

Template Anatomy

Resources	Mappings
Description	Conditions
Metadata	Transform
Parameters	Outputs

A `Resources` section is required.

Intrinsic Functions Syntax

YAML Shorthand	<code>! Ref arg</code>
YAML	<code>Fn::Ref arg</code>
JSON	<code>{ "Fn::Ref": arg }</code>

Common Intrinsic Functions

<code>!FindInMap [Map, TopLevelKey, SecondLevelKey]</code>	Returns values of keys in 2-level map declared in Mappings section
<code>!GetAtt a.Arn</code>	Get Arn attribute of resource a in this stack
<code>!ImportValue a</code>	Reference export a from another stack
<code>!Join [':', ['a', 'b']]</code>	Produces 'a:b'
<code>!Ref a</code>	Get value of parameter or resource a in this stack
<code>!Select ['1', ['a', 'b']]</code>	Produces 'b'
<code>!Split [':', 'a:b']</code>	Produces ['a', 'b']
<code>!Sub 'a-\${b}'</code>	Inject the value of b into a string

You can't nest the shorthand YAML functions. You must do:

```
Fn::ImportValue: !Sub "${a}-b"
not !ImportValue !Sub "${a}-b"
```

Transforms

```
'Fn::Transform':
- Name: 'AWS::Include'
Parameters:
Location: s3://bucket/snippet.yml
```

Use an Include transform to reference a template snippet stored separately from the main CloudFormation template.

Custom Resources

Use the `AWS::CloudFormation::CustomResource` or `Custom::String` resource type to define custom resources.

To create a custom resource, you need:

- A template that includes a custom resource type.
- A custom resource provider with a service token that the template developer uses.

During a stack operation, CloudFormation sends a request to a service token specified in the template, then waits for a response before proceeding.

Common Pseudo Parameters

<code>AWS::AccountId</code>	12-digit AWS account
<code>AWS::NoValue</code>	Use in conditionals
<code>AWS::Region</code>	Deployment region
<code>AWS::StackId</code>	ARN of the current stack
<code>AWS::StackName</code>	Name of the current stack

Reference pseudo parameters just like regular parameters, e.g. `!Ref AWS::Region`

Condition Functions

<code>!Equals ['a', 'b']</code>	false
<code>!And [!Equals ['a', 'a'], !Equals ['a', 'b']]</code>	false
<code>!Or [!Equals ['a', 'a'], !Equals ['a', 'b']]</code>	true
<code>!Not [!Equals ['a', 'a']]</code>	false
<code>!If [condition, 100, 10]</code>	100 if condition is true, else 10

Export Outputs

```
Outputs:
  MyVPCOutput:
    Value: !Ref VPCResource
    Export:
      Name: !Sub "${AWS::StackName}-VPCID"
```

- For each AWS account, Export names must be unique within a region.
- You can't create cross-stack references across regions.
- You can't delete a stack if another stack references one of its outputs.



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