고객 지원 홈페이지 서비스 구축

PineApple

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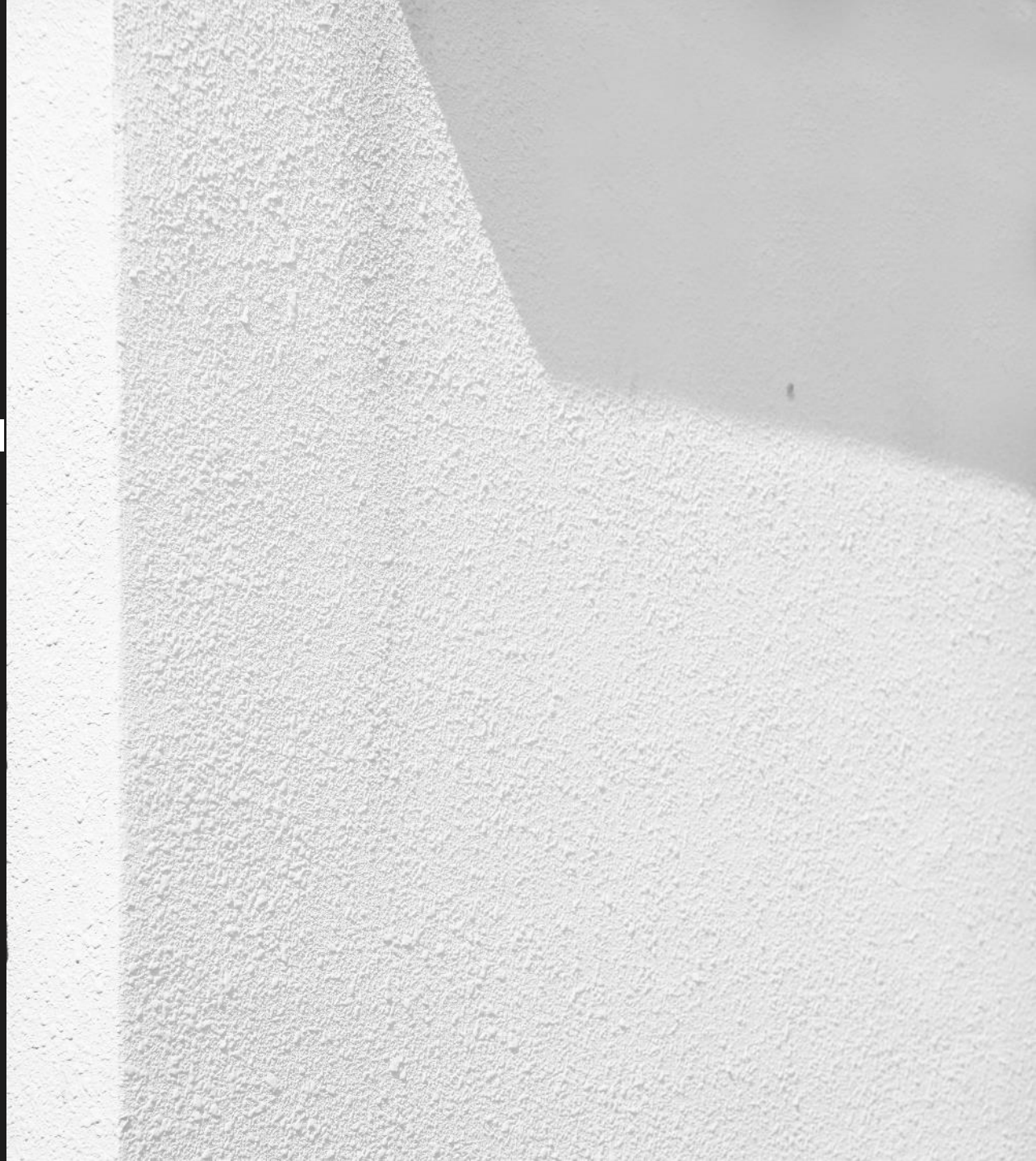
Index

Part 1 프로젝트 개요



프로젝트 배경 및 목표

프로젝트 배경

- 기업 제품 소개와 구매 등의 서비스를 제공하는 고객지원 페이지 구축
- 네트워크 및 서버 이중화를 통해 효율적인 Load Balancing과 무중단 설계 구현

프로젝트 목표

- 3Tier(WEB, WAS, DB) Architecture 구성
- DNS Server를 통한 내부 도메인 네임 시스템 구축
- NFS Server로 파일 및 디렉터리 공유 및 WEB, WAS, DB Server 이중화를 통해 서버 안정성 및 가용성 향상
- Proxy 서버를 연동하여 웹사이트의 보안과 서비스 안정성 보장
- Zabbix를 통한 각 서버 및 네트워크의 상태 모니터링

장비 및 OS/SW

장비 리스트

- Server -
HP DL360 G7

- Router -
Cisco C2901

- L3 Switch -
Cisco Catalyst 3750

- L2 Switch -
Cisco Catalyst 2950

장비 및 OS/SW

OS

Rocky Linux 8.8

Windows server 2022

Vmware ESXI 6.7

장비 및 OS/SW

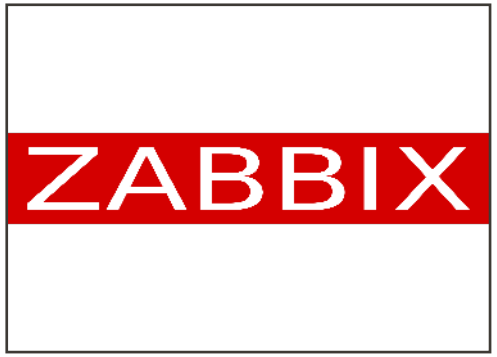
Service Group

Nginx

Php-fpm

MariaDB

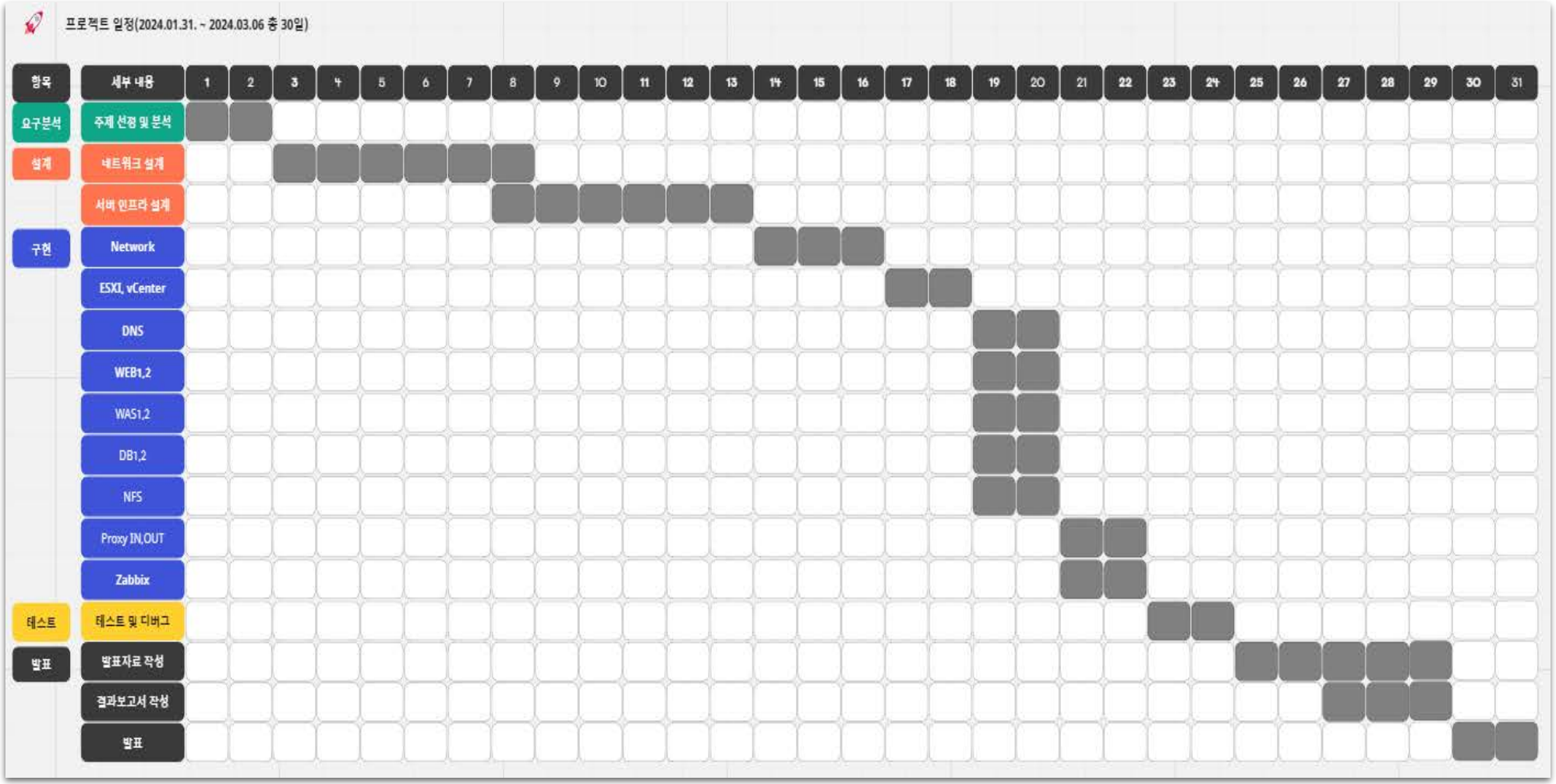
Solution Group



Zabbix

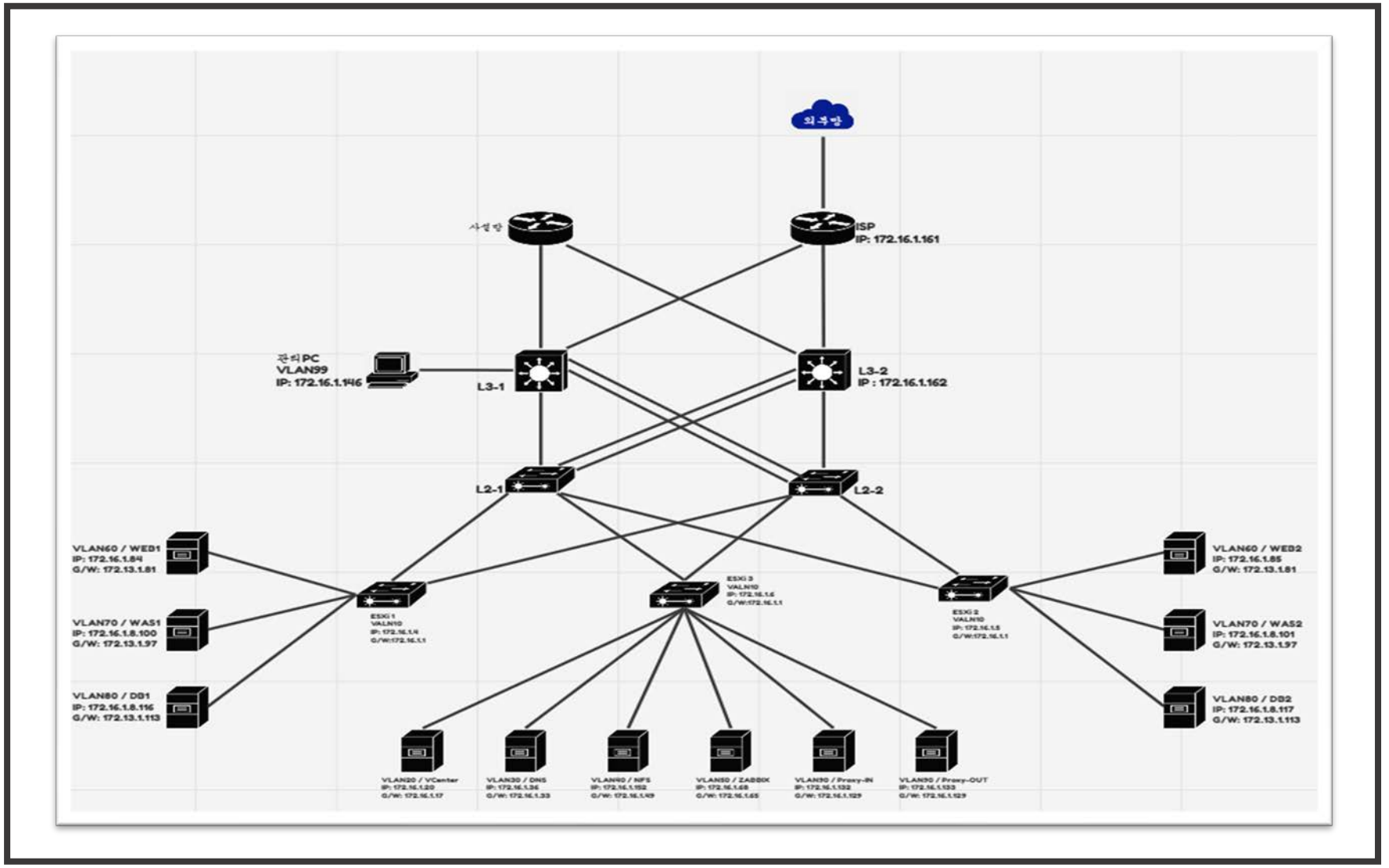
Haproxy

프로젝트 일정



Part 2 Network

네트워크 토폴로지



Router

- Nat 설정 (outside, inside)
- 상하단 통신을 위한 정적 라우팅 설정

```
nterface Embedded-Service-Engine0/0
no ip address
shutdown

nterface GigabitEthernet0/0
ip address dhcp
ip nat outside
ip virtual-reassembly in
duplex auto
speed auto

nterface GigabitEthernet0/1
ip address 172.16.1.177 255.255.255.240
ip nat inside
ip virtual-reassembly in
duplex auto
speed auto

nterface GigabitEthernet0/2
ip address 172.16.1.161 255.255.255.240
ip nat inside
ip virtual-reassembly in
duplex auto
speed auto

p forward-protocol nd

o ip http server
o ip http secure-server

p nat inside source list 1 interface GigabitEthernet0/0 overload
p route 0.0.0.0 0.0.0.0 GigabitEthernet0/0 10
p route 172.16.1.0 255.255.255.0 172.16.1.178
p route 172.16.1.0 255.255.255.0 172.16.1.162



ccess-list 1 permit 172.16.1.0 0.0.0.255
```

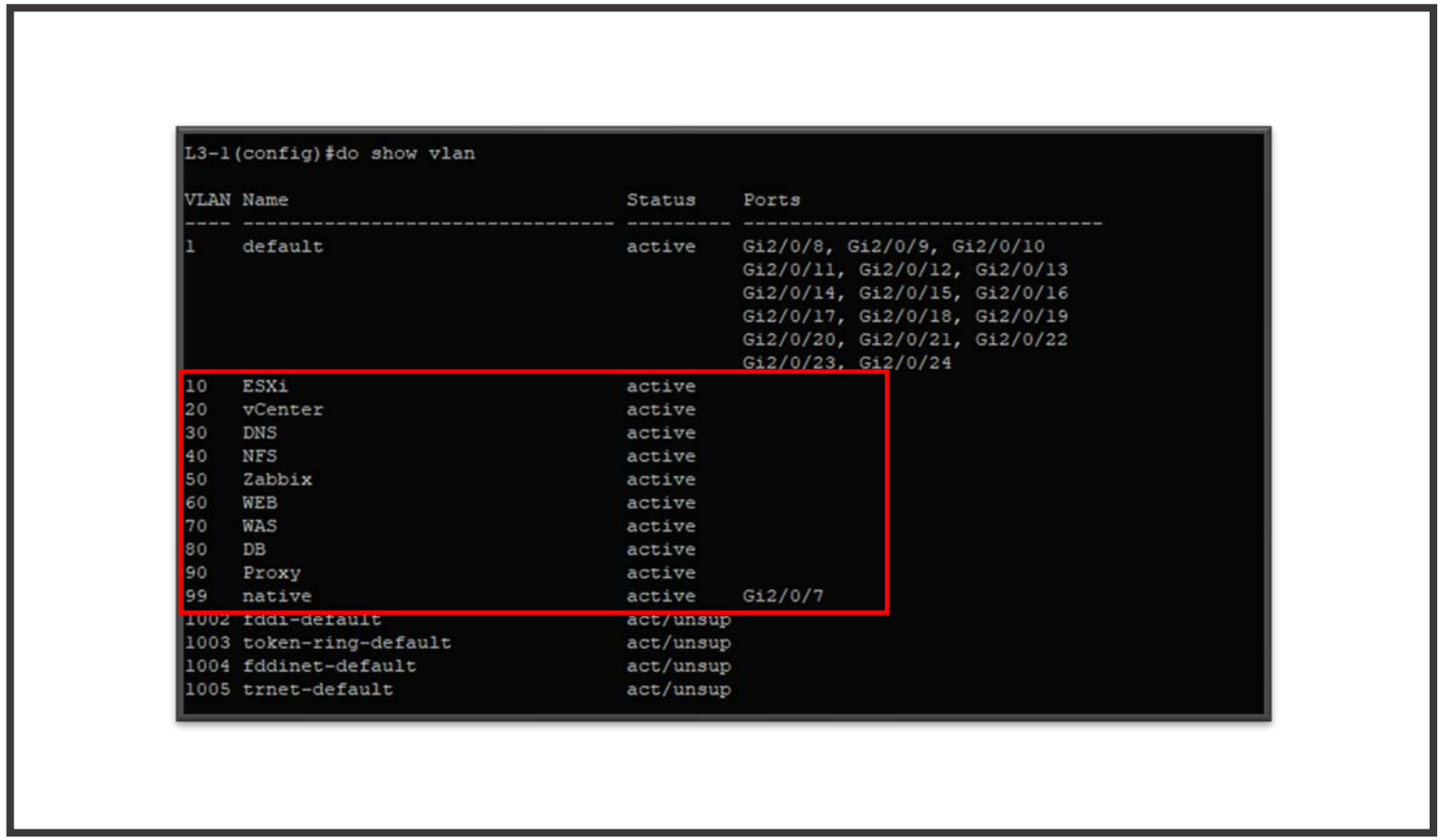
NAT

- 내부 사설 ip가 라우터를 거쳐 외부로 나갈 때 공인 ip로 변환되어 나감

```
R1(config)#do sh ip nat trans
Pro Inside global      Inside local       Outside local      Outside global
udp 175.197.24.110:36199 172.16.1.20:36199 8.8.8.8:53         8.8.8.8:53
tcp 175.197.24.110:39698 172.16.1.20:39698 184.25.179.92:443 184.25.179.92:443
udp 175.197.24.110:40074 172.16.1.20:40074 8.8.8.8:53         8.8.8.8:53
udp 175.197.24.110:40384 172.16.1.20:40384 8.8.8.8:53         8.8.8.8:53
udp 175.197.24.110:41719 172.16.1.20:41719 8.8.8.8:53         8.8.8.8:53
udp 175.197.24.110:43501 172.16.1.20:43501 8.8.8.8:53         8.8.8.8:53
udp 175.197.24.110:44440 172.16.1.20:44440 8.8.8.8:53         8.8.8.8:53
udp 175.197.24.110:44819 172.16.1.20:44819 8.8.8.8:53         8.8.8.8:53
udp 175.197.24.110:48002 172.16.1.20:48002 8.8.8.8:53         8.8.8.8:53
udp 175.197.24.110:48411 172.16.1.20:48411 8.8.8.8:53         8.8.8.8:53
udp 175.197.24.110:49850 172.16.1.20:49850 8.8.8.8:53         8.8.8.8:53
udp 175.197.24.110:51753 172.16.1.20:51753 8.8.8.8:53         8.8.8.8:53
udp 175.197.24.110:52215 172.16.1.20:52215 8.8.8.8:53         8.8.8.8:53
tcp 175.197.24.110:52938 172.16.1.20:52938 184.25.179.92:443 184.25.179.92:443
udp 175.197.24.110:53255 172.16.1.20:53255 8.8.8.8:53         8.8.8.8:53
```

Vlan

Vlan 10 – ESXi
Vlan 20 – vCenter
Vlan 30 – DNS
Vlan 40 – NFS
Vlan 50 – Zabbix
Vlan 60 – WEB
Vlan 70 – WAS
Vlan 80 – DB
Vlan 90 – Proxy



```
L3-1(config)#do show vlan

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Gi2/0/8, Gi2/0/9, Gi2/0/10
                                                Gi2/0/11, Gi2/0/12, Gi2/0/13
                                                Gi2/0/14, Gi2/0/15, Gi2/0/16
                                                Gi2/0/17, Gi2/0/18, Gi2/0/19
                                                Gi2/0/20, Gi2/0/21, Gi2/0/22
                                                Gi2/0/23, Gi2/0/24
10   ESXi                             active
20   vCenter                          active
30   DNS                              active
40   NFS                              active
50   Zabbix                           active
60   WEB                              active
70   WAS                              active
80   DB                               active
90   Proxy                            active
99   native                           active    Gi2/0/7
1002 fddi-default                     act/unsup
1003 token-ring-default               act/unsup
1004 fddinet-default                  act/unsup
1005 trnet-default                    act/unsup
```

SVI

- SVI를 통한 Vlan별 IP 부여

```
L3-1#show ip int br
Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      YES unset  up                    down
Vlan10                 172.16.1.2      YES manual up                    up
Vlan20                 172.16.1.18     YES manual up                    up
Vlan30                 172.16.1.34     YES manual up                    up
Vlan40                 172.16.1.50     YES manual up                    up
Vlan50                 172.16.1.66     YES manual up                    up
Vlan60                 172.16.1.82     YES manual up                    up
Vlan70                 172.16.1.98     YES manual up                    up
Vlan80                 172.16.1.114    YES manual up                    up
Vlan90                 172.16.1.130    YES manual up                    up
Vlan99                 172.16.1.146    YES manual up                    up
FastEthernet0          unassigned      YES unset  down                  down
GigabitEthernet2/0/1   172.16.0.10     YES manual down                  down
GigabitEthernet2/0/2   172.16.1.178    YES manual up                    up
```

```
L3-2(config)#do show ip int br
Interface              IP-Address      OK? Method Status                Protocol
Vlan1                  unassigned      YES unset  administratively down down
Vlan10                 172.16.1.3      YES manual up                    up
Vlan20                 172.16.1.19     YES manual up                    up
Vlan30                 172.16.1.35     YES manual up                    up
Vlan40                 172.16.1.51     YES manual up                    up
Vlan50                 172.16.1.67     YES manual up                    up
Vlan60                 172.16.1.83     YES manual up                    up
Vlan70                 172.16.1.99     YES manual up                    up
Vlan80                 172.16.1.115    YES manual up                    up
Vlan90                 172.16.1.131    YES manual up                    up
Vlan99                 172.16.1.147    YES manual up                    up
FastEthernet0          unassigned      YES unset  administratively down down
GigabitEthernet1/0/1   172.16.0.11     YES manual down                  down
GigabitEthernet1/0/2   172.16.1.162    YES manual up                    up
```

HSRP

- Hsrp 이중화 프로토콜
  – 안정성 향상 및 부하분산 용도

```
L3-1(config)#do show stand br
                    P indicates configured to preempt.
                    |
Interface   Grp  Pri P State   Active          Standby         Virtual IP
V110        10   150 P Active  local           172.16.1.3      172.16.1.1
V120        20   150 P Active  local           172.16.1.19     172.16.1.17
V130        30   150 P Active  local           172.16.1.35     172.16.1.33
V140        40   150 P Active  local           172.16.1.51     172.16.1.49
V150        50   150 P Active  local           172.16.1.67     172.16.1.65
V160        60   140 P Standby 172.16.1.83     local           172.16.1.81
V170        70   140 P Standby 172.16.1.99     local           172.16.1.97
V180        80   140 P Standby 172.16.1.115    local           172.16.1.113
V190        90   140 P Standby 172.16.1.131    local           172.16.1.129
V199        99   140 P Standby 172.16.1.147    local           172.16.1.150
L3-1(config)#
```

```
L3-2(config)#do show stand br
                    P indicates configured to preempt.
                    |
Interface   Grp  Pri P State   Active          Standby         Virtual IP
V110        10   140 P Standby 172.16.1.2      local           172.16.1.1
V120        20   140 P Standby 172.16.1.18     local           172.16.1.17
V130        30   140 P Standby 172.16.1.34     local           172.16.1.33
V140        40   140 P Standby 172.16.1.50     local           172.16.1.49
V150        50   140 P Standby 172.16.1.66     local           172.16.1.65
V160        60   150 P Active  local           172.16.1.82     172.16.1.81
V170        70   150 P Active  local           172.16.1.98     172.16.1.97
V180        80   150 P Active  local           172.16.1.114    172.16.1.113
V190        90   150 P Active  local           172.16.1.130    172.16.1.129
V199        99   150 P Active  local           172.16.1.146    172.16.1.150
L3-2(config)#
```

Routing, ACL

- L3 장비와 인터넷망, 사설망 간 통신을 위한 정적 라우팅 설정
- ACL 설정을 통한 보안성 향상

```
ip route 0.0.0.0 0.0.0.0 GigabitEthernet2/0/2 172.16.1.177 10
ip route 0.0.0.0 0.0.0.0 GigabitEthernet2/0/1 172.16.0.1 20
```

```
ip route 0.0.0.0 0.0.0.0 GigabitEthernet1/0/2 172.16.1.161 10
ip route 0.0.0.0 0.0.0.0 GigabitEthernet1/0/1 172.16.0.1 20
```

```
L3-1(config)#do show access-lists
Standard IP access list 1
    30 permit 172.16.1.148
    10 permit 172.16.1.133
    20 permit 172.16.1.36
    40 deny   any (96 matches)
```

```
L3-2(config)#do show access-lists
Standard IP access list 1
    30 permit 172.16.1.148
    10 permit 172.16.1.133
    20 permit 172.16.1.36
    40 deny   any (18 matches)
```

EtherChannel, Trunk

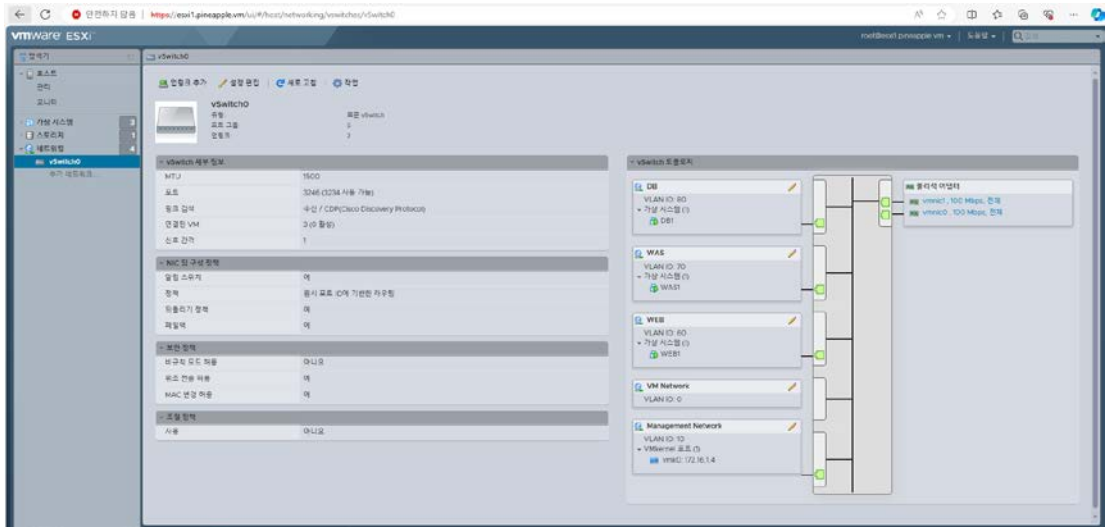
- EtherChannel 설정
  - 토플로지 안정성 향상
  - 대역폭 확장
- Trunk 설정
  - 스위치 간 VLAN 정보를 전달,
    스위치 간에 VLAN 트래픽을 전송

```
interface Port-channel3
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface Port-channel5
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport trunk encapsulation dot1q
 switchport mode trunk
!
interface FastEthernet0
 no ip address
 no ip route-cache
!
interface GigabitEthernet2/0/1
 no switchport
 ip address 172.16.0.10 255.255.255.0
!
interface GigabitEthernet2/0/2
 no switchport
 ip address 172.16.1.178 255.255.255.240
!
interface GigabitEthernet2/0/3
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 3 mode on
!
interface GigabitEthernet2/0/4
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 3 mode on
!
interface GigabitEthernet2/0/5
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 5 mode on
!
interface GigabitEthernet2/0/6
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport trunk encapsulation dot1q
 switchport mode trunk
 channel-group 5 mode on
!
interface GigabitEthernet2/0/7
 switchport access vlan 99
 switchport mode access
!
```

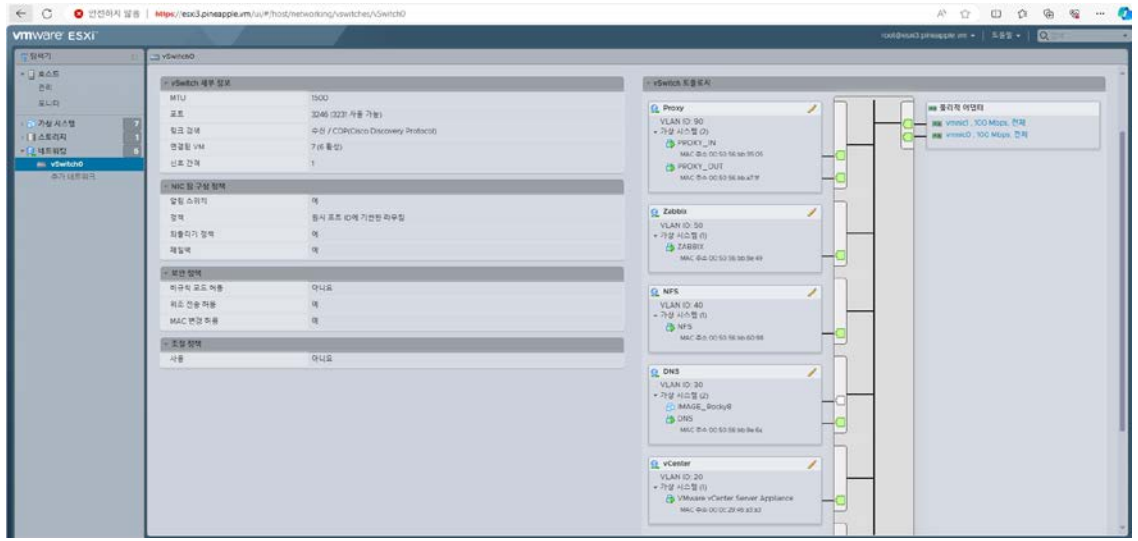
```
interface Port-channel2
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport mode trunk
!
interface Port-channel3
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport mode trunk
!
interface Port-channel6
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport mode trunk
!
interface FastEthernet0/1
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport mode trunk
 channel-group 2 mode on
!
interface FastEthernet0/2
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport mode trunk
 channel-group 2 mode on
!
interface FastEthernet0/3
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport mode trunk
 channel-group 3 mode on
!
interface FastEthernet0/4
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport mode trunk
 channel-group 3 mode on
!
interface FastEthernet0/5
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport mode trunk
 channel-group 6 mode on
!
interface FastEthernet0/6
 switchport trunk allowed vlan 10,20,30,40,50,60,70,80,90,99
 switchport mode trunk
 channel-group 6 mode on
!
interface FastEthernet0/7
 switchport mode trunk
!
interface FastEthernet0/8
 switchport mode trunk
!
interface FastEthernet0/9
 switchport mode trunk
```

vSwitch

ESXi 1 ,2



ESXi 3



Router NTP 설정

- Router에서 NTP Master 설정
- 연동 확인

```
R1(config)#do show clock
12:19:07.026 KST Mon Mar 4 2024
R1(config)#do show ntp status
Clock is synchronized, stratum 3, reference is 203.248.240.103
nominal freq is 250.0000 Hz, actual freq is 250.0002 Hz, precision is 2**20
ntp uptime is 93600 (1/100 of seconds), resolution is 4000
reference time is E98FBC05.4DBF69A4 (12:18:29.303 KST Mon Mar 4 2024)
clock offset is -9.9131 msec, root delay is 3.84 msec
root dispersion is 632.26 msec, peer dispersion is 2.97 msec
loopfilter state is 'CTRL' (Normal Controlled Loop), drift is -0.000000949 s/s
system poll interval is 64, last update was 43 sec ago.
R1(config)#do show nt
R1(config)#do show ntp ass
R1(config)#do show ntp associations

  address         ref clock       st   when   poll reach  delay  offset   disp
 ~127.127.1.1     .LOCL.           5      4     16   377  0.000   0.000  0.232
*~203.248.240.103 123.140.16.100   2     56     64   377  3.361  -9.913  2.975
 * sys.peer, # selected, + candidate, - outlyer, x falseticker, ~ configured
```

L3-1, 2 NTP 설정

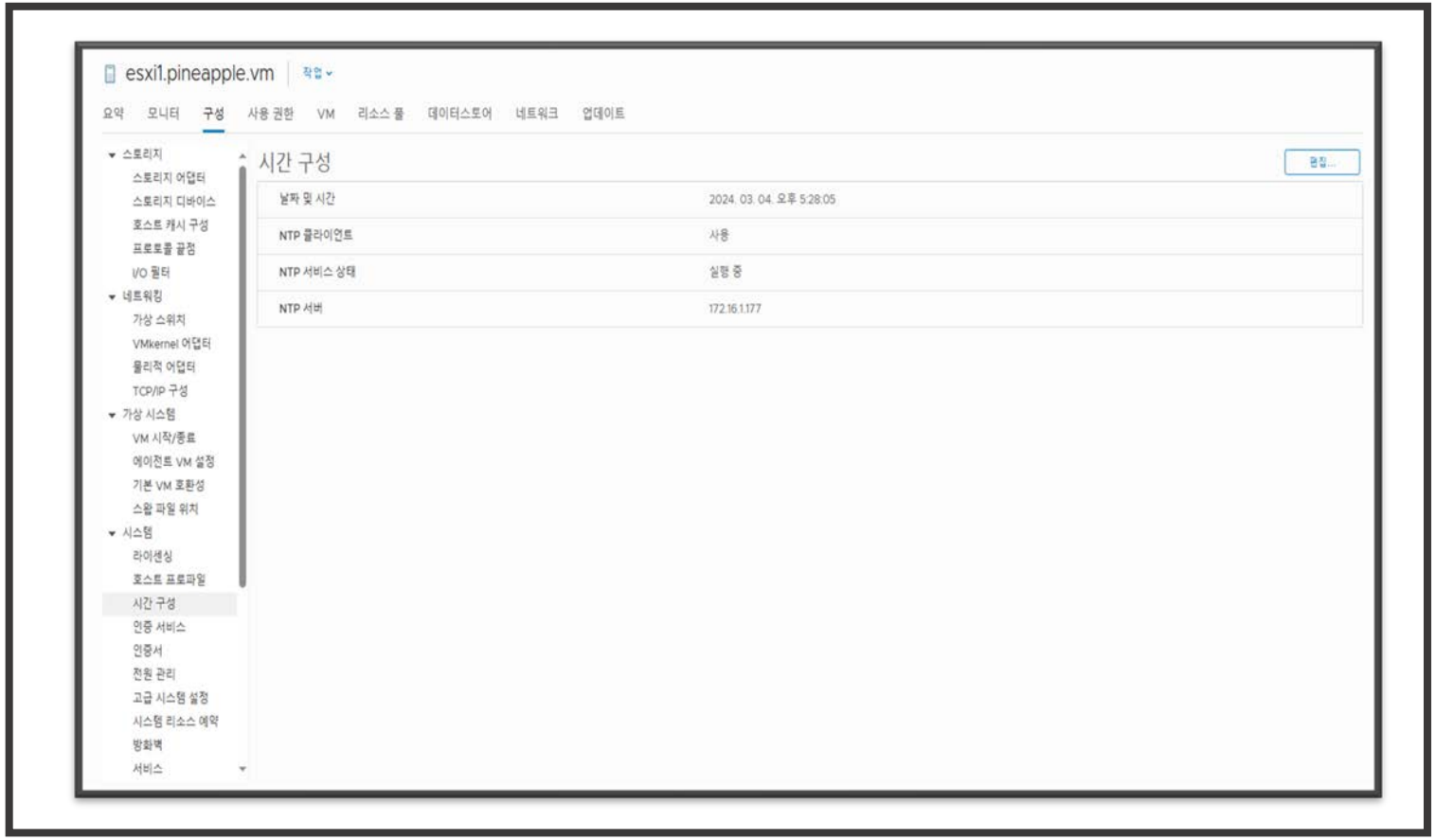
- 각 L3-1, L3-2 Switch에 Master NTP 주소(Router 주소) 할당

```
L3-1(config)#ntp server 172.16.1.177
L3-1(config)#clock timezone KST 9
L3-1(config)#
*Mar  4 03:07:08.192: %SYS-6-CLOCKUPDATE: System clock has been updated from 03:
07:08 UTC Mon Mar 4 2024 to 12:07:08 KST Mon Mar 4 2024, configured from console
 by console.
L3-1(config)#
L3-1(config)#
L3-1(config)#
L3-1(config)#
L3-1(config)#do show clock
*12:07:14.450 KST Mon Mar 4 2024
```

```
L3-2(config-if)#ntp server 172.16.1.177
L3-2(config)#clock timezone KST 9
L3-2(config)#
L3-2(config)#
L3-2(config)#
L3-2(config)#
Mar  4 03:07:35.973: %SYS-6-CLOCKUPDATE: System clock has been updated from 03:0
7:35 UTC Mon Mar 4 2024 to 12:07:35 KST Mon Mar 4 2024, configured from console
by console.
L3-2(config)#do show clock
12:07:43.942 KST Mon Mar 4 2024
```

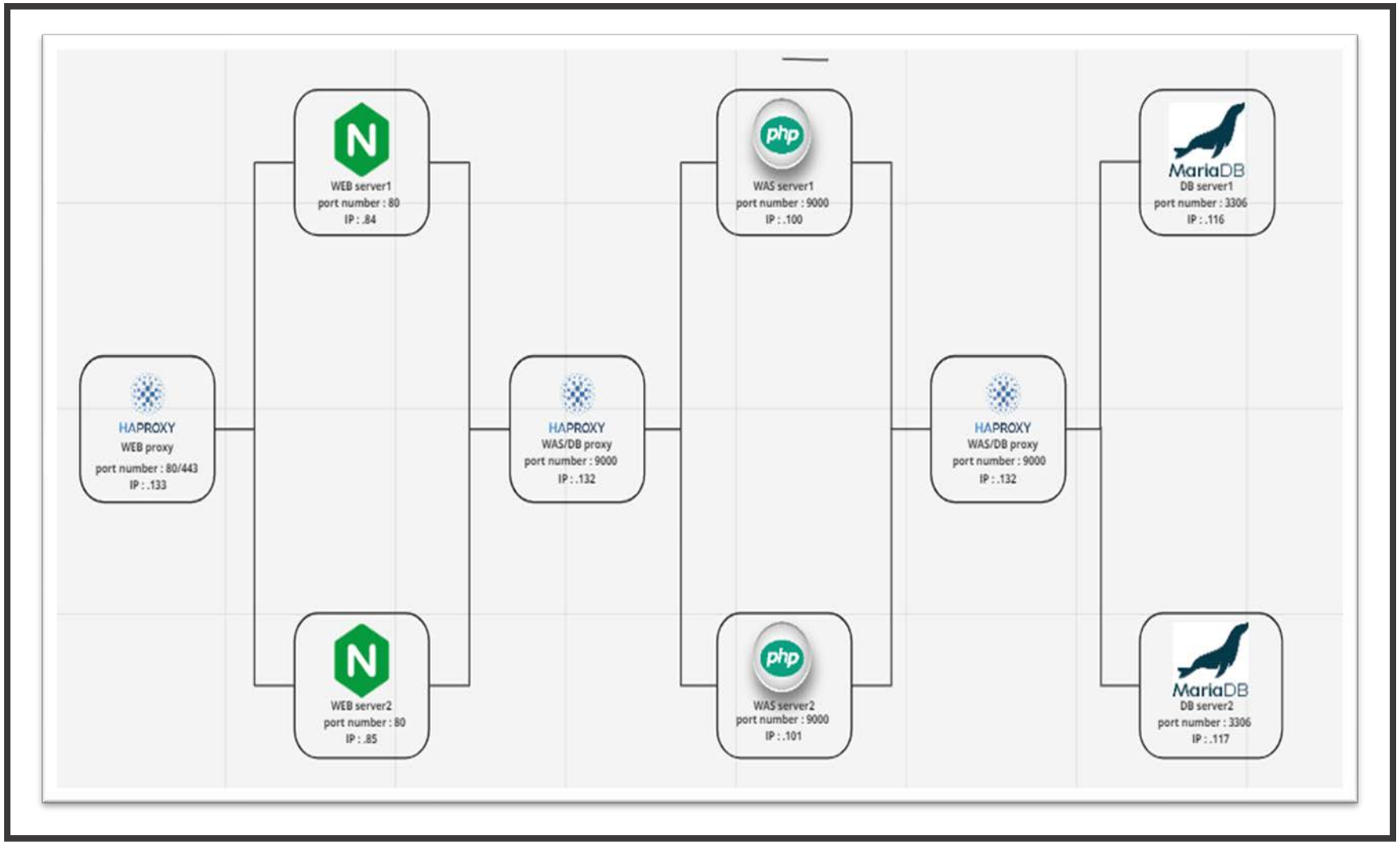
ESXI NTP 설정

- ESXI에서 Master NTP 주소(Router 주소) 할당
- NTP 연동 확인



Part 3 Server

서버 구성도



Nginx

- Nginx 설치
- Nginx.conf 설정

```
server {
    listen       80;
    server_name  _;
    root         /usr/share/nginx/html;

    # Load configuration files for the default server block.
    include /etc/nginx/default.d/*.conf;

    error_page 404 /404.html;
    location = /404.html {
    }

    error_page 500 502 503 504 /50x.html;
    location = /50x.html {
    }
}
```

WEB-WAS 연동

- PHP-FPM 설정
- PHP-opcache

```
location ~ [^/].php(/|$) {
    fastcgi_split_path_info ^(.+?\.php)(/.*)$;
    set $path_info $fastcgi_path_info;
    fastcgi_index index.php;
    include fastcgi_params;
    fastcgi_pass 172.16.1.132:9000;
    fastcgi_param SCRIPT_FILENAME $document_root$fastcgi_script_name;
}

# Deny access to .htaccess files
location ~ /.ht {
    deny all;
}

location / {
    index index.php index.html
    try_files $uri $uri/ /index.php$uri?$query_string;
}
```

```
; Enable Zend OPcache extension module
zend_extension=opcache

; Determines if Zend OPCache is enabled
opcache.enable=1

; Determines if Zend OPCache is enabled for the CLI version of PHP
opcache.enable_cli=1

; The OPcache shared memory storage size.
opcache.memory_consumption=2048
```

```
[web1]
user = nginx
group = nginx

listen = 9000
listen.owner = nginx
listen.group = nginx

pm = dynamic
pm.max_children = 30
pm.start_servers = 5
pm.min_spare_servers = 5
pm.max_spare_servers = 10
pm.max_requests = 500
```

NFS Server

- exports 설정
- WEB / WAS 연결

```
[root@NFS web]# exportfs -v
/web            172.16.1.84(sync,wdelay,hide,no_subtree_check,sec=sys,rw,secure,no_root_squash,no_all_squas
h)
/web            172.16.1.85(sync,wdelay,hide,no_subtree_check,sec=sys,rw,secure,no_root_squash,no_all_squas
h)
/web            172.16.1.100(sync,wdelay,hide,no_subtree_check,sec=sys,rw,secure,no_root_squash,no_all_squa
sh)
/web            172.16.1.101(sync,wdelay,hide,no_subtree_check,sec=sys,rw,secure,no_root_squash,no_all_squa
sh)
```

Server mount

- fstab 설정
- Server별 mount 상태 확인

```
# /etc/fstab
# Created by anaconda on Tue Feb 27 07:40:26 2024
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
/dev/mapper/rl-root     /                       xfs     defaults        0 0
UUID=3a666a53-6530-4ef6-9b22-9e3d11509c10 /boot                   xfs     defaults        0 0
UUID=1E53-85DB          /boot/efi               vfat    umask=0077,shortname=winnt 0 2
/dev/mapper/rl-swap     none                    swap    defaults        0 0

nfs.pineapple.vm:/web /usr/share/nginx/html nfs defaults 0 0
~
```

```
[root@web1 ~]# df -Th
Filesystem                Type      Size  Used Avail Use% Mounted on
devtmpfs                  devtmpfs  961M     0  961M   0% /dev
tmpfs                     tmpfs     980M     0  980M   0% /dev/shm
tmpfs                     tmpfs     980M   17M  963M   2% /run
tmpfs                     tmpfs     980M     0  980M   0% /sys/fs/cgroup
/dev/mapper/rl-root       xfs        13G  3.1G  9.8G  24% /
/dev/sda2                 xfs      1014M  231M  784M  23% /boot
/dev/sda1                 vfat      599M  5.8M  594M   1% /boot/efi
tmpfs                     tmpfs     196M     0  196M   0% /run/user/0
nfs.pineapple.vm:/web     nfs4       13G  3.2G  9.7G  25% /usr/share/nginx/html
[root@web1 ~]# df -Th
Filesystem                Type      Size  Used Avail Use% Mounted on
devtmpfs                  devtmpfs  961M     0  961M   0% /dev
tmpfs                     tmpfs     980M     0  980M   0% /dev/shm
tmpfs                     tmpfs     980M   17M  963M   2% /run
tmpfs                     tmpfs     980M     0  980M   0% /sys/fs/cgroup
/dev/mapper/rl-root       xfs        13G  3.2G  9.7G  25% /
/dev/sda2                 xfs      1014M  231M  784M  23% /boot
/dev/sda1                 vfat      599M  5.8M  594M   1% /boot/efi
tmpfs                     tmpfs     196M     0  196M   0% /run/user/0
nfs.pineapple.vm:/web     nfs4       13G  3.2G  9.7G  25% /usr/share/nginx/html
[root@web2 ~]# df -Th
Filesystem                Type      Size  Used Avail Use% Mounted on
devtmpfs                  devtmpfs  961M     0  961M   0% /dev
tmpfs                     tmpfs     980M     0  980M   0% /dev/shm
tmpfs                     tmpfs     980M   17M  963M   2% /run
tmpfs                     tmpfs     980M     0  980M   0% /sys/fs/cgroup
/dev/mapper/rl-root       xfs        13G  3.1G  9.8G  24% /
/dev/sda2                 xfs      1014M  231M  784M  23% /boot
/dev/sda1                 vfat      599M  5.8M  594M   1% /boot/efi
tmpfs                     tmpfs     196M     0  196M   0% /run/user/0
nfs.pineapple.vm:/web     nfs4       13G  3.2G  9.7G  25% /usr/share/nginx/html
[root@web2 ~]# df -Th
Filesystem                Type      Size  Used Avail Use% Mounted on
devtmpfs                  devtmpfs  961M     0  961M   0% /dev
tmpfs                     tmpfs     980M     0  980M   0% /dev/shm
tmpfs                     tmpfs     980M   17M  963M   2% /run
tmpfs                     tmpfs     980M     0  980M   0% /sys/fs/cgroup
/dev/mapper/rl-root       xfs        13G  3.2G  9.7G  25% /
/dev/sda2                 xfs      1014M  231M  784M  23% /boot
/dev/sda1                 vfat      599M  5.8M  594M   1% /boot/efi
tmpfs                     tmpfs     196M     0  196M   0% /run/user/0
nfs.pineapple.vm:/web     nfs4       13G  3.2G  9.7G  25% /usr/share/nginx/html
```

Maria DB

- 한글 인코딩 설정
- SERVER ID 설정

DB Replication

- Replication DB 및 USER 생성
- Master / Slave

```
MariaDB [(none)]> SHOW DATABASES;
--------------
SHOW DATABASES
--------------

+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| replDB             |
| sys                |
| testdb             |
+--------------------+
6 rows in set (0.002 sec)
```

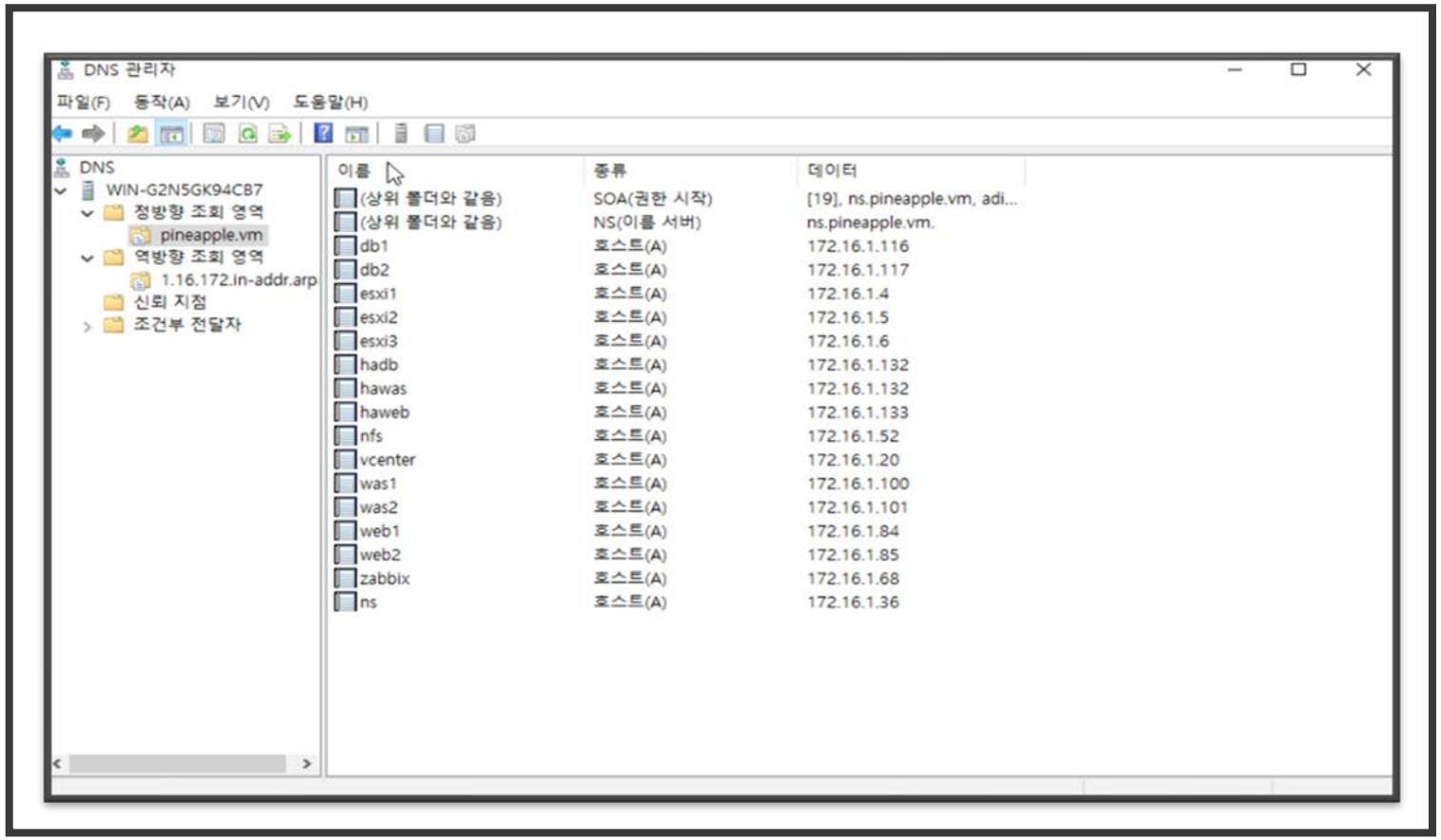
```
MariaDB [mysql]> select user, host from user;
--------------
select user, host from user
--------------

+-------------+-----------+
| User        | Host      |
+-------------+-----------+
| repl_user   | %         |
| wp          | %         |
| mariadb.sys | localhost |
| mysql       | localhost |
| root        | localhost |
+-------------+-----------+
5 rows in set (0.002 sec)
```

```
MariaDB [(none)]> SHOW MASTER STATUS\G
*************************** 1. row ***************************
            File: binlog.000004
        Position: 3405950
    Binlog_Do_DB:
Binlog_Ignore_DB:
1 row in set (0.000 sec)
```

```
MariaDB [(none)]> SHOW SLAVE STATUS\G
*************************** 1. row ***************************
               Slave_IO_State: Waiting for master to send event
                  Master_Host: 172.16.1.116
                  Master_User: repl_user
                  Master_Port: 3306
                Connect_Retry: 60
              Master_Log_File: binlog.000004
          Read_Master_Log_Pos: 3405950
               Relay_Log_File: 21-relay-bin.000002
                Relay_Log_Pos: 1748401
        Relay_Master_Log_File: binlog.000004
             Slave_IO_Running: Yes
            Slave_SQL_Running: Yes
              Replicate_Do_DB:
          Replicate_Ignore_DB:
           Replicate_Do_Table:
       Replicate_Ignore_Table:
      Replicate_Wild_Do_Table:
  Replicate_Wild_Ignore_Table:
                   Last_Errno: 0
                   Last_Error:
                 Skip_Counter: 0
          Exec_Master_Log_Pos: 3405950
              Relay_Log_Space: 1749004
              Until_Condition: None
```

DNS

- NS 서버 설정
- A레코드 추가(정방향)
- PTR 레코드 추가(역방향)



HAPROXY

- Proxy IN - WAS/DB
- Proxy OUT - WEB

```
        server WAS1 172.16.1.100:9000 check rise 2 fall 1 weight 1 #WAS1
        server WAS2 172.16.1.101:9000 check rise 2 fall 1 weight 1 #WAS2


#---------------------------------------------------------------------
#  HAProxy for Database
#---------------------------------------------------------------------
frontend pinedb
        mode    tcp
        bind    *:3306 # 포트 설정
        stats   uri /dbstatus # (옵션) 상태 페이지 주소
        stats   refresh 30s # (옵션) 상태 페이지 자동 새로고침 시간
        stats   hide-version #  (옵션) 상태 페이지 HAProxy 버전 숨기기
        default_backend pinedb_backend #기본 backend 지정
        acl url_static       path_beg       -i /static /images /javascript /stylesheet
s /css /js /img /fonts /admin
        acl url_static       path_end       -i .jpg .gif .png .css .js


backend pinedb_backend # Backend 이름
        mode    tcp
        fullconn 100000 #최대 연결수 설정
        balance roundrobin # 알고리즘 설정


        server DB1 172.16.1.116:3306 check rise 2 fall 1 weight 1 #DB1
        server DB2 172.16.1.117:3306 check rise 2 fall 1 weight 1 #DB2
```

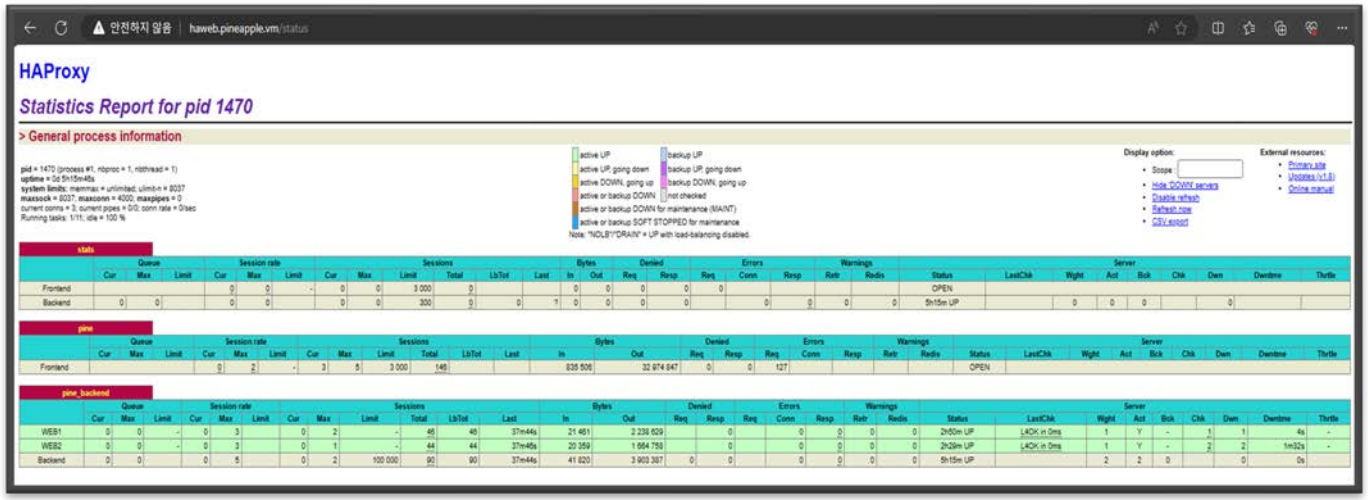
Proxy_IN

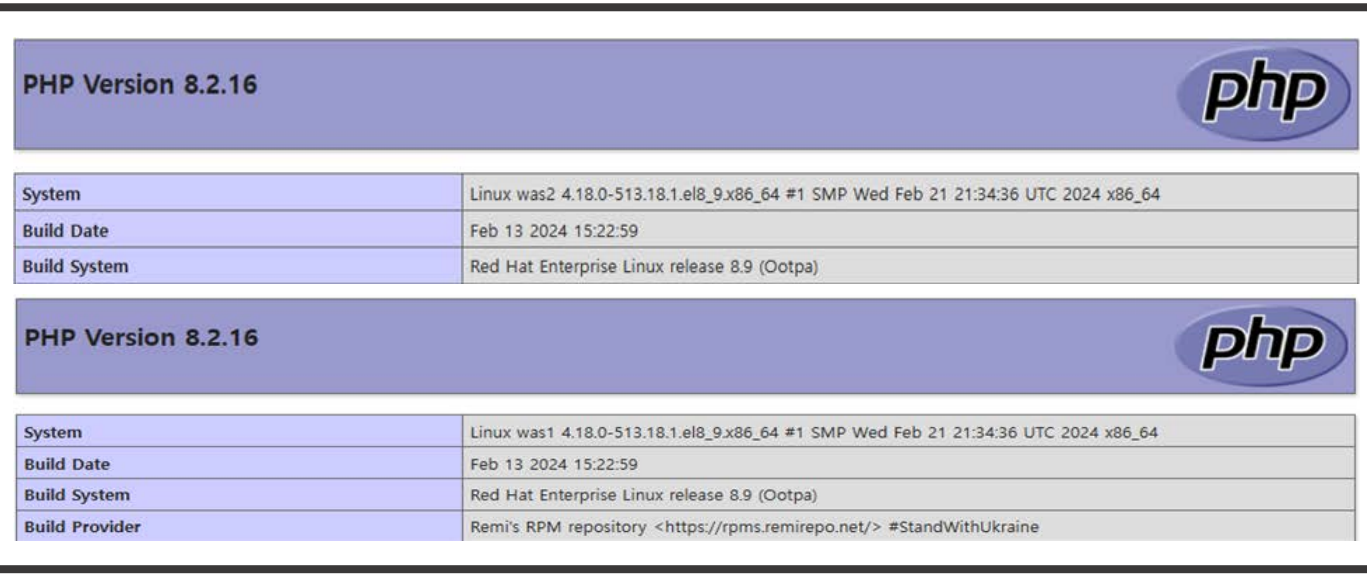
```
#---------------------------------------------------------------------

# GUI admin enable
#---------------------------------------------------------------------

listen stats
        bind *:7777
        mode  http
        option dontlog-normal
        stats enable
        stats realm Haproxy\ Statistics
        stats uri /haproxy
#---------------------------------------------------------------------

# frontend of web.pine base settings
#---------------------------------------------------------------------

frontend pine # Frontend 이름
        mode    http
        bind    *:80 # 포트 설정
        stats   uri /status # (옵션) 상태 페이지 주소
        stats   refresh 5s # (옵션) 상태 페이지 자동 새로고침 시간

        stats   hide-version #  (옵션) 상태 페이지 HAProxy 버전 숨기기

        default_backend pine_backend #기본 backend 설정

backend pine_backend # Backend 이름
        mode    http
        fullconn 100000 #최대 연결수 설정
        balance roundrobin # 알고리즘 설정

        server WEB1 172.16.1.84:80 check rise 2 fall 1 weight 1 #WEB1

        server WEB2 172.16.1.85:80 check rise 2 fall 1 weight 1 #WEB2
```

Proxy_OUT

HAPROXY

- HAPROXY 모니터링 페이지
- Info.php





Zabbix

- Zabbix Server
- Zabbix Agent

- Zabbix Agent

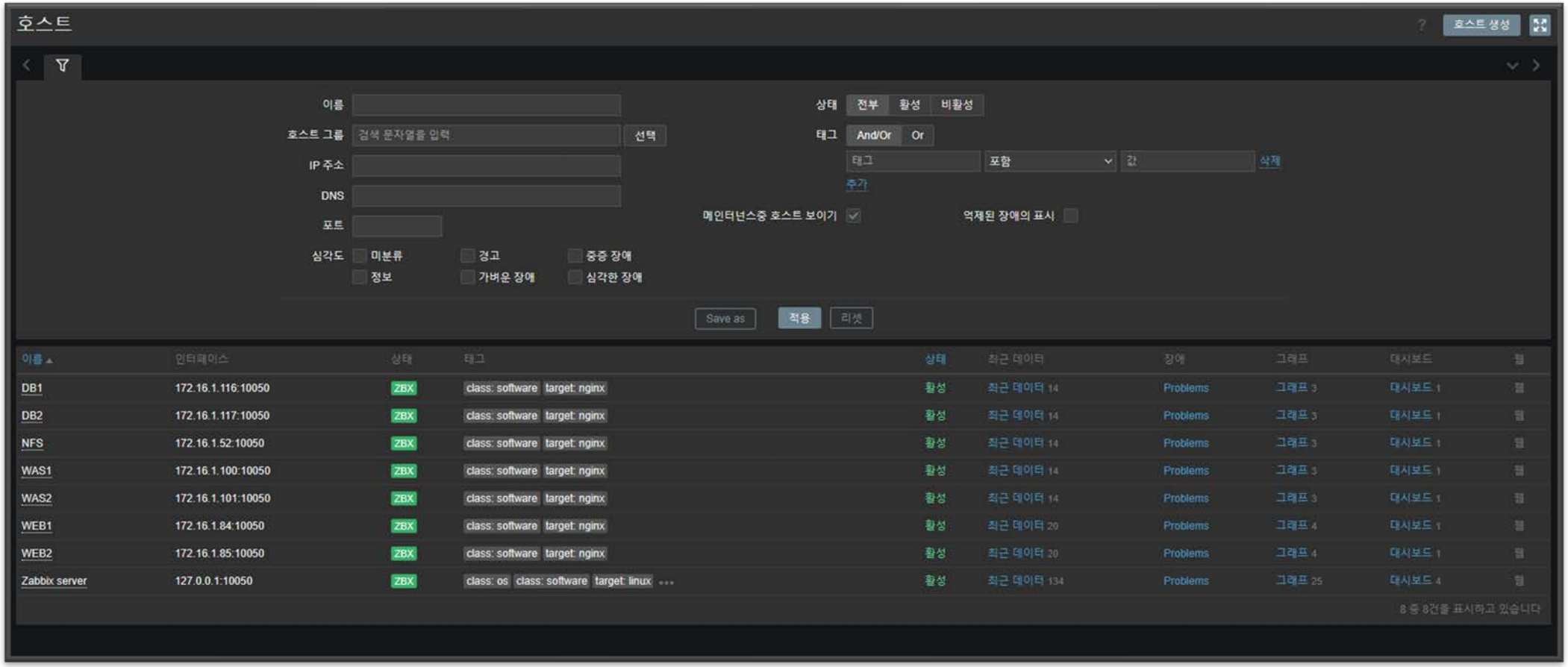
```
ServerActive=172.16.1.68

### Option: Hostname
#       List of comma delimi
#       Required for active
#       Value is acquired fr
#
# Mandatory: no
# Default:
# Hostname=

Hostname=WEB1
```

- Zabbix server

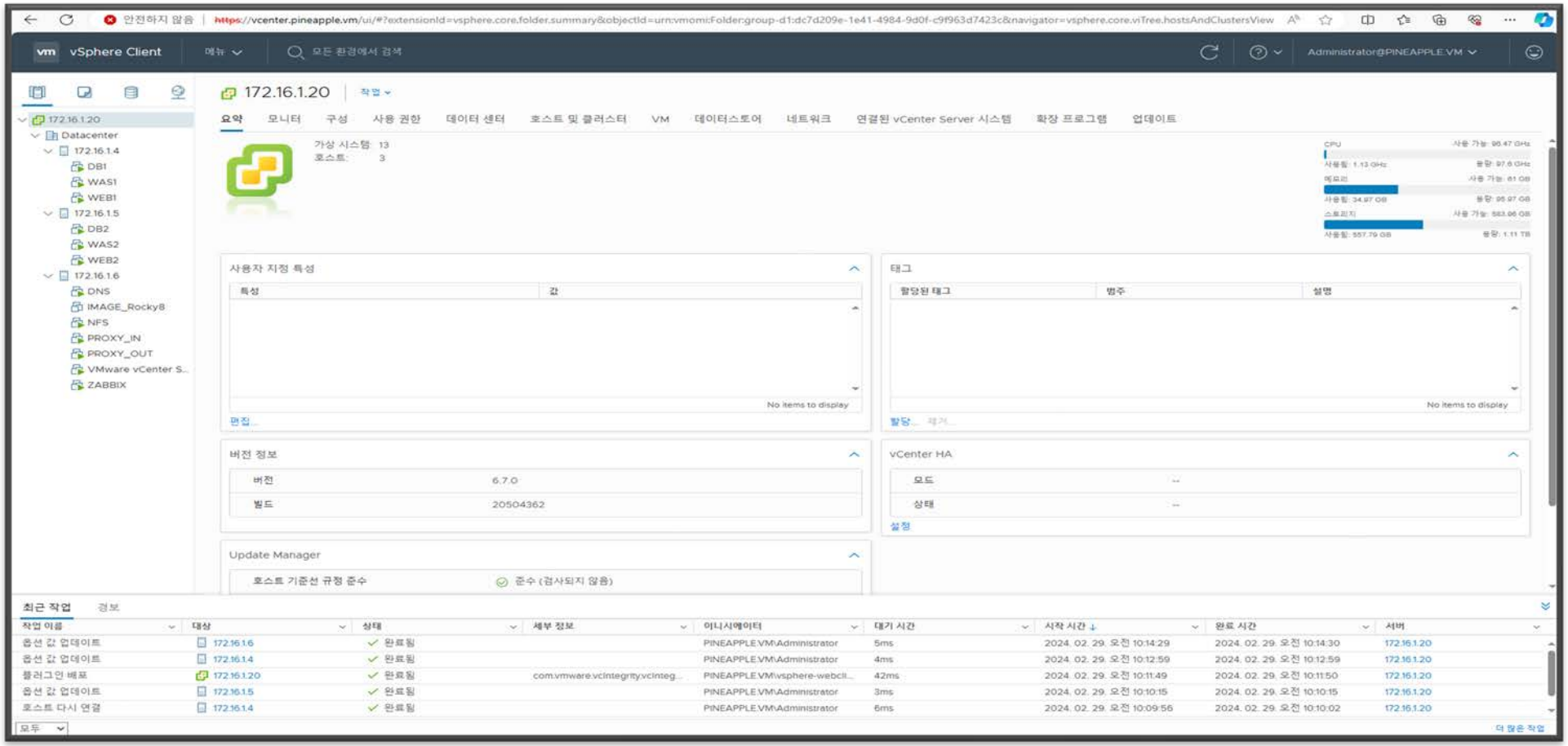
```
server {
        listen          8080;
        server_name     zabbix.pineapple.vm;

        root    /usr/share/zabbix;

        index   index.php;

        location = /favicon.ico {
                log_not_found   off;
        }

        location / {
                try_files       $uri $uri/ =404;
        }

        location /assets {
                access_log      off;
                expires         10d;
        }
```

Part 4 프로젝트 결과

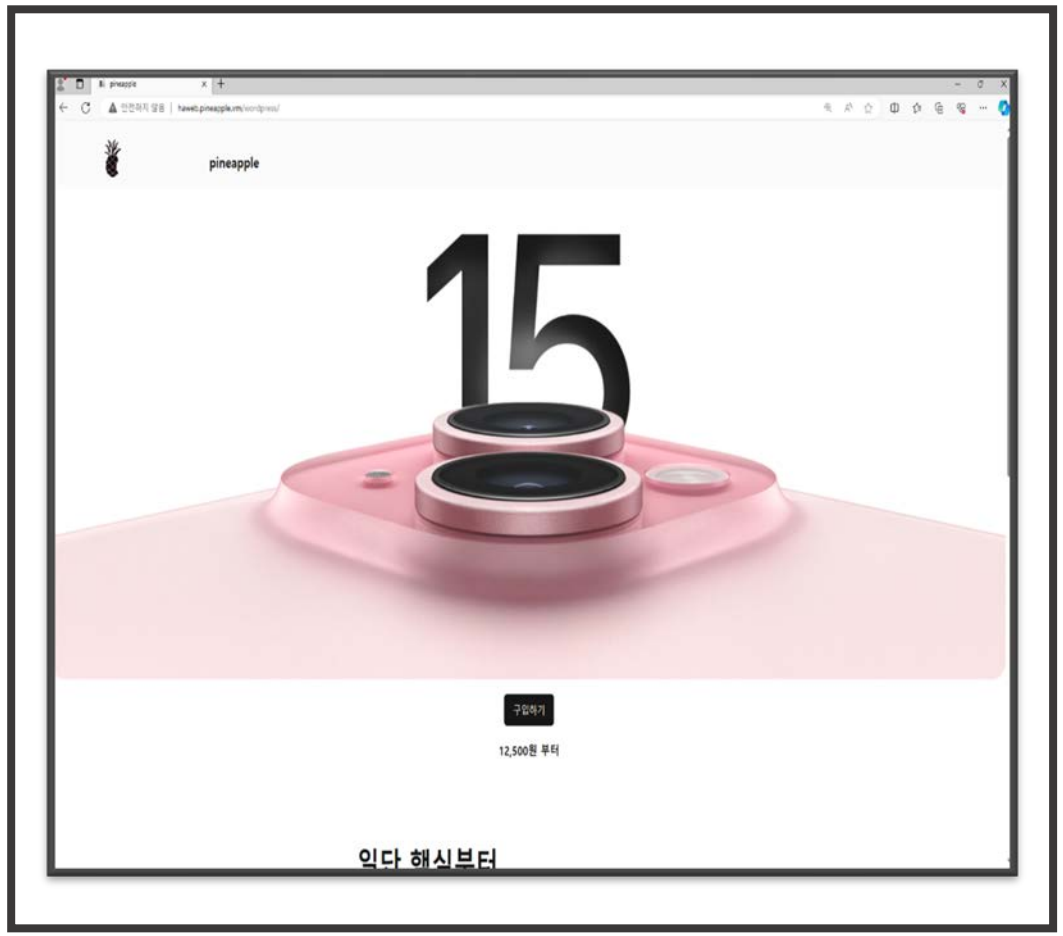
Zabbix를 통한 호스트 관리



vCenter 통한 ESXI 모니터링 및 관리



웹 페이지 확인



달성 목표

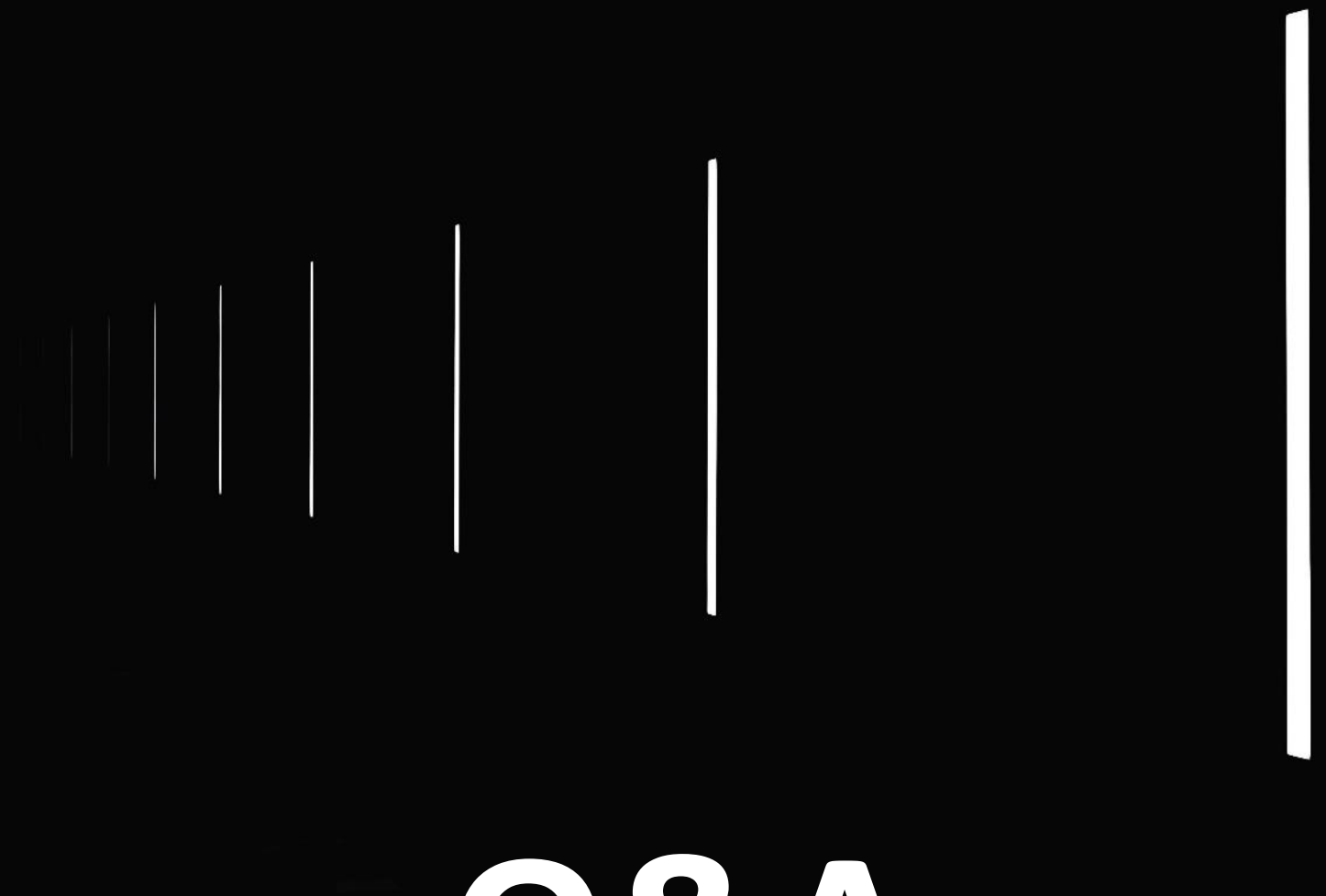
- NAT를 통한 내/외부망간 통신 구성 및 네트워크를 통한 서버간 통신
- NTP를 통한 시간 동기화
- DNS Server를 통한 Domain System 사용
- NFS Server를 통한 공유 작업 환경 구축
- WEB / WAS / DB Server Haproxy를 이용한 이중화 및 Load-Balancing 구현
- DB Server Replication을 통한 데이터 동기화 구성
- Zabbix / vCenter를 통한 ESXI 전체 서버 모니터링 및 관리
- Wordpress를 통한 웹 페이지 구현

미달성 목표

- 기존에 계획하였던 프로젝트 일정대로 완료하지 못하고 더 많은 시간 소요
  (예상보다 길어졌던 네트워크 구성 및 Config 기간)
- WEB, WAS Server SSL인증서(https) 미 사용
- 웹페이지 구성 미흡
- NFS 이중화 미 구성

향후 계획

- 체계적인 역할분담과, 우선순위, 시간관리 및 하루목표를 세워 계획하였던 일정 준수
- SSL 인증서를 연동한 보안성 향상
- Wordpress도 쓰기 편하고 좋았지만 html을 사용해서 페이지를 만들어보고 싶다



Q&A

Fin.