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APPLICATION NOTE

FOXMAN-UN

Integration with Active Directory (AD)

Hitachi Energy

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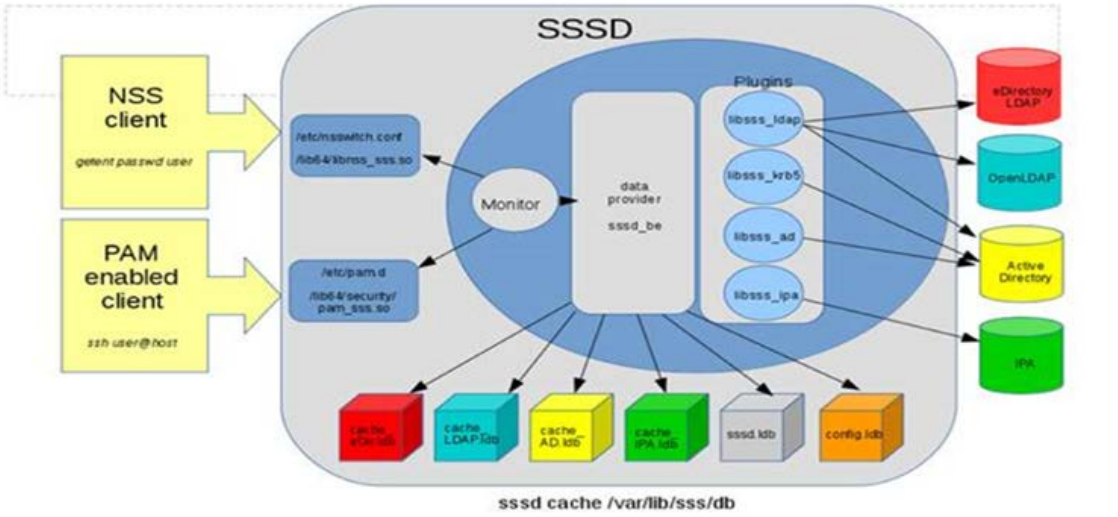
Contents

1 Introduction

FOXMAN-UN uses PAM for authentication.

During the FOXMAN-UN installation the configuration file `/etc/pam.d/nem-auth` is installed.

- By default, `nem-auth` is looking to `system-auth` for authentication rules.
- By default, `system-auth` is configured to use local server for authentication



sssd cache /var/lib/sss/db

After the FOXMAN-UN installation, the following users are created:

- The FOXMAN-UN security administrator: username to be defined during installation (e.g., nemsecadm), with group nem. The username nemsecadm is assumed in the examples of the present document.
- The DIRAC superuser: dirac with group dirac.
- To control how users are retrieved, two config variables can be added to the /opt/nem/etc/nem.conf file:
  - security_enable_new_user_group_name
  - security_new_user_group_name

  If “security_enable_new_user_group_name” is enabled, FOXMAN-UN will propose users belonging to the group “security_new_user_group_name” to be registered as new users into its database. If not present, “security_enable_new_user_group_name” is disabled.

Existing AD users are not automatically discovered by FOXMAN-UN, which is preventing their addition to FOXMAN-UN users. A possible workaround would be to use the setting “enumerate = True” in SSSD which would make AD users visible in FOXMAN-UN user management. However, this would introduce two potential problems:

- All AD users will be visible, which may be undesirable.
- SSSD initialization is getting significantly slower, especially in large AD environments, making enumeration not recommended.

Hence the recommendation is the following:

- Disable SSSD enumeration;
- Let FOXMAN-UN retrieve all users of a specific group. This works even in the case enumeration is disabled.
- In SSSD config (as described in Integration Steps) we recommend the addition of an AD access group filter (ad_access_filter) to limit accessibility of the server to a specified AD user part of a group.

2 Integration Steps

To integrate FOXMAN-UN with AD,

Proceed as follows:

1. Integration of the Linux server with AD:

   Please refer to the following RHEL document for a complete description of the steps needed to integrate the Linux server with the AD server:

   [1] Red_Hat_Enterprise_Linux-9-Integrating_RHEL_systems_directly_with_Windows_Active_Directory-en-US (Red Hat online product documentation).

   Chapters 1.4.1 and 1.4.2.1 are particularly important:

   - 1.4.1: “Discovering and joining an AD Domain using SSSD”
   - 1.4.2.1: “Automatically generate new UIDs and GIDs for AD users”

   Like with the document in [1], we recommend integrating FOXMAN-UN with AD by using SSSD with option “using ID mapping” to automatically generate new UIDs and GIDs for AD users.

2. Configuring the file /etc/sssd/sssd.conf:

   Optional: add the following parameters in Domain section:

   ```
   ad_gpo_access_control = disabled
   ad_gpo_ignore_unreadable = True
   ```

   By default, ad_gpo_access_control is enforced, i.e., GPO are evaluated and enforced. Admin must define the GPO settings on RHEL and create and configure a GPO for a RHEL host in the AD GUI as per [1] Red_Hat_Enterprise_Linux-9-Integrating_RHEL_systems_directly_with_Windows_Active_Directory-en-US (Red Hat online product documentation).

   Leaving the default can prevent the SSH and GIU login.

   As initial configuration for non-AD experts we suggest to disable the use of GPO.

   Change in Domain section: set the following parameters to the values:

   ```
   use_fully_qualified_names = False
   fallback_homedir = /home/%u
   ```

   The content of the file sssd.conf (using a sample domain name here) should look like:

   ```
   [sssd]
   domains = EXAMPLE.COM
   config_file_version = 2
   services = nss, pam

   [domain/EXAMPLE.COM]
   ad_server = win-test.example.com
   ad_domain = EXAMPLE.COM
   krb5_realm = EXAMPLE.COM
   realmd_tags = manages-system joined-with-adcli
   cache_credentials = True
   id_provider = ad
   krb5_store_password_if_offline = True
   default_shell = /bin/bash
   ldap_id_mapping = True
   use_fully_qualified_names = False
   fallback_homedir = /home/%u
   access_provider = ad
   ad_access_filter =
   (&(memberOf=cn=admins,ou=groups,dc=example,dc=com)(unixHomeDirectory=*)
   ad_gpo_access_control = disabled
   ad_gpo_ignore_unreadable = True
   ```

3. Configuration of the FOXMAN-UN users in the windows AD server:

   Before the FOXMAN-UN installation, you need to add to the windows AD server the FOXMAN-UN security administrator user:

   username: “nemsecadm”

   home dir: “/opt/nem/nemsecadm”

   shell:”/bin/bash”

   primary group: “nem”

   Before the DIRAC installation, you need to add to the windows AD server the dirac FOXMAN-UN user:

   username: “dirac”

   home dir: “/opt/dirac/dirac”

   shell: “/bin/bash”

   primary group: “diracgrp”

   Please note:
   It is important that “nem” and “diracgrp” group also need to be added to the AD server and that nem is set as primary group for nemsecadm user and diracgrp for dirac user.

4. Install FOXMAN-UN:

a Verify the nemsecadm UID and nem GID are set in AD.

Execute the following command to verify nemsecadm is defined in AD:

```
getent passwd nemsecadm@EXAMPLE.COM
nemsecadm:x:796401107:796401113:nemsecadm:/opt/nem/nemsecadm:/bin/bash
```

or

```
getent passwd nemsecadm
nemsecadm:x:796401107:796401113:nemsecadm:/opt/nem/nemsecadm:/bin/bash
```

nemsecadm user UID 796401107, nem group GID 796401113

b Verify that linux password rules minlen and minclass in /etc/security/pwquality.conf are aligned to AD password rules

c Manually add to /etc/group the entry for the nem group with the GID proposed by AD,

e.g., nem:x:796401113:rabbitmq,nemsecadm

d Install FOXMAN-UN with the standard install script.

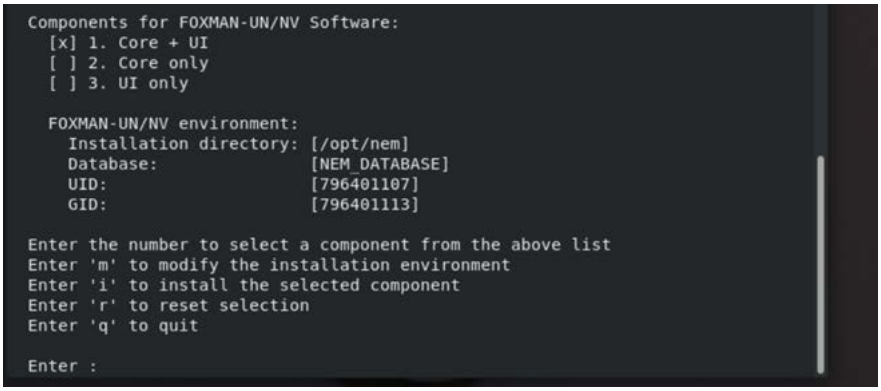
Enter m to modify the default configuration.

Press enter to accept the default Database name.

Insert the nemsecadm UID proposed by AD.

Insert the nem GID proposed by AD.

e.g., uid=796401107(nemsecadm) gid=796401113(nem)



Enter i to install.

When requested to set up the nemsecadm password insert the one defined in AD

e Manually add to /etc/passwd the entry for the nemsecadm user with the UID/GID proposed by AD,

e.g., nemsecadm:x:796401107:796401113:NEM administrator:/opt/nem/nemsecadm:/bin/bash

5. PAM module integration:

   In this section we describe the modification of `/etc/pam.d/nem-auth`.

   Add the following line at beginning in nem-auth:

   ```
   Auth [success=done auth_err=die default=ignore]  pam_sss.so
   ```

   The file content would then look like:

   ```
   #%PAM-1.1
   # NEM authenticaton
   auth        [success=done auth_err=die default=ignore]  pam_sss.so
   auth        include      system-auth
   auth        required     pam_nologin.so
   account     required     pam_unix.so
   password    include      system-auth
   session     include      system-auth
   session     required     pam_limits.so
   session     optional     pam_console.so
   ```

   If OK, restart FOXMAN-UN.

6. Configuration of new operator users in the windows AD server:

   This step needs to be repeated each time a new user is added to FOXMAN-UN.

   A new used added to FOXMAN-UN needs to be added as well to the AD server.

   Add each FOXMAN-UN user to AD with group nem.

   On the Linux server, the user needs to be added to /etc/password with same groupid, uid as defined in AD with /bin/bash shell and without domain name.

Please note:

To prevent new users to get local access to the server via ssh, add the user(s) to the **DenyUsers or AllowUsers** of sshd via sshd_config. To prevent users from logging in through GDM, configure the “auth” section of /etc/pam.d/gd-password file as follows:

```
auth     [success=done ignore=ignore default=bad] pam_selinux_permit.so
auth required pam_succeed_if.so user notin user1:user2 quiet
auth        substack      password-auth
```



```
auth        optional      pam_gnome_keyring.so
```

After making the above change, user1 and user2 will no longer be able to log in via GDM. Also see https://access.redhat.com/solutions/2839611, “How to disable User Authentication in GDM using PAM?” (subscriber-exclusive content; login required).

Result: FOXMAN-UN is integrated with AD.

7. Install DIRAC (optional)

a Verify the dirac UID and diracgrp GID are set in AD. To do so,

Execute the following command to verify dirac is defined in AD:

```
$ getent passwd dirac@EXAMPLE.COM
dirac:*:796401116:796401115:dirac:/opt/dirac/dirac:/bin/bash
```

or

```
$ getent passwd dirac
dirac:*:796401116:796401115:dirac:/opt/dirac/dirac:/bin/bash
```

dirac user UID 796401116, diracgrp group GID 796401115

b Manually add to /etc/group the entry for the dirac group with the GID proposed by AD, e.g., dirac:x:796401115:nemsecadm

c Manually add to /etc/passwd the entry for the dirac user with the UID/GID proposed by AD, e.g., dirac:x:796401116:796401115:DIRAC administrator:/opt/dirac/dirac:/bin/bash

d Install DIRAC with the standard install script.
When requested to set up the dirac password, insert the one defined in AD.

Result: DIRAC is integrated with AD.

End of instruction

3 Annex

3.1 Associated Documents

[1] Red_Hat_Enterprise_Linux-9-Integrating_RHEL_systems_directly_with_Windows_Active_Directory-en-US (Red Hat online product documentation)

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