



Securing and monitoring Azure AD accounts

Thomas Naunheim
Azure Meetup Bonn, 20.08.2019

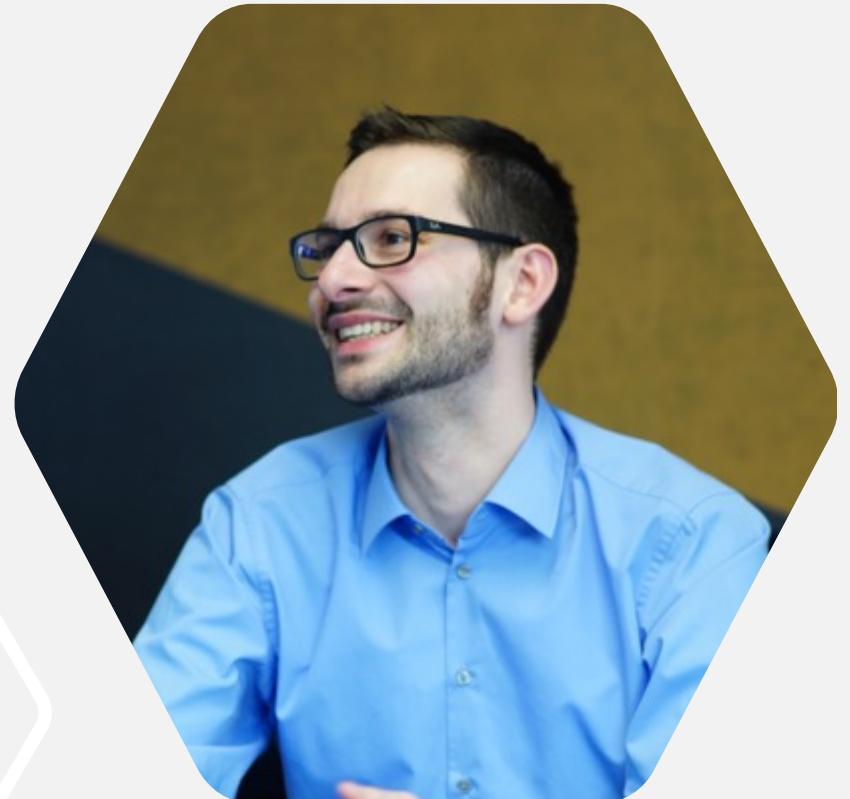
About Me

Thomas Naunheim

Cloud Engineer
Koblenz, Germany

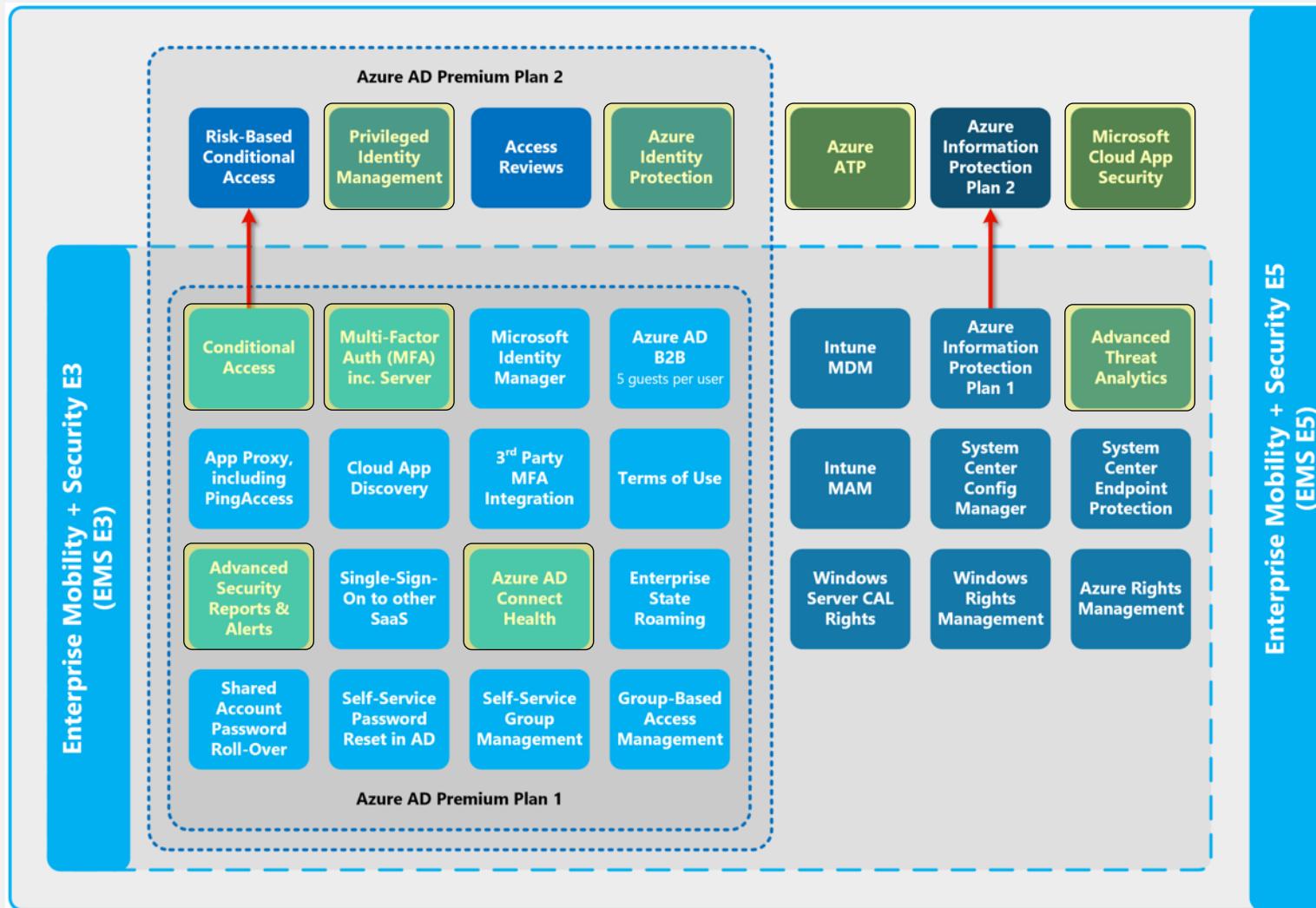
 @Thomas_Live

 Thomas@Naunheim.net



About Licensing...

...security costs money!



Agenda

1. Zero Trust with „Conditional Access“
2. Advanced protection of identities and access
3. Privileged identity management
4. Auditing and monitoring



Microsoft's "Zero Trust" approach

never trust, always verify

Identity Protection

→ Strong identities with detection of user/sign-in risk

Endpoint Security

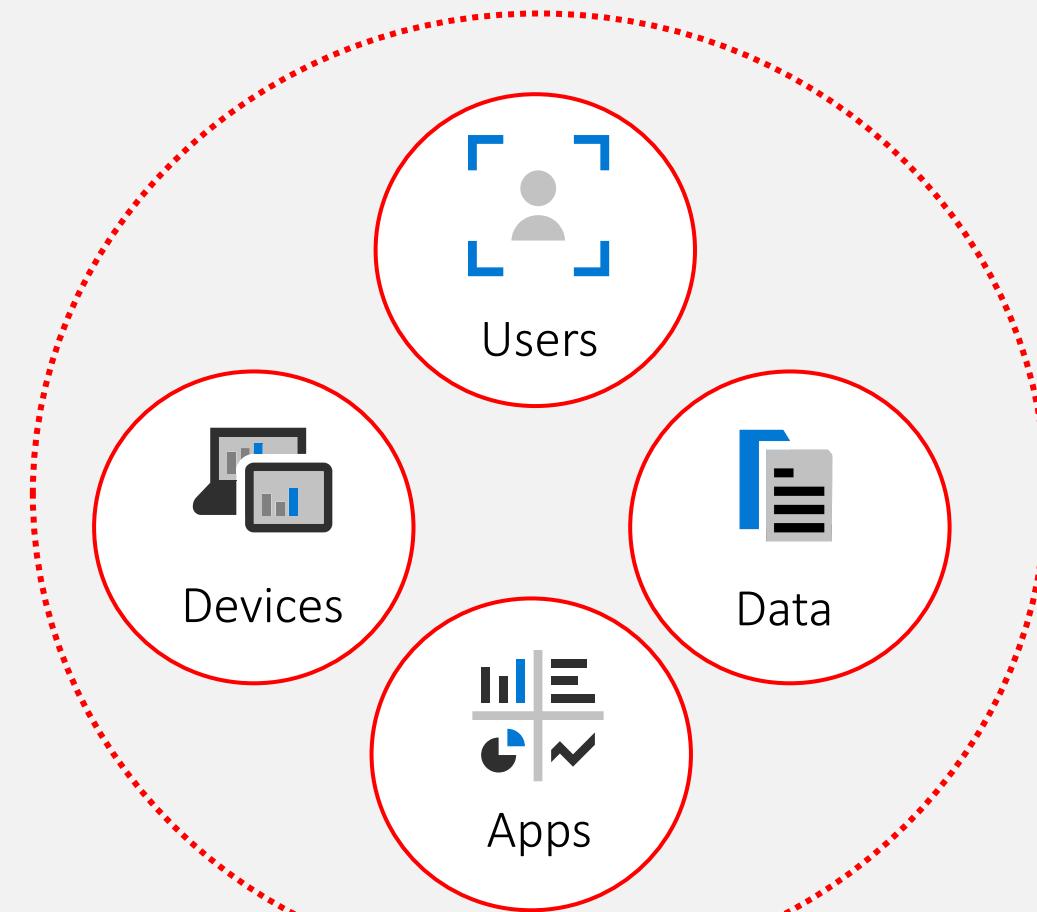
→ Enrolled devices (health and compliance status)

Information Protection

→ Policies based on classification/risk levels

(Cloud) App Security

→ Monitoring and controlling of apps and activities



*Unprivileged network
(outside traditional corporate network
boundaries with VPN and firewalls)*

Identity as a new perimeter

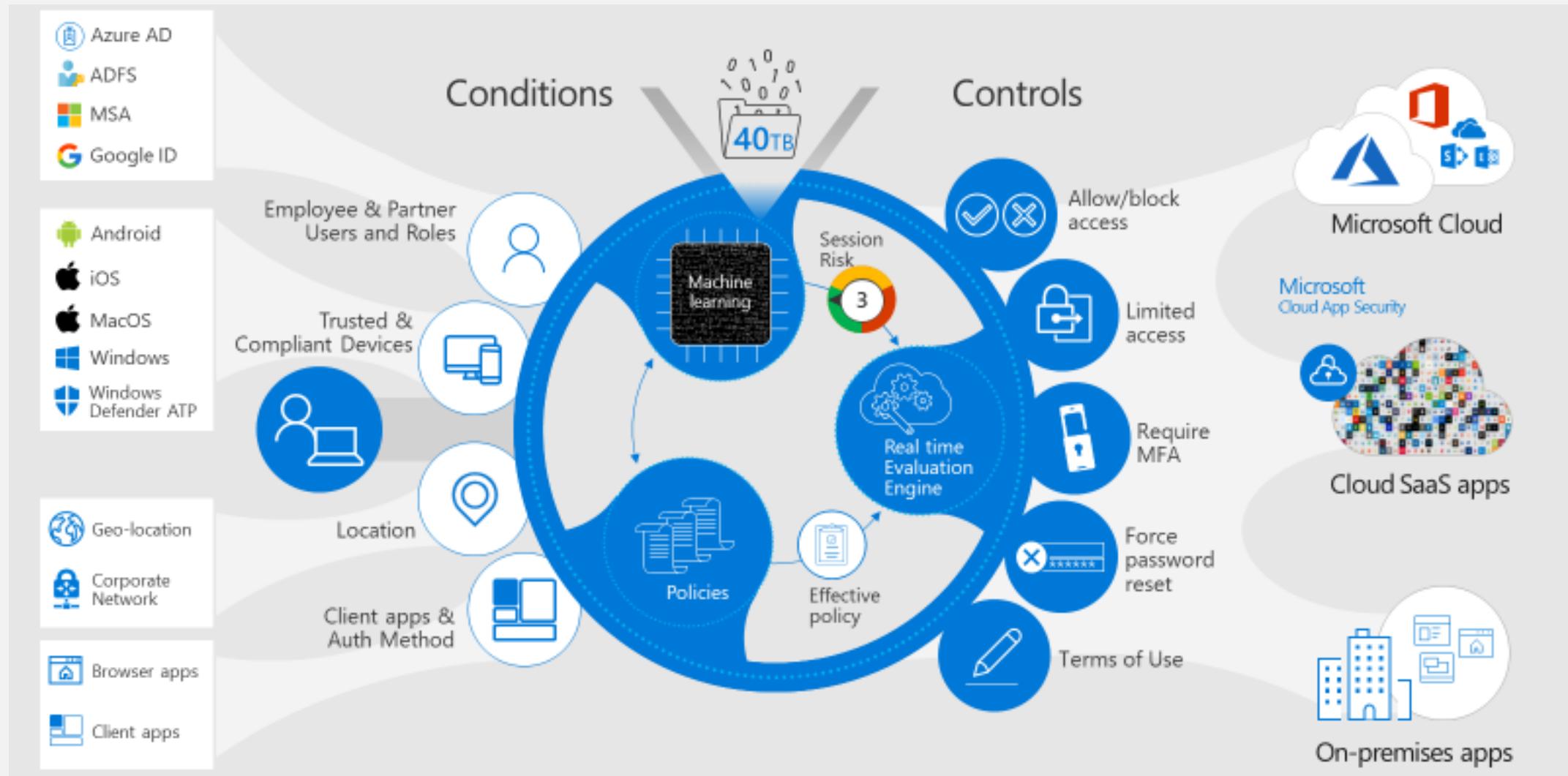
General considerations

- Do not rely on your **existing security policies and network environments** (only)
 - Bypassing based on trusted network range
 - Block access from specific countries
 - Block unknown areas (mostly IPv6 addresses)
- Configuring named locations to reduce the amount of false-positive
- Microsoft Security Intelligent (Graph)
Machine Learning and advanced AI = Security insights, risk score and alerts



„Zero Trust“ with
Conditional Access

Zero Trust with „Conditional Access“



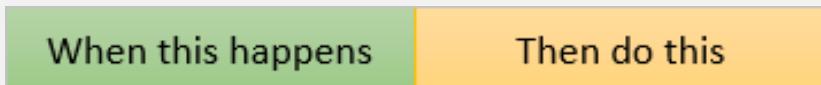
Zero Trust with „Conditional Access“

Design and Implementation of policies

- (Predefined) Baseline and (custom) standard policies
- Group by user-, (device) platform- or resource-related policies
- Define a standard **naming** convention for policies
 - CA01 - Dynamics CRP: Require MFA for marketing When on external networks



- Draft policies (when this happens → do this)



Zero Trust with „Conditional Access“

Microsoft’s “Golden” Config (aka.ms/M365GoldenConfig)

Protection level	Device type	Azure AD conditional access policies	Azure AD Identity Protection user risk policy	Intune device compliance policy	Intune app protection policies
Baseline	 	<p>Require multi-factor authentication (MFA) when sign-in risk is <i>medium or high</i></p> <p>Require approved apps (Enforces mobile app protection for phones and tablets)</p>	<p>Block clients that don't support modern authentication (Clients that do not use modern authentication can bypass conditional access rules, so it's important to block these)</p>	<p>Require compliant PCs</p> <p>High risk users must change password (Forces users to change their password when signing in if high risk activity is detected for their account)</p>	<p>Define compliance policies (One policy for each platform)</p> <p>Define app protection policies (One policy per platform — iOS, Android)</p>
Sensitive	 	<p>Require MFA when sign-in risk is <i>low, medium, or high</i></p>	<p>Require compliant PCs and mobile devices (Enforces Intune management for PCs and phone/tablets)</p>		
Highly regulated	 	<p>Always require MFA</p>			

Zero Trust with „Conditional Access“

Deployment and Management of policies

- [Azure AD access reviews](#) to manage exclusions from policies
- Exclude emergency accounts from every policy
- Case of disruption or lockout: Contingency CA policy
(as part of [resilient access control management strategy](#))
- Automated documentation of Intune policies
([Intune Documentation by Thomas Kur](#))



NCC1701 policy: Registration ... ×

Info Delete

me

701 policy: Registration of MFA/SSPR

Groups ⓘ
Is included and specific us...

Cloud apps or actions ⓘ
User action included

Conditions ⓘ
2 conditions selected

Access controls

Grant ⓘ
1 control selected

Session ⓘ
0 controls selected

Enable policy

On Off

Save

Conditions

Info

Sign-in risk ⓘ
Not configured

Device platforms ⓘ
All platforms

Locations ⓘ
Any location

Client apps (preview) ⓘ
Not configured

Device state (preview) ⓘ
Not configured

Info

Configure ⓘ
Yes No

Select the sign-in risk to apply to

- High
- Medium
- Low
- No risk

Done

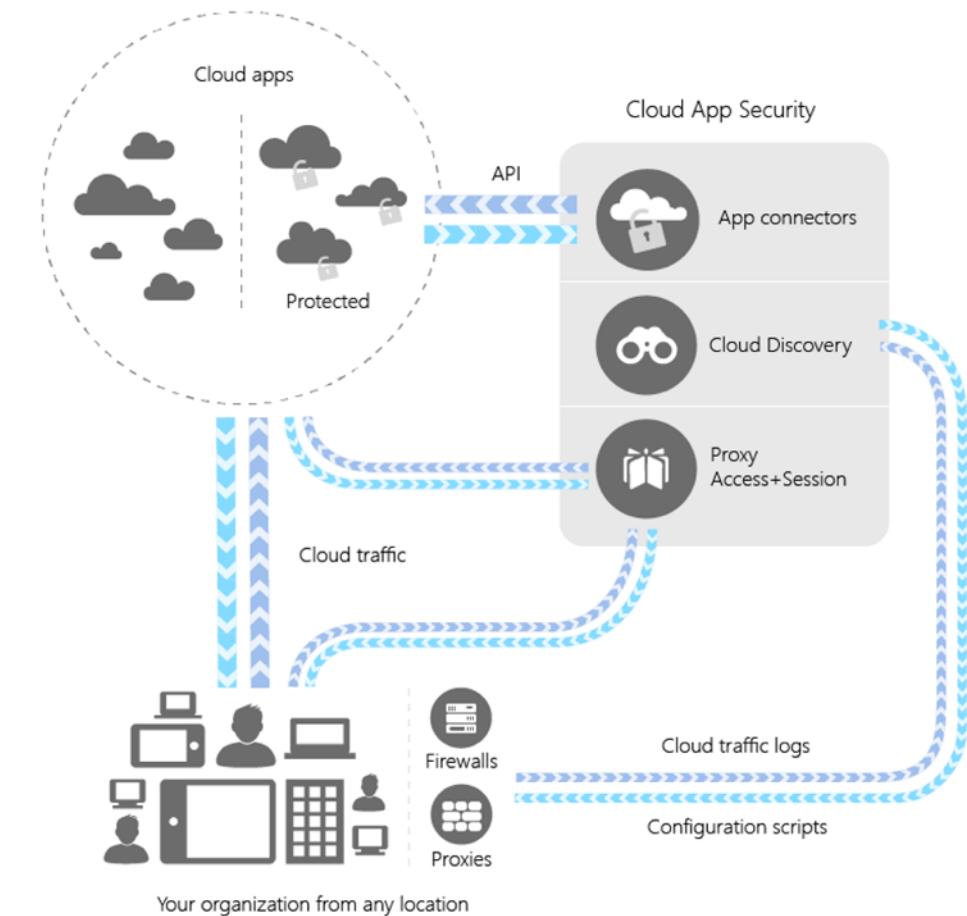
Select

Hands-on: Custom Conditional Access Policies

Zero Trust with „Microsoft Cloud App Security“

Detection across cloud apps and providers

- App connectors
 - Alerted on user or file behavior anomalies
 - Control data stored in (supported) cloud apps
- Cloud Discovery
 - Discover cloud apps based on traffic- and user data (from local network or MDATP as data source)
 - Evaluate risk of discovered apps
- Proxy Access + Conditional Access App Control
 - Sanctioning or blocking of (risky) apps/sessions
 - Real-time monitoring and control (AAD CA Integration)



The image displays a composite view of a cloud discovery interface and a main title area.

Cloud Discovery Dashboard (Left Side):

- Top Navigation:** Dashboard, Discovered apps, IP addresses, Users.
- Key Metrics:**
 - IP addresses: 2112
 - Users: 457
 - Traffic: 2.8 GB
 - Upload: 849 MB
 - Download: 2.0 GB
- Category Summary:** Categories, Cloud storage, Online meetings, Webmail, CRM, Accounting and finance.
- Discovered Apps (1-15 of 293):**
 - Microsoft OneDrive: 1.2 GB
 - Box: 654 MB
 - Microsoft Skype fo...: 225 MB
 - Microsoft Exchang...: 220 MB
 - Microsoft Dynamics: 196 MB

Main Title (Right Side):

Hands-on: „Conditional Access App Control“

Zero Trust with „Conditional Access“

Considerations of Conditional Access Policies

- Settings reference and support of policies
 - Device platform: Windows, iOS, macOS and Android devices
 - Browser support limitations: Device Compliance in Firefox, „In private“-browsing
- Applying policies to all users includes:
 - On-Premises Directory Synchronization Service Account
 - B2B (Guest) → Covered home and targeted tenant policies
 - Does not apply to Windows client logon (PRT request)
- Order of apply: Assignments are logically ANDed, blocks always wins and controls enforced in specific order (Workflow Cheatsheet)
- Service dependencies of cloud apps (e.g. Microsoft Teams)
- New: MFA and SSPR registration with CA policies

Zero Trust with „Conditional Access“

Support of 3rd party (security) solutions

- Users are redirected to a [compatible service](#) to satisfy further requirements outside of Azure Active Directory
- Configured as „custom control“ in Azure AD CA blade
- MFA/User Risk: [PingID](#), [DuoSecurity](#), ...
- Device Risk: [Lockout](#), [Symantec Endpoint Protection](#),...
- Device Compliance: [Jamf Pro](#), [MobileIron](#)
(Integration of „Microsoft Intune Device Compliance Service“)
- VPN Connectivity: Azure AD-issued short-lived certificates for supported VPN solutions



Advanced protection of
identities and access



Advanced protection of identities and access

Investigation on cloud authentication, cloud apps and on-premises



**Microsoft
Cloud
App
Security**

Behavior across
cloud apps

Activity from
infrequent country

Data exfiltration
to unsanctioned apps

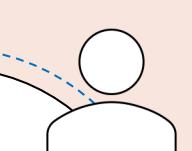


**Azure AD
Identity
Protection**

Risky sign-ins &
User Risk

Sign-ins from
unfamiliar locations

-



**Azure
Advanced
Threat
Protection**

Identity behavior
on-premises

Suspicious VPN
connection/sign-in

Data exfiltration
over SMB

Advanced protection of identities and access

Automate response with risk-based conditional access policies

- Sign-In Risk
 - (Real-time or aggregated) Detections of the probability a sign-in is compromised
 - Various signals will be included and result will be sent to conditional access (**Session risk**)
 - Sample: Sign-in from Unfamiliar location
 - Automate response: Risk level „Medium and above“ → Allow access, Required MFA
- User Risk
 - Detects the probability that a user account has been compromised
 - Analyzes each sign-in to detect suspicious and atypical user behaviour (collect data over time)
 - Sample: Leaked credential
 - Automate response: High Risk → Allow access, Force password change

Advanced protection of identities and access

Risk events (Azure AD Identity Protection - Refreshed)

Risk event type	Description	Detection type
Atypical travel	Sign in from an atypical location based on the user's recent sign-ins.	Offline
Anonymous IP address	Sign in from an anonymous IP address (for example: Tor browser, anonymizer VPNs).	Real-time
Unfamiliar sign-in properties*	Sign in with properties we've not seen recently for the given user.	Real-time
Malware linked IP address	Sign in from a malware linked IP address	Offline
Leaked Credentials	This risk event indicates that the user's valid credentials have been leaked	Offline

* [Updated version](#) of the Unfamiliar Sign-in Properties in August 2019.

increased number of signals (device identifiers, IP address, location, available browser sessions

Microsoft Azure

Home < Home > Azure AD Identity Protection - Sign-in risk policy

Azure AD Identity Protection - Sign-in risk policy

Cloud-Architekt.net

Search (Ctrl+ /)

GENERAL

- Overview
- Getting started

INVESTIGATE

- Users flagged for risk
- Risk events
- Vulnerabilities

CONFIGURE

- MFA registration
- User risk policy
- Sign-in risk policy**

SETTINGS

- Alerts
- Weekly Digest
- Pin to dashboard

Troubleshooting + support

- Troubleshoot
- New support request

Policy name
Sign-in risk remediation policy

Assignments

- All users

Conditions

- Sign-in risk

Controls

- Access
- Require multi-factor authentication

Review

- Estimated impact
- Number of sign-ins impacted

Enforce Policy

On **Off**

Save

Hands-on: Block access when a session risk is detected

Advanced protection of identities and access

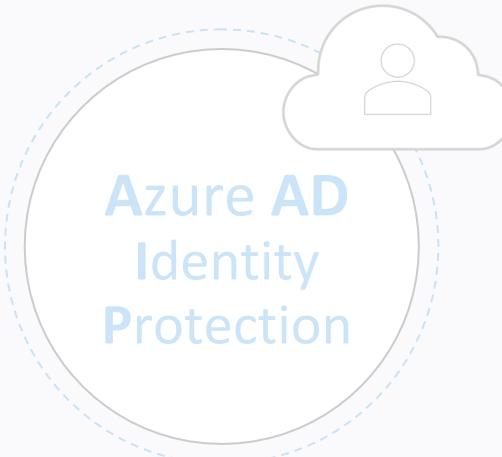
Investigation on cloud authentication, cloud apps and on-premises



Behavior across
cloud apps

Activity from
infrequent country

Data exfiltration
to unsanctioned apps



Risky sign-ins &
User Risk

Sign-ins from
unfamiliar locations



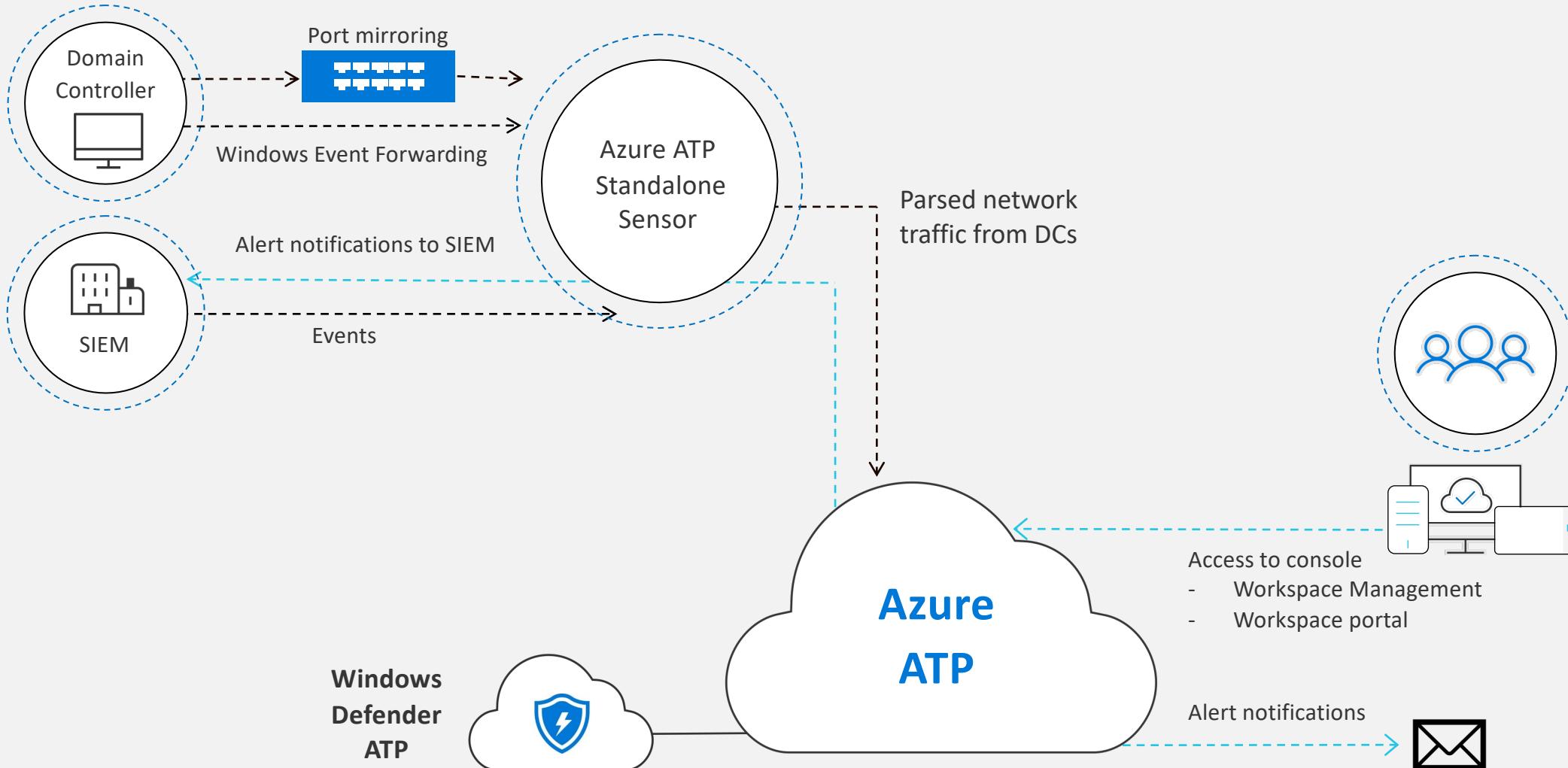
Identity behavior
on-premises

Suspicious VPN
connection

Data exfiltration
over SMB

Advanced protection of identities and access

Protection of on-premises environment



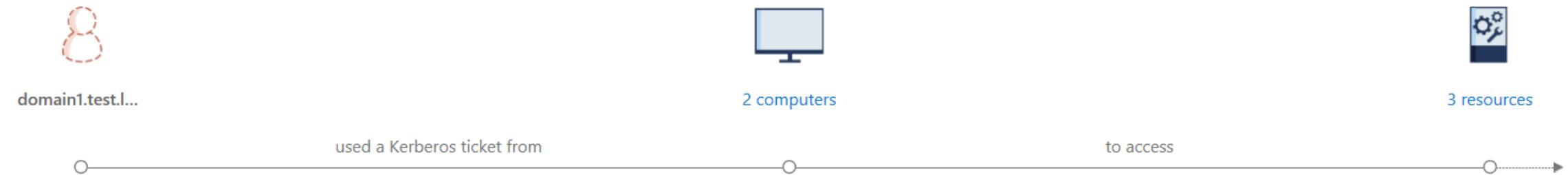
Advanced protection of identities and access

Protection of on-premises environment

Kerberos Golden Ticket - nonexistent account

domain1.test.local\fake, which does not exist in Active Directory, used a Kerberos ticket from **2 computers** to access **3 resources**.

12:42 PM Aug 6, 2018 – 12:42 PM Aug 8, 2018



Evidence

- ⊕ [8/6/18 12:42 PM - 8/8/18 12:42 PM] The Kerberos ticket was used to access **3 resources** from **2 computers**.
- The password of the KRBTGT account of domain domain1.test.local was last updated 2 years ago.
- The TGS_REQ that was received was missing the necessary authentication request (AS_REQ).

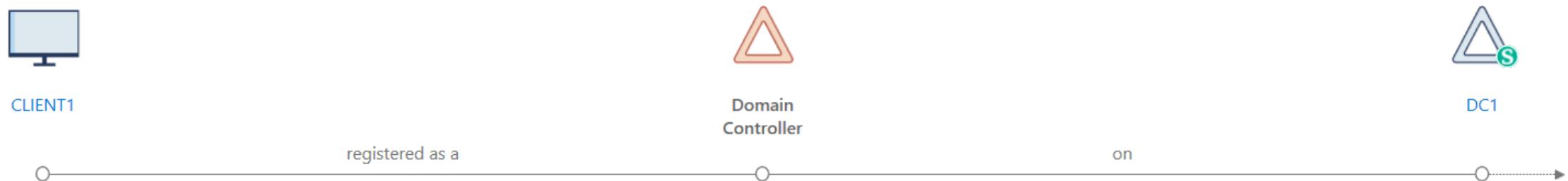
Advanced protection of identities and access

Protection of on-premises environment

Suspicious domain controller promotion (potential DcShadow attack)

CLIENT1, which is not a valid domain controller in domain1.test.local, registered as a domain controller on DC1.

2:55 PM Jul 18, 2018

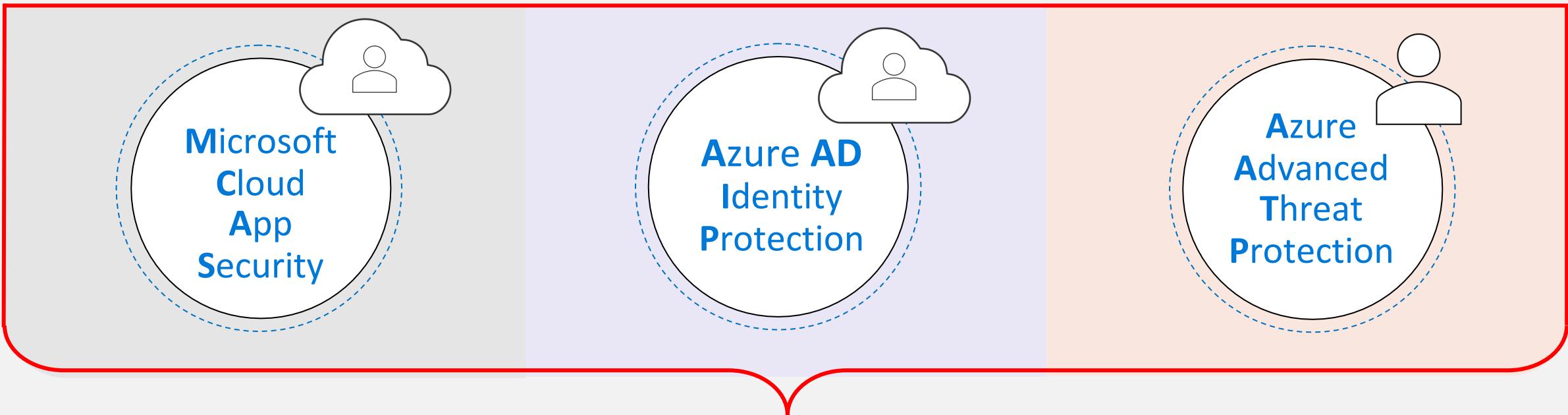


Evidence

- CLIENT1 registered as a domain controller at Jul 18, 2018 2:55:17 PM.
- CLIENT1 unregistered as a domain controller at Jul 18, 2018 2:55:18 PM.
- CLIENT1 is not a Windows Server machine.

Advanced protection of identities and access

Unified SecOps Investigation of hybrid environments



- Aggregated into users' „Investigation Priority score“ built from evaluated data
- Unified portal for hunting and investigation in hybrid environments

Auditing and Monitoring of Azure Active Directory

Investigation Priority built on User and Entity Behavior Analytics

User actions ▾

Santos Bui
Software Engineer
R&D

SENSITIVE

USER THREAT

Investigation priority	Alerts
189	13

Identity risk level >Last seen Jun 6, 2019
Medium

Lateral movement paths
1

USER EXPOSURE

Devices	Accounts
5	2

Resources	Locations
5	1

Matched files
0

CONTACT INFORMATION

Email	santos@contoso.com
-------	--------------------

User risk Lateral movement paths PREVIEW

Investigation priority score

Score is based on the last 7 days [How do we score?](#)

189 |

Alerts Score: 178
Risky activities Score: 11

User's score compared to the organization 0%

User score in the last two weeks

■ Top 90% in your organization

Alerts and risky activities that contributed to the score (last 7 days) [View all user alerts \(13\)](#)

Yesterday	+34	Jun 6, 2019, 2:21 PM	Suspicious modification of sensitive groups
	+36	Jun 6, 2019, 2:01 PM	Mass download
	+4	Jun 6, 2019, 1:45 PM Device: FILESERER	Resource access: device FILESERVER, property Spns cifs/fileserver.contoso.com
	+5	Jun 6, 2019, 1:45 PM Device: FILESERER	Log on

Source: [https://docs.microsoft.com/en-us/cloud-app-security/tutorial-uba](https://docs.microsoft.com/en-us/cloud-app-security/tutorial-ueba)

Advanced protection of identities and access

Smart Lockout

- Assists in locking out attackers to use brute-force methods



- AAD data center/regions tracks lockout independently
- (Un)familiar locations will be used for differentiation
 - Temporary lockout from (unfamiliar) locations (based on IP addresses)
- Consideration in hybrid environments with PTA:
 - Lockout threshold in Azure AD should be less than in AD
 - Lockout duration should be set longer than AD reset

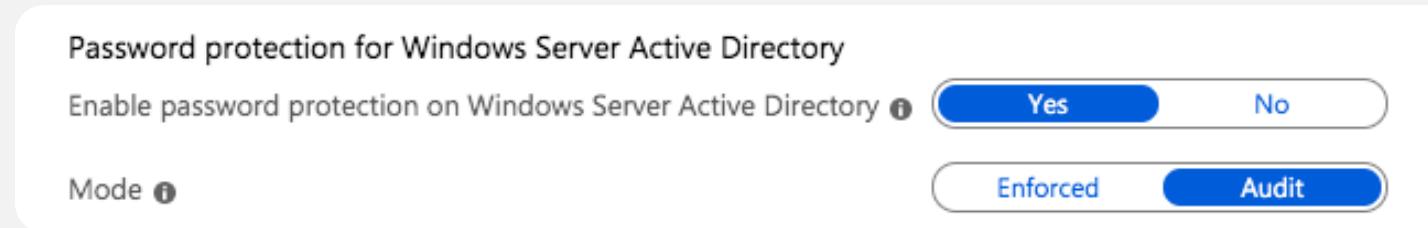
Advanced protection of identities and access

Password Protection

- Reset or change password checks current version of „global banned password list“
- Based on known bad patterns (passwOrds and k3ywords)
- Custom banned password list (max. 1000 terms and 16 characters)



- On-premises integration with “Azure AD Password Protection” (including [monitoring](#))





Privileged Identity Management (PIM)

Privileged Identity Management (PIM)

Foundation of securing privileged access



Isolated privileged identities

Issue managed and isolated administrator identity (“SC-Alt”),
strong or password less authentication



Non-persistent access

Provide zero rights by default to administration accounts
Just-in-time (JIT) privileges based on a standardized RBAC model



Secure devices

Establish a separate device/workstation for administrative tasks
Various kinds of security levels and implementations

Privileged Identity Management (PIM)

Design your Azure AD roles

Security isolation level of privileged identities

- Separate your work account and privileged account
- Do not sync on-premises accounts as cloud admin
- Tiering model of Enhanced Security Administrative Environment



Privileged Identity Management (PIM)

Design your Azure AD roles

Built-in Azure AD directory roles and limitations

- [Azure AD Built-in Directory roles](#) and [least-privileged roles by task](#)
- [Custom](#) directory roles → Available in public preview for “app registration”
- No support for security group assignment → “Under [review](#)” by AAD product group

“Red Tenant” / ESAE design approach in the cloud

- Securing privileged identities in an **isolated tenant**
 - Separated identity and device management
- **CSP scenarios** or very high regulated organizations
- No hybrid identity integration (AAD Connect)
- Access to managed tenants via **Guest assignment (B2B)**
- **Privileged resources only** (security groups, apps, network, devices,..)

Privileged Identity Management (PIM)

Considerations in RBAC Design

- Challenge to limit default directory roles / least privileges
 - Intune Service administrator has the permission to modify security groups
 - Exchange Online administrator are able to create security groups ([undocumented](#))
- Additional administrative roles and assignments for [Microsoft 365 services](#)
 - RBAC in Intune, Microsoft Defender ATP, Windows Store for Business,...
 - No PIM management for these RBAC roles
 - Inheritance permission of Azure AD directory roles
- Cloud-only security groups for assignment to policies and Azure/AAD roles
- Permanent view-only permission (e.g. “Global Reader”)
- Inheritance permissions of [Azure EA \(Account Owner\)](#) and [CSPs \(delegated admins\)](#)



Privileged Identity Management - Quick start

Quick start

«



Introduction

Secure your organization by managing and restricting privileged access

Azure AD Privileged Identity Management

Azure AD Privileged Identity Management PowerShell module

Azure AD Privileged Identity Management for Azure resource roles

Approve requests

Review access

Manage

Azure AD roles

Azure resources

Activity

My audit history

Troubleshooting + Support

Troubleshoot

New support request

What's new in Privileged Identity Management

- All services
- Azure Active Directory
- Azure resources

Feature update

Azure Active Directory

Improved activation experience

Friday, March 22, 2019

New feature

Azure Active Directory

New alert on potential stale accounts in a privileged directory role

Tuesday, January 1, 2019

New feature

Azure Active Directory

New PIM Weekly Digest Email

Monday, December 17, 2018

Hands-on: Privileged Identity Management

Privileged Identity Management (PIM)

Lower exposure of privileged accounts

- Process and requirements to activate roles
 - Limit risk time: Time-bound access to resources
 - Relation to change or incident: Approval and input text (Ticket number, activation reason)
 - Auditing and notification of privileged activities

Automation and integration of PIM

- [PowerShell module](#) and [PIM App](#) (PowerApps and Flow)

Notifications & eligible users

- Eligible users (such as Global Admins) not receiving notifications



Privileged Identity Management (PIM)

Access to Azure resources

- Browser (with different profiles)
 - Session token in various browser profiles
 - Accessible from loggedin user / no security by separate browser profiles
- RunAs (different users) or Jumpbox/Jumphost
 - Similiar to AD administration (back in the old days)
 - WHfB useable limited (→ only by „RunAs Administrator“)
 - Breach of „source-principal“ approach (“secure keyboard”)
- Privileged Admin Workstation (PAW)
 - Corporate PC as separated device or virtual machine (or WVD)
 - Isolated, hardened and restricted usage of OS, apps and network



Privileged Identity Management (PIM)

Secure access to Azure (Roles and Security Levels)

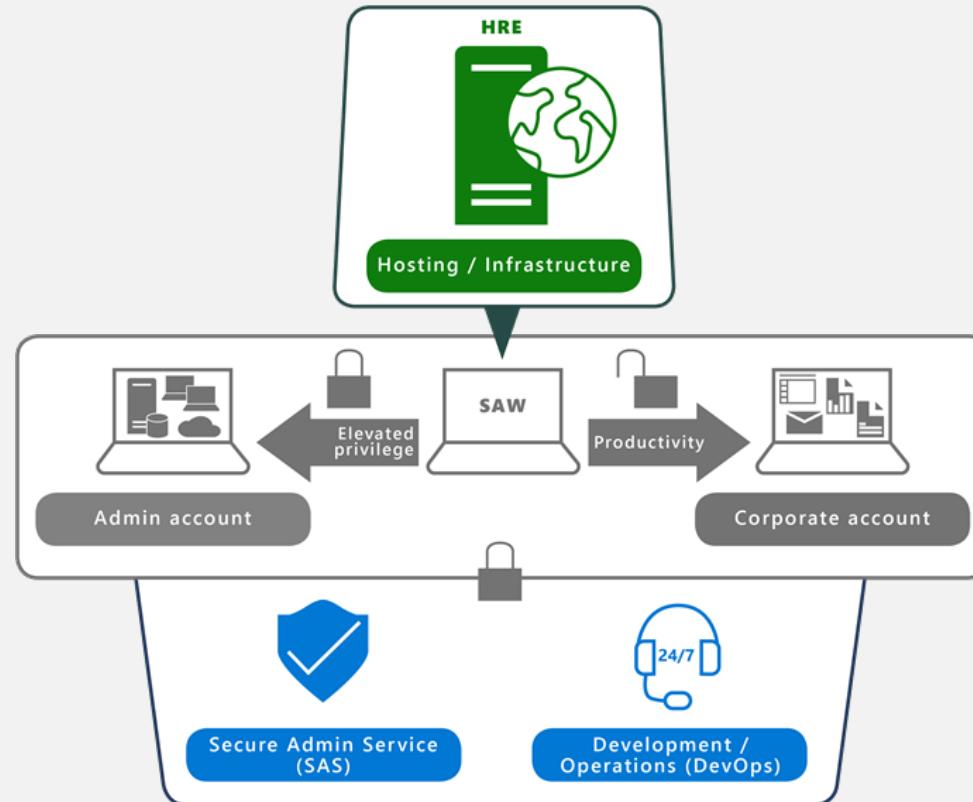
- Understand secure, Azure-managed workstations

ROLES	USERS	DEVELOPERS	IT OPERATIONS	Secure Admins	Isolated Critical Assets	
PROFILES	Low Security Workstation <ul style="list-style-type: none">• Productivity Apps• Application and browser activity monitored• User Managed policies• Antivirus	Enhanced Security Workstation <ul style="list-style-type: none">• Low Security Plus...• Centrally Managed Policies• Defender ATP	High Security Workstation <ul style="list-style-type: none">• Enhanced Security Plus...• No Local Admin	Specialized Workstation <ul style="list-style-type: none">• High Security Plus...• Restricted applications• Restricted browsing	Secured Workstation –aka PAW <ul style="list-style-type: none">• High Security Plus...• No productivity applications• Restricted browsing• Separate identity	Isolated Workstation <ul style="list-style-type: none">• Secured Workstation Plus...• No Internet Access <p>Enhanced Security Admin Environment (ESAE)</p>
SECURITY CONTROLS						

Privileged Identity Management (PIM)

Secure access to Azure by Microsoft IT

- Secure Admin Workstation used for High Risk Environment [at Microsoft](#)



Microsoft's (IT) approach:

- Zero persistent admins
- 2FA and JIT
- Whitelisting and code integrity
- Password Vaulting
- Secure Supply Chain

Privileged Identity Management (PIM)

Secure access to Azure (Custom solution)

Hosting SAW VM

- vShielded and secured Hyper-V VM
- Secure Workstation [configuration and policy baselines](#) for Microsoft Intune and Windows 10 (latest build)
- Azure Portal „Log me out when inactive“
(Personal Setting or directory level timeout)
- Reduced token life time and non-persistent session
- Reset of user profile or VM (optional)
- [Tenant restriction](#)
- URL auditing or blocking to specified Azure resources
(by Security Gateway or Broker solution)
- Passwordless authentication with Windows Hello- (or FIDO2-based) logon



Privileged Identity Management - Quick start

Quick start

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Hands-on: Secure and password-less access to Azure

Privileged Identity Management (PIM)

Lateral Movement

Discovery of Lateral Movement Paths (LMPs)

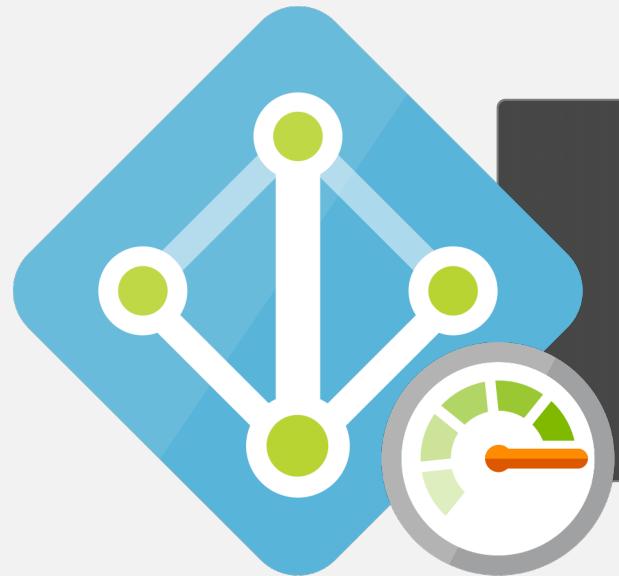
- Using [Azure ATP](#) to discover and analyze LMPs

Reduce attack surface of lateral movement

- Avoid usage of "Device administrator" or "Global administrator" for local helpdesk and troubleshooting

Management of (unique) local admin accounts of Azure AD clients

- Missing LAPS support or „Modern Management“-solution by Microsoft
- Custom or 3rd Party solutions:
 - [Local Administrator Password Solution](#) and RealmJoin (by Glueck & Kanja)
 - [Serverless LAPS solution](#) (Intune, Azure Functions and KeyVault) by John Seerden

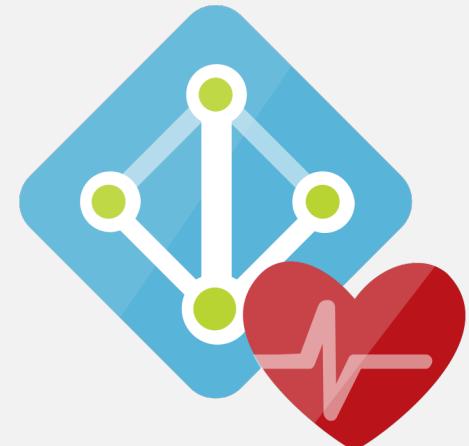


Auditing and Monitoring of Azure Active Directory

Auditing and Monitoring of Azure Active Directory

Azure Active Directory Connect Health

- Monitor your on-premises hybrid and synchronization services in Azure
- AAD Connect Health Agent must be configured on each targeted server:
 - Outbound connectivity and disabled SSL inspection
 - Required to install „Health Agent for (AD DS) Domain Controllers“
 - Consideration: Azure AD Connect Health can not be configured on Server Core!



Auditing and Monitoring of Azure Active Directory

Azure Active Directory Connect Health

Home > Cloud-Architekt.net - Azure AD Connect > Azure Active Directory Connect Health - Sync services > cloudlab.onmicrosoft.com > Sync Error

cloudlab.onmicrosoft.com × Sync Error cloudlab.onmicrosoft.com

Delete Settings Export Notification Settings

Overview

Azure Active Directory Connect Servers
1 CA-DS1 Healthy

Sync Error by Type

Duplicate Attribute	Data Mismatch	Data Validation Failure
AadSyncService-cloudlab.onmi... 0	AadSyncService-cloudlab.onmi... 0	AadSyncService-cloudlab.onmi... 0
Large Attribute AadSyncService-cloudlab.onmi... 0	Federated Domain C... AadSyncService-cloudlab.onmi... 0	Existing Admin Role ... AadSyncService-cloudlab.onmi... 0
Other AadSyncService-cloudlab.onmi... 0		

Operations

Alerts cloudlab.onmicrosoft.com
0 active

Active 0

Resolved from last 24 hours 0

Last export to Azure AD cloudlab.onmicrosoft.com
Exported 7/14/2019, 1:36:02 PM

Sync Error AadSyncService-cloudlab.onmi...
0

Auditing and Monitoring of Azure Active Directory

Service Health of Azure AD services

- Create service health alerts
 - Azure Active Directory
 - Multi-Factor Authentication
- Status history & Root Cause Analysis (RCAs)
 - Service outage history of the past 90 days only
- What happens when Azure AD-related services fails?
 - MFA major outage in the past ([November 2018](#), [February 2019](#))
- Twitter [@AzureSupport](#)



Auditing and Monitoring of Azure Active Directory

Monitor your tenant-wide settings and app registration

- Azure Identity Secure Score (via [Security Graph API](#))
- MFA Authentication method usage (via [Graph API](#))
- Assessment of application configuration
 - Expired client secret of registered applications ([AzureADAssessment](#))
 - OAuth2 admin and app consent delegation
 - [Advanced lists](#) of delegated and application permissions
 - Permission level, security breach and compliance reports with MCAS

Auditing and Monitoring of Azure Active Directory

Monitor IAM of Azure subscriptions and resources

- Identity & Access recommendations in „Azure Security Center“

Contoso IT - demo (Preview)
Subscription security health

Recommendations

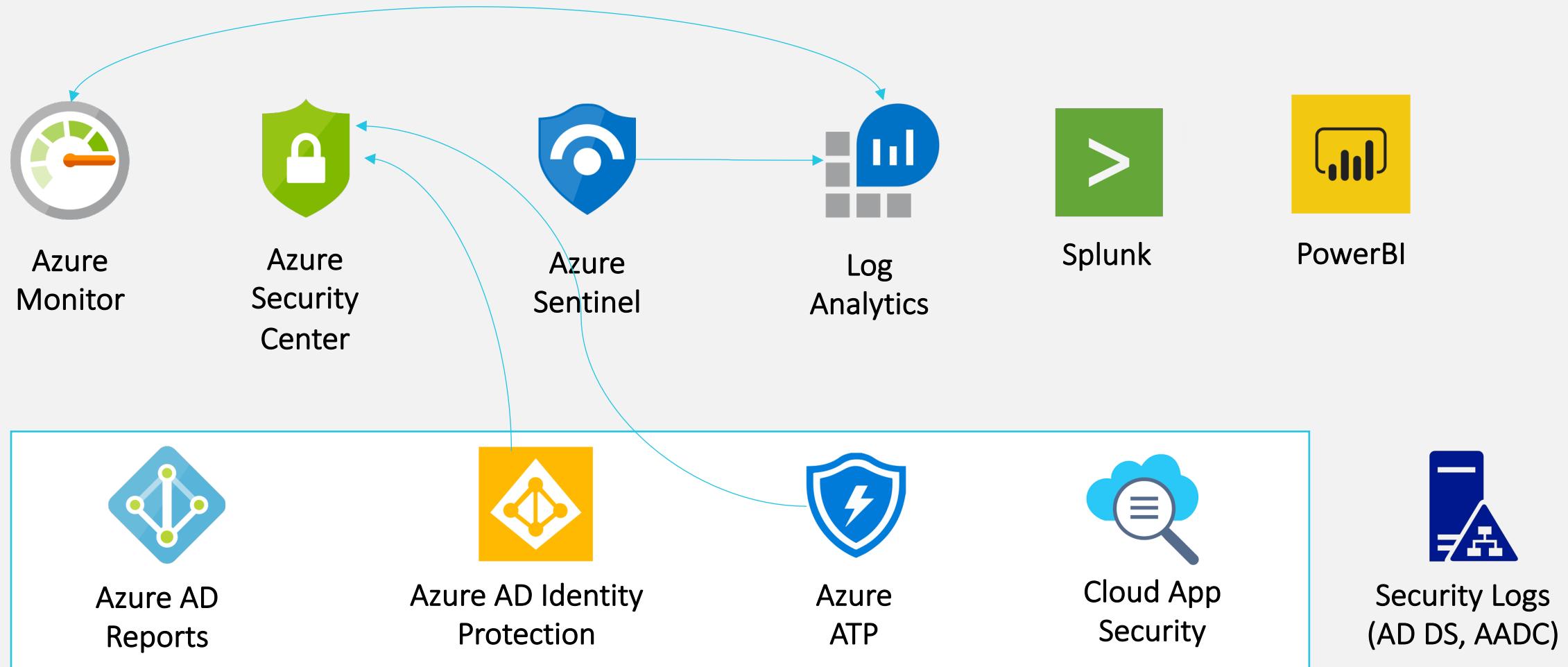
8 ! 2 ✓

Recommendations Passed assessments Unavailable assessments

DESCRIPTION	STATUS
Remove privileged external accounts from your subscription (Preview)	! High
Enable MFA for privileged accounts on your subscription (Preview)	! High
Remove external accounts with write permissions from your subscription (Preview)	⚠ Medium
Enable MFA for accounts with write permissions on your subscription (Preview)	⚠ Medium
Designate up to 3 owners on your subscription (Preview)	⚠ Medium

Auditing and Monitoring of Azure Active Directory

Monitoring and Security solutions



Auditing and Monitoring of Azure Active Directory

Security events to take care on...

Microsoft's „Best practice“: Have a method to identify:

- ✓ Attempts to sign in without being traced
- ✓ Brute force attacks against a particular account (high count of failed MFA challenges)
- ✓ Attempts to sign in from unfamiliar or multiple locations
- ✓ Sign-ins from infected devices or suspicious IP addresses

Further examples of suspicious activities:

- Modification of CA policies (and assigned security groups)
- Sign-ins of emergency accounts
- Modification of Directory roles (alerting covered by Azure AD PIM)
- Create service principals, modified app registration or admin/user consent
- Successful authentication without the use of MFA or legacy authentication
- External forwarding or sharing of Exchange mailboxes

Auditing and Monitoring of Azure Active Directory

Activity Reports in Azure Active Directory

Sign-in Logs

- User sign-in to application with Success/Failure
- Details of client, MFA and session conditions

Audit Logs

- Activities to perform change of objects and resources in Core Directory and AAD-related components e.g. Conditional Access Policies, PIM,...
- Including self service activities by end-users

Security Logs

- Users flagged for risk, Risk events, Vulnerability

Usage and insights

- Reports of top used applications and top sign-in errors

Cloud-Architekt.net - Workbooks

Azure Active Directory

Search (Ctrl+ /)

← Gallery Edit X

Properties

Applications settings

EW (Preview)

Identity Secure Score

Conditional Access

MFA

Users flagged for risk

Risk events

Authentication methods

Monitoring

Sign-ins

Audit logs

Logs

Diagnostic settings

Workbooks

Usage & insights

Troubleshooting + Support

Sign-in Analysis

TimeRange: Last 14 days

Apps: All

Users: All

All Sign-ins

62

Success

51

Failure

6

Click on a tile or a row in the grid to drill-in further

Sign-ins by Location

Search

Name ↑ Sign-in Count ↑ Trend ↑ Failures ↑

DE 62

Hands-on:
Reports,
Workbooks &
Usage/Insights

Auditing and Monitoring of Azure Active Directory

Activity and security log considerations

- Name in reports are based on the object name at the time of the event/sign-in
- Only initial authentication is in the report (refresh token)
- Service principals are not covered by sign-in logs
- Non-Global Admins can access logs
 - Security Administrator & Reader
 - Reports Reader and Application Administrator
 - Global Reader ☺

Auditing and Monitoring of Azure Active Directory

Reporting latency and retention policies

Activity / Security Reports	Azure AD Free/Basic	Azure AD Premium P1/P2	Latency (Average)	Latency (Min-Max)
Audit logs	7 days	30 days	2-5 min.	15-60 min.
Sign-ins	N/A	30 days	2-5 min.	15-120 min.
Users at Risk	7 days	30 days (P2: 90 days)	15 min.	5-120 min.
Risky sign-ins	7 days	30 days (P2: 90 days)	15 min.	5-120 min.

→ Retain the **audit and sign-in activity data (based on your requirements)**

Auditing and Monitoring of Azure Active Directory

Diagnostic Settings / Export Audit and Sign-In data



Archive to a storage account

Retain the data for a long time, Retention policy (in days)



Stream to an event hub

Connecting 3rd party (SIEM) solutions, custom apps or automation/workflows



Send to Log Analytics

Advanced analytics, alerting and queries (by Kusto)

*Consideration: Beware of the pipeline-process time from source to target resource by routing.
Additional latency e.g. by storing data to Blob Storage, Event Hub or Log Analytics workspace.*

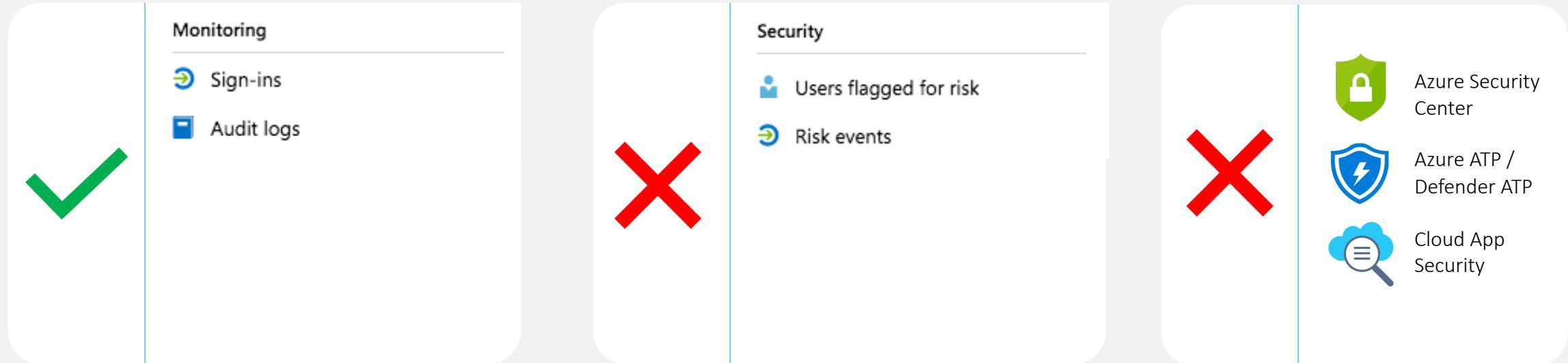
Auditing and Monitoring of Azure Active Directory

Support of 3rd Party SIEM solutions

- Option 1: Microsoft Graph API and own scripts
 - Prerequisite: Call Graph API to access the data push it into the SIEM system using your own scripts
- Option 2: Azure Monitor and EventHub-Integration
 - Prerequisite: Azure Monitor [to stream](#) via EventHubs, configure SIEM connectors to source
 - Supported connectors by [Splunk](#), [QRader](#) and [Sumo](#) (seamless integration)
 - [Azure Function to](#) forward Azure Monitor to Syslog
 - [Event Hub Plug-in](#) for ELK
- Deprecated: [AAD Log Integration tool](#)

Auditing and Monitoring of Azure Active Directory

Checklist: Collect all Identity-related security logs to SIEM



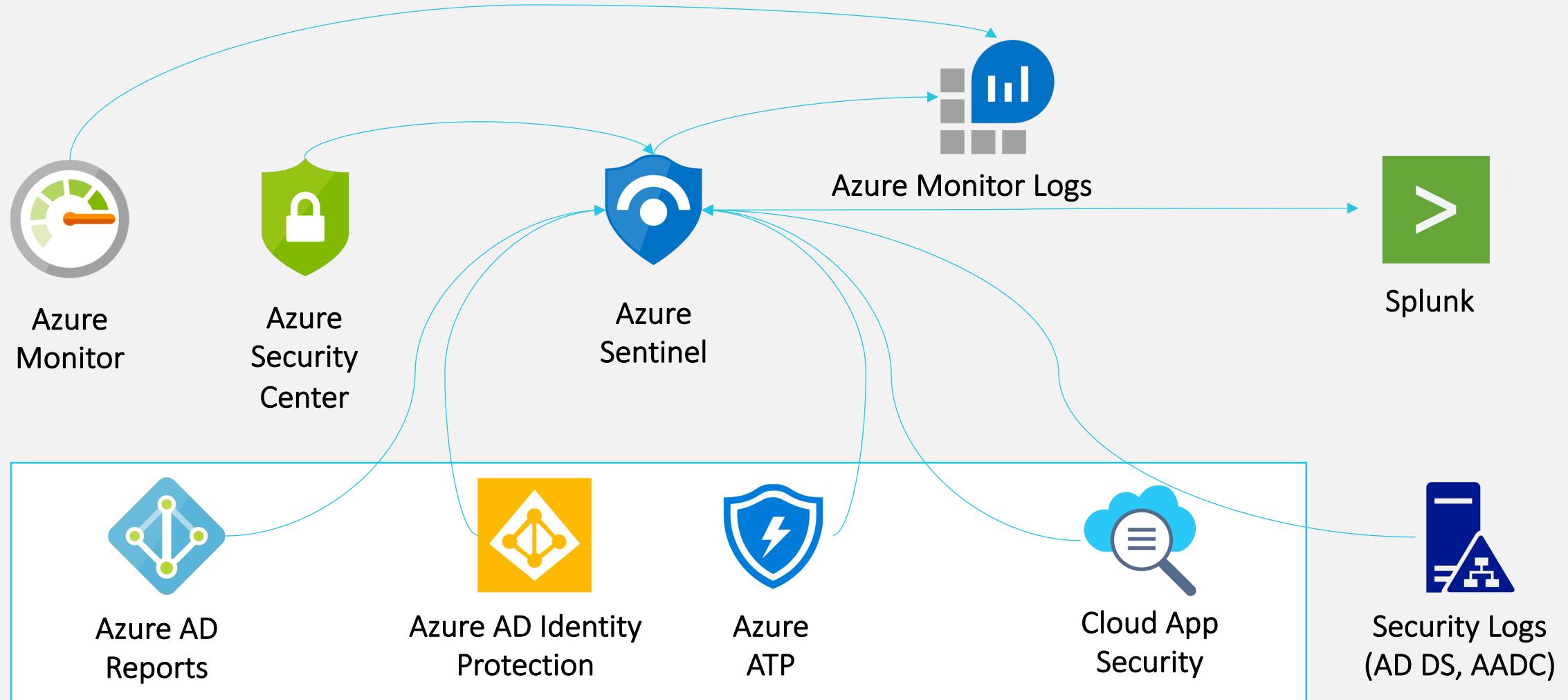
Auditing and Monitoring of Azure Active Directory

Collecting Microsoft Security Graph API alerts with a SIEM

- Alerts from the following security providers are available [via SIEM integration](#):
 - [Azure Security Center](#)
 - [Azure Active Directory Identity Protection](#)
 - [Microsoft Cloud App Security](#)
 - [Azure Information Protection \(preview\)](#)
 - [Azure Advanced Threat Protection \(preview\)](#)
 - [Azure Sentinel \(preview\)](#)
- [Supported API Integration](#) is currently available for Splunk and Qradar
- [Graph Security API](#) and [Connectors](#) to LogicApps, Flow and PowerApps

Auditing and Monitoring of Azure Active Directory

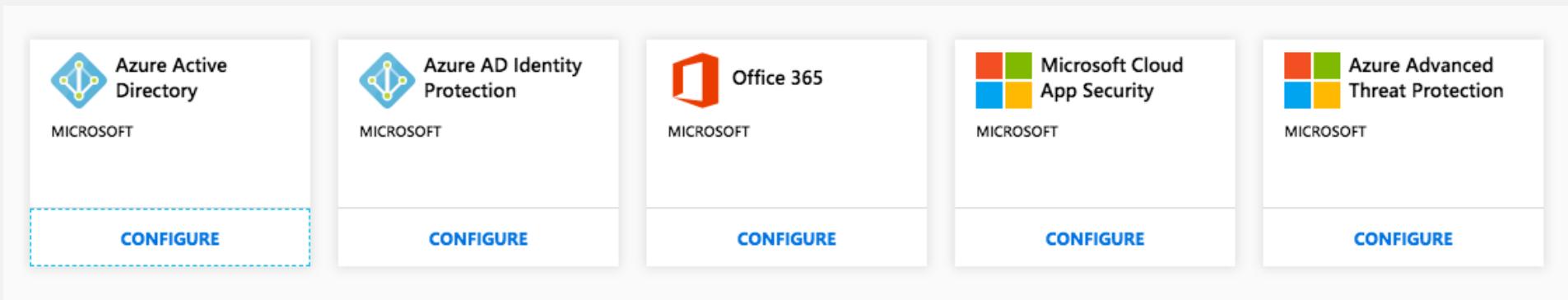
Monitoring and Security solutions



Auditing and Monitoring of Azure Active Directory

Azure Sentinel

- Advanced analytics, dashboards and huntings with Microsoft's Cloud „SIEM“ solution
- Build on Log Analytics Workspaces, Logic Apps,...
 - Create custom playbooks (e.g. [Threat responding](#))
- Native „data connectors“ to gain insights and loggings



Azure AD sign-in log overview

Sign-in status

Sign-ins overtime

Sign-ins, by application

Sign-ins, by device

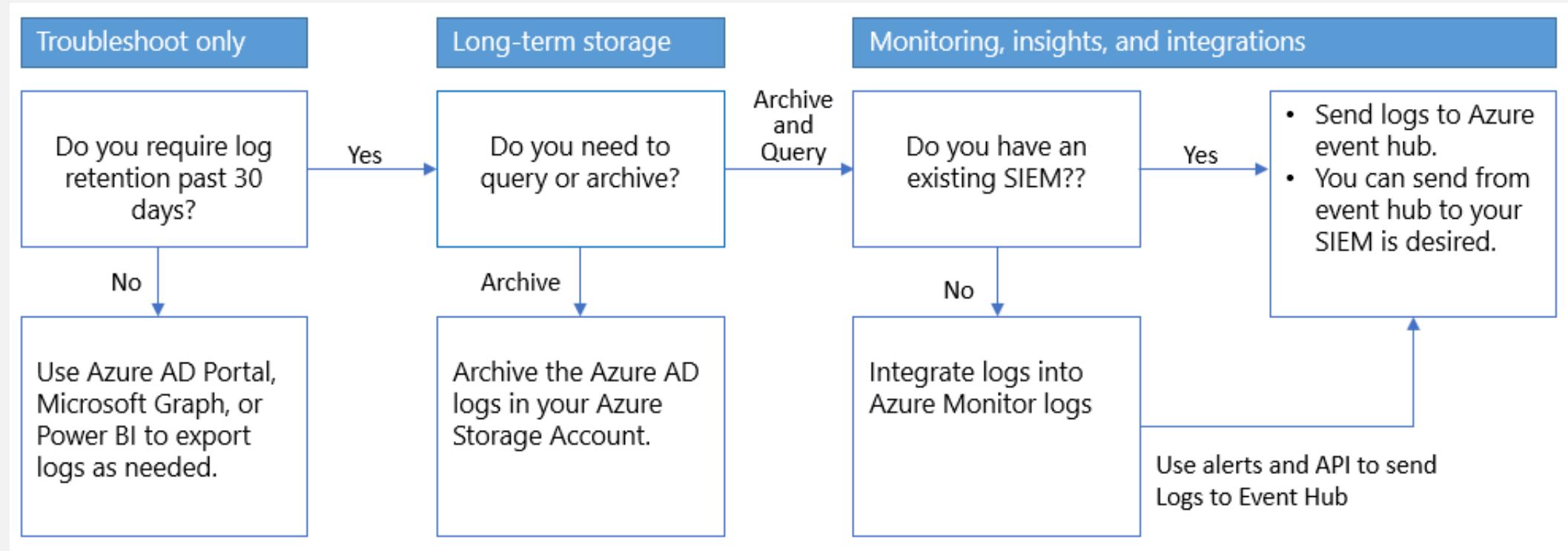
Application sign-ins, by location

Hands-on: Azure Sentinel and Microsoft Identity

Auditing and Monitoring of Azure Active Directory

Choose a monitoring solution architecture

- Plan an Azure Active Directory [reporting and monitoring deployment](#)



A close-up photograph of a person's hands typing on a silver laptop keyboard. The background is blurred, showing what appears to be a window or a bright light source.

Thank You

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 www.cloud-architekt.net