Automating Infrastructure with CloudFormation

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CloudFormation Key Concepts

JSON

Resource Relationships

Feedback

Reusable

Interactive

Automated

DependsOn and Conditional Resources

```json
{
    "AWSTemplateFormatVersion" : "2010-09-09",
    "Mappings" : {
        "RegionMap" : {
            "us-east-1" : { "AMI" : "ami-76f0061f" },
            "us-west-1" : { "AMI" : "ami-655a0a20" },
            "eu-west-1" : { "AMI" : "ami-7fd4e10b" },
            "ap-northeast-1" : { "AMI" : "ami-8e08a38f" },
            "ap-southeast-1" : { "AMI" : "ami-72621c20" }
        }
    },
    "Resources" : {
        "Ec2Instance" : {
            "Type" : "AWS::EC2::Instance",
            "Properties" : {
                "ImageId" : {
                    "Fn::FindInMap" : [ "RegionMap", { "Ref" : "AWS::Region" }, "AMI" ]
                }
            },
            "DependsOn" : "myDB"
        },
        "myDB" : {
            "Type" : "AWS::RDS::DBInstance",
            "Properties" : {
                "AllocatedStorage" : "5",
                "DBInstanceClass" : "db.m1.small",
                "Engine" : "MySQL",
                "EngineVersion" : "5.5",
                "MasterUsername" : "MyName",
                "MasterUserPassword" : "MyPassword"
            }
        }
    }
}
```

Troubleshooting Failed Stacks

Troubleshooting Failed Stacks

Linux

Review log files in /var/log

Windows

Review log files in c:\cfn\log

Creating Nested Templates

VPC Template

Input Parameters

Outputs

VpcId
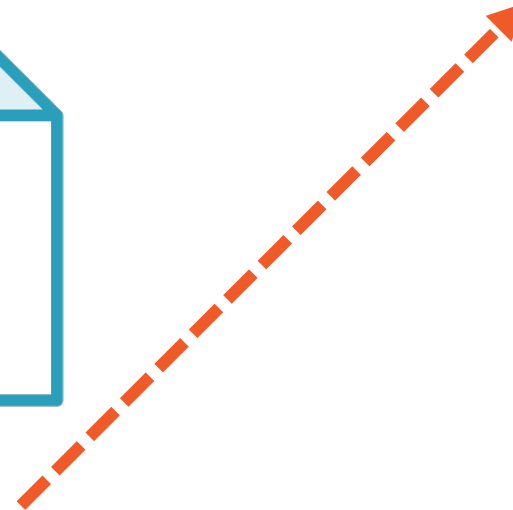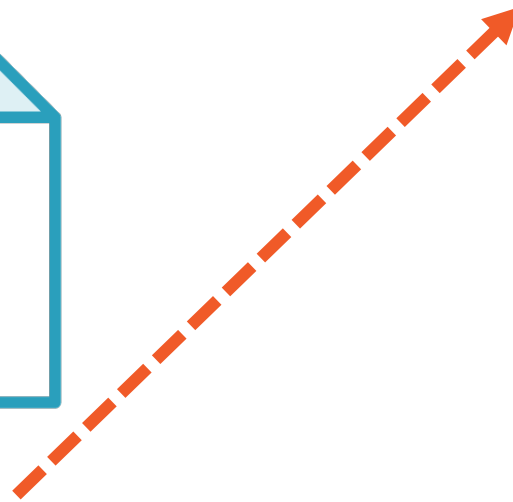SubnetId

Database Template

Input Parameters

Outputs

VpcId
SubnetId
DBName
DBUser
DBPassword

Web Server Template

Input Parameters

Custom Resources

AWS Resources

3rd Party

```
"Resources" : {
    "MyAuthService" : {
        "Type": "Custom::AuthService",
        "Version" : "1.0",
        "Properties" : {
            "ServiceToken": "arn:aws:sns: ...",
            "Action" : "CreateAuthSubscription()",
            "Site" : [ "http://example.com" ]
        }
    }
}
```

Custom Resources

Lambda-backed custom resources

SNS-backed custom resources

Common use cases for custom resources

Custom programming logic

Lookup AMI id's

Lookup resource id's for VPC's, etc.
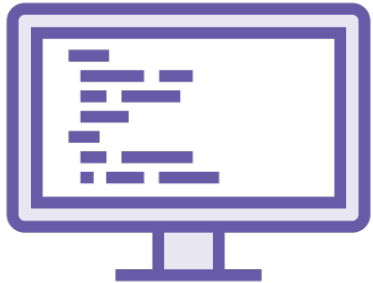
CloudFormation Best Practices
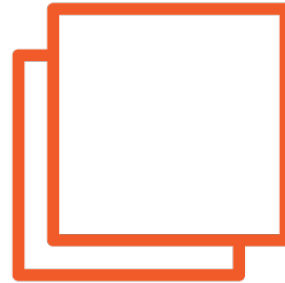
Don't embed credentials

Validate templates

Manage Everything from CloudFormation

Use constraints & AWS-specific parameter types

Use nested stacks to reduce code duplication

Use code reviews and store templates in version control

Summary

Template authoring

Bootstrapping

Nested templates

Troubleshooting failed stacks

Best practices