

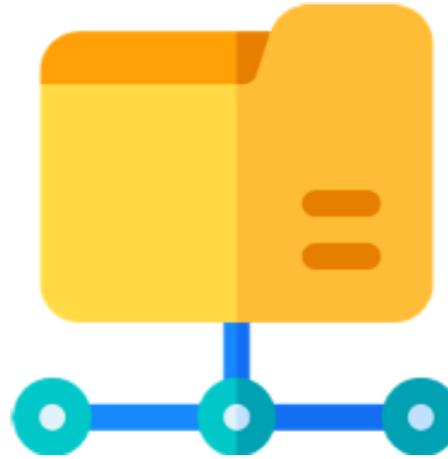
Azure directory services

UNDERSTANDING MICROSOFT AZURE ARCHITECTURE AND SERVICES

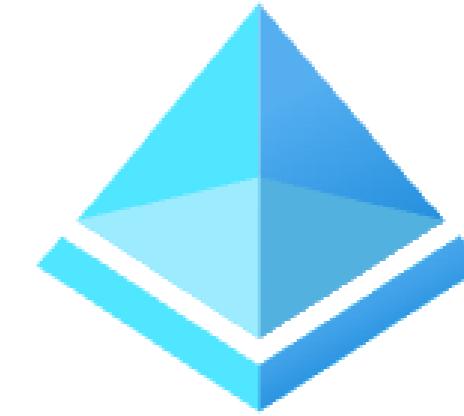


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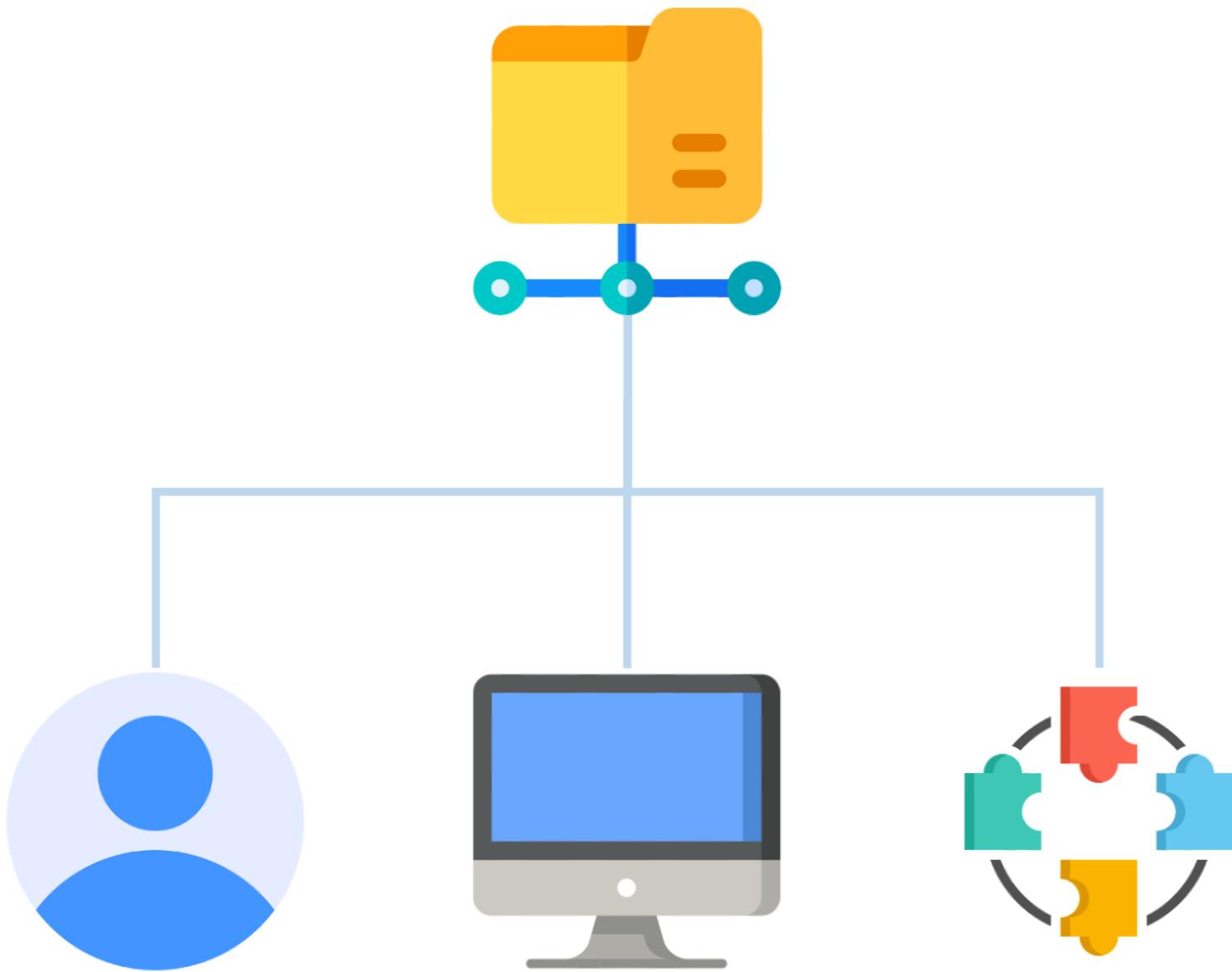
Directory services



- Active Directory
 - Conventional tool
 - On-premises Windows environments
- Microsoft Entra ID
 - Cloud tool
 - User-friendly online version



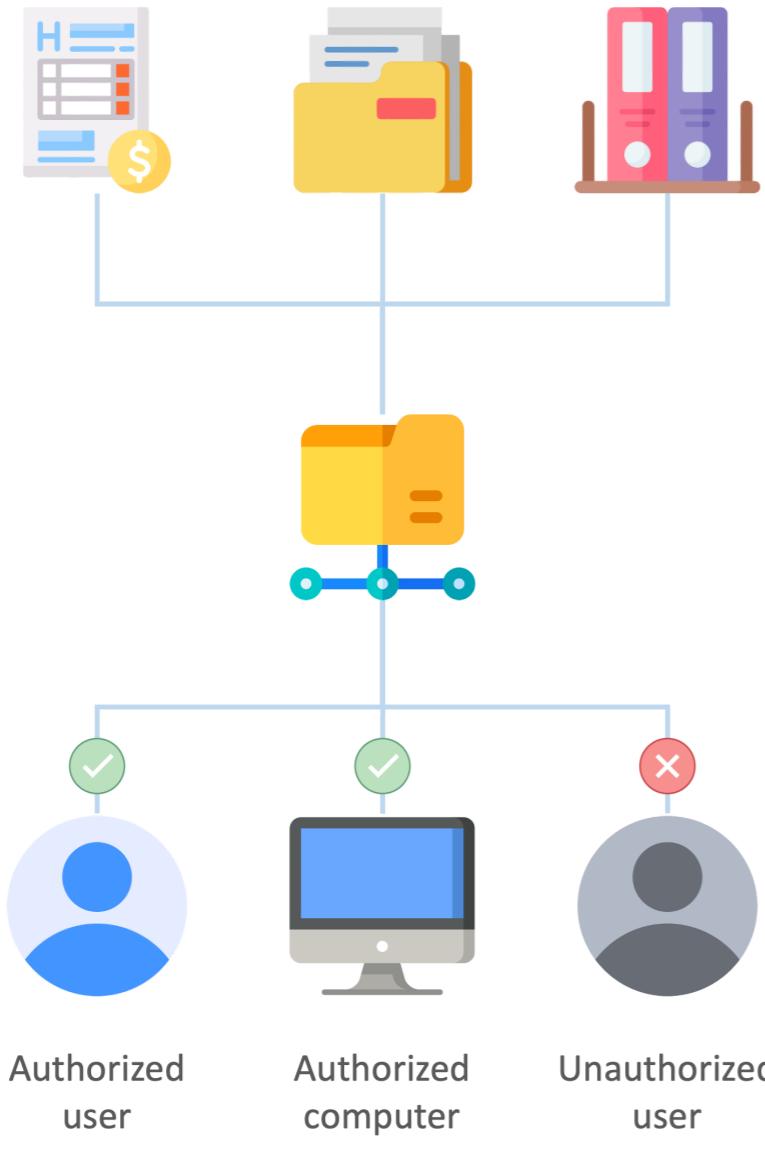
Active Directory (AD)



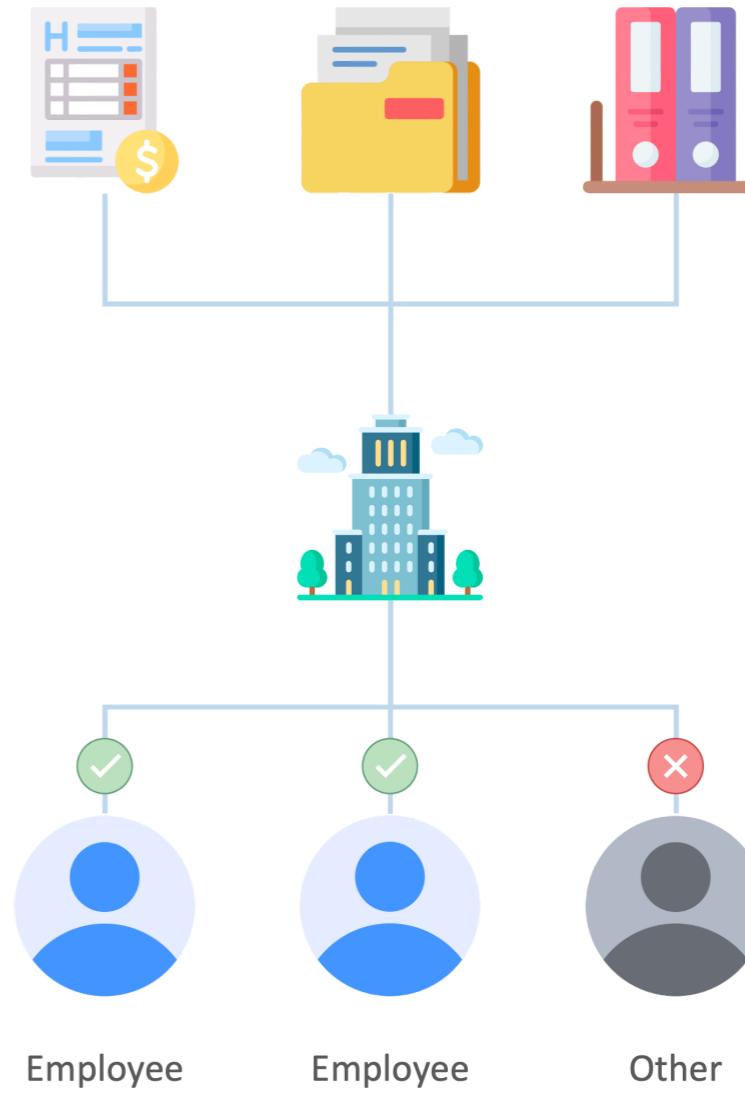
- Address book for an organization's assets
- Organize and store information about:
 - Users
 - Computers
 - Resources
- Centralized identification service

Active Directory (AD)

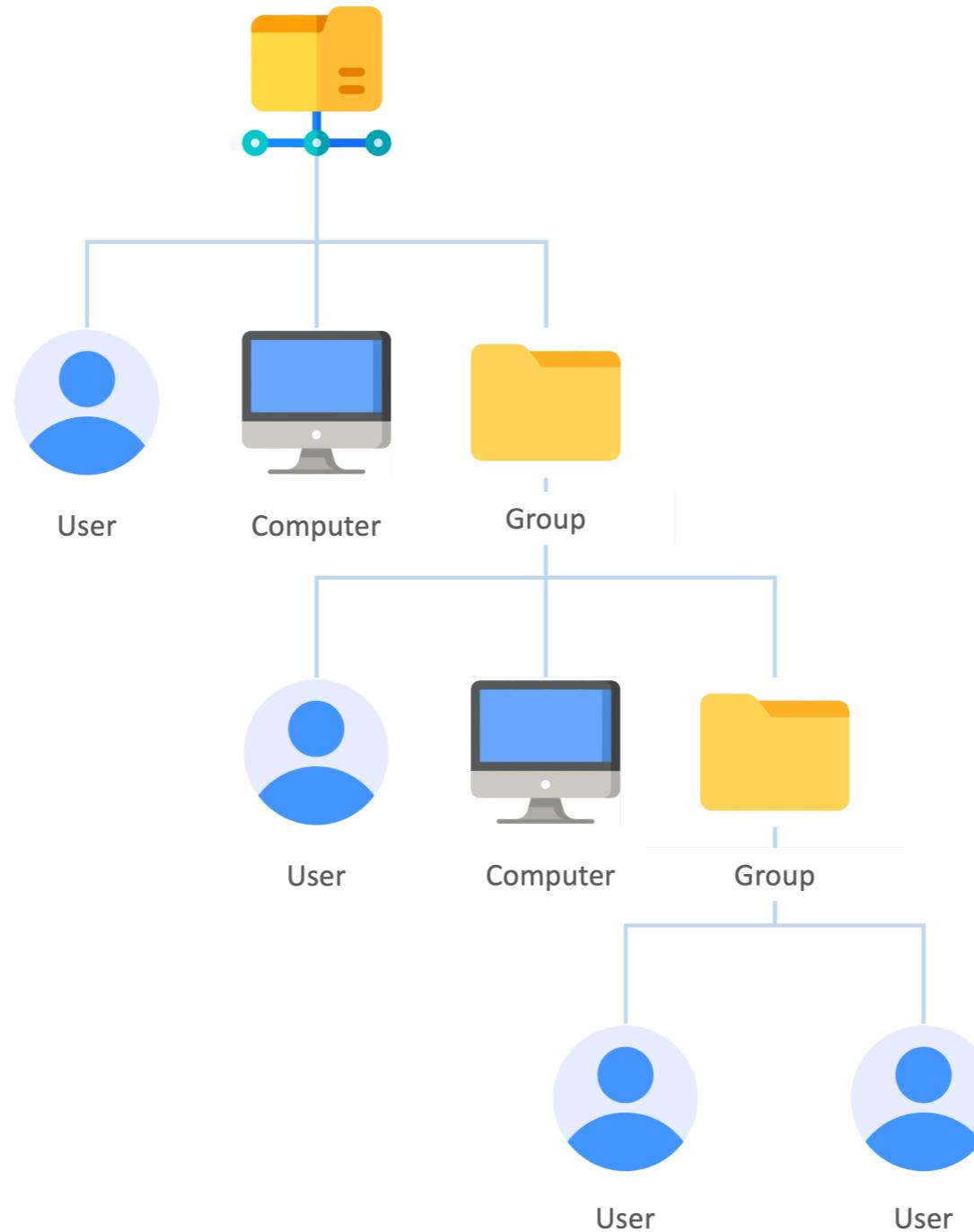
- Only authorized users can access



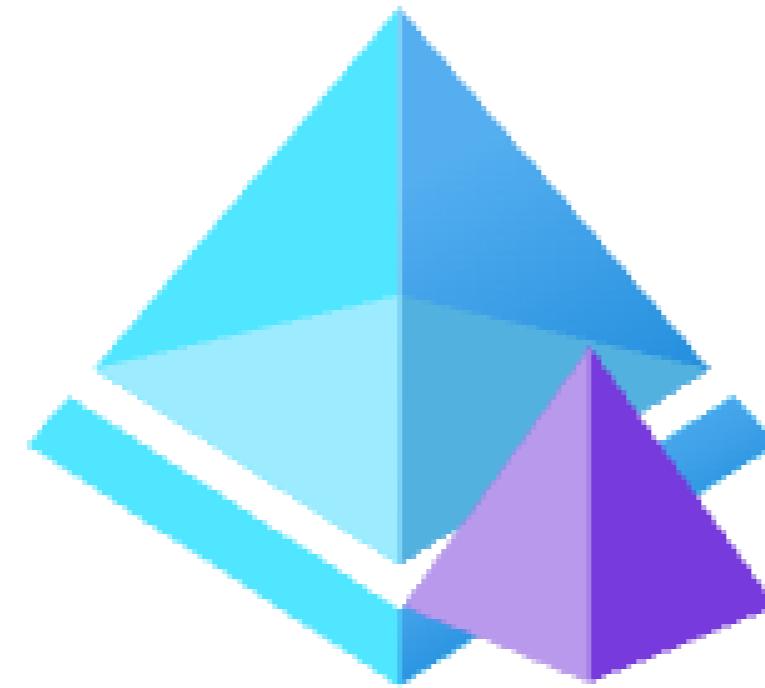
- Similar to how employees have building access



AD structure

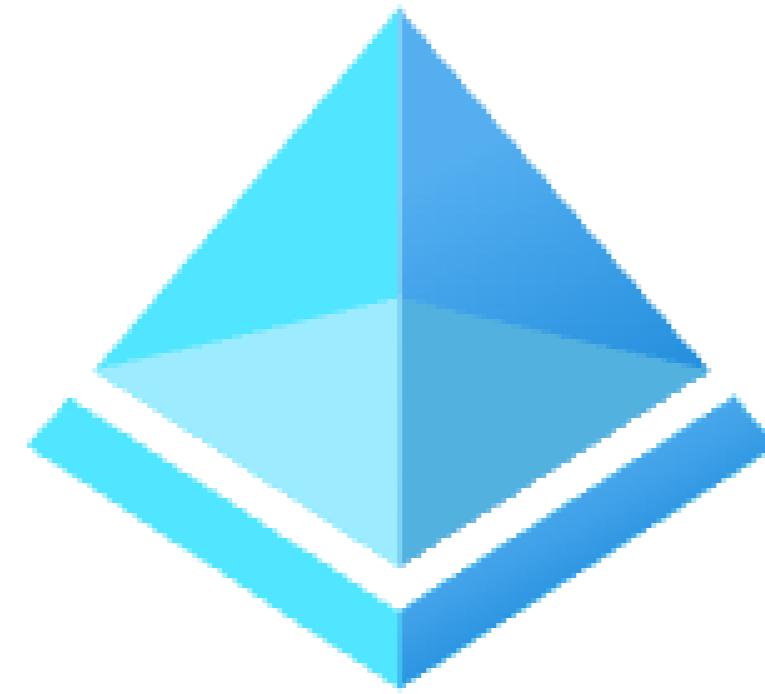


Azure directory services



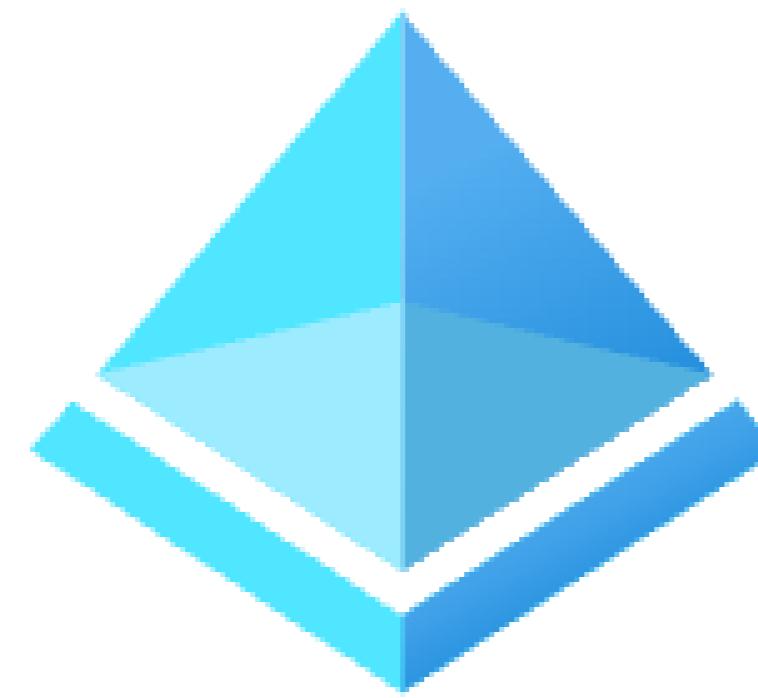
- Managing user identities and access
- Secure access to applications and resources
- Microsoft Entra ID

Microsoft Entra ID



- Simplifies online experience
- Single set of login credentials for services
- Eliminates the need to remember multiple usernames and passwords

Microsoft Entra ID use cases



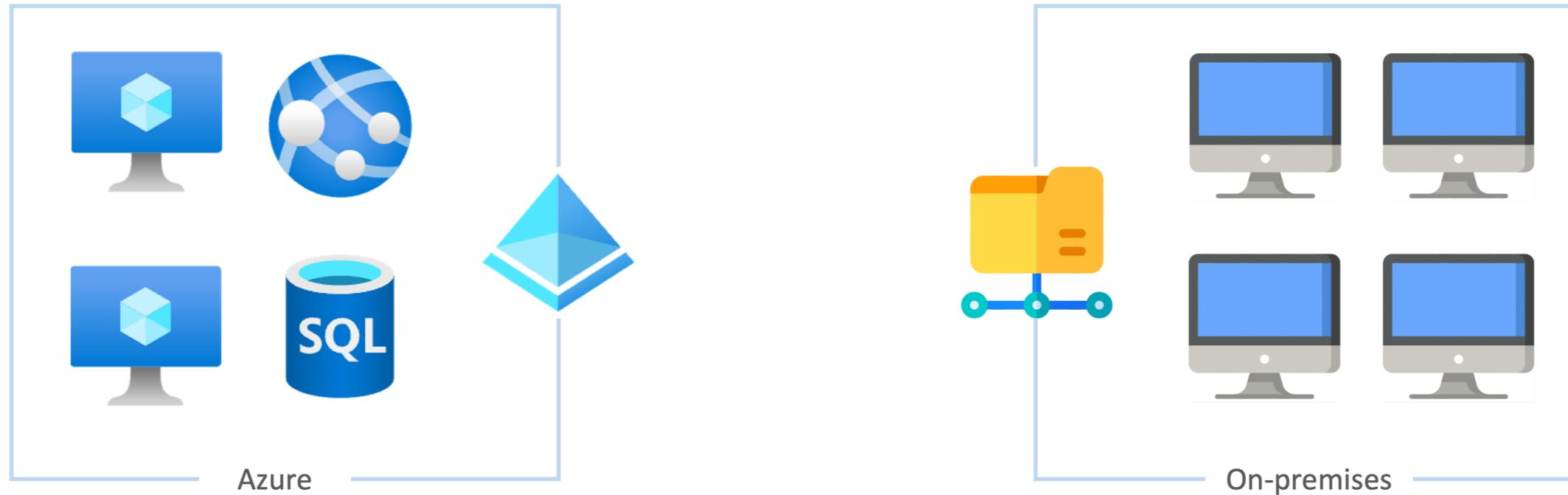
- Authentication
- Single Sign-On (SSO)
- Application management
- Device management and access policies

External identities



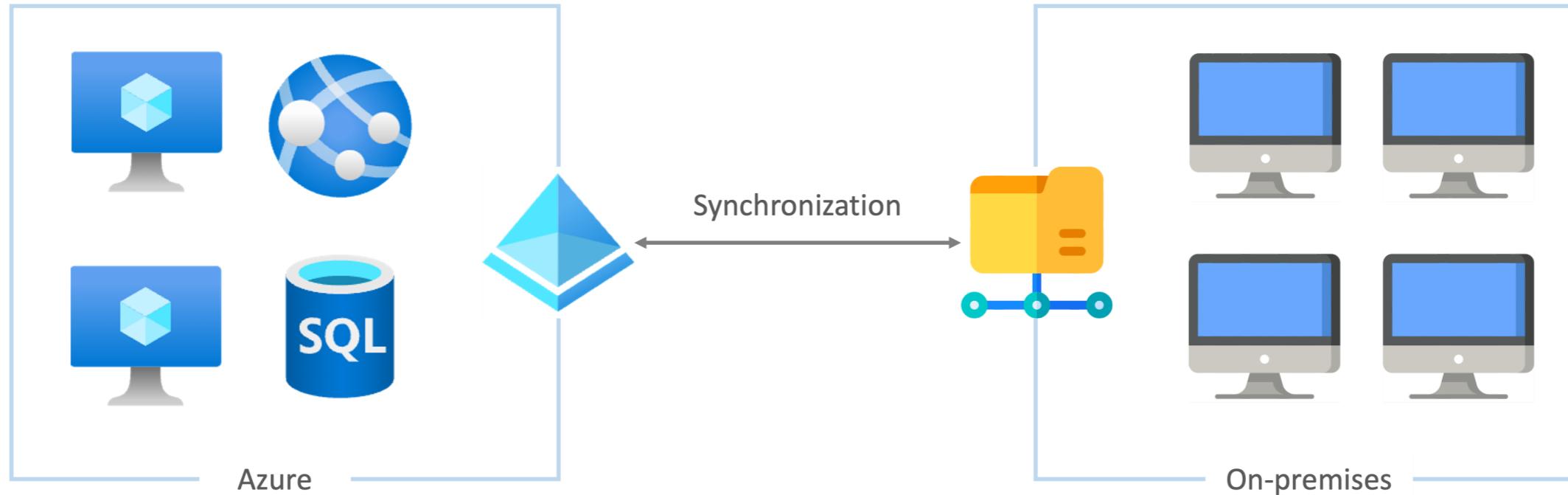
- Improves collaboration using external identities
- Beneficial when working with external partners
- Simplifies resource access without the need for new user accounts

Hybrid environments



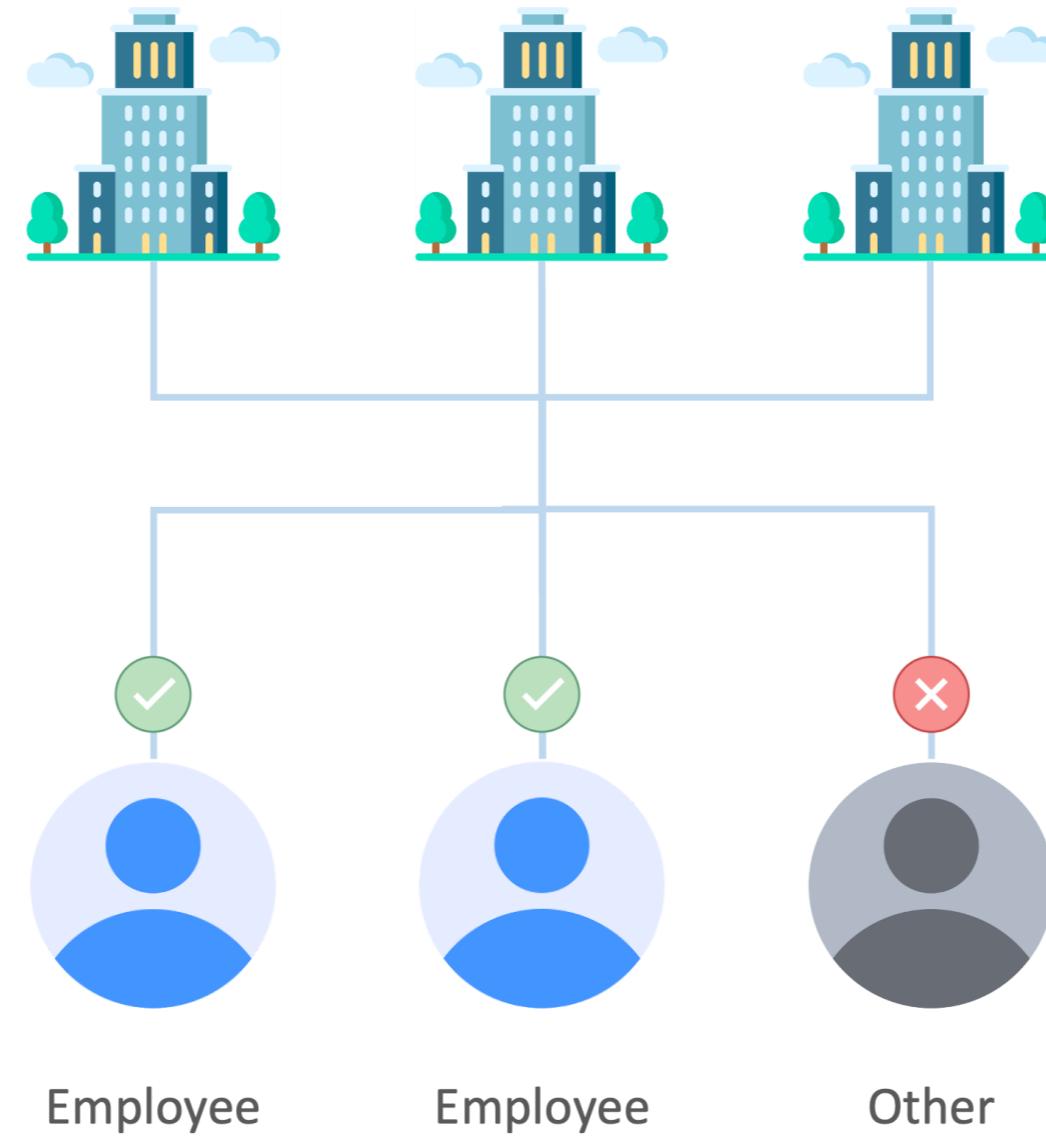
- Infrastructure that combines elements of both on-premises and cloud-based services
- Leverage the benefits of both on-premises and cloud solutions
- Allows businesses to transition gradually to the cloud

Hybrid environments



- Active Directory and Microsoft Entra ID can work together
- Share information about users, computers, groups, and their properties
- Synchronization enables access to resources in both cloud and local networks

Hybrid environments



Conclusion



Microsoft Entra ID

- Essential for efficient and secure identity and access management in the cloud
- Provides a unified set of credentials for accessing various resources

Let's practice!

UNDERSTANDING MICROSOFT AZURE ARCHITECTURE AND SERVICES

Azure identity services and access control

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Azure Architect



Azure authentication methods



- Authentication = Verifying the identity of an individual, service, or device
- Presenting credentials to prove who they are

Multi-factor authentication (MFA)



- Requires an additional form of identification during sign-in
- Safeguards against unauthorized access, even when password has been compromised
- Provides additional security by requiring two or more elements to fully authenticate

Multi-factor authentication



- Code sent to a user's phone
- Biometric property
- Respond to a challenge question

Passwordless authentication



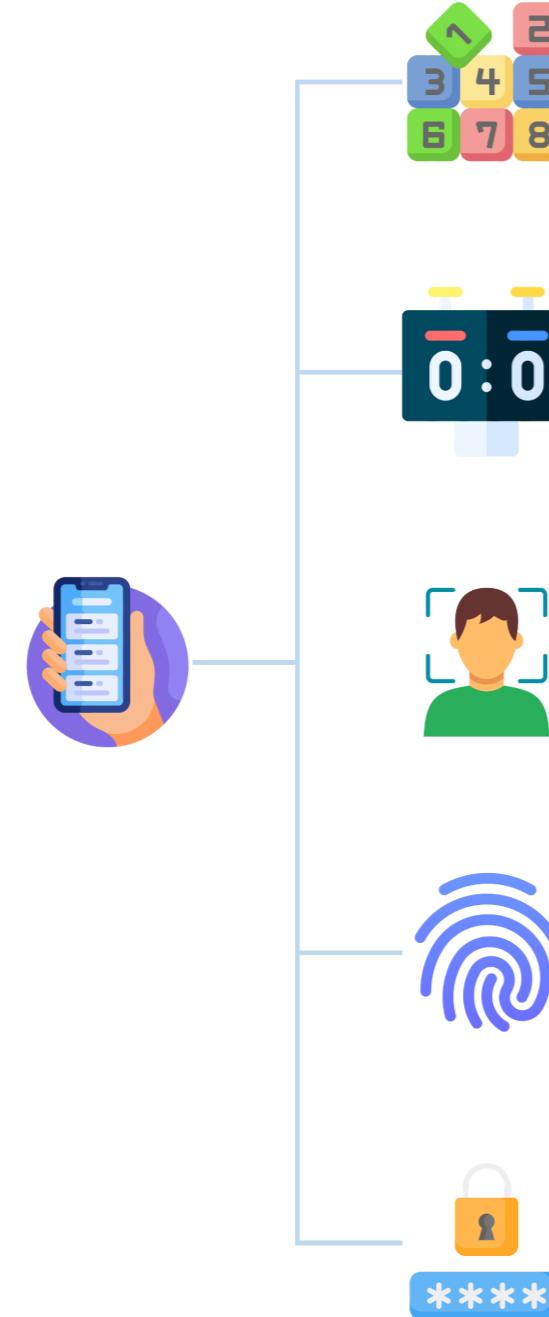
- Eliminate the need for passwords
- Devices need to be registered and associated with a user
- Authentication can occur using something the user has, knows, or is

Windows Hello for Business



- Ideal for individuals with Windows computer
- Users can access their computer using:
 - Fingerprint
 - Face recognition
 - PIN code
- Prevents unauthorized access by others

Microsoft Authenticator App



- Mobile app that offers MFA options
- Can transform any phone into a secure passwordless tool
- Sign in by:
 - Receiving a notification
 - Matching displayed numbers
 - Confirming with biometric
 - PIN code

FIDO2 security keys



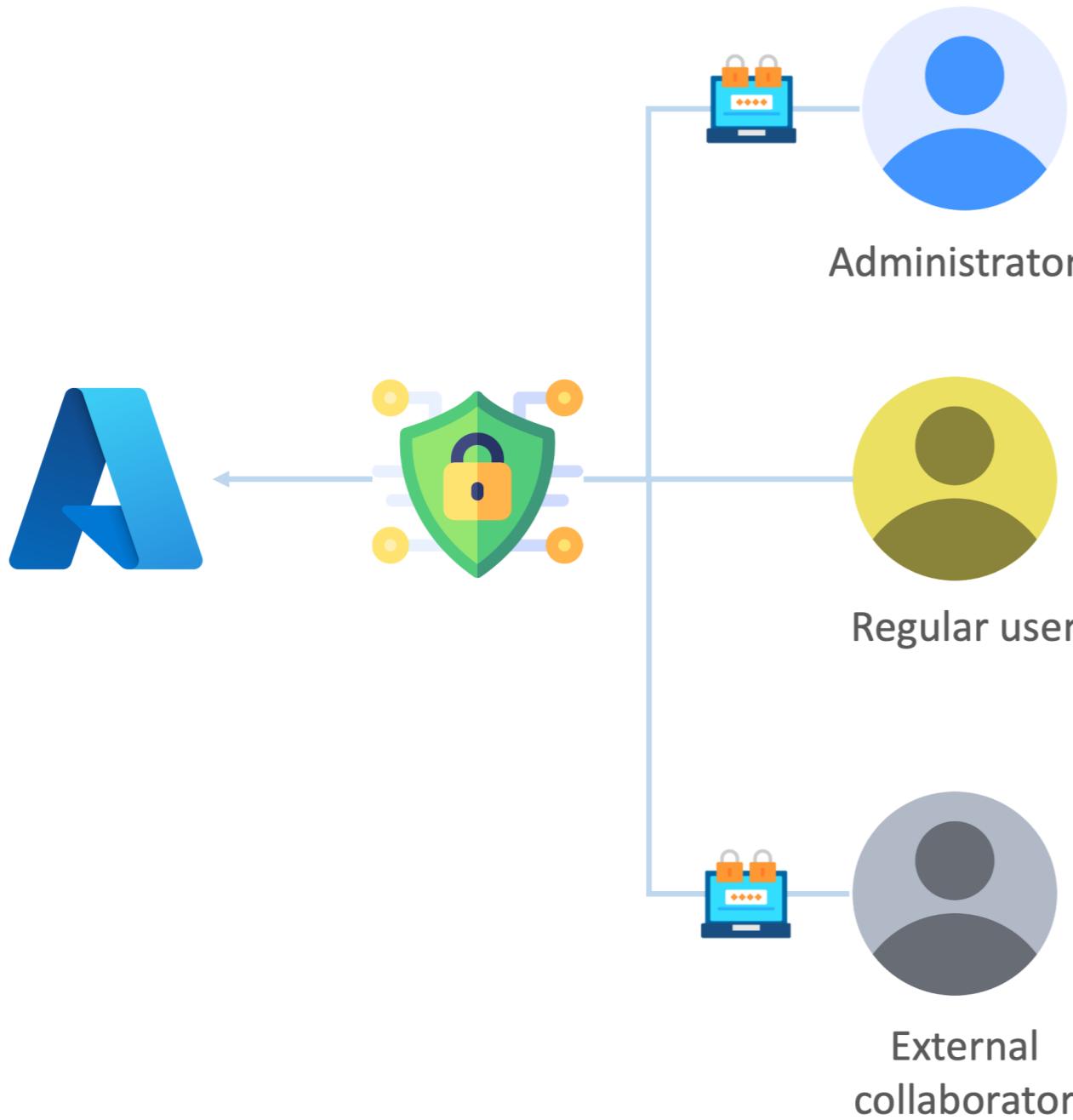
- Secure and passwordless authentication method
- Open standard by the FIDO Alliance
- Key is available in different forms, including USB devices

Conditional access



- Resource access based on:
 - User identity
 - Location
 - Device
- Collects and analyzes such details at login
- Decides to:
 - Allow access
 - Deny access
 - Enforce MFA

Conditional access use cases



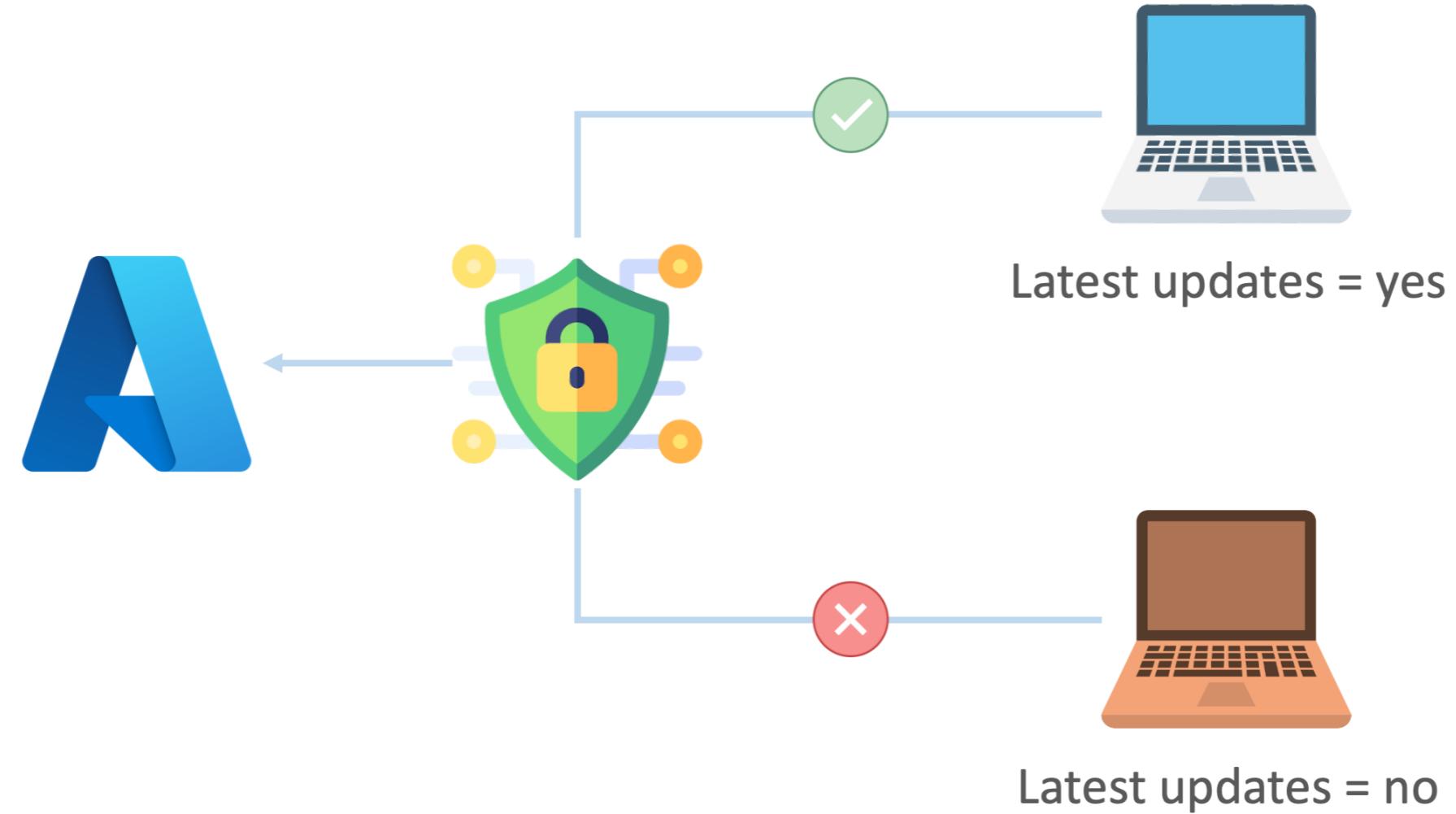
- Enforce MFA based on:
 - Roles
 - Location
 - Network

Conditional access use cases



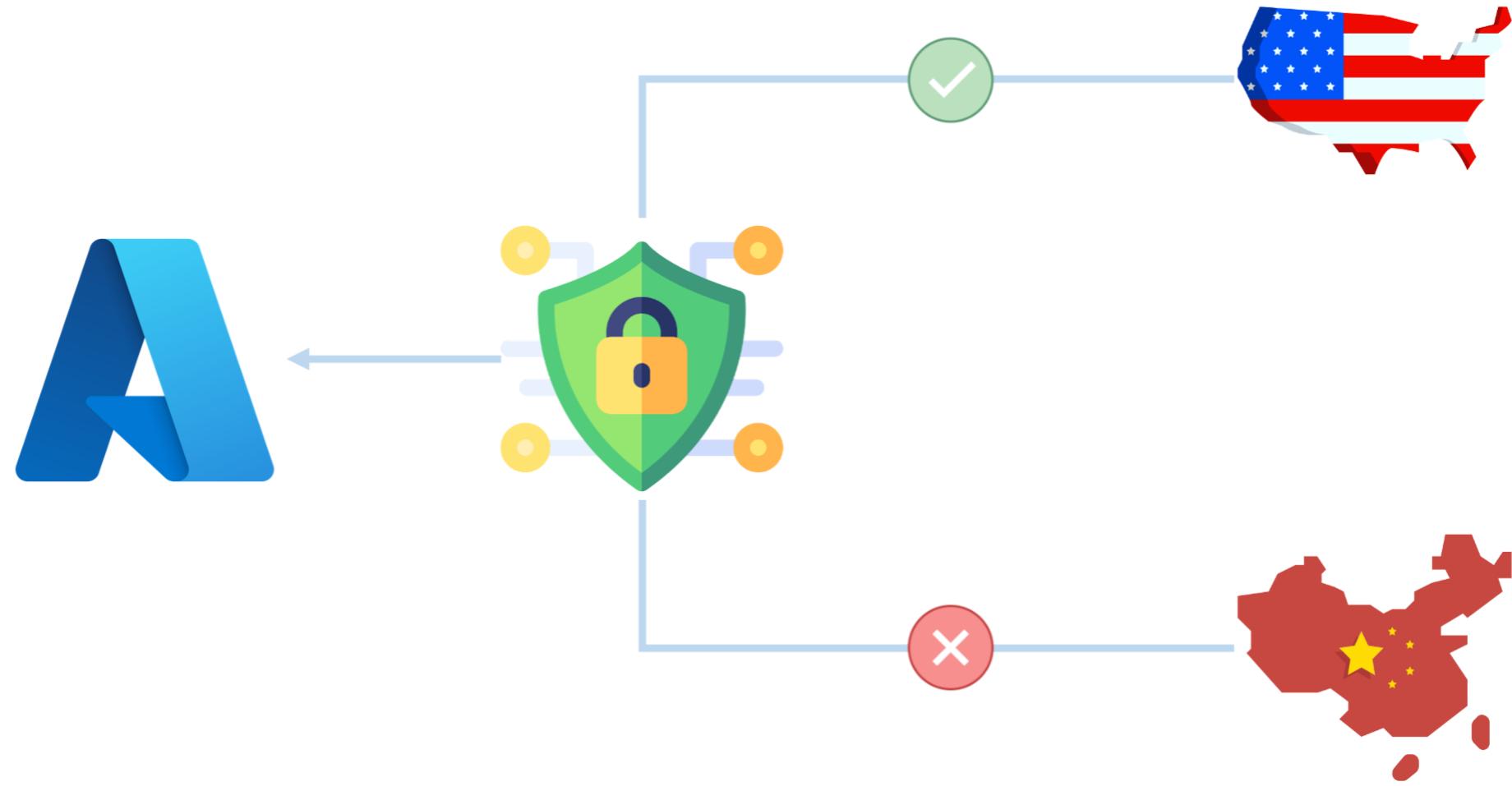
- Allow access to services exclusively through approved client applications
- Control which applications can connect to specific services

Conditional access use cases



- Restrict application access to users on managed devices that meet security and compliance standards

Conditional access use cases



- Prevent access from untrusted sources, including unknown or unexpected locations

Let's practice!

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Create users and groups in Entra ID

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Let's practice!

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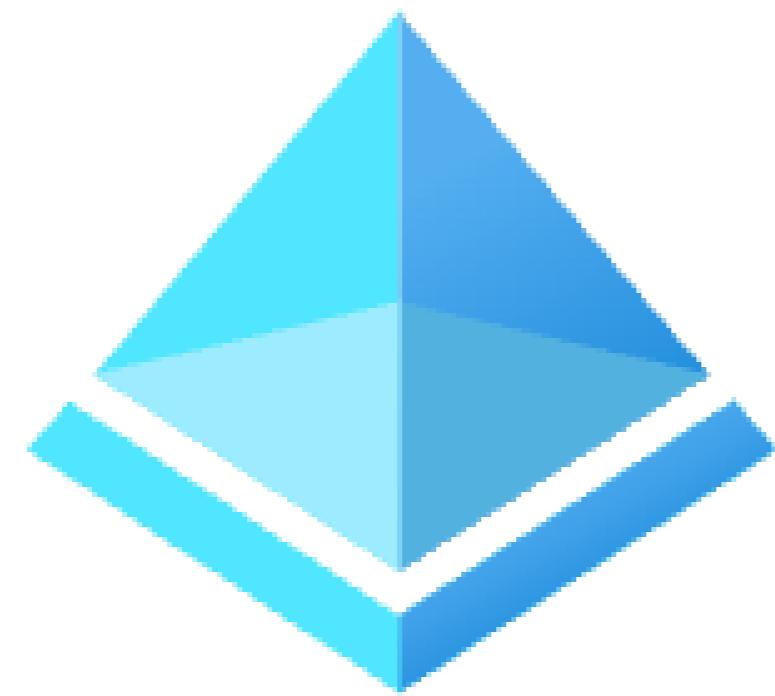
Azure permission model

UNDERSTANDING MICROSOFT AZURE ARCHITECTURE AND SERVICES



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Azure permission model



- Structure and system in place for managing and controlling access to Azure resources
- Two primary models for managing access:
 - Directory roles
 - Role-Based Access Control (RBAC)

What is a role?



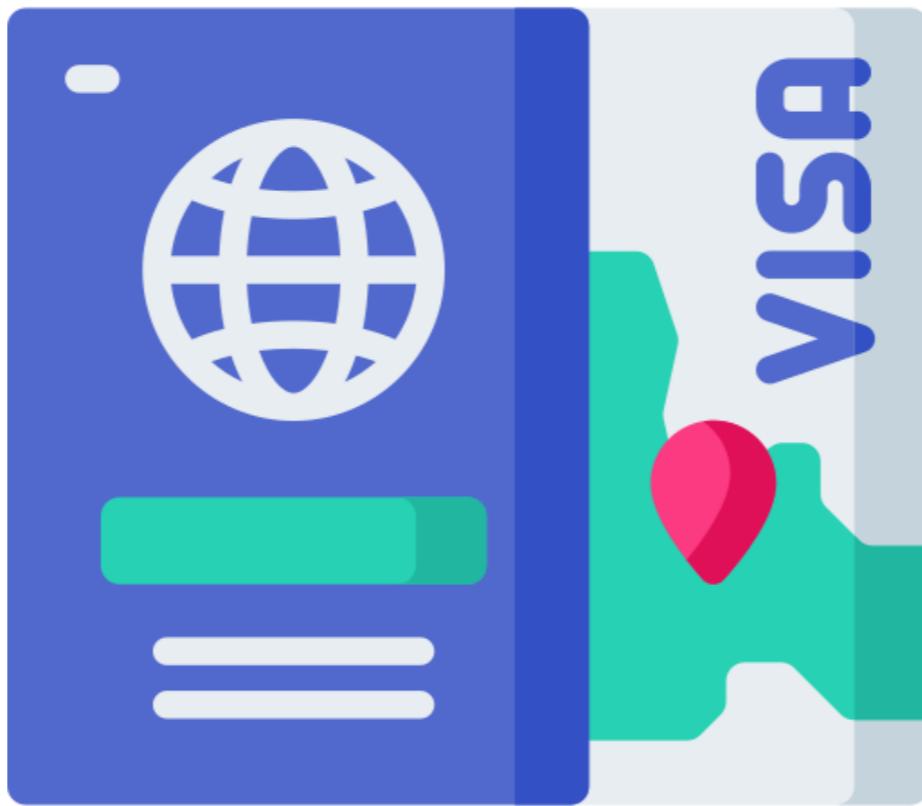
- Collection of permissions
- Define the actions an entity can perform on Azure resources
- Azure offers:
 - Predefined roles
 - Creation of custom roles

Directory roles



- Identity and access management within the organization
- Not related to managing access to Azure resources

Directory roles



Directory roles use cases



- Administrative tasks related to:
 - User accounts
 - Groups
 - Directory settings
- Example: IT administrator

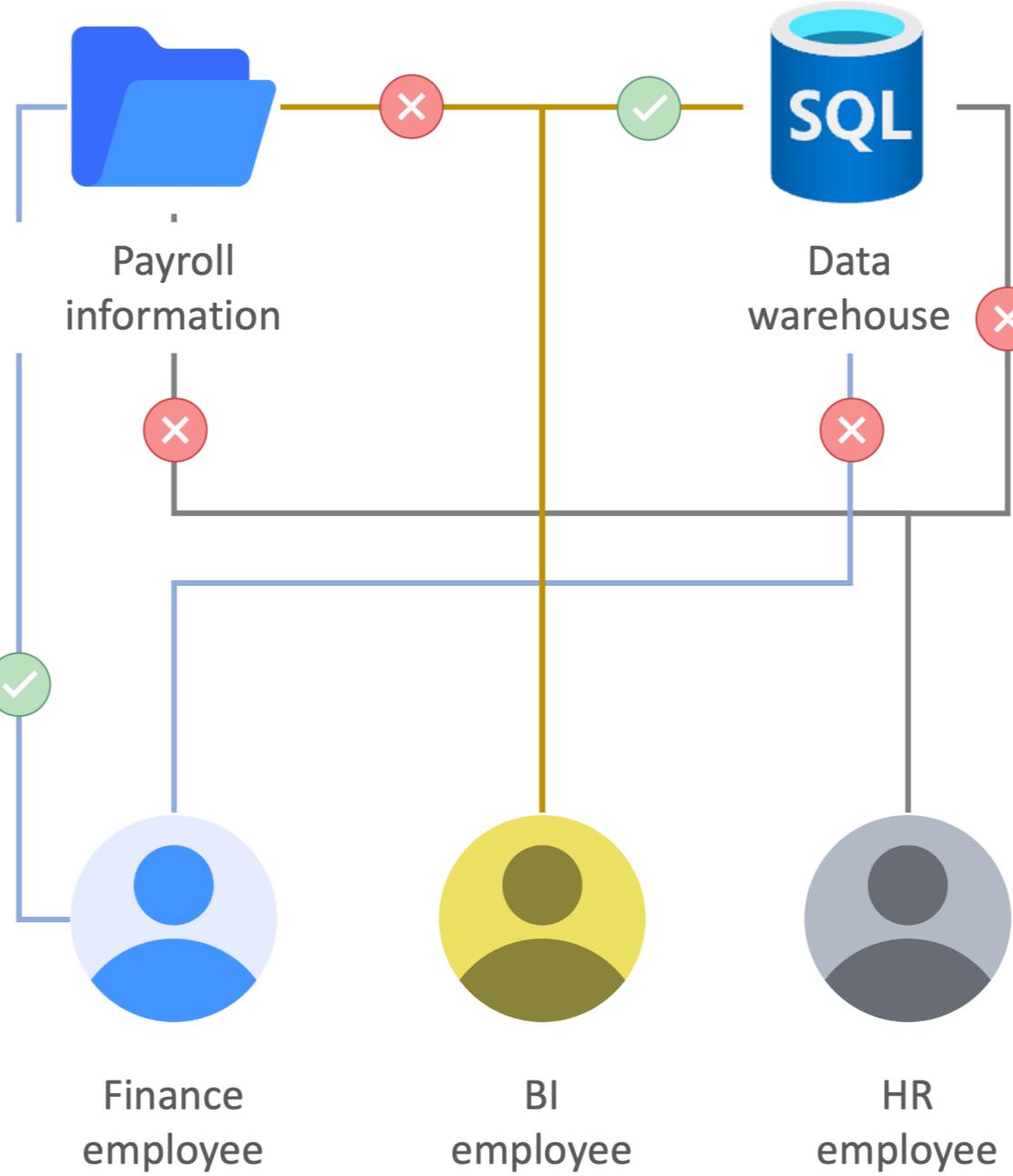


Role-based access control (RBAC)

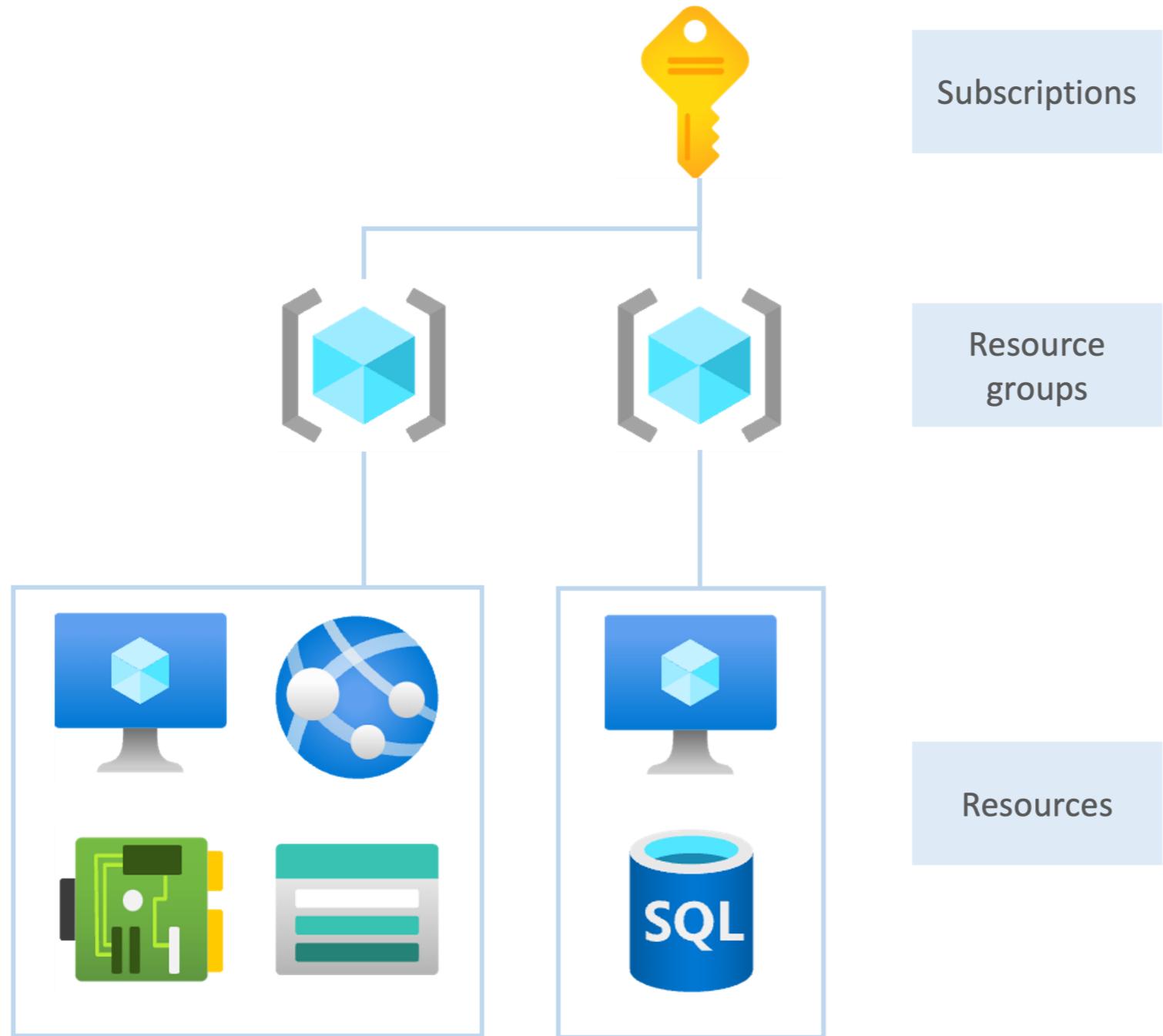


- Manage access to Azure resources
- Control who can do what within:
 - Subscription
 - Resource group
 - Individual resource
- Assign specific roles
- Assign only the necessary permissions

RBAC use cases

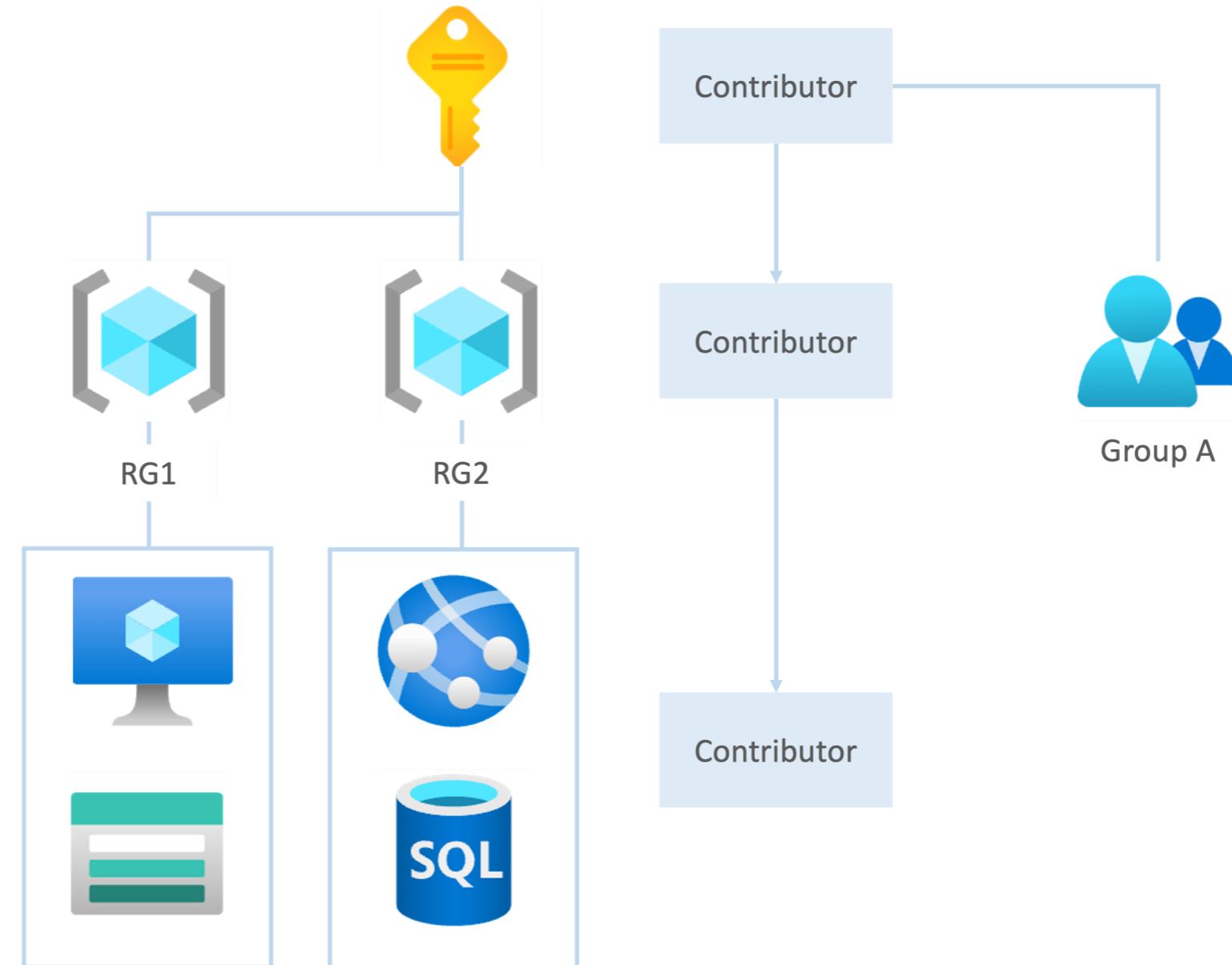


RBAC inheritance

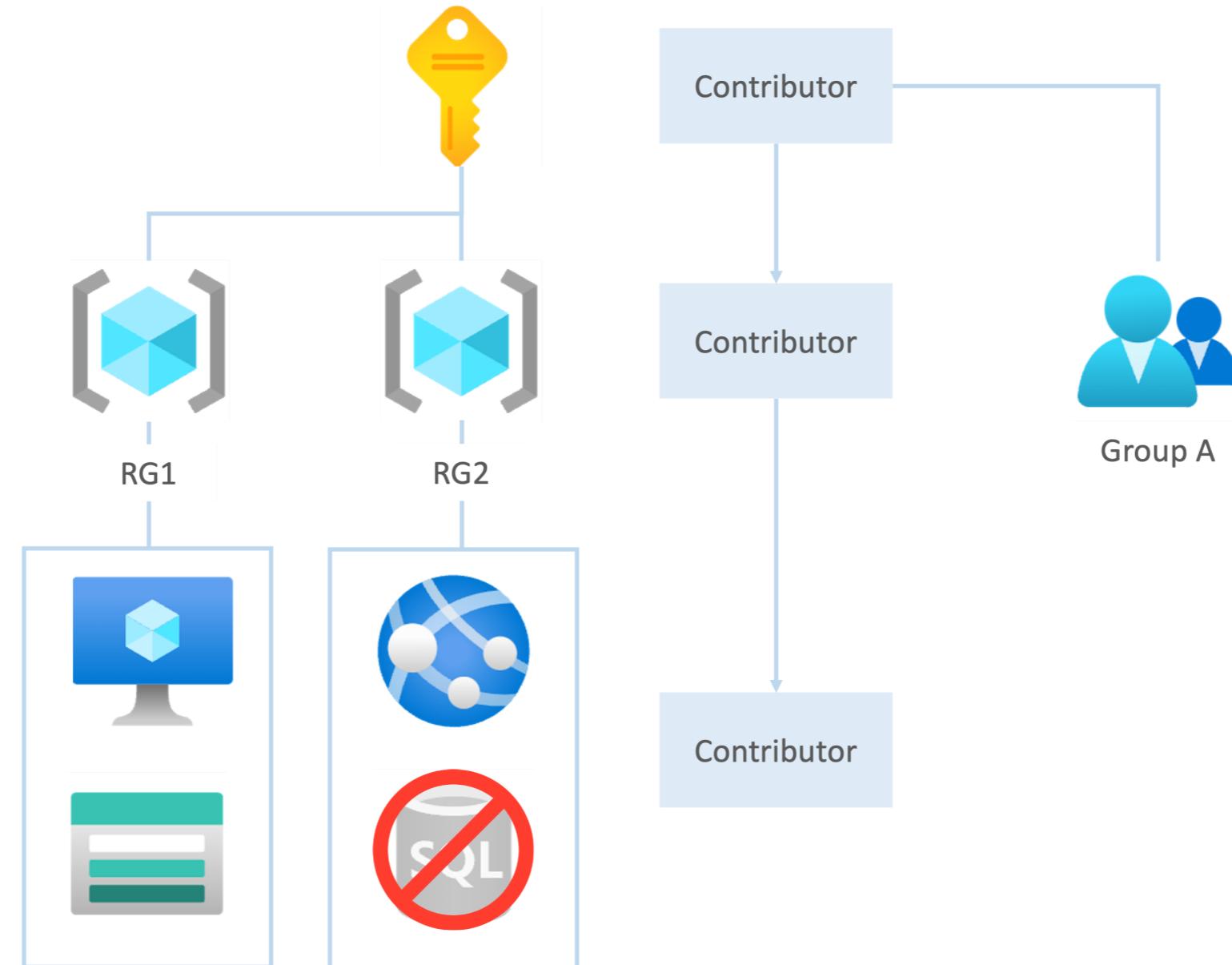


- Permissions are propagated through different levels of the resource hierarchy
- Permissions assigned at a higher level are automatically inherited by lower levels

RBAC inheritance



RBAC inheritance



Let's practice!

UNDERSTANDING MICROSOFT AZURE ARCHITECTURE AND SERVICES

Configure Azure permissions

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Cloud security in Azure

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Cloud security



- Protection of data, applications, and infrastructure
- Involves practices like:
 - Data encryption
 - Identity management
 - Network security
 - Compliance adherence
 - Measures to detect and respond to security incidents

Cloud security



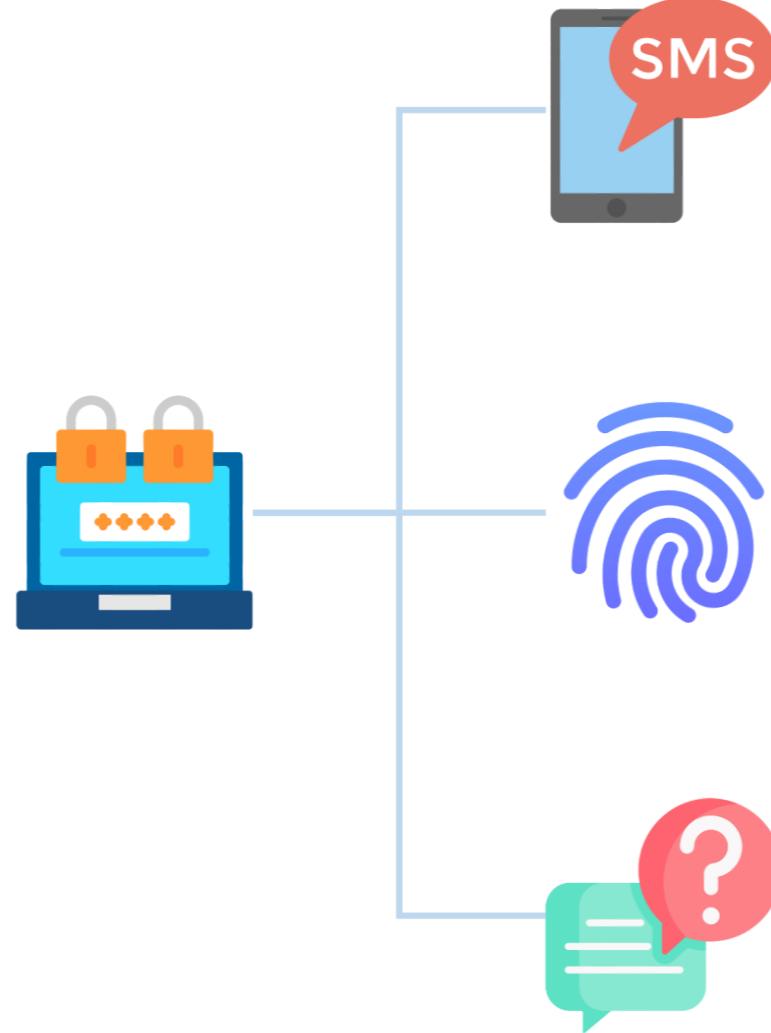
- Responsibility is shared between the cloud service provider and the users
- Aims to ensure the confidentiality, integrity, and availability of information

Zero trust model



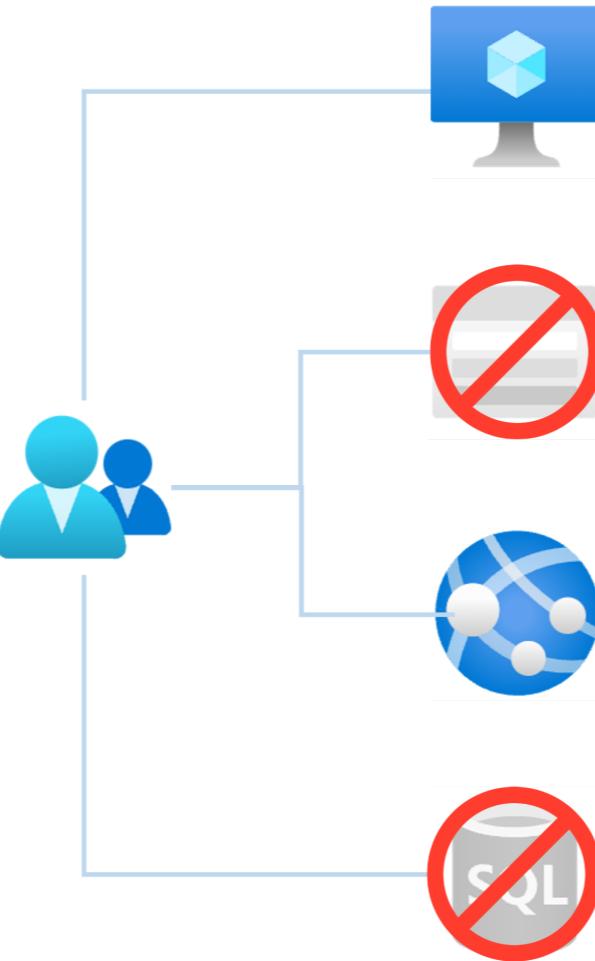
- Assumption of a potential breach
- Safeguards resources accordingly
- Verifies each request as if it originated from an unsecured network

Zero trust - explicit verification



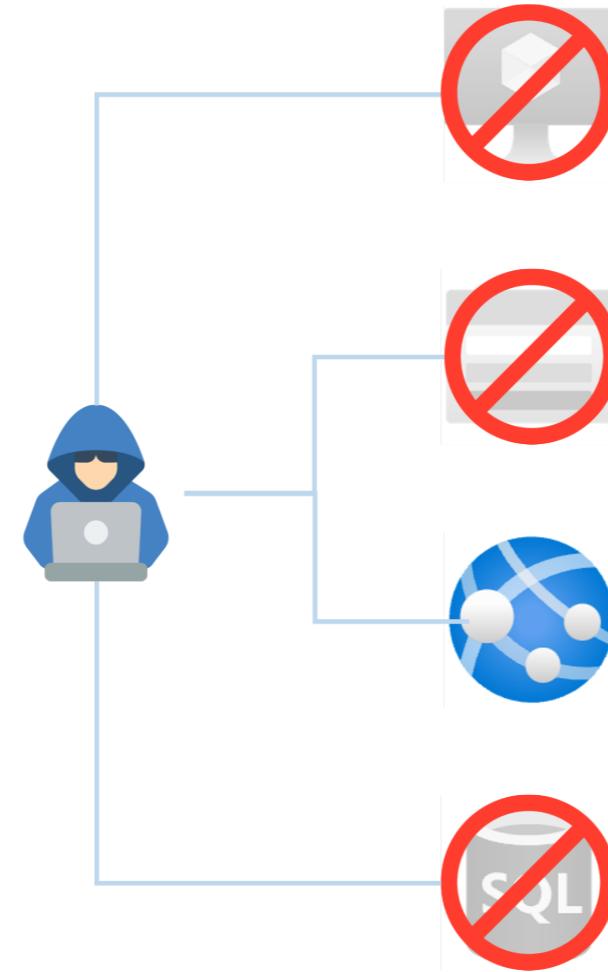
- Always authenticate and authorize based on all available channels

Zero trust - least privilege access



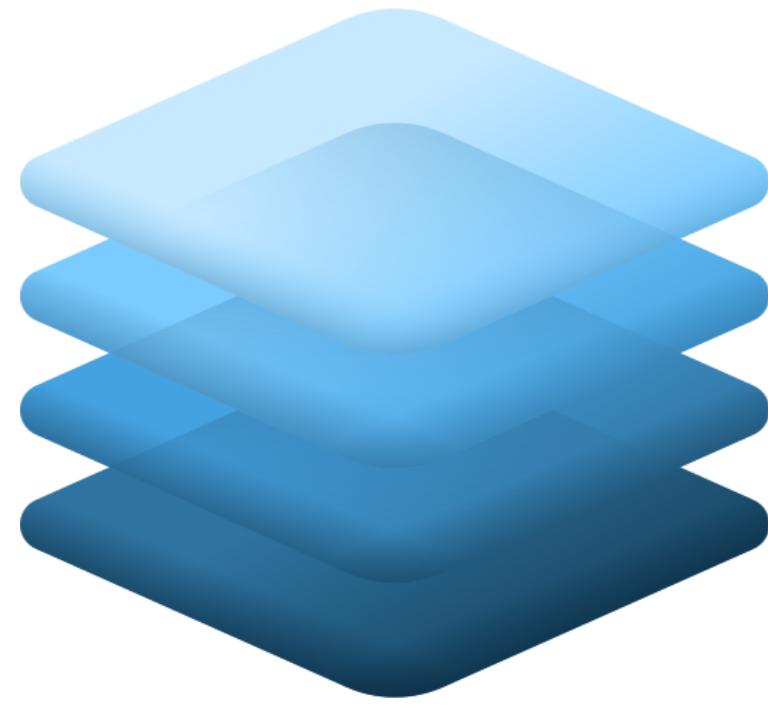
- Users should only be granted access to the resources and permissions essential for their specific job roles

Zero trust - assume breach



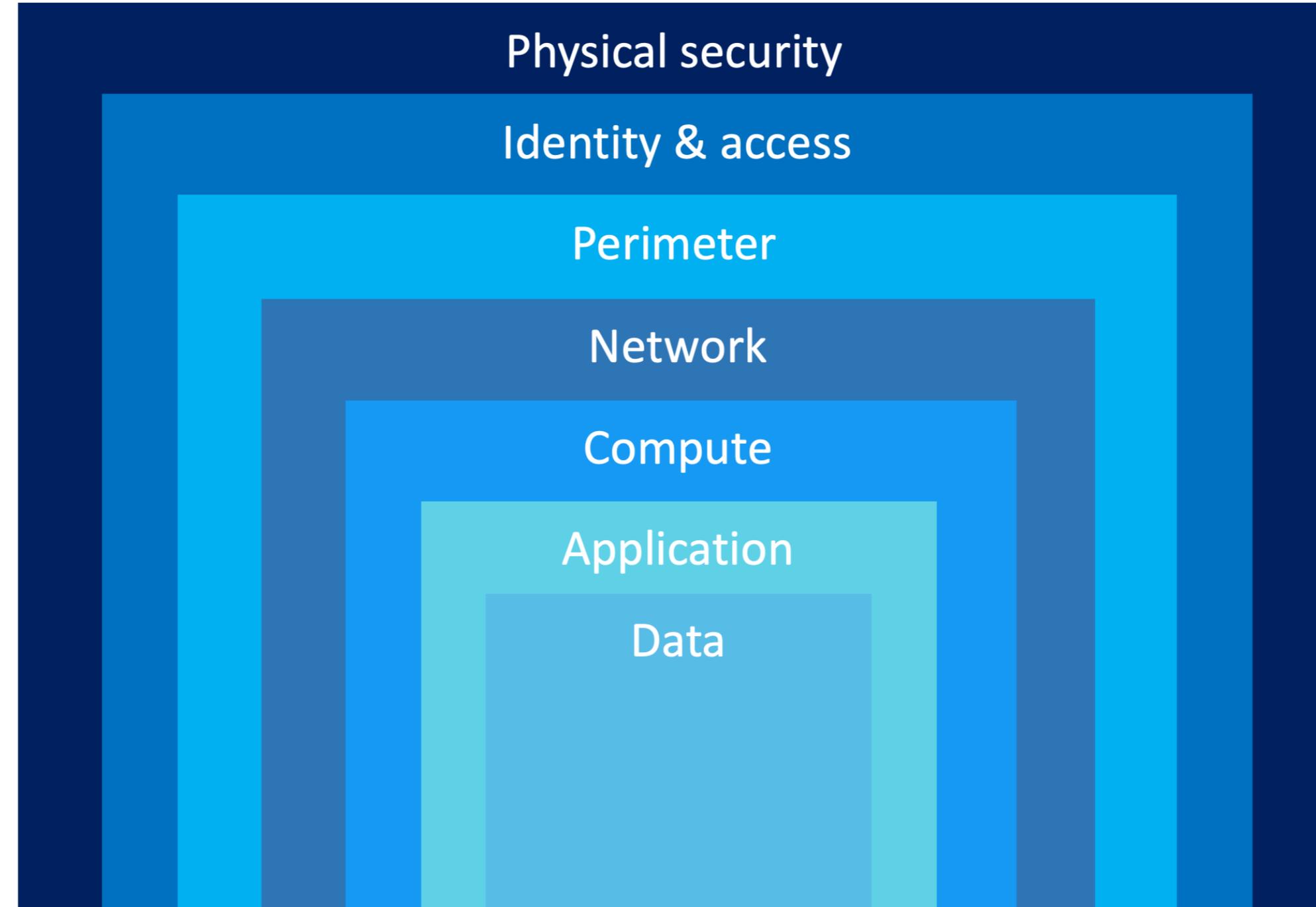
- Determined attackers may find a way in
- Minimize the impact of a breach

Defense-in-depth



- Safeguard resources and prevent unauthorized access and information theft
- Employs multiple layers of mechanisms to block the progress of an attack
- Central data is surrounded by protective layers to ensure its security

Defense-in-depth layers



Microsoft Defender for Cloud



- Monitoring tool for security posture management and threat protection
- Provides guidance and notifications to enhance security
- Integrates into Azure natively

Assess, secure and defend



Asses

- Identify and track vulnerabilities



Secure

- Strengthen resources and services



Defend

- Detect and resolve threats

Importance of cloud security



- Foundation of trust in our digital landscape
- Protects data, applications, and systems
- Ensures confidentiality, integrity, and availability

Let's practice!

UNDERSTANDING MICROSOFT AZURE ARCHITECTURE AND SERVICES

Azure Architecture and Services

UNDERSTANDING MICROSOFT AZURE ARCHITECTURE AND SERVICES

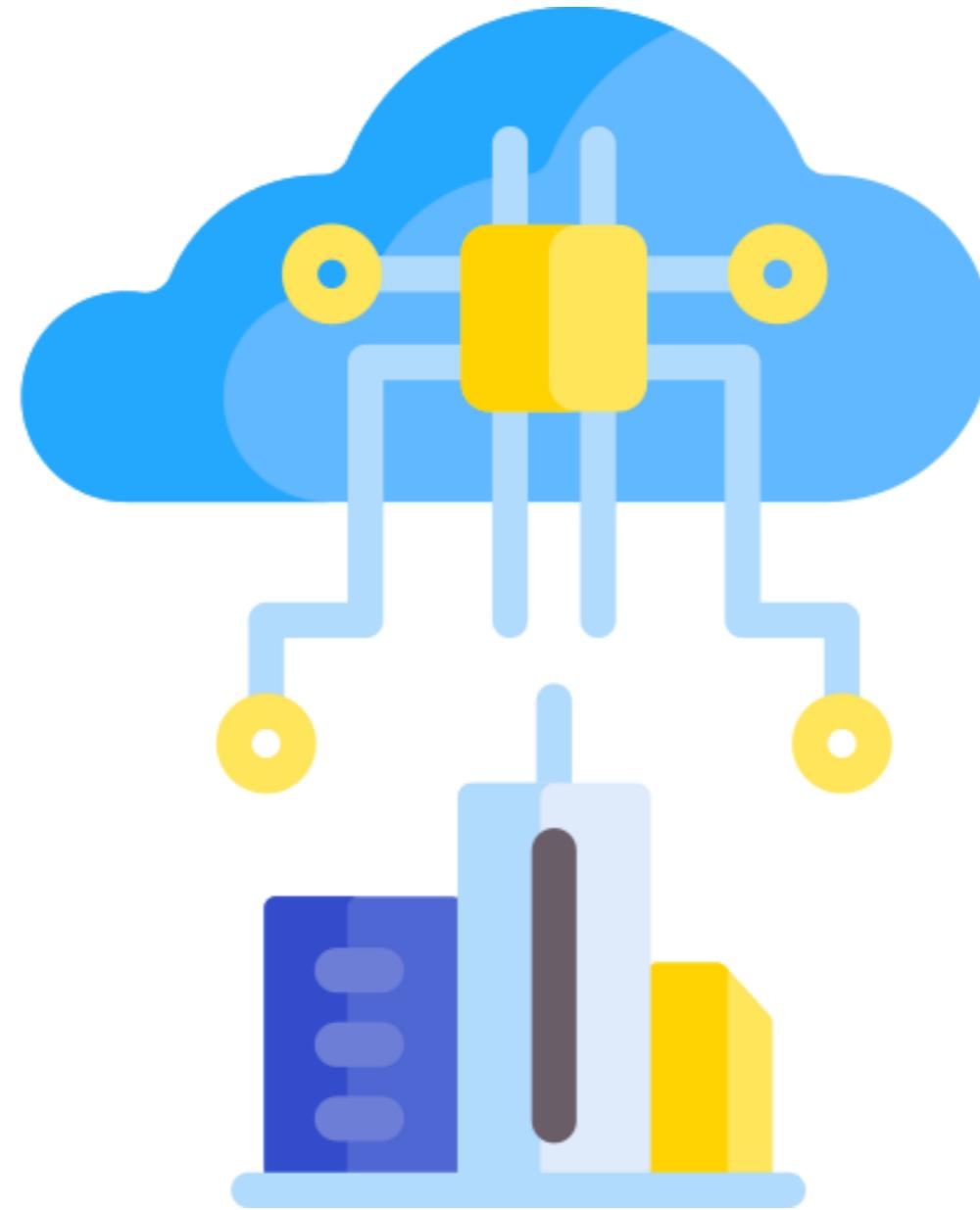


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Wrap-up



Keep exploring



Let's practice!

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