# Introductory

The focus and aim of this project (Project 2) is to deploy a complete WordPress configuration demonstrating steps and prerequisite actions required to achieve this end-goal. A number of components have been specified in the project definition as listed below:

* PHP
* Nginx/Apache
* MySQL
* WordPress

It was my original intention to quickly submit this project then move on to the more challenging Jenkins project (Project 1) as initially, the WordPress assignment appeared to be very simple requiring installation of just the four components above. However, while undertaking this work, I discovered that additional components and configurations were required to deliver a working solution - it was not sufficient to simply install these components but to configure them to work together in concert.

Additionally, I have very limited exposure to Apache and zero experience or WordPress which resulted in considerable time learning these tools which otherwise could have been employed on configuration management with Ansible and Terraform.

2 Environment Configuration

### 2.1 Install Ansible of Control Host

1. sudo apt update
2. sudo apt install software-properties-common
3. sudo apt-add-repository --yes --update ppa:ansible/ansible
4. sudo apt install ansible

vagrant@vagrant-ubuntu-trusty-64:~$ ansible --version

ansible 1.5.4

2.2 Edit the hosts file (/etc/ansible/hosts) or create Inventory file to define Ansible targets

cat wp-inventory

[wpserver]

10.0.2.15

2.3 Create user account ‘devops’ and assign permissions on all nodes

sudo -i

adduser devops

## Add permissions to the sudoers file:

root@vagrant-ubuntu-trusty-64:~# tail -3 /etc/sudoers

#includedir /etc/sudoers.d

devops  ALL=(ALL) NOPASSWD:ALL

## Switch (su) to the newly created devops account

su - devops

## Create SSH key and copy to the worker node

ssh-key-gen

ssh-copy-id devops@10.0.2.15

### 3. Test connectivity from Ansible Control host to Ansible targets

ansible wpserver -i wp-inventory -m ping

devops@vagrant-ubuntu-trusty-64:~/project2$ ansible wpserver -i wp-inventory -m ping

10.0.2.15 | success >> {

"changed": false,

"ping": "pong"

}

### 4 Project Code

The entirety of the code used in the project is saved on Github here: <https://github.com/nickvholbrook/Caltech-config-management.git>

4.1 Ansible Playbook

Filename: webtool.yml

|  |
| --- |
| --- |
|  |

|  |
| --- |
| - hosts: web |
|  |

|  |
| --- |
| vars: |
|  |

|  |
| --- |
| - wp\_mysql\_db: wordpress |
|  |

|  |
| --- |
| - wp\_mysql\_user: wordpress |
|  |

|  |
| --- |
| - wp\_mysql\_password: randompassword |
|  |

|  |
| --- |
| - sql\_rootpw: "mypass" |
|  |

|  |
| --- |
| - http\_host: "nicksblog.com" |
|  |

|  |
| --- |
| - http\_port: 8080 |
|  |

|  |
| --- |
| - http\_conf: "nicksblogs.com.conf" |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| become: yes |
|  |

|  |
| --- |
| tasks: |
|  |

|  |
| --- |
| - name: Install WordPress and supporting applications |
|  |

|  |
| --- |
| apt: |
|  |

|  |
| --- |
| name: "{{ item }}" |
|  |

|  |
| --- |
| state: present |
|  |

|  |
| --- |
| update\_cache: yes |
|  |

|  |
| --- |
| loop: |
|  |

|  |
| --- |
| - apache2 |
|  |

|  |
| --- |
| - php |
|  |

|  |
| --- |
| - mysql-server |
|  |

|  |
| --- |
| - wordpress |
|  |

|  |
| --- |
| - python |
|  |

|  |
| --- |
| - pip |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| - name: Install PyMySQL |
|  |

|  |
| --- |
| pip: |
|  |

|  |
| --- |
| name: pymysql |
|  |

|  |
| --- |
| state: present |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| - name: Create MySQL DB |
|  |

|  |
| --- |
| mysql\_db: |
|  |

|  |
| --- |
| login\_unix\_socket: /var/run/mysqld/mysqld.sock |
|  |

|  |
| --- |
| name: "{{ wp\_mysql\_db }}" |
|  |

|  |
| --- |
| login\_user: root |
|  |

|  |
| --- |
| login\_password: "{{ sql\_rootpw}: |
|  |

|  |
| --- |
| state: present |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| - name: Create WordPress mysql user |
|  |

|  |
| --- |
| mysql\_user: |
|  |

|  |
| --- |
| name: "{{ wp\_mysql\_user }}" |
|  |

|  |
| --- |
| password: "{{ wp\_mysql\_password }}" |
|  |

|  |
| --- |
| priv: '\*.\*:ALL' |
|  |

|  |
| --- |
| login\_unix\_socket: /var/run/mysqld/mysqld.sock |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| - name: Copy PHP config file to server |
|  |

|  |
| --- |
| template: |
|  |

|  |
| --- |
| src: "/home/devops/project2/wp-config.php.j2" |
|  |

|  |
| --- |
| dest: "/var/www/wordpress/wp-config.php" |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| - name: Set up Apache VirtualHost |
|  |

|  |
| --- |
| template: |
|  |

|  |
| --- |
| src: "/home/devops/project2/apache.conf.j2" |
|  |

|  |
| --- |
| dest: "/etc/apache2/sites-available/{{ http\_conf }}" |
|  |

|  |
| --- |
| notify: Reload Apache |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| - name: Create document root |
|  |

|  |
| --- |
| file: |
|  |

|  |
| --- |
| path: "/var/www/{{ http\_host}}" |
|  |

|  |
| --- |
| state: directory |
|  |

|  |
| --- |
| owner: "devops" |
|  |

|  |
| --- |
| group: "root" |
|  |

|  |
| --- |
| mode: '0755' |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| - name: Disable default Apache site |
|  |

|  |
| --- |
| shell: /usr/sbin/a2dissite 000-default.conf |
|  |

|  |
| --- |
| notify: Restart Apache |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| - name: Enable rewrite module |
|  |

|  |
| --- |
| shell: /usr/sbin/a2enmod rewrite |
|  |

|  |
| --- |
| notify: Reload Apache |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| - name: Enable new site |
|  |

|  |
| --- |
| shell: /usr/sbin/a2ensite {{ http\_conf }} |
|  |

|  |
| --- |
| notify: Reload Apache |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| - name: UFW - Allow HTTP on port 8080 |
|  |

|  |
| --- |
| ufw: |
|  |

|  |
| --- |
| rule: allow |
|  |

|  |
| --- |
| port: "{{ http\_port }}" |
|  |

|  |
| --- |
| proto: tcp |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| handlers: |
|  |

|  |
| --- |
| - name: Reload Apache |
|  |

|  |
| --- |
| service: |
|  |

|  |
| --- |
| name: apache2 |
|  |

|  |
| --- |
| state: reloaded |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| - name: Restart Apache |
|  |

|  |
| --- |
| service: |
|  |

|  |
| --- |
| name: apache2 |
|  |

state: restarted

4.2 Template files

Filename: apache.conf.j2

|  |
| --- |
| <VirtualHost \*:8080> |
|  |

|  |
| --- |
| ServerAdmin webmaster@localhost |
|  |

|  |
| --- |
| ServerName localhost |
|  |

|  |
| --- |
| ServerAlias www.localhost |
|  |

|  |
| --- |
| DocumentRoot /var/www/8080 |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| <Directory /var/www/localhost> |
|  |

|  |
| --- |
| Options -Indexes |
|  |

|  |
| --- |
| </Directory> |
|  |

|  |
| --- |
|  |
|  |

|  |
| --- |
| <IfModule mod\_dir.c> |
|  |

|  |
| --- |
| DirectoryIndex index.php index.html index.cgi index.pl index.xhtml index.htm |
|  |

|  |  |
| --- | --- |
| </IfModule> | |
|  |

</VirtualHost>

Filename: wp-config.php.j2

|  |
| --- |
| // \*\* MySQL settings - You can get this info from your web host \*\* // |
|  |

|  |
| --- |
| /\*\* The name of the database for WordPress \*/ |
|  |

|  |
| --- |
| define( 'DB\_NAME', 'wordpress' ); |
|  |

|  |
| --- |
| /\*\* MySQL database username \*/ |
|  |

|  |
| --- |
| define( 'DB\_USER', 'wordpress' ); |
|  |

|  |
| --- |
| /\*\* MySQL database password \*/ |
|  |

|  |
| --- |
| define( 'DB\_PASSWORD', 'randompassword' ); |
|  |

|  |
| --- |
| /\*\* MySQL hostname \*/ |
|  |

define( 'DB\_HOST', 'localhost' );