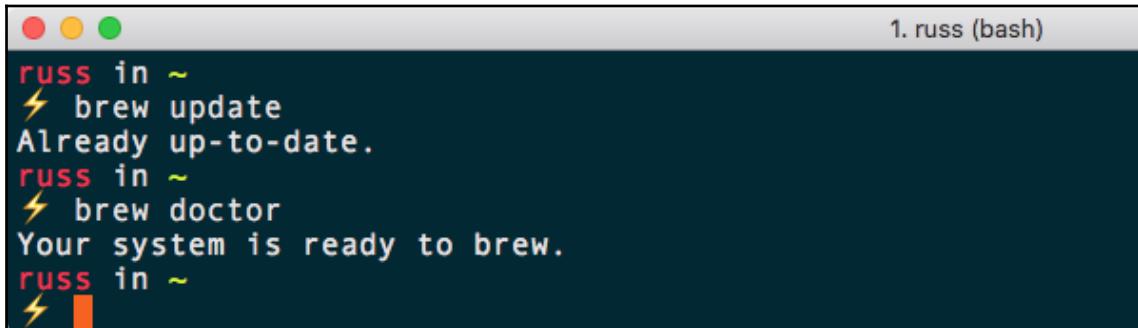
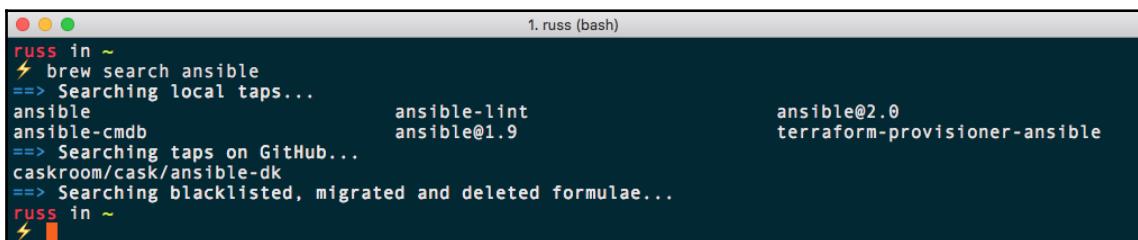


# Chapter 2: Installing and Running Ansible



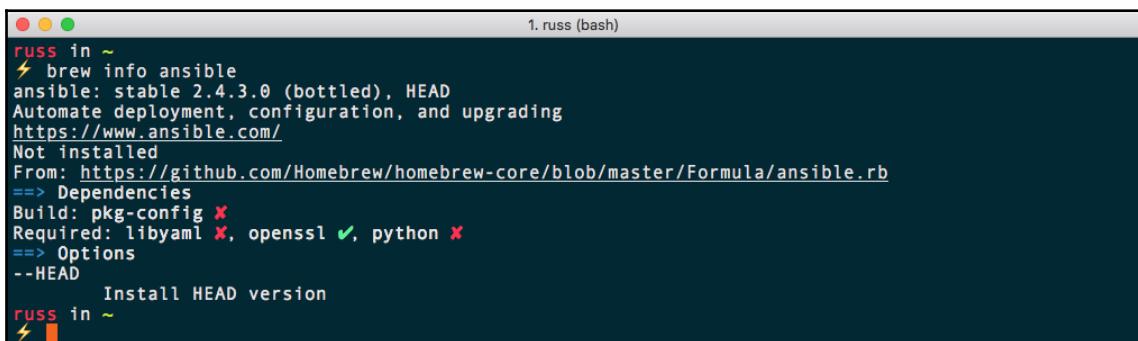
1. russ (bash)

```
russ in ~
⚡ brew update
Already up-to-date.
russ in ~
⚡ brew doctor
Your system is ready to brew.
russ in ~
⚡
```



1. russ (bash)

```
russ in ~
⚡ brew search ansible
==> Searching local taps...
ansible                  ansible-lint          ansible@2.0
ansible-cmdb             ansible@1.9          terraform-provisioner-ansible
==> Searching taps on GitHub...
caskroom/cask/ansible-dk
==> Searching blacklisted, migrated and deleted formulae...
russ in ~
⚡
```



1. russ (bash)

```
russ in ~
⚡ brew info ansible
ansible: stable 2.4.3.0 (bottled), HEAD
Automate deployment, configuration, and upgrading
https://www.ansible.com/
Not installed
From: https://github.com/Homebrew/homebrew-core/blob/master/Formula/ansible.rb
==> Dependencies
Build: pkg-config ✘
Required: libyaml ✘, openssl ✓, python ✘
==> Options
--HEAD
      Install HEAD version
russ in ~
⚡
```

```
1. russ (bash)
==> /usr/local/Cellar/python/2.7.14_3/bin/python2 -s setup.py --no-user-cfg install --force --verbose
==> /usr/local/Cellar/python/2.7.14_3/bin/python2 -s setup.py --no-user-cfg install --force --verbose
==> Caveats
This formula installs a python2 executable to /usr/local/bin.
If you wish to have this formula's python executable in your PATH then add
the following to ~/.bash_profile:
  export PATH="/usr/local/opt/python/libexec/bin:$PATH"

Pip and setuptools have been installed. To update them
  pip2 install --upgrade pip setuptools

You can install Python packages with
  pip2 install <package>

They will install into the site-package directory
  /usr/local/lib/python2.7/site-packages

See: https://docs.brew.sh/Homebrew-and-Python.html
==> Summary
🍺 /usr/local/Cellar/python/2.7.14_3: 3,517 files, 48.4MB
==> Installing ansible
==> Downloading https://homebrew.bintray.com/bottles/ansible-2.4.3.0.high_sierra.bottle.tar.gz
==> Downloading from https://akamai.bintray.com/6d/6dbc8e6c1dcf2efb6d5c8960108f2e0d1092a60ba2157af6f
#####
Pouring ansible-2.4.3.0.high_sierra.bottle.tar.gz
🍺 /usr/local/Cellar/ansible/2.4.3.0: 11,219 files, 137.4MB
russ in ~
```

```
russ in ~ 1. russ (bash)
⚡ sudo -H pip install ansible
Collecting ansible
  Downloading ansible-2.4.3.0.tar.gz (6.5MB)
    100% |██████████| 6.5MB 193kB/s
Requirement already satisfied: jinja2 in /Library/Python/2.7/site-packages (from ansible)
Requirement already satisfied: PyYAML in /Library/Python/2.7/site-packages (from ansible)
Requirement already satisfied: paramiko in /Library/Python/2.7/site-packages (from ansible)
Requirement already satisfied: cryptography in /Library/Python/2.7/site-packages (from ansible)
Requirement already satisfied: setuptools in /Library/Python/2.7/site-packages (from ansible)
Requirement already satisfied: MarkupSafe>=0.23 in /Library/Python/2.7/site-packages (from jinja2->ansible)
Requirement already satisfied: pyasn1>=0.1.7 in /Library/Python/2.7/site-packages (from paramiko->ansible)
Requirement already satisfied: bcrypt>=3.1.3 in /Library/Python/2.7/site-packages (from paramiko->ansible)
Requirement already satisfied: pynacl>=1.0.1 in /Library/Python/2.7/site-packages (from paramiko->ansible)
Requirement already satisfied: six>=1.4.1 in /Library/Python/2.7/site-packages (from cryptography->ansible)
Requirement already satisfied: cffi>=1.7; platform_python_implementation != "PyPy" in /Library/Python/2.7/site-packages (from cryptography->ansible)
Requirement already satisfied: enum34; python_version < "3" in /Library/Python/2.7/site-packages (from cryptography->ansible)
Requirement already satisfied: idna>=2.1 in /Library/Python/2.7/site-packages (from cryptography->ansible)
Requirement already satisfied: asn1crypto>=0.21.0 in /Library/Python/2.7/site-packages (from cryptography->ansible)
Requirement already satisfied: ipaddress; python_version < "3" in /Library/Python/2.7/site-packages (from cryptography->ansible)
Requirement already satisfied: pycparser in /Library/Python/2.7/site-packages (from cffi>=1.7; platform_python_implementation != "PyPy"->cryptography->ansible)
Installing collected packages: ansible
  Running setup.py install for ansible ... done
Successfully installed ansible-2.4.3.0
russ in ~
⚡
```

```
russ@ubuntu:~$ sudo -H pip install ansible
Collecting ansible
  Downloading ansible-2.4.3.0.tar.gz (6.5MB)
    100% |██████████| 6.5MB 182kB/s
Collecting PyYAML (from ansible)
  Downloading PyYAML-3.12.tar.gz (253kB)
    100% |██████████| 256kB 3.0MB/s
Requirement already satisfied: cryptography in /usr/lib/python2.7/dist-packages
(from ansible)
Collecting jinja2 (from ansible)
  Downloading Jinja2-2.2.10-py2.py3-none-any.whl (126kB)
    100% |██████████| 133kB 4.0MB/s
Collecting paramiko (from ansible)
  Downloading paramiko-2.4.0-py2.py3-none-any.whl (192kB)
    100% |██████████| 194kB 3.2MB/s
Requirement already satisfied: setuptools in /usr/lib/python2.7/dist-packages (f
rom ansible)
Collecting MarkupSafe>=0.23 (from jinja2->ansible)
  Downloading MarkupSafe-1.0.tar.gz
Collecting pynacl>=1.0.1 (from paramiko->ansible)
  Downloading PyNaCl-1.2.1-cp27-cp27mu-manylinux1_x86_64.whl (696kB)
    100% |██████████| 706kB 1.6MB/s
Collecting pyasn1>=0.1.7 (from paramiko->ansible)
  Downloading pyasn1-0.4.2-py2.py3-none-any.whl (71kB)
```

```
Select C:\Windows\System32\bash.exe
-- Beta feature --
This will install Ubuntu on Windows, distributed by Canonical
and licensed under its terms available here:
https://aka.ms/uowterms

Type "y" to continue: y
Downloading from the Windows Store... 89%
```

```
④ Select russ@Russ-Windows: ~
russ@Russ-Windows:~$ cat /etc/*release
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=16.04
DISTRIB_CODENAME=xenial
DISTRIB_DESCRIPTION="Ubuntu 16.04.2 LTS"
NAME="Ubuntu"
VERSION="16.04.2 LTS (Xenial Xerus)"
ID=ubuntu
ID_LIKE=debian
PRETTY_NAME="Ubuntu 16.04.2 LTS"
VERSION_ID="16.04"
HOME_URL="http://www.ubuntu.com/"
SUPPORT_URL="http://help.ubuntu.com/"
BUG_REPORT_URL="http://bugs.launchpad.net/ubuntu/"
VERSION_CODENAME=xenial
UBUNTU_CODENAME=xenial
russ@Russ-Windows:~$ ■
```

```
④ Select russ@Russ-Windows: ~
russ@Russ-Windows: $ sudo -H pip install ansible
Collecting ansible
  Downloading ansible-2.4.3.0.tar.gz (6.5MB)
    100% |██████████| 6.5MB 243kB/s
Collecting jinja2 (from ansible)
  Downloading Jinja2-2.10-py2.py3-none-any.whl (126kB)
    100% |██████████| 133kB 6.1MB/s
Collecting PyYAML (from ansible)
  Downloading PyYAML-3.12.tar.gz (253kB)
    100% |██████████| 256kB 3.8MB/s
Collecting paramiko (from ansible)
  Downloading paramiko-2.4.0-py2.py3-none-any.whl (192kB)
    100% |██████████| 194kB 841kB/s
Collecting cryptography (from ansible)
  Downloading cryptography-2.1.4-cp27-cp27mu-manylinux1_x86_64.whl (2.2MB)
    100% |██████████| 2.2MB 772kB/s
Requirement already satisfied (use --upgrade to upgrade): setuptools in /usr/lib/python2.7/dist-packages (from ansible) ■
```

```
1. chapter02 (bash)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡ vagrant up --provider=vmware_fusion
Bringing machine 'default' up with 'vmware_fusion' provider...
==> default: Cloning VMware VM: 'centos/7'. This can take some time...
==> default: Checking if box 'centos/7' is up to date...
==> default: Verifying vmnet devices are healthy...
==> default: Preparing network adapters...
WARNING: The VMX file for this box contains a setting that is automatically overwritten by Vagrant
WARNING: when started. Vagrant will stop overwriting this setting in an upcoming release which may
WARNING: prevent proper networking setup. Below is the detected VMX setting:
WARNING:
WARNING:     ethernet0.pcislotnumber = "32"
WARNING:
WARNING: If networking fails to properly configure, it may require this VMX setting. It can be manually
WARNING: applied via the Vagrantfile:
WARNING:
WARNING:   Vagrant.configure(2) do |config|
WARNING:     config.vm.provider :vmware_fusion do |vmware|
WARNING:       vmware.vmx["ethernet0.pcislotnumber"] = "32"
WARNING:     end
WARNING:   end
WARNING:
WARNING: For more information: https://www.vagrantup.com/docs/vmware/boxes.html#vmx-whitelisting
==> default: Starting the VMware VM...
==> default: Waiting for the VM to receive an address...
==> default: Forwarding ports...
    default: -- 22 => 2222
==> default: Waiting for machine to boot. This may take a few minutes...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
    default:
    default: Vagrant insecure key detected. Vagrant will automatically replace
    default: this with a newly generated keypair for better security.
    default:
    default: Inserting generated public key within guest...
    default: Removing insecure key from the guest if it's present...
    default: Key inserted! Disconnecting and reconnecting using new SSH key...
==> default: Machine booted and ready!
==> default: Setting hostname...
==> default: Configuring network adapters within the VM...
    default: SSH address: 127.0.0.1:2222
    default: SSH username: vagrant
    default: SSH auth method: private key
==> default: Rsyncing folder: /Users/russ/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02/ => /vagrant
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡
```

```
1. chapter02 (bash)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡ vagrant ssh
Last login: Sun Feb 11 15:18:22 2018 from 172.16.20.2
[vagrant@192 ~]$ hostname
192.168.50.4.nip.io
[vagrant@192 ~]$ uname -a
Linux 192.168.50.4.nip.io 3.10.0-693.11.6.el7.x86_64 #1 SMP Thu Jan 4 01:06:37 UTC 2018 x86_64 x86_64 x86_64 GNU/Linux
[vagrant@192 ~]$ exit
logout
Connection to 127.0.0.1 closed.
```

---

```
1. chapter02 (bash)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡ ssh vagrant@192.168.50.4.nip.io
The authenticity of host '192.168.50.4.nip.io (192.168.50.4)' can't be established.
ECDSA key fingerprint is SHA256:28Wmps81rENYuOYSc+EcruiyUfOLcZOkNr0rLmanbdA.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.50.4.nip.io,192.168.50.4' (ECDSA) to the list of known hosts.
Last login: Sun Feb 11 15:18:52 2018 from 192.168.50.1
[vagrant@192 ~]$ hostname
192.168.50.4.nip.io
[vagrant@192 ~]$ uname -a
Linux 192.168.50.4.nip.io 3.10.0-693.11.6.el7.x86_64 #1 SMP Thu Jan 4 01:06:37 UTC 2018 x86_64 x86_6
4 x86_64 GNU/Linux
[vagrant@192 ~]$ exit
logout
Connection to 192.168.50.4.nip.io closed.
```

1. chapter02 (bash)

```
⚡ ansible -i hosts-simple 192.168.50.4.nip.io -m setup
192.168.50.4.nip.io | SUCCESS => {
    "ansible_facts": {
        "ansible_all_ipv4_addresses": [
            "192.168.50.4",
            "172.16.20.132"
        ],
        "ansible_all_ipv6_addresses": [
            "fe80::20c:29ff:fe70:2511",
            "fe80::20c:29ff:fe70:2507"
        ],
        "ansible_apparmor": {
            "status": "disabled"
        },
        "ansible_architecture": "x86_64",
        "ansible_bios_date": "05/19/2017",
        "ansible_bios_version": "6.00",
        "ansible_cmdline": {
            "BOOT_IMAGE": "/vmlinuz-3.10.0-693.11.6.el7.x86_64",
            "biosdevname": "0",
            "console": "ttyS0,115200n8",
            "crashkernel": "auto",
            "net.ifnames": "0",
            "no_timer_check": true,
            "quiet": true,
            "rd.lvm.lv": "VolGroup00/LogVol01",
            "rhgb": true,
            "ro": true,
            "root": "/dev/mapper/VolGroup00-LogVol00"
        },
        "ansible_date_time": {
            "date": "2018-02-17",
            "day": "17",
            "epoch": "1518891516",
            "hour": "18",
            "iso8601": "2018-02-17T18:18:36Z",
            "iso8601_basic": "20180217T181836309359",
            "iso8601_basic_short": "20180217T181836",
            "iso8601_micro": "2018-02-17T18:18:36.309471Z",
            "minute": "18",
            "month": "02",
            "second": "36",
            "time": "18:18:36",
            "tz": "UTC",
            "tz_offset": "+0000",
            "weekday": "Saturday",
            "weekday_number": "6",
            "weeknumber": "07",
            "year": "2018"
        },
    }
}
```

```
1. chapter02 (bash)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡ ansible-playbook -i hosts playbook01.yml

PLAY [boxes] ****
TASK [Gathering Facts] ****
ok: [box]

TASK [debug] ****
ok: [box] => {
    "msg": "I am connecting to 192.168.50.4.nip.io which is ruuning CentOS 7.4.1708"
}

PLAY RECAP ****
box : ok=2     changed=0     unreachable=0     failed=0
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡
```

```
1. chapter02 (bash)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡ ansible-playbook -i hosts playbook02.yml

PLAY [boxes] ****
TASK [Gathering Facts] ****
ok: [box]

TASK [debug] ****
ok: [box] => {
    "msg": "I am connecting to 192.168.50.4.nip.io which is running CentOS 7.4.1708"
}

TASK [yum] ****
changed: [box]

PLAY RECAP ****
box : ok=3     changed=1     unreachable=0     failed=0
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡
```

```
1. chapter02 (bash)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡ ansible-playbook -i hosts playbook02.yml

PLAY [boxes] ****
TASK [Gathering Facts] ****
ok: [box]

TASK [debug] ****
ok: [box] => {
    "msg": "I am connecting to 192.168.50.4.nip.io which is running CentOS 7.4.1708"
}

TASK [yum] ****
ok: [box]

PLAY RECAP ****
box : ok=3    changed=0    unreachable=0    failed=0

russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡
```

```
1. chapter02 (bash)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡ ansible-playbook -i hosts playbook03.yml

PLAY [boxes] ****
TASK [Gathering Facts] ****
ok: [box]

TASK [debug] ****
ok: [box] => {
    "msg": "I am connecting to 192.168.50.4.nip.io which is running CentOS 7.4.1708"
}

TASK [yum] ****
ok: [box]

TASK [yum] ****
changed: [box] => (item=[u'ntp', u'ntpdate'])

TASK [template] ****
changed: [box]

RUNNING HANDLER [restart ntp] ****
changed: [box]

PLAY RECAP ****
box : ok=6    changed=3    unreachable=0    failed=0

russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡
```

```
1. chapter02 (bash)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡ ansible-playbook -i hosts playbook03.yml

PLAY [boxes] ****
TASK [Gathering Facts] ****
ok: [box]

TASK [debug] ****
ok: [box] => {
    "msg": "I am connecting to 192.168.50.4.nip.io which is running CentOS 7.4.1708"
}

TASK [yum] ****
ok: [box]

TASK [ntp] ****
ok: [box] => (item=[u'ntp', u'ntpdate'])

TASK [template] ****
ok: [box]

PLAY RECAP ****
box : ok=5     changed=0     unreachable=0     failed=0

russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡
```

```
1. chapter02 (bash)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡ vagrant ssh
Last login: Sun Feb 18 11:35:12 2018 from 192.168.50.1
[vagrant@192 ~]$ cat /etc/ntp.conf
# Ansible managed
driftfile /var/lib/ntp/drift
restrict default nomodify notrap nopeer noquery
restrict 127.0.0.1
restrict ::1
server 0.centos.pool.ntp.org iburst
server 1.centos.pool.ntp.org iburst
server 2.centos.pool.ntp.org iburst
server 3.centos.pool.ntp.org iburst
includefile /etc/ntp/crypto/pw
keys /etc/ntp/keys
disable monitor[vagrant@192 ~]$ exit
logout
Connection to 127.0.0.1 closed.
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡
```

```
1. chapter02 (bash)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡ vagrant ssh
Last login: Sun Feb 18 13:58:08 2018 from 172.16.20.2
[vagrant@192 ~]$ sudo systemctl status ntpd
● ntpd.service - Network Time Service
  Loaded: loaded (/usr/lib/systemd/system/ntp.service; disabled; vendor preset: disabled)
  Active: active (running) since Sun 2018-02-18 13:58:31 UTC; 20s ago
    Process: 3165 ExecStart=/usr/sbin/ntp -u ntp:ntp $OPTIONS (code=exited, status=0/SUCCESS)
   Main PID: 3166 (ntpd)
     CGroup: /system.slice/ntp.service
             └─3166 /usr/sbin/ntp -u ntp:ntp -g

Feb 18 13:58:31 192.168.50.4.nip.io ntpd[3166]: Listen normally on 3 eth0 172.16.20.134 UDP 123
Feb 18 13:58:31 192.168.50.4.nip.io ntpd[3166]: Listen normally on 4 eth1 192.168.50.4 UDP 123
Feb 18 13:58:31 192.168.50.4.nip.io ntpd[3166]: Listen normally on 5 lo ::1 UDP 123
Feb 18 13:58:31 192.168.50.4.nip.io ntpd[3166]: Listen normally on 6 eth1 fe80::20c:29ff:fe43::123
Feb 18 13:58:31 192.168.50.4.nip.io ntpd[3166]: Listen normally on 7 eth0 fe80::20c:29ff:fe43::123
Feb 18 13:58:31 192.168.50.4.nip.io ntpd[3166]: Listening on routing socket on fd #24 for interface...
Feb 18 13:58:31 192.168.50.4.nip.io ntpd[3166]: 0.0.0.0 c016 06 restart
Feb 18 13:58:31 192.168.50.4.nip.io ntpd[3166]: 0.0.0.0 c012 02 freq_set kernel 0.000 PPM
Feb 18 13:58:31 192.168.50.4.nip.io ntpd[3166]: 0.0.0.0 c011 01 freq_not_set
Feb 18 13:58:38 192.168.50.4.nip.io ntpd[3166]: 0.0.0.0 c614 04 freq_mode
Hint: Some lines were ellipsized, use -l to show in full.
[vagrant@192 ~]$ exit
logout
Connection to 127.0.0.1 closed.
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡
```

```
1. chapter02 (bash)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡ ansible-playbook -i hosts playbook03.yml

PLAY [boxes] ****
TASK [Gathering Facts] ****
ok: [box]

TASK [debug] ****
ok: [box] => {
    "msg": "I am connecting to 192.168.50.4.nip.io which is running CentOS 7.4.1708"
}

TASK [yum] ****
changed: [box]

TASK [yum] ****
changed: [box] => (item=[u'ntp', u'ntpdate'])

TASK [template] ****
changed: [box]

RUNNING HANDLER [restart ntp] ****
changed: [box]

PLAY RECAP ****
box : ok=6      changed=4      unreachable=0      failed=0

russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡
```

```
1. chapter02 (bash)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡ ansible-playbook -i hosts playbook03.yml

PLAY [boxes] ****
TASK [Gathering Facts] ****
ok: [box]

TASK [debug] ****
ok: [box] => {
    "msg": "I am connecting to 192.168.50.4.nip.io which is running CentOS 7.4.1708"
}

TASK [yum] ****
ok: [box]

TASK [yum] ****
ok: [box] => (item=[u'ntp', u'ntpdate'])

TASK [template] ****
ok: [box]

PLAY RECAP ****
box : ok=5    changed=0    unreachable=0    failed=0

russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter02
⚡ █
```

# Chapter 3: The Ansible Commands

```
1. russ (bash)
russ in ~
⚡ ansible -i hosts london -m ping
ansible01 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
ansible02 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
russ in ~
⚡ ansible -i hosts nyc -m ping
ansible03 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
ansible04 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
russ in ~
⚡
```

```
1. russ (bash)
russ in ~
⚡ ansible -i hosts all -m ping
ansible03 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
ansible01 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
ansible02 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
ansible04 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
russ in ~
⚡
```

```
1. russ (bash)
russ in ~
⚡ ansible -i hosts london -a "ping -c 3 google.com"
ansible01 | SUCCESS | rc=0 >>
PING google.com (216.58.213.110) 56(84) bytes of data.
64 bytes from lhr25s02-in-f110.1e100.net (216.58.213.110): icmp_seq=1 ttl=58 time=1.41 ms
64 bytes from lhr25s02-in-f110.1e100.net (216.58.213.110): icmp_seq=2 ttl=58 time=1.10 ms
64 bytes from lhr25s02-in-f110.1e100.net (216.58.213.110): icmp_seq=3 ttl=58 time=1.10 ms
--- google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2002ms
rtt min/avg/max/mdev = 1.101/1.209/1.417/0.147 ms

ansible02 | SUCCESS | rc=0 >>
PING google.com (172.217.23.14) 56(84) bytes of data.
64 bytes from lhr35s01-in-f14.1e100.net (172.217.23.14): icmp_seq=1 ttl=57 time=1.76 ms
64 bytes from lhr35s01-in-f14.1e100.net (172.217.23.14): icmp_seq=2 ttl=57 time=1.25 ms
64 bytes from lhr35s01-in-f14.1e100.net (172.217.23.14): icmp_seq=3 ttl=57 time=1.24 ms
--- google.com ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 1.241/1.418/1.764/0.248 ms

russ in ~
⚡
```



```
1. russ (bash)
⚡ ansible -i hosts all -a "reboot now"
ansible01 | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: Shared connection to 46.101.92.240 closed.\r\n",
    "unreachable": true
}
ansible03 | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: Shared connection to 159.65.63.217 closed.\r\n",
    "unreachable": true
}
ansible02 | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: Shared connection to 159.65.63.218 closed.\r\n",
    "unreachable": true
}
ansible04 | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: Shared connection to 138.68.145.116 closed.\r\n",
    "unreachable": true
}
```

```
1. russ (bash)
⚡ ansible -i hosts all -a "uptime"
ansible01 | SUCCESS | rc=0 >>
16:30:57 up 1 min, 1 user, load average: 0.18, 0.12, 0.05

ansible03 | SUCCESS | rc=0 >>
16:30:57 up 1 min, 1 user, load average: 0.12, 0.09, 0.04

ansible02 | SUCCESS | rc=0 >>
16:30:57 up 1 min, 1 user, load average: 0.13, 0.09, 0.04

ansible04 | SUCCESS | rc=0 >>
16:30:57 up 1 min, 1 user, load average: 0.25, 0.10, 0.04
```

```
1. russ (less)
russ in ~
⚡ ansible-config dump
ACCELERATE_CONNECT_TIMEOUT(default) = 1.0
ACCELERATE_DAEMON_TIMEOUT(default) = 30
ACCELERATE_KEYS_DIR(default) = ~/.fireball.keys
ACCELERATE_KEYS_DIR_PERMS(default) = 700
ACCELERATE_KEYS_FILE_PERMS(default) = 600
ACCELERATE_MULTI_KEY(default) = False
ACCELERATE_PORT(default) = 5099
ACCELERATE_TIMEOUT(default) = 30
ALLOW_WORLD_READABLE_TMPFILES(default) = False
ANSIBLE_COW_SELECTION(default) = default
ANSIBLE_COW_WHITELIST(default) = ['bud-frogs', 'bunny', 'cheese', 'daemon', 'default', 'dragon', 'el
ANSIBLE_FORCE_COLOR(default) = False
ANSIBLE_NOCOLOR(default) = False
ANSIBLE_NOCOWS(default) = False
ANSIBLE_PIPELINING(default) = False
ANSIBLE_SSH_ARGS(default) = -C -o ControlMaster=auto -o ControlPersist=60s
ANSIBLE_SSH_CONTROL_PATH(env: ANSIBLE_SSH_CONTROL_PATH) = /tmp/%h-%p-%r
ANSIBLE_SSH_CONTROL_PATH_DIR(default) = ~/ansible/cp
ANSIBLE_SSH_EXECUTABLE(default) = ssh
ANSIBLE_SSH_RETRIES(default) = 0
ANY_ERRORS_FATAL(default) = False
BECOME_ALLOW_SAME_USER(default) = False
CACHE_PLUGIN(default) = memory
```

```
1. russ (less)
ANSIBLE_COW_SELECTION:
:
  description: This allows you to chose a specific cowsay stencil for the banners
    or use 'random' to cycle through them.
  env:
  - {name: ANSIBLE_COW_SELECTION}
  ini:
  - {key: cow_selection, section: defaults}
    name: Cowsay filter selection
ANSIBLE_COW_WHITELIST:
  default: [bud-frogs, bunny, cheese, daemon, default, dragon, elephant-in-snake,
    elephant, eyes, hellokitty, kitty, luke-koala, meow, milk, moofasa, moose, ren,
    sheep, small, stegosaurus, stimpy, supermilker, three-eyes, turkey, turtle, tux,
    udder, vader-koala, vader, www]
  description: White list of cowsay templates that are 'safe' to use, set to empty
    list if you want to enable all installed templates.
  env:
  - {name: ANSIBLE_COW_WHITELIST}
  ini:
  - {key: cow_whitelist, section: defaults}
    name: Cowsay filter whitelist
  type: list
  yaml: {key: display.cowsay_whitelist}
```

```
1. russ (python)
⚡ ansible-console -i hosts london
Vault password:
Welcome to the ansible console.
Type help or ? to list commands.

russ@london (2)[f:5]$
```

```
1. russ (python)
russ@london (2)[f:5]$ ping
ansible01 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
ansible02 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
russ@london (2)[f:5]$
```

```
1. russ (python)
russ@london (2)[f:5]$ raw uptime
ansible01 | SUCCESS | rc=0 >>
18:38:44 up 2:09, 1 user, load average: 0.00, 0.01, 0.05
Shared connection to 46.101.92.240 closed.

ansible02 | SUCCESS | rc=0 >>
18:38:44 up 2:09, 1 user, load average: 0.05, 0.07, 0.06
Shared connection to 159.65.63.218 closed.

russ@london (2)[f:5]$
```

```
1. russ (python)
russ@london (2)[f:5]$ yum name=kpartx state=latest
ansible01 | SUCCESS => {
    "changed": false,
    "msg": "",
    "rc": 0,
    "results": [
        "All packages providing kpartx are up to date",
        ""
    ]
}
ansible02 | SUCCESS => {
    "changed": false,
    "msg": "",
    "rc": 0,
    "results": [
        "All packages providing kpartx are up to date",
        ""
    ]
}
russ@london (2)[f:5]$
```

```
1. russ (less)
> RAW      (/usr/local/Cellar/ansible/2.4.3.0/libexec/lib/python2.7/site-packages/ansible/modules/comm
Executes a low-down and dirty SSH command, not going through the module
subsystem. This is useful and should only be done in two cases. The
first case is installing `python-simplejson` on older (Python 2.4 and
before) hosts that need it as a dependency to run modules, since nearly
all core modules require it. Another is speaking to any devices such as
routers that do not have any Python installed. In any other case, using
the [shell] or [command] module is much more appropriate. Arguments
given to 'raw' are run directly through the configured remote shell.
Standard output, error output and return code are returned when
available. There is no change handler support for this module. This
module does not require python on the remote system, much like the
[script] module. This module is also supported for Windows targets.

* note: This module has a corresponding action plugin.

OPTIONS (= is mandatory):

- executable
    change the shell used to execute the command. Should be an absolute path
    to the executable.
    when using privilege escalation (`become`), a default shell will be
    assigned if one is not provided as privilege escalation requires a
    shell.
    [Default: (null)]
    version_added: 1.0

= free_form
:
```

```
russ in ~ 1. russ (bash)
⚡ ansible-doc --snippet raw
- name: Executes a low-down and dirty SSH command
  raw:
    executable:          # change the shell used to execute the command. Should be an absolute
                        path to the executable. When using
                        privilege escalation ('become'), a
                        default shell will be assigned if one
                        is not provided as privilege
                        escalation requires a shell.
    free_form:           # (required) the raw module takes a free form command to run. There is
                        no parameter actually named 'free
                        form'; see the examples!
russ in ~
```

```
russ in ~ 1. russ (bash)
⚡ ansible-inventory -i hosts --graph
@all:
  |-- @digitalocean:
  |  |-- @london:
  |  |  |-- ansible01
  |  |  |-- ansible02
  |  |-- @nyc:
  |  |  |-- ansible03
  |  |  |-- ansible04
  |-- @ungrouped:
  |  |-- ansible01
  |  |-- ansible02
  |  |-- ansible03
  |  |-- ansible04
russ in ~
```

```
russ in ~ 1. russ (bash)
⚡ ansible-inventory -i hosts --host=ansible01
{
  "ansible_connection": "ssh",
  "ansible_host": "46.101.92.240",
  "ansible_private_key_file": "~/.ssh/id_rsa",
  "ansible_user": "root",
  "host_key_checking": false
}
russ in ~
```

```
russ in ~ 1. russ (bash)
⚡ ansible-vault encrypt secrets.yml
New Vault password:
Confirm New Vault password:
Encryption successful
russ in ~
```

```
russ in ~                                         1. russ (bash)
⚡ ansible-vault view secrets.yml
Vault password:
---
secret: "mypassword"
secret-api-key: "myprivateapikey"
russ in ~
⚡
```

```
russ in ~                                         1. russ (bash)
⚡ ansible-vault encrypt_string 'mypassword' --name 'password'
New Vault password:
Confirm New Vault password:
password: !vault |
$ANSIBLE_VAULT;1.1;AES256
30646136653066633833363837613162623765386561356334386463366338313164633737386534
6536663537383830323636653235633662353933616331660a313962626530303961383234323736
36393433313530343266383239663738626235393164356135336564626661303564343039303436
6662653961303764630a34663966396437313736666383630323535663536623763303339323062
3662
Encryption successful
russ in ~
⚡
```

```
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter03      1. chapter03 (bash)
⚡ ansible-playbook playbook.yml
[WARNING]: provided hosts list is empty, only localhost is available. Note that the implicit
localhost does not match 'all'

PLAY [localhost] ****
TASK [Gathering Facts] ****
ok: [localhost]

TASK [debug] ****
fatal: [localhost]: FAILED! => {"msg": "Attempting to decrypt but no vault secrets found"}
    to retry, use: --limit @/Users/russ/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/
chapter03/playbook.retry

PLAY RECAP ****
localhost                  : ok=1    changed=0    unreachable=0    failed=1
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter03
⚡
```

```

1. chapter03 (bash)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter03
⚡ ansible-playbook --vault-id /tmp/vault-file playbook.yml
[WARNING]: provided hosts list is empty, only localhost is available. Note that the implicit
localhost does not match 'all'

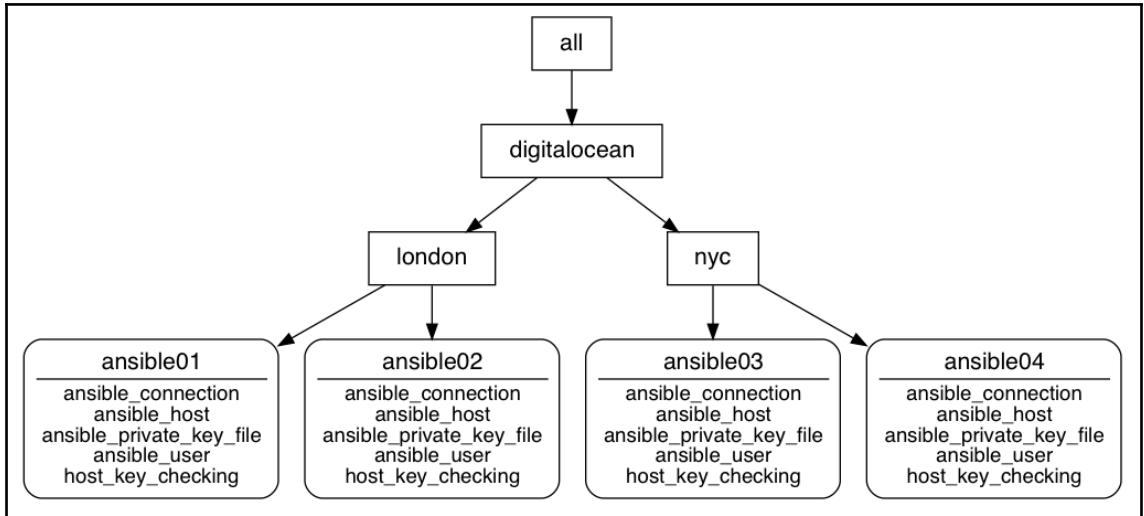
PLAY [localhost] ****
TASK [Gathering Facts] ****
ok: [localhost]

TASK [debug] ****
ok: [localhost] => {
    "msg": "The username is russmckendrick and password is mypassword, also the API key is myprivate
apikey"
}

TASK [debug] ****
ok: [localhost] => {
    "msg": "I am going to install [u'httpd', u'php', u'mariadb']"
}

PLAY RECAP ****
localhost : ok=3    changed=0    unreachable=0    failed=0
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter03
⚡

```



The screenshot shows the Ara web interface at `127.0.0.1`. The top navigation bar includes links for Documentation, ARA 0.14.6, Ansible 2.4.3.0, and Python 2.7. The main content area is titled "Playbook reports" and displays four entries:

- 2018-02-24 14:36:10 playbook.yml: 0:00:02 > 0 Parameters > 1 Hosts > 1 Plays > 1 Files > ✓ 3 Tasks > 0 Records
- 2018-02-24 12:11:21 playbook.yml: 0:00:01 > 0 Parameters > 1 Hosts > 1 Plays > 1 Files > ✓ 2 Tasks > 0 Records
- 2018-02-24 12:11:11 playbook.yml: 0:00:01 > 0 Parameters > 1 Hosts > 1 Plays > 1 Files > ✓ 3 Tasks > 0 Records
- 2018-02-24 11:26:33 playbook.yml: 0:00:01 > 0 Parameters > 1 Hosts > 1 Plays > 1 Files > ✓ 3 Tasks > 0 Records

Below the list, a message states "Displaying 4 playbook reports out of a total of 4."

This screenshot shows a detailed view of a playbook report from the Ara interface. The title of the modal window is "File: /Users/russ/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter03/playbook.yml". The modal contains the following information:

- Last updated: 2018-02-24 14:36:12
- Ansible version: 2.4.3.0
- Playbook content (lines 1-12):

```
1 ----
2
3 - hosts: localhost
4
5   vars_files:
6     - secrets.yml
7
8   tasks:
9     - debug:
10       msg: "The username is {{ username }} and password is {{ password }}, also the API key is {{ secretapikey }}"
11     - debug:
12       msg: "I am going to install {{ packages }}"
```

On the right side of the interface, there are three separate windows showing "3 Tasks" each.

At the bottom, a message indicates "Displaying 4 playbook reports out of a total of 4."

# Chapter 4: Deploying a LAMP Stack

```
russ in ~/lamp
⚡ tree
.
├── Vagrantfile
├── group_vars
│   └── common.yml
├── production
└── roles
    └── common
        ├── README.md
        ├── defaults
        │   └── main.yml
        ├── files
        ├── handlers
        │   └── main.yml
        ├── meta
        │   └── main.yml
        ├── tasks
        │   └── main.yml
        ├── templates
        ├── tests
        │   └── inventory
        │       └── test.yml
        └── vars
            └── main.yml
└── site.yml

11 directories, 12 files
russ in ~/lamp
⚡
```

```
russ in ~/lamp/roles/common
⚡ tree
.
├── README.md
├── defaults
│   └── main.yml
├── files
├── handlers
│   └── main.yml
├── meta
│   └── main.yml
├── tasks
│   └── main.yml
├── templates
├── tests
│   └── inventory
│       └── test.yml
└── vars
    └── main.yml

8 directories, 8 files
russ in ~/lamp/roles/common
⚡
```



(MySQL 5.5.5-10.1.31-MariaDB) 192.168.50.4.nip.io/employees/employees

employees						
Select Database		Structure	Content	Relations	Triggers	Table Info
TABLES & VIEWS		Search: emp_no				
		emp_no	birth_date	first_name	last_name	gender
		10001	1953-09-02	Georgi	Facello	M
		10002	1964-06-02	Bezalel	Simmel	F
		10003	1959-12-03	Porto	Bamford	M
		10004	1954-05-01	Chirstian	Koblick	M
		10005	1955-01-21	Kyoichi	Maliniak	M
		10006	1953-04-20	Anneke	Preusig	F
		10007	1957-05-23	Tzvetan	Zielinski	F
		10008	1958-02-19	Saniya	Kalloufi	M
		10009	1952-04-19	Suman	Peac	F
		10010	1963-06-01	Duangkaew	Piveteau	F
		10011	1953-11-07	Mary	Sluis	F
		10012	1960-10-04	Patricia	Bridgland	M
		10013	1963-06-07	Eberhardt	Terkki	M
		10014	1956-02-12	Berni	Genin	M
		10015	1959-08-19	Guoxiang	Nooteboom	M
		10016	1961-05-02	Kazuhito	Cappelletti	M
		10017	1958-07-06	Cristinel	Bouloucos	F
		10018	1954-06-19	Kazuhide	Peha	F
		10019	1953-01-23	Lillian	Haddadi	M
		10020	1952-12-24	Mayuko	Warwick	M
		10021	1960-02-20	Ramzi	Erde	M
		10022	1952-07-08	Shahaf	Famili	M
		10023	1953-09-29	Bojan	Montemayor	F
		10024	1958-09-05	Suzette	Pettesy	F
		10025	1958-10-31	Prasadram	Heyers	M
		10026	1953-04-03	Yongqiao	Berztiss	M
		10027	1962-07-10	Oliver	Reinhard	F

TABLE INFORMATION

- created: 02/03/2018
- engine: InnoDB
- rows: ~298,892
- size: 14.5 MB
- encoding: latin1

Rows 1 - 1,000 of ~298,892 from table

PHP Version 7.2.2



System	Linux 192.168.50.4.nip.io 3.10.0-693.11.6.x86_64 #1 SMP Thu Jan 4 01:06:37 UTC 2018 x86_64
Build Date	Feb 1 2018 15:31:57
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc
Loaded Configuration File	/etc/php.ini
Scan this dir for additional .ini files	/etc/php.d
Additional .ini files parsed	/etc/php.d/20-bcmath.ini, /etc/php.d/20-bz2.ini, /etc/php.d/20-calendar.ini, /etc/php.d/20-ctype.ini, /etc/php.d/20-curl.ini, /etc/php.d/20-cgi-fcgi.ini, /etc/php.d/20-dba.ini, /etc/php.d/20-dom.ini, /etc/php.d/20-exif.ini, /etc/php.d/20-fileinfo.ini, /etc/php.d/20-ftp.ini, /etc/php.d/20-gd.ini, /etc/php.d/20-gettext.ini, /etc/php.d/20-iconv.ini, /etc/php.d/20-intl.ini, /etc/php.d/20-json.ini, /etc/php.d/20-mbstring.ini, /etc/php.d/20-phar.ini, /etc/php.d/20-posix.ini, /etc/php.d/20-shmop.ini, /etc/php.d/20-simplxml.ini, /etc/php.d/20-smtp.ini, /etc/php.d/20-soap.ini, /etc/php.d/20-sockets.ini, /etc/php.d/20-sqlite3.ini, /etc/php.d/20-sysvmsg.ini, /etc/php.d/20-sysvsem.ini, /etc/php.d/20-sysvshm.ini, /etc/php.d/20-tokenizer.ini, /etc/php.d/20-xml.ini, /etc/php.d/20-xmlwriter.ini, /etc/php.d/20-xsl.ini, /etc/php.d/20-zip.ini, /etc/php.d/30-mysqli.ini, /etc/php.d/30-pdo_mysqli.ini, /etc/php.d/30-pdo_oci8.ini, /etc/php.d/30-pdo_sqlite.ini, /etc/php.d/30-wddx.ini, /etc/php.d/30-xmireader.ini, /etc/php.d/30-xmlrpc.ini
PHP API	20170718
PHP Extension	20170718
Zend Extension	320170718
Zend Extension Build	API20170718.NTS
PHP Extension Build	API20170718.NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	enabled
Zend Memory Manager	enabled
Zend Multibyte Support	provided by mbstring

MySQL > Server > Database: employees

Logout

Adminer 4.6.2

Database: employees

DB: employees

Alter database Database schema Privileges

Tables and views

Search data in tables (6)

	Table	Engine?	Collation?	Data Length?	Index Length?	Data Free?	Auto Increment?	Rows?	Comment?
<input type="checkbox"/>	current_dept_emp	View							?
<input type="checkbox"/>	departments	InnoDB	latin1_swedish_ci	16,384	16,384	0			~ 9
<input type="checkbox"/>	dept_emp	InnoDB	latin1_swedish_ci	12,075,008	5,783,552	4,194,304			~ 331,570
<input type="checkbox"/>	dept_emp_latest_date	View							?
<input type="checkbox"/>	dept_manager	InnoDB	latin1_swedish_ci	16,384	16,384	0			~ 24
<input type="checkbox"/>	employees	InnoDB	latin1_swedish_ci	15,220,736	0	4,194,304			~ 299,246
<input type="checkbox"/>	salaries	InnoDB	latin1_swedish_ci	100,270,080	0	4,194,304			~ 2,838,426
<input type="checkbox"/>	titles	InnoDB	latin1_swedish_ci	20,512,768	0	4,194,304			~ 441,951
	8 in total	InnoDB	latin1_swedish_ci	148,111,360	5,816,320	0			

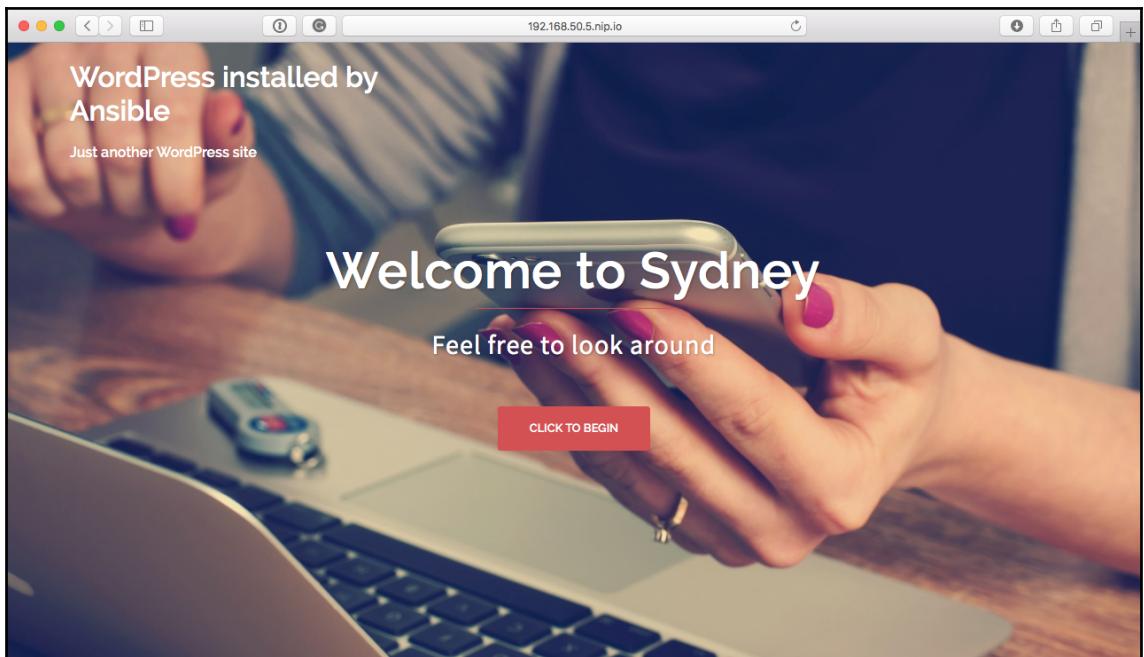


# Chapter 5: Deploying WordPress

```
[root@192 yum.repos.d]# cat nginx.repo
[nginx]
baseurl = http://nginx.org/packages/mainline/centos/7/$basearch/
enabled = 1
gpgcheck = 0
name = The mainline NGINX repo

[root@192 yum.repos.d]# yum info nginx
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: repo.uk.bigstepcloud.com
 * epel: www.mirrorservice.org
 * extras: repo.uk.bigstepcloud.com
 * ius: mirrors.ircam.fr
 * updates: repo.uk.bigstepcloud.com
Available Packages
Name        : nginx
Arch       : x86_64
Epoch      : 1
Version    : 1.13.9
Release    : 1.el7_4.ngx
Size       : 728 k
Repo       : nginx/x86_64
Summary    : High performance web server
URL        : http://nginx.org/
License    : 2-clause BSD-like license
Description: nginx [engine x] is an HTTP and reverse proxy server, as well as
             : a mail proxy server.

[root@192 yum.repos.d]#
```



A screenshot of the WordPress dashboard. The left sidebar shows menu items like Home, Updates (1), Jetpack, Posts, Media, Pages, Comments, Appearance, Plugins (1), Users, Tools, Settings, SEO (2), Wordfence (2), and a Collapse menu. The main area has a yellow header bar with a message about optimizing the Wordfence Web Application Firewall, with "CLICK HERE TO CONFIGURE" and "DISMISS" buttons. Below this is the "Dashboard" section with a "Welcome to Sydney" message, a "Get started with Sydney" button, and a note about recommended plugins: "Page Builder by SiteOrigin" and "Sydney Toolbox - custom posts and fields for the Sydney theme". It also asks if Wordfence should stay up-to-date automatically. At the bottom, there are sections for "Welcome to WordPress!", "Get Started" (with a "Customize Your Site" button), "Next Steps" (with "Write your first blog post" and "Add an About page" options), and "More Actions" (with "Manage widgets or menus" and "Turn comments on or off" options).

# Chapter 6: Targeting Multiple Distributions

```
1. lemp (bash)
russ in ~/lemp
⚡ ansible -i production centos -m setup | grep ansible_os_family
  "ansible_os_family": "RedHat",
russ in ~/lemp
⚡ ansible -i production ubuntu -m setup | grep ansible_os_family
russ in ~/lemp
⚡
```

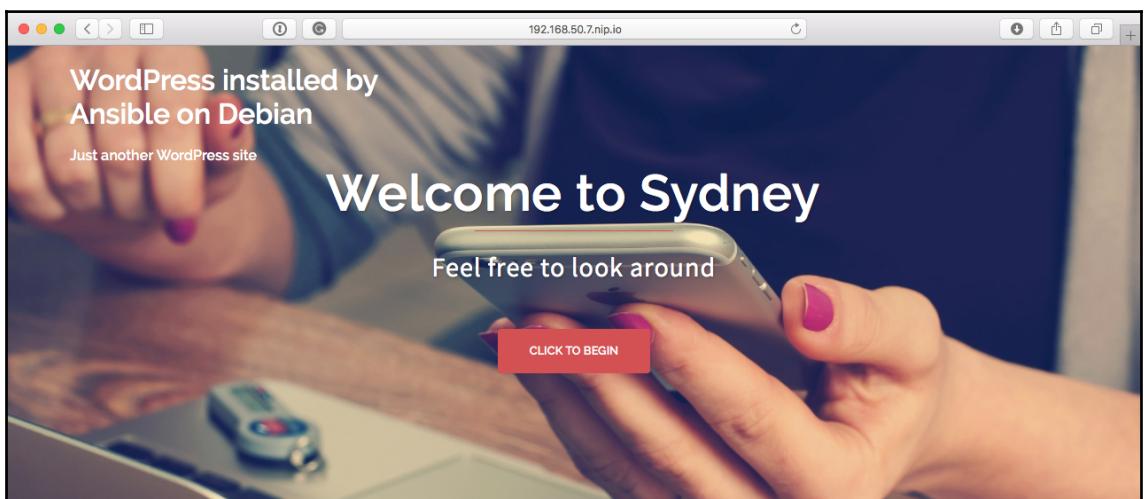
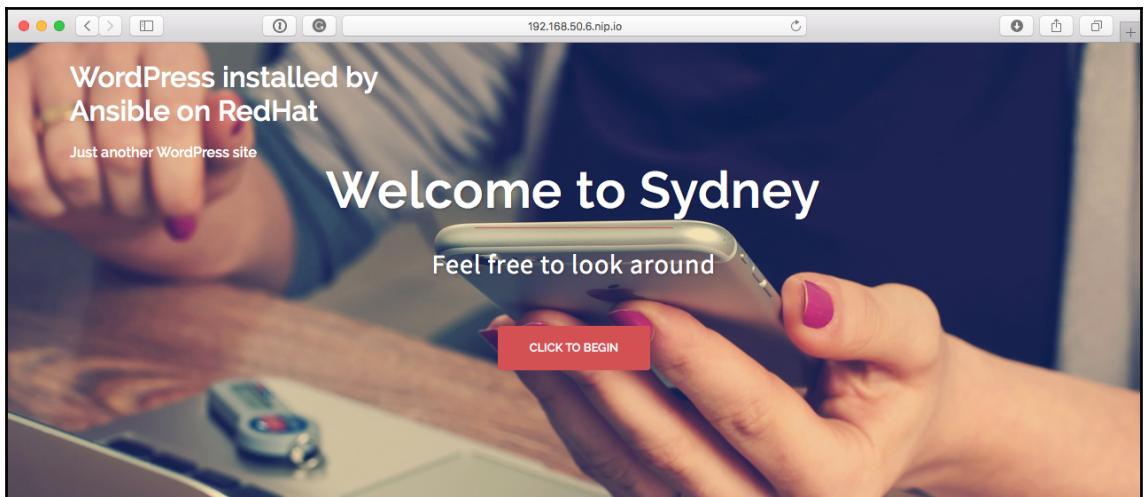
```
1. lemp (bash)
russ in ~/lemp
⚡ ansible -i production ubuntu -m setup
ubuntu | FAILED! => {
  "changed": false,
  "module_stderr": "Shared connection to 192.168.50.7.mip.io closed.\r\n",
  "module_stdout": "/bin/sh: 1: /usr/bin/python: not found\r\n",
  "msg": "MODULE FAILURE",
  "rc": 0
}
russ in ~/lemp
⚡
```

```
1. vagrant@192: ~ (ssh)
russ in ~/lemp
⚡ vagrant ssh ubuntu
Welcome to Ubuntu 17.04 (GNU/Linux 4.10.0-42-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

Last login: Sat Mar 10 03:36:33 2018 from 192.168.50.1
vagrant@192:~$ which python
vagrant@192:~$ which python3
/usr/bin/python3
vagrant@192:~$
```

```
1. lemp (bash)
russ in ~/lemp
⚡ ansible -i production wordpress -m setup | grep ansible_os_family
  "ansible_os_family": "RedHat",
  "ansible_os_family": "Debian",
russ in ~/lemp
⚡
```

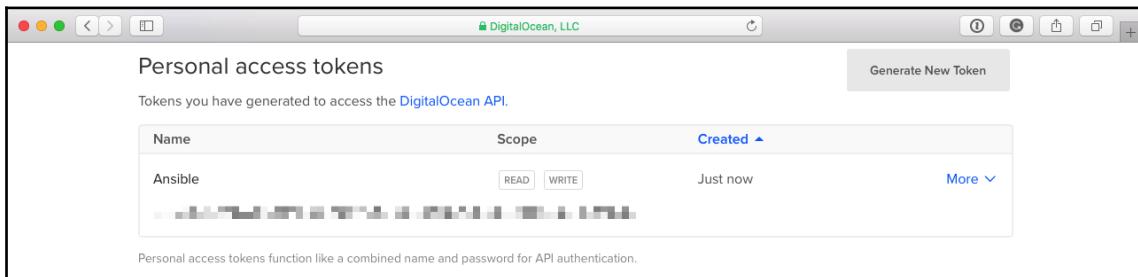
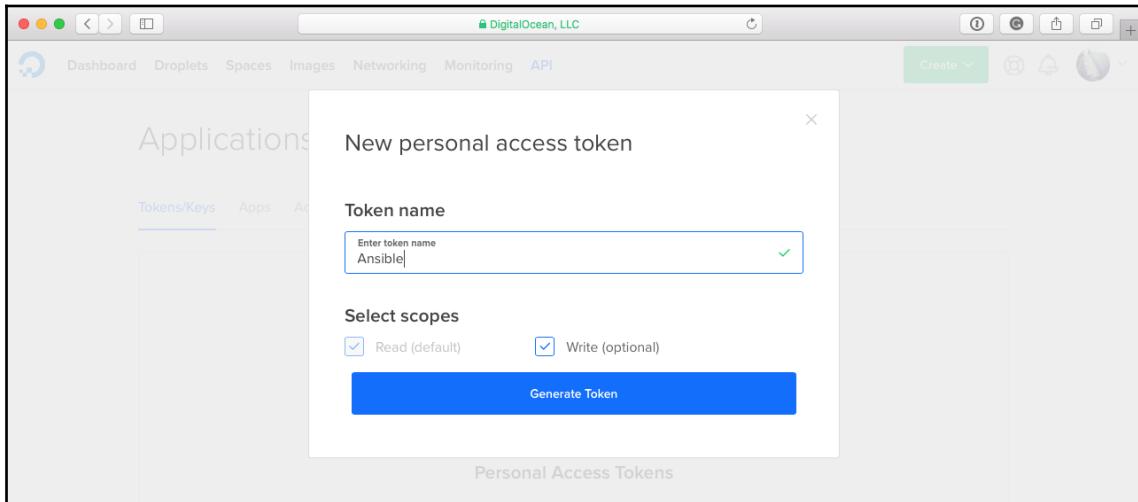


# Chapter 7: The Core Network Modules

```
2. vagrant@192: ~ (ssh)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter07/vyos on master*
⚡ vagrant ssh
-----
VyOS Ansible Managed Firewall
-----
Last login: Mon Mar 26 15:41:49 2018 from 172.16.20.2
vagrant@192:~$
```

```
2. vagrant@192: ~ (ssh)
firewall {
    all-ping enable
    broadcast-ping disable
    group {
        address-group SSH-ACCESS {
            address 172.16.20.2
        }
    }
    ipv6-receive-redirects disable
    ipv6-src-route disable
    ip-src-route disable
    log-martians enable
    name OUTSIDE-IN {
        default-action drop
        description "deny traffic from internet"
        rule 10 {
            action accept
            destination {
                address 172.16.20.11
                port 80
            }
            protocol tcp
        }
    }
}
```

# Chapter 8: Moving to the Cloud



```
russ in ~/digitalocean
⚡ ansible-vault \
  encrypt_string 'pLgVbM2hswiLFWbemyD4Nru3a2yYwAKm2xbL6WmPBtzqvnMTrVTXYuabWbp7vArQ' \
  --name "do_token"
New Vault password:
Confirm New Vault password:
do_token: !vault |
  $ANSIBLE_VAULT;1.1;AES256
  61343630316236306532316531633239636661383630323030303861346363376665623762343031
  6334316635333833373362303839646262376136343836330a64353665336439353836661633139
  37326633346636333963336135313534326138346461333163306330336432306439383336663137
  6337356363323064660a386264643131666132633835383630323738356662653163343436396134
  3335663832613736633234316265663962363264633763336643636439643933653062303539
  63393964343636353664633636356364636331613832663730393063666132613135626539613533
  6565323343335663265646663646437363639663932363432303531383831333837383031343434
  65336163643635623038
Encryption successful
russ in ~/digitalocean
⚡
```

The screenshot shows the 'Two-factor authentication' section of the DigitalOcean account settings. It includes a summary of the default method (App) being enabled and a backup method (SMS) also being enabled. Buttons for 'Two-factor Authentication Enabled' and 'Backup Method Enabled' are visible.

**Two-factor authentication**

Default method: App  
When you log in you will be required to enter a code that we will send to an app.

Two-factor Authentication Enabled

Backup method: SMS  
We will send a unique code to [REDACTED]

Backup Method Enabled

**SSH keys**

Add SSH Key

Name	Fingerprint	More
Ansible	7d:ce:56:5f:af:45:71:ab:af:fe:77:c2:9f:90:bc:cf	More ▾
Work	[REDACTED]	More ▾

The screenshot shows the 'Droplets' section of the DigitalOcean dashboard. A single droplet named 'AnsibleDroplet' is listed, showing its IP address (159.65.27.87), creation time (2 minutes ago), and a 'More' dropdown menu.

**Droplets**

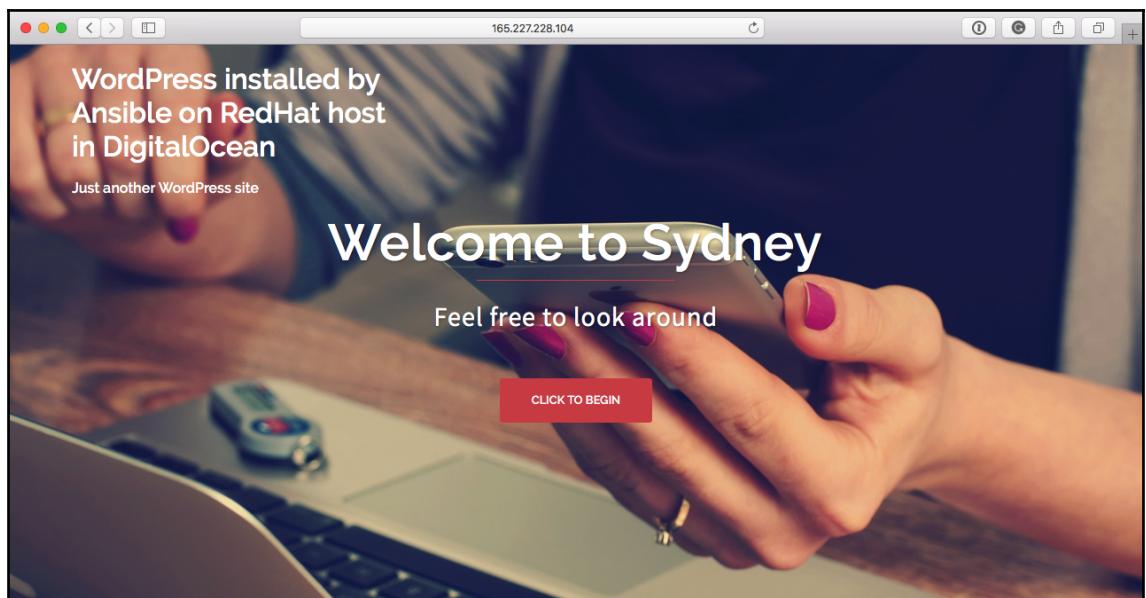
Search by Droplet name

Droplets Volumes

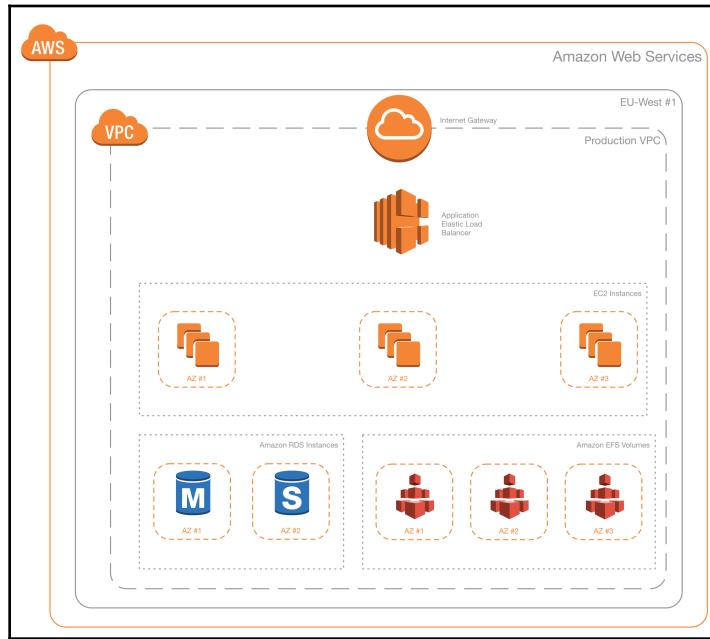
Name	IP Address	Created	Tags
AnsibleDroplet	159.65.27.87	2 minutes ago	More ▾

The screenshot shows a terminal session on a CentOS 7.4.1708 droplet. The user is attempting to ssh into the host and is prompted to confirm the host key fingerprint due to it being untrusted.

```
1. digitalocean (bash)
russ in ~/digitalocean
$ ssh root@159.65.27.87
ssh: Could not resolve host address 159.65.27.87
The authenticity of host '159.65.27.87 (159.65.27.87)' can't be established.
ECDSA key fingerprint is SHA256:khZ2jjeAs3PpU7ygXkzqj4lTLbCfkfIlybKp4mGtD4.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '159.65.27.87' (ECDSA) to the list of known hosts.
[root@AnsibleDroplet ~]# cat /etc/*release
CentOS Linux release 7.4.1708 (Core)
NAME="CentOS Linux"
VERSION="7 (Core)"
ID="centos"
ID_LIKE="rhel fedora"
VERSION_ID="7"
PRETTY_NAME="CentOS Linux 7 (Core)"
ANSI_COLOR="0;31"
CFE_NAME="cpe:/o:centos:centos:7"
HOME_URL="https://www.centos.org/"
BUG_REPORT_URL="https://bugs.centos.org/"
```



# Chapter 9: Building Out a Cloud Network



Screenshot of the AWS Identity and Access Management (IAM) console at [console.aws.amazon.com](https://console.aws.amazon.com). The interface shows the following sections:

- Search IAM**: A search bar.
- Dashboard**: A summary of IAM resources: Users: 0, Groups: 0, Roles: 0, Policies: 0, Identity providers: 0, Customer Managed Policies: 1.
- Welcome to Identity and Access Management**: A welcome message and a link to sign-in (<https://signin.aws.amazon.com/console>).
- IAM Resources**: A table showing the count of users, groups, roles, policies, identity providers, and customer managed policies.
- Security Status**: A progress bar indicating 3 out of 5 steps completed, with tasks listed:
  - Delete your root access keys
  - Activate MFA on your root account
  - Create individual IAM users
  - Use groups to assign permissions
  - Apply an IAM password policy
- Feature Spotlight**: A video player showing an introduction to AWS IAM.
- Additional Information**: Links to IAM best practices, documentation, and other resources.

Create New Group Wizard

Step 1 : Group Name

Step 2 : Attach Policy

Step 3 : Review

**Review**

Review the following information, then click **Create Group** to proceed.

Group Name	Ansible	Edit Group Name
Policies	arn:aws:iam::aws:policy/AmazonEC2FullAccess arn:aws:iam::aws:policy/AmazonVPCFullAccess arn:aws:iam::aws:policy/AmazonRDSFullAccess	Edit Policies

**Create Group**

Add user

1 2 3 4

**Success**

You successfully created the users shown below. You can view and download user security credentials. You can also email users instructions for signing in to the AWS Management Console. This is the last time these credentials will be available to download. However, you can create new credentials at any time.

Users with AWS Management Console access can sign-in at: [https://\[REDACTED\].signin.aws.amazon.com/console](https://[REDACTED].signin.aws.amazon.com/console)

**Download .csv**

User	Access key ID	Secret access key
Ansible	[REDACTED]	***** Show

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```
russ in ~
⚡ export AWS_ACCESS_KEY=AKIAI5KECPOTNTVM3EDA
russ in ~
⚡ export AWS_SECRET_KEY=Y4B7FFiSwl0Am3VIFc07lgnc/TAtK5+RpxzIGTr
russ in ~
⚡ echo $AWS_ACCESS_KEY
AKIAI5KECPOTNTVM3EDA
russ in ~
⚡
```

Screenshot of the AWS VPC console showing the list of VPCs. The search bar shows "vpc-ccef75aa | my-vpc".

Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR	DHCP options set	Route table	Network ACL	Tenancy
vpc-205dff47	vpc-205dff47	available	172.16.0.0/16		dopt-44851321	rtb-a3a19bc4	acl-b999eade	Default
my-vpc	vpc-ccef75aa	available	10.0.0.0/16		dopt-44851321	rtb-49e85430	acl-a98d9acf	Default

Selected VPC: my-vpc (vpc-ccef75aa)

Summary tab details:

- VPC ID: vpc-ccef75aa | my-vpc
- State: available
- IPv4 CIDR: 10.0.0.0/16
- IPv6 CIDR:
- DHCP options set: dopt-44851321
- Route table: rtb-49e85430
- ClassicLink: Disabled
- Network ACL: acl-a98d9acf
- Tenancy: Default
- DNS resolution: yes
- DNS hostnames: yes
- ClassicLink DNS Support: no

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Screenshot of the AWS VPC console showing the list of subnets for the selected VPC.

Name	Subnet ID	State	VPC	IPv4 CIDR	Available IPv4 Addresses	Availability Zone
my-vpc_ec2_eu-west-1a	subnet-24ea4a42	available	vpc-ccef75aa   my-vpc	10.0.10.0/24	251	eu-west-1a
my-vpc_ec2_eu-west-1b	subnet-2951e761	available	vpc-ccef75aa   my-vpc	10.0.11.0/24	251	eu-west-1b
my-vpc_ec2_eu-west-1c	subnet-fce80ba6	available	vpc-ccef75aa   my-vpc	10.0.12.0/24	251	eu-west-1c
my-vpc_efs_eu-west-1b	subnet-4340f60b	available	vpc-ccef75aa   my-vpc	10.0.40.0/24	251	eu-west-1b
my-vpc_efs_eu-west-1c	subnet-5aea0900	available	vpc-ccef75aa   my-vpc	10.0.41.0/24	251	eu-west-1c
my-vpc_elb_eu-west-1a	subnet-511f15137	available	vpc-ccef75aa   my-vpc	10.0.20.0/24	251	eu-west-1a
my-vpc_elb_eu-west-1b	subnet-6744f22f	available	vpc-ccef75aa   my-vpc	10.0.21.0/24	251	eu-west-1b
my-vpc_elb_eu-west-1c	subnet-64eb083e	available	vpc-ccef75aa   my-vpc	10.0.22.0/24	251	eu-west-1c
my-vpc_rds_eu-west-1a	subnet-19e9497f	available	vpc-ccef75aa   my-vpc	10.0.30.0/24	251	eu-west-1a
my-vpc_rds_eu-west-1b	subnet-154ef85d	available	vpc-ccef75aa   my-vpc	10.0.31.0/24	251	eu-west-1b

Select a subnet above

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The screenshot shows the AWS VPC Dashboard. On the left, there's a sidebar with links like VPC Dashboard, Virtual Private Cloud, Your VPCs, Subnets, Route Tables, Internet Gateways (which is selected), Egress Only Internet Gateways, and DHCP Options Sets. The main area has tabs for 'Create internet gateway' and 'Actions'. A search bar at the top says 'Filter by tags and attributes or search by keyword'. Below it is a table with columns: Name, ID, State, and VPC. Two rows are listed: one for 'igw-655b1401' and another for 'my-vpc\_inte...'. The second row is highlighted. Below the table, it says 'Internet gateway: igw-a74235c0' with tabs for 'Description' and 'Tags'. Under 'Description', it shows 'ID: igw-a74235c0' and 'State: attached'. To the right, it says 'Attached VPC ID: vpc-cccf75aa | my-vpc'. At the bottom, there are links for Feedback, English (US), and navigation icons.

The screenshot shows the AWS VPC Dashboard. The sidebar is identical to the previous one. The main area has tabs for 'Create Route Table' and 'Delete Route Table'. A search bar says 'my-vpc'. Below it is a table with columns: Name, Route Table ID, Explicitly Associated, Main, and VPC. Two rows are listed: one for 'rtb-9dd569e4' and another for 'rtb-49e85430'. The first row is highlighted. Below the table, it says 'rtb-9dd569e4 | my-vpc\_outbound' with tabs for 'Summary', 'Routes', 'Subnet Associations', 'Route Propagation', and 'Tags'. Under 'Summary', it shows 'Route Table ID: rtb-9dd569e4 | my-vpc\_outbound' and 'Explicitly Associated With: 3 Subnets'. To the right, it says 'Main: no' and 'VPC: vpc-cccf75aa | my-vpc'. At the bottom, there are links for Feedback, English (US), and navigation icons.

Screenshot of the AWS VPC Dashboard showing the list of security groups for a specific VPC.

The search bar at the top right shows the filter "my-vpc".

The table lists five security groups:

Name tag	Group ID	Group Name	VPC	Description
my-vpc-efs	sg-7b718806	my-vpc-efs	vpc-cce75aa   my-vpc	opens port 2049 to the ec2 instances
	sg-7df60f00	default	vpc-cce75aa   my-vpc	default VPC security group
my-vpc-rds	sg-8e7089f3	my-vpc-rds	vpc-cce75aa   my-vpc	opens port 3306 to the ec2 instances
my-vpc-elb	sg-97778eea	my-vpc-elb	vpc-cce75aa   my-vpc	opens port 80 and 443 to the world
my-vpc-ec2	sg-fa778e87	my-vpc-ec2	vpc-cce75aa   my-vpc	opens port 22 to a trusted IP and port 80...

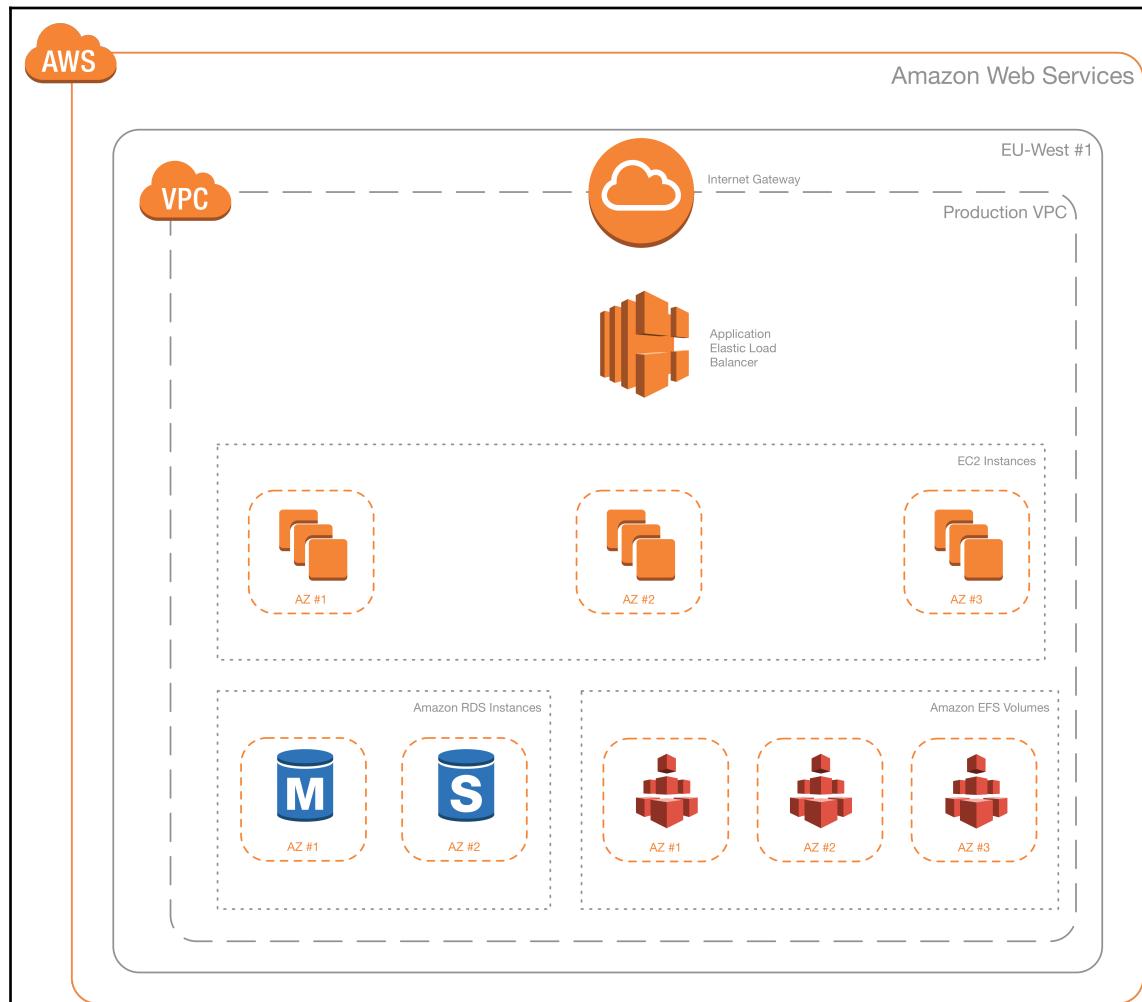
The "Inbound Rules" tab is selected. The table shows two rules:

Type	Protocol	Port Range	Source	Description
HTTP (80)	TCP (8)	80	sg-97778eea	allow sg-97778eea ac...
SSH (22)	TCP (8)	22	109.153.155.197/32	allow 109.153.155.19...

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The screenshot shows the AWS Elastic Load Balancing (ELB) console. On the left, there's a sidebar with navigation links for EC2 Dashboard, Events, Tags, Reports, Limits, Instances, Launch Templates, Spot Requests, Reserved Instances, Dedicated Hosts, Scheduled Instances, Images, AMIs, Bundle Tasks, Elastic Block Store, Volumes, Snapshots, Network & Security, Security Groups, Elastic IPs, Placement Groups, Key Pairs, Network Interfaces, and Load Balancing. Under Load Balancing, 'Load Balancers' is selected, and under it, 'Target Groups' is listed. The main content area shows a table of existing load balancers. A search bar at the top of the table allows filtering by tags and attributes or searching by keyword. The table has columns for Name, DNS name, State, VPC ID, Availability Zones, and Type. One row is highlighted for a load balancer named 'my-vpc-elb'. Below the table, the 'Load balancer: my-vpc-elb' section is expanded. It contains tabs for Description, Listeners, Monitoring, and Tags, with 'Description' currently selected. The 'Basic Configuration' section displays various settings: Name (my-vpc-elb), ARN (arn:aws:elasticloadbalancing:eu-west-1:687011238589:loadbalancer/app/my-vpc-elb/98dd881c7a931ab3), Creation time (April 22, 2018 at 5:12:31 PM UTC+1), Hosted zone (Z32O12XQLNTSW2), State (active), VPC (vpc-ccef75aa), IP address type (ipv4), and AWS WAF Web ACL (not specified). The 'Availability Zones' section lists three subnets: subnet-51f15137 - eu-west-1a, subnet-64eb083e - eu-west-1c, and subnet-6744f221 - eu-west-1b. There is a button labeled 'Edit availability zones'. The 'Security' section shows the security groups assigned: sg-97770eea, my-vpc-elb, which opens port 80 and 443 to the world. There is also a 'Edit security groups' button.

# Chapter 10: Highly Available Cloud Deployments



The screenshot shows the AWS VPC console. At the top, there's a search bar with placeholder text "Search VPCs and their properties". Below it is a table with columns: Name, VPC ID, State, IPv4 CIDR, IPv6 CIDR, DHCP options set, Route table, Network ACL, and Tenancy. Two VPCs are listed:

Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR	DHCP options set	Route table	Network ACL	Tenancy
vpc-205dff47	vpc-205dff47	available	172.16.0.0/16		dopt-44851321	rtb-a3a19bc4	acl-b999eade	Default
wordpress	vpc-7596f013	available	10.0.0.0/16		dopt-44851321	rtb-0e289377	acl-1f859779	Default

Below the table, the "wordpress" VPC is selected. Its details are shown in a summary card:

VPC ID: vpc-7596f013   wordpress	Network ACL: acl-1f859779
State: available	Tenancy: Default
IPv4 CIDR: 10.0.0.0/16	DNS resolution: yes
IPv6 CIDR:	DNS hostnames: yes
DHCP options set: dopt-44851321	ClassicLink DNS Support: no
Route table: rtb-0e289377	
ClassicLink: Disabled	

At the bottom, there are links for Feedback, English (US), Privacy Policy, and Terms of Use.

The screenshot shows the AWS Load Balancer console. At the top, there's a search bar with placeholder text "Filter by tags and attributes or search by keyword". Below it is a table with columns: Name, DNS name, State, VPC ID, Availability Zones, and Type. One load balancer is listed:

Name	DNS name	State	VPC ID	Availability Zones	Type
wordpress-elb	wordpress-elb-441525357.eu-west-1.elb.amazonaws.com	active	vpc-7596f013	eu-west-1c, eu-west-1a...	application

Below the table, the "wordpress-elb" load balancer is selected. Its details are shown in a summary card:

Description	Listeners	Monitoring	Tags
-------------	-----------	------------	------

**Basic Configuration**

Name: wordpress-elb	Creation time: April 29, 2018 at 3:07:44 PM UTC+1
ARN: arn:aws:elasticloadbalancing:eu-west-1:687011238589:loadbalancer/app/wordpress-elb/08d4de808d7c35b9	Hosted zone: Z32O12XQLNTSW2
DNS name: wordpress-elb-441525357.eu-west-1.elb.amazonaws.com	State: active
(A Record)	VPC: vpc-7596f013
Scheme: internet-facing	IP address type: ipv4
Type: application	AWS WAF Web ACL:
Availability Zones: subnet-029b7758 - eu-west-1c, subnet-8095466 - eu-west-1a, subnet-c227948a - eu-west-1b	

At the bottom, there are links for Feedback, English (US), Privacy Policy, and Terms of Use.

Screenshot of the AWS RDS Instances page for the 'wordpress-rds' database.

**Summary**

Engine MariaDB 10.1.31	DB instance class db.t2.micro	DB instance status available	Pending maintenance none
---------------------------	----------------------------------	---------------------------------	-----------------------------

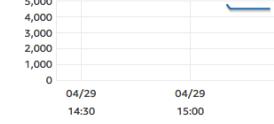
**CloudWatch (54)**  
Legend: wordpress-rds

**CPU Utilization (Percent)**  


Time	CPU Utilization (%)
04/29 14:30	0
04/29 15:00	~12

**DB Connections (Count)**  


Time	DB Connections (Count)
04/29 14:30	75
04/29 15:00	75

**Free Storage Space (MB)**  


Time	Free Storage Space (MB)
04/29 14:30	5,000
04/29 15:00	~4,500

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File systems

Create file system Actions

	Name	File system ID	Metered size	Number of mount targets	Creation date
wordpress-efs	fs-71be2db8	6.0 KIB	3	2018-04-29T14:22:50Z	

Other details

Owner ID: 687011238589  
Life cycle state: Available  
Performance mode: General Purpose  
Encrypted: No

Tags

Environment: wordpress, Name: wordpress-efs

Manage tags

File system access

DNS name: fs-71be2db8.efs.eu-west-1.amazonaws.com

Amazon EC2 mount instructions  
AWS Direct Connect mount instructions

Mount targets

VPC	Availability Zone	Subnet	IP address	Mount target ID	Network interface ID	Security groups	Life cycle state
vpc-7596f013 - wordpress	eu-west-1b	subnet-ec3e8da4 - wordpress_efs_eu-west-1b	10.0.41.217	fsmt-9588165c	eni-baf3e588	sg-6d924510 - wordpress-efs	Available
	eu-west-1a	subnet-d7fe53b1 - wordpress_efs_eu-west-1a	10.0.40.211	fsmt-9488165d	eni-09471429	sg-6d924510 - wordpress-efs	Available
	eu-west-1c	subnet-8e967ad4 - wordpress_efs_eu-west-1c	10.0.42.46	fsmt-9788165e	eni-cdc751c9	sg-6d924510 - wordpress-efs	Available

```
1. aws-wordpress (bash)
changed: [localhost]

PLAY RECAP ****
localhost : ok=23    changed=14    unreachable=0    failed=0

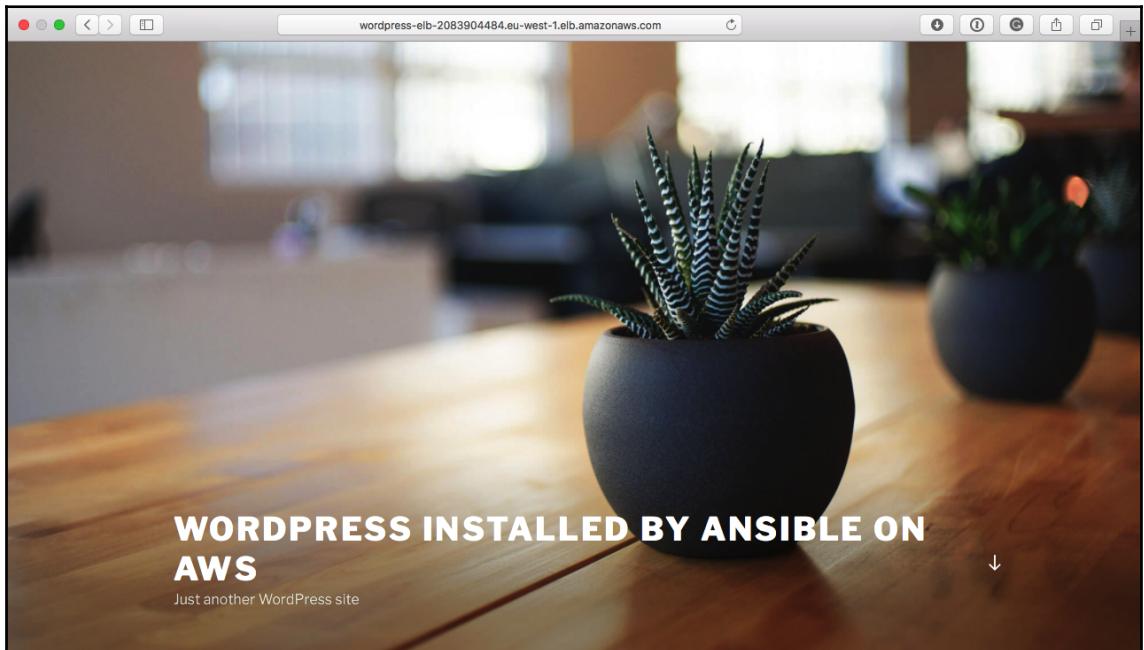
real    18m20.106s
user    1m8.357s
sys     0m20.363s
russ in ~/aws-wordpress
```

---

```
1. aws-wordpress (bash)
TASK [roles/remove : ensure that the VPC is absent] ****
changed: [localhost]

PLAY RECAP ****
localhost : ok=23    changed=13    unreachable=0    failed=0

real    11m32.724s
user    0m47.679s
sys     0m15.653s
russ_in ~/aws-wordpress
```



The screenshot shows the AWS CloudWatch Metrics interface. At the top, there's a search bar and a navigation bar with tabs for 'Metrics' (selected), 'Logs', 'CloudWatch Metrics Insights', and 'CloudWatch Metrics Insights (Preview)'. Below the search bar, there are sections for 'Metrics Overview' and 'Metrics Insights'.

**Metrics Overview**

Series	Time Range	Approximate Data Points
awslogs-cloudwatchLogsGroupMetrics	1 hour ago - 1 hour ago	1,000,000
awslogs-cloudwatchLogsGroupMetrics	1 day ago - 1 hour ago	1,000,000
awslogs-cloudwatchLogsGroupMetrics	1 week ago - 1 day ago	1,000,000
awslogs-cloudwatchLogsGroupMetrics	1 month ago - 1 week ago	1,000,000

**Metrics Insights**

Search term: `awslogs-cloudwatchLogsGroupMetrics`

Series	Time Range	Approximate Data Points
awslogs-cloudwatchLogsGroupMetrics	1 hour ago - 1 hour ago	1,000,000
awslogs-cloudwatchLogsGroupMetrics	1 day ago - 1 hour ago	1,000,000
awslogs-cloudwatchLogsGroupMetrics	1 week ago - 1 day ago	1,000,000
awslogs-cloudwatchLogsGroupMetrics	1 month ago - 1 week ago	1,000,000

Metrics Insights results:

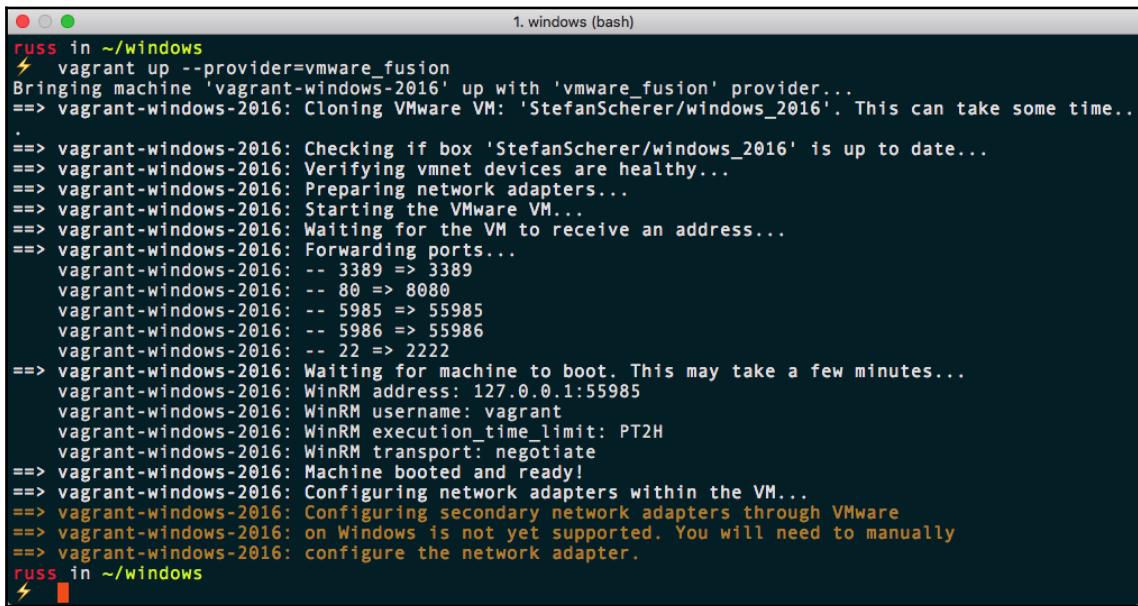
Series	Time Range	Approximate Data Points
awslogs-cloudwatchLogsGroupMetrics	1 hour ago - 1 hour ago	1,000,000
awslogs-cloudwatchLogsGroupMetrics	1 day ago - 1 hour ago	1,000,000
awslogs-cloudwatchLogsGroupMetrics	1 week ago - 1 day ago	1,000,000
awslogs-cloudwatchLogsGroupMetrics	1 month ago - 1 week ago	1,000,000

The screenshot shows the WordPress dashboard with the Twenty Seventeen theme. The left sidebar includes links for Home, Updates, Posts, Media, Pages, Comments, Appearance, Plugins, Users, Tools, and Settings. The main content area has sections for 'At a Glance' (1 Post, 1 Comment), 'Quick Draft' (Title field, 'What's on your mind?' text area, Save Draft button), 'Activity' (Recently Published: Today, 2:19 pm, Hello world!), and 'Recent Comments' (one comment from a WordPress commenter). At the bottom, there are links for All (1), Pending (0), Approved (1), Spam (0), and Trash (0).

The screenshot shows the AWS Auto Scaling console with the URL [eu-west-1.console.aws.amazon.com](https://eu-west-1.console.aws.amazon.com). The user is Russell Mckendrick from Ireland. The main view displays the 'Create Auto Scaling group' button and a table for the 'wordpress-asg' group. The table includes columns for Name, Launch Configuration, Instances, Desired, Min, Max, Availability Zones, DefaultCooldown, and HealthCheckGracePeriod. The group has 3 instances, desired 3, min 2, max 9, and is configured for eu-west-1b, eu-west-1c, and eu-west-1d with a cooldown of 300 seconds and a grace period of 300 seconds. Below the table, the 'Activity History' tab is selected, showing a list of 9 history items. The table headers for the history list are Status, Description, Start Time, and End Time. The items show various EC2 instance operations like terminating and launching new instances.

Status	Description	Start Time	End Time
Successful	Terminating EC2 instance: i-0fd3311f61d1d789e	2018 May 6 15:55:54 UTC+1	2018 May 6 15:57:15 UTC+1
Successful	Terminating EC2 instance: i-053e302b852908e5d	2018 May 6 15:55:54 UTC+1	2018 May 6 15:57:18 UTC+1
Successful	Launching a new EC2 instance: i-0a44454ceab42f6f1	2018 May 6 15:54:43 UTC+1	2018 May 6 15:55:16 UTC+1
Successful	Terminating EC2 instance: i-0103e58a7ca44e0f1	2018 May 6 15:54:19 UTC+1	2018 May 6 15:55:37 UTC+1
Successful	Launching a new EC2 instance: i-062139a24092fbea4	2018 May 6 15:53:14 UTC+1	2018 May 6 15:53:47 UTC+1
Successful	Launching a new EC2 instance: i-070de215d571a889a	2018 May 6 15:53:14 UTC+1	2018 May 6 15:53:47 UTC+1

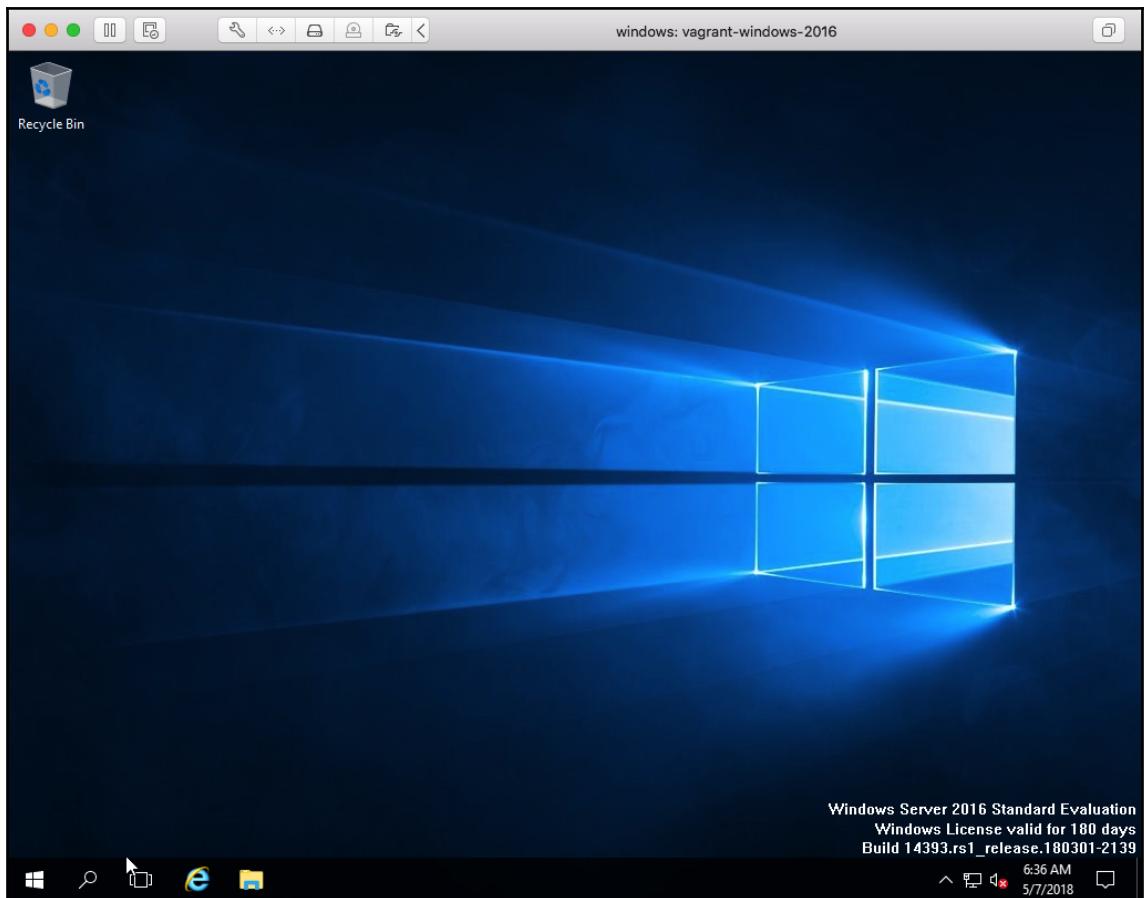
# Chapter 12: Ansible Windows Modules



The screenshot shows a terminal window titled "1. windows (bash)". The command run is "vagrant up --provider=vmware\_fusion". The output details the provisioning process:

```
russ in ~/windows
⚡ vagrant up --provider=vmware_fusion
Bringing machine 'vagrant-windows-2016' up with 'vmware_fusion' provider...
==> vagrant-windows-2016: Cloning VMware VM: 'StefanScherer/windows_2016'. This can take some time...
.
==> vagrant-windows-2016: Checking if box 'StefanScherer/windows_2016' is up to date...
==> vagrant-windows-2016: Verifying vmnet devices are healthy...
==> vagrant-windows-2016: Preparing network adapters...
==> vagrant-windows-2016: Starting the VMware VM...
==> vagrant-windows-2016: Waiting for the VM to receive an address...
==> vagrant-windows-2016: Forwarding ports...
  vagrant-windows-2016: -- 3389 => 3389
  vagrant-windows-2016: -- 80 => 8080
  vagrant-windows-2016: -- 5985 => 55985
  vagrant-windows-2016: -- 5986 => 55986
  vagrant-windows-2016: -- 22 => 2222
==> vagrant-windows-2016: Waiting for machine to boot. This may take a few minutes...
  vagrant-windows-2016: WinRM address: 127.0.0.1:55985
  vagrant-windows-2016: WinRM username: vagrant
  vagrant-windows-2016: WinRM execution_time_limit: PT2H
  vagrant-windows-2016: WinRM transport: negotiate
==> vagrant-windows-2016: Machine booted and ready!
==> vagrant-windows-2016: Configuring network adapters within the VM...
==> vagrant-windows-2016: Configuring secondary network adapters through VMware
==> vagrant-windows-2016: on Windows is not yet supported. You will need to manually
==> vagrant-windows-2016: configure the network adapter.

russ in ~/windows
⚡
```



```
1. windows (bash)
russ in ~/windows
⚡ ansible windows -i production -m win_ping
objc[29981]: +[__NSPlaceholderDate initialize] may have been in progress in another thread when fork()
() was called.
objc[29981]: +[__NSPlaceholderDate initialize] may have been in progress in another thread when fork()
() was called. We cannot safely call it or ignore it in the fork() child process. Crashing instead.
Set a breakpoint on objc_initializeAfterForkError to debug.
^C [ERROR]: User interrupted execution
russ in ~/windows
⚡
```

```
1. windows (bash)
russ in ~/windows
⚡ ansible windows -i production -m win_ping
box1 | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
russ in ~/windows
⚡
```

```
1. windows (bash)
russ in ~/windows
⚡ ansible-playbook -i production playbook01.yml

PLAY [windows] ****
TASK [Gathering Facts] ****
ok: [box1]

TASK [debug] ****
ok: [box1] => {
    "msg": "I am connecting to vagrant, which is running Microsoft Windows Server 2016 Standard Evaluation 10.0.14393.0"
}

PLAY RECAP ****
box1 : ok=2     changed=0     unreachable=0     failed=0

russ in ~/windows
⚡
```

```
1. web (bash)
russ in ~/windows/web
⚡ ansible-playbook -i production site.yml

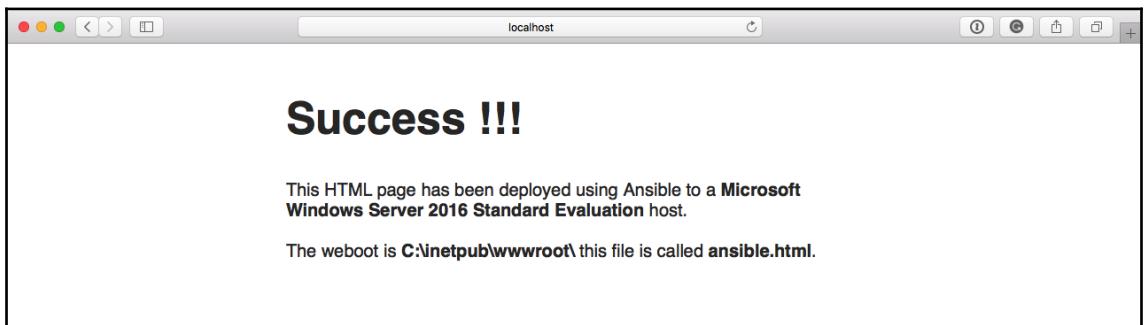
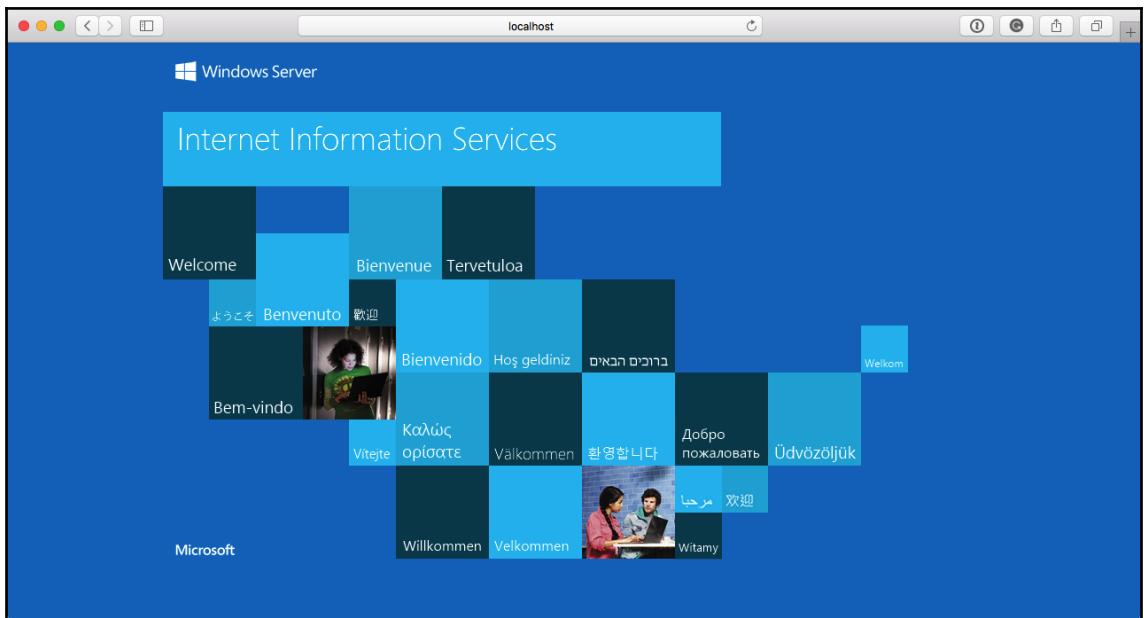
PLAY [windows] ****
TASK [Gathering Facts] ****
ok: [box1]

TASK [roles/iis : enable IIS] ****
changed: [box1]

TASK [roles/iis : create an html file from a template] ****
changed: [box1]

PLAY RECAP ****
box1 : ok=3     changed=2     unreachable=0     failed=0

russ in ~/windows/web
⚡
```



```
1. web (bash)
⚡ ansible-playbook -i production site.yml

PLAY [windows] ****
TASK [Gathering Facts] ****
ok: [box1]

TASK [roles/iis : enable IIS] ****
ok: [box1]

TASK [roles/iis : create an html file from a template] ****
ok: [box1]

TASK [roles/asp : enable .net] ****
changed: [box1]

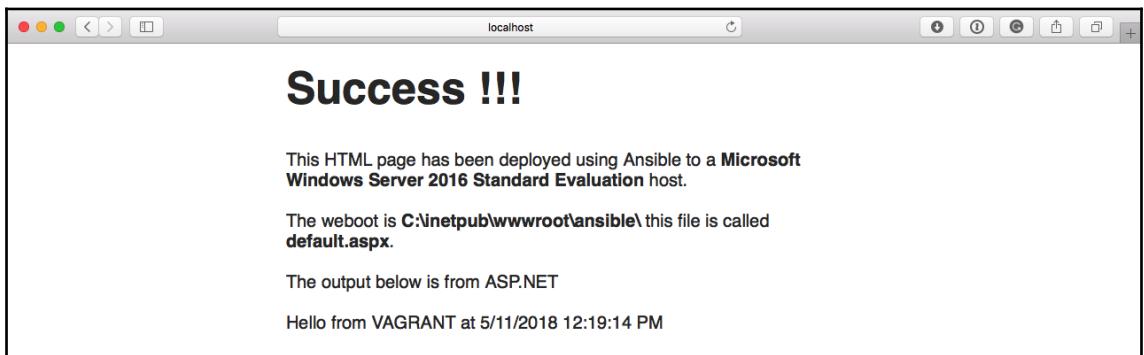
TASK [roles/asp : create the folder for our asp.net app] ****
changed: [box1]

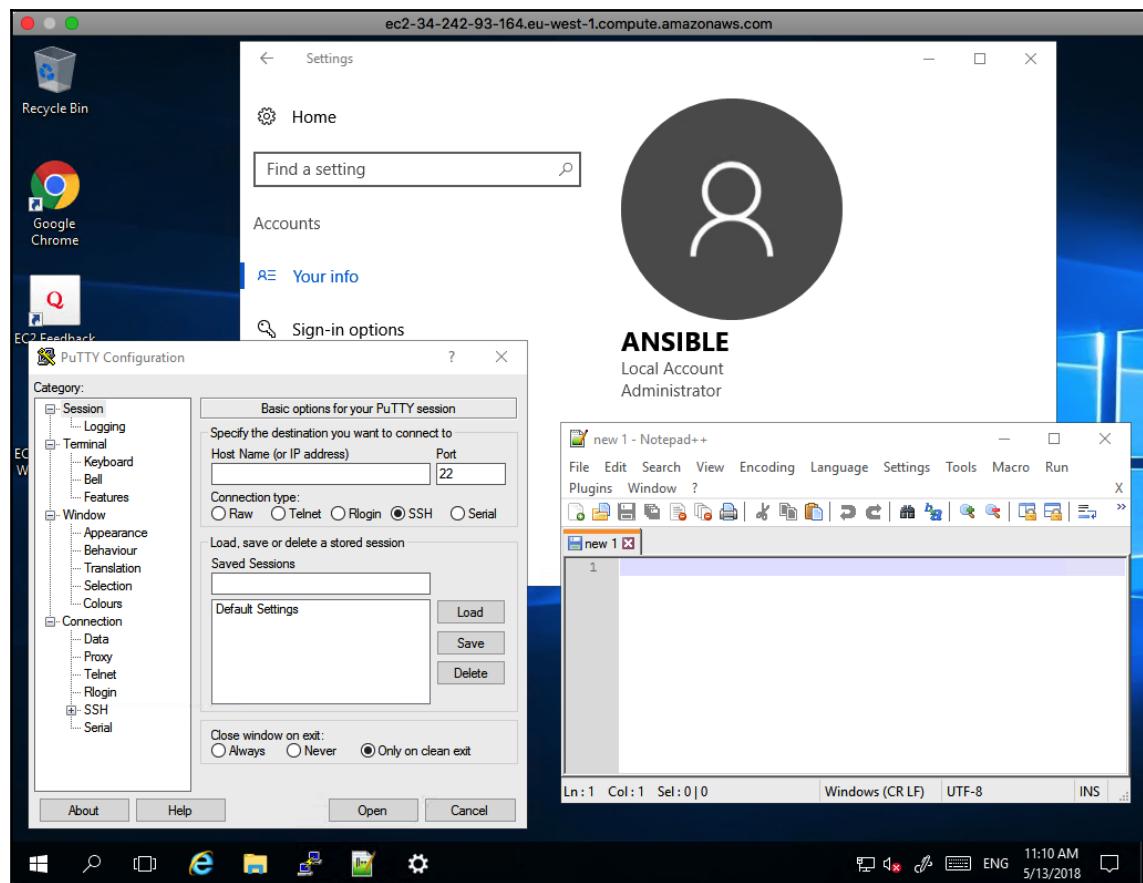
TASK [roles/asp : create an aspx file from a template] ****
changed: [box1]

TASK [roles/asp : ensure the default web application exists] ****
changed: [box1]

RUNNING HANDLER [roles/asp : restart iis] ****
changed: [box1]

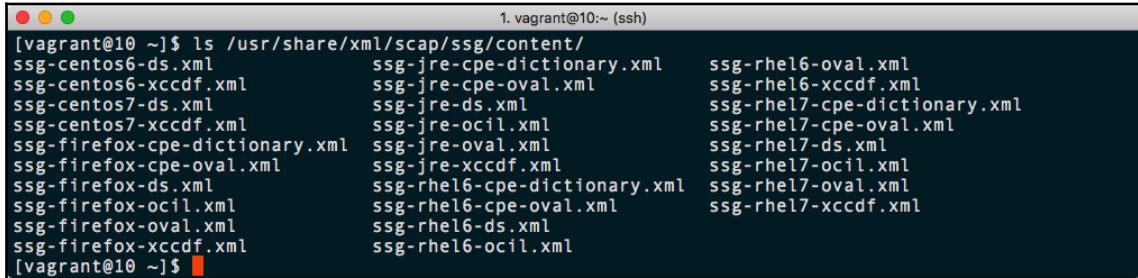
PLAY RECAP ****
box1          : ok=8    changed=5    unreachable=0    failed=0
```





---

# Chapter 13: Hardening Your Servers Using Ansible and OpenSCAP



```
1. vagrant@10:~ (ssh)
[vagrant@10 ~]$ ls /usr/share/xml/scap/ssg/content/
ssg-centos6-ds.xml          ssg-jre-cpe-dictionary.xml    ssg-rhel6-oval.xml
ssg-centos6-xccdf.xml       ssg-jre-cpe-oval.xml      ssg-rhel6-xccdf.xml
ssg-centos7-ds.xml          ssg-jre-ds.xml           ssg-rhel7-cpe-dictionary.xml
ssg-centos7-xccdf.xml       ssg-jre-ocil.xml        ssg-rhel7-cpe-oval.xml
ssg-firefox-cpe-dictionary.xml ssg-jre-oval.xml      ssg-rhel7-ds.xml
ssg-firefox-cpe-oval.xml     ssg-jre-xccdf.xml     ssg-rhel7-ocil.xml
ssg-firefox-ds.xml          ssg-rhel6-cpe-dictionary.xml ssg-rhel7-oval.xml
ssg-firefox-ocil.xml         ssg-rhel6-cpe-oval.xml   ssg-rhel7-xccdf.xml
ssg-firefox-oval.xml         ssg-rhel6-ds.xml
ssg-firefox-xccdf.xml        ssg-rhel6-ocil.xml
```

Evaluation Characteristics

Evaluation target	10.20.30.40.nip.io
Benchmark URL	/usr/share/xml/ssg/ssg/content/ssg-centos7-ds.xml
Benchmark ID	xccdf_org.ssgproject.content_benchmark_RH7
Profile ID	xccdf_org.ssgproject.content_profile_pci-dss
Started at	2018-05-16T08:16:52
Finished at	2018-05-16T08:17:48
Performed by	vagrant

CPE Platforms

- cpe:/o:centos:centos:7
- cpe:/o:redhat:enterprise\_linux:7
- cpe:/o:redhat:enterprise\_linux:7::ce
- cpe:/o:redhat:enterprise\_linux:7::ce

Addresses

- IPv4 127.0.0.1
- IPv4 172.16.117.132
- IPv4 10.20.30.40
- IPv6 0:0:0:0:0:0:0:1
- IPv6 fe80:0:0:0:455f:df89:ba88:9280
- IPv6 fe80:0:0:0:20c:29ff:febb:a365
- MAC 00:00:00:00:00:00
- MAC 00:0C:29:BB:A3:5B
- MAC 00:0C:29:BB:A3:65

## Compliance and Scoring

The target system did not satisfy the conditions of 51 rules! Please review rule results and consider applying remediation.

### Rule results

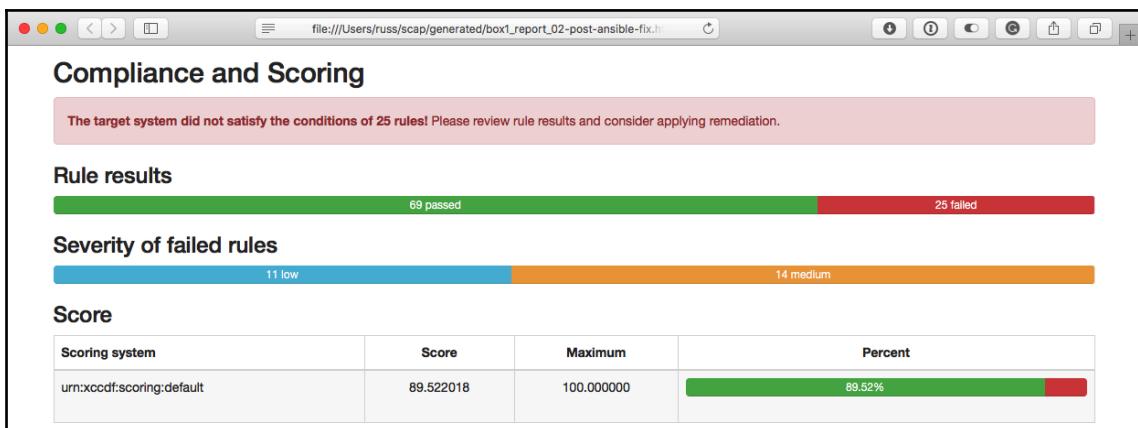
43 passed      51 failed

### Severity of failed rules

22 low      28 medium      1 critical

### Score

Scoring system	Score	Maximum	Percent
urn:xccdf:scoring:default	52.762619	100.000000	52.76%



**Set SSH Idle Timeout Interval**

Rule ID	xccdf_org.ssgproject.content_rule_sshd_set_idle_timeout
Result	fail
Time	2018-05-16T15:49:46
Severity	low
Identifiers and References	References: SV-86861r2_rule, AC-2(5), SA-8(l), AC-12, CCI-001133, CCI-002361, SRG-OS-000163-GPOS-00072, SRG-OS-000279-GPOS-00109, Req-8.1.8, 5.2.12, 5.5.6, 3.1.11
Description	<p>SSH allows administrators to set an idle timeout interval. After this interval has passed, the idle user will be automatically logged out.</p> <p>To set an idle timeout interval, edit the following line in <code>/etc/ssh/sshd_config</code> as follows:</p> <pre>ClientAliveInterval interval</pre> <p>The timeout <code>interval</code> is given in seconds. To have a timeout of 10 minutes, set <code>interval</code> to 600.</p> <p>If a shorter timeout has already been set for the login shell, that value will preempt any SSH setting made here. Keep in mind that some processes may stop SSH from correctly detecting that the user is idle.</p>
Rationale	Terminating an idle ssh session within a short time period reduces the window of opportunity for unauthorized personnel to take control of a management session enabled on the console or console port that has been left unattended.

**Remediation Shell script:** (show)

**Remediation Ansible snippet:** (show)

---

The target system did not satisfy the conditions of 5 rules! Please review rule results and consider applying remediation.

### Rule results

89 passed      5 failed

### Severity of failed rules

1 low      4 medium

### Score

Scoring system	Score	Maximum	Percent
urn:xccdf:scoring:default	95.312500	100.000000	95.31%

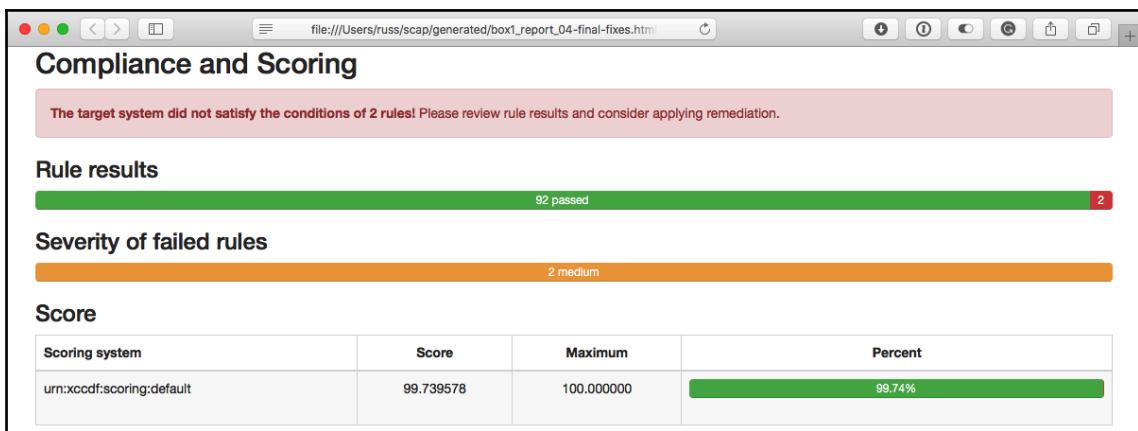
```
russ in ~/scap
⚡ ansible-playbook -i production --tags "scan" --extra-vars "report_name=scan-only" site.yml

PLAY [scap] ****
TASK [Gathering Facts] ****
ok: [box1]

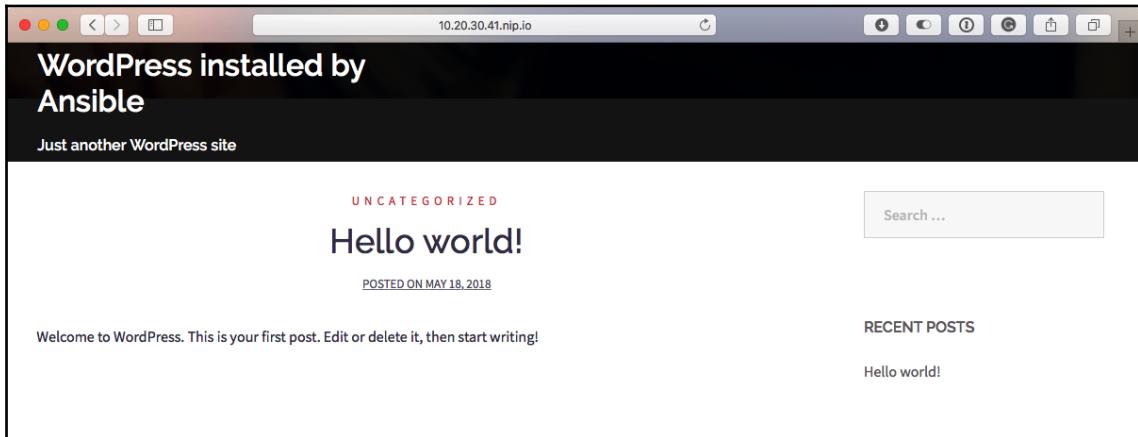
TASK [install : update all of the installed packages] ****
ok: [box1]

TASK [install : install the packages needed] ****
ok: [box1] => (item=openscap-scanner)
ok: [box1] => (item=scap-security-guide)

TASK [scan : run the openscap scan] ****
fatal: [box1]: FAILED! => {"changed": true, "cmd": ["oscap", "xccdf", "eval", "--profile", "xccdf_oreg.ssgproject.content_profile_pci-dss", "--fetch-remote-resources", "--results-arf", "/tmp/box1_results_scan-only.xml", "--report", "/tmp/box1_report_scan-only.html", "/usr/share/xml/scap/ssg/content/ssg-centos7-ds.xml"], "delta": "0:00:55.750166", "end": "2018-05-16 17:12:22.514364", "msg": "non-zero return code", "rc": 2, "start": "2018-05-16 17:11:26.764198", "stderr": "Downloading: https://www."}
```



# Chapter 14: Deploying WPScan and OWASP ZAP



```
1. chapter14 (bash)
⚡ ansible-playbook -i production site.yml
PLAY [scan] *****
TASK [Gathering Facts] *****
ok: [box1]
TASK [roles/wpscan : pull the image] *****
changed: [box1]
TASK [roles/wpscan : create the folder which we will mount inside the container] *****
changed: [box1]
TASK [roles/wpscan : run the scan] *****
ok: [box1] => (item=box2)
TASK [roles/wpscan : download the html report] *****
changed: [box1] => (item=box2)
PLAY RECAP *****
box1 : ok=5    changed=3    unreachable=0    failed=0
```

```
10.20.30.41.nip.io-2018-05-19-13-04.txt — chapter14
```

FOLDERS

- chapter14
- .vagrant
- generated
- 10.20.30.41.nip.io-2018-05-19-13-04
- group.vars
- roles
- production
- site.yml
- Vagrantfile

```
1  | 
2  | 
3  | 
4  | 
5  | 
6  | 
7  | 
8  | 
9  | 
10 | 
11 | 
12 | 
13 | 
14 | 
15 | [i] Updating the Database ...
16 | [i] Update completed.
17 | [+]
18 | [+]
19 | 
20 | [+]
21 | [+]
22 | [+]
23 | [+]
24 | [+]
25 | [+]
26 | 
27 | 
28 | 
29 | 
30 | 
31 | 
32 | 
33 | 
34 | 
```

[+] Interesting header: LINK: <http://10.20.30.41.nip.io/wp-json/>;  
rel="https://api.w.org/"  
[+] Interesting header: SERVER: nginx/1.13.12  
[+] Interesting header: X-CONTENT-TYPE-OPTIONS: nosniff  
[+] Interesting header: X-FRAME-OPTIONS: SAMEORIGIN  
[+] Interesting header: X-XSS-PROTECTION: 1; mode=block  
[+] XML-RPC Interface available under: http://10.20.30.41.nip.io/xmlrpc.php  
[+] WordPress version 4.9.6 (Released on 2018-05-17) identified from advanced  
fingerprinting, meta generator, links opml, stylesheets numbers  
[+] WordPress theme in use: sydney - v1.45  
[+] Name: sydney - v1.45  
| Latest version: 1.45 (up to date)  
| Last updated: 2018-02-13T00:00:00Z  
| Location: http://10.20.30.41.nip.io/wp-content/themes/sydney/

Line 1, Column 1      Spaces: 4      Plain Text

```
2. chapter14 (bash)
```

```
⚡ ansible-playbook -i production site.yml
```

```
PLAY [scan] *****
TASK [Gathering Facts] *****
ok: [box1]
```

```
TASK [roles/zap : pull the image] *****
changed: [box1]
```

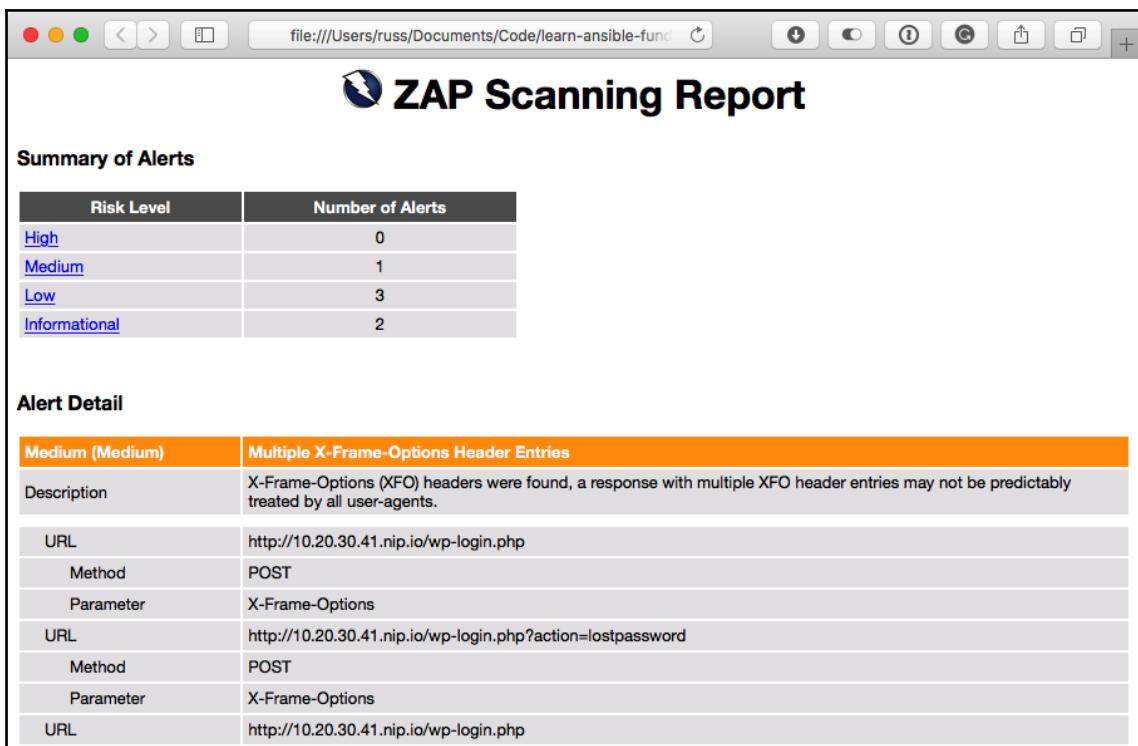
```
TASK [roles/zap : create the folder which we will mount inside the container] *****
changed: [box1]
```

```
TASK [roles/zap : run the scan] *****
ok: [box1] => (item=box2)
```

```
TASK [roles/zap : download the html report] *****
changed: [box1] => (item=box2)
```

```
PLAY RECAP *****
box1 : ok=5    changed=3    unreachable=0    failed=0
```

---



The screenshot shows a ZAP Scanning Report in a web browser window. The title bar reads "file:///Users/russ/Documents/Code/learn-ansible-func". The main content area has a header "ZAP Scanning Report" with a lightning bolt icon. Below it is a section titled "Summary of Alerts" containing a table:

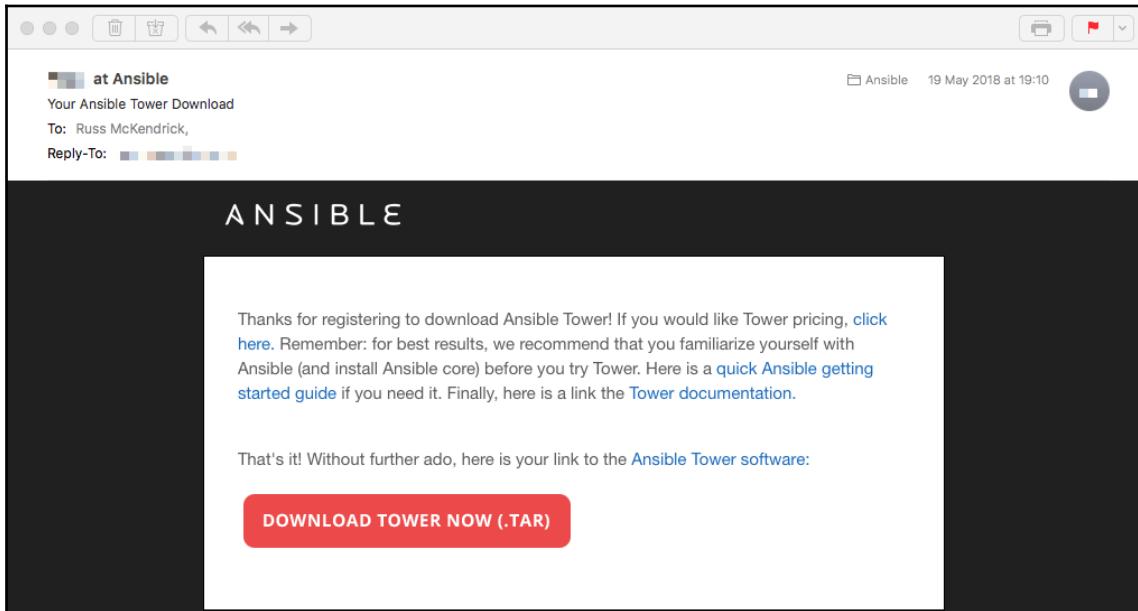
Risk Level	Number of Alerts
High	0
Medium	1
Low	3
Informational	2

Below this is a section titled "Alert Detail" with a table:

Medium (Medium)	Multiple X-Frame-Options Header Entries
Description	X-Frame-Options (XFO) headers were found, a response with multiple XFO header entries may not be predictably treated by all user-agents.
URL	http://10.20.30.41.nip.io/wp-login.php
Method	POST
Parameter	X-Frame-Options
URL	http://10.20.30.41.nip.io/wp-login.php?action=lostpassword
Method	POST
Parameter	X-Frame-Options
URL	http://10.20.30.41.nip.io/wp-login.php

---

# Chapter 15: Introducing Ansible Tower and Ansible AWX

A screenshot of a terminal window titled '1. ansible-tower-setup-3.2.5 (bash)'. The user has run the command 'ls' and the output is: 'README.md group\_vars inventory restore.yml setup.sh backup.yml install.yml licenses roles'. The prompt shows 'russ in ~/ansible-tower-setup-3.2.5'.

```
1. ansible-tower-setup-3.2.5 (bash)
changed: [10.20.30.40.nip.io] => (item=tower)

TASK [misc : Create the default organization if it is needed.] ****
changed: [10.20.30.40.nip.io]

RUNNING HANDLER [supervisor : restart supervisor] ****
changed: [10.20.30.40.nip.io] => {
    "msg": "Restarting supervisor."
}

RUNNING HANDLER [supervisor : Stop supervisor.] ****
changed: [10.20.30.40.nip.io]

RUNNING HANDLER [supervisor : Wait for supervisor to stop.] ****
ok: [10.20.30.40.nip.io]

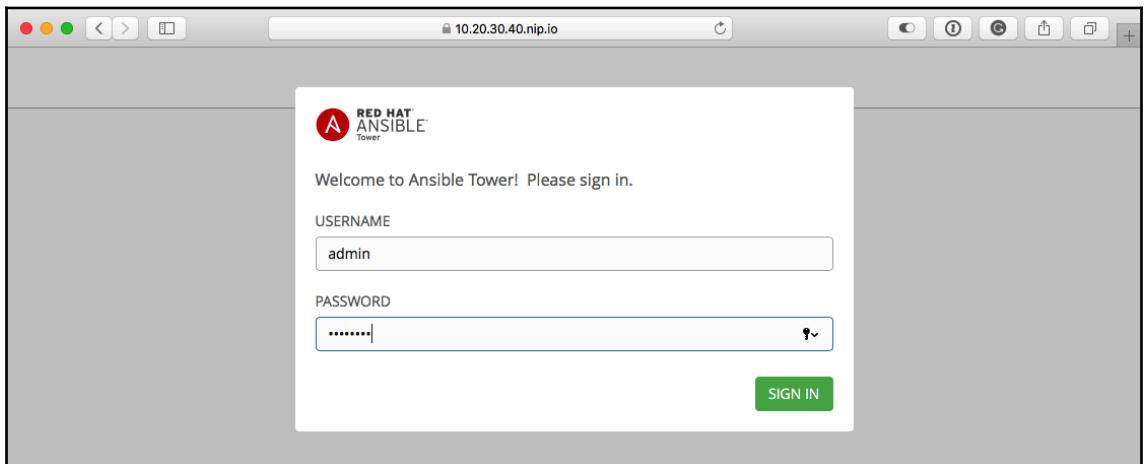
RUNNING HANDLER [supervisor : Start supervisor.] ****
changed: [10.20.30.40.nip.io]

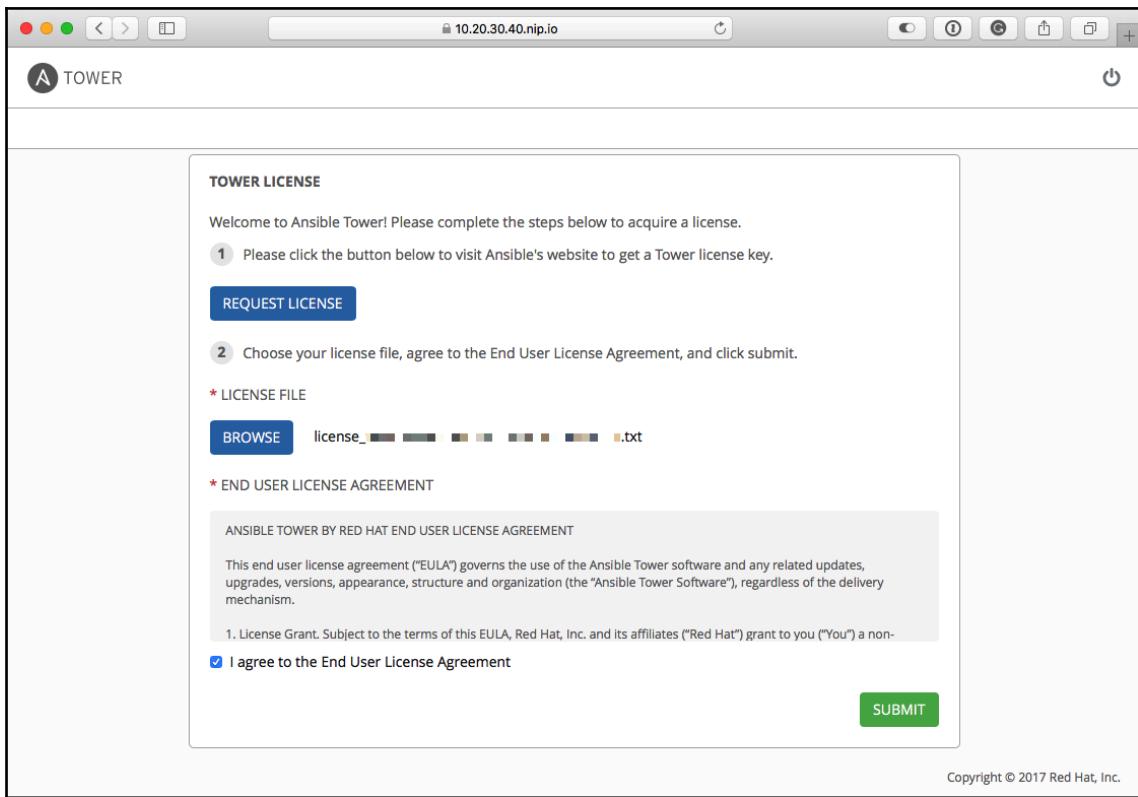
RUNNING HANDLER [nginx : restart nginx] ****
changed: [10.20.30.40.nip.io]

PLAY [Install Tower isolated node(s)] ****
skipping: no hosts matched

PLAY RECAP ****
10.20.30.40.nip.io      : ok=137   changed=66   unreachable=0   failed=0

russ in ~/ansible-tower-setup-3.2.5
```





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The screenshot shows the Tower dashboard interface. At the top, there are navigation links: TOWER, PROJECTS, INVENTORIES, TEMPLATES, and JOBS. On the right side, there is a user icon labeled "admin" and several small icons for settings, logs, and other functions.

The main area is titled "DASHBOARD". It features a row of six boxes with counts: 1 HOSTS, 0 FAILED HOSTS, 1 INVENTORIES, 0 INVENTORY SYNC FAILURES, 1 PROJECTS, and 0 PROJECT SYNC FAILURES.

Below this is a section titled "JOB STATUS" with a chart. The chart has "JOBS" on the y-axis ranging from -1 to 1 and "TIME" on the x-axis from May 2 to Jun 2. A red line is plotted at 0, indicating no jobs were run during this period.

There are two smaller sections below the chart: "RECENTLY USED JOB TEMPLATES" (No templates used) and "RECENTLY RUN JOBS" (No jobs run).

At the bottom right, the copyright notice "Copyright © 2017 Red Hat, Inc." is visible.

The screenshot shows the "PROJECTS" page in Tower. The top navigation bar includes TOWER, PROJECTS, INVENTORIES, TEMPLATES, and JOBS, with PROJECTS being the active tab. The right side shows the "admin" user and standard interface icons.

The main content area is titled "PROJECTS" and shows a table with one item:

NAME	TYPE	REVISION	LAST UPDATED	ACTIONS
Demo Project	Git	347e44f	2/6/2018 15:16:10	

At the bottom right of the table, it says "ITEMS 1 - 1".

The screenshot shows the Ansible Tower web interface. At the top, there are navigation links: TOWER, PROJECTS, INVENTORIES, TEMPLATES, and JOBS. On the right, there are user authentication (admin), settings, and other administrative icons. The main content area is titled "JOBS / 2 - Demo Job Template".  
**Details Panel:**  
- Status: Successful  
- Started: 2/6/2018 15:22:02  
- Finished: 2/6/2018 15:22:10  
- Template: Demo Job Template  
- Job Type: Run  
- Launched By: admin  
- Inventory: Demo Inventory  
- Project: Demo Project  
- Revision: 347e44f  
- Playbook: hello\_world.yml  
- Machine Credential: Demo Credential  
- Forks: 0  
- Verbosity: 0 (Normal)  
- Instance Group: tower  
- Extra Variables: 1 ---  
**Demo Job Template Editor:**  
The editor shows the playbook code:

```
PLAY [Hello World Sample] ****
15:22:08
TASK [Gathering Facts] ****
15:22:09
ok: [localhost]
TASK [Hello Message] ****
15:22:10
ok: [localhost] => {
    "msg": "Hello World!"
}
PLAY RECAP ****
15:22:10
localhost : ok=2    changed=0    unreachable=0    failed=0
```

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```
1. ansible-tower-setup-3.2.5 (bash)
Successfully uninstalled botocore-1.5.72
Found existing installation: futures 3.1.1
Uninstalling futures-3.1.1:
Successfully uninstalled futures-3.1.1
Found existing installation: s3transfer 0.1.10
Uninstalling s3transfer-0.1.10:
Successfully uninstalled s3transfer-0.1.10
Found existing installation: boto3 1.4.4
Uninstalling boto3-1.4.4:
Successfully uninstalled boto3-1.4.4
Successfully installed boto-2.48.0 boto3-1.7.31 botocore-1.10.31 docutils-0.14 futures-3.2.0 python-dateutil-2.7.3 s3transfer-0.1.13
You are using pip version 9.0.1, however version 10.0.1 is available.
You should consider upgrading via the 'pip install --upgrade pip' command.
(ansible) [root@10 ~]# deactivate
[root@10 ~]# exit
logout
[vagrant@10 ~]$ exit
logout
Connection to 127.0.0.1 closed.
russ in ~/ansible-tower-setup-3.2.5
```

The screenshot shows the Ansible Tower interface with the URL `10.20.30.40.nip.io` in the address bar. The top navigation bar includes links for TOWER, PROJECTS, INVENTORIES, TEMPLATES, and JOBS, with PROJECTS being the active tab. On the right, there's a user icon for admin and various management icons. The main content area is titled "PROJECTS" and displays a table with two rows of project data:

NAME	TYPE	REVISION	LAST UPDATED	ACTIONS
AWS Project	Git	2c54f2e	3/6/2018 10:23:07	[Cloud, Calendar, Edit, Delete]
Demo Project	Git	347e44f	2/6/2018 15:22:02	[Cloud, Calendar, Edit, Delete]

At the bottom right of the table, it says "ITEMS 1 - 2". A green "+ ADD" button is located at the top right of the table header.

The screenshot shows the Ansible Tower interface with the URL `10.20.30.40.nip.io` in the address bar. The top navigation bar includes links for TOWER, PROJECTS, INVENTORIES, TEMPLATES, and JOBS, with TOWER being the active tab. On the right, there's a user icon for admin and various management icons. The main content area is titled "SETTINGS" and displays a grid of nine cards:

- ORGANIZATIONS**  
Group all of your content to manage permissions across departments in your company.
- USERS**  
Allow others to sign into Tower and own the content they create.
- TEAMS**  
Split up your organization to associate content and control permissions for groups.
- CREDENTIALS**  
Add passwords, SSH keys, and other credentials to use when launching jobs against machines, or when syncing inventories or projects.
- CREDENTIAL TYPES**  
Create custom credential types to be used for authenticating to network hosts and cloud sources.
- MANAGEMENT JOBS**  
Manage the cleanup of old job history, activity streams, data marked for deletion, and system tracking info.
- INVENTORY SCRIPTS**  
Create and edit scripts to dynamically load hosts from any source.
- NOTIFICATIONS**  
Create templates for sending notifications with Email, HipChat, Slack, and SMS.
- INSTANCE GROUPS**  
View list and capacity of Tower instances.
- CONFIGURE TOWER**  
Edit Tower's configuration.
- ABOUT TOWER**  
View information about this version of Ansible Tower.
- VIEW YOUR LICENSE**  
View and edit your license information.

The screenshot shows the 'Edit Credential' page for 'AWS API Credentials'. The URL is 10.20.30.40.nip.io. The top navigation bar includes 'TOWER', 'PROJECTS', 'INVENTORIES', 'TEMPLATES', 'JOBS', 'admin', and a gear icon. The left sidebar shows 'SETTINGS / CREDENTIALS / EDIT CREDENTIAL'. The main form has tabs for 'DETAILS' (selected) and 'PERMISSIONS'. Fields include:

- \* NAME: AWS API Credentials
- DESCRIPTION: AWS API Credentials
- ORGANIZATION: Default
- \* CREDENTIAL TYPE: Amazon Web Services
- \* ACCESS KEY: [REDACTED]
- \* SECRET KEY: REPLACE ENCRYPTED
- STS TOKEN: SHOW

Buttons at the bottom: CANCEL (gray), SAVE (green).

The screenshot shows the 'Edit Inventory' page for 'AWS Inventory'. The URL is 10.20.30.40.nip.io. The top navigation bar includes 'TOWER', 'PROJECTS', 'INVENTORIES', 'TEMPLATES', 'JOBS', 'admin', and a gear icon. The left sidebar shows 'INVENTORIES / AWS Inventory'. The main form has tabs for 'DETAILS' (selected), 'PERMISSIONS', 'GROUPS', 'HOSTS', 'SOURCES', and 'COMPLETED JOBS'. Fields include:

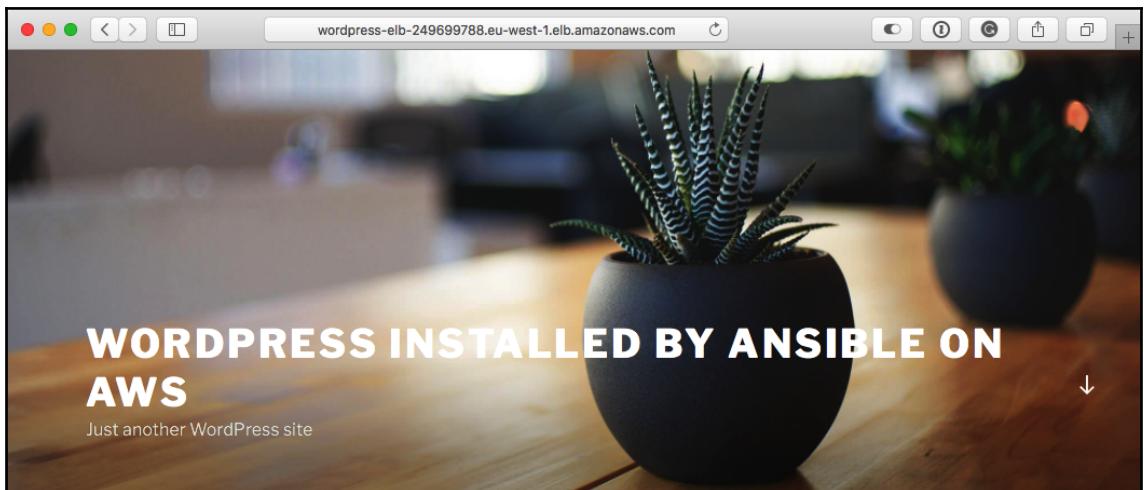
- \* NAME: AWS Inventory
- DESCRIPTION: AWS Inventory
- \* ORGANIZATION: Default
- INSIGHTS CREDENTIAL: [REDACTED]
- INSTANCE GROUPS: [REDACTED]
- VARIABLES: YAML (selected), JSON  
1 ansible\_ssh\_user: "centos"  
2 ansible\_ssh\_private\_key\_file: "~/.ssh/id\_rsa"  
3 host\_key\_checking: "False"

Buttons at the bottom: CANCEL (gray), SAVE (green).

The screenshot shows the Ansible Tower interface at the URL [10.20.30.40.nip.io](http://10.20.30.40.nip.io). The top navigation bar includes links for TOWER, PROJECTS, INVENTORIES, TEMPLATES, JOBS, and a user icon for admin. On the right, there are settings, export, and other management icons. The current page is "INVENTORIES / AWS Inventory / GROUPS". The main content area is titled "AWS Inventory" and contains tabs for DETAILS, PERMISSIONS, GROUPS (which is selected), HOSTS, SOURCES, and COMPLETED JOBS. A search bar and a key button are also present. Below the tabs, a "GROUPS" section lists two items: "already\_running" and "ec2\_instance", each with edit and delete icons. A "RUN COMMANDS" button and a "+ ADD GROUP" button are located on the right. The bottom right corner indicates "ITEMS 1 - 2".

The screenshot shows the Ansible Tower interface at the URL [10.20.30.40.nip.io](http://10.20.30.40.nip.io). The top navigation bar includes links for TOWER, PROJECTS, INVENTORIES, TEMPLATES, JOBS, and a user icon for admin. The current page is "JOBS / 12 - AWS - Launch". The left sidebar displays the "DETAILS" of the job, including: STATUS (Successful), STARTED (3/6/2018 11:32:07), FINISHED (3/6/2018 12:11:37), TEMPLATE (AWS - Launch), JOB TYPE (Run), LAUNCHED BY (admin), INVENTORY (AWS Inventory), PROJECT (AWS Project), REVISION (2c54f2e), PLAYBOOK (site.yml), MACHINE CREDENTIAL (Demo Credential), EXTRA CREDENTIALS (AWS API Credentials), FORKS (0), VERTIOSITY (0 (Normal)), and INSTANCE GROUP (tower). The right sidebar shows the "AWS - Launch" job run details. It includes a summary bar with PLAYS (3), TASKS (83), HOSTS (2), and ELAPSED (00:39:30). Below this is a log viewer with a search bar and a key button. The log output shows several tasks being executed, such as creating an auto-scaling group and removing tmp instances, along with a play recap at the end. The bottom right corner of the log viewer has a "TOP" link.

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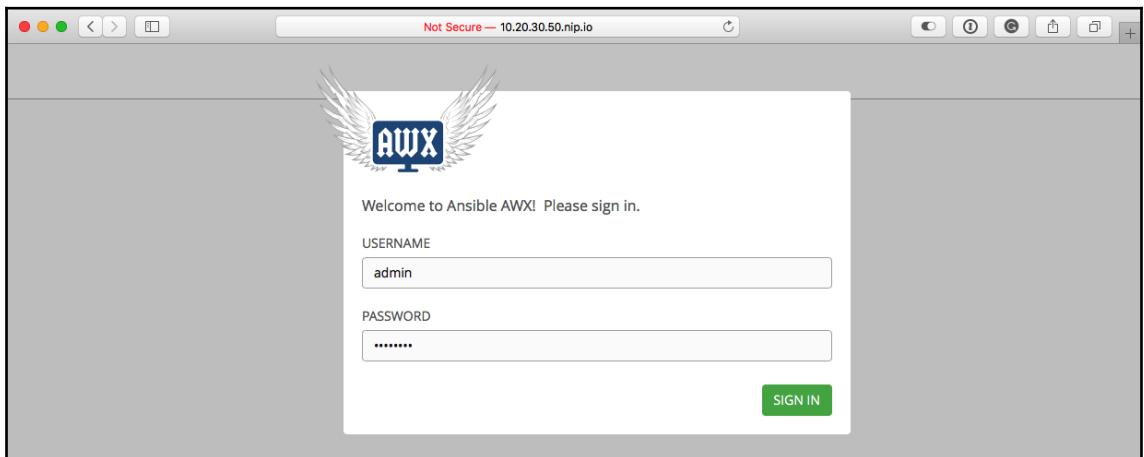
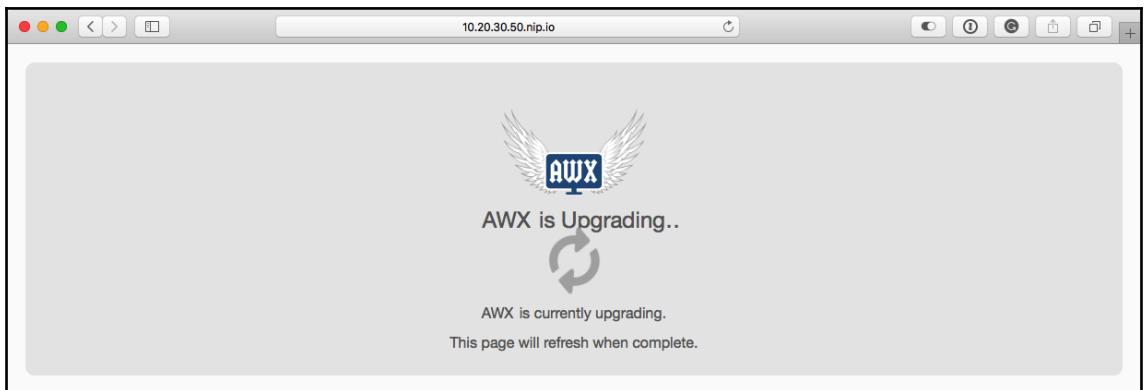
```
1. awx (bash)
TASK [roles/awx : install the python packages] ****
changed: [box] => (item=ansible)
changed: [box] => (item=boto)
changed: [box] => (item=boto3)
ok: [box] => (item=botocore)

TASK [roles/awx : check out the awx repo] ****
changed: [box]

TASK [roles/awx : check out the awx logos repo] ****
changed: [box]

TASK [roles/awx : install awx] ****
changed: [box]

PLAY RECAP ****
box : ok=14    changed=13    unreachable=0    failed=0
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter15/awx on master*
```



The screenshot shows the AWX dashboard interface. On the left is a dark sidebar with navigation links: VIEWS, DASHBOARD (selected), JOBS, SCHEDULES, PORTAL MODE, RESOURCES, TEMPLATES (selected), CREDENTIALS, PROJECTS, INVENTORIES, INVENTORY SCRIPTS, ORGANIZATIONS, USERS, TEAMS, and ADMINISTRATION. The main area is titled "DASHBOARD". It features a row of six summary boxes: 1 HOSTS, 0 FAILED HOSTS, 1 INVENTORIES, 0 INVENTORY SYNC FAILURES, 1 PROJECTS, and 0 PROJECT SYNC FAILURES. Below this is a "JOB STATUS" section with a line graph. The graph has "JOBS" on the y-axis (ranging from -1 to 1) and "TIME" on the x-axis (ranging from May 3 to Jun 3). A single data point at May 3 is at value 1. Above the graph are filters: PERIOD (PAST MONTH), JOB TYPE (ALL), and VIEW (ALL). At the bottom of the dashboard are two sections: "RECENTLY USED JOB TEMPLATES" (empty) and "RECENTLY RUN JOBS" (empty).

The screenshot shows the AWX "TEMPLATES" page. The sidebar on the left is identical to the one in the first screenshot. The main area is titled "TEMPLATES" and shows a single item: "Demo Template" (1 JOB TEMPLATE). The template details are: INVENTORY (Demo Inventory), PROJECT (Demo Project), CREDENTIALS (a DEMO CREDENTIAL), and LAST MODIFIED (3/6/2018 16:38:30 by admin). To the right of the template card are edit, calendar, copy, and delete icons. At the bottom right of the page, it says "ITEMS 1 - 1".

The screenshot shows the AWX web interface. On the left is a dark sidebar with various navigation options: DASHBOARD, JOBS, SCHEDULES, PORTAL MODE, TEMPLATES, CREDENTIALS, PROJECTS, INVENTORIES, INVENTORY SCRIPTS, ORGANIZATIONS, USERS, TEAMS, CREDENTIAL TYPES, and NOTIFICATIONS. The main area has a title "JOBS / 2 - Demo Template". On the left side of the main area, there's a "DETAILS" panel showing the following information:

STATUS	Successful
STARTED	3/6/2018 16:41:19
FINISHED	3/6/2018 16:41:20
JOB TEMPLATE	Demo Template
JOB TYPE	Run
LAUNCHED BY	admin
INVENTORY	Demo Inventory
PROJECT	Demo Project
PLAYBOOK	hello_world.yml
MACHINE CREDENTIAL	Demo Credential

Below this is an "EXTRA VARIABLES" section with tabs for YAML and JSON, currently set to YAML. A small preview window shows the YAML content:

```
1 ---
```

On the right side of the main area is a large panel titled "Demo Template" showing the execution log:

```
PLAY [Hello World Sample] *****
*****
4 TASK [Gathering Facts] *****
*****
ok: [localhost]
6
7 TASK [Hello Message] *****
*****
8 ok: [localhost] => {
9     "msg": "Hello World!"
10 }
11
12 PLAY RECAP *****
*****
localhost : ok=2      changed=0      u
nreachable=0      failed=0
```

At the bottom right of the main area, there's a link "About | Copyright © 2018 Red Hat, Inc."

# Chapter 16: Ansible Galaxy

The screenshot shows the Ansible Galaxy website ([galaxy.ansible.com](https://galaxy.ansible.com)) running in a web browser. The page has a dark background featuring a galaxy image. At the top, there's a navigation bar with links for ABOUT, EXPLORE, SEARCH, BROWSE AUTHORS, and SIGN IN. A GitHub sign-in button is also present. Below the navigation, a main heading reads "Galaxy is your hub for finding, reusing and sharing Ansible content". On the right side, there's a "SIGNIN with GitHub" button and a "Use an existing account not associated with GitHub" link. The bottom section is divided into three main sections: "DOWNLOAD" (with a cloud icon), "SHARE" (with a share icon), and "FEATURED" (with a star icon). The "FEATURED" section highlights a role by "carlosbuenosvinos" and an author by "andrewrothstein". There are also links for "BLOG" and "SEARCH".

**GALAXY**

ABOUT EXPLORE SEARCH BROWSE AUTHORS SIGN IN

Galaxy is your hub for finding, reusing and sharing Ansible content

SIGNIN with GitHub

Use an existing account not associated with GitHub

**DOWNLOAD**

Jump-start your automation project with great content from the Ansible community. Galaxy provides pre-packaged units of work known to Ansible as [roles](#).

Roles can be dropped into Ansible PlayBooks and immediately put to work. You'll find roles for provisioning infrastructure, deploying applications, and all of the tasks you do everyday.

Use [Search](#) to find roles for your project, then download them onto your Ansible host using the `ansible-galaxy` command that comes bundled with Ansible.

**SHARE**

Help other Ansible users by sharing the awesome roles you create.

Maybe you have a role for installing and configuring a popular software package, or a role for deploying software built by your company. Whatever it is, use Galaxy to share it with the community.

Top content authors will be featured on the [Explore](#) page, achieving worldwide fame! Or at least fame on the internet among other developers and sysadmins.

**★ FEATURED**

ROLE: [carlosbuenosvinos.ansistrano-deploy](#) - Ansible role to deploy scripting applications like PHP, Python, Ruby, etc. in a Capistrano style

AUTHOR: [andrewrothstein](#) with 248 roles.

BLOG: Read the latest from The Inside Playbook, and keep up with what's happening in the Ansible universe.

```
1. jenkins (bash)
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter16/jenkins on master*
⚡ ansible-galaxy install -r requirements.yml
- downloading role 'java', owned by geerlingguy
- downloading role from https://github.com/geerlingguy/ansible-role-java/archive/1.8.1.tar.gz
- extracting geerlingguy.java to /Users/russ/.ansible/roles/geerlingguy.java
- geerlingguy.java (1.8.1) was installed successfully
- downloading role 'jenkins', owned by geerlingguy
- downloading role from https://github.com/geerlingguy/ansible-role-jenkins/archive/3.5.0.tar.gz
- extracting geerlingguy.jenkins to /Users/russ/.ansible/roles/geerlingguy.jenkins
- geerlingguy.jenkins (3.5.0) was installed successfully
[WARNING]: - dependency geerlingguy.java from role geerlingguy.jenkins differs from already
installed version (1.8.1), skipping

russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter16/jenkins on master*
⚡
```

The screenshot shows the Jenkins web interface at the URL 10.20.30.60.nip.io. The page title is "Jenkins". On the left, there are navigation links for "People" and "Build History". Below these are two collapsed sections: "Build Queue" (which shows "No builds in the queue") and "Build Executor Status" (which shows "1 Idle" and "2 Idle"). In the center, the main content area displays the message "Welcome to Jenkins!" above a blue button labeled "Log in to create new jobs.". At the bottom of the page, there is footer text: "Page generated: 09-Jun-2018 15:55:57 UTC REST API Jenkins ver. 2.126".

The screenshot shows the GitHub interface for creating a new repository. At the top, there's a navigation bar with links for Pull requests, Issues, Marketplace, and Explore. Below the header, the main title is "Create a new repository". A sub-instruction below it says, "A repository contains all the files for your project, including the revision history." The form fields are as follows:

- Owner:** russmckendrick (dropdown menu)
- Repository name:** ansible-role-docker (text input field with a green checkmark)

Below the form, a note says: "Great repository names are short and memorable. Need inspiration? How about solid-potato."

**Description (optional):** Example Ansible role for installing Docker CE Edge on Enterprise Linux and Ubuntu

**Visibility:**  **Public** (Public icon) - Anyone can see this repository. You choose who can commit.

**Private** (Private icon) - You choose who can see and commit to this repository.

**Initialize this repository with a README** (checkbox) - This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.

Buttons at the bottom include "Add .gitignore: None" (dropdown), "Add a license: None" (dropdown), and a blue "Create repository" button.

The screenshot shows a GitHub repository page for the user 'russmckendrick' with the repository name 'ansible-role-docker'. The page includes a navigation bar with links for Pull requests, Issues, Marketplace, and Explore. Below the navigation is a search bar and a header showing the repository name and stats: 1 unwatched, 0 stars, 0 forks, and 0 pull requests. A 'Code' tab is selected, showing 5 commits, 1 branch, 0 releases, and 1 contributor. A 'New pull request' button is visible. The main content area displays a list of files and their commit history:

File	Commit Message	Time Ago
defaults	Initial checkin	15 hours ago
handlers	Initial checkin	15 hours ago
meta	Update	14 hours ago
tasks	Initial checkin	15 hours ago
tests	Initial checkin	15 hours ago
vars	Initial checkin	15 hours ago
README.md	Update	15 hours ago

The screenshot shows a web browser window with the URL `galaxy.ansible.com` in the address bar. The page is titled "GALAXY" with a logo. The navigation menu includes "ABOUT", "EXPLORE", "SEARCH", "BROWSE AUTHORS", "MY CONTENT" (which is highlighted in blue), and a user profile "RUSSMCK". A banner at the top right says "MY CONTENT". The main content area is titled "Import Your Content from GitHub". It instructs users to click a toggle next to a repository to reveal a checkmark, which adds it to Galaxy. It also mentions removing the checkmark deletes the repository and provides settings to enable Travis notifications and control the repository name. Below this, there's a search bar and a list of repositories under the heading "russmck". One repository, "russmckendrick/ansible-role-docker", is listed with a green checkmark icon, a gear icon, the repository name, and a status badge "Succeeded" with a download icon. At the bottom, there are logos for Red Hat and Ansible, and copyright information: "Copyright © 2018 Red Hat, Inc. | Security Disclosures | Privacy Policy | GALAXY 2.4.0".

The screenshot shows a web browser window for [galaxy.ansible.com](https://galaxy.ansible.com). The user is logged in as RUSSMCK. The main navigation bar includes links for ABOUT, EXPLORE, SEARCH, BROWSE AUTHORS, MY CONTENT, and a dropdown for RUSSMCK. A banner at the top right says "MY IMPORTS".

The left sidebar has a "IMPORTS" section with a search bar and a "+ ADD" button. It lists a recent import:

- russmckendrick/ansible-role-d...** (Finished: 6/9/18 8:04 PM)

The main content area shows the details of the imported role "russmckendrick/ansible-role-docker" under the "master Update - fixing tags" section. The log output is as follows:

```
Starting import 249616: role_name=docker repo=russmckendrick/ansible-role-docker
Accessing branch: master
Parsing and validating meta data.
Parsing galaxy_tags
Parsing platforms
Parsing cloud platforms
No cloud platforms found in meta data
Parsing and validating README
Adding repo tags as role versions
Removing old tags
Import completed
Status SUCCESS : warnings=1 errors=0
```

On the right side of the import card, there are statistics: Commit 946728a, Stars 0, Forks 0, and Watchers 1.

At the bottom of the page, there are logos for Red Hat and Ansible, and copyright information: Copyright © 2018 Red Hat, Inc. | Security Disclosures | Privacy Policy | GALAXY 2.4.0.

The screenshot shows a web browser window with the URL `galaxy.ansible.com` in the address bar. The page is titled "ROLE DETAIL" and features a header with links for "ABOUT", "EXPLORE", "SEARCH", "BROWSE AUTHORS", "MY CONTENT", and a user account icon for "RUSSMCK". The main content area displays a role named "russmckendrick.docker". The role's description is: "Role to install the Docker CE Edge release on either an Enterprise Linux or Ubuntu host". To the right is a profile picture of the author, "russmckendrick". Below the description are two tabs: "Details" (which is selected) and "README". Under the "Details" tab, there are sections for "Downloads" (0), "Issue Tracker", "Github Repo", "Download", "Watch 1", and "Star 0". Technical details listed include: Type (Ansible), Minimum Ansible Version (2.4), Installation command (`$ ansible-galaxy install russmckendrick.docker`), Tags (docker), Last Commit (39 seconds ago), and Last Imported (29 seconds ago). A section for "OS Platforms" lists supported platforms and versions: EL (6, 7), Ubuntu (artful, bionic, xenial).

The terminal window shows the command `ansible-galaxy install -r requirements.yml` being run. The output indicates that the "docker" role was successfully installed from the GitHub repository `https://github.com/russmckendrick/ansible-role-docker` into the local Ansible roles directory.

```
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter16/docker on master*
⚡ ansible-galaxy install -r requirements.yml
- downloading role 'docker', owned by russmckendrick
- downloading role from https://github.com/russmckendrick/ansible-role-docker/archive/master.tar.gz
- extracting russmckendrick.docker to /Users/russ/.ansible/roles/russmckendrick.docker
- russmckendrick.docker (master) was installed successfully
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter16/docker on master*
```

```
1. docker (bash)

TASK [russmckendrick.docker : add the apt repo] ****
skipping: [centos]
changed: [ubuntu]

TASK [russmckendrick.docker : install the docker package] ****
skipping: [centos] => (item=[])
changed: [ubuntu] => (item=[u'docker-ce'])

TASK [russmckendrick.docker : install the python packages] ****
skipping: [centos] => (item=docker)
changed: [ubuntu] => (item=docker)

TASK [russmckendrick.docker : start docker and configure to start on boot] ****
skipping: [centos]
ok: [ubuntu]

PLAY RECAP ****
centos : ok=9    changed=7    unreachable=0    failed=0
ubuntu  : ok=8    changed=5    unreachable=0    failed=0

russ_in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter16/docker on master*
```

```
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter16/docker on master*  
⚡ ansible-galaxy login --github-token [REDACTED]  
Successfully logged into Galaxy as russmck  
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter16/docker on master*
```

```
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter16/docker on master*
⚡ ansible-galaxy import russmckendrick ansible-role-docker
Successfully submitted import request 249834
Starting import 249834: role_name=docker repo=russmckendrick/ansible-role-docker
Accessing branch: master
Parsing and validating meta data.
Setting role name to docker
Parsing galaxy_tags
Parsing platforms
Parsing cloud platforms
No cloud platforms found in meta data
Parsing and validating README
Adding repo tags as role versions
Removing old tags
Import completed
Status SUCCESS : warnings=1 errors=0
russ in ~/Documents/Code/learn-ansible-fundamentals-of-ansible-2x/chapter16/docker on master*
```

```
1. russ (bash)
russ in ~
⚡ ansible-galaxy search --author=russmckendrick docker

Found 1 roles matching your search:

  Name          Description
  ----
russmckendrick.docker Role to install the Docker CE Edge release on either an Enterprise Linux or U
russ in ~
⚡
```

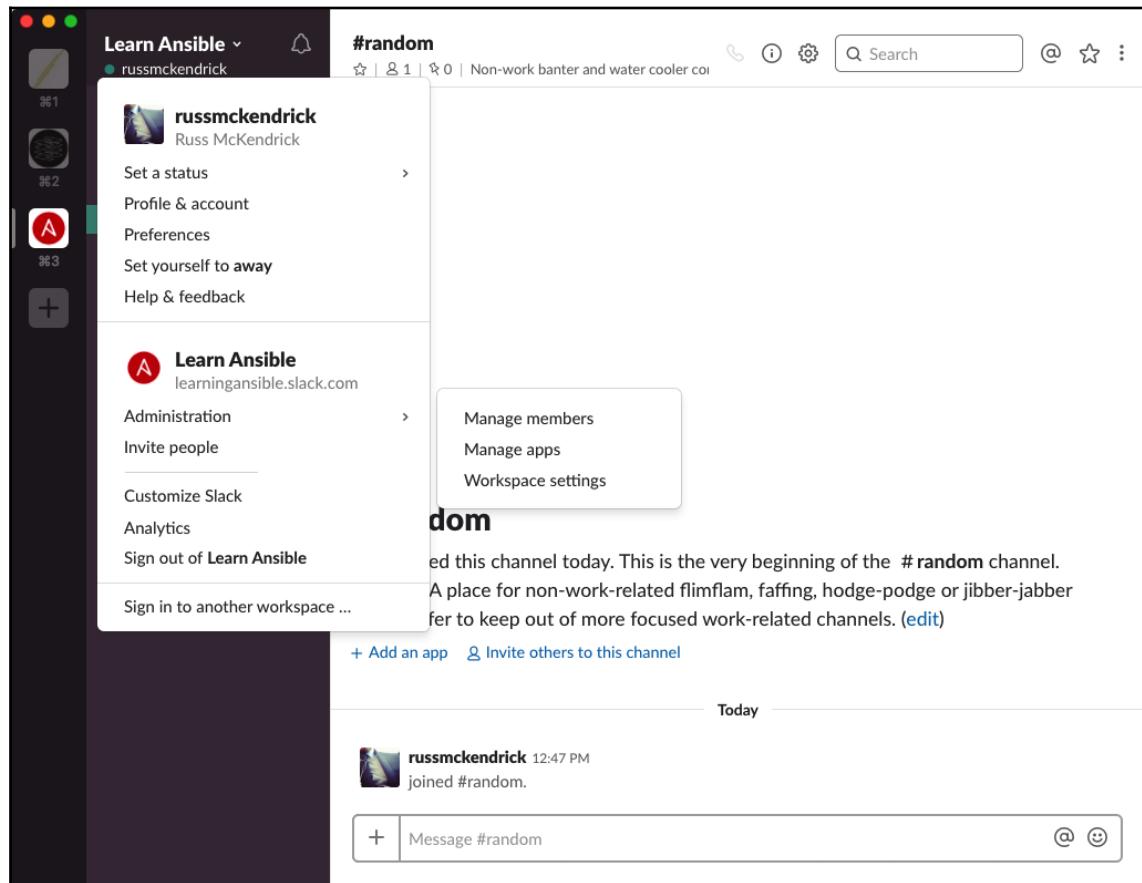
---

```
russ in ~
⚡ ansible-galaxy info russmckendrick.docker

Role: russmckendrick.docker
      description: Role to install the Docker CE Edge release on either an Enterprise Linux or Ubu
      active: True
      commit: d26cf0ea4b3a9706151d25782b5ba498bd5ff698
      commit_message: Update

- update metadata
  commit_url: https://github.com/russmckendrick/ansible-role-docker/commit/d26cf0ea4b3a9706151
  company:
  created: 2018-06-09T18:58:56.523Z
  dependencies: []
  download_count: 1
  forks_count: 0
  galaxy_info:
    author: russmck
    galaxy_tags: ['docker']
    license: license (BSD)
    min_ansible_version: 2.4
    platforms: [{"name": "EL", "versions": [6, 7]}, {"name": "Ubuntu", "versions": [14, 16]}]
  github_branch:
  github_repo: ansible-role-docker
  github_user: russmckendrick
  id: 26229
  install_date: Sat Jun  9 19:08:47 2018
  intalled_version: master
  is_valid: True
  issue_tracker_url: https://github.com/russmckendrick/ansible-role-docker/issues
```

# Chapter 17: Next Steps with Ansible



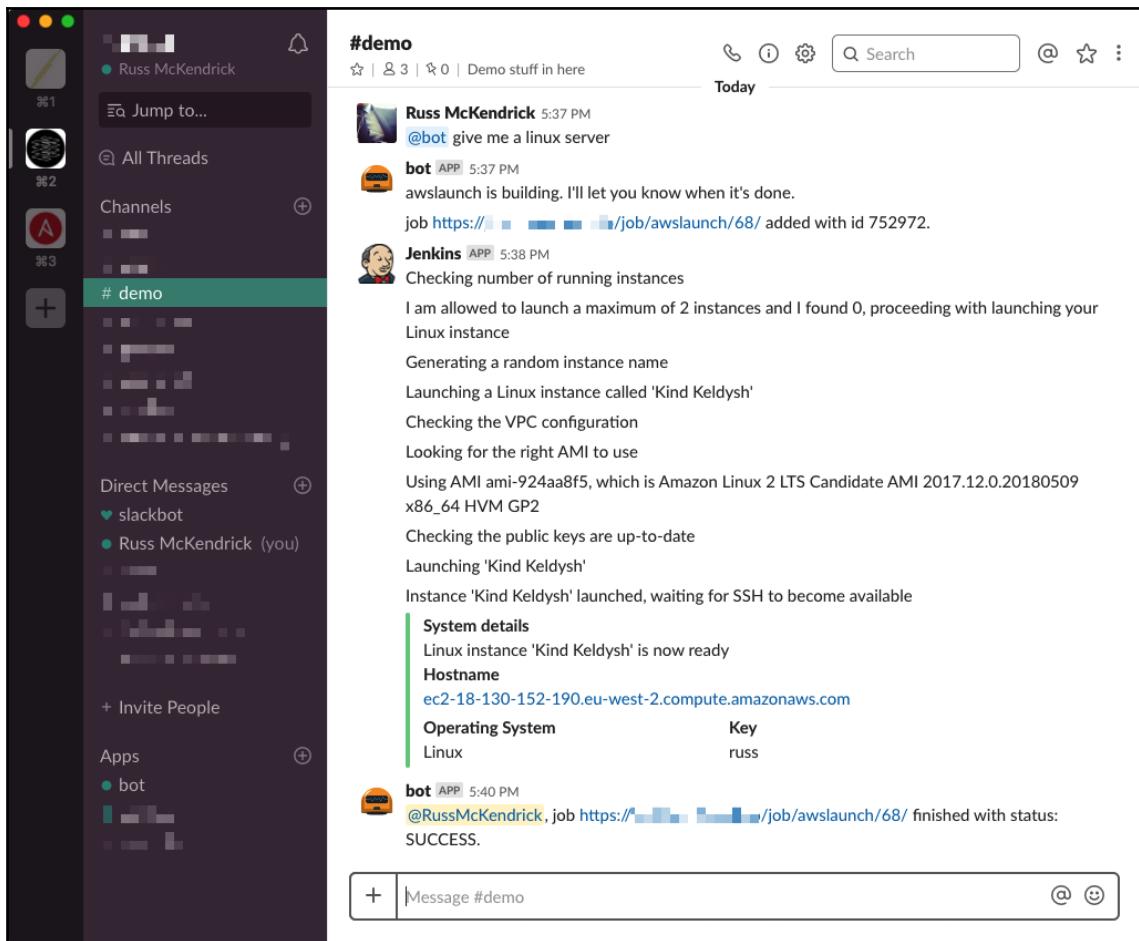
A screenshot of a web browser window displaying the Slack App Directory at [learnansible.slack.com](https://learnansible.slack.com). The page shows the "Incoming WebHooks" app. The interface includes a header with the Slack logo, a search bar, and navigation links for Browse, Manage, and Build. A user profile icon for "Learn Ansible" is also present. Below the header, there's a link to "Browse Apps". The main content area features a large icon of a red and black gear-like symbol, a green "Add Configuration" button, and a white "App Homepage" button. The "Settings" tab is currently selected. A message states: "This app was made by Slack. It only uses data Slack already has access to (view our [Privacy Policy](#) to learn more)." A "Configurations" section lists a single entry: "Posts to #general as Ansible" by "russmckendrick" on Jun 23, 2018, with an edit icon next to it.

The screenshot shows the Slack interface. On the left is the sidebar with pinned channels: Learn Ansible, # general (which is selected), # random, Direct Messages (with slackbot and russmckendrick), and Apps. There are also three notifications: #1, #2, and #3. The main area is the #general channel, which has 1 message and 0 files. It's described as a company-wide announcements channel. A message from russmckendrick at 12:47 PM indicates they joined the channel. At 3:39 PM, russmckendrick added an integration named Ansible. The Ansible bot (@Ansible) started a series of messages at 4:18 PM, detailing its actions: checking for a VPC called 'VPC-Slack' (which exists with ID 'vpc-dbbcffbd'), ensuring subnets are present, checking for an internet gateway, adding an internet gateway with ID 'igw-48fab92f', ensuring the route is present, ensuring security groups are present, ensuring the target group is present, and checking for an Elastic Load Balancer. The bot then provides system details, stating it created an ELB in 'VPC-Slack' with the URL 'VPC-Slack-elb-854065100.eu-west-1.elb.amazonaws.com'. A 'new messages' indicator is visible on the right. At the bottom, there's a message input field with '+ Message #general' and a send button.

The screenshot shows a Slack interface with the '#general' channel selected. The left sidebar lists various channels and direct messages. The main window displays a series of messages from an Ansible playbook running in a VPC. The messages include:

- Ensuring that the subnets are present in 'VPC-Slack'
- Checking there is an internet gateway configured in 'VPC-Slack'
- Adding an internet gateway in 'VPC-Slack' which has an ID of 'igw-48fab92f'
- Ensuring that the route is present for the internet gateway in 'VPC-Slack'
- Ensuring that the security groups are present in 'VPC-Slack'
- Ensuring that the target group is present in 'VPC-Slack'
- Checking for an Elastic Load Balancer in 'VPC-Slack'
- System details**
- Created an Elastic Load Balancer in 'VPC-Slack'
- ELB URL**
- [VPC-Slack-elb-854065100.eu-west-1.elb.amazonaws.com](http://VPC-Slack-elb-854065100.eu-west-1.elb.amazonaws.com)

Below the messages, there is a red 'new messages' badge. At the bottom, there is a message input field with a '+' icon and the placeholder 'Message #general'.



Slack interface showing a demo channel and Jenkins status.

**Left Sidebar:**

- Russ McKendrick
- Jump to...
- All Threads
- Channels
  - # demo (highlighted)
  - ...
- Direct Messages
  - slackbot
  - Russ McKendrick (you)
  - ...
- + Invite People
- Apps
  - bot
  - ...

**Right Channel View:**

**#demo**  
☆ | 3 | 0 | Demo stuff in here

Today

**Messages:**

- Russ McKendrick 5:42 PM @bot terminate all servers
- bot APP 5:42 PM awsremove is building. I'll let you know when it's done.
- job <https://.../job/awsremove/22/> added with id 681198. new messages
- Jenkins APP 5:43 PM Checking number of running instances
- I found you have 1 instances, terminating them now
- Instances terminated (2 MB) 
- bot APP 5:44 PM @RussMcKendrick, job <https://.../job/awsremove/22/> finished with status: SUCCESS.

**Input Field:** + Message #demo