Microsoft Azure

2,)

AZ-104

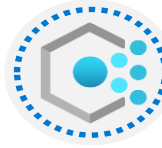# Administer Governance and Compliance

Administer Governance and Compliance Introduction

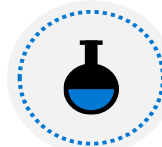Configure Subscriptions

Configure Azure Policy

2 x RBAC

Configure Role-Based Access Control

Lab 02a - Manage Subscriptions and RBAC
Lab 02b - Manage Governance via Azure Policy
Lab 03a – Manage Azure resources with the Azure portal

Configure Subscriptions and Configure Azure Resource Manager Resources

Configure Subscriptions Introduction

Identify Regions

Implement Azure Subscriptions

Identify Subscription Usage

Obtain a Subscription

Create Resource Groups

Determine Resource Limits

Create an Azure Resource Hierarchy

Apply Resource Tagging

Manage Costs

Summary and Resources

Identify Regions

67

A region represents a collection of datacenters

Provides flexibility and scale

Preserves data residency

Select regions close to your users

Be aware of region deployment availability

There are global services that are region independent

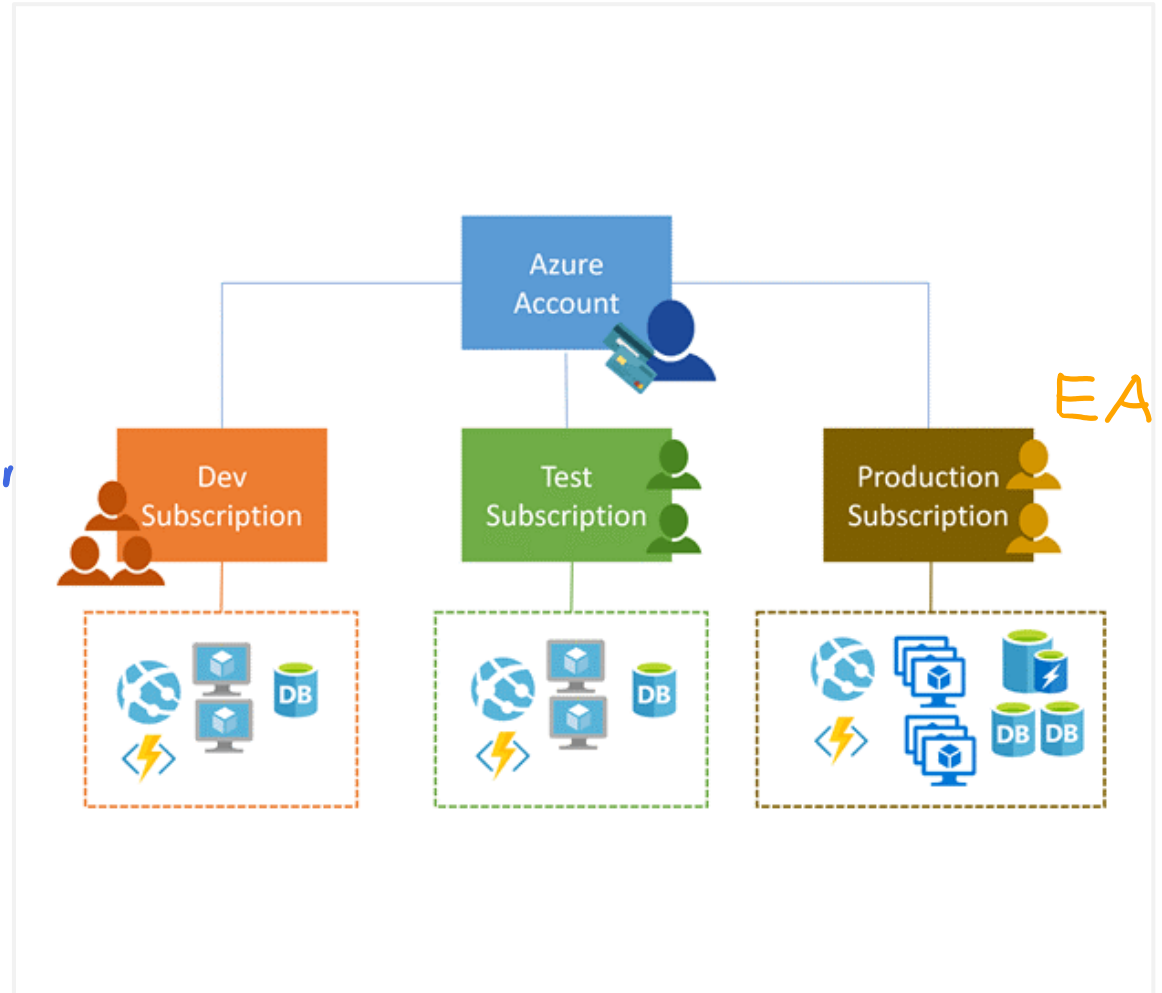Regions are paired for high availability

Worldwide there are 60+ regions representing 140 countries

Implement Azure Subscriptions

Only identities in Azure AD, or in a directory that is trusted by Azure AD, can create a subscription

Logical unit of Azure services that is linked to an Azure account

Security and billing boundary

Identify Subscription Usage

Subscription	Usage
Free	Includes a $200 credit for the first 30 days, free limited access for 12 months
Pay-As-You-Go	Charges you monthly
CSP	Agreement with possible discounts through a Microsoft Cloud Solutions Provider Partner – typically for small to medium businesses
Enterprise	One agreement, with discounts for new licenses and Software Assurance – targeted at enterprise-scale organizations
Student	Includes $100 for 12 months – must verify student access

Obtain a Subscription

Enterprise Agreement customers make an upfront monetary commitment and consume services throughout the year

Resellers provide a simple, flexible way to purchase cloud services

Partners can design and implement your Azure cloud solution

Personal free account – Start right away

Create Resource Groups

CAF

RG
~~East~~
west

VM   west
VNet west
NIC   west

Resources can only exist in one resource group

Groups can have resources of many different types (services) and from many different regions
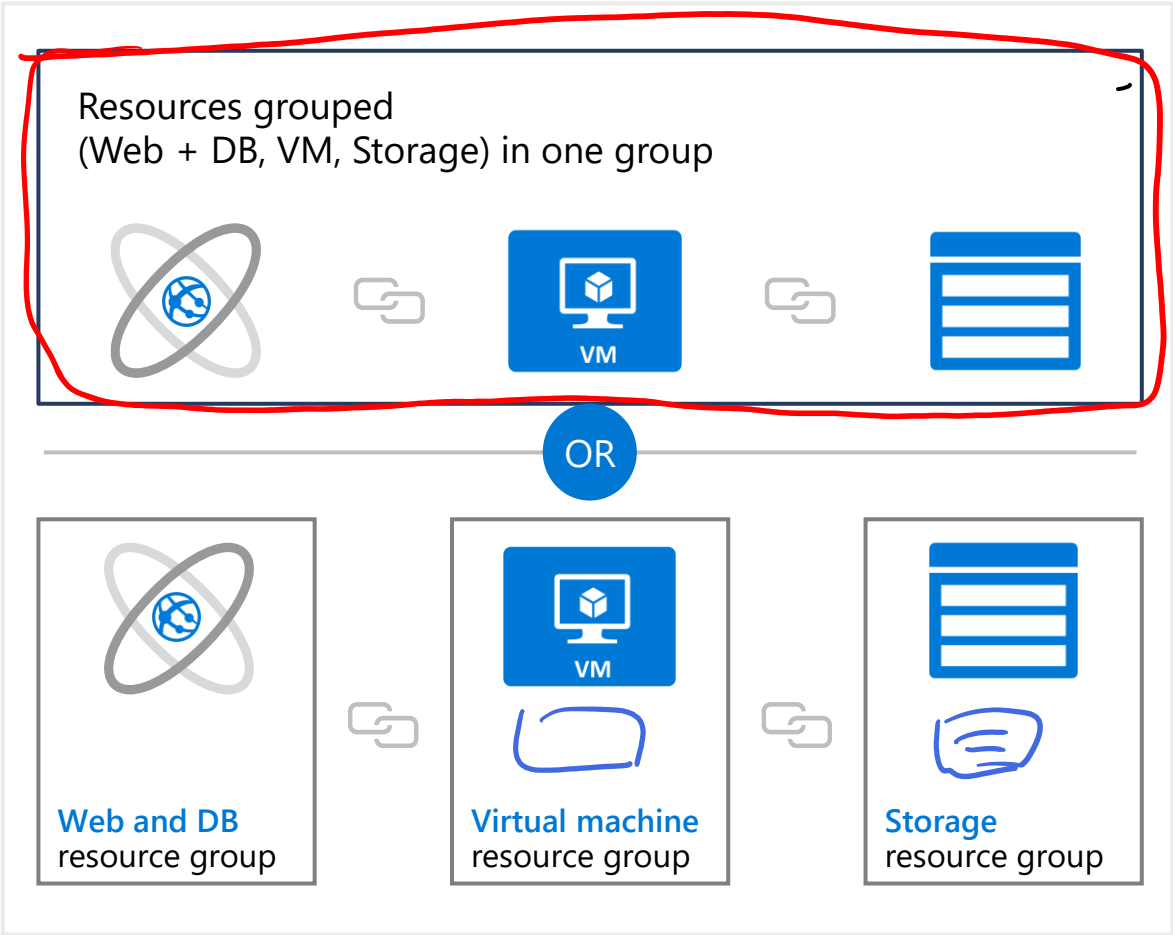
Groups cannot be renamed or nested

Resource locks can prevent changes to the resources

You can move resources between groups

Resources grouped
(Web + DB, VM, Storage) in one group

VM

OR

Web and DB
resource group

Virtual machine
resource group

Storage
resource group

VM

Determine Resource Limits

Resources have a default limit also known as quota

Helpful to track current usage, and plan for future use

You can open a free support case to increase limits to published maximums

Create an Azure Resource Hierarchy

Management groups provides a level of scope above subscriptions

Target policies and spend budgets across subscriptions and inheritance down the hierarchies

Implement compliance and cost reporting by organization (business/teams)
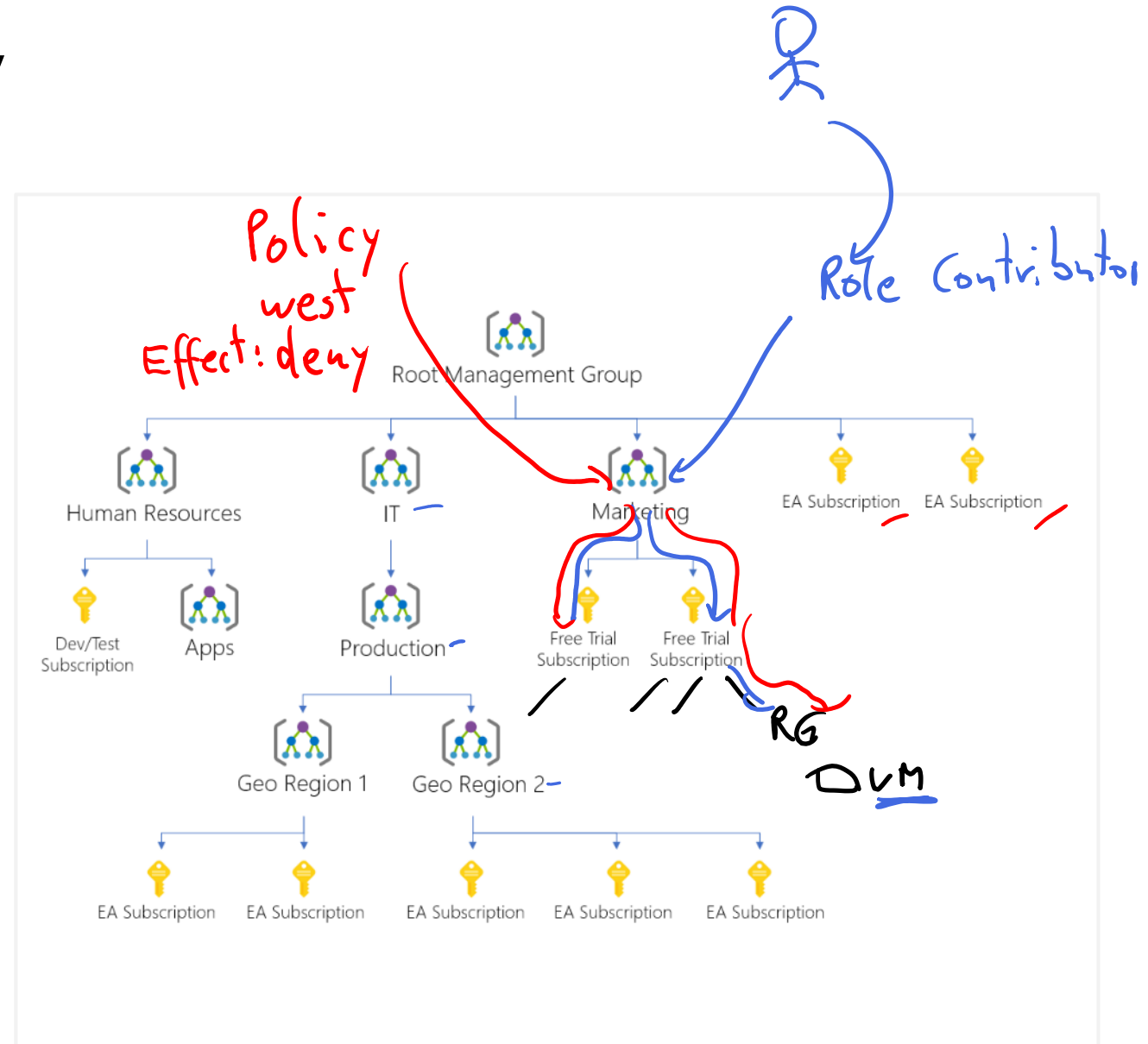
Apply Resource Tagging

Provides metadata for your Azure resources

Logically organizes resources

Consists of a name-value pair

Very useful for rolling up billing information

TAGS

OR

Owner: Joe
Department: marketing
Environment: production

Cost-center: Marketing
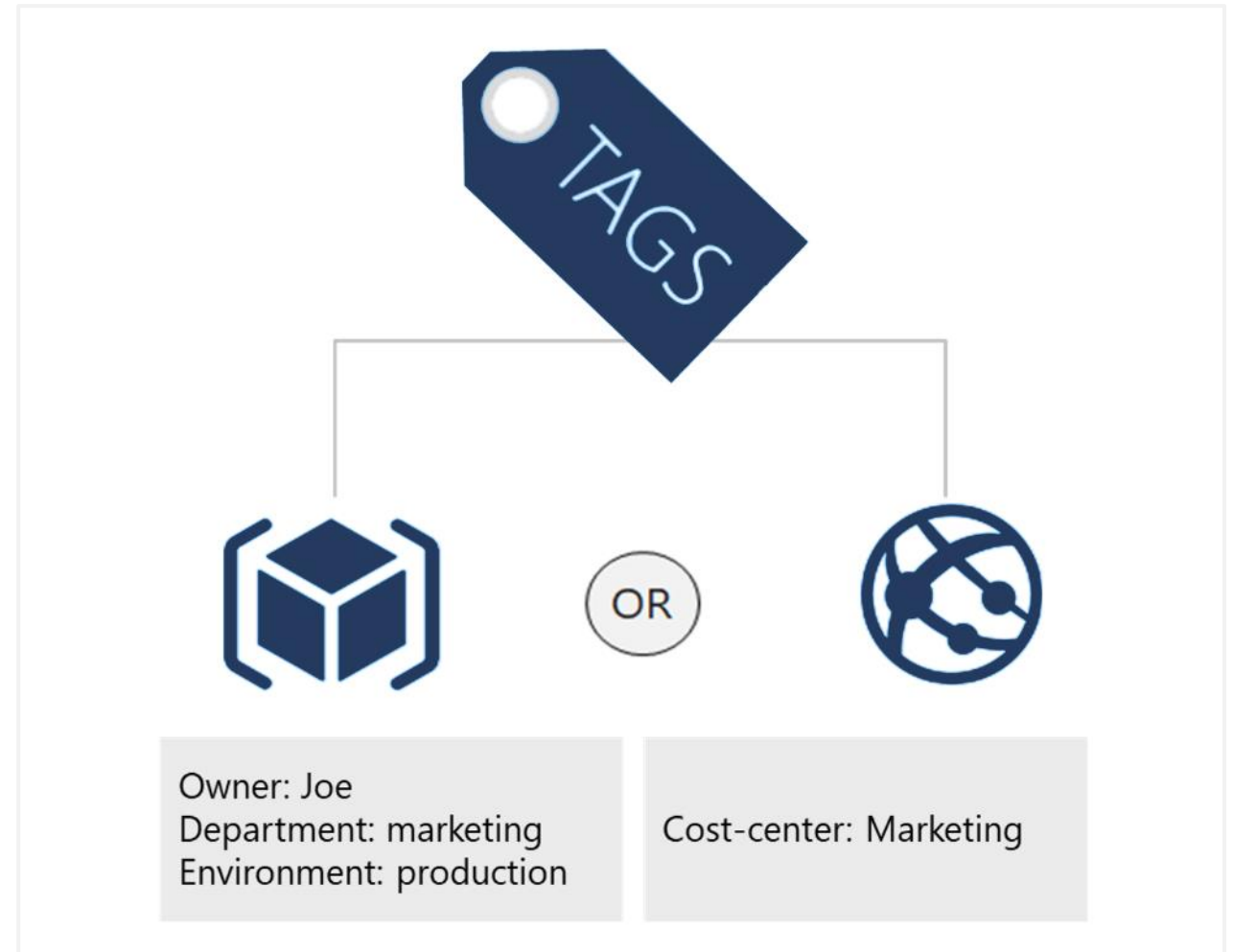
Manage Costs

- Costs are resource-specific

- Usage costs may vary between locations

- Costs for inbound and outbound data transfers differ

- Pre-pay with Azure reserved instances

- Use your on-premises licenses with Azure Hybrid Benefit

- Optimize with alerts, budgets, and recommendations
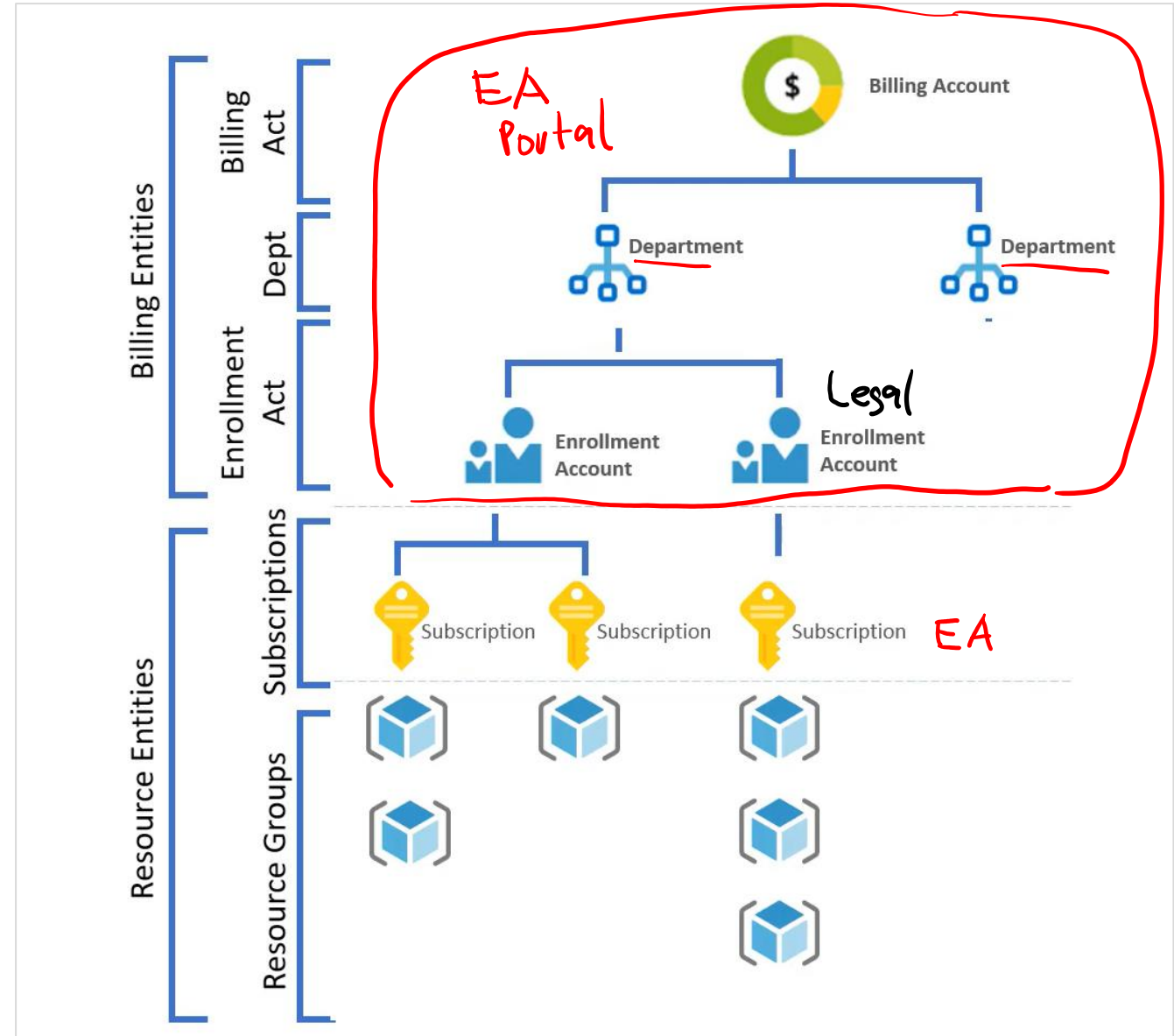
Summary and Resources - Configure Subscriptions

Knowledge Check Questions	Microsoft Learn Modules (docs.microsoft.com/Learn)
	Introduction to analyzing costs and creating budgets with Azure Cost Management
	Plan and manage your Azure costs (Sandbox)
	Control and organize Azure resources with Azure Resource Manager

A *sandbox* indicates a hands-on exercise.

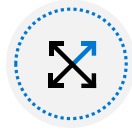# Configure Azure Policy

Configure Azure Policy Introduction

Implement Azure Policy

Create Azure Policies

Demonstration – Azure Policies

- Create Policy Definitions
- Create and Scope the Initiative Definition
- Determine Compliance

Summary and Resources

Implement Azure Policies

Definition   json
Effect   deny | audit | add if missing
Scope

A service to create, assign, and manage policies

Runs evaluations and scans for non-compliant resources

Advantages:

Enforcement and compliance

Apply policies at scale

Remediation

Usage Cases
Allowed resource types – Specify the resource types that your organization can deploy
Allowed virtual machine SKUs – Specify a set of virtual machine SKUs that your organization can deploy
Allowed locations – Restrict the locations your organization can specify when deploying resources
Require tag and its value – Enforces a required tag and its value
Azure Backup should be enabled for Virtual Machines – Audit if Azure Backup service is enabled for all Virtual machines

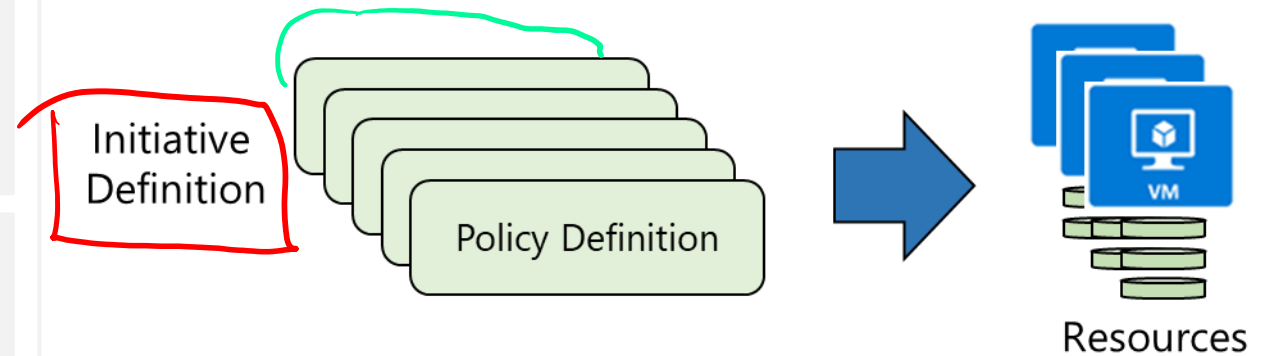# Create Azure Policies

1. Create Policy Definitions

2. Create Initiative Definitions

3. Scope the Initiative Definition

4. Determine Compliance

Initiative Definition

Policy Definition

Resources

VM

Demonstration – Azure Policy

Assign a policy
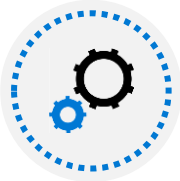
Create and assign an initiative definition

Check for compliance

Check for remediation tasks

Remove your policy and initiative

1. Create Policy Definitions

Many policy definitions are available

You can import policies from GitHub

Policy Definitions have a specific JSON format

You can create custom policy definitions

Policy definition
New Policy definition

BASICS

Definition location *

Visual Studio Enterprise

Name * ⓘ

Github Sample Policy

Description

A sample policy from Github.

Category ⓘ
◉ Create new   ○ Use existing

Category

POLICY RULE

↓ Import sample policy definition from GitHub

2. Create Initiative Definitions

Group policy definitions

Include one or more policies

Requires planning

Initiative definition
New Initiative definition

BASICS

Definition location *
Visual Studio Enterprise

Name * ⓘ
East Region ✓

Description ⓘ
East Region Initiative Definition

Category ⓘ
○ Create new   ● Use existing
General ⌄

namingPolicyDefinition	Policy to specify allowed naming convention	Custom	Delete
regionPolicyDefinition	Policy to allow resource creation only in certain regions	Custom	Delete

3. Scope the Initiative Definition

Assign the definition to a scope

The scope enforces the policy

Select the subscription, and optionally the resource group

4. Determine Compliance

Non-compliant initiatives, policies and resources

Evaluates and reports about once an hour

Automatic remediations is available

Summary and Resources – Configure Azure Policy

Knowledge Check Questions	Microsoft Learn Modules (docs.microsoft.com/Learn)
	Introduction to Azure Policy
	Build a cloud governance strategy on Azure

Azure

Role

Owner
Contributor
Reader
...
Custom Roles

Azure AD

Global Admin
User Admin
AU

Custom Roles
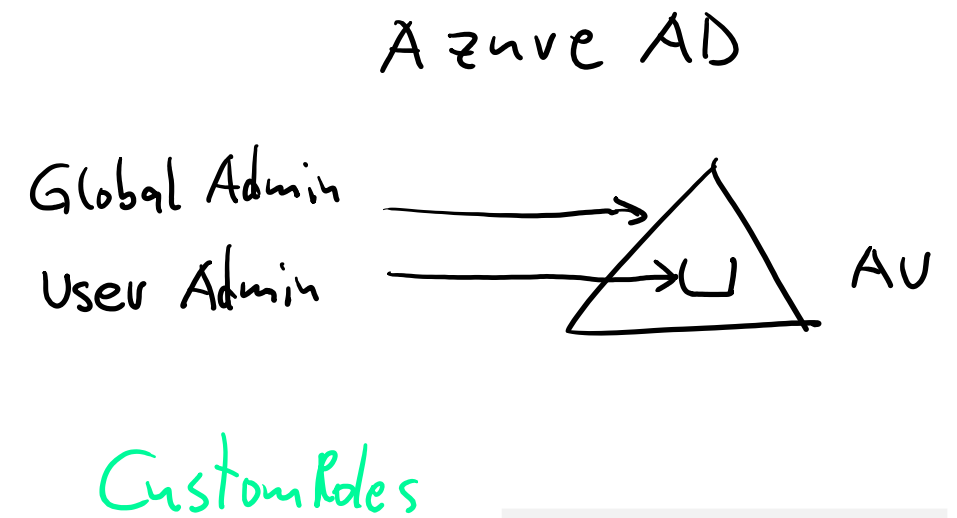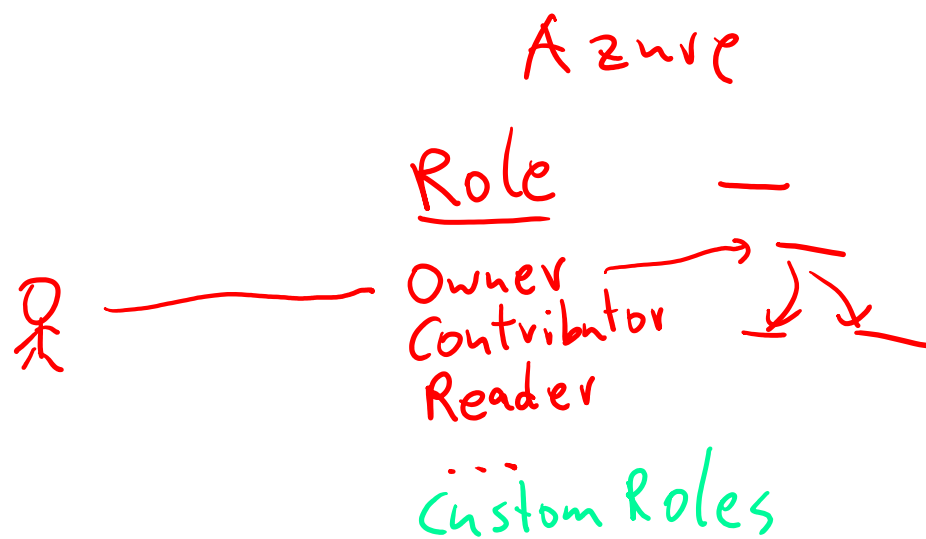
Configure Role-Based Access Control

Configure Role-Based Access Control Introduction

Compare Azure RBAC Roles to Azure AD Roles

Create a Role Definition

Create a Role Assignment
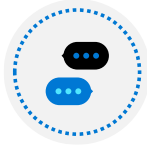
Apply RBAC Authentication

Demonstration – Azure RBAC

Summary and Resources

Compare Azure RBAC Roles to Azure AD Roles

RBAC roles provide fine-grained access management

Azure RBAC roles *Owner*	Azure AD roles *Global Admin*
Manage access to Azure resources	Manage access to Azure AD objects
Scope can be specified at multiple levels	Scope is at the tenant level *zum Teil AU*
Role information can be accessed in the Azure portal, Azure CLI, Azure PowerShell, Azure Resource Manager templates, REST API	Role information can be accessed in Azure portal, Microsoft 365 admin portal, Microsoft Graph, Azure Active Directory PowerShell for Graph

✓ **There are many built-in roles, or you can create your own custom role**

Create a Role Definition

Collection of permissions that lists the operations that can be performed

Contributor

Owner
Contributor
Reader
 …
Backup Operator
Security Reader
User Access Administrator
Virtual Machine Contributor

Built-in

Reader Support Tickets
Virtual Machine Operator

Custom

```
"Actions": [
 "*"
],
"NotActions" : [
 "Authorization/*/Delete",
 "Authorization/*/Write",
 "Authorization/elevateAccess/Action"
],
"DataActions" : [],
"NotDataActions": []    leer
"AssignableScopes" : [
 "/"
]
```
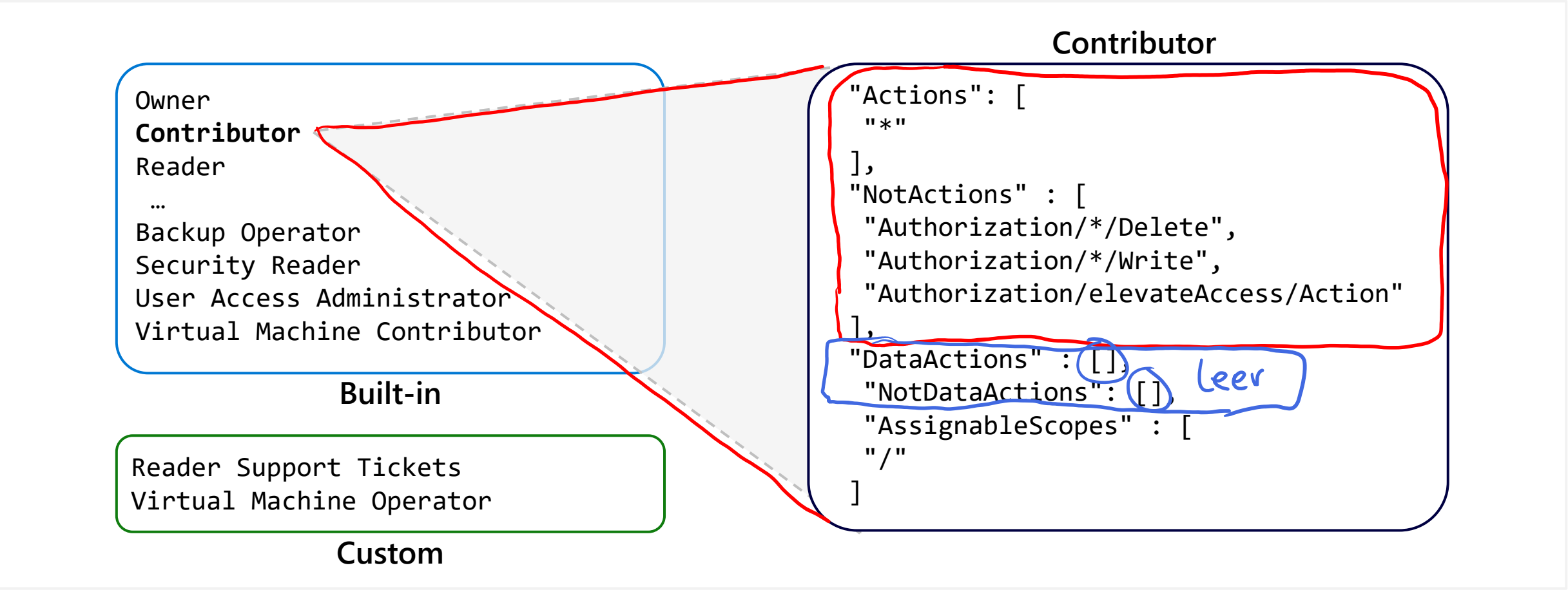
Create a Role Assignment

Process of binding a role definition to a user, group, or service principal at a scope for the purpose of granting access

1 Security principal

User   Group   Service principal

2 Role definition

Owner
Contributor
Reader
…
Backup Operator
Security Reader
Contributor

Reader Support Tickets
Virtual Machine Operator

Role assignment

```json
"Actions": [
  "*"
],
"NotActions": [
  "Auth/*/Delete",
  "Auth/*/Write",
  "Auth/elevate"
]
```

json

Contributor

Marketing group

Pharma-sales
Resource group

3 Scope

Management group —

Subscription —

Resource group

Resource

Apply RBAC Authentication

Azure AD Admin roles

Azure Active Directory tenant

Global admin
Application admin
Application developer
Billing admin
...

Global admin/User access admin (elevated access)

Root

Azure RBAC roles

Owner
Contributor
Reader
User access admin
...

Root management group

Management group

Azure RBAC roles

Owner
Contributor
Reader
User access admin
...

Subscription

Resource group

Resource

Azure account

Demonstration – Azure RBAC

Locate the Access Control blade

Review role permissions
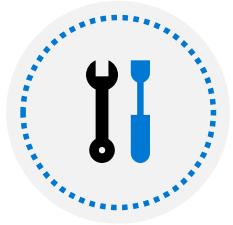
Add a role assignment
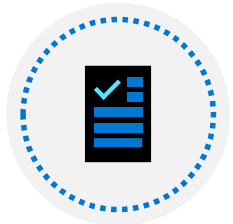
Explore PowerShell commands

Summary and Resources – Configure RBAC

Knowledge Check	Microsoft Learn Modules (docs.microsoft.com/Learn)
	[Create custom roles for Azure resources with Azure role-based access control](#)
	[Manage access to an Azure subscription by using Azure role-based access control](#)
	[Secure your Azure resources with Azure role-based access control (Sandbox)](#)

A *sandbox* indicates a hands-on exercise.

Lab 02a - Manage Subscriptions and RBAC
Lab 02b - Manage Governance via Azure Policy
Lab 03a – Manage Azure resources with the Azure portal
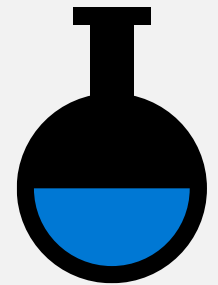
Lab 02a – Manage Subscriptions and Azure RBAC

Lab scenario

To improve the management of Azure resources in Contoso, you have been tasked with implementing the following functionality:

- Using management groups for the Contoso's Azure subscriptions
- Granting user permissions for submitting support requests. This user would only be able to create support request tickets and view resource groups

Objectives

Task 1:	Task 2:	Task 3:
Implement Management Groups	Create custom RBAC roles	Assign RBAC roles

Next slide for an architecture diagram ⊙

Lab 02a – Architecture diagram

Task 1

Tenant Root Group

↓

az104-02-rg1

↓

Azure pass subscription

Default Azure AD tenant

Task 3

az104-02-aaduser1   customRoleDefinition

Task 2

az104-02a-customRoleDefinition.json

```
{
  "Name": "Support Request Contributor (Custom)",
  "IsCustom": true,
  "Description": "Allows to create support requests",
  "Actions": [
    "Microsoft.Resources/subscriptions/resourceGroups/read",
    "Microsoft.Support/*"
  ],
  "NotActions": [
  ],
  "AssignableScopes": [
    "/providers/Microsoft.Management/managementGroups/az104-02-mg1",
    "/subscriptions/SUBSCRIPTION_ID"
  ]
}
```

Lab 02b – Manage Governance via Azure Policy

Lab scenario

To improve management of Azure resources in Contoso, you have been tasked with implementing the following functionality:

- Tagging resource groups that include only infrastructure resources
- Ensuring that only properly tagged infrastructure resources can be added to infrastructure resource groups
- Remediating any non-compliant resources

Objectives

Task 1:
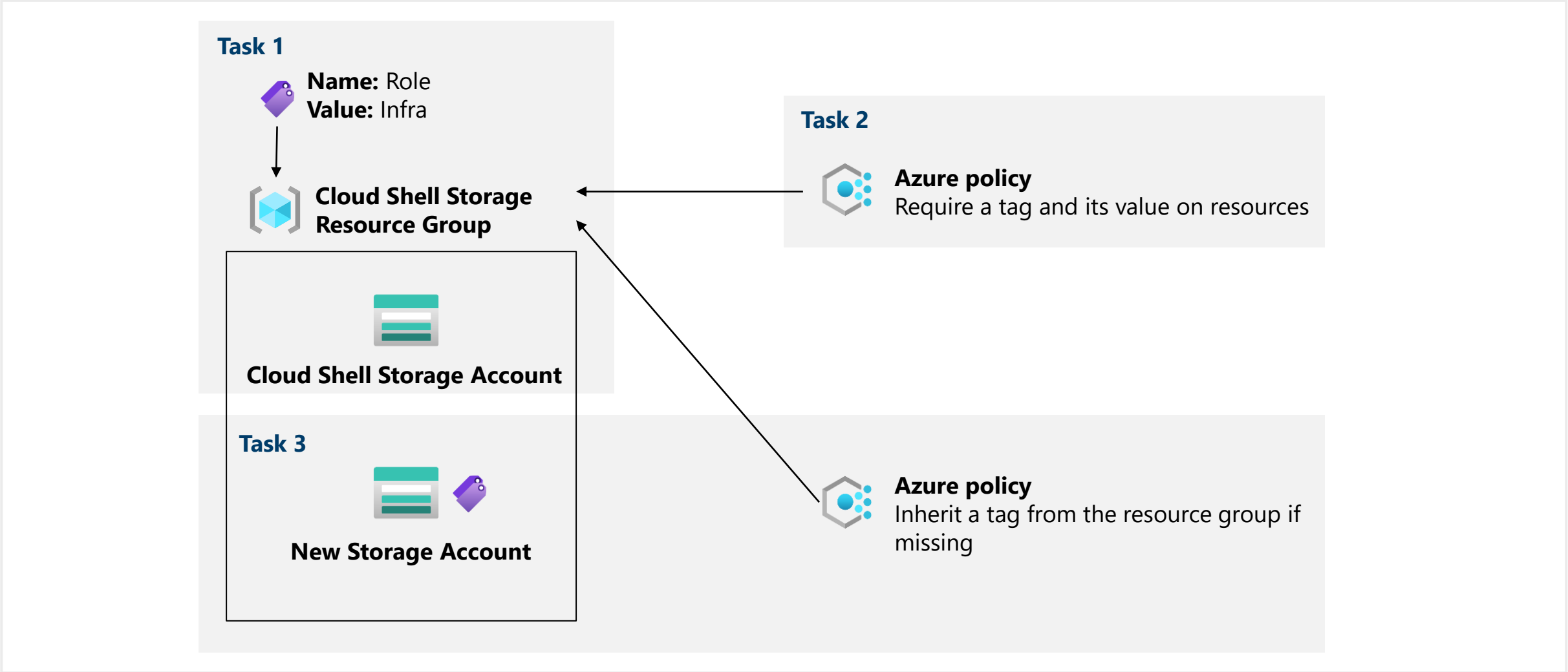Create and assign tags via the Azure portal

Task 2:
Enforce tagging via an Azure Policy

Task 3:
Apply tagging via an Azure Policy

Next slide for an architecture diagram ⊙

Lab 02b – Architecture diagram

Task 1

Name: Role
Value: Infra

Cloud Shell Storage Resource Group

Cloud Shell Storage Account

Task 3

New Storage Account

Task 2

Azure policy
Require a tag and its value on resources

Azure policy
Inherit a tag from the resource group if missing

Lab 03a – Manage Azure resources with the Azure portal

Lab scenario

You need to explore the basic Azure administration capabilities associated with provisioning resources and organizing them based on resource groups, including moving resources between resource groups. You also want to explore options for protecting disk resources from being accidentally deleted, while still allowing for modifying their performance characteristics and size

Objectives

Task 1:
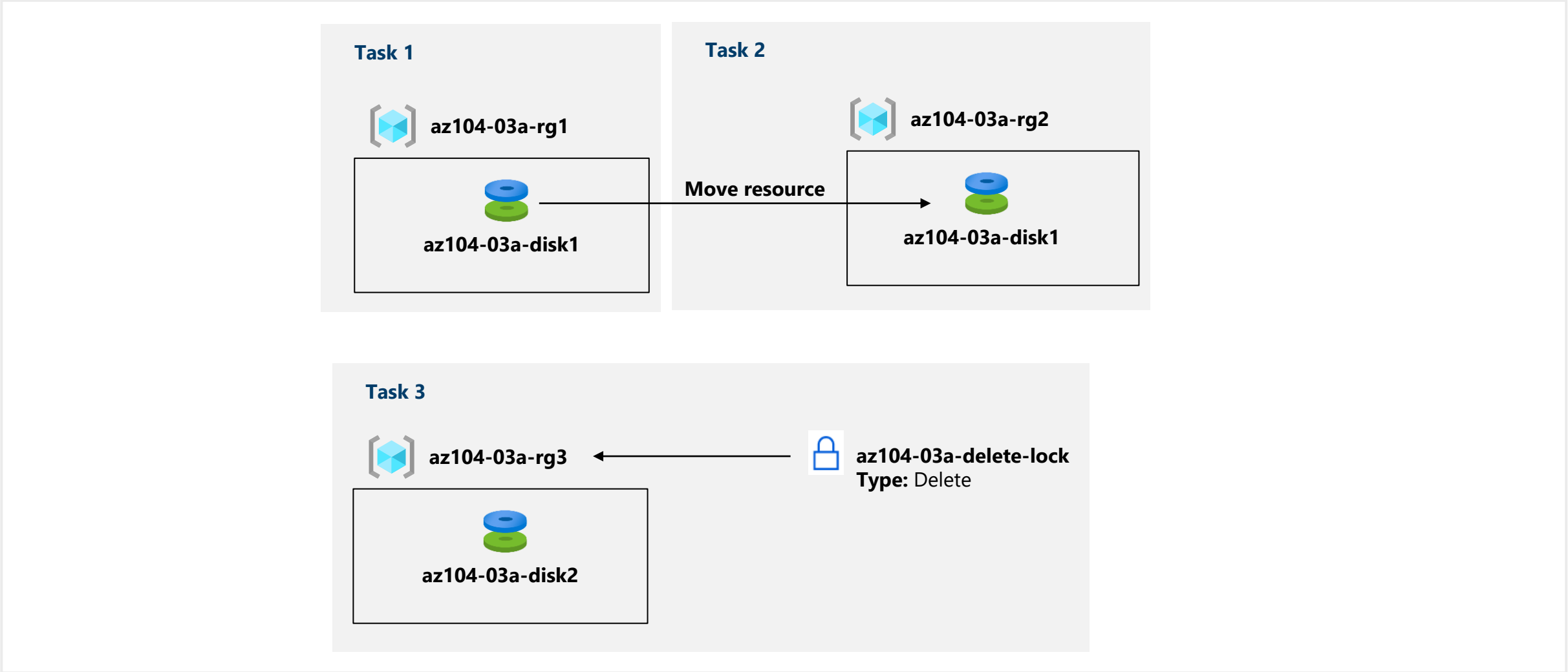Create resource groups and deploy resources to resource groups

Task 2:
Move resources between resource groups

Task 3:
Implement and test resource locks

Next slide for an architecture diagram →

Lab 03a – Architecture diagram

Task 1

🧊 **az104-03a-rg1**

💾 **az104-03a-disk1**

Move resource →

Task 2

🧊 **az104-03a-rg2**

💾 **az104-03a-disk1**

Task 3

🧊 **az104-03a-rg3** ← 🔒 **az104-03a-delete-lock**
Type: Delete

💾 **az104-03a-disk2**

End of presentation