

Chapter 1: The System Architecture and Design of Ansible

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook --version
ansible-playbook 2.7.5
  config file = /etc/ansible/ansible.cfg
  configured module search path = [u'/home/jfreeman/.ansible/plugins/modules', u
'/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python2.7/site-packages/ansible
  executable location = /usr/bin/ansible-playbook
  python version = 2.7.5 (default, Oct 30 2018, 23:45:53) [GCC 4.8.5 20150623 (R
ed Hat 4.8.5-36)]
~/src/mastery> █
```

```
jfreeman@mastery: ~ (ssh)
~> curl -O https://raw.githubusercontent.com/ansible/ansible/devel/contrib/inven
tory/ec2.py
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
100 73063  100 73063    0     0  102k      0  --:--:-- --:--:-- --:--:--  102k
~> curl -O https://raw.githubusercontent.com/ansible/ansible/devel/contrib/inven
tory/ec2.ini
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
100  9529  100  9529    0     0  28118      0  --:--:-- --:--:-- --:--:--  28109
~> chmod +x ec2.py
~>
```

```
jfreeman@mastery: ~ (ssh)
~> sudo yum -y install python-boto
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirror.sov.uk.goscomb.net
 * epel: mirror.1000mbps.com
 * extras: repo.uk.bigstepcloud.com
 * updates: anorien.csc.warwick.ac.uk
Package python-boto is obsoleted by python2-boto, trying to install python2-boto
-2.45.0-3.el7.noarch instead
Resolving Dependencies
--> Running transaction check
---> Package python2-boto.noarch 0:2.45.0-3.el7 will be installed
```

```
jfreeman@mastery: ~ (ssh)
~> export AWS_ACCESS_KEY_ID='XXXXXXXXXXXXXXXXXXXX'
~> export AWS_SECRET_ACCESS_KEY='XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX'
~> ./ec2.py --list
{
  "_meta": {
    "hostvars": {
      "xx.xxx.xxx.xx": {
        "ansible_host": "xx.xxx.xxx.xx",
        "ec2__in_monitoring_element": false,
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts -c local mastery.yaml

PLAY [limit example play] *****

TASK [tell us which host we are on] *****
ok: [backend.example.name] => {
  "inventory_hostname": "backend.example.name"
}
ok: [mastery.example.name] => {
  "inventory_hostname": "mastery.example.name"
}

PLAY RECAP *****
backend.example.name      : ok=1    changed=0    unreachable=0    failed=0
mastery.example.name     : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts -c local --limit frontend mastery.yaml

PLAY [limit example play] *****

TASK [tell us which host we are on] *****
ok: [mastery.example.name] => {
  "inventory_hostname": "mastery.example.name"
}

PLAY RECAP *****
mastery.example.name     : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts -c local --limit frontend mastery.yaml

PLAY [limit example play] *****

TASK [tell us which host we are on] *****
ok: [mastery.example.name] => {
  "inventory_hostname": "mastery.example.name"
}

TASK [grab variable data from backend] *****
ok: [mastery.example.name] => {
  "hostvars['backend.example.name']['ansible_port']": "314"
}

PLAY RECAP *****
mastery.example.name      : ok=2    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts -c local relative.yaml

PLAY [relative path play] *****

TASK [who am I] *****
ok: [localhost] => {
  "msg": "I am mastery task"
}

TASK [var from file] *****
ok: [localhost] => {
  "something": "better than nothing"
}

TASK [where am I] *****
ok: [localhost] => {
  "msg": "I am task a"
}

TASK [who am I] *****
ok: [localhost] => {
  "msg": "I am task b"
}

PLAY RECAP *****
localhost           : ok=4   changed=0   unreachable=0   failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts -c local names.yml

PLAY [play with a not-mastery] *****

TASK [set a variable] *****
ok: [localhost]

TASK [task with a defined variable] *****
ok: [localhost] => {
  "msg": "I am mastery task"
}

PLAY [second play with a {{ task_var_name }}] *****

TASK [task with a {{ runtime_var_name }}] *****
ok: [localhost] => {
  "msg": "I am another mastery task"
}

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

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-doc debug | cat -
> DEBUG    (/usr/lib/python2.7/site-packages/ansible/modules/utilities/logic/debug.py)

This module prints statements during execution and can be
useful for debugging variables or expressions without
necessarily halting the playbook. Useful for debugging
together with the 'when:' directive. This module is also
supported for Windows targets.

* note: This module has a corresponding action plugin.

OPTIONS (= is mandatory):

- msg
  The customized message that is printed. If omitted, prints a
  generic message.
  [Default: Hello world!]

- var
  A variable name to debug. Mutually exclusive with the 'msg'
  option.
  [Default: (null)]

- verbosity
  A number that controls when the debug is run, if you set to 3
  it will only run debug when -vvv or above
  [Default: 0]
  version_added: 2.1

NOTES:
  * This module is also supported for Windows targets.

AUTHOR: Dag Wieers (@dagwieers), Michael DeHaan
METADATA:
  status:
  - stableinterface
  supported_by: core

EXAMPLES:
# Example that prints the loopback address and gateway for each host
- debug:
  msg: "System {{ inventory_hostname }} has uuid {{ ansible_product_uuid }}"
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i priority-hosts -c local priorityordering.yml

PLAY [group variable priority ordering example play] *****

TASK [show assigned group variables] *****
ok: [host1.example.com] => {
  "msg": [
    "http_port:8080",
    "thread_count:10",
    "secure:true",
    ""
  ]
}
ok: [host2.example.com] => {
  "msg": [
    "http_port:80",
    "thread_count:undefined",
    "secure:true",
    ""
  ]
}

PLAY RECAP *****
host1.example.com      : ok=1    changed=0    unreachable=0    failed=0
host2.example.com      : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> █
```



```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i priority-hosts -c local priorityordering.yml

PLAY [group variable priority ordering example play] *****

TASK [show assigned group variables] *****
ok: [host1.example.com] => {
  "msg": [
    "http_port:8080",
    "thread_count:10",
    "secure:true",
    ""
  ]
}
ok: [host2.example.com] => {
  "msg": [
    "http_port:80",
    "thread_count:undefined",
    "secure:true",
    ""
  ]
}

PLAY RECAP *****
host1.example.com      : ok=1    changed=0    unreachable=0    failed=0
host2.example.com      : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

Chapter 2: Protecting Your Secrets with Ansible

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-vault create --help
Usage: ansible-vault create [options] file_name

encryption/decryption utility for Ansible data files

Options:
  --ask-vault-pass          ask for vault password
  --encrypt-vault-id=ENCRYPT_VAULT_ID
                           the vault id used to encrypt (required if more than
                           vault-id is provided)
  -h, --help                show this help message and exit
  --new-vault-id=NEW_VAULT_ID
                           the new vault identity to use for rekey
  --new-vault-password-file=NEW_VAULT_PASSWORD_FILE
                           new vault password file for rekey
  --vault-id=VAULT_IDS     the vault identity to use
  --vault-password-file=VAULT_PASSWORD_FILES
                           vault password file
  -v, --verbose             verbose mode (-vvv for more, -vvvv to enable
                           connection debugging)
  --version                 show program's version number and exit

See 'ansible-vault <command> --help' for more information on a specific
command.
~/src/mastery>
```

```
ansible-vault create --vault-id @prompt secrets.yaml (ssh)
~/src/mastery> ansible-vault create --vault-id @prompt secrets.yaml
New vault password (default):
Confirm new vault password (default):
```

```
ansible-vault create --vault-id @prompt secrets.yaml (ssh)
---
my_secret: is_safe
~
~
~
~
~
:wq
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> cat secrets.yaml
$ANSIBLE_VAULT;1.1;AES256
66643936633534316232613165346637383063313230363765323262353662646135666136643434
3635396330373764636432366564363936616164313232330a633637323966623661623432643532
61356564333264383063323531643263656662346262323337366432326464373235376463313835
3764646665613638620a653566353431663165343366643965346335653730633636313132386162
38313032306631323834346332383965393034663265346635383239313663306333
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> echo "my long password" > password_file
~/src/mastery> ansible-vault create --vault-id ./password_file more_secrets.yaml
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> vim password.sh
~/src/mastery> cat password.sh
#!/bin/sh
echo "a long password"

~/src/mastery> chmod +x password.sh
~/src/mastery> ansible-vault create --vault-id ./password.sh even_more_secrets.y
aml
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-vault encrypt --help
Usage: ansible-vault encrypt [options] file_name

encryption/decryption utility for Ansible data files

Options:
  --ask-vault-pass          ask for vault password
  --encrypt-vault-id=ENCRYPT_VAULT_ID
                           the vault id used to encrypt (required if more than
                           vault-id is provided)
  -h, --help                show this help message and exit
  --new-vault-id=NEW_VAULT_ID
                           the new vault identity to use for rekey
  --new-vault-password-file=NEW_VAULT_PASSWORD_FILE
                           new vault password file for rekey
  --output=OUTPUT_FILE     output file name for encrypt or decrypt; use - for
                           stdout
  --vault-id=VAULT_IDS     the vault identity to use
  --vault-password-file=VAULT_PASSWORD_FILES
                           vault password file
  -v, --verbose            verbose mode (-vvv for more, -vvvv to enable
                           connection debugging)
  --version                show program's version number and exit

See 'ansible-vault <command> --help' for more information on a specific
command.
~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> cat a_vars_file.yaml
---
something: "better than nothing"
~/src/mastery> ansible-vault encrypt --vault-id ./password.sh a_vars_file.yaml
Encryption successful
~/src/mastery> cat a_vars_file.yaml
$ANSIBLE_VAULT;1.1;AES256
39636234666234353062386337303935666632363638373639396336663134636235653631616134
3362326237633930363636393063333835393038303733650a633265663163633336353933303036
61313331646262383736396133376233376461663062366132616466376636653935373431623264
3463323833373738380a346332323335653539613531333635336333346331326531343737393638
32346635663439643230326335383139303835623631386430383136353631323364346265363837
3235303266653664623339343366616431333035376563313065
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-vault edit --help
Usage: ansible-vault edit [options] file_name

encryption/decryption utility for Ansible data files

Options:
  --ask-vault-pass          ask for vault password
  --encrypt-vault-id=ENCRYPT_VAULT_ID
                           the vault id used to encrypt (required if more than
                           vault-id is provided)
  -h, --help               show this help message and exit
  --new-vault-id=NEW_VAULT_ID
                           the new vault identity to use for rekey
  --new-vault-password-file=NEW_VAULT_PASSWORD_FILE
                           new vault password file for rekey
  --vault-id=VAULT_IDS    the vault identity to use
  --vault-password-file=VAULT_PASSWORD_FILES
                           vault password file
  -v, --verbose           verbose mode (-vvv for more, -vvvv to enable
                           connection debugging)
  --version               show program's version number and exit

See 'ansible-vault <command> --help' for more information on a specific
command.
~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-vault edit --vault-id ./password.sh a_vars_file.yaml
```

```
ansible-vault edit --vault-id ./password.sh a_vars_file.yaml (ssh)
---
something: "better than nothing"
~
~
~
"/tmp/tmpVvcJBK.yaml" 2L, 39C
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-vault rekey --help 5
Usage: ansible-vault rekey [options] file_name

encryption/decryption utility for Ansible data files

Options:
  --ask-vault-pass          ask for vault password
  --encrypt-vault-id=ENCRYPT_VAULT_ID
                           the vault id used to encrypt (required if more than
                           vault-id is provided)
  -h, --help               show this help message and exit
  --new-vault-id=NEW_VAULT_ID
                           the new vault identity to use for rekey
  --new-vault-password-file=NEW_VAULT_PASSWORD_FILE
                           new vault password file for rekey
  --vault-id=VAULT_IDS     the vault identity to use
  --vault-password-file=VAULT_PASSWORD_FILES
                           vault password file
  -v, --verbose            verbose mode (-vvv for more, -vvvv to enable
                           connection debugging)
  --version                show program's version number and exit

See 'ansible-vault <command> --help' for more information on a specific
command.
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-vault rekey --vault-id password.sh --new-vault-id dev@.p
assword_file even_more_secrets.yaml
Rekey successful
~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-vault decrypt --help
Usage: ansible-vault decrypt [options] file_name

encryption/decryption utility for Ansible data files

Options:
  --ask-vault-pass          ask for vault password
  -h, --help                show this help message and exit
  --new-vault-id=NEW_VAULT_ID
                           the new vault identity to use for rekey
  --new-vault-password-file=NEW_VAULT_PASSWORD_FILE
                           new vault password file for rekey
  --output=OUTPUT_FILE     output file name for encrypt or decrypt; use - for
                           stdout
  --vault-id=VAULT_IDS     the vault identity to use
  --vault-password-file=VAULT_PASSWORD_FILES
                           vault password file
  -v, --verbose            verbose mode (-vvv for more, -vvvv to enable
                           connection debugging)
  --version                show program's version number and exit

See 'ansible-vault <command> --help' for more information on a specific
command.
~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> cat more_secrets.yaml
$ANSIBLE_VAULT;1.1;AES256
343163623863326262646663732613733623966663761633630633338626233316532326464313436
6666626532306561363731383932343262626536316334660a323938343539386338643033333634
39623861316534363663383766396234316464356431653664646630363039323335613130316335
3432313332663763340a303866366534373436303338316535373639313138616135643936373439
36613837343864636539393735616466373136623334306164356562643839656466
~/src/mastery> ansible-vault decrypt --vault-id ./password_file more_secrets.yam
l
Decryption successful
~/src/mastery> cat more_secrets.yaml
---
my_secret2: is_also_safe
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts --vault-id test@./password.sh i
nline.yaml

PLAY [inline secret variable demonstration] *****

TASK [print the secure variable] *****
ok: [localhost] => {
  "my_secret": "secure_password"
}

PLAY RECAP *****
localhost          : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```



```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts inline.yaml

PLAY [inline secret variable demonstration] *****

TASK [print the secure variable] *****
ok: [localhost] => {
  "my_secret": "secure_password"
}

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> 
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-vault encrypt_string --help
Usage: ansible-vault encrypt_string [--prompt] [options] string_to_encrypt

encryption/decryption utility for Ansible data files

Options:
  --ask-vault-pass          ask for vault password
  --encrypt-vault-id=ENCRYPT_VAULT_ID
                           the vault id used to encrypt (required if more than
                           vault-id is provided)
  -h, --help                show this help message and exit
  -n ENCRYPT_STRING_NAMES, --name=ENCRYPT_STRING_NAMES
                           Specify the variable name
  --new-vault-id=NEW_VAULT_ID
                           the new vault identity to use for rekey
  --new-vault-password-file=NEW_VAULT_PASSWORD_FILE
                           new vault password file for rekey
  --output=OUTPUT_FILE     output file name for encrypt or decrypt; use - for
                           stdout
  -p, --prompt              Prompt for the string to encrypt
  --stdin-name=ENCRYPT_STRING_STDIN_NAME
                           Specify the variable name for stdin
  --vault-id=VAULT_IDS     the vault identity to use
  --vault-password-file=VAULT_PASSWORD_FILES
                           vault password file
  -v, --verbose             verbose mode (-vvv for more, -vvvv to enable
                           connection debugging)
  --version                show program's version number and exit

See 'ansible-vault <command> --help' for more information on a specific
command.
~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts --vault-id test@./password.sh inline.yaml

PLAY [inline secret variable demonstration] *****

TASK [print the secure variable] *****
ok: [localhost] => {
  "my_secret": "secure_password"
}

PLAY RECAP *****
localhost                : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> cat inline.yaml 1
---
- name: inline secret variable demonstration
  hosts: localhost
  gather_facts: false

  vars:
    my_secret: !vault |
      $ANSIBLE_VAULT;1.2;AES256:test
      3935656364356464376462633235663838393164666131373564613834626334666131
      6163386435
      6631623531336637633566363461646463383331343836630a38333635333533333431
      6535313662
      3137393861383464306236616532373165373066356231336533626630323336376133
      6532363166
      6534303839646539310a39306536393637633833316131303336366563623232393862
      3632376165
      3533

  tasks:
    - name: print the secure variable
      debug:
        var: my_secret

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts --vault-id test@./password.sh inline.yml

PLAY [inline secret variable demonstration] *****

TASK [print the secure variable] *****
ok: [localhost] => {
  "my_secret": "secure_password"
}

PLAY RECAP *****
localhost          : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts --vault-id password.sh showme.yml -v
Using /etc/ansible/ansible.cfg as config file

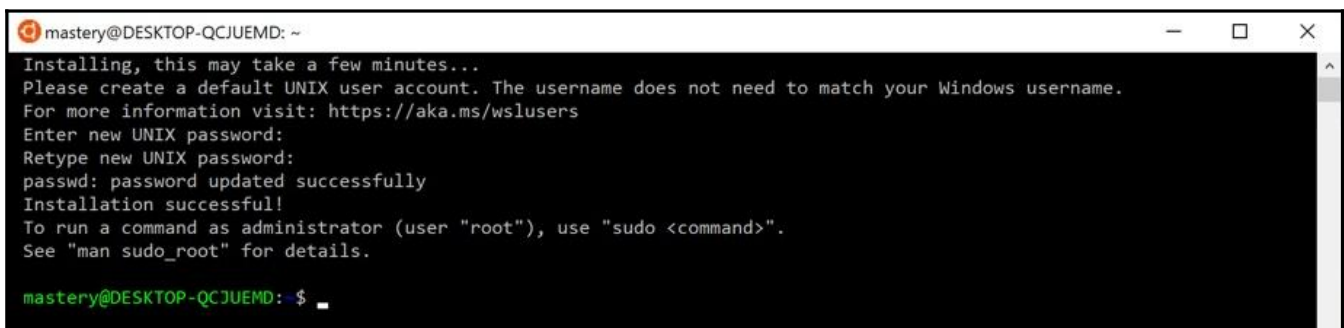
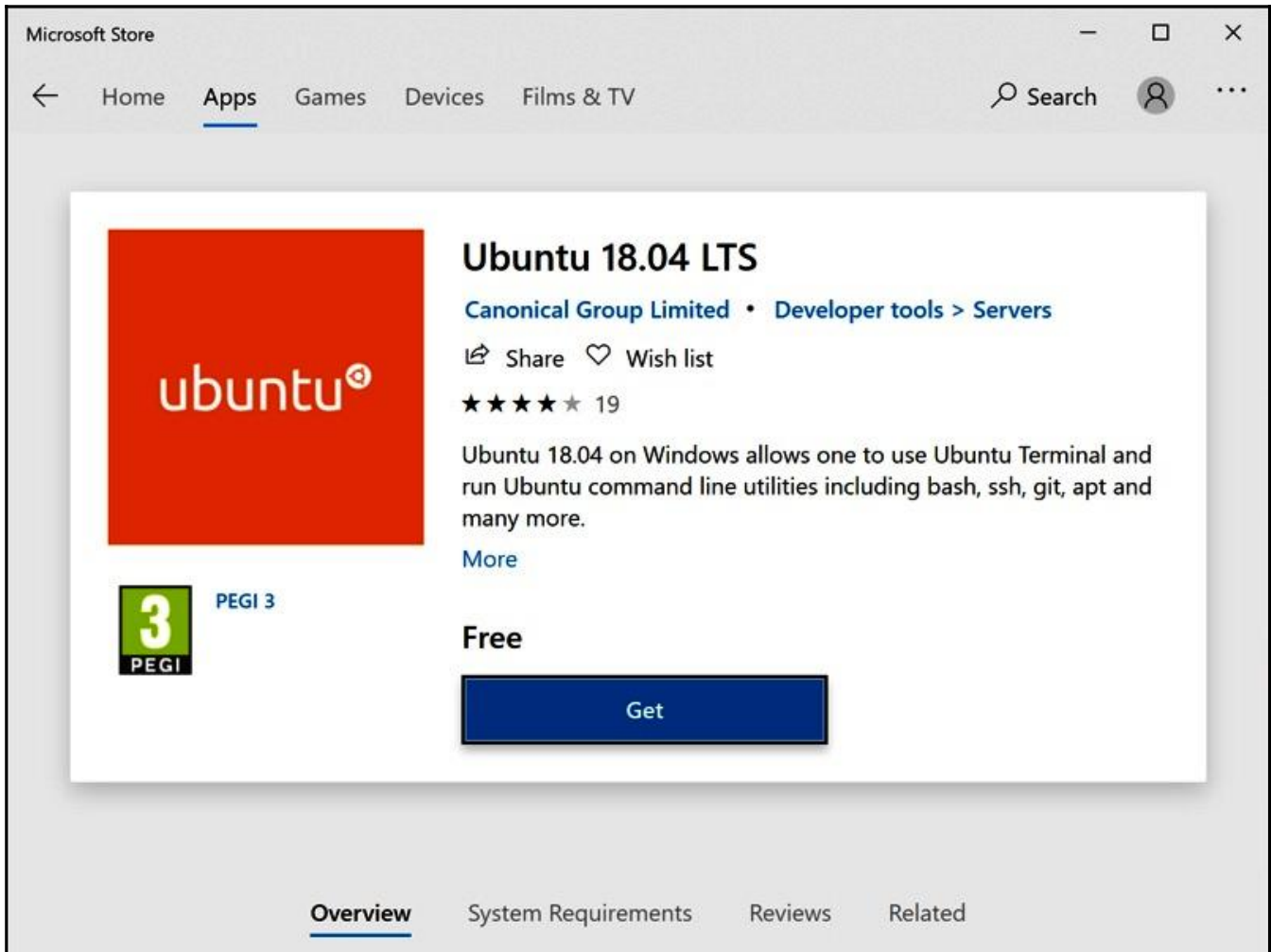
PLAY [show me an encrypted var] *****

TASK [print the variable] *****
ok: [localhost] => {"censored": "the output has been hidden due to the fact that 'no_log: true' was specified for this result"}

PLAY RECAP *****
localhost          : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

Chapter 3: Ansible and Windows - Not Just for Linux



```

Administrator: Windows PowerShell
PS C:\Users\Administrator> New-SelfSignedCertificate -CertStoreLocation Cert:\LocalMachine\My -DnsName "Senv:computernam
e" -FriendlyName "winRM HTTPS certificate" -NotAfter (get-Date).AddYears(5)

PSParentPath: Microsoft.PowerShell.Security\Certificate::LocalMachine\My

Thumbprint                               Subject
-----
7CB312B9009E596652974C7FC3912363AF5BF016  CN=WIN-2NJFMR0MNB
PS C:\Users\Administrator>

```

```

Administrator: Windows PowerShell
PS C:\Users\Administrator> New-Item -Path WSMan:\localhost\Listener -Transport HTTPS -Address * -CertificateThumbprint 7
CB312B9009E596652974C7FC3912363AF5BF016

Creates a new Listener item.
This command creates a new Listener item.

Do you want to continue?
[Y] Yes [N] No [S] Suspend [?] Help (default is "Y"): y

WSManConfig: Microsoft.WSMan.Management\WSMan::localhost\Listener

Type      Keys                               Name
----      -
Container {Transport=HTTPS, Address=*}      Listener_1305953032

PS C:\Users\Administrator> New-NetFirewallRule -DisplayName 'winRM HTTPS Management' -Profile Domain,Private -Direction
Inbound -Action Allow -Protocol TCP -LocalPort 5986

Name                : {a21b1711-ab50-4baf-89a7-26735dbc71f5}
DisplayName         : winRM HTTPS Management
Description         :
DisplayGroup       :
Group              :
Enabled            : True
Profile            : Domain, Private
Platform          : {}
Direction         : Inbound
Action            : Allow
EdgeTraversalPolicy : Block
LooseSourceMapping : False
LocalOnlyMapping  : False
Owner              :
PrimaryStatus      : OK
Status            : The rule was parsed successfully from the store. (65536)
EnforcementStatus  : NotApplicable
PolicyStoreSource  : PersistentStore
PolicyStoreSourceType : Local

PS C:\Users\Administrator> Set-Item -Path "WSMan:\localhost\Service\Auth\Basic" -Value $true
PS C:\Users\Administrator>

```

```
python (ssh)
~/src/mastery> python
Python 2.7.5 (default, Oct 30 2018, 23:45:53)
[GCC 4.8.5 20150623 (Red Hat 4.8.5-36)] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>> import winrm
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
ImportError: No module named winrm
>>> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible -i windows-hosts -m win_ping all
192.168.81.150 | SUCCESS => {
  "changed": false,
  "ping": "pong"
}
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> kinit Administrator@MASTERY.EXAMPLE.COM
Password for Administrator@MASTERY.EXAMPLE.COM:
~/src/mastery> klist
Ticket cache: KEYRING:persistent:1000:1000
Default principal: Administrator@MASTERY.EXAMPLE.COM

Valid starting          Expires                Service principal
01/09/2019 13:44:10    01/09/2019 23:44:10    krbtgt/MASTERY.EXAMPLE.COM@MASTERY.EXAMPLE.COM
    renew until 01/16/2019 13:44:08
~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible -i windows-hosts -m win_ping all
192.168.81.150 | SUCCESS => {
  "changed": false,
  "ping": "pong"
}
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible -i windows-hosts -m win_ping all
/usr/lib/python2.7/site-packages/urllib3/connection.py:362: SubjectAltNameWarning: Certificate for win-2njfmr0mnb.d.mastery.example.com has no `subjectAltName`, falling back to check for a `commonName` for now. This feature is being removed by major browsers and deprecated by RFC 2818. (See https://github.com/shazow/urllib3/issues/497 for details.)
  SubjectAltNameWarning
WIN-2NJFMR0MNB.D.MASTERY.EXAMPLE.COM | SUCCESS => {
  "changed": false,
  "ping": "pong"
}
~/src/mastery>
```


Chapter 4: Infrastructure Management for Enterprises with AWX

The screenshot displays the AWX web interface for creating a new project. The top navigation bar shows the user is logged in as 'admin'. The left sidebar contains a menu with categories: VIEWS (Dashboard, Jobs, Schedules, My View), RESOURCES (Templates, Credentials, Projects, Inventories, Inventory Scripts), ACCESS (Organizations, Users, Teams), and ADMINISTRATION (Credential Types, Notifications, Management Jobs). The main content area is titled 'PROJECTS / CREATE PROJECT' and features a 'NEW PROJECT' form with tabs for DETAILS, PERMISSIONS, NOTIFICATIONS, JOB TEMPLATES, and SCHEDULES. The form fields include: NAME (Mastery Examples), DESCRIPTION, ORGANIZATION (Default), SCM TYPE (Manual), PROJECT BASE PATH (/var/lib/awx/projects), and PLAYBOOK DIRECTORY (mastery). Below the form is a 'PROJECTS' table with a search bar and a 'KEY' button. The table lists one project: 'Demo Project' (GIT), with ORGANIZATION 'Default' and LAST MODIFIED '1/14/2019 5:09:08 PM'. The interface includes 'CANCEL' and 'SAVE' buttons, and a footer indicating 'ITEMS 1 - 1'.

AWX admin

INVENTORIES / Mastery Demo

Mastery Demo

DETAILS PERMISSIONS GROUPS HOSTS SOURCES COMPLETED JOBS

* NAME:
 DESCRIPTION:
 * ORGANIZATION:

INSIGHTS CREDENTIAL:
 INSTANCE GROUPS:

VARIABLES YAML JSON

1 ---

CANCEL SAVE

INVENTORIES HOSTS

SEARCH

NAME ^ TYPE ORGANIZATION ACTIONS

AWX admin

INVENTORIES / Mastery Demo / GROUPS / CREATE GROUP

CREATE GROUP

DETAILS GROUPS HOSTS

* NAME:
 DESCRIPTION:

VARIABLES YAML JSON

1 ---

CANCEL SAVE

Mastery Demo

DETAILS PERMISSIONS GROUPS HOSTS SOURCES COMPLETED JOBS

RUN COMMANDS

AWX

admin

INVENTORIES / Mastery Demo / GROUPS / Mastery Group / ASSOCIATED HOSTS / CREATE HOST

CREATE HOST ON

DETAILS FACTS GROUPS

* HOST NAME 192.168.81.149 DESCRIPTION AWX Mastery Host

VARIABLES 1 ---

CANCEL SAVE

Mastery Group

DETAILS GROUPS HOSTS

RUN COMMANDS +

AWX

admin

CREDENTIALS / CREATE CREDENTIAL

NEW CREDENTIAL

DETAILS PERMISSIONS

* NAME Mastery Login DESCRIPTION ORGANIZATION SELECT AN ORGANIZATION

* CREDENTIAL TYPE Machine

TYPE DETAILS

USERNAME root PASSWORD MASTERY123! Prompt on launch

SSH PRIVATE KEY HINT: Drag and drop an SSH private key file on the field below.

PRIVATE KEY PASSPHRASE Prompt on launch PRIVILEGE ESCALATION METHOD PRIVILEGE ESCALATION USERNAME

PRIVILEGE ESCALATION PASSWORD Prompt on launch

AWX admin

TEMPLATES / CREATE JOB TEMPLATE

NEW JOB TEMPLATE

DETAILS | PERMISSIONS | NOTIFICATIONS | COMPLETED JOBS | SCHEDULES | ADD SURVEY

* NAME: Mastery Template | DESCRIPTION: | *JOB TYPE: Run PROMPT ON LAUNCH

* INVENTORY: Mastery Demo PROMPT ON LAUNCH | * PROJECT: Mastery Examples | * PLAYBOOK: example.yaml

CREDENTIAL: Mastery Login PROMPT ON LAUNCH | FORKS: DEFAULT PROMPT ON LAUNCH | LIMIT:

* VERBOSITY: 0 (Normal) PROMPT ON LAUNCH | JOB TAGS: PROMPT ON LAUNCH | SKIP TAGS: PROMPT ON LAUNCH

LABELS: | INSTANCE GROUPS: | JOB SLICING: 1

SHOW CHANGES: OFF PROMPT ON LAUNCH | OPTIONS: Enable Privilege Escalation Allow Provisioning Callbacks Enable Concurrent Jobs Use Fact Cache

EXTRA VARIABLES: PROMPT ON LAUNCH

1 ---

AWX admin

JOBS / 2 - Mastery Template

Mastery Template

PLAYS 1 | TASKS 2 | HOSTS 1 | ELAPSED 00:00:06

SEARCH [] KEY

DETAILS

STATUS: ● Successful

STARTED: 1/15/2019 6:40:30 PM

FINISHED: 1/15/2019 6:40:37 PM

JOB TEMPLATE: Mastery Template

JOB TYPE: Run

LAUNCHED BY: admin

INVENTORY: Mastery Demo

PROJECT: Mastery Examples

PLAYBOOK: example.yaml

CREDENTIAL: Mastery Login

INSTANCE GROUP: tower

EXTRA VARIABLES: PROMPT ON LAUNCH

1 ---

```

1 SSH password:
2
3 PLAY [AWX example playbook] ***** 18:40:34
4
5 TASK [Create temporary directory] ***** 18:40:34
6 changed: [192.168.81.149]
7
8 TASK [Create a file with example text] ***** 18:40:36
9 changed: [192.168.81.149]
10
11 PLAY RECAP ***** 18:40:36
12 192.168.81.149 : ok=2 changed=2 unreachable=0
13 failed=0
          
```

AWX admin

TEMPLATES / Mastery Template / SCHEDULES / CREATE SCHEDULE

Daily run

* NAME: Daily run

* START DATE: 1/16/2019

* START TIME (HH24:MM:SS): 12:30:00

* LOCAL TIME ZONE: Europe/London

* REPEAT FREQUENCY: Day

FREQUENCY DETAILS

* EVERY: 2 DAYS

* END: After

* OCCURRENCES: 5

SCHEDULE DESCRIPTION

every 2 days for 5 times

OCCURRENCES (Limited to first 10) DATE FORMAT LOCAL TIME ZONE UTC

01-16-2019 12:30:00
 01-18-2019 12:30:00
 01-20-2019 12:30:00
 01-22-2019 12:30:00
 01-24-2019 12:30:00

CANCEL SAVE

AWX admin

JOB

JOB 2

SEARCH KEY

2 - Mastery Template Playbook Run

STARTED 1/15/2019 6:40:30 PM FINISHED 1/15/2019 6:40:37 PM

LAUNCHED BY admin

JOB TEMPLATE Mastery Template

INVENTORY Mastery Demo

PROJECT Mastery Examples

CREDENTIALS Mastery Login

1 - Cleanup Activity Stream Management Job

STARTED 1/15/2019 5:07:15 PM FINISHED 1/15/2019 5:07:20 PM

ITEMS 1 - 2

AWX

admin

TEMPLATES / Mastery Template

Mastery Template | SURVEY **ON**

ADD SURVEY PROMPT

* PROMPT
Please enter the HTTP port number to use

DESCRIPTION
HTTP port value - integer between 1 and 65535

* ANSWER VARIABLE NAME
http_port

* ANSWER TYPE
Integer

MINIMUM
1

MAXIMUM
65535

DEFAULT ANSWER
80

REQUIRED

CLEAR +ADD

PREVIEW

PLEASE ADD A SURVEY PROMPT.

CANCEL SAVE

WORKFLOW VISUALIZER | Mastery Workflow

TOTAL NODES 4

ADD A TEMPLATE

JOB'S PROJECT SYNC INVENTORY SYNC

SEARCH Q KEY

NAME ^

- Demo Job Template ?
- Mastery Template ?
- Mastery Workflow Workflow

ITEMS 1 - 3

* RUN
Always

CANCEL SELECT

CLOSE SAVE

```

graph LR
    START[START] --> ME[Mastery Examples]
    ME --> DJT[Demo Job Template]
    DJT --> MT[Mastery Template]
  
```

Mastery Template ✖

DETAILS PERMISSIONS **NOTIFICATIONS** COMPLETED JOBS SCHEDULES

SEARCH GO TO NOTIFICATIONS TO ADD A NEW TEMPLATE

NAME ▲	TYPE ↕	SUCCESS	FAILURE
E-mail mastery	Email	<input type="checkbox"/> OFF	<input checked="" type="checkbox"/> ON

ITEMS 1 - 1

Chapter 5: Unlocking the Power of Jinja2 Templates

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo.yaml

PLAY [demo the template] *****

TASK [pause with render] *****
[pause with render]
setting = a_val

feature = True

another_setting = b_val
:
ok: [localhost]

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> █
```



```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo.yaml

PLAY [demo the template] *****

TASK [pause with render] *****
[pause with render]
setting = a_val

feature = False

another_setting = b_val
:
ok: [localhost]

PLAY RECAP *****
localhost          : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-v2.yaml

PLAY [demo the template] *****

TASK [pause with render] *****
ok: [localhost] => {
  "msg": "API = cinderv2"
}

PLAY RECAP *****
localhost          : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-v2.yaml

PLAY [demo the template] *****

TASK [pause with render] *****
ok: [localhost] => {
  "msg": "API = cinder"
}

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-for.yaml

PLAY [demo the template] *****

TASK [pause with render] *****
[pause with render]
# data dirs
# no data dirs found
:
ok: [localhost]

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-for.yaml

PLAY [demo the template] *****

TASK [pause with render] *****
[pause with render]
# data dirs
data_dir = /foo,
/bar,
:
ok: [localhost]

PLAY RECAP *****
localhost          : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-for.yaml

PLAY [demo the template] *****

TASK [pause with render] *****
[pause with render]
# data dirs.
data_dir = /foo,
/bar
:
ok: [localhost]

PLAY RECAP *****
localhost          : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-macro.yaml

PLAY [demo the template] *****

TASK [pause with render] *****
[pause with render]
test
:
ok: [localhost]

PLAY RECAP *****
localhost          : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-macro.yaml

PLAY [demo the template] *****

TASK [pause with render] *****
[pause with render]
('var_a',)
:
ok: [localhost]

PLAY RECAP *****
localhost          : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-macro.yaml

PLAY [demo the template] *****

TASK [pause with render] *****
[pause with render]
('var_a',)
('a string',)
:
ok: [localhost]

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-macro.yaml

PLAY [demo the template] *****

TASK [pause with render] *****
[pause with render]
{'unexpected': 'surprise'}
True
:
ok: [localhost]

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-macro.yaml

PLAY [demo the template] *****

TASK [pause with render] *****
[pause with render]
('surprise',)
True
:
ok: [localhost]

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-macro.yaml

PLAY [demo the template] *****

TASK [pause with render] *****
[pause with render]
The text from the caller follows:
This is text inside the call
:
ok: [localhost]

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-macro.yaml

PLAY [demo the template] *****

TASK [pause with render] *****
[pause with render]
[web]
host1 ssh_host_name=host1.example.name ansible_sudo=true
host2 ssh_host_name=host2.example.name ansible_sudo=true
host3 ssh_host_name=host3.example.name ansible_sudo=true
[db]
db1
ssh_host_name=db1.example.name
db2
ssh_host_name=db2.example.name
:
ok: [localhost]

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-filters.yaml

PLAY [demo the template] *****

TASK [debug the template] *****
ok: [localhost] => {
  "msg": "yes so yes yes"
}

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-filters.yaml

PLAY [demo the filters] *****

TASK [fail a task] *****
ok: [localhost] => {
  "msg": "I am not a change"
}

TASK [only do this on change] *****
skipping: [localhost]

TASK [only do this on success] *****
ok: [localhost] => {
  "msg": "You had a success"
}

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

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-filters.yaml

PLAY [demo the filters] *****

TASK [shuffle the cards] *****
ok: [localhost] => {
  "msg": [
    "Ace",
    "Deuce",
    "Queen",
    "King"
  ]
}

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> █
```



```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-filters.yaml

PLAY [demo the filters] *****

TASK [demo basename] *****
ok: [localhost] => {
  "msg": "nova-api.log"
}

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-filters.yaml

PLAY [demo the filters] *****

TASK [demo basename] *****
ok: [localhost] => {
  "msg": "/var/log/nova"
}

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-filters.yaml

PLAY [demo the filters] *****

TASK [demo filter] *****
ok: [localhost] => {
  "msg": "/home/jfreeman/.stackrc"
}

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> cat << EOF > derp
\ Ansible is great
\ EOF
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-filters.yaml

PLAY [demo the filters] *****

TASK [read file] *****
ok: [localhost]

TASK [display file content (undecoded)] *****
ok: [localhost] => {
  "derp.content": "QW5zaWJsZSBpcyBncmVhdAo="
}

TASK [display file content (decoded)] *****
ok: [localhost] => {
  "derp.content | b64decode": "Ansible is great\n"
}

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

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-objects.yaml

PLAY [demo the filters] *****

TASK [string methods] *****
ok: [localhost] => {
  "msg": [
    "FOO",
    "BAR",
    "BAZ"
  ]
}

PLAY RECAP *****
localhost          : ok=1   changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts template-demo-comparisons.yaml

PLAY [demo the logic] *****

TASK [logic and comparison] *****
ok: [localhost] => {
  "msg": "Can you read me?"
}

PLAY RECAP *****
localhost          : ok=1   changed=0    unreachable=0    failed=0

~/src/mastery>
```

Chapter 6: Controlling Task Conditions

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yml

PLAY [error handling] *****

TASK [broken website] *****
fatal: [localhost]: FAILED! => {"changed": false, "content": "", "msg": "Status
code was -1 and not [200]: Request failed: <urlopen error [Errno -2] Name or ser
vice not known>", "redirected": false, "status": -1, "url": "http://notahost.nod
omain"}
    to retry, use: --limit @/home/jfreeman/src/mastery/error.retry

PLAY RECAP *****
localhost           : ok=0    changed=0    unreachable=0    failed=1

~/src/mastery> 2
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yml

PLAY [error handling] *****

TASK [broken website] *****
fatal: [localhost]: FAILED! => {"changed": false, "content": "", "msg": "Status
code was -1 and not [200]: Request failed: <urlopen error [Errno -2] Name or ser
vice not known>", "redirected": false, "status": -1, "url": "http://notahost.nod
omain"}
...ignoring

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yml

PLAY [error handling] *****

TASK [query sessions] *****
fatal: [localhost]: FAILED! => {"changed": true, "cmd": ["/sbin/iscsiadm", "-m",
"session"], "delta": "0:00:00.008345", "end": "2019-02-18 20:20:50.839578", "ms
g": "non-zero return code", "rc": 21, "start": "2019-02-18 20:20:50.831233", "st
derr": "iscsiadm: No active sessions.", "stderr_lines": ["iscsiadm: No active se
ssions."], "stdout": "", "stdout_lines": []}
    to retry, use: --limit @/home/jfreeman/src/mastery/error.retry

PLAY RECAP *****
localhost           : ok=0    changed=0    unreachable=0    failed=1

~/src/mastery> | 2
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [error handling] *****

TASK [query sessions] *****
changed: [localhost] => {"changed": true, "cmd": ["/sbin/iscsiadm", "-m", "sessi
on"], "delta": "0:00:00.003955", "end": "2019-02-18 20:25:08.426058", "failed_wh
en_result": false, "msg": "non-zero return code", "rc": 21, "start": "2019-02-18
20:25:08.422103", "stderr": "iscsiadm: No active sessions.", "stderr_lines": ["
iscsiadm: No active sessions."], "stdout": "", "stdout_lines": []}

PLAY RECAP *****
localhost           : ok=1    changed=1    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [error handling] *****

TASK [delete branch bad] *****
fatal: [localhost]: FAILED! => {"changed": true, "cmd": ["git", "branch", "-D",
"badfeature"], "delta": "0:00:00.003471", "end": "2019-02-18 20:29:10.341743", "
msg": "non-zero return code", "rc": 1, "start": "2019-02-18 20:29:10.338272", "s
tderr": "error: branch 'badfeature' not found.", "stderr_lines": ["error: branch
'badfeature' not found."], "stdout": "", "stdout_lines": []}
    to retry, use: --limit @/home/jfreeman/src/mastery/error.retry

PLAY RECAP *****
localhost                : ok=0    changed=0    unreachable=0    failed=1

~/src/mastery> 2
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [error handling] *****

TASK [check if branch badfeature exists] *****
changed: [localhost] => {"changed": true, "cmd": ["git", "branch"], "delta": "0:
00:00.003240", "end": "2019-02-18 20:33:58.777764", "rc": 0, "start": "2019-02-1
8 20:33:58.774524", "stderr": "", "stderr_lines": [], "stdout": "* master", "std
out_lines": ["* master"]}

TASK [delete branch bad] *****
skipping: [localhost] => {"changed": false, "skip_reason": "Conditional result w
as False"}

PLAY RECAP *****
localhost                : ok=1    changed=1    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [error handling] *****

TASK [delete branch bad $] *****
changed: [localhost] => {"changed": true, "cmd": ["git", "branch", "-D", "badfeature"], "delta": "0:00:00.003175", "end": "2019-02-18 20:37:40.300397", "failed_when_result": false, "msg": "non-zero return code", "rc": 1, "start": "2019-02-18 20:37:40.297222", "stderr": "error: branch 'badfeature' not found.", "stderr_lines": ["error: branch 'badfeature' not found."], "stdout": "", "stdout_lines": []}

PLAY RECAP *****
localhost                : ok=1    changed=1    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [error handling] *****

TASK [delete branch bad] *****
ok: [localhost] => {"changed": false, "cmd": ["git", "branch", "-D", "badfeature"], "delta": "0:00:00.003639", "end": "2019-02-18 20:44:18.306087", "failed_when_result": false, "msg": "non-zero return code", "rc": 1, "start": "2019-02-18 20:44:18.302448", "stderr": "error: branch 'badfeature' not found.", "stderr_lines": ["error: branch 'badfeature' not found."], "stdout": "", "stdout_lines": []}

PLAY RECAP *****
localhost                : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [error handling] *****

TASK [delete branch bad] *****
changed: [localhost] => {"changed": true, "cmd": ["git", "branch", "-D", "badfeature"], "delta": "0:00:00.003880", "end": "2019-02-18 20:46:25.513992", "failed_when_result": false, "rc": 0, "start": "2019-02-18 20:46:25.510112", "stderr": "", "stderr_lines": [], "stdout": "Deleted branch badfeature (was 6d7301c).", "stdout_lines": ["Deleted branch badfeature (was 6d7301c)."]}

PLAY RECAP *****
localhost                : ok=1    changed=1    unreachable=0    failed=0

~/src/mastery> █
```



```
jfreeman@mastery: ~/src/mastery (ssh)
Using /etc/ansible/ansible.cfg as config file

PLAY [error handling] *****

TASK [discover tango directory] *****
ok: [localhost] => {"changed": false, "stat": {"atime": 1550582331.3089645, "attr_flags": "", "attributes": [], "block_size": 4096, "blocks": 0, "charset": "binary", "ctime": 1550582331.3089645, "dev": 64768, "device_type": 0, "executable": true, "exists": true, "gid": 1000, "gr_name": "jfreeman", "inode": 18197358, "isblk": false, "ischr": false, "isdir": true, "isfifo": false, "isgid": false, "islnk": false, "isreg": false, "issock": false, "isuid": false, "mimetype": "inode/directory", "mode": "0775", "mtime": 1550582331.3089645, "nlink": 2, "path": "/srv/whiskey/tango", "pw_name": "jfreeman", "readable": true, "rgrp": true, "roth": true, "rusr": true, "size": 6, "uid": 1000, "version": "18446744072254471206", "wgrp": true, "woth": false, "writeable": true, "wusr": true, "xgrp": true, "xoth": true, "xusr": true}}

TASK [run frobitz] *****
skipping: [localhost] => {"changed": false, "skip_reason": "Conditional result was False"}

PLAY RECAP *****
localhost                : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [error handling] *****

TASK [run frobitz] *****
skipping: [localhost] => {"changed": false, "msg": "/srv/whiskey/tango exists, matching creates option"}

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

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yml

PLAY [error handling] *****

TASK [discover iscsi sessions] *****
ok: [localhost]

PLAY RECAP *****
localhost : ok=1  changed=0  unreachable=0  failed=0

~/src/mastery>
```

```
jffreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [error handling] *****

TASK [delete branch bad] *****
fatal: [localhost]: FAILED! => {"changed": true, "cmd": ["git", "branch", "-D",
"badfeature"], "delta": "0:00:00.006281", "end": "2019-02-19 13:28:34.334423", "
msg": "non-zero return code", "rc": 1, "start": "2019-02-19 13:28:34.328142", "s
tderr": "error: branch 'badfeature' not found.", "stderr_lines": ["error: branch
'badfeature' not found."], "stdout": "", "stdout_lines": []}

TASK [cleanup task] *****
ok: [localhost] => {
  "msg": "I am cleaning up"
}

TASK [cleanup task 2] *****
ok: [localhost] => {
  "msg": "I am also cleaning up"
}

TASK [task after block] *****
ok: [localhost] => {
  "msg": "Execution goes on"
}

PLAY RECAP *****
localhost                : ok=3    changed=0    unreachable=0    failed=1

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [error handling] *****

TASK [delete branch bad] *****
fatal: [localhost]: FAILED! => {"changed": true, "cmd": ["git", "branch", "-D",
"badfeature"], "delta": "0:00:00.003373", "end": "2019-02-19 13:31:05.777987", "
msg": "non-zero return code", "rc": 1, "start": "2019-02-19 13:31:05.774614", "s
tderr": "error: branch 'badfeature' not found.", "stderr_lines": ["error: branch
'badfeature' not found."], "stdout": "", "stdout_lines": []}

TASK [cleanup task] *****
ok: [localhost] => {
  "msg": "I am cleaning up"
}

TASK [cleanup task 2] *****
ok: [localhost] => {
  "msg": "I am also cleaning up"
}

TASK [most important task] *****
ok: [localhost] => {
  "msg": "Never going to let you down"
}

TASK [task after block] *****
ok: [localhost] => {
  "msg": "Execution goes on"
}

PLAY RECAP *****
localhost                : ok=4    changed=0    unreachable=0    failed=1

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [error handling] *****

TASK [delete branch bad] *****
changed: [localhost] => {"changed": true, "cmd": ["git", "branch", "-D", "badfeature"], "delta": "0:00:00.003121", "end": "2019-02-19 13:32:09.989143", "failed_when_result": false, "msg": "non-zero return code", "rc": 1, "start": "2019-02-19 13:32:09.986022", "stderr": "error: branch 'badfeature' not found.", "stderr_lines": ["error: branch 'badfeature' not found."], "stdout": "", "stdout_lines": []}

TASK [this task is lost] *****
ok: [localhost] => {
  "msg": "I do not get seen"
}

TASK [most important task] *****
ok: [localhost] => {
  "msg": "Never going to let you down"
}

TASK [task after block] *****
ok: [localhost] => {
  "msg": "Execution goes on"
}

PLAY RECAP *****
localhost                : ok=4    changed=1    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [error handling] *****

TASK [delete branch bad] *****
fatal: [mastery.example.name]: UNREACHABLE! => {"changed": false, "msg": "Failed
to connect to the host via ssh: ssh: connect to host 192.168.10.25 port 22: Con
nection timed out\r\n", "unreachable": true}
fatal: [backend.example.name]: UNREACHABLE! => {"changed": false, "msg": "Failed
to connect to the host via ssh: ssh: Could not resolve hostname backend.example
.name: Name or service not known\r\n", "unreachable": true}
to retry, use: --limit @/home/jfreeman/src/mastery/error.retry

PLAY RECAP *****
backend.example.name      : ok=0    changed=0    unreachable=1    failed=0
mastery.example.name     : ok=0    changed=0    unreachable=1    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts error.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [error handling] *****

TASK [delete branch bad] *****
fatal: [mastery.example.name]: UNREACHABLE! => {"changed": false, "msg": "Failed
to connect to the host via ssh: ssh: connect to host 192.168.10.25 port 22: Con
nection timed out\r\n", "skip_reason": "Host mastery.example.name is unreachable
", "unreachable": true}
fatal: [backend.example.name]: UNREACHABLE! => {"changed": false, "msg": "Failed
to connect to the host via ssh: ssh: Could not resolve hostname backend.example
.name: Name or service not known\r\n", "skip_reason": "Host backend.example.name
is unreachable", "unreachable": true}

TASK [important task] *****
ok: [mastery.example.name] => {
  "msg": "It is important we attempt this task!"
}
ok: [backend.example.name] => {
  "msg": "It is important we attempt this task!"
}

PLAY RECAP *****
backend.example.name      : ok=1    changed=0    unreachable=1    failed=0
mastery.example.name     : ok=1    changed=0    unreachable=1    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts loop.yaml

PLAY [looping demo] *****

TASK [create a directory] *****
changed: [localhost]

TASK [create another directory] *****
changed: [localhost]

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

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts loop.yaml

PLAY [looping demo] *****

TASK [create a directory] *****
changed: [localhost] => (item=/srv/whiskey/alpha)
changed: [localhost] => (item=/srv/whiskey/beta)

PLAY RECAP *****
localhost           : ok=1    changed=1    unreachable=0    failed=0

~/src/mastery>
```

Chapter 7: Composing Reusable Ansible Content with Roles

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml

PLAY [task inclusion] *****

TASK [non-included task] *****
ok: [localhost] => {
  "msg": "I am not included"
}

TASK [included task 1] *****
ok: [localhost] => {
  "msg": "I am the first included task"
}

TASK [included task 2] *****
ok: [localhost] => {
  "msg": "I am the second included task"
}

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

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml

PLAY [task inclusion] *****

TASK [non-included task] *****
ok: [localhost] => {
  "msg": "I am not included"
}

TASK [included task 1] *****
ok: [localhost] => {
  "msg": "I am the first included task"
}

TASK [included task 2] *****
ok: [localhost] => {
  "msg": "I am the second included task"
}

TASK [after-included tasks] *****
ok: [localhost] => {
  "msg": "I run last"
}

PLAY RECAP *****
localhost           : ok=4    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [touch files] *****

TASK [create leading path] *****
changed: [localhost] => {"changed": true, "gid": 1000, "group": "jfreeman", "mode": "0775", "owner": "jfreeman", "path": "/tmp/foo", "secontext": "unconfined_u:object_r:user_tmp_t:s0", "size": 6, "state": "directory", "uid": 1000}

TASK [touch the file] *****
changed: [localhost] => {"changed": true, "dest": "/tmp/foo/herp", "gid": 1000, "group": "jfreeman", "mode": "0664", "owner": "jfreeman", "secontext": "unconfined_u:object_r:user_tmp_t:s0", "size": 0, "state": "file", "uid": 1000}

TASK [create leading path] *****
ok: [localhost] => {"changed": false, "gid": 1000, "group": "jfreeman", "mode": "0775", "owner": "jfreeman", "path": "/tmp/foo", "secontext": "unconfined_u:object_r:user_tmp_t:s0", "size": 18, "state": "directory", "uid": 1000}

TASK [touch the file] *****
changed: [localhost] => {"changed": true, "dest": "/tmp/foo/derp", "gid": 1000, "group": "jfreeman", "mode": "0664", "owner": "jfreeman", "secontext": "unconfined_u:object_r:user_tmp_t:s0", "size": 0, "state": "file", "uid": 1000}

PLAY RECAP *****
localhost                : ok=4    changed=3    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [touch files] *****

TASK [create leading path] *****
changed: [localhost] => (item={'value': {'u'path': u'/tmp/foo'}, 'key': u'herp'})
=> {"changed": true, "gid": 1000, "group": "jfreeman", "item": {"key": "herp",
"value": {"path": "/tmp/foo"}}, "mode": "0775", "owner": "jfreeman", "path": "/t
mp/foo", "secontext": "unconfined_u:object_r:user_tmp_t:s0", "size": 6, "state":
"directory", "uid": 1000}
ok: [localhost] => (item={'value': {'u'path': u'/tmp/foo'}, 'key': u'derp'}) => {
"changed": false, "gid": 1000, "group": "jfreeman", "item": {"key": "derp", "val
ue": {"path": "/tmp/foo"}}, "mode": "0775", "owner": "jfreeman", "path": "/tmp/f
oo", "secontext": "unconfined_u:object_r:user_tmp_t:s0", "size": 6, "state": "di
rectory", "uid": 1000}

TASK [touch the file] *****
changed: [localhost] => (item={'value': {'u'path': u'/tmp/foo'}, 'key': u'herp'})
=> {"changed": true, "dest": "/tmp/foo/herp", "gid": 1000, "group": "jfreeman",
"item": {"key": "herp", "value": {"path": "/tmp/foo"}}, "mode": "0664", "owner"
: "jfreeman", "secontext": "unconfined_u:object_r:user_tmp_t:s0", "size": 0, "st
ate": "file", "uid": 1000}
changed: [localhost] => (item={'value': {'u'path': u'/tmp/foo'}, 'key': u'derp'})
=> {"changed": true, "dest": "/tmp/foo/derp", "gid": 1000, "group": "jfreeman",
"item": {"key": "derp", "value": {"path": "/tmp/foo"}}, "mode": "0664", "owner"
: "jfreeman", "secontext": "unconfined_u:object_r:user_tmp_t:s0", "size": 0, "st
ate": "file", "uid": 1000}

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

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [task inclusion] *****

TASK [included task 1] *****
ok: [localhost] => (item=True) => {
  "msg": "I am the first included task"
}
skipping: [localhost] => (item=False) => {"item": false}

TASK [include task 2] *****
ok: [localhost] => (item=True) => {
  "msg": "I am the second included task"
}
skipping: [localhost] => (item=False) => {"item": false}

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

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [task inclusion] *****

TASK [included task] *****
ok: [localhost] => {
  "msg": "My data is first"
}

TASK [included task] *****
ok: [localhost] => {
  "msg": "My data is second"
}

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

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml -v --tags second
Using /etc/ansible/ansible.cfg as config file

PLAY [task inclusion] *****

TASK [included task] *****
ok: [localhost] => {
  "msg": "My data is second"
}

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [task inclusion] *****

TASK [include] *****
included: /home/jfreeman/src/mastery/more-tasks.yaml for localhost => (item=one)
included: /home/jfreeman/src/mastery/more-tasks.yaml for localhost => (item=two)

TASK [included task 1] *****
ok: [localhost] => {
  "msg": "I am the first included task with one"
}

TASK [included task 2] *****
ok: [localhost] => {
  "msg": "I am the second included task with one"
}

TASK [included task 1] *****
ok: [localhost] => {
  "msg": "I am the first included task with two"
}

TASK [included task 2] *****
ok: [localhost] => {
  "msg": "I am the second included task with two"
}

PLAY RECAP *****
localhost                : ok=6    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [task inclusion] *****

TASK [include] *****
included: /home/jfreeman/src/mastery/more-tasks.yaml for localhost
included: /home/jfreeman/src/mastery/more-tasks.yaml for localhost

TASK [included task 1] *****
ok: [localhost] => (item=a) => {
  "msg": "I combine a and one"
}
ok: [localhost] => (item=b) => {
  "msg": "I combine b and one"
}

TASK [included task 1] *****
ok: [localhost] => (item=a) => {
  "msg": "I combine a and two"
}
ok: [localhost] => (item=b) => {
  "msg": "I combine b and two"
}

PLAY RECAP *****
localhost                : ok=4    changed=0    unreachable=0    failed=0

~/src/mastery>
```



```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [touch files] *****

TASK [a task] *****
changed: [localhost] => {
  "msg": "I am a changing task"
}

RUNNING HANDLER [a handler] *****
ok: [localhost] => {
  "msg": "handling a thing"
}

PLAY RECAP *****
localhost                : ok=2    changed=1    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml -v -e foo=false
Using /etc/ansible/ansible.cfg as config file

PLAY [touch files] *****

TASK [a task] *****
changed: [localhost] => {
  "msg": "I am a changing task"
}

RUNNING HANDLER [a handler] *****
skipping: [localhost] => {}

PLAY RECAP *****
localhost                : ok=1    changed=1    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [vars] *****

TASK [a task] *****
ok: [localhost] => {
  "msg": "I am a derp"
}

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml -v -e varfile=variables.yaml
Using /etc/ansible/ansible.cfg as config file

PLAY [vars] *****

TASK [a task] *****
ok: [localhost] => {
  "msg": "I am a derp"
}

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml -v -e varfile=variables.yaml
Using /etc/ansible/ansible.cfg as config file

PLAY [vars] *****

TASK [load variables] *****
ok: [localhost] => {"ansible_facts": {"varname": "derp"}, "ansible_included_var_files": ["/home/jfreeman/src/mastery/variables.yaml"], "changed": false}

TASK [a task] *****
ok: [localhost] => {
  "msg": "I am a derp"
}

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

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts -c local includer.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [vars] *****

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

TASK [load variables] *****
ok: [localhost] => (item=/home/jfreeman/src/mastery/variables.yaml) => {"ansible
_facts": {"varname": "derp"}, "ansible_included_var_files": ["/home/jfreeman/src
/mastery/variables.yaml"], "changed": false, "item": "/home/jfreeman/src/mastery
/variables.yaml"}

TASK [a task] *****
ok: [localhost] => {
  "msg": "I am a derp"
}

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

~/src/mastery> 
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml -v -e @variables.
yaml
Using /etc/ansible/ansible.cfg as config file

PLAY [vars] *****

TASK [a task] *****
ok: [localhost] => {
  "msg": "I am a derp"
}

PLAY RECAP *****
localhost                : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> 
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includeme.yaml

PLAY [include playbook] *****

TASK [an included playbook task] *****
ok: [localhost] => {
  "msg": "I am in the included playbook"
}

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts includer.yaml

PLAY [include playbook] *****

TASK [a task] *****
ok: [localhost] => {
  "msg": "I am in the main playbook"
}

PLAY [include playbook] *****

TASK [an included playbook task] *****
ok: [localhost] => {
  "msg": "I am in the included playbook"
}

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

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts roleplay.yml

PLAY [localhost] *****

TASK [simple : print a variable] *****
ok: [localhost] => {
  "derp": "herp"
}

PLAY RECAP *****
localhost          : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts roleplay.yml

PLAY [localhost] *****

TASK [simple : print a variable] *****
ok: [localhost] => {
  "derp": "newval"
}

PLAY RECAP *****
localhost          : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts roleplay.yaml

PLAY [localhost] *****

TASK [pretask] *****
changed: [localhost] => {
  "msg": "a pre task"
}

RUNNING HANDLER [say hi] *****
ok: [localhost] => {
  "msg": "hi"
}

TASK [simple : print a variable] *****
changed: [localhost] => {
  "derp": "newval"
}

TASK [task] *****
changed: [localhost] => {
  "msg": "a task"
}

RUNNING HANDLER [say hi] *****
ok: [localhost] => {
  "msg": "hi"
}

TASK [posttask] *****
changed: [localhost] => {
  "msg": "a post task"
}

RUNNING HANDLER [say hi] *****
ok: [localhost] => {
  "msg": "hi"
}

PLAY RECAP *****
localhost                : ok=7    changed=4    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts roleplay.yaml

PLAY [localhost] *****

TASK [simple : print a variable] *****
ok: [localhost] => {
  "derp": "newval"
}

PLAY RECAP *****
localhost           : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```



```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-galaxy list -p roles/
- angstwad.docker_ubuntu, v3.8.0
~/src/mastery> ansible-galaxy info -p roles/ angstwad.docker_ubuntu | head -n 25

Role: angstwad.docker_ubuntu
  description: A comprehensive and (ideally) sane way to install Docker on
  Ubuntu 14.04+
  active: True
  commit: 6edfac43340df6983b04926ec48d9aa5fba0b00f
  commit_message: Permit to provide proxies for installation
  commit_url: https://api.github.com/repos/angstwad/docker.ubuntu/git/comm
its/6edfac43340df6983b04926ec48d9aa5fba0b00f
  company:
  created: 2014-01-28T03:13:44.951696Z
  dependencies: []
  download_count: 180443
  forks_count: 210
  galaxy_info:
    author: Paul Durivage
    categories: ['development', 'packaging', 'system']
    license: Apache v2.0
    min_ansible_version: 2.3
    platforms: [{'name': 'Debian', 'versions': ['jessie', 'stretch']}
], {'name': 'Ubuntu', 'versions': ['trusty', 'xenial', 'zesty'}}]
  github_branch: master
  github_repo: docker.ubuntu
  github_user: angstwad
  id: 292
  imported: 2018-12-18T12:52:09.717829-05:00
  install_date: Thu Feb 21 11:09:49 2019
  installed_version: v3.8.0
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> cat roles/angstwad.docker_ubuntu/meta/main.yml
---
galaxy_info:
  author: Paul Durivage
  description: A comprehensive and (ideally) sane way to install Docker on Ubuntu 14.04+
  license: Apache v2.0
  min_ansible_version: 2.3
  platforms:
    - name: Debian
      versions:
        - jessie
        - stretch
    - name: Ubuntu
      versions:
        - trusty
        - xenial
        - zesty
  categories:
    - development
    - packaging
    - system
  dependencies: []
  # List your role dependencies here, one per line. Only
  # dependencies available via galaxy should be listed here.
  # Be sure to remove the '[]' above if you add dependencies
  # to this list.
~/src/mastery> █
```

```
jffreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-galaxy init --help
Usage: ansible-galaxy init [options] role_name

Initialize new role with the base structure of a role.

Options:
  -f, --force           Force overwriting an existing role
  -h, --help           show this help message and exit
  -c, --ignore-certs   Ignore SSL certificate validation errors.
  --init-path=INIT_PATH
                       The path in which the skeleton role will be created.
                       The default is the current working directory.
  --offline            Don't query the galaxy API when creating roles
  --role-skeleton=ROLE_SKELETON
                       The path to a role skeleton that the new role should
                       be based upon.
  -s API_SERVER, --server=API_SERVER
                       The API server destination
  --type=ROLE_TYPE     Initialize using an alternate role type. Valid types
                       include: 'container', 'apb' and 'network'.
  -v, --verbose        verbose mode (-vvv for more, -vvvv to enable
                       connection debugging)
  --version            show program's version number and exit

See 'ansible-galaxy <command> --help' for more information on a specific
command.
~/src/mastery> █
```


```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-galaxy init --init-path roles/ autogen
- autogen was created successfully
~/src/mastery> tree roles/autogen
roles/autogen
├── defaults
│   └── main.yml
├── files
├── handlers
│   └── main.yml
├── meta
│   └── main.yml
├── README.md
├── tasks
│   └── main.yml
├── templates
├── tests
│   ├── inventory
│   └── test.yml
└── vars
    └── main.yml

8 directories, 8 files
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-galaxy install -p /opt/ansible/roles git+git@git.internal
.site:ansible-roles/foowhiz
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-galaxy install -p /opt/ansible/roles git+git@git.internal
.site:ansible-roles/foowhiz,v1
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-galaxy install -p /opt/ansible/roles git+git@git.internal
.site:ansible-roles/foowhiz,,foo-whiz-common
```

A screenshot of a terminal window. The title bar shows three colored window control buttons (red, yellow, green) on the left and the text 'jfreeman@mastery: ~/src/mastery (ssh)' on the right. The terminal content shows a prompt '~ /src/mastery>' followed by the command 'ansible-galaxy install -r foowhiz-reqs.yaml'.

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-galaxy install -r foowhiz-reqs.yaml
```

Chapter 8: Troubleshooting Ansible

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts vintro.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [variable introspection demo] *****

TASK [do a thing] *****
ok: [localhost] => {"accept_ranges": "bytes", "access_control_allow_origin": "*",
, "age": "382", "cache_control": "max-age=600", "changed": false, "connection":
"close", "content_length": "8338", "content_type": "text/html; charset=utf-8", "
cookies": {}, "cookies_string": "", "date": "Mon, 25 Feb 2019 15:17:21 GMT", "et
ag": "\"5c2179e7-2092\"", "expires": "Mon, 25 Feb 2019 15:20:59 GMT", "last_modi
fied": "Tue, 25 Dec 2018 00:29:27 GMT", "msg": "OK (8338 bytes)", "redirected":
false, "server": "GitHub.com", "status": 200, "url": "https://derpops.bike", "va
ry": "Accept-Encoding", "via": "1.1 varnish", "x_cache": "HIT", "x_cache_hits":
"1", "x_fastly_request_id": "7b55b3984cba19b6f4215d8027c67d706b920e49", "x_githu
b_request_id": "B196:22BE:839AD6:ABB800:5C740583", "x_served_by": "cache-lcy1924
9-LCY", "x_timer": "S1551107841.147987,VS0,VE0"}

TASK [show derpops] *****
ok: [localhost] => {
  "msg": "derpops value is {u'content_length': u'8338', u'cookies': {}, u'via'
: u'1.1 varnish', u'vary': u'Accept-Encoding', u'x_timer': u'S1551107841.147987,
VS0,VE0', u'x_fastly_request_id': u'7b55b3984cba19b6f4215d8027c67d706b920e49', u
'x_cache_hits': u'1', 'failed': False, u'etag': u'"5c2179e7-2092"', u'msg': u'
OK (8338 bytes)', u'accept_ranges': u'bytes', u'cache_control': u'max-age=600',
u'status': 200, u'x_github_request_id': u'B196:22BE:839AD6:ABB800:5C740583', u'e
xpires': u'Mon, 25 Feb 2019 15:20:59 GMT', u'x_served_by': u'cache-lcy19249-LCY'
, u'access_control_allow_origin': u'*', u'last_modified': u'Tue, 25 Dec 2018 00:
29:27 GMT', u'content_type': u'text/html; charset=utf-8', u'date': u'Mon, 25 Feb
2019 15:17:21 GMT', u'url': u'https://derpops.bike', u'age': u'382', u'changed'
: False, u'server': u'GitHub.com', u'x_cache': u'HIT', u'connection': u'close',
u'redirected': False, u'cookies_string': u''}"
}

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

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts vintro.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [variable introspection demo] *****

TASK [do a thing] *****
ok: [localhost] => {"accept_ranges": "bytes", "access_control_allow_origin": "*",
, "age": "0", "cache_control": "max-age=600", "changed": false, "connection": "c
lose", "content_length": "8338", "content_type": "text/html; charset=utf-8", "co
okies": {}, "cookies_string": "", "date": "Mon, 25 Feb 2019 15:18:57 GMT", "etag
": "\"5c2179e7-2092\"", "expires": "Mon, 25 Feb 2019 15:28:57 GMT", "last_modifi
ed": "Tue, 25 Dec 2018 00:29:27 GMT", "msg": "OK (8338 bytes)", "redirected": fa
lse, "server": "GitHub.com", "status": 200, "url": "https://derpops.bike", "vary
": "Accept-Encoding", "via": "1.1 varnish", "x_cache": "MISS", "x_cache_hits": "
0", "x_fastly_request_id": "96659679d30c889f4d2f64be5116b54e6994a2c6", "x_github
_request_id": "6C1E:57D8:10D3B4D:15F89CD:5C740760", "x_served_by": "cache-lhr635
1-LHR", "x_timer": "S1551107937.440554,VS0,VE104"}

TASK [show derpops] *****
ok: [localhost] => {
  "derpops.server": "GitHub.com"
}

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

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts vintro.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [variable introspection demo] *****

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

TASK [show a complex hash] *****
ok: [localhost] => {
  "ansible_python": {
    "executable": "/usr/bin/python2",
    "has_sslcontext": true,
    "type": "CPython",
    "version": {
      "major": 2,
      "micro": 5,
      "minor": 7,
      "releaselevel": "final",
      "serial": 0
    }
  },
  "version_info": [
    2,
    7,
    5,
    "final",
    0
  ]
}

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

~/src/mastery>
```



```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts vintro.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [variable introspection demo] *****

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

TASK [show a complex hash] *****
ok: [localhost] => {
  "ansible_python.version_info[-1]": "0"
}

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

~/src/mastery> 
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts objmethod.yaml

PLAY [sub-element access styles] *****

TASK [subscript style] *****
ok: [localhost] => {
  "derp['keys']": [
    "c",
    "d"
  ]
}

TASK [dot notation style] *****
ok: [localhost] => {
  "derp.keys": "<built-in method keys of dict object at 0x7fbde6ae4050>"
}

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

~/src/mastery> 
```

```
ansible-playbook -i mastery-hosts objmethod.yaml (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts objmethod.yaml

PLAY [sub-element access styles] *****

TASK [subscript style] *****
ok: [localhost] => {
  "derp['keys']": [
    "c",
    "d"
  ]
}

TASK [failing task] *****
fatal: [localhost]: FAILED! => {"msg": "The task includes an option with an unde
fined variable. The error was: 'dict object' has no attribute 'missing'\n\nThe e
rror appears to have been in '/home/jfreeman/src/mastery/objmethod.yaml': line 1
8, column 7, but may\nbe elsewhere in the file depending on the exact syntax pro
blem.\n\nThe offending line appears to be:\n\n    - name: failing task\n
^ here\n"}
[localhost] TASK: failing task (debug)>
```

```
[localhost] TASK: failing task (debug)> p task
TASK: failing task
[localhost] TASK: failing task (debug)> p task.args
{u'msg': u"this is {{ derp['missing'] }}"}
```

```
[localhost] TASK: failing task (debug)> task_vars['derp']['missing'] = "the end"

[localhost] TASK: failing task (debug)> r
ok: [localhost] => {
  "msg": "this is the end"
}

TASK [final task] *****
ok: [localhost] => {
  "msg": "my only friend the end"
}

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

~/src/mastery>
```

```
sudo vim manager.py (ssh)

''' sets up loaded inventory plugins for usage '''

display.vvvv('setting up inventory plugins')

for name in C.INVENTORY_ENABLED:
    plugin = inventory_loader.get(name)
    if plugin:
        self._inventory_plugins.append(plugin)
    else:
        display.warning('Failed to load inventory plugin, skipping %s' %
name)

    if not self._inventory_plugins:
        raise AnsibleError("No inventory plugins available to generate inven
tory, make sure you have at least one whitelisted.")

def parse_sources(self, cache=False):
    ''' iterate over inventory sources and parse each one to populate it'''
    import pdb; pdb.set_trace()
    self._setup_inventory_plugins()

    parsed = False
    # allow for multiple inventory parsing
    for source in self._sources:

        if source:
            if ',' not in source:
                source = unfrackpath(source, follow=False)
            parse = self.parse_source(source, cache=cache)
            if parse and not parsed:
                parsed = True

    if parsed:
        # do post processing

: 195,9 30%
```

```
ansible-playbook -i mastery-hosts objmethod.yaml (ssh)

~/src/mastery> ansible-playbook -i mastery-hosts objmethod.yaml
> /usr/lib/python2.7/site-packages/ansible/inventory/manager.py(196)parse_sour
s()
-> self._setup_inventory_plugins()
(Pdb) █
```

```
ansible-playbook -i mastery-hosts objmethod.yaml (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts objmethod.yaml
> /usr/lib/python2.7/site-packages/ansible/inventory/manager.py(196)parse_source
s()
-> self._setup_inventory_plugins()
(Pdb) help

Documented commands (type help <topic>):
=====
EOF      bt        cont      enable   jump     pp       run      unt
a        c         continue exit     l        q        s        until
alias   cl        d         h        list    quit     step     up
args    clear    debug    help     n        r        tbreak   w
b        commands disable  ignore  next    restart u        whatis
break   condition down     j        p        return  unalias  where

Miscellaneous help topics:
=====
exec    pdb

Undocumented commands:
=====
retval rv

(Pdb)
```

```
ansible-playbook -i mastery-hosts objmethod.yaml (ssh)
(Pdb) where
  /usr/bin/ansible-playbook(118)<module>()
-> exit_code = cli.run()
  /usr/lib/python2.7/site-packages/ansible/cli/playbook.py(104)run()
-> loader, inventory, variable_manager = self._play_prereqs(self.options)
  /usr/lib/python2.7/site-packages/ansible/cli/__init__.py(786)_play_prereqs()
-> inventory = InventoryManager(loader=loader, sources=options.inventory)
  /usr/lib/python2.7/site-packages/ansible/inventory/manager.py(145)__init__()
-> self.parse_sources(cache=True)
> /usr/lib/python2.7/site-packages/ansible/inventory/manager.py(196)parse_sources()
-> self._setup_inventory_plugins()
(Pdb) list
191         raise AnsibleError("No inventory plugins available to generate inventory, make sure you have at least one whitelisted.")
192
193     def parse_sources(self, cache=False):
194         ''' iterate over inventory sources and parse each one to populate it'''
195         import pdb; pdb.set_trace()
196 ->     self._setup_inventory_plugins()
197
198         parsed = False
199         # allow for multiple inventory parsing
200         for source in self._sources:
201
(Pdb)
```

```
ansible-playbook -i mastery-hosts objmethod.yaml (ssh)
192
193     def parse_sources(self, cache=False):
194         ''' iterate over inventory sources and parse each one to populate it'''
195         import pdb; pdb.set_trace()
196 ->     self._setup_inventory_plugins()
197
198         parsed = False
199         # allow for multiple inventory parsing
200         for source in self._sources:
201
(Pdb) p self._sources
[u'/home/jfreeman/src/mastery/mastery-hosts']
(Pdb)
```

```
sudo vim /usr/lib/python2.7/site-packages/ansible/playbook/_init__.py (ssh)
cur_basedir = self._loader.get_basedir()
self._loader.set_basedir(self._basedir)

self._file_name = file_name

# dynamically load any plugins from the playbook directory
for name, obj in get_all_plugin_loaders():
    if obj.subdir:
        plugin_path = os.path.join(self._basedir, obj.subdir)
        if os.path.isdir(plugin_path):
            obj.add_directory(plugin_path)
import pdb; pdb.set_trace()
try:
    ds = self._loader.load_from_file(os.path.basename(file_name))
except UnicodeDecodeError as e:
    raise AnsibleParserError("Could not read playbook (%s) due to encoding issues: %s" % (file_name, to_native(e)))

if not isinstance(ds, list):
    # restore the basedir in case this error is caught and handled
    self._loader.set_basedir(cur_basedir)
    raise AnsibleParserError("playbooks must be a list of plays", obj=ds
)

76,1 68%
```

```
sudo vim playbook_executor.py (ssh)

self._options = options
self.passwords = passwords
self._unreachable_hosts = dict()

if options.listhosts or options.listtasks or options.listtags or options
.syntax:
    self._tqm = None
else:
    self._tqm = TaskQueueManager(inventory=inventory, variable_manager=v
variable_manager, loader=loader, options=options, passwords=self.passwords)

# Note: We run this here to cache whether the default ansible ssh
# executable supports control persist. Sometime in the future we may
# need to enhance this to check that ansible_ssh_executable specified
# in inventory is also cached. We can't do this caching at the point
# where it is used (in task_executor) because that is post-fork and
# therefore would be discarded after every task.
import pdb; pdb.set_trace()
check_for_controlpersist(C.ANSIBLE_SSH_EXECUTABLE)

def run(self):
    """
    Run the given playbook, based on the settings in the play which
    may limit the runs to serialized groups, etc.
"playbook_executor.py" 292L, 13007C written                                68,9          19%
```

```
ansible-playbook -i mastery-hosts objmethod.yaml (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts objmethod.yaml
> /usr/lib/python2.7/site-packages/ansible/executor/playbook_executor.py(69) __in
it__()
-> check_for_controlpersist(C.ANSIBLE_SSH_EXECUTABLE)
(Pdb) █
```

```
(Pdb) step
--Call--
> /usr/lib/python2.7/site-packages/ansible/executor/ssh_functions.py(31) check_for_c
ontrolpersist()
-> def check_for_controlpersist(ssh_executable):
(Pdb)
```

```
(Pdb) list
26
27
28     _HAS_CONTROLPERSIST = {}
29
30
31 -> def check_for_controlpersist(ssh_executable):
32     try:
33         # If we've already checked this executable
34         return _HAS_CONTROLPERSIST[ssh_executable]
35     except KeyError:
36         pass
(Pdb)
```

```
(Pdb) l
37
38     b_ssh_exec = to_bytes(ssh_executable, errors='surrogate_or_strict')
39     has_cp = True
40     try:
41         cmd = subprocess.Popen([b_ssh_exec, '-o', 'ControlPersist'], stdout=subprocess.PIPE, stderr=subprocess.PIPE)
42         (out, err) = cmd.communicate()
43         if b"Bad configuration option" in err or b"Usage:" in err:
44             has_cp = False
45     except OSError:
46         has_cp = False
47
(Pdb)
```

```
ansible-playbook -i mastery-hosts objmethod.yaml (ssh)
> /usr/lib/python2.7/site-packages/ansible/utils/ssh_functions.py(39)check_for_c
ontrolpersist()
-> has_cp = True
(Pdb) n
> /usr/lib/python2.7/site-packages/ansible/utils/ssh_functions.py(40)check_for_c
ontrolpersist()
-> try:
(Pdb) n
> /usr/lib/python2.7/site-packages/ansible/utils/ssh_functions.py(41)check_for_c
ontrolpersist()
-> cmd = subprocess.Popen([b_ssh_exec, '-o', 'ControlPersist'], stdout=subprocess
s.PIPE, stderr=subprocess.PIPE)
(Pdb) n
> /usr/lib/python2.7/site-packages/ansible/utils/ssh_functions.py(42)check_for_c
ontrolpersist()
-> (out, err) = cmd.communicate()
(Pdb) n
> /usr/lib/python2.7/site-packages/ansible/utils/ssh_functions.py(43)check_for_c
ontrolpersist()
-> if b"Bad configuration option" in err or b"Usage:" in err:
(Pdb) p err
'command-line line 0: Missing ControlPersist argument.\r\n'
(Pdb) █
```

```
vim library/systemd.py (ssh)
# initialize
module = AnsibleModule(
    argument_spec=dict(
        name=dict(type='str', aliases=['service', 'unit']),
        state=dict(type='str', choices=['reloaded', 'restarted', 'started',
'stopped']),
        enabled=dict(type='bool'),
        force=dict(type='bool'),
        masked=dict(type='bool'),
        daemon_reload=dict(type='bool', default=False, aliases=['daemon-relo
ad']),
        user=dict(type='bool'),
        scope=dict(type='str', choices=['system', 'user', 'global']),
        no_block=dict(type='bool', default=False),
    ),
    supports_check_mode=True,
    required_one_of=[['state', 'enabled', 'masked', 'daemon_reload']],
    mutually_exclusive=[['scope', 'user']],
)
import rpdb; rpdb.set_trace(addr="0.0.0.0")
systemctl = module.get_bin_path('systemctl', True)
```

: 317,5 63%

```
ansible-playbook -i mastery-debug rpdb.yaml -vv (ssh)
~/src/mastery> ansible-playbook -i mastery-debug rpdb.yaml -vv
ansible-playbook 2.7.5
  config file = /etc/ansible/ansible.cfg
  configured module search path = [u'/home/jfreeman/.ansible/plugins/modules', u
'/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python2.7/site-packages/ansible
  executable location = /usr/bin/ansible-playbook
  python version = 2.7.5 (default, Oct 30 2018, 23:45:53) [GCC 4.8.5 20150623 (R
ed Hat 4.8.5-36)]
Using /etc/ansible/ansible.cfg as config file

PLAYBOOK: rpdb.yaml *****
1 plays in rpdb.yaml

PLAY [remote code debug] *****
META: ran handlers

TASK [a remote module execution] *****
task path: /home/jfreeman/src/mastery/rpdb.yaml:8
```

```
telnet 192.168.81.154 4444 (ssh)
~/src/mastery> telnet 192.168.81.154 4444
Trying 192.168.81.154...
Connected to 192.168.81.154.
Escape character is '^]'.
> /tmp/ansible_systemd_payload_YUlb6V/__main__.py(318)main()
-> systemctl = module.get_bin_path('systemctl', True)
(Pdb) █
```

```

(Pdb) list
313         supports_check_mode=True,
314         required_one_of=[['state', 'enabled', 'masked', 'daemon_reload']
],
315         mutually_exclusive=[['scope', 'user']],
316     )
317     import rpdb; rpdb.set_trace(addr="0.0.0.0")
318 ->     systemctl = module.get_bin_path('systemctl', True)
319
320     ''' Set CLI options depending on params '''
321     if module.params['user'] is not None:
322         # handle user deprecation, mutually exclusive with scope
323         module.deprecate("The 'user' option is being replaced by 'scope'
", version='2.11')
(Pdb)

```

The terminal window shows a remote module execution failure. The task path is `/home/jfreeman/src/mastery/rpdb.yaml:8`. The error message is: `fatal: [debug.example.com]: FAILED! => {"changed": false, "module_stderr": "Shared connection to 127.0.0.1 closed.\r\n", "module_stdout": "pdb is running on 0.0.0.0:4444\r\n\u001b[?1034hTraceback (most recent call last):\r\n File \"/home/jfreeman/.ansible/tmp/ansible-tmp-1551116237.74-258140651503843/AnsiballZ_systemd.py\", line 113, in <module>\r\n _ansiballz_main()\r\n File \"/home/jfreeman/.ansible/tmp/ansible-tmp-1551116237.74-258140651503843/AnsiballZ_systemd.py\", line 105, in _ansiballz_main\r\n invoke_module(zipped_mod, temp_path, ANSIBALLZ_PARAMS)\r\n File \"/home/jfreeman/.ansible/tmp/ansible-tmp-1551116237.74-258140651503843/AnsiballZ_systemd.py\", line 48, in invoke_module\r\n imp.load_module('__main__', mod, module, MOD_DESC)\r\n File \"/tmp/ansible_systemd_payload_YUlb6V/__main__.py\", line 489, in <module>\r\n File \"/tmp/ansible_systemd_payload_YUlb6V/__main__.py\", line 318, in main\r\n File \"/tmp/ansible_systemd_payload_YUlb6V/__main__.py\", line 318, in main\r\n File \"/usr/lib64/python2.7/db.py\", line 49, in trace_dispatch\r\n return self.dispatch_line(frame)\r\n File \"/usr/lib64/python2.7/db.py\", line 68, in dispatch_line\r\n if self.quitting: raise BdbQuit\r\nbdb.BdbQuit\r\n", "msg": "MODULE FAILURE\r\nSee stdout/stderr for the exact error", "rc": 1}`. The terminal suggests to retry with `--limit @/home/jfreeman/src/mastery/rpdb.retry`. Below the error is a `PLAY RECAP` section showing `ok=0`, `changed=0`, `unreachable=0`, and `failed=1`. The prompt is `~/src/mastery>` and the page number `2` is visible in the bottom right corner.

Chapter 9: Extending Ansible

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts simple_module.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [test remote_copy module] *****

TASK [ensure foo] *****
changed: [localhost] => {"changed": true, "dest": "/tmp/rcfoo", "gid": 1000, "group": "jfreeman", "mode": "0664", "owner": "jfreeman", "secontext": "unconfined_u:object_r:user_tmp_t:s0", "size": 0, "state": "file", "uid": 1000}

TASK [do a remote copy] *****
changed: [localhost] => {"changed": true}

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

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-doc -M library/ remote_copy | cat -
> REMOTE_COPY      (/home/jfreeman/src/mastery/library/remote_copy.py)

    The remote_copy module copies a file on the remote host from a
    given source to a provided destination.

OPTIONS (= is mandatory):

= dest
    Path to the destination on the remote host for the copy

= source
    Path to a file on the source file on the remote host

AUTHOR: Jesse Keating

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-doc -M library/ remote_copy | cat -
> REMOTE_COPY    (/home/jfreeman/src/mastery/library/remote_copy.py)

    The remote_copy module copies a file on the remote host from a
    given source to a provided destination.

OPTIONS (= is mandatory):

= dest
    Path to the destination on the remote host for the copy

= source
    Path to a file on the source file on the remote host

AUTHOR: Jesse Keating

EXAMPLES:
# Example from Ansible Playbooks
- name: backup a config file
  remote_copy:
    source: /etc/herp/derp.conf
    dest: /root/herp-derp.conf.bak

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts simple_module.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [test remote_copy module] *****

TASK [ensure foo] *****
changed: [localhost] => {"changed": true, "dest": "/tmp/rcfoo", "gid": 1000, "group": "jfreeman", "mode": "0664", "owner": "jfreeman", "secontext": "unconfined_u:object_r:user_tmp_t:s0", "size": 0, "state": "file", "uid": 1000}

TASK [do a remote copy] *****
changed: [localhost] => {"changed": true, "dest": "/tmp/rcbar", "gid": 1000, "group": "jfreeman", "mode": "0664", "owner": "jfreeman", "secontext": "unconfined_u:object_r:user_tmp_t:s0", "size": 0, "source": "/tmp/rcfoo", "state": "file", "uid": 1000}

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

~/src/mastery>
```



```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-doc -M library/ remote_copy | cat -
> REMOTE_COPY      (/home/jfreeman/src/mastery/library/remote_copy.py)

    The remote_copy module copies a file on the remote host from a
    given source to a provided destination.

OPTIONS (= is mandatory):

= dest
    Path to the destination on the remote host for the copy

= source
    Path to a file on the source file on the remote host

AUTHOR: Jesse Keating

EXAMPLES:
# Example from Ansible Playbooks
- name: backup a config file
  remote_copy:
    source: /etc/herp/derp.conf
    dest: /root/herp-derp.conf.bak

RETURN VALUES:

source:
  description: source file used for the copy
  returned: success
  type: string
  sample: "/path/to/file.name"
dest:
  description: destination of the copy
  returned: success
  type: string
  sample: "/path/to/destination.file"
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts simple_module.yaml -v
Using /etc/ansible/ansible.cfg as config file

PLAY [test remote_copy module] *****

TASK [ensure foo] *****
changed: [localhost] => {"changed": true, "dest": "/tmp/rcfoo", "gid": 1000, "group": "jfreeman", "mode": "0664", "owner": "jfreeman", "secontext": "unconfined_u:object_r:user_tmp_t:s0", "size": 0, "state": "file", "uid": 1000}

TASK [do a remote copy] *****
changed: [localhost] => {"ansible_facts": {"rc_dest": "/tmp/rcbar", "rc_source": "/tmp/rcfoo"}, "changed": true}

TASK [show a fact] *****
ok: [localhost] => {
  "rc_dest": "/tmp/rcbar"
}

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

~/src/mastery> 
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> file /tmp/rcfoo /tmp/rcbar
/tmp/rcfoo: cannot open (No such file or directory)
/tmp/rcbar: cannot open (No such file or directory)
~/src/mastery> ansible-playbook -i mastery-hosts simple_module.yaml -v -C
Using /etc/ansible/ansible.cfg as config file

PLAY [test remote_copy module] *****

TASK [ensure foo] *****
ok: [localhost] => {"changed": false, "dest": "/tmp/rcfoo", "state": "absent"}

TASK [do a remote copy] *****
changed: [localhost] => {"ansible_facts": {"rc_dest": "/tmp/rcbar", "rc_source":
"/tmp/rcfoo"}, "changed": true}

TASK [show a fact] *****
ok: [localhost] => {
  "rc_dest": "/tmp/rcbar"
}

PLAY RECAP *****
localhost                : ok=3    changed=1    unreachable=0    failed=0

~/src/mastery> file /tmp/rcfoo /tmp/rcbar
/tmp/rcfoo: cannot open (No such file or directory)
/tmp/rcbar: cannot open (No such file or directory)
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts simple_filter.yaml

PLAY [test cloud_truth filter] *****

TASK [make a statement] *****
ok: [localhost] => {
  "msg": "I store my files in somebody else's computer"
}

PLAY RECAP *****
localhost                : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts simple_filter.yaml
PLAY [test cloud_truth filter] *****
TASK [make a statement] *****
ok: [localhost] => {
  "msg": "I store my files in somebody else's computer"
}
PLAY RECAP *****
localhost : ok=1    changed=0    unreachable=0    failed=0
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ./mastery-inventory.py --help
usage: mastery-inventory.py [-h] [--list] [--host HOST]

Simple Inventory

optional arguments:
  -h, --help  show this help message and exit
  --list      List all hosts
  --host HOST List details of a host
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ./mastery-inventory.py --list
{"web": {"hosts": ["mastery.example.name"], "vars": {"ansible_ssh_user": "otto",
"http_port": 80, "proxy_timeout": 5}}, "errors": {"hosts": ["scsihost"], "vars"
: {"ansible_ssh_user": "otto"}}, "frontend": {"children": ["web"], "vars": {"ans
ible_ssh_user": "otto"}}, "database": {"hosts": ["backend.example.name"], "vars"
: {"ansible_ssh_user": "database"}}, "failtest": {"hosts": ["failer01", "failer0
2", "failer03", "failer04", "failer05", "failer06", "failer07", "failer08", "fai
ler09", "failer10"], "vars": {"ansible_ssh_user": "otto"}}, "dns": {"hosts": ["b
ackend.example.name"], "vars": {"ansible_ssh_user": "otto"}}, "backend": {"child
ren": ["dns", "database"], "vars": {"ansible_ssh_user": "blotto"}}}
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ./mastery-inventory.py --host mastery.example.name
{"ansible_ssh_host": "192.168.10.25", "ansible_ssh_user": "otto", "http_port": 8
0, "proxy_timeout": 5}
~/src/mastery> ./mastery-inventory.py --host web
{}
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> time ansible-playbook -i mastery-inventory.py inventory_test.yaml
--limit backend,frontend,errors

PLAY [test the inventory] *****

TASK [hello world] *****
ok: [scsihost] => {
  "msg": "Hello world, I am scsihost. My username is jfreeman"
}
ok: [backend.example.name] => {
  "msg": "Hello world, I am backend.example.name. My username is database"
}
ok: [mastery.example.name] => {
  "msg": "Hello world, I am mastery.example.name. My username is otto"
}

PLAY RECAP *****
backend.example.name      : ok=1    changed=0    unreachable=0    failed=0
mastery.example.name     : ok=1    changed=0    unreachable=0    failed=0
scsihost                  : ok=1    changed=0    unreachable=0    failed=0

real    1.17s
user    0.97s
sys     0.28s
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> time ansible-playbook -i mastery-inventory.py inventory_test.yaml
--limit backend,frontend,errors

PLAY [test the inventory] *****

TASK [hello world] *****
ok: [scsihost] => {
  "msg": "Hello world, I am scsihost. My username is jfreeman"
}
ok: [mastery.example.name] => {
  "msg": "Hello world, I am mastery.example.name. My username is otto"
}
ok: [backend.example.name] => {
  "msg": "Hello world, I am backend.example.name. My username is database"
}

PLAY RECAP *****
backend.example.name      : ok=1    changed=0    unreachable=0    failed=0
mastery.example.name     : ok=1    changed=0    unreachable=0    failed=0
scsihost                  : ok=1    changed=0    unreachable=0    failed=0

real    0.69s
user    0.57s
sys     0.18s
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ./mastery-inventory.py --host scsihost
Traceback (most recent call last):
  File "./mastery-inventory.py", line 52, in <module>
    raise StandardError("You've been a bad boy")
StandardError: You've been a bad boy
~/src/mastery>
```

```
jfreeman@mastery: ~/src/ansible (ssh)
~/src/ansible> py.test test/units/parsing devel
===== test session starts =====
platform linux2 -- Python 2.7.5 -- py-1.4.32 -- pytest-2.7.0
rootdir: /home/jfreeman/src/ansible, inifile: tox.ini
collected 301 items / 1 errors

test/units/parsing/test_ajson.py .
test/units/parsing/test_data_loader.py .....
test/units/parsing/test_metadata.py .....
test/units/parsing/test_splitter.py .....F.....
.F
test/units/parsing/test_unquote.py .....
test/units/parsing/utils/test_addresses.py ..
test/units/parsing/utils/test_jsonify.py ....
test/units/parsing/utils/test_yaml.py ..
test/units/parsing/vault/test_vault.py .....
.....F.....F.....
test/units/parsing/vault/test_vault_editor.py .....
test/units/parsing/yaml/test_dumper.py .
test/units/parsing/yaml/test_loader.py .....
test/units/parsing/yaml/test_objects.py .....
```



```
jfreeman@mastery: ~/src/ansible (ssh)
~/src/ansible> test/runner/ansible-test integration -v ping                                devel
Run command: /usr/bin/python setup.py egg_info
Running ping integration test role
Run command: ansible-playbook ping-jMkQV8.yml -i inventory -e @integration_ ...
Using /home/jfreeman/.ansible/test/tmp/ping-wiQ0s-ÅÑSİβtÉ/test/integration/inte
gration.cfg as config file.
[WARNING]: The `junit_xml` python module is not installed. Disabling the
`junit` callback plugin.

PLAY [testhost] *****

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

TASK [ping : ping the test] *****
ok: [testhost] => {"changed": false, "ping": "pong"}

TASK [ping : assert the ping worked] *****
ok: [testhost] => {
  "changed": false,
  "msg": "All assertions passed"
}

TASK [ping : ping with data] *****
ok: [testhost] => {"changed": false, "ping": "testing"}

TASK [ping : assert the ping worked with data] *****
ok: [testhost] => {
  "changed": false,
  "msg": "All assertions passed"
}

TASK [ping : ping with data=crash] *****
An exception occurred during task execution. To see the full traceback, use -vvv
. The error was: Exception: boom
fatal: [testhost]: FAILED! => {"changed": false, "module_stderr": "Traceback (mo
st recent call last):\n File \"/home/jfreeman/.ansible/tmp/ansible-tmp-15512017
81.83-81175392284685/AnsiballZ_ping.py\", line 128, in <module>\n   _ansiballz_
main()\n File \"/home/jfreeman/.ansible/tmp/ansible-tmp-1551201781.83-811753922
84685/AnsiballZ_ping.py\", line 120, in _ansiballz_main\n   invoke_module(zippe
d_mod, temp_path, ANSIBALLZ_PARAMS)\n File \"/home/jfreeman/.ansible/tmp/ansibl
e-tmp-1551201781.83-81175392284685/AnsiballZ_ping.py\", line 63, in invoke_modul
e\n   imp.load_module('__main__', mod, module, MOD_DESC)\n File \"/tmp/ansible
_ping_payload_HFcGUz/__main__.py\", line 85, in <module>\n File \"/tmp/ansible_
ping_payload_HFcGUz/__main__.py\", line 75, in main\nException: boom\n", "module
_stdout": "", "msg": "MODULE FAILURE\nSee stdout/stderr for the exact error", "r
c": 1}
...ignoring

TASK [ping : assert the ping failed with data=boom] *****
ok: [testhost] => {
  "changed": false,
  "msg": "All assertions passed"
}

PLAY RECAP *****
testhost          : ok=7    changed=0    unreachable=0    failed=0    s
kipped=0    rescued=0    ignored=1
```

```
jfreeman@mastery: ~/src/ansible (ssh)
~/src/ansible> make pep8                                devel
bin/ansible-test sanity --test pep8 --python 2.7
Sanity check using pep8
~/src/ansible> echo $?                                  devel
0
~/src/ansible>                                         devel
```

```
jfreeman@mastery: ~/src/ansible (ssh)
~/src/ansible> make pep8                                devel!
bin/ansible-test sanity --test pep8 --python 2.7
Sanity check using pep8
ERROR: Found 11 pep8 issue(s) which need to be resolved:
ERROR: lib/ansible/modules/cloud/openstack/os_zone.py:184:1: W293 blank line contains whitespace
ERROR: lib/ansible/modules/cloud/openstack/os_zone.py:185:9: E101 indentation contains mixed spaces and tabs
ERROR: lib/ansible/modules/cloud/openstack/os_zone.py:185:9: W191 indentation contains tabs
ERROR: lib/ansible/modules/cloud/openstack/os_zone.py:185:15: E111 indentation is not a multiple of four
ERROR: lib/ansible/modules/cloud/openstack/os_zone.py:185:15: E113 unexpected indentation
ERROR: lib/ansible/modules/cloud/openstack/os_zone.py:186:1: E101 indentation contains mixed spaces and tabs
ERROR: lib/ansible/modules/cloud/openstack/os_zone.py:186:1: W191 indentation contains tabs
ERROR: lib/ansible/modules/cloud/openstack/os_zone.py:186:4: E113 unexpected indentation
ERROR: lib/ansible/modules/cloud/openstack/os_zone.py:187:1: E101 indentation contains mixed spaces and tabs
ERROR: lib/ansible/modules/cloud/openstack/os_zone.py:187:48: E127 continuation line over-indented for visual indent
ERROR: lib/ansible/modules/cloud/openstack/os_zone.py:188:48: E127 continuation line over-indented for visual indent
ERROR: The 1 sanity test(s) listed below (out of 1) failed. See error output above for details.
pep8
make: *** [pep8] Error 1
~/src/ansible> echo $?                                  2 devel!
2
~/src/ansible>                                         devel!
```

Chapter 10: Minimizing Downtime with Rolling Deployments

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts failtest.yaml

PLAY [any errors fatal] *****

TASK [fail last host] *****
skipping: [failer01]
skipping: [failer02]
skipping: [failer03]
skipping: [failer04]
skipping: [failer05]
skipping: [failer06]
skipping: [failer07]
skipping: [failer08]
skipping: [failer09]
fatal: [failer10]: FAILED! => {"changed": false, "msg": "I am last"}

NO MORE HOSTS LEFT *****
to retry, use: --limit @/home/jfreeman/src/mastery/failtest.retry

PLAY RECAP *****
failer01      : ok=0    changed=0    unreachable=0    failed=0
failer02      : ok=0    changed=0    unreachable=0    failed=0
failer03      : ok=0    changed=0    unreachable=0    failed=0
failer04      : ok=0    changed=0    unreachable=0    failed=0
failer05      : ok=0    changed=0    unreachable=0    failed=0
failer06      : ok=0    changed=0    unreachable=0    failed=0
failer07      : ok=0    changed=0    unreachable=0    failed=0
failer08      : ok=0    changed=0    unreachable=0    failed=0
failer09      : ok=0    changed=0    unreachable=0    failed=0
failer10      : ok=0    changed=0    unreachable=0    failed=1

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts failtest.yaml

PLAY [any errors fatal] *****

TASK [fail last host] *****
skipping: [failer01]
skipping: [failer02]
skipping: [failer03]
skipping: [failer04]
skipping: [failer06]
skipping: [failer05]
skipping: [failer07]
skipping: [failer08]
skipping: [failer09]
fatal: [failer10]: FAILED! => {"changed": false, "msg": "I am last"}

TASK [never run] *****
skipping: [failer01]
skipping: [failer03]
skipping: [failer04]
skipping: [failer02]
skipping: [failer06]
skipping: [failer08]
skipping: [failer05]
skipping: [failer07]
ok: [failer09] => {
  "msg": "I should never be run"
}
to retry, use: --limit @/home/jfreeman/src/mastery/failtest.retry

PLAY RECAP *****
failer01      : ok=0    changed=0    unreachable=0    failed=0
failer02      : ok=0    changed=0    unreachable=0    failed=0
failer03      : ok=0    changed=0    unreachable=0    failed=0
failer04      : ok=0    changed=0    unreachable=0    failed=0
failer05      : ok=0    changed=0    unreachable=0    failed=0
failer06      : ok=0    changed=0    unreachable=0    failed=0
failer07      : ok=0    changed=0    unreachable=0    failed=0
failer08      : ok=0    changed=0    unreachable=0    failed=0
failer09      : ok=1    changed=0    unreachable=0    failed=0
failer10      : ok=0    changed=0    unreachable=0    failed=1

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts failtest.yaml

PLAY [any errors fatal] *****

TASK [fail last host] *****
fatal: [failer01]: FAILED! => {"changed": false, "msg": "I am last"}
skipping: [failer04]
fatal: [failer03]: FAILED! => {"changed": false, "msg": "I am last"}
skipping: [failer05]
fatal: [failer02]: FAILED! => {"changed": false, "msg": "I am last"}
skipping: [failer06]
skipping: [failer07]
skipping: [failer08]
skipping: [failer09]
skipping: [failer10]

NO MORE HOSTS LEFT *****

NO MORE HOSTS LEFT *****
to retry, use: --limit @/home/jfreeman/src/mastery/failtest.retry

PLAY RECAP *****
failer01      : ok=0    changed=0    unreachable=0    failed=1
failer02      : ok=0    changed=0    unreachable=0    failed=1
failer03      : ok=0    changed=0    unreachable=0    failed=1
failer04      : ok=0    changed=0    unreachable=0    failed=0
failer05      : ok=0    changed=0    unreachable=0    failed=0
failer06      : ok=0    changed=0    unreachable=0    failed=0
failer07      : ok=0    changed=0    unreachable=0    failed=0
failer08      : ok=0    changed=0    unreachable=0    failed=0
failer09      : ok=0    changed=0    unreachable=0    failed=0
failer10      : ok=0    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts failtest.yaml --limit failer01:
failer01

PLAY [any errors fatal] *****

TASK [run first] *****
changed: [failer01] => {
  "msg": "I am a change"
}

TASK [change a host] *****
fatal: [failer01]: FAILED! => {"changed": false, "msg": "I am last"}

RUNNING HANDLER [critical handler] *****
to retry, use: --limit @/home/jfreeman/src/mastery/failtest.retry

PLAY RECAP *****
failer01 : ok=1    changed=1    unreachable=0    failed=1

~/src/mastery> 2
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts failtest.yaml --limit failer01:
failer01

PLAY [any errors fatal] *****

TASK [run first] *****
changed: [failer01] => {
  "msg": "I am a change"
}

TASK [change a host] *****
fatal: [failer01]: FAILED! => {"changed": false, "msg": "I am last"}

RUNNING HANDLER [critical handler] *****
ok: [failer01] => {
  "msg": "I really need to run"
}
    to retry, use: --limit @/home/jfreeman/src/mastery/failtest.retry

PLAY RECAP *****
failer01                : ok=2    changed=1    unreachable=0    failed=1

~/src/mastery> 2
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts micro.yaml

PLAY [apply microA] *****
TASK [microA : install microA package] *****
changed: [localhost] => {
  "msg": "This is installing A"
}
RUNNING HANDLER [microA : restart microA] *****
ok: [localhost] => {
  "msg": "microA is restarting"
}
PLAY [apply microB] *****
TASK [microB : install microB package] *****
changed: [localhost] => {
  "msg": "This is installing B"
}
RUNNING HANDLER [microB : restart microB] *****
ok: [localhost] => {
  "msg": "microB is restarting"
}
PLAY [restart microA] *****
TASK [restart microA for upgrade] *****
skipping: [localhost]
PLAY [restart microB] *****
TASK [restart microB for upgrade] *****
skipping: [localhost]
PLAY RECAP *****
localhost           : ok=4    changed=2    unreachable=0    failed=0

~/src/mastery> █
```



```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts micro.yaml -e upgrade=true

PLAY [apply microA] *****
TASK [microA : install microA package] *****
changed: [localhost] => {
  "msg": "This is installing A"
}

RUNNING HANDLER [microA : restart microA] *****
skipping: [localhost]

PLAY [apply microB] *****
TASK [microB : install microB package] *****
changed: [localhost] => {
  "msg": "This is installing B"
}

RUNNING HANDLER [microB : restart microB] *****
skipping: [localhost]

PLAY [restart microA] *****
TASK [restart microA for upgrade] *****
ok: [localhost] => {
  "msg": "microA is restarting"
}

PLAY [restart microB] *****
TASK [restart microB for upgrade] *****
ok: [localhost] => {
  "msg": "microB is restarting"
}

PLAY RECAP *****
localhost           : ok=4    changed=2    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts runonce.yaml

PLAY [run once test] *****

TASK [do a thing] *****
ok: [failer01] => {
  "msg": "I am groot"
}

TASK [what is groot] *****
skipping: [failer01]
ok: [failer02] => {
  "groot": {
    "changed": false,
    "failed": false,
    "msg": "I am groot"
  }
}

PLAY RECAP *****
failer01          : ok=1    changed=0    unreachable=0    failed=0
failer02          : ok=1    changed=0    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts forserial.yaml -vv
ansible-playbook 2.7.5
  config file = /etc/ansible/ansible.cfg
  configured module search path = [u'/home/jfreeman/.ansible/plugins/modules', u
'/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python2.7/site-packages/ansible
  executable location = /usr/bin/ansible-playbook
  python version = 2.7.5 (default, Oct 30 2018, 23:45:53) [GCC 4.8.5 20150623 (R
ed Hat 4.8.5-36)]
Using /etc/ansible/ansible.cfg as config file

PLAYBOOK: forserial.yaml *****
1 plays in forserial.yaml

PLAY [parallel and serial] *****
META: ran handlers

TASK [do a thing] *****
task path: /home/jfreeman/src/mastery/forserial.yaml:7
NOTIFIED HANDLER restart groot for failer01
changed: [failer01] => {
  "msg": "I am groot"
}
ok: [failer04] => {
  "msg": "I am groot"
}
ok: [failer03] => {
  "msg": "I am groot"
}
NOTIFIED HANDLER restart groot for failer02
changed: [failer02] => {
  "msg": "I am groot"
}

RUNNING HANDLER [restart groot] *****
task path: /home/jfreeman/src/mastery/forserial.yaml:15
ok: [failer01 -> failer01] => (item=failer01) => {
  "msg": "I am groot?"
}
ok: [failer01 -> failer02] => (item=failer02) => {
  "msg": "I am groot?"
}
skipping: [failer01] => (item=failer03) => {"item": "failer03"}
skipping: [failer01] => (item=failer04) => {"item": "failer04"}
META: ran handlers
META: ran handlers

PLAY RECAP *****
failer01      : ok=2    changed=1    unreachable=0    failed=0
failer02      : ok=1    changed=1    unreachable=0    failed=0
failer03      : ok=1    changed=0    unreachable=0    failed=0
failer04      : ok=1    changed=0    unreachable=0    failed=0
```

Chapter 11: Infrastructure Provisioning

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts boot-server.yaml -vv
ansible-playbook 2.7.5
  config file = /etc/ansible/ansible.cfg
  configured module search path = [u'/home/jfreeman/.ansible/plugins/modules', u
'/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python2.7/site-packages/ansible
  executable location = /usr/bin/ansible-playbook
  python version = 2.7.5 (default, Oct 30 2018, 23:45:53) [GCC 4.8.5 20150623 (R
ed Hat 4.8.5-36)]
Using /etc/ansible/ansible.cfg as config file

PLAYBOOK: boot-server.yaml *****
1 plays in boot-server.yaml

PLAY [boot server] *****
META: ran handlers

TASK [boot the server] *****
task path: /home/jfreeman/src/mastery/boot-server.yaml:7
changed: [localhost] => {"changed": true, "id": "9bfbc66e-63f4-4822-8b10-49fed7e
17c0c", "openstack": {"OS-DCF:diskConfig": "MANUAL", "OS-EXT-AZ:availability_zon
e": "nova", "OS-EXT-SRV-ATTR:hypervisor_hostname": "devstack.example.com", "OS-E
XT-SRV-ATTR:instance_name": "instance-00000003", "OS-EXT-SRV-ATTR:user_data": nu
ll, "OS-EXT-STS:power_state": 1, "OS-EXT-STS:task_state": null, "OS-EXT-STS:vm_s
tate": "active", "OS-SCH-HNT:scheduler_hints": null, "OS-SRV-USG:launched_at": "
2019-03-04T16:52:35.000000", "OS-SRV-USG:terminated_at": null, "accessIPv4": "17
2.24.4.46", "accessIPv6": "fdfd:e9e0:14e1:0:f816:3eff:feba:353b", "addresses": {
"private": [{"OS-EXT-IPS-MAC:mac_addr": "fa:16:3e:ba:35:3b", "OS-EXT-IPS:type":
"fixed", "addr": "fdfd:e9e0:14e1:0:f816:3eff:feba:353b", "version": 6}, {"OS-EXT
-IPS-MAC:mac_addr": "fa:16:3e:ba:35:3b", "OS-EXT-IPS:type": "fixed", "addr": "10
.0.0.5", "version": 4}, {"OS-EXT-IPS-MAC:mac_addr": "fa:16:3e:ba:35:3b", "OS-EXT
-IPS:type": "floating", "addr": "172.24.4.46", "version": 4}}], "adminPass": "9V
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts boot-server.yaml

PLAY [boot server] *****

TASK [boot the server] *****
ok: [localhost]

TASK [show floating ip] *****
ok: [localhost] => {
  "newserver.openstack.accessIPv4": "172.24.4.46"
}

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

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts boot-server.yaml --private-key
mastery-key

PLAY [boot server] *****

TASK [boot the server] *****
ok: [localhost]

TASK [show floating ip] *****
ok: [localhost] => {
  "newserver.openstack.accessIPv4": "172.24.4.46"
}

TASK [add new server] *****
changed: [localhost]

PLAY [configure server] *****

TASK [install python] *****
changed: [mastery1]

TASK [install imagemagick] *****
changed: [mastery1]

PLAY RECAP *****
localhost          : ok=3    changed=1    unreachable=0    failed=0
mastery1           : ok=2    changed=2    unreachable=0    failed=0

~/src/mastery>
```

```
fedora@mastery1:~ (ssh)
~/src/mastery> ssh -i mastery-key fedora@172.24.4.46
Last login: Mon Mar  4 17:36:27 2019 from 192.168.81.154
[fedora@mastery1 ~]$ rpm -qa --last | head
libgs-9.26-1.fc29.x86_64           Mon 04 Mar 2019 05:36:50 PM UTC
ImageMagick-libs-6.9.9.38-3.fc29.x86_64  Mon 04 Mar 2019 05:36:50 PM UTC
ImageMagick-6.9.9.38-3.fc29.x86_64      Mon 04 Mar 2019 05:36:50 PM UTC
adobe-mappings-pdf-20180407-2.fc29.noarch Mon 04 Mar 2019 05:36:49 PM UTC
urw-base35-fonts-20170801-11.fc29.noarch Mon 04 Mar 2019 05:36:48 PM UTC
pango-1.42.4-2.fc29.x86_64           Mon 04 Mar 2019 05:36:48 PM UTC
librsvg2-2.44.13-1.fc29.x86_64        Mon 04 Mar 2019 05:36:48 PM UTC
libidn-1.35-3.fc29.x86_64            Mon 04 Mar 2019 05:36:48 PM UTC
jbig2dec-libs-0.14-3.fc29.x86_64      Mon 04 Mar 2019 05:36:48 PM UTC
harfbuzz-1.8.7-1.fc29.x86_64         Mon 04 Mar 2019 05:36:48 PM UTC
[fedora@mastery1 ~]$
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ./openstack_inventory.py --help
usage: openstack_inventory.py [-h] [--cloud CLOUD] [--private] [--refresh]
                             [--debug] (--list | --host HOST)

OpenStack Inventory Module

optional arguments:
  -h, --help            show this help message and exit
  --cloud CLOUD         Cloud name (default: None)
  --private             Use private address for ansible host
  --refresh             Refresh cached information
  --debug              Enable debug output
  --list               List active servers
  --host HOST          List details about the specific host
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ./openstack_inventory.py --list
{
  "_meta": {
    "hostvars": {
      "mastery1": {
        "ansible_host": "172.24.4.46",
        "ansible_ssh_host": "172.24.4.46",
        "openstack": {
          "OS-DCF:diskConfig": "MANUAL",
          "OS-EXT-AZ:availability_zone": "nova",
          "OS-EXT-SRV-ATTR:hypervisor_hostname": "devstack.example.com",
          "OS-EXT-SRV-ATTR:instance_name": "instance-00000004",
          "OS-EXT-SRV-ATTR:user_data": null,
          "OS-EXT-STS:power_state": 1,
          "OS-EXT-STS:task_state": null,
          "OS-EXT-STS:vm_state": "active",
          "OS-SCH-HNT:scheduler_hints": null,
          "OS-SRV-USG:launched_at": "2019-03-04T17:20:33.000000",
          "OS-SRV-USG:terminated_at": null,
          "accessIPv4": "172.24.4.46",
          "accessIPv6": "fdfd:e9e0:14e1:0:f816:3eff:feb0:91ec",
          "addresses": {
            "private": [
              {
                "OS-EXT-IPS-MAC:mac_addr": "fa:16:3e:b0:91:ec",
                "OS-EXT-IPS:type": "fixed",
                "addr": "fdfd:e9e0:14e1:0:f816:3eff:feb0:91ec",
                "version": 6
              },
              {
                "OS-EXT-IPS-MAC:mac_addr": "fa:16:3e:b0:91:ec",
                "OS-EXT-IPS:type": "fixed",
                "addr": "10.0.0.22",
                "version": 4
              }
            ]
          }
        }
      }
    }
  }
}
```



```
jfreeman@mastery: ~/src/mastery (ssh)
    "vm_state": "active",
    "volumes": []
  }
}
},
"_nova": [
  "mastery1"
],
"devstack": [
  "mastery1"
],
"devstack_": [
  "mastery1"
],
"devstack__nova": [
  "mastery1"
],
"flavor-ds1G": [
  "mastery1"
],
"image-Fedora 29": [
  "mastery1"
],
"instance-63338332-de64-4200-bb60-c74a92fcba82": [
  "mastery1"
],
"nova": [
  "mastery1"
]
}
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i openstack_inventory.py configure-server.yaml
--private-key mastery-key

PLAY [configure server] *****

TASK [install python] *****
changed: [mastery1]

TASK [install imagemagick] *****
ok: [mastery1]

PLAY RECAP *****
mastery1          : ok=2    changed=1    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ANSIBLE_HOST_KEY_CHECKING=False ansible-playbook -i mastery-hosts
boot-ec2-server.yaml --private-key mastery-key.pem

PLAY [boot server] *****

TASK [boot the server] *****
changed: [localhost]

TASK [show floating ip] *****
ok: [localhost] => {
  "newserver.tagged_instances[0].public_ip": "18.130.230.217"
}

TASK [Wait for SSH to come up] *****
[WARNING]: Reset is not implemented for this connection

ok: [localhost]

TASK [add new server] *****
changed: [localhost]

PLAY [configure server] *****

TASK [install imagemagick] *****
changed: [mastery1]

PLAY RECAP *****
localhost           : ok=4    changed=2    unreachable=0    failed=0
mastery1            : ok=1    changed=1    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ANSIBLE_HOST_KEY_CHECKING=False ansible-playbook -i mastery-hosts
boot-azure-server.yaml

PLAY [boot server] *****

TASK [boot the server] *****
changed: [localhost]

TASK [show floating ip] *****
ok: [localhost] => {
  "newserver.ansible_facts.azure_vm.properties.networkProfile.networkInterface
s[0].properties.ipConfigurations[0].properties.publicIPAddress.properties.ipAddr
ess": "51.145.12.101"
}

TASK [Wait for SSH to come up] *****
[WARNING]: Reset is not implemented for this connection

ok: [localhost]

TASK [add new server] *****
changed: [localhost]

PLAY [configure server] *****

TASK [install python] *****
changed: [mastery1]

TASK [install imagemagick] *****
changed: [mastery1]

PLAY RECAP *****
localhost           : ok=4    changed=2    unreachable=0    failed=0
mastery1            : ok=2    changed=2    unreachable=0    failed=0

~/src/mastery> |
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> docker ps -a --filter ancestor=fedora-moo
CONTAINER ID      IMAGE      COMMAND      CREATED
STATUS           PORTS     NAMES
~/src/mastery> docker images --filter reference='fedora*'
REPOSITORY      TAG      IMAGE ID      CREATED
SIZE
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts docker-interact.yaml

PLAY [build an image] *****

TASK [build that image] *****
changed: [localhost]

TASK [start the container] *****
changed: [localhost]

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

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> docker ps -a --filter ancestor=fedora-moo
CONTAINER ID      IMAGE      COMMAND      CREATED
STATUS           PORTS     NAMES
cfd71ac0b9c0     fedora-moo  "/bin/sh -c /usr/s..."  49 seconds ago
Up 48 seconds    0.0.0.0:8080->80/tcp  playbook-container
~/src/mastery> docker images --filter reference='fedora*'
REPOSITORY      TAG      IMAGE ID      CREATED
SIZE
fedora-moo      latest  23f557565a30  53 seconds ago
533 MB
docker.io/fedora  29      d7372e6c93c6  2 weeks ago
275 MB
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> curl http://localhost:8080
-----
< boop >
-----
      ^__^
      (oo)\_______
         (__)\       )\/\
            ||----w |
            ||     ||

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> docker ps -a --filter ancestor=fedora-moo
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS            PORTS              NAMES
cfd71ac0b9c0       fedora-moo         "/bin/sh -c /usr/s... 12 minutes ago
Up 12 minutes      0.0.0.0:8080->80/tcp  playbook-container
~/src/mastery> docker rm -f playbook-container
playbook-container
~/src/mastery> docker ps -a --filter ancestor=fedora-moo
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS            PORTS              NAMES
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i mastery-hosts docker-all.yaml

PLAY [build an image] *****
TASK [start the container] *****
changed: [localhost]

TASK [make a host] *****
changed: [localhost]

PLAY [do things] *****
TASK [install things] *****
changed: [playbook-container]

TASK [install things] *****
changed: [playbook-container]

TASK [configure nginx] *****
changed: [playbook-container]

TASK [boop] *****
changed: [playbook-container]

TASK [run nginx] *****
changed: [playbook-container]

PLAY RECAP *****
localhost           : ok=2    changed=2    unreachable=0    failed=0
playbook-container  : ok=5    changed=5    unreachable=0    failed=0

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> curl http://localhost:8080
-----
< boop >
-----
      ^__^
      (oo)\_______
         (__)\       )\/\
            ||----w |
            ||     ||

~/src/mastery> docker ps -a --filter ancestor=fedora:29
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS            PORTS              NAMES
cf30ca27104b      docker.io/fedora:29 "sleep 500"        3 minutes ago
Up 3 minutes      0.0.0.0:8080->80/tcp  playbook-container
~/src/mastery> 
```



```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ./docker.py --help
usage: docker.py [-h] [--list] [--debug] [--host HOST] [--pretty]
                [--config-file CONFIG_FILE] [--docker-host DOCKER_HOST]
                [--tls-hostname TLS_HOSTNAME] [--api-version API_VERSION]
                [--timeout TIMEOUT] [--cacert-path CACERT_PATH]
                [--cert-path CERT_PATH] [--key-path KEY_PATH]
                [--ssl-version SSL_VERSION] [--tls] [--tls-verify]
                [--private-ssh-port PRIVATE_SSH_PORT]
                [--default-ip-address DEFAULT_IP_ADDRESS]

Return Ansible inventory for one or more Docker hosts.

optional arguments:
  -h, --help            show this help message and exit
  --list                List all containers (default: True)
  --debug               Send debug messages to STDOUT
  --host HOST           Only get information for a specific container.
  --pretty              Pretty print JSON output(default: False)
  --config-file CONFIG_FILE
                        Name of the config file to use. Default is docker.yml
  --docker-host DOCKER_HOST
                        The base url or Unix sock path to connect to the
                        docker daemon. Defaults to unix:///var/run/docker.sock
  --tls-hostname TLS_HOSTNAME
                        Host name to expect in TLS certs. Defaults to
                        localhost
  --api-version API_VERSION
                        Docker daemon API version. Defaults to 1.24
  --timeout TIMEOUT    Docker connection timeout in seconds. Defaults to 60
  --cacert-path CACERT_PATH
                        Path to the TLS certificate authority pem file.
  --cert-path CERT_PATH
                        Path to the TLS certificate pem file.
  --key-path KEY_PATH  Path to the TLS encryption key pem file.
  --ssl-version SSL_VERSION
                        TLS version number
  --tls                 Use TLS. Defaults to False
  --tls-verify          Verify TLS certificates. Defaults to False
  --private-ssh-port PRIVATE_SSH_PORT
                        Default private container SSH Port. Defaults to 22
  --default-ip-address DEFAULT_IP_ADDRESS
                        Default container SSH IP address. Defaults to
                        127.0.0.1

~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ./docker.py --list --pretty | grep -C2 playbook-container
    }
  },
  "playbook-container": {
    "ansible_ssh_host": "",
    "ansible_ssh_port": 0,
--
    "docker_mountlabel": "system_u:object_r:svirt_sandbox_file_t:s0:
c519,c726",
    "docker_mounts": [],
    "docker_name": "/playbook-container",
    "docker_networksettings": {
      "Bridge": "",
--
  ],
  "cf30ca27104b7": [
    "playbook-container"
  ],
  "cf30ca27104b771cdce2ad0a2057d31a5e112f920d9c3656de2d6c1072869c77": [
    "playbook-container"
  ],
  "docker_hosts": [
--
  ],
  "image_docker.io/fedora:29": [
    "playbook-container"
  ],
  ],
```

```
jfreeman@mastery: ~/src/mastery (ssh)
"docker_hosts": [
--
  ],
  "image_docker.io/fedora:29": [
    "playbook-container"
  ],
  "image_memcached:alpine": [
--
    "memcached"
  ],
  "playbook-container": [
    "playbook-container"
  ],
  "postgres": [
--
  ],
  "running": [
    "playbook-container",
    "awx_task",
    "awx_web",
--
  ],
  "unix://var/run/docker.sock": [
    "playbook-container",
    "awx_task",
    "awx_web",
~/src/mastery>
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-container --help
usage: ansible-container [-h] [--debug] [--devel] [--engine ENGINE_NAME]
                        [--project-path BASE_PATH]
                        [--project-name PROJECT_NAME]
                        [--vars-files VARS_FILES] [--no-selinux]

                        {run,help,deploy,stop,destroy,restart,init,version,buil
d,install,push,import}
                        ...

Build, orchestrate, run, and ship Docker containers with Ansible playbooks

optional arguments:
  -h, --help            show this help message and exit
  --debug              Enable debug output
  --devel             Enable developer-mode to aid in iterative development
                    on Ansible Container.
  --engine ENGINE_NAME Select your container engine and orchestrator
  --project-path BASE_PATH, -p BASE_PATH
                    Specify a path to your project. Defaults to current
                    working directory.
  --project-name PROJECT_NAME, -n PROJECT_NAME
                    Specify an alternate name for your project. Defaults
                    to the directory it lives in.
  --vars-files VARS_FILES, --var-file VARS_FILES, --vars-file VARS_FILES
                    One or or more YAML or JSON formatted files providing
                    variables for Jinja2 style variable substitution in
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-container init --help
usage: ansible-container init [-h] [--server SERVER] [--force] [project]

positional arguments:
  project                Rather than starting with a blank project, use a
                        project template from an Ansible Container project
                        downloaded from the Ansible Galaxy web site.

optional arguments:
  -h, --help            show this help message and exit
  --server SERVER, -s SERVER
                        Use a different Galaxy server URL
  --force, -f          Overrides the requirement that init be run in an empty
                        directory, for example if a virtualenv exists in the
                        directory.

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery/ansible (ssh)
~/src/mastery> mkdir ansible
~/src/mastery> cd ansible
~/src/mastery/ansible> ansible-container init
Ansible Container initialized.
~/src/mastery/ansible> tree
.
├── ansible.cfg
├── ansible-requirements.txt
├── container.yml
├── meta.yml
└── requirements.yml

0 directories, 5 files
~/src/mastery/ansible> █
```

```

jfreeman@mastery: ~/src/mastery/ansible (ssh)
~/src/mastery/ansible> ansible-container build
Building Docker Engine context...
Starting Docker build of Ansible Container Conductor image (please be patient)..
.
Parsing conductor CLI args.
Docker™ daemon integration engine loaded. Build starting.          project=ansible
Building service...          project=ansible service=cowsay
PLAY [cowsay] *****
TASK [Gathering Facts] *****
ok: [cowsay]
TASK [cowsay : install things] *****
changed: [cowsay]
TASK [cowsay : use local python] *****
ok: [cowsay]
TASK [cowsay : install things] *****
changed: [cowsay]
TASK [cowsay : configure nginx] *****
changed: [cowsay]
TASK [cowsay : boop] *****
changed: [cowsay]
PLAY RECAP *****
cowsay          : ok=6    changed=4    unreachable=0    failed=0
Applied role to service role=cowsay service=cowsay
Committed layer as image          image=sha256:072b6d7e5c282cd92a39ec5745dc7a5e7e4
720b2e2aa3165b31ee7b95cbe8215 service=cowsay
Build complete. service=cowsay
All images successfully built.
Conductor terminated. Cleaning up.          command_rc=0 conductor_id=4b1999639ed7ca
6efef612efd041c105d5968e5928d52f3b9b15fba023378f74 save_container=False
~/src/mastery/ansible>

```

```

jfreeman@mastery: ~/src/mastery/ansible (ssh)
~/src/mastery/ansible> docker images
REPOSITORY          TAG          IMAGE ID
CREATED            SIZE
ansible-conductor  latest      d08d2ebf433
2          29 seconds ago    445 MB
ansible-cowsay     20190307143506    072b6d7e5c2
8          About an hour ago    618 MB
ansible-cowsay     latest      072b6d7e5c2
8          About an hour ago    618 MB

```

```
jfreeman@mastery: ~/src/mastery/ansible (ssh)
~/src/mastery/ansible> ansible-container run --help
usage: ansible-container run [-h] [-d]
                             [--vault-file VAULT_FILES [VAULT_FILES ...]]
                             [--vault-password-file VAULT_PASSWORD_FILE]
                             [--ask-vault-pass]
                             [--roles-path ROLES_PATH [ROLES_PATH ...]]
                             [--with-volumes WITH_VOLUMES [WITH_VOLUMES ...]]
                             [--volume-driver VOLUME_DRIVER]
                             [--with-variables WITH_VARIABLES [WITH_VARIABLES ..
.]]
                             [--production]
                             [service [service ...]]

positional arguments:
  service                The specific services you want to run

optional arguments:
  -h, --help            show this help message and exit
  -d, --detached        Run the application in detached mode
  --vault-file VAULT_FILES [VAULT_FILES ...]
                        A vault file to use to populate secrets
  --vault-password-file VAULT_PASSWORD_FILE
                        An optional file containing the vault password
  --ask-vault-pass      Asks for the vault file password at run time
  --roles-path ROLES_PATH [ROLES_PATH ...]
                        Specify a local path containing Ansible roles.
  --with-volumes WITH_VOLUMES [WITH_VOLUMES ...], -v WITH_VOLUMES [WITH_VOLUMES
...]
                        Mount one or more volumes to the Conductor. Specify
                        volumes as strings using the Docker volume format.
  --volume-driver VOLUME_DRIVER
                        Specify volume driver to use when mounting named
                        volumes to the Conductor.
  --with-variables WITH_VARIABLES [WITH_VARIABLES ...], -e WITH_VARIABLES [WITH_
VARIABLES ...]
                        Define one or more environment variables in the
                        Conductor. Format each variable as a key=value string.
  --production         Run with the production configuration.
~/src/mastery/ansible> █
```

```
jfreeman@mastery: ~/src/mastery/ansible (ssh)
~/src/mastery/ansible> ansible-container run --detached
Parsing conductor CLI args.
Engine integration loaded. Preparing run.          engine=Docker™ daemon
Verifying service image service=cowsay
PLAY [Deploy ansible] *****
TASK [docker_service] *****
changed: [localhost]
PLAY RECAP *****
localhost          : ok=1    changed=1    unreachable=0    failed=0
All services running.  playbook_rc=0
Conductor terminated. Cleaning up.      command_rc=0 conductor_id=c697eecbb6a5fd
0cbdb154d32874ac0bb50bb87ca3bdcd1a10fa8043f25d513d save_container=False
~/src/mastery/ansible>
```

```
jfreeman@mastery: ~/src/mastery/ansible (ssh)
~/src/mastery/ansible> docker ps --filter name=cowsay
CONTAINER ID        IMAGE                                COMMAND                  CREATED
STATUS            PORTS                            NAMES
528d90e8ed4b      ansible-cowsay:20190307143506      "nginx"                 About a
minute ago       Up About a minute             0.0.0.0:8081->80/tcp    ansible_cowsay_1
~/src/mastery/ansible> curl http://localhost:8081
-----
< boop >
-----
  \      ^__^
   \     (oo)\_______
      (__)\       )\/\
         ||----w |
         ||     ||

~/src/mastery/ansible>
```

Chapter 12: Network Automation

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible -i switch-inventory -m ping mastery-switch1
mastery-switch1 | SUCCESS => {
  "changed": false,
  "ping": "pong"
}
~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i switch-inventory switch-query.yaml

PLAY [query switch] *****

TASK [Gathering Facts] *****
ok: [mastery-switch1]

TASK [query swp1 interface] *****
ok: [mastery-switch1]

TASK [print interface status] *****
ok: [mastery-switch1] => {
  "interface": {
    "changed": false,
    "failed": false,
    "msg": "
      Name  MAC                               Speed  MTU  Mode\n-----  ----
\nADMDN  swp1  00:00:01:39:34:6f  N
/A    1500  NotConfigured\n\n\n\n"
  }
}

PLAY RECAP *****
mastery-switch1      : ok=3    changed=0    unreachable=0    failed=0

~/src/mastery> █
```

```
jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i switch-inventory switch-l2-configure.yaml

PLAY [configure switch] *****

TASK [Gathering Facts] *****
ok: [mastery-switch1]

TASK [bring up ports swp[1-3]] *****
changed: [mastery-switch1]

TASK [query swp1 interface] *****
ok: [mastery-switch1]

TASK [print interface status] *****
ok: [mastery-switch1] => {
  "interface": {
    "changed": false,
    "failed": false,
    "msg": "
      Name MAC Speed MTU Mode\n-- ----
      \nUP swp1 00:00:01:39:34:6f 1G 1500 A
      ccess/L2\n\nAll VLANs on L2 Port\n-----\n1\n\nUntagged\n-----\
      \n1\n\ncl-netstat counters\n-----\nRX_OK RX_ERR RX_DRP RX_OVR T
      X_OK TX_ERR TX_DRP TX_OVR\n-----\n97879 0 0 0 620 0 0 0\n\nLLDP
      Details\n-----\nLocalPort RemotePort(RemoteHost)\n-----
      \nswp1 swp3(cumulus)\n\nRouting\n-----\n Interface swp1 is
      up, line protocol is up\n Link ups: 2 last: 2019/03/08 13:31:07.21\n
      Link downs: 2 last: 2019/03/08 13:29:35.76\n PTM status: disabled\n vrf
      : default\n index 3 metric 0 mtu 1500 speed 1000\n flags: <UP,BROADCAST,RUNNIN
      G,MULTICAST>\n Type: Ethernet\n HWaddr: 00:00:01:39:34:6f\n Interface Type Ot
      her\n Master (bridge) ifindex 8\n\n\n\n"
  }
}

PLAY RECAP *****
mastery-switch1 : ok=4 changed=1 unreachable=0 failed=0

~/src/mastery> █
```

```

jfreeman@mastery: ~/src/mastery (ssh)
~/src/mastery> ansible-playbook -i switch-inventory switch-l2-configure.yaml

PLAY [configure switch] *****

TASK [Gathering Facts] *****
ok: [mastery-switch1]

TASK [bring up ports swp[1-3]] *****
ok: [mastery-switch1]

TASK [query swp1 interface] *****
ok: [mastery-switch1]

TASK [print interface status] *****
ok: [mastery-switch1] => {
  "interface": {
    "changed": false,
    "failed": false,
    "msg": "
      Name MAC Speed MTU Mode\n-- --
      \nUP swp1 00:00:01:39:34:6f 1G 1500 A
      ccess/L2\n\nAll VLANs on L2 Port\n-----\n1\n\nUntagged\n-----\n
      \n\ncl-netstat counters\n-----\n RX_OK RX_ERR RX_DRP RX_OVR
      TX_OK TX_ERR TX_DRP TX_OVR\n-----
      \n122378 0 0 0 641 0 0 0\n\nL
      LDP Details\n-----\nLocalPort RemotePort(RemoteHost)\n-----
      \nswp1 swp3(cumulus)\n\nRouting\n-----\n Interface swp1
      is up, line protocol is up\n Link ups: 2 last: 2019/03/08 13:31:07.21\
      \n Link downs: 2 last: 2019/03/08 13:29:35.76\n PTM status: disabled\n
      vrf: default\n index 3 metric 0 mtu 1500 speed 1000\n flags: <UP,BROADCAST,RUN
      NING,MULTICAST>\n Type: Ethernet\n Hwaddr: 00:00:01:39:34:6f\n Interface Type
      Other\n Master (bridge) ifindex 8\n\n\n"
  }
}

PLAY RECAP *****
mastery-switch1 : ok=4 changed=0 unreachable=0 failed=0

~/src/mastery>

```