MANAGING AWS ACCOUNTS ON A MASSIVE SCALE

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QUICK INTRO

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Passion for:
Automation, IaC, DevOps, GitOps

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EUROPEAN LEADER IN PUBLIC CLOUD

- We offer a fully managed public cloud transformation, from infrastructure to application development
- We are the preferred partner for our strategic hyperscale partners AWS, Microsoft and Google
- Nordcloud is a Managed Services Provider for all 3 hyperscale partners - being in the elite group of less than ten companies worldwide with this same status
- We are recognized in Gartner's Magic Quadrant for Public Cloud Infrastructure Managed Services Providers 2017 & 2018
- Among TOP 5 providers globally in DevOps and Mode 2 delivery on public cloud (Gartner)

Key numbers

- Customers: +100 *
- Deployed projects: +500
- Founded 2011
- Growth 2015-2018 50 % Revenue CAGR

* 40% of OMX40

Highly skilled organization

350+ cloud experts with
250+ certifications and
200+ business and technical accreditations.

Local presence

Norway, Finland, Sweden, Poland, Netherlands, UK, Austria, Switzerland, Denmark, Germany

AGENDA

1. The need for multiple AWS accounts
2. Provisioning accounts
    a. Traditional approach
    b. Cloud native approach
3. Deploying infrastructure and application stacks

AWS ACCOUNT

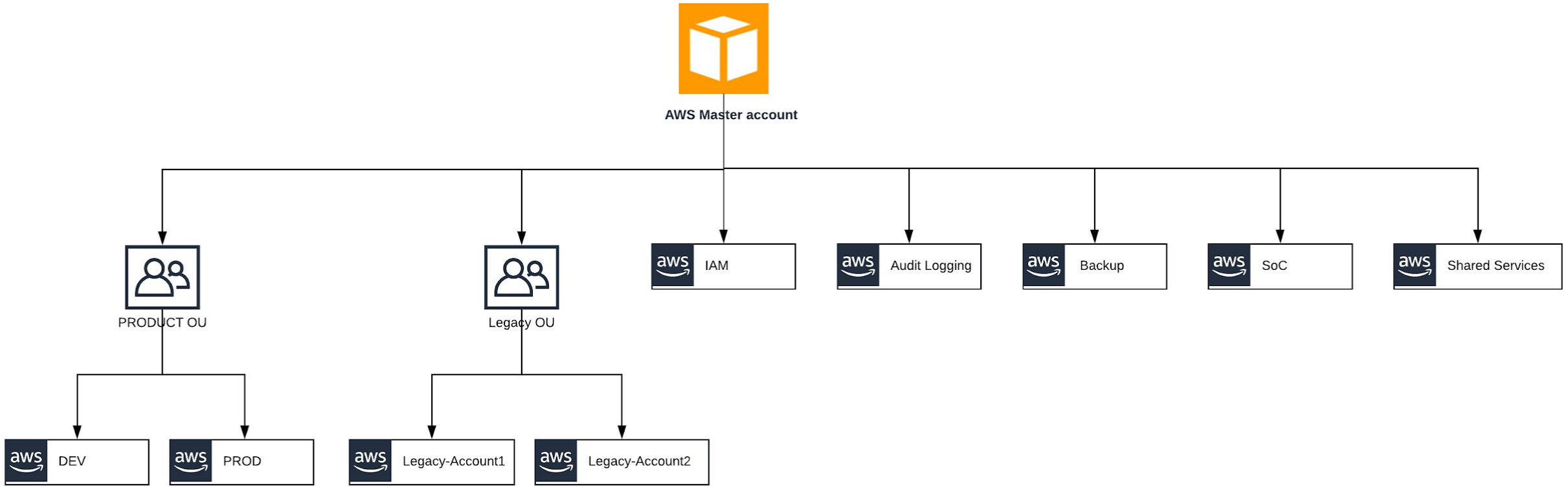
- AWS account is a container of resources
- Email is “root” user
- Billing attached
  - Directly
  - Or consolidated in another account
- Standalone or part of AWS Organization
- Does NOT cost you money to create it

WHY MORE AWS ACCOUNTS?

- **Environment** isolation
  - development
  - production
- **Resource** isolation
  - Shared services
  - Backups
  - Sandboxing
- **Business** or **product** isolation
  - Organizational units
- **Teams** isolation
  - Product teams
  - Tech stack teams (Network, Development)

“Everything is about **reducing** blast radius.”

GENERIC AWS ORGANIZATION



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PROVISIONING NEW AWS ACCOUNTS - VENDING MACHINE

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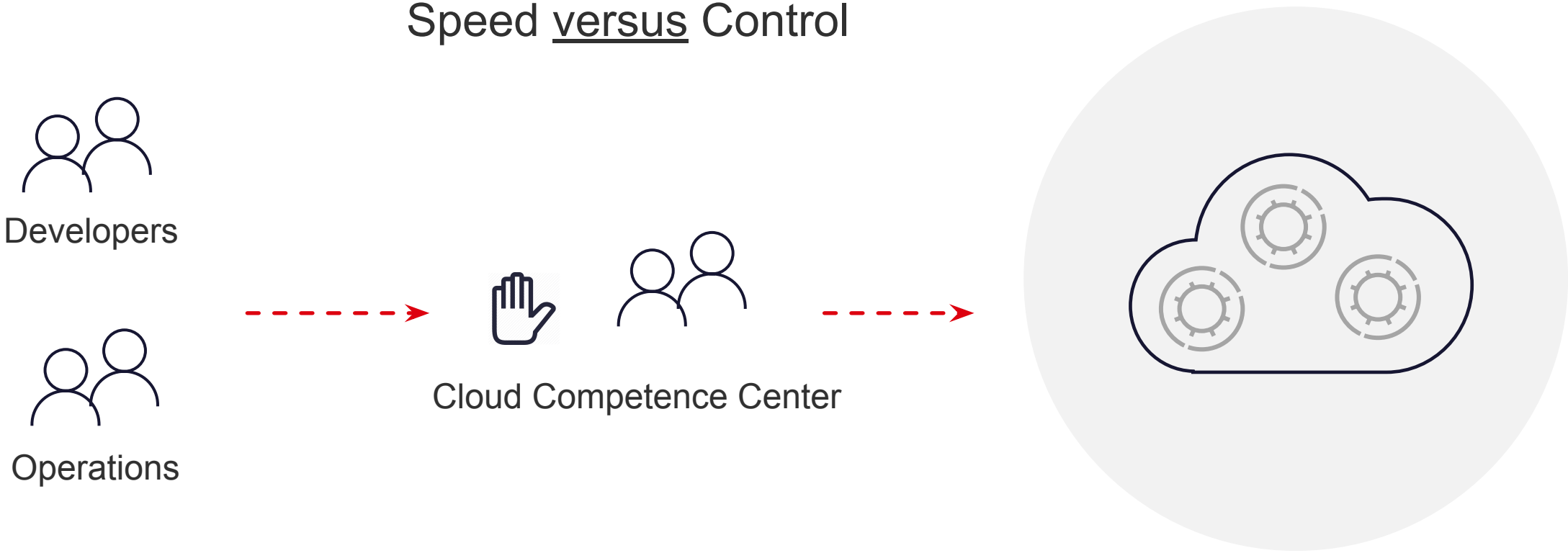
TRADITIONAL APPROACH OF ACCOUNT CREATION

Speed versus Control



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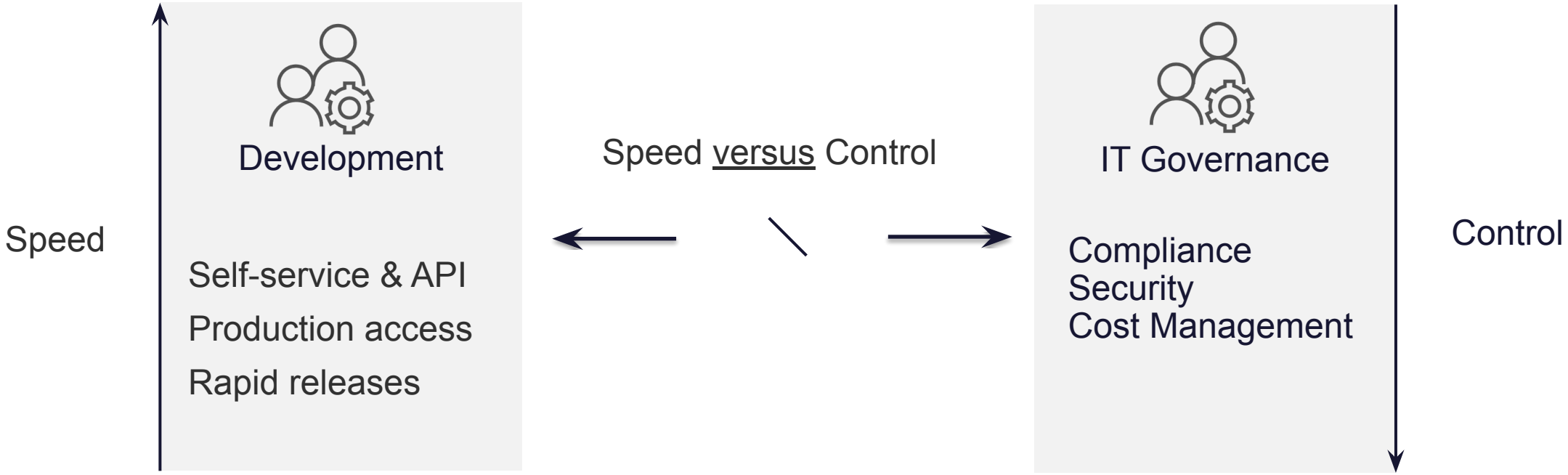
TRADITIONAL APPROACH



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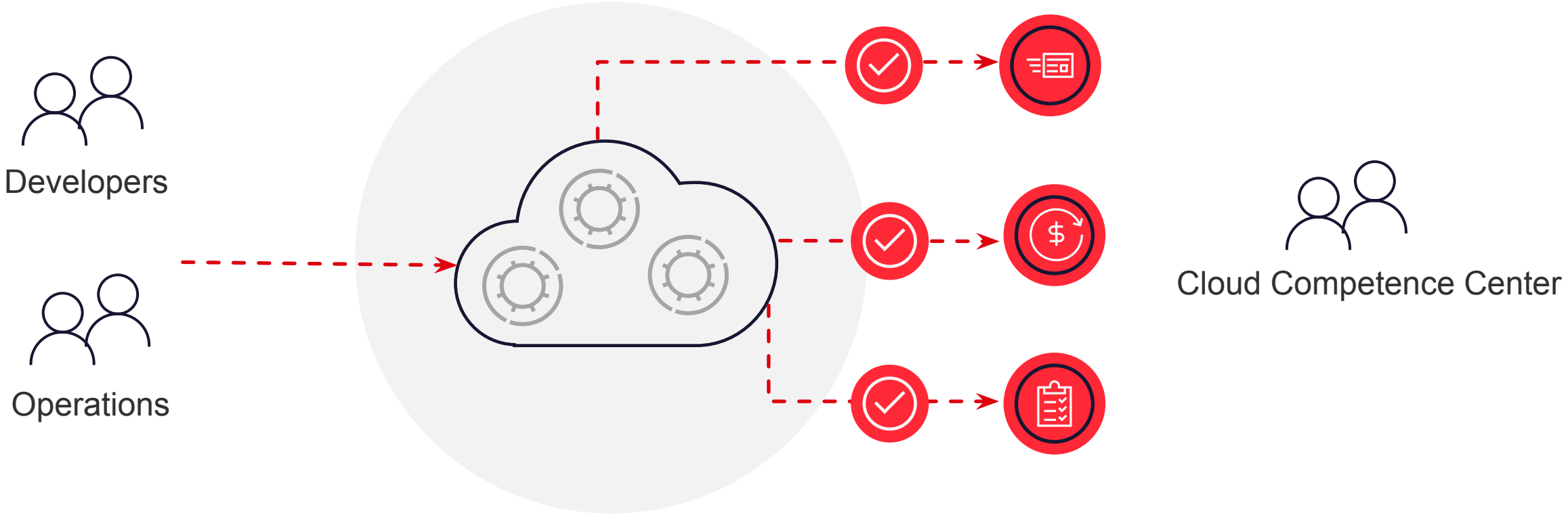
CLOUD NATIVE APPROACH



Speed with Control - automated foundation for provisioning

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PROVISIONER

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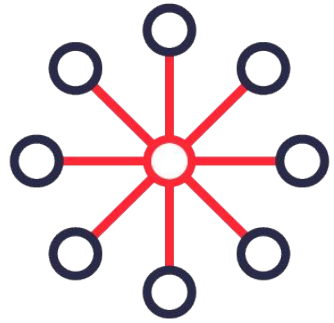
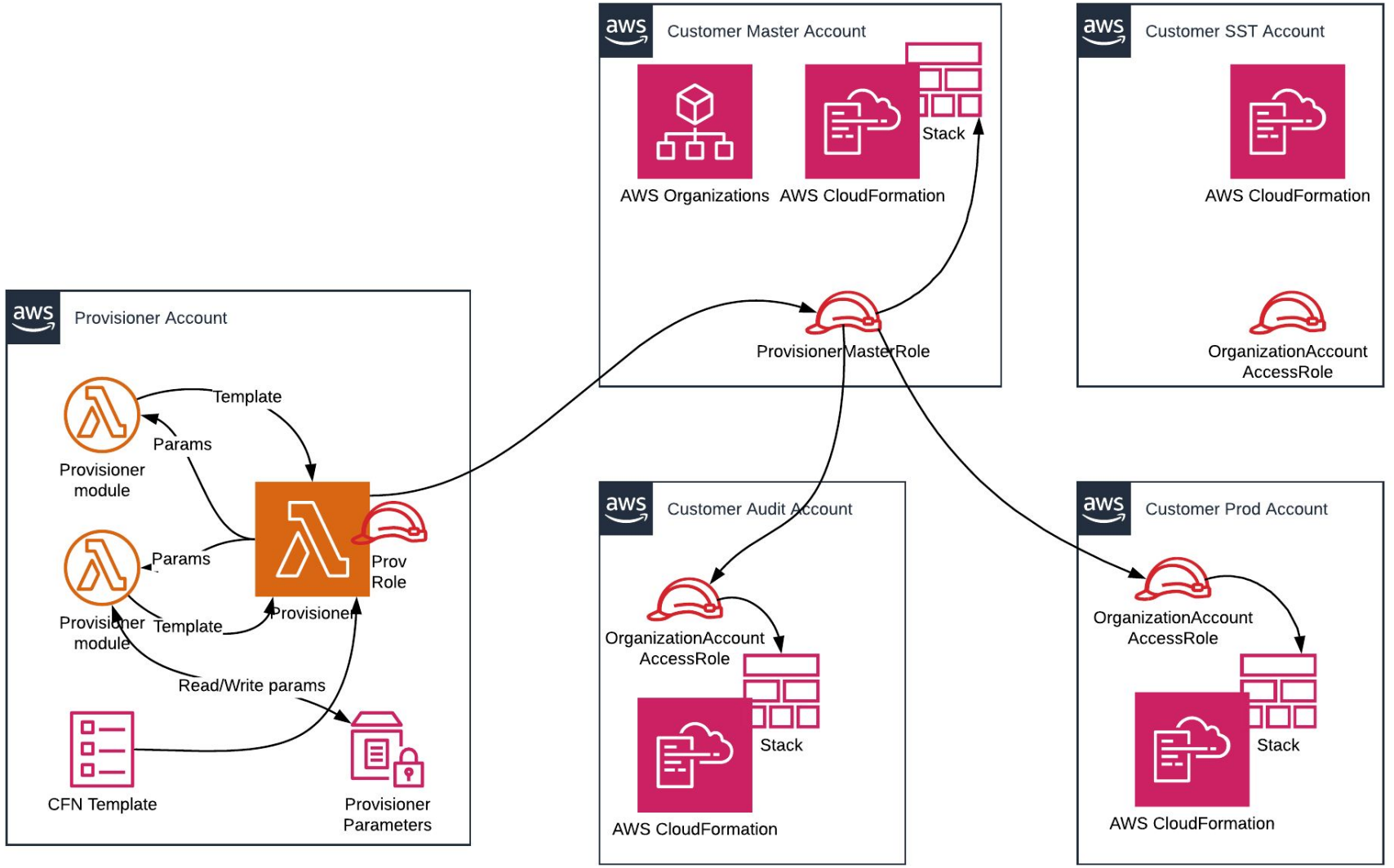
PROVISIONER MAIN FEATURES

- Manage **AWS Organization**
- Create static (CloudFormation) or dynamic (Lambda) **templates and blueprints** that can be used to **provision** hundreds of AWS accounts
- Setup **core infrastructure** that will be automatically deployed to every Account in the Organizational Unit (OUs)
- Design and run sophisticated, **multi-account deployments**



HOW PROVISIONER WORKS



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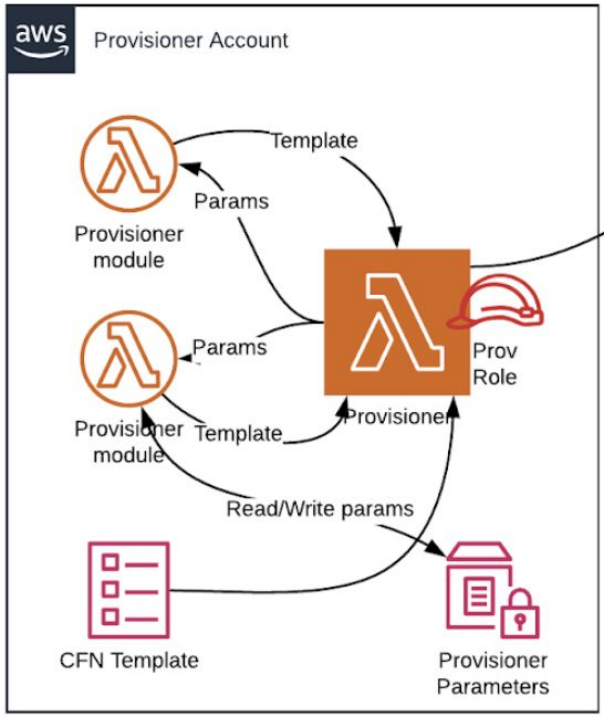
HOW PROVISIONER USES OBJECTS

If you want to define a state - run **THIS** Cloudformation yaml on every account in **XYZ** OU, provisioner needs to know

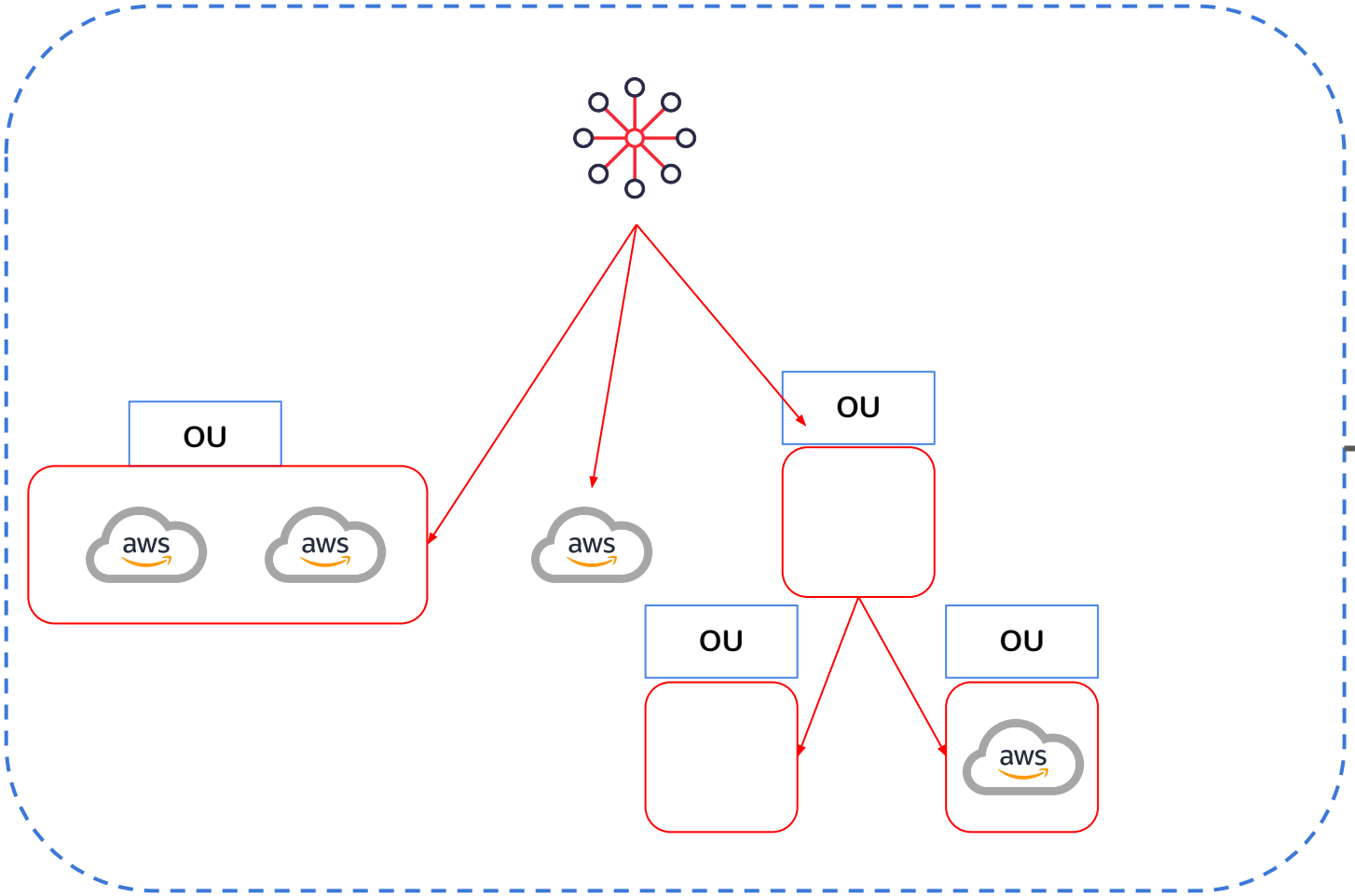
1) That **THIS** cloudformation template needs to be launched → create template object in provisioner with i.e. S3 URL to CFN stack

2) Combine 1+ templates into a single → blueprint object that represents a set of templates to be provisioned during a single operation

3) Define via → deployment object which blueprint object should be deployed on accounts in **XYZ** OU

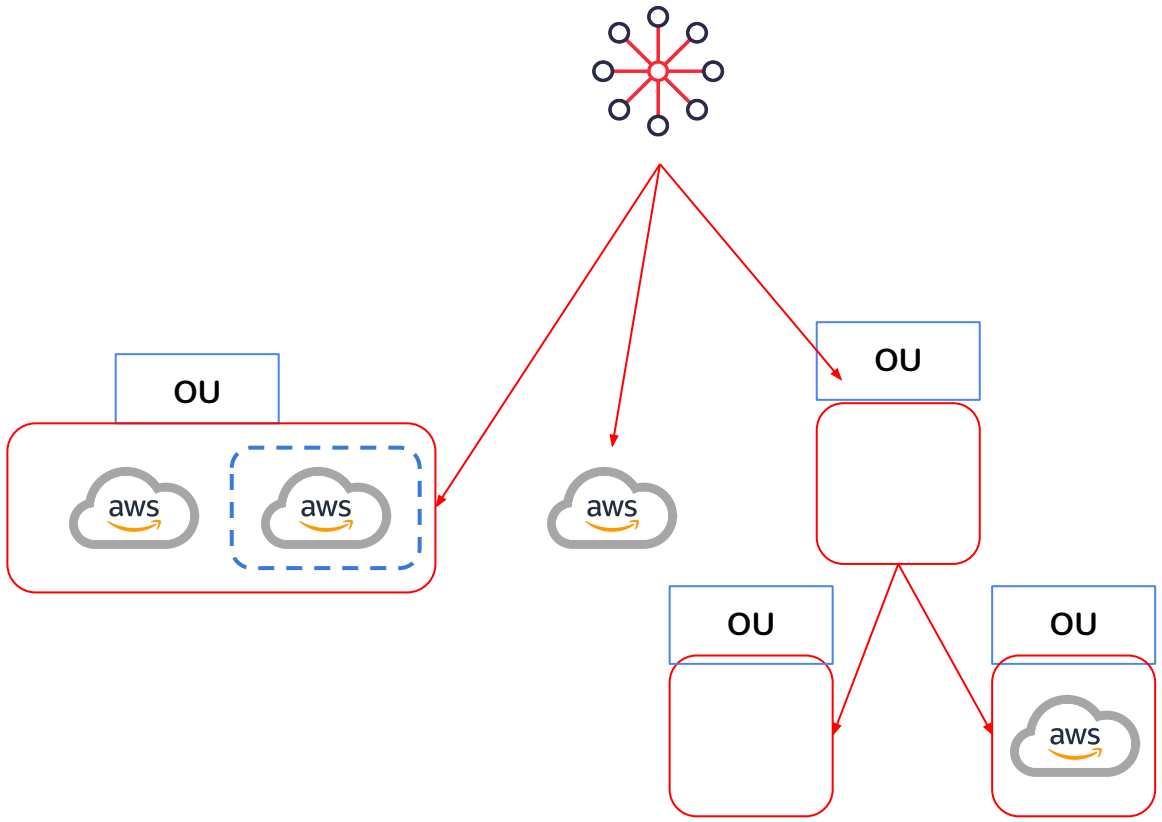


ORGANIZATION (provctl apply -f org.yaml)




```yaml
apiVersion: v1
kind: Organization
metadata:
 name: TheBestOrganization
spec:
 orgAccountId: 123456789012
 access:
 - roleArn: RoleForProvisioner
   externalId: poufnyajdi
```

ACCOUNT (provctl apply -f account.yaml)




```yaml
apiVersion: v1
kind: Account
metadata:
 name: my-iam-account
spec:
 organizationalUnit:
  name: core
  accountAlias: my-iam-account
  email: real.email+iam@demo.cloud
```

PROVISIONER ACCOUNT OBJECT

```yaml
apiVersion: v1
kind: Account
metadata:
  name: my-iam-account
spec:
  organizationalUnit:
    name: core
    accountAlias: my-iam-account
    email: real-email+iam@demo.cloud
---
apiVersion: v1
kind: Account
...
```

“**GitOps:** versioned CI/CD on top of declarative infrastructure. Stop scripting and start shipping.”

- Kelsey Hightower

DEPLOY INFRASTRUCTURE AND APPLICATION STACKS

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WHAT PROVISIONER DOES

Provisioner is an **orchestration** tool.

It **takes**

- Static templates

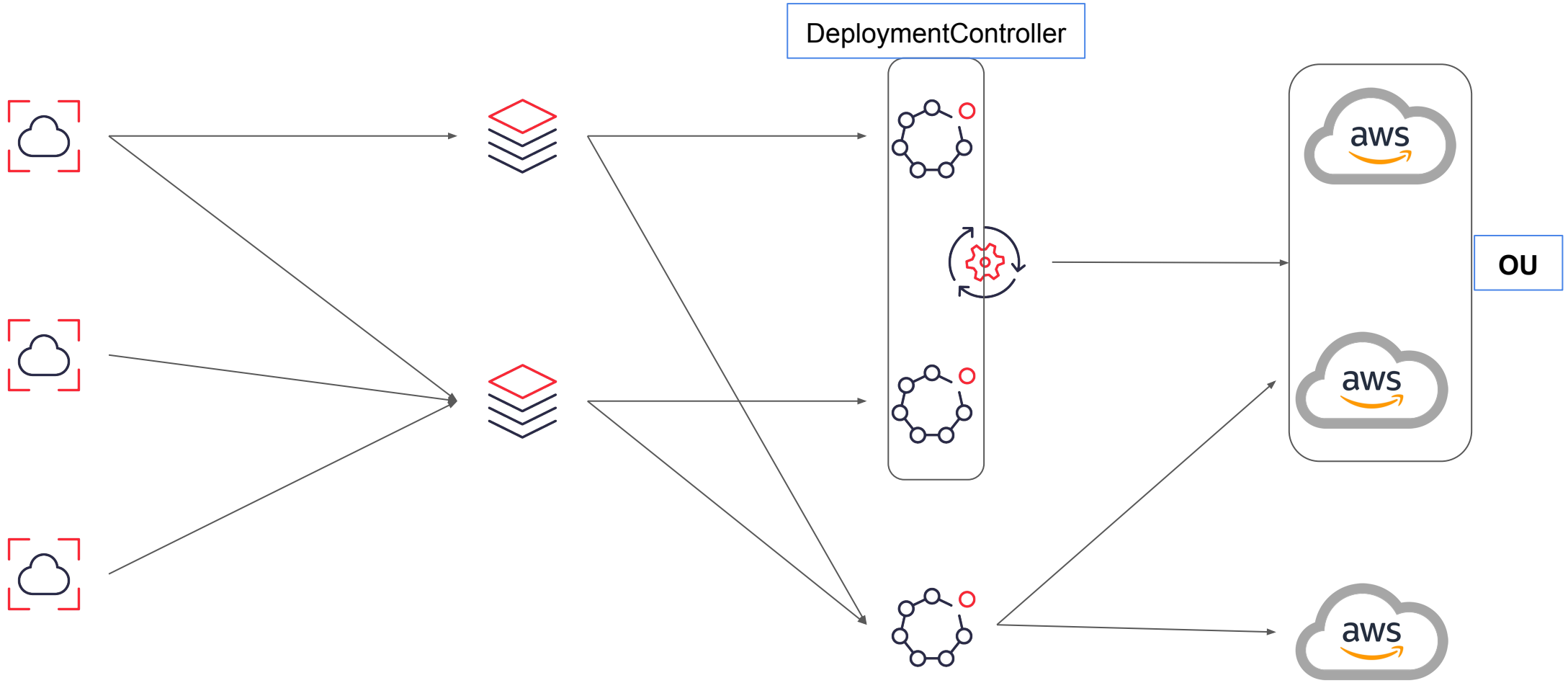
  Cloudformation template (yaml/json)

- Dynamic templates

  Provisioners sends defined parameters to Lambda function and receives in response Cloudformation template

and **deploys** Cloudformation stacks on particular standalone AWS Accounts or AWS Accounts within AWS Organizations OU

3000 FT VIEW OF DEPLOYMENT



PROVISIONER TEMPLATE OBJECT

```yaml
apiVersion: v1
kind: Template
metadata:
  name: iam-account-ReadOnlyRole
  version: 3
  annotations:
    environment: prod
spec:
  Source: ./cf-templates/iam-account/ReadOnlyRole.yaml
```

PROVISIONER BLUEPRINT OBJECT

```yaml
apiVersion: v1
kind: Blueprint
metadata:
  name: iam-account
  version: 6
spec:
  templates:
   - name: iam-account-ReadOnlyRole
   version: 3
   - name: iam-account-CloudAdminRole
   version: 2
   - name: iam-account-SandboxRole
   version: 1
```

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PROVISIONER DEPLOYMENT OBJECT

```
apiVersion: v1
kind: Deployment
metadata:
  name: iam-account
spec:
 -  name: manage-iam-roles
    account:
      name: nordcloud-iam-account
      blueprint:
        name: iam-account
        version: 6
      defaultSettings:
        regions:
       -  eu-north-1
           parameters:
       -  name: IdentityProvider
          value: arn:aws:iam::123456789012:saml-provider/gsuite
```

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PROVCTL GET ACCOUNTS

```
Ivans-MBP:ipetrushevski:~$ provctl get accounts
NAME                                ALIAS                                ACCOUNT ID     ORGANIZATIONAL UNIT                STATUS
demo-husq-simple-dep-test           demo-husq-simple-dep-test            48[redacted]   demo-husq-prov-simple              succeeded
rnd_prov_test_account               rnd-prov-test-account5               32[redacted]   demo-ou-3                          succeeded
aws-op-demo-monday                  aws-op-demo-monday                   54[redacted]   demo-ou-3                          succeeded
rnd-prov-test-async                 rnd-prov-test-async                  90[redacted]   demo-ou-child                      succeeded
demo-husq-audit                                                          35[redacted]   root                               succeeded
aws-demo-audit                                                           16[redacted]   root                               succeeded
nordcloud-test-organization         aws-nordcloud-organization-test      61[redacted]   root                               succeeded
test-new-account-kp                 testnewaccountkp0089                 62[redacted]   root                               succeeded
kamil-test-22                       kamil-test-1                         69[redacted]   account-policy-demo-ou             succeeded
kamil-test-account-234              kamil-trest-cos-tam                  51[redacted]   root                               succeeded
test-account-12345                                                       60[redacted]   a                                  failed
test-9995                           nordlcoud-test-9995                  36[redacted]   demo-ou-child-333                  succeeded
test-new-account-kp-2                                                    49[redacted]   root                               succeeded
aws-nc-demo-tue                     aws-nc-demo-tue                      31[redacted]   root                               succeeded
aws-nc-mc-demo                      aws-nc-mc-demo                       20[redacted]   demo-ou-child                      succeeded
test-new-account-kp-2222            testnewaccountkp0089112              10[redacted]   root                               succeeded
demo-mc-test-0003TestKor            demo-mc-test-0003testkorr            24[redacted]   root                               succeeded
test-new-account-kp-22222           testnewaccountkp00891122             54[redacted]   root                               succeeded
rnd-prov-test-async-final-api007    rnd-prov-test-async-final-api0010    93[redacted]   root                               succeeded
rnd-prov-test-async-final-api                                            15[redacted]   root                               succeeded
```

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PROVCTL GET TEMPLATES

```
Ivans-MBP:ipetrushevski:~$ provctl get templates
NAME                              VERSION         TYPE
demo-husq-simple-lambda           1.0             S3_URL
demo-husq-simple-sqs              1.0             S3_URL
foundation_audit                  0.0.a12a97b4    LAMBDA_ARN
foundation_soc                    0.0.a12a97b4    LAMBDA_ARN
prep_audit                        0.0.a12a97b4    LAMBDA_ARN
prep_soc                          0.0.a12a97b4    LAMBDA_ARN
source                            0.0.a12a97b4    LAMBDA_ARN
sqsTemplate 33                    1               S3_URL
sqsTemplate1                      1               LOCAL
sqsTemplate                       1               LOCAL
test-aws-template-x               0.0.d6f5ec4e    S3_URL
test-aws-template-x               1.1             S3_URL
test-aws-template-xx              0.0.d6f5ec4e    S3_URL
test-aws-template                 1.0             LAMBDA_ARN
test-blueprint-dynamic-640847a0   0.0.1           LAMBDA_ARN
test-local-template               1.0             S3_URL
test-local-template               2.0             S3_URL
test-s3-template-2                1.0             S3_URL
```

PROVCTL GET TEMPLATE BODY

```
Ivans-MBP:ipetrushevski:~$ provctl get template iam-account-ReadOnlyRole:3 --body
{
  "AWSTemplateFormatVersion": "2010-09-09",
  "Description": "Creates IAM ReadOnlyRole for Federated Principal in IAM Account",
  "Parameters": {
    "IdentityProvider": {
      "Type": "String",
      "Description": "Provide the arn of the Federation Identity Provider"
    }
  },
  "Resources": {
    "Role": {
      "Type": "AWS::IAM::Role",
      "Properties": {
        "RoleName": "ReadOnlyRole",
        "Description": "Read only role used to jump in other AWS accounts with ReadOnly access",
        "AssumeRolePolicyDocument": {
          "Statement": [
            {
              "Effect": "Allow",
              "Principal": {
```

PROVCTL GET BLUEPRINTS

```
Ivans-MBP:ipetrushevski:~$ provctl get blueprints
NAME                          VERSION    TEMPLATES NUM
blueprint-sqs-lambda          1.0        2
demo-husq-foundation-audit    1.0        1
demo-husq-foundation-soc      1.0        1
demo-husq-prep-audit          1.0        1
demo-husq-prep-soc            1.0        1
demo-husq-service             1.0        1
demo-husq-simple              1.0        2
test-blueprint-dynamic        1.0.0      2
test-manual                   10         1
```

MORE COMMANDS...

Change/choose Provisioner Organization:
provctl change-org

Create/update resources defined in template.yaml:
provctl apply -f template.yaml

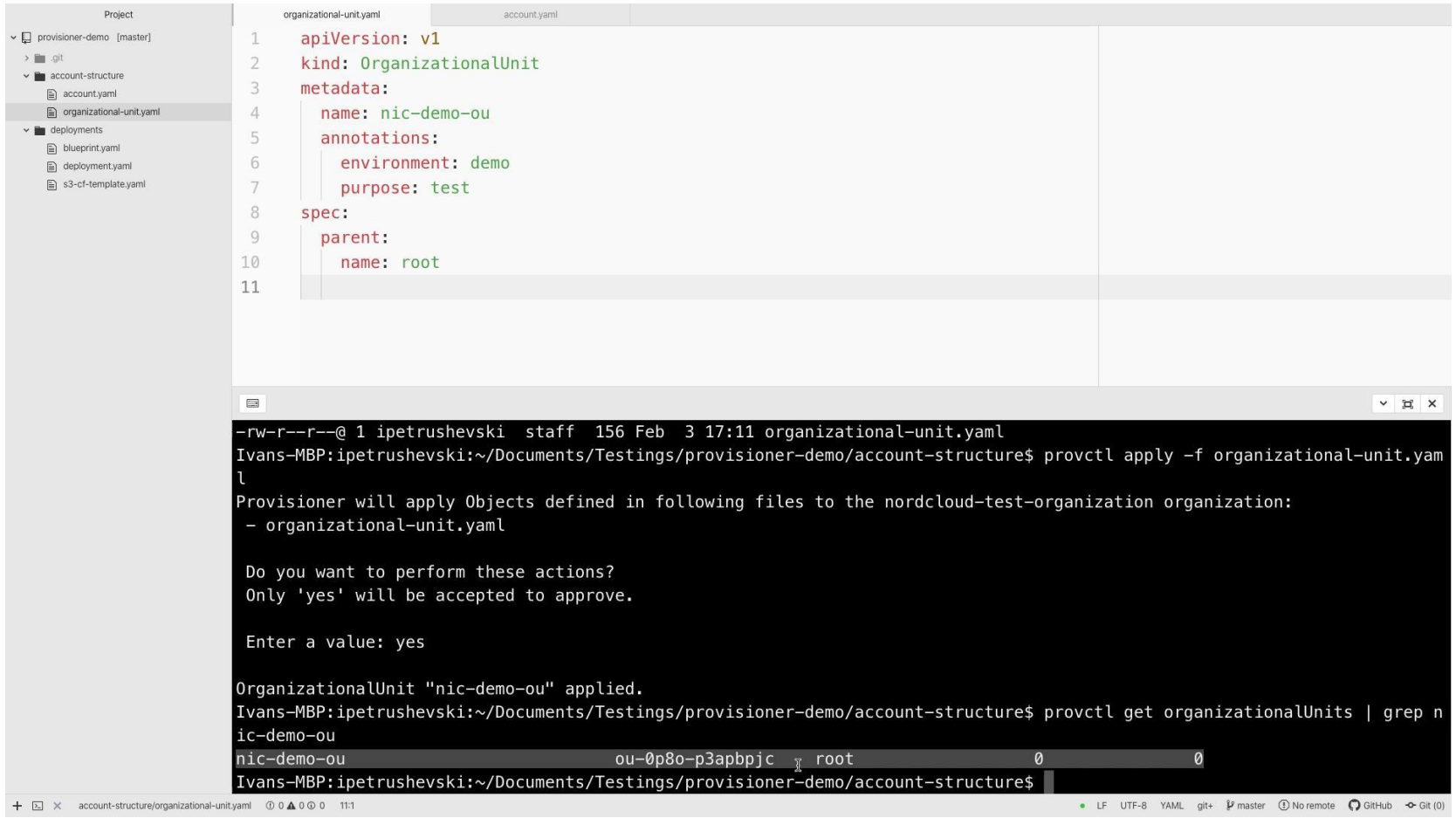
Describe template named s3bucket:
provctl describe template s3bucket

Delete Blueprint WebApp1:
provctl delete blueprint WebApp1

List all deployments with version and type:
provctl get deployments

DEMO - OU AND ACCOUNT CREATION

[OU-And-Account-Creation.mov]



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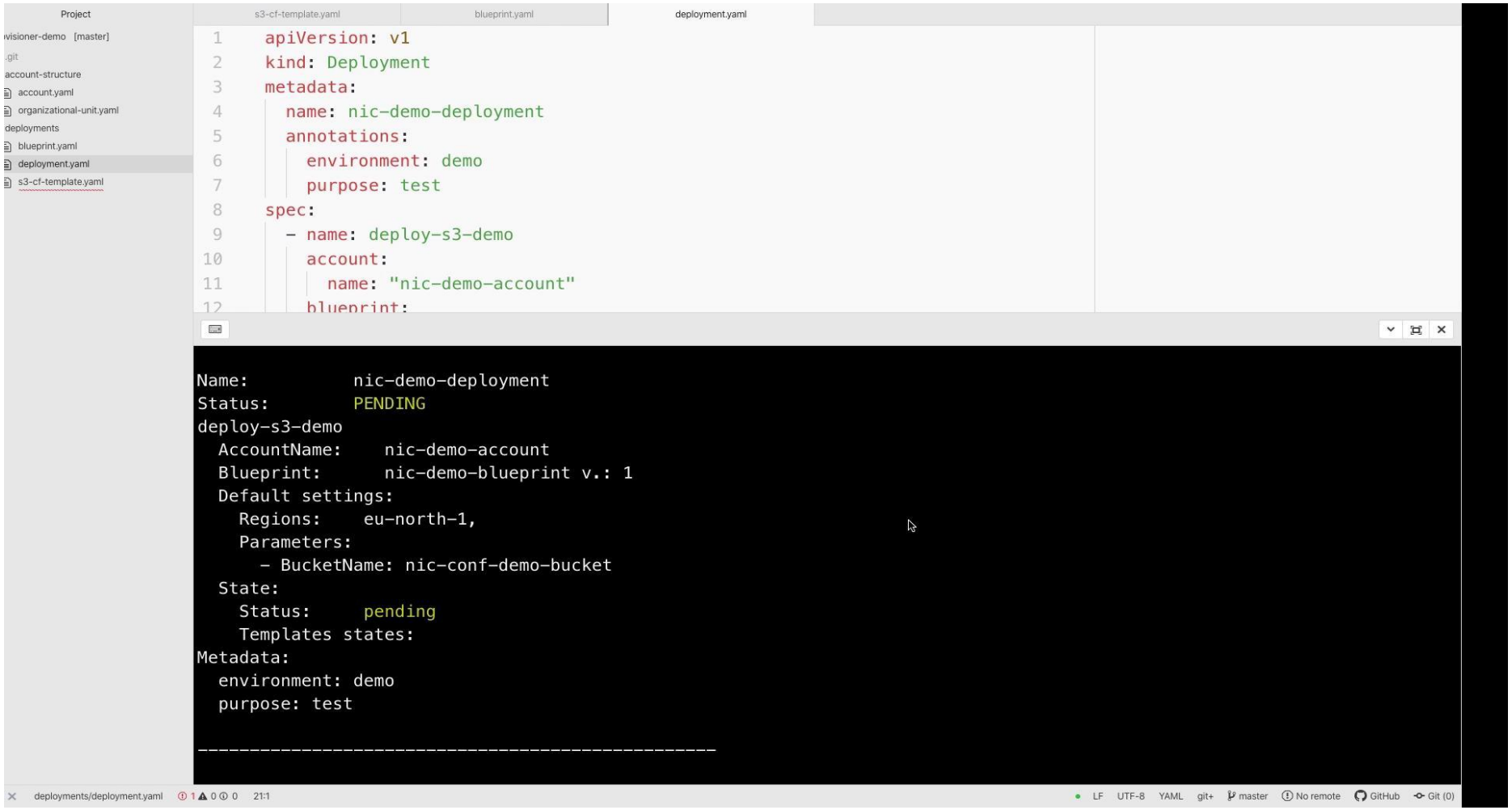
DEMO - S3 BUCKET DEPLOYMENT

deployment.mov



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THANK YOU!

Let’s stay in touch

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