

**NOTE: Complete setup for NFS requires joining the computer to the ND.EDU realm. You will need to contact ESC ([eschelp@nd.edu](mailto:eschelp@nd.edu)) with your computer's hostname or IP address so that our staff can create an object in ND's Active Directory.**

### **Validate that you can login to the NFS system**

Ensure that you can login with your ND NetID and password into an ESC remote Linux system.

```
ssh remote300.helios.nd.edu
```

If you are unable to login, please contact the ESC help desk ([help@esc.nd.edu](mailto:help@esc.nd.edu) or 631-0101).

## **Perform the steps below on the Fedora workstation you wish to setup as an ESC NFS client**

### **Switch user to root**

```
sudo -i
```

### **Install Updates**

```
dnf update
```

### **Install Packages**

```
dnf install nano autofs krb5-workstation nfs4-acl-tools
```

### **Enable services**

```
systemctl enable sshd  
systemctl start sshd
```

```
systemctl enable autofs  
systemctl start autofs
```

```
systemctl enable sssd  
systemctl start sssd
```

### **Setup krb5.conf**

```
mv /etc/krb5.conf /etc/krb5.conf.orig
```

```
nano /etc/krb5.conf
```

```
[logging]  
default = FILE:/var/log/krb5libs.log  
kdc = FILE:/var/log/krb5kdc.log  
admin_server = FILE:/var/log/kadmind.log
```

```
[libdefaults]  
default_realm = ND.EDU  
ticket_lifetime = 10h  
renew_lifetime = 7d
```

```
[realms]  
ND.EDU = {  
}
```

```
[domain_realm]
nd.edu = ND.EDU
.nd.edu = ND.EDU
```

### Setup and Join AD Domain

```
hostnamectl set-hostname host.domain.nd.edu
```

Note: Replace "host" and "domain" appropriately for the specific machine

```
realm discover nd.edu
```

```
realm --verbose --user=netid join
```

```
--computer-ou=OU=NFS,OU=ESC,OU=Campus,dc=nd,dc=edu nd.edu
```

Note: Replace "netid" with your ND NetID

### Adjust the configuration files

```
mv /etc/idmapd.conf /etc/idmapd.conf.orig
```

```
nano /etc/idmapd.conf
```

```
[General]
```

```
Verbosity = 0
```

```
Pipefs-Directory = /run/rpc_pipefs
```

```
# set your own domain here, if it differs from FQDN minus hostname
```

```
# Domain = localdomain
```

```
Domain = esc.nd.edu
```

```
[Mapping]
```

```
Nobody-User = nobody
```

```
Nobody-Group = nogroup
```

### Stop the the sssd service and clear the cache

```
systemctl stop sssd
```

```
rm -f /var/lib/sss/db/*
```

### Modify the sssd.conf

```
mv /etc/sss/sss.conf /etc/sss/sss.conf.orig
```

```
nano /etc/sss/sss.conf
```

```
[sss]
```

```
domains = ND.EDU
```

```
config_file_version = 2
```

```
services = nss, pam
```

```
[domain/ND.EDU]
```

```
ad_domain = ND.EDU
```

```
krb5_realm = ND.EDU
```

```
krb5_lifetime = 10h
```

```
krb5_renewable_lifetime = 7d
```

```
krb5_renew_interval = 8h
```

```
krb5_store_password_if_offline = True
```

```
realmd_tags = manages-system joined-with-adcli
```

```
cache_credentials = True
id_provider = ad
chpass_provider = ad
default_shell = /bin/bash
ldap_id_mapping = False
use_fully_qualified_names = False
override_homedir = /escnfs/home/%u
fallback_homedir = /home/%u@d
ignore_group_members = True
access_provider = simple
simple_allow_groups = esclinux-users-group
ad_server = addc11-prod.nd.edu, addc12-prod.nd.edu, addc13-prod.nd.edu
```

### Change sssd.conf permissions and start the sssd service

```
chmod 600 /etc/sss/sss.conf
systemctl start sssd
```

### Setup the autofs files

```
mv /etc/auto.master auto.master.orig
nano /etc/auto.master
```

```
#
# Sample auto.master file
# This is a 'master' automounter map and it has the following format:
# mount-point [map-type[,format]:]map [options]
# For details of the format look at auto.master(5).
#
/misc    /etc/auto.misc
#
# NOTE: mounts done from a hosts map will be mounted with the
#       "nosuid" and "nodev" options unless the "suid" and "dev"
#       options are explicitly given.
#
/net     -hosts
#
# Include /etc/auto.master.d/*.autofs
# The included files must conform to the format of this file.
#
+dir:/etc/auto.master.d
#
# Include central master map if it can be found using
# nsswitch sources.
#
# Note that if there are entries for /net or /misc (as
# above) in the included master map any keys that are the
#
# same will not be seen as the first read key seen takes
# precedence.
#
```

```
+auto.master
/escnfs/home /etc/auto.home --timeout=90 --ghost
/escnfs/apps /etc/auto.apps --timeout=90 --ghost
/escnfs/courses /etc/auto.courses --timeout=90 --ghost
/escnfs/backup /etc/auto.backup --timeout=90 --ghost
```

#### **nano /etc/auto.home**

```
* -port=2049,-fstype=nfs4,rw,proto=tcp,sec=krb5,vers=4.2 esc-nfs.esc.nd.edu:/home/&
```

#### **nano /etc/auto.apps**

```
* -port=2049,-fstype=nfs4,rw,proto=tcp,sec=krb5,vers=4.2 esc-nfs.esc.nd.edu:/apps/&
```

#### **nano /etc/auto.courses**

```
* -port=2049,-fstype=nfs4,rw,proto=tcp,sec=krb5,vers=4.2 esc-nfs.esc.nd.edu:/courses/&
```

#### **nano /etc/auto.backup**

```
* -port=2049,-fstype=nfs4,rw,proto=tcp,sec=krb5,vers=4.2 esc-nfs.esc.nd.edu:/backup/&
```

### **Create the root directory for the autofs mount points**

```
mkdir /escnfs
```

### **Setup Modules**

#### **nano /usr/share/Modules/init/.modulespath**

```
/usr/share/Modules/modulefiles:/etc/modulefiles:/usr/share/modulefiles
/etc/modulefiles # locally if needed
/escnfs/apps/Modules/modulefiles # on esc-nfs.esc.nd.edu
```

### **Reboot the system**

```
reboot
```

I found it necessary to enable sshd and start it in order to remotely connect to the machine. Likewise, after setup, it was necessary to enable and start autofs. I went ahead and did the same for sssd and have added to this document.

Since much of the krb5 stuff (save for krb5-workstation) is included in the default install, there is no option during install to define the default domain, so I moved the editing of k5b5.conf above the join domain section.

All appears to be working as expected with the exception of the module files and probably other outstanding issues relating to all distributions.