Microsoft

Bring Cloud Manageability to SQL Server Anywhere with Azure Arc

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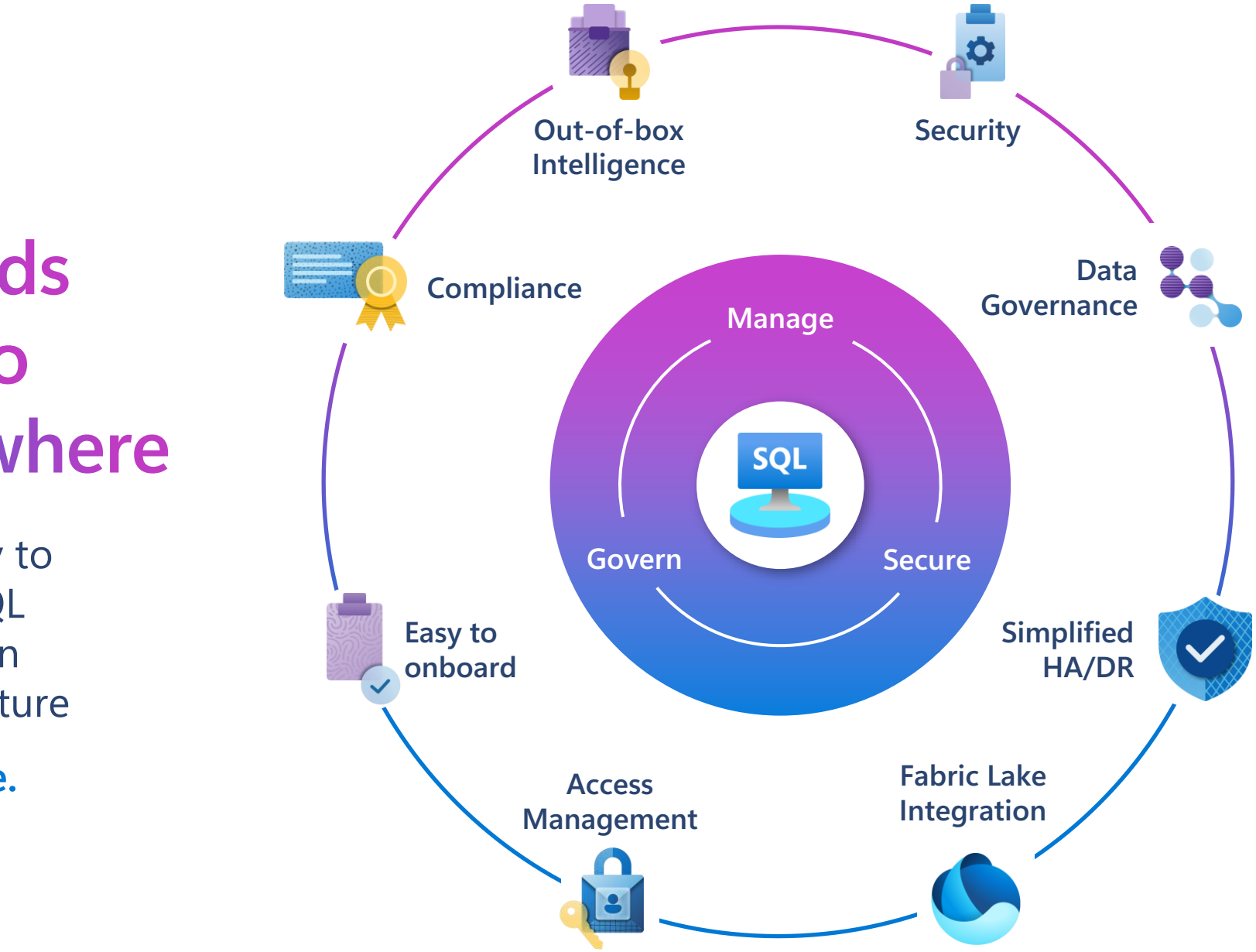
Azure Arc extends Azure services to SQL Server anywhere

Streamline migration journey to Azure, effectively manage SQL estate at scale and strengthen security and governance posture

Cloud innovation. Anywhere.



Bring cloud manageability to SQL Server anywhere

Manage, govern, and protect your SQL Server from Azure

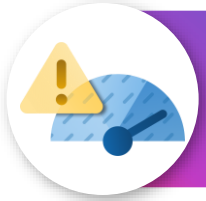
Manage all SQL estate with better observability

Single view of all SQL Servers deployed on-premises, in Azure and other clouds

Capture key performance metrics with out-of-box **monitoring**

Gain proactive and actionable insights with automated **best practices assessment**

Utilize **migration assessment** and best-fit recommendation on SQL IaaS/PaaS



Enhance business continuity

Manage **Availability Groups** inventory and track real-time health status

View Always-on **Failover Cluster Instances** and protect with Defender

Enhance operational efficiency through configurable **Automated backups**

Minimize downtime and operational disruption with **Point-in-time restore**

Govern and protect all SQL estate using Azure

Protect your on-premises and multicloud data using **Microsoft Defender** for Cloud

Enhance security using **Extended Security Updates** as a service and **auto patching**

Central insights and governance across all SQL Servers with Microsoft Purview

Unified sign-on experience with Microsoft Entra ID authentication

Azure Pay-As-You-Go enabled by Azure Arc for SQL Server anywhere, with simplified onboarding

Copilot for SQL Server

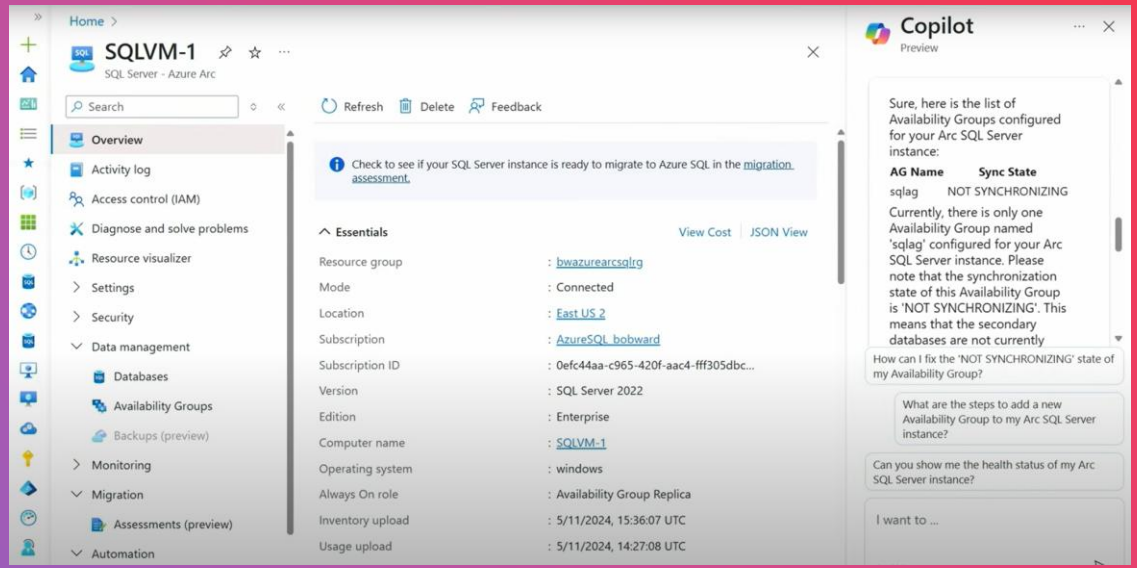
A first-look* into the future

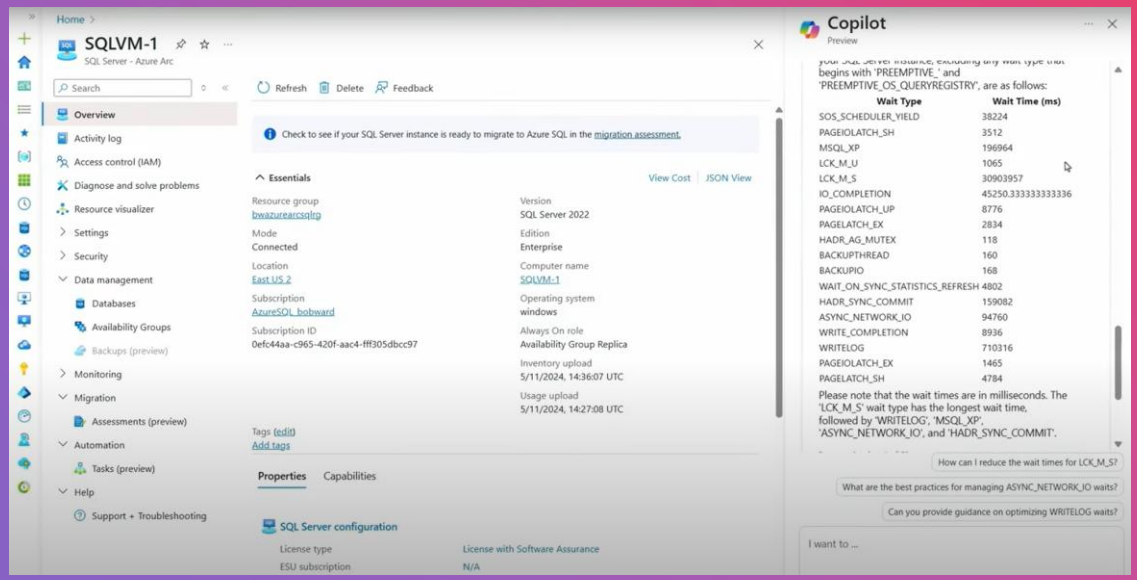
Enable self-help for day-to-day management

Gain insights on running a performant, secure and reliable SQL Server environment at scale

Simplify inventory management even further

Azure Resource Graph query to track instance and database level info



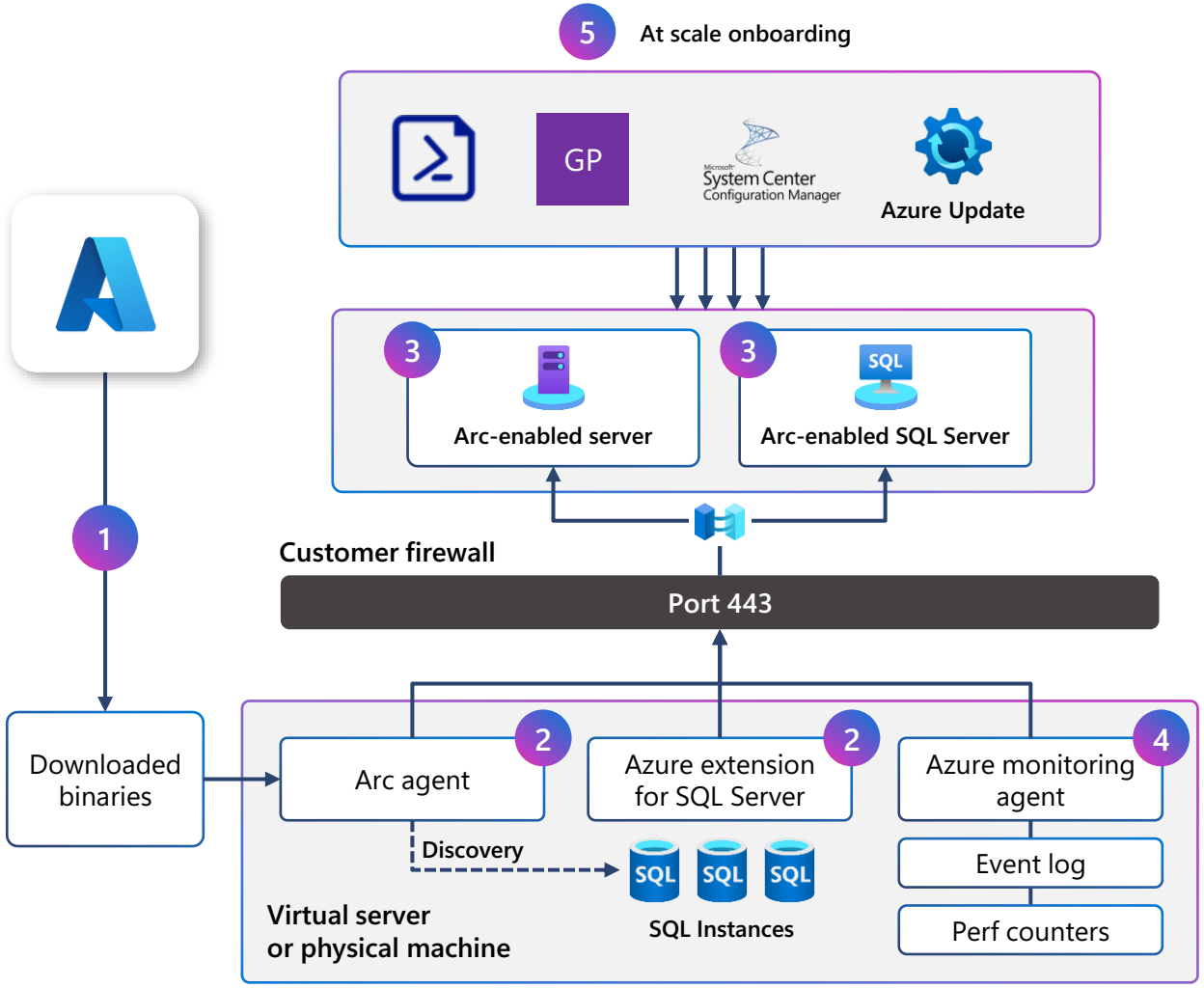


Demo at BUILD 2024

* This feature is not available for public yet.

SQL Server enabled by Azure Arc architecture

1. Generate script and execute on Server
2. Local services created
3. Arc-enabled server and Arc-enabled SQL Server resources created
4. Azure monitoring agent
5. Onboard at scale



How to onboard SQL Server to Azure Arc

Range of different onboarding tools

SQL Server 2022 setup

Integrated UI to connect to Azure Arc during installation

Automatic registration via Azure policy

One-click action applies to all servers already connected to Azure Arc

Onboarding individual SQL Servers from Azure portal

Run auto-generated script from the target machine

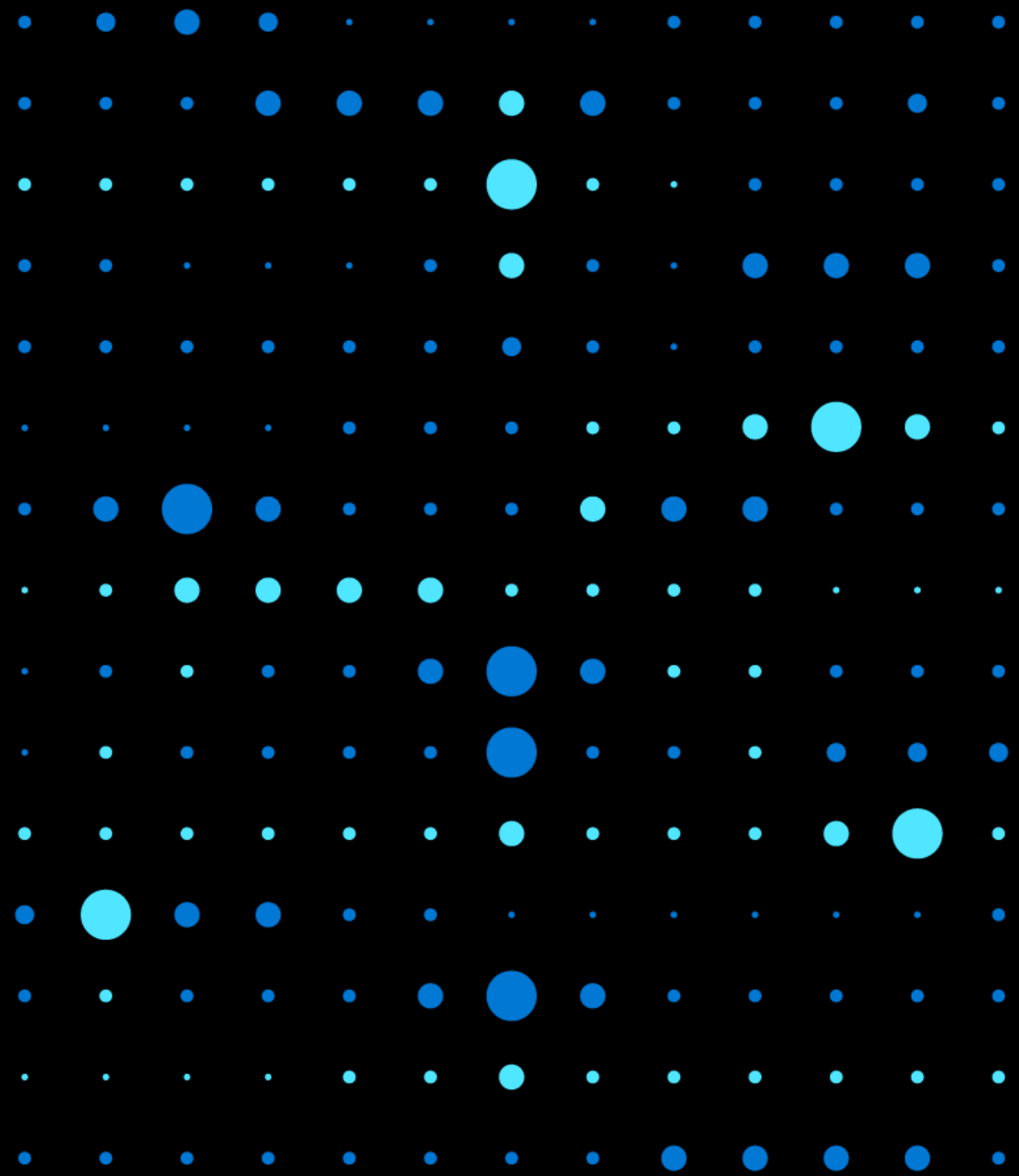
Tenant scope auto-registration

Work with your account team on a consent email to allow Microsoft devops do it for you

Future – Auto-registration during the hosting server onboarding

SQL Server configuration included into the default auto-manage profile

Microsoft Azure



Demo

Onboarding

Inventory

Azure resource graph

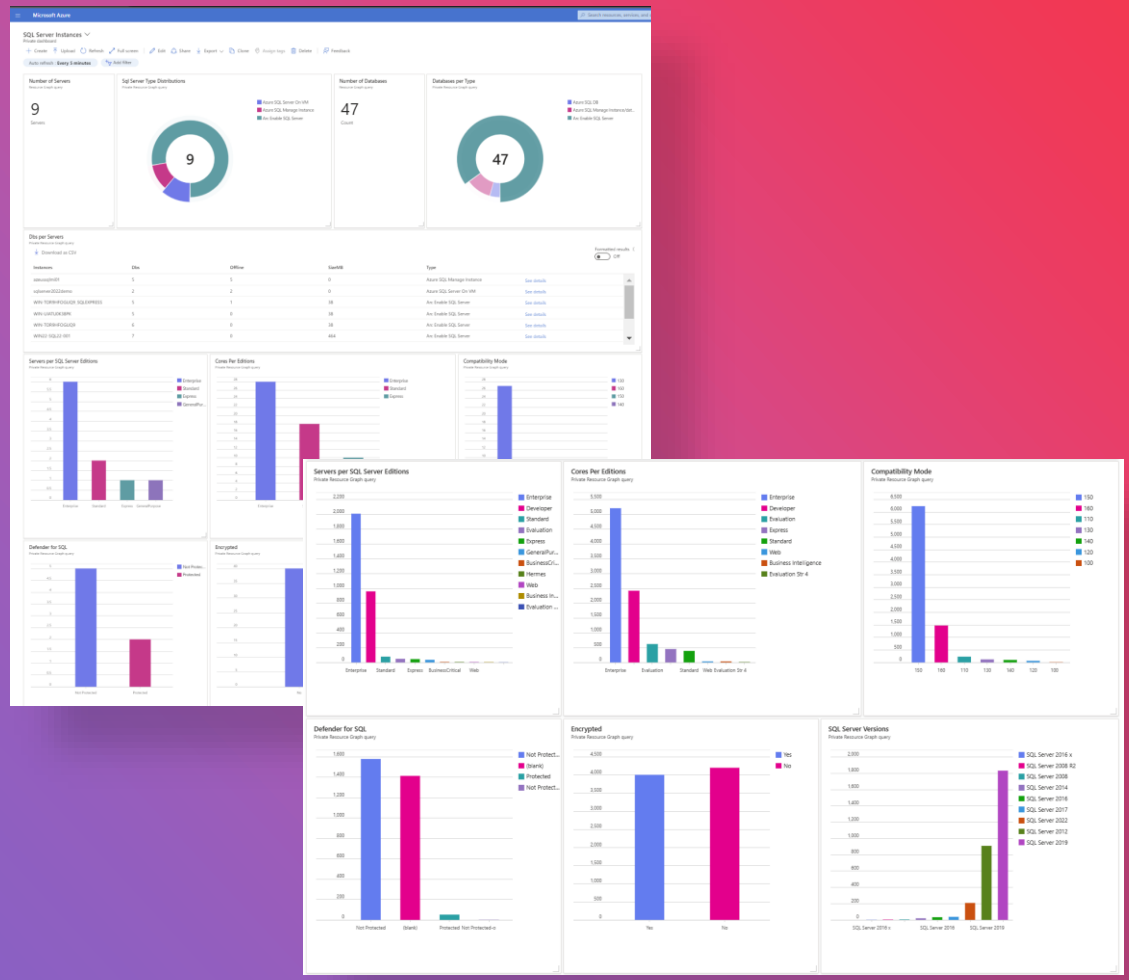
Deploy a dashboard in seconds

Easily customize to your needs

Share with your entire organization

Download

github.com/microsoft/sql-server-samples

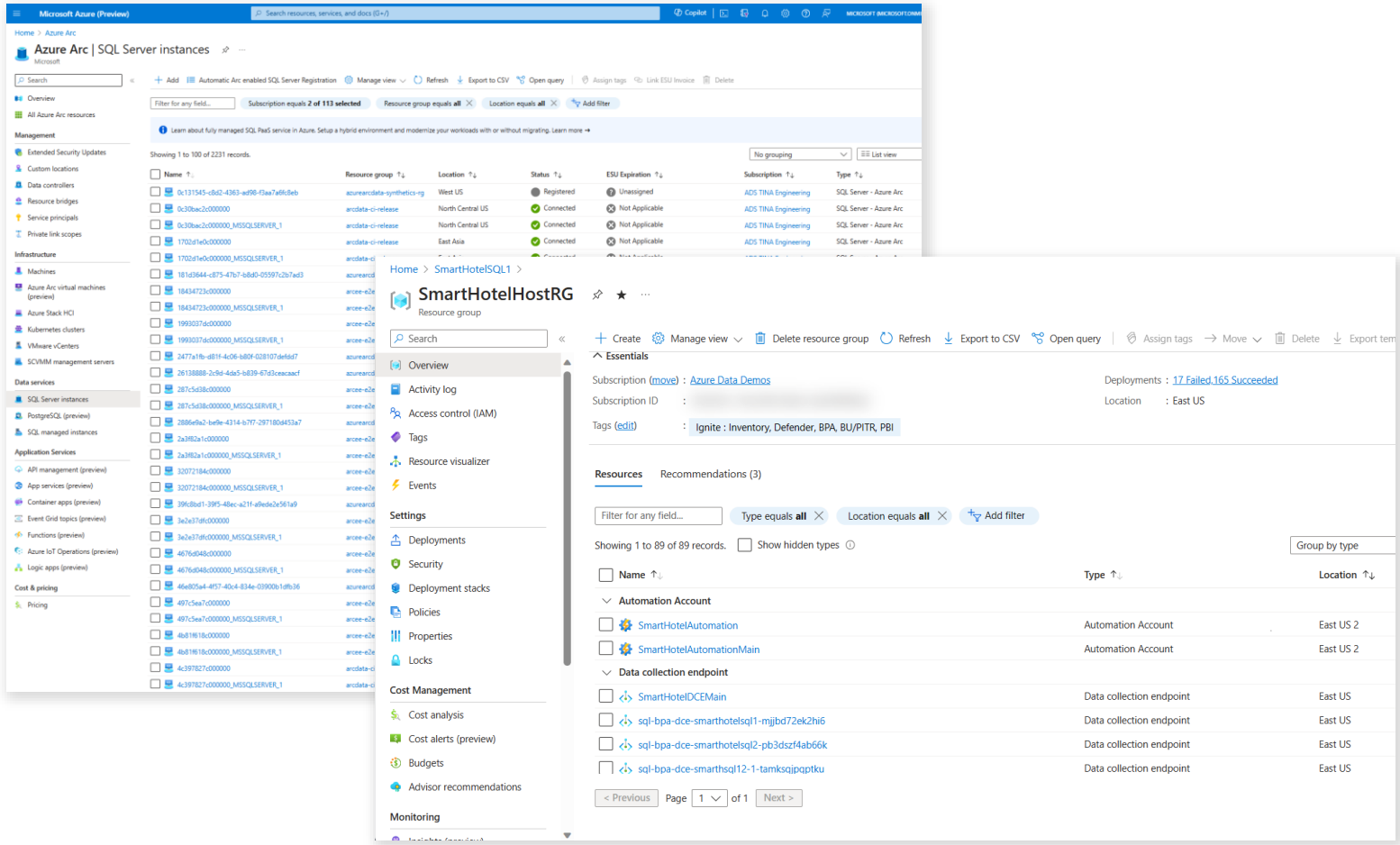


Detailed inventory of your SQL Server estate

Single view for your entire SQL Server estate

Detailed inventory information for your SQL Server

Combine to see Azure SQL and hybrid SQL together



Azure Arc | All Azure Arc resources

Microsoft

Search

Overview

All Azure Arc resources

Management

Custom locations

Data controllers

Resource bridges (preview)

Service principals

Private link scopes

Infrastructure

Azure Arc virtual machines (preview)

Azure Stack HCI

Kubernetes clusters

Servers

SQL Servers

VMware vCenters (preview)

SCVMM management servers (preview)

Data services

PostgreSQL Hyperscale (preview)

SQL managed instances

Application Services

API management (preview)

App services (preview)

Container apps (preview)

Event Grid topics (preview)

Functions (preview)

Add | Manage view | Refresh | Export summary to CSV | Open query | Assign tags

Filter for any field... | Subscription equals **2 of 90 selected** | Type equals **all** | Resource group equals **all** | Location equals **all** | Add filter

Summary view

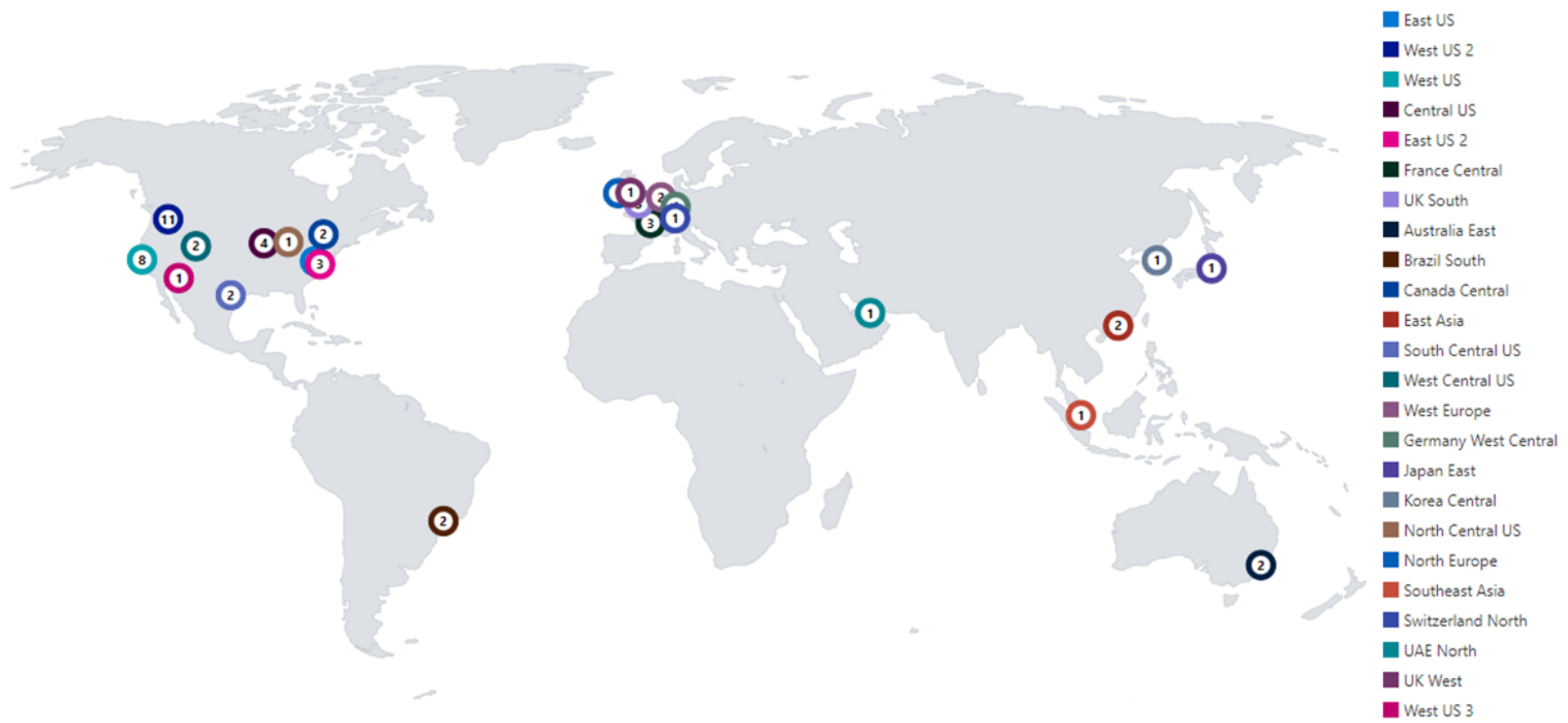
Search for summary

Summarize by

- Location
- Resource group
- Type
- Subscription

Location summary

Map



Give feedback

Best Practice Assessments

Provide proactive and actionable insights at scale to optimize entire SQL Server estate across on-premises and multicloud environments

Best Practices Assessment for SQL Server enabled by Azure Arc

Use Cases

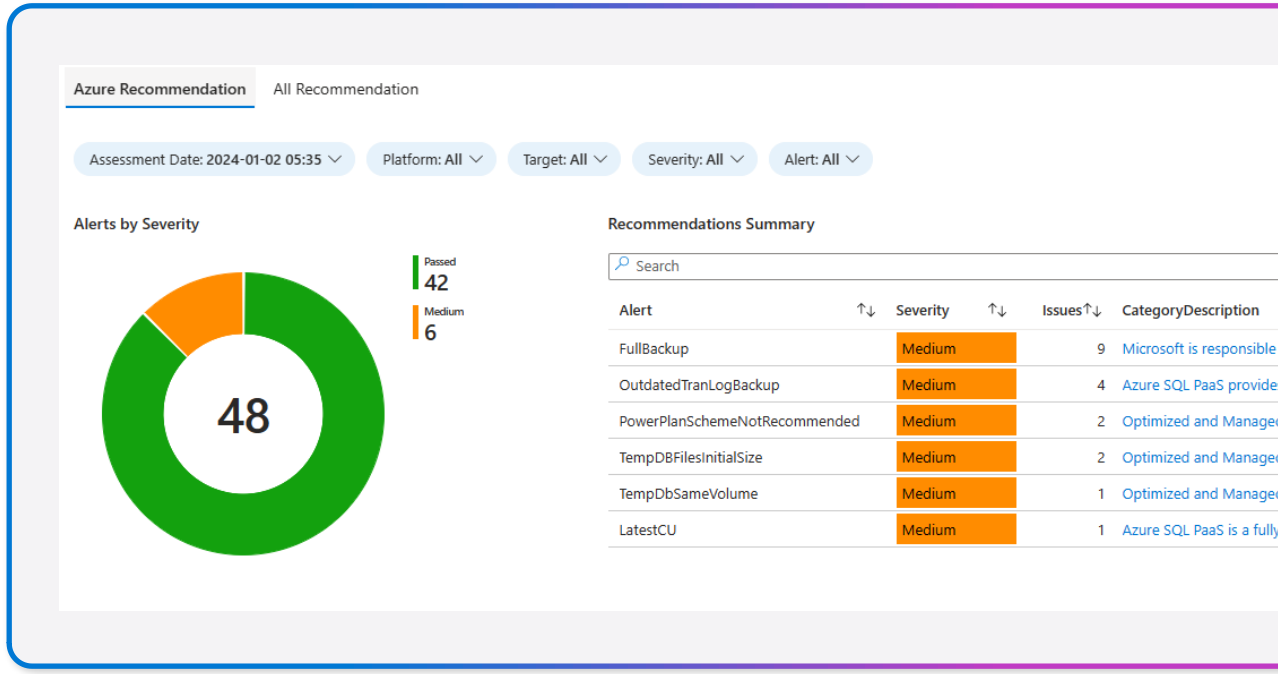
- Identify opportunities for performance optimization, improvement on security posture and compliance
- Perform proactive planning on disaster recovery and high availability
- Perform more accurate capacity planning on SQL Server resources

Key Capabilities

- 450+ rules to evaluate the configuration of SQL Server estate at scale
- Provide a prioritized list of the risks detected and step-by-step mitigation guidance
- Scan in intervals for most up to date results

Benefits

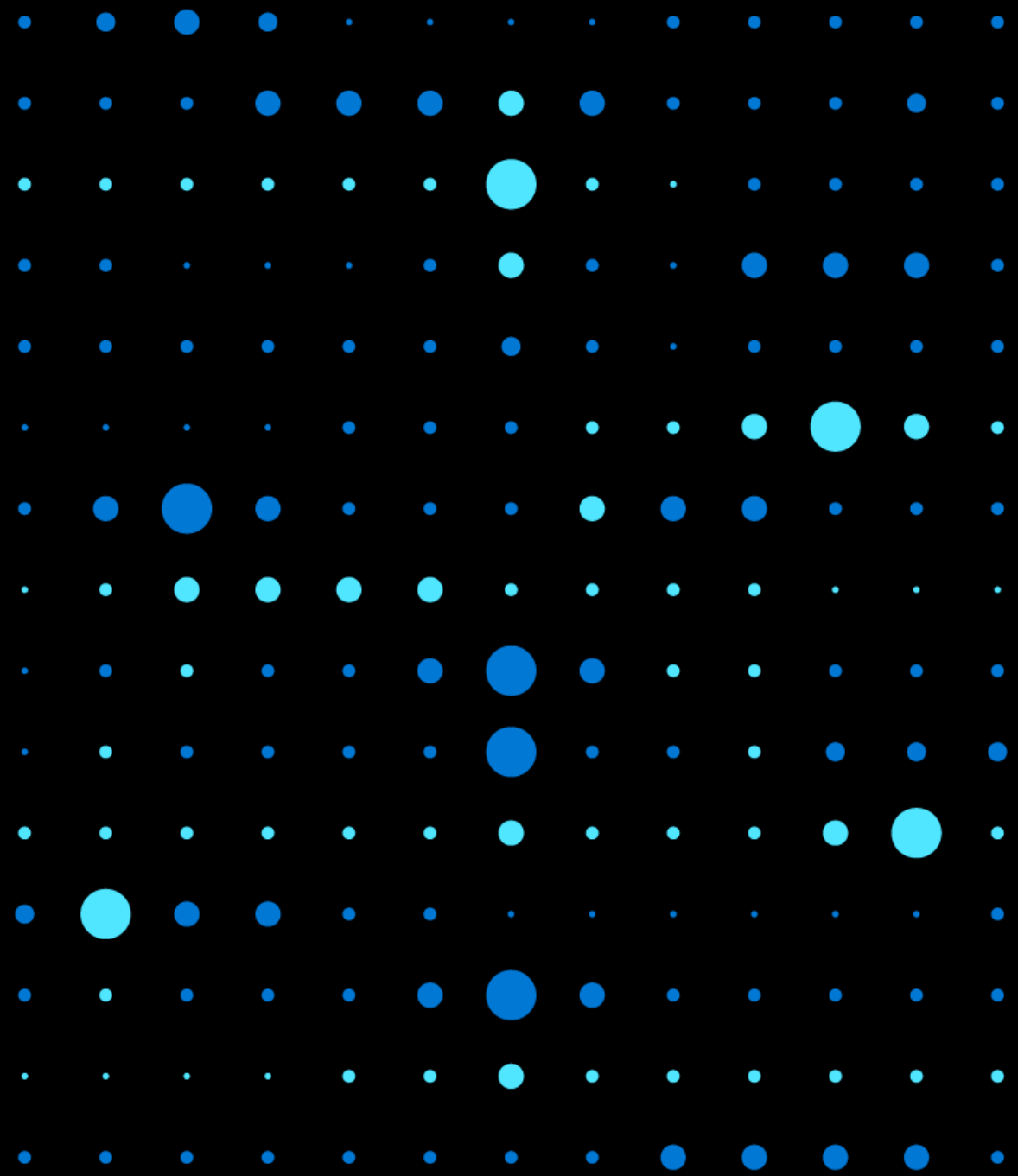
- Improve uptime and performance by mitigating the risks detected
- Enhance security and compliance posture
- Increase efficiency of DBA's routine operation by at-scale assessment



Microsoft Azure

Demo

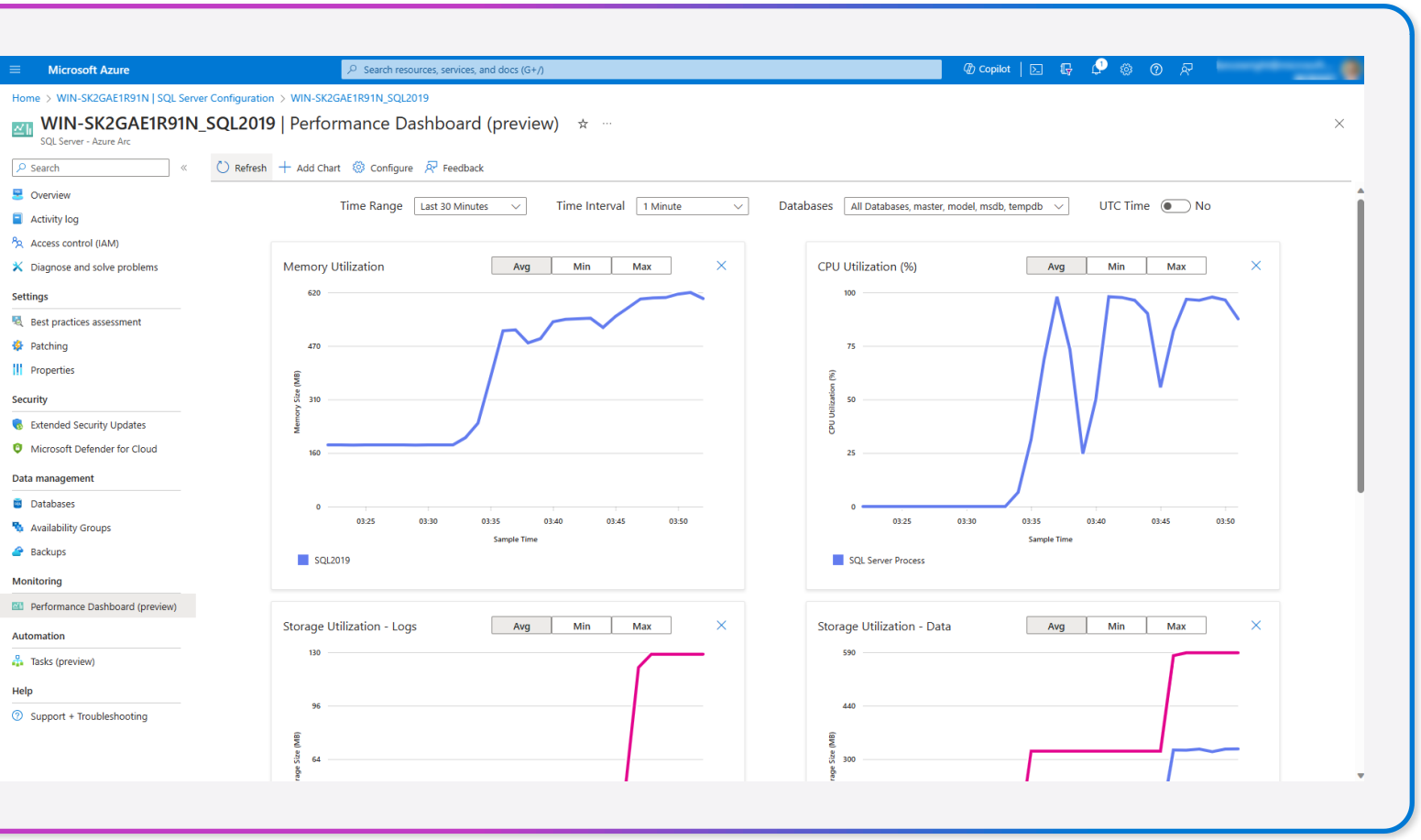
Best Practice Assessment



Performance intelligence

SQL Performance Dashboard

Now in Public Preview



View SQL Performance Metrics within the Azure

- Active Sessions
- CPU Utilization
- Database Storage Utilization
- Memory Utilization
- Performance Counters
- Storage I/O

Coming Soon

- Database Properties
- Wait Stats

Note: PII, EUII, Customer Content is NOT collected

Deliver critical insights across entire SQL Server environments, optimize database performance and enable faster diagnostic

Monitoring for SQL Server enabled by Azure Arc

Use Cases

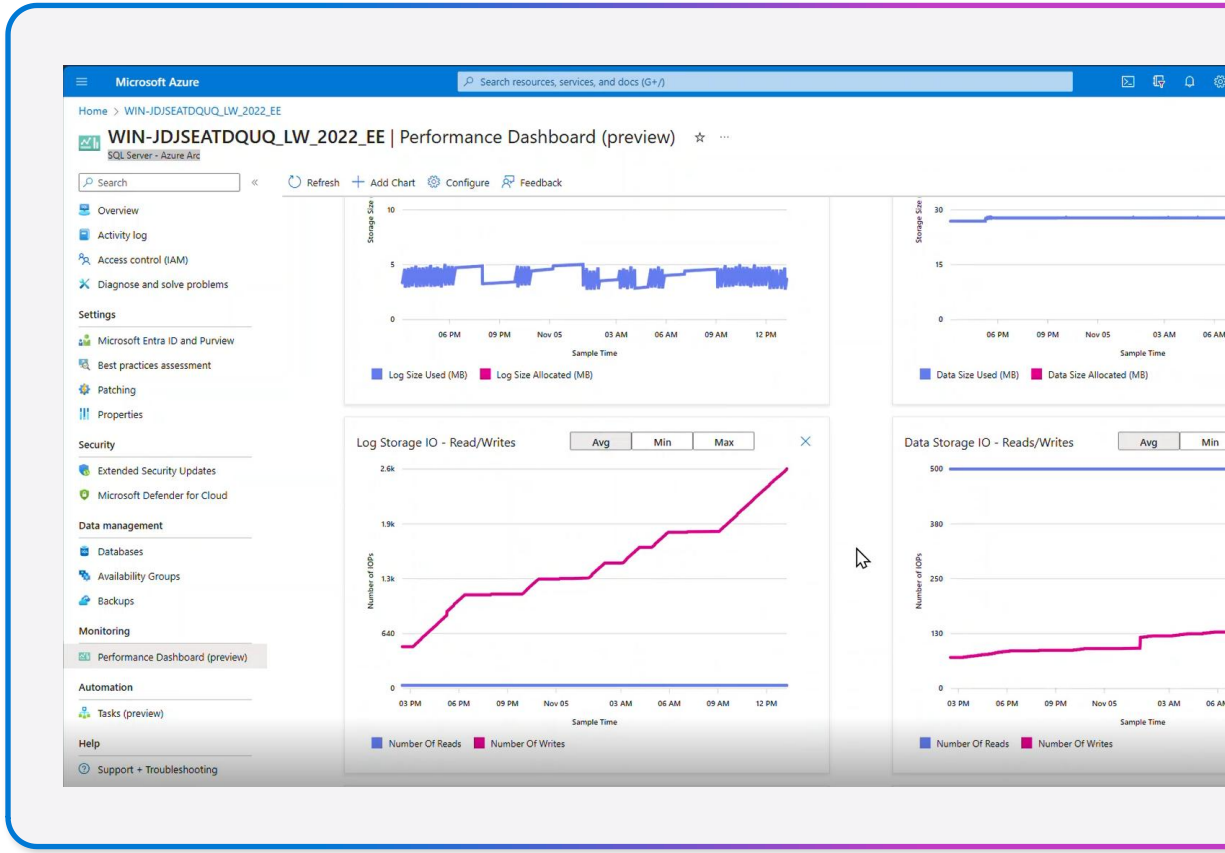
- Monitoring as the first step in optimizing performance for applications
- Perform troubleshooting when incidents happen
- Identify security gaps, remain compliant or enforce SLAs

Key Capabilities

- View key SQL performance metrics in near real time right from the Azure Portal
- Out-of-box monitoring dashboards, with zero additional setup time
- All telemetry and logs securely stored in Azure for downstream analysis

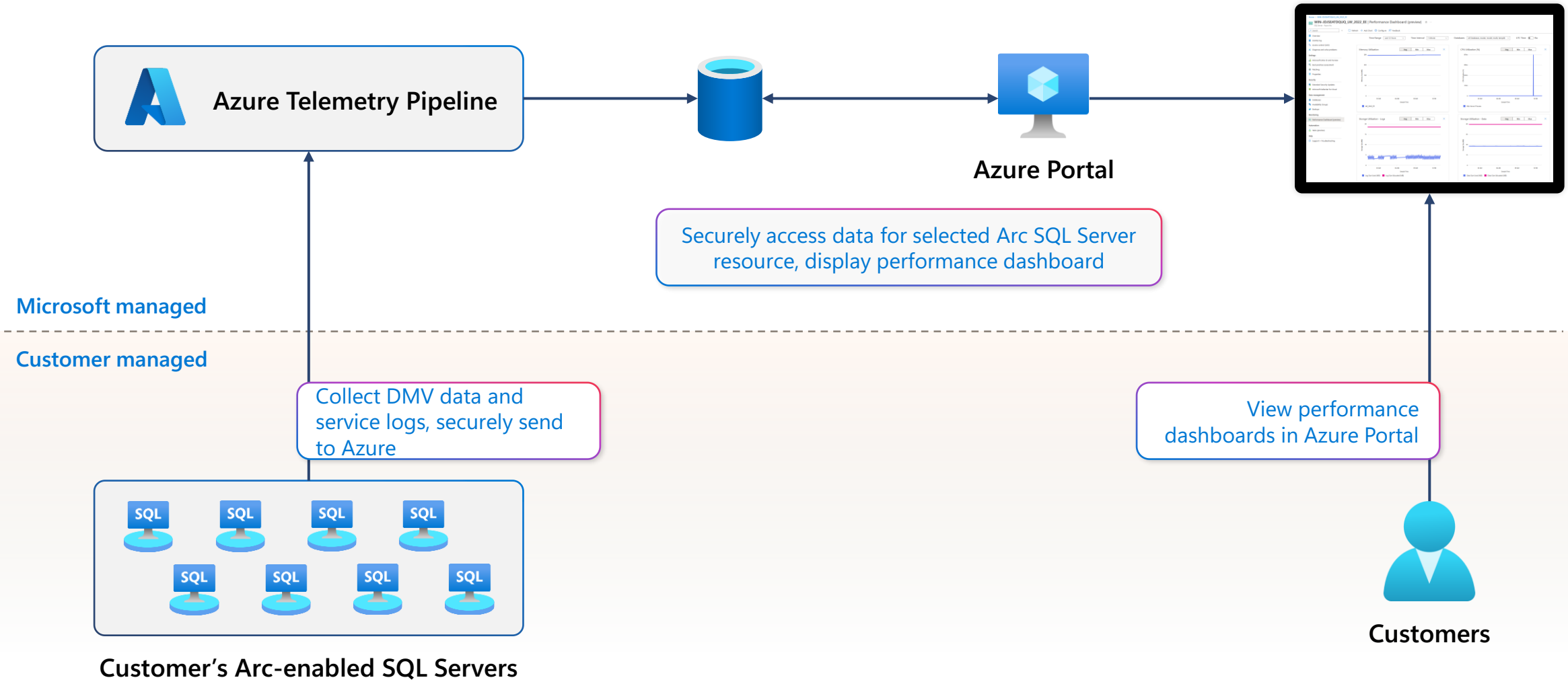
Benefits

- Reduce risks of incidents, unplanned downtime and security breach
- Increase the efficiency of DBA's maintenance and troubleshooting tasks
- Reduce the cost of underlying infrastructure, with better capacity planning



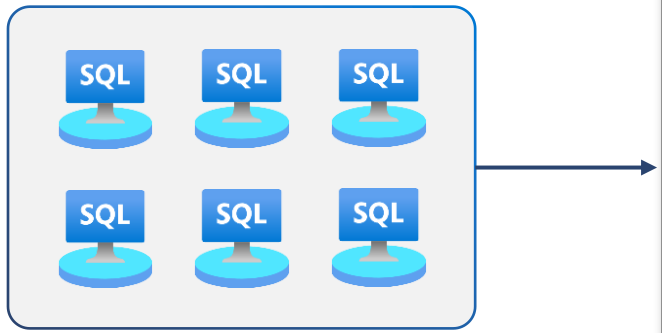
SQL performance dashboards

How it works

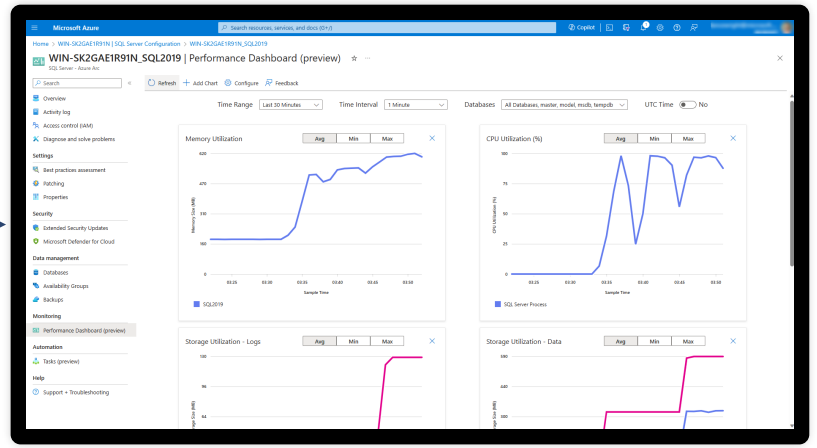


SQL performance dashboards

How it works (cont.)



Customer's Arc-enabled SQL Servers



SQL Server Performance Dashboard

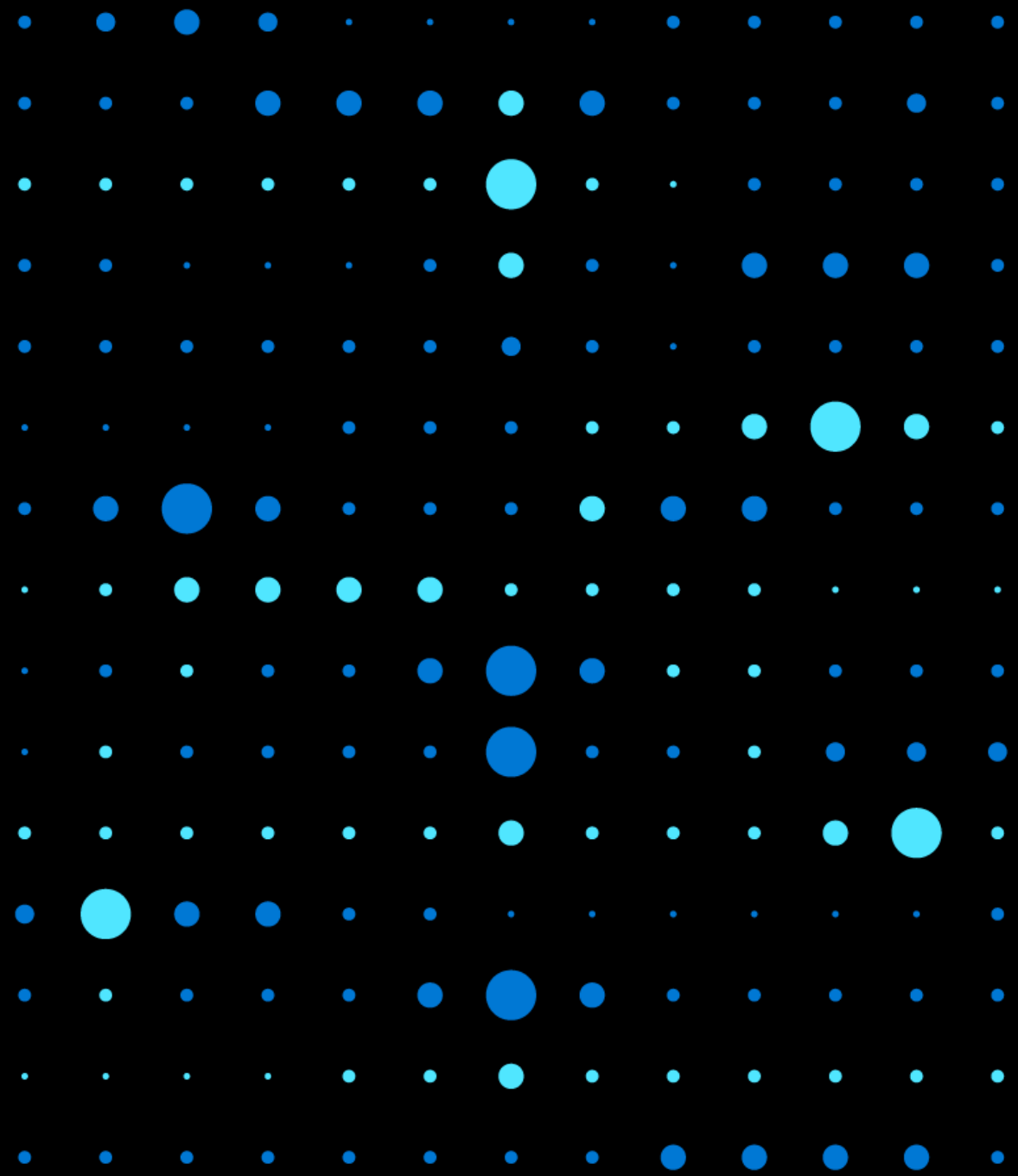
Collection is automatic for eligible SQL Server instances:

- Running the latest SQL Server extension (released in November)
- Enterprise or Standard Editions
- Running Windows OS
- License Type is "Pay as you go" or "License with Software Assurance"

Microsoft Azure

Demo

Performance Assessment



Auto Backup

Automated backups

Now in Public Preview

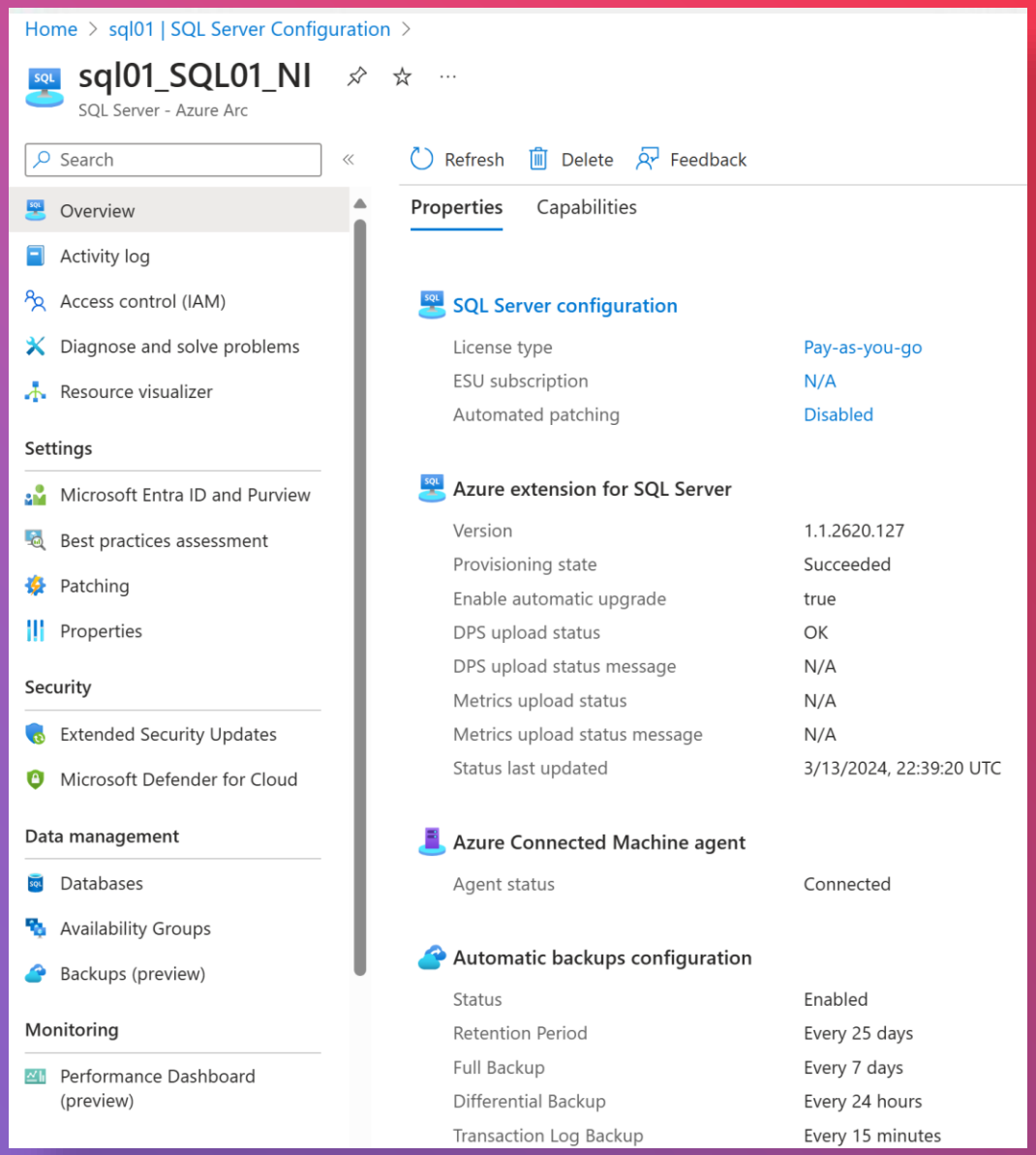
Perform backups automatically

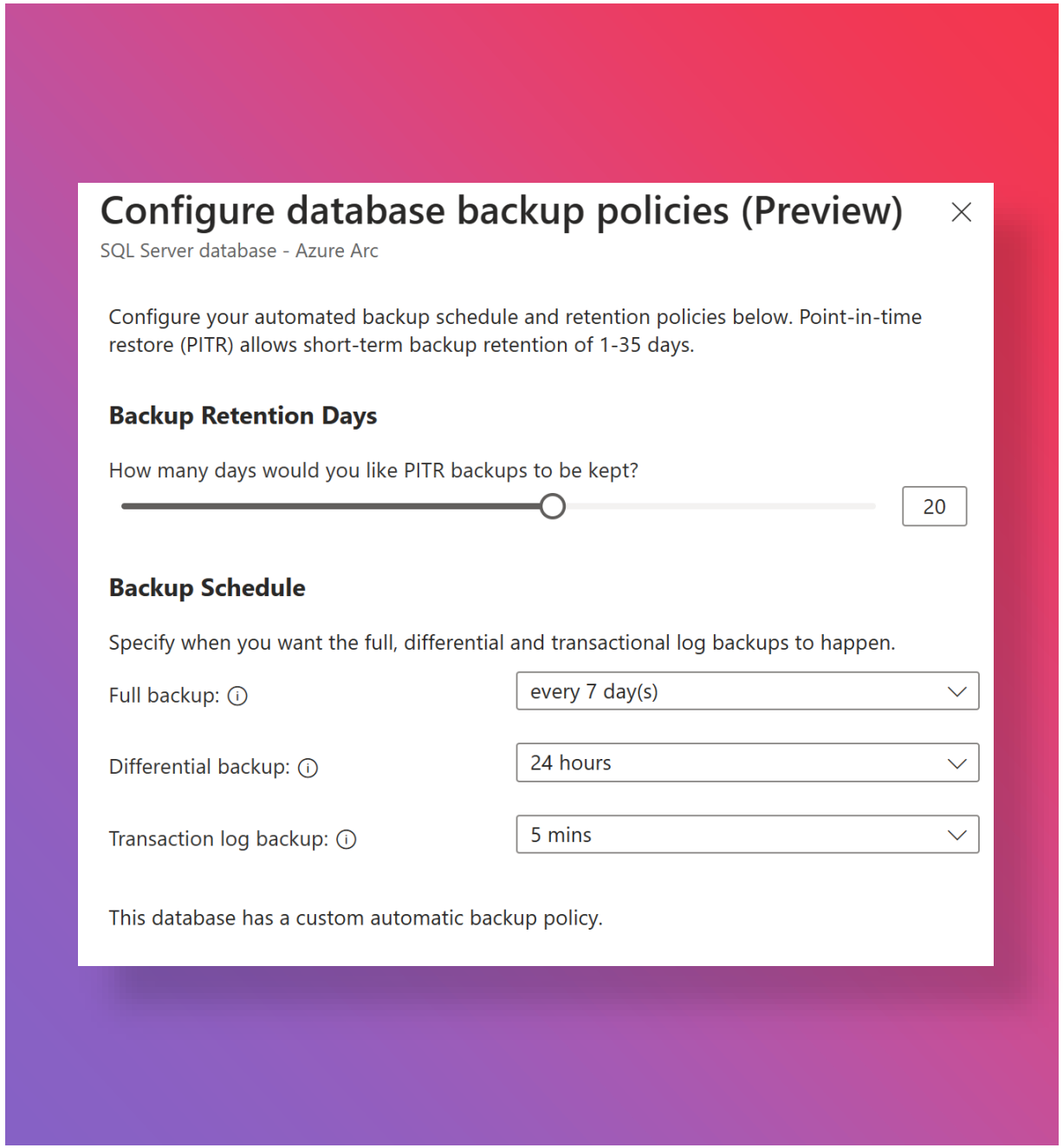
- User databases
- System databases

Built-in, disabled by default

The backups are native SQL Server backups

- Backup history is available in the msdb





Automated backup settings

Retention days (1-35)

- Days to retain the backup
- Value of 0 disables the backup

Backup schedule

- **Full backups:** Daily or weekly, default weekly
- **Differential backups:** Every 12 hours or 24 hours, default 24 hours
- **Transaction log backups:** Increments of 5 minutes, default 5 minutes

Backups are stored at the default backup location of the instance

Point-in-time restore

Now in Public Preview

You don’t need to:

- Connect to the physical machine
- Look for where backups are
- What can be restore point window

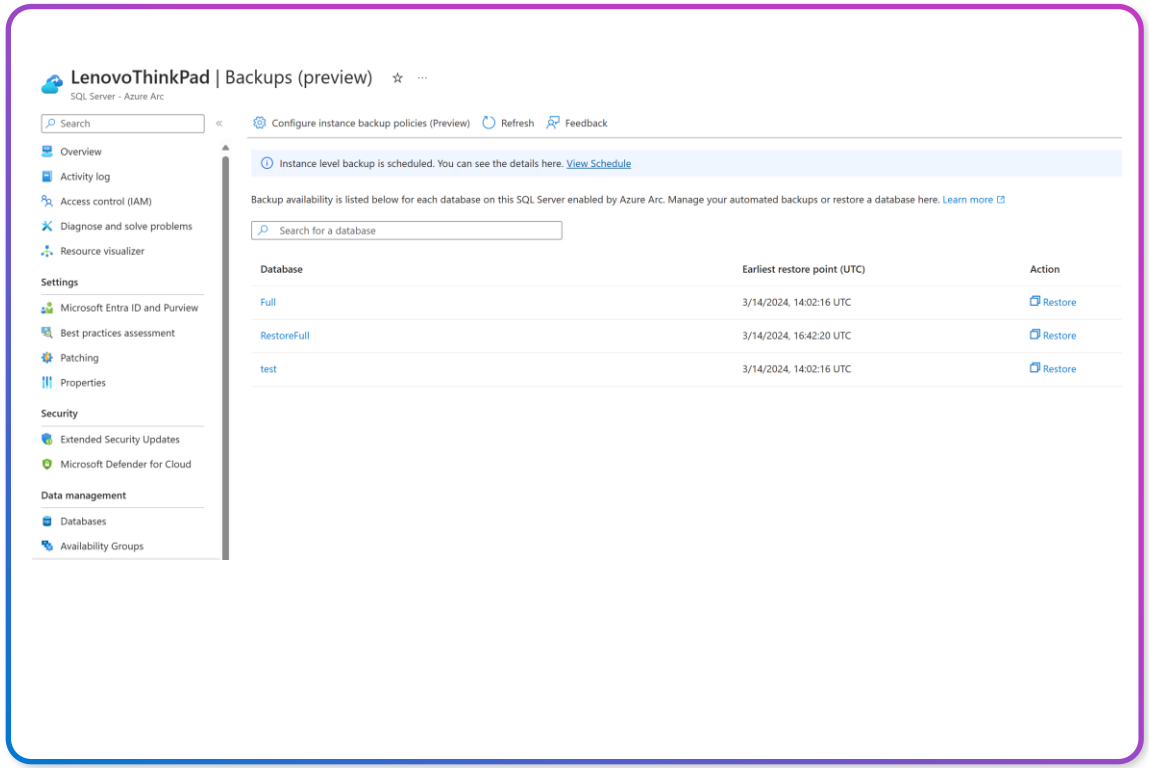
Restore to a point-in-time within the retention period

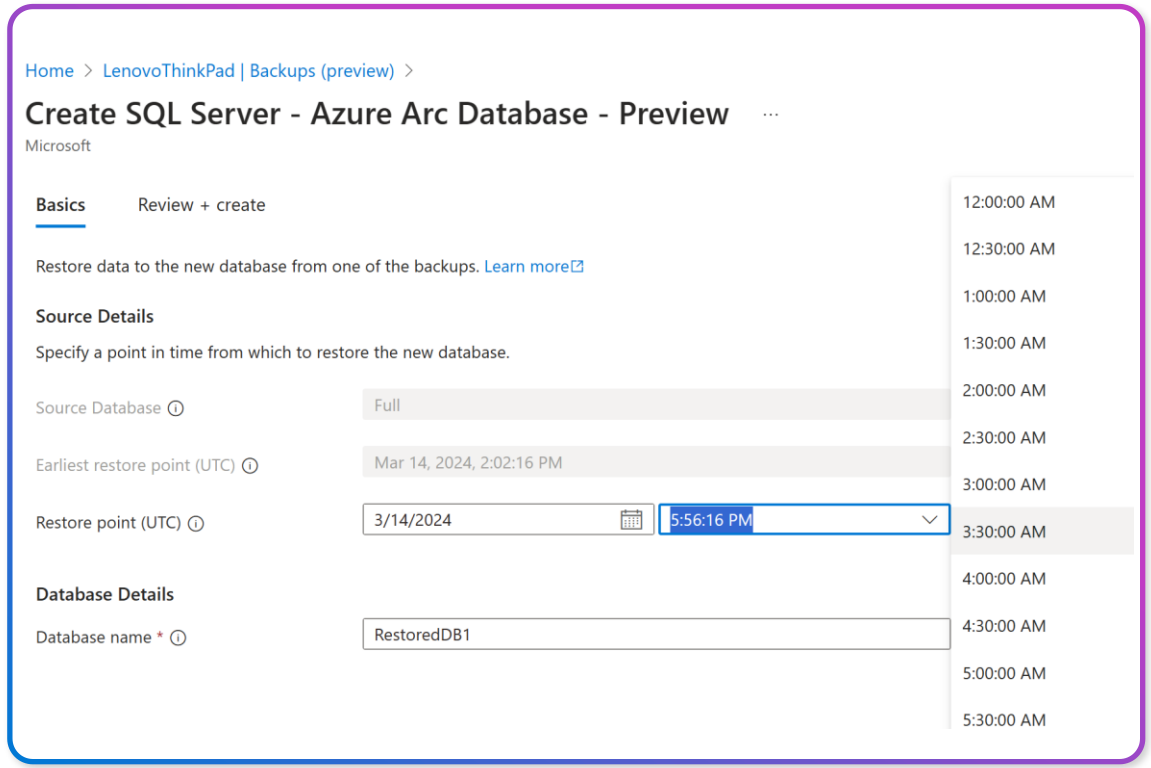
Restore as a new database to the same SQL server enabled by Arc instance

Prerequisites:

- Automated backups is enabled
- Backups are taken through automated backup

Point-in-time restore process



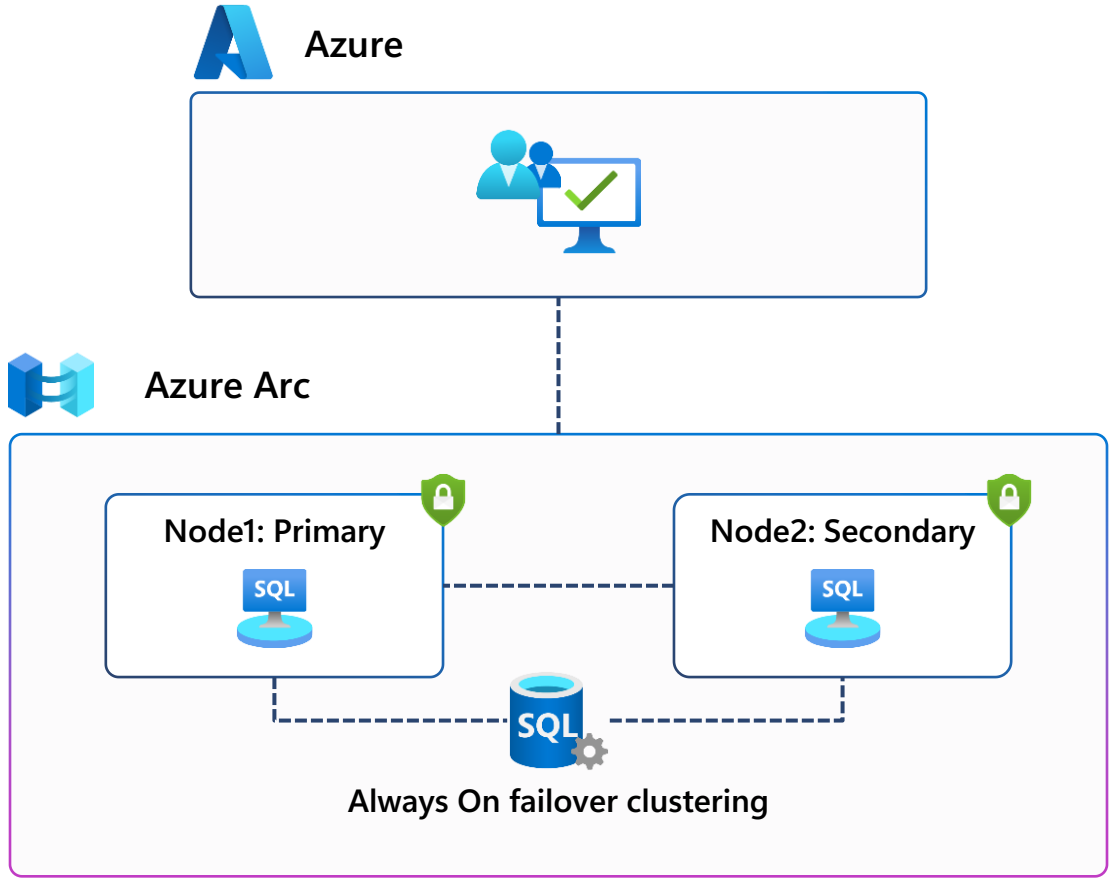


HA/DR

Manage and configure instance-level redundancy from Azure Portal

Always On Failover Cluster Instances (FCI)

- View cluster configuration, database inventory, backups
- Configure Defender against FCI to continue the threat detection and vulnerability assessments
- Don’t need to use Windows Failover Cluster Manager
- Don’t need to connect to the primary
- Manage all your instances from the Azure portal
- View cluster configuration, metadata, databases
- Defender status, Configure Defender



Availability Groups inventory, status, and failover

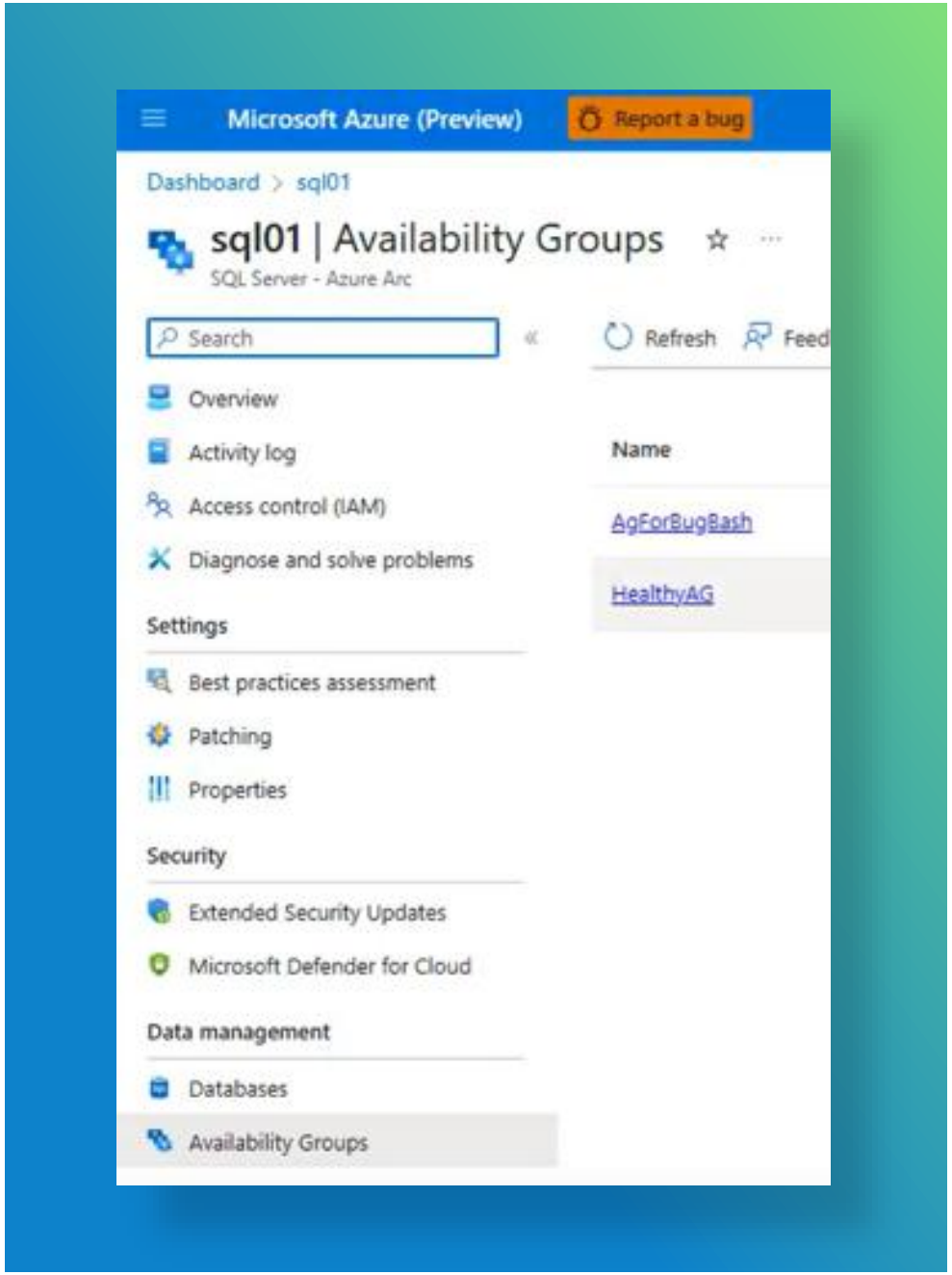
Now in Public Preview

Availability Group inventory:

- **No need to connect to the physical machine through SSMS**
- **View Availability Groups in Azure portal**
  - The current primary replica
  - Availability group replicas
  - Failover mode

Availability Group status:

- **Real-time status of each Availability Group**
  - Health state
  - Synchronization state
- **Initiate manual failover from Azure Portal**

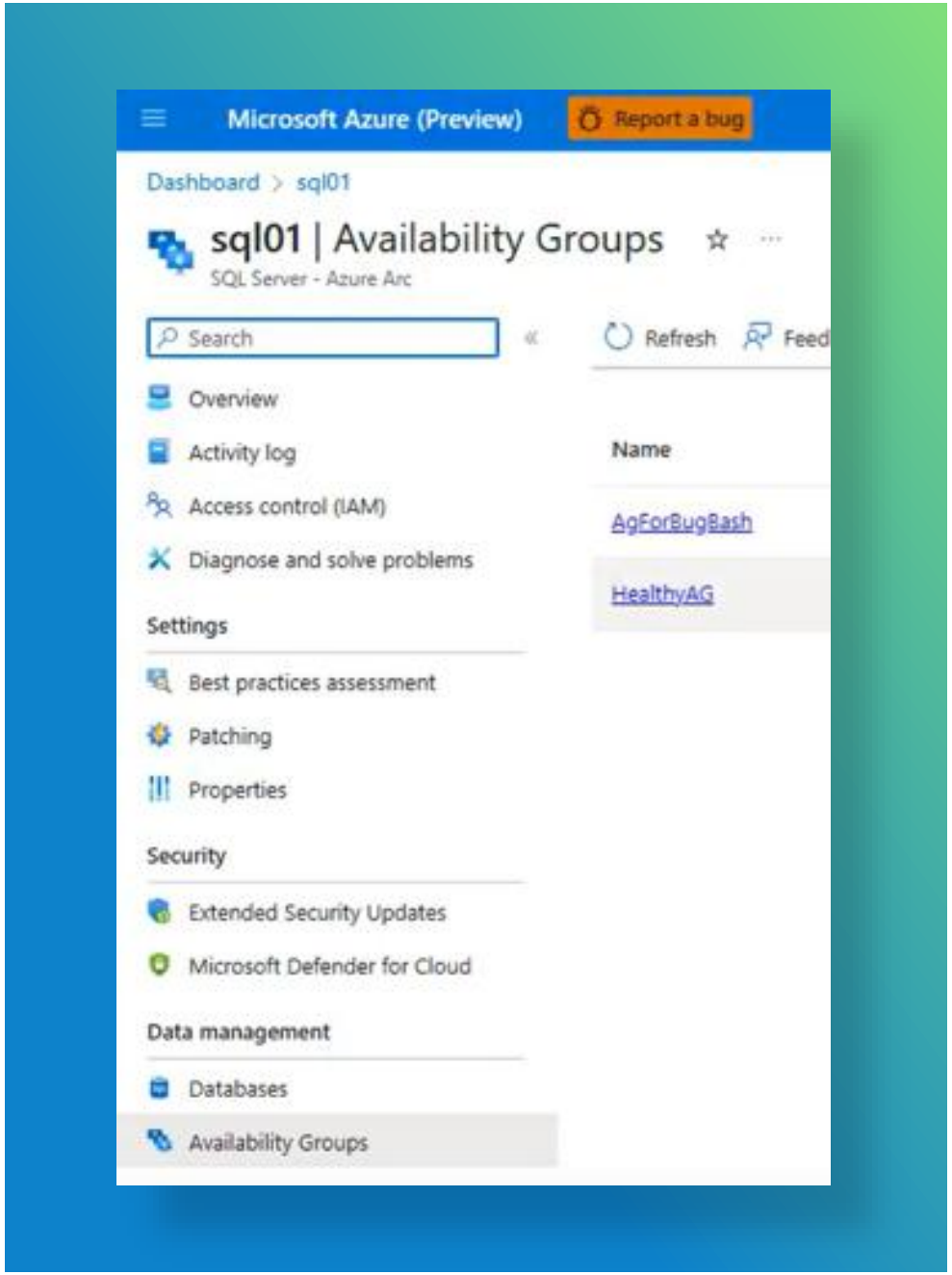


AG Replica node view

Shows all AGs in the replica

Status of AGs

Allow failover from secondary



sql01 | dn-autoAG

SQL Server - Azure Arc

Search

Overview
Activity log
Access control (IAM)
Diagnose and solve problems

Settings
Best practices assessment
Patching
Properties

Security
Extended Security Updates
Microsoft Defender for Cloud

Data management
Databases
Availability Groups

Automation
Tasks (preview)

Refresh | Feedback | Failover

2

1. Detailed, real time health status of the AG
2. Manual Failover

Current Primary:	SQL02
Cluster Type:	Wsfc
Availability Group State:	Healthy

1

Availability Replicas

Name	Role	Availability Mode	Failover Mode	Seeding Mode	Synchronization State
SQL01	Secondary	Synchronous Commit	Manual	Automatic	Healthy

Availability Databases

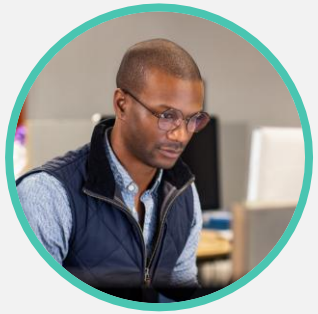
Name	Replica Name	Synchronization State	Synchronization Health
db-auto	SQL01	Synchronized	Synchronized

Secure and Govern

Dedicated views for security admins and database owners

Centralized estate view

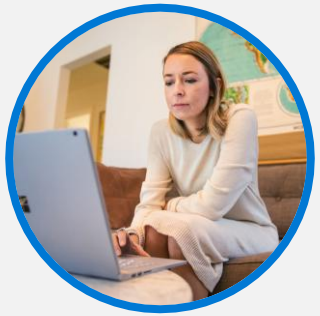
View of the entire database estate with context of the entire environment security posture.



Persona: Security admin

Single SQL workload view

Resource-level focused recommendations and alerts. Get the resource context and fix misconfigurations.



Persona: Database or resource owner

Protect SQL workloads through security posture management and allow timely responses to threats

Microsoft Defender for Cloud — Databases Protection

Use Cases

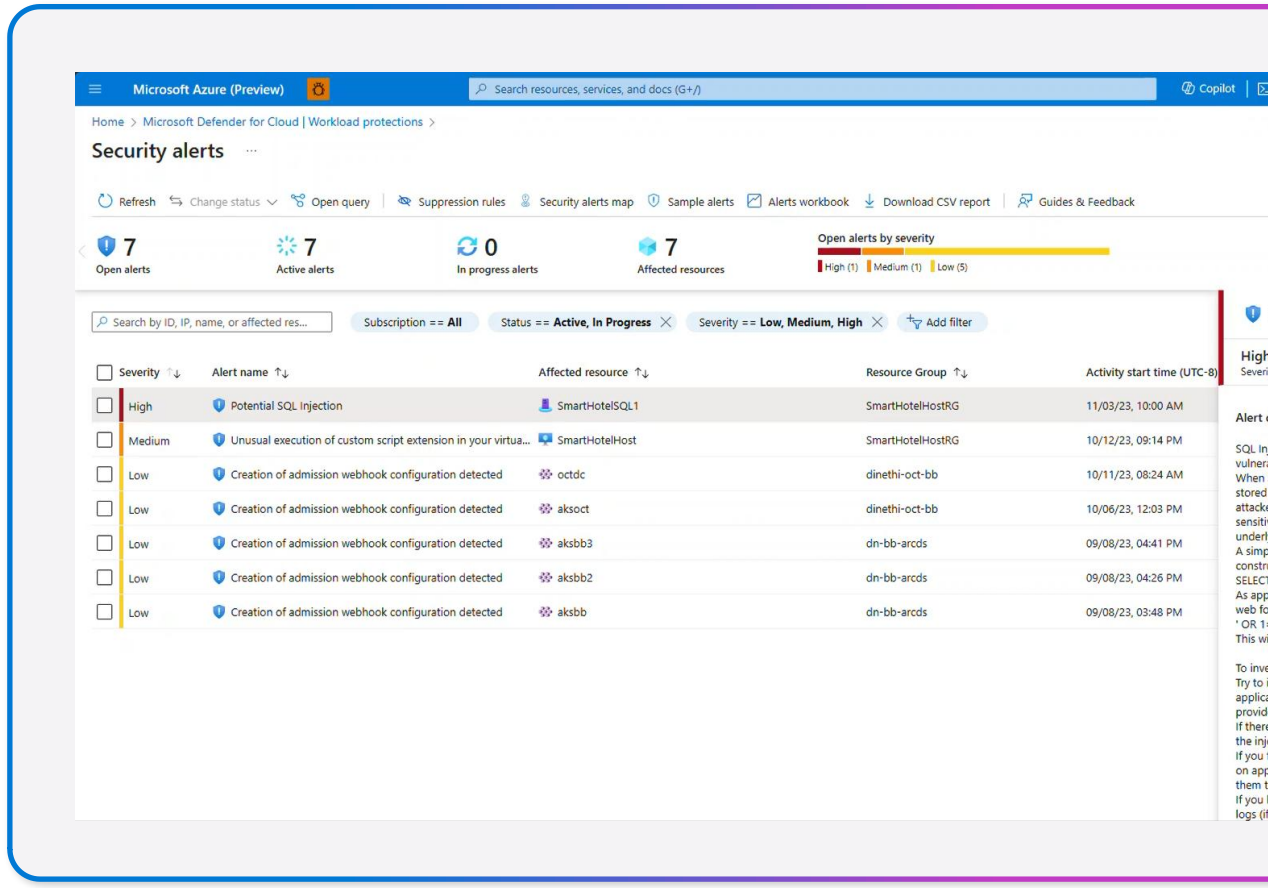
- Mitigate risks generated from modern technology (open-source, container)
- Standardize security practice across various types of databases and across hybrid and multicloud infrastructure

Key Capabilities

- Discover, track, and remediate SQL workloads security misconfigurations
- Detect and response unusual and harmful attempts to breach SQL workloads
- Centralize security across all SQL estate, with one-click enablement

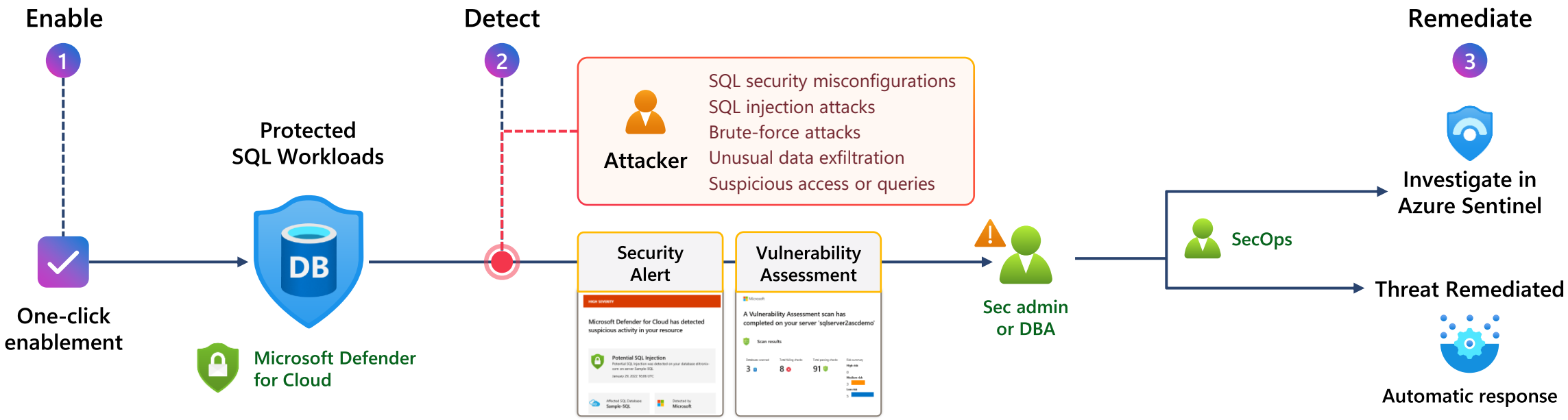
Benefits

- Reduce risk proactively with contextual cloud security posture management
- Drive compliance with MS cloud security benchmark for multicloud environments
- Enable protection with more workload coverage and native integrations



Microsoft Defender for Cloud—Databases Protection

Protect SQL workloads through security posture management and allow timely responses to threats



Cloud native security

1-click enablement of protect different type of SQL workloads (IaaS or PaaS)

Security posture management

Discover, track, and remediate **SQL workloads security misconfigurations**

Advanced threat protection

Detect and response unusual and harmful attempts to breach SQL workloads

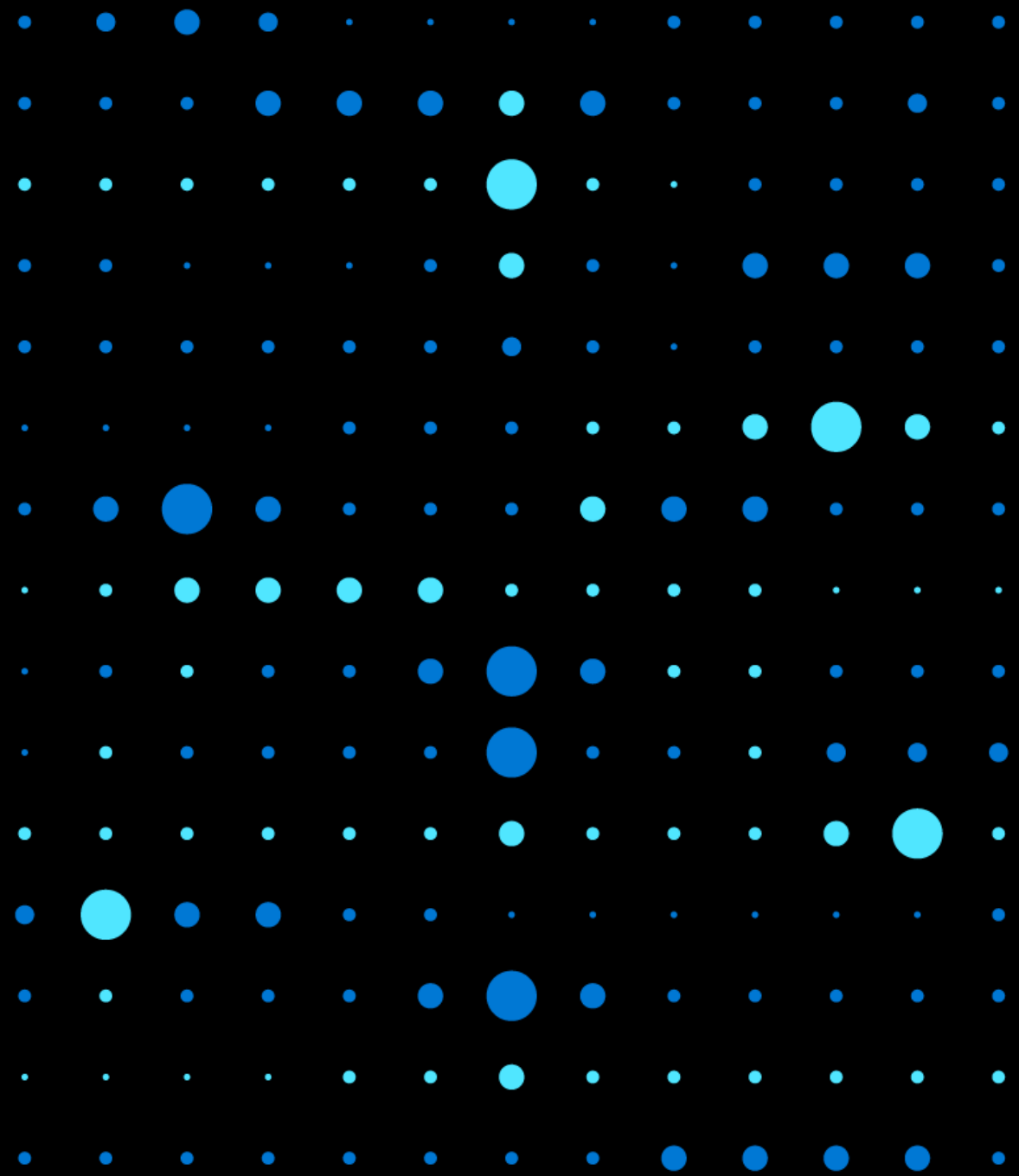
Centralized and integrated

Centralize security across all data assets managed by Azure and built-in integration with Sentinel and Purview

Microsoft Azure

Demo

Defender for Cloud



Pricing model

SQL Server enabled by Azure Arc pricing model

- SQL Best Practices Assessment
- Auto patching
- Auto backup to local storage
- Monitoring
- Point-in-time restore
- TDE with Azure Key Vault**

Microsoft Azure

Additional services ($)*

- Microsoft Defender for SQL Server
- Log Analytics
- Purview Integration
- Synapse Link
- Azure Policy
- Azure Monitor
- Cluster aware patching and upgrades**
- Backup long-term retention to Azure/S3**

No additional cost to L+SA or PAYG customer

No additional cost to L-only customer

- Tagging, management groups, activity logs, templates, Resource Graph, RBAC
- Manage license type
- Detailed Inventory
- Migration Assessment
- Failover cluster instances
- Always-on availability groups

Customers' servers and clusters

*Pricing for Azure Arc-enabled services and additional management services is consistent with Azure pricing.
** Not available today. On the product roadmap

Enabled features by license type

Not supported | Supported | Future support

Built-in capabilities	License Only	License with Software Assurance or SQL subscription	Pay-as-you-go
Connect to Azure	Included	Included	Included
SQL Server inventory	Included	Included	Included
Detailed database inventory		Included	Included
Azure AD auth		Included	Included
Best practices assessment		Included*	Included*
Auto patching		Included	Included
Auto backup		Included	Included
Monitoring		Included	Included
TDE with Azure Key Vault		Included	Included
Defender for SQL Server	Additional Cost	Additional Cost	Additional Cost
Purview premium	Additional Cost	Additional Cost	Additional Cost
HA/DR inventory management		Additional Cost	Additional Cost
License compliance management		Additional Cost	Additional Cost
Cluster aware patching and upgrades		Additional Cost	Additional Cost
Point-in-time restore		Additional Cost	Additional Cost
Backup long-term retention to Azure and S3		Additional Cost	Additional Cost

*Might incur additional charge on Log Analytics Workspace. Detailed example included in the next slide.

New cloud billing model for SQL Server (Pay As You Go*)

Better cost efficiency when paying only for what you use

SQL Server pay-as-you-go licensing enabled by Azure Arc (per core per month/hour)

Pricing	Monthly rate	Hourly rate
Standard Edition	$73	$0.100
Enterprise Edition	$274	$0.375

Available on SQL Server 2014, 2016, 2017, 2019, and 2022

* Traditional Licensing Options are still available. More here.

Optimize asset capitalization

- Organizations that focus on EBITDA and capitalized expenses prefer to purchase their licenses. Customers that bill on a cost-plus or other expense-based chargeback model will prefer the Pay-As-You-Go model.

Optimize upfront costs

- Pay-As-You-Go doesn't have any upfront costs and is billed monthly but in the long term it may have a higher TCO

Optimize for periodic consumption

- Reduced IP cost of periodic workloads such as of ERP, payroll, giving campaigns and others
- Scale down the entire VM or stop SQL Server instance

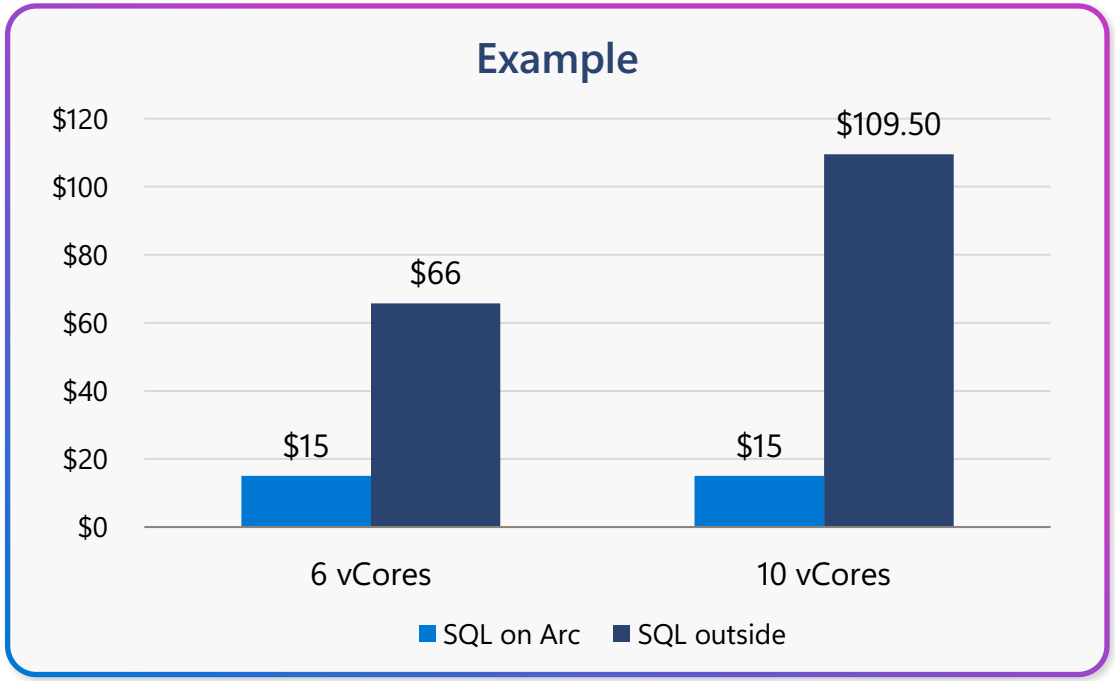
Microsoft Defender for SQL Server

Better cost efficiency when paying through Azure Arc

Defender for SQL can be enabled through Arc or without

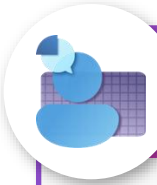
Pricing	Monthly rate	Scope
SQL on Azure-connected database (**including Arc enabled**)	$15*	/instance/month
SQL outside Azure	$10.95*	/vCore/month

Nearly 80% savings for the customer when using Defender for SQL with Arc



* This estimation is based on Azure Commercial Pricing for West US Region as of April 2023.

Pricing example

	 Customer inputs	 Pricing	 Cost calculation
Log Analytics Workspace	Run Best Practice Assessment once a month for **100** instances **3.5MB** per run per instance	**$2.76** per GB per month First **5GB** per month is free	**100 × 3.5MB × $2.76/GB = $0.97** per month
Defender for SQL Server	**100** instances	**$15** per instance/month	**$1500** per month
			Total: **$1500.97**

How to select license type for SQL Server

Customer control over cost optimization

Pay-As-You-Go

- Triggers Pay-As-You-Go hourly billing after SQL Server is connected
- Enables core Arc features

Software assurance or SQL Subscription

- Provides license usage visibility in Cost management + Billing via distinct $0 meters
- Enabled core features

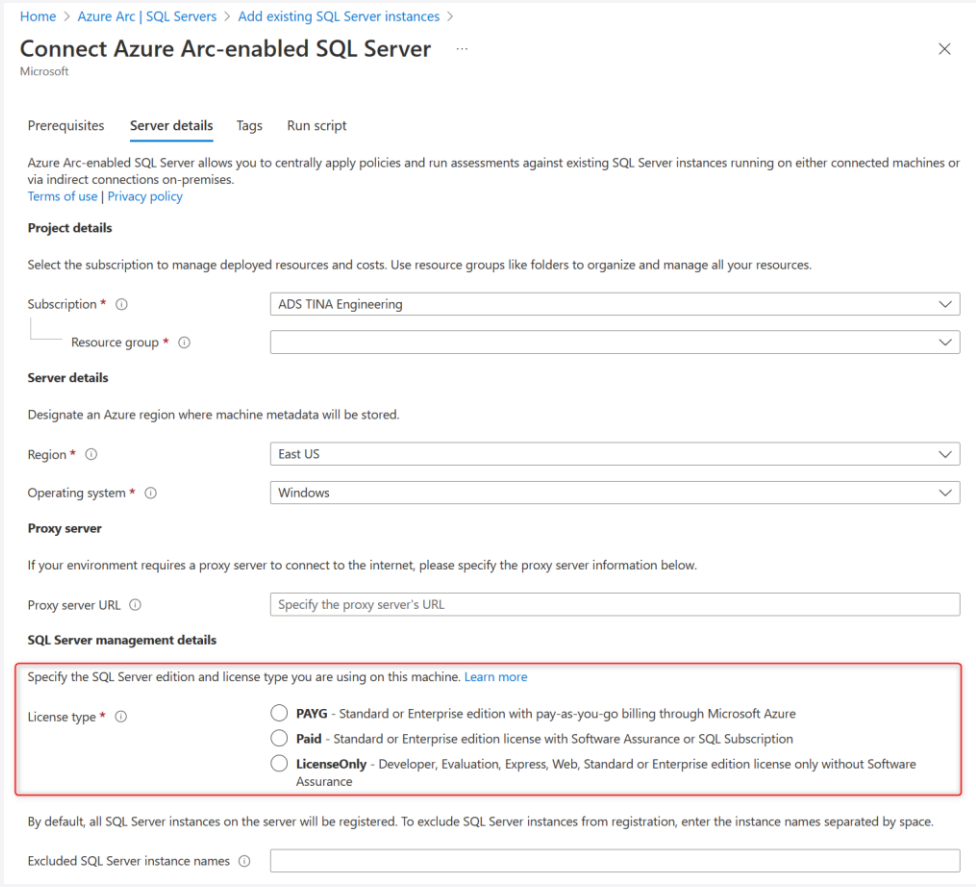
License only

- Provide license usage visibility in Cost management + Billing via distinct $meters
- Disables core features

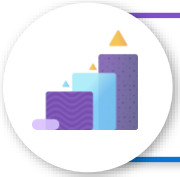
Can alter the selection at any time

Use Azure portal or script to change between license types

Takes effect the next hour



What’s coming – observability



Access performance data via data export

SQL Server health state

Alerting

Query performance insights

Copilot integration

Microsoft

Thank you