Using Functions and Looping in Your Configuration

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Module Overview

Globomantics requests

Loops and dynamic blocks

Using functions

Terraform console

Globomantics Scenario

Potential Improvements

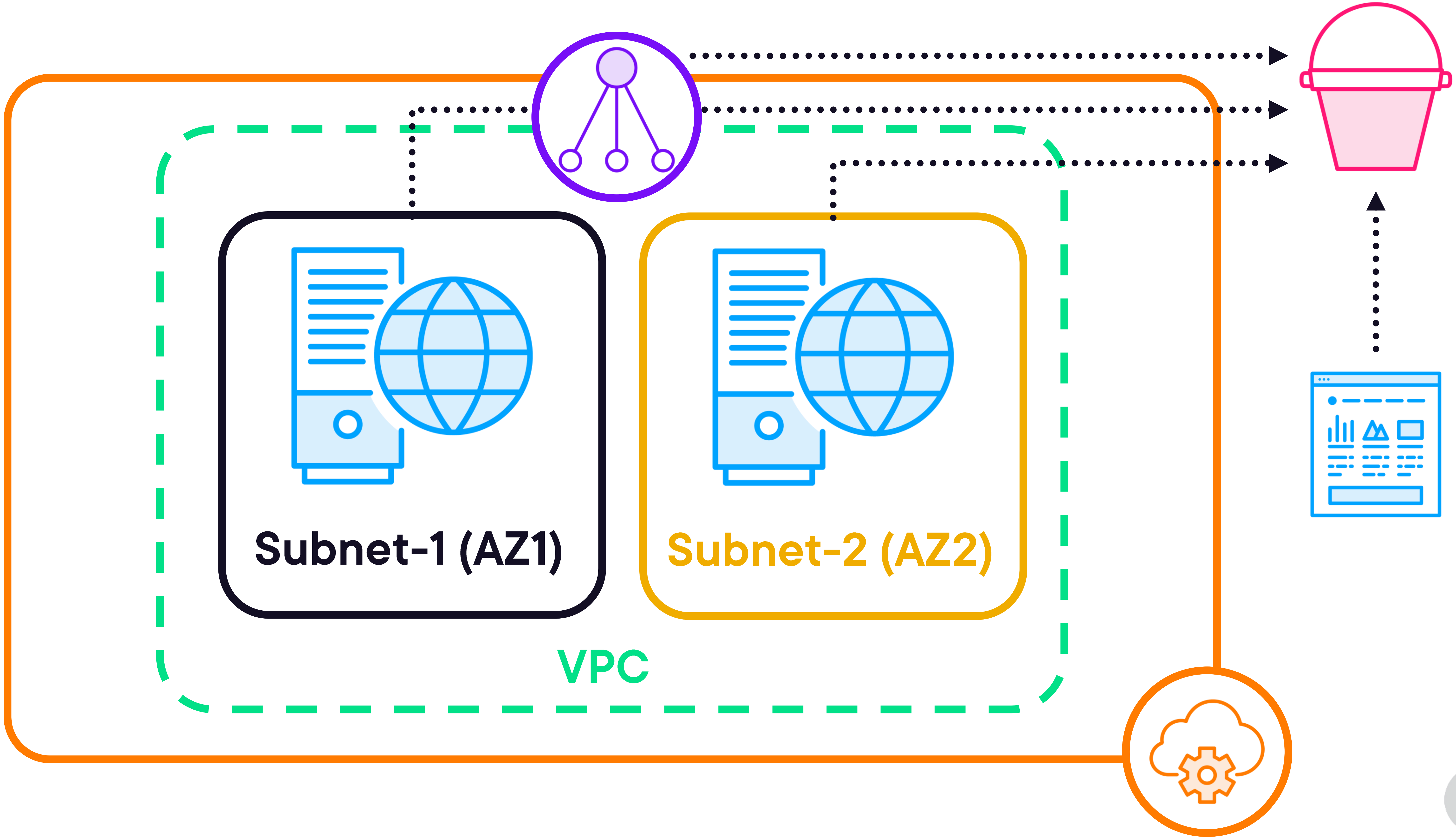
Dynamically increase instances

Use a template for startup script

Simplify networking input

Add consistent naming prefix

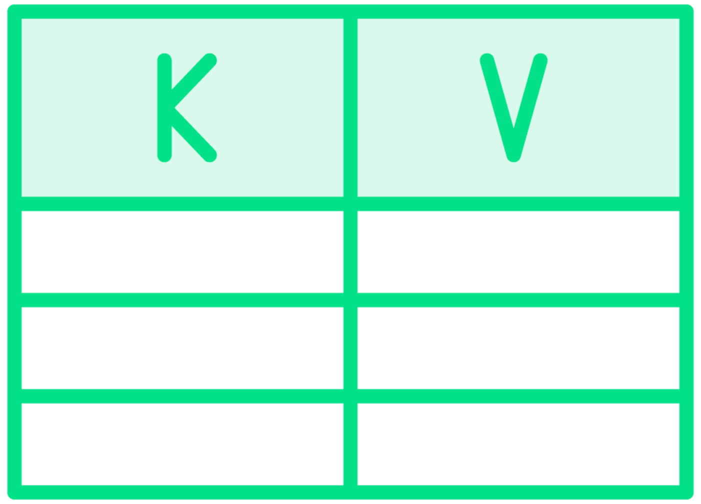
Deployment Architecture



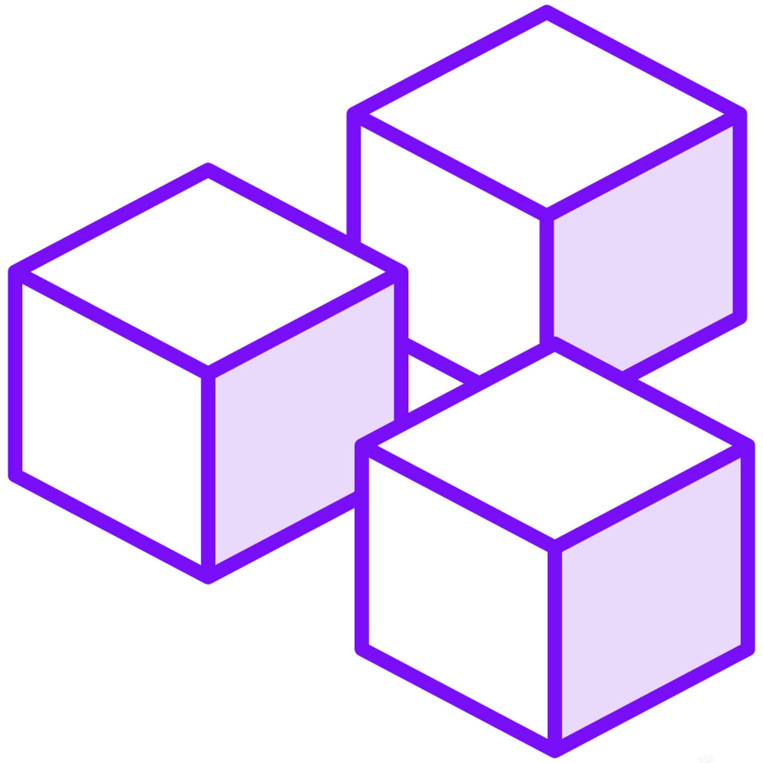
Loops in Terraform

Looping Constructs

Count
Integer input



For_each
Map or set input



Dynamic blocks
Map or set input

Count Syntax

instances.tf

```
resource "aws_instance" "web_servers" {
  count = 3
  tags = {
    Name = "globo-web-${count.index}"
  }
}
```

```
resource "aws_instance" "web_servers" {
  count = 3
  tags = {
    Name = "globo-web-${count.index}"
  }
}
```

Count References

```
<resource_type>.<name_label>[element].<attribute>
aws_instance.web_servers[0].name # Single instance
aws_instance.web_servers[*].name # All instances
```

For_each Syntax

s3.tf

```
resource "aws_s3_object" "taco_toppings" {
  for_each = {
    cheese = "cheese.png"
    lettuce = "lettuce.png"
  }
  key    = each.value
  source = "./${each.value}"
  tags = {
    Name = each.key
  }
}
```

```
resource "aws_s3_object" "taco_toppings" {
  for_each = {
    cheese = "cheese.png"
    lettuce = "lettuce.png"
  }
}
```

For_each References

```
<resource_type>.<name_label>[key].<attribute>
aws_s3_object.taco_toppings["cheese"].id # Single instance
```

Looping Targets

```
# Primary resources
"aws_subnets" # Count loop
"aws_instance" # Count loop
"aws_s3_bucket_object" # For_each loop
# Impacted resources
"aws_route_table_association"
"aws_lb_target_group_attachment"
```

Path Expressions

`path.root`

Root module

`path.module`

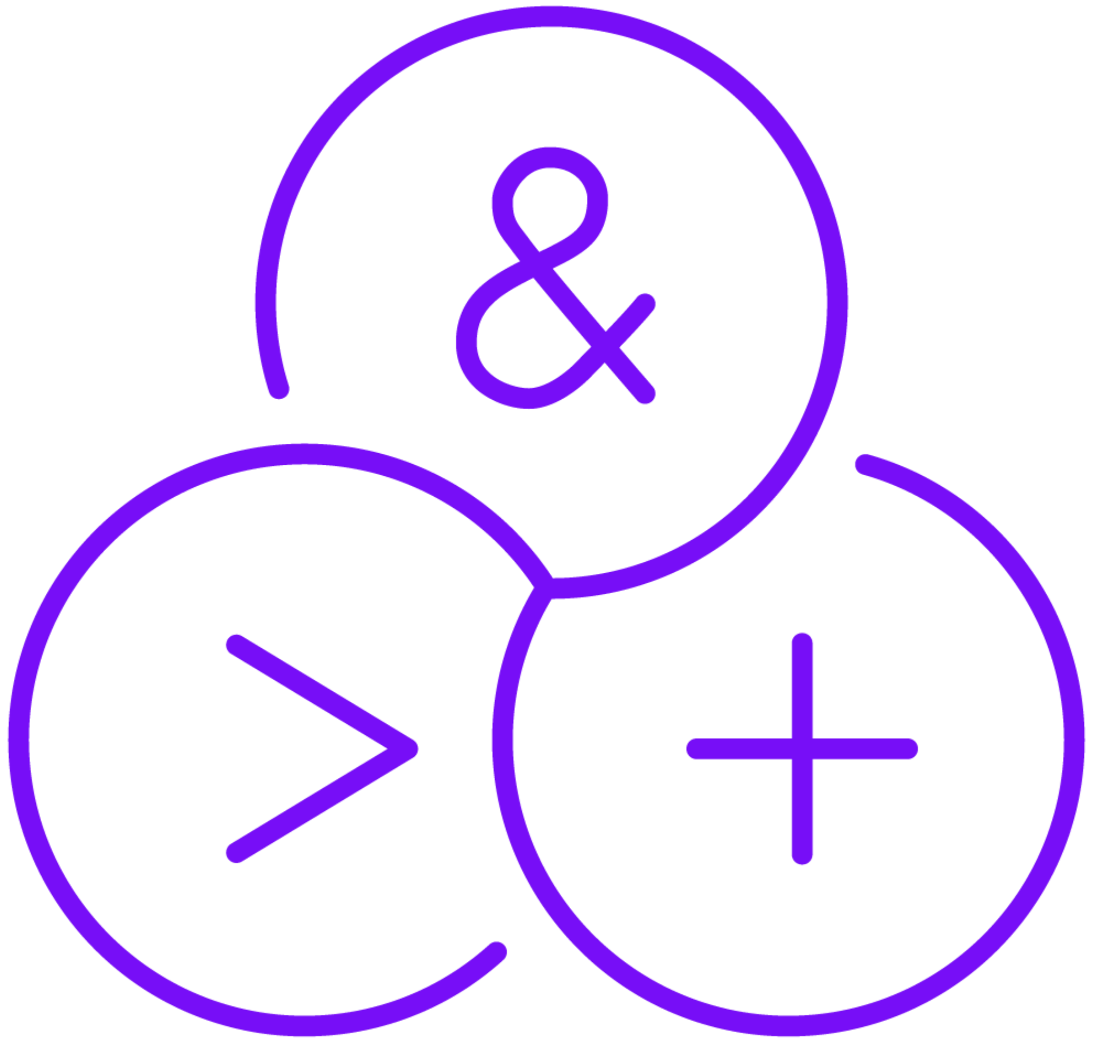
Current module

`path.cwd`

Current working directory

Terraform Functions and Expression

Terraform Expressions



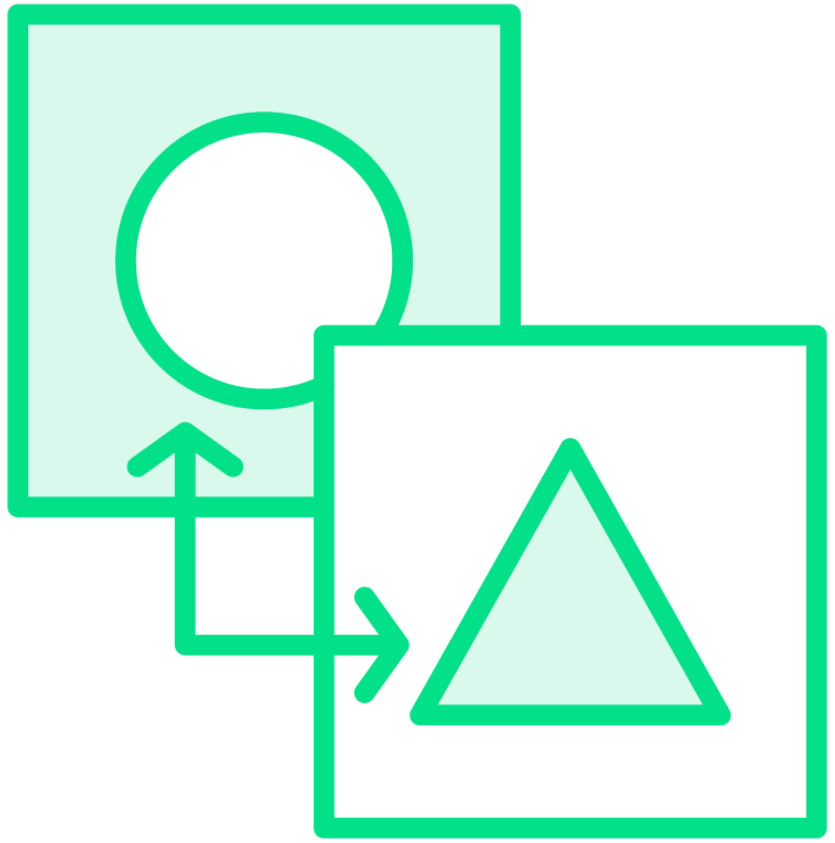
Interpolation and heredoc

Arithmetic and logical operators

Conditional expressions

For expressions

Terraform Functions



Built-in Terraform

Func_name(arg1, arg2, arg3, …)

Testing functions

- terraform plan
- terraform console

Several broad categories

Common Function Categories

Numeric

`min(42,13,7)`

String

`lower("TACOS")`

Collection

`merge(map1,map2)`

IP network

`cidrsubnet()`

Filesystem

`file(path)`

Type conversion

`toset()`

Functions to Use

```
# Startup script

templatefile(file_location, { map of variables })

# Extract subnet address from VPC CIDR

cidrsubnet(cidr_range, subnet bits to add, network number)

# Add tags to common tags

merge(common_tags, { map of additional tags })

# S3 bucket name

lower("bucket name")
```

Module Summary

Looping for dynamic configurations

Applying functions for transformation

Up Next:

Using a Module for Common Configurations