Azure directory services

UNDERSTANDING MICROSOFT AZURE ARCHITECTURE AND SERVICES

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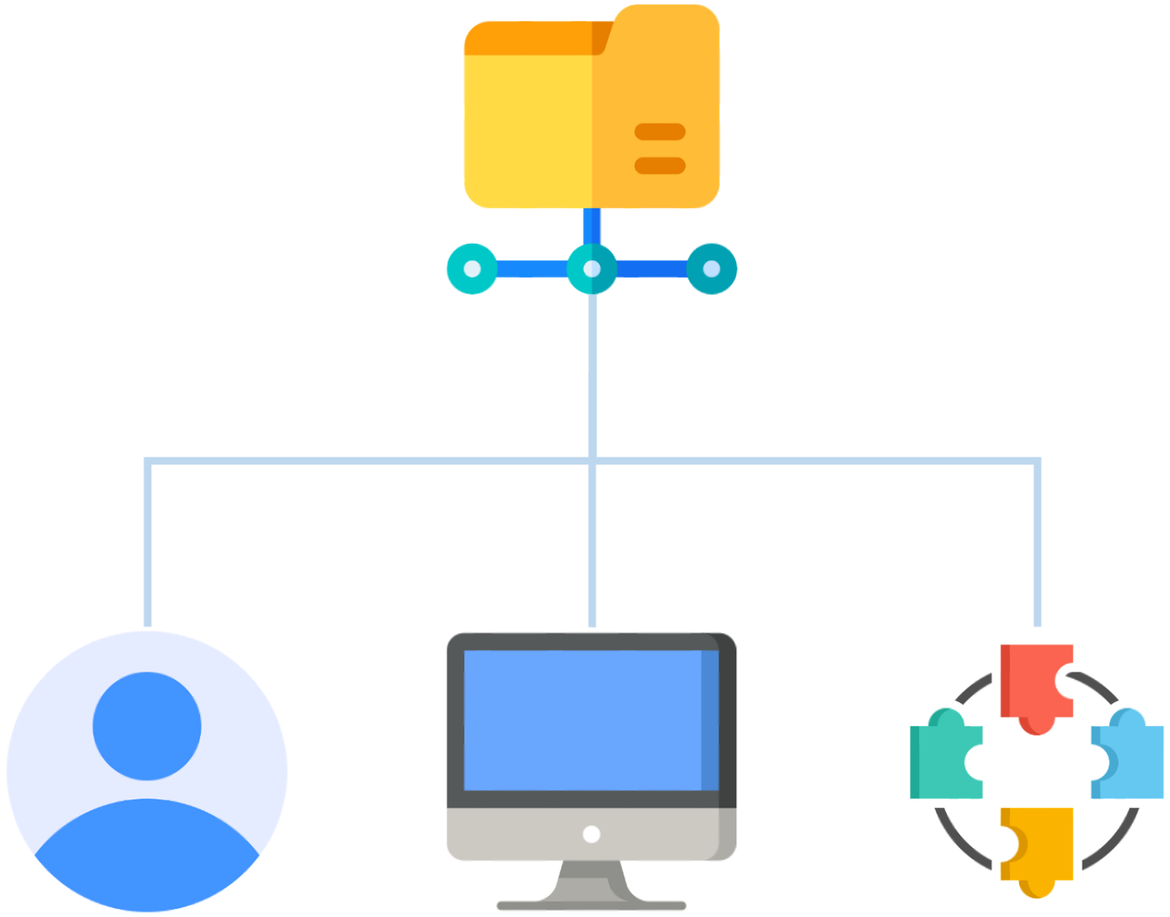
Directory services

- Active Directory
  - Conventional tool
  - On-premises Windows environments

- Microsoft Entra ID
  - Cloud tool
  - User-friendly online version

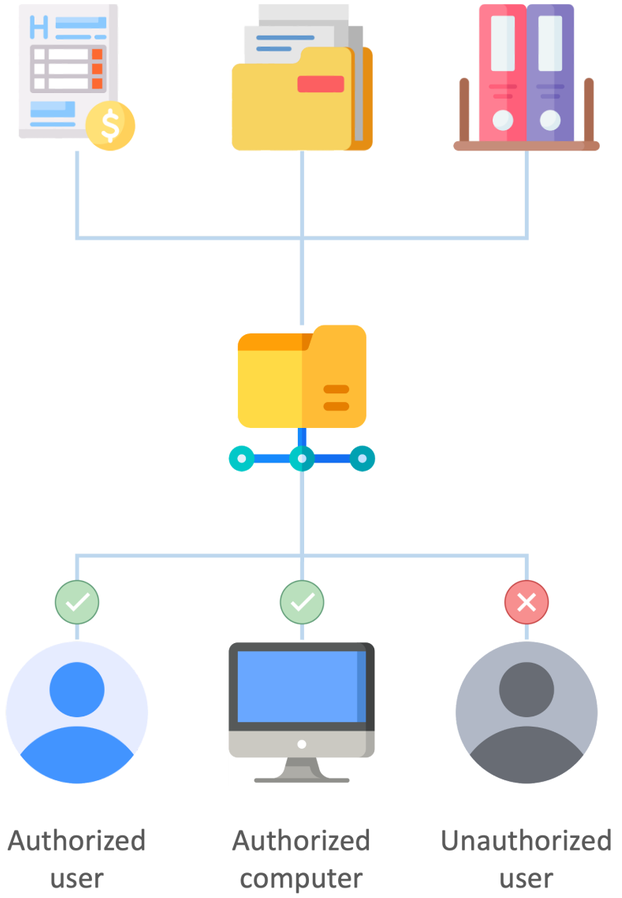
Active Directory (AD)



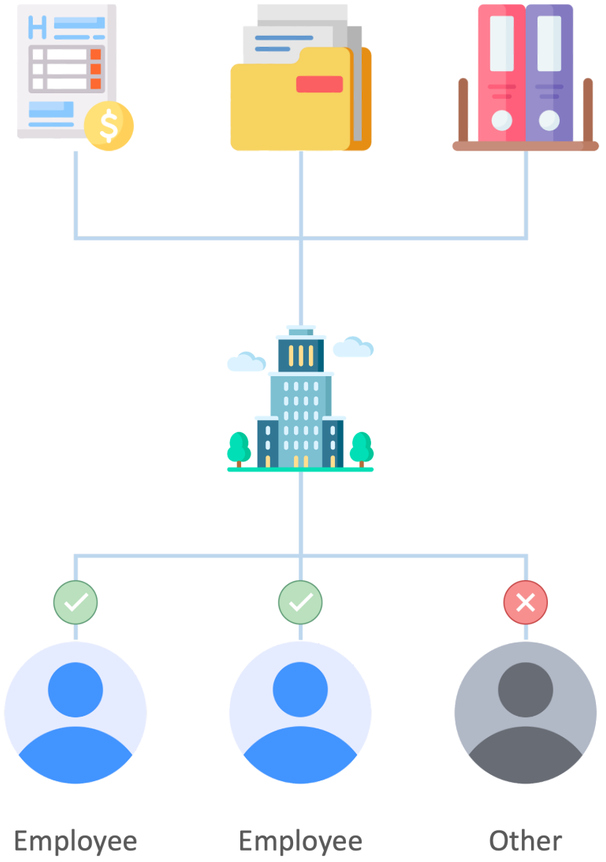
- Address book for an organization's assets
- Organize and store information about:
  - Users
  - Computers
  - Resources
- Centralized identification service

Active Directory (AD)

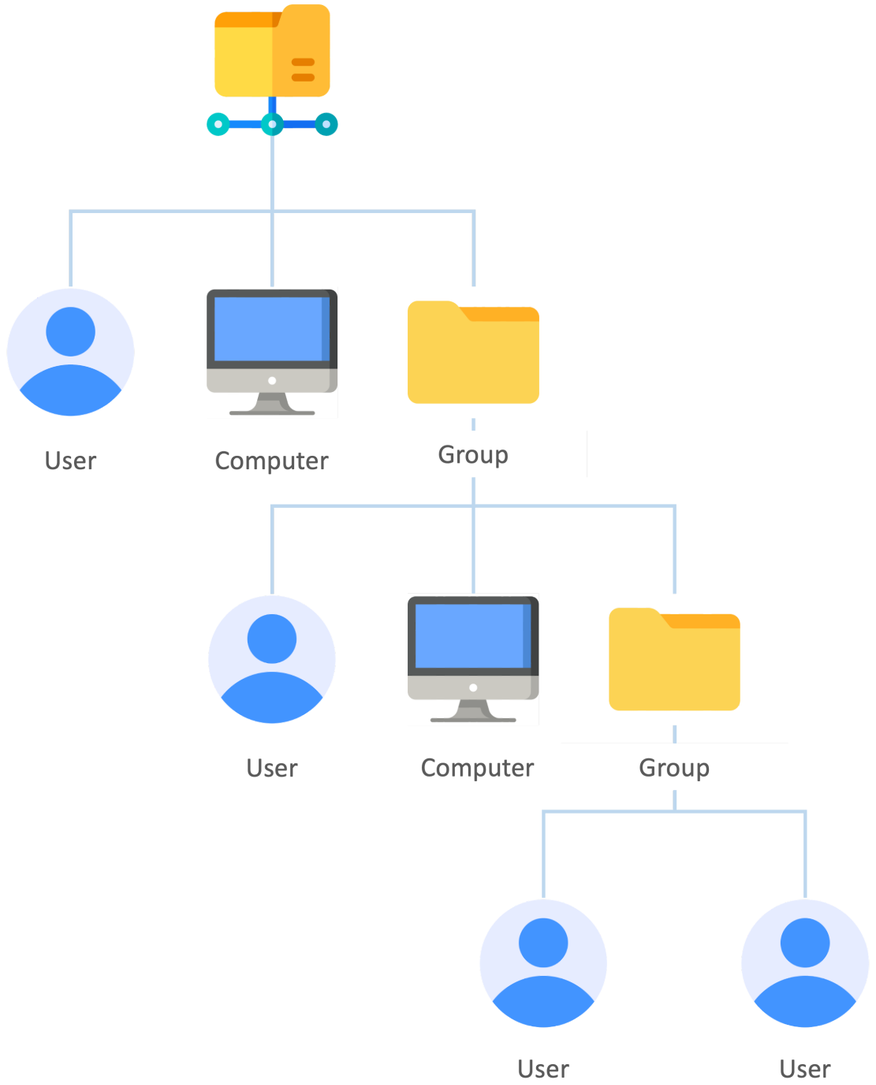
- Only authorized users can access



- 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

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

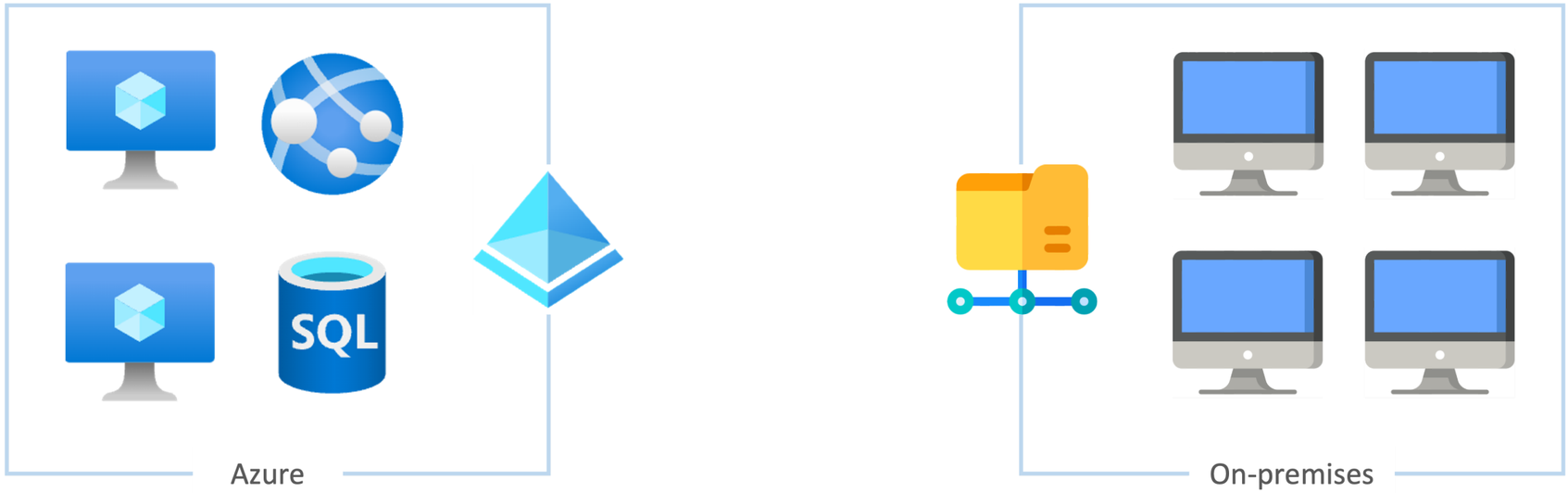
Microsoft Entra ID use cases

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

External identities

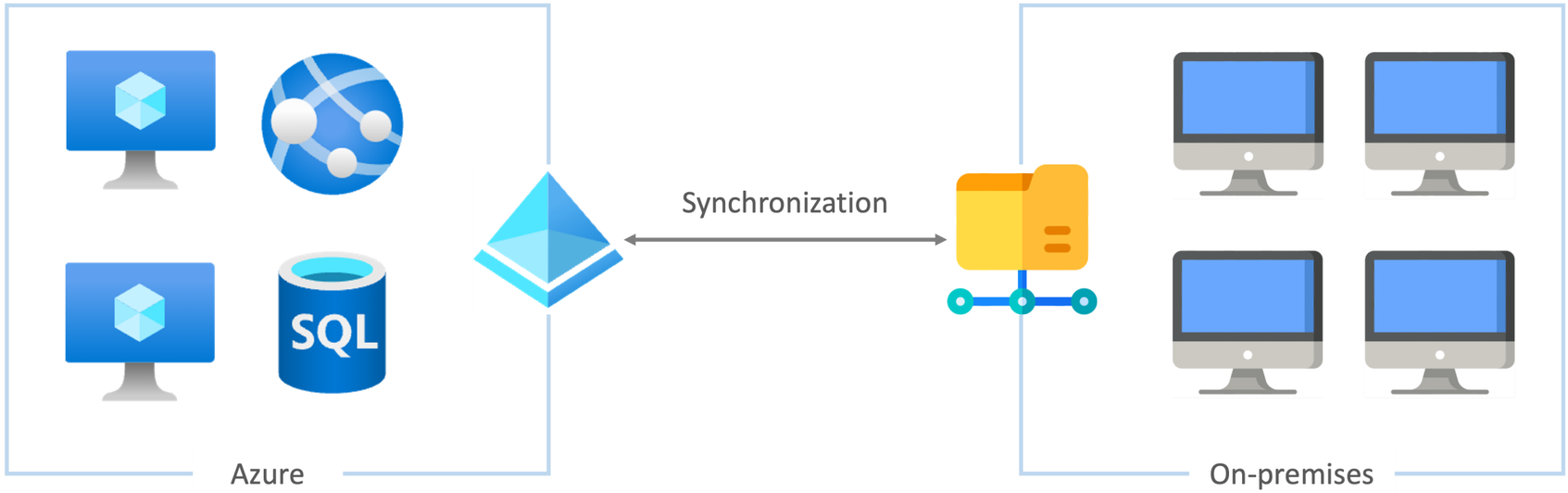
- Improves collaboration using external identities
- Beneficial when working with external partners
- Simplifies resource access without the need for new user accounts

Hybrid environments



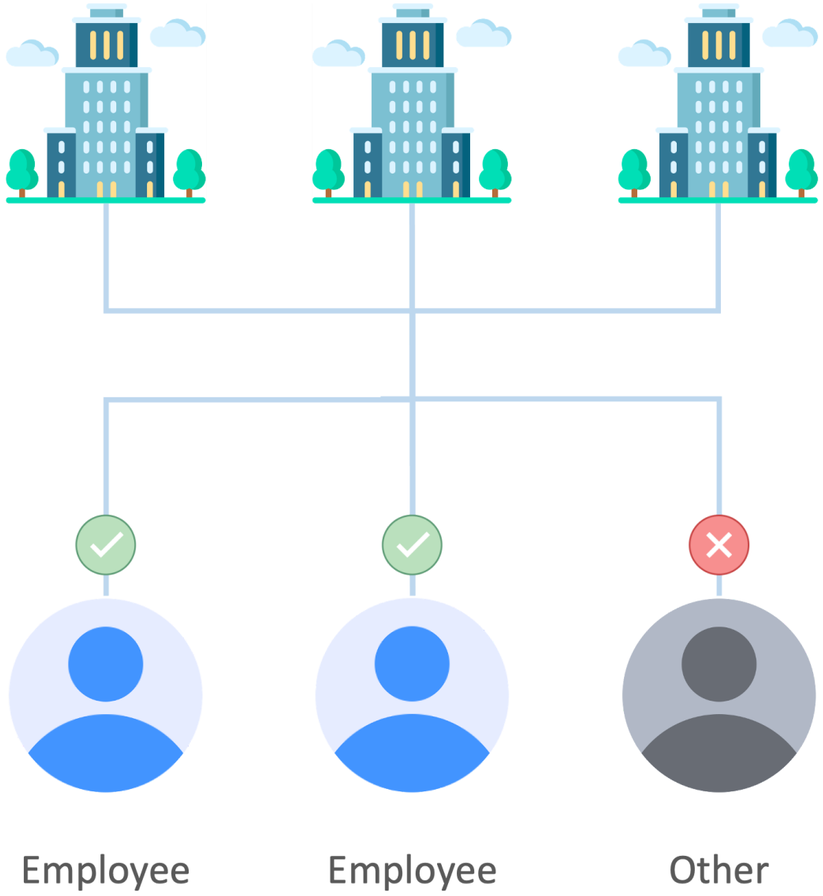
- Infrastructure that combines elements of both on-premises and cloud-based services
- Leverage the benefits of both on-premises and cloud solutions
- Allows businesses to transition gradually to the cloud

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!

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Azure identity services and access control

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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

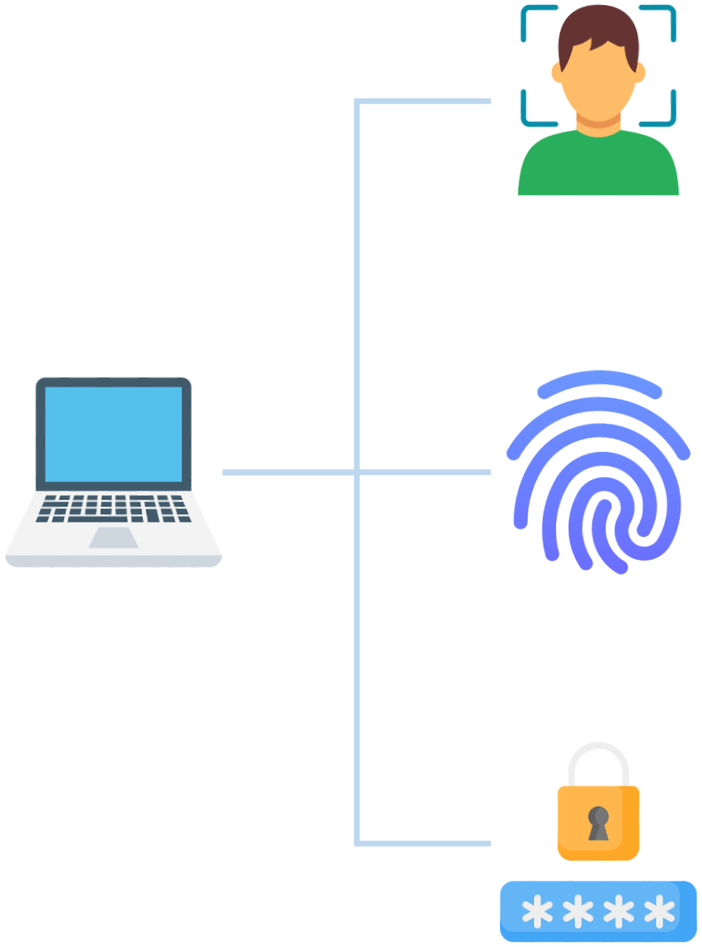
Multi-factor authentication

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

Passwordless authentication

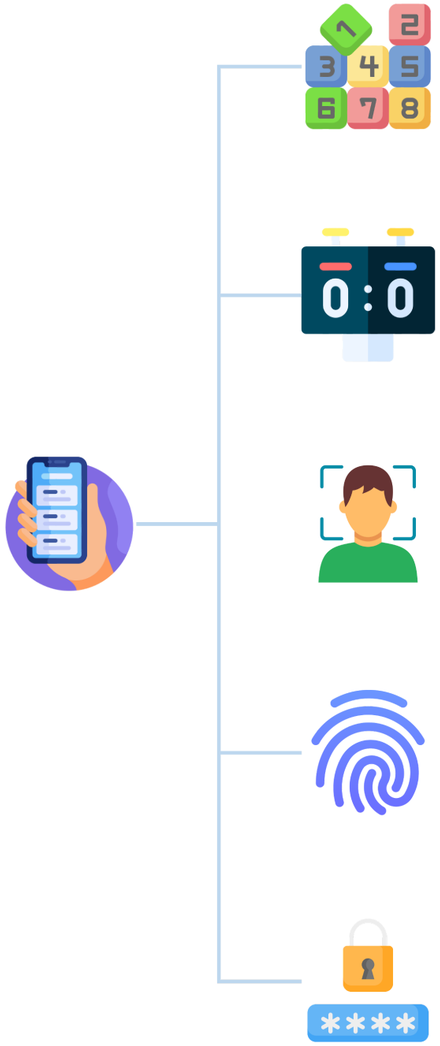
- Eliminate the need for passwords
- Devices need to be registered and associated with a user
- Authentication can occur using something the user has, knows, or is

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 a 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

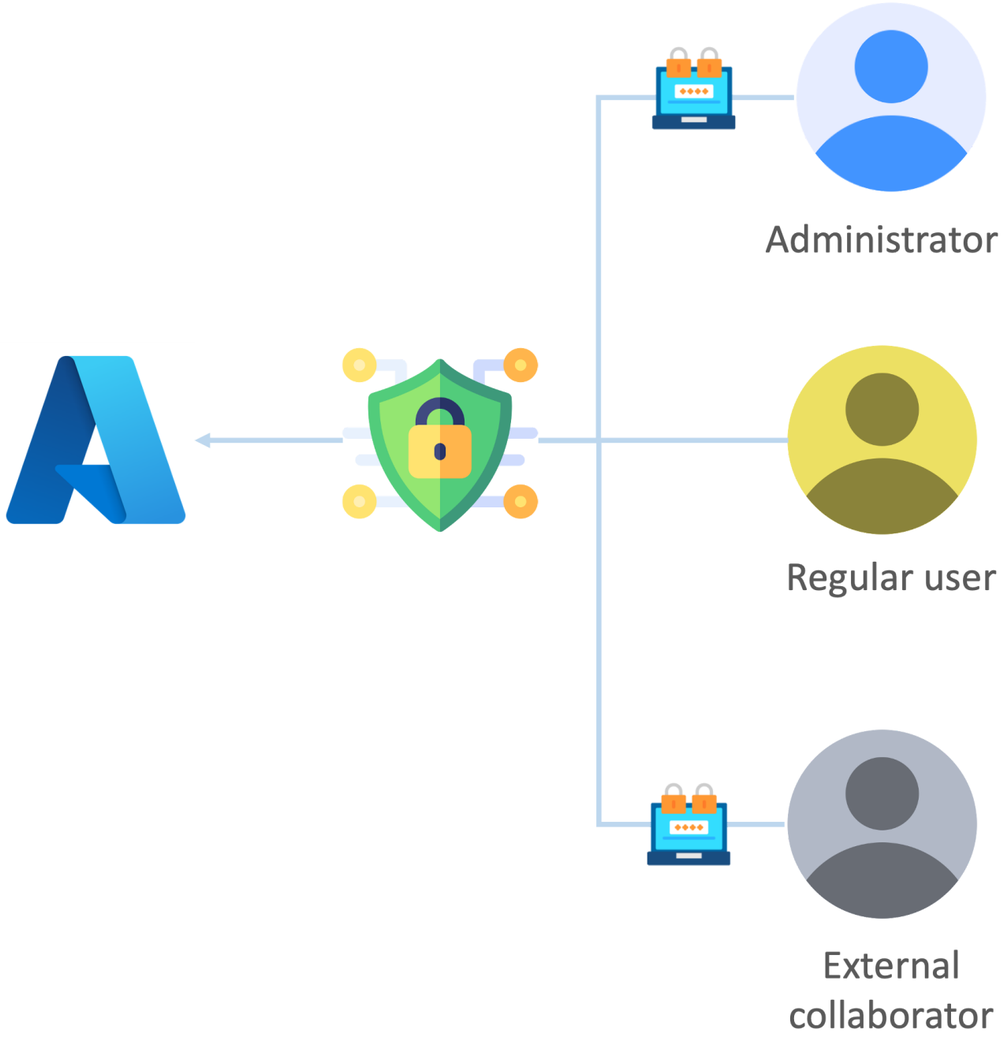
FIDO2 security keys

- 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

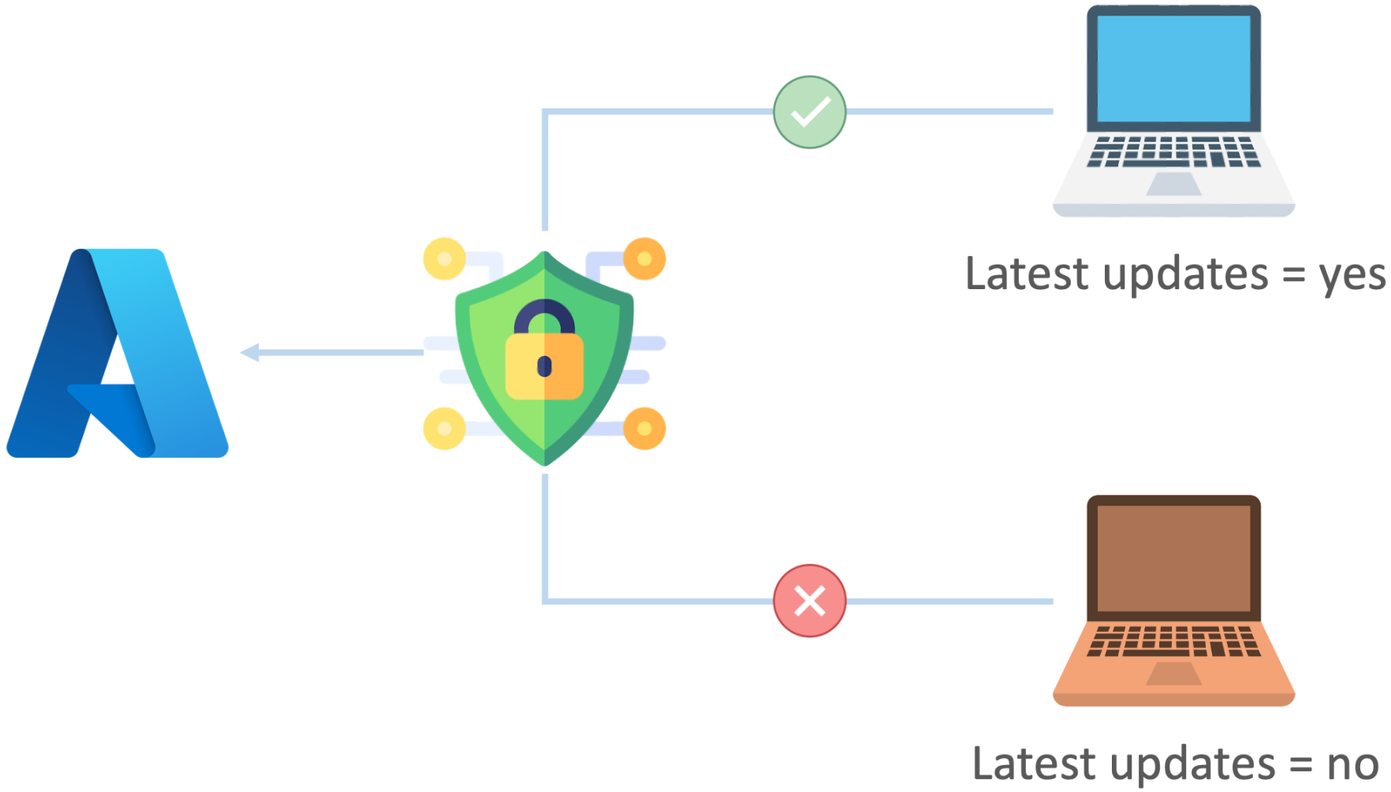


- Enforce MFA based on:
  - Roles
  - Location
  - Network

Conditional access use cases

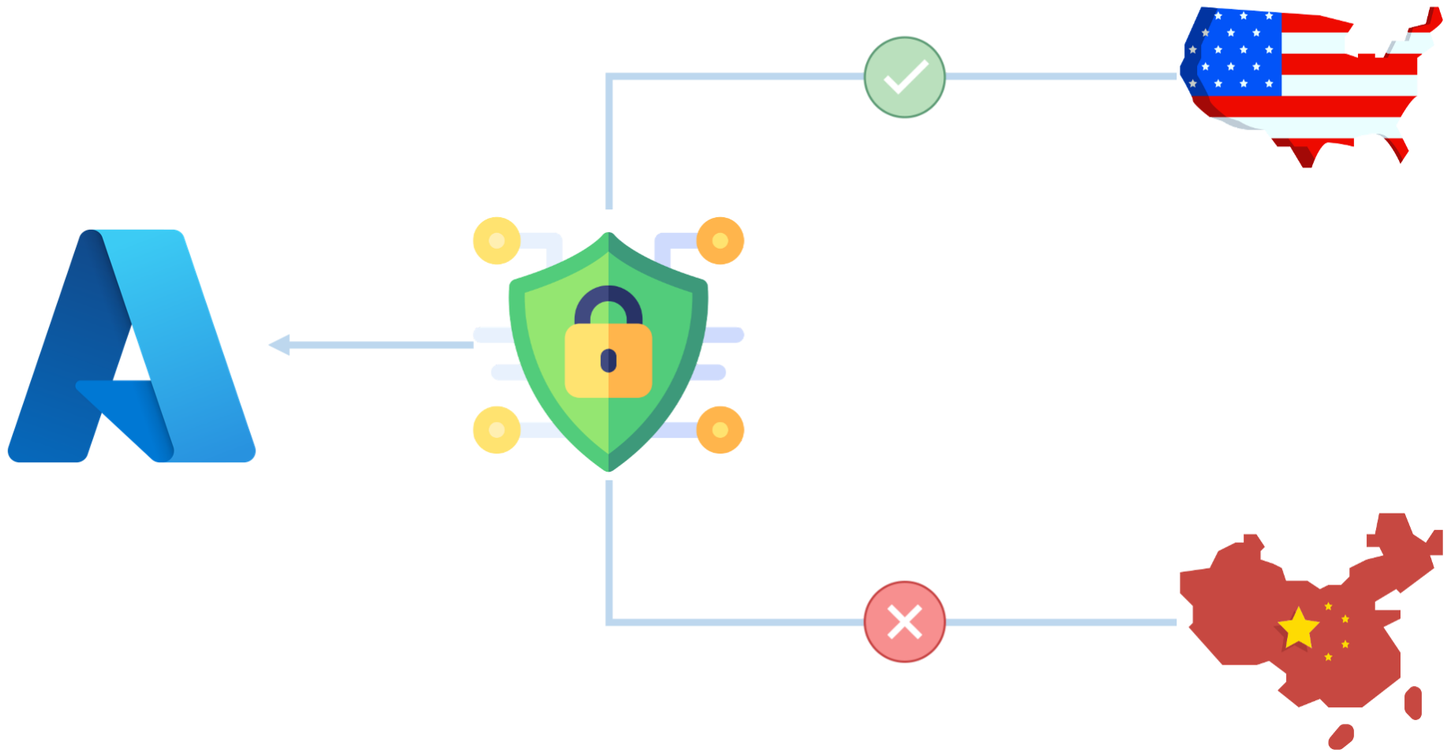
- Allow access to services exclusively through approved client applications
- Control which applications can connect to specific services

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

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Create users and groups in Entra ID

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Azure permission model

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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

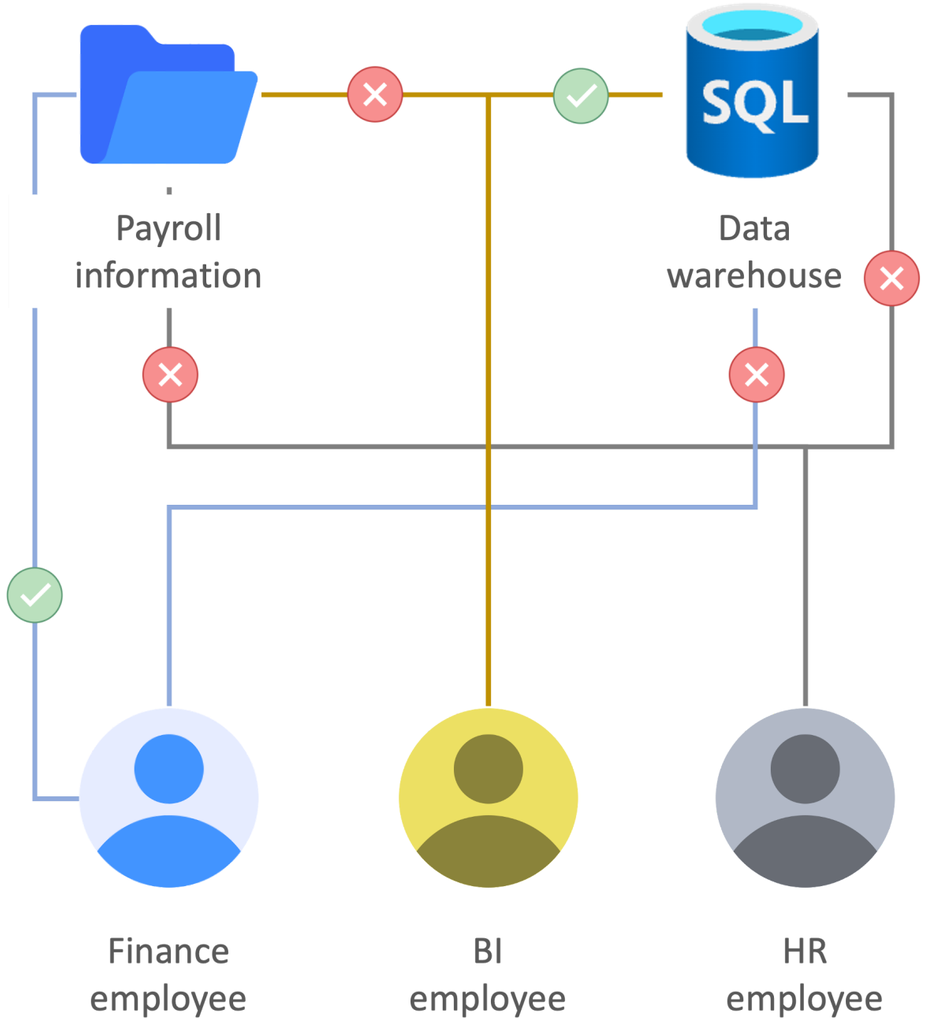
Directory roles use cases

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

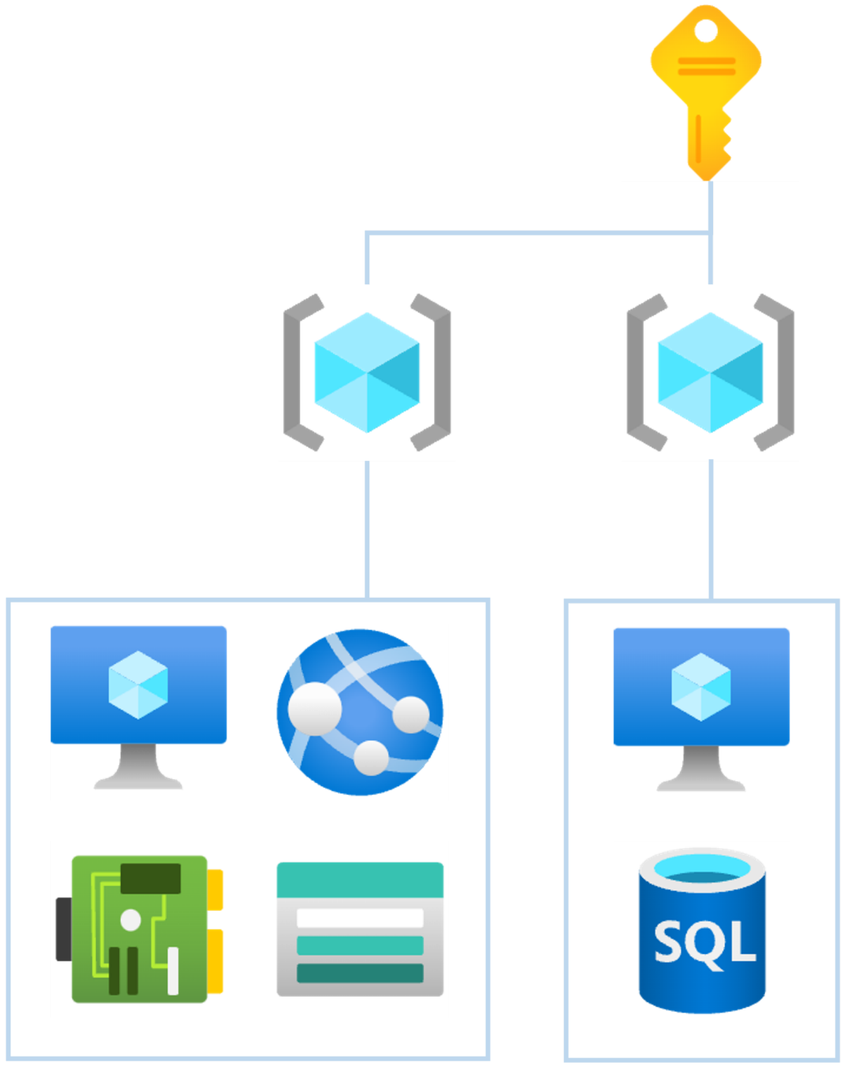
Role-based access control (RBAC)

- 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



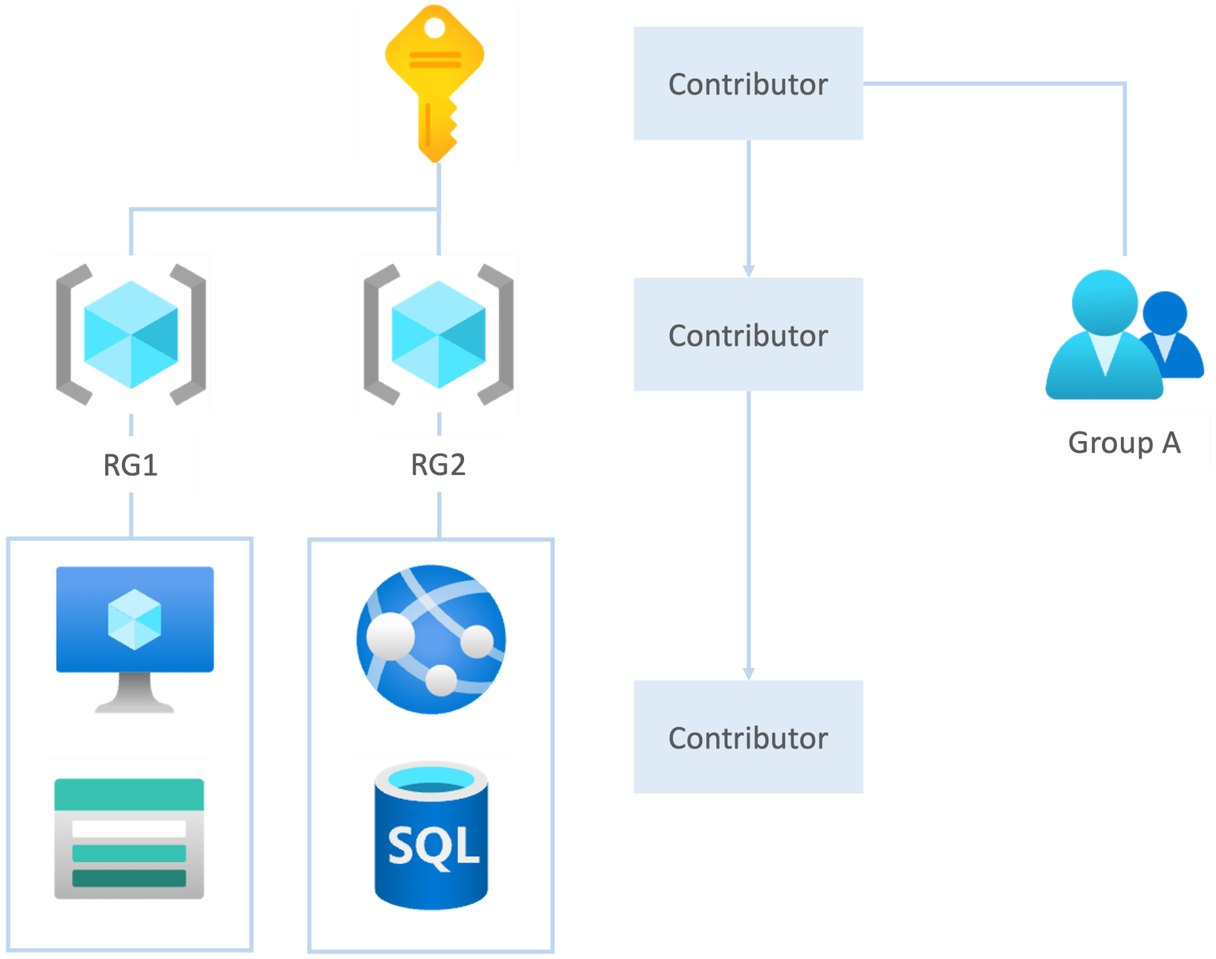
Subscriptions

Resource groups

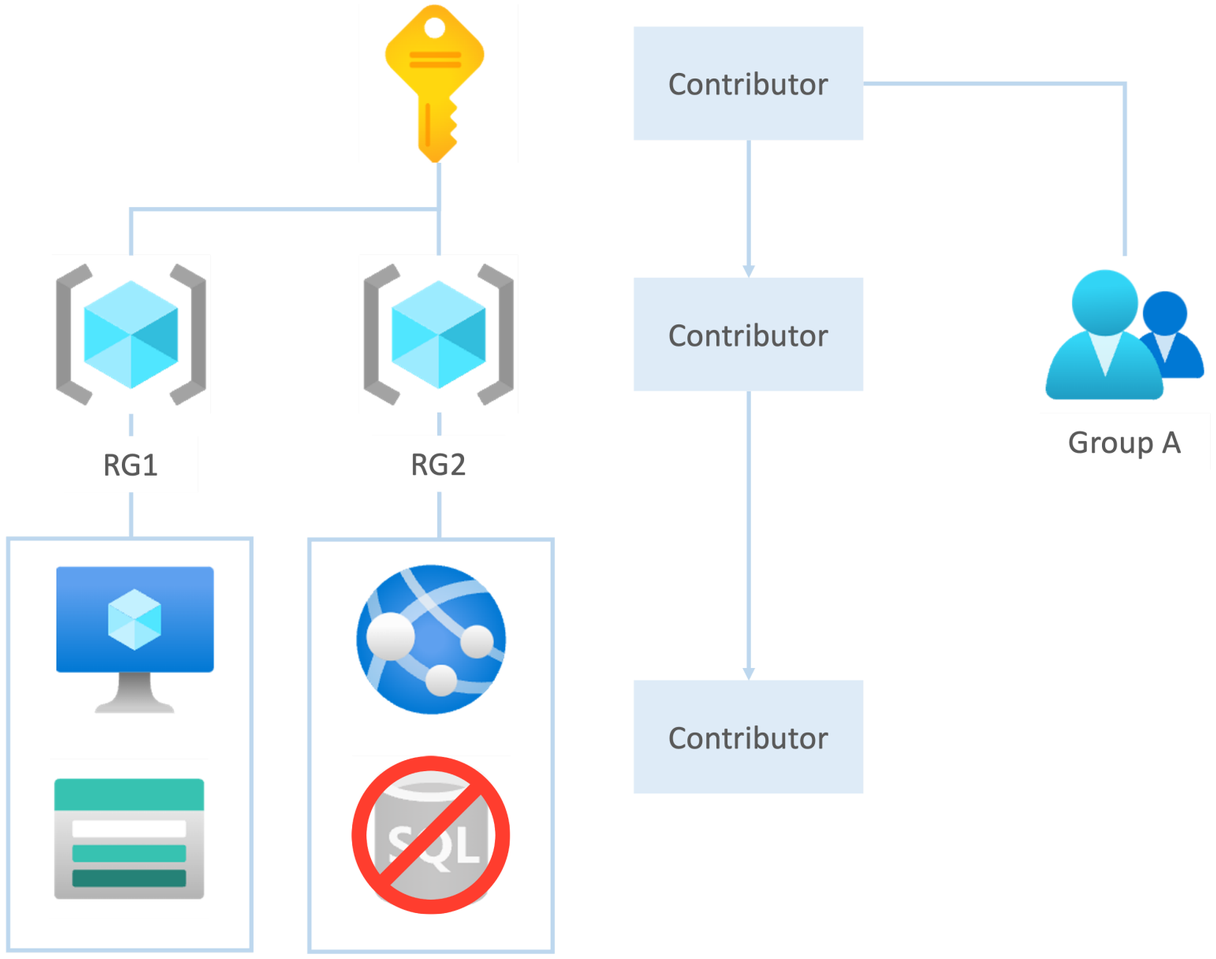
Resources

- 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



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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

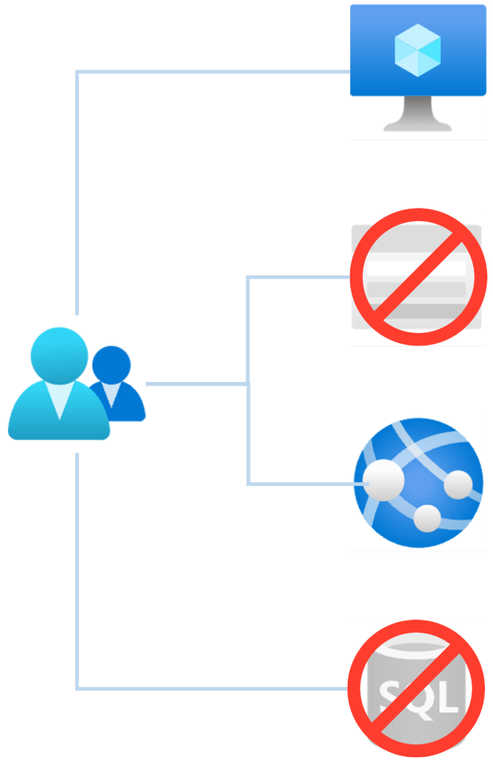
Zero trust model

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

Zero trust - explicit verification

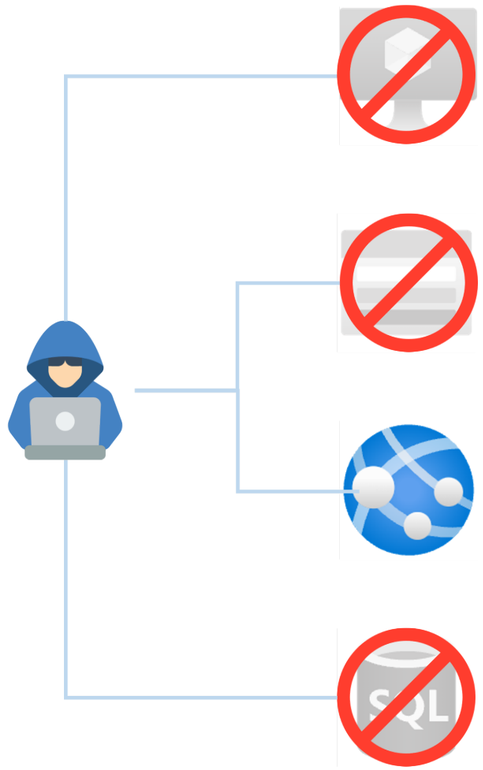
- Always authenticate and authorize based on all available channels

Zero trust - least privilege access



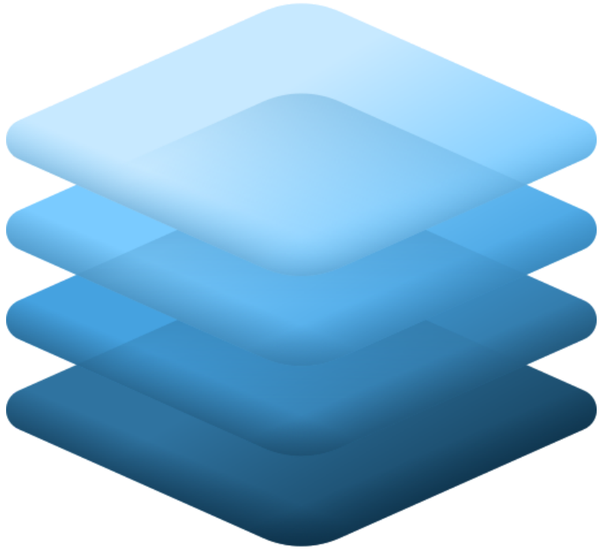
- Users should only be granted access to the resources and permissions essential for their specific job roles

Zero trust - assume breach



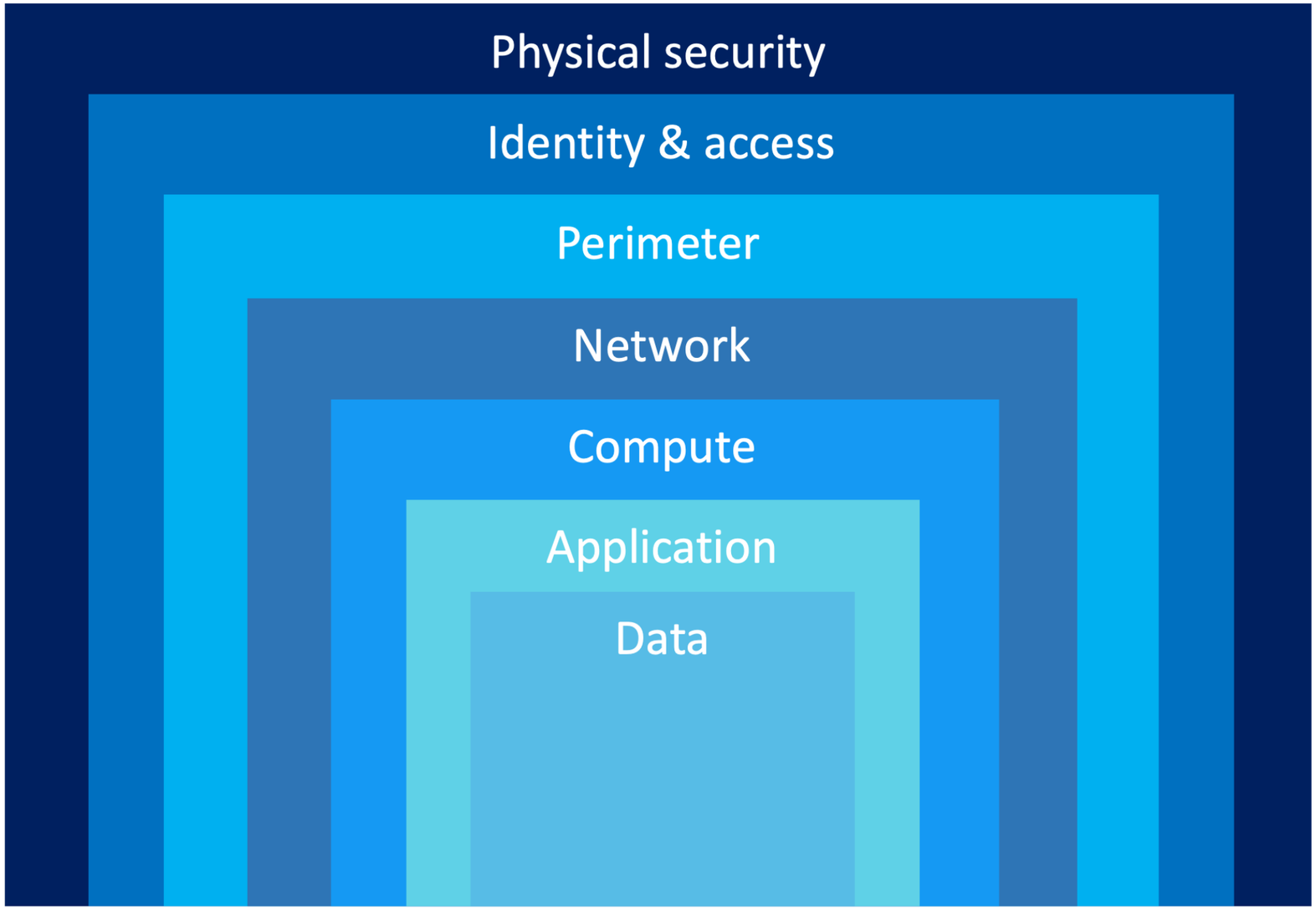
- Determined attackers may find a way in
- Minimize the impact of a breach

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!

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Azure Architecture and Services

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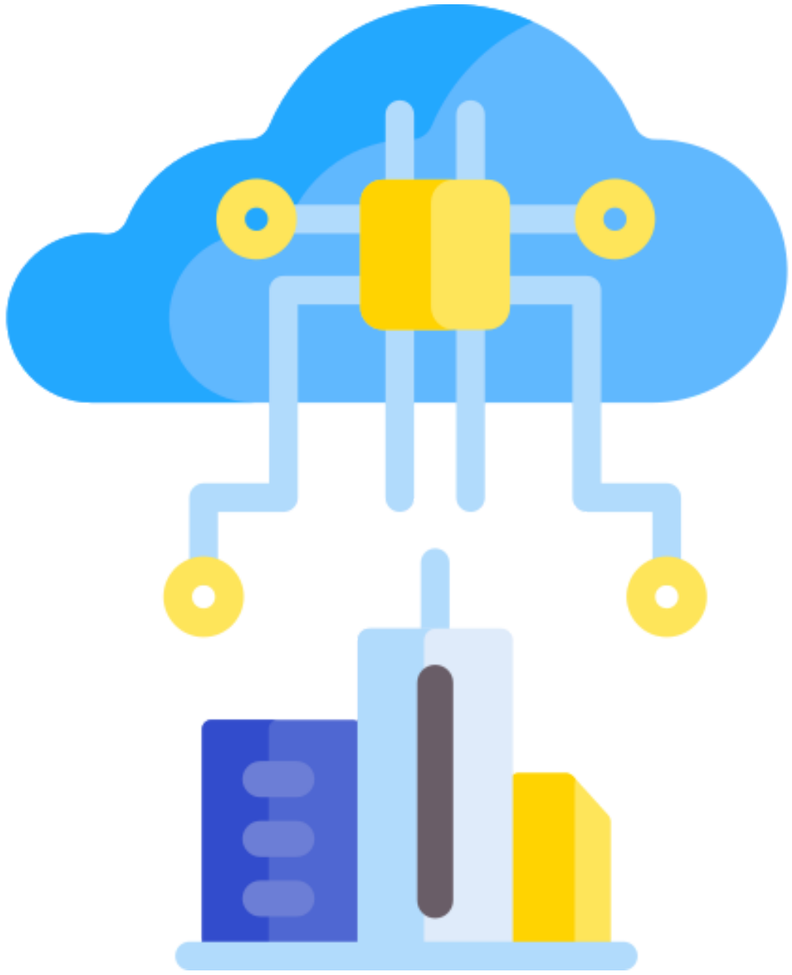
Wrap-up

Keep exploring



Let's practice!

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