

Running Docker Applications using the EC2 Container Service



Justin Menga

FULL STACK TECHNOLOGIST

@jmenga pseudo.co.de

Introduction

EC2 Container Service Overview

- ECS architecture

Publishing Docker Images to ECR

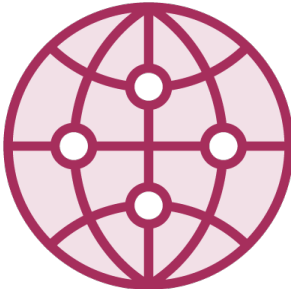
- Creating ECR repositories
- Publishing using the release pipeline

Running Docker Applications using ECS

- Creating ECS clusters
- Creating ECS task definitions
- Running ECS services and tasks

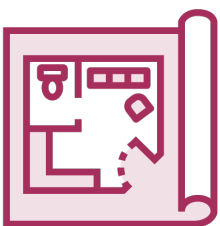
EC2 Container Service Overview

EC2 Container Service



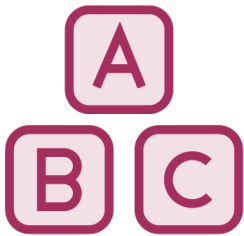
- ECS Clusters
- ECS Task Definitions
- ECS Services
- ECS Tasks

ECS Task Definition



- Image
- Memory
- Port Mappings
- Environment Variables

ECS Service



- ECS Cluster
- ECS Task Definition
- Desired Count

Schedule Containers
Container Metrics

Pull Images



ECR

Repository



ECR

Repository

latest
v1.5.2
v1.5.1

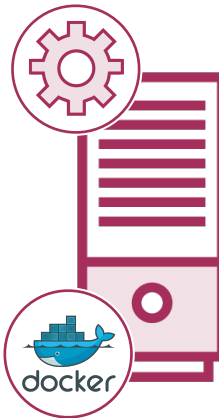
ECS Container Instances

ECS Agent



1.5.1

ECS Agent



1.5.1

ECS Agent



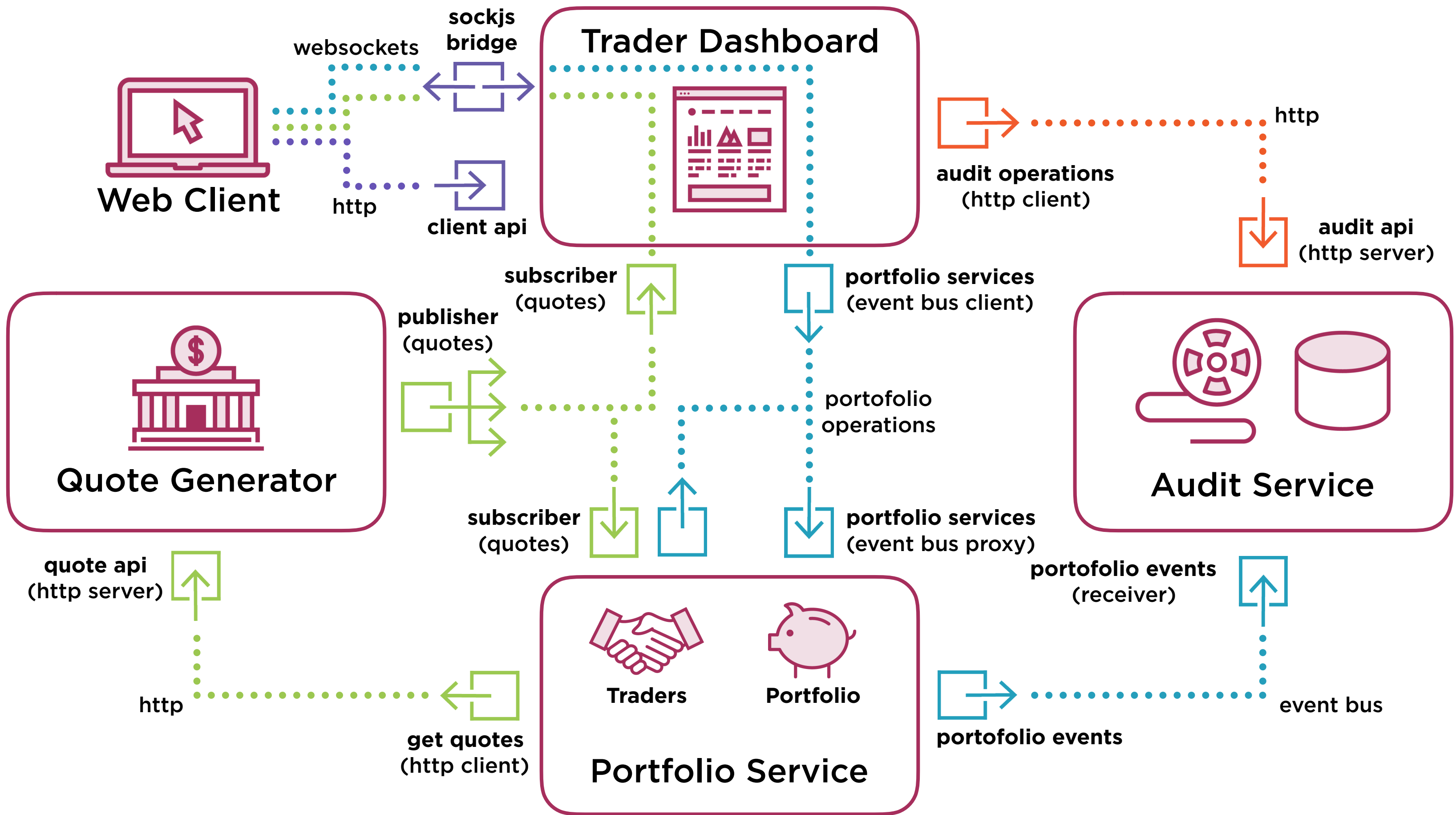
Application Service

Desired Count = 2

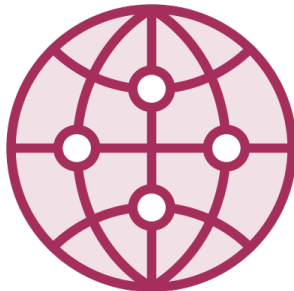
Application Version = 1.5.1

Autoscaling Group

ECS Cluster



EC2 Container Service



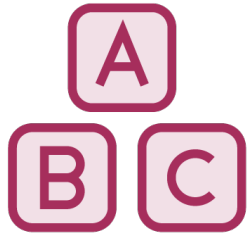
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Repository



ECR

Repository

latest
v1.5.2
v1.5.1

EC2 Container Registry

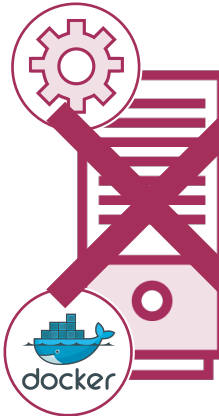
ECS Container Instances

ECS Agent



1.5.1

ECS Agent



1.5.1

ECS Agent



1.5.1

Application Service

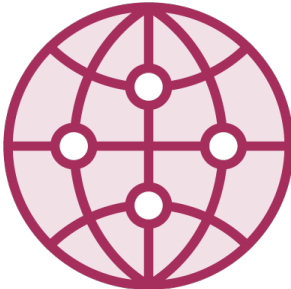
Desired Count = 2

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Autoscaling Group

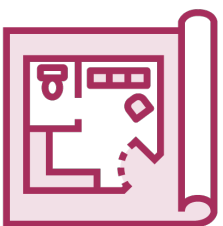
ECS Cluster

EC2 Container Service



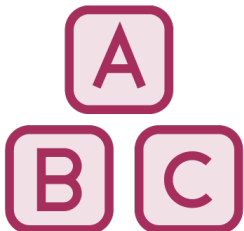
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- ECS Services
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ECS Task Definition



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ECS Service



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- ECS Task Definition
- Desired Count

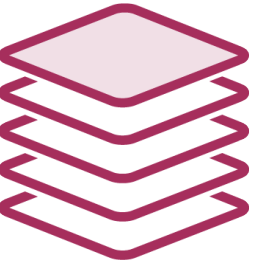
Schedule Containers
Container Metrics

Pull Images



ECR

Repository



ECR

Repository

latest

v1.5.2

v1.5.1

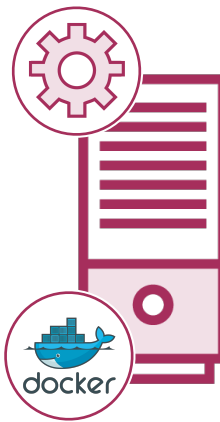
ECS Container Instances

ECS Agent



1.5.1

ECS Agent



1.5.1

Application Service

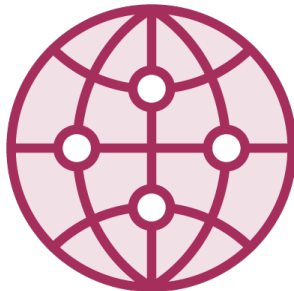
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Application Version = 1.5.2

Autoscaling Group

ECS Cluster

EC2 Container Service



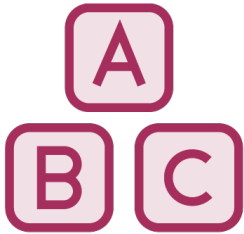
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ECR

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EC2 Container Registry

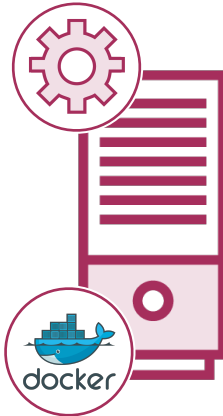
ECS Container Instances

ECS Agent



1.5.2

ECS Agent



1.5.1

Application Service

Desired Count = 2

Application Version = 1.5.2

Autoscaling Group

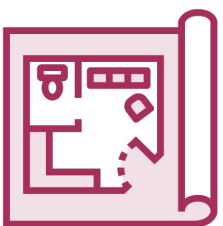
ECS Cluster

EC2 Container Service



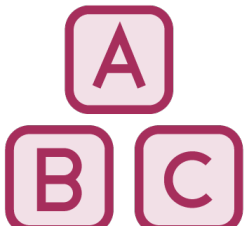
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- ECS Tasks

ECS Task Definition



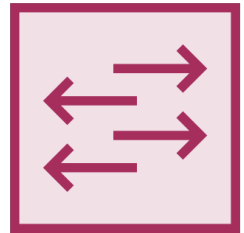
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ECS Service

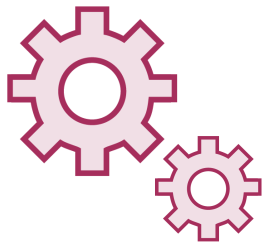


- ECS Cluster
- ECS Task Definition
- Desired Count

Connection Draining
Instance Registration
Health Checks



Application
Load Balancer



ECS Tasks

Schedule Containers
Container Metrics

Pull Images



ECR

Repository



ECR

Repository

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v1.5.2
v1.5.1

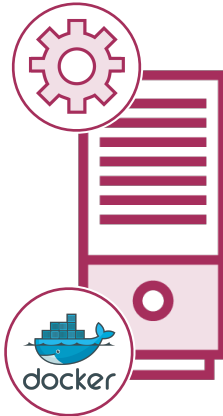
ECS Container Instances

ECS
Agent



1.5.2

ECS
Agent



1.5.2

Application Service

Desired Count = 2

Application Version = 1.5.2

Autoscaling Group

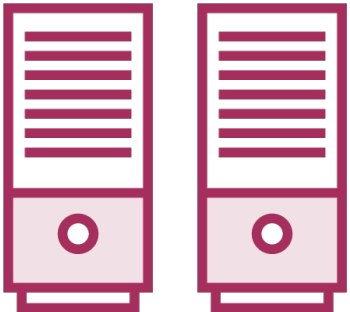
ECS Cluster

Publishing Images to EC2 Container Registry

Docker Hub

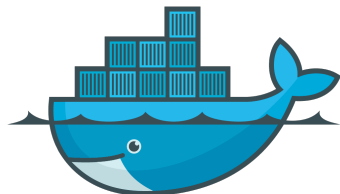
Release Pipeline

Docker Hosts



Publish

Pull



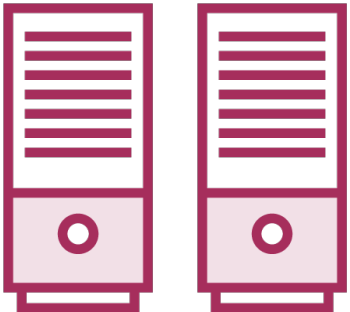
docker

Docker Hub

EC2 Container Registry

Release Pipeline

ECS Instances



Publish

Pull

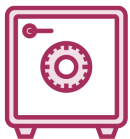
IAM Controls



Private



ECR

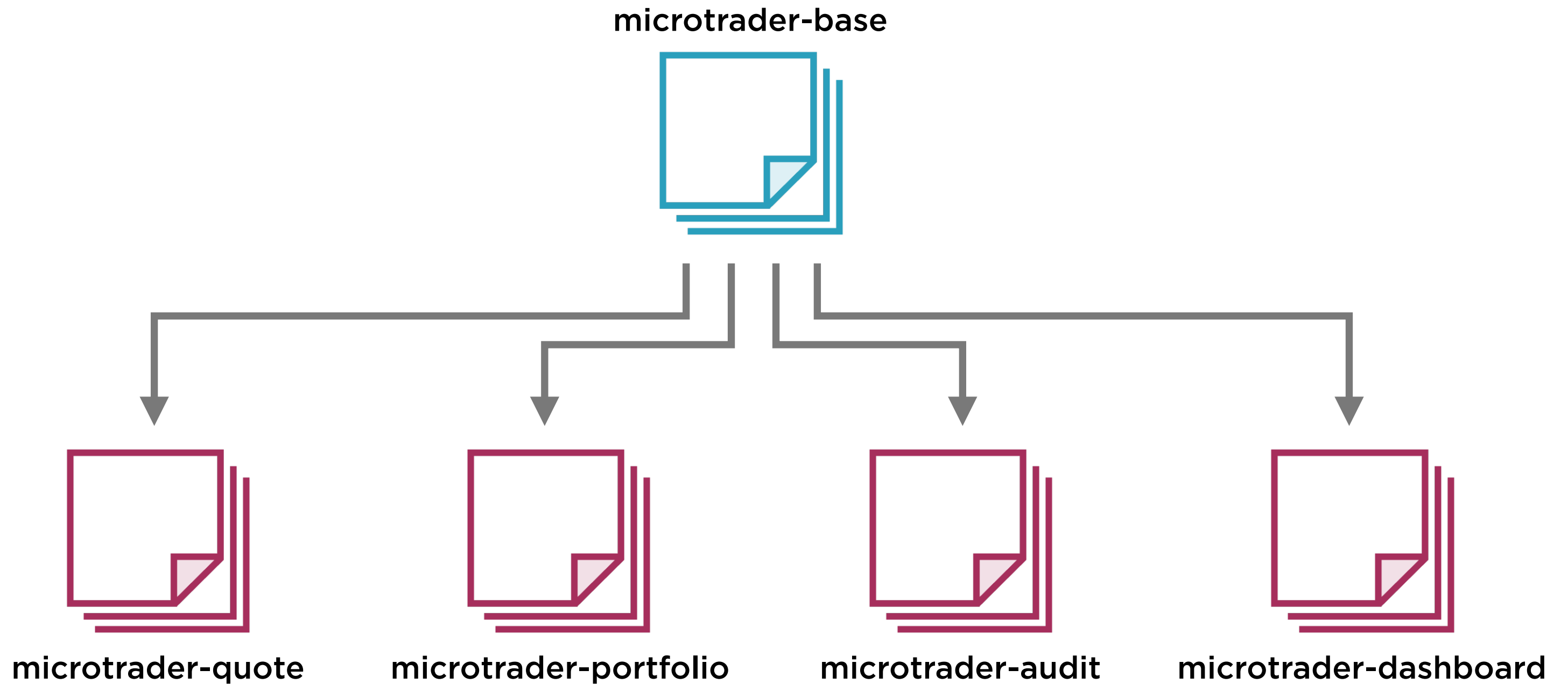


Secure

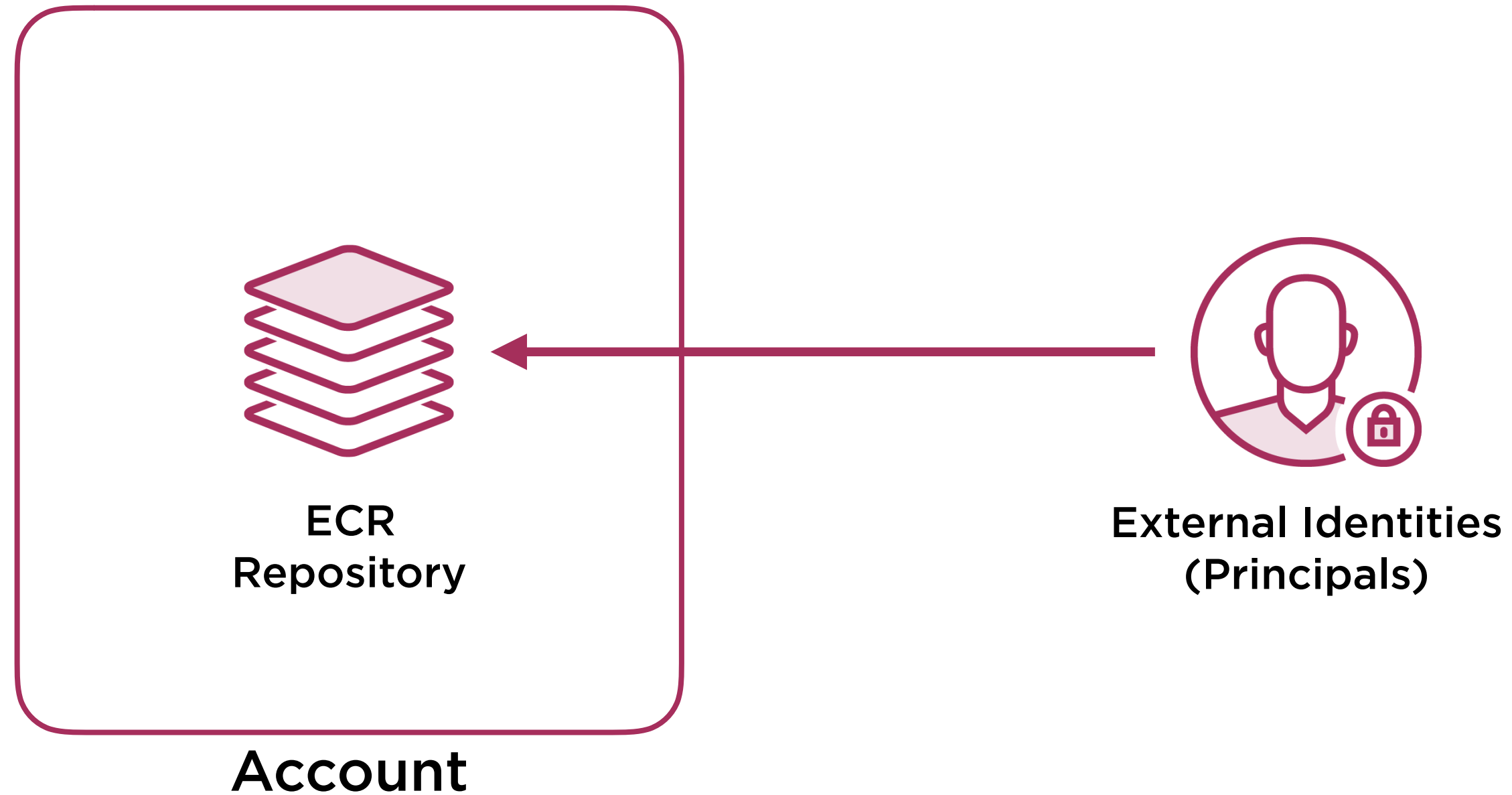


Fast

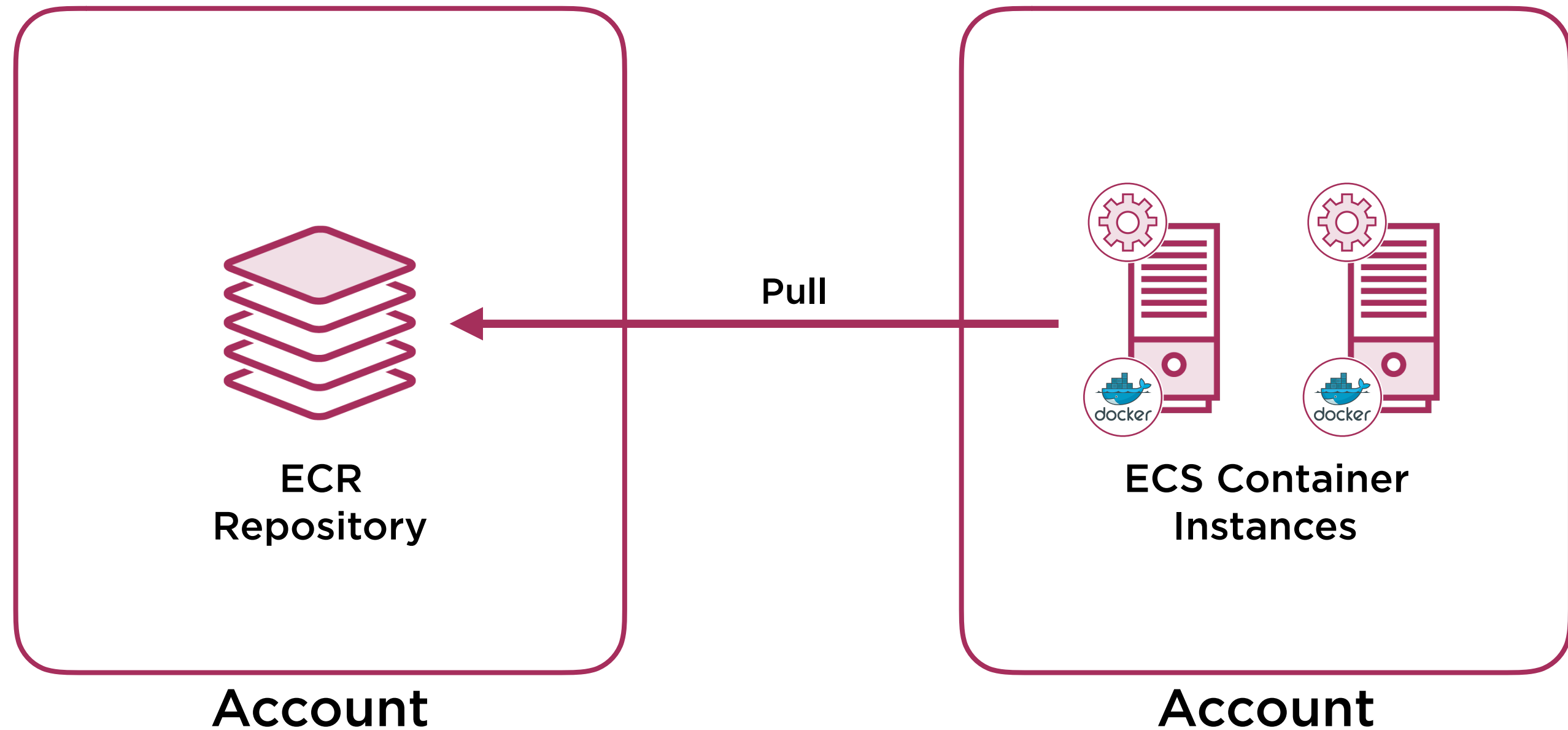
Microtrader Docker Image Hierarchy



Repository Permissions



Repository Permissions

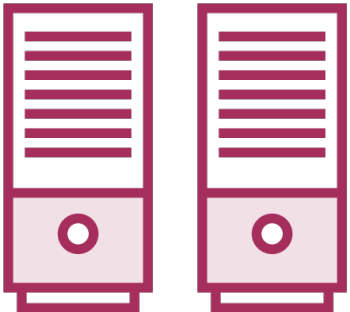


Publishing Images using the Release Pipeline

Docker Hub

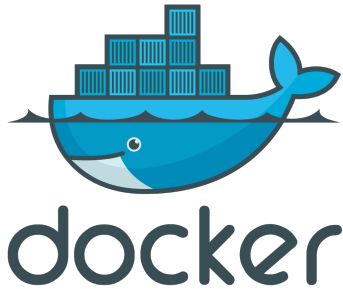
Release Pipeline

Docker Hosts



Publish

Pull

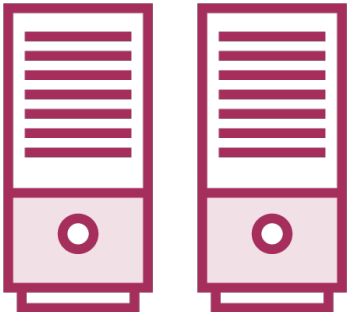


Docker Hub

EC2 Container Registry

Release Pipeline

ECS Instances



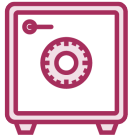
Publish

Pull

IAM Controls



Private



Secure



Fast

ECR

Creating an ECS Cluster

EC2 Container Service



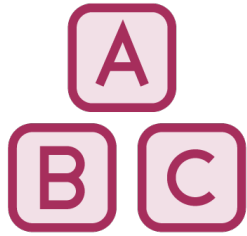
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ECS Task Definition



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ECS Service



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EC2 Container Registry



ECR
Repository



ECR
Repository

latest
v1.5.2
v1.5.1



ECS Container Instances

ECS
Agent



1.5.2

ECS
Agent



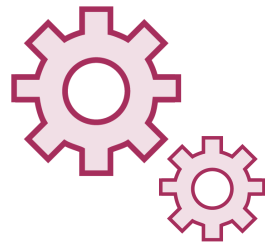
1.5.2

Application Service

Desired Count = 2

Autoscaling Group

ECS Cluster



ECS Tasks

Verifying an ECS Container Instance

Creating an ECS Task Definition

Creating an ECS Service

EC2 Container Service



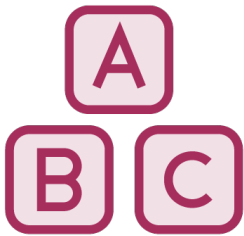
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EC2 Container Registry



ECR

Repository



ECR

Repository

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v1.5.2
v1.5.1



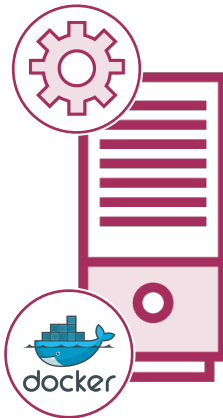
ECS Container Instances

ECS Agent



1.5.2

ECS Agent



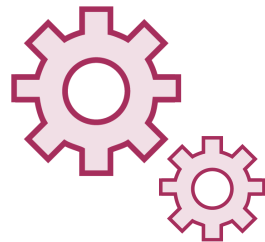
1.5.2

Application Service

Desired Count = 2

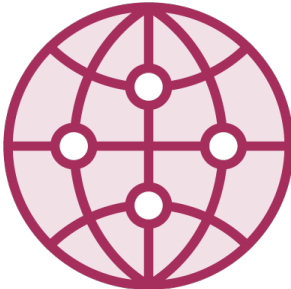
Autoscaling Group

ECS Cluster



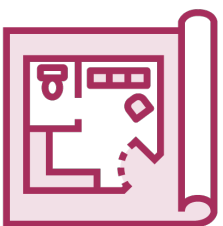
ECS Tasks

EC2 Container Service



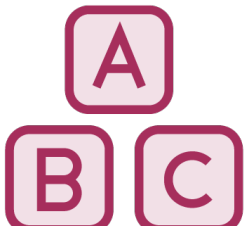
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ECS Task Definition



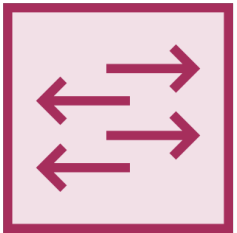
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ECS Service

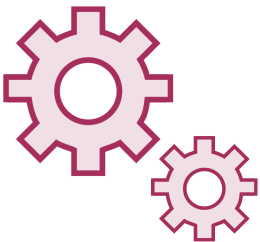


- ECS Cluster
- ECS Task Definition
- Desired Count

Connection Draining
Instance Registration
Health Checks



Application
Load Balancer

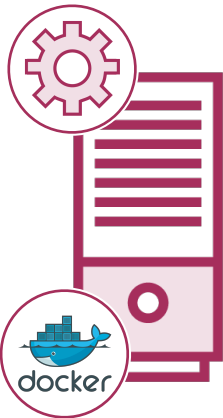


ECS Tasks



ECS Container Instances

ECS
Agent



1.5.2

ECS
Agent



1.5.2

Application Service

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Autoscaling Group

ECS Cluster



ECR

Repository



ECR

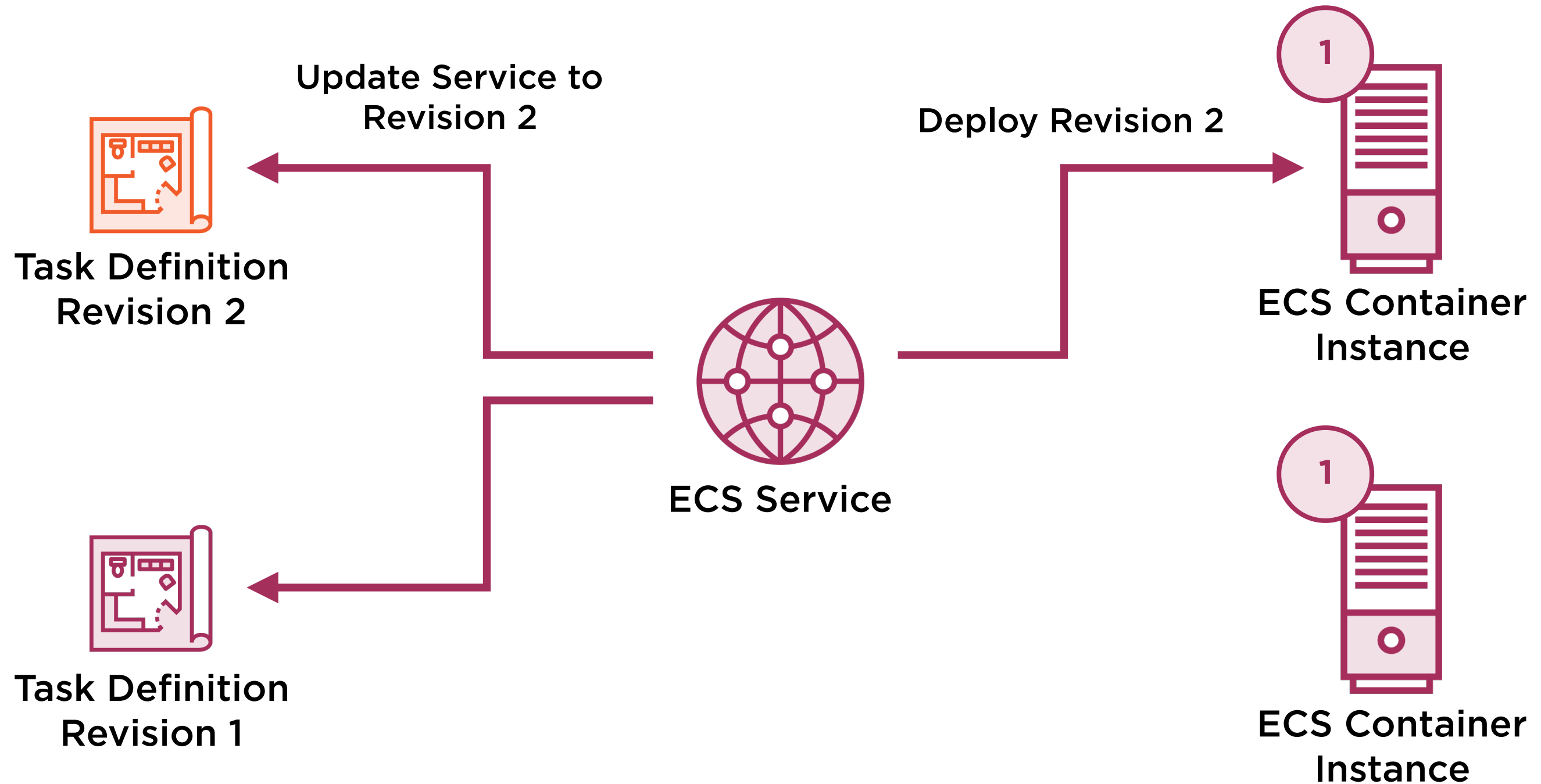
Repository

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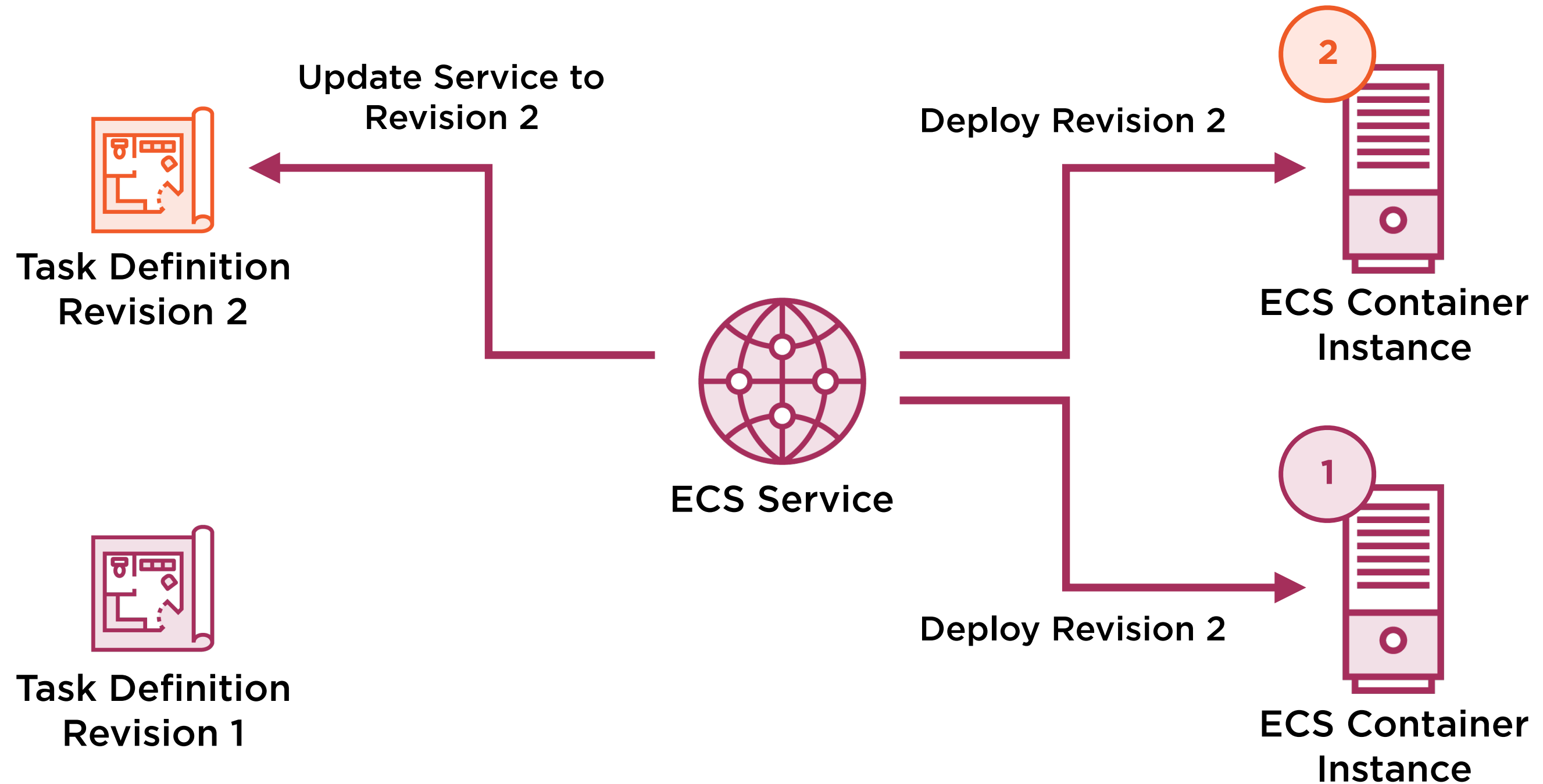
EC2 Container Registry

ECS Service Deployments

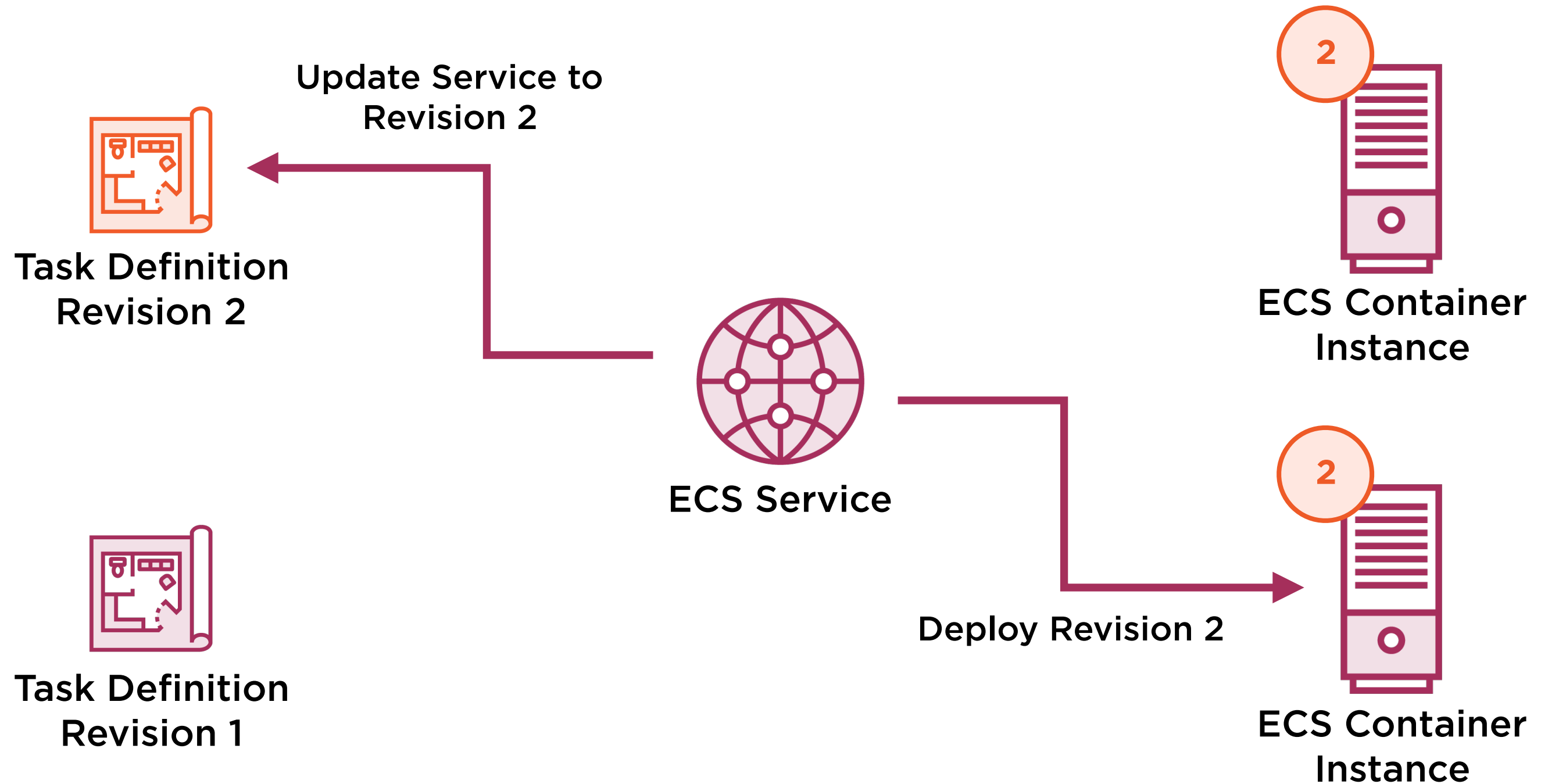
ECS Service Rolling Deployments



ECS Service Rolling Deployments

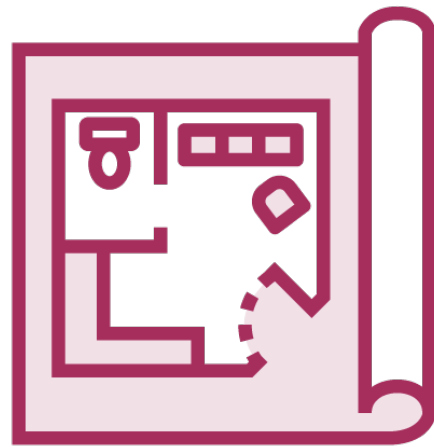


ECS Service Rolling Deployments



Task Definition Changes

image: my-app:1.0.1
port_mapping: 8000 -> 8000



Task Definition
Revision 1

Modify
Image



image: my-app:1.0.2
port_mapping: 8000 -> 8000



Task Definition
Revision 2

Modify
Port Mapping



image: my-app:1.0.2
port_mapping: 8080 -> 8000



Task Definition
Revision 3

Creating an ECS Task

Summary

Running Docker Applications using ECS

- ECS architecture
- Publish Docker images to ECR
- Create an ECS cluster
- Create an ECS task definition
- Create ECS services
- Create ECS tasks