Microsoft

SC-300

Tag 2

Microsoft Identity and Access Administrator

Guten Morgen!

Microsoft

LP 2

Implement an authentication and access management solution

Agenda

- LP 1 Implement an Identity Management Solution
- LP 2 Implement an Authentication and Access Management Solution
- LP 3 Implement Access Management for Apps
- LP 4 Plan and Implement an Identity Governance Strategy

$12^{30} - 13^{30}$

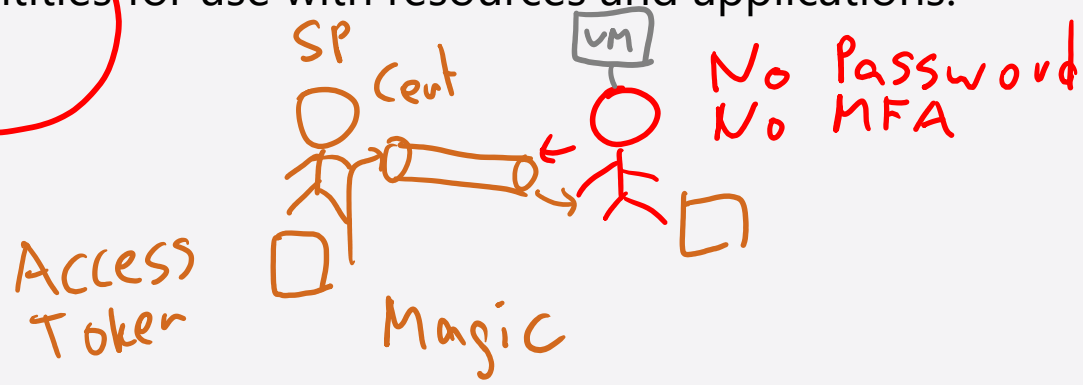
Outline

- Plan and implement Microsoft Entra multifactor authentication (MFA)
- Manage user authentication
- Plan, implement, and administer Conditional Access
- Manage Microsoft Entra ID Protection
- Implement access management for Azure resources
- Configure and deploy Global Secure Access

Learning objectives

After completing this module, you will be able to:

1. Configure and manage authentication including MFA.
2. Implement Zero Trust using Conditional Access and other tools.
3. Create and manage identities for use with resources and applications.



Secure Microsoft Entra users with multifactor authentication

Objectives

1. Configure and deploy self-service password reset
2. What is Microsoft Entra multifactor authentication?
3. Plan your multifactor authentication
4. Configure multifactor authentication methods

Microsoft Entra features to protect cloud assets

- Password complexity rules
- Password expiration rules
- Self-service password reset (SSPR)
- Microsoft Entra Identity Protection
- Microsoft Entra password protection
- Microsoft Entra smart lockout
- Microsoft Entra Application Proxy
- Single sign-on (SSO)
- Microsoft Entra Connect
- Microsoft Entra MFA and Conditional Access

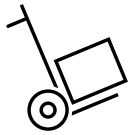
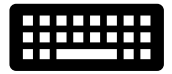
Always think **Zero Trust**

Always verify – Use least privilege access – Assume breach

Configure and deploy self-service password reset

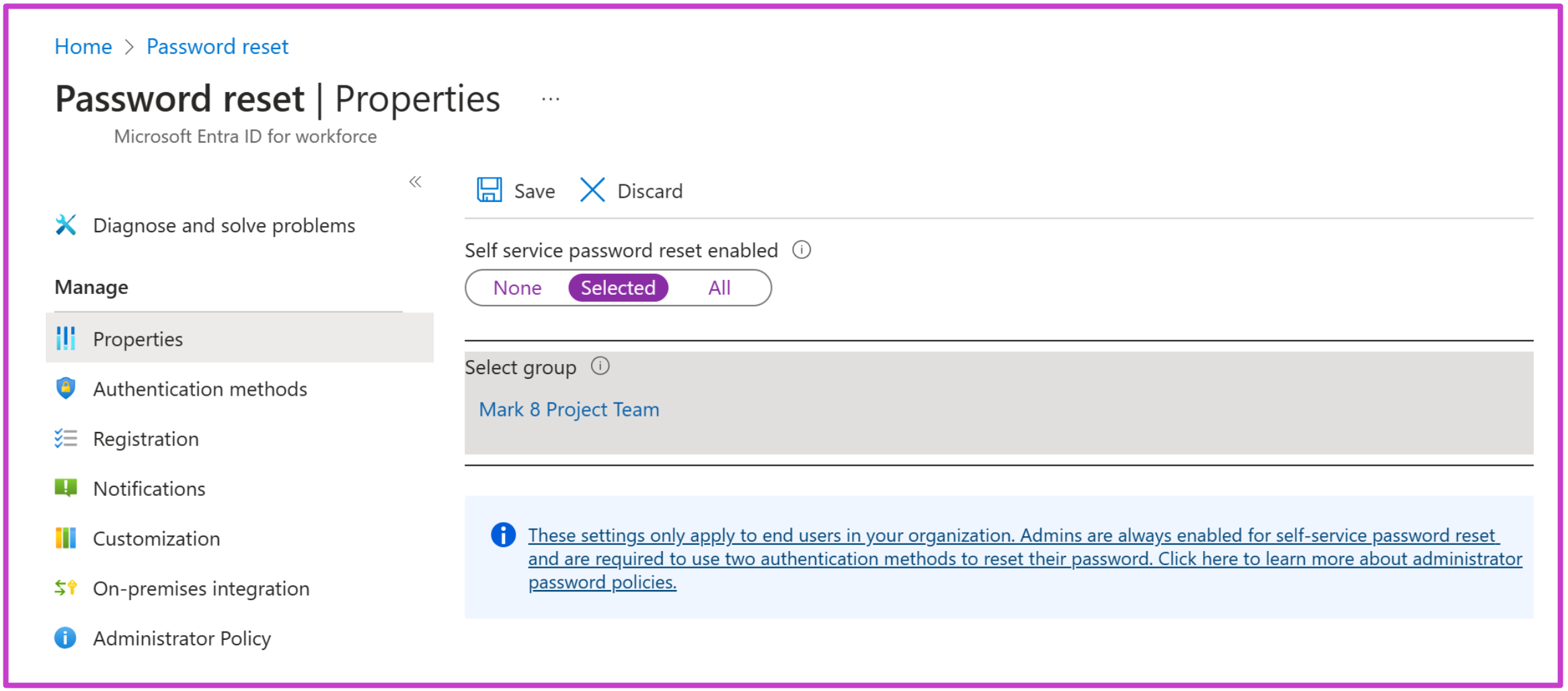
Microsoft Entra self-service password reset

P1

Users can reset their own password	
	No admin/IT intervention
Reduces the loss of user productivity	
	Reduces helpdesk efforts
Users must be enrolled first	
	Requires an assigned license

MFA Questions

Enabling SSPR



SSPR Licensing options

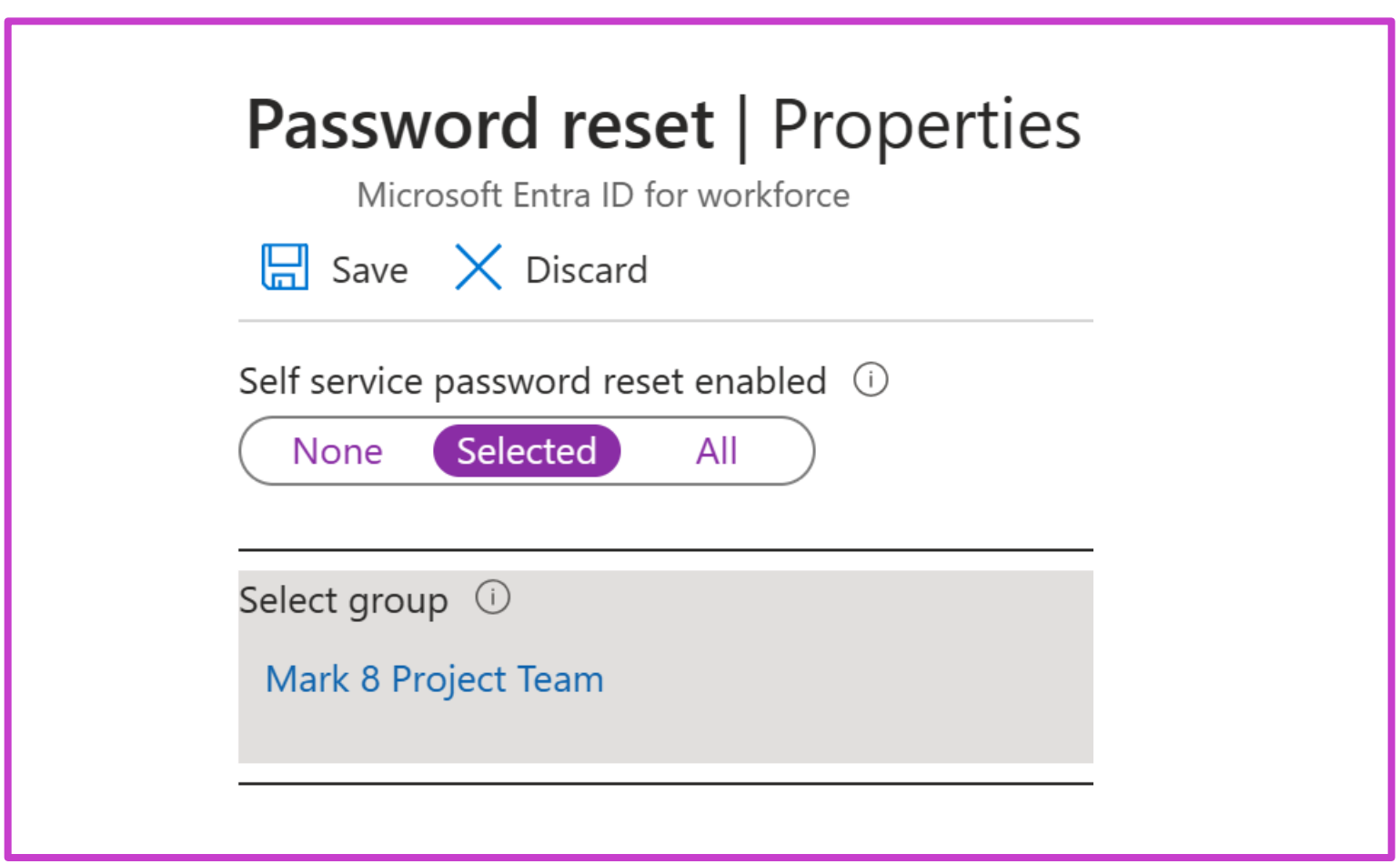
Feature	Microsoft Entra ID Free	Microsoft 365 Business Standard	Microsoft 365 Business Premium	Microsoft Entra ID Premium P1 or P2
Cloud-only user password change When a user in Microsoft Entra ID knows their password and wants to change it	●	●	●	●
Cloud-only user password reset When a user in Microsoft Entra ID has forgotten their password		●	●	●
Hybrid user password change or reset with on-premises writeback When a user in Microsoft Entra ID is synchronized from an on-premises directory using Microsoft Entra Connect			●	●

Exercise—Configure and deploy self-service password reset

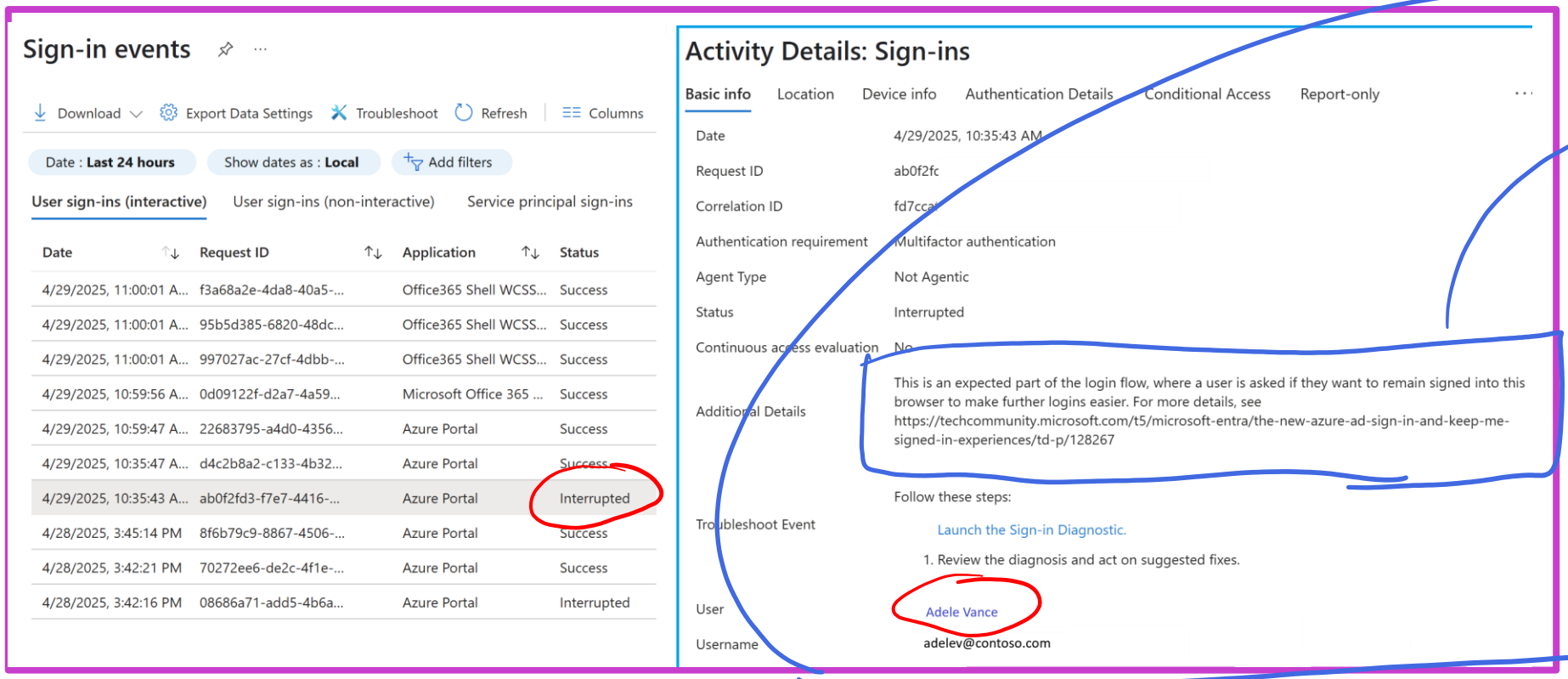
Microsoft Entra self-service password reset (SSPR) gives users the ability to change or reset their password, with no administrator or helpdesk involvement. If a user's account is locked or they forget their password, they can follow prompts to unblock themselves and get back to work. This ability reduces helpdesk calls and loss of productivity when a user can't sign in to their device or an application.

This exercise teaches the student to enable self-service password reset, register a cell phone number, and test self-service password reset.

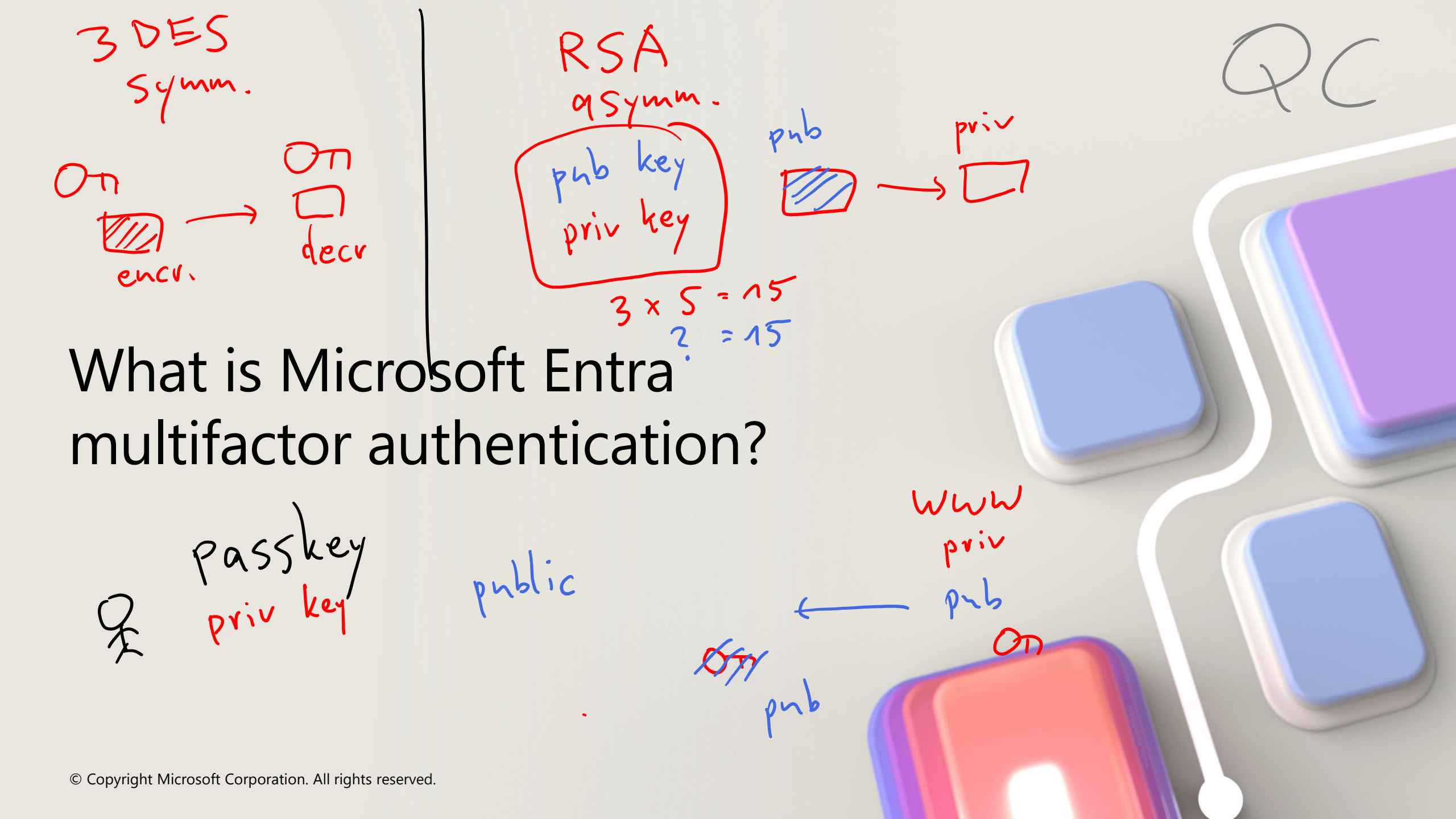
Launch this Exercise in GitHub



User—Sign-ins report



The **Authentication Details** or **Conditional Access** tab of the event details shows you the status code or which policy triggered the MFA prompt.



What is Microsoft Entra multifactor authentication?

Value and capabilities of Microsoft Entra MFA

Value

- More secure than passwords
- Quick and easy to set up and manage
- Strong identity verification
- Stronger security
- Often supports compliance goals
- Many different types of authentication methods, with different levels of security

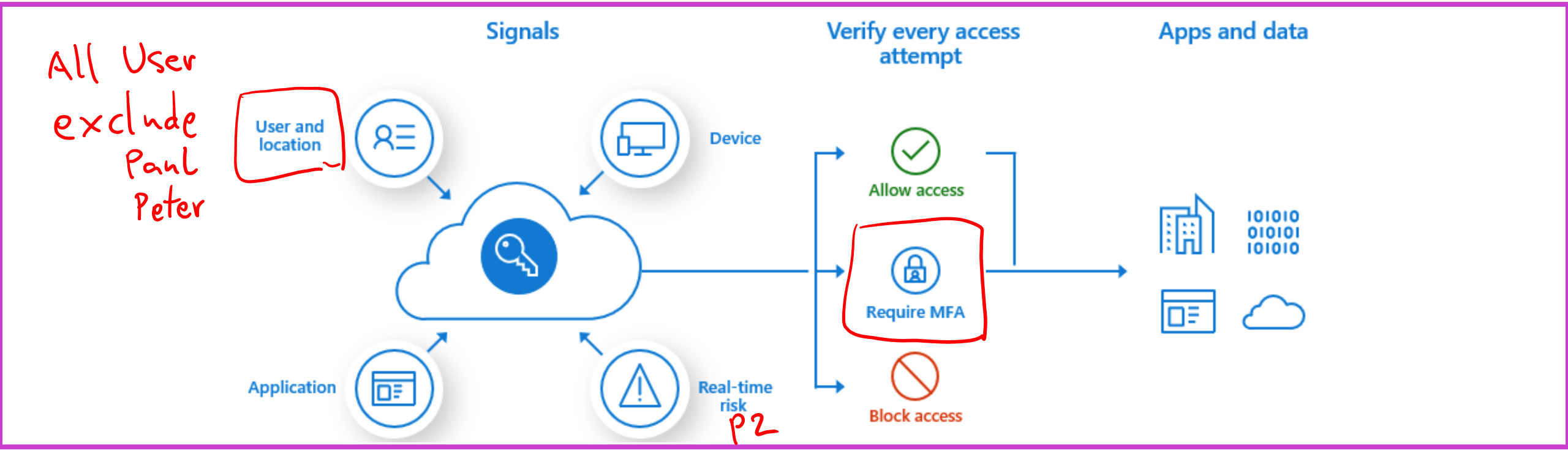
Categories of authentication factors

Something you know

Something you possess

Something you are

Enabling MFA with Conditional Access



Set up a Conditional Access policy that requires a user/group to have MFA required for access to specific resources.

User states of MFA

Disabled—default state, user not enrolled in MFA.

Enabled—user is enrolled in MFA, but can still use their password. At each login they are prompted to register for an MFA authentication method.

Enforced—user is enrolled in MFA, and has either completed their MFA registration; or will be forced to complete it on their next login.

Considerations for Microsoft Entra MFA based on the infrastructure

Cloud Only setup—nothing additional required to set up Microsoft Entra MFA

Hybrid Identity—Microsoft Entra Connect must be deployed and synchronized/ federated with your on-premises Active Directory Domain Services

Need on-premises legacy apps—Microsoft Entra Application Proxy must be deployed

Use Microsoft Entra MFA with a RADIUS Authentication—a Network Policy Server (NPS) must be set up and configured

Plan your multifactor authentication deployment

Deployment considerations

- Get employee buy-in
  - User communications (posters, emails, and other support items)
- Consider rolling MFA out in waves
- Create a full communications plan
- Tie your MFA roll-out with Conditional Access compliance
  - Specific devices, working location, application or data access
- Select your authentication methods
- Plan MFA registration process
- Add on-premises systems after MFA is established

Supported authentication methods

Mobile app verification

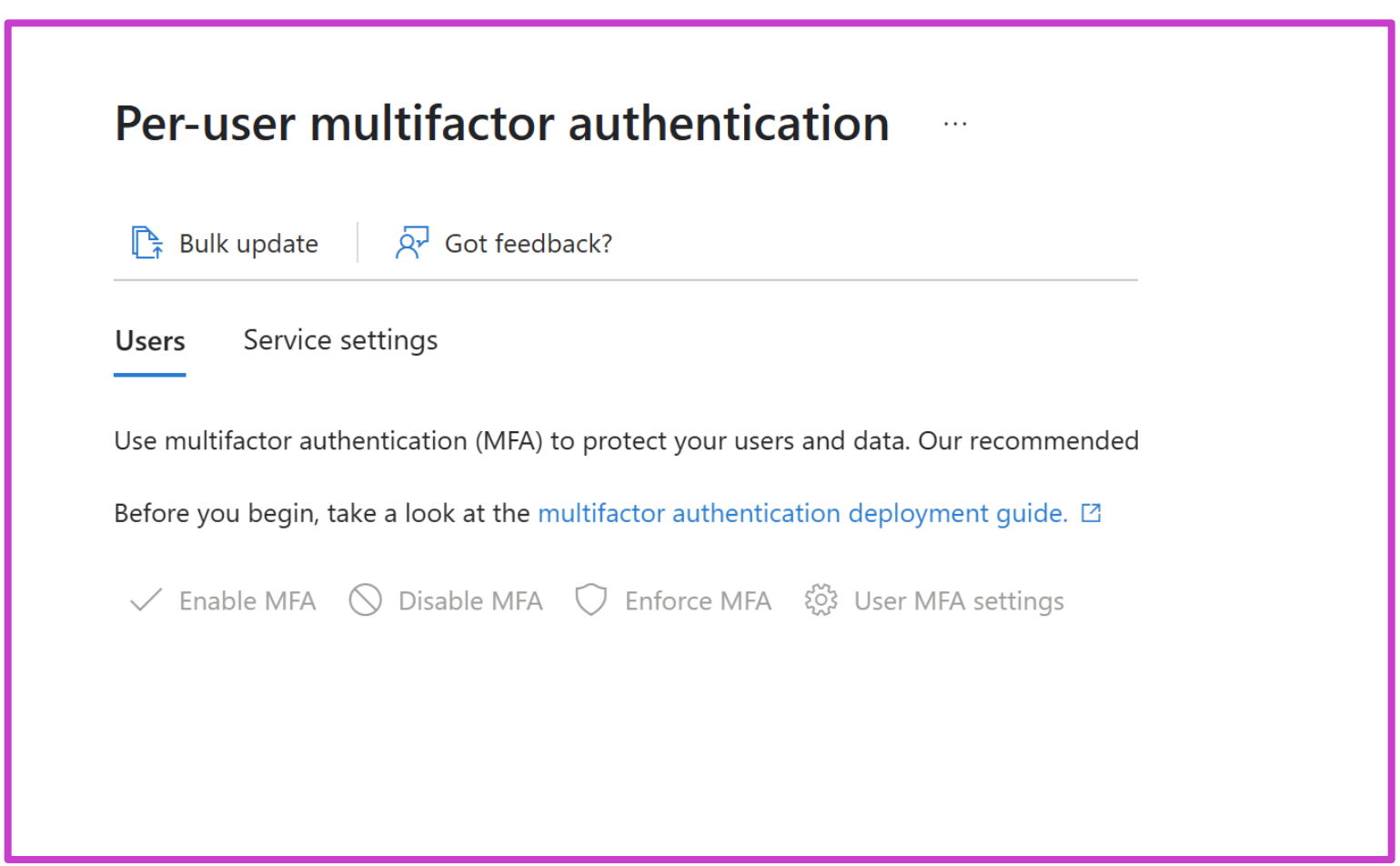
Call to a phone

Text message to a phone

Exercise—enable Microsoft Entra multifactor authentication

This exercise teaches students how to configure multifactor authentication policies, set up Conditional Access rules, and configure Microsoft Entra MFA for passwords.

Launch this Exercise in GitHub



Configure multifactor authentication methods

Azure authentication methods

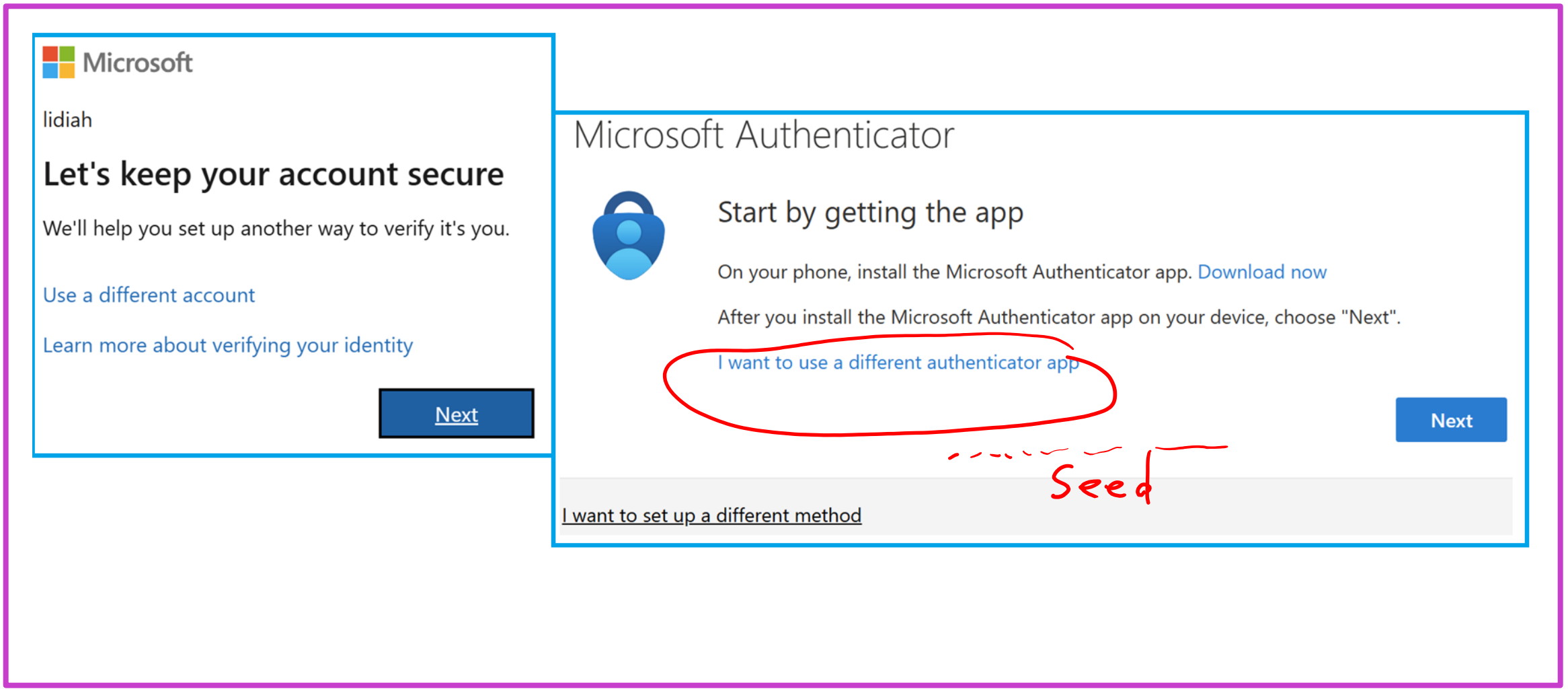
AuthN methods when deploying MFA

- Microsoft Authenticator app
- Windows Hello for Business
- FIDO2 security key
- OATH hardware token (preview)
- OATH software token
- SMS
- Voice call

Supplemental AuthN for niche use

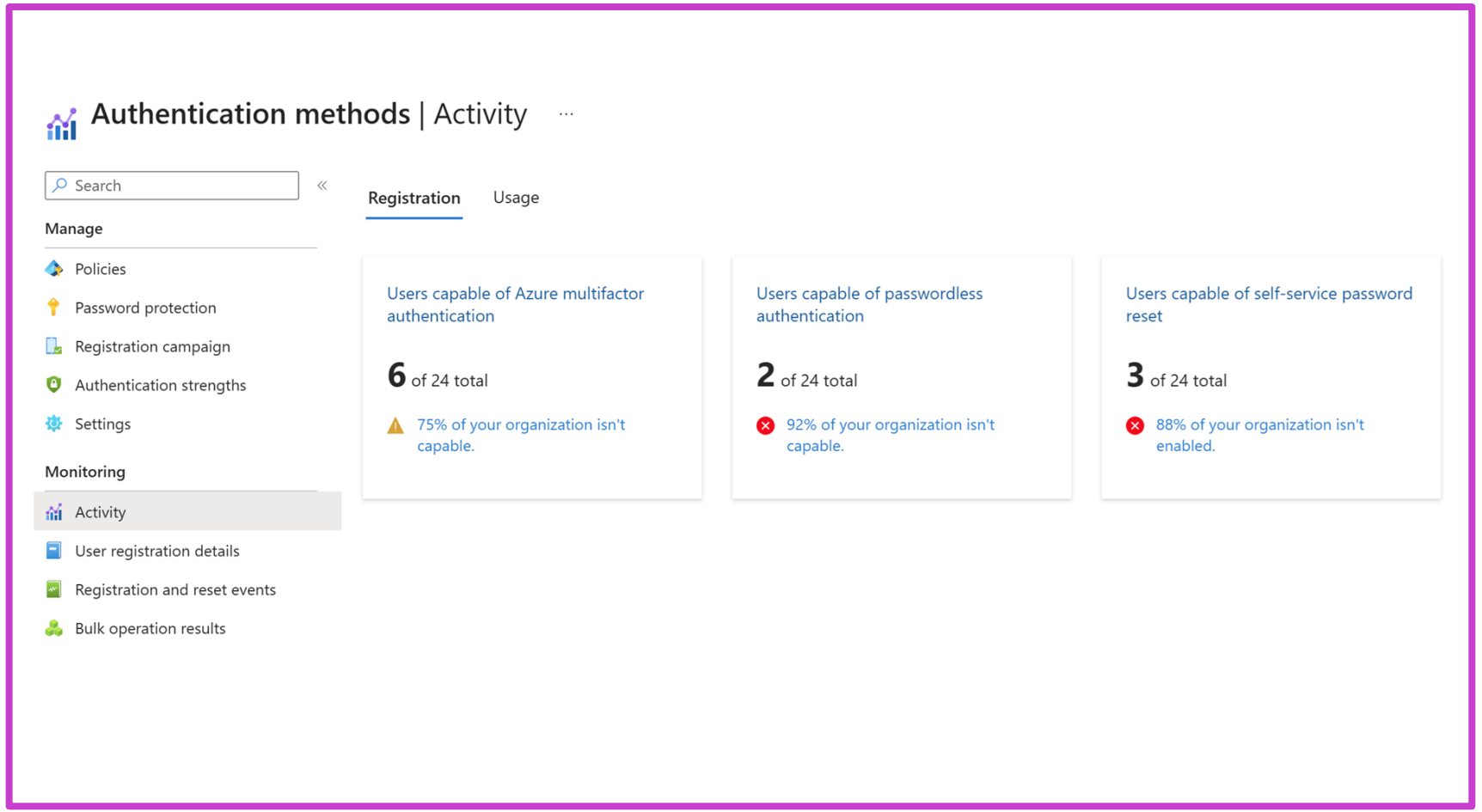
- Security questions
  - Non-admins only
- Email address
  - Part of SSPR if enabled
- App passwords
  - For legacy apps that don't directly support Azure MFA

Registering an authentication method



Monitoring adoption

- Microsoft Entra ID includes a **Usage & insights** view in the **Monitoring** section where you can monitor the authentication methods activity. From here you can view the adoption of MFA.
- In addition to the overall registration numbers, you can also see the success and failure of registrations per authentication method.
- You can also learn more about MFA usage in your organization through the **Usage** tab on the main view.



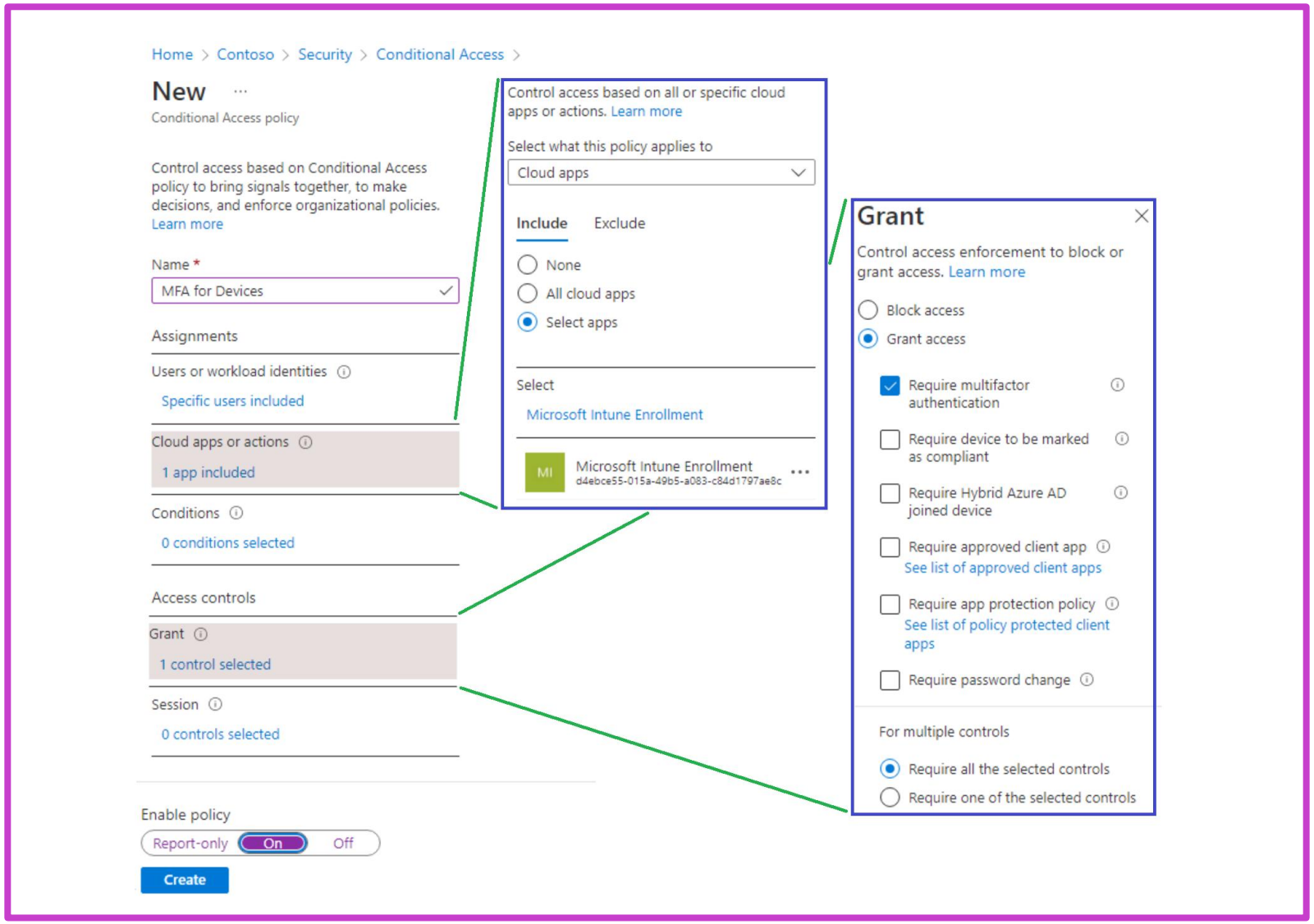
Extend MFA to devices

Require MFA for devices

Use Conditional Access rules to extend MFA to devices and device enrollment.

Two methods:

1) Policy for Microsoft Intune or Microsoft Intune Enrollment (seen in picture).
2) Policy within Intune device settings.



Protecting Microsoft Entra ID from device attacks

Monitor the device:

- Device registration and Microsoft Entra ID join
- Noncompliant devices accessing applications
- BitLocker key retrieval
- Device administrator roles
- Sign-ins to virtual machines

Logs with device data:

- Microsoft Entra ID audit logs
- Sign-in logs
- Microsoft 365 audit logs
- Azure Key Vault logs

Tools to use:

- Microsoft Sentinel
- Azure Monitor
- Azure Event Hubs

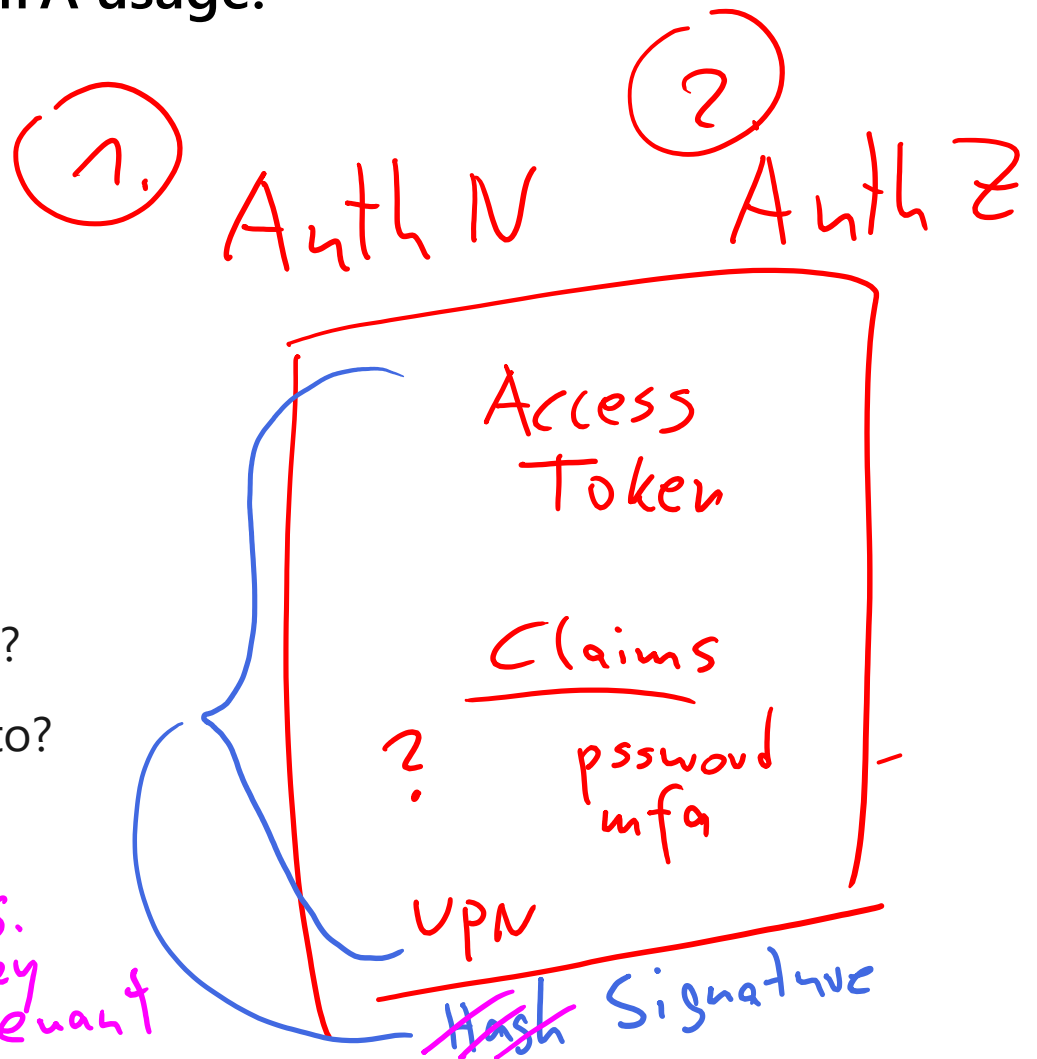
Monitor MFA

Monitor Microsoft Entra ID MFA activity

Use the Microsoft Entra sign-in report to review MFA usage.

Data available in the report:

- Was the sign-in challenged with MFA?
- How did the user complete MFA?
- Which authentication methods were used during a sign-in?
- Why was the user unable to complete MFA?
- How many users are challenged for MFA?
- How many users are unable to complete the MFA challenge?
- What are the common MFA issues end users are running into?



References

Planning a cloud-based Microsoft Entra multifactor authentication deployment

https://learn.microsoft.com/azure/active-directory/authentication/howto-mfa-getstarted

Deploy Microsoft Entra self-service password reset

https://learn.microsoft.com/azure/active-directory/authentication/howto-sspr-deployment

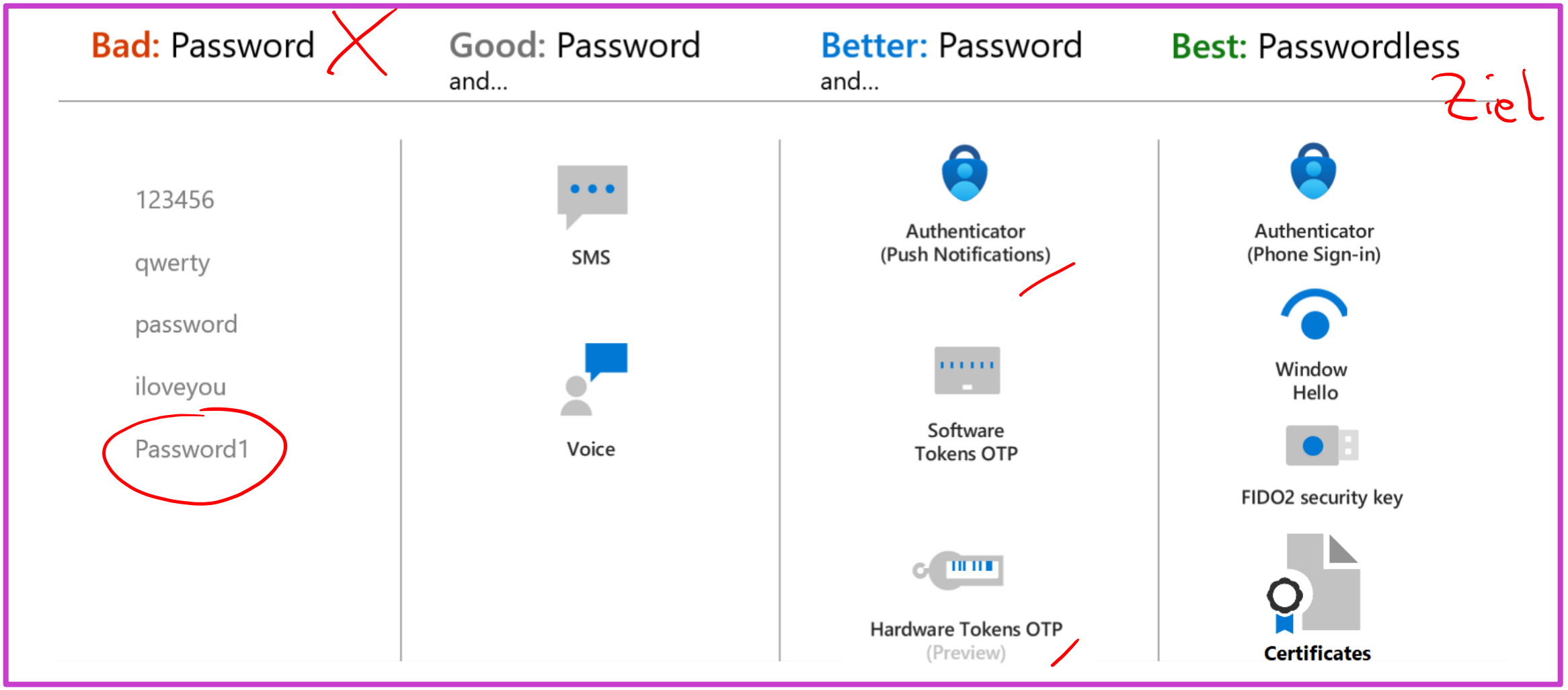
Manage user authentication

Objectives

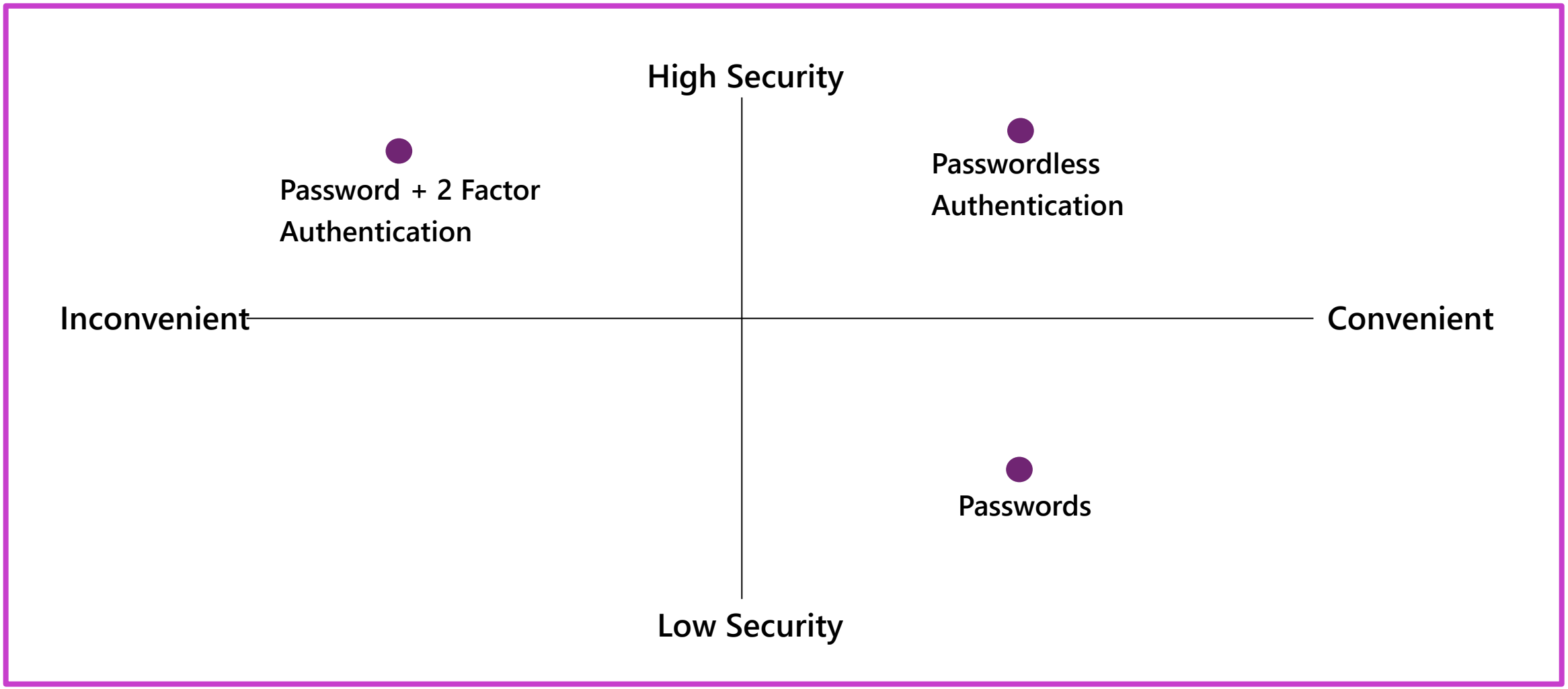
1. Administer authentication methods (FIDO2/Passwordless)
2. Implement an authentication solution based on Windows Hello for Business
3. Disable accounts and revoke sessions
4. Deploy and manage password protection
5. Configure smart lockout thresholds
6. Kerberos in Microsoft Entra ID
7. Certificate-based authentication
8. Microsoft Entra ID user authentication in Virtual Machines (VMs)

Administer authentication methods

Authentication methods



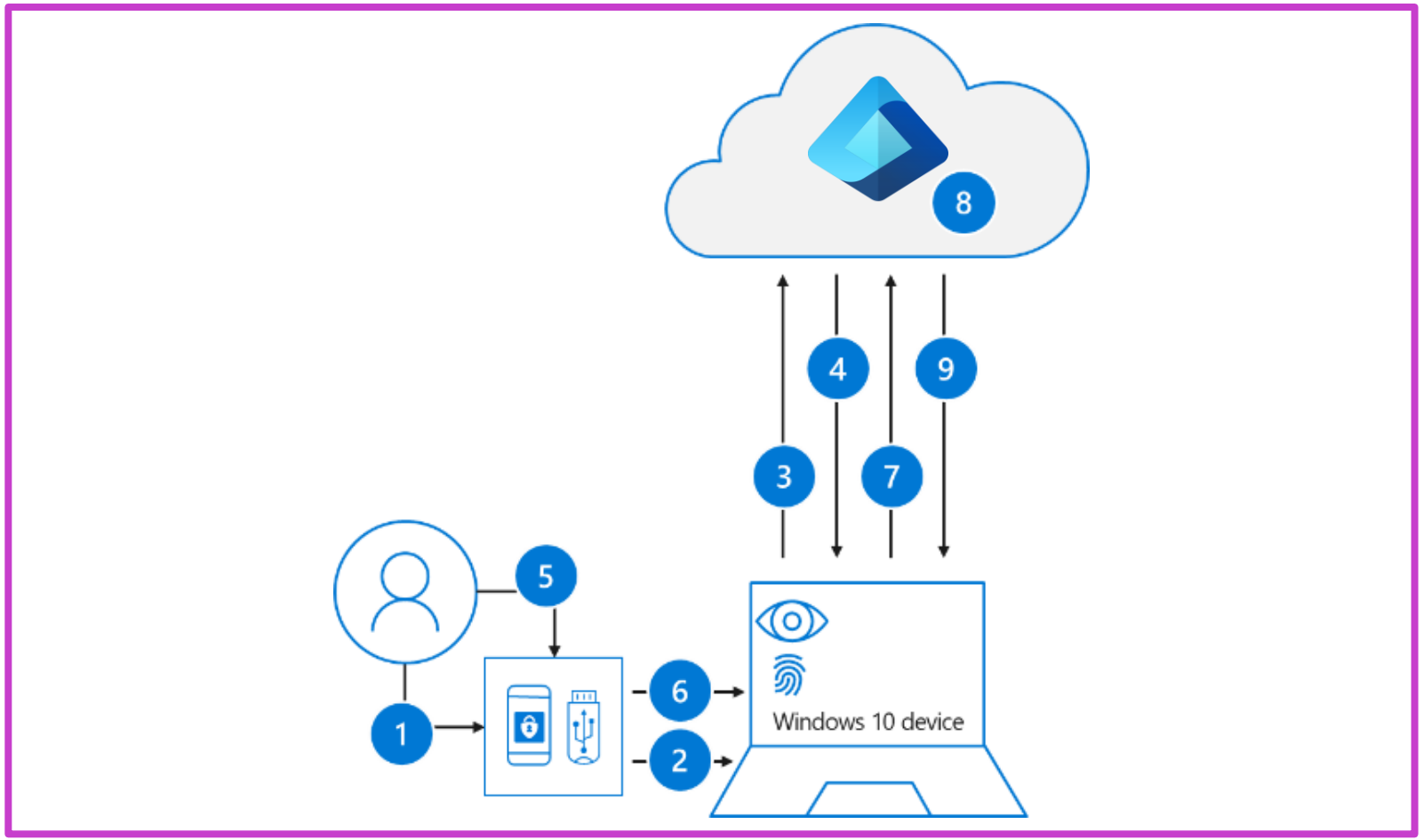
Authentication method strength and security



TLA

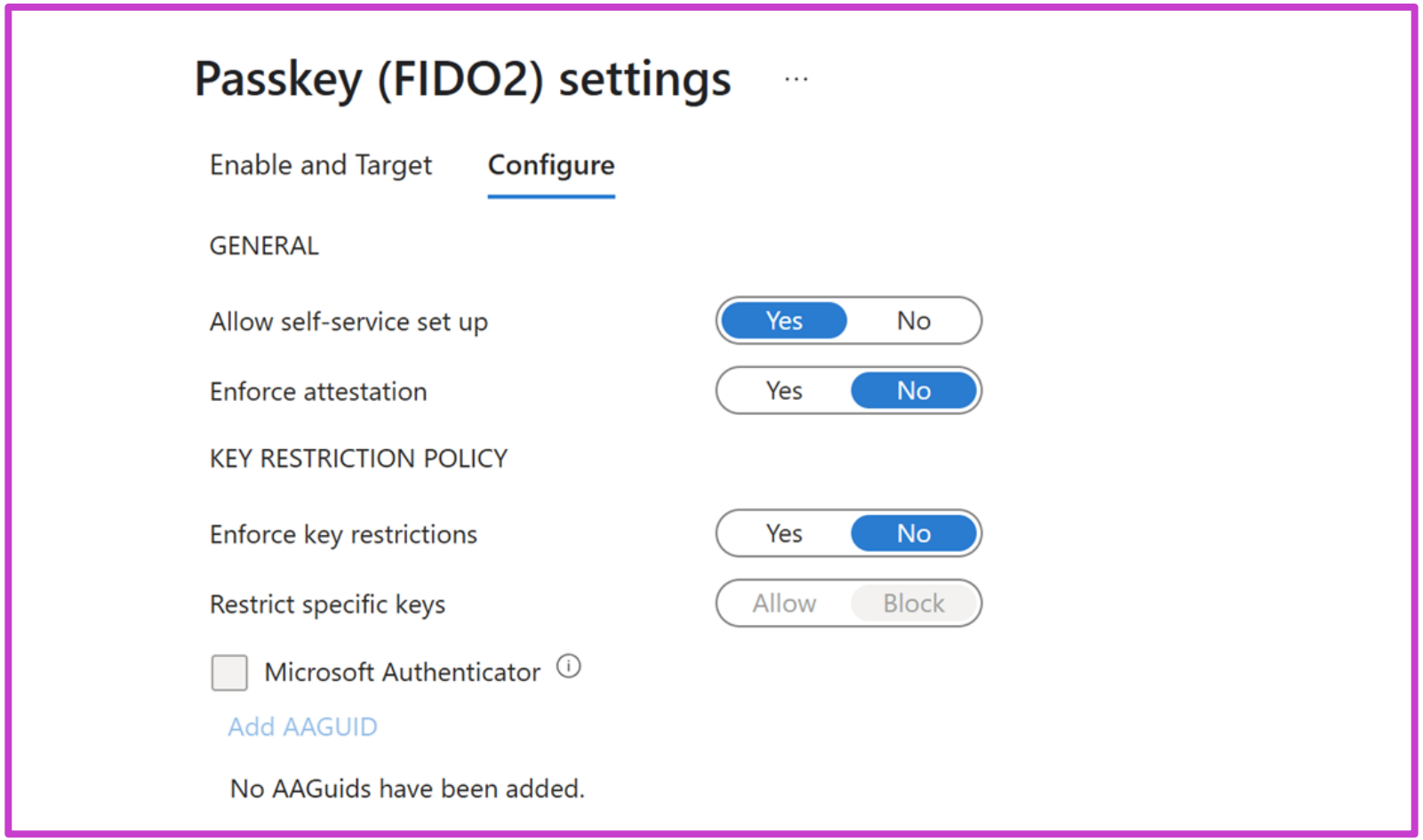
What is FIDO2?

- FIDO2 security keys are an unphishable specification-based passwordless authentication method that can come in any form factor.
- Fast Identity Online (FIDO) is an open specification for passwordless authentication.
- FIDO allows users and organizations to leverage the specification to sign in to their resources without a username or password using an external security key or a platform key built into a device.

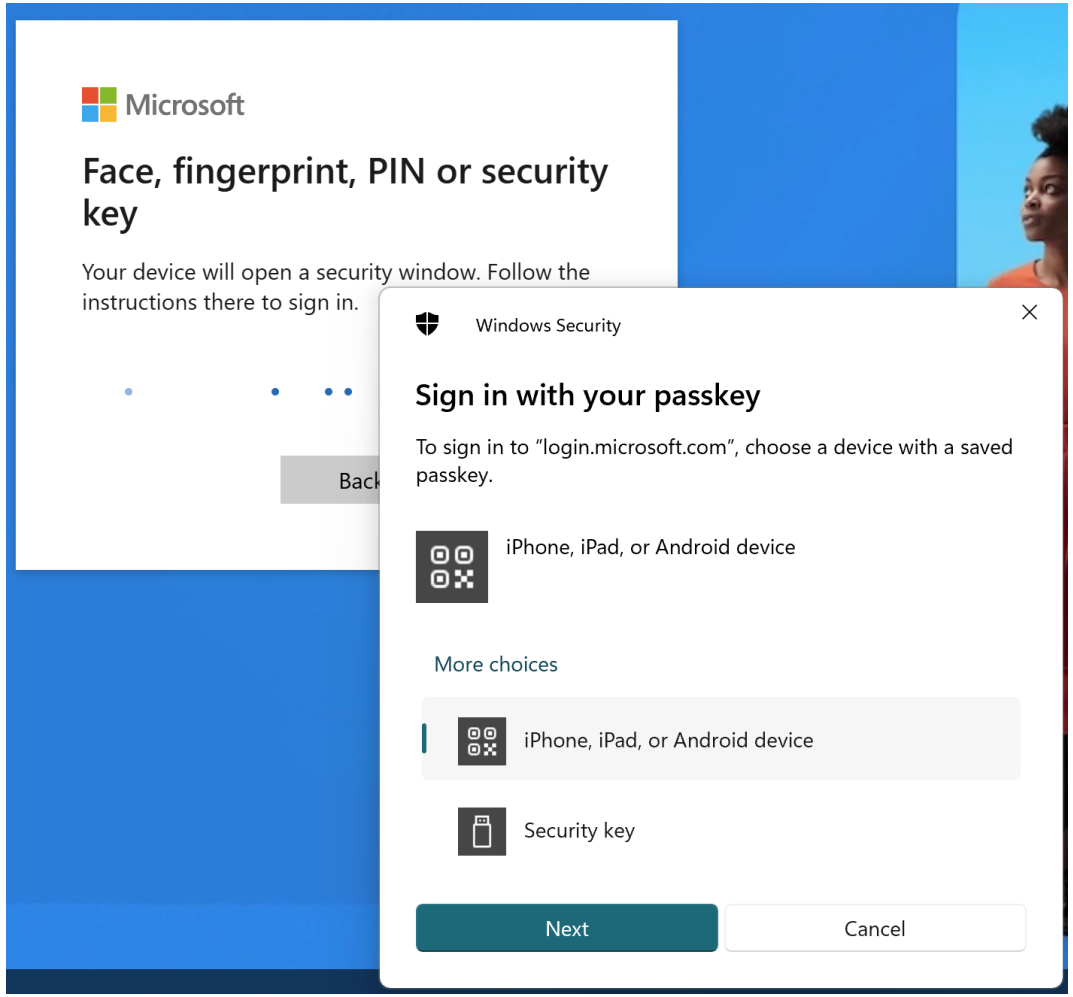


Implement FIDO2 security keys

- **Allow self-service setup**—if set to NO, users cannot register a FIDO key.
- **Enforce attestation**—if set to YES, the FIDO key has to be published and verified with FIDO-Alliance.
- **Enforce key restrictions**—only set to YES if your organization wants to specify valid keys via AAGuids.

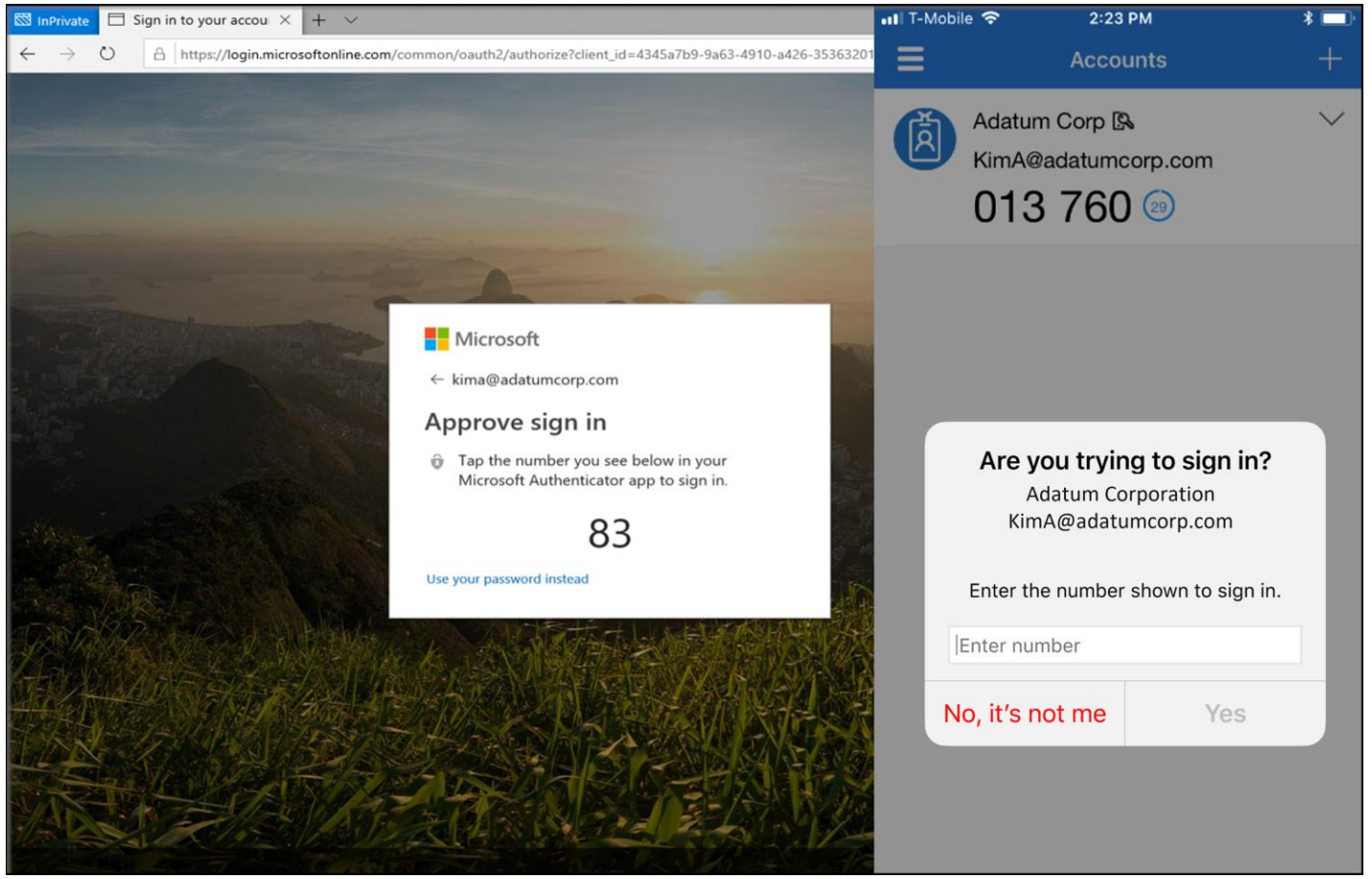


Signing in with passwordless credential

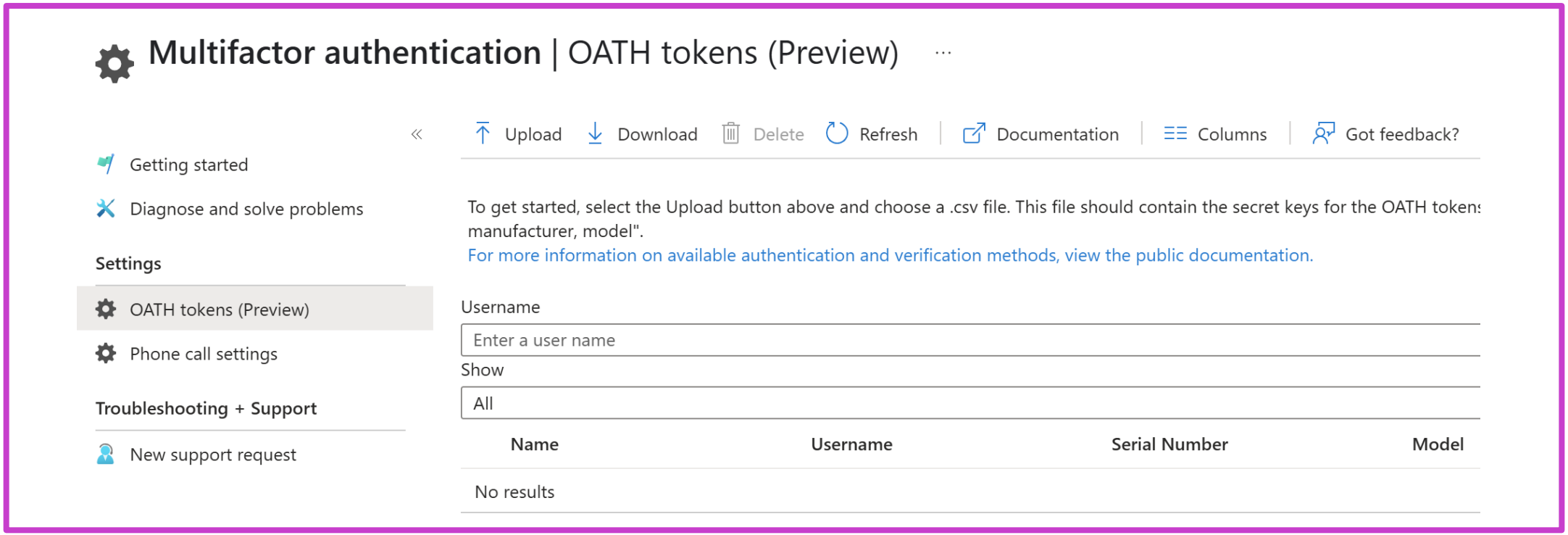


Microsoft Authenticator

- **Approve through mobile app** – Use a pin and or verify a number
- **Generate an OATH verification code** – One-time code entered into sign-in UI
- **Enforce with policy and governance**



OATH tokens



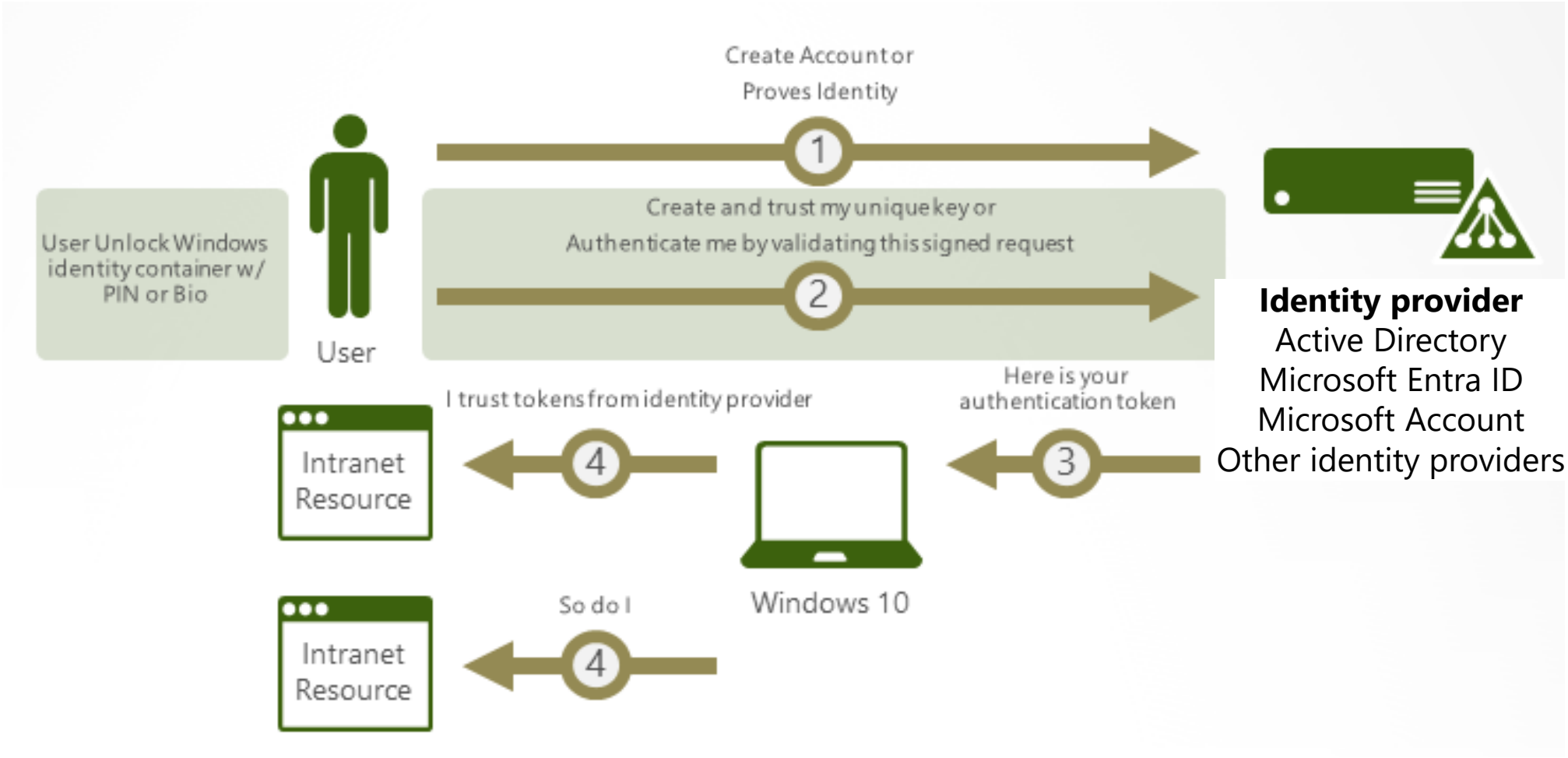
OATH—Open Authentication

TOTP—Time-based One Time Password

Software or hardware implementations available in Microsoft Entra ID

Implement an authentication solution based on Windows Hello for Business

Authentication in Windows Hello



Windows Hello for Business—key points

Key points
Credentials are based on certificate or asymmetrical key pair.
Credentials can be bound to the device, and the token that is obtained using the credential is also bound to the device.
Identity providers (such as Microsoft Entra ID, or a Microsoft account) validate user identity and maps the Windows Hello public key to a user account.
Keys can be generated in hardware (TPM 1.2 or 2.0 for enterprises, and TPM 2.0 for consumers) or software.
Two-factor authentication with the combination of a key or certificate tied to a device and something that the person knows (a PIN) or something that the person is (biometrics).
The private key never leaves a device when using TPM.
Personal (Microsoft account) and corporate (Active Directory or Microsoft Entra ID) accounts use a single container for keys.

Disable accounts and revoke user sessions

Describe how to disable accounts and revoke user sessions

There are occasions when you need to disable an account and/or revoke an existing user session.

- **Access tokens and refresh token**
  - When a user authenticates, they are issued an access token (Valid for one hour) and Refresh tokens.

Primary steps that you need to take:

1) Disable the account.
2) Reset the password.
3) Disable any devices, tokens, or other references.

Disable accounts: On-premises and Microsoft Entra users

Disabling and revoking access (PowerShell)

- **On-premises user**
  - Disable account → `Disable-ADAccount -Identity johndoe`
  - Reset password → `Set-ADAccountPassword -Identity johndoe -Reset -NewPassword (ConvertTo-SecureString -AsPlainText "p@ssw0rd1" -Force)`
  - Recommended to run password reset twice to avoid pass-the-hash style attacks
- **Microsoft Entra user**
  - Disable account → `Set-AzureADUser -ObjectId johndoe@contoso.com -AccountEnabled $false`
  - Revoke refresh token → `Revoke-AzureADUserAllRefreshToken -ObjectId johndoe@contoso.com`
  - Disable user devices → `Get-AzureADUserRegisteredDevice -ObjectId johndoe@contoso.com | Set-AzureADDevice -AccountEnabled $false`

Deploy and manage password protection

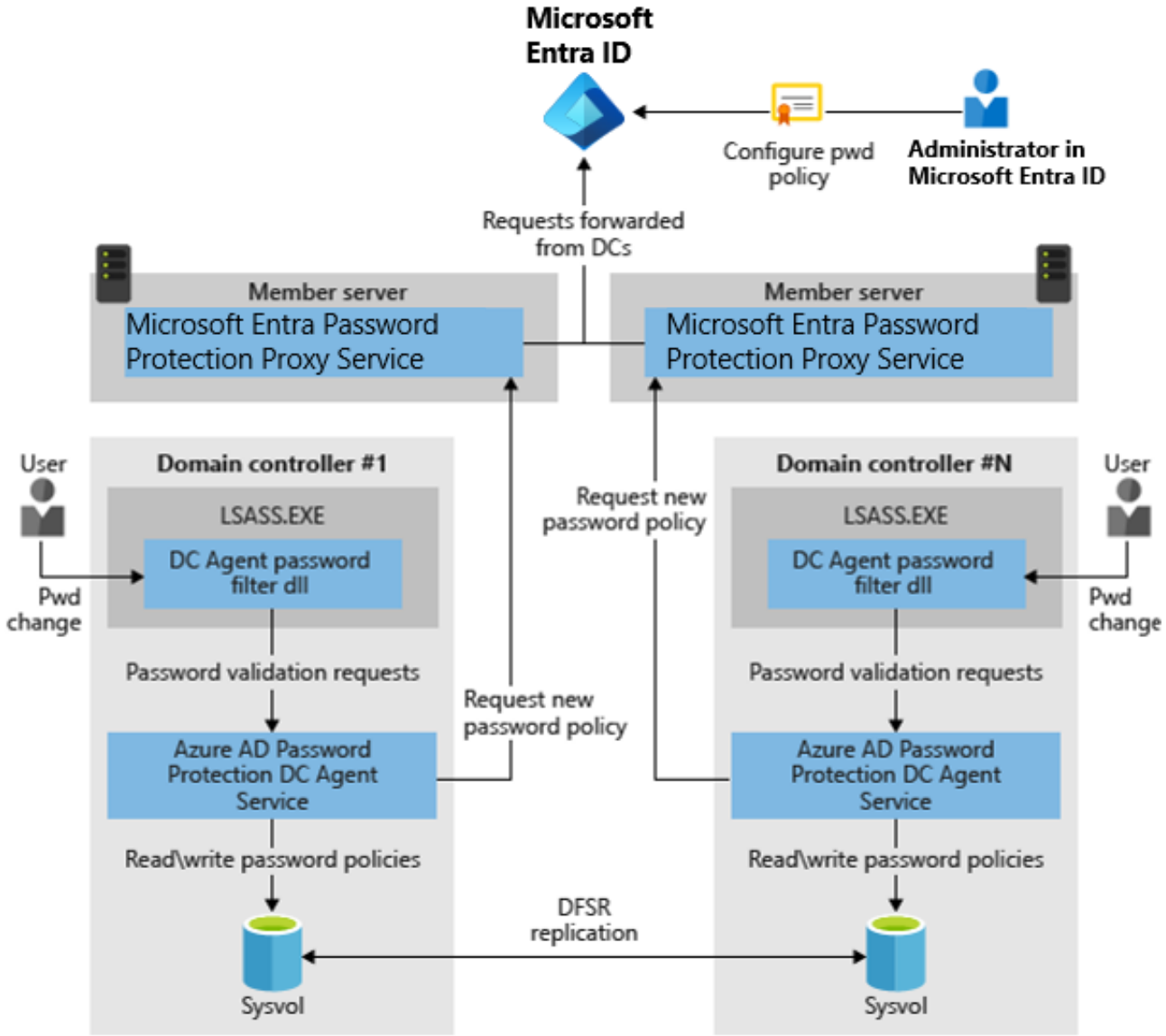
Microsoft Entra password protection

Users often create easy to guess passwords that are weak against dictionary-based attacks. To help you enforce strong passwords, Microsoft Entra password protection provides a global and custom banned password list. Benefits include:

- Domain controllers (DCs) never have to communicate directly with the internet.
- No new network ports.
- No AD DS schema changes required.
- No minimum AD DS domain or forest functional level (DFL/FFL) required.
- The software doesn't create or require accounts in the AD DS domains that it protects.
- User clear-text passwords never leave the DC.
- The software isn't dependent on other Microsoft Entra features.
- Incremental deployment is supported.

Deployment technology

How the basic components of Microsoft Entra password protection are configured and work together



Deployment approach

Strategy for rolling out password protection—don’t just turn it on

Audit mode

Audit mode is the default initial setting, where passwords can continue to be set. Passwords that would be blocked are recorded in the event log. After you deploy the proxy servers and DC agents in audit mode, monitor the impact that the password policy will have on users when the policy is enforced.

Common findings

During the audit stage, many organizations find:

- They need to improve existing operational processes to use more secure passwords.
- Users often use unsecure passwords.
- Organizations need to inform users about the upcoming change in security enforcement, the possible impact on them, and how to choose more secure passwords.

Considerations

- Multiple forest considerations
- Read-only domain controller considerations
- High availability considerations

Configure smart lockout thresholds

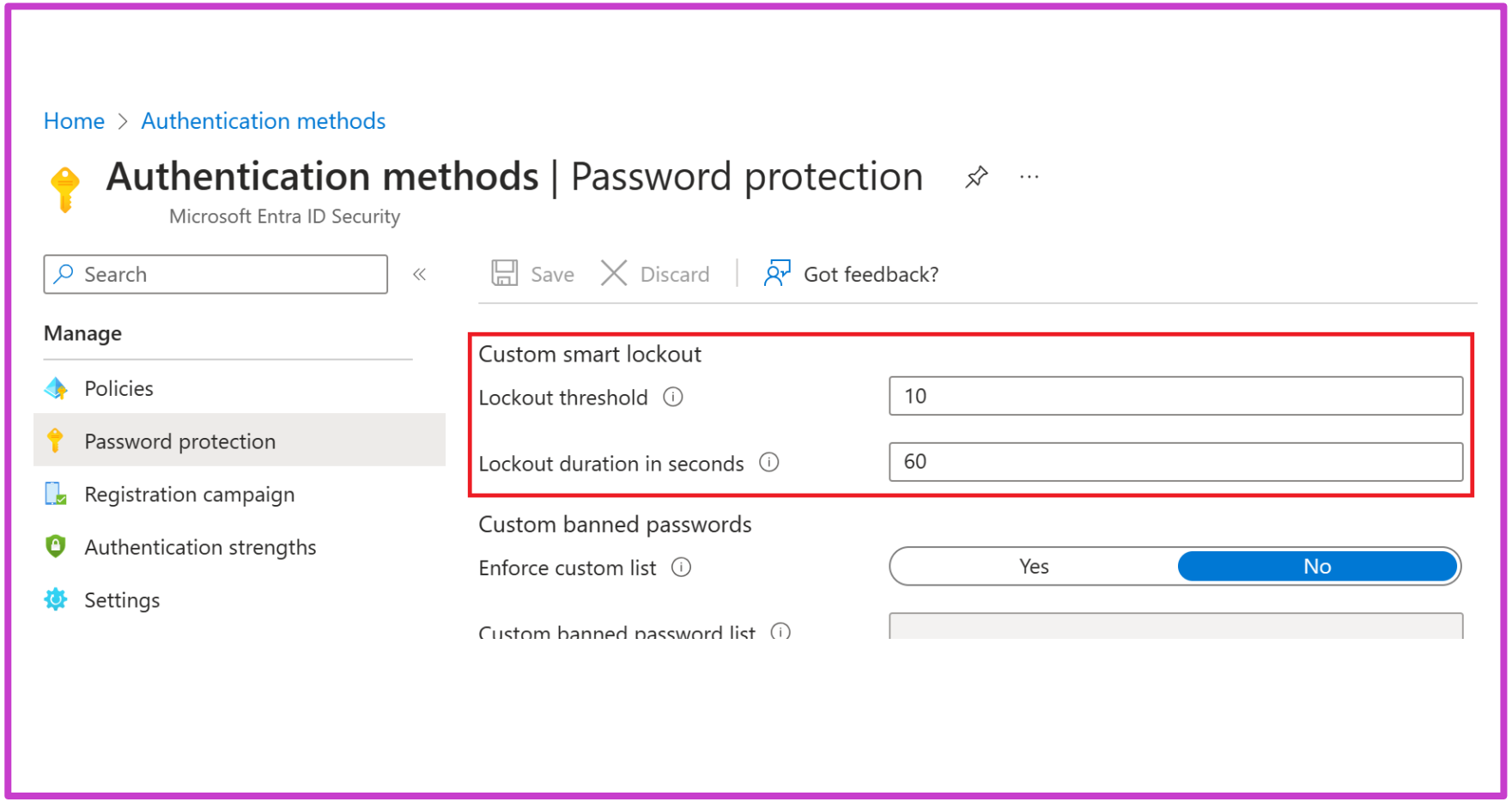
How smart lockout works

- By default, smart lockout locks the account for one minute after 10 failed attempts
- The account is locked again after subsequent attempts, for increasing periods
- Smart lockout is always on for all Microsoft Entra ID customers
- The default configuration can be customized
- Smart lockout doesn’t guarantee that a genuine user is never locked out, but it is tailored to resisting bad actors
- Smart lockout can be integrated with hybrid deployments

Exercise—manage Microsoft Entra smart lockout values

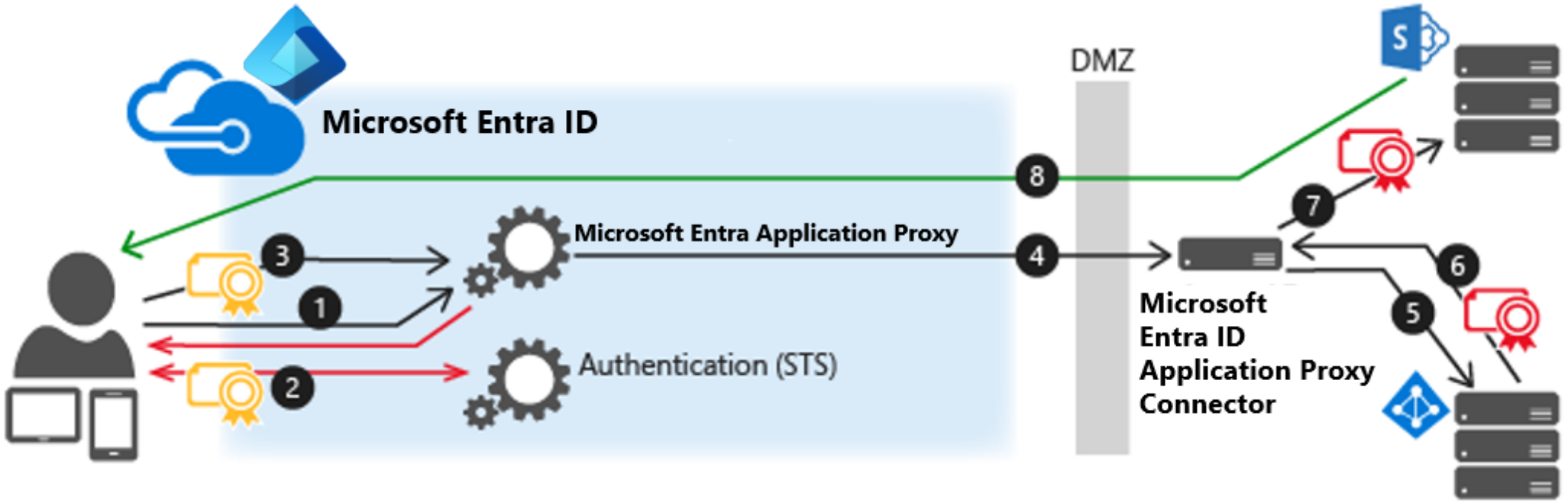
This exercise teaches students to customize the Microsoft Entra smart lockout values.

[Launch this Exercise in GitHub]



Kerberos in Microsoft Entra ID

Configure Kerberos for use in Microsoft Entra ID



Environment setup needed:

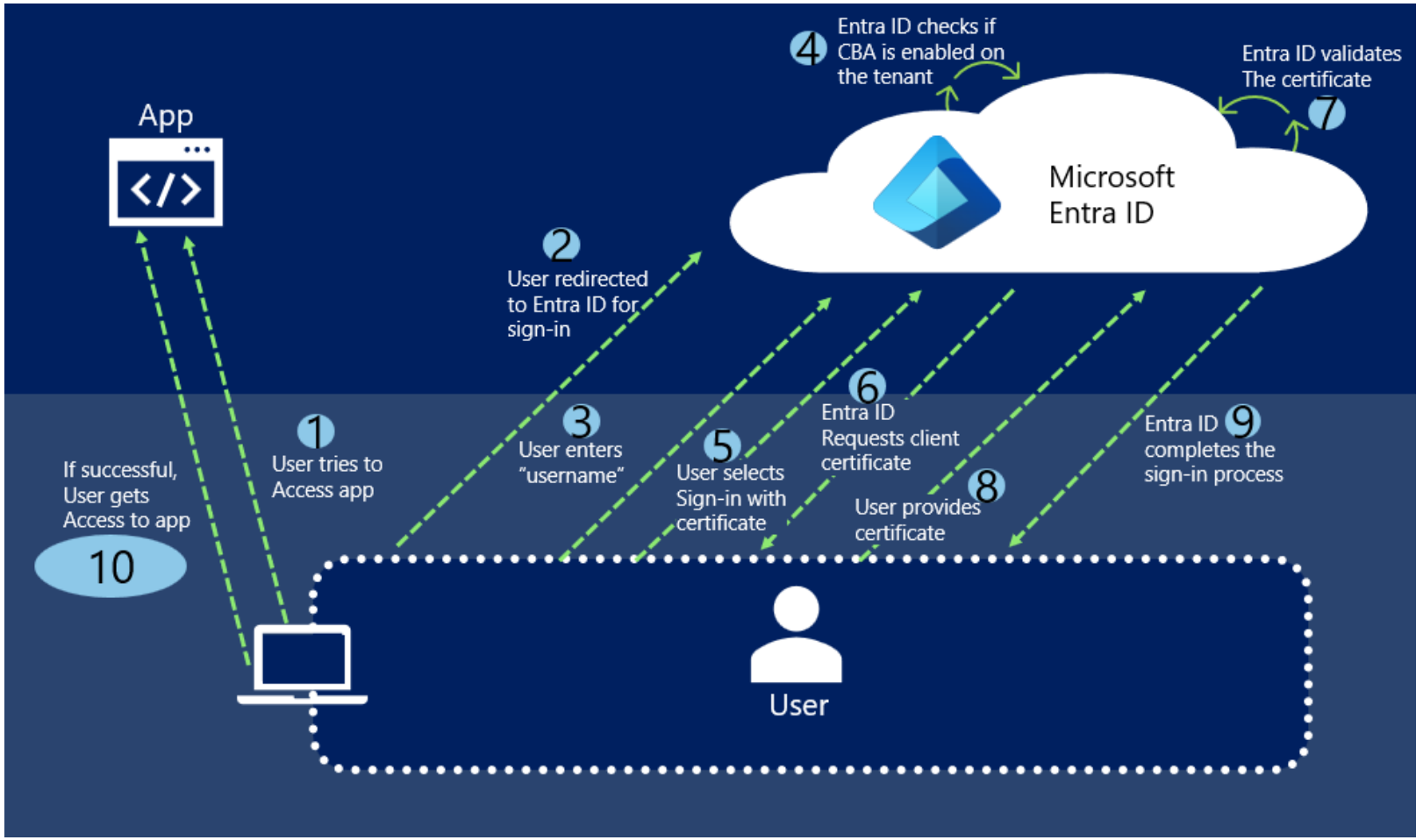
- Integrated Windows Authentication enabled on web apps
- All apps must have a service principal
- Server running the Kerberos connector must be in domain joined

Certificate-based authentication

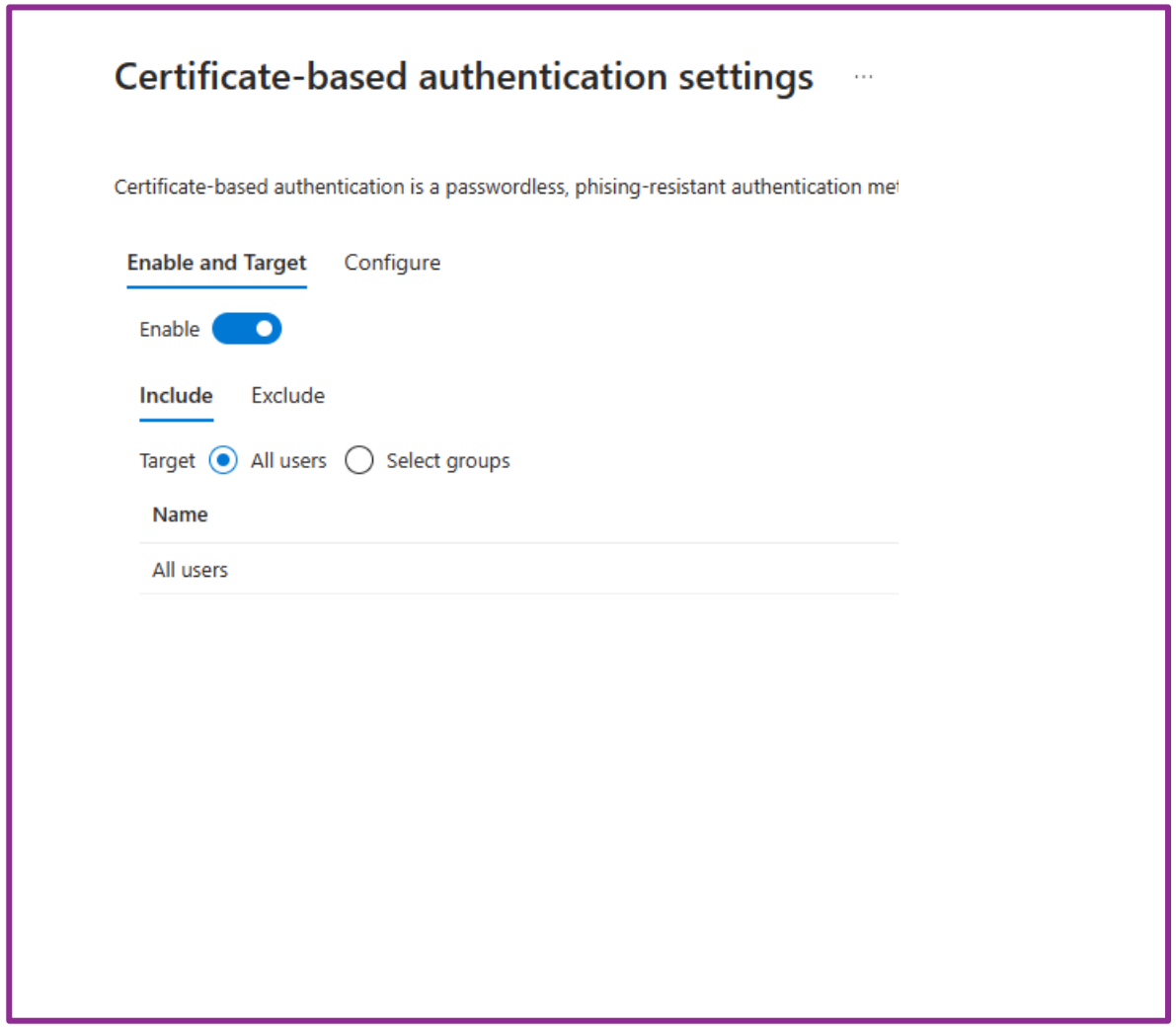
Implement certificate-based authentication in Microsoft Entra ID

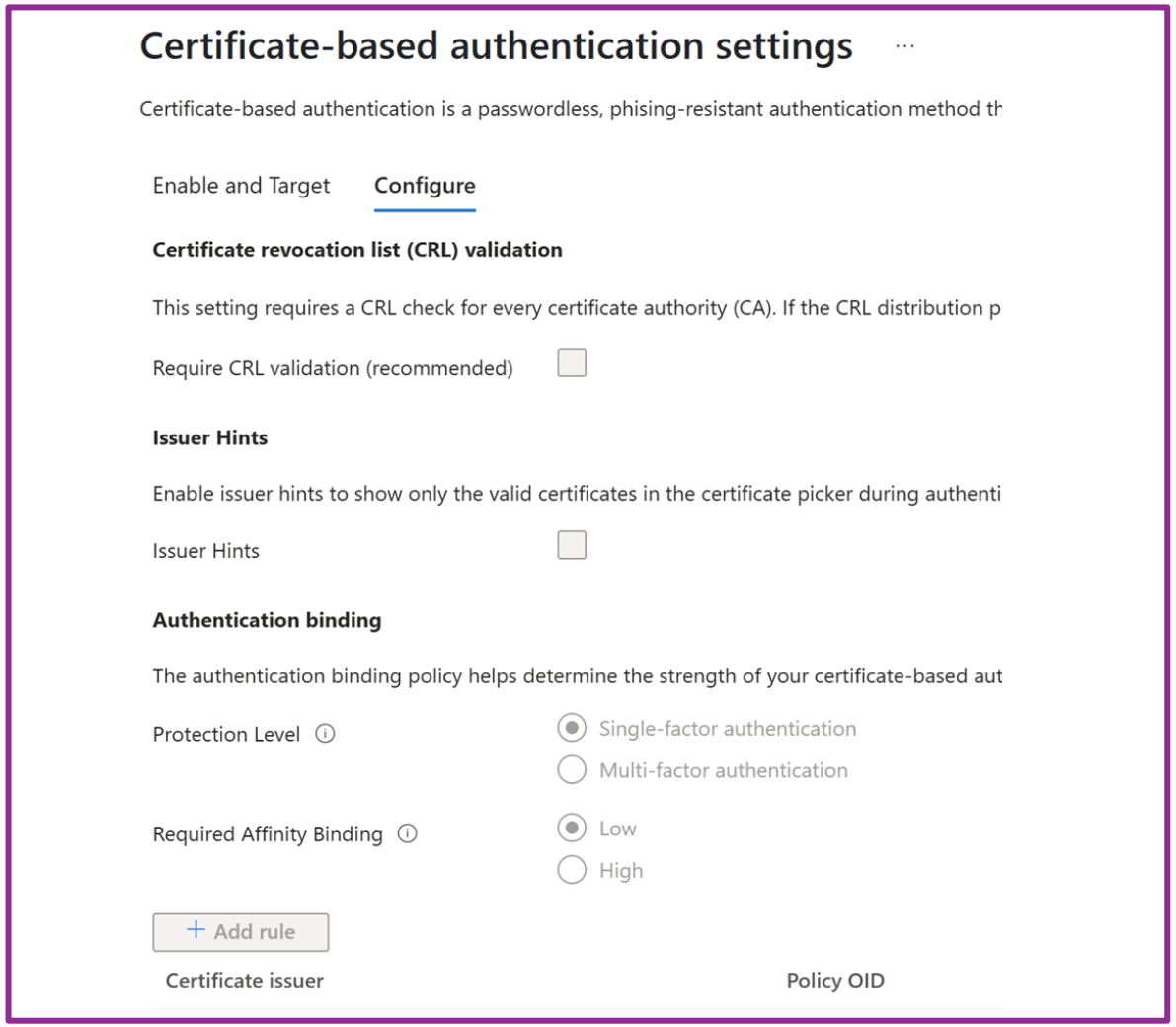
The following scenarios are supported:

- User sign-ins to web browser-based applications on all platforms.
- User sign-ins on mobile native browsers.
- Support for granular authentication rules for multifactor authentication by using the certificate issuer **Subject** and **policy OIDs.**
- Configuring certificate-to-user account bindings by using the certificate Subject Alternate Name (SAN) principal name and SAN RFC822 name.



Enable certificate-based authentication





Microsoft Entra ID user authentication for VMs

Benefits of Microsoft Entra ID user authentication in VMs

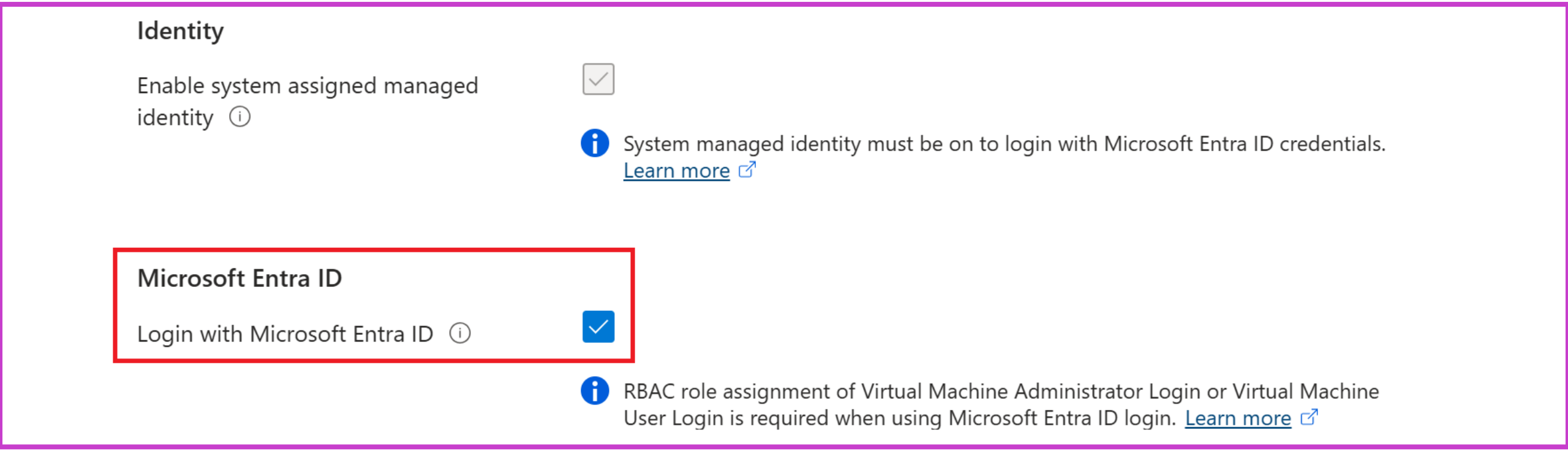
Benefits:

- Use Microsoft Entra credentials to sign in to Windows VMs in Azure.
- Reduce reliance on local administrator accounts.
- Password complexity and password lifetime policies configured for your Microsoft Entra ID.
- Configure Conditional Access policies to require multifactor authentication and other signals such as risky user or sign-in risk.

Supported operation systems:

- Windows Server 2019 Datacenter edition and later.
- Windows 10 1809 and later.
- Windows 11.
- Linux virtual machine.

Configure Windows VMs



To use Microsoft Entra sign-in for Windows VM in Azure, you must:

- First enable the Microsoft Entra sign-in option for your Windows VM.
- Then configure Azure role assignments for users who are authorized to sign into the VM.

Configure Microsoft Entra ID sign-in for Linux VMs

You can enable Microsoft Entra ID sign-in for any of the supported Linux distributions mentioned using the Azure portal. As an example, to create an Ubuntu Server 22.04 Long Term Support (LTS) VM in Azure with Microsoft Entra ID authentication:

1. Sign into the Azure portal, with an account that has access to create VMs, and select **+ Create** a resource.
2. Select **Create** under Ubuntu Server 18.04 LTS in the Popular view.
3. On the **Management** tab, Check the box to enable **Login with Microsoft Entra ID.**
4. Ensure **System assigned managed identity** is checked.
5. Complete the Linux virtual machine setup.

References (1 of 2)

Enable combined security information registration in Microsoft Entra ID

https://learn.microsoft.com/azure/active-directory/authentication/howto-registration-mfa-sspr-combined

Create a resilient access control management strategy with Microsoft Entra ID

https://learn.microsoft.com/azure/active-directory/authentication/concept-resilient-controls

Microsoft Entra authentication methods API overview

https://learn.microsoft.com/graph/api/resources/authenticationmethods-overview

Windows Hello for Business overview

https://learn.microsoft.com/windows/security/identity-protection/hello-for-business/hello-overview

Authentication methods in Microsoft Entra ID—Microsoft Authenticator app

https://learn.microsoft.com/azure/active-directory/authentication/concept-authentication-authenticator-app

Passwordless authentication options for Microsoft Entra ID

https://learn.microsoft.com/azure/active-directory/authentication/concept-authentication-passwordless

References (2 of 2)

Authentication methods in Microsoft Entra ID—OATH tokens
https://learn.microsoft.com/azure/active-directory/authentication/concept-authentication-oath-tokens

Configure and enable users for SMS-based authentication using Microsoft Entra ID
https://learn.microsoft.com/azure/active-directory/authentication/howto-authentication-sms-signin

Authentication methods in Microsoft Entra ID—phone options
https://learn.microsoft.com/azure/active-directory/authentication/concept-authentication-phone-options

Enforce on-premises Microsoft Entra password protection for Active Directory Domain Services
https://learn.microsoft.com/azure/active-directory/authentication/concept-password-ban-bad-on-premises

Enable on-premises Microsoft Entra password protection
https://learn.microsoft.com/azure/active-directory/authentication/howto-password-ban-bad-on-premises-operations

Step-by-step: Implementing Microsoft Entra password protection on-premises
https://techcommunity.microsoft.com/t5/itops-talk-blog/step-by-step-implementing-azure-ad-password-protection-on/ba-p/563342

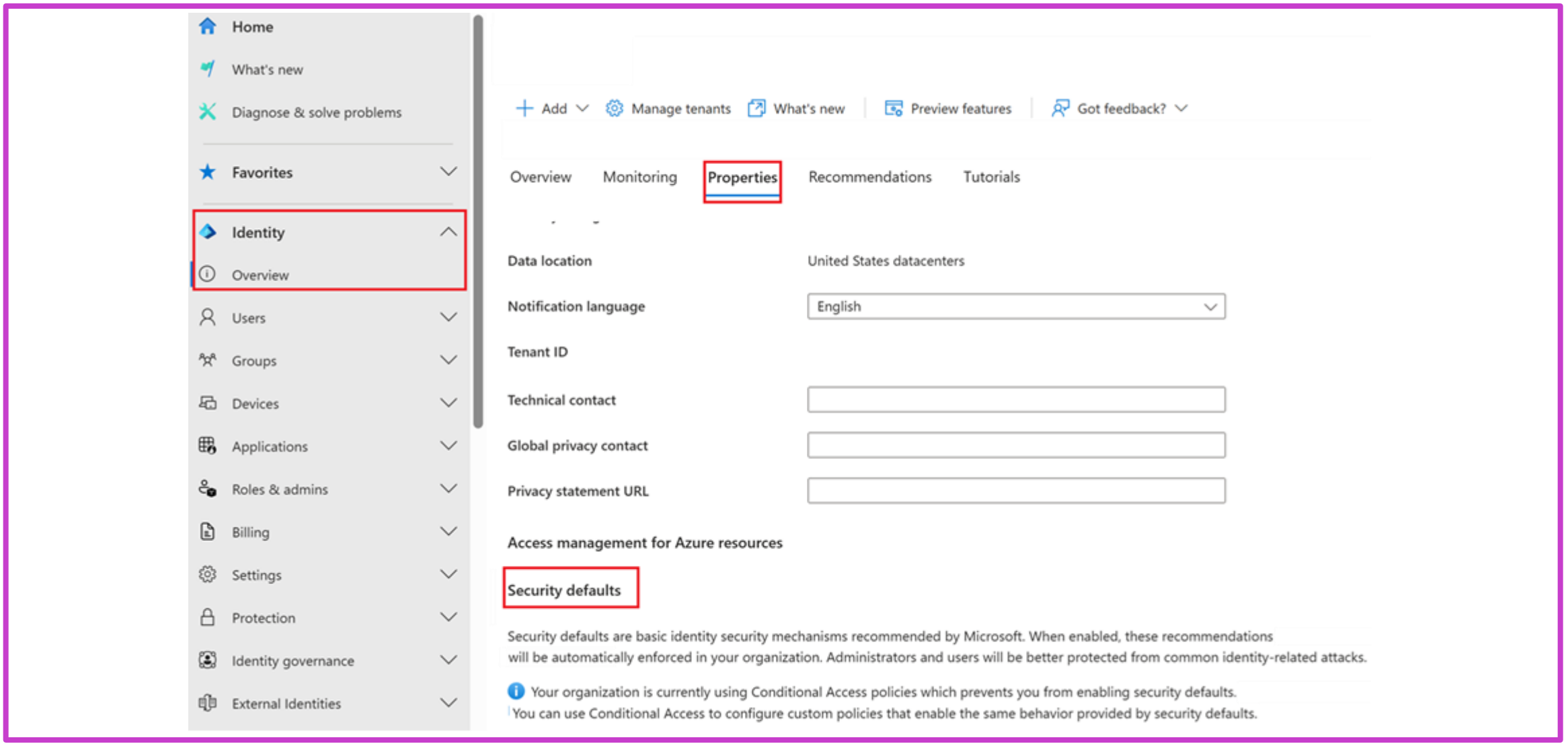
Plan, implement, and administer Conditional Access

Objectives

1. Plan and implement security defaults
2. Plan Conditional Access policies
3. Implement conditional access policy controls and assignments (targeting, applications, and conditions)
4. Template-based conditional access
5. Test and troubleshoot conditional access policies
6. Implement application controls and session management
7. Continuous Access Evaluation
8. Authentication context

Explore security defaults

Security defaults



Who's it for?

Who should use security defaults?

- Organizations that want to increase their security posture but don't know how or where to start
- Organizations utilizing the free tier of Microsoft Entra ID

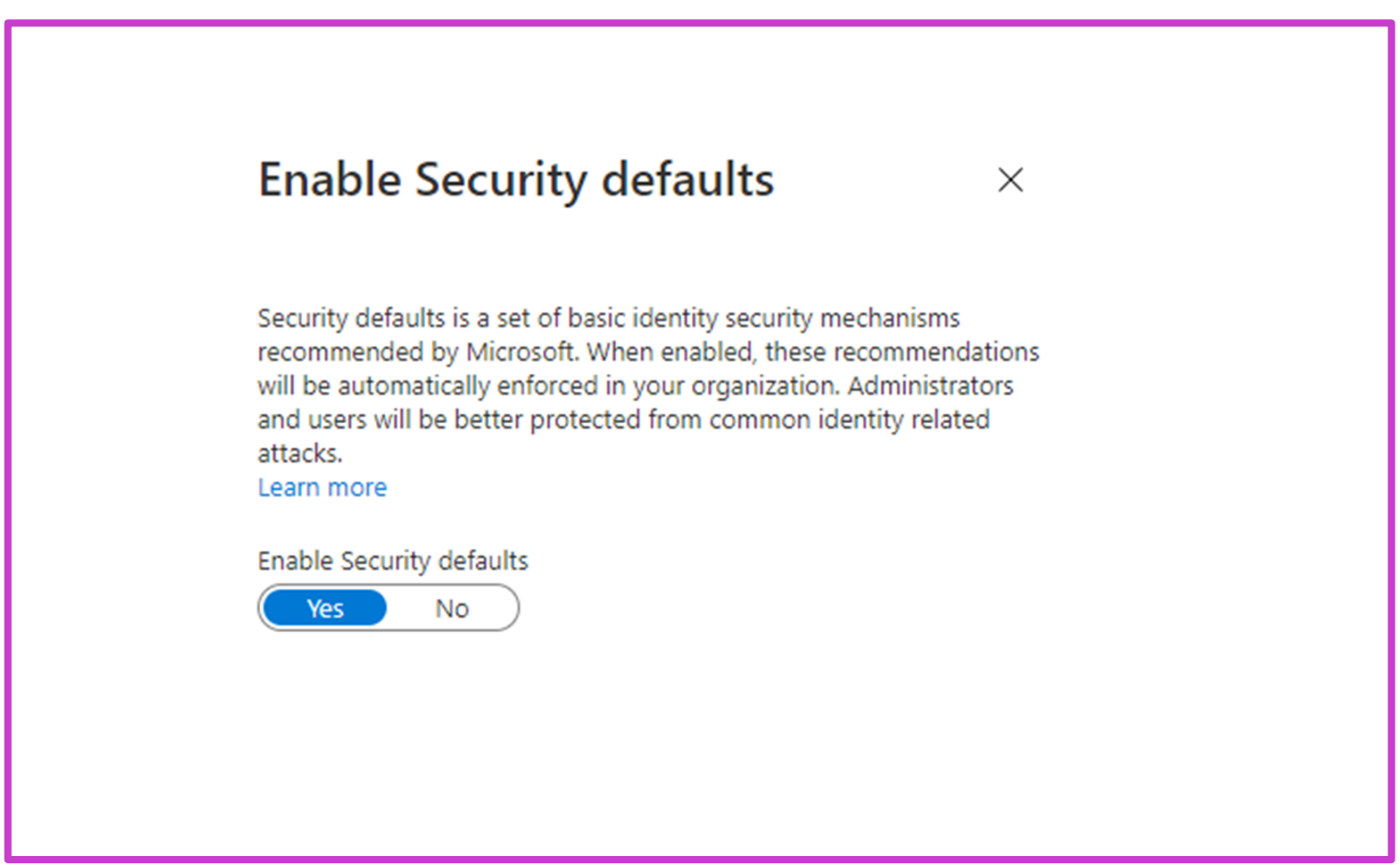
Who shouldn't use security defaults?

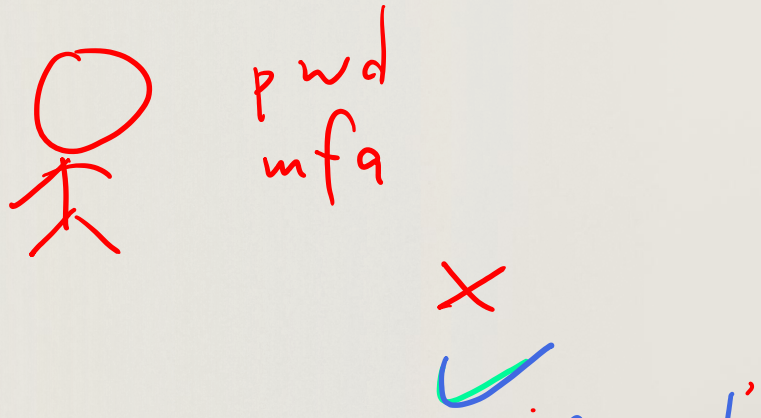
- Organizations currently using Conditional Access policies to bring signals together, make decisions, and enforce organizational policies
- Organizations with Microsoft Entra ID Premium licenses
- Organizations with complex security requirements that warrant using Conditional Access

Exercise—work with security defaults

This exercise teaches the student how to enable security defaults in Microsoft Entra ID.

Launch this Exercise in GitHub

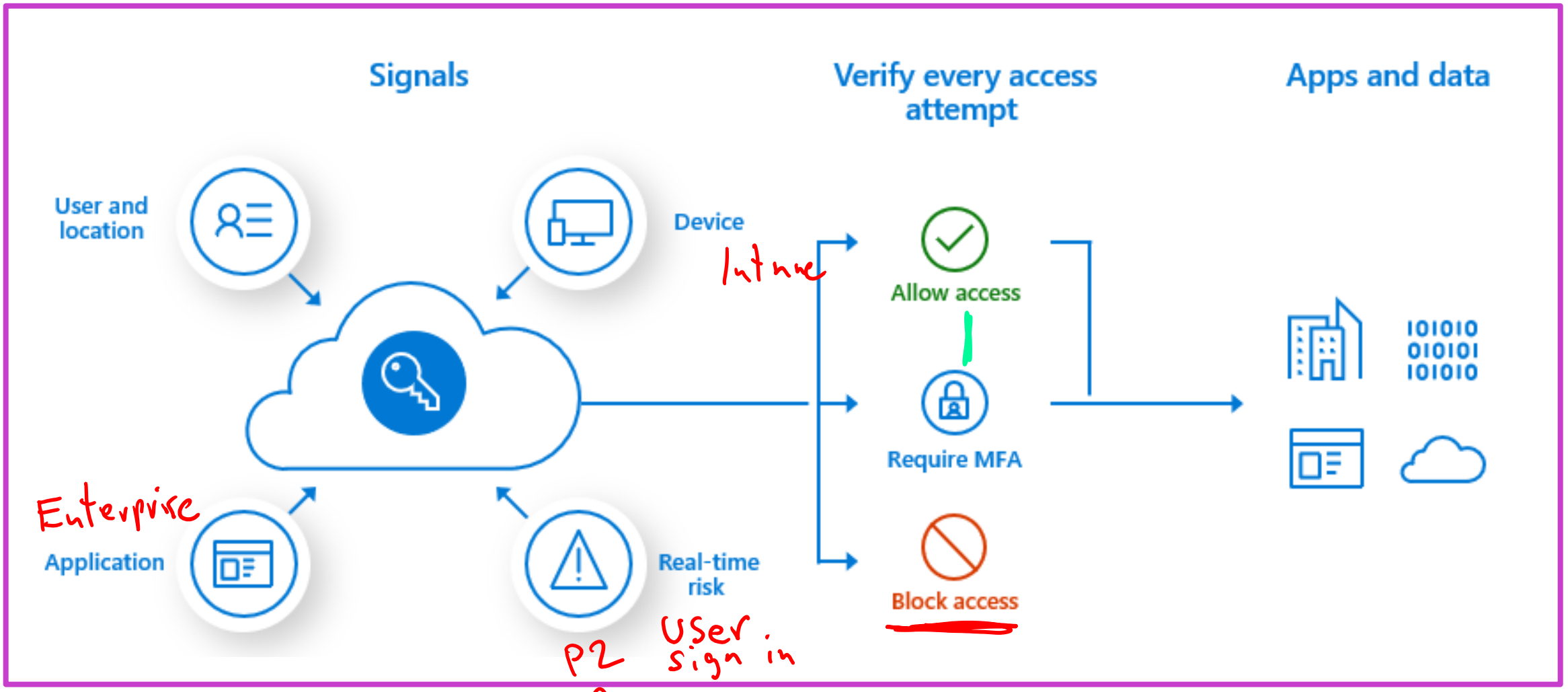




Plan Conditional Access policies

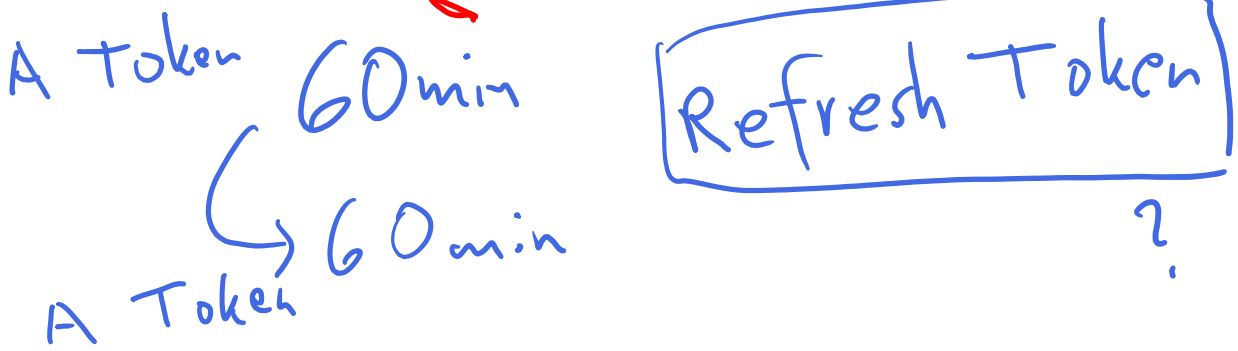
About Conditional Access policies

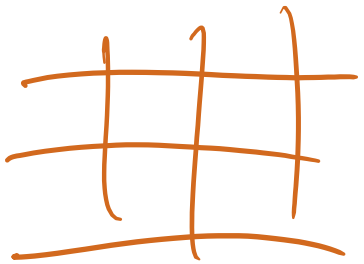
P1 C E3



Benefits of Conditional Access

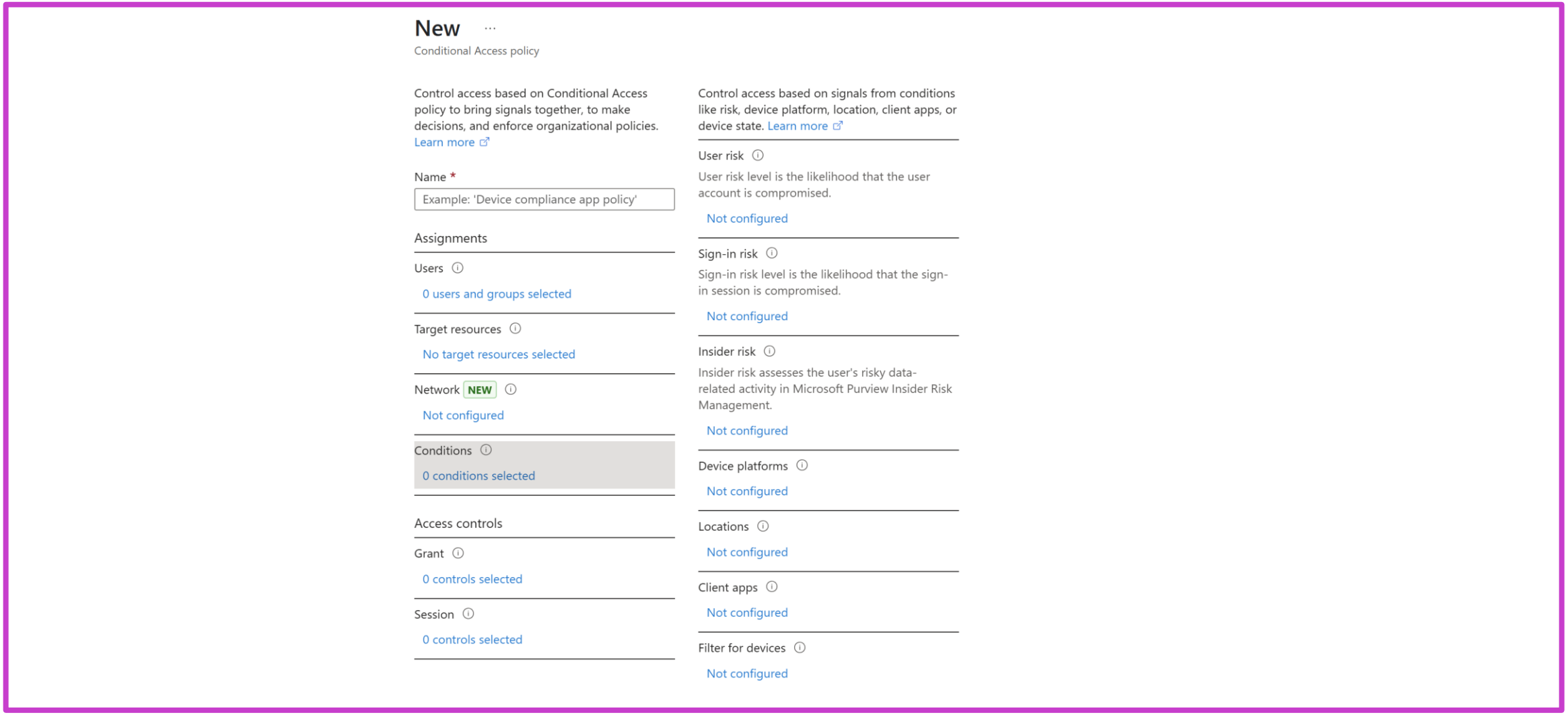
- Increase productivity
- Manage risk
- Address compliance and governance
- Manage cost
- Zero Trust



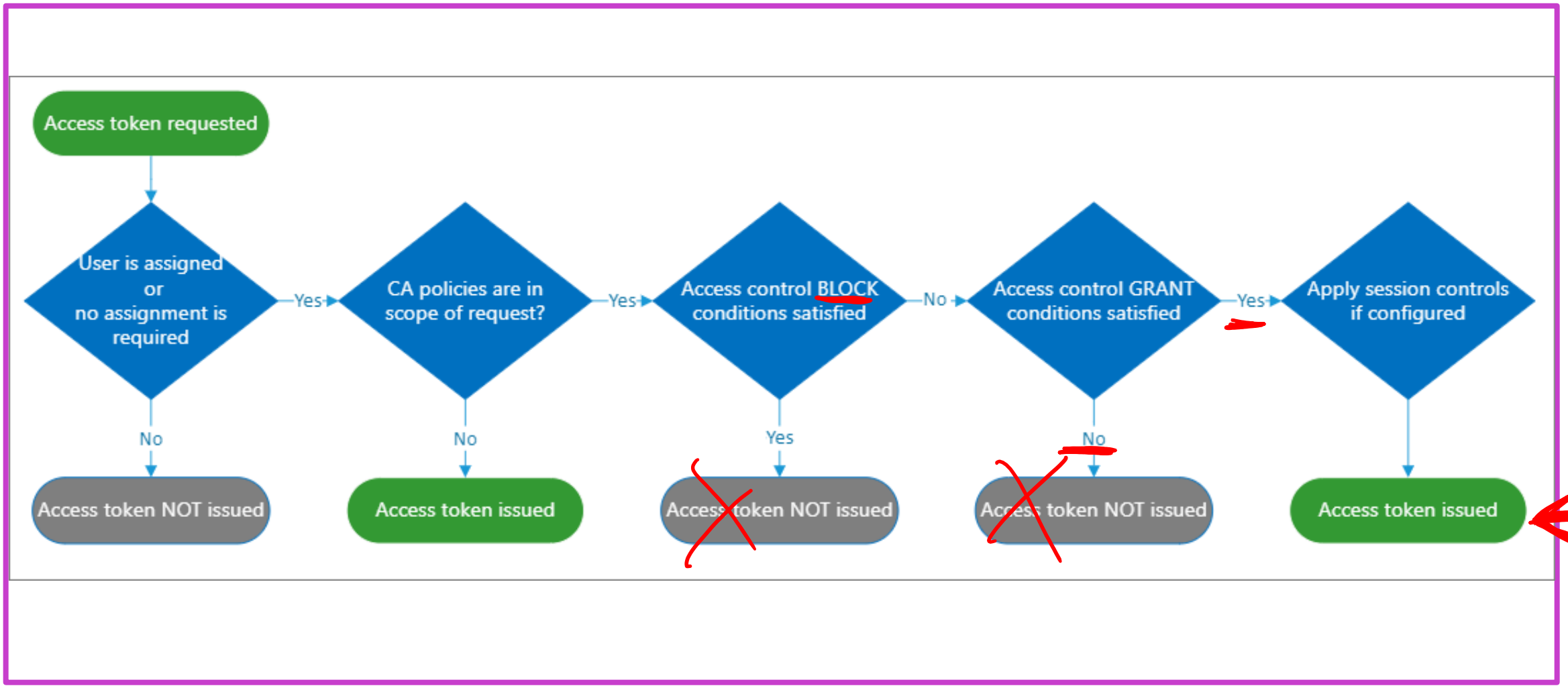


m365maps.com

Understanding Conditional Access policy components

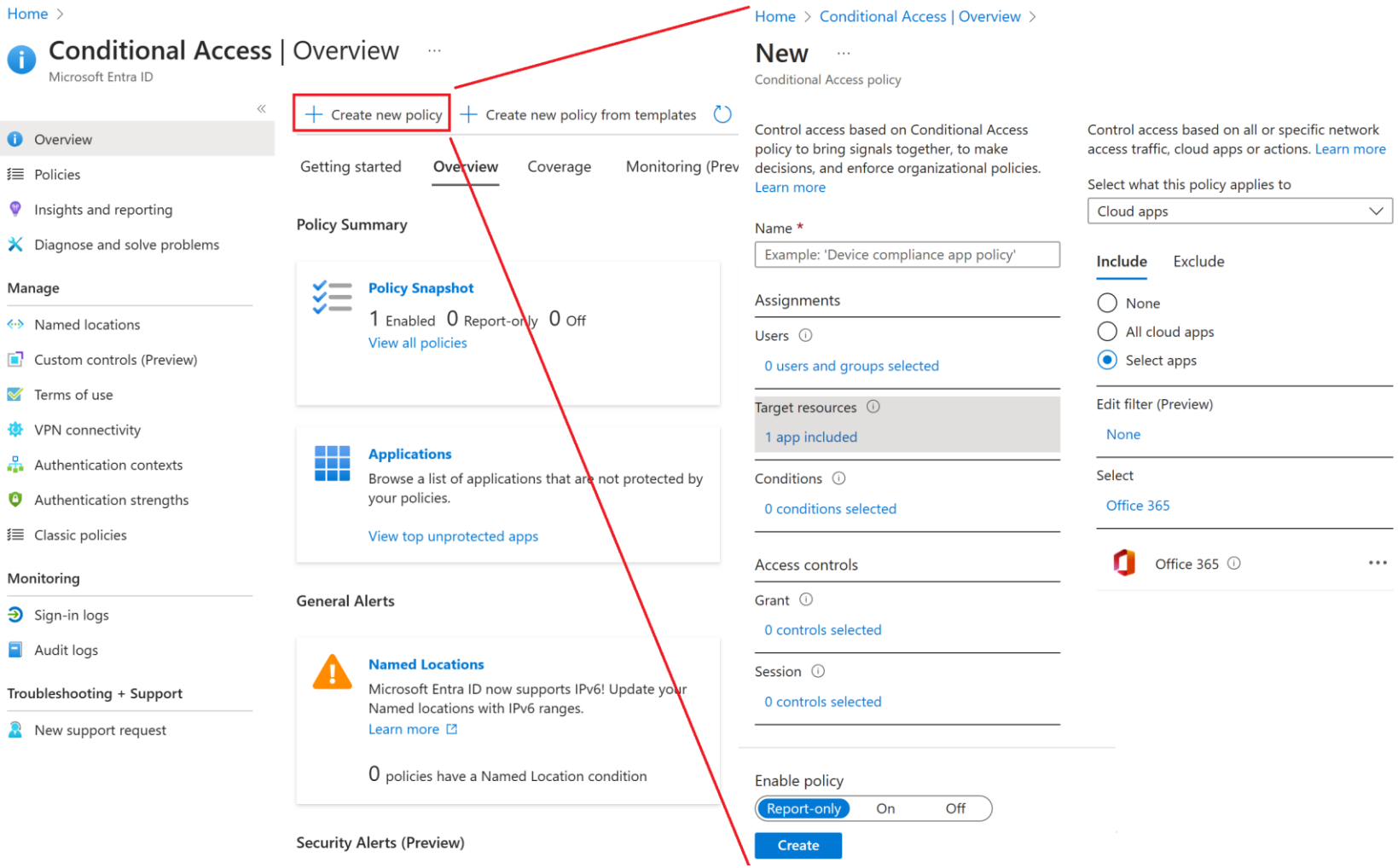


Access token issuance



Implement Conditional Access policies and assignments

Setting up Conditional Access



Grant/block access controls

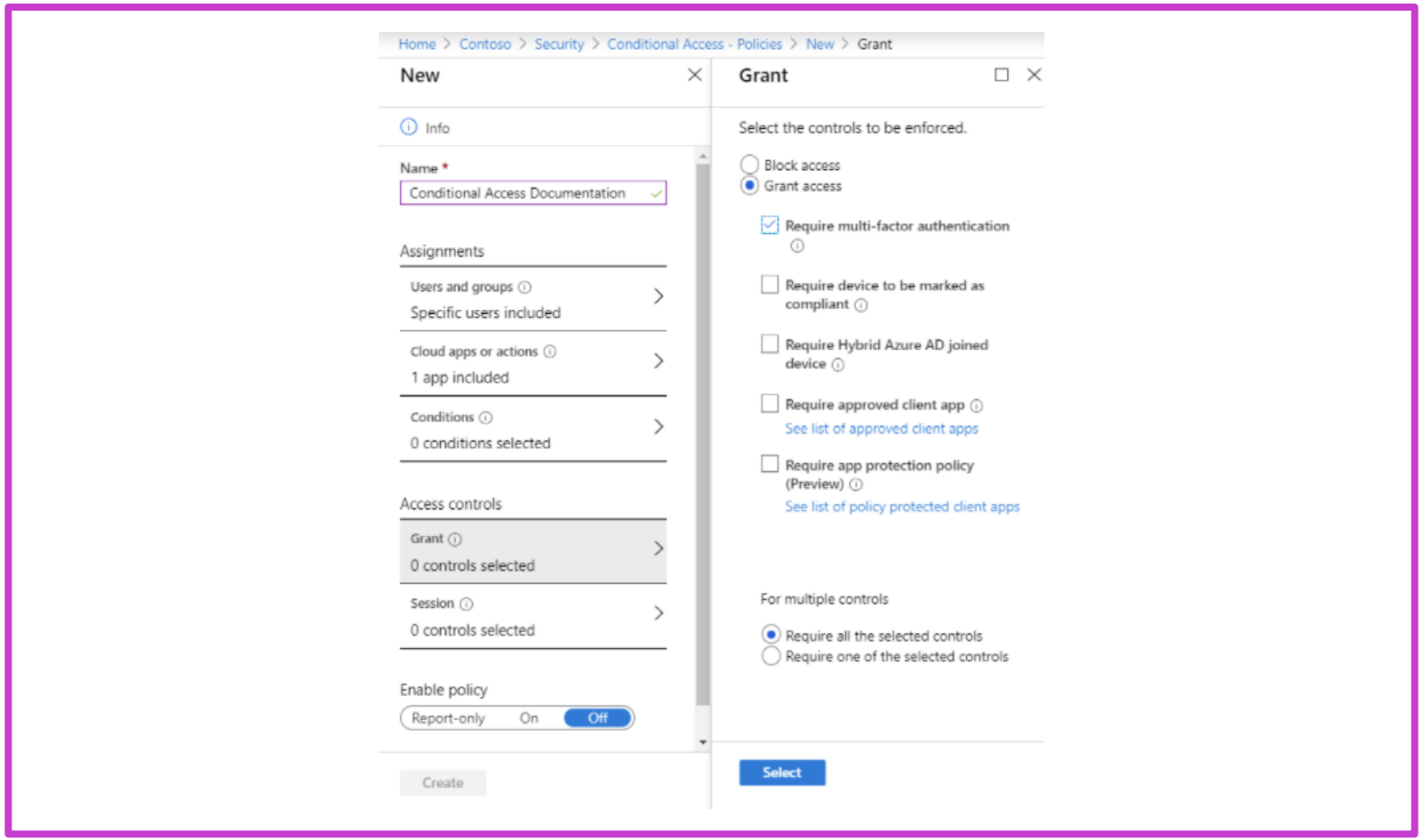
Block access

- Use carefully or you could block your system
- Always test with What-if and Report-only mode

Grant access

- Enforce several different controls before allowing access

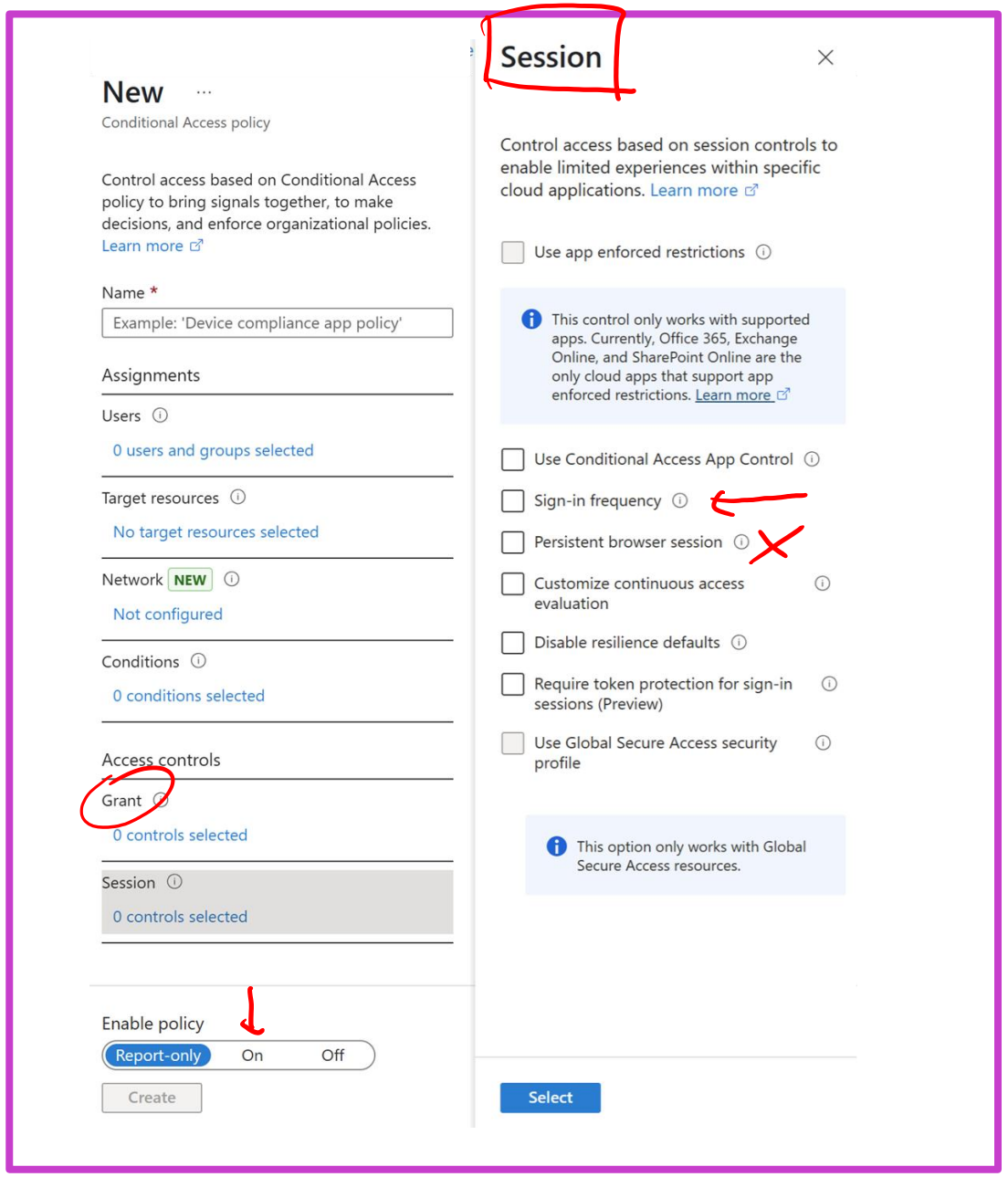
Note—require all/require one



Session access control

Limit the experience of the user/application within a specific cloud application.

Base the experience on specific conditions the user has met or failed to meet.

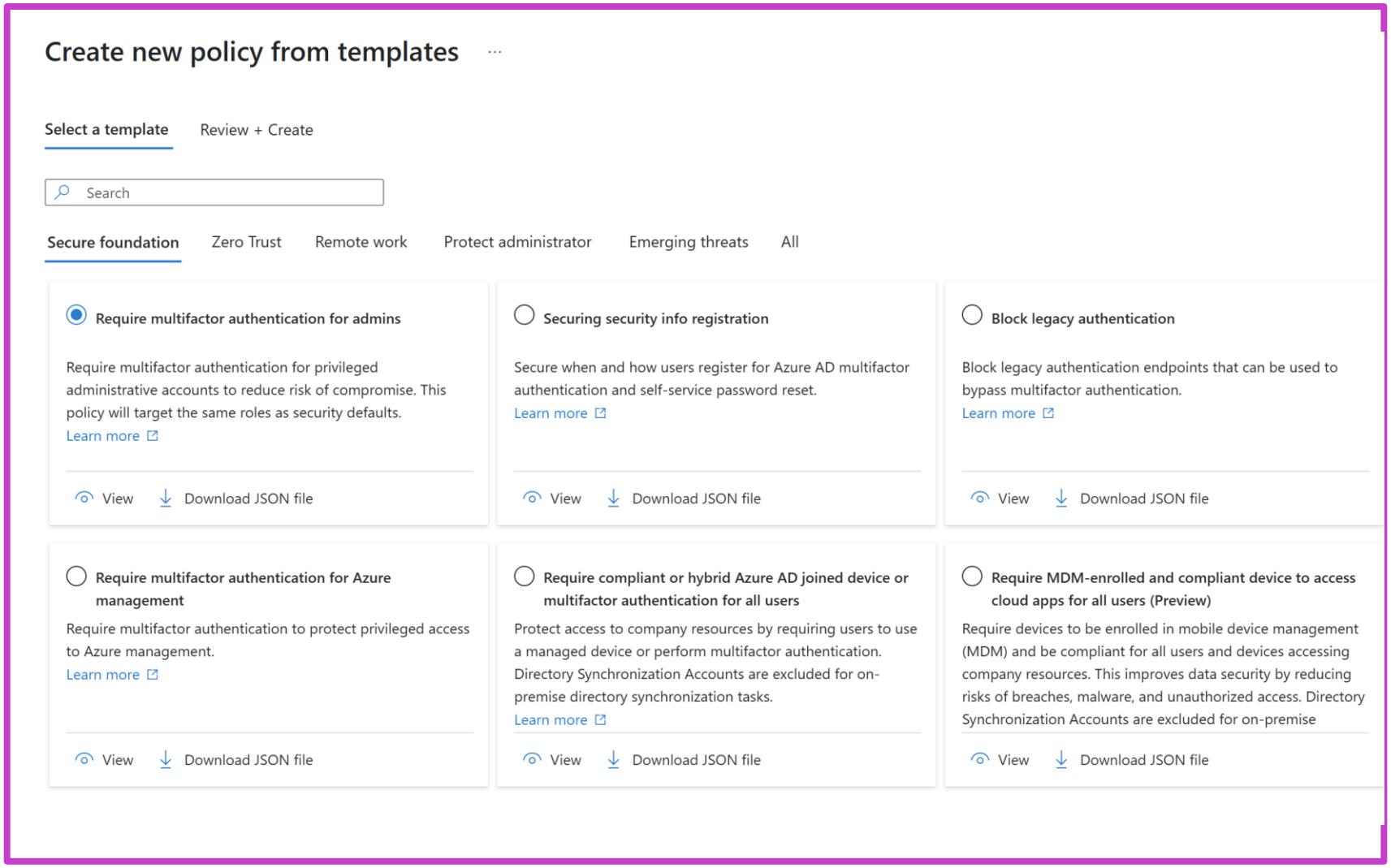


Template-based Conditional Access

Conditional Access templates

There are 14 policy templates available:

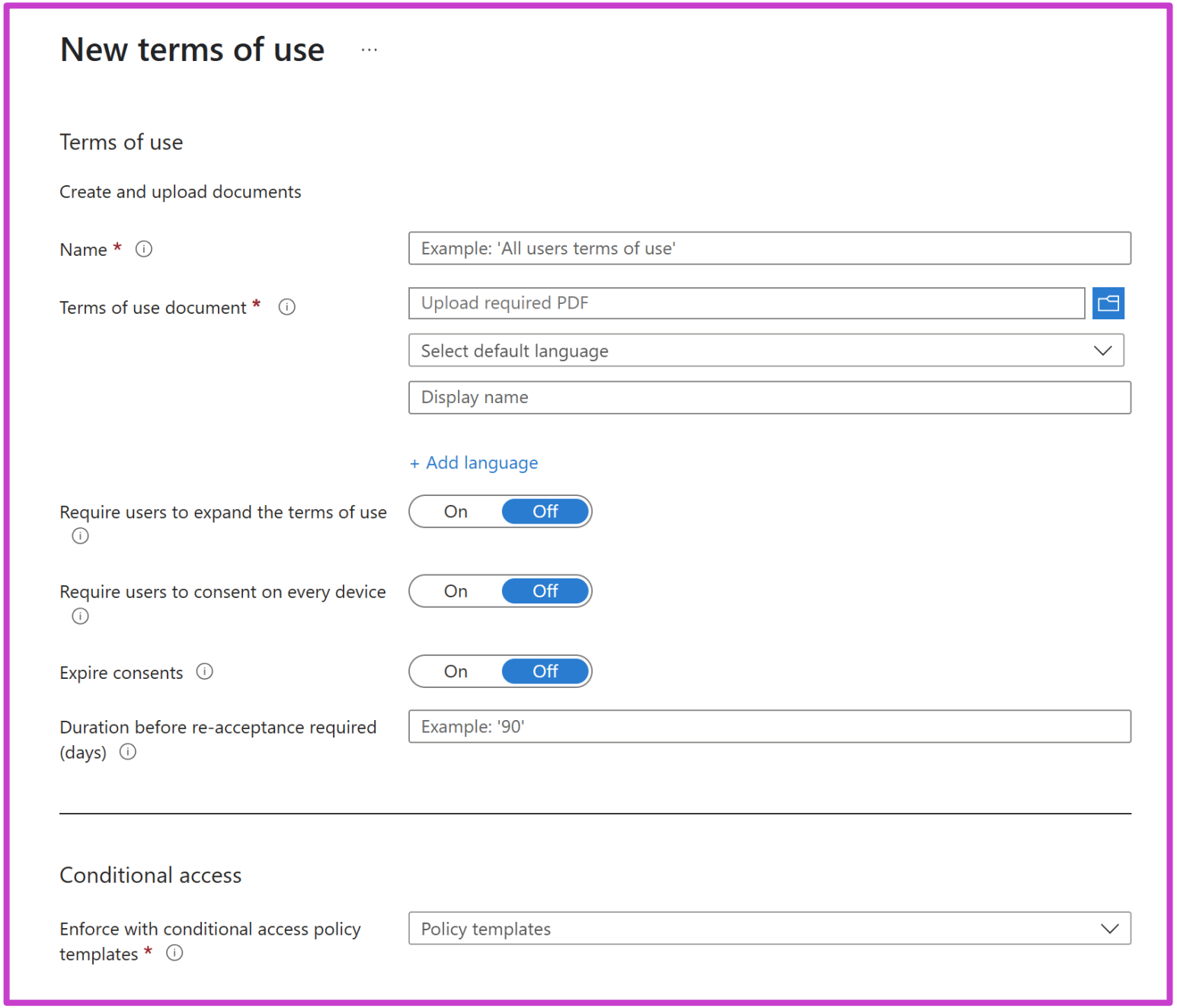
1. Open Microsoft admin center.
2. View the Identity menu.
3. Open the Protection section.
4. Choose Conditional Access.
5. Create new policy from template.



Examples of Conditional Access scenarios

- Require registration from a trusted location
- Block access by location
- Require compliant devices
- Exclude access from emergency and service accounts

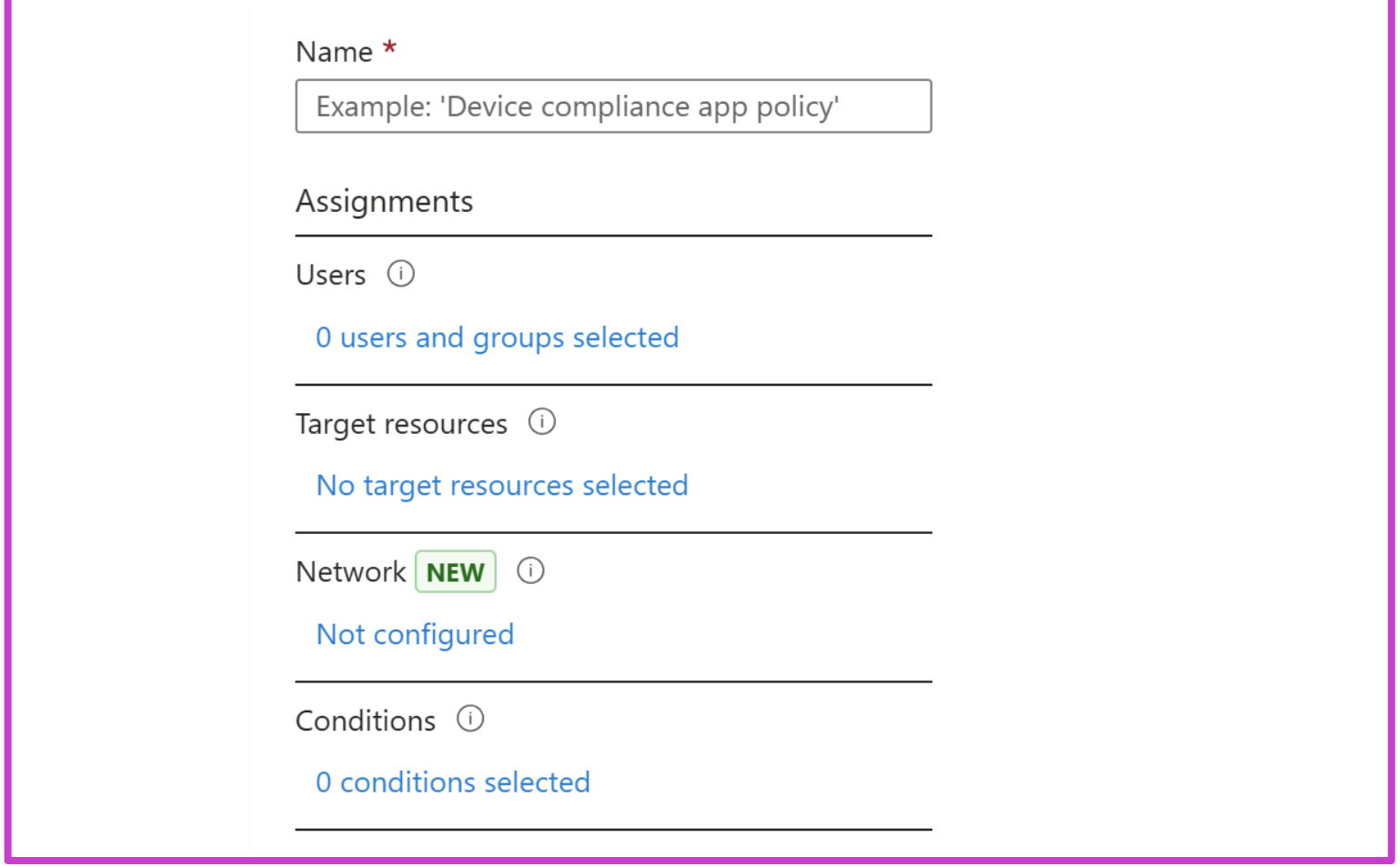
Conditional Access terms of use (TOU)



Exercise—implement conditional access policies, roles, and assignments

Microsoft Entra Conditional Access is an advanced feature of Microsoft Entra ID that allows you to specify detailed policies that control who can access your resources. This exercises teaches students how to create and test a Conditional Access policy.

[Launch this Exercise in GitHub]



Test and troubleshoot Conditional Access policies

Configurations to avoid

For all users, all cloud apps:

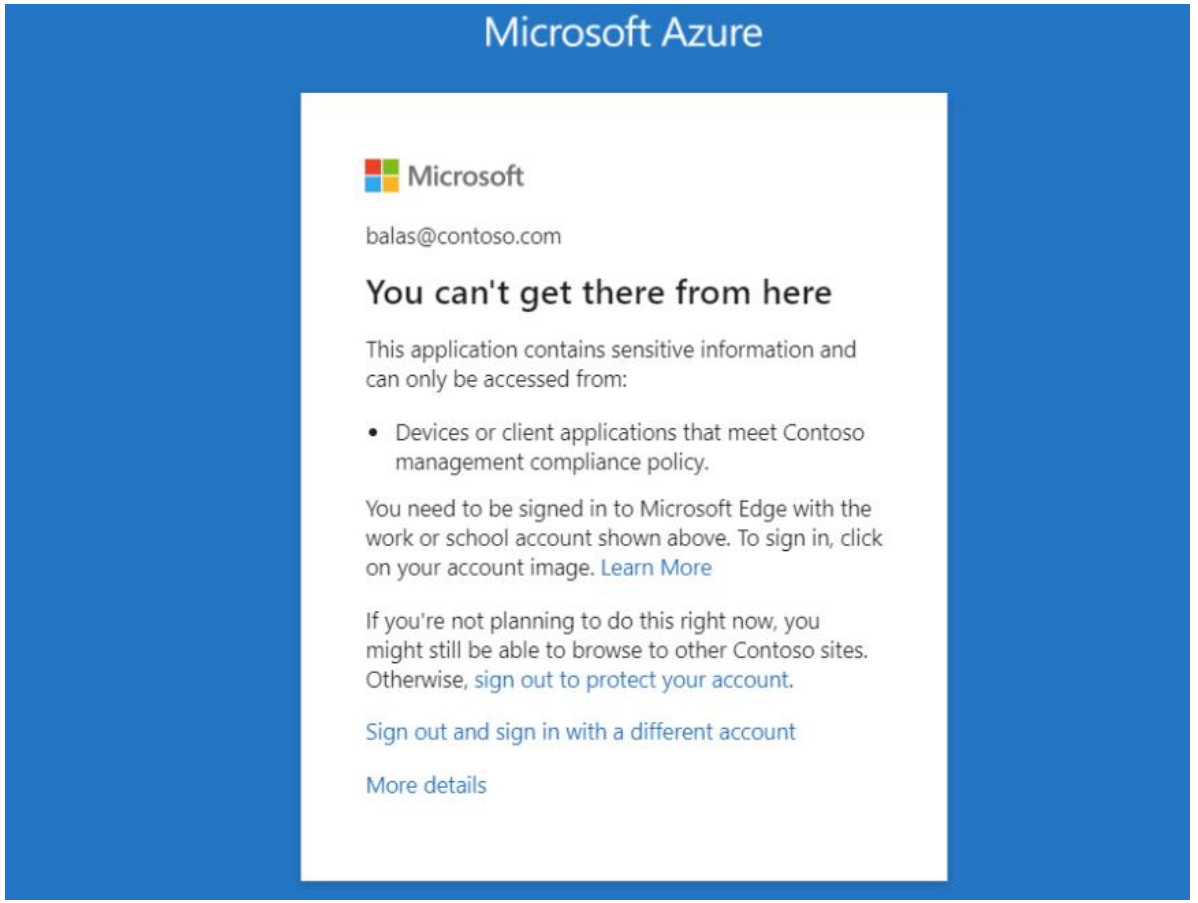
- Block access
- Require device to be marked as compliant
- Require Hybrid Microsoft Entra ID domain-joined device
- Require app protection policy

For all users, all cloud apps, all platforms:

- Block access

Troubleshooting sign-in interrupts

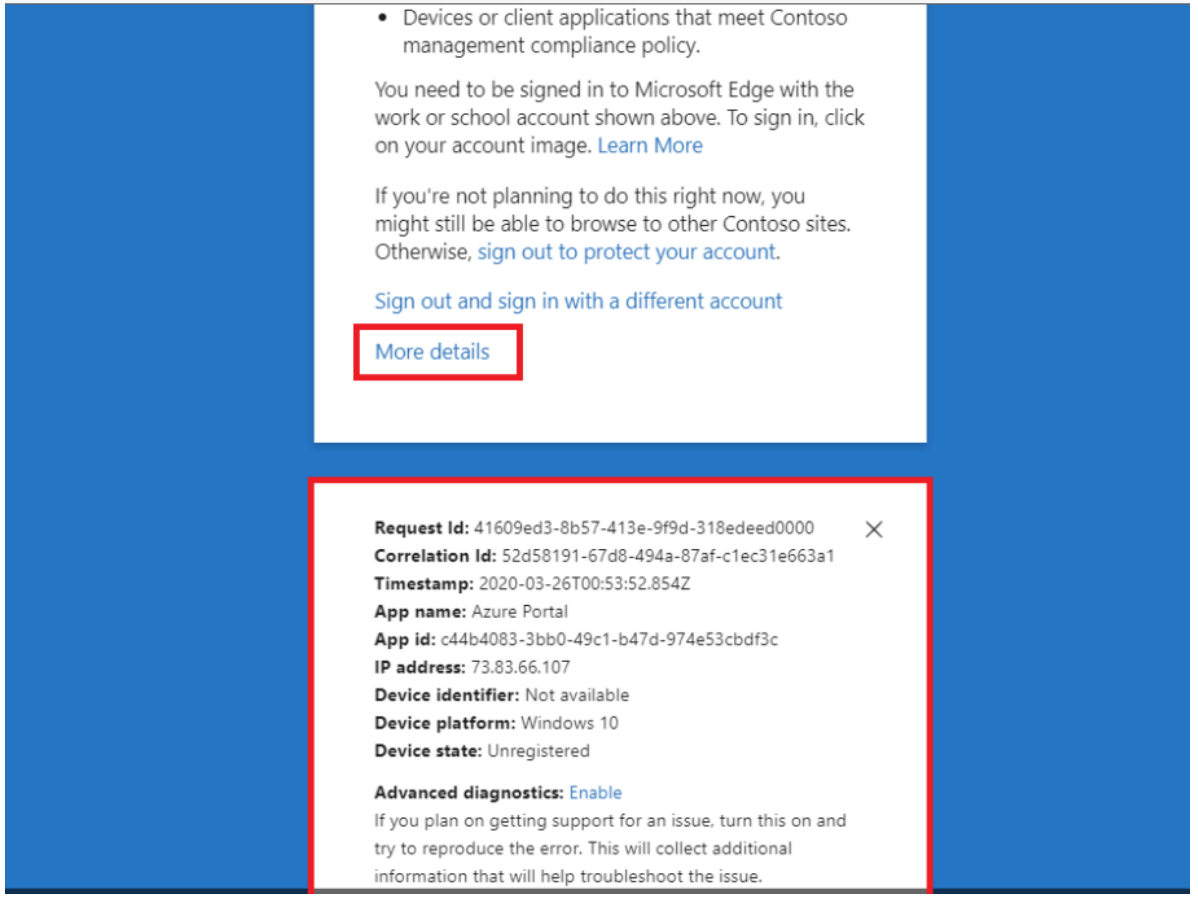
In this error, the message states that the application can only be accessed from devices or client applications that meet the company's mobile device management policy. In this case, the application and device do not meet that policy.



Troubleshooting directory sign-in events

Find more information about the problem by clicking **More Details** in the initial error page.

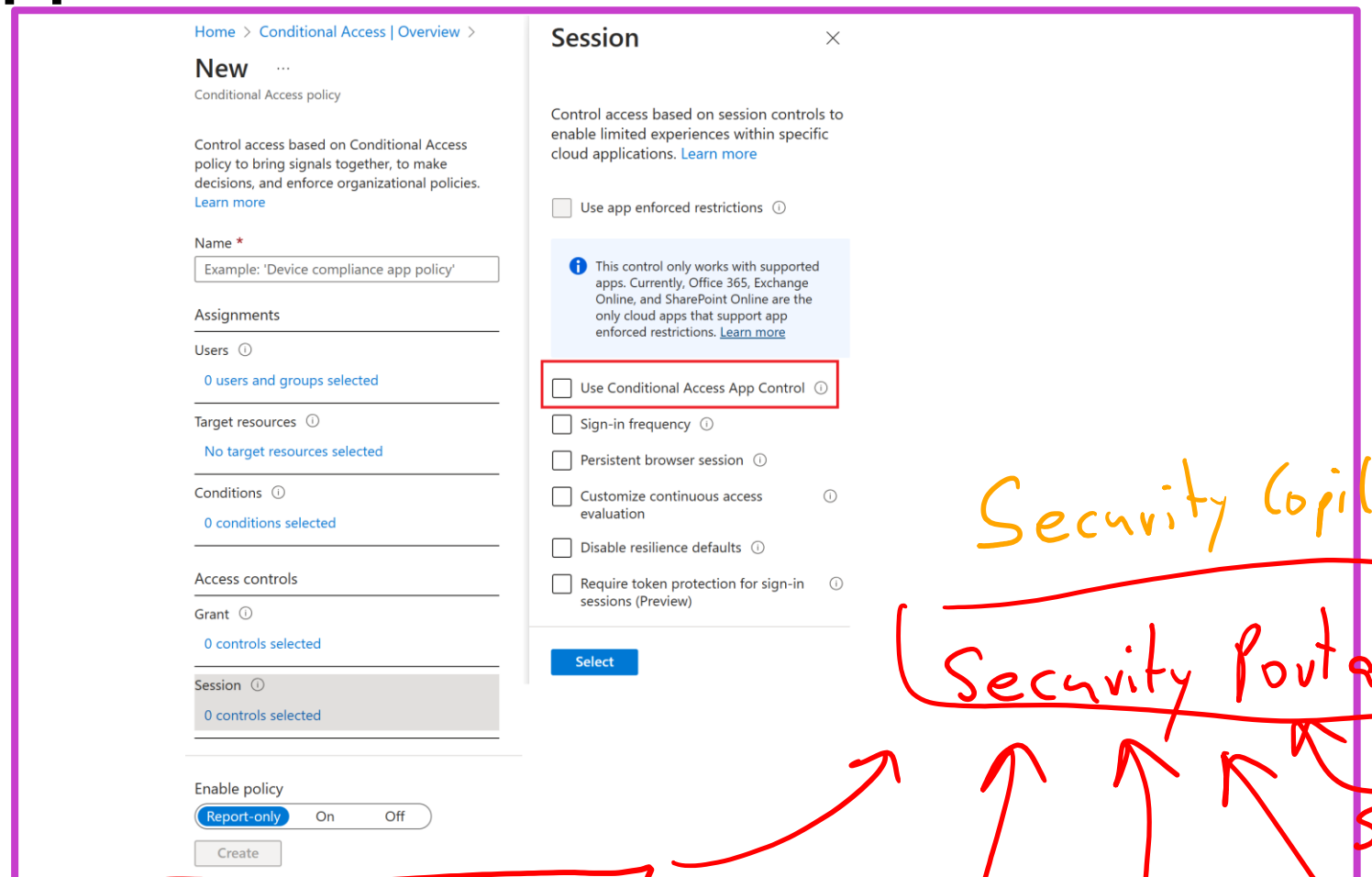
Clicking **More Details** will reveal troubleshooting information that is helpful when searching the Microsoft Entra sign-in events for the specific failure event the user saw, or when opening a support incident with Microsoft.



Implement application controls

Conditional Access App Control

- Block download, cut, copy and print
- Enforce document labeling with Azure Information Protection
- Prevent file uploads
- Monitor/log sessions for compliance
- Block app access based on risk factors



CA-App Control works with Microsoft Defender for Cloud Apps

Security Copilot

Security Portal

SIEM

Defender Cloud

Def EP

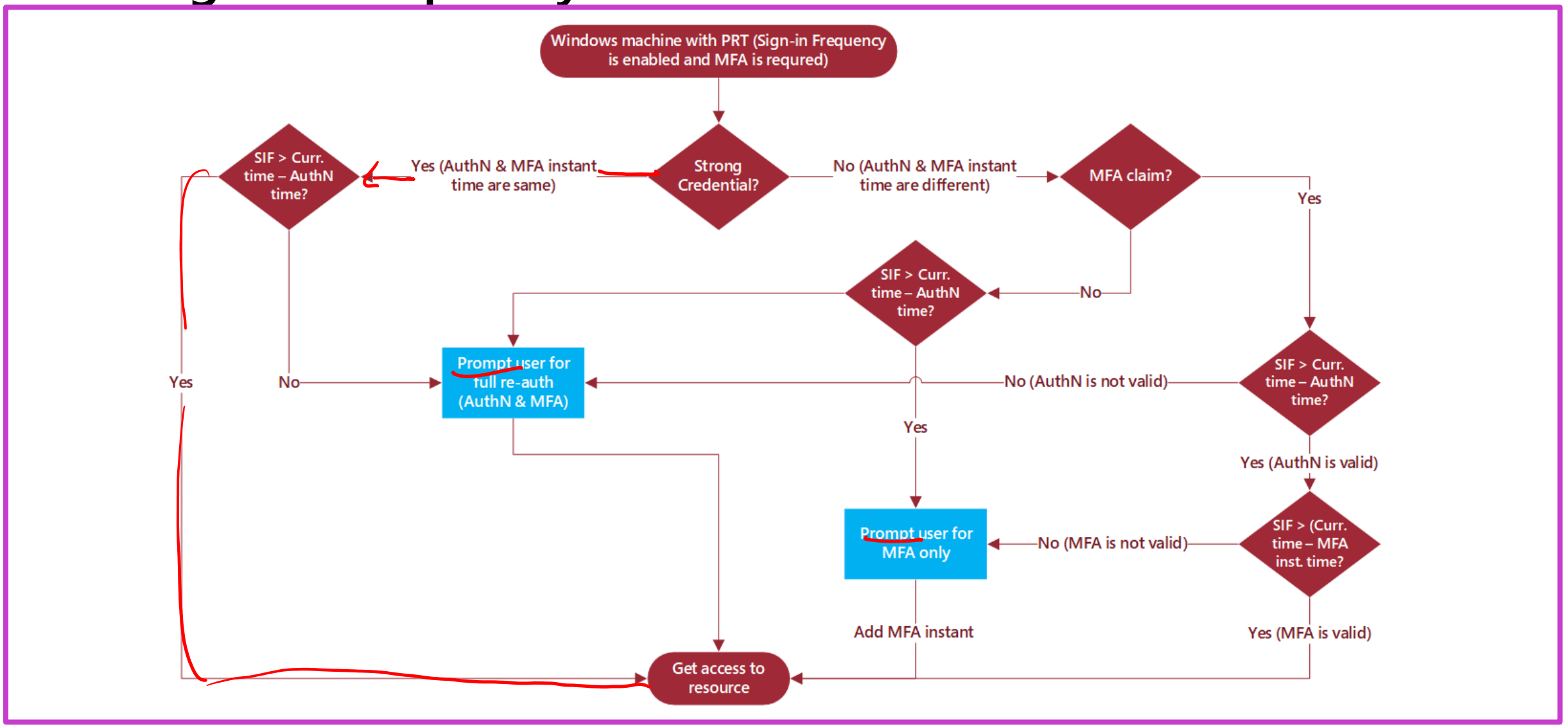
Def User

Benefits of using app protection policies (MDM/MAM)

- Protecting your company data at the app level
- End-user productivity isn’t affected, and policies don’t apply when using the app in a personal context
- App protection policies ensure that the app-layer protections are in place
- MDM, in addition to MAM, ensures that the device is protected

Implement session management

User sign-in frequency and multifactor authentication

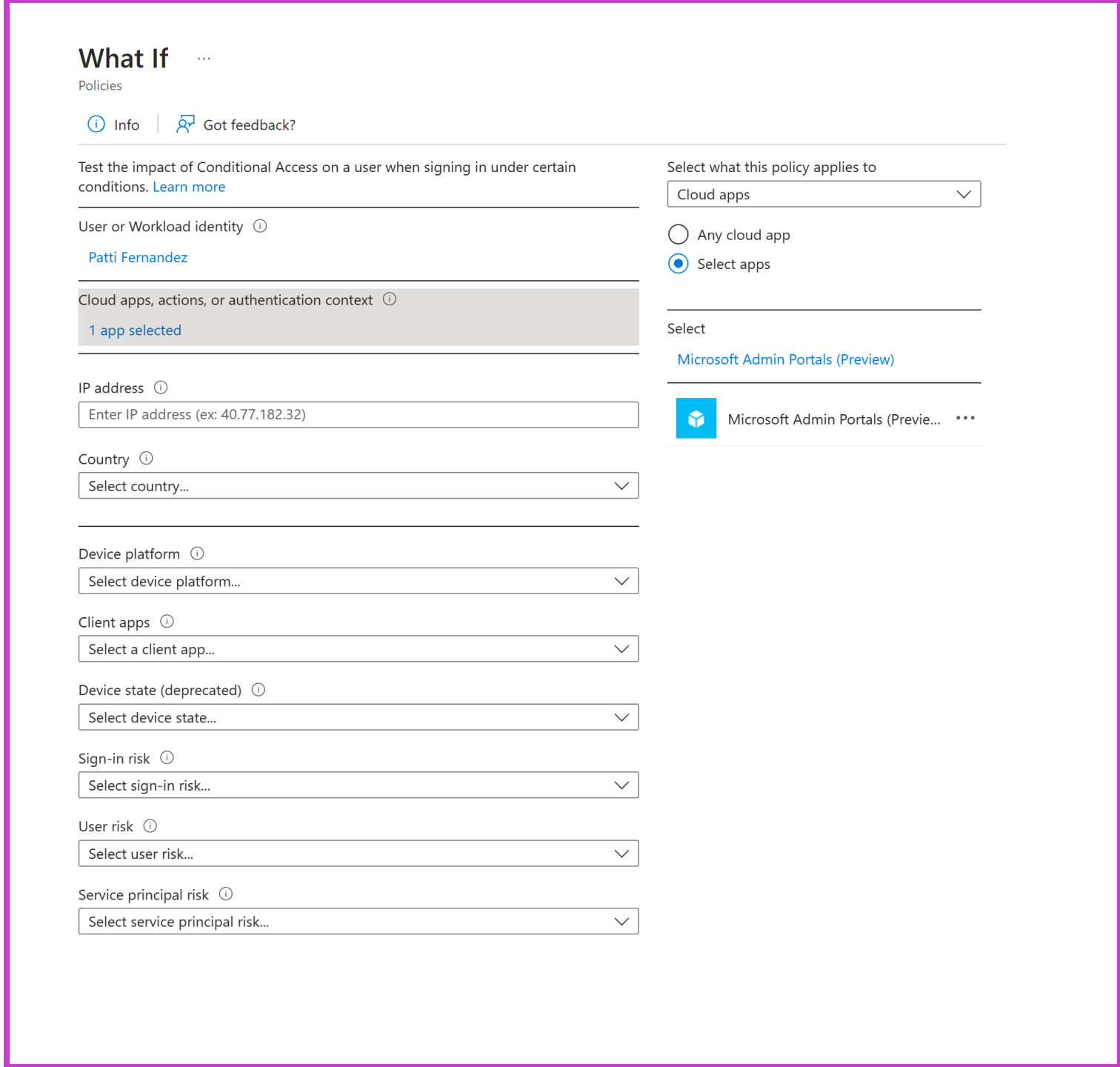


Validation

Use the What If tool:

- Simulate a login from the user to the target application
- Select other conditions based on how you configured your policy.

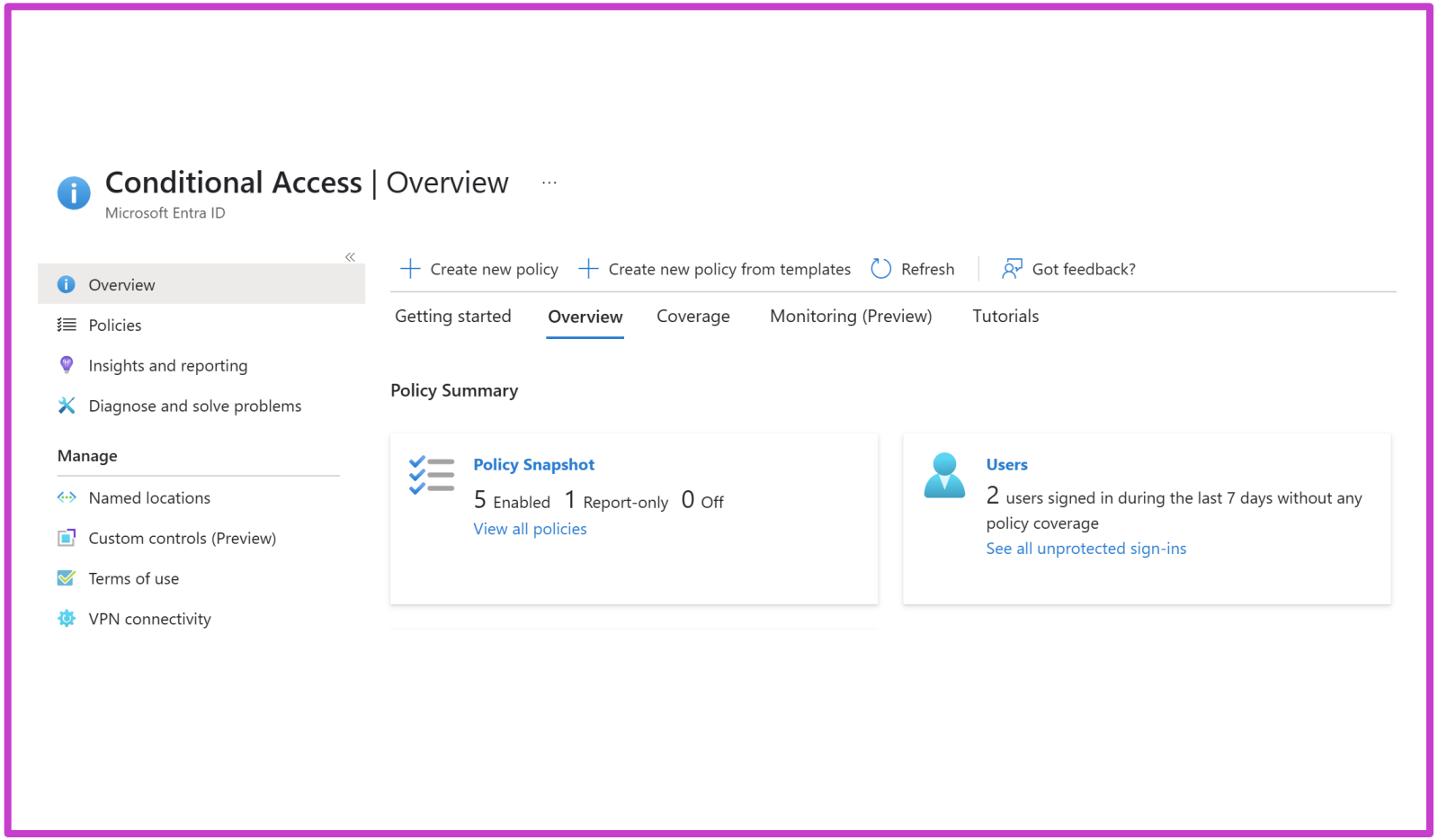
The authentication session management controls show up in the result of the tool.



Exercise—configure authentication session controls

This exercise teaches the student to configure sign-in frequency controls using a conditional access policy.

[Launch this Exercise in GitHub]

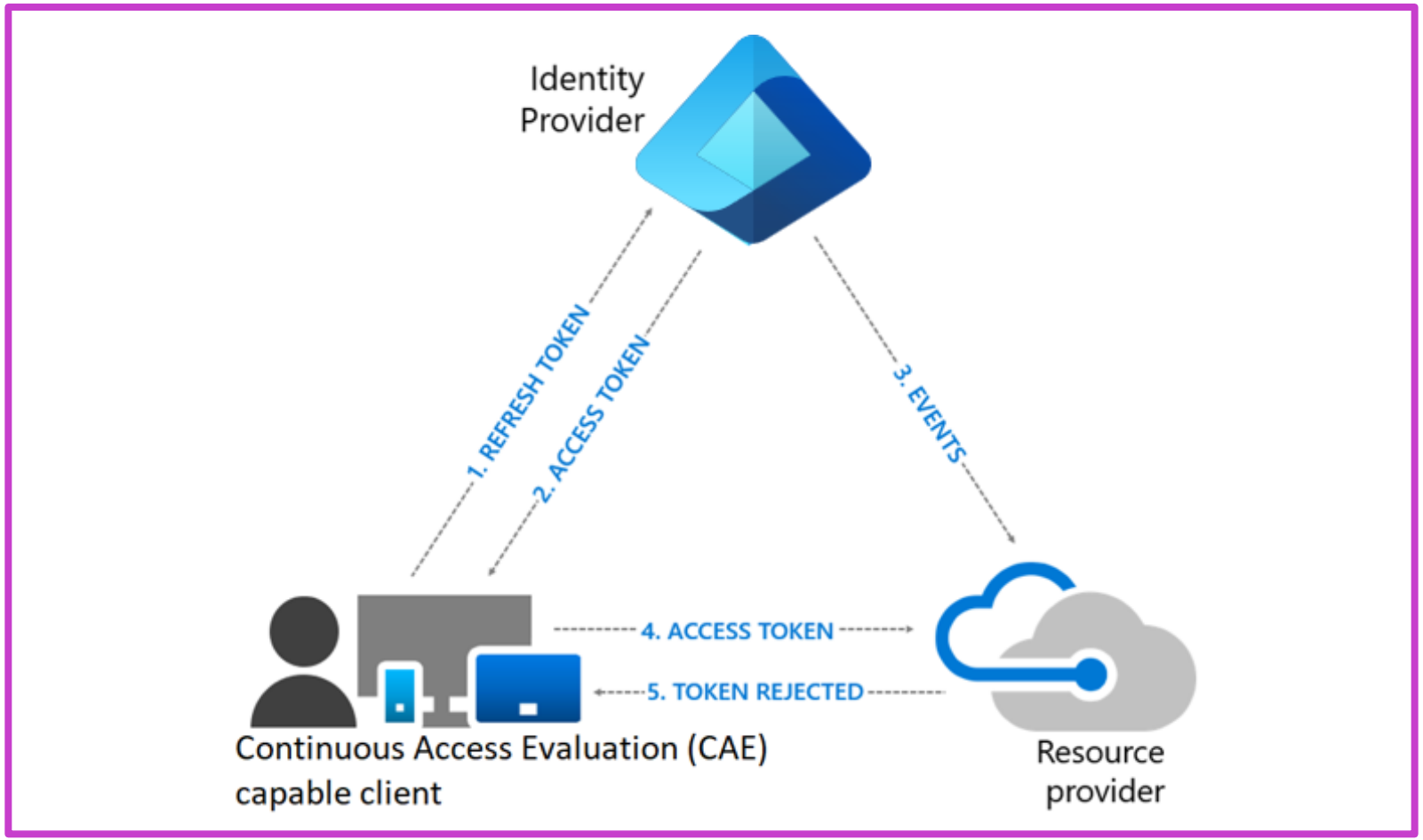


Continuous access evaluation

Continuous access evaluation

Benefits

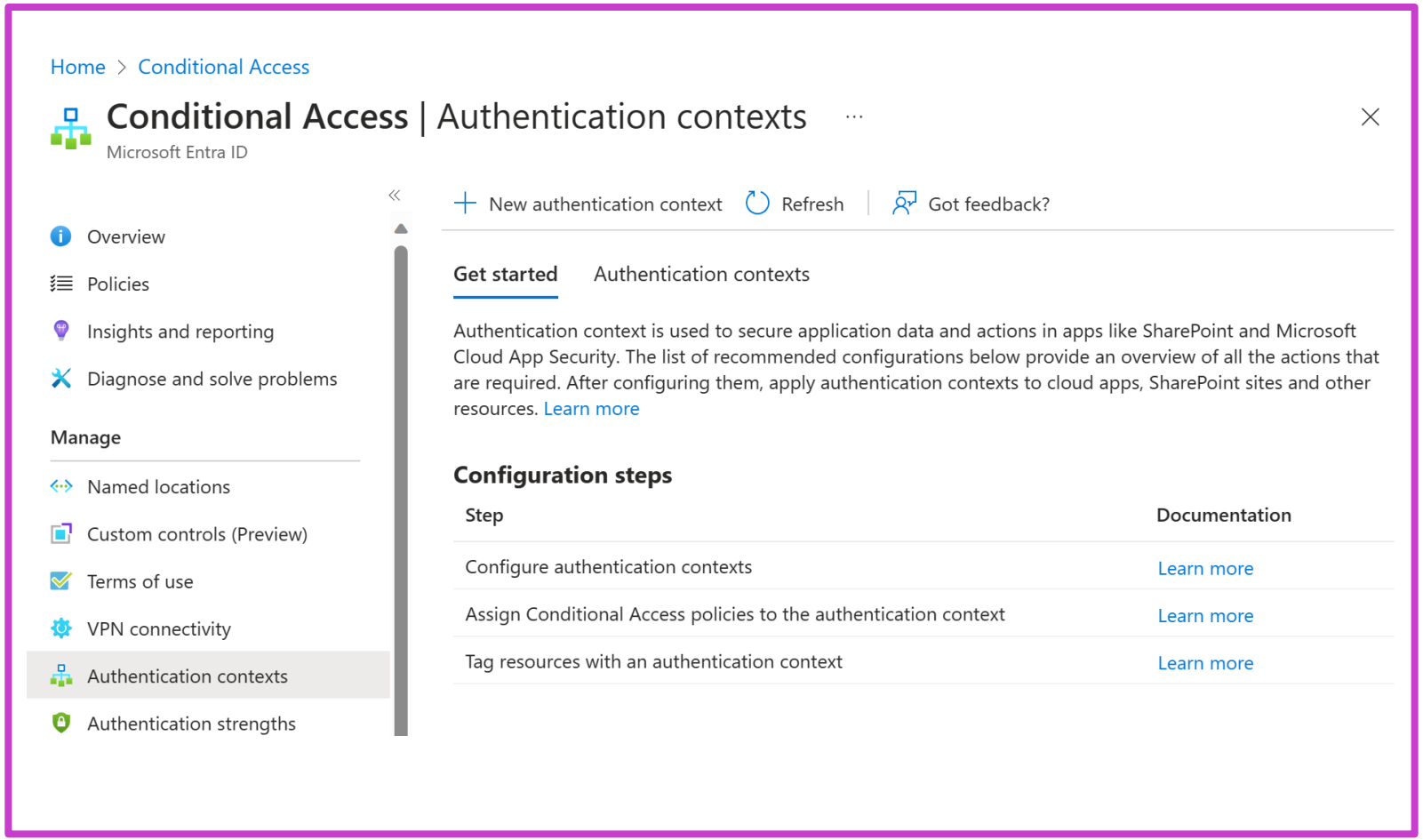
- There are several key benefits to continuous access evaluation.
- User termination or password change/reset: User session revocation will be enforced in near real time.
- Network location change: Conditional Access location policies will be enforced in near real time.
- Token export to a machine outside of a trusted network can be prevented with Conditional Access location policies.



Authentication context

Configure authentication context—Conditional Access

Authentication context can be used to further secure data and actions in applications. These applications can be your own custom applications, custom line-of-business (LOB) applications, applications like SharePoint, or applications protected by Microsoft Defender for Cloud Apps.



References (1 of 2)

What is Conditional Access?
https://www.youtube.com/watch?v=ffMAw2IVO7A

How to deploy Conditional Access
https://www.youtube.com/watch?v=c_izIRNJNuk

How to roll out CA policies to end users
https://www.youtube.com/watch?v=0_Fze7Zpyvc

Conditional Access with device controls
https://www.youtube.com/watch?v=NcONUf-jeS4

Conditional Access with Microsoft Entra MFA
https://www.youtube.com/watch?v=Tbc-SU97G-w

References (2 of 2)

Conditional Access in Enterprise Mobility and Security
https://www.youtube.com/watch?v=A7IrxAH87wc

Using the location condition in a Conditional Access policy
https://learn.microsoft.com/azure/active-directory/conditional-access/location-condition

Use compliance policies to set rules for devices you manage with Intune
https://learn.microsoft.com/mem/intune/protect/device-compliance-get-started

Introducing security defaults
https://techcommunity.microsoft.com/t5/azure-active-directory-identity/introducing-security-defaults/ba-p/1061414

Plan a Conditional Access deployment
https://techcommunity.microsoft.com/t5/azure-active-directory-identity/introducing-security-defaults/ba-p/1061414

Manage Microsoft Entra Identity Protection

Objectives

1. Review identity protection basics
2. Implement and manage user risk policy
3. Implement MFA registration policy
4. Monitor, investigate, and remediate elevated risky users
5. Security for workload identities
6. Microsoft Defender for Identity

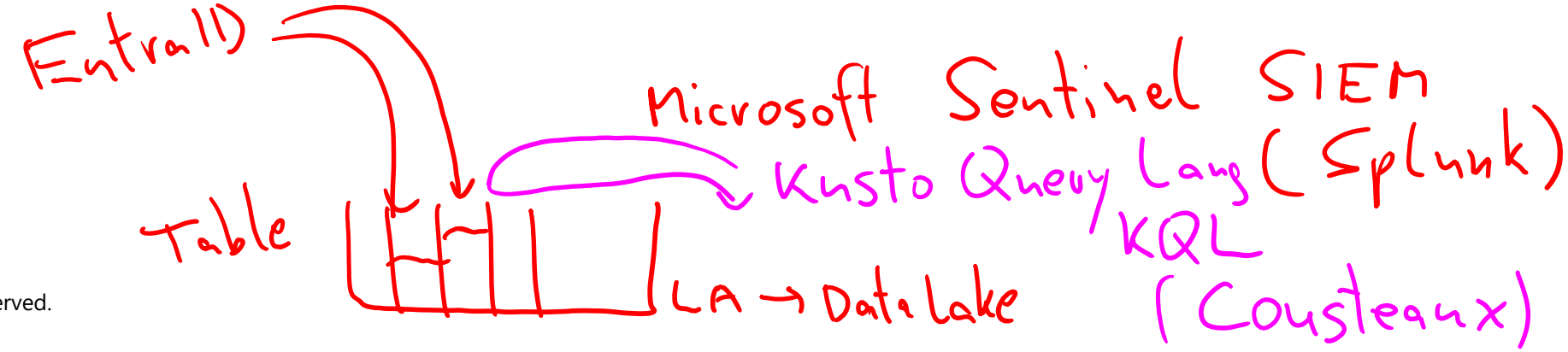
Review identity protection basics

Identity protection basics

Identity protection is a service that enables organizations to view the security posture of any account.

Key tasks:

- Automate the detection and remediation of identity-based risks.
- Investigate risks using data in the Microsoft Entra admin center.
- Export risk detection data to third-party utilities for further analysis.



Risk detection, remediation, and investigation

Common risks detected and remediated

- Anonymous IP address/atypical travel
- Malware-linked IP address
- Unfamiliar sign-in properties
- Leaked credentials
- Password spray
- Microsoft Entra threat intelligence
- New country
- Suspicious inbox forwarding

Risk investigation

Reports:

- Risky users
- Risky sign-ins
- Risk detections

Risk levels—low/medium/high

- Each level represents a higher likelihood that a user or sign-in is compromised

Licensing for Identity Protection

E5

Capability		Microsoft Entra ID Free/ Microsoft 365 Apps	Microsoft Entra ID Premium P1	Microsoft Entra ID Premium P2
User risk policy (via Identity Protection)		No	No	Yes
Sign-in risk policy (via identity protection)		No	No	Yes
Security reports	Overview	No	No	Yes
	Risky users	Limited Information. *	Limited Information.*	Full access
	Risky sign-ins	Limited Information. *	Limited Information. *	Full access
	Risk detection	No	Limited Information. *	Full access
Notifications	User at risk alert	No	No	Yes
	Weekly digest	No	No	Yes
MFA registration policy		No	No	Yes

* See notes or student materials for details.

Identity Protection permissions

Password Admin

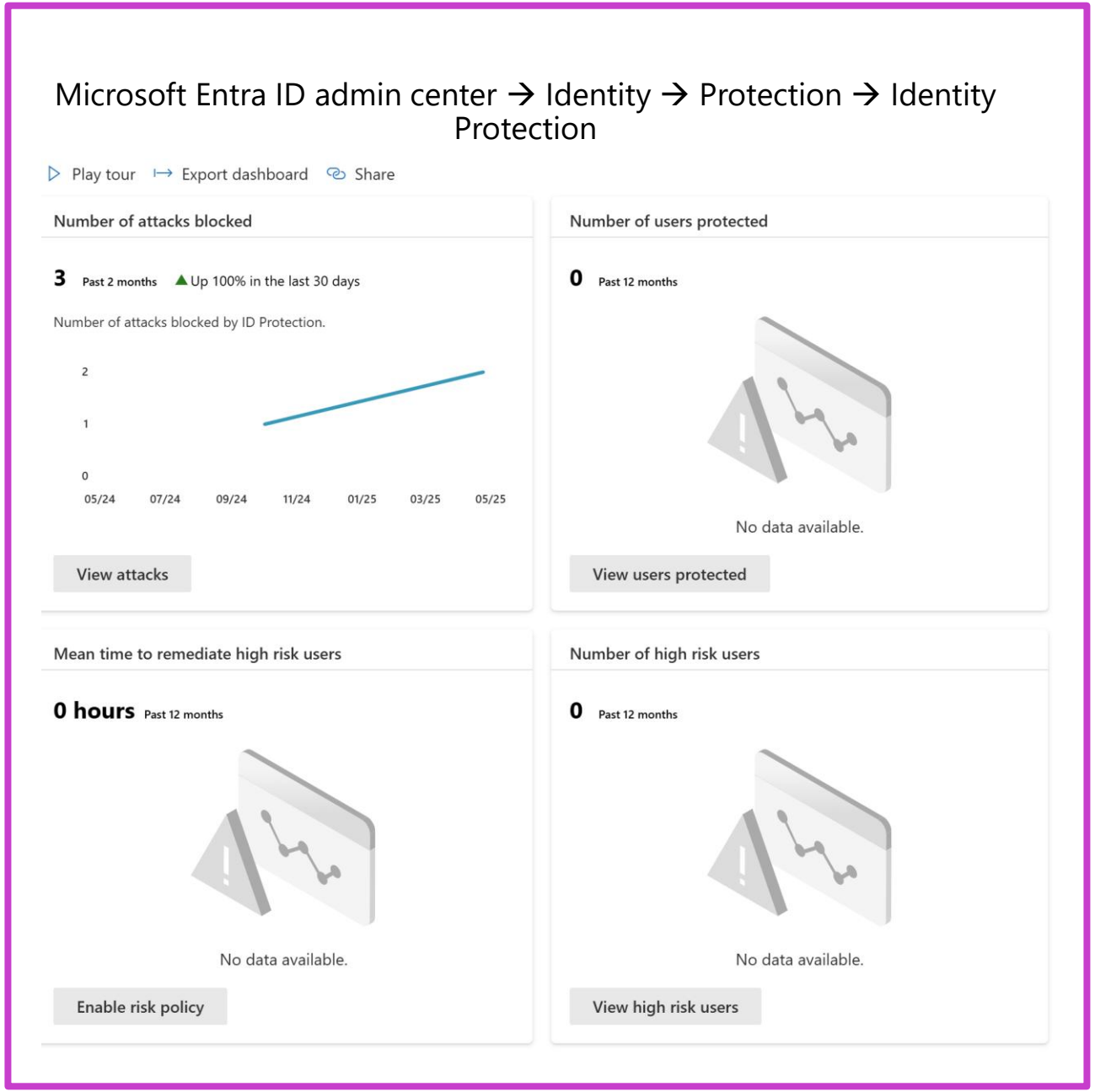
Role	Can do	Cannot do
Global Administrator	Full access to Identity Protection	
Security Administrator	Full access to Identity Protection CA	Reset password for a user
Security Operator	View all Identity Protection reports and Overview blade Dismiss user risk, confirm safe sign-in, confirm compromise	Configure or change policies Reset password for a user Configure alerts
Security Reader	View all Identity Protection reports and Overview blade	Configure or change policies Reset password for a user Configure alerts Give feedback on detections

Microsoft Entra ID P2 license required

Implement and manage user risk policy

User risk policies

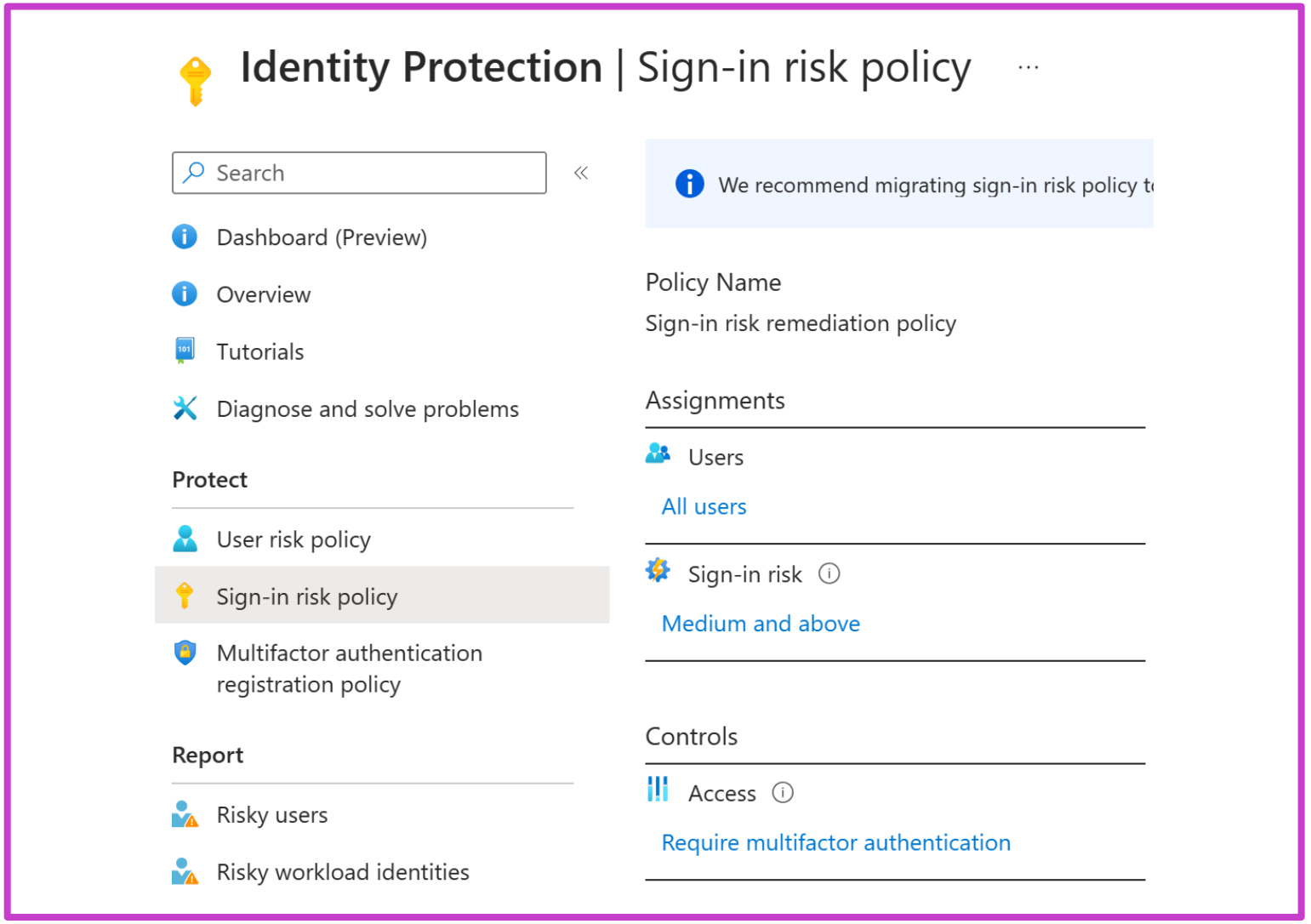
- Both sign-in risk policies and user risk policies can be enabled to automate the response to risk detections and allow users to self-remediate.
- Organizations must decide the level of risk they are willing to accept, balancing user experience and security posture.



Exercise—enable sign-in risk policy

This exercise teaches students to enable a user risk policy and a sign-in risk policy.

[Launch this Exercise in GitHub]



Implement MFA registration policy

What is MFA registration policy?

Microsoft Entra multifactor authentication provides a means to verify who you are using more than just a username and password. It provides a second layer of security to user sign-ins. For users to be able to respond to MFA prompts, they must first register for Microsoft Entra multifactor authentication.

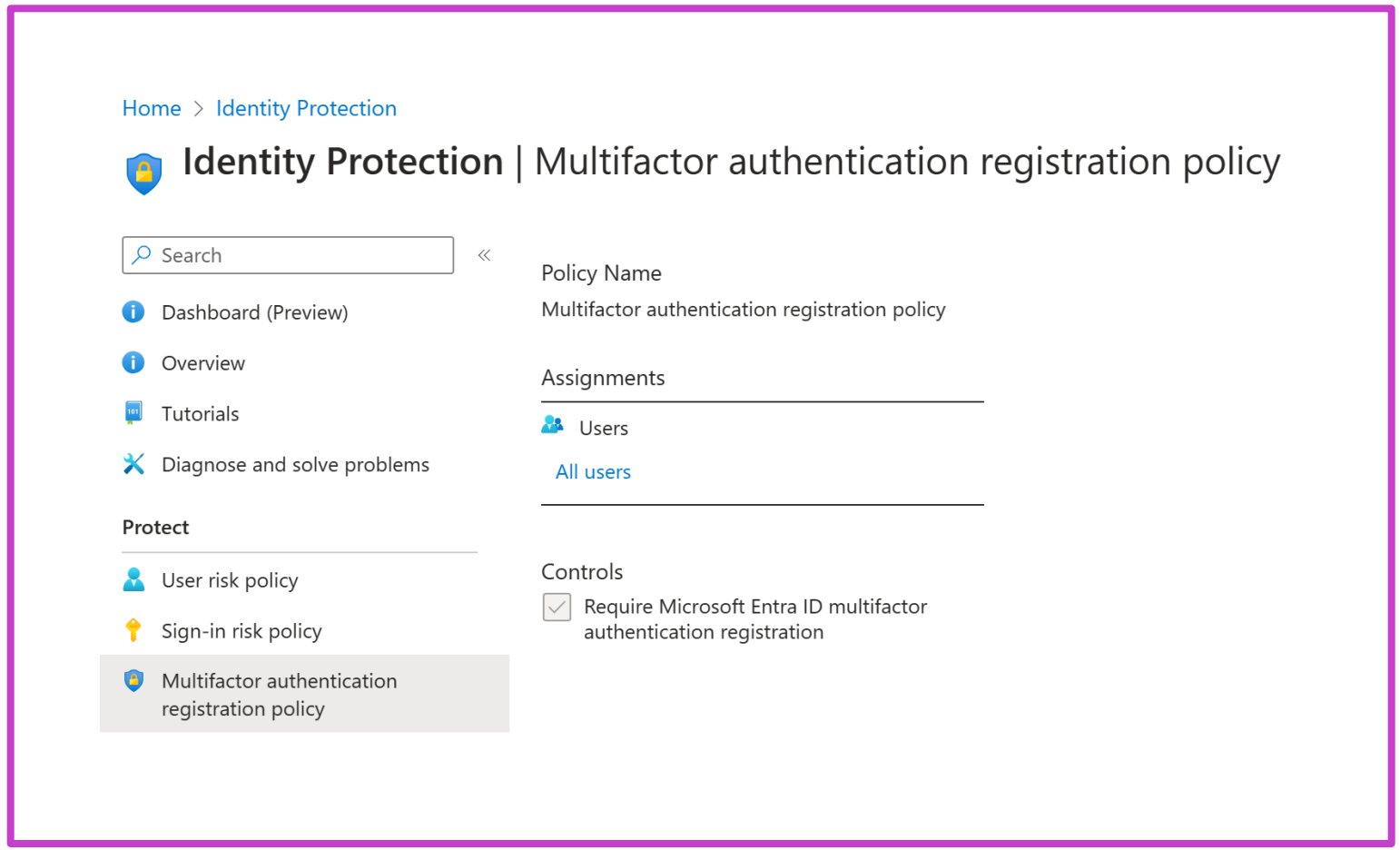
We recommend that you require Microsoft Entra multifactor authentication for user sign-ins because it:

- Delivers strong authentication through a range of verification options.
- Plays a key role in preparing your organization to self-remediate from risk detections in Identity Protection.

Demo—configure Microsoft Entra multifactor authentication registration policy

Microsoft Entra multifactor authentication provides a means to verify who you are using more than just a username and password. It provides a second layer of security to user sign-ins. This exercise teaches students to configure a registration policy.

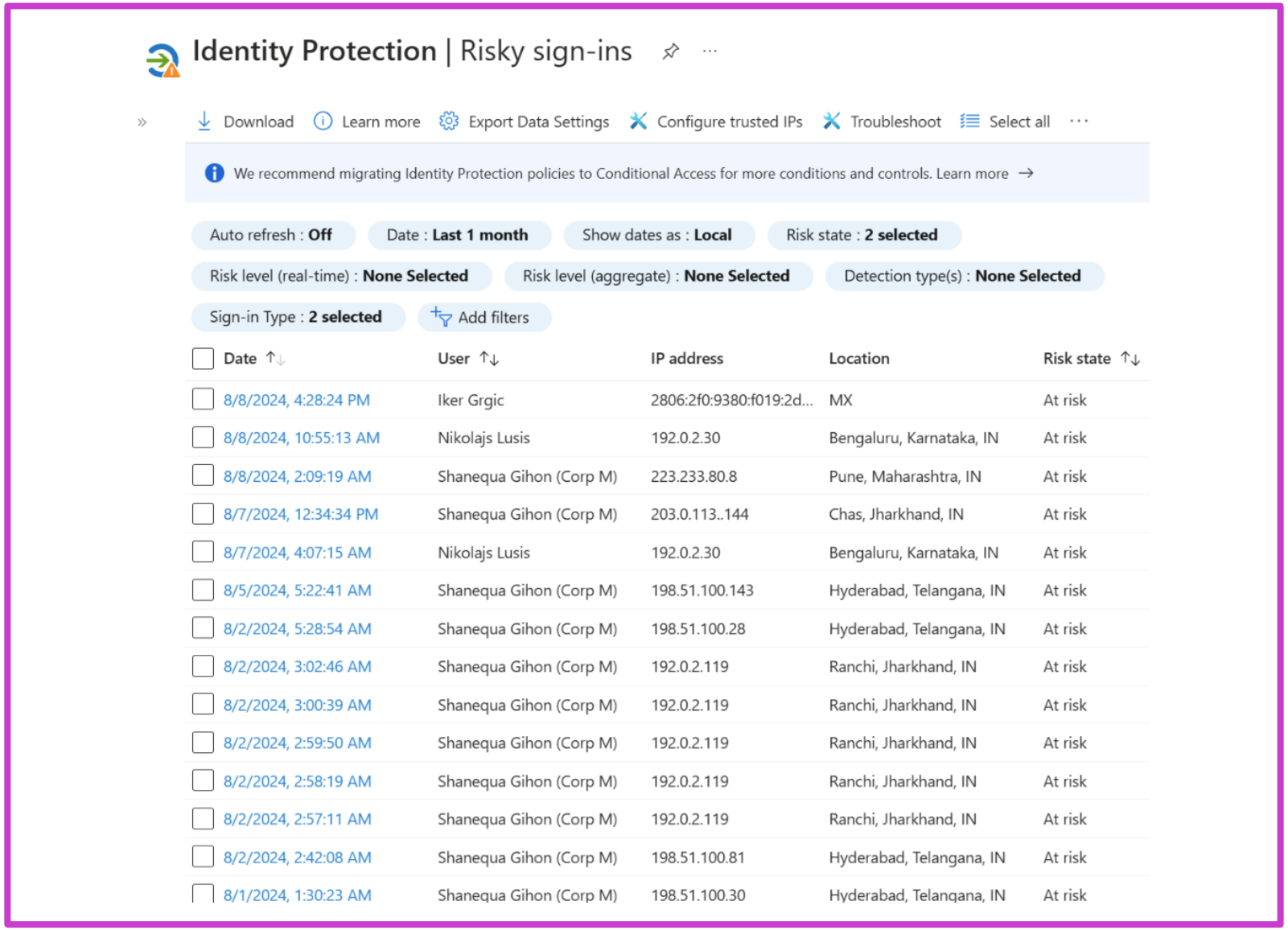
Launch this Exercise in GitHub



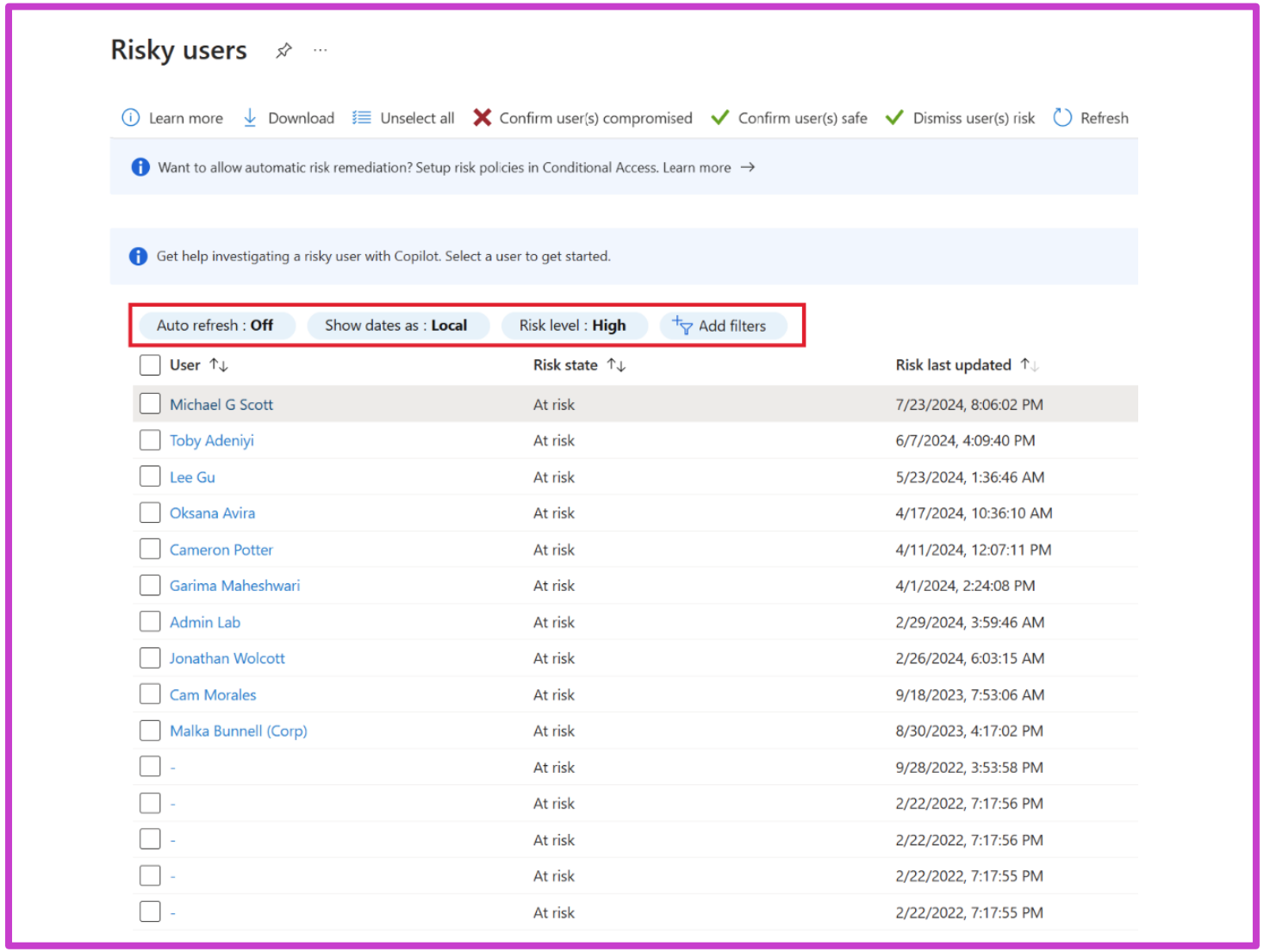
Monitor, investigate, and remediate elevated risky users

Risk reports

Each report launches with a list of all detections for the period shown at the top of the report. Each report allows for the addition or removal of columns based on administrator preference. Administrators can choose to download the data in .CSV or .JSON format. Reports can be filtered using the filters across the top of the report



Report details—example Risky Users Report

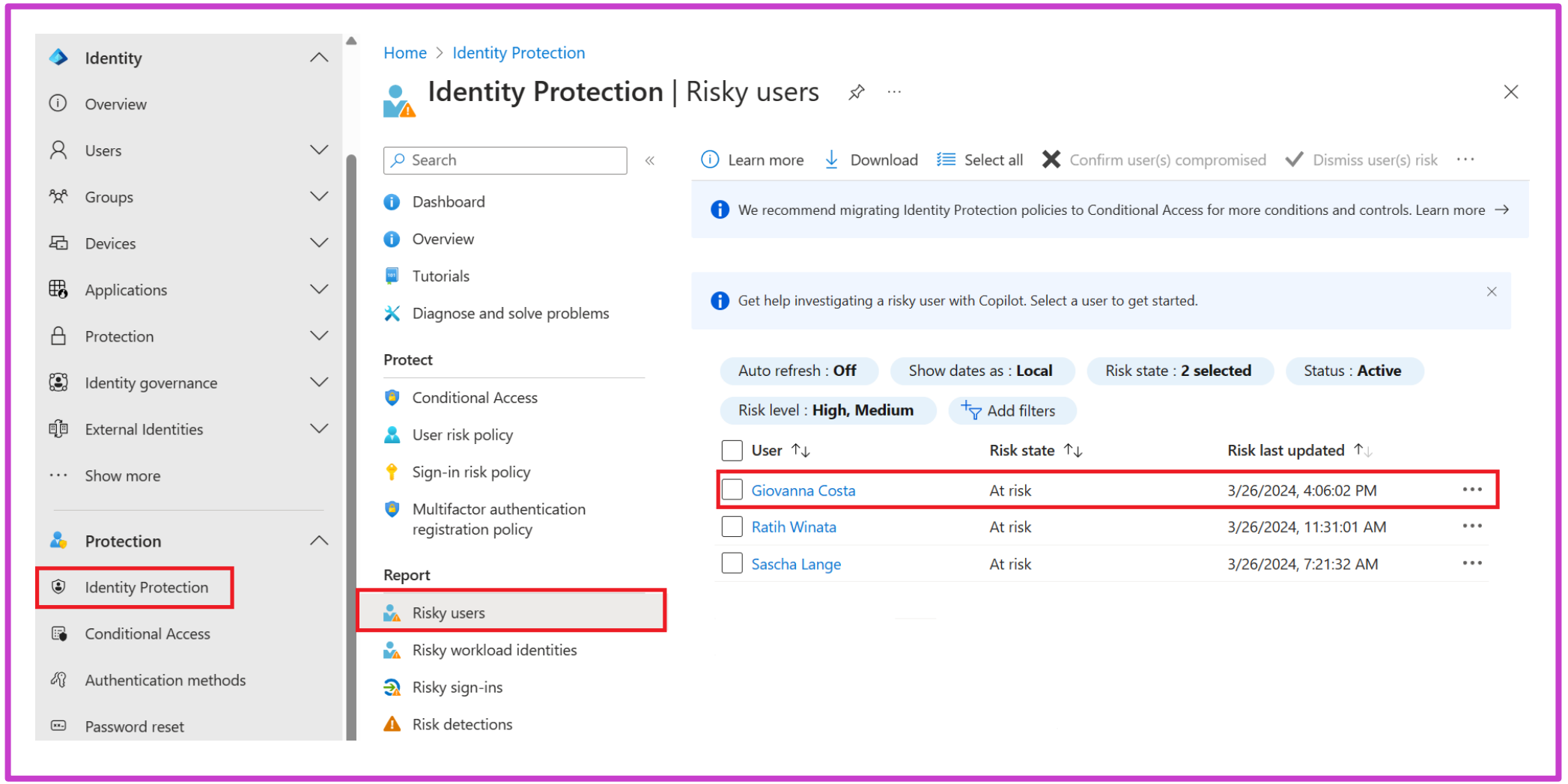


Remediate risks and unblock users

Administrators have the following options to remediate:

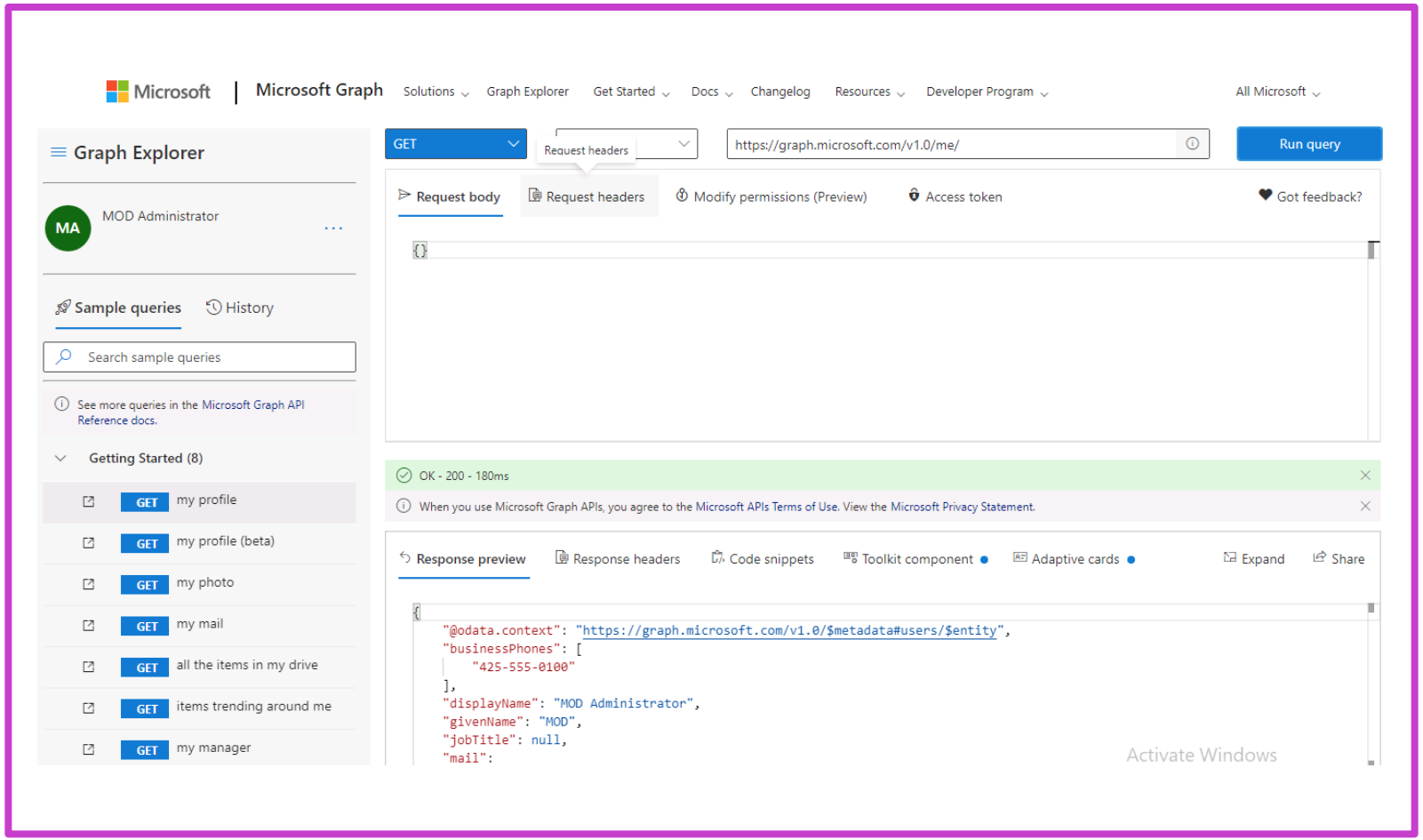
- Self-remediation with risk policy
- Manual password reset
- Dismiss user risk
- Close individual risk detections manually

Copilot for Security + Microsoft Entra – Risky Users



Use the Microsoft Graph API

- Microsoft Graph—unified API endpoint and the home of Microsoft Entra Identity Protection APIs
- Three Microsoft Graph APIs expose information about risky users and sign-ins:
  - RiskDetection
  - RiskyUsers
  - SignIn



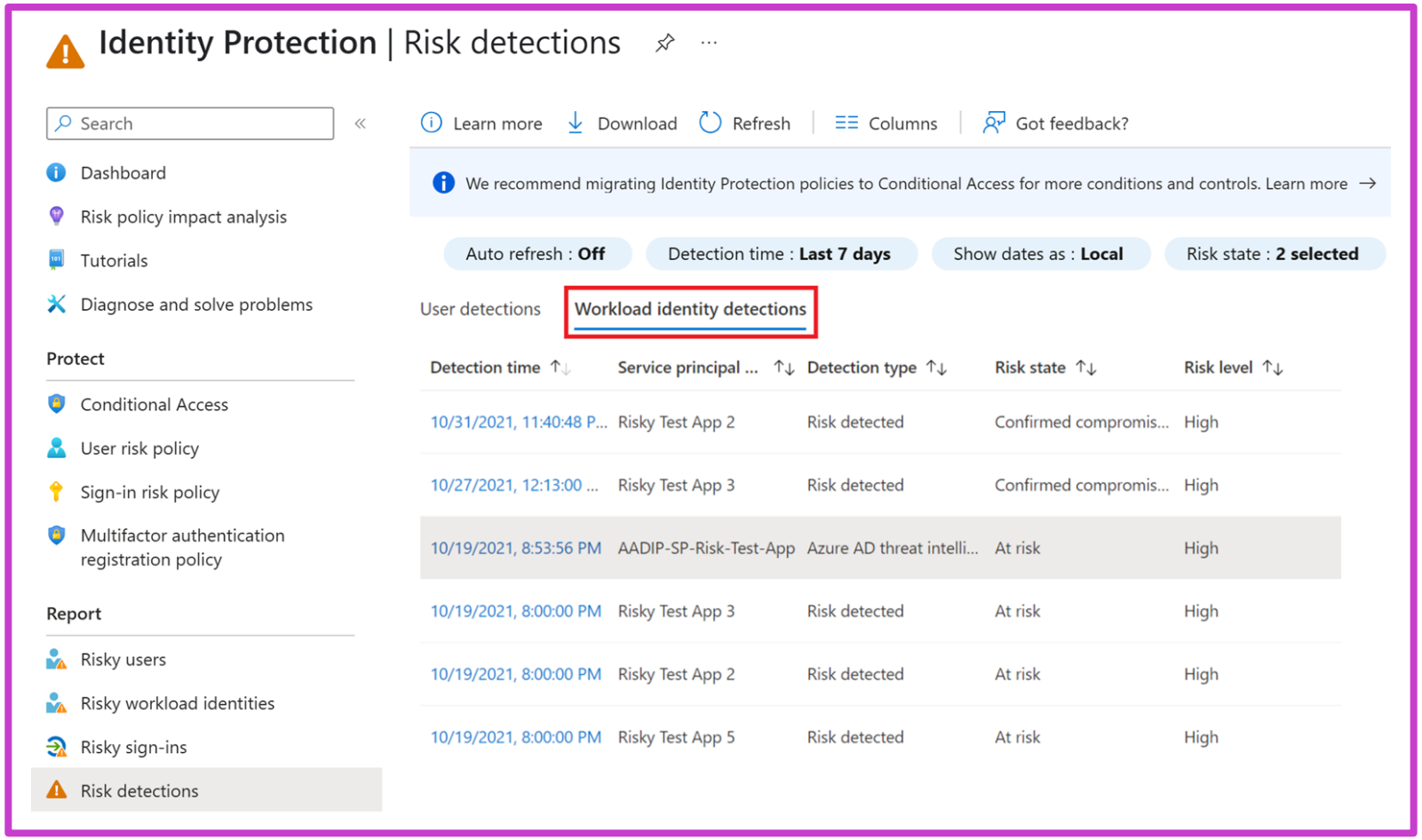
Security for workload identities

Workload identities risk

A workload identity allows an application or service principal access to resources.

These workload identities differ from traditional user accounts as they:

- Can't perform multifactor authentication.
- Often have no formal lifecycle process.
- Need to store their credentials or secrets.

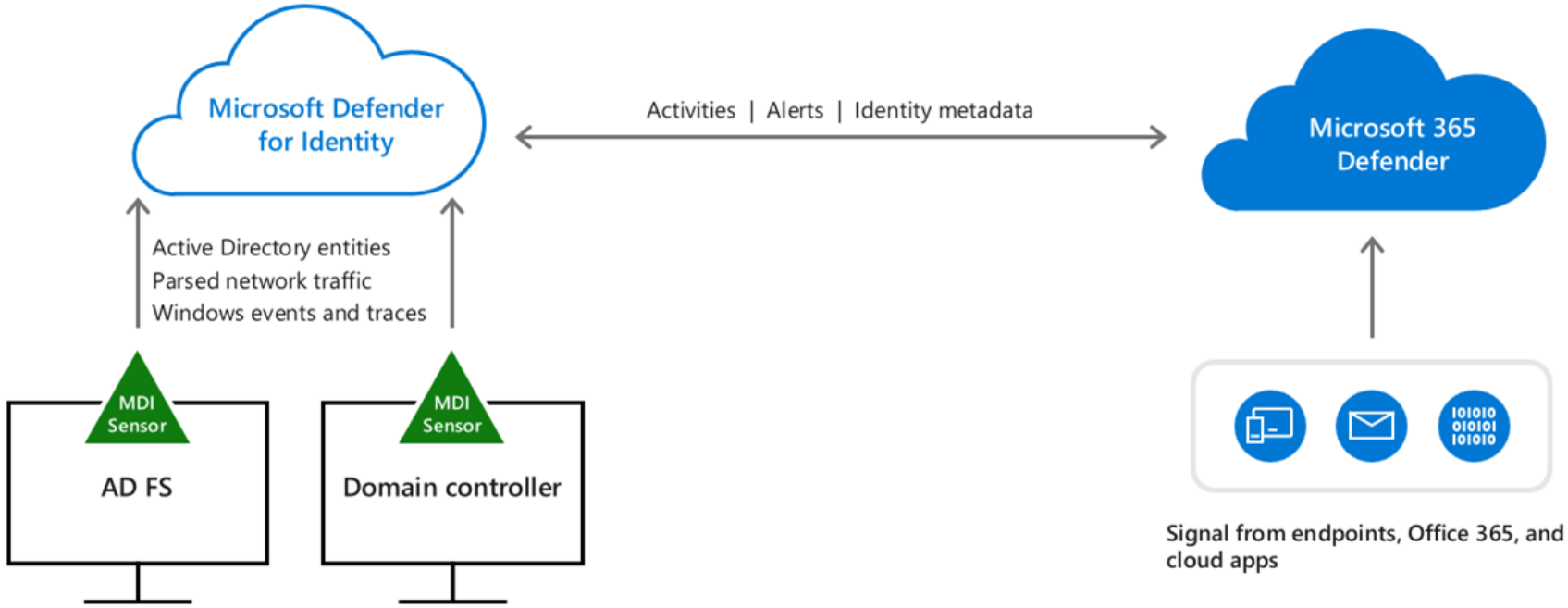


Workload identity risks detected

Detection name	Description
Microsoft Entra threat intelligence	This risk detection indicates some activity that is consistent with known attack patterns based on Microsoft's internal and external threat intelligence sources.
Suspicious sign-ins	This risk detection indicates sign-in properties or patterns that are unusual for this service principal.
Unusual addition of credentials to an OAuth app	This detection identifies the suspicious addition of privileged credentials to an OAuth app. This can indicate that an attacker has compromised the app, and is using it for malicious activity.
Admin confirmed account compromised	This detection indicates an admin has selected 'Confirm compromised' in the Risky Workload Identities UI or using the riskyServicePrincipals API.

Microsoft Defender for Identity

Microsoft Defender for Identity



- Monitor users, entity behavior, and activities with learning-based analytics
- Protect user identities and credentials stored in Active Directory
- Identify and investigate suspicious user activities and advanced attacks throughout the kill chain
- Provide clear incident information on a simple timeline for fast triage

Log into Defender for Identity:

- https://security.microsoft.com/settings/identities

What Microsoft Defender for Identity does

- **Monitors**
  - AD on-premises and hybrid signals
  - Uses behavioral analytics
  - Finds identity-based attacks
  - Surfaces risk in the identity usage
- **Detects**
  - Credential theft
  - Golden ticket / silver ticket attacks
  - DCSync and DCShadow
  - Reconnaissance
  - Lateral movement
- **Signals sent to Sentinel / XDR**
  - Endpoint activity
  - Email signals
  - Unusual cloud app behavior
- **Signals for Microsoft Identity Threat Detection and Response (ITDR)**
  - On-prem AD activity
  - Lateral movement
  - Kerberos abuse
  - Domain dominance attempts

References

Conditional Access for workloads

https://learn.microsoft.com/en-us/azure/active-directory/conditional-access/workload-identity

Require MFA for all users

https://learn.microsoft.com/en-us/azure/active-directory/conditional-access/howto-conditional-access-policy-all-users-mfa

Defender for Identity

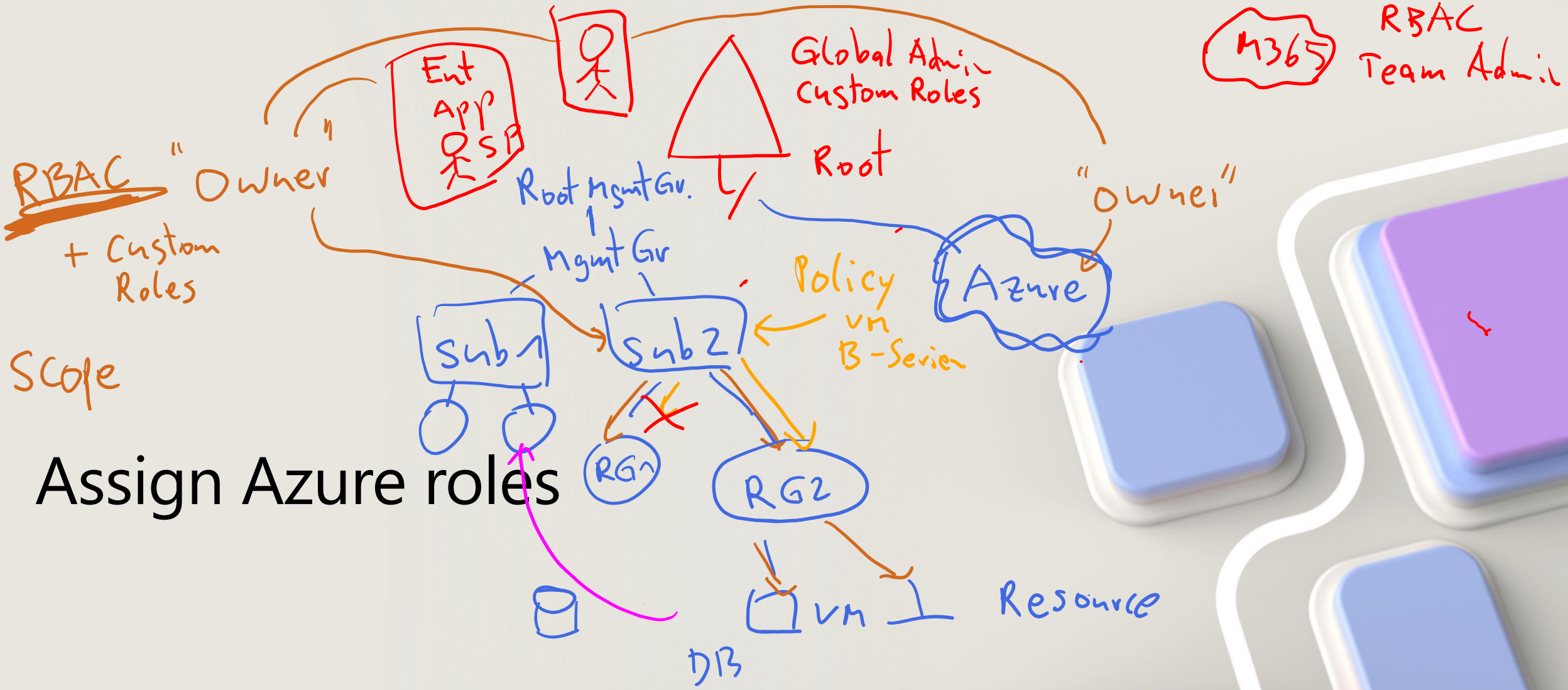
https://learn.microsoft.com/en-us/defender-for-identity/

Implement access management for Azure resources

Objectives

1. Assign Azure roles
2. Configure a custom Azure role
3. Create and configure managed identities
4. Access Azure resources with managed mdentities
5. Analyze Azure role permissions
6. Configure Azure Key Vault policies and access objects

Assign Azure roles



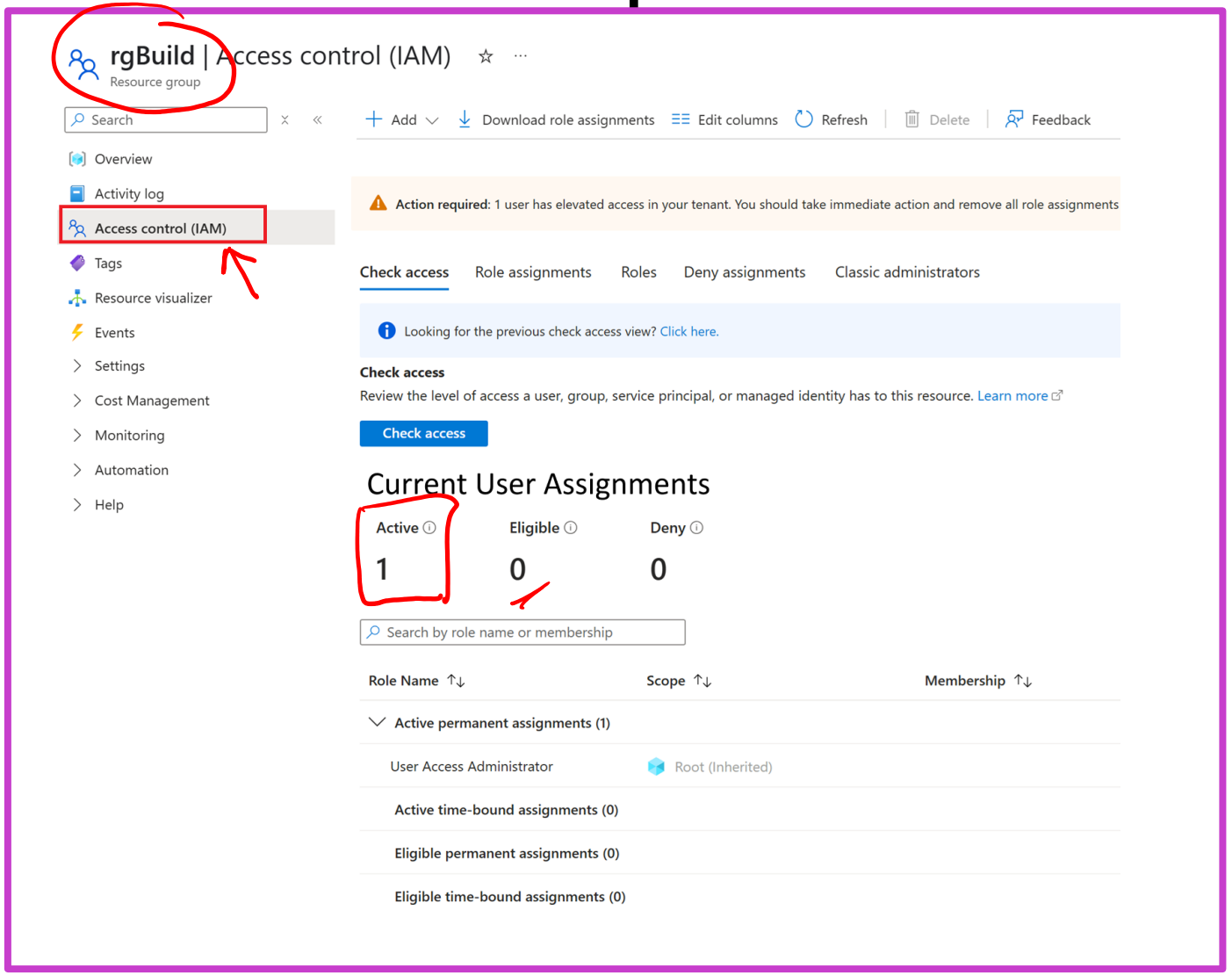
Identities and roles

Azure role-based access control (Azure RBAC) is the authorization system to manage access to Azure resources. Assign roles to users, groups, service principals, or managed identities at a particular scope.

Who needs access	What role to assign
Identities • User • Group • Service Principal • Managed Identity	Built-in Azure roles • Owner – Full access to all resources. • Contributor – Can create and manage all types of Azure resources, but can't grant access. • Reader – Can view the available Azure resources. • User Access Administrator – Assign access to Azure resources. • Other task specific roles, like Virtual Machine Contributor, can be assigned.

What scope to assign?
Management Group – Subscription – Resource Group - Resource

Assign a role in the Azure portal



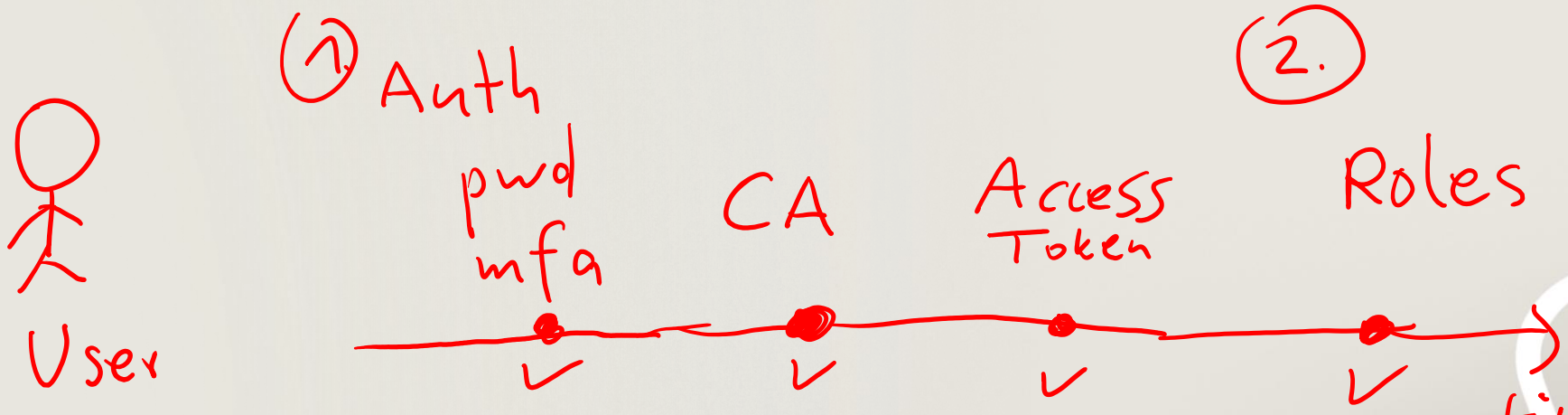
Assign a role using script

PowerShell

```
New-AzRoleAssignment -ObjectId <objectId> `
-RoleDefinitionName <roleName> `
-Scope
/subscriptions/<subscriptionId>/resourcegroups/<resourceGroupName>/providers/<providerName>/<res
ourceType>/<resourceSubType>/<resourceName>
```

CLI scripting

```
az role assignment create --assignee “{assignee}” \
--role “{roleNameOrId}” \
--resource-group "{resourceGroupName}"
```



Configure a custom Azure role

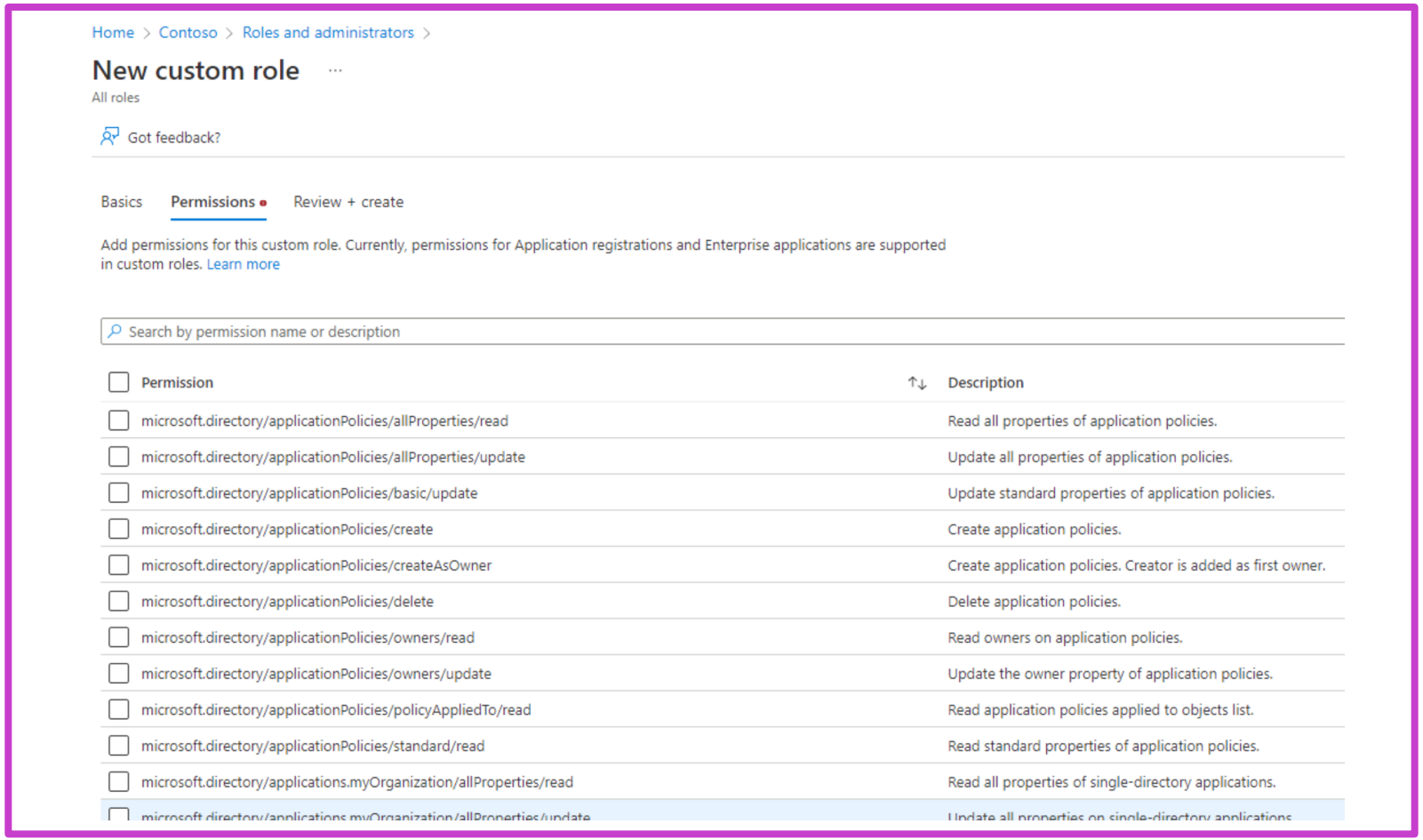
Entra

Create a custom role

The principle of least privilege let's you pick just the capabilities you need.

To create the custom role:

1. Open Microsoft Entra admin center then open Identity.
2. Select **Roles and administration.**
3. Select + **New custom role.**
4. Then name and assign the capabilities needed.



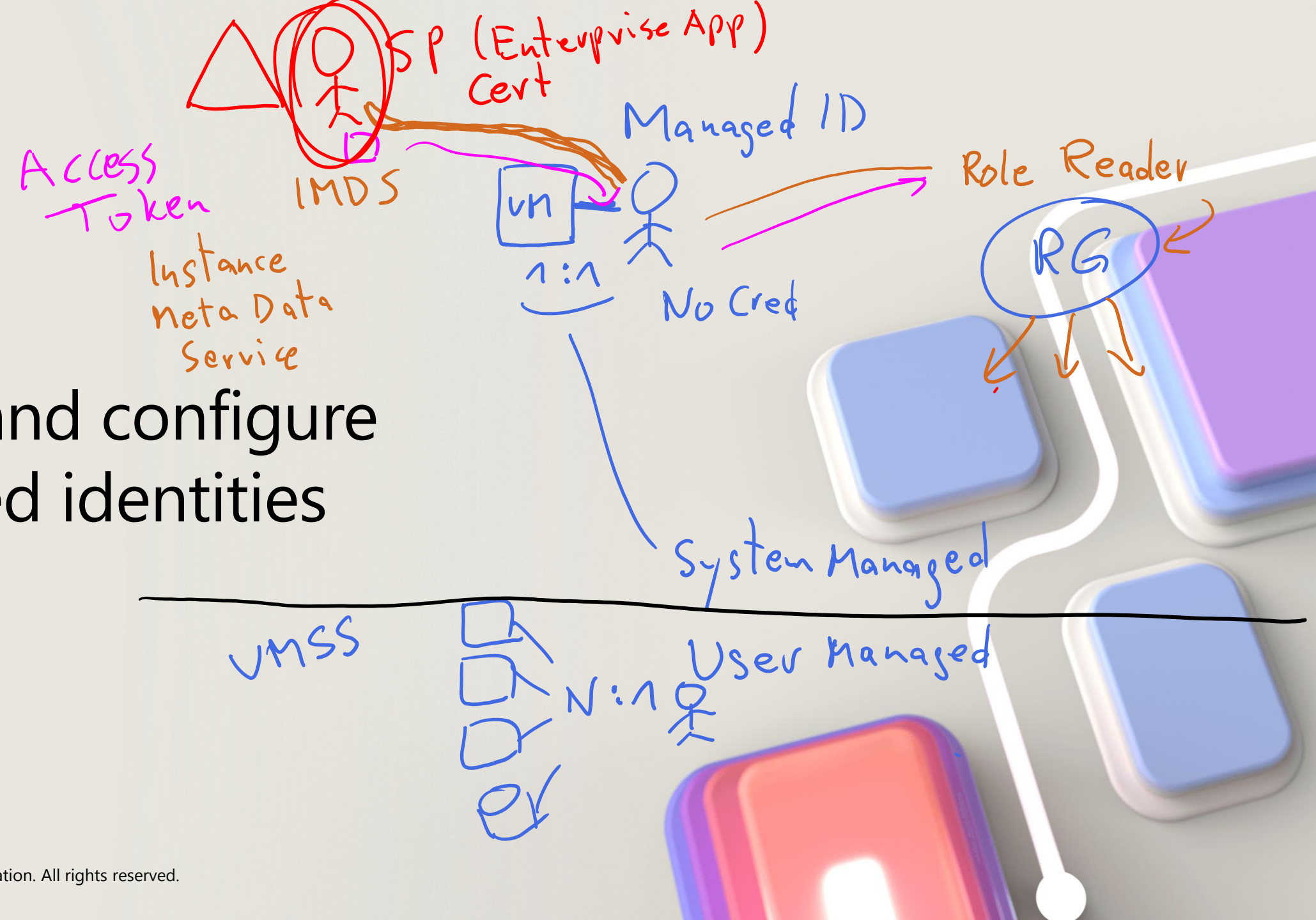
Create a custom role using JSON

The asterisk (*) is used as a wildcard. If you need to assign all of the read permissions from the Billing resource, use this command:

Microsoft/Billing//read*.

The wildcard can exist at any level.

Create and configure managed identities



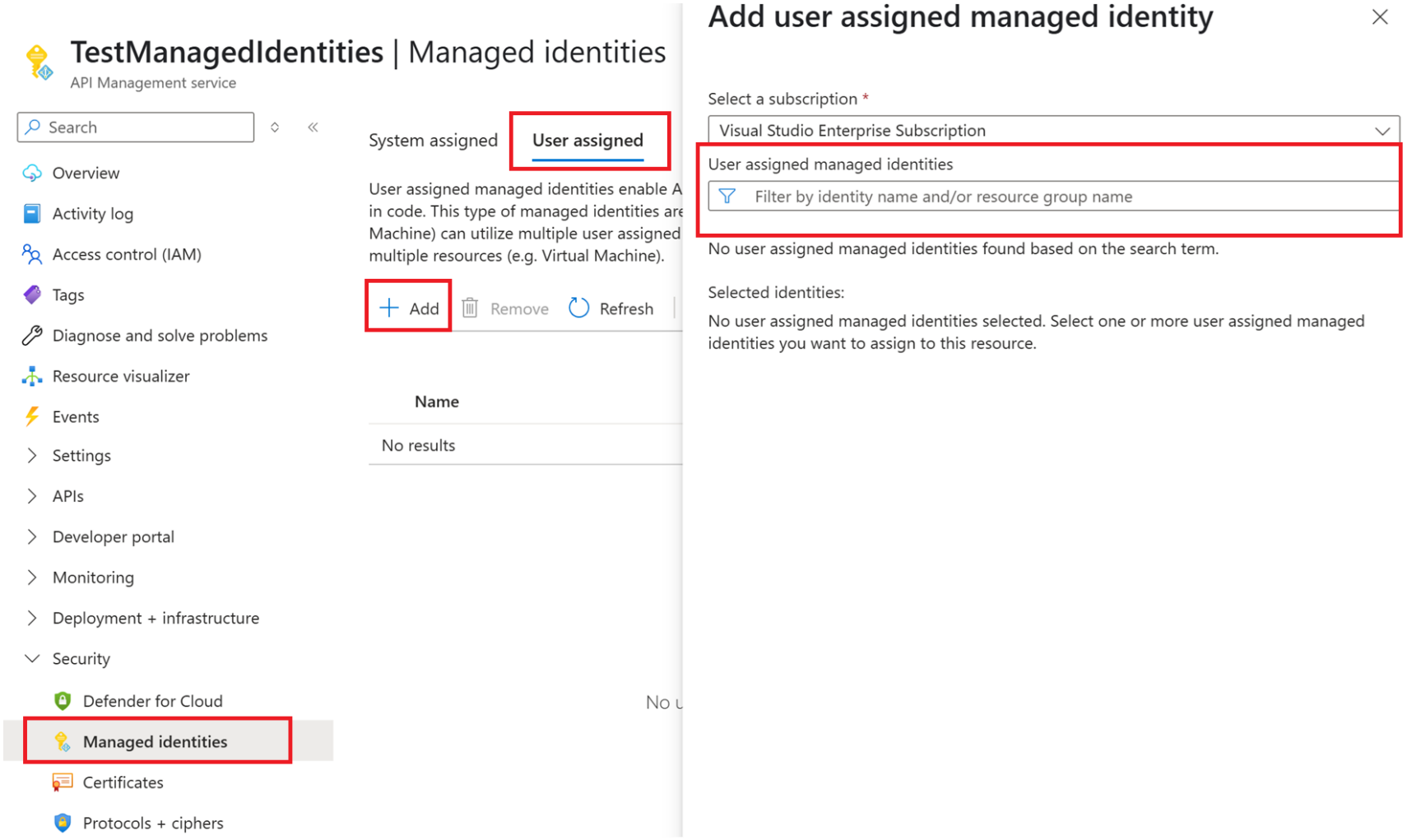
Types of Managed Identities

Identity type	Description and usage
System-assigned	Some Azure services allow you to enable a managed identity directly on a service instance. When you enable a system-assigned managed identity, an identity is created in Microsoft Entra ID. The identity is tied to the lifecycle of that service instance. When the resource is deleted, Azure automatically deletes the identity for you. By design, only that Azure resource can use this identity to request tokens from Microsoft Entra ID.
User-assigned	You may also create a managed identity as a standalone Azure resource. You can create a user-assigned managed identity and assign it to one or more instances of an Azure service. For user-assigned managed identities, the identity is managed separately from the resources that use it.

Benefits of using managed identities

- You don't need to manage credentials. Credentials aren't even accessible to you.
- You can use managed identities to authenticate to any resource that supports Microsoft Entra authentication, including your own applications. Managed identities can be used without any extra cost.

Use a managed identity in the Azure portal



Assign a managed identity in script

CLI

```
az webapp identity assign --resource-group <group-name> --name <app-name> --identities <identity-name>
```

PowerShell

```
Update-AzFunctionApp -Name <app-name> -ResourceGroupName <group-name> -IdentityType UserAssigned -IdentityId $userAssignedIdentity.Id
```

Within a template

ARM (json)

```
"identity": {
    "type": "UserAssigned",
    "userAssignedIdentities": {
        "<RESOURCEID>": {}
    }
}
```

Access Azure resources with managed identities

Managed identities and Azure resources

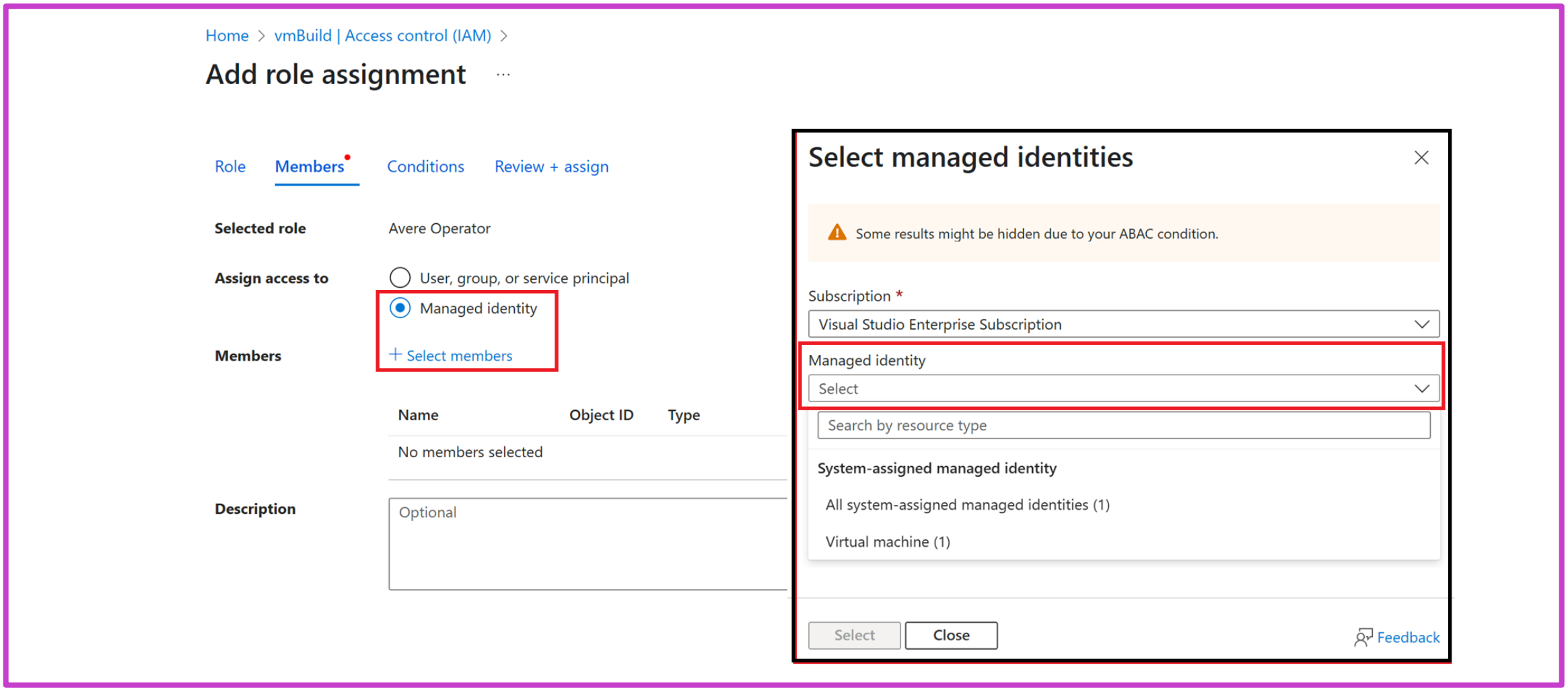
Scenario:

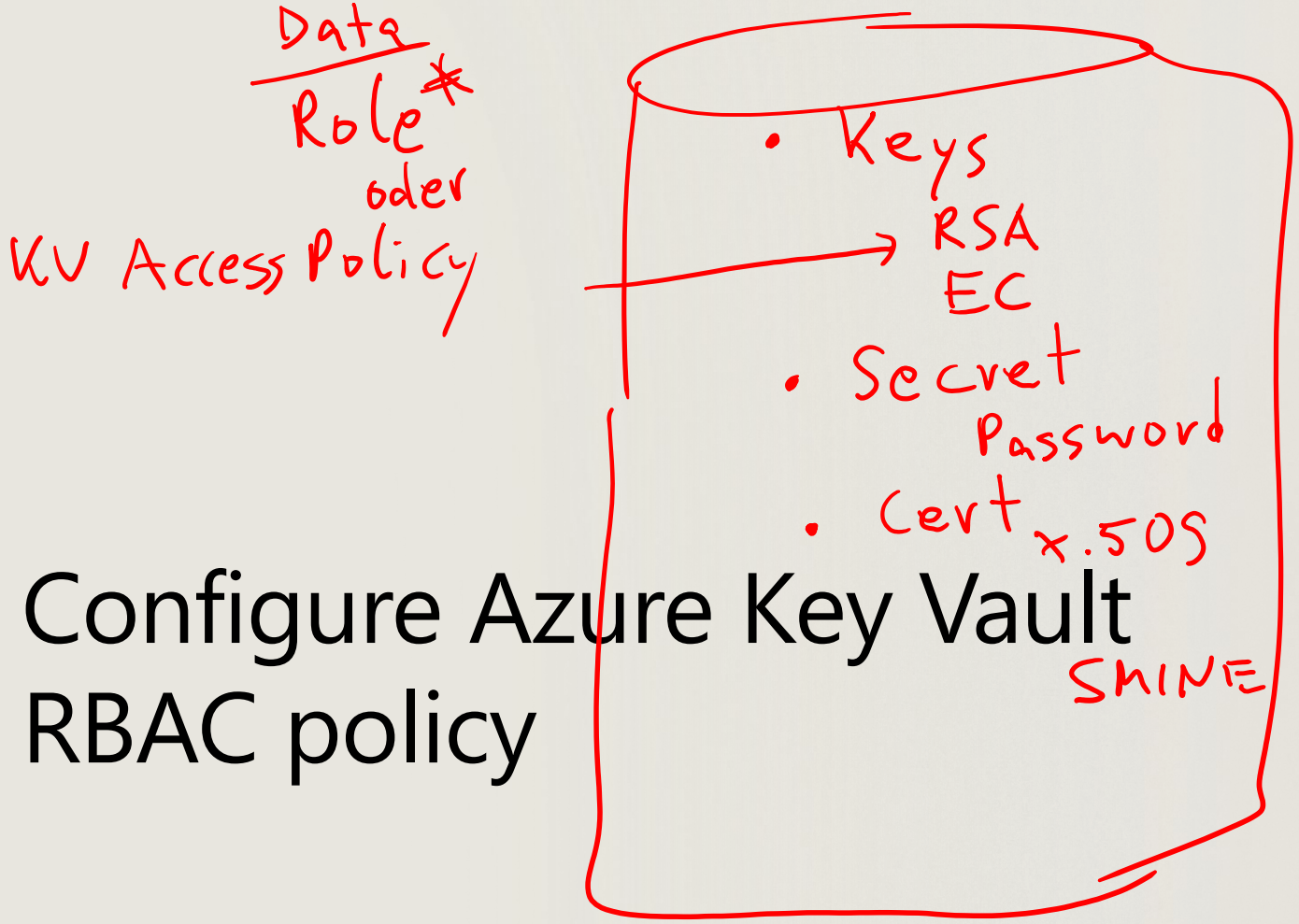
- Application needs to access outside resources like a database or storage account
- How can a developer do this securely?
- You don’t want to embed an account/password into the application.

Use a managed identity:

- Assign a managed identity to an application or virtual machine.
- Open the applications properties.
- Launch the Access Control (IAM).
- Add a role assignment to grant the needed access and resource.

Assigning a resource and managed identity

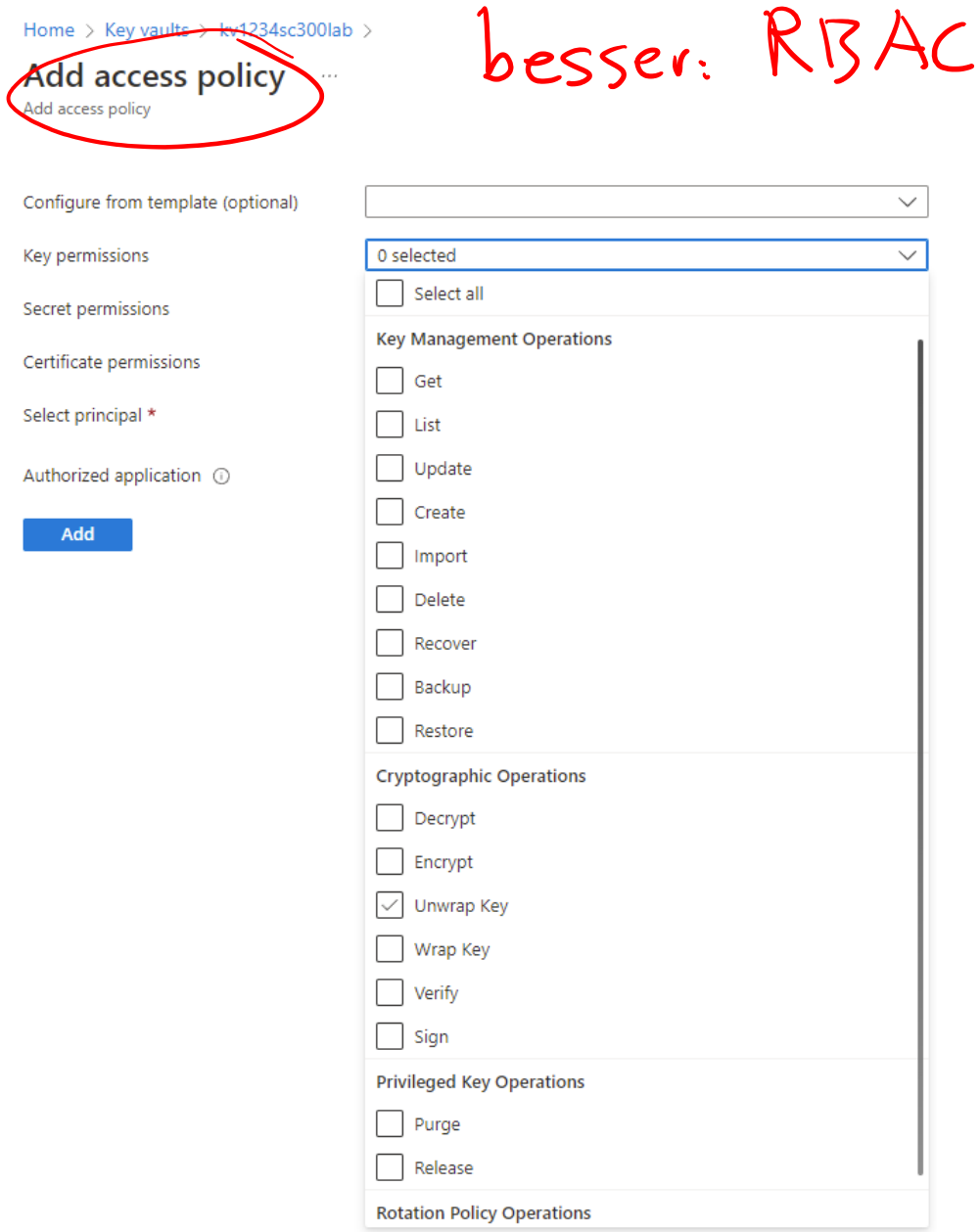




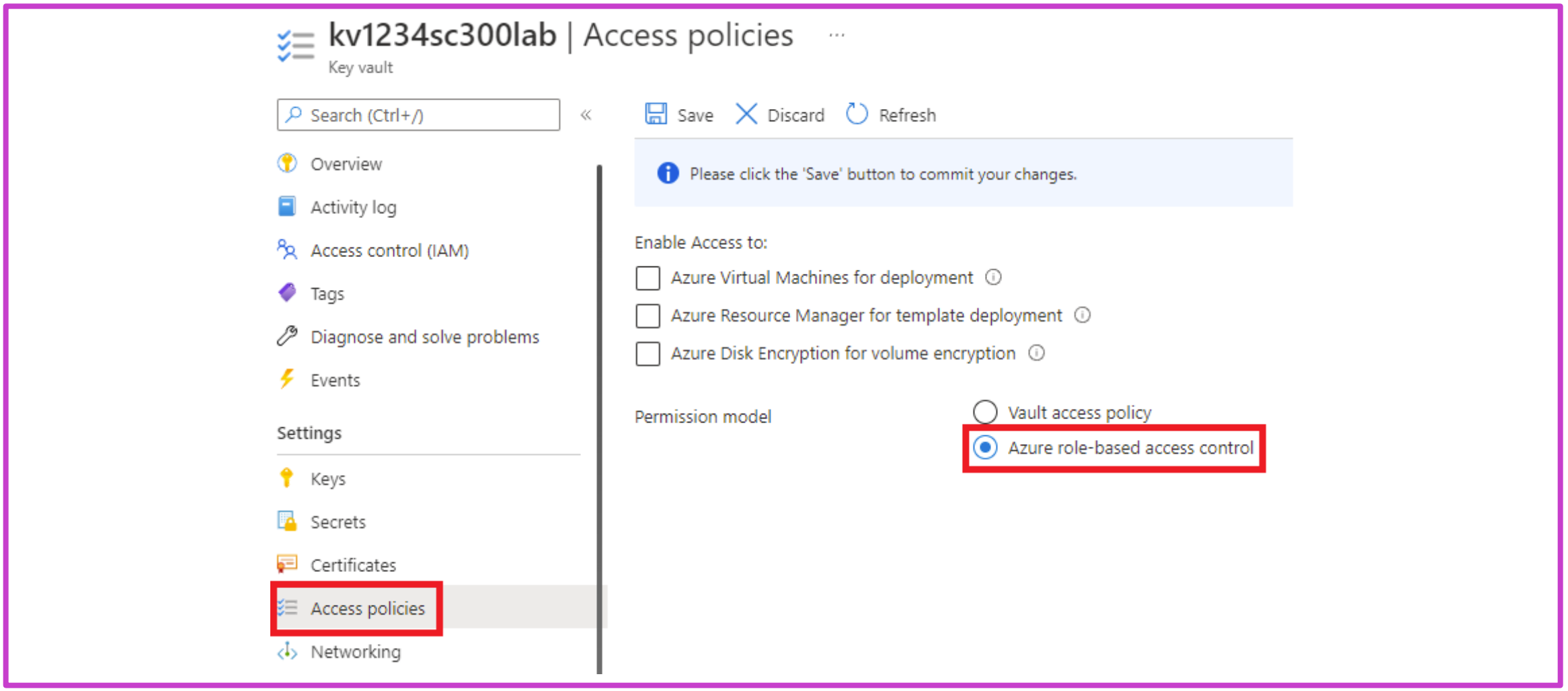
Configure Azure Key Vault RBAC policy

Key Vault Access policy

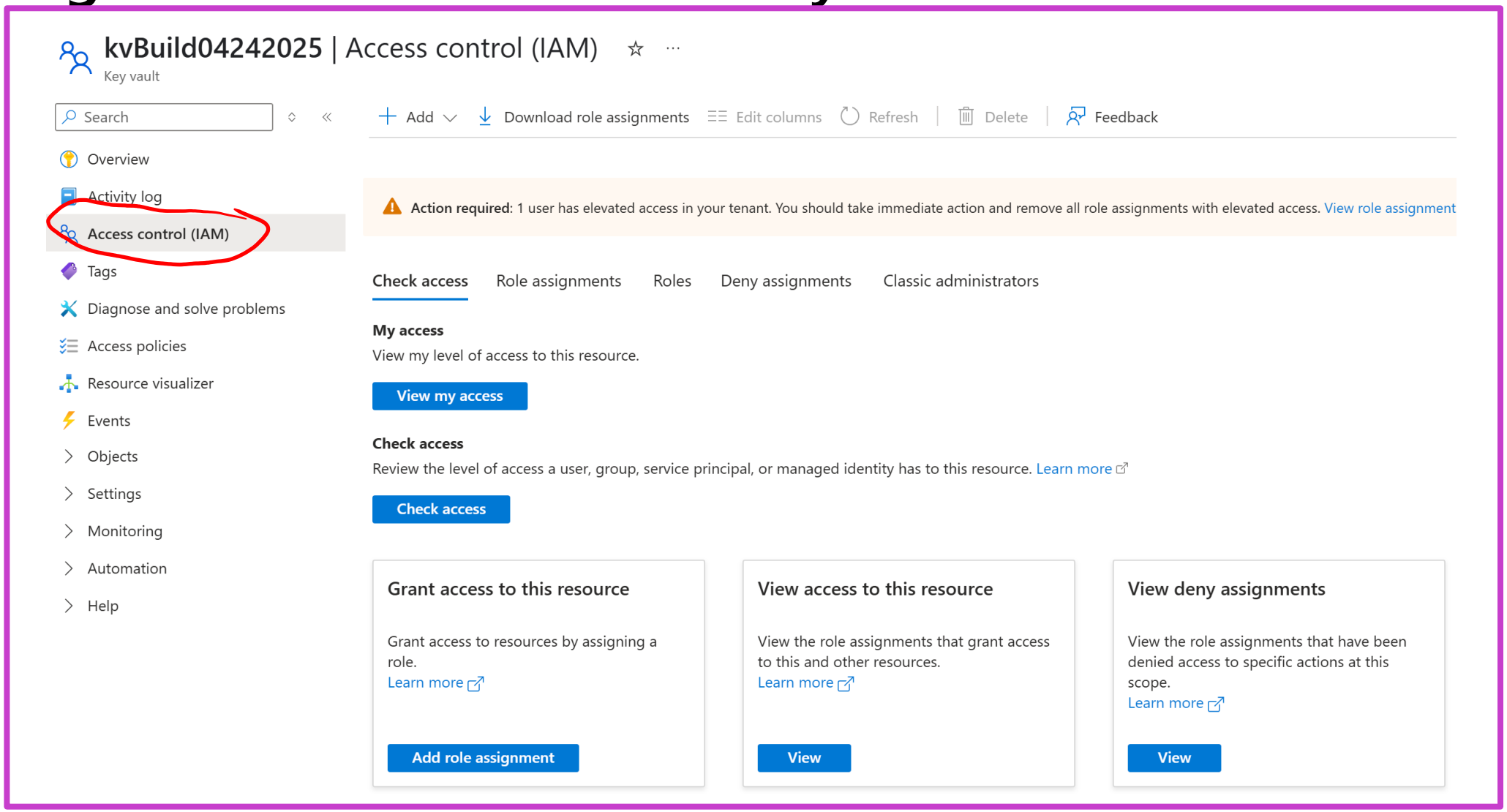
- You can grant access to Azure Key Vault using either role-based access control (RBAC) or Key Vault access policies.
- Either method works to protect your secrets, certificates, and keys.
- Access policies give you a little more granular control, but can be harder to manage.
- Choose the best option based on your security posture needs.



Key Vault and RBAC policies



Assign access with RBAC to Key Vault



Built-in Azure Key Vault roles

Built-in role	Description
Key Vault Administrator	Perform all data plane operations on a key vault and all objects in it, including certificates, keys, and secrets. Can't manage key vault resources or manage role assignments.
Key Vault Certificates Officer	Perform any action on the certificates of a key vault, except manage permissions.
Key Vault Crypto Officer	Perform any action on the keys of a key vault, except manage permissions.
Key Vault Crypto Service Encryption User	Read metadata of keys and perform wrap/unwrap operations.
Key Vault Crypto User	Perform cryptographic operations using keys.
Key Vault Reader	Read metadata of key vaults and its certificates, keys, and secrets. Can't read sensitive values such as secret contents or key material.
Key Vault Secrets Officer	Perform any action on the secrets of a key vault, except manage permissions.
Key Vault Secrets User	Read secret contents.

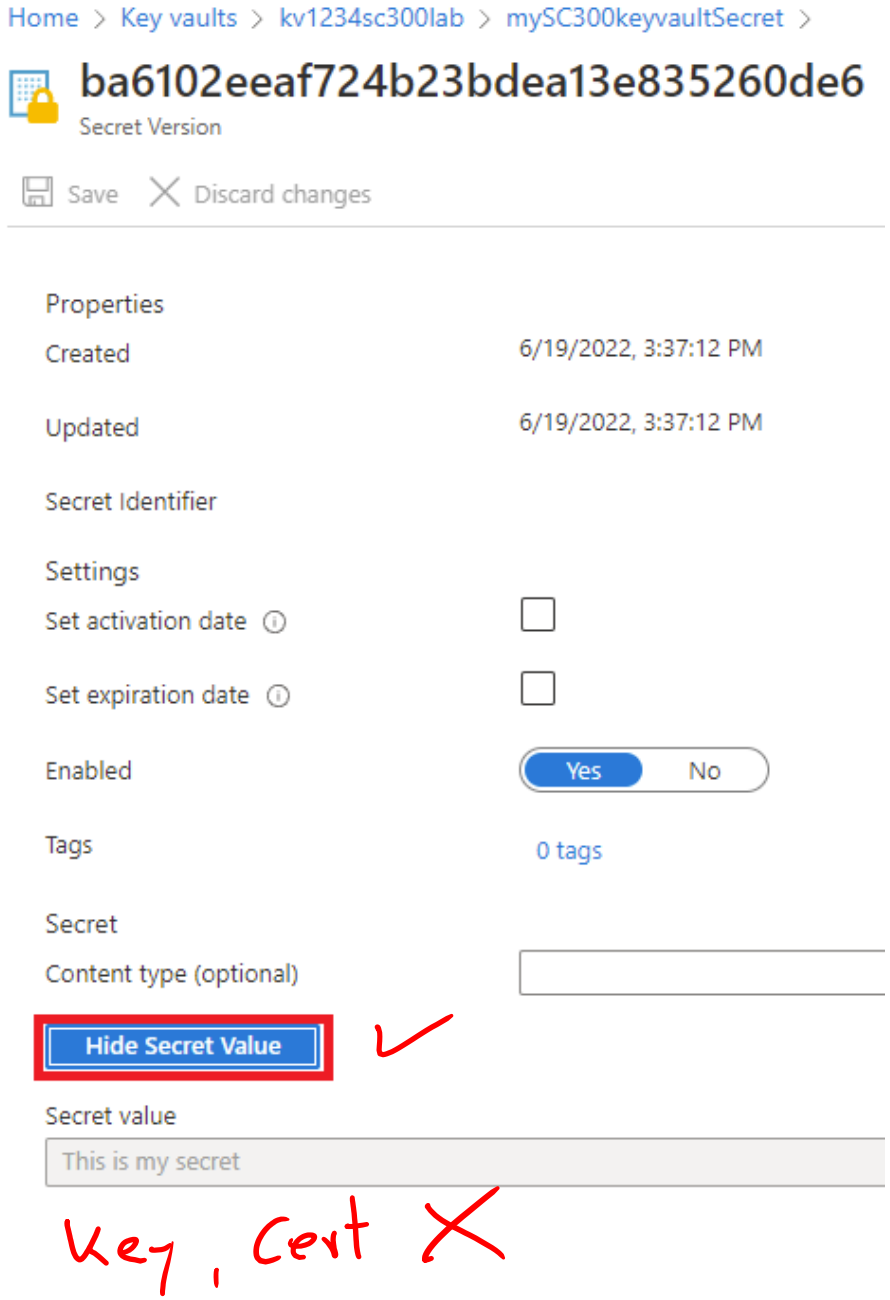
Retrieve objects from Azure Key Vault

Retrieve a secret from Key Vault in the Azure portal

- Azure Key Vault is a secure tool for storing secrets, keys, and certificates.
- Once stored, these items can be used by users and applications to perform actions and operations in a secure method.

Retrieval methods:

- Key Vault UI
- Scripting/code



Retrieve a secret from Key Vault in code/script

Azure CLI

```
az keyvault secret show --name "mySC300keyvaultSecret" --vault-name "<your-unique-keyvault-name>" --query "value"
```

PowerShell

```
$secret = Get-AzKeyVaultSecret -VaultName "<your-unique-keyvault-name>" -Name "mySC300keyvaultSecret" -AsPlainText
```

Application code

If you're building an application that needs access to your key vault secrets, certificates, and keys that can be done. You can access the key vault using .NET, Node.js, Python, and other languages.

References

- Assign Azure roles using the Azure portal – Azure RBAC
- Create or update Azure custom roles using the Azure portal – Azure RBAC
- Configure managed identities using the Azure portal – Microsoft Entra ID
- Assign a managed identity access to a resource using the Azure portal – Microsoft Entra ID
- Understand Azure role definitions – Azure RBAC
- Grant permission to applications to access an Azure key vault using Azure RBAC
- Create and access a secret in Azure Key Vault

Deploy and configure Global Secure Access with Microsoft Entra

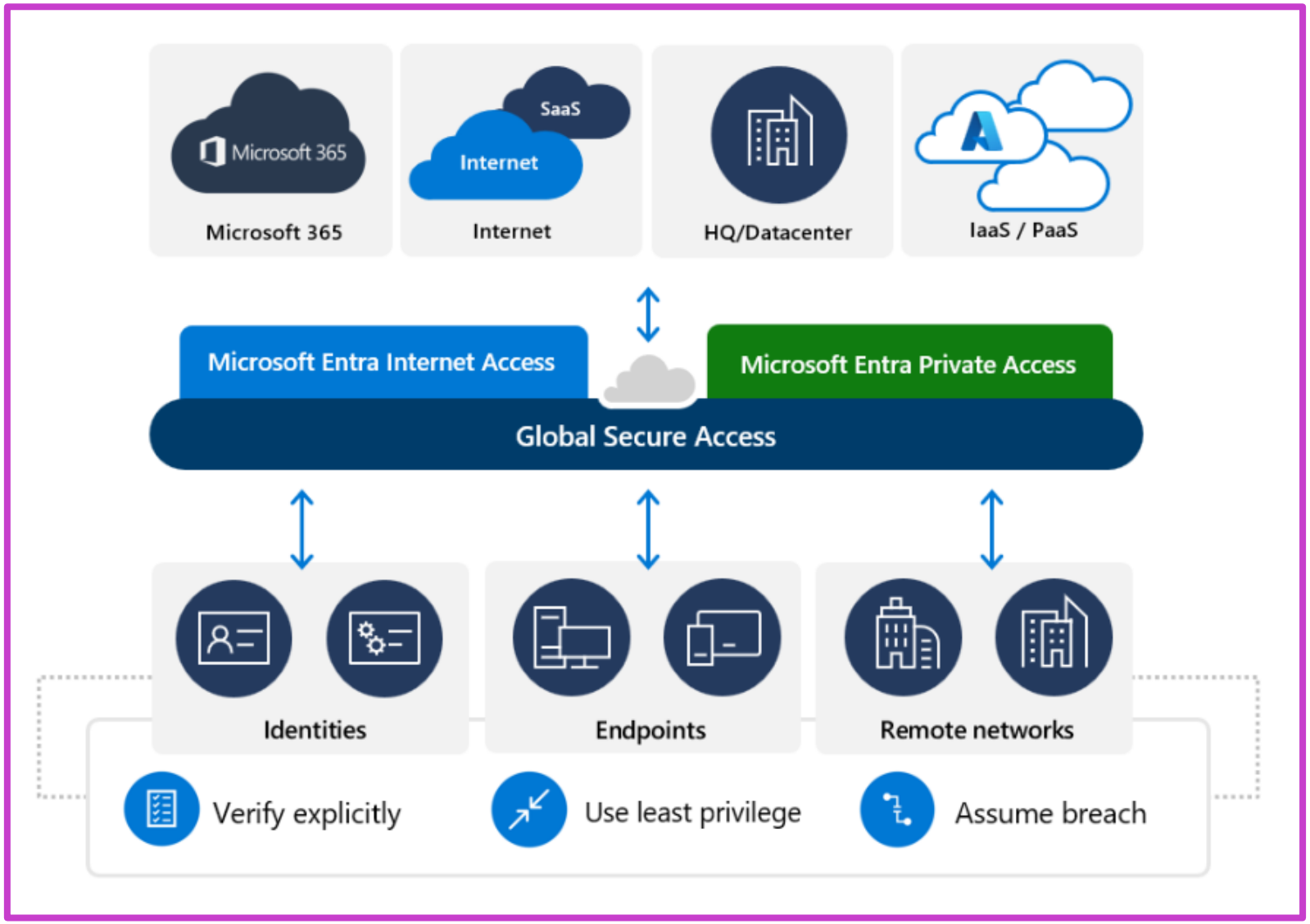
Objectives

1. Define Global Secure Access and it components
2. Explore deployment and configuration of Microsoft Entra Internet Access
3. Explore deployment and configuration of Microsoft Entra Private Access
4. Use the Global Secure Access Dashboard to monitor your systems
5. Configure Remote Networks
6. Create Conditional Access based on Global Secure Access

What is Global Secure Access?

Microsoft Security Service Edge (SSE)

- Microsoft Entra Internet Access
  - Secure access to Microsoft services, SaaS apps, and public internet apps
- Microsoft Entra Private Access
  - Secure access to private corporate resources.



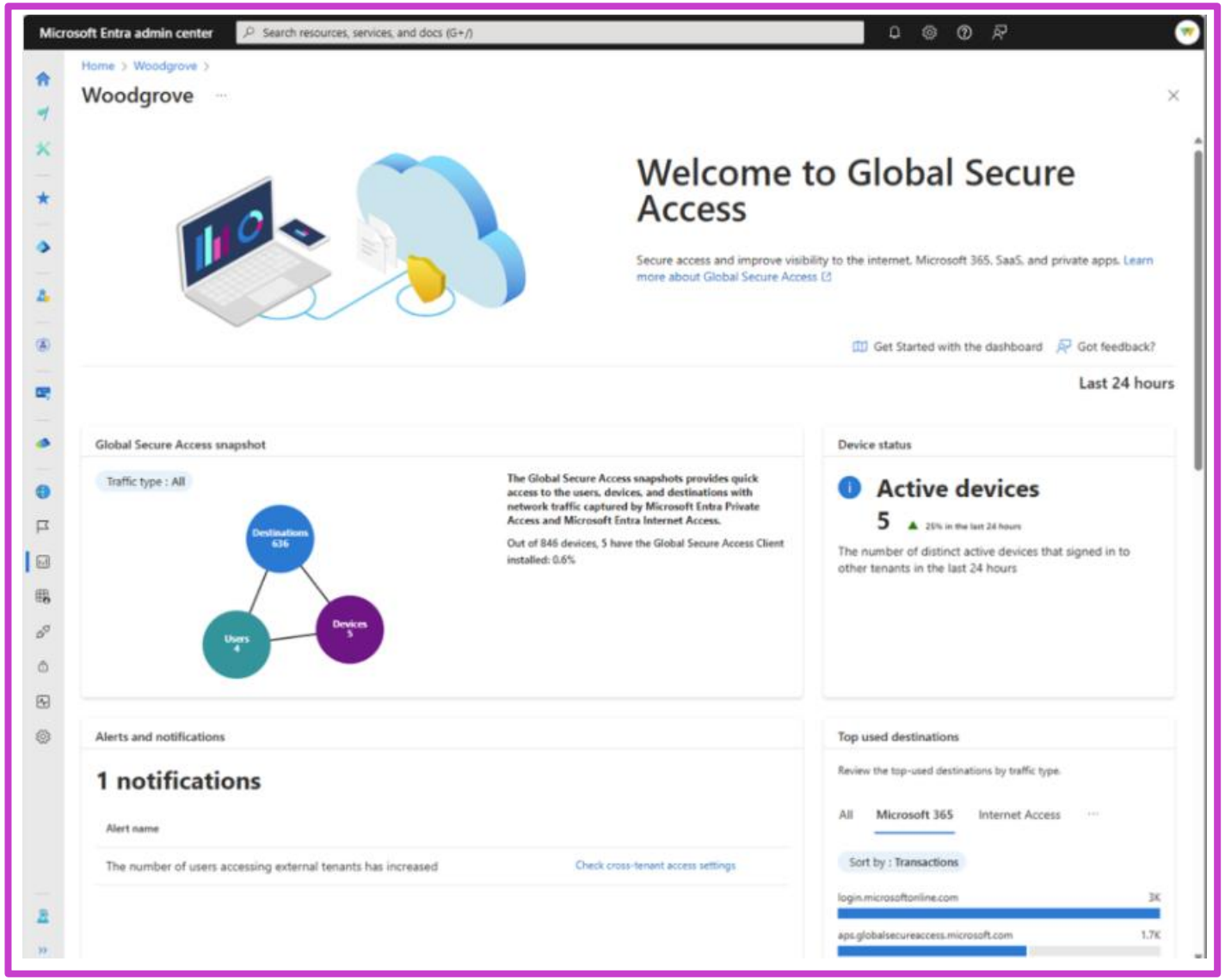
Deploy and configure Microsoft Entra Internet Access

Steps	Description
1. Enable the Microsoft traffic forwarding profile.	With the Microsoft profile enabled, Microsoft Entra Internet Access acquires the traffic going to Microsoft services, like Exchange Online and SharePoint Online.
2. Install the Global Secure Access Client on end-user devices.	Download and install the client app to capture and control access from the client.
3. Enable tenant restrictions.	Configure which tenants / organizations are allowed to blocked.
4. Enable enhanced Global Secure Access signaling and Conditional Access.	Use Conditional Access and Global Secure Access to prevent attacks.

Deploy and configure Microsoft Entra Private Access

Steps	Description
1. Configure a Microsoft Entra private network connector and connector group.	Create connection between an on-premises server and Global Secure Access.
2. Configure Quick Access to your private resources.	Define specific fully qualified domain names (FQDNs) or IP addresses of private resources to include in Microsoft Entra Private Access.
3. Enable the Private Access traffic forwarding profile.	Turn on Private Access and link from on-premises router to remote networks.
4. Install and configure the Global Secure Access Client on end-user devices.	Deploy the client software onto devices, so they can access the traffic flow.

Global Secure Access Dashboard



Reporting widgets and deeper details:

- Global Secure Access snapshot
- Alerts and notifications
- Usage profiling
- Top used destinations
- Cross-tenant access
- Web category filtering
- Device status

Conditional Access updates with Global Secure Access

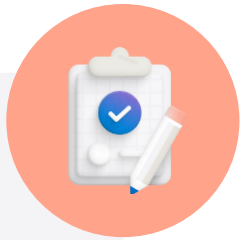
New Conditional Access check	What it does
Compliant network check	Ensures users connect from a verified network connectivity model for their specific tenant and are compliant with security policies enforced by administrators.
Private Access apps	Microsoft Entra Private Access apps is a powerful way to enforce security policies for your internal, private resources.
Source IP restoration	Source IP restoration in Global Secure Access allows backward compatibility for Microsoft Entra customers to continue using original user Source IP.

- Always remember to protect your break-glass accounts.
- You can combine new and existing conditions for more security.

References

- Global Secure Access documentation - Global Secure Access
- Learn about Microsoft Entra Private Access - Global Secure Access
- Learn about Microsoft Entra Internet Access - Global Secure Access
- Learn about Universal Conditional Access through Global Secure Access - Global Secure Access

Summary



Plan and implement MFA

- Plan your MFA deployment
- Configure and manage MFA settings
- Manage MFA for users
- Core piece of Zero Trust

Conditional Access

- Conditional Access policies
- Testing and troubleshooting CA
- Implement application controls
- Session management

Manage user authentication

- Configure authentication methods (passwords to passwordless)
- Windows Hello for Business
- Use Password Protection and Smart Lockout
- Implement tenant restrictions

Identity Protection

- Implement user risk policy
- Configure sign-in risk policies
- Manage MFA registration policy
- Remediate elevated risky users

Access Azure resources

- Built-in and custom roles
- Managed identities
- Key Vault identity level access

Labs

Lab	Brief description	Length
8. Enable MFA	Configure multifactor authentication policies, set up Conditional Access rules, and configure Microsoft Entra MFA for passwords.	10 minutes
9. Configure and deploy SSPR	Enable self-service password reset, register a cell phone number, and test self-service password reset.	15 minutes
10. Microsoft Entra ID Authentication for Windows and Linux VMs	Configure Microsoft Entra ID authentication on a virtual machine running Windows or Linux.	15 minutes
11. Assign Azure resources	Use PIM to assign Azure resource roles	10 minutes
12. Manage Microsoft Entra smart lockout values.	Customize the Microsoft Entra smart lockout values.	5 minutes
13. Implement Conditional Access	Create and test a Conditional Access policy.	10 minutes
14. Enable sign-in risk policy	Enable a user risk policy and a sign-in risk policy.	10 minutes
15. Configure MFA registration policy	Configure a multifactor authentication registration policy.	5 minutes
16. Key Vault and managed identities	Configure an Azure Key Vault for access from a managed identity	10 minutes

Learning path recap

In this learning path, we learned how to:

Configure and manage authentication including MFA.

Implement Zero Trust using Conditional Access and other tools.

Create and manage identities for use with resources and applications.