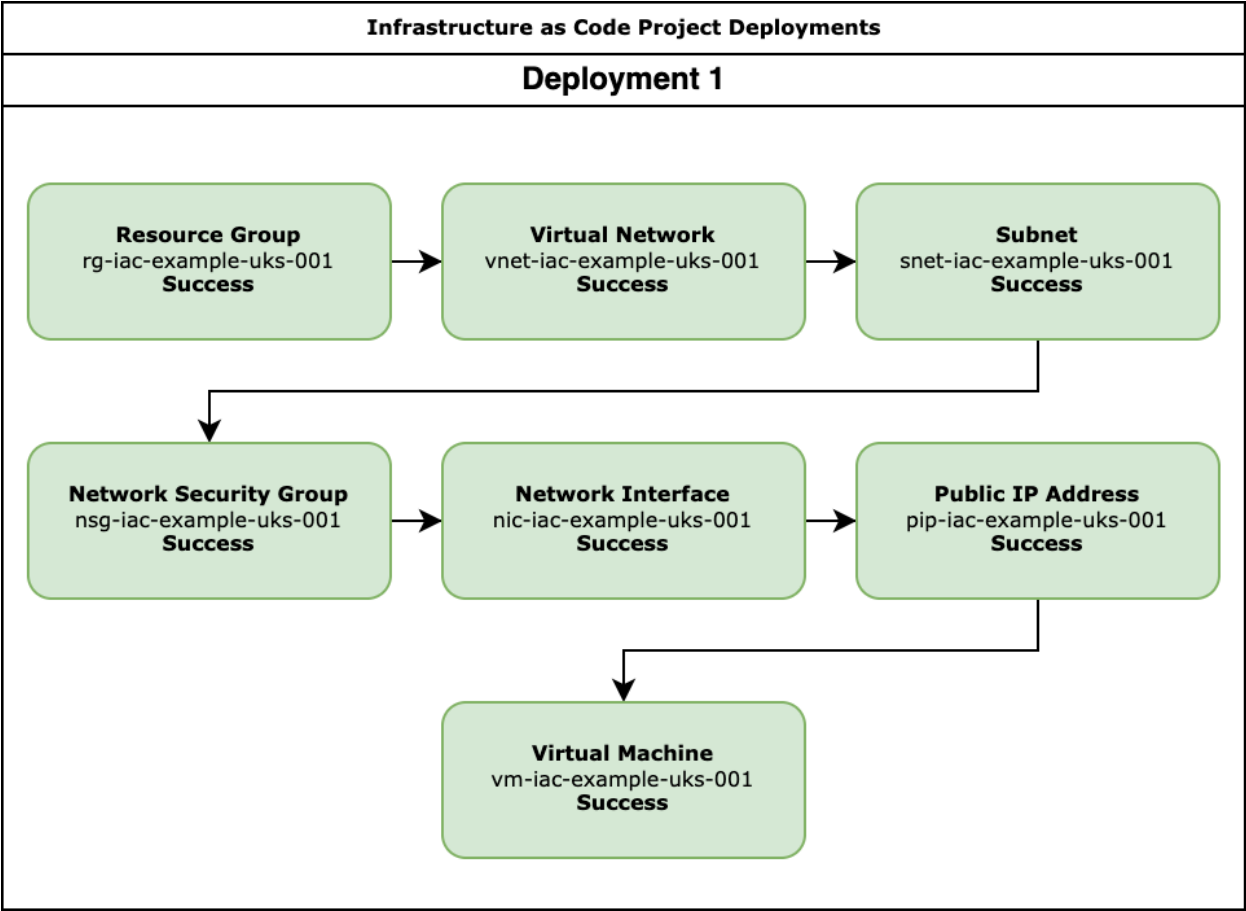


Chapter 1: Choosing the Right Approach – Declarative or Imperative



Infrastructure as Code Project Deployments		
Deployment 1	Deployment 2	Deployment 3
<div>Virtual Network vnet-iac-example-uks-001 Failed</div>	<div>Virtual Network vnet-iac-example-uks-001 Success</div>	<div>Virtual Network vnet-iac-example-uks-001 No Change</div>
<div>Resource Group rg-iac-example-uks-001 Success</div>	<div>Resource Group rg-iac-example-uks-001 No Change</div>	<div>Resource Group rg-iac-example-uks-001 No Change</div>
<div>Network Security Group nsg-iac-example-uks-001 Failed</div>	<div>Network Security Group nsg-iac-example-uks-001 Failed</div>	<div>Network Security Group nsg-iac-example-uks-001 Success</div>
<div>Subnet snet-iac-example-uks-001 Failed</div>	<div>Subnet snet-iac-example-uks-001 Success</div>	<div>Subnet snet-iac-example-uks-001 No Change</div>
<div>Public IP Address pip-iac-example-uks-001 Failed</div>	<div>Public IP Address pip-iac-example-uks-001 Failed</div>	<div>Public IP Address pip-iac-example-uks-001 Failed</div>
<div>Virtual Machine vm-iac-example-uks-001 Failed</div>	<div>Virtual Machine vm-iac-example-uks-001 Failed</div>	<div>Virtual Machine vm-iac-example-uks-001 Failed</div>
<div>Network Interface nic-iac-example-uks-001 Failed</div>	<div>Network Interface nic-iac-example-uks-001 Success</div>	<div>Network Interface nic-iac-example-uks-001 No Change</div>



Chapter 2: Ansible and Terraform Beyond the Documentation

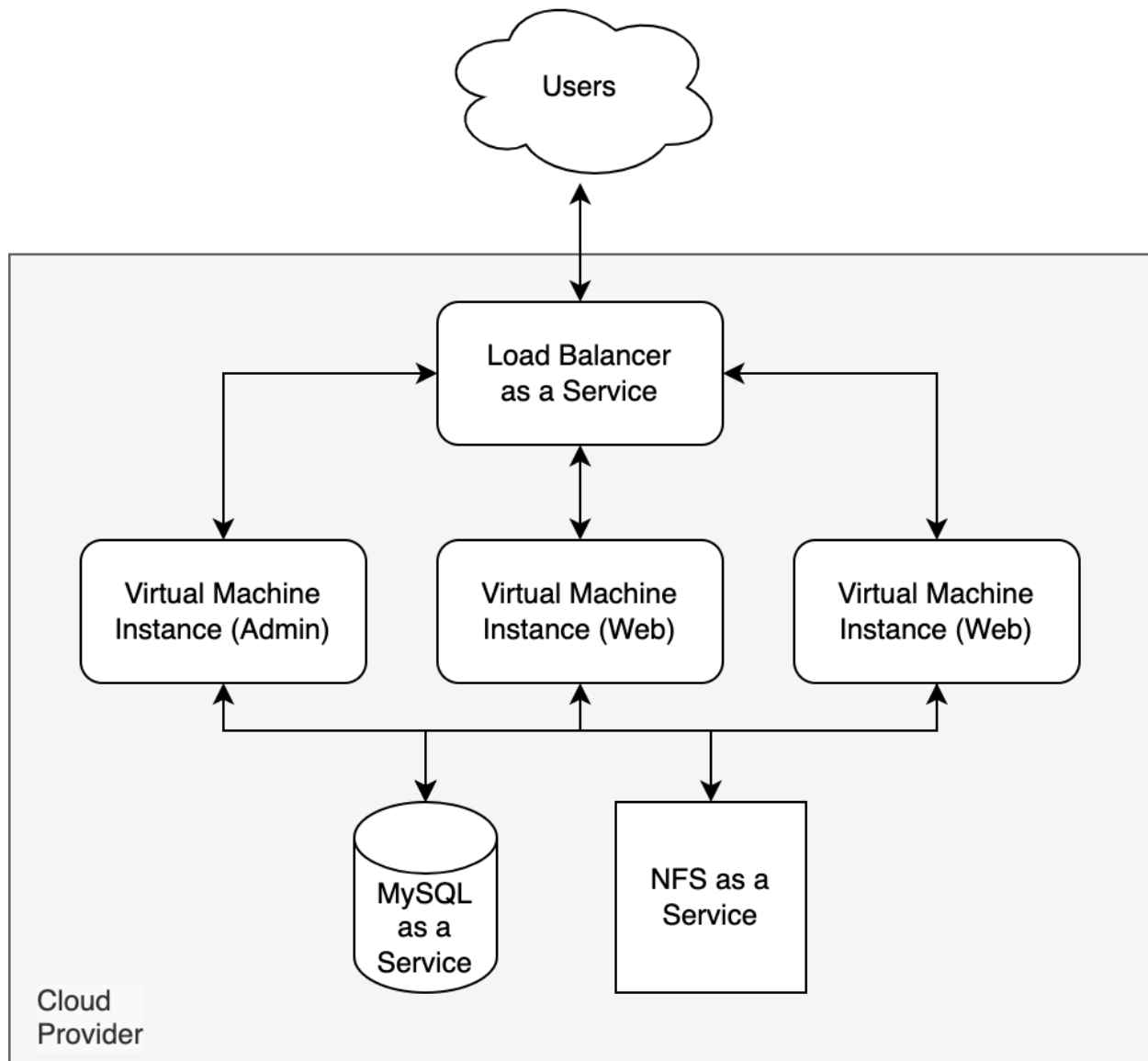
The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the Microsoft Azure logo, a search bar, and various utility icons. The main content area is titled 'rg-example-uks' and is categorized as a 'Resource group'. On the left, there is a sidebar with navigation options: Overview, Activity log, Access control (IAM), Tags, Resource visualizer, Events, Settings, Deployments, Security, Policies, Properties, Locks, Cost Management, and Cost analysis. The 'Overview' tab is selected, displaying 'Essentials' information such as Subscription (Russ MPN Subscription), Subscription ID, and Location (UK South). Below this, the 'Resources' section shows a table with one resource: 'saiaacforbeg2022111534', which is a 'Storage account' located in 'UK South'. The table includes filters for Type and Location, and a 'Show hidden types' checkbox.

The screenshot shows a code editor window titled 'terraform.tf — example01'. The editor displays a Terraform configuration file with the following content:

```
1 terraform {
2   required_version = ">=1.0"
3
4   required_providers {
5     azurerm = {
6       source = "hashicorp/azurerm"
7       version = "~>3.0"
8     }
9   }
10 }
11
12 provider "azurerm" {
13   features {}
14 }
15
16 resource "azurerm_resource_group" "example" {
17   name     = "rg-example-uks"
18   location = "UK South"
19 }
20
21 resource "azurerm_storage_account" "example" {
22   name                        = "saiaacforbeg2022111534"
23   resource_group_name        = azurerm_resource_group.example.name
24   location                   = azurerm_resource_group.example.location
25   account_tier               = "Standard"
26   account_replication_type   = "GRS"
27 }
28
```

The editor interface includes an 'EXPLORER' sidebar on the left showing the file structure of 'EXAMPLE01' with files like '.terraform', '.terraform.lock.hcl', 'terraform.tf', 'terraform.tfstate', and 'terraform.tfstate.backup'. The bottom status bar shows 'Ln 28, Col 1', 'Spaces: 2', 'UTF-8', 'LF', 'Terraform', and 'Formatting: ✓'.

Chapter 3: Planning the Deployment

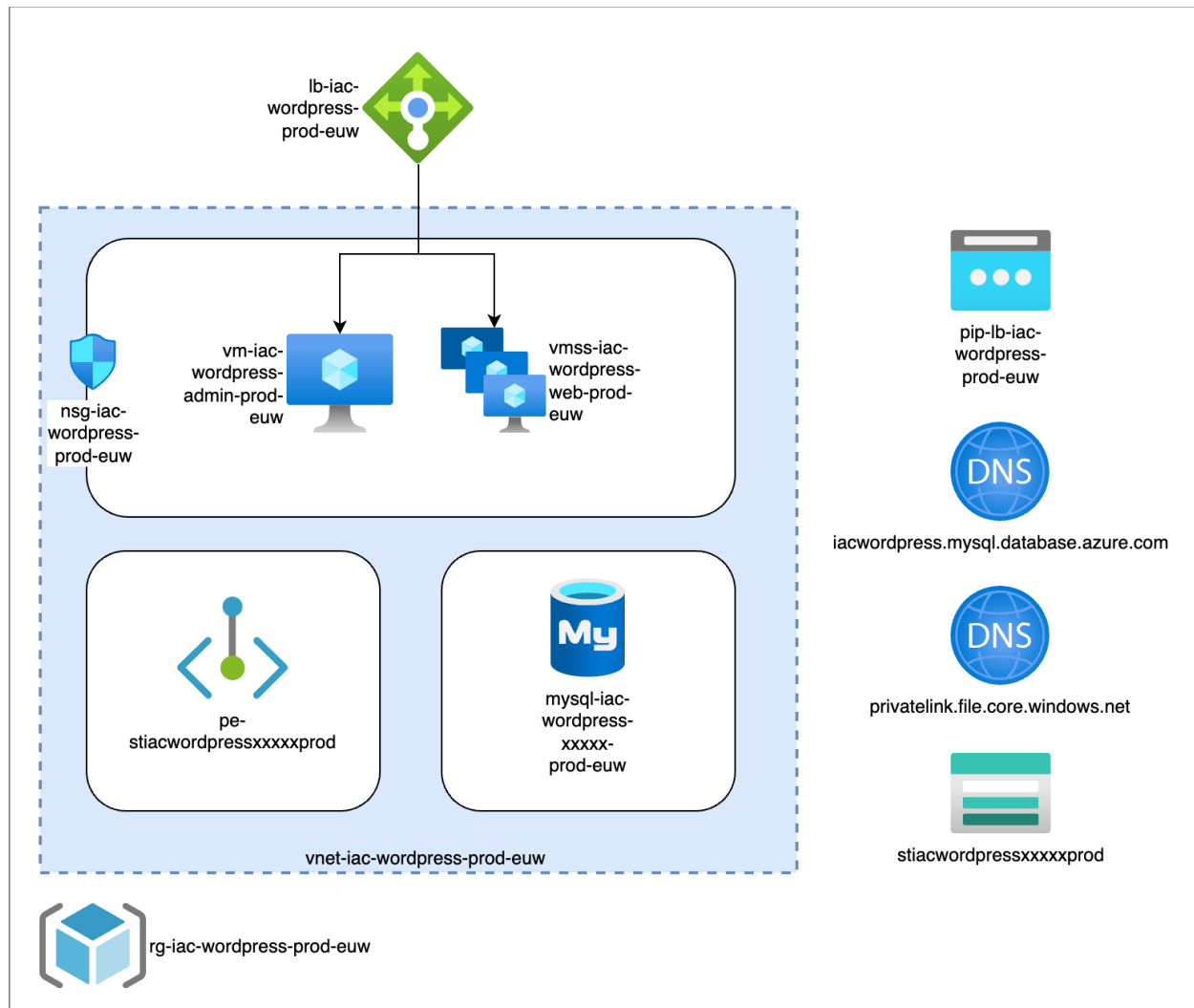




WORDPRESS

ubuntu[®]

Chapter 4: Deploying to Microsoft Azure



var.name module.azure_region.location_short

rg-iac-wordpress-prod-euw

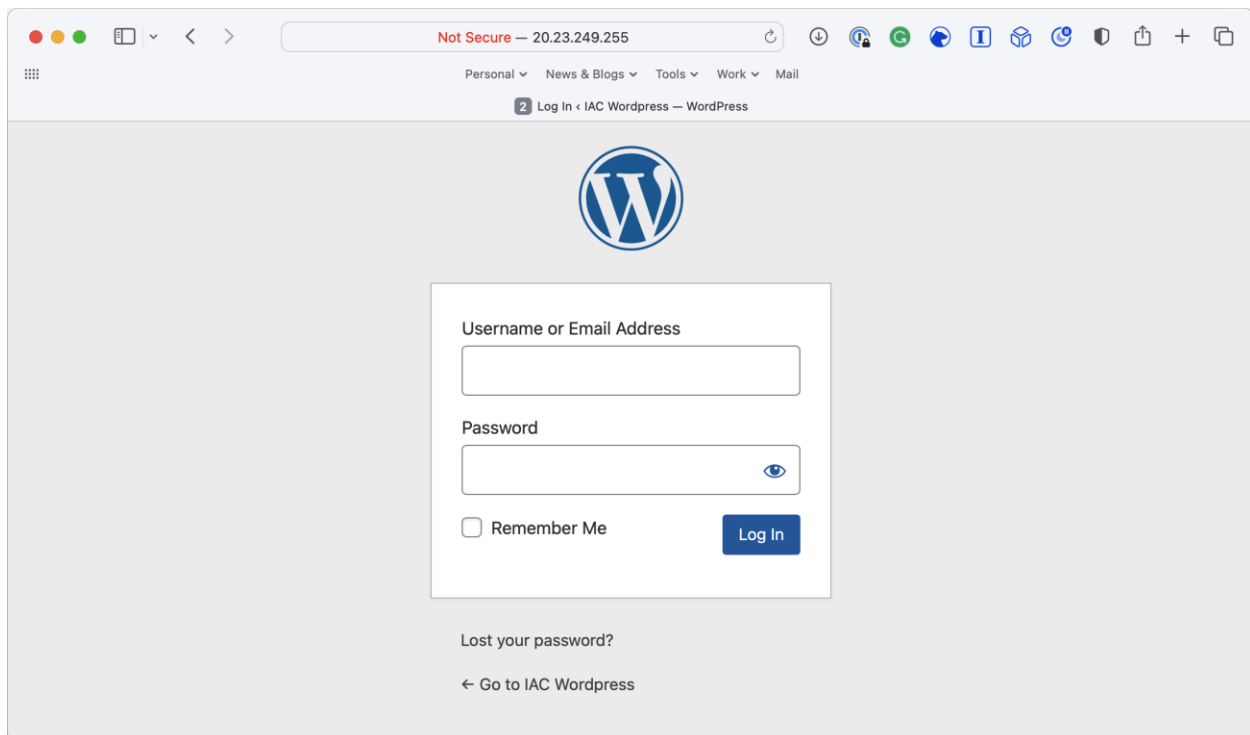
resource_type var.environment_type

```
russ@Russs-Laptop: ~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/chapter04/terraform-azure
azurerm_linux_virtual_machine_scale_set.web: Still creating... [10s elapsed]
azurerm_linux_virtual_machine_scale_set.web: Still creating... [20s elapsed]
azurerm_linux_virtual_machine_scale_set.web: Still creating... [30s elapsed]
azurerm_linux_virtual_machine_scale_set.web: Still creating... [40s elapsed]
azurerm_linux_virtual_machine_scale_set.web: Still creating... [50s elapsed]
azurerm_linux_virtual_machine_scale_set.web: Still creating... [1m0s elapsed]
azurerm_linux_virtual_machine_scale_set.web: Still creating... [1m10s elapsed]
azurerm_linux_virtual_machine_scale_set.web: Creation complete after 1m12s [id=/subscriptions/ce7aa0b9-3545-4104-99dc-d4d082339a05/resourceGroups/rg-iac-wordpress-prod-euw/providers/Microsoft.Compute/virtualMachineScaleSets/vmss-iac-wordpress-web-prod-euw]

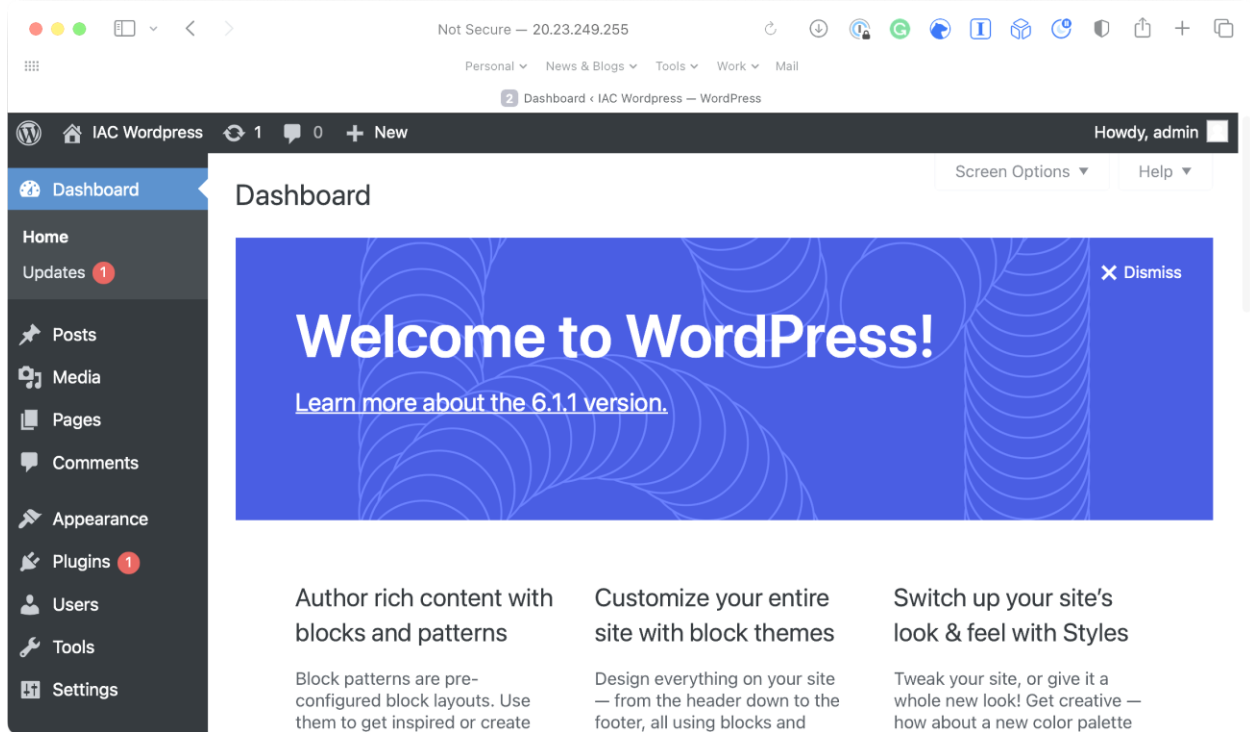
Apply complete! Resources: 49 added, 0 changed, 0 destroyed.

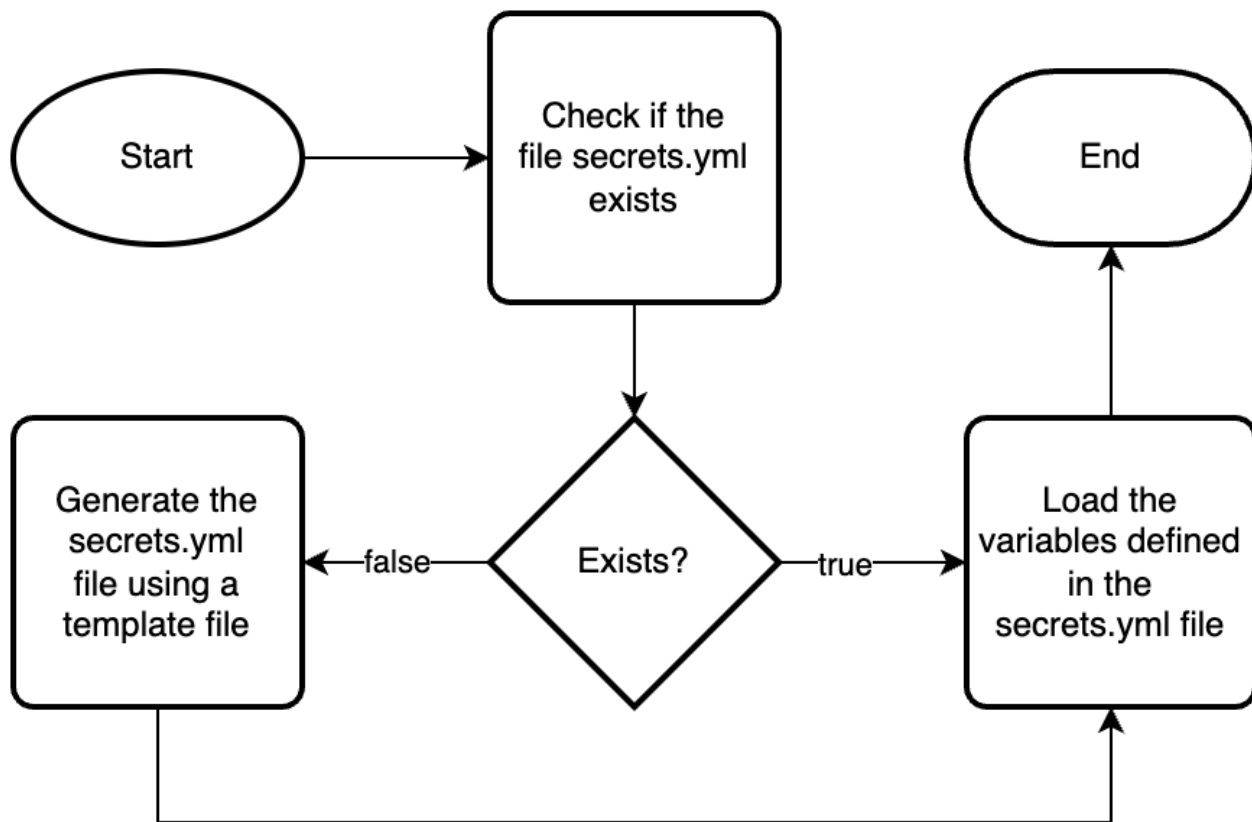
Outputs:

vm_password = <sensitive>
wp_password = <sensitive>
wp_url = "Wordpress URL: http://20.23.249.255/"
~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/chapter04/terraform-azure
```




```
russ@Russ-Laptop: ~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/chapter04/terraform-azure
s/Code/chapter04/terraform-azure → main terraform output -json
{
  "vm_password": {
    "sensitive": true,
    "type": "string",
    "value": "Virtual Machine Password: wKMWpKPT\u0026!Xx#EIL"
  },
  "wp_password": {
    "sensitive": true,
    "type": "string",
    "value": "Wordpress Admin Password: _k88AG95tBjGRYZX"
  },
  "wp_url": {
    "sensitive": false,
    "type": "string",
    "value": "Wordpress URL: http://20.23.249.255/"
  }
}
```





```

russ@Russ-Laptop:~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/chapter04/ansi...
changed: [localhost]

TASK [roles/azure-vm-admin : Create the admin virtual machine] *****
changed: [localhost]

TASK [roles/azure-vmss-web : Generate temp web cloud-init file] *****
changed: [localhost]

TASK [roles/azure-vmss-web : Create the web cloud-init file from a template file] *****
changed: [localhost]

TASK [roles/azure-vmss-web : Create VMSS with an image that requires plan information] *****
[WARNING]: Module did not set no_log for ssh_password_enabled
changed: [localhost]

TASK [roles/output : Output details on the deployment] *****
ok: [localhost] => {
  "msg": [
    "Virtual Machine Passowrd: gNNnx@eIO-bES6wsDRER",
    "Wordpress Admin Password: CV2YTCxkUImxHpU*-i0@",
    "Wordpress URL: http://52.166.172.87/"
  ]
}

PLAY RECAP *****
localhost : ok=48  changed=30  unreachable=0  failed=0  skipped=0  rescued=
0  ignored=0

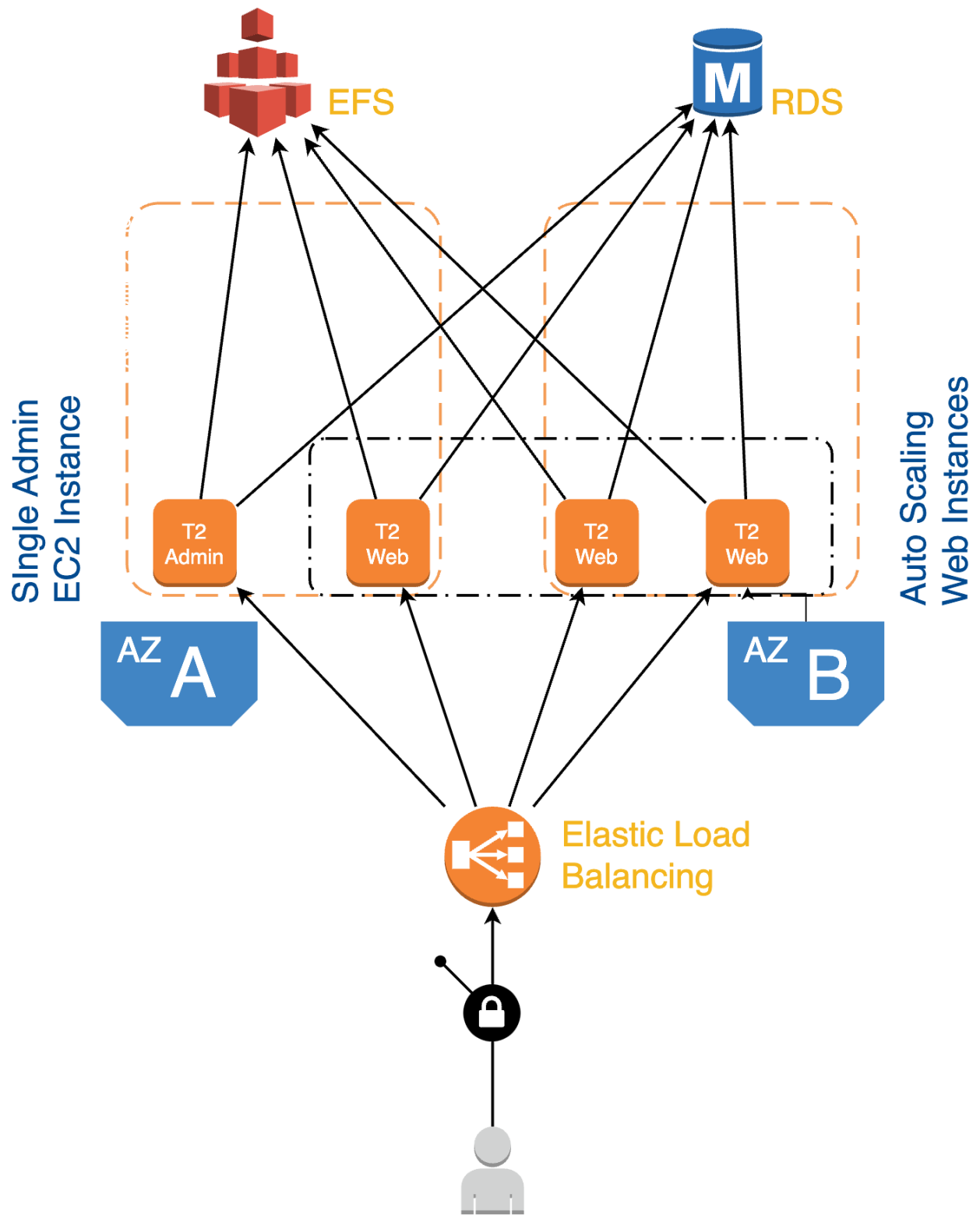
~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginner
s/Code/chapter04/ansible-azure > main

```

Chapter 5: Deploying to Amazon Web Services

```
aws --version
aws-cli/2.9.17 Python/3.11.1 Darwin/22.3.0 source/arm64 prompt/off
```

```
aws ec2 describe-regions
{
  "Regions": [
    {
      "Endpoint": "ec2.ap-south-1.amazonaws.com",
      "RegionName": "ap-south-1",
      "OptInStatus": "opt-in-not-required"
    },
    {
      "Endpoint": "ec2.eu-north-1.amazonaws.com",
      "RegionName": "eu-north-1",
      "OptInStatus": "opt-in-not-required"
    },
    {
      "Endpoint": "ec2.eu-west-3.amazonaws.com",
```



```

russ.mckendrick@Russ-MBP:~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/Chapter05/ansible-aws
changed: [localhost]

TASK [roles/aws-asg-web : Create launch config] *****
*****
changed: [localhost]

TASK [roles/aws-asg-web : Create the Auto Scaling Group] *****
*****
changed: [localhost]

TASK [roles/output : Output details on the deployment] *****
*****
ok: [localhost] => {
  "msg": [
    "Wordpress Admin Username: admin",
    "Wordpress Admin Password: &Yn-txWSiYoFThGfflAg",
    "Wordpress URL: http://iac-wordpress-prod-lb-1367747359.us-east-1.elb.amazonaws.com/"
  ]
}

PLAY RECAP *****
localhost                : ok=31  changed=23  unreachable=0  failed=0  skipped=1  rescued=0  ignored=0

```

```

russ.mckendrick@Russ-MBP:~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/Chapter05/ansible-aws
TASK [roles/aws-vm-admin : create the admin ec2 instance] *****
*****
changed: [localhost]

TASK [roles/aws-vm-admin : Get information about the admin EC2 instance to see if its running] *****
*****
FAILED - RETRYING: [localhost]: Get information about the admin EC2 instance to see if its running (50 retries left).
FAILED - RETRYING: [localhost]: Get information about the admin EC2 instance to see if its running (49 retries left).
FAILED - RETRYING: [localhost]: Get information about the admin EC2 instance to see if its running (48 retries left).
FAILED - RETRYING: [localhost]: Get information about the admin EC2 instance to see if its running (47 retries left).
ok: [localhost]

TASK [roles/aws-vm-admin : Update the ELB target group] *****
*****
changed: [localhost]

```

```

russ.mckendrick@Russ-MBP:~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/Chapter05/ansible-aws
TASK [Delete the Subnets] *****
changed: [localhost] => (item=10.0.0.0/27)
changed: [localhost] => (item=10.0.0.32/27)
changed: [localhost] => (item=10.0.0.64/27)
changed: [localhost] => (item=10.0.0.96/27)

TASK [Delete the VPC] *****
changed: [localhost]

PLAY RECAP *****
localhost                : ok=19  changed=13  unreachable=0  failed=0  skipped=0  rescued=0  ignored=0

~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/Chapter05/ans
sible-aws > r main

```

```

russ.mckendrick@Russ-MBP:~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/Chapter05/ansible-aws
TASK [Delete the security groups] *****
changed: [localhost] => (item=iac-wordpress-prod-efs-security-group)
changed: [localhost] => (item=iac-wordpress-prod-rds-security-group)
FAILED - RETRYING: [localhost]: Delete the security groups (25 retries left).
changed: [localhost] => (item=iac-wordpress-prod-web-security-group)

TASK [Get information about the VPC] *****
ok: [localhost]

```

```
russ.mckendrick@Russs-MBP:~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/Chapter05/ansible-aws 361

TASK [Delete the Route Table] *****
skipping: [localhost] => (item={'associations': [{'main': True, 'route_table_association_id': 'rtbassoc-0bc17a8d87a323951', 'route_table_id': 'rtb-0c26792e7d983cef4', 'association_state': {'state': 'associated'}, 'id': 'rtbassoc-0bc17a8d87a323951'}], 'propagating_vgws': [], 'route_table_id': 'rtb-0c26792e7d983cef4', 'routes': [{'destination_cidr_block': '10.0.0.0/24', 'gateway_id': 'local', 'origin': 'CreateRouteTable', 'state': 'active', 'instance_id': None, 'network_interface_id': None, 'interface_id': None}], 'vpc_id': 'vpc-0ee18b6fddd2f9436', 'owner_id': '687011238589', 'tags': {}, 'id': 'rtb-0c26792e7d983cef4'})
changed: [localhost] => (item={'associations': [{'main': False, 'route_table_association_id': 'rtbassoc-0794b6f18e1df1e73', 'route_table_id': 'rtb-001ae4e964bb1a82a', 'subnet_id': 'subnet-0403fe4591cebb74c', 'association_state': {'state': 'associated'}, 'id': 'rtbassoc-0794b6f18e1df1e73'}, {'main': False, 'route_table_association_id': 'rtbassoc-0b71b875ee0a83d56', 'route_table_id': 'rtb-001ae4e964bb1a82a', 'subnet_id': 'subnet-07ee8537d214f2f93', 'association_state': {'state': 'associated'}, 'id': 'rtbassoc-0b71b875ee0a83d56'}], 'propagating_vgws': [], 'route_table_id': 'rtb-001ae4e964bb1a82a', 'routes': [{'destination_cidr_block': '10.0.0.0/24', 'gateway_id': 'local', 'origin': 'CreateRouteTable', 'state': 'active', 'instance_id': None, 'network_interface_id': None, 'interface_id': None}, {'destination_cidr_block': '0.0.0.0/0', 'gateway_id': 'igw-044f0d543160f3efe', 'origin': 'CreateRoute', 'state': 'active', 'instance_id': None, 'network_interface_id': None, 'interface_id': None}, {'destination_ip_v6_cidr_block': '::/0', 'gateway_id': 'igw-044f0d543160f3efe', 'origin': 'CreateRoute', 'state': 'active', 'destination_cidr_block': None, 'instance_id': None, 'network_interface_id': None, 'interface_id': None}], 'vpc_id': 'vpc-0ee18b6fddd2f9436', 'owner_id': '687011238589', 'tags': {'Environment': 'prod', 'Deployed_by': 'Ansible', 'Name': 'iac-wordpress-prod-route-table', 'Project': 'iac-wordpress', 'Description': 'Resource managed by Ansible'}, 'id': 'rtb-001ae4e964bb1a82a'})
```

```
russ.mckendrick@Russs-MBP:~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/Chapter05/terraform-aws 361

aws_instance.admin: Still creating... [30s elapsed]
aws_instance.admin: Creation complete after 33s [id=i-0ee6553bb3358aa40]
aws_lb_target_group_attachment.admin: Creating...
aws_lb_target_group_attachment.admin: Creation complete after 1s [id=arn:aws:elasticloadbalancing:us-east-1:687011238589:targetgroup/iac-wordpress-test-front-end/bc666cde25425cee-20230128180057562300000004]

Apply complete! Resources: 26 added, 0 changed, 0 destroyed.

Outputs:

wp_password = <sensitive>
wp_url = "Wordpress URL: http://iac-wordpress-test-lb-1463072921.us-east-1.elb.amazonaws.com/"
wp_user = "Wordpress Admin Username: admin"

~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/Chapter05/terraform-aws main
```

Chapter 6: Building upon the Foundations

```
● ● ● russ.mckendrick@Russ-MBP:~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/Chap... 361
changed: [vm-iac-ansible-uks]

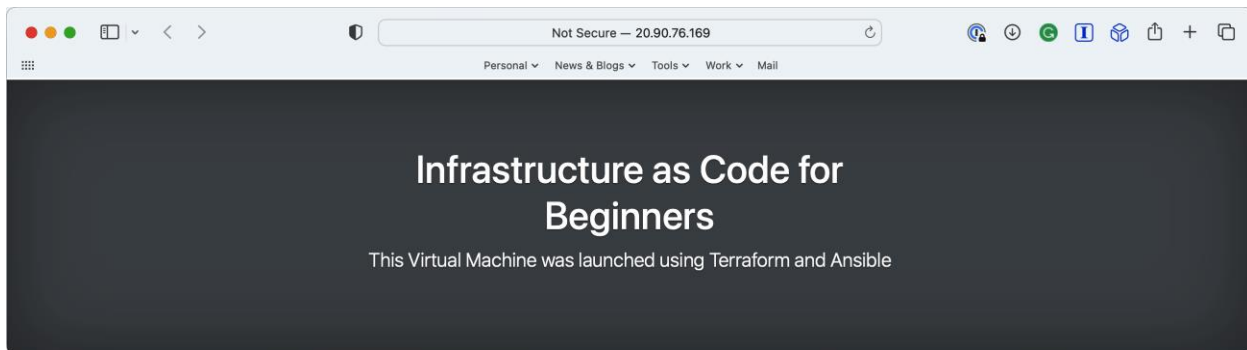
TASK [roles/application : Install packages] *****
changed: [vm-iac-ansible-uks] => (item=nginx)

TASK [roles/application : Copy the index file to the web server] *****
changed: [vm-iac-ansible-uks]

TASK [roles/application : Output details on the deployment] *****
ok: [vm-iac-ansible-uks] => {
  "msg": [
    "Application URL: http://20.90.108.92/"
  ]
}

PLAY RECAP *****
localhost                : ok=5    changed=2    unreachable=0    failed=0    skipped=1    rescued=
0    ignored=0
vm-iac-ansible-uks       : ok=6    changed=3    unreachable=0    failed=0    skipped=0    rescued=
0    ignored=0

~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/Chapter06/ansible-terraform-azure main ±
```



Chapter 7: Leveraging CI/CD in the Cloud

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General

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Collaborators

Moderation options

Code and automation

Actions

Webhooks

Environments

Codespaces

Pages

Security

Code security and analysis

Deploy keys

Secrets and variables

Actions

Codespaces

Dependabot

Actions secrets and variables

SecretsVariablesNew repository secret

Environment secretsManage environments

There are no secrets for this repository's environments.

Repository secrets

There are no secrets for this repository.

Profile picture

rusismckendrick Update

b490e8 1 minute ago 3 commits

.github/workflows	Update	1 minute ago
.gitignore	Update	2 minutes ago
README.md	Update	3 minutes ago
main.tf	Update	3 minutes ago
variables.tf	Update	3 minutes ago

README.md

Terraform GitHub Actions Example

russmckendrick / terraform-github-actions-examplePublic

Pin

Unwatch1

Fork0

Star0

<> Code

Issues

Pull requests

Actions

Projects

Wiki

Security

Insights

Settings

Actions

New workflow

All workflows

Terraform Plan/Apply

Management

Caches

All workflows

Showing runs from all workflows

Filter workflow runs

1 workflow run

EventStatusBranchActor

Update

Terraform Plan/Apply #2: Commit b4900e8 pushed by russmckendrick

main

5 minutes ago

3m 5s

russmckendrick / terraform-github-actions-examplePublic

Pin

Unwatch1

Fork0

Star0

<> Code

Issues

Pull requests

Actions

Projects

Wiki

Security

Insights

Settings

← Terraform Plan/Apply

Update #2

Re-run all jobs

Summary

Jobs

Check for Azure storage account

Terraform Plan

Terraform Apply

Run details

Usage

Workflow file

Triggered via push 7 minutes ago

Status

Total duration

Artifacts

russmckendrick pushed → b4900e8main

Success

3m 5s

1

action.yml

on: push

Check for Azure storag...1m 12s

Terraform Plan21s

Terraform Apply1m 6s

Artifacts

Produced during runtime

Name	Size
tfplan	3.71 KB

Terraform Plan summary

Terraform Plan Output

Click to expand

Job summary generated at run-time

Summary

Jobs

- ✓ Check for Azure storage account
- ✓ Terraform Plan
- ✓ Terraform Apply

Run details

- 🕒 Usage
- 📄 Workflow file

```
+ address_space = [
+   "10.0.0.0/24",
+ ]
+ dns_servers    = (known after apply)
+ guid           = (known after apply)
+ id             = (known after apply)
+ location       = "uksouth"
+ name           = "vnet-iac-github-actions-uksouth"
+ resource_group_name = "rg-iac-github-actions-uksouth"
+ subnet         = (known after apply)
+ tags           = {
+   "Name"         = "vnet-iac-github-actions-uksouth"
+   "deployed_by"  = "terraform"
+   "environment"  = "prod"
+   "project"      = "iac-github-actions"
+ }
}
```

Plan: 6 to add, 0 to change, 0 to destroy.

Job summary generated at run-time

📄 russmckendrick / terraform-github-actions-example Public

📌 Pin

👁 Unwatch 1

🍴 Fork 0

★ Star 0

<> Code 🕒 Issues 🔗 Pull requests 🎮 Actions 📁 Projects 📖 Wiki 🛡 Security 📊 Insights ⚙ Settings

← Terraform Plan/Apply

✓ Update #2

Re-run all jobs

...

Summary

Jobs

- ✓ Check for Azure storage account
- ✓ Terraform Plan
- ✓ Terraform Apply

Run details

- 🕒 Usage
- 📄 Workflow file

Terraform Apply

succeeded 9 minutes ago in 1m 6s

🔍 Search logs

🔄 ⚙

> ✓ Set up job	3s
> ✓ Checkout the code	1s
> ✓ Setup Terraform	1s
> ✓ Terraform Init	5s
> ✓ Download Terraform Plan	0s
> ✓ Terraform Apply	55s
> ✓ Post Checkout the code	0s
> ✓ Complete job	0s



tfstate

Container

...

✕

 Upload

 Change access level

 Refresh

 Delete

 Change tier

 Acquire lease

 Break lease


 View snapshots

 Create snapshot

 Give feedback

Authentication method: Access key ([Switch to Azure AD User Account](#))
Location: tfstate

☐ Show deleted blobs

 Add filter

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state	
<input type="checkbox"/>  ghact.tfstate	19/03/2023, 14:03:48	Hot (Inferred)		Block blob	8.27 KiB	Available	...

 russmckendrick / ansible-github-actions-example

Public

 Pin

 Unwatch 1

 Fork 0

 Star 0

...

[Code](#) [Issues](#) [Pull requests](#) [Actions](#) [Projects](#) [Wiki](#) [Security](#) [Insights](#) [Settings](#)

Ansible Playbook Run


 Update #1

Re-run all jobs


...


Summary

Jobs


 Run Ansible Playbook

Run details

 Usage

 Workflow file

Triggered via push 4 minutes ago

 russmckendrick pushed · cbab2b0 · main

Status

Success

Total duration


3m 17s

Artifacts




-

action.yml

on: push

 Run Ansible Playbook

3m 2s

Run Ansible Playbook summary

Ansible Playbook Output

▼ Click to expand

```
PLAY [Deploy and configure the Azure Environment] *****

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

TASK [roles/azure-rg : Create the resource group] *****
changed: [localhost]

TASK [roles/azure-virtualnetwork : Create the virtual network] *****
changed: [localhost]

TASK [roles/azure-virtualnetwork : Add the subnets] *****
changed: [localhost] => (item={'name': 'snet-vms-ansible-github-actions-prod-uks', 'subnet': '10.0.0.0/27', 'private': True, 'service_endpoints': 'Microservices'})
changed: [localhost] => (item={'name': 'snet-endpoints-ansible-github-actions-prod-uks', 'subnet': '10.0.0.32/27', 'private': True, 'service_endpoints': 'Microservices'})
skipping: [localhost] => (item={'name': 'snet-database-ansible-github-actions-prod-uks', 'subnet': '10.0.0.64/27', 'private': True, 'service_endpoints': 'Microservices'})

TASK [roles/azure-virtualnetwork : Add the subnets] *****
skipping: [localhost] => (item={'name': 'snet-vms-ansible-github-actions-prod-uks', 'subnet': '10.0.0.0/27', 'private': True, 'service_endpoints': 'Microservices'})
skipping: [localhost] => (item={'name': 'snet-endpoints-ansible-github-actions-prod-uks', 'subnet': '10.0.0.32/27', 'private': True, 'service_endpoints': 'Microservices'})
changed: [localhost] => (item={'name': 'snet-database-ansible-github-actions-prod-uks', 'subnet': '10.0.0.64/27', 'private': True, 'service_endpoints': 'Microservices'})

PLAY RECAP *****
localhost                : ok=5    changed=4    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```

Job summary generated at run-time

Chapter 8: Common Troubleshooting Tips and Best Practices

```
russ.mckendrick@x3:~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Cod...  1

~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/Chapter08/ansible-vault > ansible-playbook --vault-id @prompt site.yml
Vault password (default):
[WARNING]: No inventory was parsed, only implicit localhost is available
[WARNING]: provided hosts list is empty, only localhost is available. Note that the implicit
localhost does not match 'all'

PLAY [Ansible Vault Example] *****

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

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

~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/Chapter08/ansible-vault >
```

Chapter 9: Exploring Alternative Infrastructure as Code Tools

```
pulumi up -c Pulumi.dev.yaml

~/Library/CloudStorage/OneDrive-Personal/Documents/PAKKT/B19537_Infrastructure_as_Code_for_Beginners/Code/Chapter09/pu
lumi-yaml main ± pulumi up -c Pulumi.dev.yaml
Manage your Pulumi stacks by logging in.
Run `pulumi login --help` for alternative login options.
Enter your access token from https://app.pulumi.com/account/tokens
or hit <ENTER> to log in using your browser
```

```
pulumi up -c Pulumi.dev.yaml

We've launched your web browser to complete the login process.

Waiting for login to complete...

Welcome to Pulumi!

Pulumi helps you create, deploy, and manage infrastructure on any cloud using
your favorite language. You can get started today with Pulumi at:

https://www.pulumi.com/docs/get-started/

Tip: Resources you create with Pulumi are given unique names (a randomly
generated suffix) by default. To learn more about auto-naming or customizing resource
names see https://www.pulumi.com/docs/intro/concepts/resources/#autonaming.

Please choose a stack, or create a new one: [Use arrows to move, type to filter]
> <create a new stack>
```

```
pulumi up -c Pulumi.dev.yaml

Previewing update (dev)

View in Browser (Ctrl+O): https://app.pulumi.com/russmckendrick/pulumi-yaml/dev/previews/1243871e-dcdd-47a1-b49f-23176101012e

|   | Type                                    | Name            | Plan   |
|---|-----------------------------------------|-----------------|--------|
| + | pulumi:pulumi:Stack                     | pulumi-yaml-dev | create |
| + | └─ azure-native:resources:ResourceGroup | resourceGroup   | create |
| + | └─ azure-native:storage:StorageAccount  | sa              | create |

Outputs:
  primaryStorageKey: output<string>

Resources:
  + 3 to create

Do you want to perform this update? [Use arrows to move, type to filter]
  yes
> no
  details
```

```
russ.mckendrick@x3:~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/B19537_Infrastructure_as_Code_for_Beginners/Code/Chapter09/pulumi-yaml
```

```
Do you want to perform this update? yes
Updating (dev)

View in Browser (Ctrl+O): https://app.pulumi.com/russmckendrick/pulumi-yaml/dev/updates/1
```

Type	Name	Status
+ pulumi:pulumi:Stack	pulumiyaml-dev	created (24s)
+ azure-native:resources:ResourceGroup	resourcegroup	created (0.53s)
+ azure-native:storage:StorageAccount	sa	created (20s)

```
Outputs:
```


```
primaryStorageKey: "XXXXXXXXXX-XXXXXXX-XXXXX-XXXXX-XXXXX"
```

```
Resources:
```

```
+ 3 created
```

```
Duration: 25s
```

⋮

 Pulumi

Stacks / pulumi-yaml / dev

Email Notifications

Off

Status: Update #1 succeeded 4 minutes ago

Overview

README

Activity

Resources 4

Settings

Update #1 succeeded in a few seconds

rusmckendrick updated 4 minutes ago

Update

<> 9ada3c1

main

Changes

Timeline

Configuration

Metadata

Summary

Diff

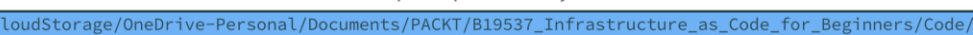
Diagnostic

Changes:

Type	Name	Status	Info
+ pulumi:pulumi:Stack	pulumi-yaml-dev	created	
+ azure-native:resources:ResourceGroup	resourceGroup	created	
+ azure-native:storage:StorageAccount	sa	created	

Resources:
+ created 3

Duration: 24s



The terminal shows the execution of the `pulumi up` command. The output indicates that the preview is for the `main` branch. The preview shows that the `pulumi:python` stack will be updated. The preview also shows the details of the update, including the type of update (in-place), the name of the stack, and the plan. The plan shows that the stack will be updated with the following changes: installing collected packages: arpeggio, six, semver, pyyaml, pr.

```
pulumi up -c Pulumi.dev.yaml

~/Library/CloudStorage/OneDrive-Personal/Documents/PACKT/BI9537_Infrastructure_as_Code_for_Beginners/Code/Chapter09/pul
lumi-python ➤ main ➤ pulumi up -c Pulumi.dev.yaml
Previewing update (dev)

View in Browser (Ctrl+O): https://app.pulumi.com/russmckendrick/pulumi-python/dev/previews/3a31e509-4fbc-49d8-8479-c5bd
b031df19

Type      Name      Plan      Info
pulumi:python:Stack  pulumi-python-dev  Installing collected packages: arpeggio, six, semver, pyyaml, pr
```

```
pulumi up -c Pulumi.dev.yaml

lumi-python main
Previewing update (dev)

View in Browser (Ctrl+O): https://app.pulumi.com/russmckendrick/pulumi-python/dev/previews/3a31e509-4fbc-49d8-8479-c5bd
b031df19

Type                                Name                                Plan
+ pulumi:pulumi:Stack                pulumi-python-dev                  create
+   └─ azure-native:resources:ResourceGroup resource_group                      create
+   └─ azure-native:storage:StorageAccount sa                                create

Outputs:
  primary_storage_key: output<string>

Resources:
  + 3 to create

Do you want to perform this update? [Use arrows to move, type to filter]
yes
> no
details
```

CloudFormation > Stacks > Create stack

Step 1
Create stack

Step 2
Specify stack details

Step 3
Configure stack options

Step 4
Review

Create stack

Prerequisite - Prepare template

Prepare template
Every stack is based on a template. A template is a JSON or YAML file that contains configuration information about the AWS resources you want to include in the stack.

☒ Template is ready

☐ Use a sample template

☐ Create template in Designer

Specify template

A template is a JSON or YAML file that describes your stack's resources and properties.

Template source
Selecting a template generates an Amazon S3 URL where it will be stored.

☐ Amazon S3 URL

☒ Upload a template file

Upload a template file

cftemplate.yaml

JSON or YAML formatted file

S3 URL: https://s3.us-east-1.amazonaws.com/cf-templates-eywxo9sm5wfi-us-east-1/2023-04-04T153048.070Zcur-cftemplate.yaml

Cancel

Next

Step 1

[Create stack](#)

Step 2

Specify stack details

Step 3

[Configure stack options](#)

Step 4

[Review iaccloudform](#)

Specify stack details

Stack name

Stack name

iaccloudform

Stack name can include letters (A-Z and a-z), numbers (0-9), and dashes (-).

Parameters

Parameters are defined in your template and allow you to input custom values when you create or update a stack.

BucketName

iac230404

[Cancel](#)[Previous](#)[Next](#)

Step 1

[Create stack](#)

Step 2

[Specify stack details](#)

Step 3

Configure stack options

Step 4

[Review iaccloudform](#)

Configure stack options

Tags

You can specify tags (key-value pairs) to apply to resources in your stack. You can add up to 50 unique tags for each stack.

No tags associated with the stack.

[Add new tag](#)

You can add 50 more tag(s)

Permissions

IAM role - optional

Choose the IAM role for CloudFormation to use for all operations performed on the stack.

IAM role name ▼

Sample-role-name ▼

[Remove](#)

Stack failure options

Behavior on provisioning failure

Specify the roll back behavior for a stack failure. [Learn more](#) [🔗](#)

☒ Roll back all stack resources

Roll back the stack to the last known stable state.

☐ Preserve successfully provisioned resources

Preserves the state of successfully provisioned resources, while rolling back failed resources to the last known stable state. Resources without a last known stable state will be deleted upon the next stack operation.

Delete

Update

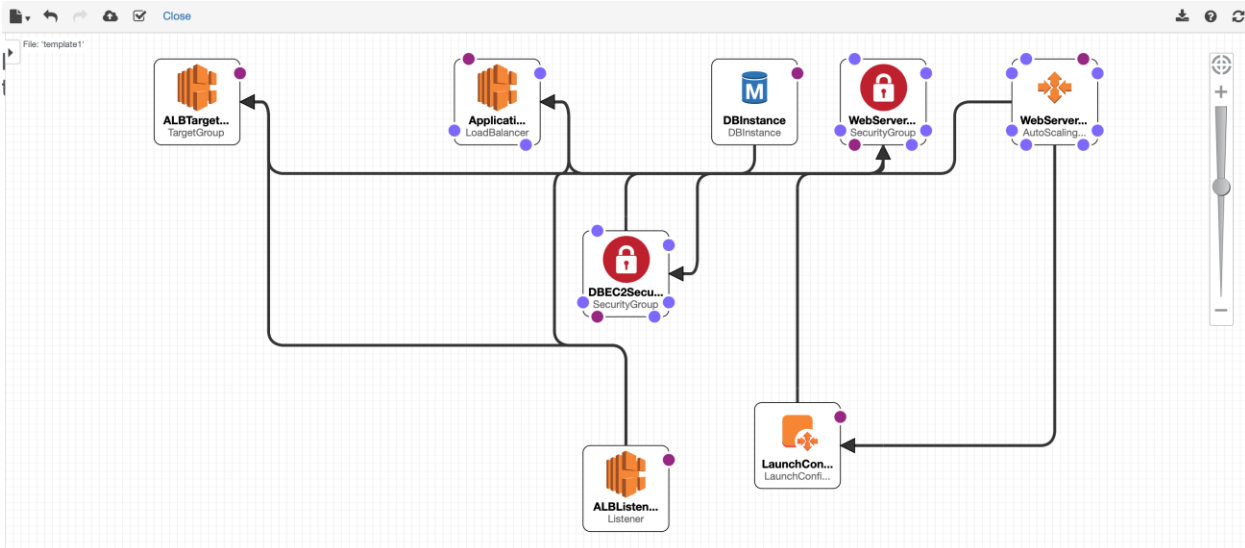
Stack actions ▼

Create stack ▼

Stack info **Events** Resources Outputs Parameters Template Change sets

 Search events

Timestamp	Logical ID	Status	Status reason
2023-04-04 16:43:37 UTC+0100	iaccloudform	✔ CREATE_COMPLETE	-
2023-04-04 16:43:36 UTC+0100	ExampleBucket	✔ CREATE_COMPLETE	-
2023-04-04 16:43:15 UTC+0100	ExampleBucket	④ CREATE_IN_PROGRESS	Resource creation Initiated
2023-04-04 16:43:14 UTC+0100	ExampleBucket	④ CREATE_IN_PROGRESS	-
2023-04-04 16:43:11 UTC+0100	iaccloudform	④ CREATE_IN_PROGRESS	User Initiated



```
template1
1 AWS::TemplateFormationVersion: 2018-09-09
2 Description: >
3 AWS CloudFormation Sample Template WordPress_Multi_Az: WordPress is web
4 software you can use to create a beautiful website or blog. This template
5 installs a highly-available, scalable WordPress deployment using a multi-az
6 Amazon RDS database instance for storage. It demonstrates using the AWS
7 CloudFormation bootstrap scripts to deploy WordPress. **WARNING** This
8 template creates an Amazon EC2 instance, an Application Load Balancer and an
9 Amazon RDS database instance. You will be billed for the AWS resources used if
10 you create a stack from this template.
11 Parameters:
12 VpcId:
13 Type: 'AWS::EC2::VPC::Id'
14 Description: VpcId of your existing Virtual Private Cloud (VPC)
15 ConstraintDescription: must be the VPC Id of an existing Virtual Private Cloud.
16 Subnets:
17 Type: 'List<AWS::EC2::Subnet::Id>'
```

Choose template language: ☐ JSON ☒ YAML ?

