QATIP Intermediate
Azure Lab 06
Advanced Terraform Expressions, Functions, and Regular Expressions

Contents

Lab Objectives

This multi-challenge lab integrates expressions, dynamic blocks, Terraform functions, and regular expressions to create flexible and reusable infrastructure configurations in Azure. By the end of this lab, you will:

- Implement conditional expressions to control resource creation.
- Leverage string, numeric, and date/time functions to standardize resource naming, tagging, and configuration.
- Utilize regular expressions (regex) to standardize inconsistent resource names.

- Validate outputs using terraform console.

Before you begin

- Ensure you have completed Lab0 before attempting this lab.
- In the IDE terminal pane, enter the following command...

  cd c:\azure-tf-int\lab\06
- There is a sub-directory for each of the following challenges. Navigate to the appropriate folder as you attempt each challenge. Ensure all file changes and commands are executed in the appropriate challenge sub-directory

Challenge 1: Creating a Resource Group with Dynamic Naming and Tagging

Scenario

You are tasked to create a reusable configuration that..

- Creates a resource group with a name within the range RG1 to RG6.
- Adds an **Environment** tag that is always upper-case and restricted to DEV, PROD, or TEST.
- Add a second tag, **UpdatedOn** with the date of resource group creation/update in the format YYYY-MM-DD.
- Variables are to be used with default values for resource group name and environment.
- Validation check should ensure that the resource group name proposed is within the specified range and that the environment is “DEV”, “PROD” or “TEST”.

Goal: Define Terraform Configuration for Resource Group

Updating the files provided in **c:\azure-tf-int\labs\06\challenge1**, attempt to create a deployment that complies with the given scenario.

Validation Checks

To validate your configuration, run **terraform plan** operations and review the output to ensure the resource group name, Environment and UpdatedOn tags are compliant with the requirements specified.

Run tests with invalid parameters:

> **terraform plan -var="resource_group_name=RG8" -var="environment=Plan"**

This should result in error messages being output

Run tests with valid parameters:

> **terraform plan -var="resource_group_name=RG1" -var="environment=dev"**

This should return a success message with the environment being converted to uppercase

Hints

- Use format() and upper() for consistency.
- Use timestamp() to capture creation date and time
- Use formatdate() to generate the creation date tag.
- Use contains() to validate the resource group name

Proposed Solution

A proposed solution to this challenge can be found at c:\azure-tf-in\labs\solutions\06\challenge1

Challenge 2: Standardizing Resource Names Using Regular Expressions

Scenario

You've been assigned to the Cloud Infrastructure team at a company migrating virtual machines (VMs) from multiple departments to Azure. Each department has used its own naming convention, leading to inconsistent VM naming such as:

`dev-finance.db01` (stage-project.name)

`infra_prod_appserver` (project_stage_name)

`sales-test_db02` (project-stage_name)

`infra_prod_web01` (project_stage_name)

`test.backup.storage03` (stage.project.name)

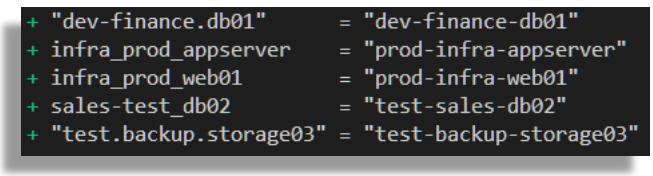
The business has mandated a standardized naming convention for all cloud hosted VMs: **[environment]-[project]-[name]** *(e.g., prod-finance-db01)*

Goal: Load JSON File and Process Data using Regex

Updating the files provided in **c:\azure-tf-int\labs\06\challenge2**, attempt to create a deployment that complies with the given scenario

Use Terraform functions to process a JSON file containing inconsistent virtual machine names. Reconstruct the names in accordance with the mandated naming convention using Regex.

- Load the JSON file **resource-names.json** using jsondecode()
- Construct regex patterns dynamically based on known stages and projects
- Extract the environment, project, and machine name using regex()
- Generate new names in accordance with the naming convention
- Generate screen output listing the original names and the converted names:



- There is no requirement to create these machines at this stage

Hints

- Use jsondecode(file("./resource-names.json")) to read the JSON file
- Use join("|", {stages/projects}) logic to create a regex pattern for stages and projects to find matches against

- Use try(regex(pattern, name), "default_value") to avoid errors on missing matches

Solution

A proposed solution for this challenge can be found at c:\azure-tf-int\labs\solutions\06\challenge2