Using Functions and Looping in Your Configuration



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Overview



Globomantics requests

Loops and dynamic blocks

Using functions

Terraform console



Globomantics Scenario

Potential Improvements



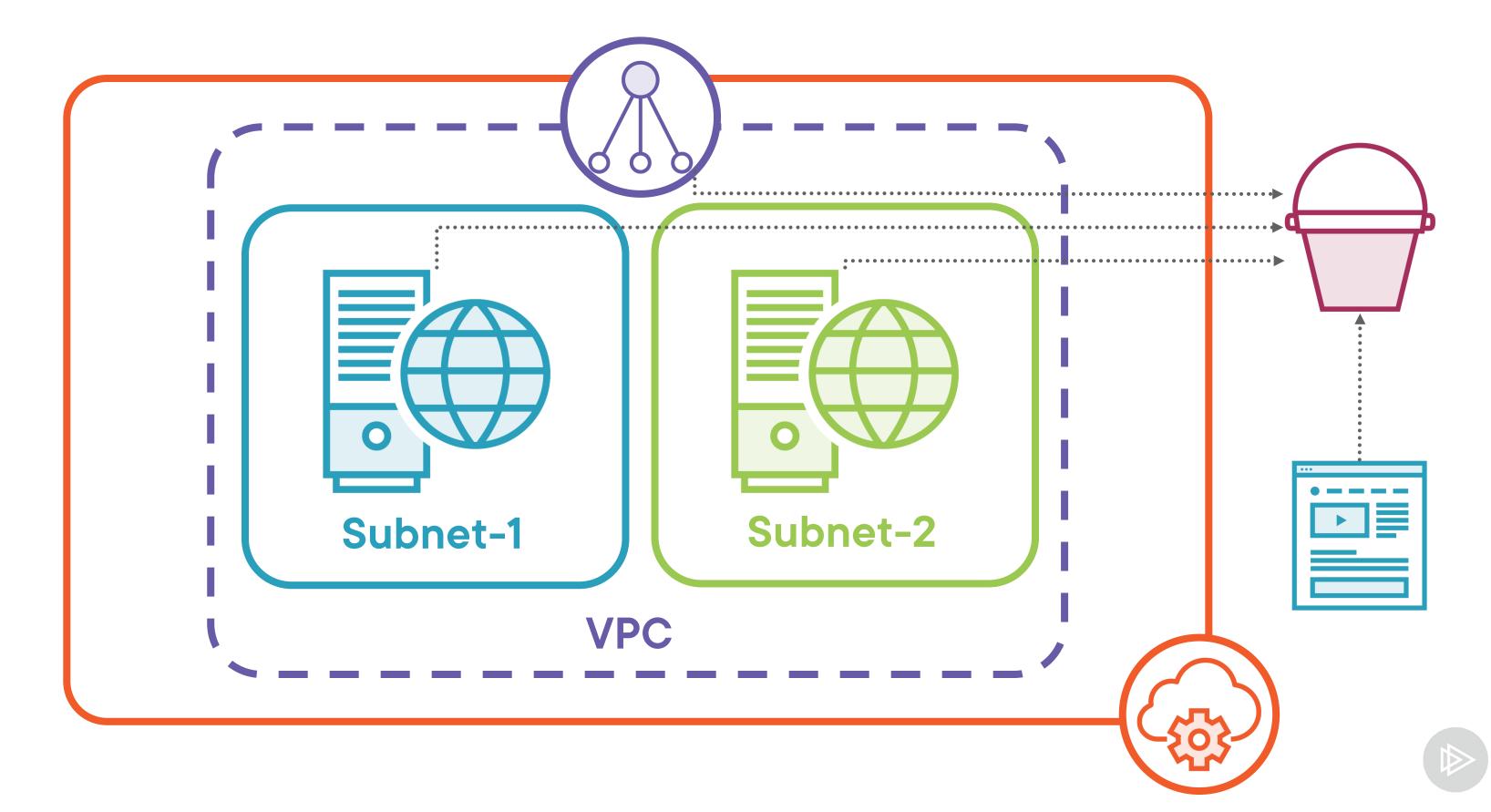
Dynamically increase instances

Use a template for startup script

Simplify networking input

Add consistent naming prefix

Deployment Architecture



Loops in Terraform



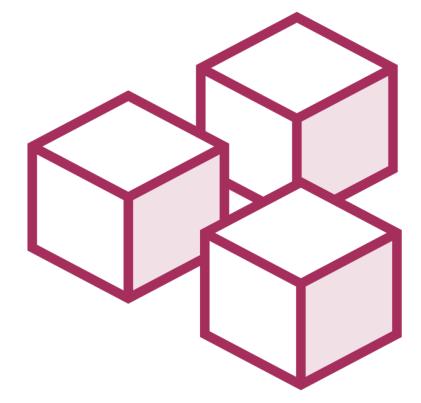
Looping Constructs

[1, 2, 3] K V

Count

Integer

For_each
Map or set



Dynamic blocks
Map or set



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_server[0].name # Single instance
aws_instance.web_server[*].name # All instances

For_each Syntax

```
resource "aws_s3_bucket_object" "taco_toppings" {
 for_each = {
  cheese = "cheese.png"
  lettuce = "lettuce.png"
 key = each.value
 source = ".${each.value}"
 tags = {
  Name = each.key
```

```
resource "aws_s3_bucket_object" "taco_toppings" {
  for_each = {
    cheese = "cheese.png"
    lettuce = "lettuce.png"
  }
}
```

For_each References

```
<resource_type>.<name_label>[key].<attribute>
aws_s3_bucket_object.taco_toppings["cheese"].id # Single instance
aws_s3_bucket_object.taco_toppings[*].id # All instances
```

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"
```



Terraform Functions and Expressions



Terraform Expressions



Interpolation and heredoc

Arithmetic and logical operators

Conditional expressions

For expressions

Terraform Functions



Built-in Terraform

Func_name(arg1, arg2, arg3, ...)

Test in 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")
```



Summary



Looping for dynamic configurations

Applying functions for transformation



Up Next:

Using a Module for Common Configurations

