Red Hat Enterprise Linux 8

Using authselect on a Red Hat Enterprise Linux host

Understanding, selecting, modifying, and creating authselect profiles

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Legal Notice

Abstract

This documentation collection provides instructions on how to use authselect on a Red Hat Enterprise Linux 8 host.

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- For simple comments on specific passages, make sure you are viewing the documentation in the Multi-page HTML format. Highlight the part of text that you want to comment on. Then, click the **Add Feedback** pop-up that appears below the highlighted text, and follow the displayed instructions.
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CHAPTER 1. CONFIGURING USER AUTHENTICATION USING AUTHSELECT

This paragraph is the assembly introduction. It explains what the user will accomplish by working through the modules in the assembly and sets the context for the user story the assembly is based on. Can include more than one paragraph. Consider using the information from the user story.

1.1. WHAT IS AUTHSELECT USED FOR

Authselect is a utility that simplifies the configuration of user authentication on a Red Hat Enterprise Linux host. **Authselect** offers two ready-made profiles that can be universally used with all modern identity management systems:

- the **sssd** profile
- the **winbind** profile

For legacy compatibility reasons, the **nis** profile is also available.

Red Hat recommends using **authselect** in semi-centralized identity management environments, for example if your company utilizes the LDAP, winbind or nis databases to authenticate users to use services in your domain.

WARNING

Do not use **authselect** if your host is part of Red Hat Enterprise Linux Identity Management or Active Directory. The **ipa-client-install** command, called when joining your host to a Red Hat Identity Management domain, takes full care of configuring authentication on your host. Similarly the **realm join** command, called when joining your host to an Active Directory domain, takes full care of configuring authentication on your host.

The **authconfig** utility, used in previous Red Hat Enterprise Linux versions, created and modified many different configuration files, making troubleshooting a difficult task. **Authselect** makes testing and troubleshooting easy because it only modifies files in these directories:

- **/etc/nsswitch.conf**
- **/etc/pam.d/*** files
- **/etc/dconf/db/distro.d/*** files

The Name Service Switch (NSS) configuration file, **/etc/nsswitch.conf**, is used by the GNU C Library and certain other applications to determine the sources from which to obtain name-service information in a range of categories, and in what order. Each category of information is identified by a database name.

Linux-PAM (Pluggable Authentication Modules) is a system of modules that handle the authentication tasks of applications (services) on the system. The nature of the authentication is dynamically configurable: the system administrator can choose how individual service-providing applications will

authenticate users. This dynamic configuration is set by the contents of the configuration files in the **/etc/pam.d/** directory, which list the PAMs that will do the authentication tasks required by this service, and the appropriate behavior of the PAM-API in the event that individual PAMs fail.

Once an **authselect** profile is selected for a given host, the profile will be applied to every user logging into the host.

1.2. CHOOSING AN AUTHSELECT PROFILE

As a system administrator, you can select a profile for the **authselect** utility for a specific host. The profile will be applied to every user logging into the host.

Procedure

1. Select the **authselect** profile that is appropriate for your authentication provider. For example, for logging into the network of a company that uses LDAP, choose **sssd**. Run the command as root:

```
# authselect select sssd
```

2. Optionally, review the contents of the **/etc/nsswitch.conf** file:

```
passwd:     sss files
group:      sss files
netgroup:   sss files
automount:  sss files
services:   sss files
...
```

The content of the **/etc/nsswitch.conf** file shows that selecting the **sssd** profile means that the system first uses **sssd** if information concerning one of the first five items is requested. Only if the requested information is not found in the **sssd** cache and on the server providing authentication, or if **sssd** is not running, the system looks at the local files, that is **/etc/***.

For example, if information is requested about a user id, the user id is first searched in the **sssd** cache. If it is not found there, the **/etc/passwd** file is consulted. Analogically, if a user's group affiliation is requested, it is first searched in the **sssd** cache and only if not found there, the **/etc/group** file is consulted.

In practice, the local **files** database does not normally get consulted at all. The only exception is the case of the **root** user, which is never handled by **sssd** but by **files**.

3. Optionally, review the contents of the **/etc/pam.d/system-auth** file:

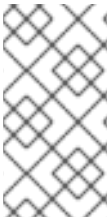
```
# Generated by authselect on Tue Sep 11 22:59:06 2018
# Do not modify this file manually.

auth        required      pam_env.so
auth        required      pam_faildelay.so delay=2000000
auth        [default=1 ignore=ignore success=ok]    pam_succeed_if.so uid >= 1000 quiet
auth        [default=1 ignore=ignore success=ok]    pam_localuser.so
auth        sufficient    pam_unix.so nullok try_first_pass
auth        requisite     pam_succeed_if.so uid >= 1000 quiet_success
auth        sufficient    pam_sss.so forward_pass
auth        required      pam_deny.so
```

```
account     required      pam_unix.so
account     sufficient    pam_localuser.so
...
```

Among other things, the **/etc/pam.d/system-auth** file contains information about:

- user password lockout condition
- the possibility to authenticate with a smart card
- the possibility to authenticate with fingerprints
  You can modify the default profile settings by adding the following options to the **authselect select sssd** or **authselect select winbind** command, for example:
  - **with-faillock**
  - **with-smartcard**
  - **with-fingerprint**

To see the full list of available options, see Section 1.5, "Converting your scripts from authconfig to authselect" or the authselect-migration(7) man page.



NOTE

Make sure that the configuration files that are relevant for your profile are configured properly before finishing the **authselect** select procedure. For example, if the **sssd** daemon is not configured correctly and active, running **authselect select** results in only local users being able to authenticate, using pam_unix.

If adjusting a ready-made profile by adding one of the **authselect select** command-line options described above is not enough for your use case, you can:

- modify a ready-made profile by changing the **/etc/authselect/user-nsswitch.conf** file. For details, see Section 1.3, "Modifying a ready-made authselect profile" .
- create your own custom profile. For details, see Section 1.4, "Creating and deploying your own authselect profile".

1.3. MODIFYING A READY-MADE AUTHSELECT PROFILE

As a system administrator, you can modify one of the default profiles, the **sssd**, **winbind**, or the **nis** profile, to suit your needs. You can modify any of the items in the **/etc/authselect/user-nsswitch.conf** file with the exception of:

- passwd
- group
- netgroup
- automount
- services

Running **authselect select profile_name** afterwards will result in permissible changes to the profile being transferred from **/etc/authselect/user-nsswitch.conf** to the **/etc/nsswitch.conf** file but unacceptable changes being overwritten by the default profile configuration.

IMPORTANT

Do not modify the **/etc/nsswitch.conf** file directly.

Procedure

1. Select an **authselect** profile, for example:

```
# authselect select sssd
```

2. Edit the **/etc/authselect/user-nsswitch.conf** file.

3. Apply the changes from the **/etc/authselect/user-nsswitch.conf** file:

```
# authselect apply-changes
```

4. Optionally, review the **/etc/nsswitch.conf** file to verify that the changes from **/etc/authselect/user-nsswitch.conf** have been propagated there.

1.4. CREATING AND DEPLOYING YOUR OWN AUTHSELECT PROFILE

As a system administrator, you can create and deploy a custom profile by customizing one of the default profiles, the **sssd**, **winbind**, or the **nis** profile. This is particularly useful if Section 1.3, "Modifying a ready-made authselect profile" is not enough for your needs. When you deploy a custom profile, the profile is applied to every user logging into the given host.

Procedure

1. Create your custom profile by using the **authselect create-profile** command. For example, to create a custom profile called **user-profile** based on the ready-made **sssd** profile but one in which you can configure the items in the **/etc/nsswitch.conf** file yourself:

```
# authselect create-profile user-profile -b sssd --symlink-meta --symlink-pam
New profile was created at /etc/authselect/custom/user-profile
```

   Including the **--symlink-pam** option in the command means that PAM templates will be symbolic links to the origin profile files instead of their copy; including the **--symlink-meta** option means that meta files, such as README and REQUIREMENTS will be symbolic links to the origin profile files instead of their copy. This ensures that all future updates to the PAM templates and meta files in the original profile will be reflected in your custom profile, too.

   The command has created a copy of the **/etc/nsswitch.conf** file in the **/etc/authselect/custom/user-profile/** directory.

2. Configure the **/etc/authselect/custom/user-profile/nsswitch.conf** file.

3. Select the custom profile by running the **authselect select** command, and adding custom/*name_of_the_profile* as a parameter. For example, to select the **user-profile** profile:

```
# authselect select custom/user-profile
```

Selecting the **user-profile** profile for your machine means that if the **sssd** profile is subsequently updated by Red Hat, you will benefit from all the updates with the exception of updates made to the **/etc/nsswitch.conf** file.

Example

The following procedure shows how to create a profile based on the **sssd** profile which only consults the local static table lookup for hostnames in the **/etc/hosts** file, not in the **dns** or **myhostname** databases.

1. Edit the **/etc/nsswitch.conf** file by editing the following line:

```
hosts:      files
```

2. Create a custom profile based on **sssd** that excludes changes to **/etc/nsswitch.conf**:

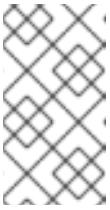
```
# authselect create-profile user-profile -b sssd --symlink-meta --symlink-pam
```

3. Select the profile:

```
# authselect select custom/user-profile
```

4. Optionally, check that selecting the custom profile has
   - created the **/etc/pam.d/system-auth** file according to the chosen **sssd** profile
   - left the configuration in the **/etc/nsswitch.conf** unchanged:

```
hosts:      files
```



NOTE

Running **authselect select sssd** would, in contrast, result in

```
hosts:      files dns myhostname
```

1.5. CONVERTING YOUR SCRIPTS FROM AUTHCONFIG TO AUTHSELECT

If you use **ipa-client-install** or **realm join** to join a domain, you can safely remove any **authconfig** call in your scripts. If this is not possible, replace each **authconfig** call with its equivalent **authselect** call. In doing that, select the correct profile and the appropriate options. In addition, edit the necessary configuration files:

- **/etc/krb5.conf**
- **/etc/sssd/sssd.conf** (for the **sssd** profile) or **/etc/samba/smb.conf** (for the **winbind** profile)

Table 1.1, "Relation of authconfig options to authselect profiles" and Table 1.2, "Authselect profile option equivalents of authconfig options" show the **authselect** equivalents of **authconfig** options.

Table 1.1. Relation of authconfig options to authselect profiles

Authconfig options	Authselect profile

--enableldap --enableldapauth	**sssd**
--enablesssd --enablesssdauth	**sssd**
--enablekrb5	**sssd**
--enablewinbind --enablewinbindauth	**winbind**
--enablenis	**nis**

Table 1.2. Authselect profile option equivalents of authconfig options

Authconfig option	Authselect profile feature
--enablesmartcard	with-smartcard
--enablefingerprint	with-fingerprint
--enableecryptfs	with-ecryptfs
--enablemkhomedir	with-mkhomedir
--enablefaillock	with-faillock
--enablepamaccess	with-pamaccess
--enablewinbindkrb5	with-krb5
--enablepamaccess	with-pamaccess

Table 1.3, "Examples of authselect commands equivalents to authconfig commands" shows example transformations of Kickstart calls to **authconfig** into Kickstart calls to **authselect**.

Table 1.3. Examples of authselect commands equivalents to authconfig commands

authconfig command	authselect equivalent
authconfig --enableldap --enableldapauth --enablefaillock --updateall	authselect select sssd with-faillock
authconfig --enablesssd --enablesssdauth --enablesmartcard --smartcardmodule=sssd --updateall	authselect select sssd with-smartcard
authconfig --enableecryptfs --enablepamaccess --updateall	authselect select sssd with-ecryptfs with-pamaccess

authconfig --enablewinbind --enablewinbindauth --winbindjoin=Administrator --updateall	realm join -U Administrator --client-software=winbind **WINBINDDOMAIN**

CHAPTER 2. CONFIGURING SMART CARDS USING AUTHSELECT

This chapter describes how to configure your smart card to achieve one of the following aims:"

- Enable both password and smart card authentication
- Disable password and enable smart card authentication
- Enable lock on removal

2.1. PREREQUISITES

- Authselect installed
  The authselect tool configures user authentication on Linux hosts and you can use it to configure smart card authentication parameters. For details about authselect, see Explaining authselect.
- Smart Card or USB device supported by RHEL 8
  For details, see Smart Card support in RHEL8 .

2.2. CERTIFICATES ELIGIBLE FOR SMART CARDS

You can configure a smart card with the authselect tool. However, first you need to import a certificate into your smart card. The certificate can be generated by:

- Active Directory (AD)
- Identity Management (IdM)
  For details about how to create IdM certificates into a smart card, see Configuring Identity Management for smart card authentication.
- Red Hat Certificate System (RHCS)
  For details, see Managing Smart Cards with the Enterprise Security Client .
- Local Certification Authority. You can use a certificate generated by the Local Certification Authority if the user is not part of a domain or for testing purposes.
  For details about how to create and import local certificates into a smart card, Configuring and importing local certificates to a smart card.

2.3. CONFIGURING SMART CARD AUTHENTICATION TO ENABLE USER PASSWORD AUTHENTICATION

This section describes how to enable both smart card and password authentication on your system.

Prerequisites

- The Smart card contains your certificate and private key.
- The card is inserted into the reader and connected to the computer.
- The **authselect** tool is installed on your system.

Procedure

- Enter the following command to allow smart card and password authentication:

```
# authselect select sssd with-smartcard --force
```

At this point, smart card authentication is enabled, however, password authentication will work if you forget your smart card at home.

2.4. CONFIGURING AUTHSELECT TO ENFORCE SMART CARD AUTHENTICATION

The **authselect** tool enables you to configure smart card authentication on your system and to disable the default password authentication. The **authselect** command must include the following options:

- **with-smartcard** – enabling smart card authentication
- **with-smartcard-required** – enabling exclusive smart card authentication (authentication with a password is disabled)

Prerequisites

- Smart card contains your certificate and private key.
- The card is inserted into the reader and connected to the computer.
- The **authselect** tool is installed on your local system.

Procedure

- Enter the following command to enforce smart card authentication:

```
# authselect select sssd with-smartcard  with-smartcard-required --force
```

At this point, you can only log in with a smart card. Password authentication will not be working any more.

2.5. CONFIGURING SMART CARD AUTHENTICATION WITH LOCK ON REMOVAL

The **authselect** service enables you to configure your smart card authentication to lock your screen instantly after removing the smart card from the reader. The **authselect** command must include the following variables:

- **with-smartcard** – enabling smart card authentication
- **with-smartcard-required** – enabling exclusive smart card authentication (authentication with a password is disabled)
- **with-smartcard-lock-on-removal** – enforcing log out after the smart card removal

Prerequisites

- Smart card contains your certificate and private key.
- The card is inserted into the reader and connected to the computer.

- The **authselect** tool is installed on your local system.

Procedure

- Enter the following command to enable smart card authentication, disable password authentication, and enforce lock on removal:

```
# authselect select sssd  with-smartcard  with-smartcard-required with-smartcard-lock-on-removal --force
```

At this point, removing the card lock the screen and you must re-insert your smart card to unlock it.

CHAPTER 3. CONFIGURING AND IMPORTING LOCAL CERTIFICATES TO A SMART CARD

This chapter describes a scenario where:

- The host is cannot be connected to a domain
- You want to authenticate with a smart card on this host
- You want to configure SSH access using smart card authentication
- Configure the smart card with **authselect**

The following configuration is necessary for accomplishing the scenario described above:

- Obtain a user certificate for the user who wants to authenticate with a smart card. The certificate should be generated by a trustworthy Certification Authority used in the domain. If you cannot get the certificate, for testing purpose, you can generate a user certificate signed by a local certificate authority.
- Storing the certificate and private key in a smart card.
- Configuring the smart card authentication for SSH access.

IMPORTANT

If a host can be part of the domain, add the host to the domain and use certificates generated by Active Directory or Identity Management Certification Authority.

For details about how to create IdM certificates for a smart card, see Configuring Identity Management for smart card authentication.

3.1. PREREQUISITES

- Authselect installed
  The authselect tool configures user authentication on Linux hosts and you can use it to configure smart card authentication parameters. For details about authselect, see Explaining authselect.
- Smart Card or USB device supported by RHEL 8
  For details, see Smart Card support in RHEL8 .

3.2. CREATING LOCAL CERTIFICATES

This section describes how to:

- Generate the OpenSSL certificate authority
- Create a certificate signing request

WARNING

The following steps are intended for testing purpose only. Certificates generated by a local self-signed Certificate Authority are not as secure as using AD, IdM, or RHCS Certification Authority. Use a certificate generated by your enterprise Certification Authority even though the host is not part of the domain.

Procedure

1. Create a directory in which you want to generate the certificate, for example:

```
# mkdir /tmp/ca
# cd /tmp/ca
```

2. Set up the certificate (copy this text to your command line in the ca directory):

```
cat > ca.cnf <<EOF
[ ca ]
default_ca = CA_default

[ CA_default ]
dir             = .
database        = \$dir/index.txt
new_certs_dir   = \$dir/newcerts

certificate     = \$dir/rootCA.crt
serial          = \$dir/serial
private_key     = \$dir/rootCA.key
RANDFILE        = \$dir/rand

default_days    = 365
default_crl_days = 30
default_md      = sha256

policy          = policy_any
email_in_dn     = no

name_opt        = ca_default
cert_opt        = ca_default
copy_extensions  = copy

[ usr_cert ]
authorityKeyIdentifier = keyid, issuer

[ v3_ca ]
subjectKeyIdentifier   = hash
authorityKeyIdentifier = keyid:always,issuer:always
basicConstraints       = CA:true
keyUsage               = critical, digitalSignature, cRLSign, keyCertSign

[ policy_any ]
```

```
organizationName       = supplied
organizationalUnitName = supplied
commonName             = supplied
emailAddress           = optional

[ req ]
distinguished_name = req_distinguished_name
prompt             = no

[ req_distinguished_name ]
O  = Example
OU = Example Test
CN = Example Test CA
EOF
```

3. Create the following directories:

```
# mkdir certs crl newcerts
```

4. Create the following files:

```
# touch index.txt crlnumber index.txt.attr
```

5. Write the number 01 in the serial file:

```
# echo 01 > serial
```

This command writes a number 01 in the serial file. It is a serial number of the certificate. With each new certificate released by this CA the number increases by one.

6. Create an OpenSSL root CA key:

```
# openssl genrsa -out rootCA.key 2048
```

7. Create a self-signed root Certification Authority certificate:

```
# openssl req -batch -config ca.cnf \
    -x509 -new -nodes -key rootCA.key -sha256 -days 10000 \
    -set_serial 0 -extensions v3_ca -out rootCA.crt
```

8. Create the key for your username:

```
# openssl genrsa -out example.user.key 2048
```

This key is generated in the local system which is not secure, therefore, remove the key from the system when the key is stored in the card.

You can create a key directly in the smart card as well. For doing this, follow instructions created by the manufacturer of your smart card.

9. Create the certificate signing request configuration file (copy this text to your command line in the ca directory):

```
cat > req.cnf <<EOF
```

```
[ req ]
distinguished_name = req_distinguished_name
prompt = no

[ req_distinguished_name ]
O = Example
OU = Example Test
CN = testuser

[ req_exts ]
basicConstraints = CA:FALSE
nsCertType = client, email
nsComment = "testuser"
subjectKeyIdentifier = hash
keyUsage = critical, nonRepudiation, digitalSignature, keyEncipherment
extendedKeyUsage = clientAuth, emailProtection, msSmartcardLogin
subjectAltName = otherName:msUPN;UTF8:testuser@EXAMPLE.COM,
email:testuser@example.com
EOF
```

10. Create a certificate signing request for your example.user certificate:

```
# openssl req -new -nodes -key example.user.key \
    -reqexts req_exts -config req.cnf -out testuser.csr
```

11. Configure the new certificate. Expiration period is set to 1 year:

```
# openssl ca -config ca.cnf -batch -notext \
    -keyfile rootCA.key -in example.user.csr -days 365 \
    -extensions usr_cert -out example.user.crt
```

At this point, the certification authority and certificates are successfully generated and prepared for import into a smart card.

3.3. COPYING CERTIFICATES TO THE SSSD DIRECTORY

Gnome Desktop Manager (GDM) requires SSSD. If you use GDM, you need to copy the PEM certificate in the **/etc/sssd/pki** directory.

Prerequisites

- The local CA authority and certificates have been generated

Procedure

1. Ensure that you have SSSD installed on the system.

```
# rpm -q sssd
sssd-2.0.0.43.el8_0.3.x86_64
```

2. Create a **/etc/sssd/pki** directory:

```
# file /etc/sssd/pki
/etc/sssd/pki/: directory
```

3. Copy the **rootCA.crt** as a PEM file in the **/etc/sssd/pki/** directory:

```
# cp /tmp/ca/rootCA.crt /etc/sssd/pki/sssd_auth_ca_db.pem
```

At this point, certificate authority and certificates are successfully generated and saved in the **/etc/sssd/pki** directory.

NOTE

If you want to share the Certificate Authority certificates with another application, you can change a location in sssd.conf:

- SSSD PAM responder: **pam_cert_db_path** in the **[pam]** section
- SSSD ssh responder: **ca_db** in the **[ssh]** section

Ford details, see man mage for **sssd.conf**.

Red Hat recommends to keep the default path and use a dedicated Certificate Authority certificate file for SSSD to make sure that only Certificate Authorities trusted for authentication are listed here.

3.4. INSTALLING GNUTLS-UTILS

To configure your smart card, you need a tool that can generate certificates and store them in the smart card.

You must:

- Install the **gnutls-utils** program which helps you to manage certificates.
- Start the **pcscd** service which communicates with the smart card reader.

Procedure

1. Install the the **gnutls-utils** package which allows you to manage smart card settings for reading and writing from the smart card:

```
# dnf -y install opensc gnutls-utils
```

2. Start the **pcscd** service.

```
# systemctl start pcscd
```

Verify that the **pcscd** service is up and running.

3.5. STORING A CERTIFICATE ON THE SMART CARD

This section describes smart card configuration with **gnutls-utils** which helps you to configure:

- Erasing your smart card
- Setting a new PIN and PUK

- Creating a new slot in the smart card
- Storing the certificate and private key in the slot
- Locking the smart card settings (some smart cards need this type of finalization)

Prerequisites

- The **gnutls-utils** package is installed.
  For details, see Installing gnutls-utils.
- The card is inserted in the reader and connected to the computer.

Procedure

1. Erase your smart card and authenticate yourself with PIN:

```
# spawn pkcs15-init --erase-card --use-default-transport-keys
Using reader with a card: Smart Card name
PIN [Security Officer PIN] required.
Please enter PIN [Security Officer PIN]:
```

   The card has been erased.

2. Set your PIN and PUK – both twice for verification:

```
# pkcs15-init --create-pkcs15 --use-default-transport-keys \
    --pin redhat --puk redhat --so-pin redhat --so-puk redhat
Using reader with a card: SCM Microsystems Inc. SCR 3320 [CCID Interface]
(53311657131456) 00 00
```

   The **pcks15-init** creates a new slot in the smart card and marks it with a label and an authentication ID.

3. Add a label that is the name of the slot and the authentication ID:

```
# pkcs15-init --store-pin --label testuser \
    --auth-id 01 --so-pin redhat --pin redhat --puk redhat
Using reader with a card: SCM Microsystems Inc. SCR 3320 [CCID Interface]
(53311657131456) 00 00
```

   The label auth-id is set to 01.

4. Store the private key in the new slot of the smart card:

```
# pkcs15-init --store-private-key testuser.key --label testuser_key \
    --auth-id 01 --id 01 --so-pin redhat --pin redhat
Using reader with a card: SCM Microsystems Inc. SCR 3320 [CCID Interface]
(53311657131456) 00 00
```

5. Store the certificate in the new slot of the smart card:

```
# pkcs15-init --store-certificate testuser.crt --label testuser_crt \
    --auth-id 01 --id 01 --format pem --so-pin redhat --pin redhat
Using reader with a card: SCM Microsystems Inc. SCR 3320 [CCID Interface]
```

```
(53311657131456) 00 00
```

6. Optionally finalize the card settings with locking the settings:

```
# pkcs15-init -F
```

IMPORTANT

Some smart cards require this step.

At this stage, your smart card includes the certificate and private key in the newly created slot. PIN and PUK has been successfully created.

3.6. CONFIGURING SSH ACCESS USING SMART CARD AUTHENTICATION

If your smart card is configured, you can set up SSH access to this host using smart card authentication.

Basically you need to run the **ssh-keygen** command to generate a key using the opensc library to write to the SSH keys.

Prerequisites

- The smart card contains your certificate and private key.
- The card is inserted in the reader and connected to the computer.

Procedure

1. Create a new directory for SSH keys in the home directory of the user who uses smart card authentication:

```
# mkdir /home/example.user/.ssh
```

2. Generate the SSH keys:

```
# ssh-keygen -D /usr/lib64/pkcs11/opensc-pkcs11.so >>
~example.user/.ssh/authorized_keys
```

3. Change access rights:

```
# chown -R example.user:example.user ~example.user/.ssh/
# chmod 700 ~example.user/.ssh/
# chmod 600 ~example.user/.ssh/authorized_keys
```

4. Optionally, display the keys:

```
# cat ~example.user/.ssh/authorized_keys
```

The terminal displays the keys.

5. To use the ssh keys, configure authentication with the **authselect** command:

```
# authselect select sssd with-smartcard with-smartcard-lock-on-removal --force
```

For details about configuring smart cards with authselect, see Configuring smart cards using authselect.

Now, you can verify ssh access with the following command:

```
# ssh -I /usr/lib64/opensc-pkcs11.so -l example.user localhost hostname
```

If the configuration is successful, you should not be prompted for entering your credentials. You just need to add the smart card PIN.