

UNIT – 3

Security, Privacy, Compliance, and Trust

➤ Aim & Objective

After completing this module, you'll be able to:

- Describe directory services in Azure, including Azure Active Directory (AD).
- Describe authentication methods in Azure, including single sign-on (SSO), multifactor authentication (MFA), and passwordless.
- Describe external identities and guest access in Azure.
- Describe Azure AD Conditional Access.
- Describe Azure Role Based Access Control (RBAC).
- Describe the concept of Zero Trust.
- Describe the purpose of the defense in depth model.
- Describe the purpose of Microsoft Defender for Cloud.

1 Azure identity, access, and security

Azure identity, access, and security are essential components of Microsoft Azure, Microsoft's cloud computing platform. They focus on providing a secure and controlled environment for users and resources within the Azure ecosystem. Two fundamental services related to identity, access, and security in Azure are Azure Active Directory (Azure AD) and Role-Based Access Control (RBAC).

1.1 Azure Active Directory (Azure AD): Azure AD is Microsoft's cloud-based identity and access management service. It acts as a central repository for managing and storing user identities and their associated authentication and authorization information.

1.2 Role-Based Access Control (RBAC): RBAC is a security model used to manage access to Azure resources. It provides a way to control what actions users can perform on specific resources based on their roles and responsibilities within the organization.

1.1 Azure directory services

Azure Active Directory (Azure AD) is a directory service that enables you to sign in and access both Microsoft cloud applications and cloud applications that you develop. Azure AD can also help you maintain your on-premises Active Directory deployment.

For on-premises environments, Active Directory running on Windows Server provides an identity and access management service that's managed by your organization. Azure AD is Microsoft's cloud-based identity and access management service. With Azure AD, you control the identity accounts, but Microsoft ensures that the service is available globally.

When you secure identities on-premises with Active Directory, Microsoft doesn't monitor sign-in attempts. When you connect Active Directory with Azure AD, Microsoft can help protect you by detecting suspicious sign-in attempts at no extra cost. For example, Azure AD can detect sign-in attempts from unknown devices.

Azure AD is for:

- **IT administrators.** Administrators can use Azure AD to control access to applications and resources based on their business requirements.
- **App developers.** Developers can use Azure AD to provide a standards-based approach for adding functionality to applications that they build, such as adding SSO functionality to an app or enabling an app to work with a user's existing credentials.
- **Users.** Users can manage their identities and take maintenance actions like self-service password reset.
- **Online service subscribers.** Microsoft 365, Microsoft Office 365, Azure, and Microsoft Dynamics CRM Online subscribers are already using Azure AD to authenticate into their account.

If you had an on-premises environment running Active Directory and a cloud deployment using Azure AD, you would need to maintain two identity sets. However, you can connect Active Directory with Azure AD, enabling a consistent identity experience between cloud and on-premises.

One method of connecting Azure AD with your on-premises AD is using Azure AD Connect. Azure AD Connect synchronizes user identities between on-premises Active Directory and Azure AD. Azure AD Connect synchronizes changes between both identity systems, so you can use features like SSO, multifactor authentication, and self-service password reset under both systems.

1.2 Azure role-based access control

When you have multiple IT and engineering teams, how can you control what access they have to the resources in your cloud environment? The principle of least privilege says you should only grant access up to the level needed to complete a task. If you only need read access to a storage blob, then you should only be granted read access to that storage blob. Write access to that blob shouldn't be granted, nor should read access to other storage blobs. It's a good security practice to follow.

However, managing that level of permissions for an entire team would become tedious. Instead of defining the detailed access requirements for each individual, and then updating access requirements when new resources are created or new people join the team, Azure enables you to control access through Azure role-based access control (Azure RBAC).

Azure provides built-in roles that describe common access rules for cloud resources. You can also define your own roles. Each role has an associated set of access permissions that relate to that role. When you assign individuals or groups to one or more roles, they receive all the associated access permissions.

So, if you hire a new engineer and add them to the Azure RBAC group for engineers, they automatically get the same access as the other engineers in the same Azure RBAC group. Similarly, if you add additional resources and point Azure RBAC at them, everyone in that Azure RBAC group will now have those permissions on the new resources as well as the existing resources.





1.2.1 Application:

Role-based access control is applied to a scope, which is a resource or set of resources that this access applies to.

Scopes include:

- A management group (a collection of multiple subscriptions).
- A single subscription.
- A resource group.
- A single resource.

The following diagram shows the relationship between roles and scopes. A management group, subscription, or resource group might be given the role of owner, so they have increased control and authority. An observer, who isn't expected to make any updates, might be given a role of Reader for the same scope, enabling them to review or observe the management group, subscription, or resource group.

		Role				
		Reader	Resource-specific	Custom	Contributor	Owner
Scope	 Management group	Observers	Users managing resources			Admins
	 Subscription					
	 Resource group					
	 Resource	Automated processes				

Observers, users managing resources, admins, and automated processes illustrate the kinds of users or accounts that would typically be assigned each of the various roles.

Azure RBAC is hierarchical, in that when you grant access at a parent scope, those permissions are inherited by all child scopes. For example:

- When you assign the Owner role to a user at the management group scope, that user can manage everything in all subscriptions within the management group.
- When you assign the Reader role to a group at the subscription scope, the members of that group can view every resource group and resource within the subscription.

1.2.2 Azure RBAC enforcement:

Azure RBAC is enforced on any action that's initiated against an Azure resource that passes through Azure Resource Manager. Resource Manager is a management service that provides a way to organize and secure your cloud resources.

You typically access Resource Manager from the Azure portal, Azure Cloud Shell, Azure PowerShell, and the Azure CLI. Azure RBAC doesn't enforce access permissions at the application or data level. Application security must be handled by your application.

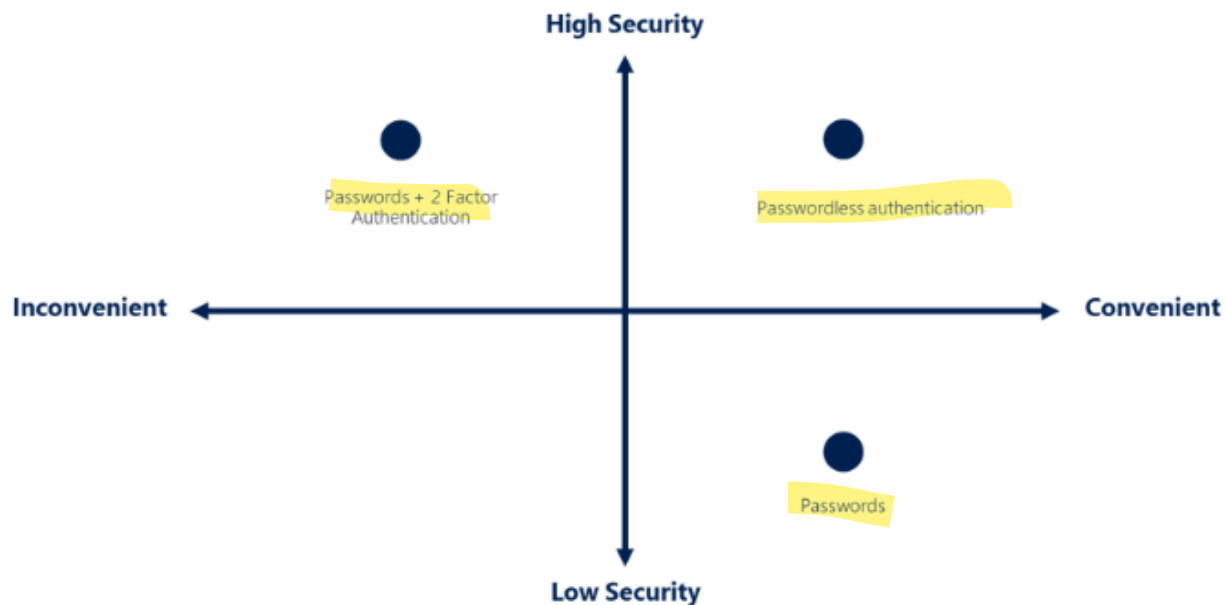
Azure RBAC uses an allow model. When you're assigned a role, Azure RBAC allows you to perform actions within the scope of that role. If one role assignment grants you read permissions to a resource group and a different role assignment grants you write permissions to the same resource group, you have both read and write permissions on that resource group.

3 Azure authentication methods

Authentication is the process of establishing the identity of a person, service, or device. It requires the person, service, or device to provide some type of credential to prove who they are. Authentication is like presenting ID when you're traveling. It doesn't confirm that you're ticketed, it just proves that you're who you say you are. Azure supports multiple authentication methods, including standard passwords, single sign-on (SSO), multifactor authentication (MFA), and passwordless.

For the longest time, security and convenience seemed to be at odds with each other. Thankfully, new authentication solutions provide both security and convenience.

The following diagram shows the security level compared to the convenience. Notice Passwordless authentication is high security and high convenience while passwords on their own are low security but high convenience.



3.1 single sign-on

Single sign-on (SSO) enables a user to sign in one time and use that credential to access multiple resources and applications from different providers. For SSO to work, the different applications and providers must trust the initial authenticator.

More identities mean more passwords to remember and change. Password policies can vary among applications. As complexity requirements increase, it becomes increasingly difficult for users to remember them. The more passwords a user has to manage, the greater the risk of a credential-related security incident.

Consider the process of managing all those identities. More strain is placed on help desks as they deal with account lockouts and password reset requests. If a user leaves an organization, tracking down all those identities and ensuring they're disabled can be challenging. If an identity is overlooked, this might allow access when it should have been eliminated.

With SSO, you need to remember only one ID and one password. Access across applications is granted to a single identity that's tied to the user, which simplifies the security model. As users change roles or leave an organization, access is tied to a single identity. This change greatly reduces the effort needed to change or disable accounts. Using SSO for accounts makes it easier for users to manage their identities and for IT to manage users.

3.2 Multifactor Authentication:

Multifactor authentication is the process of prompting a user for an extra form (or factor) of identification during the sign-in process. MFA helps protect against a password compromise in situations where the password was compromised but the second factor wasn't.

Think about how you sign into websites, email, or online services. After entering your username and password, have you ever needed to enter a code that was sent to your phone? If so, you've used multifactor authentication to sign in.

Multifactor authentication provides additional security for your identities by requiring two or more elements to fully authenticate. These elements fall into three categories:

- Something the user knows – this might be a challenge question.
- Something the user has – this might be a code that's sent to the user's mobile phone.
- Something the user is – this is typically some sort of biometric property, such as a fingerprint or face scan.

Multifactor authentication increases identity security by limiting the impact of credential exposure (for example, stolen usernames and passwords). With multifactor authentication enabled, an attacker who has a user's password would also need to have possession of their phone or their fingerprint to fully authenticate.

Compare multifactor authentication with single-factor authentication. Under single-factor authentication, an attacker would need only a username and password to authenticate. Multifactor authentication should be enabled wherever possible because it adds enormous benefits to security.

3.2.1 Azure AD Multi-Factor Authentication

Azure AD Multi-Factor Authentication is a Microsoft service that provides multifactor authentication capabilities. Azure AD Multi-Factor Authentication enables users to choose an additional form of authentication during sign-in, such as a phone call or mobile app notification.

3.3 passwordless authentication

Features like MFA are a great way to secure your organization, but users often get frustrated with the additional security layer on top of having to remember their passwords. People are more likely to comply when it's easy and convenient to do so. Passwordless authentication methods are more convenient because the password is removed and replaced with something you have, plus something you are, or something you know.

Passwordless authentication needs to be set up on a device before it can work. For example, your computer is something you have. Once it's been registered or enrolled, Azure now knows that it's associated with you. Now that the computer is known, once you provide something you know or are (such as a PIN or fingerprint), you can be authenticated without using a password.

Each organization has different needs when it comes to authentication. Microsoft global Azure and Azure Government offer the following three passwordless authentication options that integrate with Azure Active Directory (Azure AD):

- Windows Hello for Business
- Microsoft Authenticator app
- FIDO2 security keys

3.3.1 Windows Hello for Business

Windows Hello for Business is ideal for information workers that have their own designated Windows PC. The biometric and PIN credentials are directly tied to the user's PC, which prevents access from anyone other than the owner. With public key infrastructure (PKI) integration and built-in support for single sign-on (SSO), Windows Hello for Business provides a convenient method for seamlessly accessing corporate resources on-premises and in the cloud.

3.3.2 Microsoft Authenticator App

You can also allow your employee's phone to become a passwordless authentication method. You may already be using the Microsoft Authenticator App as a convenient multi-factor authentication option in addition to a password. You can also use the Authenticator App as a passwordless option.

The Authenticator App turns any iOS or Android phone into a strong, passwordless credential. Users can sign-in to any platform or browser by getting a notification to their phone, matching a number displayed on the screen to the one on their phone, and then using their biometric (touch or face) or PIN to confirm. Refer to Download and install the Microsoft Authenticator app for installation details.

3.3.3 FIDO2 security keys

The FIDO (Fast IDentity Online) Alliance helps to promote open authentication standards and reduce the use of passwords as a form of authentication. FIDO2 is the latest standard that incorporates the web authentication (WebAuthn) standard.

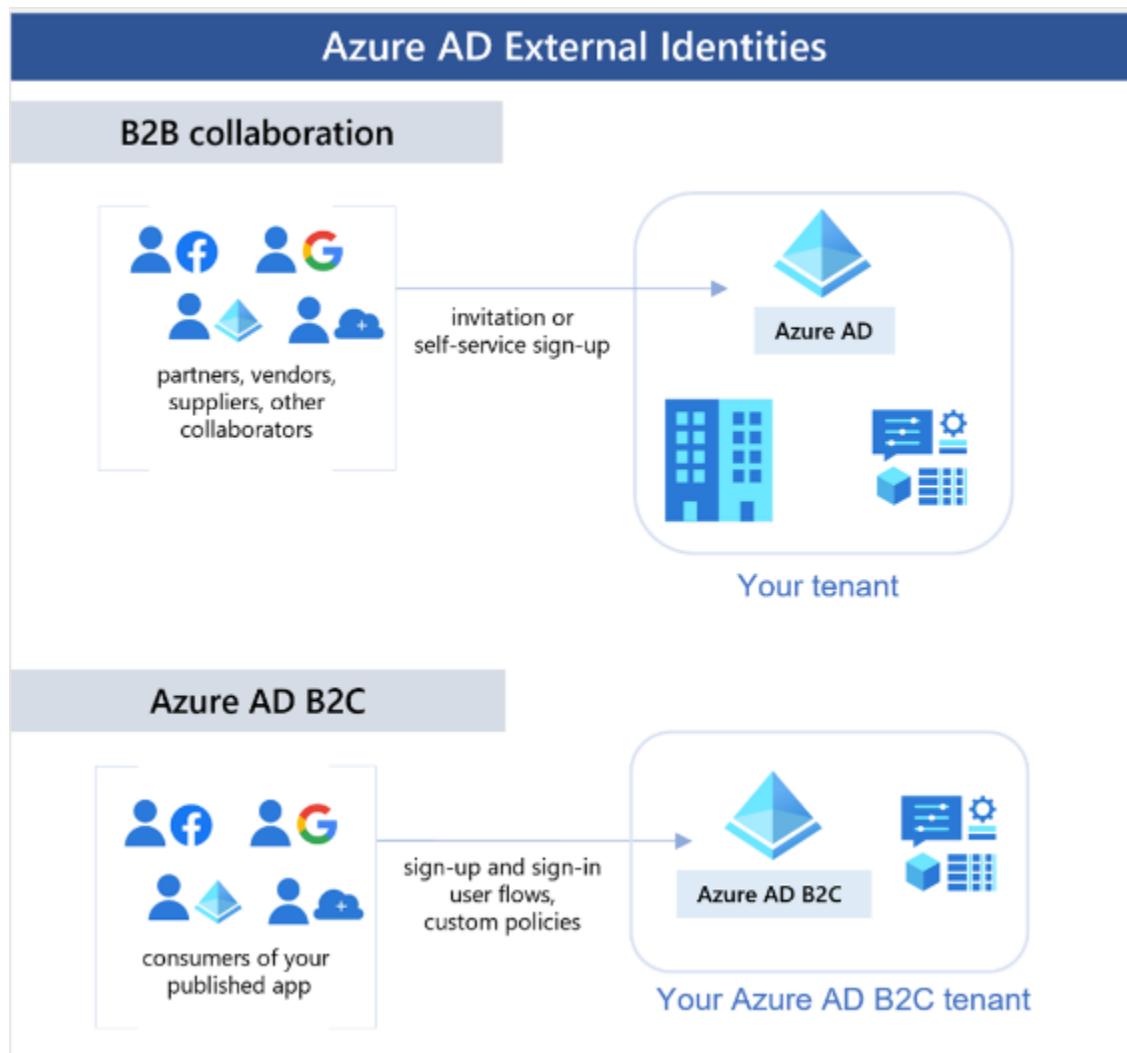
FIDO2 security keys are an unphishable standards-based passwordless authentication method that can come in any form factor. Fast Identity Online (FIDO) is an open standard for passwordless authentication. FIDO allows users and organizations to leverage the standard to sign-in to their resources without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

Users can register and then select a FIDO2 security key at the sign-in interface as their main means of authentication. These FIDO2 security keys are typically USB devices, but could also use Bluetooth or NFC. With a hardware device that handles the authentication, the security of an account is increased as there's no password that could be exposed or guessed.

4 Azure external identities (B2B And B2C):

An external identity is a person, device, service, etc. that is outside your organization. Azure AD External Identities refers to all the ways you can securely interact with users outside of your organization. If you want to collaborate with partners, distributors, suppliers, or vendors, you can share your resources and define how your internal users can access external organizations. If you're a developer creating consumer-facing apps, you can manage your customers' identity experiences.

External identities may sound similar to single sign-on. With External Identities, external users can "bring their own identities." Whether they have a corporate or government-issued digital identity, or an unmanaged social identity like Google or Facebook, they can use their own credentials to sign in. The external user's identity provider manages their identity, and you manage access to your apps with Azure AD or Azure AD B2C to keep your resources protected.



The following capabilities make up External Identities:

- **Business to business (B2B) collaboration** - Collaborate with external users by letting them use their preferred identity to sign-in to your Microsoft applications or other enterprise applications (SaaS apps, custom-developed apps, etc.). B2B collaboration users are represented in your directory, typically as guest users.
- **B2B direct connect** - Establish a mutual, two-way trust with another Azure AD organization for seamless collaboration. B2B direct connect currently supports Teams shared channels, enabling external users to access your resources from within their home instances of Teams. B2B direct connect users aren't represented in your directory, but they're visible from within the Teams shared channel and can be monitored in Teams admin center reports.
- **Azure AD business to customer (B2C)** - Publish modern SaaS apps or custom-developed apps (excluding Microsoft apps) to consumers and customers, while using Azure AD B2C for identity and access management.

Depending on how you want to interact with external organizations and the types of resources you need to share, you can use a combination of these capabilities.

With Azure Active Directory (Azure AD), you can easily enable collaboration across organizational boundaries by using the Azure AD B2B feature. Guest users from other tenants can be invited by administrators or by other users. This capability also applies to social identities such as Microsoft accounts.

You also can easily ensure that guest users have appropriate access. You can ask the guests themselves or a decision maker to participate in an access review and recertify (or attest) to the guests' access. The reviewers can give their input on each user's need for continued access, based on suggestions from Azure AD. When an access review is finished, you can then make changes and remove access for guests who no longer need it.

5 Azure Zero trust model

Zero Trust is a security model that assumes the worst case scenario and protects resources with that expectation. Zero Trust assumes breach at the outset, and then verifies each request as though it originated from an uncontrolled network.

Today, organizations need a new security model that effectively adapts to the complexity of the modern environment; embraces the mobile workforce; and protects people, devices, applications, and data wherever they're located.

To address this new world of computing, Microsoft highly recommends the Zero Trust security model, which is based on these guiding principles:

- **Verify explicitly** - Always authenticate and authorize based on all available data points.
- **Use least privilege access** - Limit user access with Just-In-Time and Just-Enough-Access (JIT/JEA), risk-based adaptive policies, and data protection.
- **Assume breach** - Minimize blast radius and segment access. Verify end-to-end encryption. Use analytics to get visibility, drive threat detection, and improve defenses.

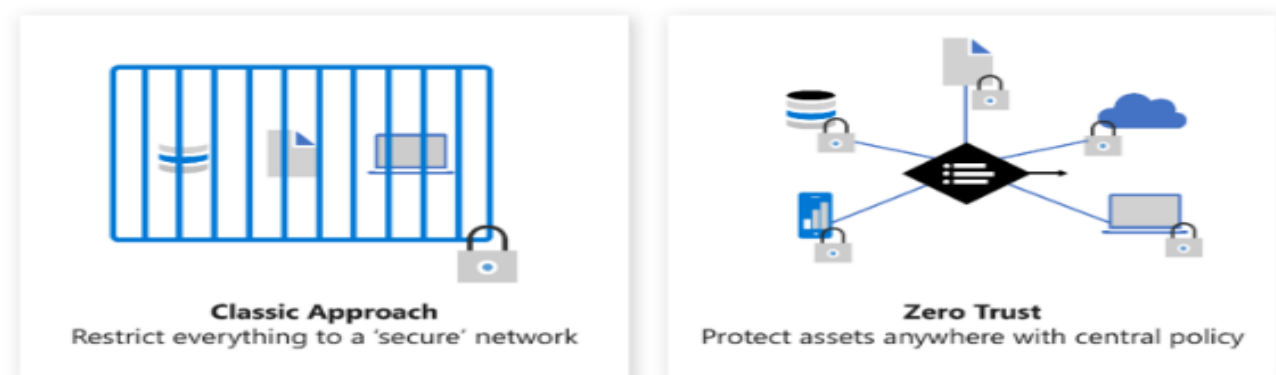
Adjusting to Zero Trust

Traditionally, corporate networks were restricted, protected, and generally assumed safe. Only managed computers could join the network, VPN access was tightly controlled, and personal devices were frequently restricted or blocked.

The Zero Trust model flips that scenario. Instead of assuming that a device is safe because it's within the corporate network, it requires everyone to authenticate. Then grants access based on authentication rather than location.

Secure assets where they are with Zero Trust

Simplify security and make it more effective



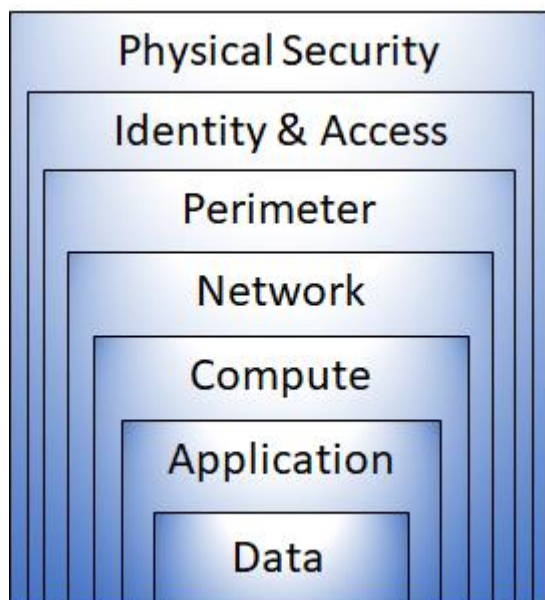
5.1 defense-in-depth

The objective of defense-in-depth is to protect information and prevent it from being stolen by those who aren't authorized to access it.

A defense-in-depth strategy uses a series of mechanisms to slow the advance of an attack that aims at acquiring unauthorized access to data.

Layers of defense-in-depth

You can visualize defense-in-depth as a set of layers, with the data to be secured at the center and all the other layers functioning to protect that central data layer.



Each layer provides protection so that if one layer is breached, a subsequent layer is already in place to prevent further exposure. This approach removes reliance on any single layer of protection. It slows down an attack and provides alert information that security teams can act upon, either automatically or manually.

Here's a brief overview of the role of each layer:

- The physical security layer is the first line of defense to protect computing hardware in the datacenter.
- The identity and access layer controls access to infrastructure and change control.
- The perimeter layer uses distributed denial of service (DDoS) protection to filter large-scale attacks before they can cause a denial of service for users.
- The network layer limits communication between resources through segmentation and access controls.

- The compute layer secures access to virtual machines.
- The application layer helps ensure that applications are secure and free of security vulnerabilities.
- The data layer controls access to business and customer data that you need to protect.

These layers provide a guideline for you to help make security configuration decisions in all of the layers of your applications.

Azure provides security tools and features at every level of the defense-in-depth concept. Let's take a closer look at each layer:

Physical security

Physically securing access to buildings and controlling access to computing hardware within the datacenter are the first line of defense.

With physical security, the intent is to provide physical safeguards against access to assets. These safeguards ensure that other layers can't be bypassed, and loss or theft is handled appropriately. Microsoft uses various physical security mechanisms in its cloud datacenters.

Identity and access

The identity and access layer is all about ensuring that identities are secure, that access is granted only to what's needed, and that sign-in events and changes are logged.

At this layer, it's important to:

- Control access to infrastructure and change control.
- Use single sign-on (SSO) and multifactor authentication.
- Audit events and changes.

Perimeter

The network perimeter protects from network-based attacks against your resources. Identifying these attacks, eliminating their impact, and alerting you when they happen are important ways to keep your network secure.

At this layer, it's important to:

- Use DDoS protection to filter large-scale attacks before they can affect the availability of a system for users.
- Use perimeter firewalls to identify and alert on malicious attacks against your network.

Network

At this layer, the focus is on limiting the network connectivity across all your resources to allow only what's required. By limiting this communication, you reduce the risk of an attack spreading to other systems in your network.

At this layer, it's important to:

- Limit communication between resources.
- Deny by default.
- Restrict inbound internet access and limit outbound access where appropriate.
- Implement secure connectivity to on-premises networks.

Compute

Malware, unpatched systems, and improperly secured systems open your environment to attacks. The focus in this layer is on making sure that your compute resources are secure and that you have the proper controls in place to minimize security issues.

At this layer, it's important to:

- Secure access to virtual machines.
- Implement endpoint protection on devices and keep systems patched and current.

Application

Integrating security into the application development lifecycle helps reduce the number of vulnerabilities introduced in code. Every development team should ensure that its applications are secure by default.

At this layer, it's important to:

- Ensure that applications are secure and free of vulnerabilities.
- Store sensitive application secrets in a secure storage medium.
- Make security a design requirement for all application development.

Data

Those who store and control access to data are responsible for ensuring that it's properly secured. Often, regulatory requirements dictate the controls and processes that must be in place to ensure the confidentiality, integrity, and availability of the data.

In almost all cases, attackers are after data:

- Stored in a database.
- Stored on disk inside virtual machines.
- Stored in software as a service (SaaS) applications, such as Office 365.
- Managed through cloud storage.

6 Microsoft Defender for Cloud

Defender for Cloud is a monitoring tool for security posture management and threat protection. It monitors your cloud, on-premises, hybrid, and multicloud environments to provide guidance and notifications aimed at strengthening your security posture.

Defender for Cloud provides the tools needed to harden your resources, track your security posture, protect against cyber-attacks, and streamline security management. Deployment of Defender for Cloud is easy, it's already natively integrated to Azure.

Protection everywhere you're deployed

Because Defender for Cloud is an Azure-native service, many Azure services are monitored and protected without needing any deployment. However, if you also have an on-premises datacenter or are also operating in another cloud environment, monitoring of Azure services may not give you a complete picture of your security situation.

When necessary, Defender for Cloud can automatically deploy a Log Analytics agent to gather security-related data. For Azure machines, deployment is handled directly. For hybrid and multicloud environments, Microsoft Defender plans are extended to non-Azure machines with the help of Azure Arc. Cloud security posture management (CSPM) features are extended to multicloud machines without the need for any agents.

Azure-native protections

Defender for Cloud helps you detect threats across:

- Azure PaaS services – Detect threats targeting Azure services including Azure App Service, Azure SQL, Azure Storage Account, and more data services. You can also perform anomaly detection on your Azure activity logs using the native integration with Microsoft Defender for Cloud Apps (formerly known as Microsoft Cloud App Security).
- Azure data services – Defender for Cloud includes capabilities that help you automatically classify your data in Azure SQL. You can also get assessments for potential vulnerabilities across Azure SQL and Storage services, and recommendations for how to mitigate them.
- Networks – Defender for Cloud helps you limit exposure to brute force attacks. By reducing access to virtual machine ports, using the just-in-time VM access, you can harden your network by preventing unnecessary access. You can set secure access policies on selected ports, for only authorized users, allowed source IP address ranges or IP addresses, and for a limited amount of time.

Defend your hybrid resources

In addition to defending your Azure environment, you can add Defender for Cloud capabilities to your hybrid cloud environment to protect your non-Azure servers. To help you focus on what matters the most, you'll get customized threat intelligence and prioritized alerts according to your specific environment.

To extend protection to on-premises machines, deploy Azure Arc and enable Defender for Cloud's enhanced security features.

Defend resources running on other clouds

Defender for Cloud can also protect resources in other clouds (such as AWS and GCP).

For example, if you've connected an Amazon Web Services (AWS) account to an Azure subscription, you can enable any of these protections:

- Defender for Cloud's CSPM features extend to your AWS resources. This agentless plan assesses your AWS resources according to AWS-specific security recommendations, and includes the results in the secure score. The resources will also be assessed for compliance with built-in standards specific to AWS (AWS CIS, AWS PCI DSS, and AWS Foundational Security Best Practices). Defender for Cloud's asset inventory page is a multicloud enabled feature helping you manage your AWS resources alongside your Azure resources.
- Microsoft Defender for Containers extends its container threat detection and advanced defenses to your Amazon EKS Linux clusters.
- Microsoft Defender for Servers brings threat detection and advanced defenses to your Windows and Linux EC2 instances.

Assess, Secure, and Defend

Defender for Cloud fills three vital needs as you manage the security of your resources and workloads in the cloud and on-premises:

- Continuously assess – Know your security posture. Identify and track vulnerabilities.
- Secure – Harden resources and services with Azure Security Benchmark.
- Defend – Detect and resolve threats to resources, workloads, and services.



Continuously assess

Defender for cloud helps you continuously assess your environment. Defender for Cloud includes vulnerability assessment solutions for your virtual machines, container registries, and SQL servers.

Microsoft Defender for servers includes automatic, native integration with Microsoft Defender for Endpoint. With this integration enabled, you'll have access to the vulnerability findings from Microsoft threat and vulnerability management.

Between these assessment tools you'll have regular, detailed vulnerability scans that cover your compute, data, and infrastructure. You can review and respond to the results of these scans all from within Defender for Cloud.

Secure

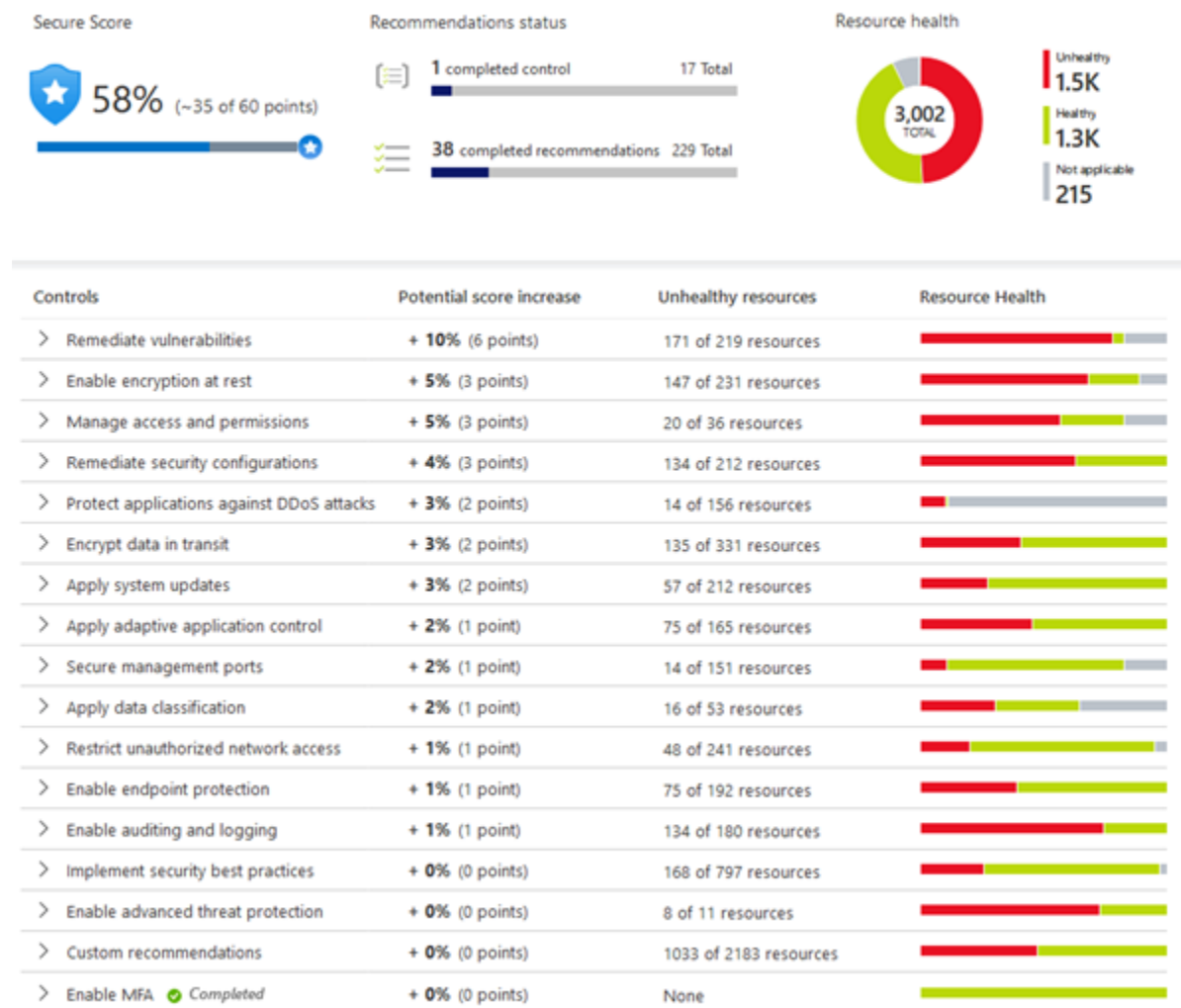
From authentication methods to access control to the concept of Zero Trust, security in the cloud is an essential basic that must be done right. In order to be secure in the cloud, you have to ensure your workloads are secure. To secure your workloads, you need security policies in place that are tailored to your environment and situation. Because policies in Defender for Cloud are built on top of Azure Policy controls, you're getting the full range and flexibility of a world-class policy solution. In Defender for Cloud, you can set your policies to run on management groups, across subscriptions, and even for a whole tenant.

One of the benefits of moving to the cloud is the ability to grow and scale as you need, adding new services and resources as necessary. Defender for Cloud is constantly monitoring for new resources being deployed across your workloads. Defender for Cloud assesses if new resources are configured according to security best practices. If not, they're flagged and you get a prioritized list of recommendations for what you need to fix. Recommendations help you reduce the attack surface across each of your resources.

The list of recommendations is enabled and supported by the Azure Security Benchmark. This Microsoft-authored, Azure-specific, benchmark provides a set of guidelines for security and compliance best practices based on common compliance frameworks.

In this way, Defender for Cloud enables you not just to set security policies, but to apply secure configuration standards across your resources.

To help you understand how important each recommendation is to your overall security posture, Defender for Cloud groups the recommendations into security controls and adds a secure score value to each control. The secure score gives you an at-a-glance indicator of the health of your security posture, while the controls give you a working list of things to consider to improve your security score and your overall security posture.



Defend

The first two areas were focused on assessing, monitoring, and maintaining your environment. Defender for Cloud also helps you defend your environment by providing security alerts and advanced threat protection features.

Security alerts

When Defender for Cloud detects a threat in any area of your environment, it generates a security alert. Security alerts:

- Describe details of the affected resources
- Suggest remediation steps
- Provide, in some cases, an option to trigger a logic app in response

Whether an alert is generated by Defender for Cloud or received by Defender for Cloud from an integrated security product, you can export it. Defender for Cloud's threat protection includes fusion kill-chain analysis, which automatically correlates alerts in your environment based on cyber kill-chain analysis, to help you better understand the full story of an attack campaign, where it started, and what kind of impact it had on your resources.

Advanced threat protection

Defender for cloud provides advanced threat protection features for many of your deployed resources, including virtual machines, SQL databases, containers, web applications, and your network. Protections include securing the management ports of your VMs with just-in-time access, and adaptive application controls to create allowlists for what apps should and shouldn't run on your machines.

7 Features and tools in Azure for governance and compliance

Microsoft Azure places a strong emphasis on security, privacy, and trust, providing a robust set of features and tools to ensure that customer data and applications are protected, and compliance with various industry standards and regulations is maintained. Here's how Azure addresses security, privacy, and trust:

- 1. Data Encryption:** Azure offers encryption at rest and in transit to protect data from unauthorized access. Azure Key Vault provides a secure key management solution for safeguarding cryptographic keys used for data encryption.
- 2. Azure Security Center:** Azure Security Center is a centralized security management tool that continuously monitors the security posture of Azure resources. It provides security recommendations and threat detection capabilities to enhance the security of applications and data.
- 3. Identity and Access Management:** Azure Active Directory (Azure AD) allows organizations to manage user identities and access to resources. Multi-factor authentication (MFA) adds an extra layer of security to user sign-ins.
- 4. Compliance Certifications:** Azure maintains a wide range of compliance certifications, including ISO, SOC, GDPR, HIPAA, FedRAMP, and others. These certifications demonstrate adherence to strict security and privacy standards.
- 5. Azure Policy:** Azure Policy helps enforce compliance with organization-specific rules and industry regulations across Azure resources. It allows the definition and enforcement of policies that govern access, configurations, and more.
- 6. Azure Blueprints:** Azure Blueprints facilitate the creation of reusable templates for cloud deployments, including security and compliance policies. This ensures consistent and compliant deployments across the organization.
- 7. Azure Sentinel:** Azure Sentinel is a cloud-native SIEM and SOAR solution, enabling organizations to detect and respond to security incidents in real-time, promoting better trust and security.
- 8. Azure Data Lake Storage (ADLS) and Azure Data Factory:** These services enable secure and compliant data management. ADLS provides secure data storage, while Azure Data Factory helps build and manage data pipelines while adhering to data governance policies.

9. Azure Sovereign Regions: Azure offers sovereign cloud regions dedicated to specific countries or regions, helping organizations comply with data residency requirements.

10. Privacy and Data Protection: Azure adheres to strict privacy principles and policies, including the Microsoft Privacy Statement. Customers maintain ownership and control of their data, and Microsoft does not use customer data for advertising purposes.

11. Microsoft Trust Center: The Microsoft Trust Center provides comprehensive information about Microsoft's security, privacy, and compliance practices, enhancing transparency and customer trust.

12. Azure AD B2B and B2C: Azure AD B2B enables secure collaboration with external partners, while Azure AD B2C facilitates secure customer identity and access management.

13. Secure Development Practices: Microsoft follows secure development practices, such as the Security Development Lifecycle (SDL), to create secure and reliable software.

14. Threat Intelligence: Azure benefits from Microsoft's extensive global threat intelligence to proactively identify and mitigate security risks.

These features and tools demonstrate Azure's commitment to maintaining a secure and trusted cloud environment, giving organizations the confidence to run their critical workloads and sensitive data on the platform while meeting strict security and compliance requirements. It's essential for organizations to familiarize themselves with Azure's security and compliance documentation to fully leverage these capabilities.