RADIUS/LDAP Authentication Configuration

V005

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Preface

This document is about RADIUS/LDAP configuration and how to set RADIUS/LDAP authentication for N-Reporter/N-Cloud. The examples here are based on N-Reporter/N-Cloud 6.1.142.

Environment:

CentOS 8/Debian 10 with FreeRADIUS package.

Windows 2019 with Active Directory account.

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Chapter 1
RADIUS Configuration

1. RADIUS Configuration

1.1 Install FreeRADIUS Package

➢ CentOS 8

(1) Install FreeRADIUS package

```
# dnf -y install freeradius freeradius-utils
```

(2) Check FreeRADIUS version

```
# radiusd -v
```

```
[root@CentOS8 ~]# radiusd -v
radiusd: FreeRADIUS Version 3.0.20, for host x86_64-redhat-linux-gnu
FreeRADIUS Version 3.0.20
Copyright (C) 1999-2019 The FreeRADIUS server project and contributors
There is NO warranty; not even for MERCHANTABILITY or FITNESS FOR A
PARTICULAR PURPOSE
You may redistribute copies of FreeRADIUS under the terms of the
GNU General Public License
For more information about these matters, see the file named COPYRIGHT
[root@CentOS8 ~]#
```

➢ Debian 10

(1) Download FreeRADIUS package

```
# apt -y install freeradius freeradius-utils
```

(2) Check FreeRADIUS version

```
# freeradius -v
```

```
root@debian10:~# freeradius -v
radiusd: FreeRADIUS Version 3.0.17, for host x86_64-pc-linux-gnu, built on Apr 22 2019 at 21:23:36
FreeRADIUS Version 3.0.17
Copyright (C) 1999-2017 The FreeRADIUS server project and contributors
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```


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1.2 Create Dictionary Text

➢ In Dictionary text, please set parameter names of each brand and the corresponding value or type. They will be used to analyze RADIUS packets, and the data will be shown in debug pattern or log files.

```
# vi /usr/share/freeradius/dictionary.npartner
```

```
# -*- text -*-
# Copyright (C) 2015 The FreeRADIUS Server project and contributors
##########################################################################################
#
#       N-Partner attributes
#
#       $Id$
#
##########################################################################################

VENDOR          N-Partner                       39693
BEGIN-VENDOR    N-Partner

ATTRIBUTE       N-Partner-Domain        1       integer
ATTRIBUTE       N-Partner-Menu          2       integer
ATTRIBUTE       N-Partner-Email         3       string

END-VENDOR N-Partner
```

```
# -*- text -*-
# Copyright (C) 2015 The FreeRADIUS Server project and contributors
##########################################################################################
#
#       N-Partner attributes
#
#       $Id$
#
##########################################################################################

VENDOR          N-Partner                       39693
BEGIN-VENDOR    N-Partner

ATTRIBUTE       N-Partner-Domain        1       integer
ATTRIBUTE       N-Partner-Menu          2       integer
ATTRIBUTE       N-Partner-Email         3       string

END-VENDOR N-Partner
```

➢ Edit dictionary text

(1) CentOS 8

```
# vi /etc/raddb/dictionary
```

(2) Debian 10

```
# vi /etc/freeradius/3.0/dictionary
```

➢ Add a command at the bottom to include “dictionary.npartner”

```
$INCLUDE /usr/share/freeradius/dictionary.npartner
```


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1.3 Set Connection Information

At the bottom, configure the secret key N-Reporter/N-Cloud and RADIUS server need to connect with each other. The IP address set here is the external IP of N-Reporter/N-Cloud.

➢ CentOS 8

```
# vi /etc/raddb/clients.conf
```

➢ Debian 10

```
# vi /etc/freeradius/3.0/clients.conf
```

Set connection information at the bottom

```
client n-reporter{
        ipaddr = 192.168.8.4
        secret = npartner
        shortname = npartner
}
```

```
client n-reporter{
        ipaddr = 192.168.8.4
        secret = npartner
        shortname = npartner
}
```

The red part above contains the IP address of N-Reporter/N-Cloud and the secret key.

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1.4 Set Account and Password for Authentication

Please set accounts and passwords for RADIUS server authentication and set the domain ID, menu ID, and E-mail. Users can search for the former two in “Domain Management” and “User” of N- Reporter/N-Cloud.

➢ CentOS 8

```
# vi /etc/raddb/users
```

➢ Debian 10

```
# vi /etc/freeradius/3.0/users
```

Enter an account and password for authentication at the bottom

```
npartner Cleartext-Password := "npartner"
          Reply-Message = "RADIUS npartner",
          N-Partner-Domain = 1001,
          N-Partner-Menu = 2,
          N-Partner-Email = "npartner@npartner.local"
```

```
npartner Cleartext-Password := "npartner"
         Reply-Message = "RADIUS npartner",
         N-Partner-Domain = 1001,
         N-Partner-Menu = 2,
         N-Partner-Email = "npartner@npartner.local"
```

The red part above contains the account/password for authentication, N-Partner domain ID, N-Partner menu ID, and N-Partner E-mail.

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1.5 Activate RADIUS

If there are RADIUS authentication errors, please check RADIUS log files.

➢ CentOS 8

(1) Activate the service

```
# systemctl restart radiusd && systemctl status radiusd
```

```
[root@CentOS8 ~]# systemctl restart radiusd && systemctl status radiusd
● radiusd.service - FreeRADIUS high performance RADIUS server.
   Loaded: loaded (/usr/lib/systemd/system/radiusd.service; enabled; vendor preset: disabled)
   Active: active (running) since Wed 2021-10-27 17:11:04 CST; 6ms ago
  Process: 6546 ExecStart=/usr/sbin/radiusd -d /etc/raddb (code=exited, status=0/SUCCESS)
  Process: 6542 ExecStartPre=/usr/sbin/radiusd -C (code=exited, status=0/SUCCESS)
  Process: 6533 ExecStartPre=/bin/sh /etc/raddb/certs/bootstrap (code=exited, status=0/SUCCESS)
  Process: 6532 ExecStartPre=/bin/chown -R radiusd.radiusd /var/run/radiusd (code=exited, status=0/SUCCESS)
 Main PID: 6548 (radiusd)
    Tasks: 6 (limit: 11514)
   Memory: 77.0M
   CGroup: /system.slice/radiusd.service
           └─6548 /usr/sbin/radiusd -d /etc/raddb

Oct 27 17:11:04 CentOS8.localdomain systemd[1]: Stopped FreeRADIUS high performance RADIUS server..
Oct 27 17:11:04 CentOS8.localdomain systemd[1]: Starting FreeRADIUS high performance RADIUS server....
Oct 27 17:11:04 CentOS8.localdomain sh[6533]: server.pem: OK
Oct 27 17:11:04 CentOS8.localdomain systemd[1]: Started FreeRADIUS high performance RADIUS server..
[root@CentOS8 ~]#
```

(2) Set to enable radius while booting

```
# systemctl enable radiusd
```

```
[root@CentOS8 ~]# systemctl enable radiusd
Created symlink /etc/systemd/system/multi-user.target.wants/radiusd.service → /usr/lib/systemd/system/radiusd.service.
[root@CentOS8 ~]#
```

(3) Check the log file

```
# tail /var/log/radius/radius.log
```

➢ Debian 10

(1) Activate the service

```
# systemctl restart freeradius && systemctl status freeradius
```

```
root@debian10:~# systemctl restart freeradius && systemctl status freeradius
● freeradius.service - FreeRADIUS multi-protocol policy server
   Loaded: loaded (/lib/systemd/system/freeradius.service; disabled; vendor preset: enabled)
   Active: active (running) since Mon 2020-07-20 03:31:57 EDT; 5ms ago
     Docs: man:radiusd(8)
           man:radiusd.conf(5)
           http://wiki.freeradius.org/
           http://networkradius.com/doc/
  Process: 775 ExecStartPre=/usr/sbin/freeradius $FREERADIUS_OPTIONS -Cxm -lstdout (code=exited, status=0/SUCCESS)
  Process: 777 ExecStart=/usr/sbin/freeradius $FREERADIUS_OPTIONS (code=exited, status=0/SUCCESS)
 Main PID: 779 (freeradius)
    Tasks: 6 (limit: 2354)
   Memory: 9.7M
   CGroup: /system.slice/freeradius.service
           └─779 /usr/sbin/freeradius

Jul 20 03:31:57 debian10 freeradius[775]: [/etc/freeradius/3.0/mods-config/attr_filter/access_reject]:11 Check item "FreeRADIUS-Response-Delay-USec"        found in filter list for realm "
Jul 20 03:31:57 debian10 freeradius[775]: tls: Using cached TLS configuration from previous invocation
Jul 20 03:31:57 debian10 freeradius[775]: tls: Using cached TLS configuration from previous invocation
Jul 20 03:31:57 debian10 freeradius[775]: rlm_cache (cache_eap): Driver rlm_cache_rbtree (module rlm_cache_rbtree) loaded and linked
Jul 20 03:31:57 debian10 freeradius[775]: Ignoring "sql" (see raddb/mods-available/README.rst)
Jul 20 03:31:57 debian10 freeradius[775]: Ignoring "ldap" (see raddb/mods-available/README.rst)
Jul 20 03:31:57 debian10 freeradius[775]:  # Skipping contents of 'if' as it is always 'false' -- /etc/freeradius/3.0/sites-enabled/inner-tunnel:331
Jul 20 03:31:57 debian10 freeradius[775]: radiusd: #### Skipping IP addresses and Ports ####
Jul 20 03:31:57 debian10 freeradius[775]: Configuration appears to be OK
Jul 20 03:31:57 debian10 systemd[1]: Started FreeRADIUS multi-protocol policy server.
```

(2) Set to enable freeradius while booting

```
# systemctl enable freeradius
```

(3) Check the log file

```
# tail /var/log/freeradius/radius.log
```


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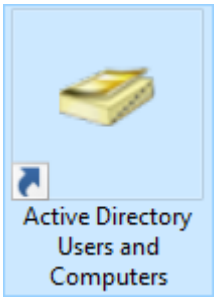
Chapter 2
LDAP Configuration

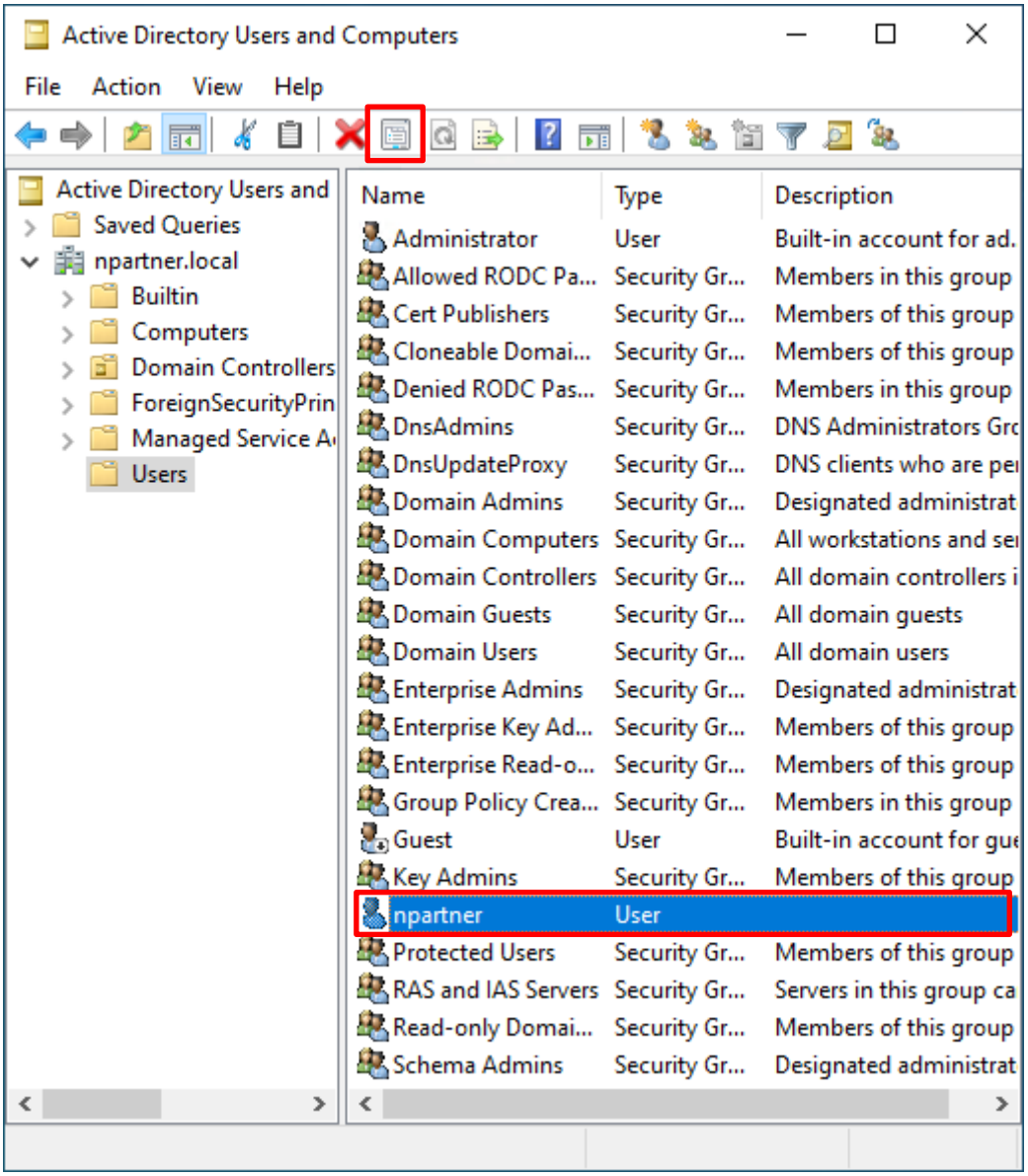
2. LDAP Configuration

2.1 Set Windows AD account

➢ Open “Active Directory Users and Computers”



➢ Click the AD account and click



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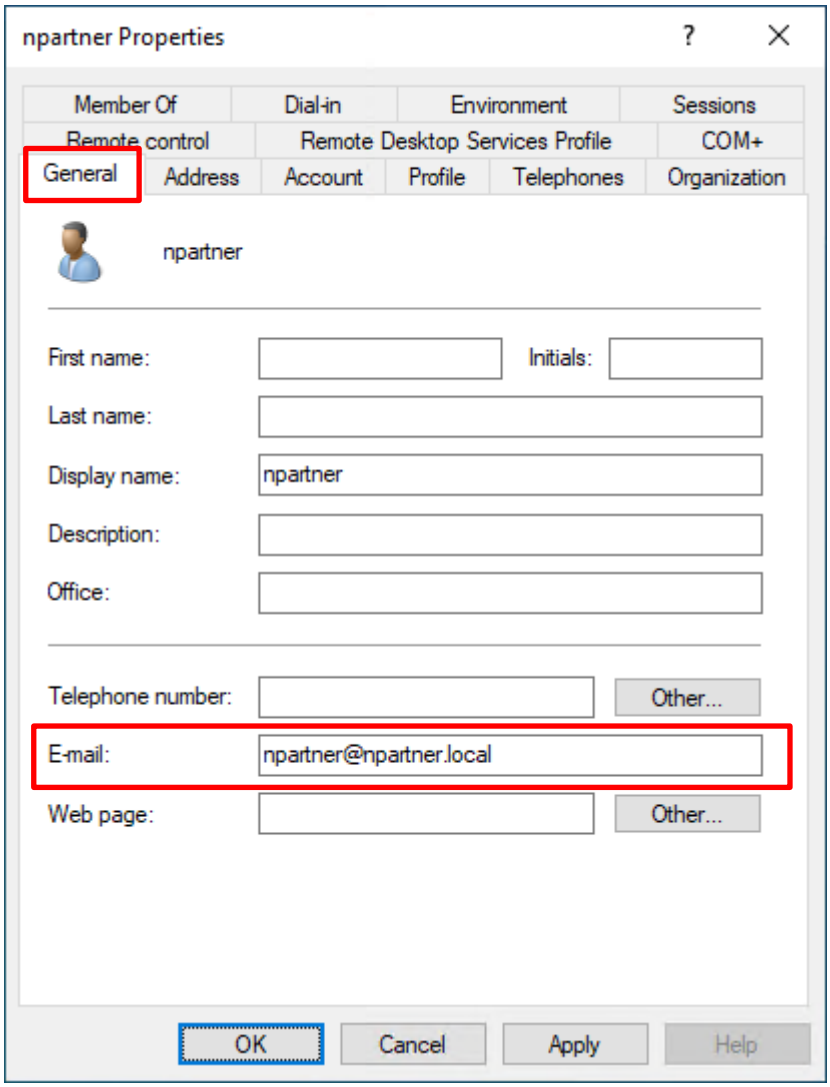
➢ In tab “General,” please check the E-mail



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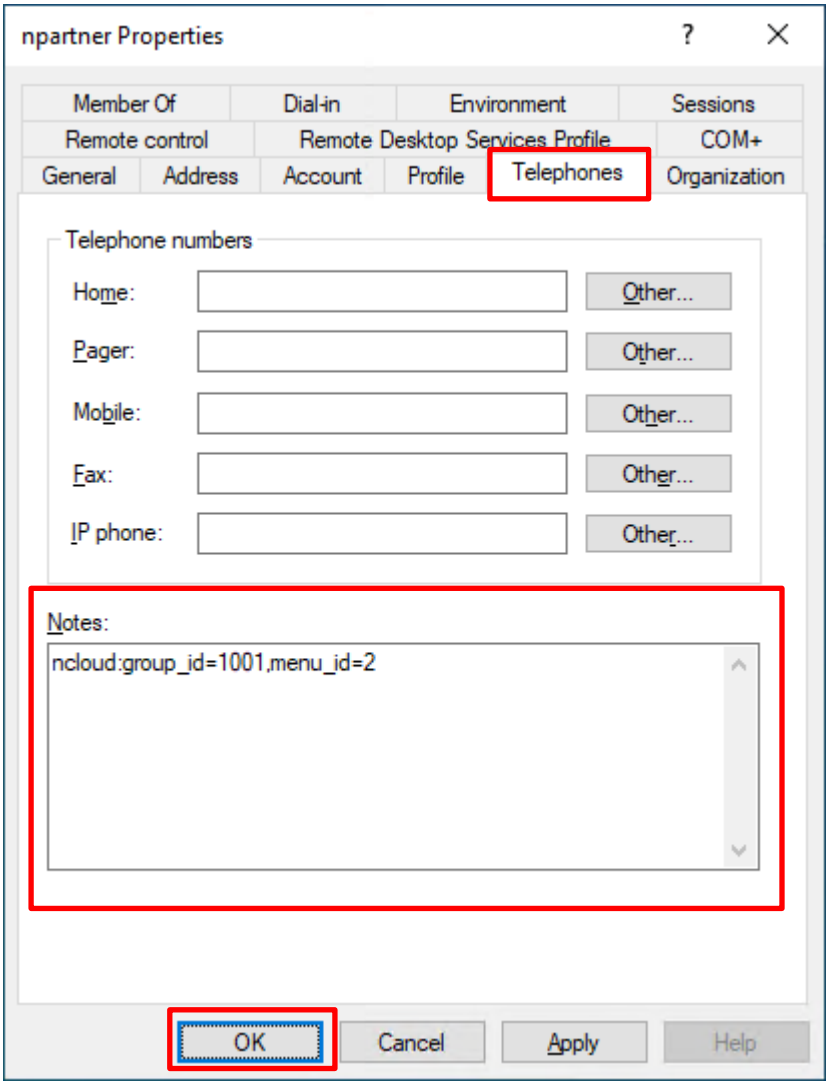
➢ In tab “Telephones,” enter the group ID and menu ID in “Notes”; click “OK”(essential)



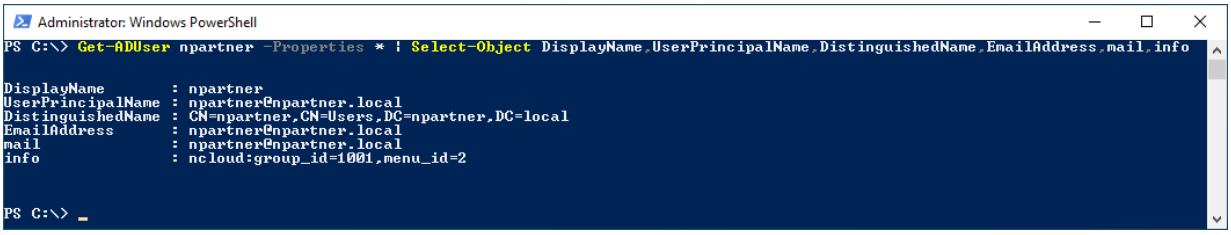
The format must be ncloud:group_id=parameter,menu_id=parameter

Note: group_id: The ID of the domain

Menu_id: The ID of the menu(the information can be checked in backend)

➢ Check the AD account information

```
PS C:\> Get-ADUser npartner -Properties * | Select-Object
DisplayName,UserPrincipalName,DistinguishedName,EmailAddress,mail,info
```



The red part above is the Windows AD account in user’s environment.

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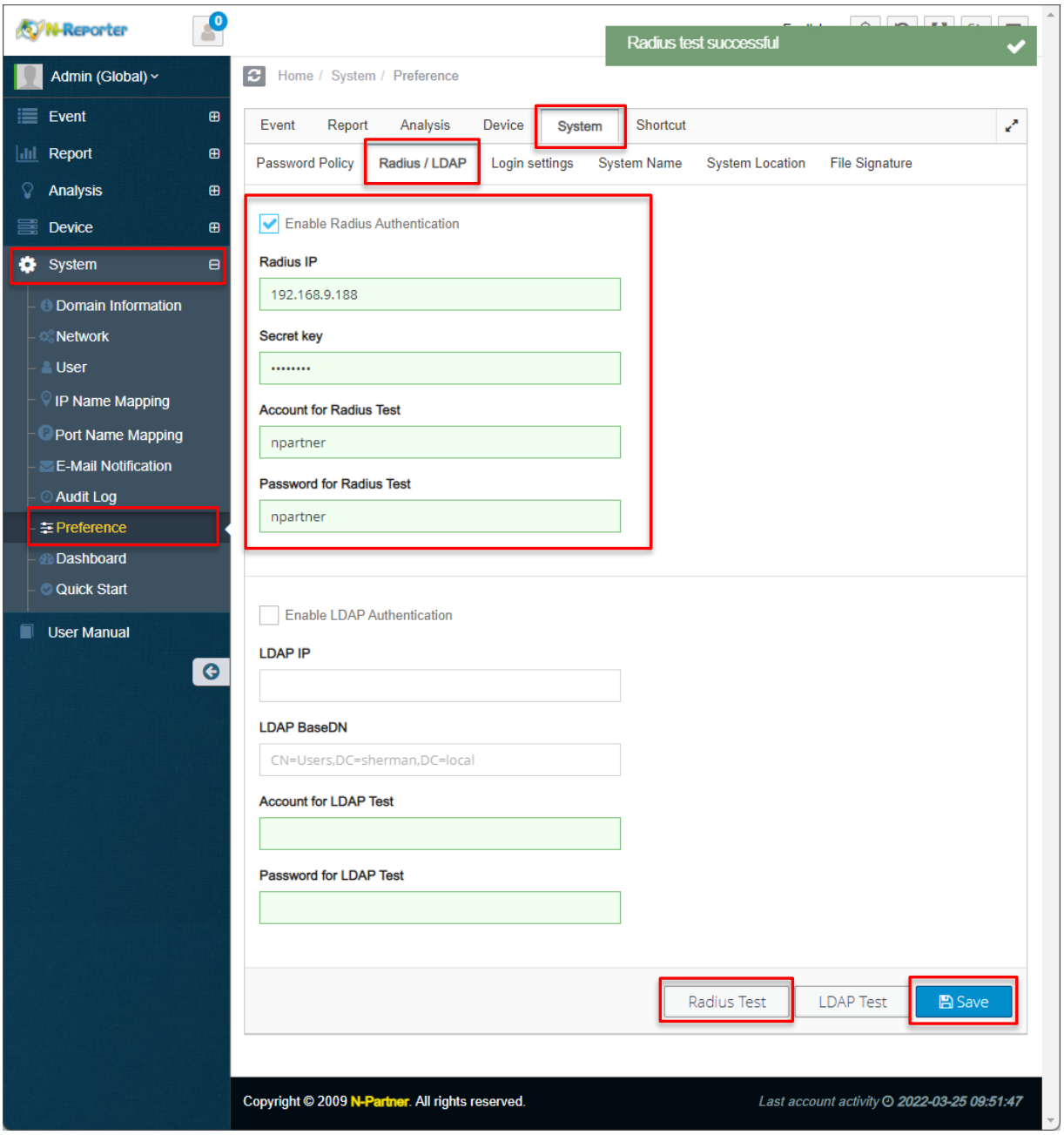
Chapter 3
N-Reporter/N-Cloud Configuration

3. N-Cloud / N-Reporter Configuration

3.1 Configure RADIUS

3.1.1 Configure Connection Information

Log in N-Reporter/N-Cloud with a manager account. Go to “System→ Preference→ System→ Radius / LDAP,” check “Enable Radius Authentication,” set Radius IP, secret key, account for Radius test and password, and then click “Radius Test.” After “Radius test successful,” click “Save,” and users can log in with the Radius account.



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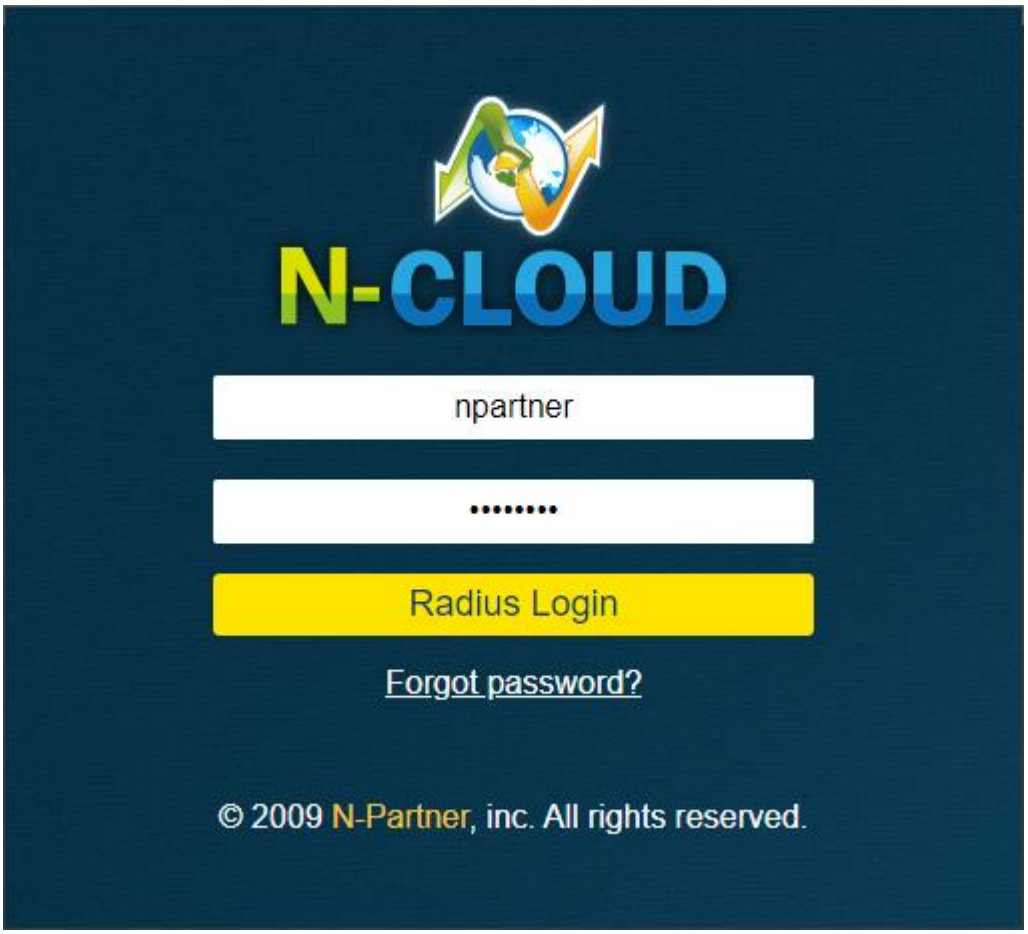
3.1.2 Login

- If users log in with account "admin" or "superuser," the system will not connect with RADIUS server to log in. If users log in with any other accounts, the system will connect with RADIUS server for authentication and get the user parameters sent back; if the entered account is not recorded in N-Reporter/N-Cloud, the system will automatically add a new user account based on the user parameters sent back.
- “Radius Login” would show in login page.



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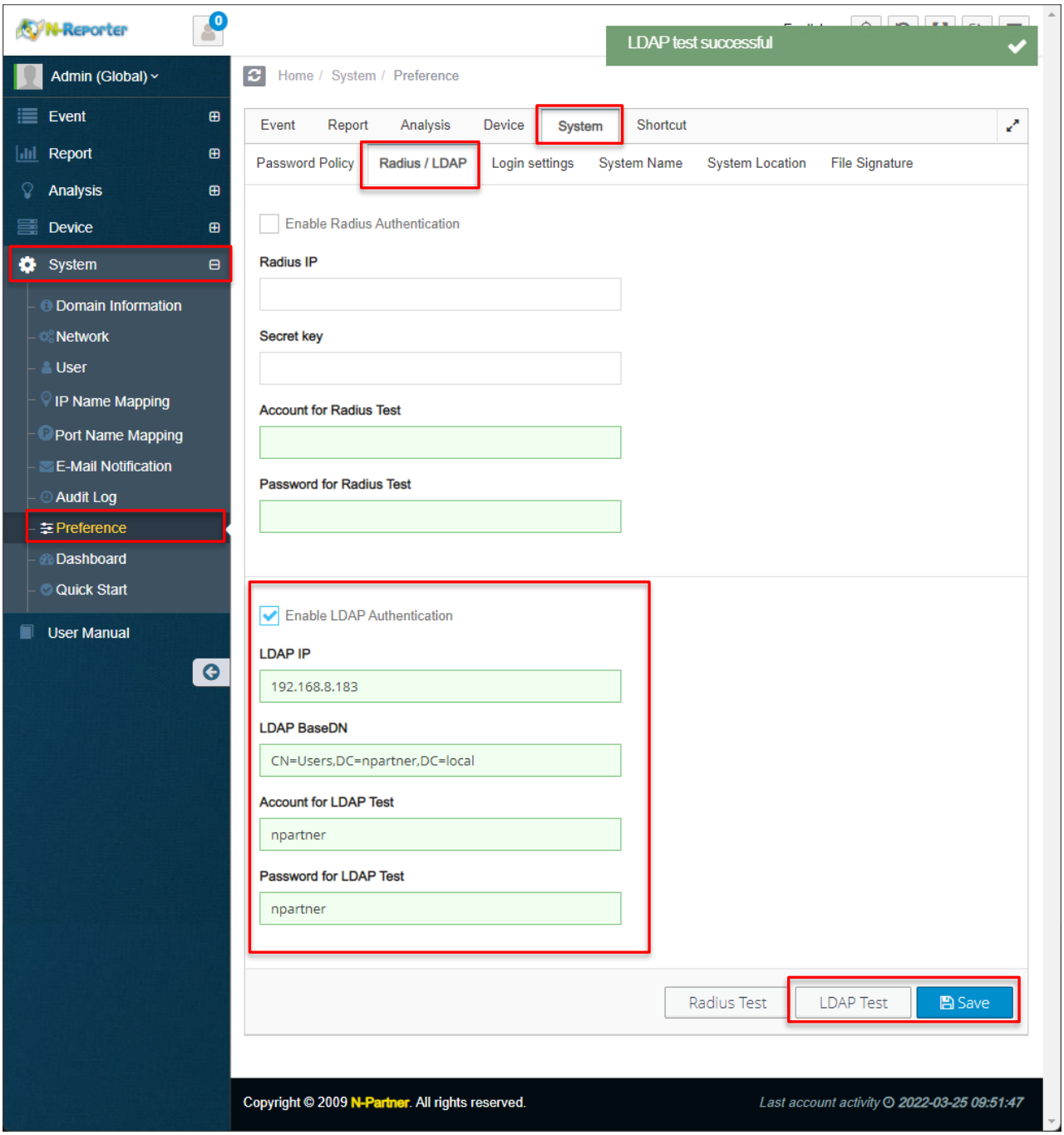
3.2 Configure LDAP

3.2.1 Set Connection Information

Log in N-Reporter/N-Cloud with a manager account. Go to “System→ Preference→ System→ Radius / LDAP,” check “Enable LDAP Authentication,” set LDAP IP, LDAP BaseDN, account for LDAP test and password, and then click “LDAP Test.” After “LDAP test successful,” click “Save,” and users can log in with the LDAP account.



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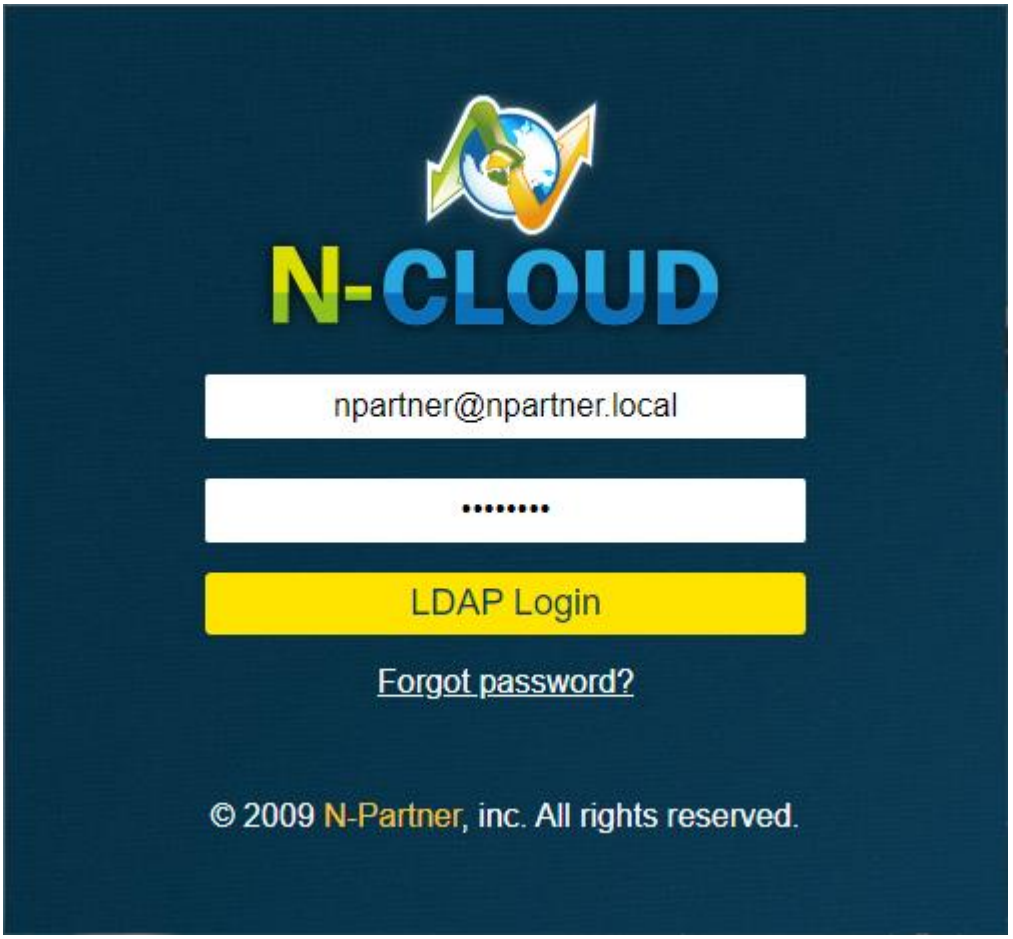
3.2.2 Login

- If users log in with account "admin" or "superuser," the system will not connect with LDAP server to log in. If users log in with any other accounts, the system will connect with LDAP server for authentication and get the user parameters sent back.
- “LDAP Login” would show in the login page; enter user principal name and password of the AD account to log in.



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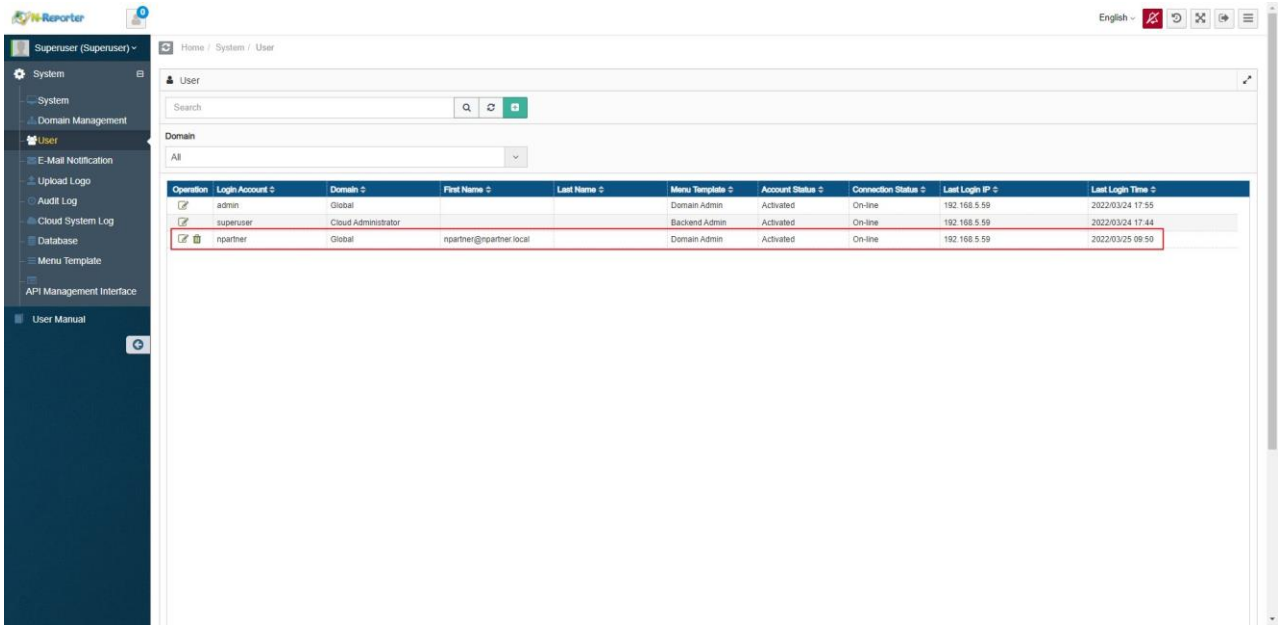
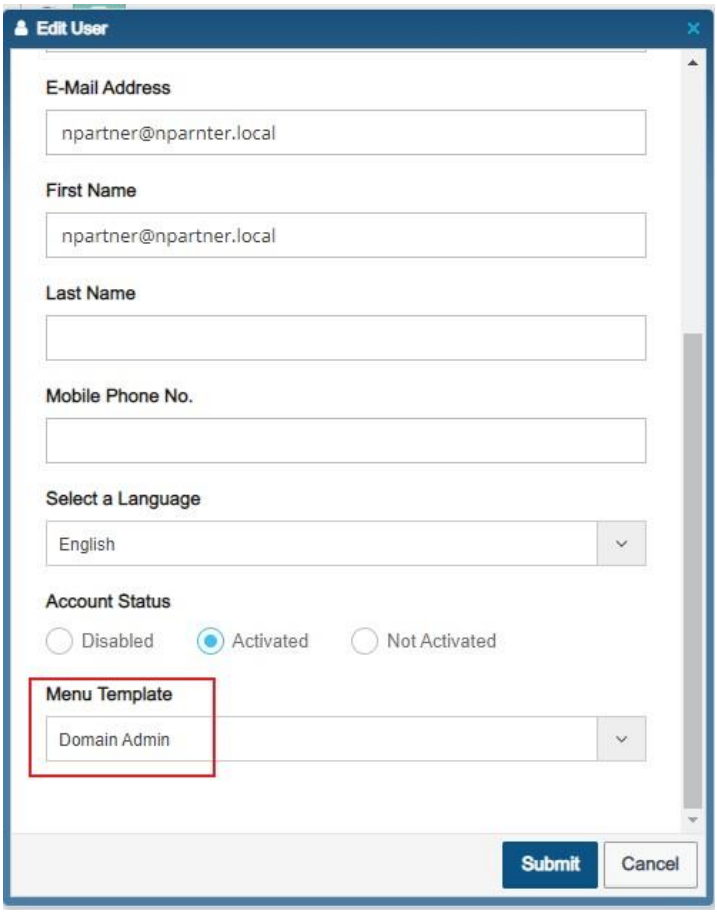
3.2.3 Edit Permission in Backend

➢ After logging in backend, users can see the account in “System→ User”



➢ To edit the account’s permission, click of the account and select a template in “Menu Template”



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