리눅스 프로젝트
3조 리뷰

조장 : 황준서

조원 : 권택, 박소정, 안웅렬, 윤승원
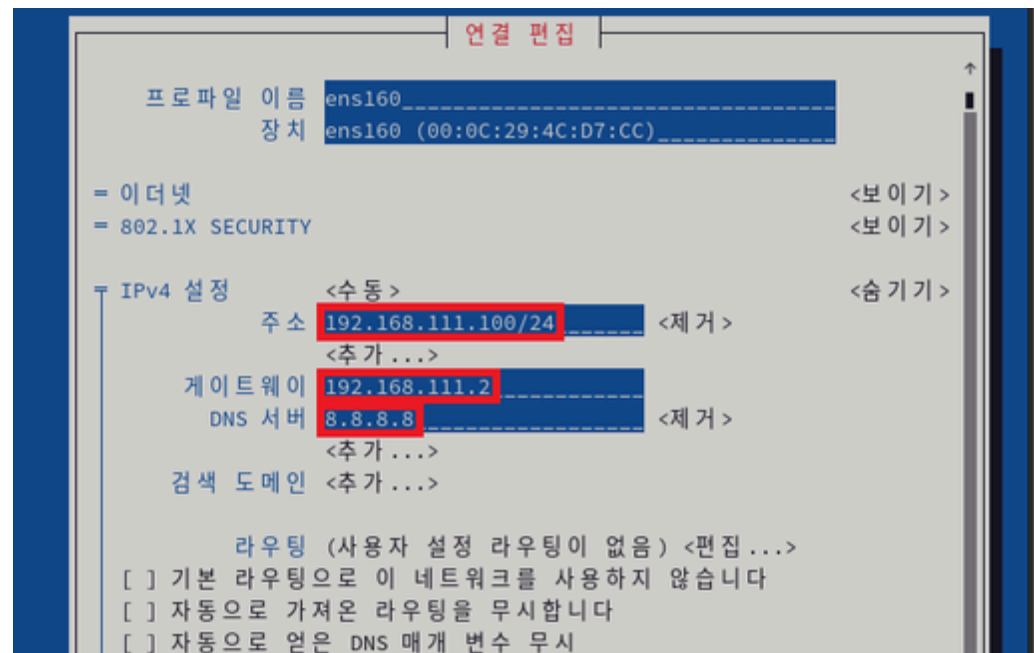
목차

설치

설치

주소 설정

server1

IP 주소 : 192.168.111.100/24

게이트웨이 : 192.168.111.2
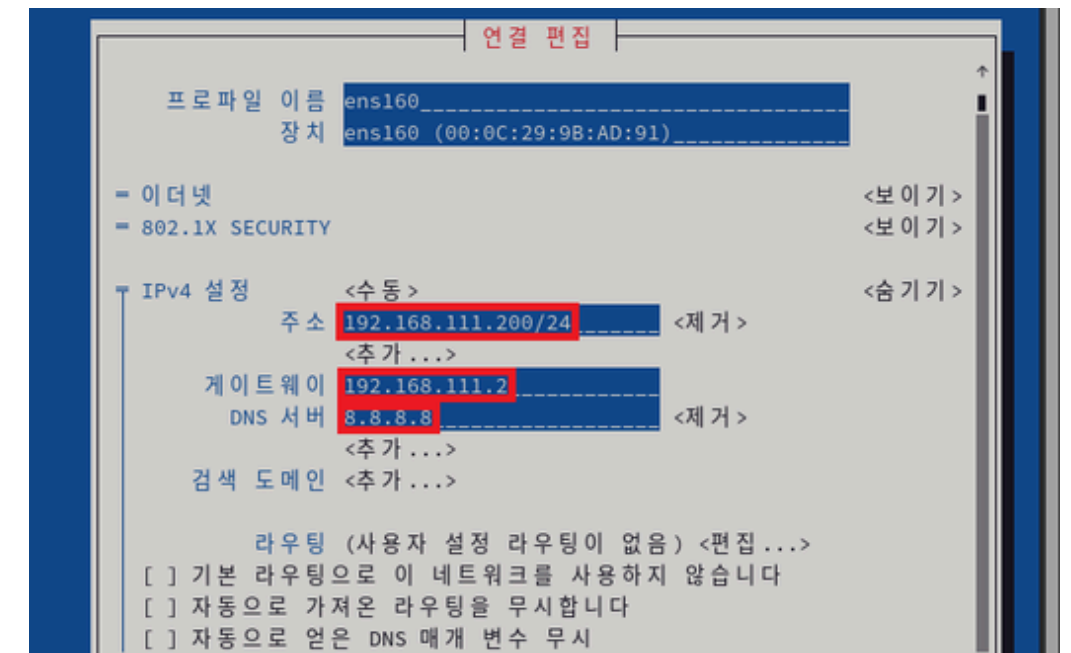
DNS 서버 : 8.8.8.8

server2

IP 주소 : 192.168.111.150/24

게이트웨이 : 192.168.111.2

DNS 서버 : 8.8.8.8

server3

IP 주소 : 192.168.111.200/24

게이트웨이 : 192.168.111.2

DNS 서버 : 8.8.8.8

사용자 및 그룹 등록

사용자 및 그룹 등록

사용자 등록

```
[root@linew1 ~]# adduser parksj
[root@linew1 ~]# adduser hwangjs
[root@linew1 ~]# adduser yoonsw
[root@linew1 ~]# adduser anwr
[root@linew1 ~]# adduser sonhm
[root@linew1 ~]# adduser leeki
[root@linew1 ~]# adduser kimmj
[root@linew1 ~]# adduser hwanghc
```
→ 사용자 추가

```
[root@linew1 ~]# passwd sonhm
```
→ 사용자 비밀번호 변경
```
sonhm 사용자의 비밀 번호 변경 중
새 암호 :
잘못된 암호 : 암호에 사용자 이름이 들어 있습니다
새 암호 재입력 :
passwd: 모든 인증 토큰이 성공적으로 업데이트 되었습니다 .
```

```
[root@server1 ~]# tail /etc/shadow
```
→ 사용자 비밀번호 설정 확인
```
tcpdump:!!:19998::::::
lima:$6$evwMhcyGNqZsmyoN$DJd36AonL2TZG7ZkTPEtkB7v87zNsVY9xRedCb9IB1DK41Pc2J.
SeXib6QVfObQYtissqDayEGilqHPushPaB0::0:99999:7:::
parksj:$6$NiQtAnhev/dCBc/j$tvPGJLKFi7hfJCW.MoqP4MACkfSbL1jqeNjgkTlYEvB/ppHMh
zXkhTptw3t1xyl0I2Qkvl.MuO9F2I.YsF2dl/:19998:0:99999:7:::
hwangjs:$6$uoDFfH6/QqHPhyp6$ycGhV0x55v5cvMo7IztGVgmxr7BkoE/O35Lz8HDgNUcjGru8
.zfFcn1bzCytoOgBoyVzpFY17gJF.xr6NOC481:19998:0:99999:7:::
yoonsw:$6$xnPRs1Epy.IcQyZw$0lh.zkSqhQyG/ivlug0JqTIG/SdmpNjbPQWSl/RaRKeVOp090
5OyMJVzgRFX31PoTSg7hLMPEA9cRuEtrygU5.:19998:0:99999:7:::
anwr:$6$ynBkmxrgQHH7hSEe$786RIAU2n88xbzdO0NyKkWOHIeLtXpDtamrOBK.GvT4fivLNYxp
qRN9dFog.u2RUF.KClGrn2uDLNPIMeYPKK1:19998:0:99999:7:::
sonhm:$6$CEPALdXCWvdKRwfT$ZncVV/ONQSFzaZK43.PjGupYTDQNR0RGyfY3Eg5o6w2fOIqPon
hsp6joFatg7WYazNqoKCbiotLCuh.aRg0ok0:19998:0:99999:7:::
leeki:$6$C6rhbMdR/JFksfz0$yRyGtriI9eDPFZ2maaiBhUvntJ4G8S7OX/oWHgpOUK7GTKOlGF
73RVtqxO5BVHvxYUtaQSeWnU56koBwN5M2g/:19998:0:99999:7:::
kimmj:$6$PUms5PalGVwST38.$r0UWIFePnPq0GO7DjC000OpcrTM0.lqgLusuXT.7M8GxTM2ZMp
ooNAGI77b9f9UolRwTa619DVxzyDTpOkvTR1:19998:0:99999:7:::
hwanghc:$6$q6YoATPCoxj3ewTR$V282OFvKhKwPo/yqUbMSmmDhEBd1rtE3y2hf3ZePfET3Ay1E
LKo..oJnUEny2OGJxW/n.J09WcnDO3PGyaLpE0:19998:0:99999:7:::
```

사용자 및 그룹 등록

그룹 등록

```
[root@linew1 ~]# groupadd eusoccer
[root@linew1 ~]# groupadd krsoccer
[root@linew1 ~]#
[root@linew1 ~]# usermod -g eusoccer sonhm
[root@linew1 ~]# usermod -g eusoccer leeki
[root@linew1 ~]# usermod -g eusoccer kimmj
[root@linew1 ~]# usermod -g eusoccer hwanghc
[root@linew1 ~]# usermod -g krsoccer parksj
[root@linew1 ~]# usermod -g krsoccer hwangjs
[root@linew1 ~]# usermod -g krsoccer yoonsw
[root@linew1 ~]# usermod -g krsoccer anwr
```

그룹 생성

그룹 지정

```
[root@server1 ~]# tail /etc/passwd
tcpdump:x:72:72::/:/sbin/nologin
lima:x:1000:1000:lima:/home/lima:/bin/bash
parksj:x:1001:1010::/home/parksj:/bin/bash
hwangjs:x:1002:1010::/home/hwangjs:/bin/bash
yoonsw:x:1003:1010::/home/yoonsw:/bin/bash
anwr:x:1004:1010::/home/anwr:/bin/bash
sonhm:x:1005:1009::/home/sonhm:/bin/bash
leeki:x:1006:1009::/home/leeki:/bin/bash
kimmj:x:1007:1009::/home/kimmj:/bin/bash
hwanghc:x:1008:1009::/home/hwanghc:/bin/bash
[root@server1 ~]#
```

사용자 및 그룹 정보 확인

☐ : 사용자 정보

☐ : 그룹 정보

```
[root@server1 ~]# tail /etc/group
hwangjs:x:1002:
yoonsw:x:1003:
anwr:x:1004:
sonhm:x:1005:
leeki:x:1006:
kimmj:x:1007:
hwanghc:x:1008:
eusoccer:x:1009:sonhm,leeki,hwanghc,kimmj
krsoccer:x:1010:parksj,hwangjs,yoonsw,anwr
named:x:25:
```
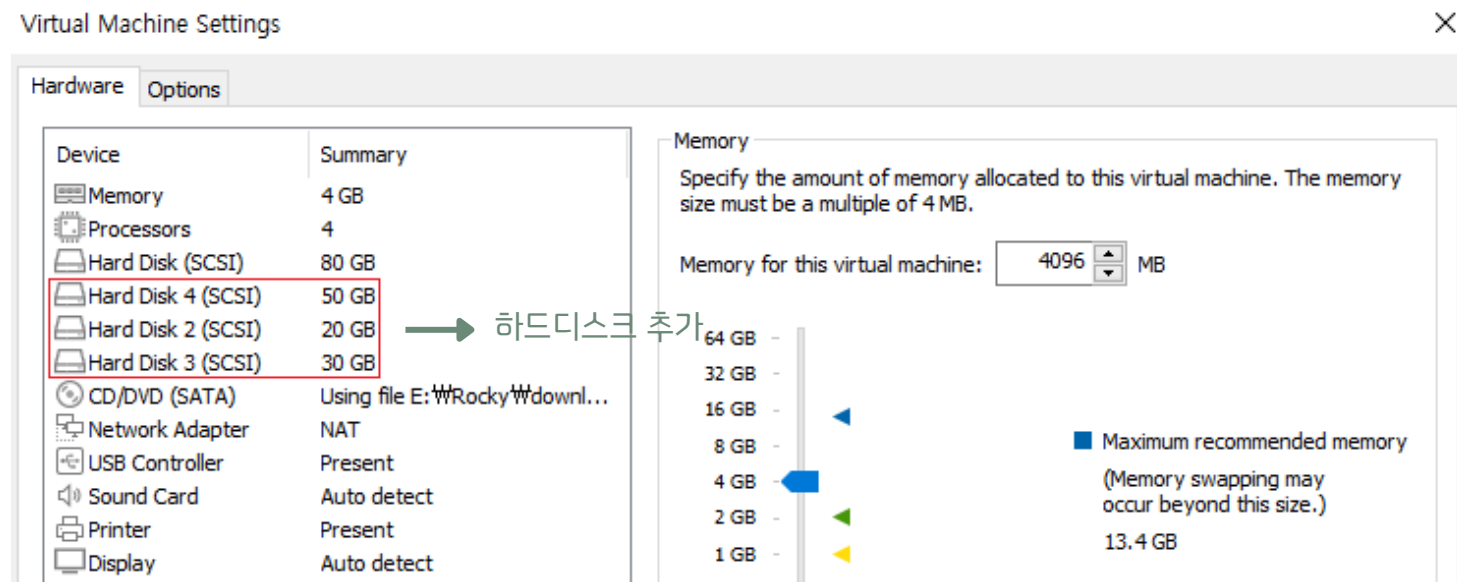
eusoccer에 포함된 사용자 확인

krsoccer에 포함된 사용자 확인

디스크 추가 후 LVM 설정

디스크 추가 후 LVM 설정

디스크 추가


```
Virtual Machine Settings                                                    ×

Hardware  Options

Device                  Summary              Memory
  Memory                4 GB                 Specify the amount of memory allocated to this virtual machine. The memory
  Processors            4                    size must be a multiple of 4 MB.
  Hard Disk (SCSI)      80 GB
  Hard Disk 4 (SCSI)    50 GB    ─→ 하드디스크 추가     Memory for this virtual machine:  4096   MB
  Hard Disk 2 (SCSI)    20 GB                       64 GB
  Hard Disk 3 (SCSI)    30 GB                       32 GB
  CD/DVD (SATA)         Using file E:\Rocky\downl...  16 GB ◀    ■ Maximum recommended memory
  Network Adapter       NAT                          8 GB ◀
  USB Controller        Present                      4 GB ◀    (Memory swapping may
  Sound Card            Auto detect                  2 GB ◀    occur beyond this size.)
  Printer               Present                      1 GB ◀    13.4 GB
  Display               Auto detect
```

```
[root@server2 ~]# lsblk  ──→ 디스크 정보 확인
NAME    MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda       8:0    0   80G  0 disk
├─sda1    8:1    0    2G  0 part [SWAP]
└─sda2    8:2    0   78G  0 part /
sdb       8:16   0   20G  0 disk
└─sdb1    8:17   0   20G  0 part
sdc       8:32   0   30G  0 disk
└─sdc1    8:33   0   30G  0 part
sdd       8:48   0   50G  0 disk
└─sdd1    8:49   0   50G  0 part
sr0      11:0    1 10.2G  0 rom  /run/media/root/Rocky-9-4-x86_64-dvd
[root@server2 ~]#
```

```
Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1):
First sector (2048-104857599, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-104857599, default 104857599
):

Created a new partition 1 of type 'Linux' and of size 50 GiB.

Command (m for help): t
Selected partition 1
Hex code or alias (type L to list all): 8e
Changed type of partition 'Linux' to 'Linux LVM'.

Command (m for help): p
Disk /dev/sdd: 50 GiB, 53687091200 bytes, 104857600 sectors
Disk model: VMware Virtual S
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x0966657e


Device     Boot Start      End    Sectors Size Id Type
/dev/sdd1       2048 104857599 104855552  50G 8e Linux LVM
```

디스크 추가 후 LVM 설정

LVM 설정

```
[root@server2 ~]# pvcreate /dev/sdb1          PV(실제 하드디스크의 파티션) 생성
  Physical volume "/dev/sdb1" successfully created.
  Creating devices file /etc/lvm/devices/system.devices
[root@server2 ~]# pvcreate /dev/sdc1
  Physical volume "/dev/sdc1" successfully created.
[root@server2 ~]# pvcreate /dev/sdd1
  Physical volume "/dev/sdd1" successfully created.
[root@server2 ~]# pvscan          PV 상태 확인
  PV /dev/sdb1          lvm2 [<20.00 GiB]
  PV /dev/sdc1          lvm2 [<30.00 GiB]
  PV /dev/sdd1          lvm2 [<50.00 GiB]
  Total: 3 [<100.00 GiB] / in use: 0 [0    ] / in no VG: 3 [<100.00 GiB]
[root@server2 ~]#
```

```
[root@server2 ~]# vgcreate DATA /dev/sdb1 /dev/sdc1 /dev/sdd1
  Volume group "DATA" successfully created
[root@server2 ~]# vgdisplay          VG 정보 확인
  --- Volume group ---                    VG(여러 개의 PV를 그룹으로 묶은 것) 생성
  VG Name               DATA
  System ID
  Format                lvm2
  Metadata Areas        3
  Metadata Sequence No  1
  VG Access             read/write
  VG Status             resizable
```

```
sdb              8:16    0   30G  0 disk
└─sdb1           8:17    0   30G  0 part
  └─DATA-AUDIO 253:1     0   60G  0 lvm  /lvm          DATA-VIDEO 삽입
sdc              8:32    0   20G  0 disk
└─sdc1           8:33    0   20G  0 part
  └─DATA-AUDIO 253:1     0   60G  0 lvm  /lvm
sdd              8:48    0   50G  0 disk
└─sdd1           8:49    0   50G  0 part
  ├─DATA-VIDEO 253:0     0   40G  0 lvm  /lvm          DATA-AUDIO 삽입
  └─DATA-AUDIO 253:1     0   60G  0 lvm  /lvm
```

```
[root@server2 ~]# lvcreate --size 40G --name VIDEO DATA
  Logical volume "VIDEO" created.          LV(VG를 적절한 크기로 나눌 때의 파티션) 생성
[root@server2 ~]# lvcreate --extents 100%FREE --name AUDIO DATA
  Logical volume "AUDIO" created.
[root@server2 ~]# lvscan          LV 상태 확인
  ACTIVE          '/dev/DATA/VIDEO' [40.00 GiB] inherit
  ACTIVE          '/dev/DATA/AUDIO' [<59.99 GiB] inherit
[root@server2 ~]#
```

디스크 추가 후 LVM 설정

설정 완료

```
[root@server2 ~]# mkfs.ext4 /dev/DATA/VIDEO
mke2fs 1.46.5 (30-Dec-2021)
Creating filesystem with 10485760 4k blocks and 2621440 inodes
Filesystem UUID: 92bdd0d7-d88f-46a7-a835-a93ac6f36b29
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
        4096000, 7962624

Allocating group tables: done
Writing inode tables: done
Creating journal (65536 blocks): done
Writing superblocks and filesystem accounting information: done

[root@server2 ~]# mkfs.ext4 /dev/DATA/AUDIO
mke2fs 1.46.5 (30-Dec-2021)
Creating filesystem with 15725568 4k blocks and 3932160 inodes
Filesystem UUID: 65103f4d-207b-42b3-9133-a652047e948d
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
        4096000, 7962624, 11239424

Allocating group tables: done
Writing inode tables: done
Creating journal (65536 blocks): done
Writing superblocks and filesystem accounting information: done
```

→ /dev/DATA/VIDEO 파일 시스템 생성

→ /dev/DATA/AUDIO 파일 시스템 생성

```
[root@server2 ~]# mkdir /lvm1 /lvm2
[root@server2 ~]# mount /dev/DATA/VIDEO /lvm1
[root@server2 ~]# mount /dev/DATA/AUDIO /lvm2
[root@server2 ~]#
```

→ /lvm1에 /dev/DATA/VIDEO 마운트
→ /lvm2에 /dev/DATA/AUDIO 마운트

```
/dev/DATA/VIDEO    /lvm1    ext4    defaults    0    0
/dev/DATA/AUDIO    /lvm2    ext4    defaults    0    0
```

→ /dev/DATA/VIDEO의 내용 수정
→ /dev/DATA/AUDIO의 내용 수정

```
sdb                  8:16    0    30G   0 disk
└─sdb1               8:17    0    30G   0 part
  └─DATA-AUDIO 253:1 0    60G   0 lvm  /lvm2
sdc                  8:32    0    20G   0 disk
└─sdc1               8:33    0    20G   0 part
  └─DATA-AUDIO 253:1 0    60G   0 lvm  /lvm2
sdd                  8:48    0    50G   0 disk
└─sdd1               8:49    0    50G   0 part
  └─DATA-VIDEO 253:0 0    40G   0 lvm  /lvm1
  └─DATA-AUDIO 253:1 0    60G   0 lvm  /lvm2
```

→ /lvm2 삽입 확인

→ /lvm1 삽입 확인

디스크 쿼터 설정

디스크 쿼터 설정

디스크 설정

```
[root@server3 ~]# lsblk
NAME    MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda      8:0    0   80G  0 disk
├─sda1   8:1    0    2G  0 part [SWAP]
└─sda2   8:2    0   78G  0 part /
sdb      8:16   0   10G  0 disk
└─sdb1   8:17   0   10G  0 part /renew
sr0     11:0    1 10.2G  0 rom  /run/media/root/Rocky-9-4-x86_64-dvd
```

→ 사용자 공간 할당

```
/dev/sdb1   /renew   ext4   defaults,usrjquota=aquota.user,jqfmt=vfsv0   0      0
~
~
```

→ 자동 마운트 설정

```
[root@server3 ~]# mount --options remount /renew
[root@server3 ~]# mount | grep renew
/dev/sdb1 on /renew type ext4 (rw,relatime,seclabel,jqfmt=vfsv0,usrjquota=aquota.user)
[root@server3 ~]#
```

→ 리마운트

→ 마운트 확인

```
[root@server3 ~]# cd /renew
[root@server3 renew]# quotaoff -avug
quotaoff: Your kernel probably supports ext4 quota feature but you are using external quot
files. Please switch your filesystem to use ext4 quota feature as external quota files on
t4 are deprecated.
/dev/sdb1 [/renew]: user quotas turned off
[root@server3 renew]# quotacheck -augmn
[root@server3 renew]# rm -rf aquota.*
[root@server3 renew]# quotacheck -augmn
[root@server3 renew]# touch aquota.user aquota.group
[root@server3 renew]# chmod 600 aquota.*
[root@server3 renew]# quotacheck -augmn
[root@server3 renew]# quotaon -avug
quotaon: Your kernel probably supports ext4 quota feature but you are using external quota
iles. Please switch your filesystem to use ext4 quota feature as external quota files on e
4 are deprecated.
/dev/sdb1 [/renew]: user quotas turned on
[root@server3 renew]#
```

→ 쿼터 DB 종료

→ 쿼터 관련 사항 체크

→ 쿼터 DB 생성

디스크 쿼터 설정

쿼터 설정

```
[root@server3 renew]#  edquota -u aespa  ──→  추가 사용자 편집
                                                          │
                                                          ↓

Disk quotas for user aespa (uid 1001):
  Filesystem                  blocks      soft      hard     inodes      soft      hard
  /dev/sdb1                       28    716800   1048576          7         0         0
```

소프트웨어 할당량 편집 ←┐   └──→ 하드웨어 할당량 편집

```
                                          ↓

[root@server3 /]#  repquota /renew/  ──→  사용자별 현재 사용량 확인
*** Report for user quotas on device /dev/sdb1
Block grace time: 7days; Inode grace time: 7days
                        Block limits                File limits
User            used    soft    hard   grace    used  soft  hard  grace
----------------------------------------------------------------
root        --    20       0       0              3     0     0
aespa       --    28  716800 1048576              7     0     0
IVE         --    28  716800 1048576              7     0     0
NewJeans    --    28  716800 1048576              7     0     0
```

서버 구성

서버 구성

SSH

```
[root@server1 ~]# rpm -qa openssh-server          ──→ SSH 설치 여부 확인
openssh-server-8.7p1-38.el9.x86_64
[root@server1 ~]#  ──→ 설치 완료
```

```
[root@server1 ~]# firewall-cmd --permanent --add-service=ssh   ──→ SSH 방화벽 허용
success
[root@server1 ~]# firewall-cmd --reload          ──→ 방화벽 재가동
success
[root@server1 ~]# firewall-cmd --list-services
cockpit dhcpv6-client dns ssh     ──→ SSH에 방화벽 가동 확인
[root@server1 ~]#
```

```
[root@server1 ~]# systemctl status sshd      ──→ SSH 활성화 상태 확인
● sshd.service - OpenSSH server daemon
     Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
     Active: active (running) since Thu 2024-10-10 16:52:19 KST; 4 days ago
       Docs: man:sshd(8)          ──→ SSH 서비스 활성화
             man:sshd_config(5)
   Main PID: 917 (sshd)
      Tasks: 1 (limit: 22836)
     Memory: 2.6M
        CPU: 20ms
     CGroup: /system.slice/sshd.service
             └─917 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"
```

(enabled → SSH 서비스 설치 확인)

```
10월 10 16:52:18 server1 systemd[1]: Starting OpenSSH server daemon...
10월 10 16:52:19 server1 sshd[917]: Server listening on 0.0.0.0 port 22.
10월 10 16:52:19 server1 sshd[917]: Server listening on :: port 22.
10월 10 16:52:19 server1 systemd[1]: Started OpenSSH server daemon.
```

서버 구성

SSH

```
[root@server1 ~]# ssh lima@192.168.111.100          ──▶  Server1의 SSH 접속
lima@192.168.111.100's password:
Last login: Mon Oct 14 21:08:04 2024 from 192.168.111.100
[lima@server1 ~]$                                         접속 확인
```

```
[root@server2 /]# ssh lima@192.168.111.100          ──▶  Server2의 SSH 접속
lima@192.168.111.100's password:
Last login: Mon Oct 14 21:08:27 2024 from 192.168.111.100
[lima@server1 ~]$ ▮                                       접속 확인
```

```
[root@server3 ~]# ssh -l lima 192.168.111.100       ──▶  Server3의 SSH 접속
lima@192.168.111.100's password:
Last login: Mon Oct 14 21:16:16 2024 from 192.168.111.12
[lima@server1 ~]$ ▮                                       접속 확인
```
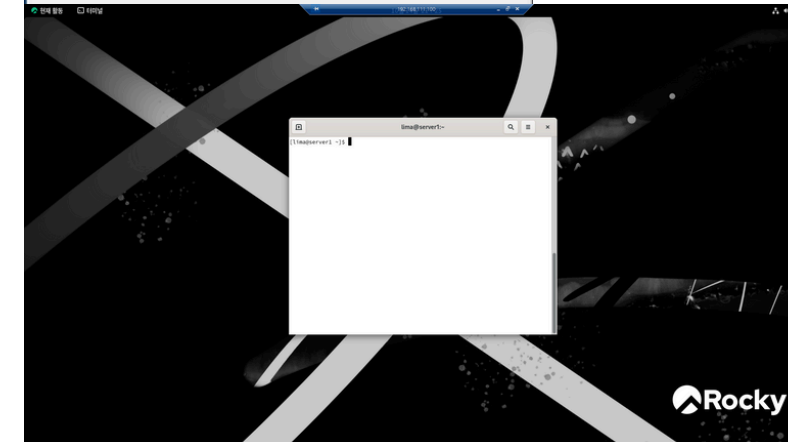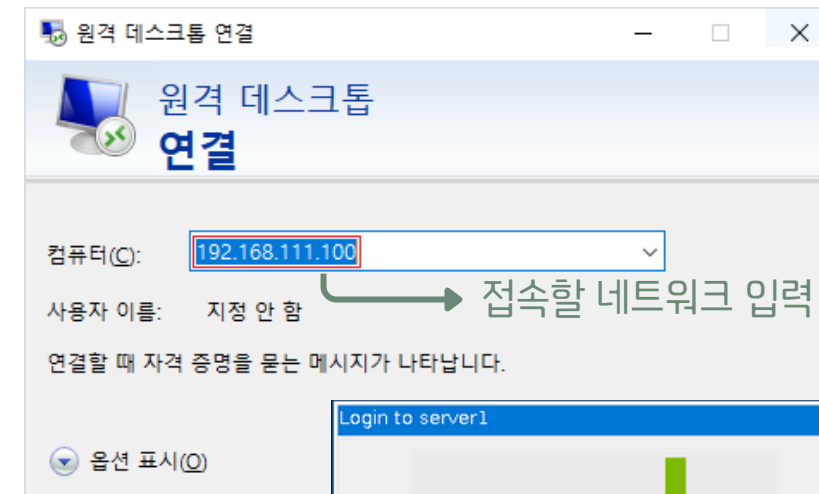
서버 구성

XRDP

```
[root@server1 ~]# rpm -qa epel-release         ⟶ XRDP 설치 여부 확인
epel-release-9-7.el9.noarch    ⟶ 설치 완료
[root@server1 ~]# systemctl status xrdp        ⟶ XRDP 활성화 상태 확인
• xrdp.service - xrdp daemon
    Loaded: loaded (/usr/lib/systemd/system/xrdp.service; enabled; preset: disable
    Active: active (running) since Thu 2024-10-10 16:52:27 KST; 4 days ago
      Docs: man:xrdp(8)
            man:xrdp.ini(5)        ⟶ XRDP 서비스 활성화
  Main PID: 1238 (xrdp)
     Tasks: 1 (limit: 22836)
    Memory: 3.7M
       CPU: 28.350s
    CGroup: /system.slice/xrdp.service
            └─1238 /usr/sbin/xrdp --nodaemon
```

XRDP 서비스 설치 확인

```
[root@server1 ~]# firewall-cmd --permanent --add-port=3389/tcp    ⟶ XRDP 방화벽 허용
success
[root@server1 ~]# firewall-cmd --reload    ⟶ 방화벽 재가동
success
[root@server1 ~]# firewall-cmd --list-ports
3389/tcp    ⟶ XRDP(3389 포트)에 방화벽 가동 확인
[root@server1 ~]#
```

원격 데스크톱 연결

원격 데스크톱
연결

컴퓨터(C): 192.168.111.100   ⟶ 접속할 네트워크 입력
사용자 이름: 지정 안 함
연결할 때 자격 증명을 묻는 메시지가 나타납니다.

⊙ 옵션 표시(O)

Login to server1

xrdp

Session   Xvnc
username   lima
password   ●●●●●●●●●   ⟶ 접속할 계정의 이름과 비밀번호 작성

⟶ 접속 완료

Rocky

서버 구성

DNS

```
[root@server1 ~]# rpm -qa bind bind-chroot
bind-9.16.23-18.el9_4.6.x86_64
```

DNS Server 관련 패키지 설치 여부 확인

```
[root@server1 ~]# cat /etc/named.conf | sed -n '11p; 12p; 19p; 33p'
listen-on port 53 { any; };
listen-on-v6 port 53 { none; };
allow-query     { any; };
dnssec-validation no;
```

DNS Server 설정 파일 수정

```
[root@server1 ~]# systemctl status named
● named.service - Berkeley Internet Name Domain (DNS)
     Loaded: loaded (/usr/lib/systemd/system/named.service; enabled; preset:
     Active: active (running) since Thu 2024-10-10 20:32:57 KST; 4 days ago
    Process: 6377 ExecStartPre=/bin/bash -c if [ ! "$DISABLE_ZONE_CHECKING"
    Process: 6394 ExecStart=/usr/sbin/named -u named -c ${NAMEDCONF} $OPTION
   Main PID: 6403 (named)
      Tasks: 18 (limit: 22836)
     Memory: 72.6M
        CPU: 15.068s
     CGroup: /system.slice/named.service
             └─6403 /usr/sbin/named -u named -c /etc/named.conf
```

DNS Server 활성화

→

```
[root@server1 ~]# firewall-cmd --permanent --add-service=dns
success
[root@server1 ~]# firewall-cmd --reload
success
[root@server1 ~]# firewall-cmd --list-services
cockpit dhcpv6-client dns ssh
```

DNS Server 방화벽 설정

```
[root@server1 ~]# nslookup
> server 192.168.111.100
Default server: 192.168.111.100
Address: 192.168.111.100#53
> www.nate.com
Server:         192.168.111.100
Address:        192.168.111.100#53

Non-authoritative answer:
Name:   www.nate.com
Address: 120.50.131.112
```

DNS Server 작동 확인

서버 구성

DNS

```
[root@server1 ~]# cd /var/named/
[root@server1 named]# ls
chroot   dynamic    named.empty     named.loopback   renew.msft.db
data     named.ca   named.localhost renew.com.db     slaves
```

정방향 영역 파일 생성

named.conf

```
60 zone "renew.msft" IN {
61        type master;
62        file "renew.msft.db";
63        allow-update { none; };
64 };
```

도메인 설정

```
$TTL    3H
@       SOA     @       root.   ( 2   1D   1H   1W   1H )
        IN      NS      @
        IN      A       192.168.111.100

server-1        IN      A       192.168.111.100
server-2        IN      A       192.168.111.150
server-3        IN      A       192.168.111.200

www     IN      CNAME   server-3
ftp     IN      CNAME   server-2
```

renew.msft.db ── 정방향 영역 파일 수정

정방향 영역 파일 문법 체크

```
[root@server1 named]# named-checkzone renew.msft renew.msft.db
zone renew.msft/IN: loaded serial 2
OK
```

팀 이름 도메인으로 테스트

```
[root@server1 ~]# nslookup
> ftp.renew.msft
Server:         192.168.111.100
Address:        192.168.111.100#53

ftp.renew.msft  canonical name = server-2.renew.msft.
Name:   server-2.renew.msft
Address: 192.168.111.150
> www.renew.msft
Server:         192.168.111.100
Address:        192.168.111.100#53

www.renew.msft  canonical name = server-3.renew.msft.
Name:   server-3.renew.msft
Address: 192.168.111.200
>
```

서버 구성

Web

```
[root@server3 ~]# rpm -qa httpd
httpd-2.4.57-11.el9_4.1.x86_64
```
→ Web Server 관련 패키지 설치 여부 확인

```
[root@server2 ~]# vi /etc/httpd/conf/httpd.conf
[root@server2 ~]# cd /var/www/html
[root@server2 html]# ls
[root@server2 html]# vi index.html
[root@server2 html]# ls
index.html
```
→ Web Server index.html 생성 및 수정 후 저장

```
[root@server3 ~]# systemctl status httpd
● httpd.service - The Apache HTTP Server
    Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset:
    Active: active (running) since Thu 2024-10-10 16:52:18 KST; 5 days ago
      Docs: man:httpd.service(8)
  Main PID: 928 (httpd)
    Status: "Total requests: 19; Idle/Busy workers 100/0;Requests/sec: 4.26(
     Tasks: 230 (limit: 22836)
    Memory: 56.6M
       CPU: 27.588s
    CGroup: /system.slice/httpd.service
            ├─  928 /usr/sbin/httpd -DFOREGROUND
            ├─ 1051 /usr/sbin/httpd -DFOREGROUND
            ├─ 1052 /usr/sbin/httpd -DFOREGROUND
            ├─ 1053 /usr/sbin/httpd -DFOREGROUND
            ├─ 1054 /usr/sbin/httpd -DFOREGROUND
            └─14956 /usr/sbin/httpd -DFOREGROUND
```
→ Web Server 활성화

```
[root@server3 ~]# firewall-cmd --permanent --add-service=http
success
[root@server3 ~]# firewall-cmd --reload
success
[root@server3 ~]# firewall-cmd --list-services
cockpit dhcp dhcpv6-client http imap mysql pop3 samba samba-client smtp ssh
```
→ Web Server 방화벽 가동

서버 구성

## FTP

```
[root@server2 /]# rpm -qa vsftpd          → FTP 설치 여부 확인
vsftpd-3.0.5-5.el9.x86_64                 → 설치 완료
[root@server2 /]# systemctl status vsftpd → FTP 활성화 상태 확인
● vsftpd.service - Vsftpd ftp daemon
     Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; enabled; preset: d>
     Active: active (running) since Thu 2024-10-10 16:51:56 KST; 6 days ago
   Main PID: 1102 (vsftpd)        → FTP 서비스 활성화
      Tasks: 1 (limit: 22836)                              → FTP 서비스 설치 확인
     Memory: 900.0K
        CPU: 169ms
     CGroup: /system.slice/vsftpd.service
             └─1102 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf
```

anonymous_enable=YES

/etc/vsftpd/vsftpd.conf에서
annoymous_enable을 YES으로 수정

```
[root@server2 /]# firewall-cmd --permanent --add-service=ftp   → FTP 방화벽 허용
success
[root@server2 /]# firewall-cmd --reload        → 방화벽 재가동
success
[root@server2 /]# firewall-cmd --list-services
cockpit dhcpv6-client ftp mountd nfs rpc-bind ssh
```
→ FTP에 방화벽 가동 확인

→ Filezila로 FTP 접속
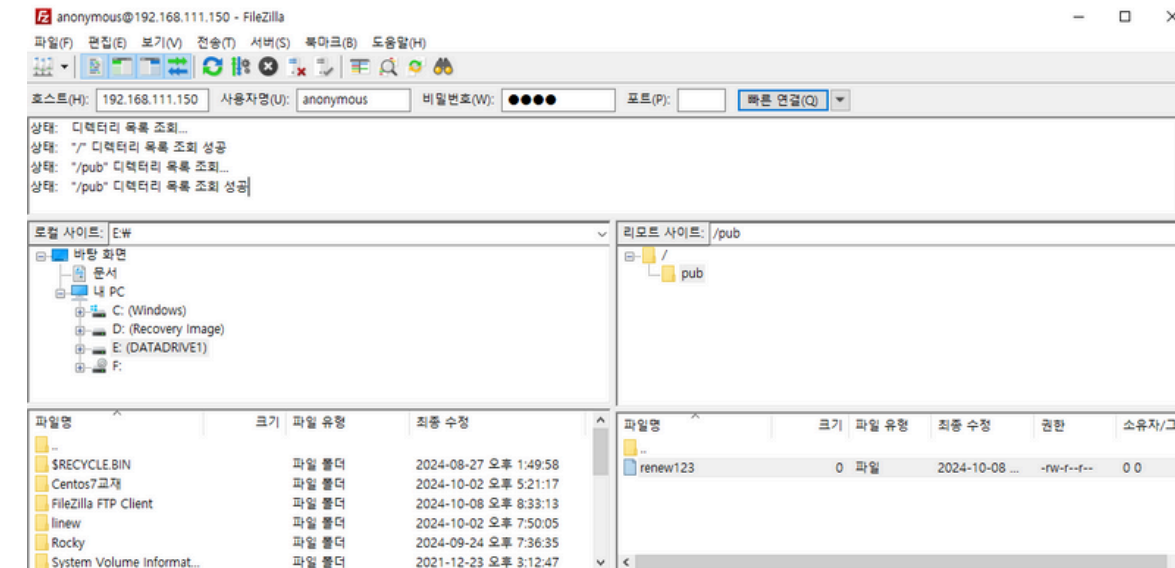
```
C:\Users\daewoo>ftp 192.168.111.150     → Window로 FTP 접속
192.168.111.150에 연결되었습니다.
220 (vsFTPd 3.0.5)
200 Always in UTF8 mode.
사용자(192.168.111.150:(none)): anonymous
331 Please specify the password.
암호:          → 암호 입력
230 Login successful.
ftp> dir       → 명령어 입력
200 PORT command successful. Consider using PASV.
150 Here comes the directory listing.
drwxr-xr-x    2 0        0              22 Oct 08 11:48 pub
226 Directory send OK.
ftp: 0.00초 32.00KB/초     → 전송 완료
ftp>
```

서버 구성

DB

```
[root@server3 ~]# rpm -qa maria*          → mariaDB 설치 여부 확인
mariadb-connector-c-config-3.2.6-1.el9_0.noarch
mariadb-common-10.5.22-1.el9_2.x86_64
mariadb-connector-c-3.2.6-1.el9_0.x86_64
mariadb-errmsg-10.5.22-1.el9_2.x86_64
mariadb-server-utils-10.5.22-1.el9_2.x86_64     → 설치 완료
mariadb-gssapi-server-10.5.22-1.el9_2.x86_64
mariadb-backup-10.5.22-1.el9_2.x86_64
mariadb-10.5.22-1.el9_2.x86_64
mariadb-server-10.5.22-1.el9_2.x86_64
[root@server3 ~]#


[root@server3 ~]# firewall-cmd --permanent --add-service=mysql    → 방화벽 허용
success
[root@server3 ~]# firewall-cmd --reload    → 방화벽 재가동
success
[root@server3 ~]# firewall-cmd --list-services
cockpit dhcp dhcpv6-client http imap mysql nfs pop3 samba samba-client smtp ssh
[root@server3 ~]#
                                    → 방화벽 가동 확인
```

```
[root@server3 ~]# systemctl status mariadb    → mariaDB 활성화 상태 확인
● mariadb.service - MariaDB 10.5 database server
     Loaded: loaded (/usr/lib/systemd/system/mariadb.service; enabled; preset: >
     Active: active (running) since Wed 2024-10-16 19:42:20 KST; 1h 9min ago
       Docs: man:mariadbd(8)           → mariaDB 서비스 설치 확인
             https://mariadb.com/kb/en/library/systemd/      ← mariaDB 서비스 활성화
    Process: 933 ExecStartPre=/usr/libexec/mariadb-check-socket (code=exited, s>
    Process: 1003 ExecStartPre=/usr/libexec/mariadb-prepare-db-dir mariadb.serv>
    Process: 1334 ExecStartPost=/usr/libexec/mariadb-check-upgrade (code=exited>
   Main PID: 1039 (mariadbd)
     Status: "Taking your SQL requests now..."
      Tasks: 8 (limit: 22836)
     Memory: 93.7M
        CPU: 890ms
     CGroup: /system.slice/mariadb.service
             └─1039 /usr/libexec/mariadbd --basedir=/usr
```

서버 구성

DB

```
[root@server3 ~]# mysqladmin -u root password '1234'        ──────▶  관리자 비밀번호 설정

[root@server3 ~]# mysql -h localhost -u root -p             ──────▶  SQL 로컬 접속
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 5
Server version: 10.5.22-MariaDB MariaDB Server

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]>
```

                                                              외부 접속 허용 권한 부여

```
MariaDB [mysql]> GRANT ALL ON *.* TO lima@'192.168.111.%' IDENTIFIED BY '4321';
Query OK, 0 rows affected (0.001 sec)

[root@server1 ~]# mysql -h 192.168.111.200 -u lima -p       ──────▶  SQL 원격 접속
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 5.5.5-10.5.22-MariaDB MariaDB Server

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affiliates. Other names may be trademarks of their respective
owners.
```

서버 구성

NFS

```
[root@server2 /]# rpm -qa nfs-utils
nfs-utils-2.5.4-26.el9_4.x86_64
```

→ NFS 서버 관련 패키지 설치 확인

```
root@server2:/ — /usr/bin/vim /etc/exports

/share   *(rw,sync)
```

→ /share 디렉터리에 해당 IP 주소 컴퓨터가 접근할 수 있게 허용 및 권한 부여

```
[root@server2 /]# ls -l | grep share
d---rwx---.   2 root itwill  127 10월  11 11:35 share
```

→ itwill 그룹 생성 후 해당 그룹만 읽기, 쓰기 권한 부여

```
[root@server2 ~]# tail -1 /etc/group
itwill:x:1011:lima
```

→ lima 사용자를 itwill 그룹에 포함

```
[root@server2 /]# firewall-cmd --permanent --add-service=nfs
success
[root@server2 /]# firewall-cmd --permanent --add-service=mountd
success
[root@server2 /]# firewall-cmd --permanent --add-service=rpc-bind
success
[root@server2 /]# firewall-cmd --reload
success
[root@server2 /]# firewall-cmd --list-services
cockpit dhcpv6-client ftp mountd nfs rpc-bind ssh
```

→ 방화벽 추가

nfs 서비스 활성화

```
[root@server2 /]# systemctl status nfs-server
● nfs-server.service - NFS server and services
     Loaded: loaded (/usr/lib/systemd/system/nfs-server.service; enabled; prese>
    Drop-In: /run/systemd/generator/nfs-server.service.d
             └─order-with-mounts.conf
     Active: active (exited) since Fri 2024-10-11 11:26:10 KST; 5 days ago
       Docs: man:rpc.nfsd(8)
             man:exportfs(8)
   Main PID: 6198 (code=exited, status=0/SUCCESS)
        CPU: 27ms

10월  11 11:26:10 server2 systemd[1]: Starting NFS server and services...
10월  11 11:26:10 server2 systemd[1]: Finished NFS server and services.
lines 1-12/12 (END)
```

```
[root@server2 /]# exportfs -v
/share          <world>(sync,wdelay,hide,no_subtree_check,sec=sys,rw,secure,root
_squash,no_all_squash)
```

서버 구성

NFS

server3에서 NFS 서버 관련 패키지 설치 확인

```
[root@server3 ~]# rpm -qa nfs-utils
nfs-utils-2.5.4-26.el9_4.x86_64

[root@server3 ~]# showmount -e 192.168.111.150
Export list for 192.168.111.150:
/share *

[root@server3 /]# mount -t nfs 192.168.111.150:/share myShare

[root@server3 ~]# ls -l myShare
합계 26576
----rw----. 1 nobody nobody        0 10월 11 11:35 f4
----rw----. 1 nobody nobody        0 10월 11 11:35 f5
----rw----. 1 root   root   13605704 10월 11 11:28 vmlinuz-0-rescue-60561144bd674f6f922dbe4647b5b6f6
----rw----. 1 root_  root   13605704 10월 11 11:28 vmlinuz-5.14.0-427.13.1.el9_4.x86_64

[root@server3 ~]# cd myShare
[root@server3 myShare]# touch f1

[root@server2 ~]# ls /share
f1  f4  f5  vmlinuz-0-rescue-60561144bd674f6f922dbe4647b5b6f6  vmlinuz-5.14.0-427.13.1.el9_4.x86_64
```

NFS 서버의 공유 디렉터리 확인

NFS 서버 공유 디렉터리를 클라이언트 쪽에서 생성한 디렉터리와 마운트 진행

마운트된 디렉터리에 touch 파일 생성

server2에서 생성 파일 확인

서버 구성

Samba

```
[root@server3 ~]# rpm -qa samba        ──▶ Samba 설치 여부 확인
samba-4.19.4-105.el9_4.x86_64          ──▶ 설치 완료
[root@server3 ~]#
```

```
[root@server3 ~]# mkdir /sambaMount
[root@server3 ~]# mount -t cifs //192.168.0.20/smbShare /sambaMount
mount: /sambaMount: mount(2) system call failed: 지금 진행 중인 명령.
```
공유 디렉터리 생성

```
[root@server3 ~]# tail /etc/group
dovenull:x:979:dovenull
mysql:x:27:
apache:x:48:
named:x:25:
rpc:x:32:
rpcuser:x:29:
sambaGroup:x:1014:lima          ──▶ 사용자가 Samba 그룹 합류 여부 확인
```

Samba 파일 수정

```
10 [global]
11      workgroup = WORKGROUP
12      unix charset = UTF-8
13      map to guest = Bad User
14      security = user
15
```

```
44 [Share]
45      path = /share
46      writable = yes
47      guest ok = no
48      create mode = 0777
49      directory mode = 0777
50      valid users = @sambaGroup
```

```
[root@server3 ~]# testparm          ──▶ 오류 확인
Load smb config files from /etc/samba/smb.conf
Loaded services file OK.
Weak crypto is allowed by GnuTLS (e.g. NTLM as a compatibility fallback)

Server role: ROLE_STANDALONE

Press enter to see a dump of your service definitions
```

서버 구성

Samba

```
[root@server3 ~]# systemctl status smb          ➜ Samba 활성화 상태 확인
● smb.service - Samba SMB Daemon
     Loaded: loaded (/usr/lib/systemd/system/smb.service; enabled; preset: disable>
     Active: active (running) since Fri 2024-10-11 12:02:26 KST; 4 days ago
       Docs: man:smbd(8)          ➜ SAMBA 서비스 활성화          ➜ SAMBA 서비스 설치 확인
             man:samba(7)
             man:smb.conf(5)
   Main PID: 12516 (smbd)
     Status: "smbd: ready to serve connections..."
      Tasks: 3 (limit: 22836)
     Memory: 7.6M
        CPU: 173ms
     CGroup: /system.slice/smb.service
             ─12516 /usr/sbin/smbd --foreground --no-process-group
             ─12519 /usr/sbin/smbd --foreground --no-process-group
             ─12520 /usr/sbin/smbd --foreground --no-process-group
```

```
[root@server3 ~]# firewall-cmd --permanent --add-service=samba    ➜ Samba 방화벽 허용
success
[root@server3 ~]# firewall-cmd --reload          ➜ 방화벽 재가동
success
[root@server3 ~]# firewall-cmd --list-services
cockpit dhcp dhcpv6-client http https imap mysql pop3 samba samba-client smtp ssh
[root@server3 ~]# █
```

➜ Samba에 방화벽 가동 확인

```
[root@server3 ~]# getenforce          ➜ SElinux 설정
Enforcing
[root@server3 ~]# setsebool -P samba_enable_home_dirs on
[root@server3 ~]# chcon -R -t samba_share_t /share
[root@server3 ~]#
```
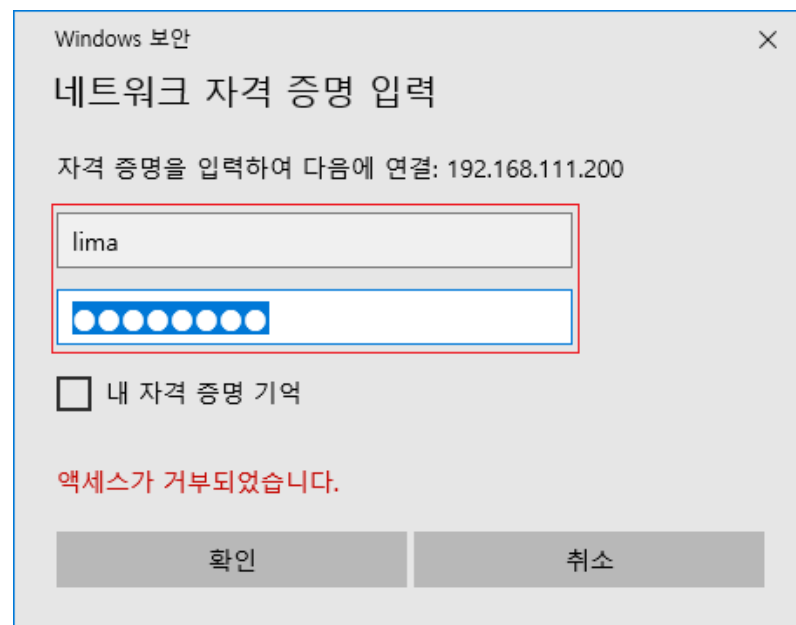
서버 구성

Samba

네트워크 자격 증명 선택
계정 이름과 비밀번호 입력

네트워크 드라이브 연결 확인
아무 파일 복사

윈도우에서 복사한 파일 확인
Samba 서버 접속 상태 확인

서버 구성

DHCP

DHCP Settings

Network: vmnet8
Subnet IP: 192.168.111.0
Subnet mask: 255.255.255.0
Starting IP address: 192 . 168 . 111 . 128
Ending IP address: 192 . 168 . 111 . 254
Broadcast address: 192.168.111.255

→ VMware 프로그램이 제공하는 DHCP 정보 확인

NAT Settings

Network: vmnet8
Subnet IP: 192.168.111.0
Subnet mask: 255.255.255.0
Gateway IP: 192 . 168 . 111 . 2

→ 게이트웨이, DNS의 정보

Virtual Network Editor

Name	Type	External Connection	Host Connection	DHCP	Subnet Address
VMnet0	Bridged	Auto-bridging	-	-	-
VMnet1	Host-only	-	Connected	Enabled	192.168.42.0
VMnet8	NAT	NAT	Connected	-	192.168.111.0

Add Network... | Remove Network | Rename Network...

VMnet Information

○ Bridged (connect VMs directly to the external network)
Bridged to: Automatic   Automatic Settings...

● NAT (shared host's IP address with VMs)   NAT Settings...

○ Host-only (connect VMs internally in a private network)

☑ Connect a host virtual adapter to this network
Host virtual adapter name: VMware Network Adapter VMnet8

☐ Use local DHCP service to distribute IP address to VMs   DHCP Settings...

Subnet IP: 192 . 168 . 111 . 0   Subnet mask: 255 . 255 . 255 . 0

Restore Defaults | Import... | Export... | OK | Cancel | Apply | Help

→ VMware 프로그램의 DHCP 서비스 중지

→ DHCP 서버 관련 패키지 설치 여부 확인

```
[root@server3 ~]# rpm -qa dhcp-server
dhcp-server-4.4.2-19.b1.el9.x86_64
```

```
ddns-update-style        interim;
subnet  192.168.111.0    netmask 255.255.255.0   {
        option routers  192.168.111.2 ;
        option subnet-mask      255.255.255.0 ;
        range   dynamic-bootp   192.168.111.12 192.168.111.28 ;
        option  domain-name-servers     8.8.8.8 ;
        default-lease-time      10000 ;
        max-lease-time  50000 ;
}
```

→ dhcpd.conf 내용 수정

```
[root@server3 ~]# systemctl status dhcpd
● dhcpd.service - DHCPv4 Server Daemon
     Loaded: loaded (/usr/lib/systemd/system/dhcpd.service; enabled; preset:
     Active: active (running) since Fri 2024-10-11 12:28:09 KST; 5 days ago
       Docs: man:dhcpd(8)
             man:dhcpd.conf(5)
   Main PID: 14302 (dhcpd)
     Status: "Dispatching packets..."
      Tasks: 1 (limit: 22836)
     Memory: 9.5M
        CPU: 152ms
     CGroup: /system.slice/dhcpd.service
             └─14302 /usr/sbin/dhcpd -f -cf /etc/dhcp/dhcpd.conf -user dhcpd
```

→ DHCP Server 활성화

서버 구성

Mail

```
[root@server3 ~]# rpm -qa sendmail          ──→  Sendmail 설치 여부 확인
sendmail-8.16.1-11.el9.x86_64
[root@server3 ~]# hostnamectl set-hostname mail.renew.msft
[root@server3 ~]# hostname        ──→  호스트 이름 수정
mail.renew.msft
[root@server3 ~]#
```

서버 설정 파일 수정

```
127.0.0.1    localhost localhost.localdomain localhost4 localhost4.localdomain4
::1          localhost localhost.localdomain localhost6 localhost6.localdomain6

192.168.111.200 mail.renew.msft
```
──→ /etc/hosts

```
# Created by anaconda
HOSTNAME=mail.renew.msft
```
──→ /etc/sysconfig/network

```
# local-host-names - include all aliases for your machine here.

mail.renew.msft
```
──→ /etc/mail/local-host-names

```
[root@mail ~]# vi /etc/named.conf
[root@mail ~]# named-checkconf          ──→  이상 여부 점검
[root@mail ~]# cd /var/named/
[root@mail named]# ls
chroot  dynamic    named.empty      named.loopback   slaves
data    named.ca  named.localhost  renew.msft.db    ──→  파일 생성 확인
[root@mail named]# cat renew.msft.db
$TTL    3H
@       SOA     @       root.   ( 2   1D   1H   1W   1H )
        IN      NS      @
        IN      A       192.168.111.200
        IN      MX      10      mail.renew.msft

mail    IN      A       192.168.111.200
```
──→ renew.msft.db에 내용 입력 후 저장

```
options {
    listen-on port 53 { any; };
    listen-on-v6 port 53 { none; };
    directory       "/var/named";
    dump-file       "/var/named/data/cache_dump.db";
    statistics-file "/var/named/data/named_stats.txt";
    memstatistics-file "/var/named/data/named_mem_stats.txt";
    secroots-file   "/var/named/data/named.secroots";
    recursing-file  "/var/named/data/named.recursing";
    allow-query     { any; };
```
──→ 네임서버 설정 파일 수정 및 Zone 내용 추가

서버 구성

Mail

```
[root@mail named]# systemctl status named          네임서버 활성화 상태 확인
● named.service - Berkeley Internet Name Domain (DNS)
     Loaded: loaded (/usr/lib/systemd/system/named.service; enabled; preset: disable>
     Active: active (running) since Thu 2024-10-10 21:00:44 KST; 5 days ago
   Main PID: 7789 (named)          네임 서버 서비스 활성화
      Tasks: 18 (limit: 22836)                                        네임 서버 서비스 설치 확인
     Memory: 51.3M
        CPU: 4.467s
     CGroup: /system.slice/named.service
             └─7789 /usr/sbin/named -u named -c /etc/named.conf
```

DNS 서버 주소 확인

```
search renew.msft
nameserver 192.168.111.200

Name:    mail.renew.msft
Address: 192.168.111.200
```

Sendmail-cf 설치 여부 확인

```
[root@mail named]# rpm -qa sendmail-cf
sendmail-cf-8.16.1-11.el9.noarch
[root@mail named]#
```

```
[root@mail named]# firewall-cmd --permanent --add-service=smtp
success
[root@mail named]# firewall-cmd --permanent --add-service=pop3          Mail 프로토콜 방화벽 허용
success
[root@mail named]# firewall-cmd --permanent --add-service=imap
success
[root@mail named]# firewall-cmd --reload          방화벽 재가동
success
[root@mail named]# firewall-cmd --list-services
cockpit dhcp dhcpv6-client http https imap mysql pop3 samba-client smtp ssh
[root@mail named]#
```

Mail 프로토콜 방화벽 가동 확인

```
[root@mail named]# cat /etc/mail/sendmail.cf | sed -n '85p; 268p'
Cwrenew.msft
O DaemonPortOptions=Port=smtp, Name=MTA          Sendmail.cf 파일 내용 수정
[root@mail named]# tail -2  /etc/mail/access
renew.msft                                RELAY
192.168.111                               RELAY          Access 파일 내용 추가
[root@mail named]#
```
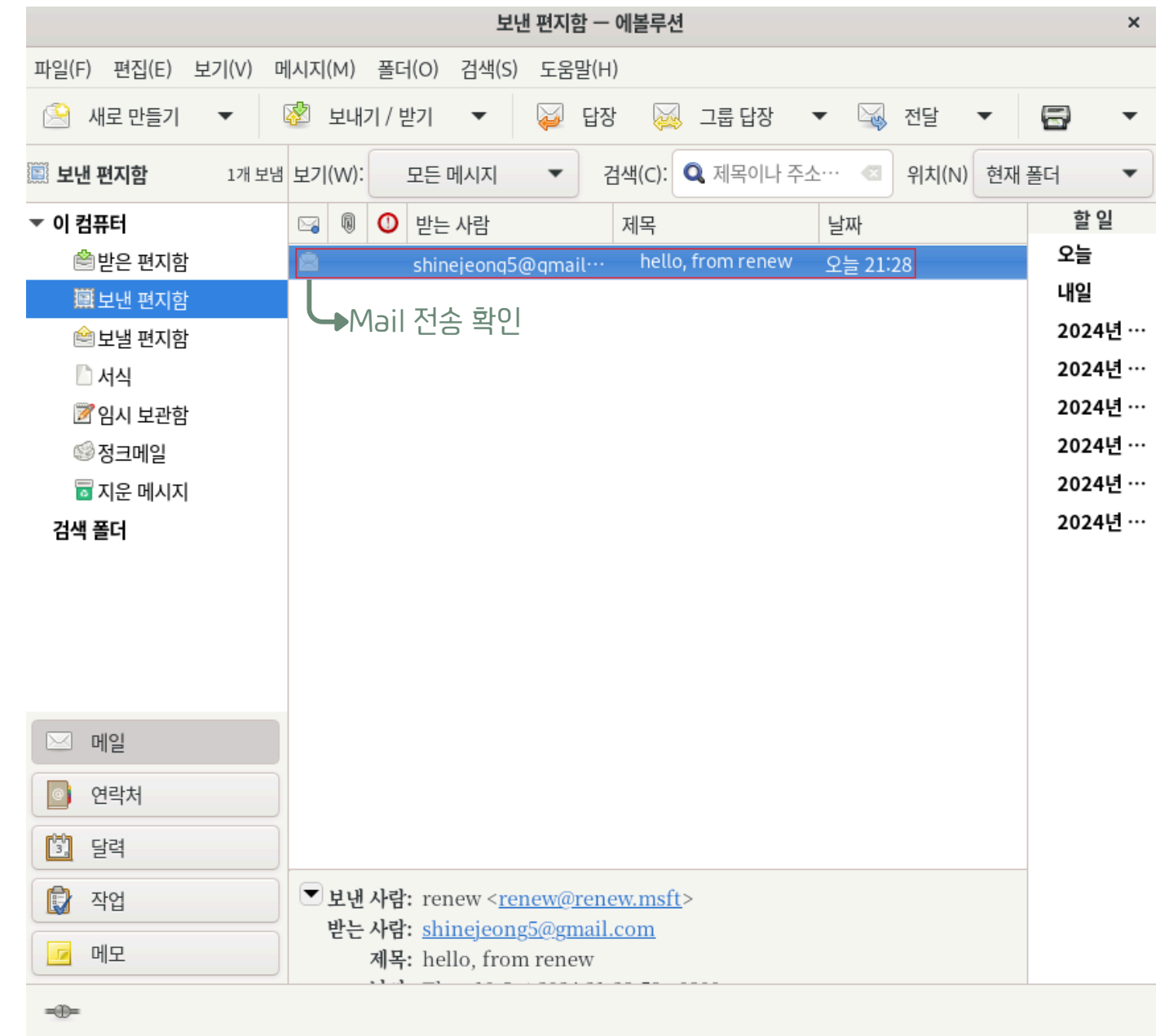
서버 구성

Mail

```
[root@mail named]# cat /etc/dovecot/dovecot.conf | sed -n '24p; 30p; 33p'
protocols = imap pop3 lmtp submission        dovecot.conf 파일 주석 제거
listen = *, ::
base_dir = /var/run/dovecot/
[root@mail named]# cat /etc/dovecot/conf.d/10-ssl.conf  | sed -n '8p'
ssl = yes                           10-ssl.conf 파일 내용 수정
[root@mail named]# cat /etc/dovecot/conf.d/10-mail.conf  | sed -n '25p; 121p; 166p'
    mail_location = mbox:~/mail:INBOX=/var/mail/%u       10-mail.conf
mail_access_groups = mail
lock_method = fcntl                                      파일 주석 제거 및 내용 수정
[root@mail named]#
```

```
[root@mail named]# systemctl status dovecot        dovecot 활성화 상태 확인
● dovecot.service - Dovecot IMAP/POP3 email server
     Loaded: loaded (/usr/lib/systemd/system/dovecot.service; enabled; preset: disab>
     Active: active (running) since Thu 2024-10-10 21:17:42 KST; 5 days ago
       Docs: man:dovecot(1)          dovecot 서비스 활성화        dovecot 서비스 설치 확인
             https://doc.dovecot.org/
   Main PID: 8216 (dovecot)
     Status: "v2.3.16 (7e2e900c1a) running"
      Tasks: 5 (limit: 22836)
     Memory: 7.4M
        CPU: 248ms
     CGroup: /system.slice/dovecot.service
             ─8216 /usr/sbin/dovecot -F
             ─8217 dovecot/anvil
             ─8218 dovecot/log
             ─8223 dovecot/config
             ─8771 dovecot/stats
```


Mail 전송 확인

감사합니다

3조 리뷰

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