Microsoft

AZ-305

Designing Microsoft Azure Infrastructure Solutions

AZ-305 Agenda

Module 01 Design a governance solution

Module 02 Design a compute solution

Module 03 Design a non-relational data storage solution

Module 04 Design a data storage solution for relational data

Module 05 Design a data integration solution

Module 06 Design an application architecture solution

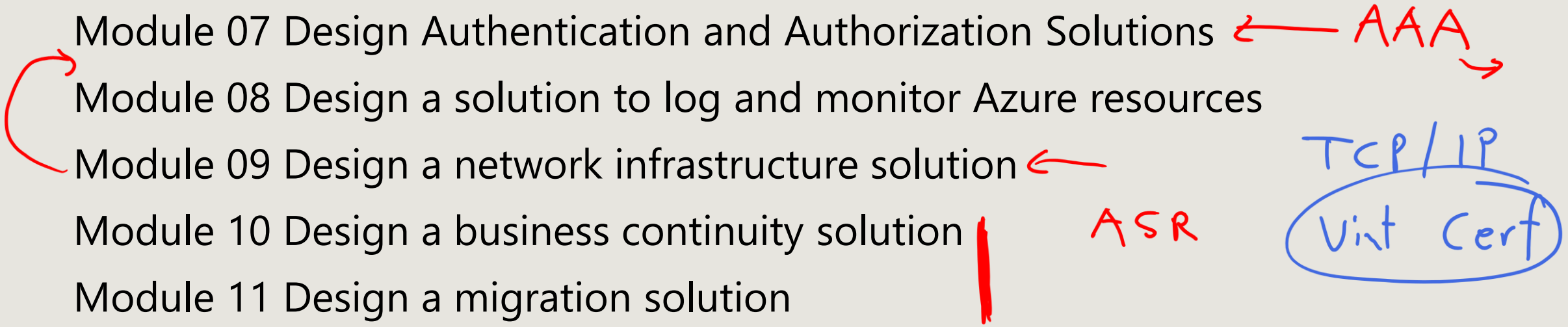
Module 07 Design Authentication and Authorization Solutions

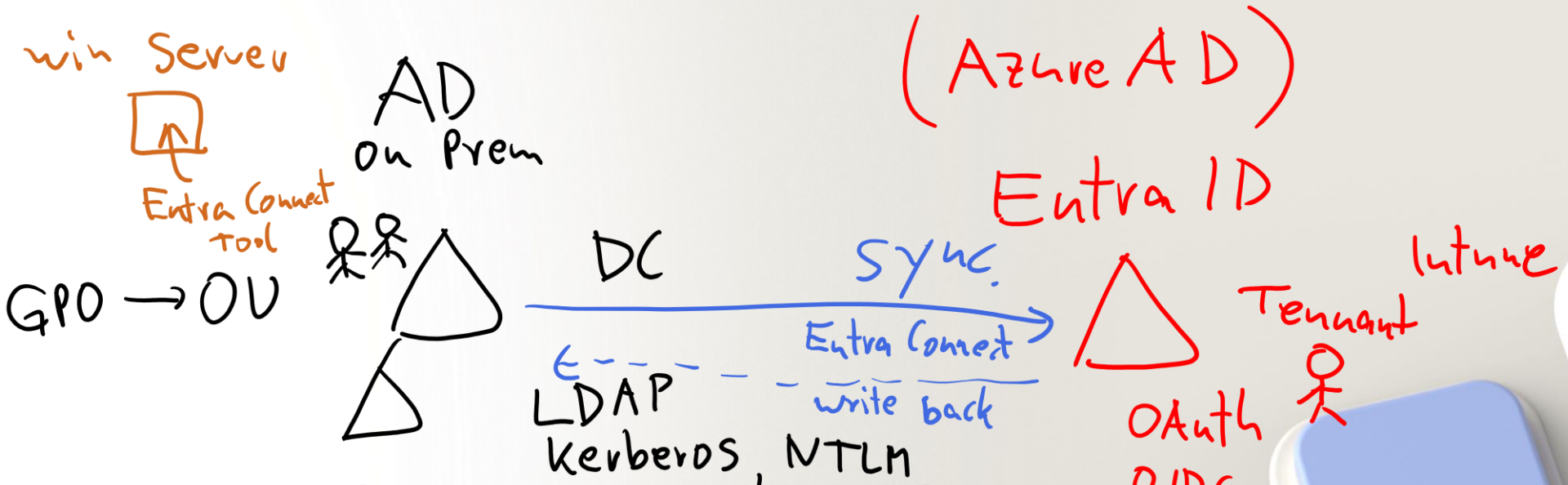
Module 08 Design a solution to log and monitor Azure resources

Module 09 Design a network infrastructure solution

Module 10 Design a business continuity solution

Module 11 Design a migration solution





Design Authentication and Authorization Solutions

Learning Objectives

- Design for identity and access management
- Design for Microsoft Entra ID
- Design for Microsoft Entra B2B
- Design for Azure Active Directory B2C
- Design for conditional access
- Design for identity protection
- Design for access reviews
- Design service principals for applications
- Design for Azure key vault
- Case study
- Learning recap

AZ-305: Design Identity, Governance, and Monitoring Solutions (25-30%)

Design Authentication and Authorization Solutions

- Recommend an authentication solution
- Recommend an identity management solution
- Recommend a solution for authorizing access to Azure resources
- Recommend a solution to manage secrets, certificates, and keys

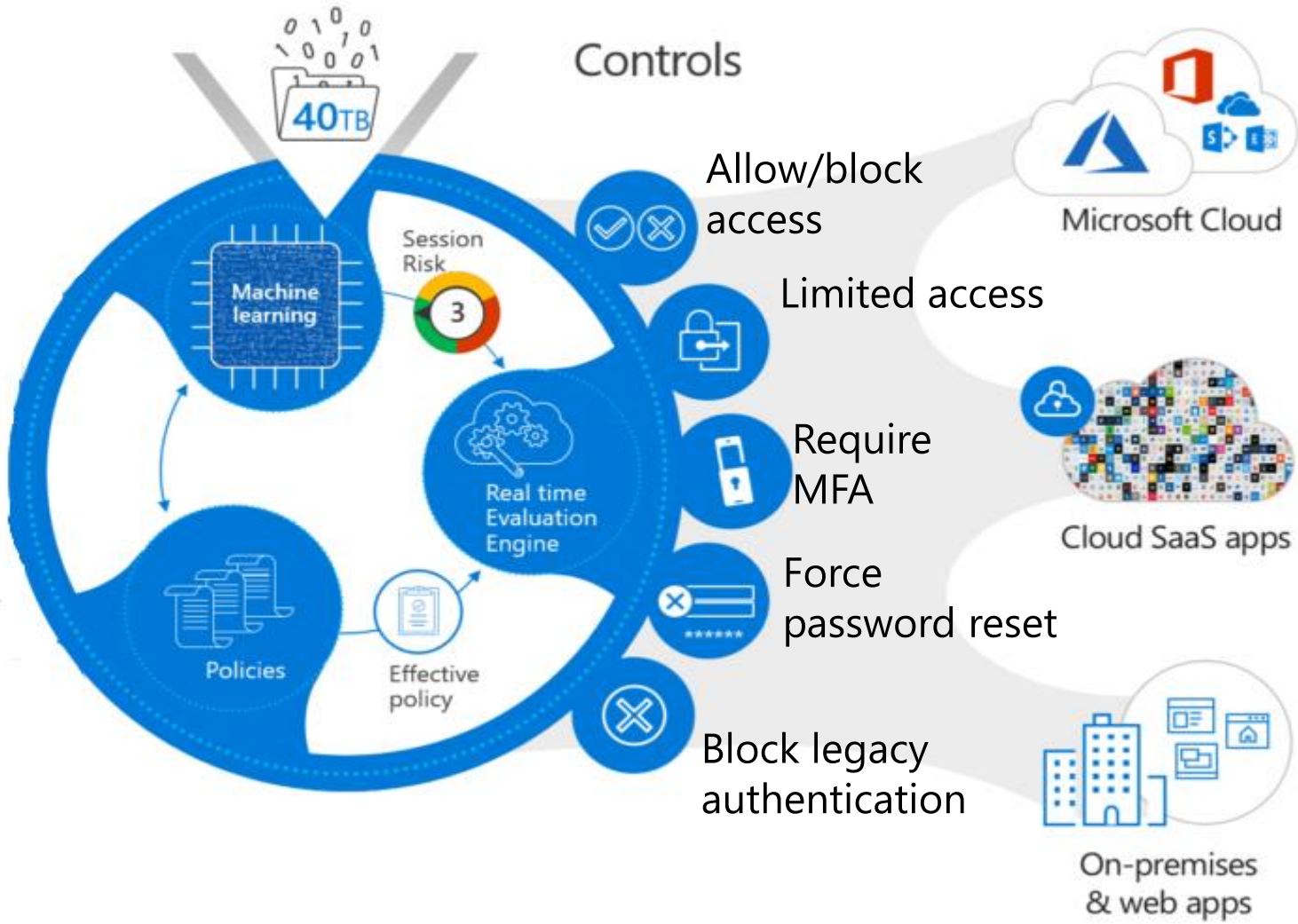
Design for identity and access management

Follow the Zero Trust model guidelines

Never trust, always verify.

- Employee and partner user and roles
- Trusted and compliant devices
- Physical and virtual location
- Client apps and authentication method

Conditions



What is identity and access management

- Unified identity management
- Seamless user experience

- Allowed by role-based access control
- Verified by conditional access
- Monitored by Microsoft Entra ID Protection
- Confirmed by Microsoft Entra ID access reviews

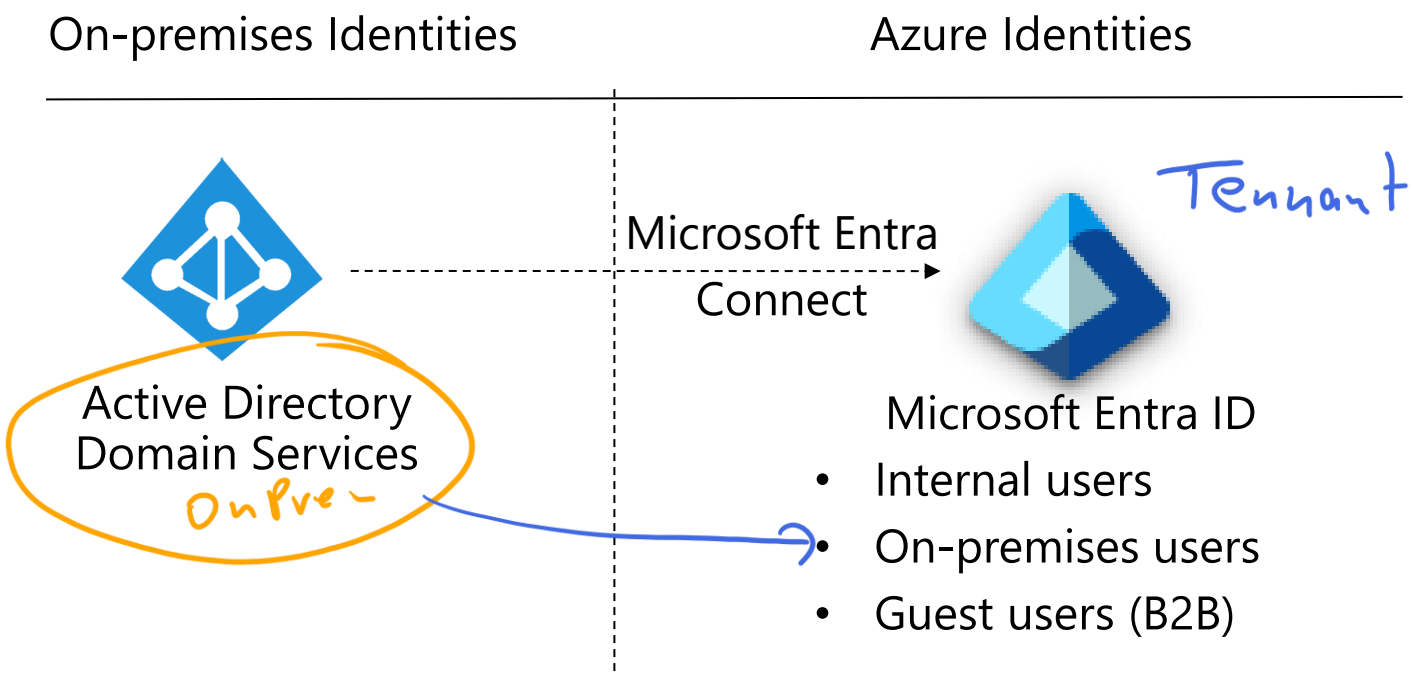
If you need this	Use this
Provide identity and access management for employees in a cloud or hybrid environment.	Microsoft Entra ID
Collaborate with guest users and external business partners like suppliers and vendors.	Microsoft Entra B2B
Control how customers sign up, sign in, and manage their profiles when they use your applications.	Azure AD Business to Consumer (B2C)

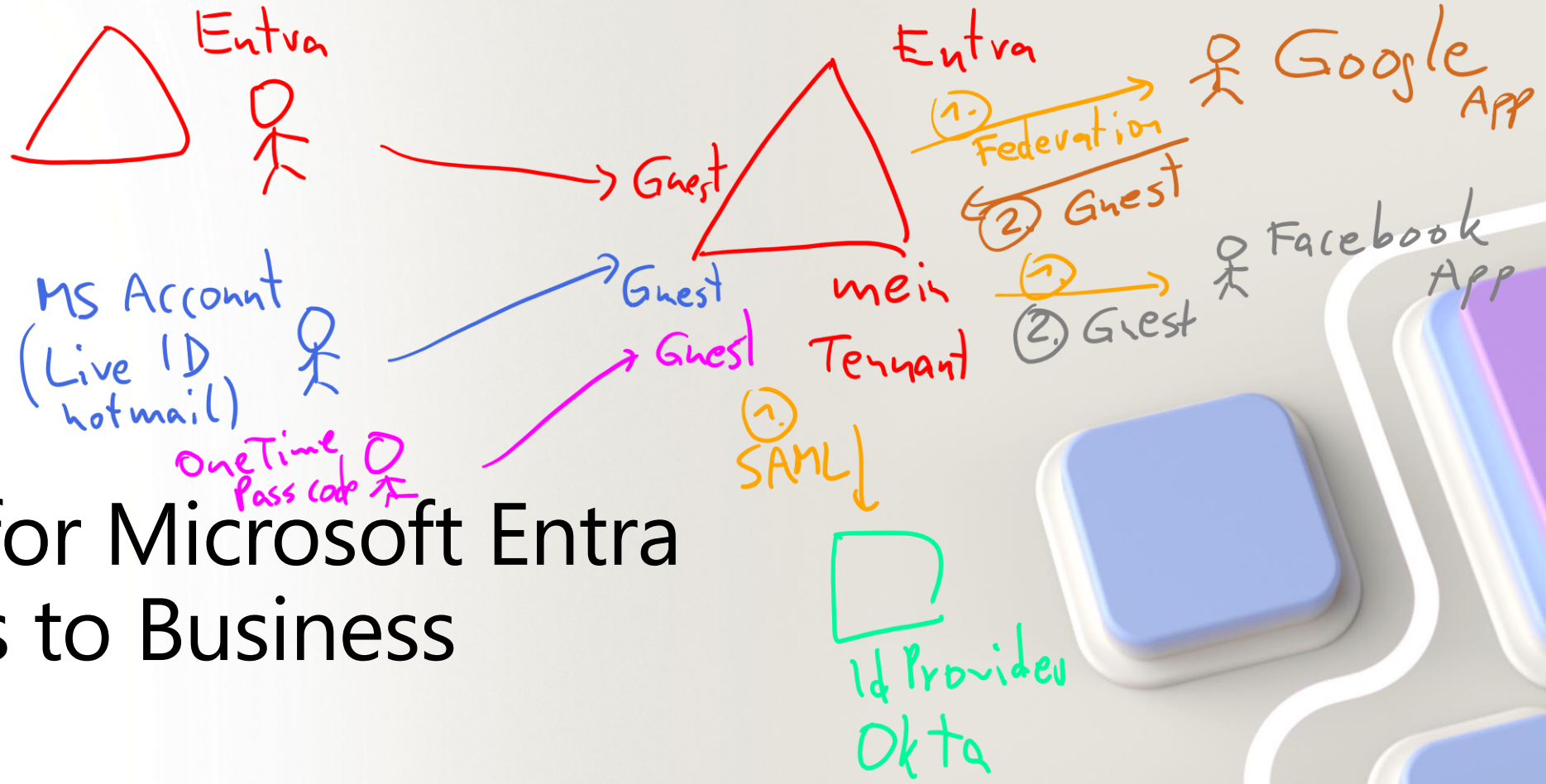
Design for Microsoft Entra ID

When to use Microsoft Entra ID

Microsoft Entra ID is a cloud-based solution for identity and access management. Microsoft Entra ID is a multitenant, cloud-based directory, and identity management service.

- Centralize identity management
- Establish a single Microsoft Entra tenant
- Use Microsoft Entra Connect, or Microsoft Entra Connect Sync for hybrid identity sync



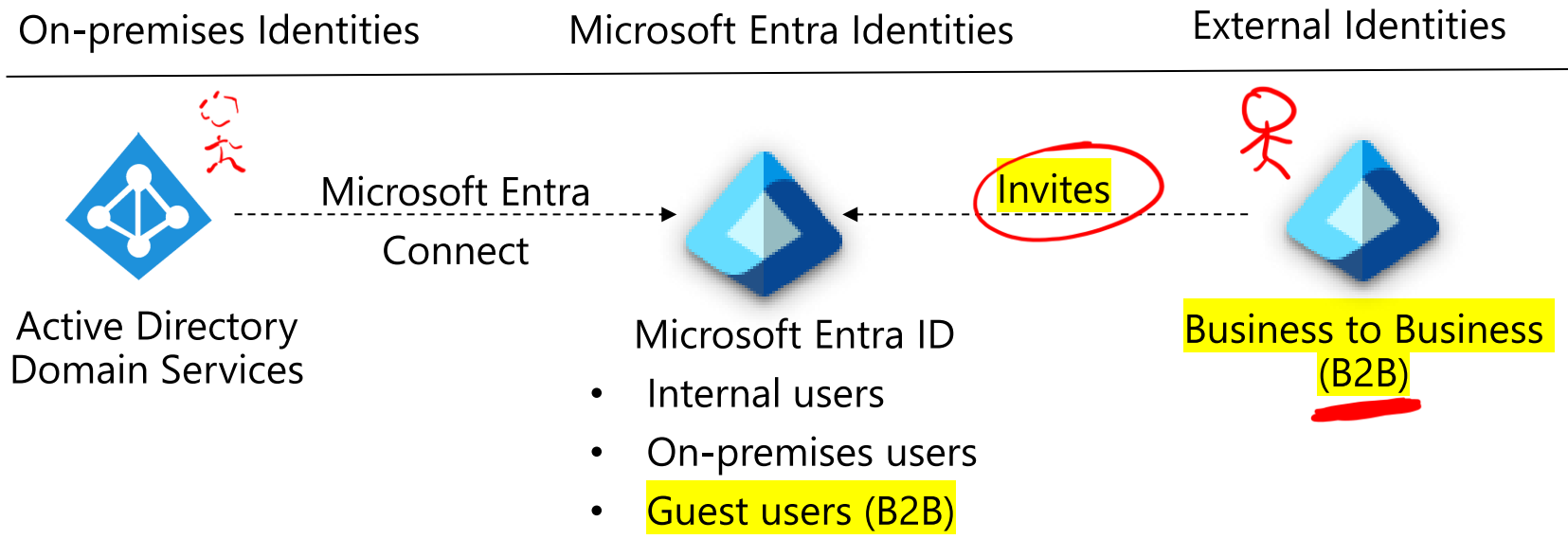


Design for Microsoft Entra Business to Business

When to use Microsoft Entra Business to Business (B2B)

Microsoft Entra B2B enables you to securely collaborate with external partners.

- Integrate with identity providers
- Use conditional access policies to intelligently grant or deny access
- Require MFA for guest users

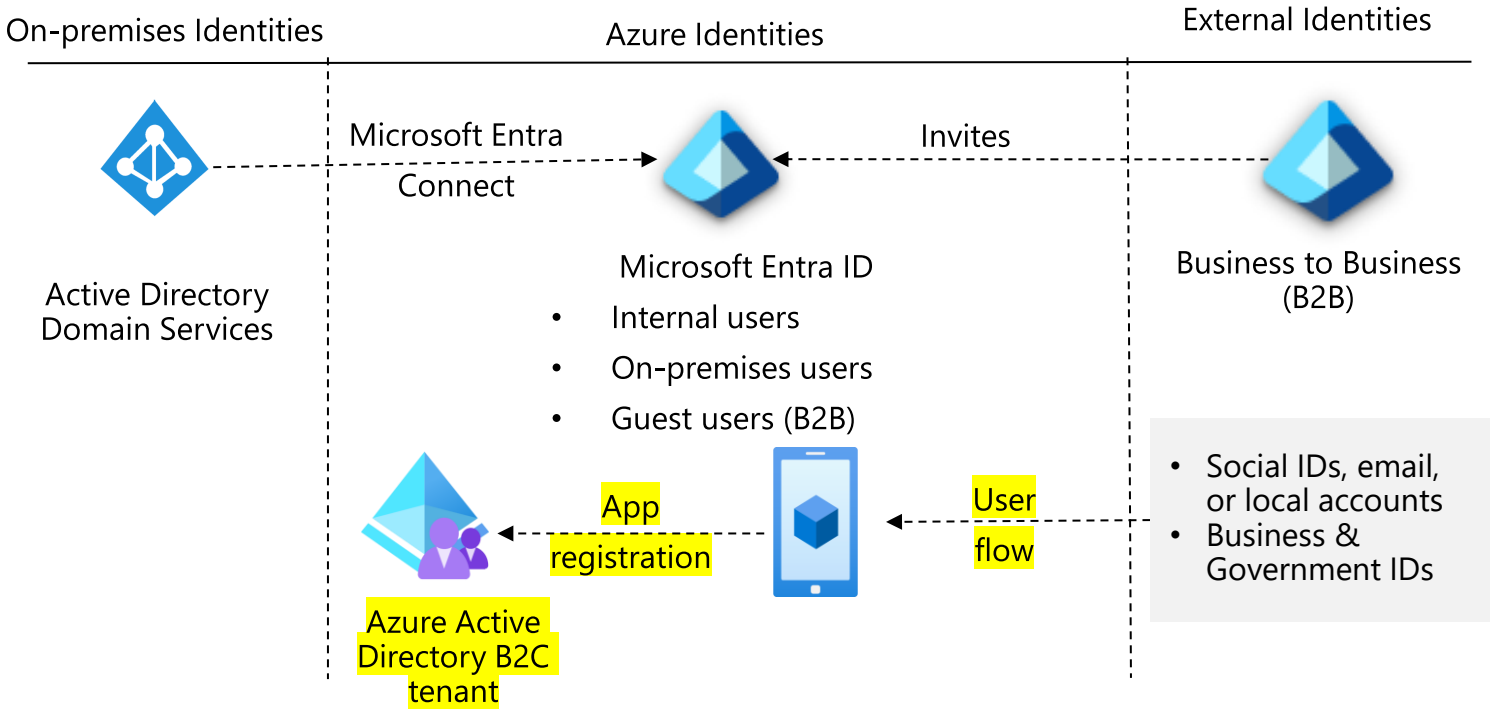


Design for Azure AD Business to Customer

When to use Azure AD Business to Customer (B2C)

Azure AD B2C is a tenant to manage customer identities and their application access.

- Integrate with external user stores
- Provide single sign-on access with a user-provided identity
- Create a custom-branded identity solution
- Use policies to configure user journeys
- Use progressive profiling to gradual collect user information
- Pass user data to a 3rd party for validation



Compare solutions (activity)

- Customers cannot be viewed by other users
- Users are managed in a separate Microsoft Entra tenant
- Users need to be able to self-signup for accounts
- Users manage their own profiles
- Users can come from SAML and WS-Fed based identity providers

Business to Business

OR

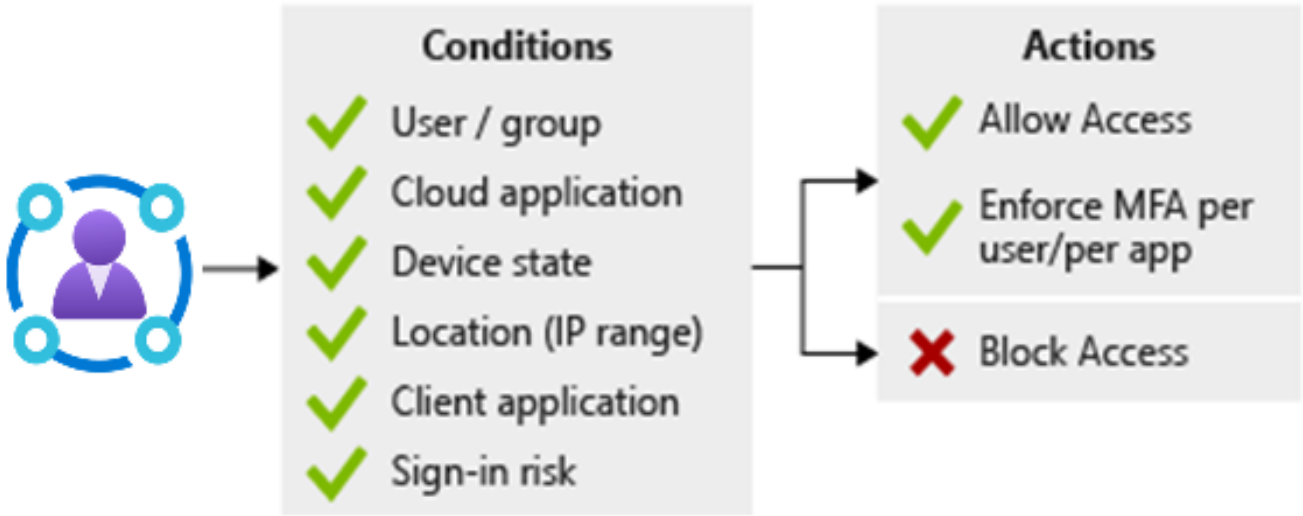
Business to Consumer

Design for conditional access

When to use conditional access

Conditional Access is a Microsoft Entra tool that allows (or denies) access to resources.

- Use to enable multifactor authentication
- Require managed devices
- Access only approved client applications
- Exclude countries from which you never expect a sign in
- Respond to potentially compromised accounts.
- Completely block access
- Block legacy authentication protocols.
- Test using the report-only mode

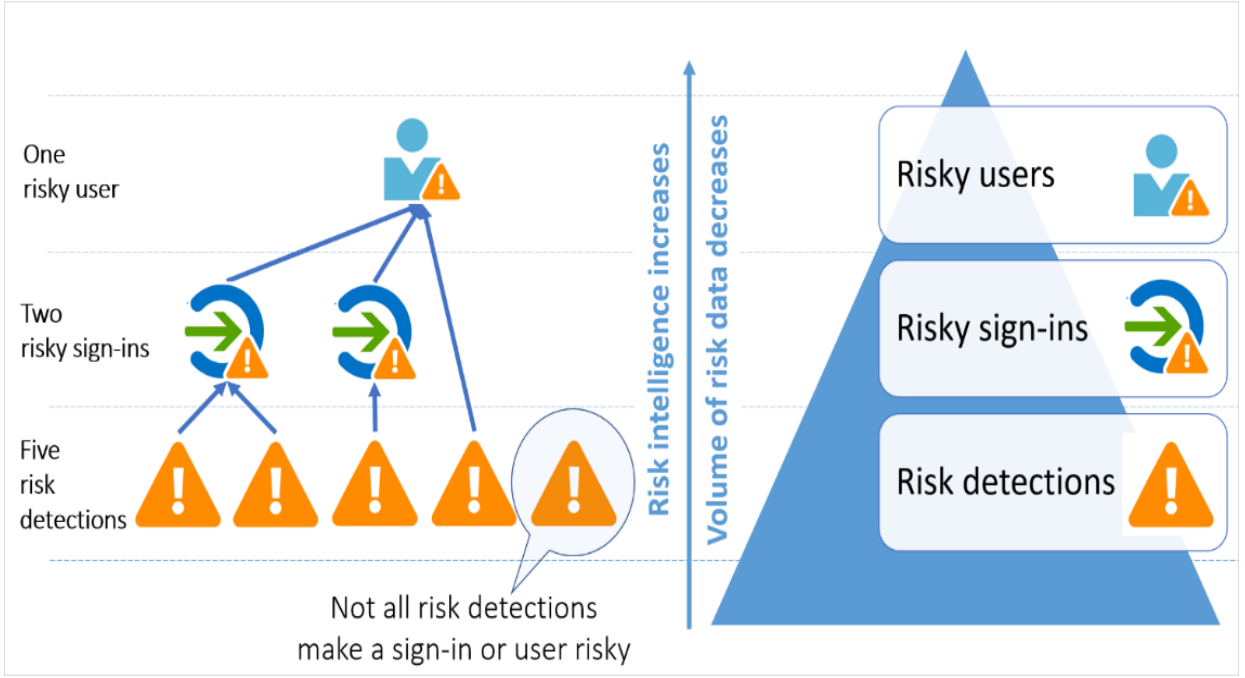


Design for identity protection

When to use identity protection

Identity protection is a Microsoft Entra tool that automates the detection and remediation of identity-based risks.

- Configure the policies and actively review the results
- Set the sign-in risk policy to Medium and above and allow self-remediation options
- Set the user risk policy threshold to High
- Allow for excluding users - emergency access or break-glass administrator accounts
- Send data to Conditional Access or other security information and event management (SIEM) tool



Design for access reviews

When to use access reviews

Access reviews are a Microsoft Entra tool to review user access and ensure they should have continued access to resources.

- Determine the purpose of the access review
- Engage the right stakeholders
- Create an access review plan
- Determine who will conduct the reviews
- Decide who can self-attest access
- Determine what resource types will be reviewed
- Start small – pilot your plan – keep people informed

Design service principals for applications

Design managed identities

Managed identities provide an identity for application authentication.

I want to build an application using

Source

- Azure VMs
- Azure App Service
- Azure Functions
- Azure Container Instances
- Azure Kubernetes Service
- Azure Logic Apps
- …

that accesses

Target

Any target that supports Microsoft Entra ID authentication

- Your applications
- Azure services (Azure Key Vault, Azure Storage, Azure SQL, …)

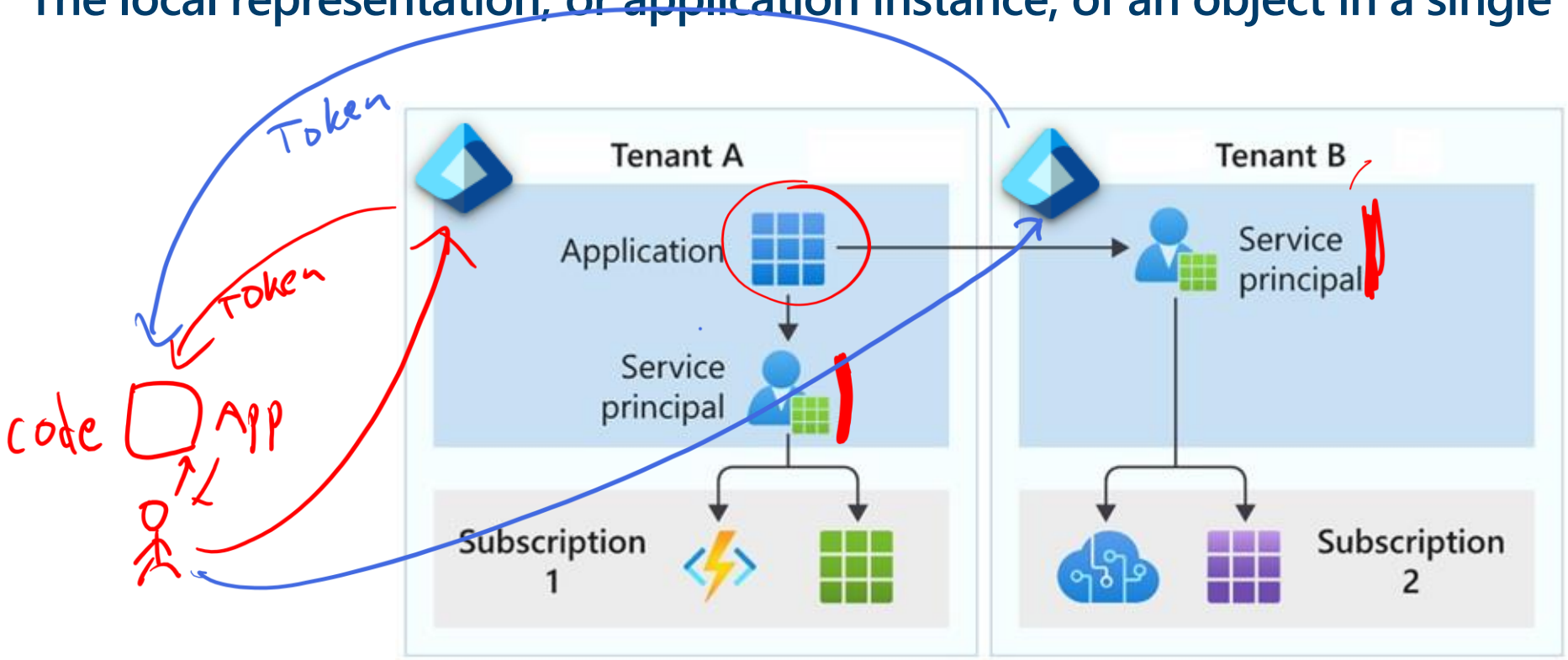
- The source is an Azure resource
- The target supports Microsoft Entra ID authentication and Azure RBAC
- No credential rotation or certificate management

Select managed identities

Property	System-assigned managed identity	User-assigned managed identity
Creation	• Created as part of an Azure resource	• Created as a stand-alone Azure resource
Life cycle	• Shared life cycle with the Azure resource	• Independent life cycle • Must be explicitly deleted
Sharing across Azure resources	• Cannot be shared • Can only be associated with a single Azure resource	• Can be shared • Can be associated with more than one Azure resource
Common use cases	• Workloads that are contained within a single Azure resource • Workloads for which you need independent identities. • For example, an application that runs on a single virtual machine	• Workloads that run on multiple resources and which can share a single identity • Workloads that need pre-authorization to a secure resource as part of a provisioning flow. • Workloads where resources are recycled frequently, but permissions should stay consistent.

Select application service principals

The local representation, or application instance, of an object in a single tenant or directory



Useful when Managed Identities cannot be used

Authentication is performed by the application using a secret or certificate

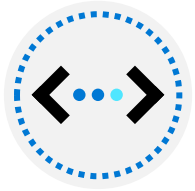
Often used to authenticate external applications to Azure resources

Best practices for requesting permissions

When building an app that uses Microsoft Entra ID to provide sign-in and access tokens for secured endpoints, there are a few good practices you should follow.

When registering an application in Microsoft Entra ID, consider business and security needs of admin consent versus user consent

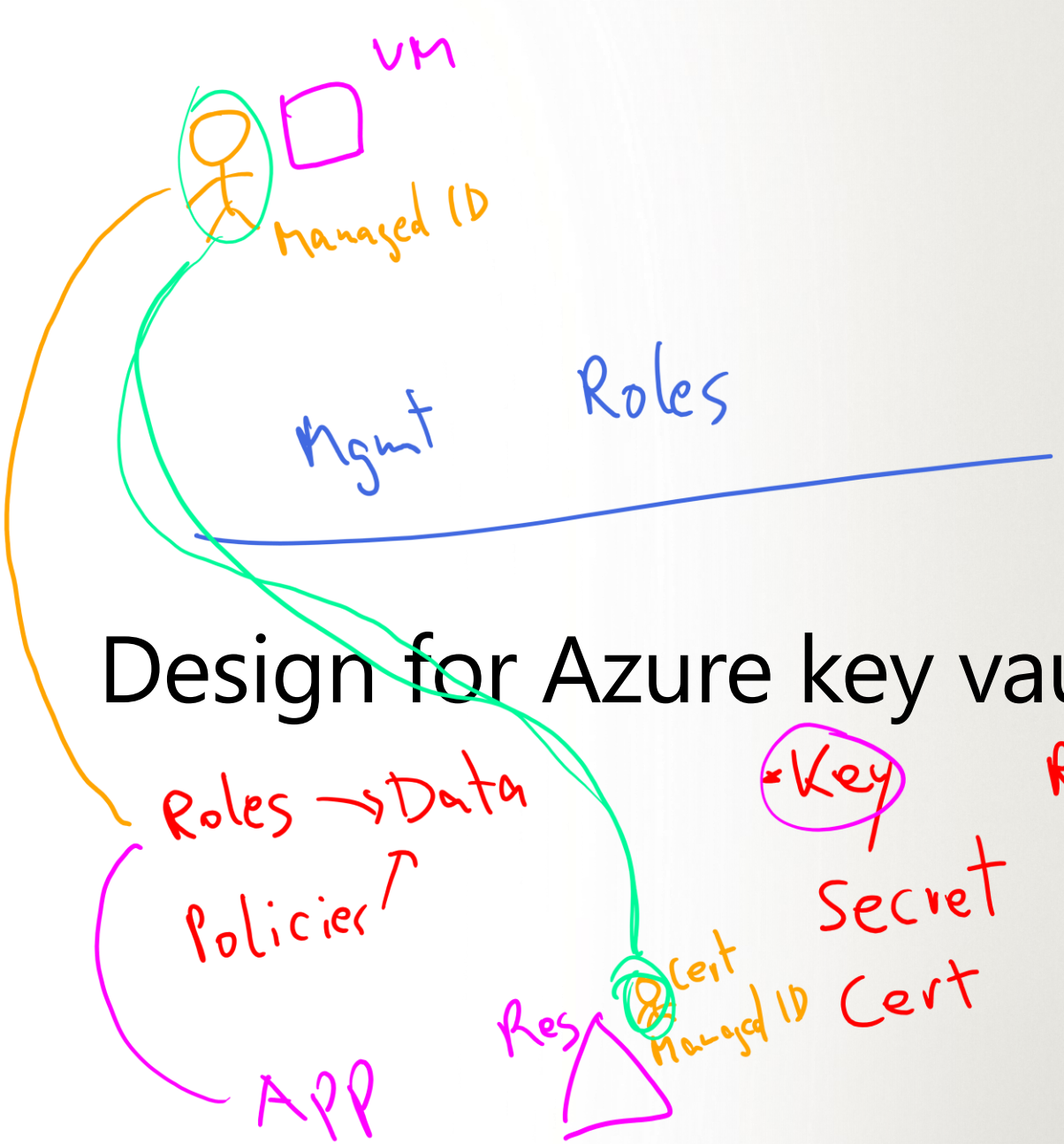
Only ask for the permissions required for implemented app functionality. Don't request user consent for permissions that you haven't yet implemented for your application.



In addition, when requesting permissions for app functionality, you should request the least-privileged access.

Apps should gracefully handle scenarios where the user doesn't grant consent to the app when permissions are requested.

Design for Azure key vault



Design for Azure Key Vault

Azure Key Vault provides a secure storage area for managing all your app secrets so you can properly encrypt your data in transit or while it's being stored.

Why use Key Vault?

- Separation of sensitive app information from other configuration and code, reducing the risk of accidental leaks.
- Restricted secret access with access policies tailored to the apps and individuals that need them.
- Centralized secret storage, allowing required changes to happen in only one place.
- Access logging and monitoring to help you understand how and when secrets are accessed.
- Implementing Customer Managed Keys for Azure services

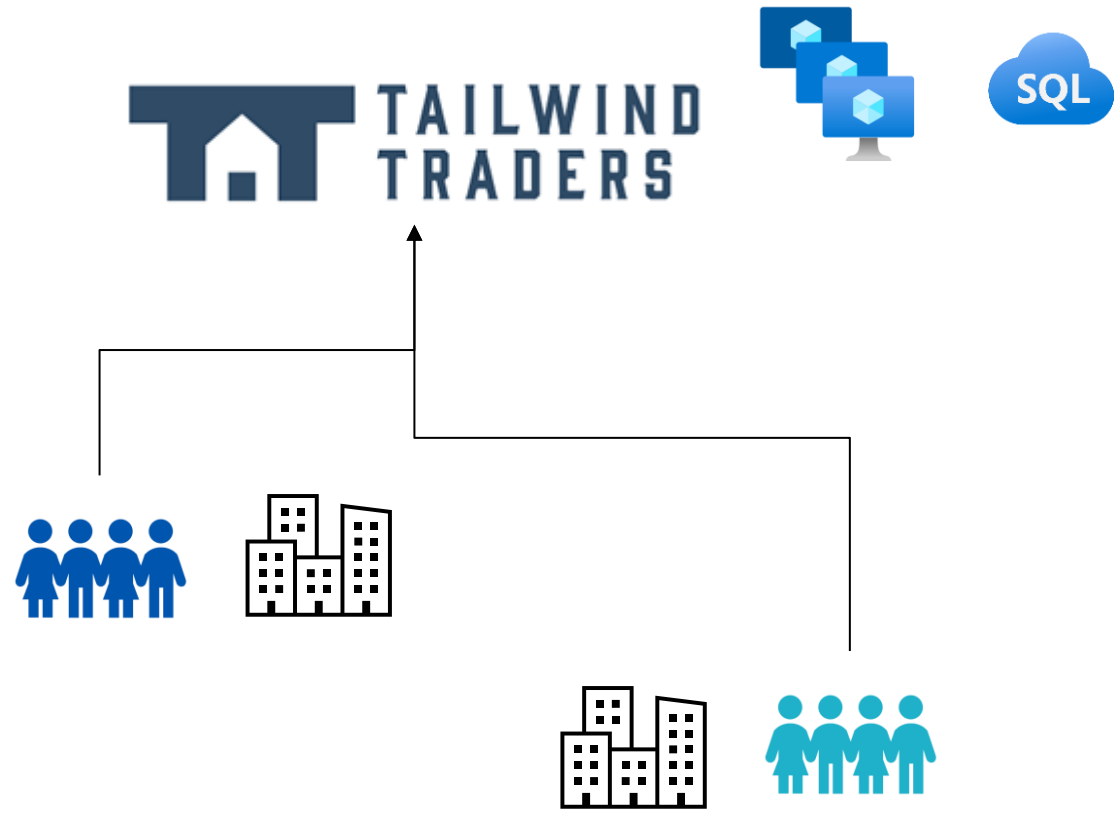
When to consider multiple Key Vaults:

- RBAC vs Policies
- Performance

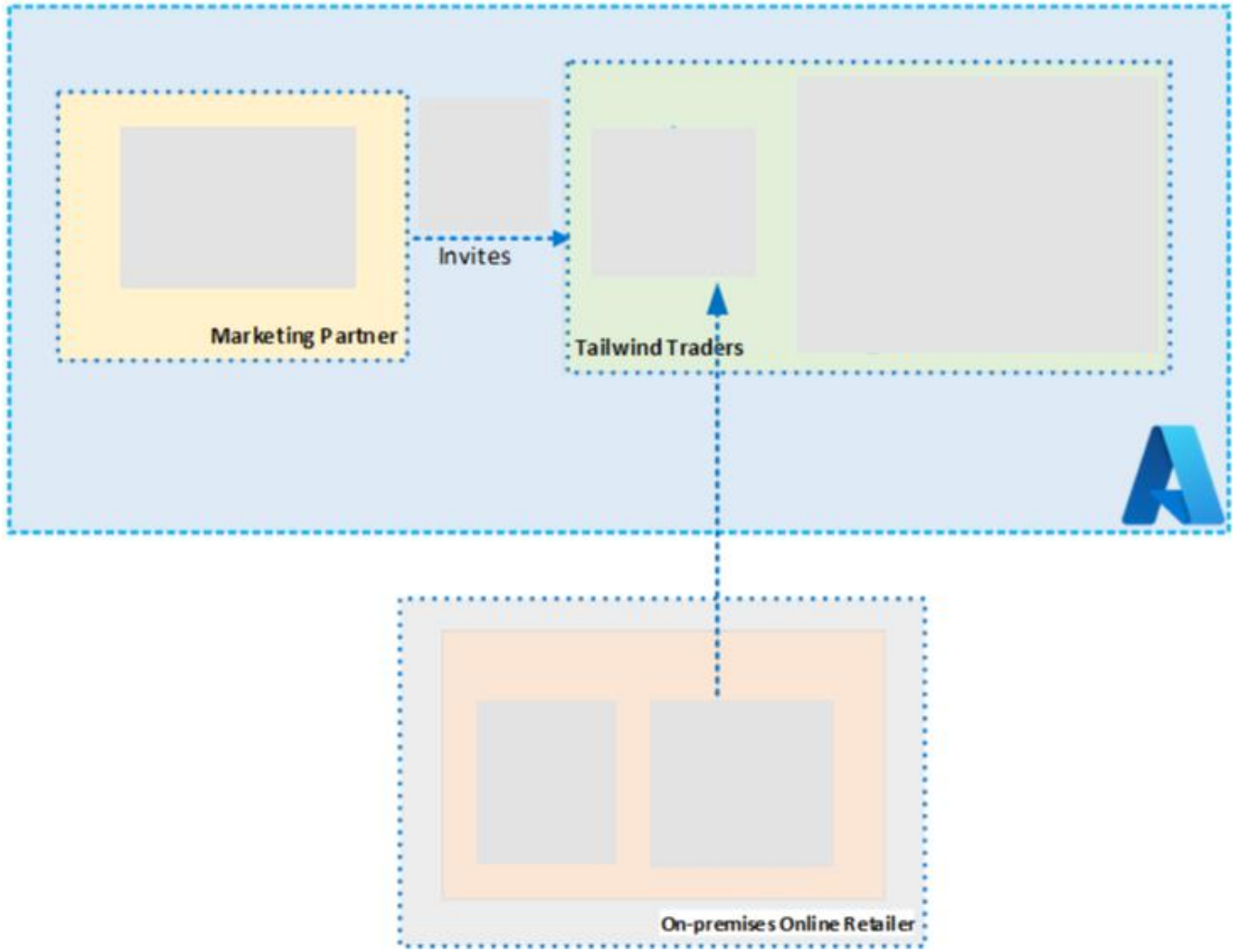
Case study and review

Case Study – Authentication and authorization

1. A company acquisition will add 75 employees – new user accounts
2. New employees are in different geographic regions – new identity protection policies
3. New application with a SQL database – access solution



Instructor – New Employee Accounts



ADDS

Microsoft Entra Connect

Conditional Access

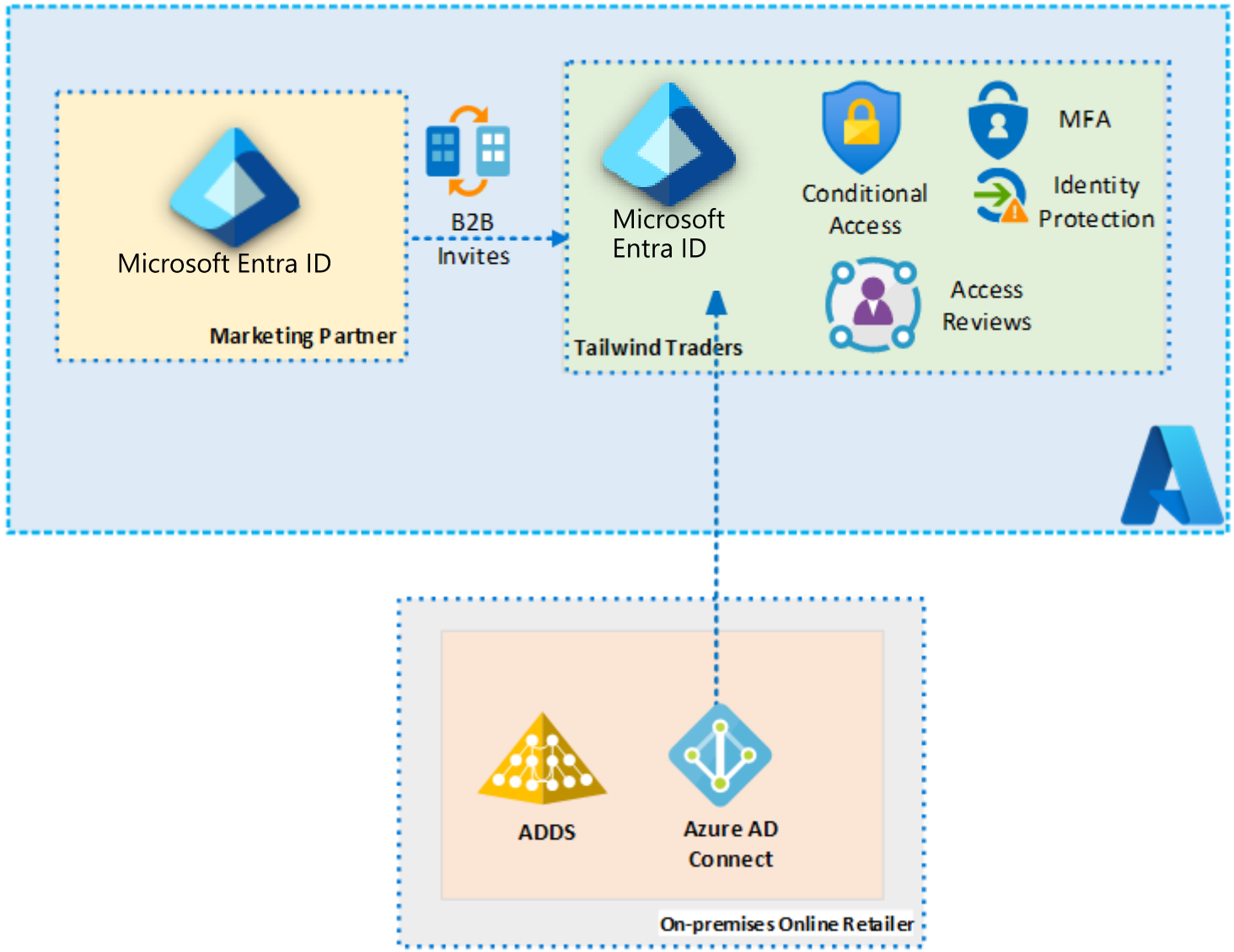
Identity Protection

B2B

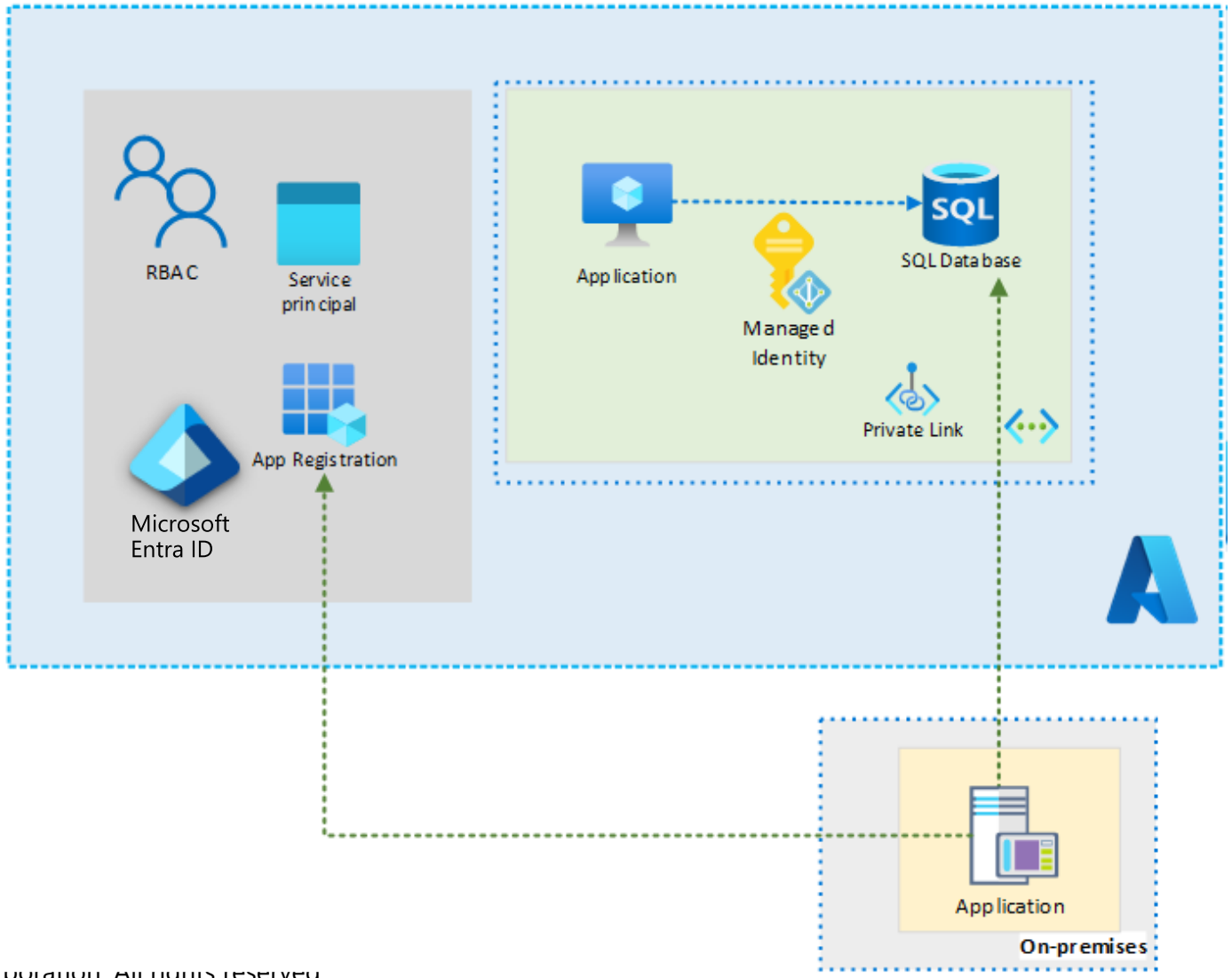
MFA

Microsoft Entra ID

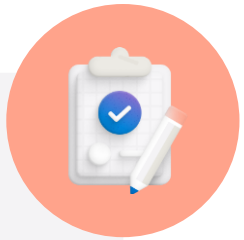
Instructor – New Employee Accounts (completed)



Instructor – New Identity Solution Features



Learning recap – authentication and authorization solutions



Check your knowledge questions and review

- Enable secure external collaboration for your applications with Azure AD B2B
- Enable secure external access to apps for external users with Azure AD B2C
- Configure and manage secrets in Azure key vault
- Manage secrets in your server apps with Azure key vault
- Authenticate apps to Azure services by using service principals and managed identities for Azure resources

End of presentation