클라우드 기반 정보시스템 구축 전문가 양성 국비 과정

서버(리눅스) - 3조

팀명: Shell Work

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목차

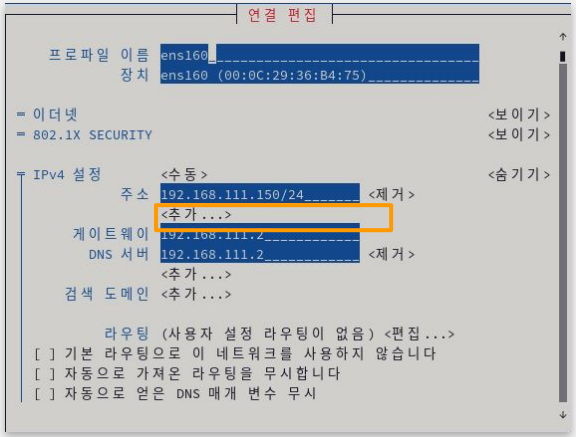
1. 주소 변경 및 설정

1. 설치 - 주소 변경 Server

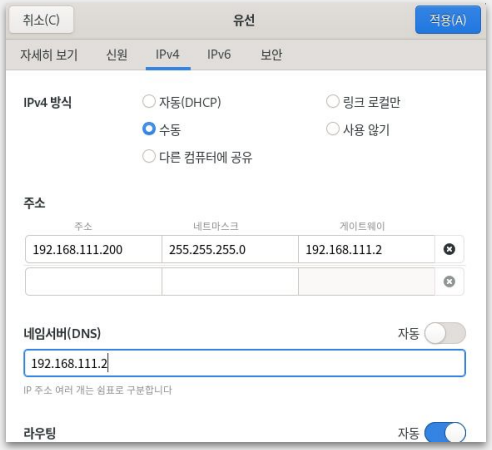
Server: IP 주소 설정

```
[root@server ~]# nmcli con mod ens160 ipv4.addresses 192.168.111.100/24 ipv4.gateway 192.168.111.2 ipv4.dns 192.168.111.2 ipv4.method manual
[root@server ~]# nmcli con down ens160
'ens160' 연결이 성공적으로 비활성화되었습니다 (D-Bus 활성 경로: /org/freedesktop/NetworkManager/ActiveConnection/2)
[root@server ~]# nmcli con up ens160
연결이 성공적으로 활성화되었습니다 (D-버스 활성 경로: /org/freedesktop/NetworkManager/ActiveConnection/3)
[root@server ~]# ifconfig
ens160: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.111.100  netmask 255.255.255.0  broadcast 192.168.111.255
        inet6 fe80::20c:29ff:feb2:5c54  prefixlen 64  scopeid 0x20<link>
        ether 00:0c:29:b2:5c:54  txqueuelen 1000  (Ethernet)
        RX packets 668482  bytes 1007767361 (961.0 MiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 97603  bytes 5303978 (5.0 MiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

Server-B: IP 주소 설정



Server-C: IP 주소 설정



2. 사용자 및 그룹 등록

2. 사용자 및 그룹 등록

사용자 생성

```
[root@server-b ~]# useradd kimjh
[root@server-b ~]# useradd limwt
[root@server-b ~]# useradd kimhw
[root@server-b ~]# useradd chunghj
[root@server-b ~]#
[root@server-b ~]# useradd sonhm
[root@server-b ~]# useradd leeki
[root@server-b ~]# useradd kimmj
[root@server-b ~]# useradd  hwanghc
```

그룹에 사용자 추가

```
[root@server-b ~]# usermod -g  krsoccer kimjh
[root@server-b ~]# usermod -g  krsoccer kimhw
[root@server-b ~]# usermod -g  krsoccer limwt
[root@server-b ~]# usermod -g  krsoccer chunghj
[root@server-b ~]#
[root@server-b ~]# usermod -g eusoccer sonhm
[root@server-b ~]# usermod -g eusoccer leeki
[root@server-b ~]# usermod -g eusoccer kimmj
[root@server-b ~]# usermod -g eusoccer hwanghc
```

그룹 생성

```
[root@server-b ~]# groupadd eusoccer
[root@server-b ~]# groupadd krsoccer
```

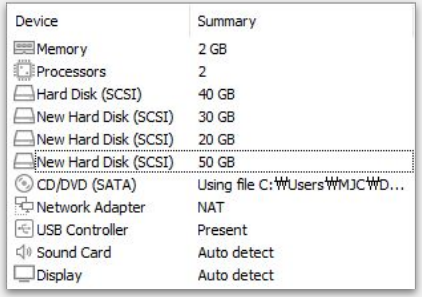
그룹 생성 확인

```
[root@server-b ~]# tail -10 /etc/passwd
tcpdump:x:72:72::/:/sbin/nologin
lima:x:1000:1000:lima:/home/lima:/bin/bash
kimjh:x:1001:1010::/home/kimjh:/bin/bash
limwt:x:1002:1010::/home/limwt:/bin/bash
kimhw:x:1003:1010::/home/kimhw:/bin/bash
chunghj:x:1004:1010::/home/chunghj:/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
```

3. 디스크 추가 및 LVM 구성

3-1. 디스크 추가 및 LVM 구성

가상 디스크 추가



추가된 디스크 확인

```
[root@server ~]# lsblk
NAME   MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda      8:0    0   40G  0 disk
├─sda1   8:1    0    4G  0 part /boot/efi
├─sda2   8:2    0    4G  0 part [SWAP]
└─sda3   8:3    0   32G  0 part /
sdb      8:16   0   20G  0 disk
sdc      8:32   0   30G  0 disk
sdd      8:48   0   50G  0 disk
```

LVM용 파티션 생성 및 타입 변경

```
[root@server ~]# fdisk /dev/sdb
[root@server ~]# fdisk /dev/sdc
[root@server ~]# fdisk /dev/sdd
```

LVM용 파티션 생성 및 타입 변경

```
Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p):

Using default response p.
Partition number (1-4, default 1):
First sector (2048-41943039, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-41943039, default 41943039):

Created a new partition 1 of type 'Linux' and of size 20 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/sdb: 20 GiB, 21474836480 bytes, 41943040 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: 0xad526538

Device     Boot Start      End  Sectors Size Id Type
/dev/sdb1        2048 41943039 41940992  20G 8e Linux LVM

Command (m for help): w
```

3-1. 디스크 추가 및 LVM 구성

PV(물리 볼륨) 생성

```
[root@server ~]# pvcreate /dev/sdb1
  Physical volume "/dev/sdb1" successfully created.
  Creating devices file /etc/lvm/devices/system.devices
[root@server ~]# pvcreate /dev/sdc1
  Physical volume "/dev/sdc1" successfully created.
[root@server ~]# pvcreate /dev/sdd1
  Physical volume "/dev/sdd1" successfully created.
[root@server ~]# pvscan
  PV /dev/sdb1         lvm2 [<20.00 GiB]
  PV /dev/sdc1         lvm2 [<30.00 GiB]
  PV /dev/sdd1         lvm2 [<50.00 GiB]
```

VG(볼륨 그룹) 생성

```
[root@server ~]# vgcreate /dev/data /dev/sdb1 /dev/sdc1 /dev/sdd1
  Volume group "data" successfully created
```

LV(논리 볼륨) 생성

```
[root@server ~]# lvcreate -L40G -n VIDEO /dev/data
  Logical volume "VIDEO" created.
[root@server ~]# lvcreate -l 100%FREE -n AUDIO /dev/data
  Logical volume "AUDIO" created.
[root@server ~]# lvscan
  ACTIVE            '/dev/data/VIDEO' [40.00 GiB] inherit
  ACTIVE            '/dev/data/AUDIO' [<59.99 GiB] inherit
```

파일 시스템 생성 및 마운트

```
[root@server ~]# mkfs.ext4 /dev/data/VIDEO
[root@server ~]# mkfs.ext4 /dev/data/AUDIO
[root@server ~]# mkdir /mnt/video /mnt/audio
```

↓

```
[root@server ~]# mount /dev/data/VIDEO /mnt/video
[root@server ~]# mount /dev/data/AUDIO /mnt/audio
```

영구 마운트 설정(etc/fstab)

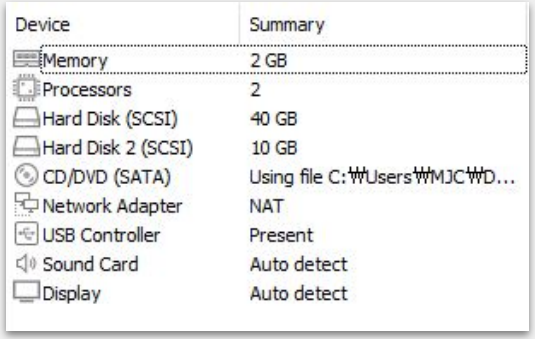
```
UUID=e6f129cc-301f-48f7-bf36-8ba91510015a /                       x
UUID=C9D0-A16B          /boot/efi               vfat    umask=0077,
UUID=a2e7abea-a505-44e8-a37b-23217d2d7049 none                    sw
/dev/data/VIDEO /mnt/video      ext4    defaults        0       0
/dev/data/AUDIO /mnt/audio      ext4    defaults        0       0
```

```
[root@server ~]# lsblk
NAME            MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda               8:0    0   40G  0 disk
├─sda1            8:1    0    4G  0 part /boot/efi
├─sda2            8:2    0    4G  0 part [SWAP]
└─sda3            8:3    0   32G  0 part /
sdb               8:16   0   20G  0 disk
└─sdb1            8:17   0   20G  0 part
  └─data-AUDIO 253:1    0   60G  0 lvm  /mnt/audio
sdc               8:32   0   30G  0 disk
└─sdc1            8:33   0   30G  0 part
  └─data-AUDIO 253:1    0   60G  0 lvm  /mnt/audio
sdd               8:48   0   50G  0 disk
└─sdd1            8:49   0   50G  0 part
  ├─data-VIDEO 253:0    0   40G  0 lvm  /mnt/video
  └─data-AUDIO 253:1    0   60G  0 lvm  /mnt/audio
```

4. 디스크 쿼터 설정

4-1. 디스크 쿼터 설정

쿼터용 디스크 추가 및 파티션 생성




```
[root@server ~]# lsblk
NAME    MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda       8:0    0   40G  0 disk
├─sda1    8:1    0    4G  0 part /boot/efi
├─sda2    8:2    0    4G  0 part [SWAP]
└─sda3    8:3    0   32G  0 part /
sdb       8:16   0   10G  0 disk
```

파일 시스템 생성 및 마운트

```
[root@server ~]# fdisk /dev/sdb

Welcome to fdisk (util-linux 2.37.4).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.


Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p):

Using default response p.
Partition number (1-4, default 1):
First sector (2048-20971519, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-20971519, default 20971519):

Created a new partition 1 of type 'Linux' and of size 10 GiB.

Command (m for help): p
Disk /dev/sdb: 10 GiB, 10737418240 bytes, 20971520 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: 0x6b02c70f

Device     Boot Start      End  Sectors Size Id Type
/dev/sdb1        2048 20971519 20969472  10G 83 Linux

Command (m for help): w
```

```
[root@server ~]# mkfs.ext4 /dev/sdb1
```

```
[root@server ~]# mkdir /quota
[root@server ~]# mount /dev/sdb1 /quota
```

4-2. 디스크 쿼터 설정

/etc/fstab 쿼터 옵션 추가 및 리마운트

```
UUID=e6f129cc-301f-48f7-bf36-8ba91510015a /
UUID=C9D0-A16B          /boot/efi               vfat    umas
UUID=a2e7abea-a505-44e8-a37b-23217d2d7049 none
/dev/sdb1 /quota        ext4    defaults        0       0
```

↓

```
[root@server ~]# useradd -d /quota/aespa aespa
[root@server ~]# useradd -d /quota/IVE IVE
[root@server ~]# useradd -d /quota/NewJeans NewJeans
```

↓

```
UUID=e6f129cc-301f-48f7-bf36-8ba91510015a /                       xfs     defa
UUID=C9D0-A16B          /boot/efi               vfat    umask=0077,shortname=w
UUID=a2e7abea-a505-44e8-a37b-23217d2d7049 none                    swap    defa
/dev/sdb1 /quota        ext4    defaults,usrjquota=aquota.user,jqfmt=vfsv0
```

↓

```
[root@server ~]# mount --options remount /quota
```

→

쿼터 파일 생성 및 활성화

```
[root@server ~]# cd /quota
[root@server quota]# quotaoff -avug
quotaoff: Your kernel probably supports ext4 quota feature but you
external quota files on ext4 are deprecated. You can enable the fe
/dev/sdb1 [/quota]: user quotas turned off
[root@server quota]# quotacheck -augmn
quotacheck: Your kernel probably supports ext4 quota feature but y
s external quota files on ext4 are deprecated. You can enable the
[root@server quota]# rm -rf quota.*
[root@server quota]# quotacheck -augmn
quotacheck: Your kernel probably supports ext4 quota feature but y
s external quota files on ext4 are deprecated. You can enable the
[root@server quota]# touch quota.user aquota.group
[root@server quota]# chmod 600 aquota.*
[root@server quota]# quotacheck -augmn
quotacheck: Your kernel probably supports ext4 quota feature but y
s external quota files on ext4 are deprecated. You can enable the
[root@server quota]# quotaon -avug
quotaon: Your kernel probably supports ext4 quota feature but you
xternal quota files on ext4 are deprecated. You can enable the fea
/dev/sdb1 [/quota]: user quotas turned on
[root@server quota]# ls -l
합 계  36
drwx------. 3 IVE       IVE        4096  5월  13 18:33 IVE
drwx------. 3 NewJeans  NewJeans   4096  5월  13 18:33 NewJeans
drwx------. 3 aespa     aespa      4096  5월  13 18:33 aespa
-rw-------. 1 root      root          0  5월  13 18:40 aquota.group
-rw-------. 1 root      root       7168  5월  13 18:40 aquota.user
drwx------. 2 root      root      16384  5월  13 18:28 lost+found
-rw-r--r--. 1 root      root          0  5월  13 18:40 quota.user
```

4-3. 디스크 쿼터 설정

사용자별 쿼터 설정(equota -e)

```
Disk quotas for user aespa (uid 1005):
  Filesystem                blocks       soft       hard     inodes     soft     hard
  /dev/sdb1                     28     716800    1048576          7        0        0
Disk quotas for user IVE (uid 1006):
  Filesystem                blocks       soft       hard     inodes     soft     hard
  /dev/sdb1                     28     716800    1048567          7        0        0
```

쿼터 설정 확인(requota /quota)

```
[root@server quota]# repquota /quota
*** 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              4     0     0
aespa     --      28  716800 1048576              7     0     0
IVE       --      28  716800 1048567              7     0     0
NewJeans  --      28  716800 1048576              7     0     0
```

5. 서버 구성

5-1. 서버 구성 - SSH

SSH 서비스 상태 확인 및 방화벽 설정 확인

```
[root@server ~]# systemctl status sshd
● sshd.service - OpenSSH server daemon
     Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
     Active: active (running) since Mon 2025-05-12 21:18:43 KST; 21h ago
       Docs: man:sshd(8)
             man:sshd_config(5)
   Main PID: 923 (sshd)
      Tasks: 1 (limit: 10754)
     Memory: 2.1M
        CPU: 23ms
     CGroup: /system.slice/sshd.service
             └─923 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"
```

```
[root@server ~]# firewall-cmd --list-services
cockpit dhcpv6-client ssh
```

server에서 sshtest 파일 생성

```
[lima@server ~]$ touch sshtest
```

원격 SSH 접속 테스트

```
[root@server-b ~]# ssh lima@192.168.111.100
The authenticity of host '192.168.111.100 (192.168.111.100)' can't be established.
ED25519 key fingerprint is SHA256:X9mf6WT6A0LQqJZ1mMd9q5p7gtfuImuiDAg2VjYQusk.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.111.100' (ED25519) to the list of known hosts.
lima@192.168.111.100's password:
Last login: Tue May 13 18:57:13 2025
[lima@server ~]$ ls
sshtest
```

5-2. 서버 구성 - XRDP

XRDP 패키지 설치 (EPEL 저장소 추가)

```
[root@server ~]# dnf -y install epel-release
```

↓

```
[root@server ~]# rpm -qa xrdp
[root@server ~]# dnf -y install xrdp
```

↓

```
[root@server ~]# systemctl enable --now xrdp
```

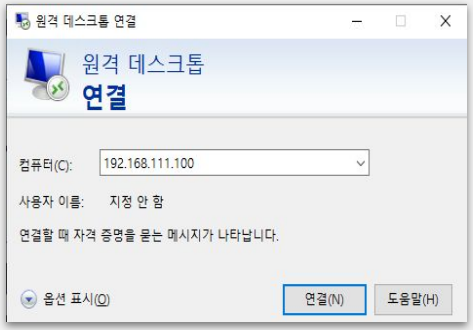
XRDP 서비스 활성화 및 방화벽 포트(3389) 허용

```
[root@server ~]# firewall-cmd --permanent --add-port=3389/tcp
[root@server ~]# firewall-cmd --reload
[root@server ~]# firewall-cmd --list-ports
3389/tcp
```

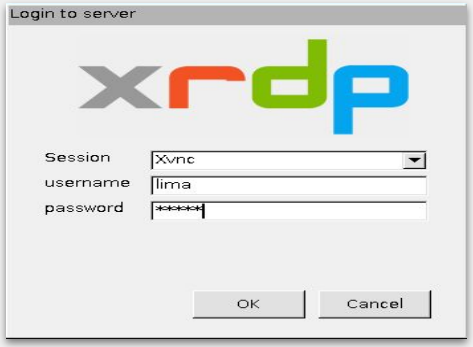
Windows 원격 데스크톱으로 XRDP 접속 테스트

```
[root@server ~]# systemctl status xrdp
● xrdp.service - xrdp daemon
     Loaded: loaded (/usr/lib/systemd/system/xrdp.service; enabled; preset: disabled)
     Active: active (running) since Tue 2025-05-13 19:14:27 KST; 31s ago
       Docs: man:xrdp(8)
             man:xrdp.ini(5)
   Main PID: 20410 (xrdp)
      Tasks: 1 (limit: 10754)
     Memory: 1.8M
        CPU: 15ms
     CGroup: /system.slice/xrdp.service
             └─20410 /usr/sbin/xrdp --nodaemon
```

↓



→



5-3. 서버 구성 - DNS

DNS (BIND) 패키지 설치

```
[root@server ~]# rpm -qa bind bind-chroot
[root@server ~]# dnf -y install bind bind-chroot
```

/etc/named.conf 기본 옵션 설정

```
[root@server ~]# vi /etc/named.conf
```

```
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; };

        /*
         - If you are building an AUTHORITATIVE DNS server, do NOT enable recursion.
         - If you are building a RECURSIVE (caching) DNS server, you need to enable
           recursion.
         - If your recursive DNS server has a public IP address, you MUST enable access
           control to limit queries to your legitimate users. Failing to do so will
           cause your server to become part of large scale DNS amplification
           attacks. Implementing BCP38 within your network would greatly
           reduce such attack surface
        */
        recursion yes;

        dnssec-validation no;
```

DNS 서비스 활성화 및 방화벽 허용

```
[root@server ~]# systemctl restart named
[root@server ~]# systemctl enable named
[root@server ~]# systemctl status named
● named.service - Berkeley Internet Name Domain (DNS)
     Loaded: loaded (/usr/lib/systemd/system/named.service; enabled; preset: di>
     Active: active (running) since Wed 2025-05-14 20:12:55 KST; 15s ago
   Main PID: 2751 (named)
      Tasks: 8 (limit: 10754)
     Memory: 21.0M
        CPU: 73ms
     CGroup: /system.slice/named.service
             └─2751 /usr/sbin/named -u named -c /etc/named.conf
```

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

5-3. 서버 구성 - DNS

/etc/resolv.conf 파일 수정

```
[root@server ~]# vi /etc/resolv.conf
```

```
# Generated by NetworkManager
nameserver 192.168.111.100
```

정방향 조회 영역(Zone) 정의

```
[root@server ~]# vi /etc/named.conf
```

```
zone "shellwork.com" IN {
        type master;
        file    "shellwork.com.db";
        allow-update { none; };
};
```

```
[root@server ~]# named-checkconf
```

DNS 영역 파일(Zone File) 작성

```
[root@server ~]# vi /var/named/shellwork.com.db
```

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

serverA IN      A       192.168.111.100
serverB IN      A       192.168.111.150
serverC IN      A       192.168.111.200

www     IN      CNAME   serverB.shellwork.com.
ftp     IN      CNAME   serverB.shellwork.com.
```

DNS 설정 파일 및 영역 파일 유효성 검사

```
[root@server named]# named-checkzone shellwork.com shellwork.com.db
zone shellwork.com/IN: loaded serial 2
OK
```

5-3. 서버 구성 - DNS(웹 서버, FTP)

웹 서버 (Apache HTTPD) 설치 및 서비스 활성화

```
[root@server-b ~]# rpm -qa httpd
[root@server-b ~]# dnf -y install httpd
```

↓

```
[root@server-b ~]# systemctl enable --now httpd
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service → /usr
/lib/systemd/system/httpd.service.
[root@server-b ~]# systemctl status httpd
● httpd.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset: di>
     Active: active (running) since Tue 2025-05-13 19:44:28 KST; 9s ago
       Docs: man:httpd.service(8)
   Main PID: 33705 (httpd)
     Status: "Total requests: 0; Idle/Busy workers 100/0;Requests/sec: 0; Bytes>
      Tasks: 177 (limit: 10754)
     Memory: 32.6M
        CPU: 86ms
     CGroup: /system.slice/httpd.service
             ├─33705 /usr/sbin/httpd -DFOREGROUND
             ├─33706 /usr/sbin/httpd -DFOREGROUND
             ├─33707 /usr/sbin/httpd -DFOREGROUND
             ├─33708 /usr/sbin/httpd -DFOREGROUND
             └─33709 /usr/sbin/httpd -DFOREGROUND
```

FTP 서버 (VSFTPD) 설치 및 서비스 활성화

```
[root@server-b ~]# rpm -qa vsftpd
[root@server-b ~]# dnf -y install vsftpd
```

↓

```
[root@server-b ~]# systemctl enable --now vsftpd
Created symlink /etc/systemd/system/multi-user.target.wants/vsftpd.service → /us
r/lib/systemd/system/vsftpd.service.
[root@server-b ~]# systemctl status vsftpd
● vsftpd.service - Vsftpd ftp daemon
     Loaded: loaded (/usr/lib/systemd/system/vsftpd.service; enabled; preset: d>
     Active: active (running) since Wed 2025-05-14 20:38:50 KST; 8s ago
    Process: 34762 ExecStart=/usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf (code=exi>
   Main PID: 34764 (vsftpd)
      Tasks: 1 (limit: 10754)
     Memory: 732.0K
        CPU: 3ms
     CGroup: /system.slice/vsftpd.service
             └─34764 /usr/sbin/vsftpd /etc/vsftpd/vsftpd.conf
```

5-3. 서버 구성 - DNS(웹 서버, FTP)

방화벽 HTTP, FTP 서비스 허용

```
[root@server-b ftp]# firewall-cmd --add-service=http
success
[root@server-b ftp]# firewall-cmd --reload
success
```

```
[root@server-b ftp]# firewall-cmd --add-service=ftp
Warning: ALREADY_ENABLED: 'ftp' already in 'public'
success
[root@server-b ftp]# firewall-cmd --reload
success
```

```
[root@server-b ~]# firewall-cmd --list-services
cockpit dhcpv6-client ftp http ssh
```

FTP 환영 메시지 설정 및 접속 테스트

```
[root@server-b ~]# vi /var/ftp/welcom.msg
```

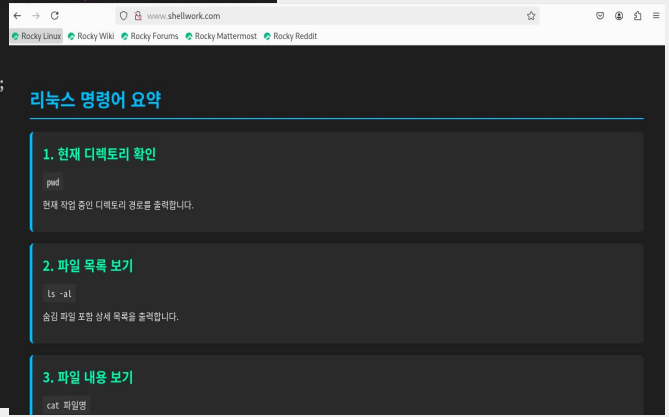
```
[root@server-c ~]# ftp ftp.shellwork.com
Connected to ftp.shellwork.com (192.168.111.150).
220-###############
220-Hi! MJC Cloud
220-###############
220
```

```
###############
Hi! MJC Cloud
###############
```

기본 웹 페이지(index.html) 작성 및 접속 테스트

```
[root@server-b ~]# vi /var/www/html/index.html
```

```
!DOCTYPE html
<html lang="ko">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>리눅스 명령어 요약</title>
  <style>
    body {
      font-family: 'Segoe UI', sans-serif;
      background-color: #1e1e1e;
      color: #f0f0f0;
      padding: 40px;
    }
    h1 {
      color: #00bfff;
      border-bottom: 2px solid #00bfff;
      padding-bottom: 10px;
    }
    .command {
      background-color: #2a2a2a;
      border-left: 5px solid #00bfff;
      padding: 20px;
      margin-bottom: 20px;
```



5-4. 서버 구성 - NFS

NFS 서버: 패키지 설치 및 공유 디렉토리 설정

```
[root@server ~]# rpm -qa nfs-utils
nfs-utils-2.5.4-27.el9.x86_64
[root@server ~]# vi /etc/exports
/share  *(rw,sync)
[root@server ~]# chmod 707 /share
[root@server ~]# touch NFStest.txt
[root@server ~]# cp NFStest.txt /share
[root@server ~]# ls /share
NFStest.txt
```

NFS 서버: 서비스 재시작 및 방화벽 설정

```
[root@server ~]# systemctl restart nfs-server
[root@server ~]# systemctl enable nfs-server
[root@server ~]# exportfs -v
/share          <world>(sync,wdelay,hide,no_subtree_check,sec=sys,rw,secure,root
_squash,no_all_squash)
[root@server ~]# firewall-cmd --permanent --add-service=nfs

success
[root@server ~]# firewall-cmd --permanent --add-service=mountd
success
[root@server ~]# firewall-cmd --permanent --add-service=rpc-bind
success
```

NFS 클라이언트: 공유 디렉토리 마운트 및 확인

```
[root@server-c ~]# rpm -qa nfs-utils
[root@server-c ~]# dnf -y install nfs-utils
[root@server-c ~]# showmount -e 192.168.111.100
Export list for 192.168.111.100:
/share *
[root@server-c ~]# mkdir myShare
[root@server-c ~]# mount -t nfs 192.168.111.100:/share myShare
[root@server-c ~]# ls  -l myShare
합계 0
-rw-r--r--. 1 root root 0  5월  14 21:09 NFStest.txt
```

5-5. 서버 구성 - Samba

Samba: 패키지 설치 및 공유 /etc/samba/smb.conf 설정

```
[root@server ~]# rpm -qa smaba
[root@server ~]# dnf -y install samba
```

```
[root@server ~]# mkdir /share
[root@server ~]# groupadd sambaGroup
[root@server ~]# chgrp sambaGroup /share
[root@server ~]# chmod 770 /share
[root@server ~]# usermod -G sambaGroup lima
[root@server ~]# smbpasswd -a lima
New SMB password:
Retype new SMB password:
Added user lima.
```

```
[global]
        workgroup = INBO
        unix charset = UTF-8
        map to guest = Bad User
        security = user
```

```
[Share]
        path = /share
        writable = yes
        guest ok = no
        create mode =0777
        directory mode = 0777
        valid users = @sambaGroup
```

Samba: 주 설정 파일 (/etc/samba/smb.conf) 설정 오류 확인

```
[root@server ~]# testparm
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
```

Samba: 서비스 재시작 및 방화벽/SELinux 설정

```
[root@server ~]# systemctl restart smb nmb
[root@server ~]# systemctl enable smb nmb
```

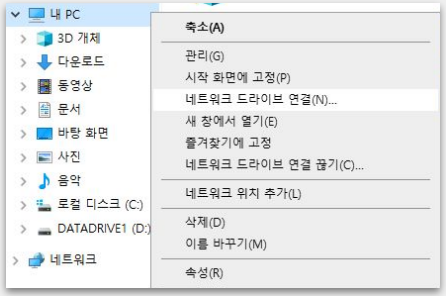
```
[root@server ~]# firewall-cmd --permanent --add-service=samba
success
[root@server ~]# firewall-cmd --permanent --add-service=samba-client
success
[root@server ~]# firewall-cmd --reload
success
```

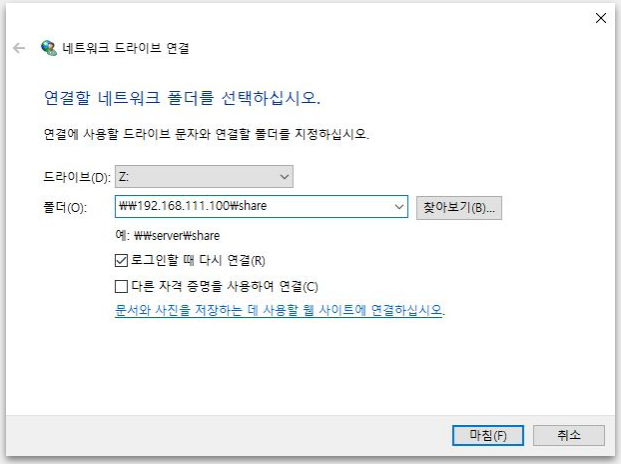
```
[root@server ~]# setsebool -P samba_enable_home_dirs on
[root@server ~]# chcon -R -t samba_share_t /share
```

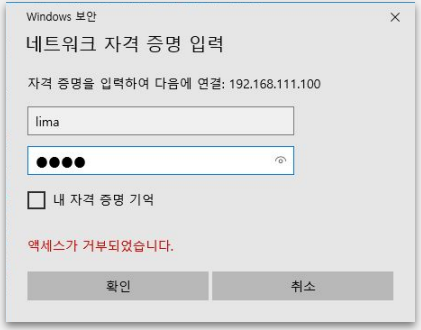
```
[root@server ~]# touch sambatest.txt
[root@server ~]# cp sambatest.txt /share
[root@server ~]# ls -l /share/
```

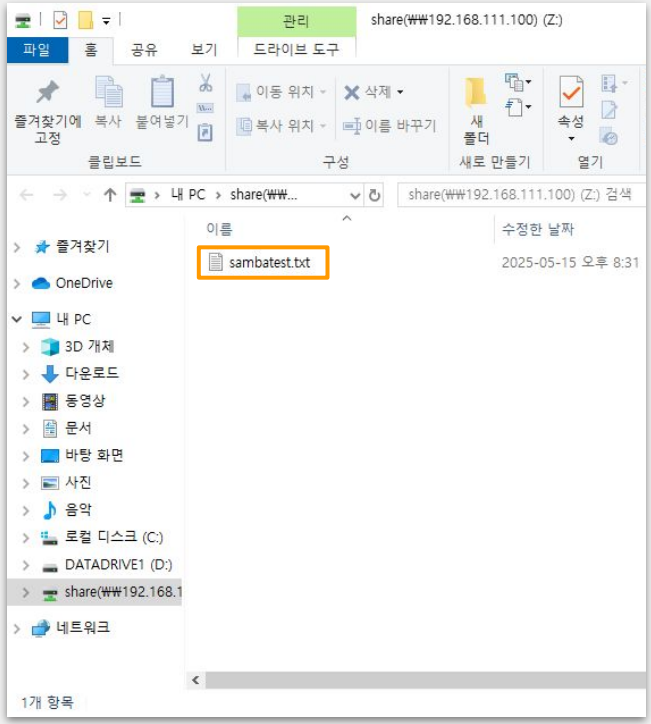
5-5. 서버 구성 - Samba

Windows 클라이언트: Samba 공유 폴더 연결 (네트워크 드라이브)



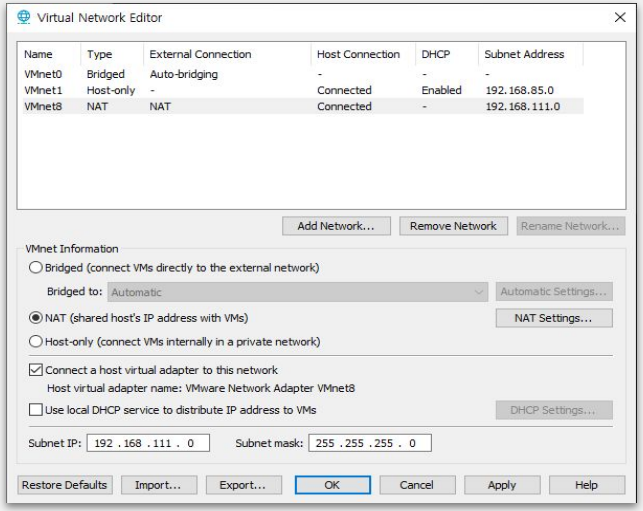






5-6. 서버 구성 - DHCP

VMware: 가상 네트워크 어댑터(VMnet) DHCP 기능 비활성화



DHCP 설정 전 IP 주소 확인

```
[root@server-c ~]# ifconfig
ens160: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet6 fe80::20c:29ff:fe18:9829  prefixlen 64  scopeid 0x20<link>
        ether 00:0c:29:18:98:29  txqueuelen 1000  (Ethernet)
        RX packets 2  bytes 512 (512.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 21  bytes 3303 (3.2 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

5-6. 서버 구성 - DHCP

DHCP 서버: 패키지 설치 및 설정 파일(/etc/dhcp/dhcpd.conf) 구성

```
[root@server ~]# rpm -qa dhcp-server
[root@server ~]# dnf -y install dhcp-server
```

```
[root@server ~]# vi /etc/dhcp/dhcpd.conf
```

```
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;
        option domain-name-servers 8.8.8.8;
        range dynamic-bootp 192.168.111.50 192.168.111.90;
        default-lease-time 10000;
        max-lease-time 50000;
}
```

DHCP 서버: 서비스 시작 및 방화벽 허용

```
[root@server ~]# systemctl restart dhcpd
[root@server ~]# systemctl enable dhcpd
```

```
[root@server ~]# firewall-cmd --permanent --add-service=dhcp
success
[root@server ~]# firewall-cmd --reload
success
```

클라이언트: DHCP를 통한 IP 주소 할당 확인

```
[root@server-c ~]# ifconfig
ens160: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.111.50  netmask 255.255.255.0  broadcast 192.168.111.255
        inet6 fe80::20c:29ff:fe18:9829  prefixlen 64  scopeid 0x20<link>
        ether 00:0c:29:18:98:29  txqueuelen 1000  (Ethernet)
        RX packets 21  bytes 2702 (2.6 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 59  bytes 6755 (6.5 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

5-7. 서버 구성 - Mail

메일 서버 (Sendmail): 패키지 설치

```
[root@server ~]# dnf -y install sendmail
```

메일 서버: 호스트 이름 관련 파일 설정

```
[root@server ~]# vi /etc/hostname
```

↓

root@server:~ — /usr/bin/vim /etc/hostname

```
mail.shellwork.com
~
```

```
[root@server ~]# vi /etc/hosts
```

↓

root@server:~ — /usr/bin/vim /etc/hosts

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

192.168.111.100         mail.shellwork.com
~
```

메일 서버: 네트워크 설정 파일에 호스트 이름 지정

```
[root@server ~]# vi /etc/sysconfig/network
```

↓

root@server:~ — /usr/bin/vim /etc/sysconfig/network

```
# Created by anaconda

HOSTNAME=mail.shellwork.com
```

```
[root@server ~]# reboot
```

```
[root@server ~]# vi /etc/mail/local-host-names
```

↓

root@server:~ — /usr/bin/vim /etc/mail/local-host-names

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

mail.shellwork.com
~
```

5-7. 서버 구성 - Mail

메일 서버용 DNS 설치

```
[root@mail ~]# dnf -y install bind bind-chroot
```

메일 서버용 DNS zone 영역 수정

```
[root@mail ~]# vi /etc/named.conf
```

```
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; };
```

```
dnssec-validation no;
```

```
zone "shellwork.com" IN {
        type master;
        file    "shellwork.com.db";
        allow-update { none; };
};
```

DNS 영역 파일: MX 레코드 추가

```
[root@mail ~]# vi /var/named/shellwork.com.db
```

```
root@mail:/var/named — /usr/bin/vim shellwork.com.db
$TTL    3H
@       SOA     @       root.   ( 2 1D 1H 1W 1H )
        IN      NS      @
        IN      A       192.168.111.100
        IN      MX      10      mail.shellwork.com.

mail    IN      A       192.168.111.100
```

DNS zone파일 확인

```
[root@mail ~]# named-checkconf
```

```
[root@mail named]# named-checkzone shellwork.com shellwork.com.db
zone shellwork.com/IN: loaded serial 2
OK
```

5-7. 서버 구성 - Mail

DNS 서비스 재시작 및 방화벽 설정

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

```
[root@mail ~]# firewall-cmd --permanent --add-service=dns
success
[root@mail ~]# firewall-cmd --reload
success
```

메일 서버: 네트워크 인터페이스 고정 IP 및 DNS 설정

```
[root@mail ~]# vi /etc/NetworkManager/system-connections/ens160.nmconnection
```

```
[ipv4]
address1=192.168.111.100/24,192.168.111.2
dns=192.168.111.10;
method=manual
```

DNS 서버 확인 (nslookup)

```
[root@mail named]# nslookup
> server 192.168.111.100
Default server: 192.168.111.100
Address: 192.168.111.100#53
> mail.shellwork.com
Server:         192.168.111.100
Address:        192.168.111.100#53

Name:   mail.shellwork.com
Address: 192.168.111.100
```

메일 서버: 네임서버 파일(/etc/resolv.conf) 확인

```
[root@mail ~]# vi /etc/resolv.conf
```

```
# Generated by NetworkManager
search shellwork.com
nameserver 192.168.111.100
```

5-7. 서버 구성 - Mail

Sendmail 상세 설정

```
[root@mail ~]# rpm -qa sendmail; rpm -qa dovecot
sendmail-8.16.1-11.el9.x86_64
[root@mail ~]# dnf -y install dovecot
[root@mail ~]# vi /etc/mail/sendmail.cf

Cwshellwork.com
268 O DaemonPortOptions=Port=smtp, Name=MTA

[root@mail ~]# vi /etc/mail/access

Connect:localhost.localdomain           RELAY
Connect:localhost                       RELAY
Connect:127.0.0.1                       RELAY

shellwork.com                           RELAY
192.168.111                             RELAY
[root@mail ~]# makemap hash /etc/mail/access < /etc/mail/access
```

Dovecot (POP3/IMAP) 설치 및 상세 설정

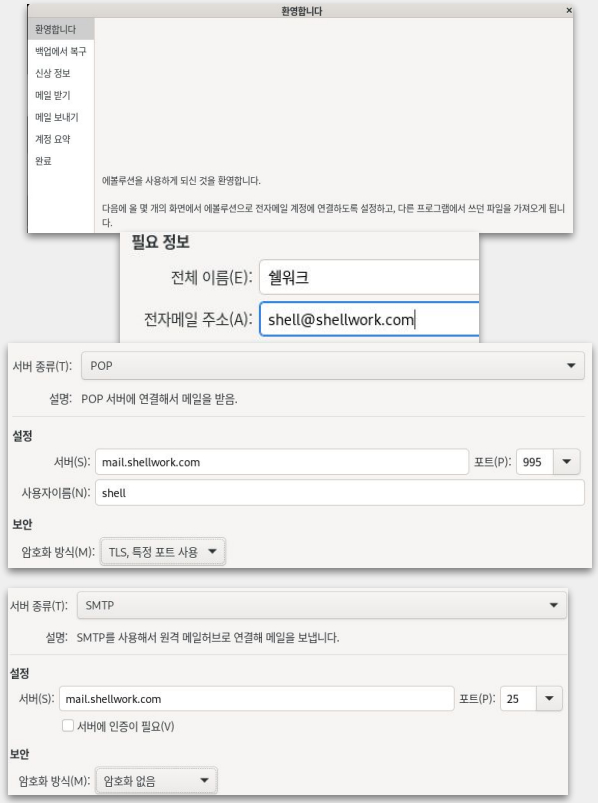
```
[root@mail ~]# vi /etc/dovecot/dovecot.conf

24 protocols = imap pop3 lmtp submission
30 listen = *, ::
33 base_dir = /var/run/dovecot/

[root@mail ~]# vi /etc/dovecot/conf.d/10-ssl.conf
8 ssl = yes
[root@mail ~]# vi /etc/dovecot/conf.d/10-mail.conf

25    mail_location = mbox:~/mail:INBOX=/var/mail/%u
121 mail_access_groups = mail
166 lock_method = fcntl
```

Sendmail, Dovecot 서비스 활성화 및 재시작

```
[root@mail ~]# systemctl restart sendmail
[root@mail ~]# systemctl enable sendmail
[root@mail ~]# systemctl restart dovecot
[root@mail ~]# systemctl enable dovecot
```

5-7. 서버 구성 - Mail

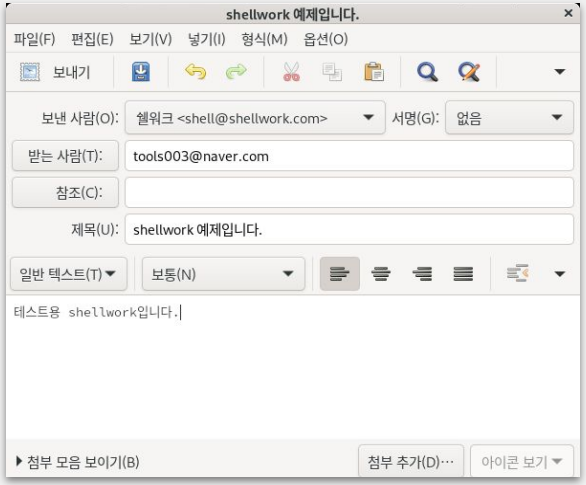
메일 클라이언트 계정 설정



방화벽: 메일 관련 프로토콜 허용

```
[root@mail ~]# firewall-cmd --permanent --add-service=smtp
success
[root@mail ~]# firewall-cmd --permanent --add-service=pop3
success
[root@mail ~]# firewall-cmd --permanent --add-service=imap
success
[root@mail ~]# firewall-cmd --reload
```

메일 송수신 테스트



5-8. 서버 구성 - MariaDB

MariaDB (DB 서버): 설치 및 서비스 실행

```
[root@mail ~]# rpm -qa mariadb-server
[root@mail ~]# dnf -y install mariadb-server
```

```
[root@mail ~]# systemctl start mariadb
[root@mail ~]# systemctl enable mariadb
```

MariaDB: 방화벽 허용

```
[root@mail ~]# firewall-cmd --permanent --add-service=mysql
success
[root@mail ~]# firewall-cmd --reload
```

원격 클라이언트에서 MariaDB 접속 및 데이터 확인

```
[root@mail ~]# mysql
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 4
Server version: 10.5.27-MariaDB MariaDB Server

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

MariaDB [(none)]>
```

```
[root@server-c ~]# mysql -h 192.168.111.100 -u root -p
```

```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| shellwork          |
+--------------------+
```

```
mysql> select * from shellwork
    -> ;
+------------+------+-------+
| student_id | name | grade |
+------------+------+-------+
| 2022661080 | won  |     1 |
+------------+------+-------+
1 row in set (0.00 sec)
```

감사합니다

Thank you