

# 앤서블 프로젝트 보고서

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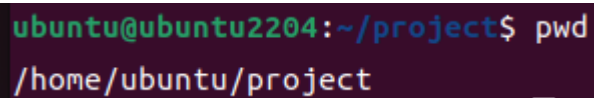
# laC 를 통한 wordpress 구성

## 1) web 서버 세팅

### 1-1) 앤서블 설치 및 구성

```
#sudo apt update  
#sudo apt install -y software-properties-common  
#sudo apt-add-repository -y -u ppa:ansible/ansible  
#sudo apt install-y ansible
```

home/ubuntu 밑에 project 디렉토리 생성



```
ubuntu@ubuntu2204:~/project$ pwd  
/home/ubuntu/project
```

```
#vim ansible.cfg
```

[illegible]

```
#vim inventory
```

[illegible]

```
#ssh-keygen -t rsa
```

```
#ssh-copy-id devops@10.0.2.7
```

```
#ssh-copy-id devops@10.0.2.8
```

```
#ssh-copy-id devops@10.0.2.9
```

## 1-2) 웹서버 구성

```
mkdir /html
```

밑에 web02.html, web03.html 생성

```
<html>
<p> this is web02 </p>
</html>
```

```
"web02.html" 3L, 38B
```

1,1

All

```
<html>  
<p> this is web03 </p>  
</html>
```

"web03.html" 3L, 38B

1,1

All



- 웹서버 세팅 플레이북 구성

#vim webserver.yml

```
- name: webserver setting
  hosts: web02 web03
  tasks:
    - name: install httpd
      yum:
        name: httpd
        state: present
    - name: correct index.html is present
      copy:
        src: "html/{{ ansible_hostname }}.html"
        dest: /var/www/html/index.html
    - name: httpd is started
      service:
        name: httpd
        state: started
        enabled: true
    - name: allow port 80
      firewalld:
        port: 80/tcp
        permanent: yes
        immediate: yes
        state: enabled
```

~

"webserver.yml" 22L, 520B

1,1

All

- 플레이북 실행

#ansible-playbook webserver.yml

```
ubuntu@ubuntu2204:~/project$ ansible-playbook webserver.yml

PLAY [webserver setting] *****

TASK [Gathering Facts] *****
ok: [10.0.2.9]
ok: [10.0.2.8]

TASK [install httpd] *****
ok: [10.0.2.8]
ok: [10.0.2.9]

TASK [correct index.html is present] *****
ok: [10.0.2.8]
ok: [10.0.2.9]

TASK [httpd is started] *****
ok: [10.0.2.8]
ok: [10.0.2.9]

TASK [allow port 80] *****
ok: [10.0.2.9]
ok: [10.0.2.8]
```

## 2) ha proxy server setting

#vim haproxy.cfg

```
#-----  
# static backend for serving up images, stylesheets and such  
#-----  
#backend static  
#    balance      roundrobin  
#    server       static 127.0.0.1:4331 check  
  
#-----  
# round robin balancing between the various backends  
#-----  
frontend http-site  
bind      *:80  
default_backend web-servers  
  
backend web-servers  
    balance      roundrobin  
        server app1 192.168.56.104:80 check  
        server app2 192.168.56.105:80 check  
#    server app1 127.0.0.1:5001 check  
#    server app2 127.0.0.1:5002 check  
#    server app3 127.0.0.1:5003 check  
#    server app4 127.0.0.1:5004 check
```

#vim ha-proxy.yml

```
- name: ha-proxy setting
  hosts: web01
  tasks:
    - name: install haproxy
      yum:
        name: haproxy
        state: present
    - name: copy to /etc/haproxy/haproxy.cfg
      copy:
        src: haproxy.cfg
        dest: /etc/haproxy/haproxy.cfg
    - name: haproxy is started
      service:
        name: haproxy
        state: started
        enabled: true
    - name: allow port 80
      firewallld:
        port: 80/tcp
        permanent: yes
        immediate: yes
        state: enabled
```

~

~

#vim ansible-playbook ha-proxy.yml

```
ubuntu@ubuntu2204:~/project$ ansible-playbook ha-proxy.yml

PLAY [ha-proxy setting] *****

TASK [Gathering Facts] *****
ok: [10.0.2.7]

TASK [install haproxy] *****
ok: [10.0.2.7]

TASK [copy to /etc/haproxy/haproxy.cfg] *****
changed: [10.0.2.7]

TASK [haproxy is started] *****
ok: [10.0.2.7]

TASK [allow port 80] *****
ok: [10.0.2.7]

PLAY RECAP *****
10.0.2.7 : ok=5    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

- 접속확인

#curl 192.168.56.103

```
ubuntu@ubuntu2204:~/project$ curl 192.168.56.103
<html>
<p> this is web02 </p>
</html>
ubuntu@ubuntu2204:~/project$ curl 192.168.56.103
<html>
<p> this is web03 </p>
</html>
```

### 3) db server setting

DB 가상 호스트 추가.



DB 서버 추가.

```
#vim inventory
```

[illegible]

- 키복사

```
#ssh-copy-id devops@10.0.2.12
```

#vim mariadb.yml

```
--
- name: maria
  hosts: db
  become: yes
  tasks:
    - name: Install MariaDB
      yum:
        name:
          - mariadb-server
          - MySQL-python
        state: present

    - name: Start MariaDB service
      service:
        name: mariadb
        state: started
        enabled: yes

    - name: Create application database
      mysql_db:
        name: wordpress
        state: present

    - name: Allow MariaDB in firewall
      firewallld:
        service: mysql
        permanent: yes
        immediate: yes
        state: enabled

    - name: Disable SELinux temporarily
      command: setenforce 0

    - name: Ensure the MySQL user db01 exists
      mysql_user:
        name: user01
        host: '%'
        password: 1234
        priv: 'wordpress.*:ALL'
        state: present
```

```

- name: Ensure the MySQL user root has all privileges
  mysql_user:
    name: root
    host: localhost
    check_implicit_admin: yes
    priv: ' *.*:ALL,GRANT '
    state: present

- name: Restart MariaDB
  service:
    name: mariadb
    state: restarted

```

- 설정 확인

```

ubuntu@ubuntu2204:~/project$ mysql -h 192.168.56.101 -u user01 -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 30
Server version: 5.5.68-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)]> show databases;
+-----+
| Database          |
+-----+
| information_schema |
| test              |
| wordpress          |
+-----+
3 rows in set (0.001 sec)

```

user01 이 생성되었고

wordpress 데이터베이스가 구성되었다.



## 4) NFS 스토리지 구성

### 4-1) NFS 스토리지 서버 구성

- web01 에 NFS 스토리지 서버 구성하는 플레이북 구성.

#vim nfs-storage.yml

```
- name: Setup for nfs server
  hosts: web01

  tasks:
    - name: Install nfs-utils
      yum:
        name: nfs-utils
        state: present

    - name: Start NFS server
      service:
        name: nfs-server
        state: started
        enabled: yes

    - name: Allow NFS service in firewall
      firewalld:
        service: nfs
        permanent: yes
        state: enabled
        immediate: yes
```

```
- name: make nfs_shared directory
  file:
    path: /wordpress
    state: directory
    mode: 0777

- name: configure /etc/exports
  become: yes
  lineinfile:
    path: /etc/exports
    line: /wordpress *(rw)

- name: Refresh NFS exports
  command: exportfs -r

- name: nfs service restart
  become: yes
  service:
    name: nfs
    state: restarted
```

- 플레이북 실행

#ansible-playbook nfs-storage

```
ubuntu@ubuntu2204:~/project$ ansible-playbook nfs-storage.yml

PLAY [Setup for nfs server] *****

TASK [Gathering Facts] *****
ok: [10.0.2.7]

TASK [Install nfs-utils] *****
ok: [10.0.2.7]

TASK [Start NFS server] *****
ok: [10.0.2.7]

TASK [Allow NFS service in firewall] *****
ok: [10.0.2.7]

TASK [make nfs_shared directory] *****
ok: [10.0.2.7]

TASK [configure /etc/exports] *****
ok: [10.0.2.7]

TASK [Refresh NFS exports] *****
changed: [10.0.2.7]

TASK [nfs service restart] *****
changed: [10.0.2.7]
```

## 4-2) NFS 스토리지 마운트

nfs 스토리지를 사용할 web02 web03 마운트 플레이북 구성

#vim nfs-mount.yml

```
- name: Setup for nfs mount
  hosts: web02 web03
  become: yes

  tasks:
    - name: Install nfs-utils
      yum:
        name: nfs-utils
        state: present

    - name: Start NFS server
      service:
        name: nfs-server
        state: started
        enabled: yes

    - name: Allow NFS service in firewall
      firewalld:
        service: nfs
        permanent: yes
        state: enabled
        immediate: yes
```

```
- name: Create mount point directory
  file:
    path: /var/www/html/wordpress
    state: directory

- name: 영구마운트
  lineinfile:
    path: /etc/fstab
    line: "192.168.56.103:/wordpress /var/www/html/wordpress nfs rw 0 0"
    insertafter: EOF

- name: 일회성마운트
  mount:
    path: /var/www/html/wordpress
    src: 192.168.56.103:/wordpress
    fstype: nfs
    opts: rw
    state: mounted

- name: nfs service restart
  service:
    name: nfs
    state: restarted
```

- 플레이북 실행

#ansible-playbook nfs-mount.yml

```
ubuntu@ubuntu2204:~/project$ ansible-playbook nfs-mount.yml

PLAY [Setup for nfs mount] *****

TASK [Gathering Facts] *****
ok: [10.0.2.9]
ok: [10.0.2.8]

TASK [Install nfs-utils] *****
ok: [10.0.2.8]
ok: [10.0.2.9]

TASK [Start NFS server] *****
ok: [10.0.2.8]
ok: [10.0.2.9]

TASK [Allow NFS service in firewall] *****
ok: [10.0.2.9]
ok: [10.0.2.8]

TASK [Create mount point directory] *****
ok: [10.0.2.9]
ok: [10.0.2.8]

TASK [영구마운트] *****
ok: [10.0.2.9]
ok: [10.0.2.8]
```

## 5) Wordpress 구성

- php 설치 및 wordpress 구성 플레이북 구성

#vim wordpress.yml

```
- name: Install WordPress on CentOS 7
hosts: web02
become: yes
tasks:
  - name: Install PHP and PHP MySQL extension
    yum:
      name:
        - php
        - php-mysqlnd
      state: present

  - name: Install MariaDB Server
    yum:
      name: mariadb-server
      state: present

  - name: MySQL module download
    yum:
      name: MySQL-python
      state: present
```

```
- name: Start MariaDB Service
  service:
    name: mariadb
    state: started
    enabled: yes

- name: Add firewall rule for MySQL
  firewallld:
    service: mysql
    state: enabled
    permanent: yes
    immediate: yes

- name: Install unzip
  yum:
    name: unzip
    state: present

- name: Create WordPress directory
  file:
    path: /var/www/html
    state: directory
```



```

- name: Download WordPress
  get_url:
    url: https://wordpress.org/wordpress-4.9.18.zip
    dest: /var/www/html/wordpress-latest.zip

- name: Unzip WordPress
  unarchive:
    src: /var/www/html/wordpress-latest.zip
    dest: /var/www/html
    remote_src: yes

- name: Copy wp-config.php
  command: cp /var/www/html/wordpress/wp-config-sample.php /var/www/html/wordpress/wp-config.php

- name: Configure WordPress database settings
  lineinfile:
    path: /var/www/html/wordpress/wp-config.php
    regexp: "{{ item.regexp }}"
    line: "{{ item.line }}"
    state: present
  with_items:
    - { regexp: ".*DB_NAME.*", line: "define('DB_NAME', 'wordpress');" }
    - { regexp: ".*DB_USER.*", line: "define('DB_USER', 'user01');" }
    - { regexp: ".*DB_PASSWORD.*", line: "define('DB_PASSWORD', '1234');" }
    - { regexp: ".*DB_HOST.*", line: "define('DB_HOST', '192.168.56.101');" }

```

46,1

86%

wordpress 를 최신버전으로하면 php 버전과 호환성 오류가 나므로 wordpress-4.9.18.zip 으로 수정.

```

- name: Restart Apache Service
  service:
    name: httpd
    state: restarted

```

- 플레이북 실행

#ansible-playbook wordpress.yml

```
ubuntu@ubuntu2204:~/project$ ansible-playbook wordpress.yml

PLAY [Install WordPress on CentOS 7] *****

TASK [Gathering Facts] *****
ok: [10.0.2.8]

TASK [Install PHP and PHP MySQL extension] *****
ok: [10.0.2.8]

TASK [Install MariaDB Server] *****
ok: [10.0.2.8]

TASK [MySQL module download] *****
ok: [10.0.2.8]

TASK [Start MariaDB Service] *****
ok: [10.0.2.8]

TASK [Add firewall rule for MySQL] *****
ok: [10.0.2.8]

TASK [Install unzip] *****
ok: [10.0.2.8]

TASK [Create WordPress directory] *****
ok: [10.0.2.8]
```

- web02.html , web03.html 수정

```
#vim web02.html
```

```
<html>
<p> this is web02 </p>
<a href="/wordpress">GO to WordPress Page</a>
</html>
```

```
#vim web03.html
```

```
<html>
<p> this is web03 </p>
<a href="/wordpress">Go to WordPress Page</a>
</html>
```

"web03.html" 4L, 84B

1,1 All

- 생성확인

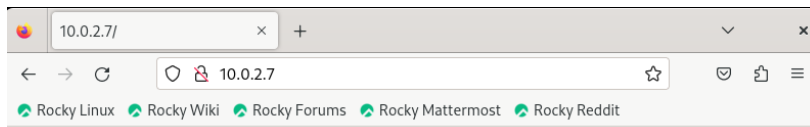
```
[root@web02 conf.d]# cd /var/www/html
[root@web02 html]# ls -l
합계 9288
-rw-r--r--. 1 root root      84  5월 28 17:37 index.html
drwxrwxrwx. 5 root root    4096  5월 28 16:54 wordpress
-rw-r--r--. 1 root root 9499756  5월 28 16:48 wordpress-latest.zip
```

```

[root@web02 html]# cd wordpress/
[root@web02 wordpress]# ls -l
합계 196
-rw-r--r--. 1 nfsnobody nfsnobody 418 9월 25 2013 index.php
-rw-r--r--. 1 nfsnobody nfsnobody 19935 1월 7 2018 license.txt
-rw-r--r--. 1 nfsnobody nfsnobody 7415 3월 19 2018 readme.html
-rw-r--r--. 1 nfsnobody nfsnobody 5 5월 28 16:49 test
-rw-r--r--. 1 nfsnobody nfsnobody 6878 12월 13 2018 wp-activate.php
drwxr-xr-x. 9 nfsnobody nfsnobody 4096 5월 13 2021 wp-admin
-rw-r--r--. 1 nfsnobody nfsnobody 364 12월 19 2015 wp-blog-header.php
-rw-r--r--. 1 nfsnobody nfsnobody 1889 5월 3 2018 wp-comments-post.php
-rw-r--r--. 1 nfsnobody nfsnobody 2853 12월 16 2015 wp-config-sample.php
-rw-r--r--. 1 nfsnobody nfsnobody 2829 5월 28 16:54 wp-config.php
drwxr-xr-x. 4 nfsnobody nfsnobody 52 5월 13 2021 wp-content
-rw-r--r--. 1 nfsnobody nfsnobody 3669 8월 20 2017 wp-cron.php
drwxr-xr-x. 18 nfsnobody nfsnobody 8192 5월 13 2021 wp-includes
-rw-r--r--. 1 nfsnobody nfsnobody 2422 11월 21 2016 wp-links-opml.php
-rw-r--r--. 1 nfsnobody nfsnobody 3306 8월 22 2017 wp-load.php
-rw-r--r--. 1 nfsnobody nfsnobody 37804 12월 13 2018 wp-login.php
-rw-r--r--. 1 nfsnobody nfsnobody 8048 1월 11 2017 wp-mail.php
-rw-r--r--. 1 nfsnobody nfsnobody 16246 10월 4 2017 wp-settings.php
-rw-r--r--. 1 nfsnobody nfsnobody 30091 4월 30 2018 wp-signup.php
-rw-r--r--. 1 nfsnobody nfsnobody 4620 10월 24 2017 wp-trackback.php
-rw-r--r--. 1 nfsnobody nfsnobody 3065 9월 1 2016 xmlrpc.php

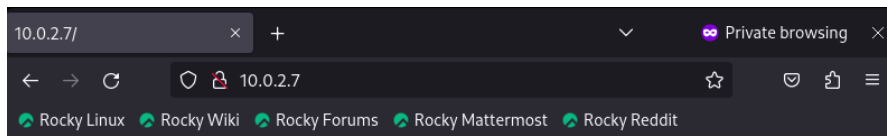
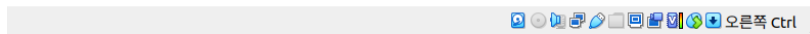
```

- 10.0.2.7 로 접속



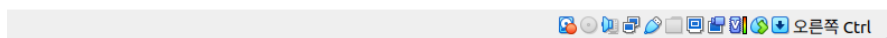
this is web02

[Go to WordPress Page](#)

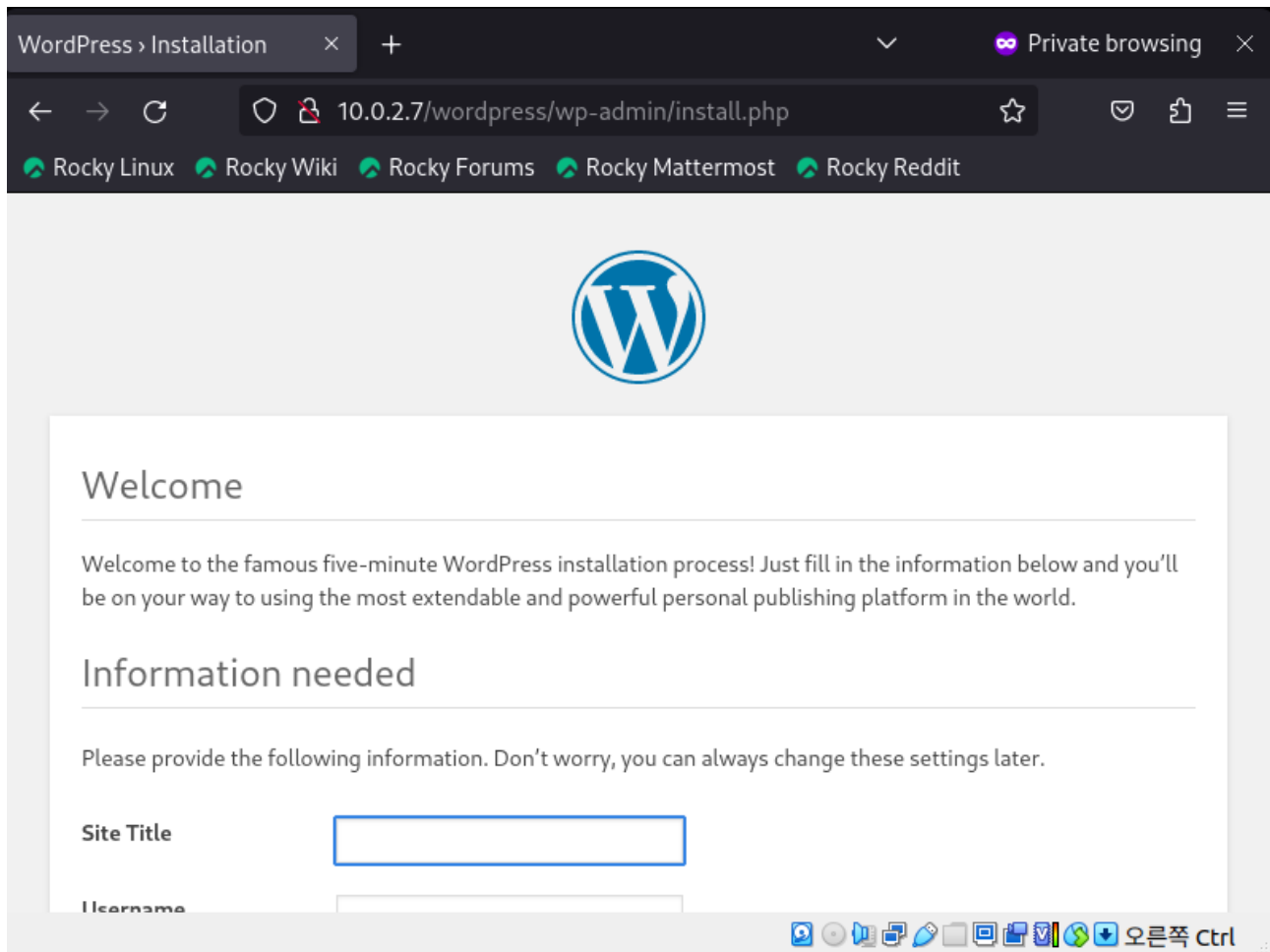


this is web03

[Go to WordPress Page](#)



web02 와 web03 으로 로드밸런싱 확인.



워드프레스 접속 확인

## 6) dns 서버 구축

- nds 가상 호스트 추가.



#ssh-copy-id devops@10.0.2.12

- dns 서버로 옮길 zone 파일 추가.

```
#vim jmw.com.zone
```

[illegible]



## - 플레이북 작성

#vim dns.yml

```
--
- name: Configure BIND DNS server
  hosts: dns
  become: yes
  tasks:
    - name: Install BIND
      yum:
        name: bind
        state: present

    - name: Update named.conf options
      lineinfile:
        path: /etc/named.conf
        regexp: "{{ item.regexp }}"
        line: "{{ item.line }}"
      loop:
        - { regexp: '^(\s*)listen-on port 53.*', line: '        listen-on port 53 { any; };' }
        - { regexp: '^(\s*)listen-on-v6 port 53.*', line: '        listen-on-v6 port 53 { any; };' }
        - { regexp: '^(\s*)allow-query.*', line: '        allow-query { any; };' }
```

```
- name: Start and enable named service
  service:
    name: named
    state: started
    enabled: yes

- name: Add DNS service to firewall
  firewallld:
    service: dns
    permanent: yes
    immediate: yes
    state: enabled

- name: Add zone configuration to named.rfc1912.zones
  blockinfile:
    path: /etc/named.rfc1912.zones
    block: |
      zone "jmw.com" IN {
        type master;
        file "jmw.com.zone";
      };
  insertafter: EOF
```

```
- name: Copy jmw.com.zone file to /var/named directory
  copy:
    src: jmw.com.zone
    dest: /var/named/jmw.com.zone
    owner: named
    group: named

- name: Restart named service
  service:
    name: named
    state: restarted
```

- 플레이북 실행

#ansible-playbook dns.yml

```

ubuntu@ubuntu2204:~/project$ ansible-playbook dns.yml

PLAY [Configure BIND DNS server] *****

TASK [Gathering Facts] *****
ok: [10.0.2.14]

TASK [Install BIND] *****
changed: [10.0.2.14]

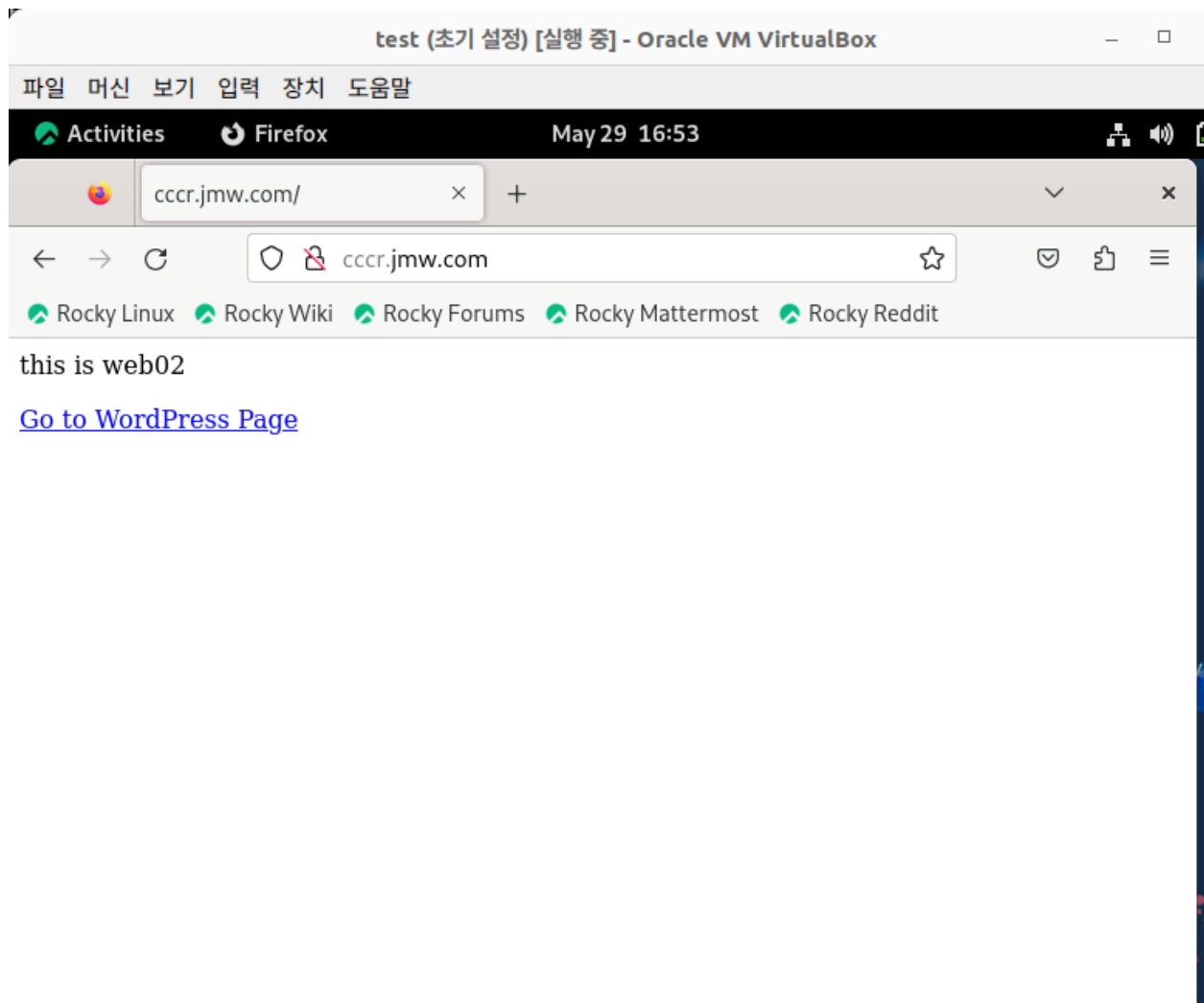
TASK [Update named.conf options] *****
changed: [10.0.2.14] => (item={'regex': '^(\s*)listen-on port 53.*', 'line': '        listen-on port 53 { any; };'})
changed: [10.0.2.14] => (item={'regex': '^(\s*)listen-on-v6 port 53.*', 'line': '        listen-on-v6 port 53 { any; };'})
changed: [10.0.2.14] => (item={'regex': '^(\s*)allow-query.*', 'line': '        allow-query { any; };'})

TASK [Start and enable named service] *****
changed: [10.0.2.14]

TASK [Add DNS service to firewall] *****
changed: [10.0.2.14]

```

- 구성된 도메인 주소로 접속 확인



## 7) 최종 구성 파일

~/project

```
ubuntu@ubuntu2204:~/project$ ls -l
total 48
-rw-rw-r-- 1 ubuntu ubuntu 266 May 27 05:28 ansible.cfg
-rw-rw-r-- 1 ubuntu ubuntu 1407 May 29 07:09 dns.yml
-rw-rw-r-- 1 ubuntu ubuntu 503 May 27 06:15 ha-proxy.yml
-rw-r--r-- 1 ubuntu ubuntu 3294 May 27 06:58 haproxy.cfg
drwxrwxr-x 2 ubuntu ubuntu 4096 May 28 09:20 html
-rw-rw-r-- 1 ubuntu ubuntu 82 May 29 06:25 inventory
-rw-rw-r-- 1 ubuntu ubuntu 409 May 29 07:44 jmw.com.zone
-rw-rw-r-- 1 ubuntu ubuntu 1103 May 29 00:49 mariadb.yml
-rw-rw-r-- 1 ubuntu ubuntu 927 May 28 07:41 nfs-mount.yml
-rw-rw-r-- 1 ubuntu ubuntu 763 May 28 07:40 nfs-storage.yml
-rw-rw-r-- 1 ubuntu ubuntu 520 May 27 06:59 webserver.yml
-rw-rw-r-- 1 ubuntu ubuntu 1939 May 28 07:54 wordpress.yml
```

## 8) 미해결 문제

mariadb.yml 설정 中

```
- name: Ensure the MySQL user root has all privileges
  mysql_user:
    name: root
    host: localhost
    check_implicit_admin: yes
    priv: '*.*:ALL,GRANT'
    state: present

- name: Restart MariaDB
  service:
    name: mariadb
    state: restarted
```

mariadb 플레이북을 실행한 후 다른 서버에서는 user01 로 접속이 잘 되지만 db 서버에서 user01 로 접속이 되지 않음.

해당

- name: Ensure the MySQL user root has all privileges 를 추가하니

접속 문제가 해결이 되었는데, 문제의 원인과 해결 이유를 찾지 못했음.