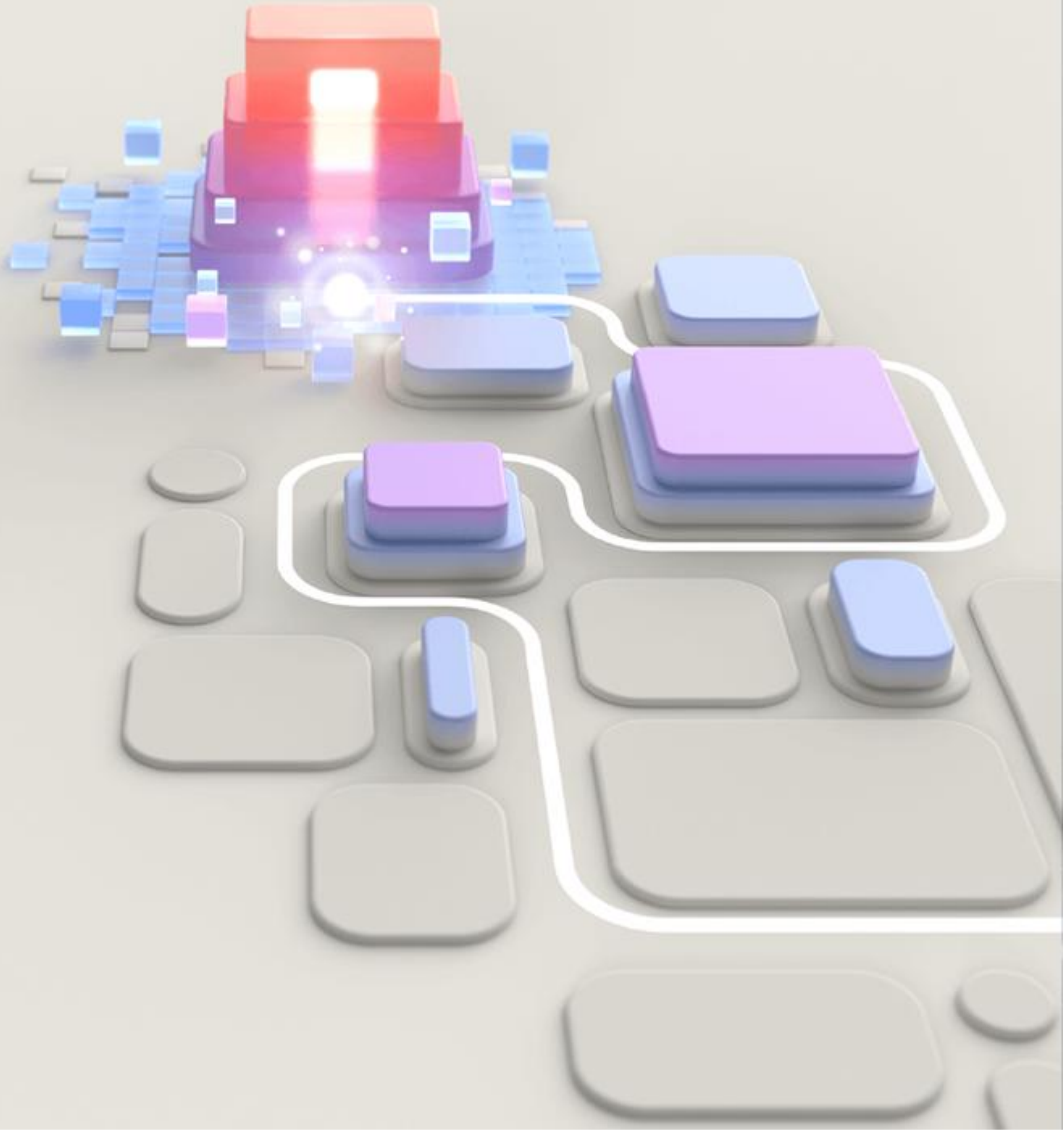
AZ-104

Administer Governance and Compliance



AZ-104 Agenda

01: Administer Identity

02: Administer Governance and Compliance ←

03: Administer Azure Resources

04: Administer Virtual Networking

05: Administer Intersite Connectivity

06: Administer Network Traffic Management

07: Administer Azure Storage

08: Administer Azure Virtual Machines

09: Administer PaaS Compute Options

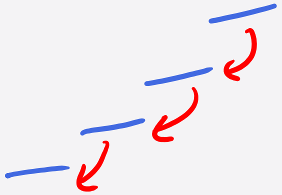
10: Administer Data Protection

11: Administer Monitoring

Learning Objectives

- Describe the core architectural components of Azure
- Azure Policy Initiatives
- Secure your Azure resources with role-based access control (RBAC) ✓
- Lab 02a - Manage Subscriptions and RBAC
- Lab 02b - Manage Governance via Azure Policy

~~ACL~~



Describe the core architectural components of Azure

Learning Objectives – Subscriptions and Azure RM

- Identify Regions
- Implement Azure Subscriptions
- Identify Subscription Usage
- Obtain a Subscription
- Create Resource Groups
- Determine Service Limits and Quotas
- Create an Azure Resource Hierarchy
- Apply Resource Tagging
- Manage Costs
- Learning Recap

Manage Azure identities and governance (20–25%): Manage subscriptions and governance

- Configure resource locks
- Apply and manage tags on resources
- Manage resource groups
- Manage subscriptions
- Manage costs by using alerts, budgets, and Azure Advisor recommendations
- Configure management groups

Identify Regions = Location

Region
Westeurope

DNS Global

A region represents a collection of datacenters

Provides flexibility and scale

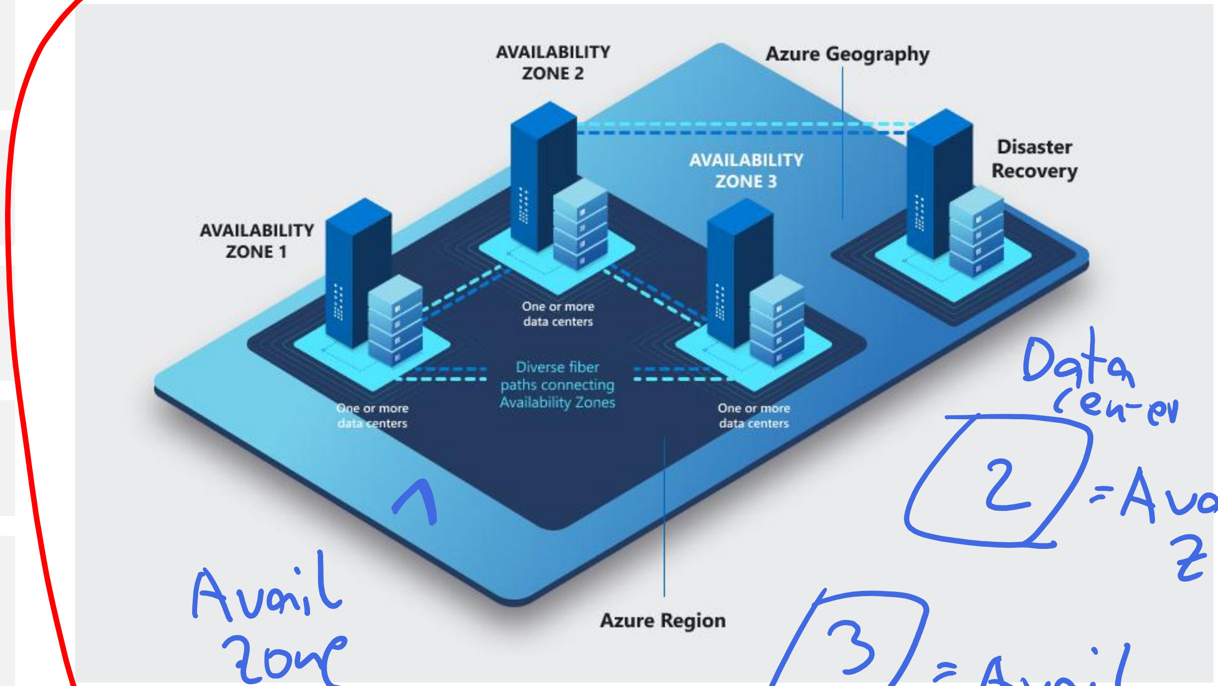
Preserves data residency

Select regions close to your users

Be aware of region deployment availability

There are global services that are region independent

Most regions are paired for high availability

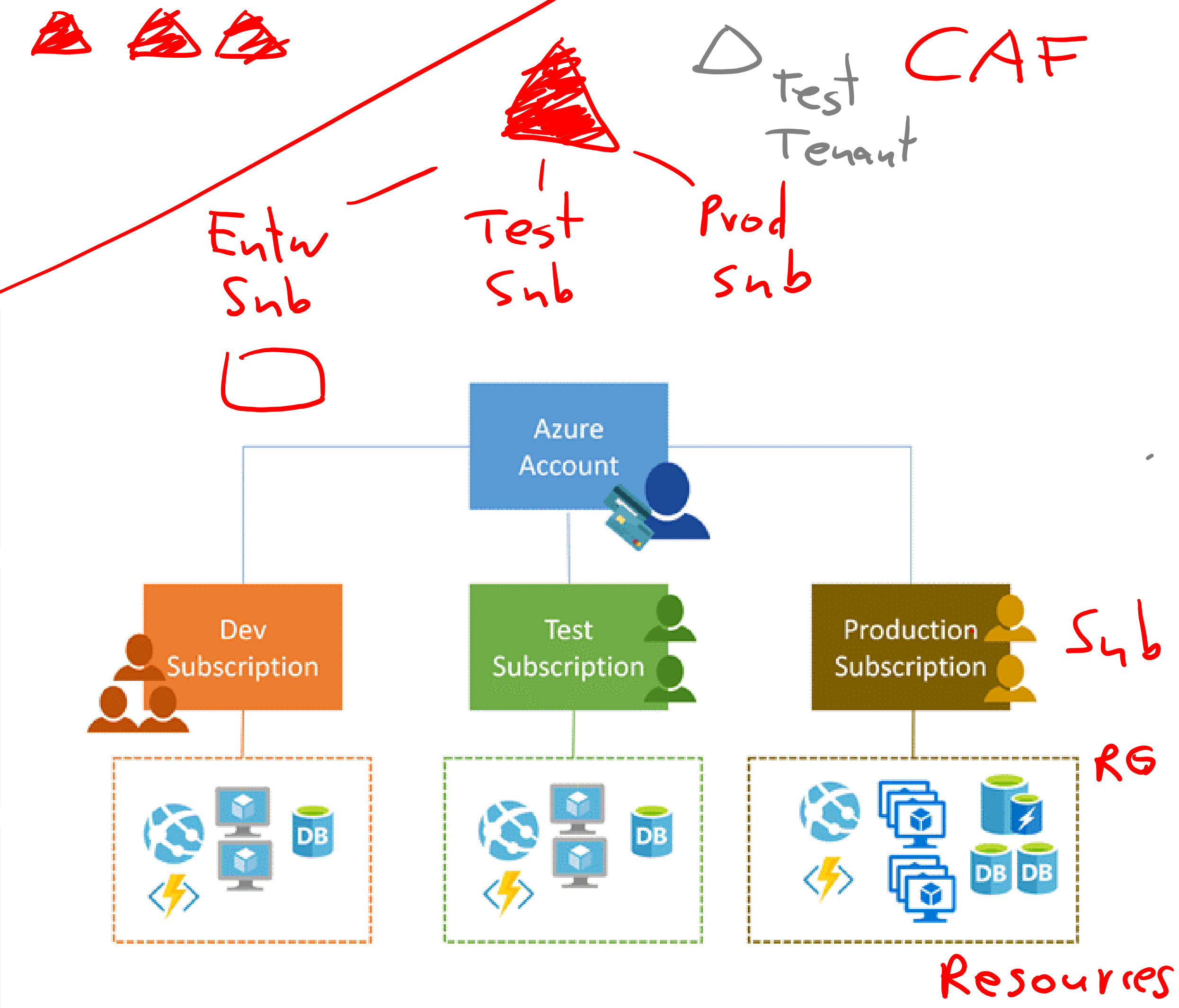


Implement Azure Subscriptions

Only identities in Entra ID, or in a directory that is trusted by Entra ID, 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

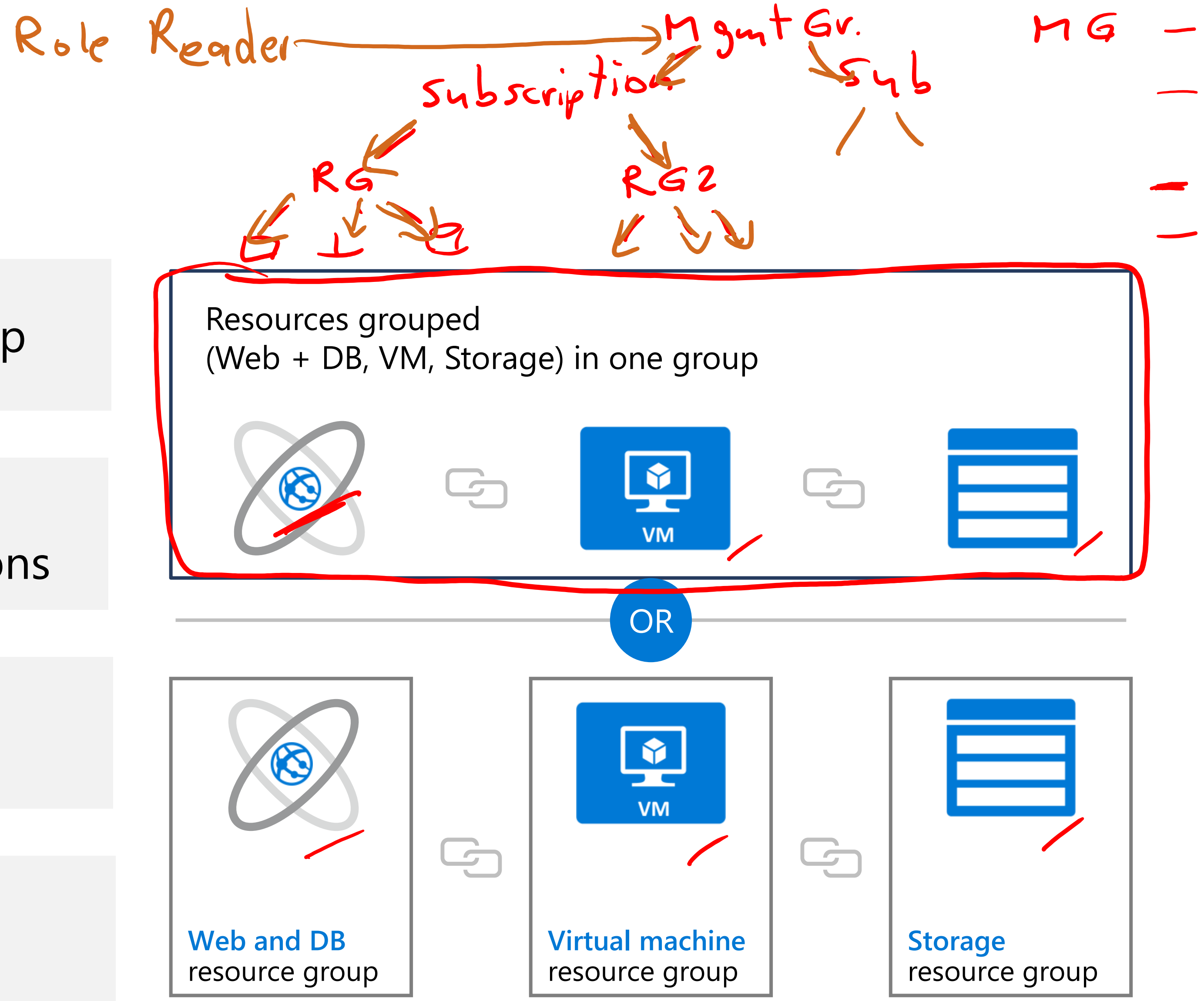
Create Resource Groups

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

You can move resources between groups



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

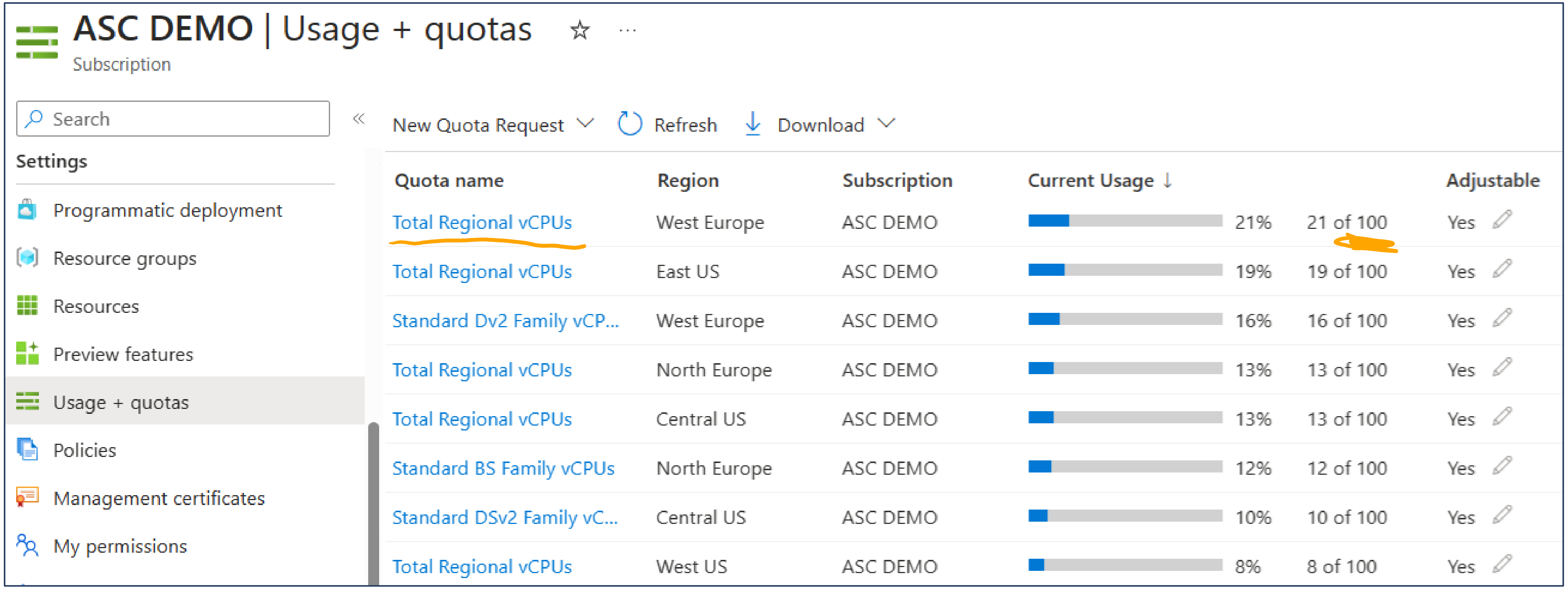
OR

Web and DB
resource group

Virtual machine
resource group

Storage
resource group

Determine Service Limits and Quotas



Quota name	Region	Subscription	Current Usage ↓		Adjustable
Total Regional vCPUs	West Europe	ASC DEMO	21%	21 of 100	Yes
Total Regional vCPUs	East US	ASC DEMO	19%	19 of 100	Yes
Standard Dv2 Family vCP...	West Europe	ASC DEMO	16%	16 of 100	Yes
Total Regional vCPUs	North Europe	ASC DEMO	13%	13 of 100	Yes
Total Regional vCPUs	Central US	ASC DEMO	13%	13 of 100	Yes
Standard BS Family vCPUs	North Europe	ASC DEMO	12%	12 of 100	Yes
Standard DSv2 Family vC...	Central US	ASC DEMO	10%	10 of 100	Yes
Total Regional vCPUs	West US	ASC DEMO	8%	8 of 100	Yes

Resources have a default limit - a subscription quota

Helpful to track current usage, and plan for future use

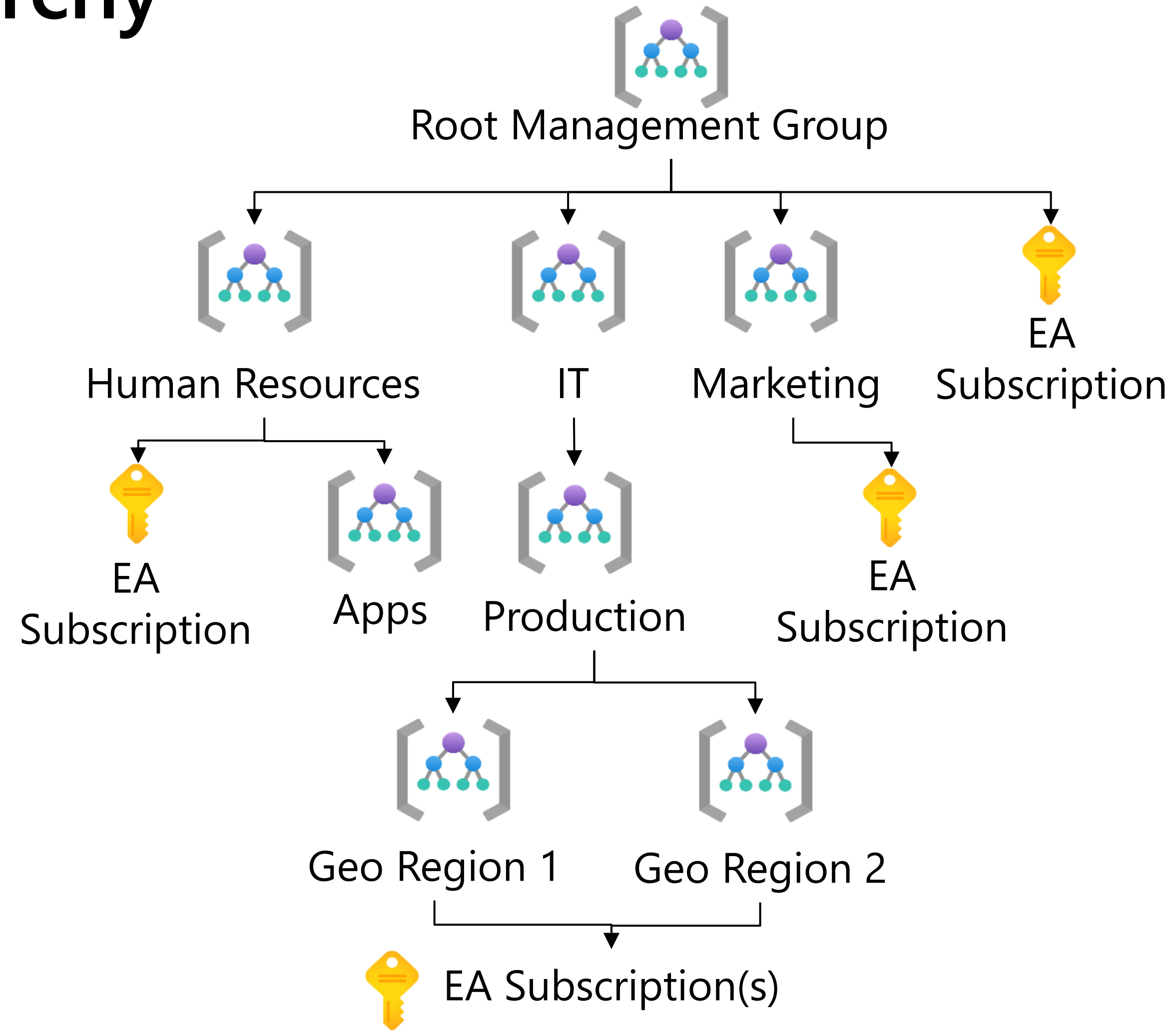
You can open a free support case to increase limits to published maximums

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)



* To prevent changes, apply resource locks at the subscription, resource group, or resources level

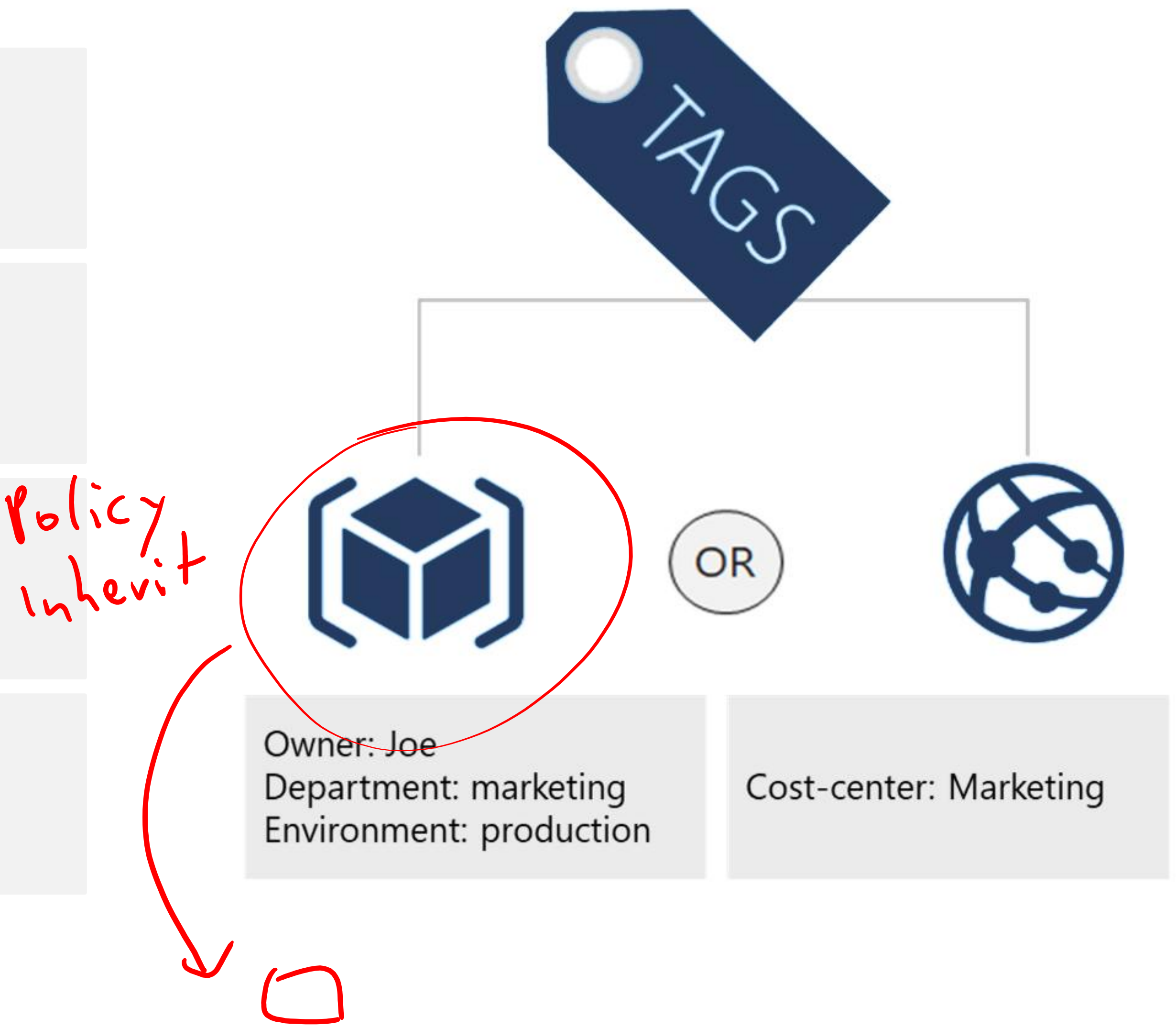
Apply Resource Tagging

Provides metadata for your Azure resources

Logically organizes resources

Consists of a name-value pair

Very useful for rolling up billing information



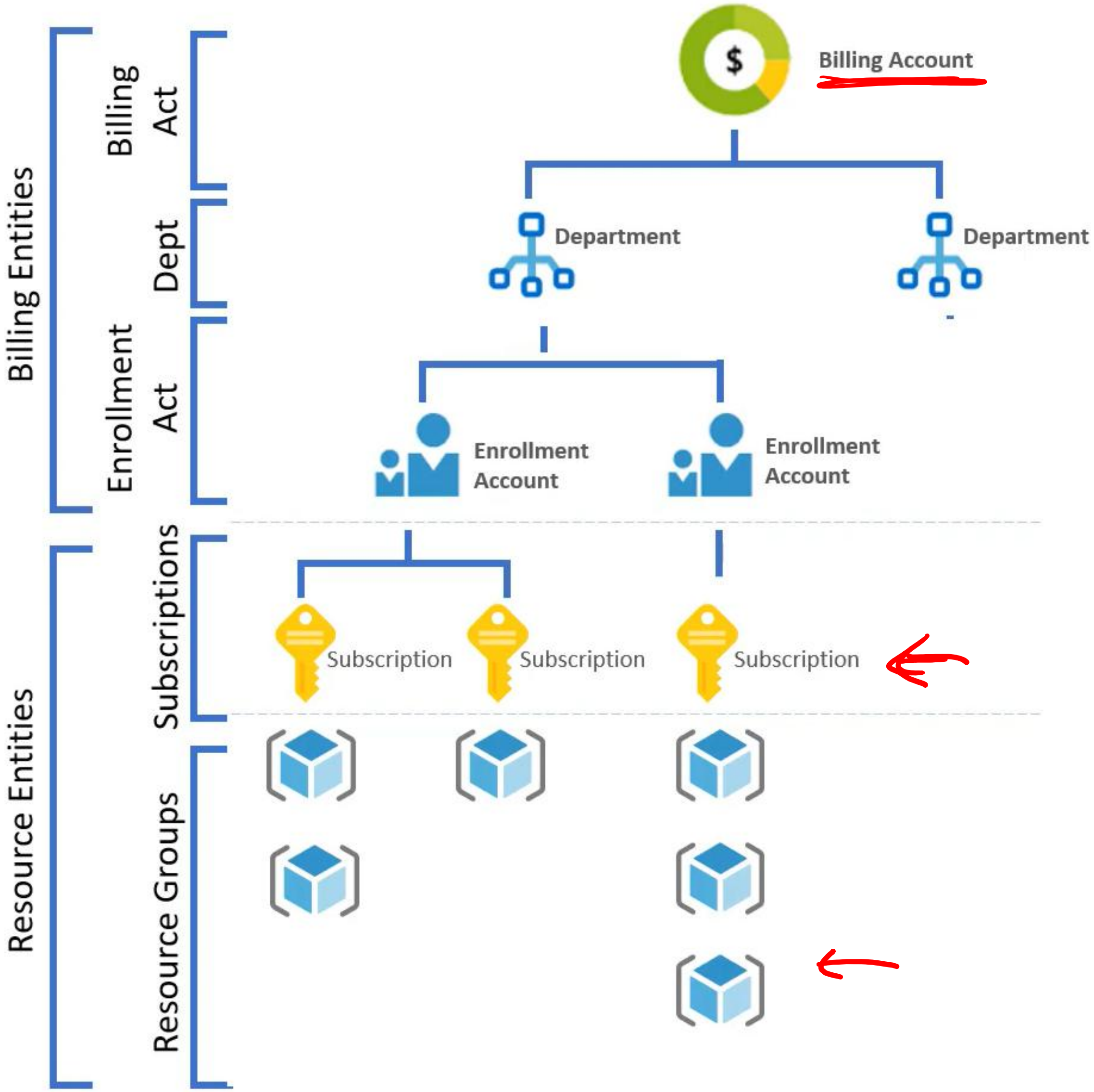
Policy
Inherit

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 Azure Advisor recommendations



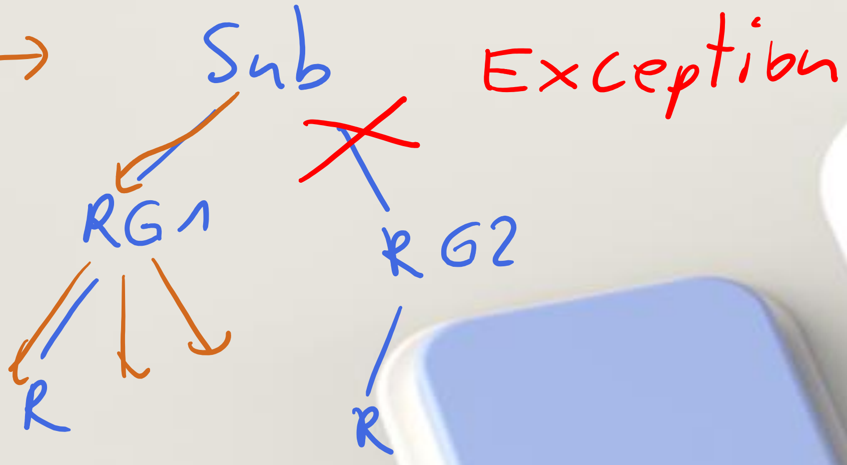
Learning Recap - Describe core architectural components

Check your knowledge questions and additional study

Reference modules

- Describe the core architectural components of Azure
- Control and organize Azure resources with Azure Resource Manager

Policy
Def (json) →
Effect : Deny
Audit



Azure Policy Initiatives

Initiative { Pol 1
Pol 2
⋮
Pol 627
628 } → Sub

Learning Objectives – Azure Policy initiatives

- Implement Azure Policy
- Implement Azure Policies
- Create Azure Policies
- Demonstration – Azure Policy
- Learning Recap

Manage Azure identities and governance (20–25%): Manage subscriptions and governance

- Implement and manage Azure Policy

Implement Azure Policies

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

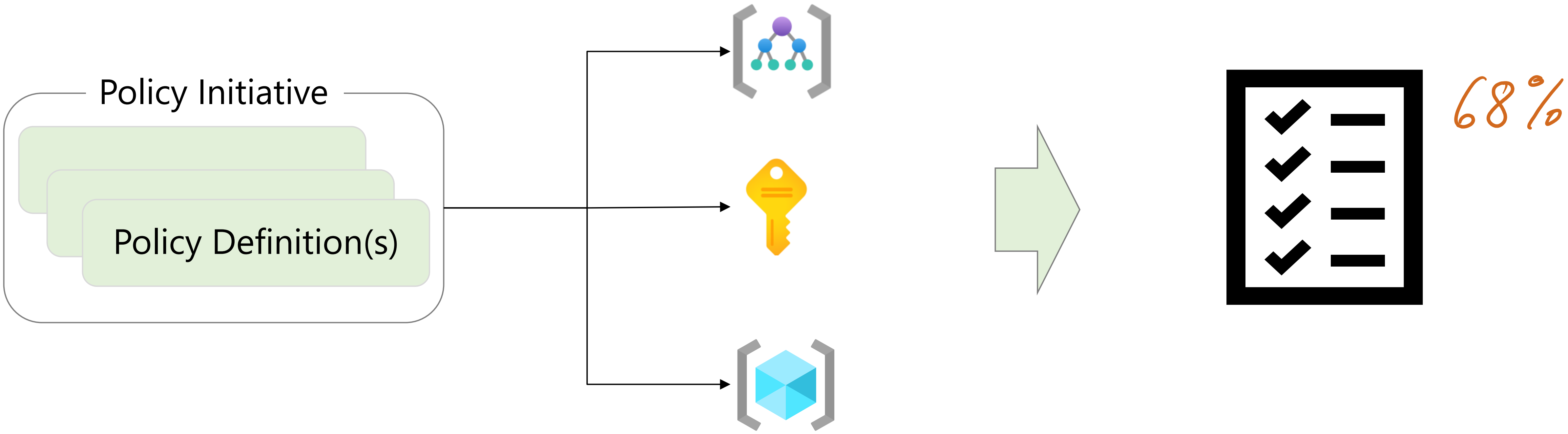
Azure Backup should be enabled for Virtual Machines – Audit if Azure Backup service is enabled for all Virtual machines

Create Azure Policies

Define and create

Scope and assign

Assess compliance



Policy Initiative

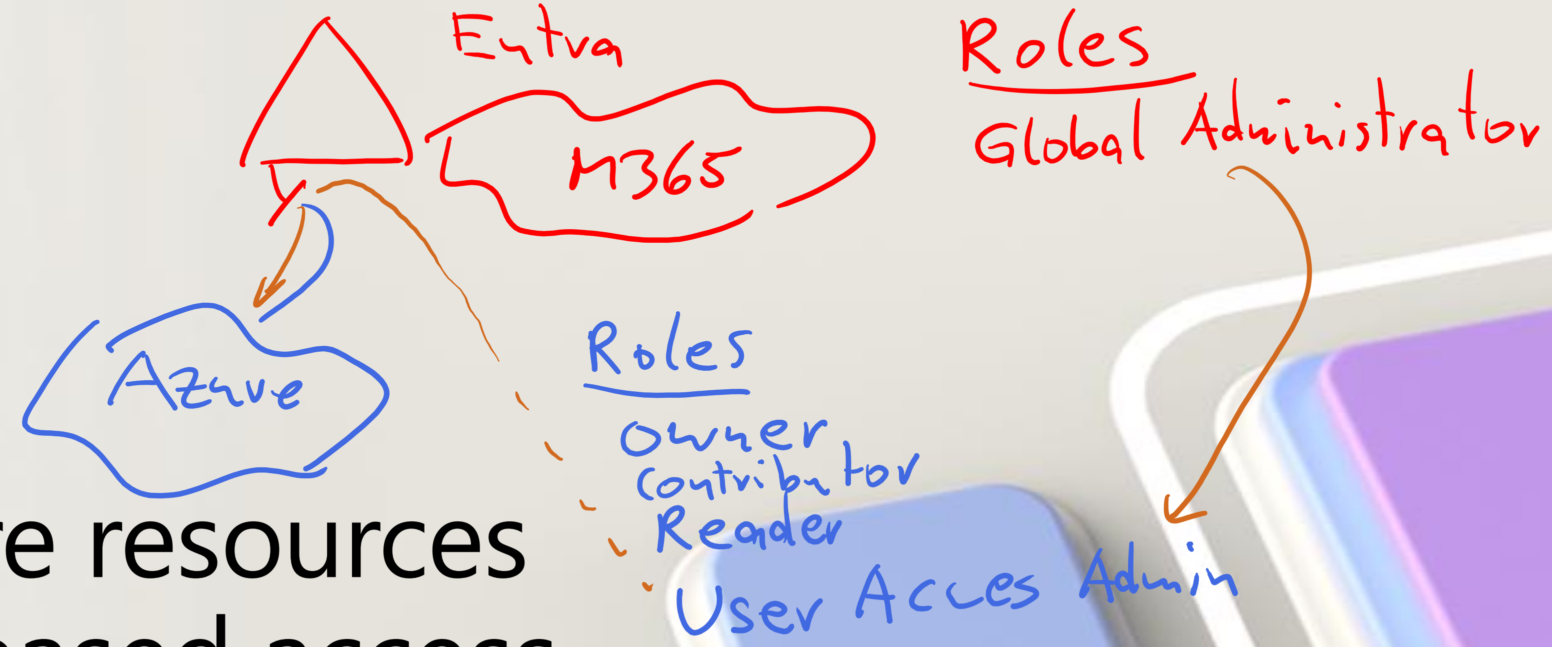
Policy Definition(s)

Learning Recap – Configure Azure Policy

Check your knowledge questions and additional study

Reference modules

- Introduction to Azure Policy
- Azure Policy initiatives
- Implement access management for Azure resources



Roles

Global Administrator

Roles

Owner
Contributor
Reader
User Acces Admin

Secure your Azure resources with Azure role-based access control (Azure RBAC)

Learning Objectives - RBAC

- Compare Azure RBAC Roles to Entra ID Roles
- Create a Role Definition
- Create a Role Assignment
- Apply RBAC Authentication
- Demonstration – Azure RBAC
- Learning Recap

Manage Azure identities and governance (20–25%): Manage access to Azure resources

- Manage built-in Azure roles
- Assign roles at different scopes
- Interpret access assignments

Compare Azure RBAC Roles to Entra ID Roles

RBAC roles provide fine-grained access management

Azure RBAC roles	Entra ID roles
Manage access to Azure resources	Manage access to Entra ID objects
Scope can be specified at multiple levels	Scope is at the tenant level
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 PowerShell

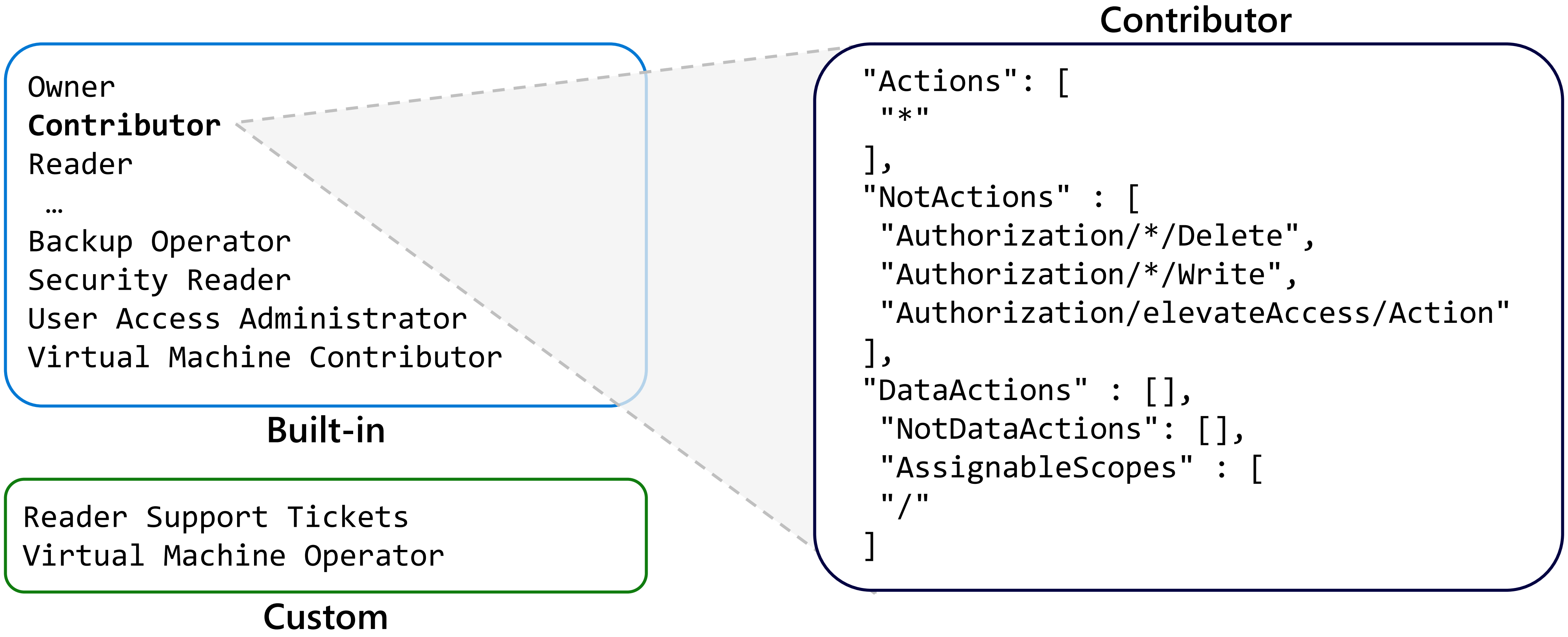
✓ There are many built-in roles, or you can create your own custom role

Determine Azure RBAC Roles

RBAC role in Azure	Permissions	Notes
Owner	Has full access to all resources and can delegate access to others	The Service Administrator and Co-Administrators are assigned the Owner role at the subscription scope. This applies to all resource types
Contributor	Creates and manages all types of Azure resources but cannot grant access to others	This applies to all resource types
Reader	Views Azure resources	This applies to all resource types
User Access Administrator	Manages user access to Azure resources	This applies to managing access, rather than to managing resources

Create a Role Definition

Collection of permissions that lists the operations that can be performed



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

Built-in

```
Reader Support Tickets
Virtual Machine Operator
```

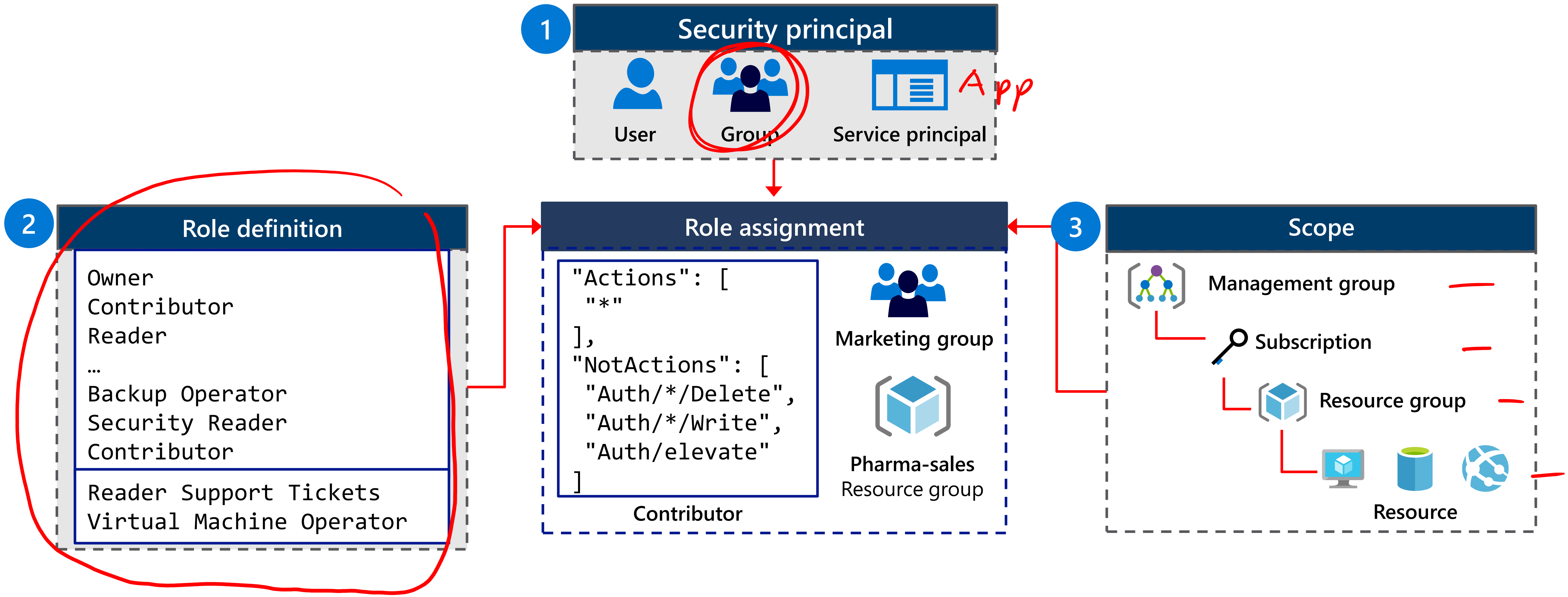
Custom

Contributor

```
"Actions": [
 "*"
],
"NotActions" : [
 "Authorization/*/Delete",
 "Authorization/*/Write",
 "Authorization/elevateAccess/Action"
],
"DataActions" : [],
 "NotDataActions": [],
 "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

App

2 Role definition

Owner
Contributor
Reader
…
Backup Operator
Security Reader
Contributor

Reader Support Tickets
Virtual Machine Operator

Role assignment

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

Contributor

Marketing group

Pharma-sales
Resource group

3 Scope

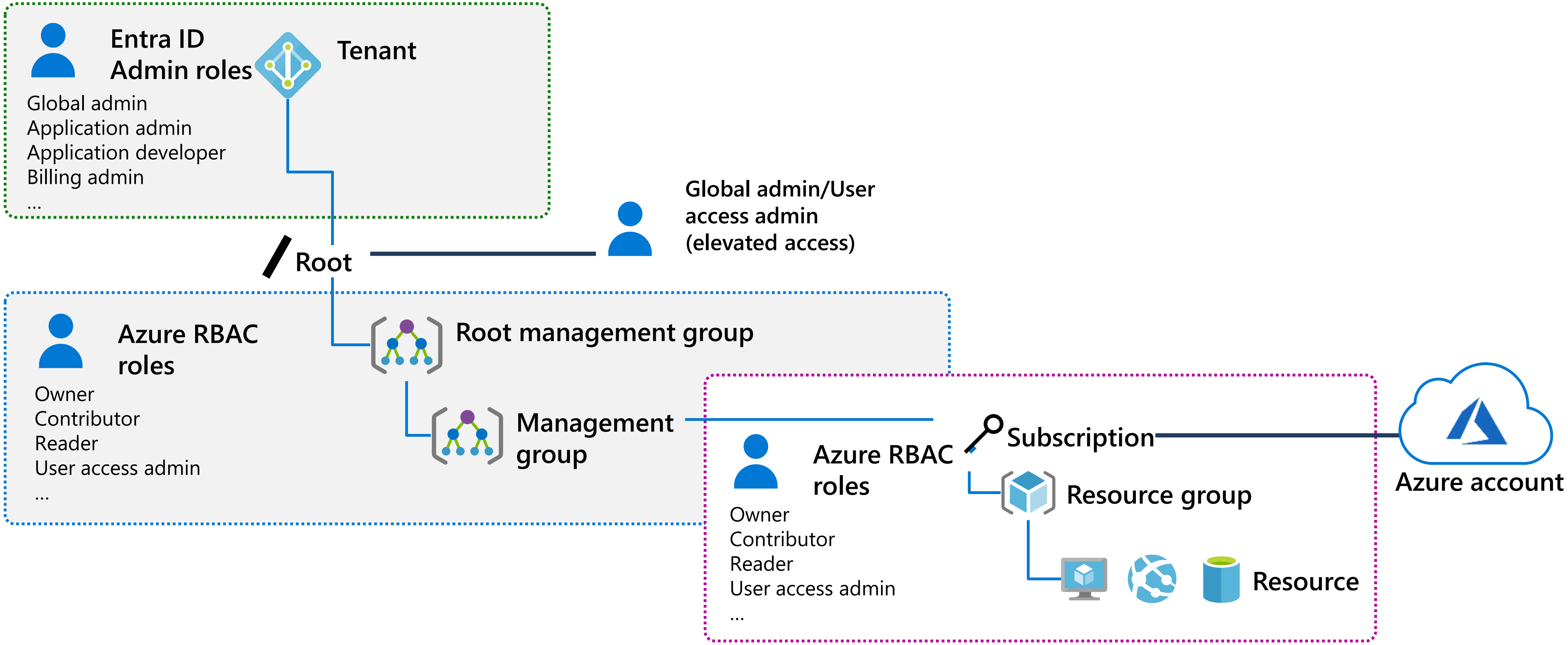
Management group

Subscription

Resource group

Resource

Apply RBAC Authentication



Entra ID
Admin roles

Tenant

Global admin
Application admin
Application developer
Billing admin
…

Root

Global admin/User
access admin
(elevated access)

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

Learning Recap– Secure resources with RBAC

Check your knowledge questions and additional study

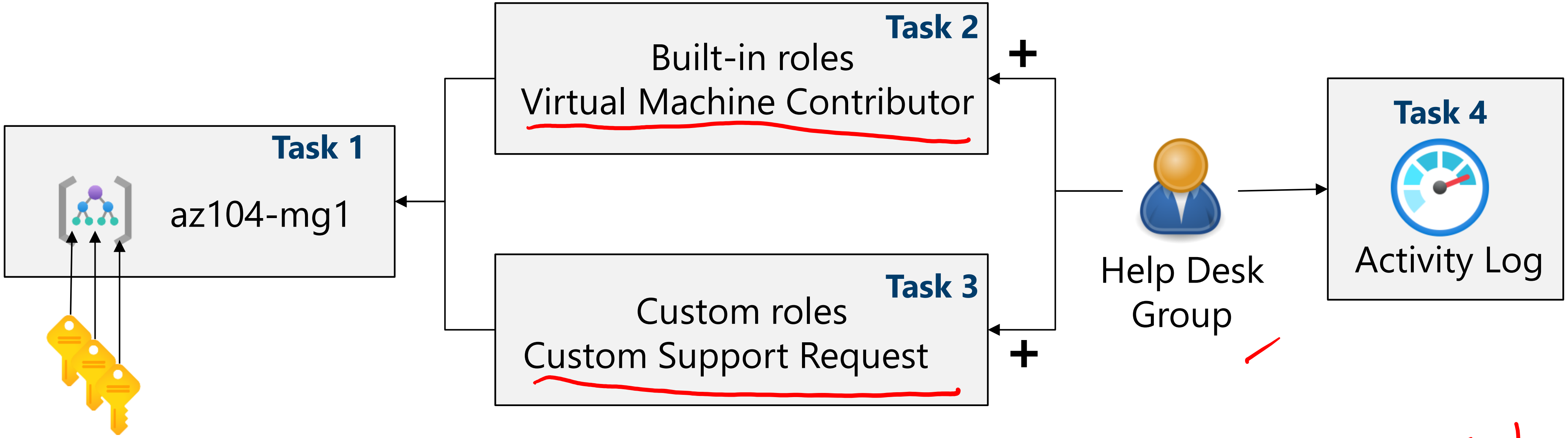
Reference modules

- Manage users and groups in Microsoft Entra ID

Lab 02a - Manage Subscriptions and RBAC

Lab 02b - Manage Governance via Azure Policy

Lab 02a – Architecture diagram



Cloud Shell

Editor

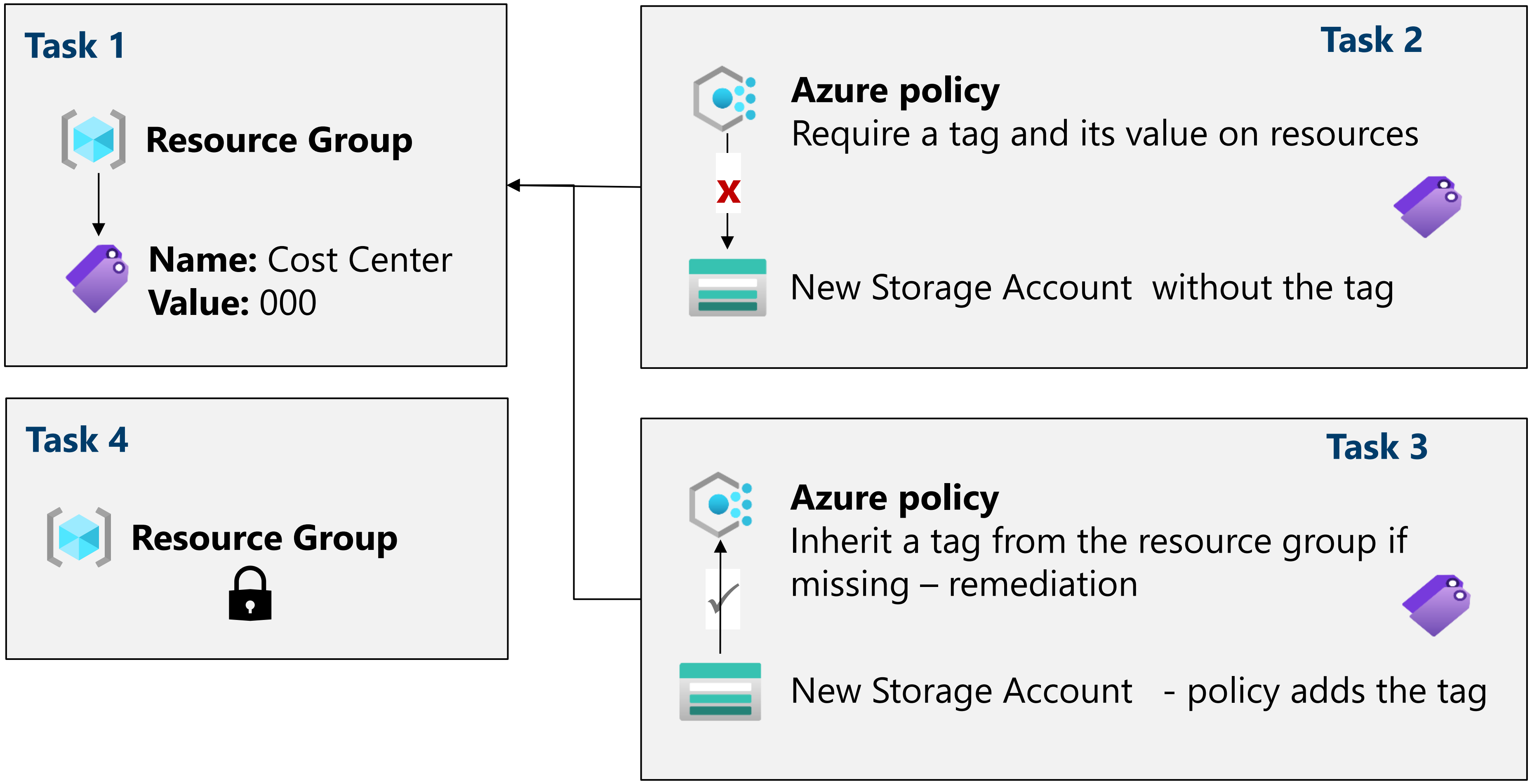
× Notepad (++)

✓ code (Monaco)

vi nano

emacs

Lab 02b – Architecture diagram



Task 1

Resource Group

Name: Cost Center
Value: 000

Task 2

Azure policy
Require a tag and its value on resources

New Storage Account without the tag

Task 3

Azure policy
Inherit a tag from the resource group if missing – remediation

New Storage Account - policy adds the tag

Task 4

Resource Group

End of presentation