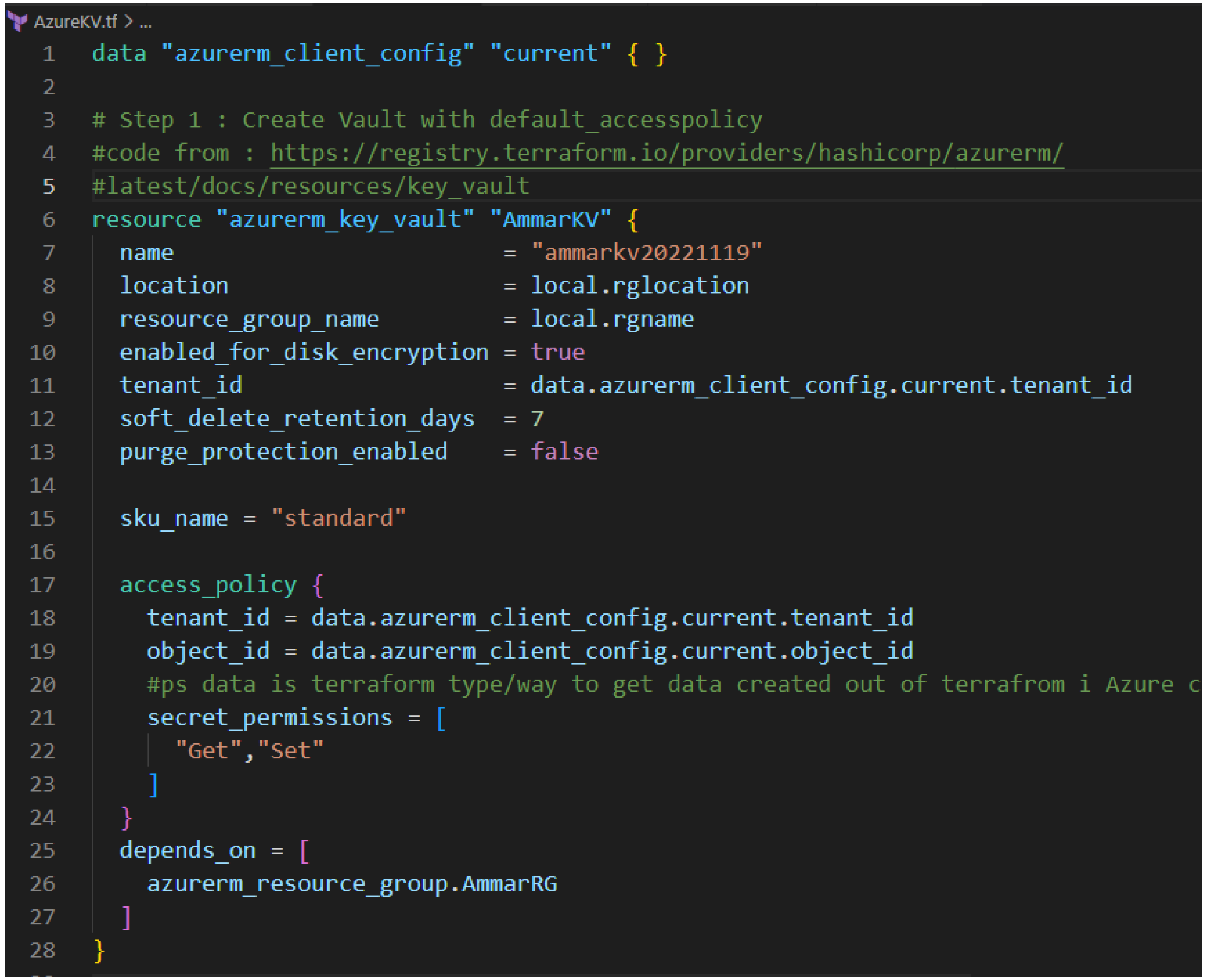
Lab : Terraform – Azure Vault- create Vault

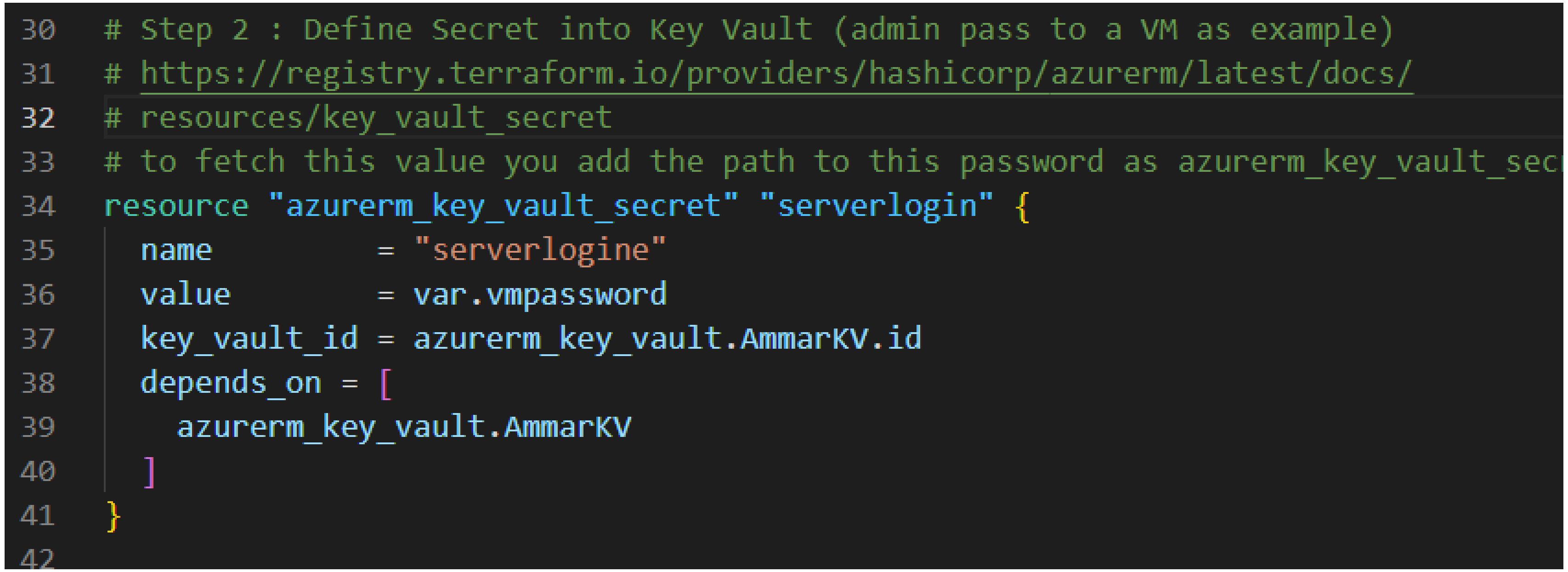
Create your Azure vault.
Add secret_permission as Set and GET only
Add key vault secret Vmserver password



```
data "azurerm_client_config" "current" { }

# Step 1 : Create Vault with default_accesspolicy
#code from : https://registry.terraform.io/providers/hashicorp/azurerm/
#latest/docs/resources/key_vault
resource "azurerm_key_vault" "AmmarKV" {
  name                        = "ammarkv20221119"
  location                    = local.rglocation
  resource_group_name         = local.rgname
  enabled_for_disk_encryption = true
  tenant_id                   = data.azurerm_client_config.current.tenant_id
  soft_delete_retention_days  = 7
  purge_protection_enabled    = false

  sku_name = "standard"

  access_policy {
    tenant_id = data.azurerm_client_config.current.tenant_id
    object_id = data.azurerm_client_config.current.object_id
    #ps data is terraform type/way to get data created out of terrafrom i Azure c
    secret_permissions = [
      "Get","Set"
    ]
  }
  depends_on = [
    azurerm_resource_group.AmmarRG
  ]
}
```

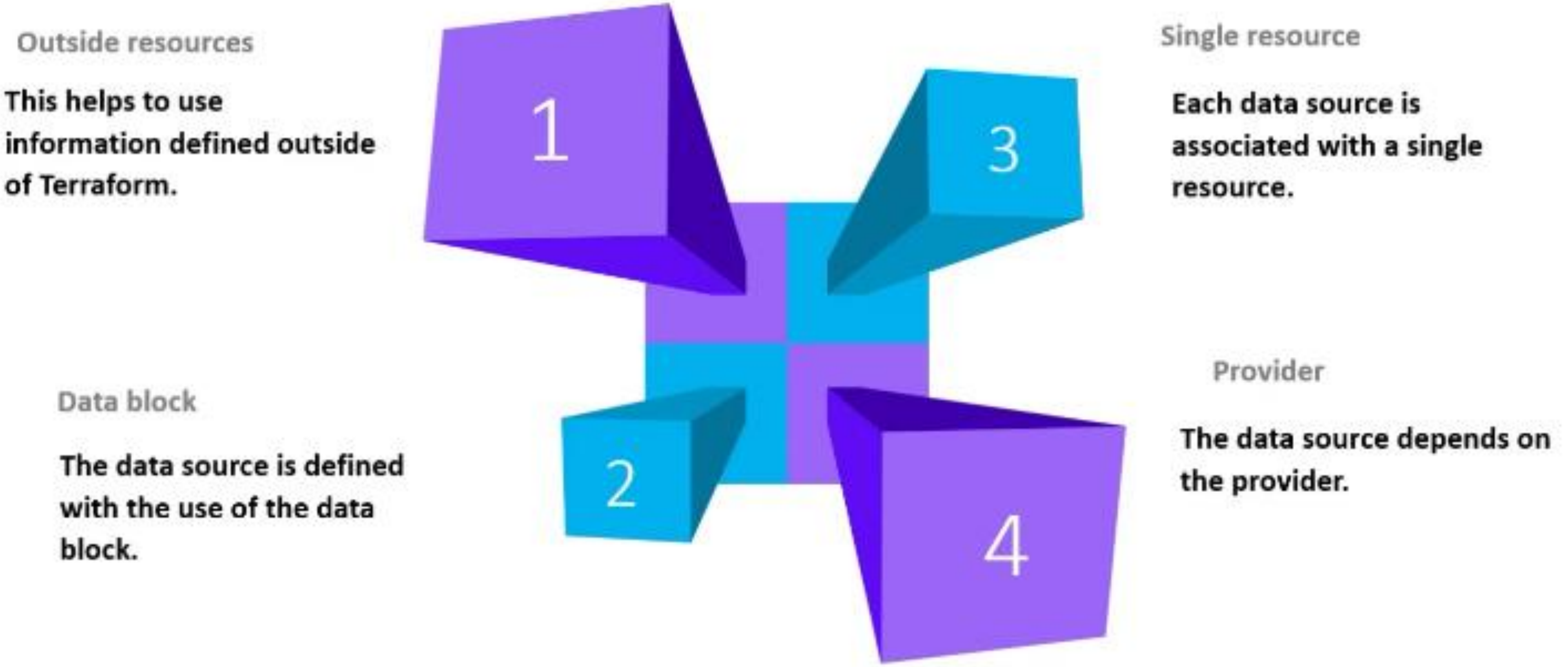
Lab : Terraform – Azure Vault- create Vault

Create your Azure vault.
Add secret_permission as Set and GET only
Add key vault secret Vmserver password



```
# Step 2 : Define Secret into Key Vault (admin pass to a VM as example)
# https://registry.terraform.io/providers/hashicorp/azurerm/latest/docs/
# resources/key_vault_secret
# to fetch this value you add the path to this password as azurerm_key_vault_sec
resource "azurerm_key_vault_secret" "serverlogin" {
  name         = "serverlogine"
  value        = var.vmpassword
  key_vault_id = azurerm_key_vault.AmmarKV.id
  depends_on = [
    azurerm_key_vault.AmmarKV
  ]
}
```

Lab : Terraform – Data Source



Outside resources

This helps to use information defined outside of Terraform.

Data block

The data source is defined with the use of the data block.

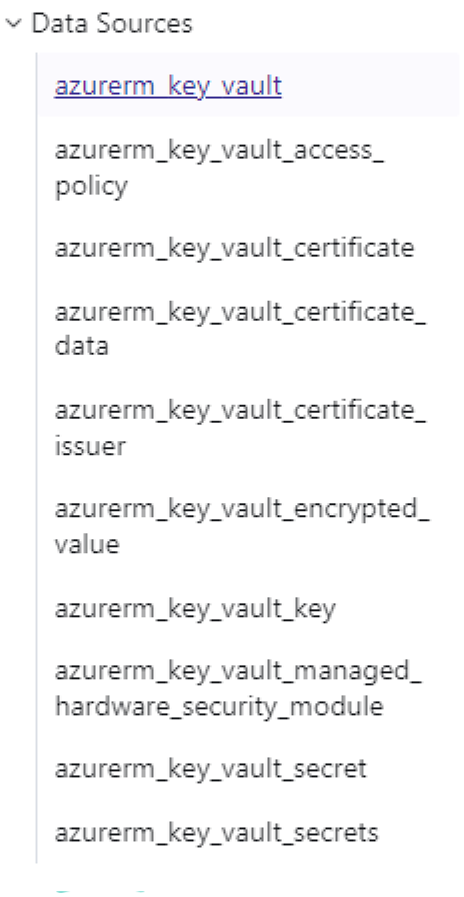
Single resource

Each data source is associated with a single resource.

Provider

The data source depends on the provider.

Lab : Terraform – Data Source - example



Data Sources

azurerm_key_vault

azurerm_key_vault_access_policy

azurerm_key_vault_certificate

azurerm_key_vault_certificate_data

azurerm_key_vault_certificate_issuer

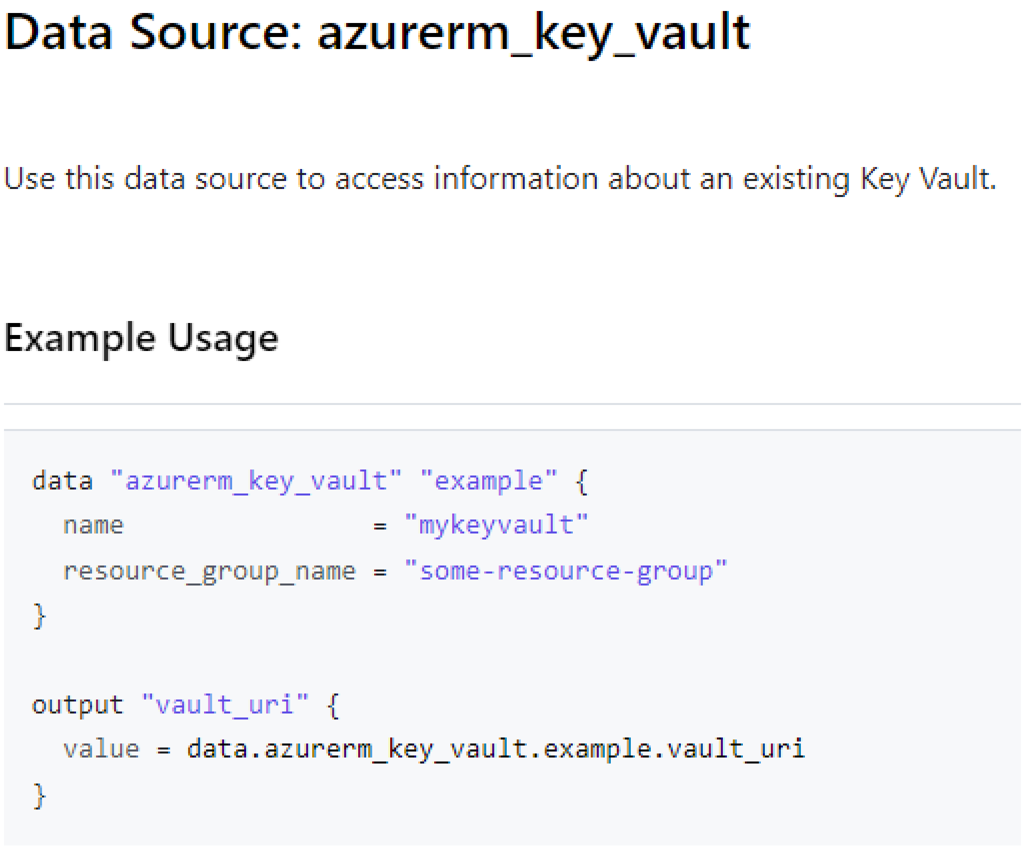
azurerm_key_vault_encrypted_value

azurerm_key_vault_key

azurerm_key_vault_managed_hardware_security_module

azurerm_key_vault_secret

azurerm_key_vault_secrets



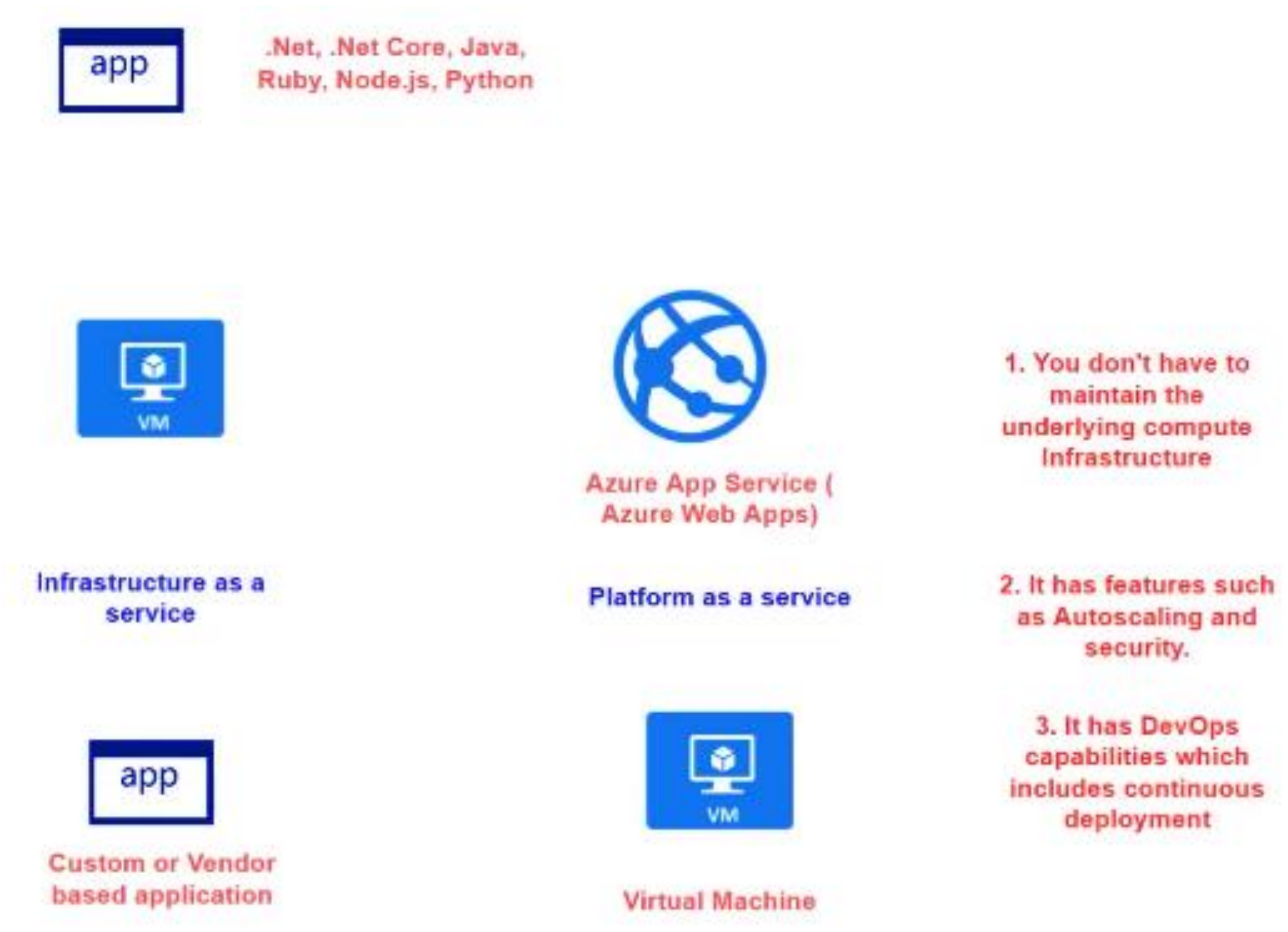
Data Source: azurerm_key_vault

Use this data source to access information about an existing Key Vault.

Example Usage

```
data "azurerm_key_vault" "example" {
  name                = "mykeyvault"
  resource_group_name = "some-resource-group"
}

output "vault_uri" {
  value = data.azurerm_key_vault.example.vault_uri
}
```

Lab : Terraform – WebApps



.Net, .Net Core, Java, Ruby, Node.js, Python

Azure App Service (Azure Web Apps)

1. You don't have to maintain the underlying compute Infrastructure

Infrastructure as a service

Platform as a service

2. It has features such as Autoscaling and security.

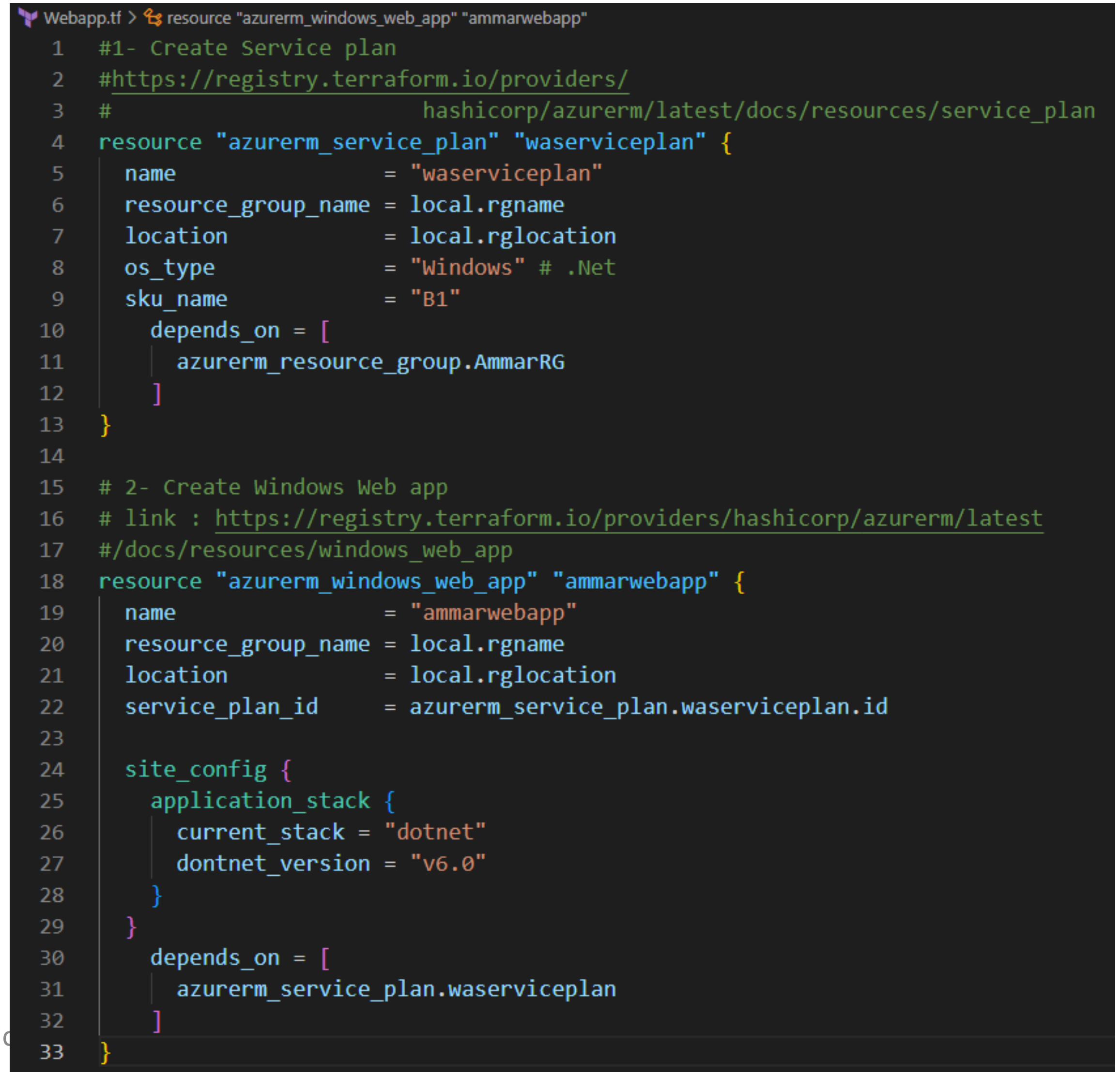
3. It has DevOps capabilities which includes continuous deployment

Custom or Vendor based application

Virtual Machine

Lab : Terraform – WebApps - .net

In order to create a windows web app in Azure we need :
1- Service Plan
2-Web App
3- Activate WebApp Loggin


Webapp.tf > resource "azurerm_windows_web_app" "ammarwebapp"

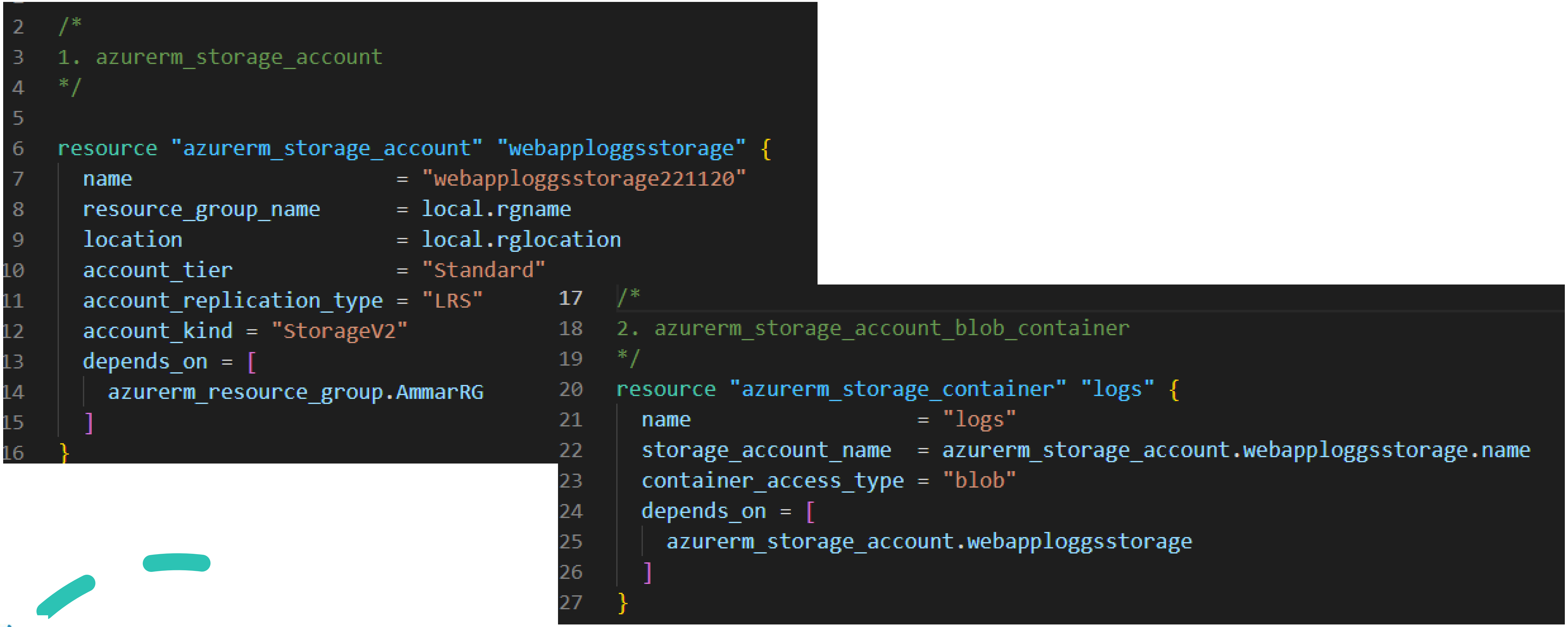
```
#1- Create Service plan
#https://registry.terraform.io/providers/
#                        hashicorp/azurerm/latest/docs/resources/service_plan
resource "azurerm_service_plan" "waserviceplan" {
  name                = "waserviceplan"
  resource_group_name = local.rgname
  location            = local.rglocation
  os_type             = "Windows" # .Net
  sku_name            = "B1"
    depends_on = [
      azurerm_resource_group.AmmarRG
    ]
}

# 2- Create Windows Web app
# link : https://registry.terraform.io/providers/hashicorp/azurerm/latest
#/docs/resources/windows_web_app
resource "azurerm_windows_web_app" "ammarwebapp" {
  name                = "ammarwebapp"
  resource_group_name = local.rgname
  location            = local.rglocation
  service_plan_id     = azurerm_service_plan.waserviceplan.id

  site_config {
    application_stack {
      current_stack = "dotnet"
      dontnet_version = "v6.0"
    }
  }
    depends_on = [
      azurerm_service_plan.waserviceplan
    ]
}
```

Lab : Terraform – WebApps– Activate App.logging

In order to create a windows web app in Azure we need :
1- Service Plan
2-Web App
3- Activate WebApp Loggin, that save info into storage container with ret. 7 days.
The plan is as next :

3.1 Create storage account
3.2 Create container into this SA , called Logs
3.3 get sas(Shared Access Signatur) into data block.
3.4 once created we need to add logs block into webapp

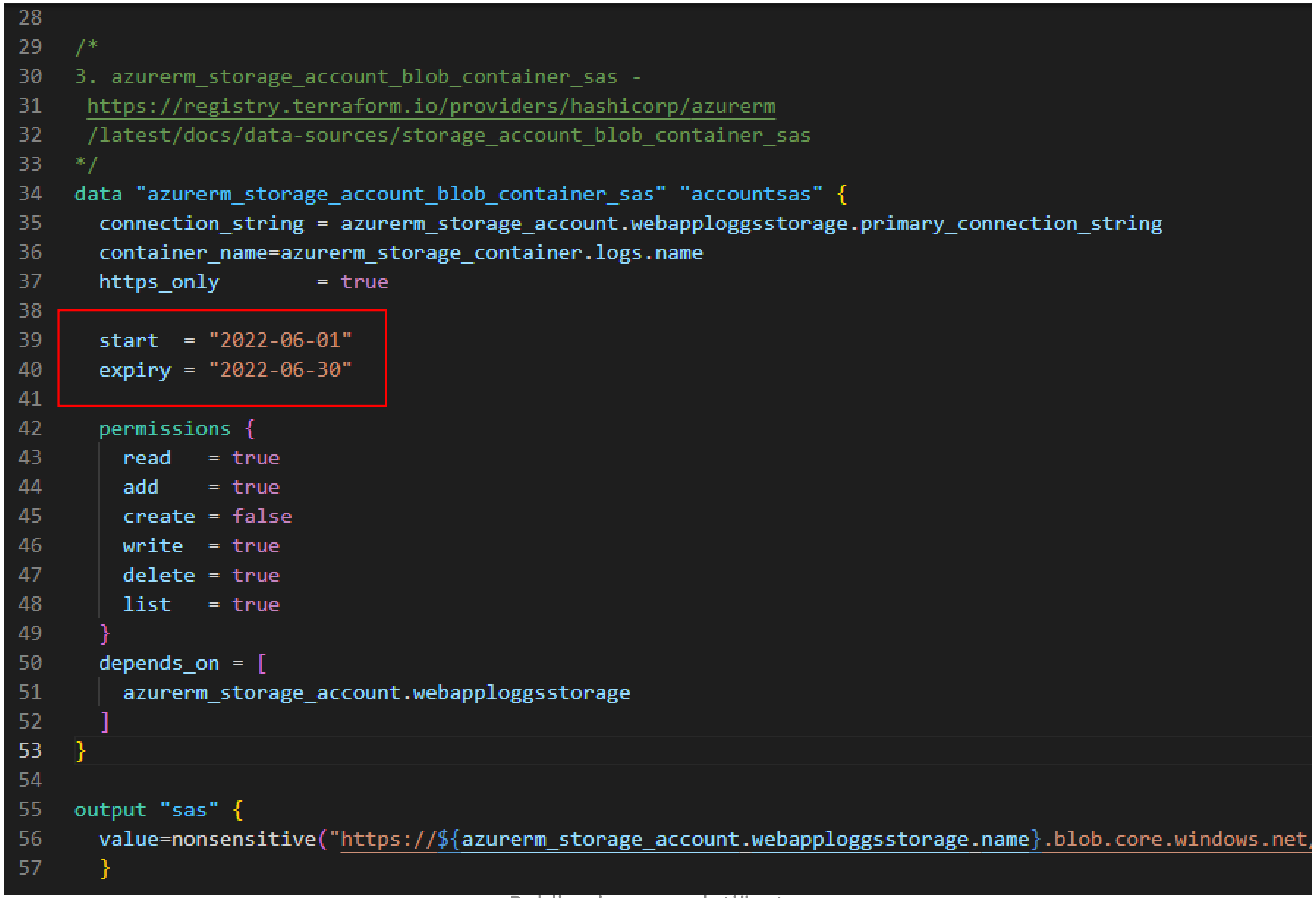
Lab : Terraform – WebApps– Activate App.logging



```
/*
1. azurerm_storage_account
*/

resource "azurerm_storage_account" "webapploggsstorage" {
  name                     = "webapploggsstorage221120"
  resource_group_name      = local.rgname
  location                 = local.rglocation
  account_tier             = "Standard"
  account_replication_type = "LRS"
  account_kind = "StorageV2"
  depends_on = [
    azurerm_resource_group.AmmarRG
  ]
}
```

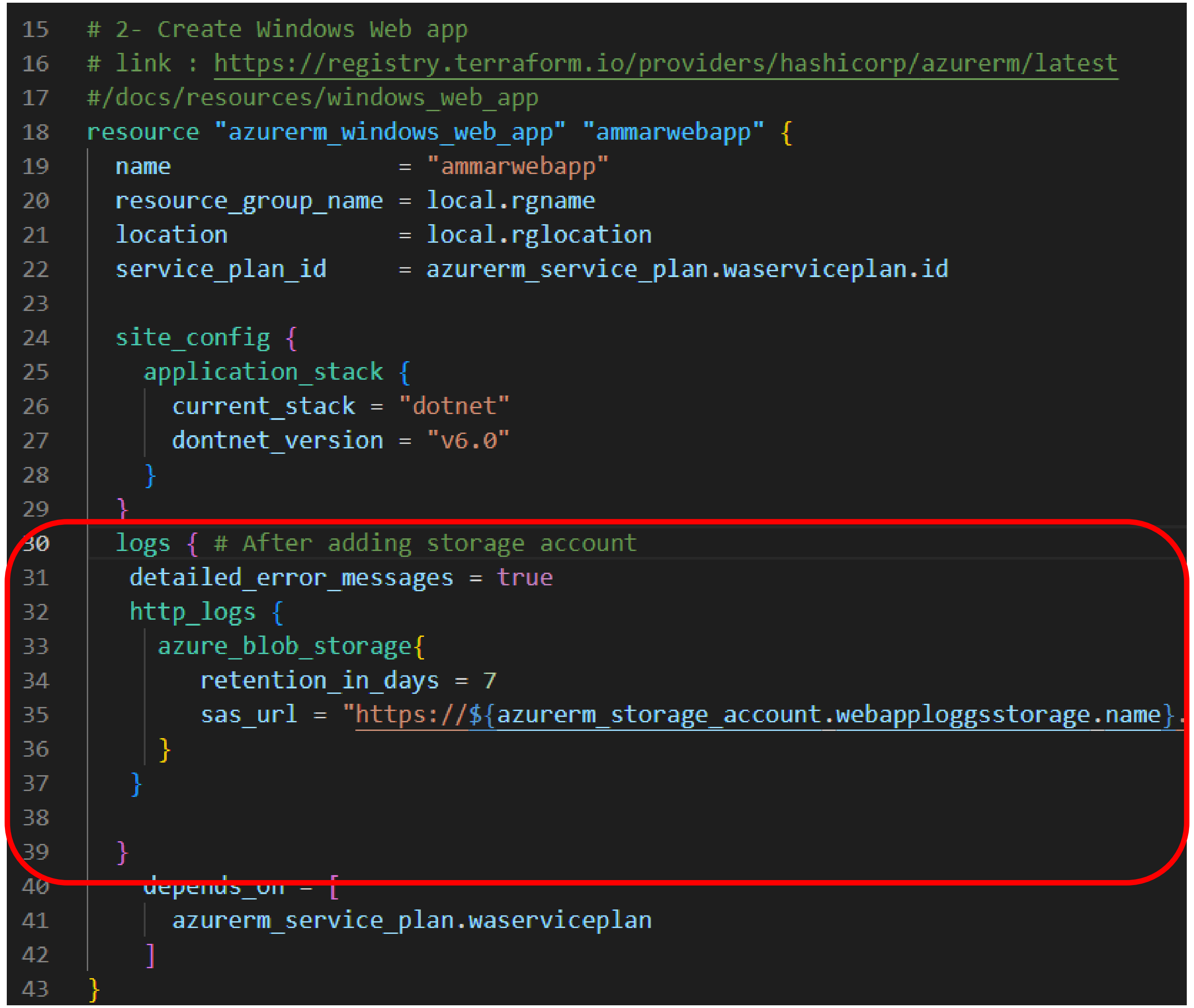
```
/*
2. azurerm_storage_account_blob_container
*/
resource "azurerm_storage_container" "logs" {
  name                  = "logs"
  storage_account_name  = azurerm_storage_account.webapploggsstorage.name
  container_access_type = "blob"
  depends_on = [
    azurerm_storage_account.webapploggsstorage
  ]
}
```

Lab : Terraform – WebApps– Activate App.logging



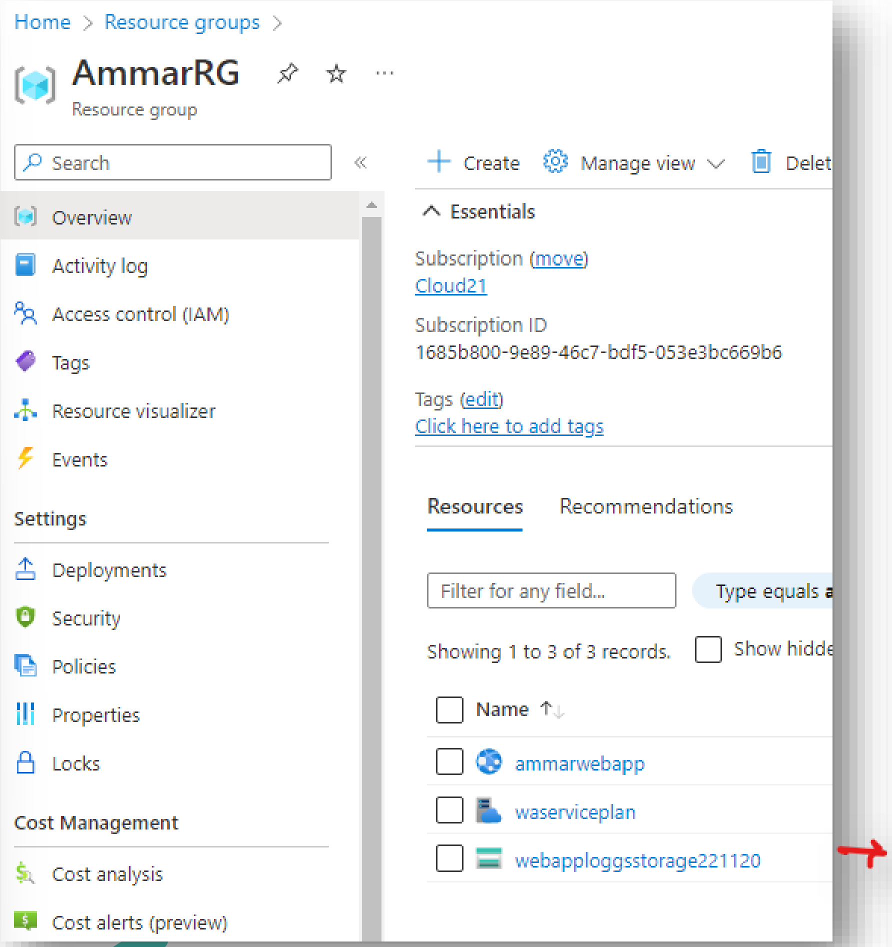
```
/*
3. azurerm_storage_account_blob_container_sas -
 https://registry.terraform.io/providers/hashicorp/azurerm
 /latest/docs/data-sources/storage_account_blob_container_sas
*/
data "azurerm_storage_account_blob_container_sas" "accountsas" {
  connection_string = azurerm_storage_account.webapploggsstorage.primary_connection_string
  container_name=azurerm_storage_container.logs.name
  https_only        = true

  start  = "2022-06-01"
  expiry = "2022-06-30"

  permissions {
    read   = true
    add    = true
    create = false
    write  = true
    delete = true
    list   = true
  }
  depends_on = [
    azurerm_storage_account.webapploggsstorage
  ]
}

output "sas" {
  value=nonsensitive("https://${azurerm_storage_account.webapploggsstorage.name}.blob.core.windows.net,
  }
```

Lab : Terraform – WebApps– Activate App.logging



```
# 2- Create Windows Web app
# link : https://registry.terraform.io/providers/hashicorp/azurerm/latest
#/docs/resources/windows_web_app
resource "azurerm_windows_web_app" "ammarwebapp" {
  name                = "ammarwebapp"
  resource_group_name = local.rgname
  location            = local.rglocation
  service_plan_id     = azurerm_service_plan.waserviceplan.id

  site_config {
    application_stack {
      current_stack = "dotnet"
      dontnet_version = "v6.0"
    }
  }
  logs { # After adding storage account
   detailed_error_messages = true
   http_logs {
     azure_blob_storage{
        retention_in_days = 7
        sas_url = "https://${azurerm_storage_account.webapploggsstorage.name}.
     }
   }

  }
    depends_on = [
      azurerm_service_plan.waserviceplan
    ]
}
```

Lab : Terraform – WebApps– Activate App.logging



Home > Resource groups >

AmmarRG

Resource group

Search

+ Create | Manage view | Delet

- Overview
- Activity log
- Access control (IAM)
- Tags
- Resource visualizer
- Events

Settings

- Deployments
- Security
- Policies
- Properties
- Locks

Cost Management

- Cost analysis
- Cost alerts (preview)

Essentials

Subscription (move)
Cloud21

Subscription ID
1685b800-9e89-46c7-bdf5-053e3bc669b6

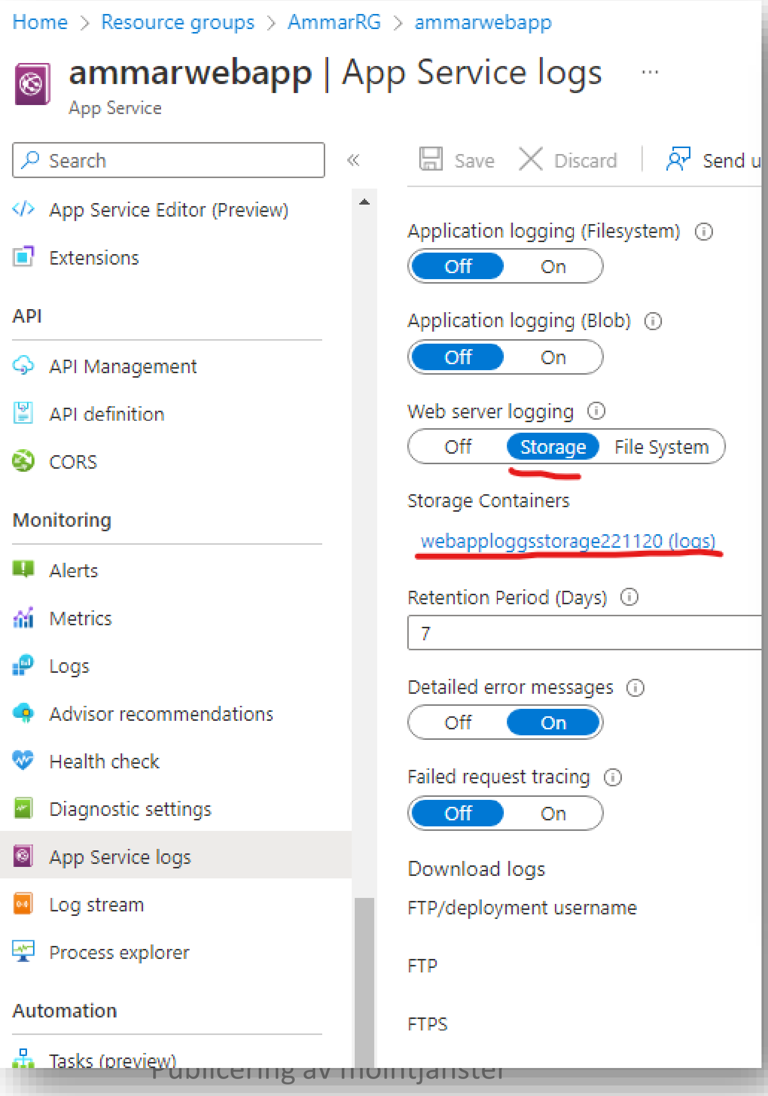
Tags (edit)
Click here to add tags

Resources | Recommendations

Filter for any field... | Type equals a

Showing 1 to 3 of 3 records. □ Show hidde

□	Name ↑↓
□	ammarwebapp
□	waserviceplan
□	webapploggsstorage221120



Home > Resource groups > AmmarRG > ammarwebapp

ammarwebapp | App Service logs

App Service

Search

Save | Discard | Send u

- App Service Editor (Preview)
- Extensions

API

- API Management
- API definition
- CORS

Monitoring

- Alerts
- Metrics
- Logs
- Advisor recommendations
- Health check
- Diagnostic settings
- App Service logs
- Log stream
- Process explorer

Automation

- Tasks (preview)

Application logging (Filesystem): [✓ Off] On

Application logging (Blob): [✓ Off] On

Web server logging: Off [✓ Storage] File System

Storage Containers
webapploggsstorage221120 (logs)

Retention Period (Days)
7

Detailed error messages: Off [✓ On]

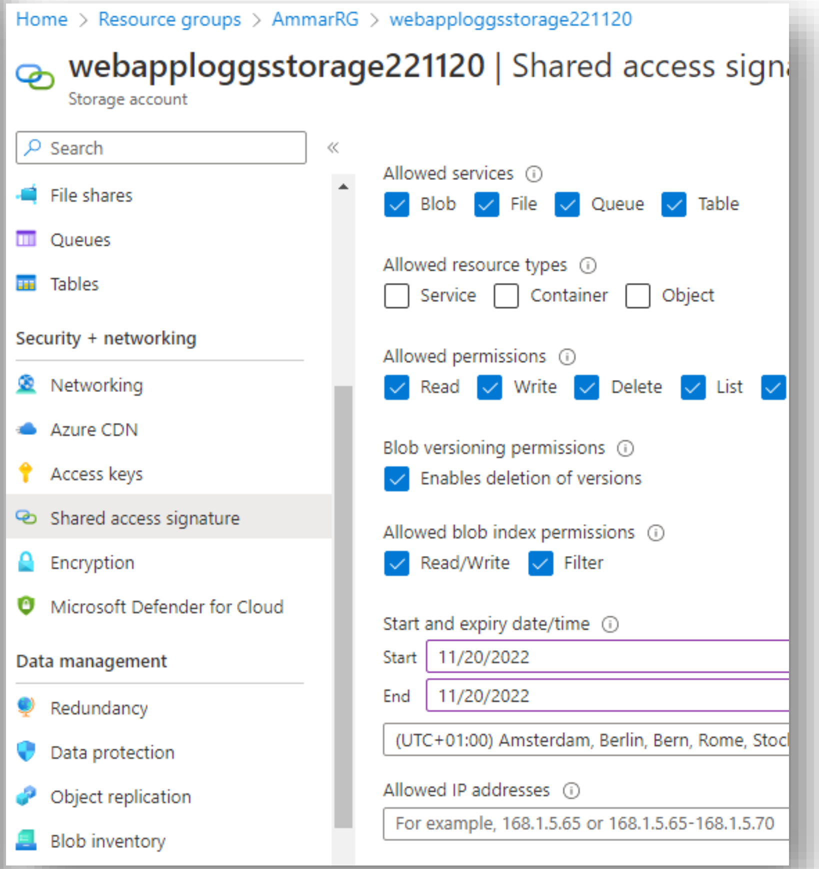
Failed request tracing: [✓ Off] On

Download logs

FTP/deployment username

FTP

FTPS



Home > Resource groups > AmmarRG > webapploggsstorage221120

webapploggsstorage221120 | Shared access sign

Storage account

Search

- File shares
- Queues
- Tables

Security + networking

- Networking
- Azure CDN
- Access keys
- Shared access signature
- Encryption
- Microsoft Defender for Cloud

Data management

- Redundancy
- Data protection
- Object replication
- Blob inventory

Allowed services
☑ Blob ☑ File ☑ Queue ☑ Table

Allowed resource types
□ Service □ Container □ Object

Allowed permissions
☑ Read ☑ Write ☑ Delete ☑ List ☑

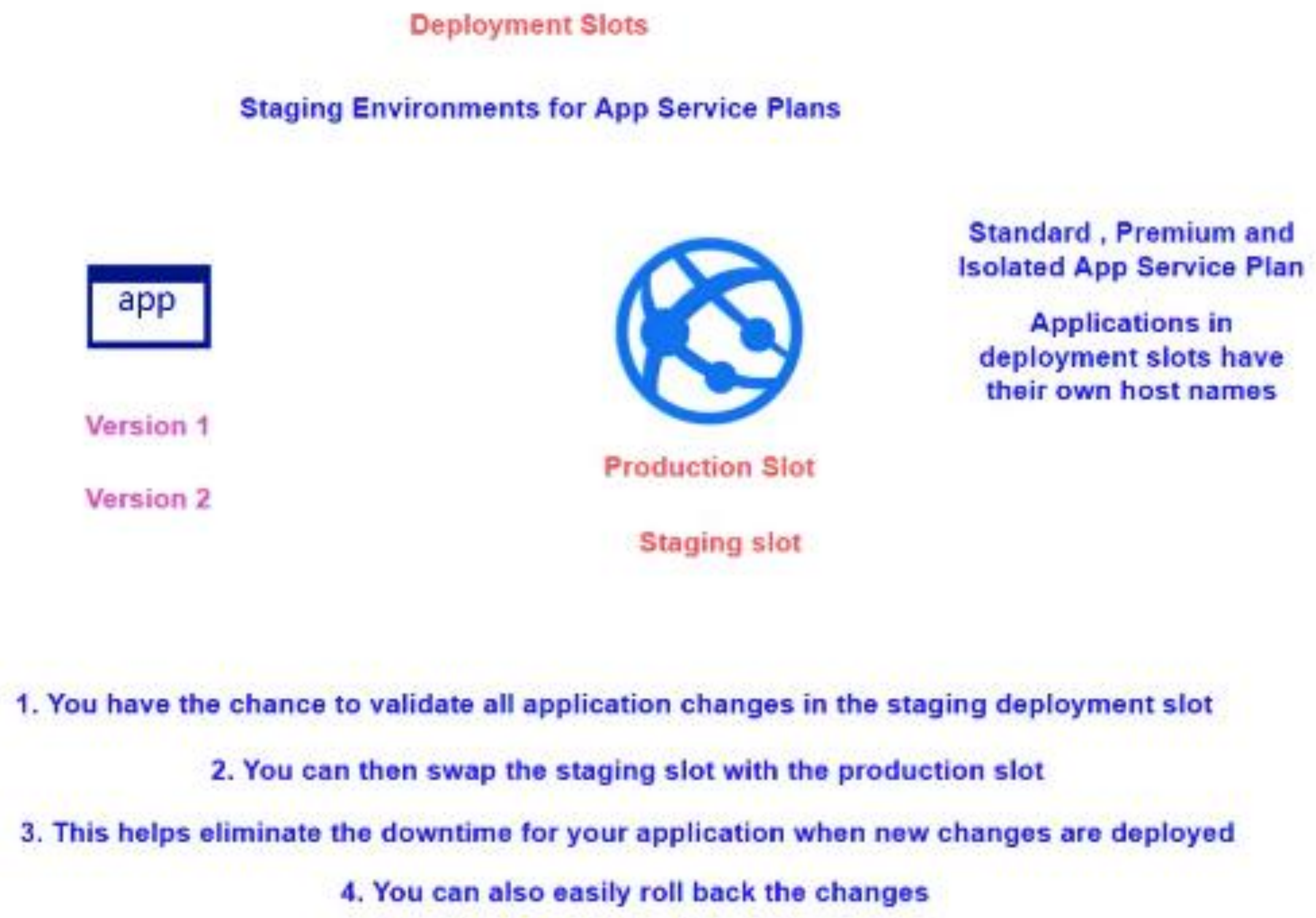
Blob versioning permissions
☑ Enables deletion of versions

Allowed blob index permissions
☑ Read/Write ☑ Filter

Start and expiry date/time
Start 11/20/2022
End 11/20/2022
(UTC+01:00) Amsterdam, Berlin, Bern, Rome, Stoc

Allowed IP addresses
For example, 168.1.5.65 or 168.1.5.65-168.1.5.70

Lab : Terraform – WebApps– what are deployment slots



Deployment Slots

Staging Environments for App Service Plans

app

Version 1

Version 2

Production Slot

Staging slot

Standard , Premium and
Isolated App Service Plan

Applications in
deployment slots have
their own host names

1. You have the chance to validate all application changes in the staging deployment slot

2. You can then swap the staging slot with the production slot

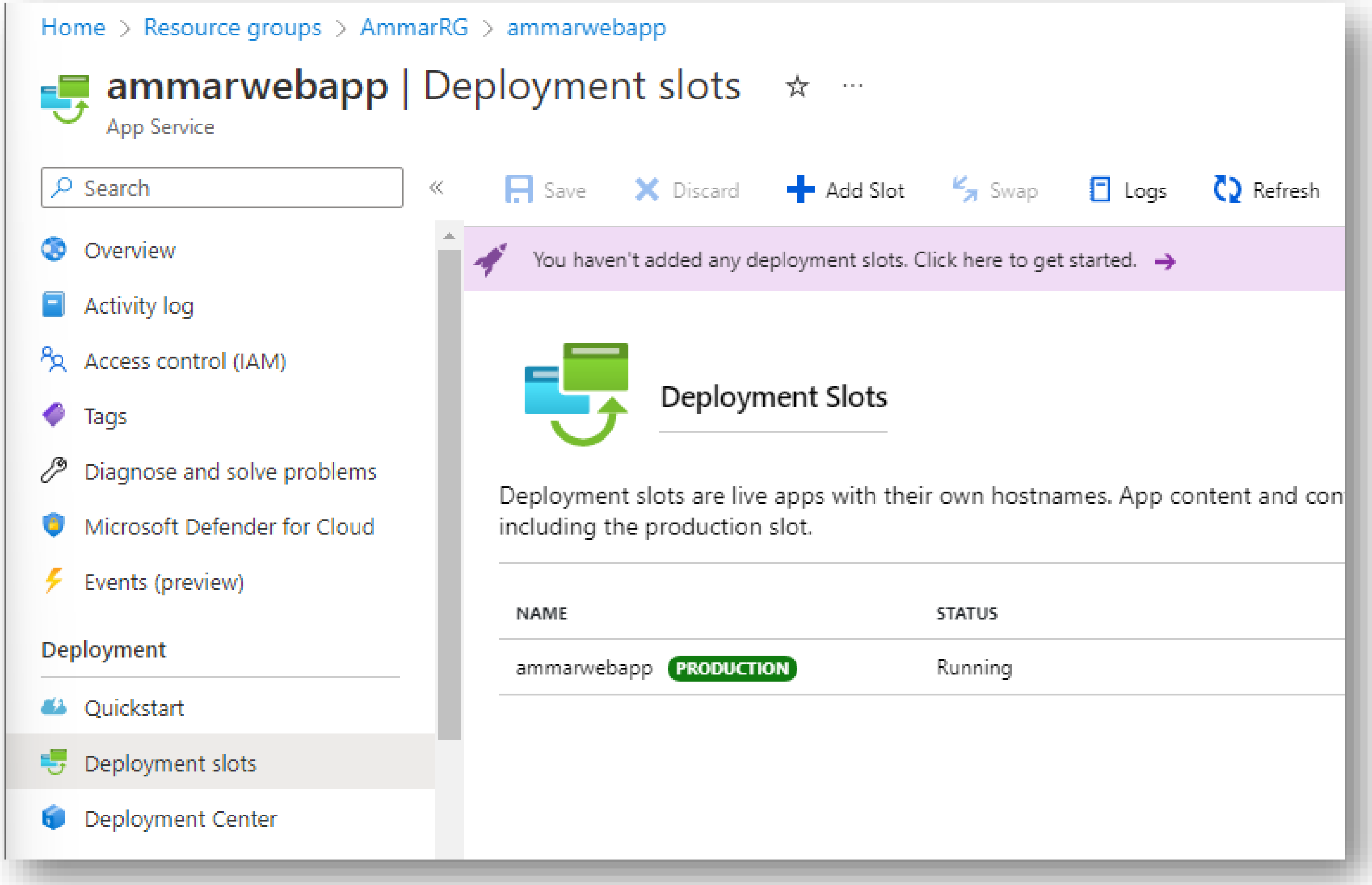
3. This helps eliminate the downtime for your application when new changes are deployed

4. You can also easily roll back the changes

Lab : Terraform – WebApps– what are deployment slots

Let’s activate deployment slots into our last created webapp

1- we need to scale it up to ”S1” in sku_name. So we get production deployment as default



Home > Resource groups > AmmarRG > ammarwebapp

ammarwebapp | Deployment slots

App Service

You haven't added any deployment slots. Click here to get started. →

Deployment Slots

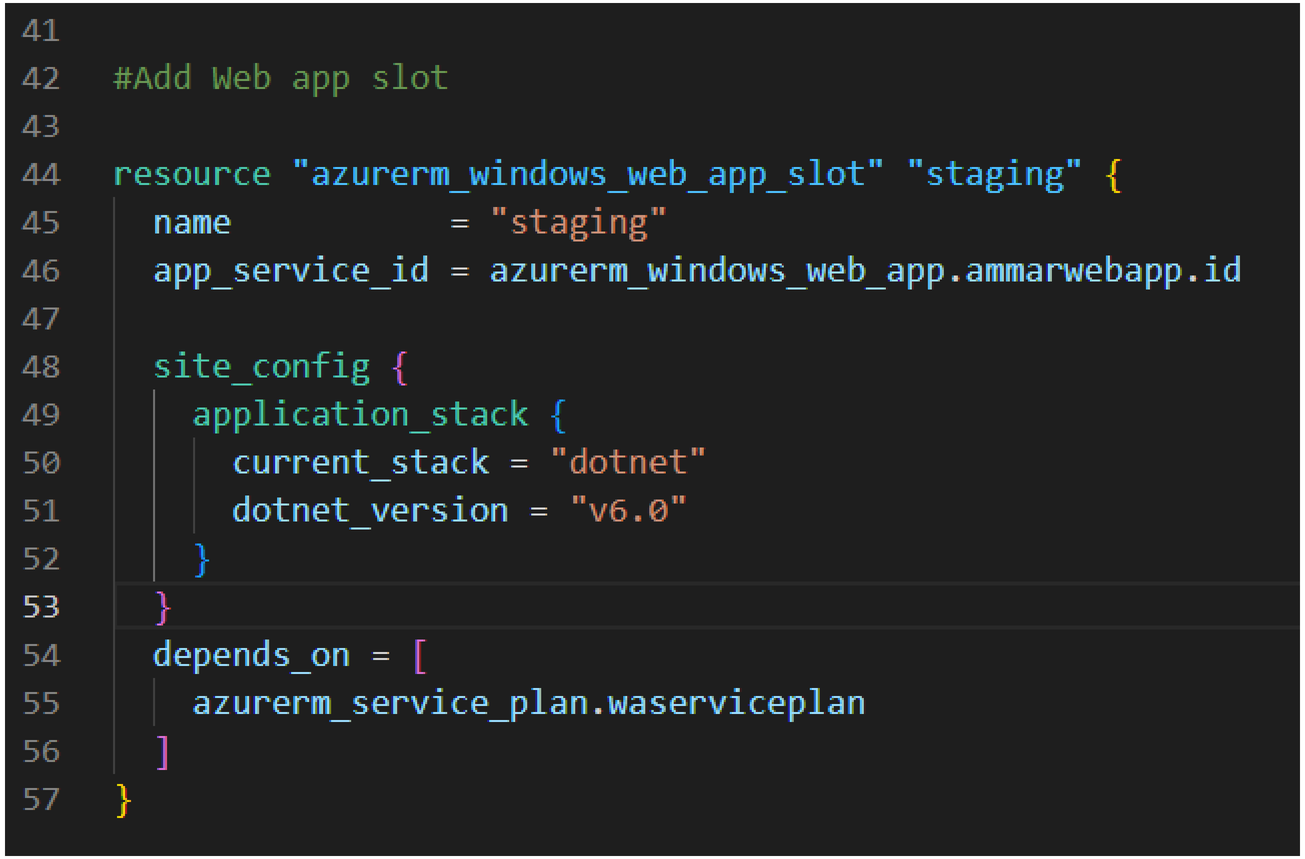
Deployment slots are live apps with their own hostnames. App content and con including the production slot.

NAME	STATUS
ammarwebapp PRODUCTION	Running

Lab : Terraform – WebApps– what are deployment slots

Let’s activate deployment slots into our last created webapp

2- adding azure resource tf code: Web_app_slot

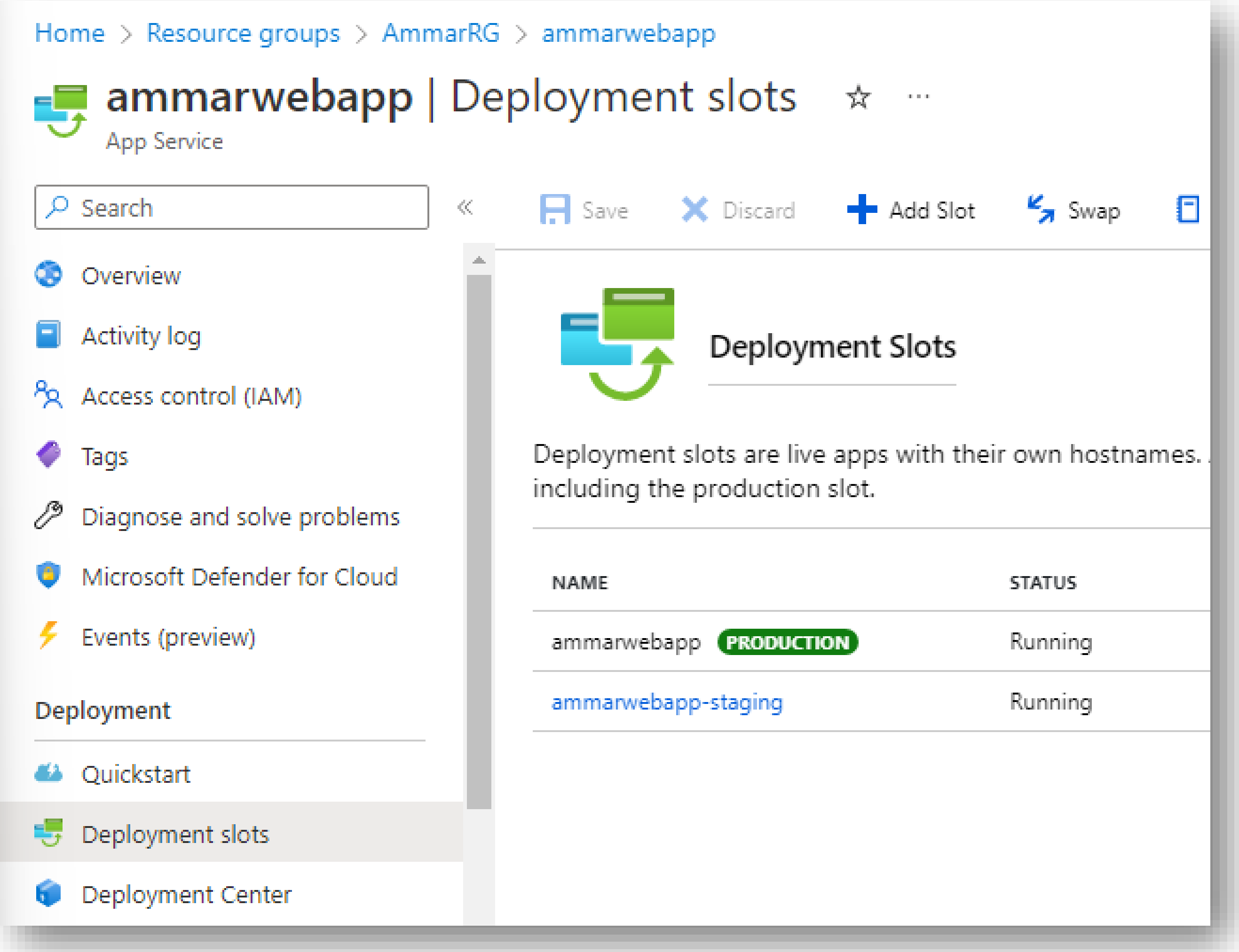


```
#Add Web app slot

resource "azurerm_windows_web_app_slot" "staging" {
  name           = "staging"
  app_service_id = azurerm_windows_web_app.ammarwebapp.id

  site_config {
    application_stack {
      current_stack = "dotnet"
      dotnet_version = "v6.0"
    }
  }
  depends_on = [
    azurerm_service_plan.waserviceplan
  ]
}
```

Lab : Terraform – WebApps– what are deployment slots

Let’s activate deployment slots into our last created webapp

2- adding azure resource tf code: Web_app_slot



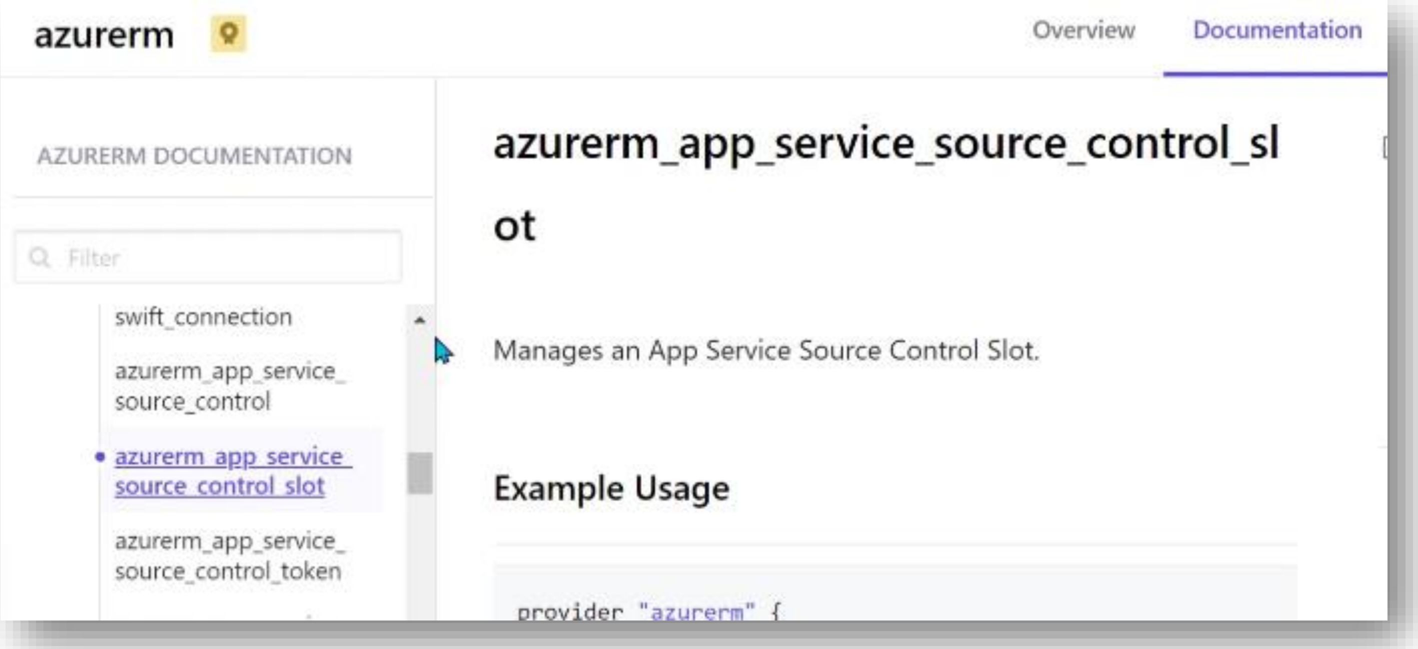
Deployment slots are live apps with their own hostnames. including the production slot.

NAME	STATUS
ammarwebapp PRODUCTION	Running
ammarwebapp-staging	Running

Lab : Terraform – WebApps– what are deployment slots

Let’s activate deployment slots into our last created webapp

3- manage source control for a slot by defining active slot resource



azurerm

Overview Documentation

AZURERM DOCUMENTATION

Filter

swift_connection

azurerm_app_service_source_control

azurerm_app_service_source_control_slot

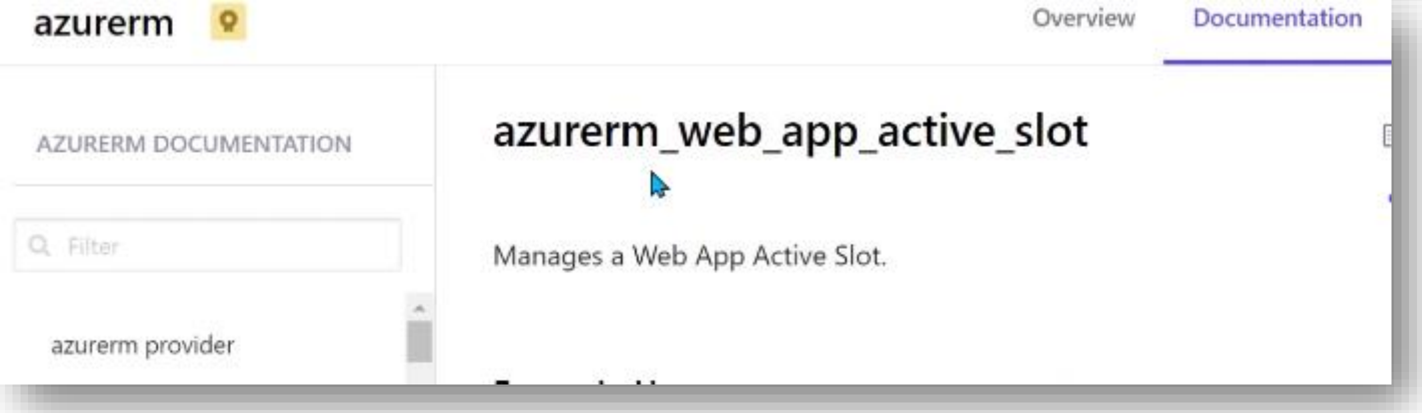
azurerm_app_service_source_control_token

azurerm_app_service_source_control_slot

Manages an App Service Source Control Slot.

Example Usage

```
provider "azurerm" {
```



azurerm

Overview Documentation

AZURERM DOCUMENTATION

Filter

azurerm provider

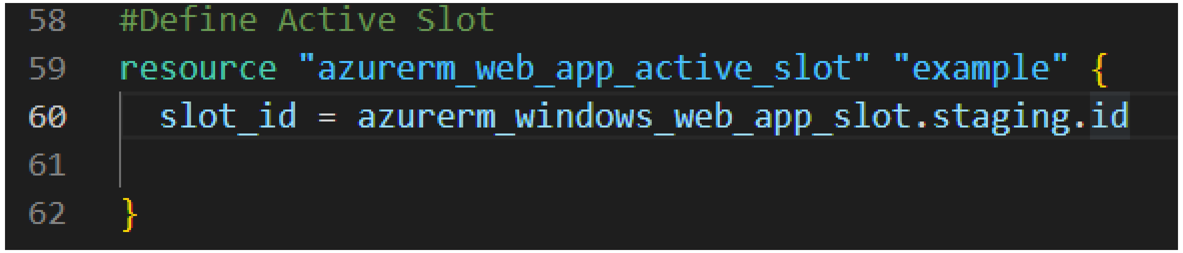
azurerm_web_app_active_slot

Manages a Web App Active Slot.

Lab : Terraform – WebApps– what are deployment slots

Let’s activate deployment slots into our last created webapp

3- manage source control for a slot by defining active slot resource

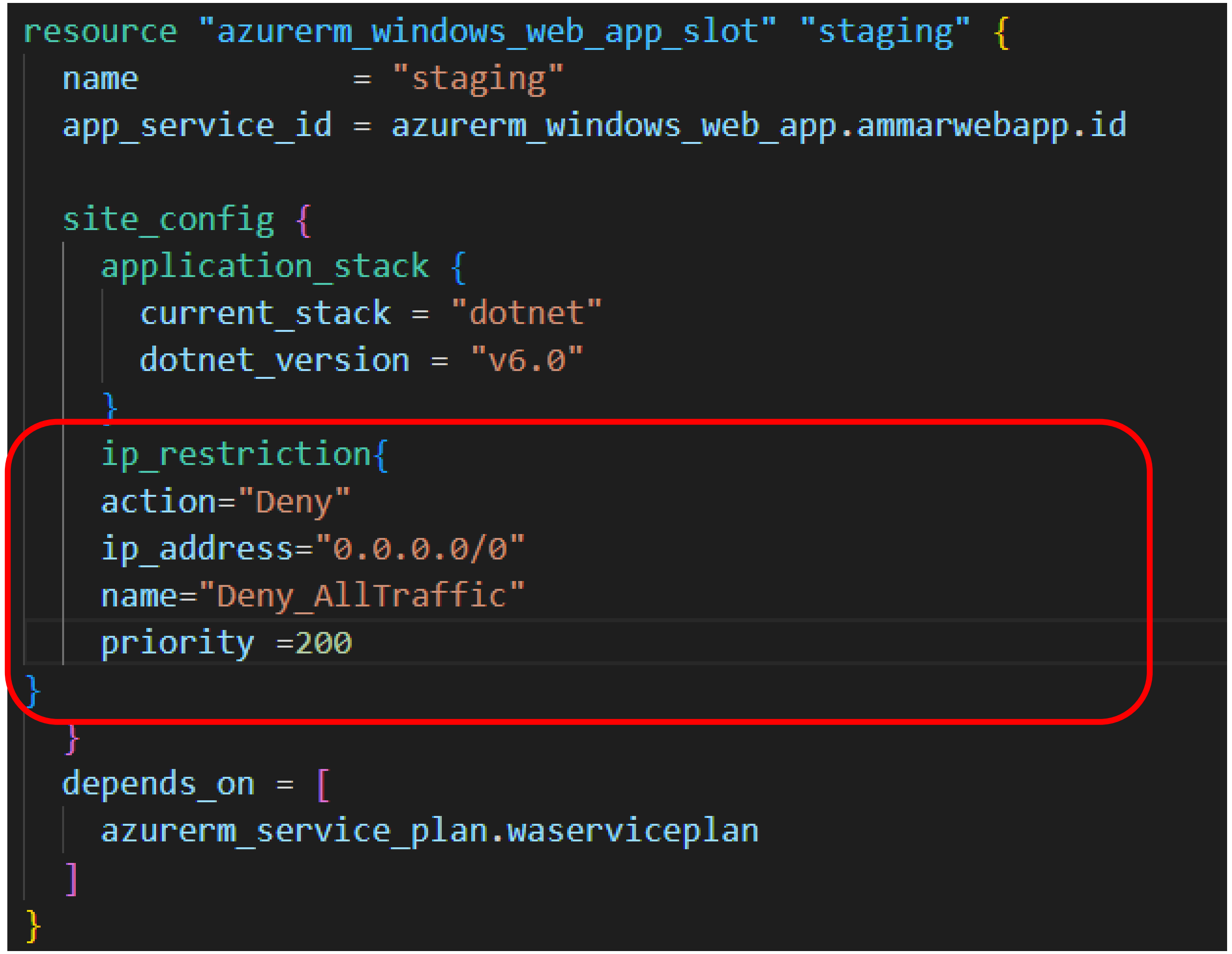


```
#Define Active Slot
resource "azurerm_web_app_active_slot" "example" {
  slot_id = azurerm_windows_web_app_slot.staging.id

}
```

Lab : Terraform – WebApps– what are deployment slots

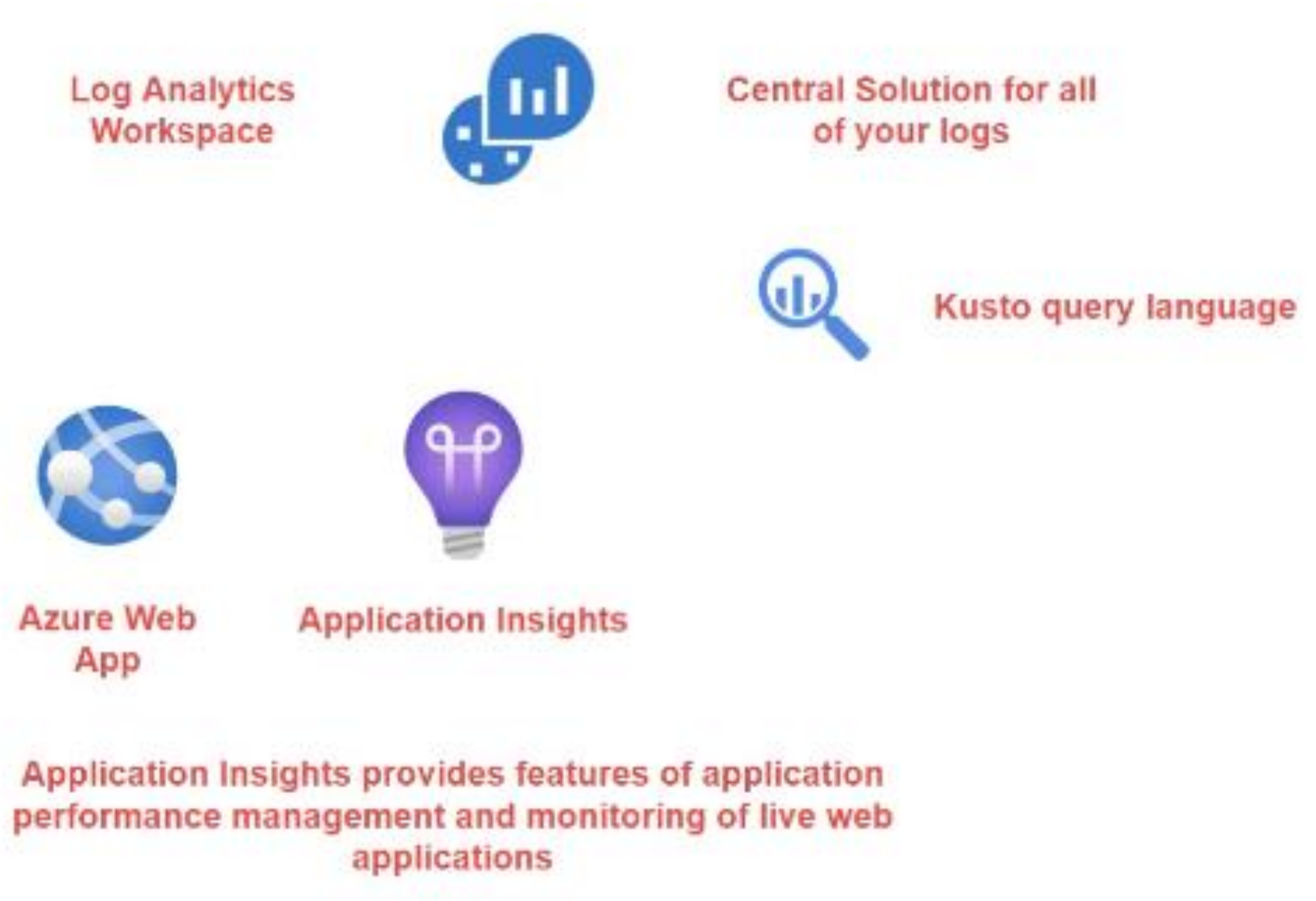
Let’s activate deployment slots into our last created webapp

3- deny all traffic



```
resource "azurerm_windows_web_app_slot" "staging" {
  name           = "staging"
  app_service_id = azurerm_windows_web_app.ammarwebapp.id

  site_config {
    application_stack {
      current_stack = "dotnet"
      dotnet_version = "v6.0"
    }
    ip_restriction{
    action="Deny"
    ip_address="0.0.0.0/0"
    name="Deny_AllTraffic"
    priority =200
}
  }
  depends_on = [
    azurerm_service_plan.waserviceplan
  ]
}
```

Lab : Terraform – WebApps– Application insight



Log Analytics Workspace

Central Solution for all of your logs

Kusto query language

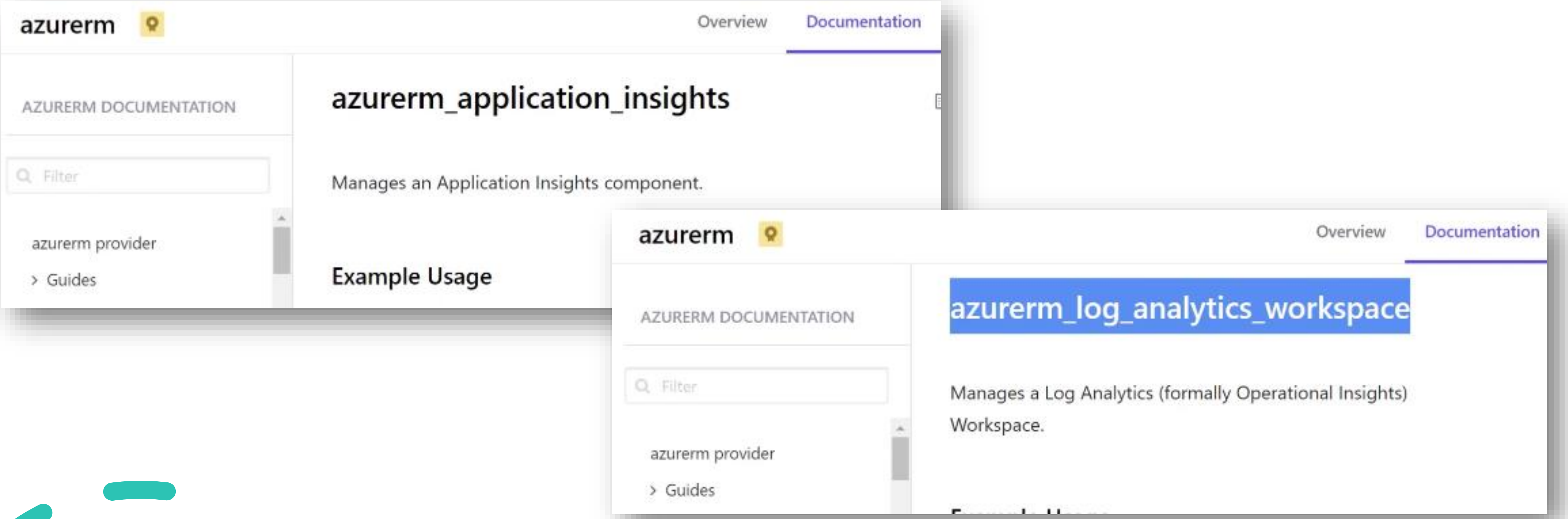
Azure Web App

Application Insights

Application Insights provides features of application performance management and monitoring of live web applications

Lab : Terraform – WebApps– Application insight

In order to activate application insights we need 2 resources:



azurerm_application_insights

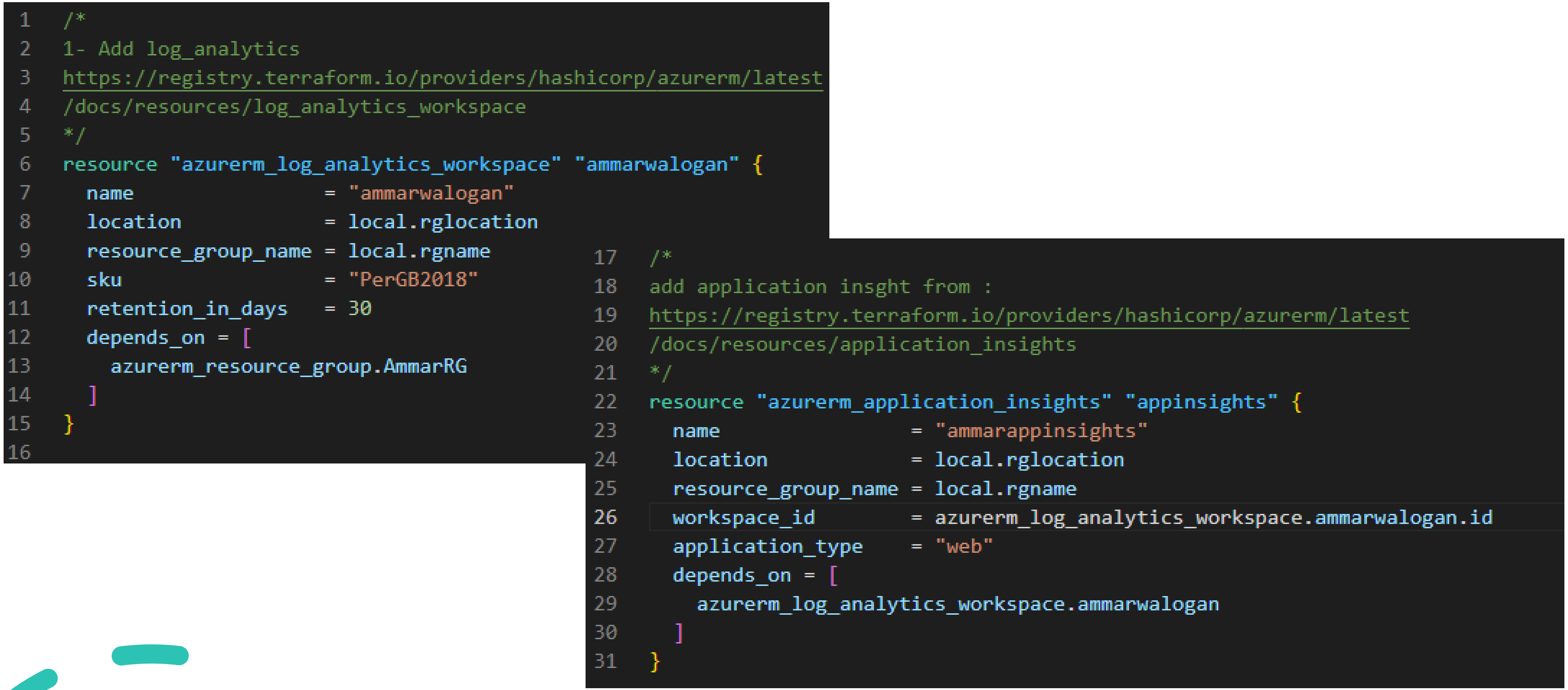
Manages an Application Insights component.

Example Usage

azurerm_log_analytics_workspace

Manages a Log Analytics (formally Operational Insights) Workspace.

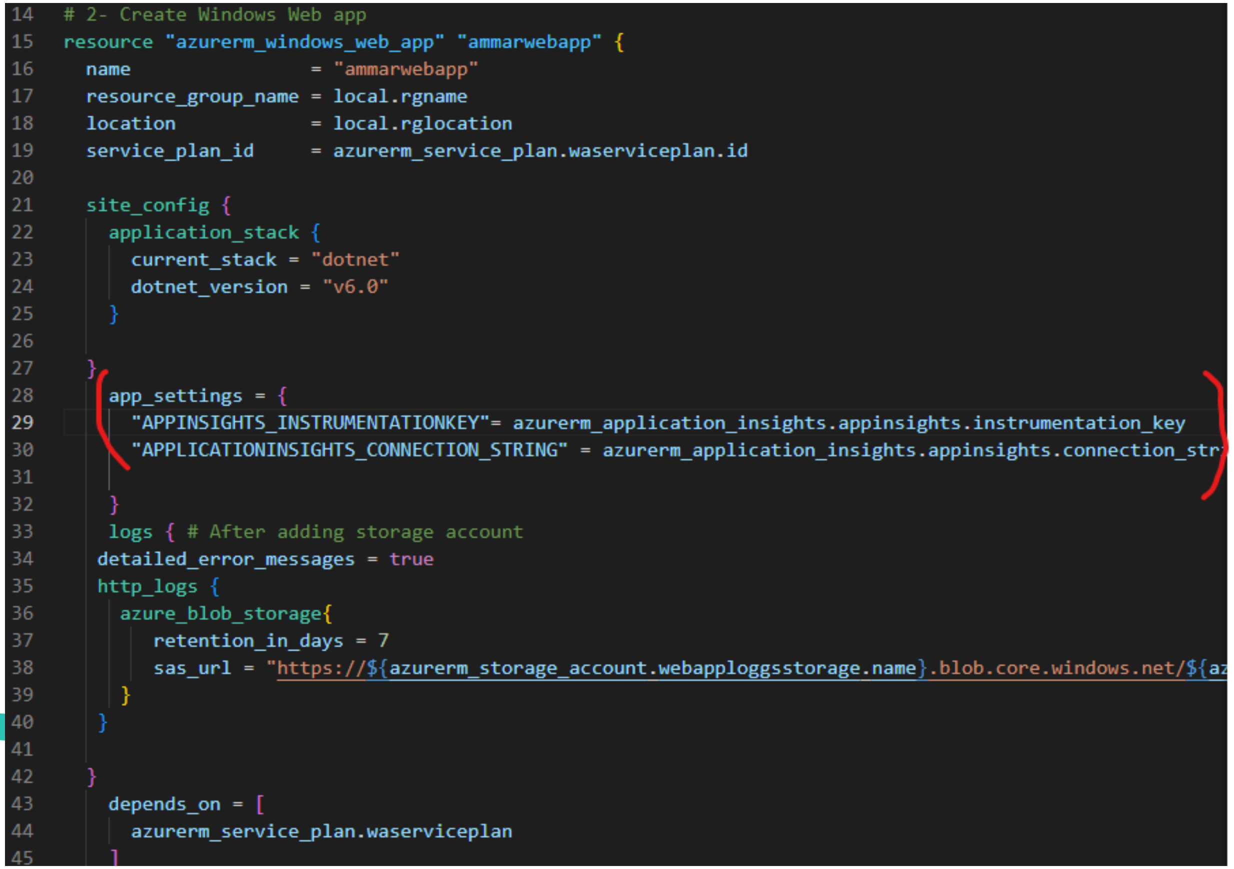
Lab : Terraform – WebApps– Application insight



```
/*
1- Add log_analytics
https://registry.terraform.io/providers/hashicorp/azurerm/latest
/docs/resources/log_analytics_workspace
*/
resource "azurerm_log_analytics_workspace" "ammarwalogan" {
  name                = "ammarwalogan"
  location            = local.rglocation
  resource_group_name = local.rgname
  sku                 = "PerGB2018"
  retention_in_days   = 30
  depends_on = [
    azurerm_resource_group.AmmarRG
  ]
}

/*
add application insght from :
https://registry.terraform.io/providers/hashicorp/azurerm/latest
/docs/resources/application_insights
*/
resource "azurerm_application_insights" "appinsights" {
  name                = "ammarappinsights"
  location            = local.rglocation
  resource_group_name = local.rgname
  workspace_id        = azurerm_log_analytics_workspace.ammarwalogan.id
  application_type    = "web"
  depends_on = [
    azurerm_log_analytics_workspace.ammarwalogan
  ]
}
```

Lab : Terraform – WebApps– Application insight

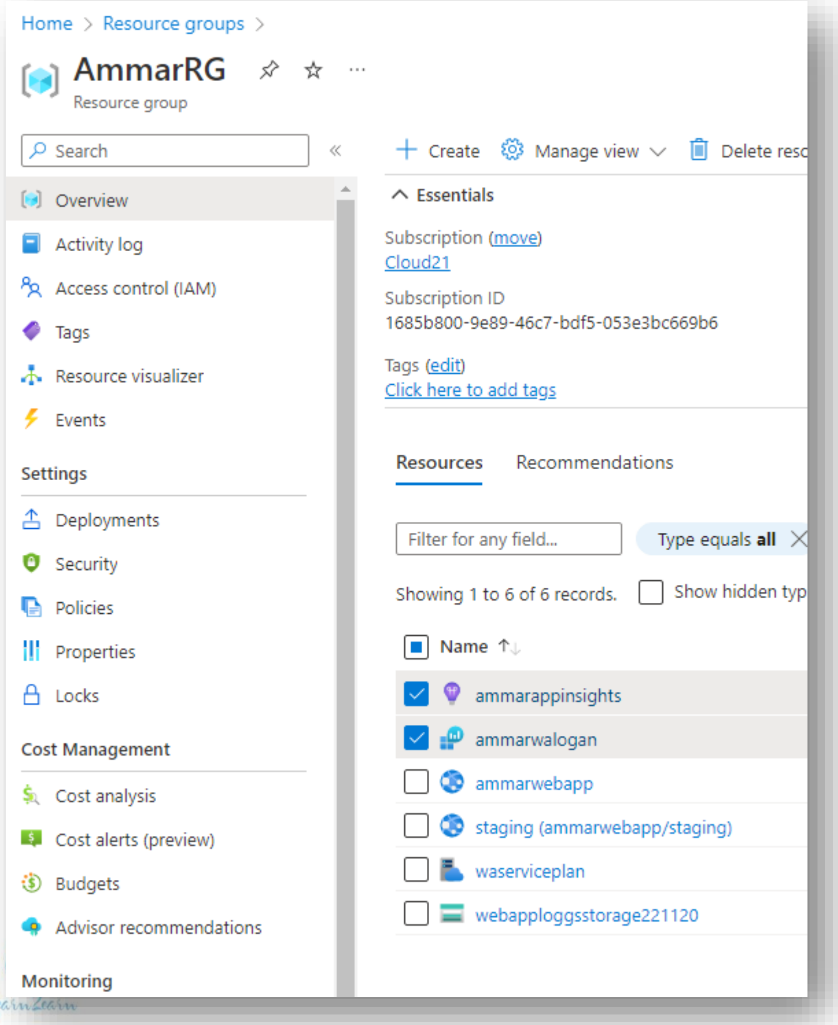
Add the needed setting to connect my web app to
application insight service via instrumentation_key and connecting_string



```
# 2- Create Windows Web app
resource "azurerm_windows_web_app" "ammarwebapp" {
  name                = "ammarwebapp"
  resource_group_name = local.rgname
  location            = local.rglocation
  service_plan_id     = azurerm_service_plan.waserviceplan.id

  site_config {
    application_stack {
      current_stack = "dotnet"
      dotnet_version = "v6.0"
    }

  }
    app_settings = {
      "APPINSIGHTS_INSTRUMENTATIONKEY"= azurerm_application_insights.appinsights.instrumentation_key
      "APPLICATIONINSIGHTS_CONNECTION_STRING" = azurerm_application_insights.appinsights.connection_str

    }
    logs { # After adding storage account
   detailed_error_messages = true
   http_logs {
     azure_blob_storage{
        retention_in_days = 7
        sas_url = "https://${azurerm_storage_account.webapploggsstorage.name}.blob.core.windows.net/${az
     }
   }

  }
    depends_on = [
      azurerm_service_plan.waserviceplan
    ]
```

Lab : Terraform – WebApps– Application insight

The results:



Home > Resource groups >

AmmarRG
Resource group

Search

- Overview
- Activity log
- Access control (IAM)
- Tags
- Resource visualizer
- Events

Settings

- Deployments
- Security
- Policies
- Properties
- Locks

Cost Management

- Cost analysis
- Cost alerts (preview)
- Budgets
- Advisor recommendations

Monitoring

+ Create | Manage view | Delete reso

Essentials

Subscription (move)
Cloud21

Subscription ID
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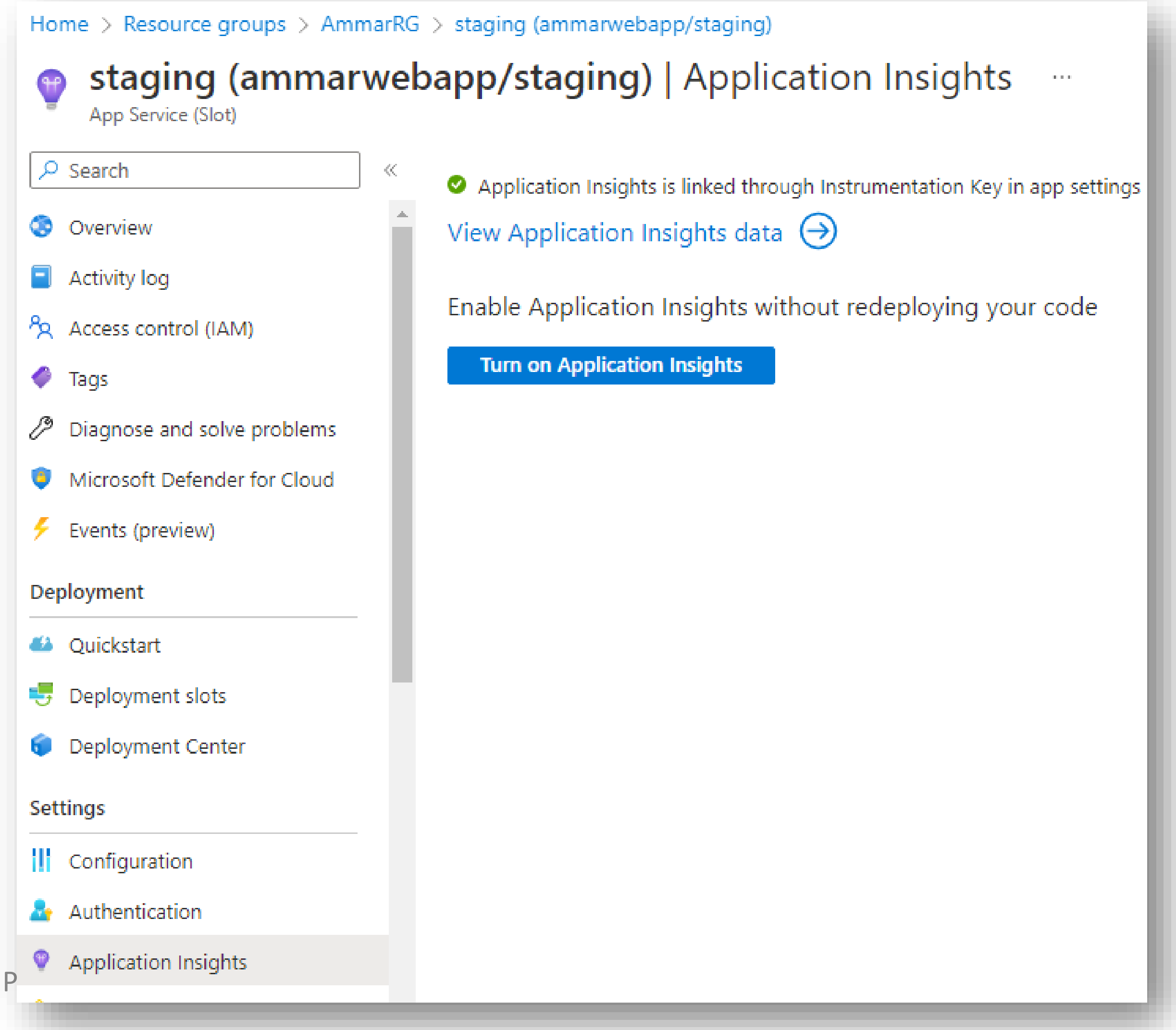

Home > Resource groups > AmmarRG > staging (ammarwebapp/staging)

staging (ammarwebapp/staging) | Application Insights ...
App Service (Slot)

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Deployment

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Settings

- Configuration
- Authentication
- Application Insights

✓ Application Insights is linked through Instrumentation Key in app settings

View Application Insights data →

Enable Application Insights without redeploying your code

Turn on Application Insights