.2.

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2.2.1. ##### ##

alice ##### **##(1)** ##### root.

```
% whoami
alice
% ls -l `which su`
-r-sr-xr-x 1 root wheel 10744 Dec 6 19:06 /usr/bin/su
% su --
Password: xi3kiune
# whoami
root
```

- ## ##### ## alice.

- ##### sshd (### ##### ##
(8))
- auth, account, session ## password #### ##
- pam_nologin.so, pam_unix.so, pam_login_access.so, pam_lastlog.so ## pam_permit.so #### ##
#####. ## ##
pam_unix.so ##### ##
(#####).

2.3.

#####

3. #### ##### ## ####

3.1. ##### ##

```
#####  ###  #####  ###  #####  #####  #####  #####  #####  #####
#####  #####  #####  #####  #####  #####  #####  #####.
```

auth

Authentication. ## #####

#####.## ##### :

- **###_#####(3)** ##### ## #####, ##### ## #####
 ## #####
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- **###_#####(3)** ##### ## ##### ## ## ##, ## ##
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account

Gestion de compte. ## ##### ## ##### ## ##### ## #####
#####. ## #####
#####. ## #####:

- ### #### ###(3) ##### ## ## ##### ##### ## #####.

session

Gestion de session. ## #####
#####,
#####:

- `###_###_#####(3) ##### ## ##### ##### # ## ## ##
: ##### ## ##### ## ##### utmp ## wtmp, ##### ##
##...`

#####

- [###_#####\(3\)](#) ##### [###](#) ##### [#####](#) # [##](#) #####
: ##### [###](#) ##### [####](#) [###](#) ##### utmp [##](#) wtmp, #####
[###](#)...

password

Gestion des mots de passe. ## ##### [###](#) ##### [####](#) ##### [##](#) #####
[#####](#) [#####](#) # [##](#) #####, [####](#) ##### [#####](#) # [#####](#), [####](#)
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- [###_#####\(3\)](#) ##### [##](#) ##### [#####](#), [##](#) #####
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3.2.

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[###](#) #####, [###](#) ##### [##](#) ##### [####](#) ##### [####](#) [###](#) [####](#) [##](#) #####.

3.2.1. ### ##

[#####](#) [#####](#) [#####](#) [####](#) [##](#) ##### [#####](#) [#####](#)
pam_mécanisme.so (### ##### pam_unix.so ##### [##](#) ##### [####](#) .) [###](#) ##### [#####](#)—
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[####](#) [#####](#) [#####](#).

3.2.2. ##### ##

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3.3.

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 #####_####(3). ##
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 ## :

binding

 ##
 ##
 ##

9
 (#### 5.9); ##

required

 ##
 ##

requisite

 ##
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sufficient

 ##
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 #####
 ##### binding #
 #####.

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optional

#####. ## ##### ## ##### ## ##
optional, ##### ## ##### ##### #####.

##, ## ##### ## #####

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binding ## sufficient, #### # ##### ## ##### ## ##### requisite). ## ##### ##
#####, ## ## ## ##
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##. ## ##### ## ##### ## ##### ## ## ##—

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3.4.

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#####, ## ##### ##### ## #####
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1. ## #####, ## ##### ## ##### ## ##### ## ##
root
root.
2. ## ##### ## [###_####\(3\)](#) ## ##### ## ## ##—
##, ## ##### ## #####—
#####.
3. ## ##### ##### ##### ## ##### (## ##

#####) ## ## ## ## ## ##### [###_###_####\(3\)](#).
4. ## ##### ## [###_#####\(3\)](#) ## #####.
5. ## ##### ## ## [###_###_####\(3\)](#) ## ##### ## ##
#####. ## ## ## ## ## ## ##
####, [###_###_####\(3\)](#) ##### PAM_NEW_AUTHTOK_REQD # ## ##
PAM_SUCCESS.
6. ## ##### # ##### PAM_NEW_AUTHTOK_REQD, ## #####
[###_#####\(3\)](#) ## ##### # ## ##
#####.

7. ##### ## ## ##### # ## #####, ## ##### #-
##_#####(3) ##### ## #####. ## ## ##

#####.
8. ##### ## ##### ## ## ## ## ##
##_####_#####(3) ##### ## #####.
9. ##### ## ##### ## ##### ## ## ## ##
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10. ##### ## ##### ## ## ##, ## ##### **##_####_#####(3)**
#####.
11. #### ##, ## ##### **##_####(3)** ##### ##

##.

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####. ## ##### ## ##### ## ##### ##### 4.##. ##### ## ## ## ##### /etc/
pam.conf ##### ## ##### ## ##### ## ##### ## #####
/etc/pam.d, ## ##### ##### ##
#####.

/etc/pam.d/ ## /etc/pam.conf ## ##### ## ##### ##
##—
#####. ## ##### ## ##### ## ##### ##
su ## sudo, ## ##### ## ##### ## :

```
# cd /etc/pam.d  
# ln --s su sudo
```


##, ##### ## ## ##—
#####.

##—
/etc/pam.conf. #####
#####, ##### ##### ## /usr/local/etc/pam.d #####
#####; ##### ## ##### ## ##### ## ##
/etc/pam.d/ ## /etc/pam.conf.

#####, ##### ## ## ##### ## ## #####, ## ##### # ##—
other ## ##### ## ##### ## ## ##
#####.

4.2. ##### ## #

4.1, # ##### ## ##### #,
pam.conf ##### ## ##### ## #####: ## ## ## ##
#####, ## ##### ## #####, ## ## ## ## ##
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#####, ##### ## ## ## ##
#####. ## ##### ## ##, ##### ## ## ##—
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/etc/pam.d/ ## ## ## ## /etc/pam.conf, ## ## ## ##

##, ## ##, ##### ## ## ## ##.

3.1, #
#.

##, ## ##### ## ##### ## ## ## ## ## ## ##—
3.3, # ##### ## ##### # ## ## ## ## ##

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#####). ##### ## ##### ##### ## ## ##### ## ##—
#####). ##### ## ##### ##### ## ##### ## #####
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4.3.

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###_#####(3) ## ##### ## ##—
(## ##
#####). ## ## ## ##### ##### ## ## ##, ## ##### ## ## ##—
other #####.

##, ##### ##### ##### ## ## ##### ##, ## ##—

#####. ##### #####
#####, ## ## ## ##### ## ## ##### #####
##. # ##### ##### ##, ## ##
##, ## ##### #####:

1. ##### ## ##

	PAM_SUCCESS	PAM_IGNORE	other
#####	## (!####) #####;	#	#### = ####;
#####	#	#	#### = ####;
#####	#	#	#### = ####, #####;
#####	## (!####) #####;	#	#
#####	#	#	#

fail #### ## ## ## ##, ## ##### # ##### # ## ##, ## ##—

PAM_SUCCESS ## #####.

PAM_NEW_AUTHOK_REQD
#####, #### ## ##### ##### ##
PAM_NEW_AUTHOK_REQD ## #####
PAM_NEW_AUTHOK_REQD.

###_#####(3) ##### ## ## binding ## suffi-
cient ##### required.

#####

##(3) ##### ## #####
##(## ##### ## ## ##### ## ##
##) ## ## ## ## ##### ## ##—
binding ## sufficient ##### ##### required.

5. ## ## ##

5.1. ##_(8)

##_(8) ## ## ## ##### ##### ## ## ##; ## —
PAM_AUTH_ERR. ## ## ## #####
(##### ## ## ## ##), ## ## #####
sufficient.

5.2. ##_(8)

##_(8) ##### ##### ## ## ##### ## #####—
PAM_TEXT_INFO. ## ## ##### ## ## —
—
#####.

5.3. ##_(8)

##_(8) ##### ##### ##### ## ## ## ## —
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##.

5.4. ##_(8)

##_(8)

5.5. ##_#####(8)

##_#####(8)

5.6. ##_(8)

##_(8) ##### ## ##### ## ##### ## ## —
(##### wheel ##(1)). ## # ## ## —
##(1) ##### #####

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#####

5.15. ###_#####(8)

[###_#####\(8\)](#) ## ##### ## ##### #####; ##
PAM_SUCCESS. ## ##### ##-
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5.16. ###_#####(8)

[###_#####\(8\)](#)

5.17. ###_#####(8)

[###_#####\(8\)](#)

5.18. ###_#####(8)

[###_#####\(8\)](#) ##### ## ##### ## #####
0. ##### ## ##
[##\(1\)](#) ## [#####\(1\)](#) ## ##### root #####
#####.

5.19. ###_#####(8)

[###_#####\(8\)](#)

5.20. ###_####(8)

[###_####\(8\)](#) ##### ## ##### ## ##
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[##\(1\)](#) ## ##### ## ##.

5.21. ###_###(8)

[###_###\(8\)](#)

5.22. ###_#####(8)

[###_#####\(8\)](#)

5.23. ###_####(8)

[###_####\(8\)](#) #####
##, ## [#####\(3\)](#) ##### ## ##
##. ## ## ##
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```
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*
* $P4: -//depot/projects/openpam/bin/su/su.c#10 $
* $FreeBSD: head/fr_FR.ISO8859-1/articles/pam/su.c 38826 2012-05-17 19:12:14Z hrs $
*/

#include <sys/param.h>
#include <sys/wait.h>

#include <err.h>
#include <pwd.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <syslog.h>
#include <unistd.h>

#include <security/pam_appl.h>
#include <security/openpam.h> /* for openpam_ttyconv() */

extern char **environ;

static pam_handle_t *pamh;
static struct pam_conv pamc;

static void
usage(void)
{
    fprintf(stderr, "-Usage: su [login [args]]\n");
    exit(1);
}

int
main(int argc, char *argv[])
{
    char hostname[MAXHOSTNAMELEN];
    const char *user, *tty;
    char **args, **pam_envlist, **pam_env;
    struct passwd *pwd;
    int o, pam_err, status;
```

```
pid_t pid;

while ((o = getopt(argc, argv, "-h")) != -1)
    switch (o) {
        case '-h':
        default:
            usage();
    }

argc -= optind;
argv += optind;

if (argc > 0) {
    user = *argv;
    --argc;
    ++argv;
} else {
    user = "-root";
}

/* initialize PAM */
pamc.conv = &openpam_ttyconv;
pam_start("su", user, &pamc, &pamh);

/* set some items */
gethostname(hostname, sizeof(hostname));
if ((pam_err = pam_set_item(pamh, PAM_RHOST, hostname)) != PAM_SUCCESS)
    goto pamerr;
user = getlogin();
if ((pam_err = pam_set_item(pamh, PAM_RUSER, user)) != PAM_SUCCESS)
    goto pamerr;
tty = ttyname(STDERR_FILENO);
if ((pam_err = pam_set_item(pamh, PAM_TTY, tty)) != PAM_SUCCESS)
    goto pamerr;

/* authenticate the applicant */
if ((pam_err = pam_authenticate(pamh, 0)) != PAM_SUCCESS)
    goto pamerr;
if ((pam_err = pam_acct_mgmt(pamh, 0)) == PAM_NEW_AUTHOK_REQD)
    pam_err = pam_chauthtok(pamh, PAM_CHANGE_EXPIRED_AUTHOK);
if (pam_err != PAM_SUCCESS)
    goto pamerr;

/* establish the requested credentials */
if ((pam_err = pam_setcred(pamh, PAM_ESTABLISH_CRED)) != PAM_SUCCESS)
    goto pamerr;

/* authentication succeeded; open a session */
if ((pam_err = pam_open_session(pamh, 0)) != PAM_SUCCESS)
    goto pamerr;

/* get mapped user name; PAM may have changed it */
pam_err = pam_get_item(pamh, PAM_USER, (const void **)&user);
```

#####

```
if (pam_err != PAM_SUCCESS || (pwd = getpwnam(user)) == NULL)
    goto pamerr;

/* export PAM environment */
if ((pam_envlist = pam_getenvlist(pamh)) != NULL) {
    for (pam_env = pam_envlist; *pam_env != NULL; ++pam_env) {
        putenv(*pam_env);
        free(*pam_env);
    }
    free(pam_envlist);
}

/* build argument list */
if ((args = calloc(argc + 2, sizeof *args)) == NULL) {
    warn("calloc()");
    goto err;
}
*args = pwd->pw_shell;
memcpy(args + 1, argv, argc * sizeof *args);

/* fork and exec */
switch ((pid = fork())) {
case -1:
    warn("fork()");
    goto err;
case 0:
    /* child: give up privs and start a shell */

    /* set uid and groups */
    if (initgroups(pwd->pw_name, pwd->pw_gid) == -1) {
        warn("initgroups()");
        _exit(1);
    }
    if (setgid(pwd->pw_gid) == -1) {
        warn("setgid()");
        _exit(1);
    }
    if (setuid(pwd->pw_uid) == -1) {
        warn("setuid()");
        _exit(1);
    }
    execve(*args, args, environ);
    warn("execve()");
    _exit(1);
default:
    /* parent: wait for child to exit */
    waitpid(pid, &status, 0);

    /* close the session and release PAM resources */
    pam_err = pam_close_session(pamh, 0);
    pam_end(pamh, pam_err);

    exit(WEXITSTATUS(status));
}
```

#####

```
}

pamerr:
    fprintf(stderr, -"Sorry\n");
err:
    pam_end(pamh, pam_err);
    exit(1);
}
```

#. #####

##_####(8) ##### -
#####. ##### ## #####
##, ##### ## #####
: ##### ## ##_#####(3) ## -

#####.

```
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```

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* SUCH DAMAGE.
*
* $P4: -//depot/projects/openpam/modules/pam_unix/pam_unix.c#3 $
* $FreeBSD: head/fr_FR.ISO8859-1/articles/pam/pam_unix.c 38826 2012-05-17 19:12:14Z hrs $
*/

#include <sys/param.h>

#include <pwd.h>
#include <stdlib.h>
#include <stdio.h>
#include <string.h>
#include <unistd.h>

#include <security/pam_modules.h>
#include <security/pam_appl.h>

#ifndef _OPENPAM
static char password_prompt[] = "-Password:";
#endif

#ifndef PAM_EXTERN
#define PAM_EXTERN
#endif

PAM_EXTERN int
pam_sm_authenticate(pam_handle_t *pamh, int flags,
int argc, const char *argv[])
{
#ifndef _OPENPAM
struct pam_conv *conv;
struct pam_message msg;
const struct pam_message *msgp;
struct pam_response *resp;
#endif
struct passwd *pwd;
const char *user;
char *crypt_password, *password;
int pam_err, retry;

/* identify user */
if ((pam_err = pam_get_user(pamh, &user, NULL)) != PAM_SUCCESS)
return (pam_err);
if ((pwd = getpwnam(user)) == NULL)
return (PAM_USER_UNKNOWN);

/* get password */
#ifndef _OPENPAM
pam_err = pam_get_item(pamh, PAM_CONV, (const void **)&conv);
```

```

if (pam_err != PAM_SUCCESS)
    return (PAM_SYSTEM_ERR);
msg.msg_style = PAM_PROMPT_ECHO_OFF;
msg.msg = password_prompt;
msgp = &msg;
#endif
for (retry = 0; retry < 3; ++retry) {
#ifdef _OPENPAM
    pam_err = pam_get_authtok(pamh, PAM_AUTHTOK,
        (const char **)&password, NULL);
#else
    resp = NULL;
    pam_err = (*conv->conv)(1, &msgp, &resp, conv->appdata_ptr);
    if (resp != NULL) {
        if (pam_err == PAM_SUCCESS)
            password = resp->resp;
        else
            free(resp->resp);
        free(resp);
    }
#endif
    if (pam_err == PAM_SUCCESS)
        break;
    }
    if (pam_err == PAM_CONV_ERR)
        return (pam_err);
    if (pam_err != PAM_SUCCESS)
        return (PAM_AUTH_ERR);

    /* compare passwords */
    if ((!pwd->pw_passwd[0] && (flags & PAM_DISALLOW_NULL_AUTHTOK)) ||
        (crypt_password = crypt(password, pwd->pw_passwd)) == NULL ||
        strcmp(crypt_password, pwd->pw_passwd) != 0)
        pam_err = PAM_AUTH_ERR;
    else
        pam_err = PAM_SUCCESS;
#ifdef _OPENPAM
    free(password);
#endif
    return (pam_err);
}

PAM_EXTERN int
pam_sm_setcred(pam_handle_t *pamh, int flags,
    int argc, const char *argv[])
{
    return (PAM_SUCCESS);
}

PAM_EXTERN int
pam_sm_acct_mgmt(pam_handle_t *pamh, int flags,
    int argc, const char *argv[])

```

```
{
    return (PAM_SUCCESS);
}

PAM_EXTERN int
pam_sm_open_session(pam_handle_t *pamh, int flags,
    int argc, const char *argv[])
{
    return (PAM_SUCCESS);
}

PAM_EXTERN int
pam_sm_close_session(pam_handle_t *pamh, int flags,
    int argc, const char *argv[])
{
    return (PAM_SUCCESS);
}

PAM_EXTERN int
pam_sm_chauthtok(pam_handle_t *pamh, int flags,
    int argc, const char *argv[])
{
    return (PAM_SERVICE_ERR);
}

#ifdef PAM_MODULE_ENTRY
PAM_MODULE_ENTRY("pam_unix");
#endif
```

```
##### ## #####
##### ## ## ##### #####(3) #####. #####
##### ## ##### ## ##### ## ##### ## ##
##### ## #####, ##### ## ##### ## ##
#####. ##### ## ##### ## #####, ##### ## #
##### ## ##### ## ##### #####(3) # ## ##, #####
##### ## #####
#####.
```

23

###

```
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* $FreeBSD: head/fr_FR.ISO8859-1/articles/pam/converse.c 38826 2012-05-17 19:12:14Z hrs $
*/

#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <unistd.h>

#include <security/pam_appl.h>

int
converse(int n, const struct pam_message **msg,
struct pam_response **resp, void *data)
{
    struct pam_response *aresp;
    char buf[PAM_MAX_RESP_SIZE];
    int i;

    data = data;
    if (n <= 0 -|| n > PAM_MAX_NUM_MSG)
        return (PAM_CONV_ERR);
```


#####

```
if ((aresp = calloc(n, sizeof *aresp)) == NULL)
    return (PAM_BUF_ERR);
for (i = 0; i < n; ++i) {
    aresp[i].resp_retcode = 0;
    aresp[i].resp = NULL;
    switch (msg[i]->msg_style) {
    case PAM_PROMPT_ECHO_OFF:
        aresp[i].resp = strdup(getpass(msg[i]->msg));
        if (aresp[i].resp == NULL)
            goto fail;
        break;
    case PAM_PROMPT_ECHO_ON:
        fputs(msg[i]->msg, stderr);
        if (fgets(buf, sizeof buf, stdin) == NULL)
            goto fail;
        aresp[i].resp = strdup(buf);
        if (aresp[i].resp == NULL)
            goto fail;
        break;
    case PAM_ERROR_MSG:
        fputs(msg[i]->msg, stderr);
        if (strlen(msg[i]->msg) > 0 &&
            msg[i]->msg[strlen(msg[i]->msg) - 1] != '\n')
            fputc('\n', stderr);
        break;
    case PAM_TEXT_INFO:
        fputs(msg[i]->msg, stdout);
        if (strlen(msg[i]->msg) > 0 &&
            msg[i]->msg[strlen(msg[i]->msg) - 1] != '\n')
            fputc('\n', stdout);
        break;
    default:
        goto fail;
    }
}
*resp = aresp;
return (PAM_SUCCESS);
fail:
    for (i = 0; i < n; ++i) {
        if (aresp[i].resp != NULL) {
            memset(aresp[i].resp, 0, strlen(aresp[i].resp));
            free(aresp[i].resp);
        }
    }
    memset(aresp, 0, n * sizeof *aresp);
    *resp = NULL;
    return (PAM_CONV_ERR);
}
```


#####

#####

#####

[1] *Rendre les services de connexion indépendants des technologies d'authentification* .
#####

[2] *X/Open Single Sign-on Preliminary Specification*. ### 1#85912#144#6.
1997.

[3] *Pluggable Authentication Modules*. #####. 1999#10#06.

#####

[4] *Administration de PAM* . #####.

#####

[5] *La page d'OpenPAM*. #####.

[6] *La page de Linux-PAM*. #####.

[7] *La page de Solaris PAM*. #####.