

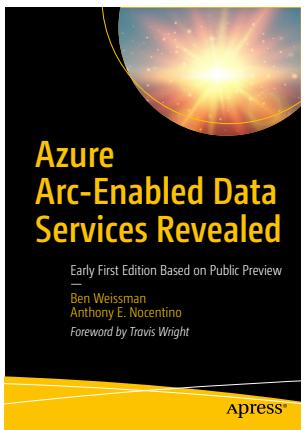
# Azure Arc Enabled Data Services Fundamentals

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# Anthony E. Nocentino

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  - Specialize in system architecture and performance
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# Agenda

- **The Challenge**
- **Azure Arc Overview**
- **Azure Arc Enabled Data Services**
  - **Architecture and Data Services**
  - **Deployment Scenarios**

# The Challenge

Cloud benefits  
everywhere

Enable consistency and  
controls

Homogenize  
management services  
and tooling

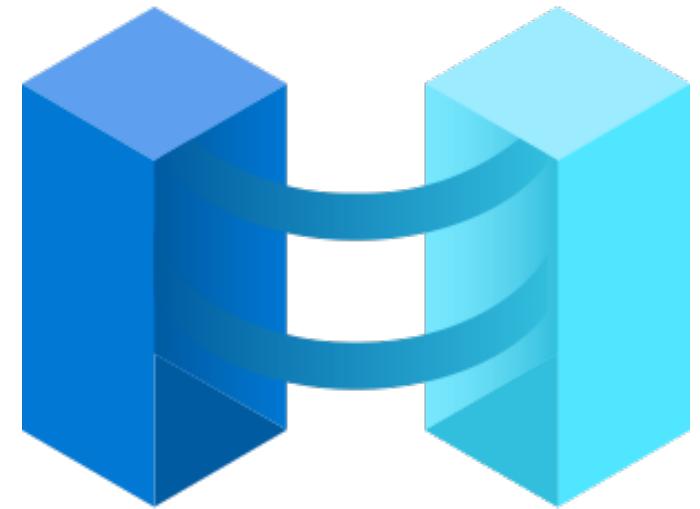
Hybrid cloud

AWS/GCP/Azure  
On Prem

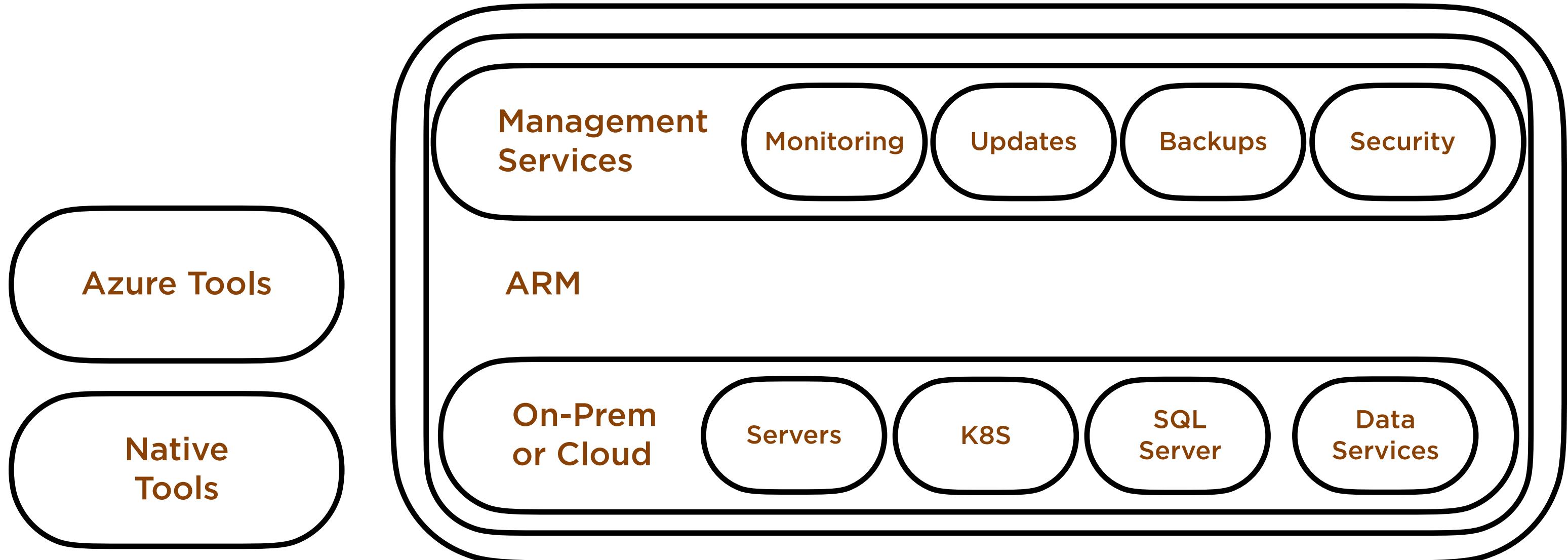
Manage this at scale?

# Azure Arc

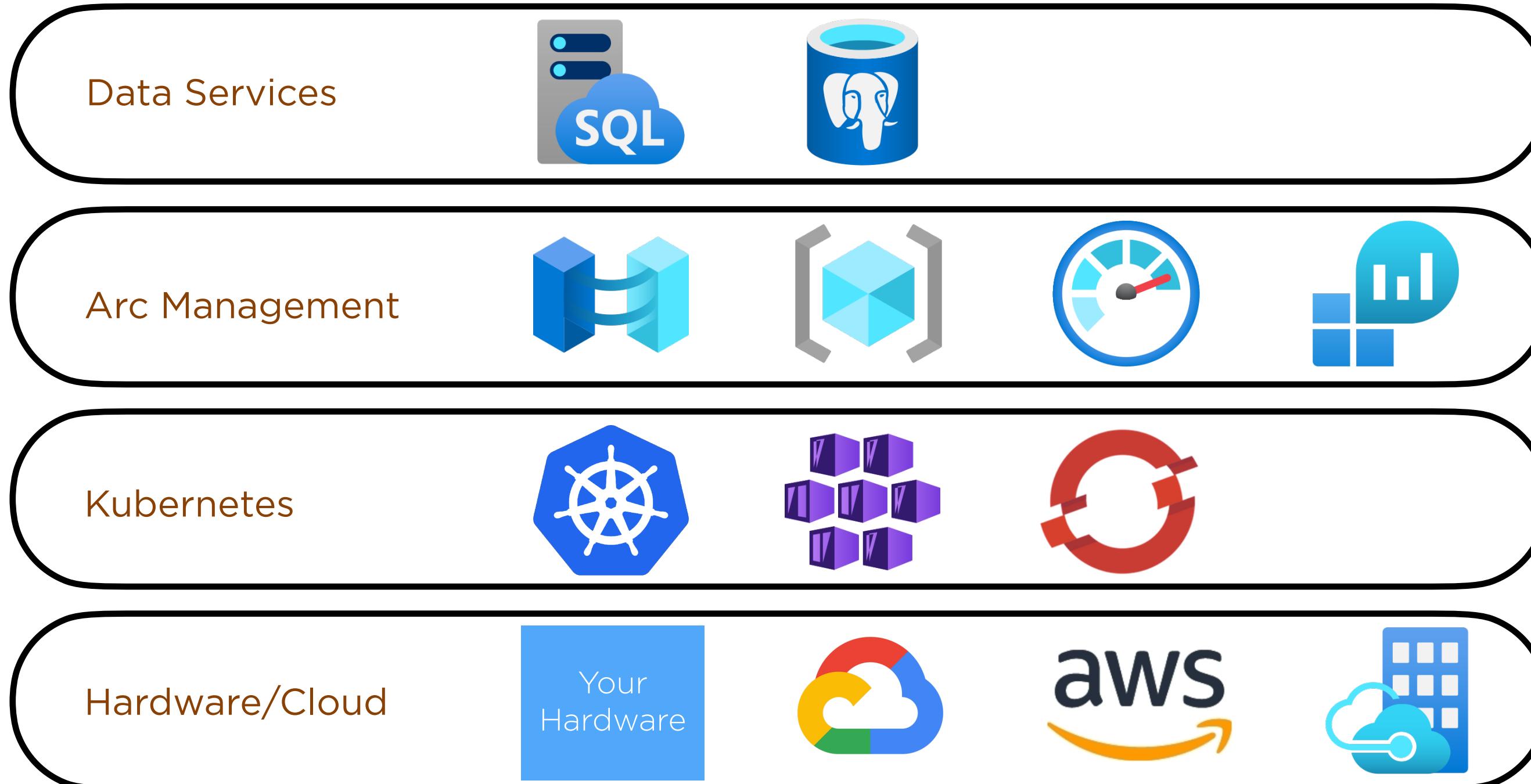
- Provides Azure management services wherever **YOU** are
- Deployment and operations
- Access controls and security
- Inventory and organization
- Unified experience across on-premises and hybrid-cloud



# Azure Arc



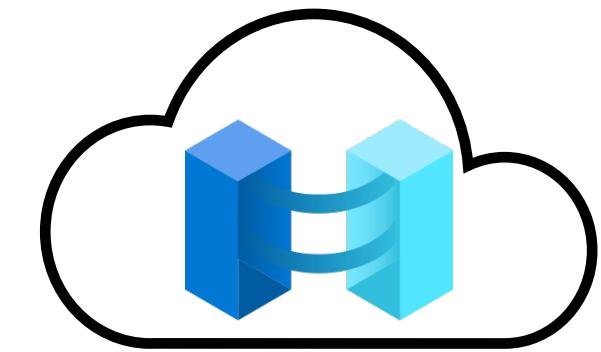
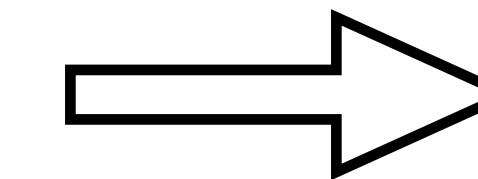
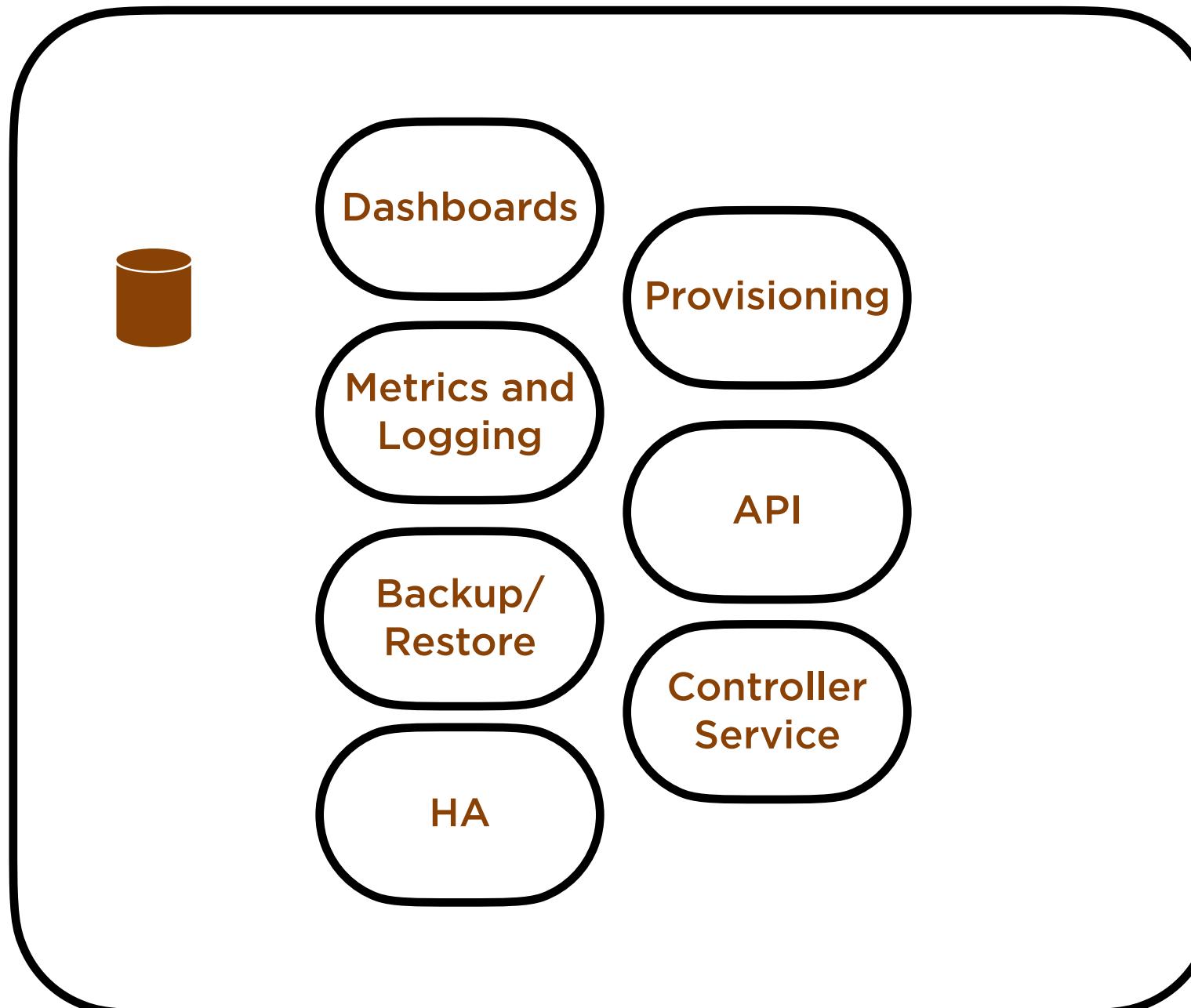
# Azure Arc Enabled Data Services



# Arc Enabled Data Services Architecture

Persistent Storage	Any Kubernetes	Management Services	Kubernetes Native Tools
Linux	Any cloud	Arc Integration	Azure Tools
Physical and VMs	On Prem	Controller API	Azure Data Studio and azdata
Hardware	Kubernetes	Deploy a Data Controller	Deploy workloads

# Azure Arc Data Services Controller and Management



## Connectivity Modes

- Directly Connected
- Indirectly Connected

<https://docs.microsoft.com/en-us/azure/azure-arc/data/connectivity>

Cluster

# Azure Arc Enabled Data Services



Managed Instance



PostgreSQL  
Hyperscale

# Azure Arc Enabled Managed Instance

- Your lift and shift version of SQL Server
- Works with existing versions of SQL on-prem
- Self-service provisioning (CLI, ADS, Portal, Kubernetes)
- Always Current/Evergreen
- Single Instance or Availability Group
- Elastic by scaling up CPU or Memory
- Backup/restore automation (Planned)
- Do you get a PaaS-like SLA? Nope...but...



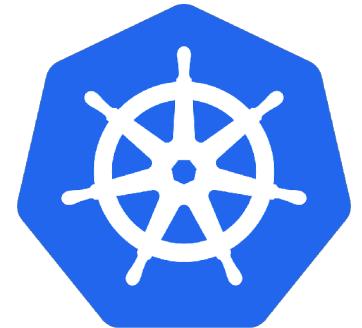
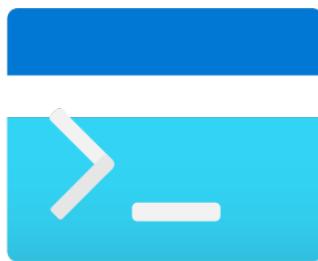
# Azure Arc Enabled PostgreSQL Hypercale

- Open source database
- Works with existing versions of PostgreSQL
- Always Current/Evergreen
- Self-service provisioning (CLI, ADS, Portal, Kubernetes)
- Elastic scale
  - Scale out
    - Compute
    - Data
- Backup/restore automation

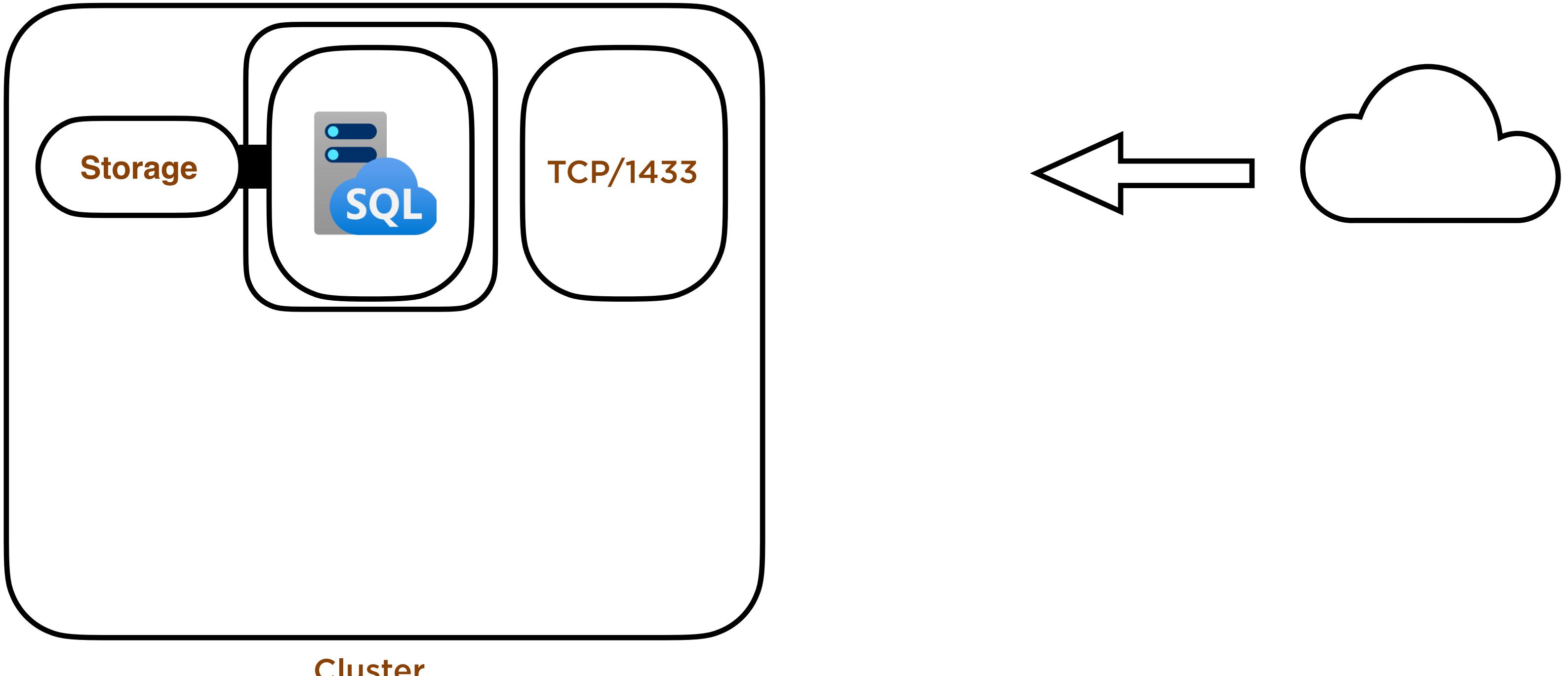


# Deployment Models

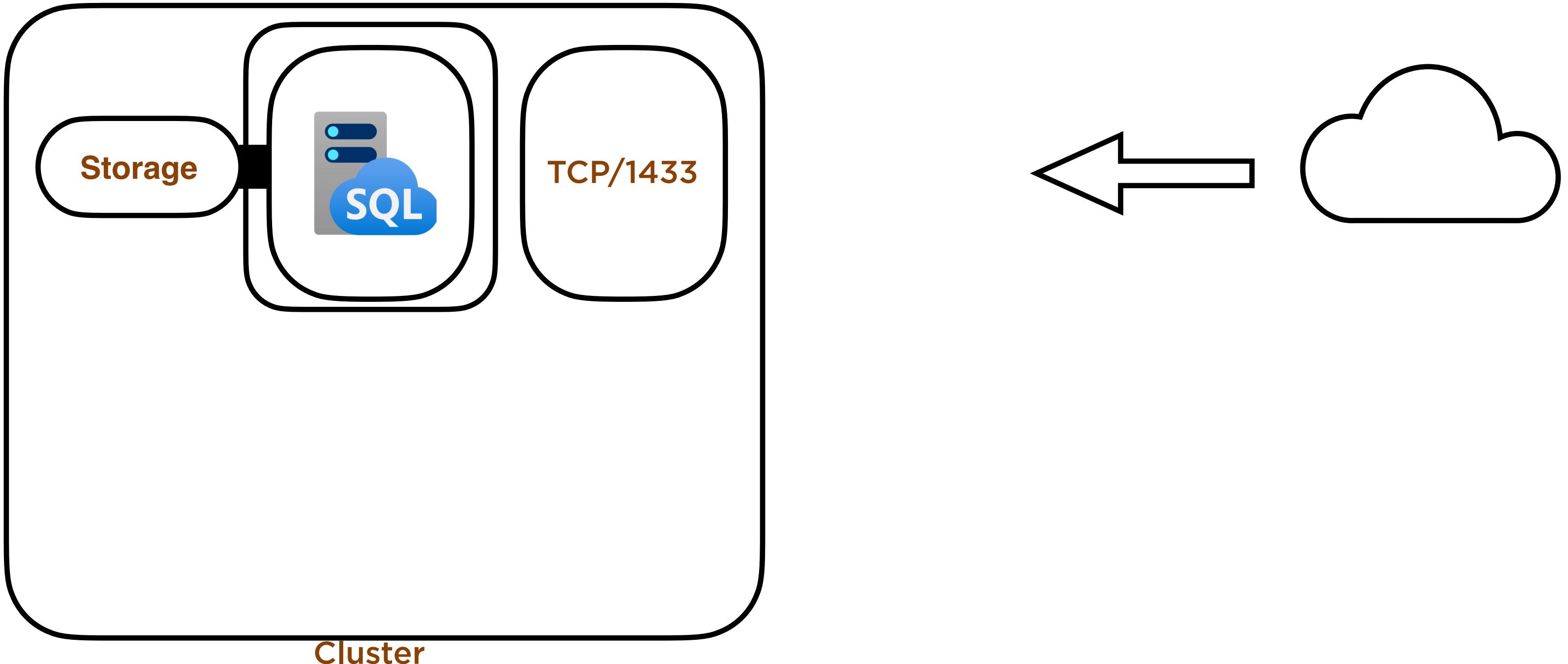
- Azure Data Studio
- Azure Data CLI (azdata)
- Kubernetes native
  - kubectl/oc
  - Custom Resource Definitions
- GitOps enabling CI/CD
- Azure Portal and CLI (Planned)



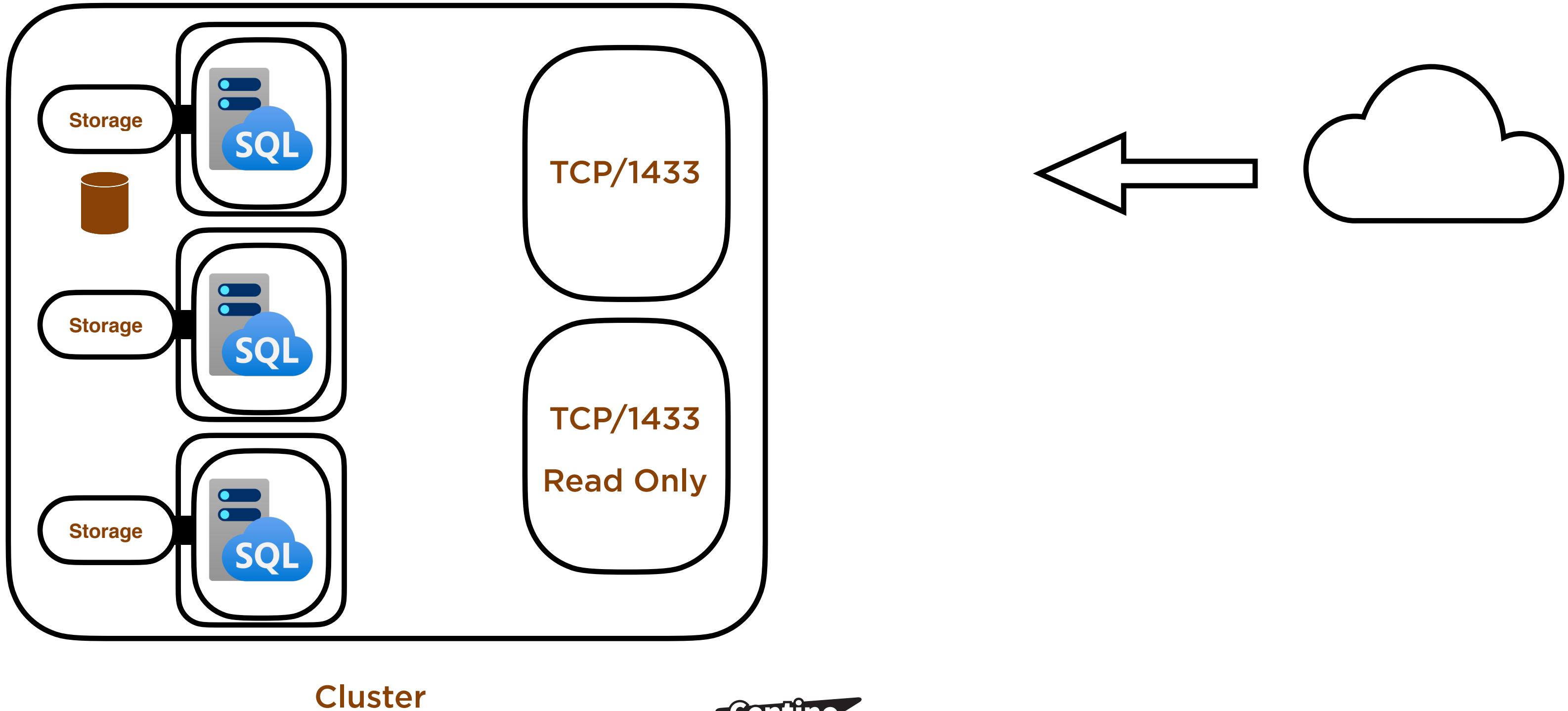
# Hybrid Cloud and Self Provisioning



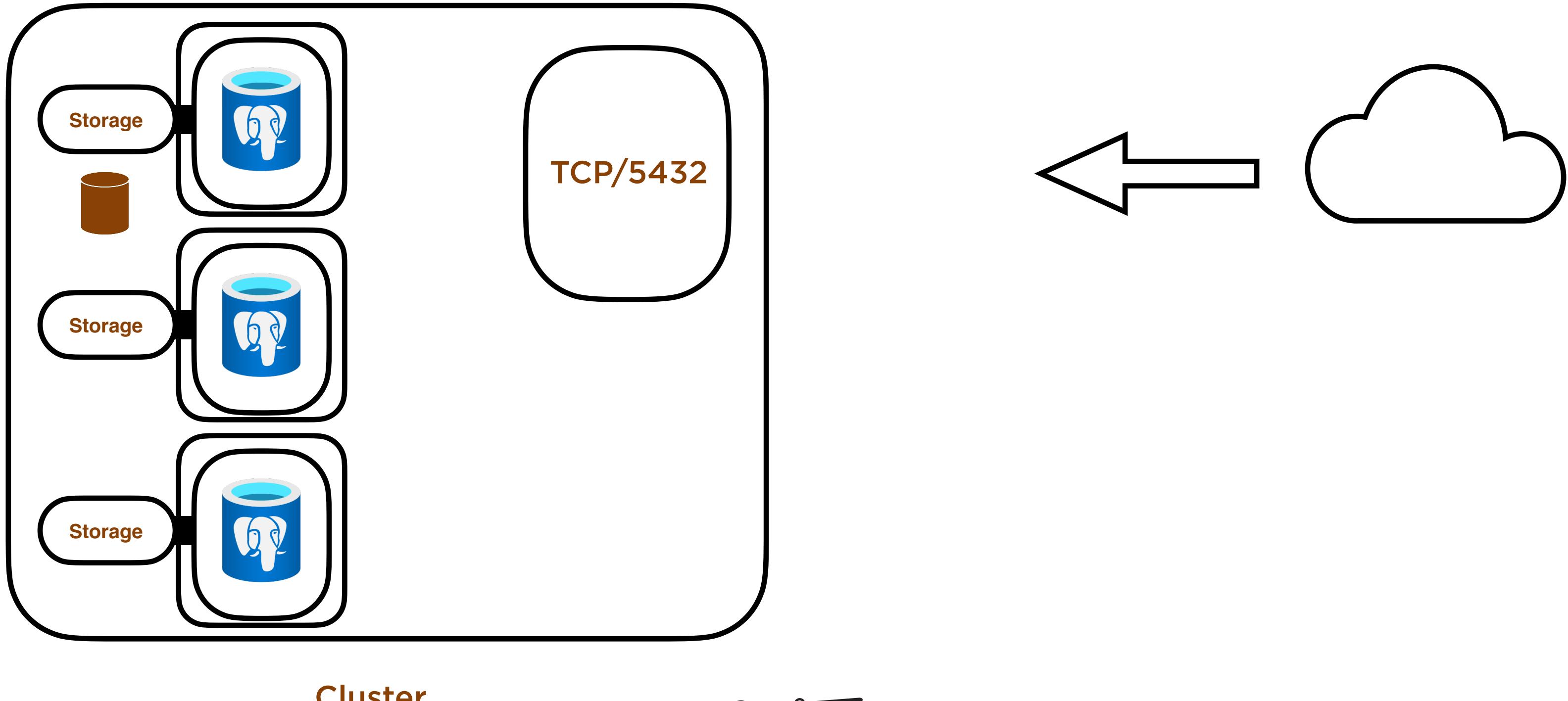
# Elastic Scale - Managed Instance



# Availability Groups - Managed Instance



# Elastic Scale - PostgreSQL HyperScale



# Deployment Considerations - Compute

- **Cluster Sizing**
  - Bare bones test environment - 4 cores and 16GB RAM
  - Control plane resources (Data Controller, Metrics, and Logging)
  - Deployed workload and their side car containers
  - Total resources should allow for node failure without impacting workload
- **Workload Sizing**
  - **Managed Instance** - 2GB and 1 core
  - **Postgres HyperScale** - 256MB and 1 core

# Deployment considerations - Storage

- Persistent storage is allocated from a StorageClass
- Specify which StorageClass you want data, log, backups and app log
- Decouples the state of the database from the lifecycle of the pods
- Local storage - on the Node
- Remote Storage - SAN, NAS, Cloud block, Cloud file

**Configuring and Managing Kubernetes Storage and Scheduling**

# Demo!

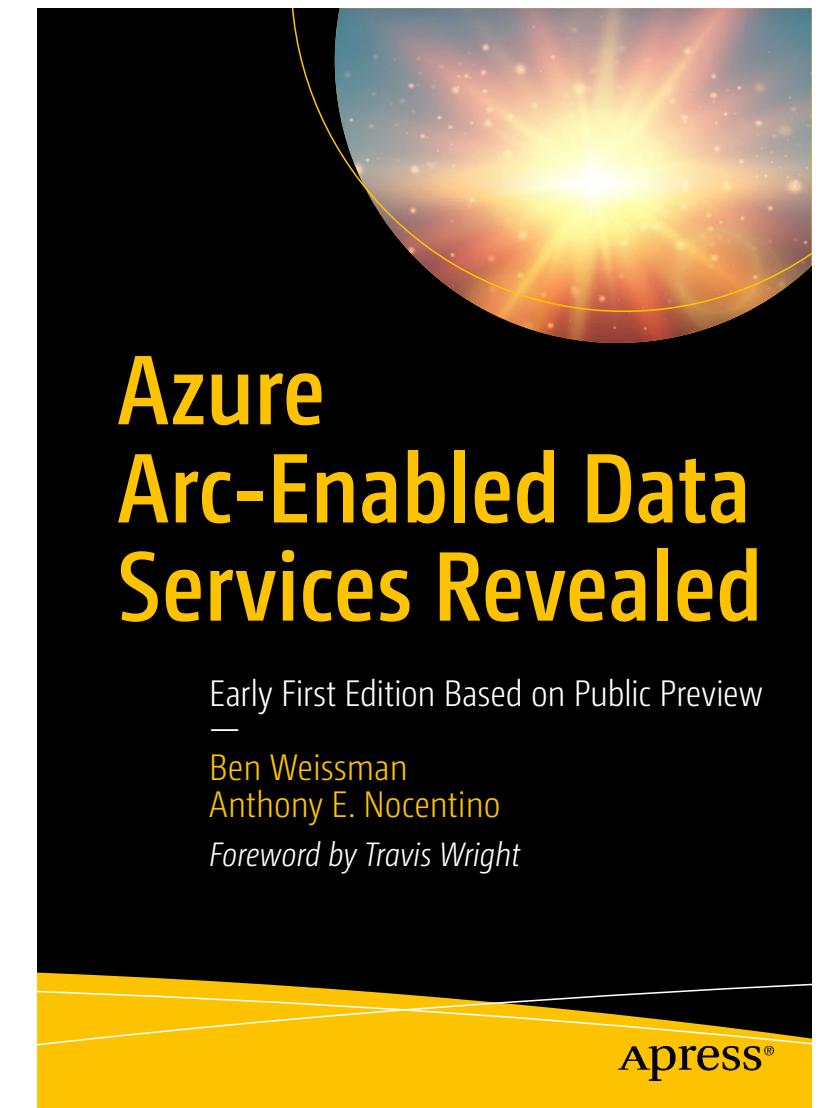
- Azure Arc enabled SQL Managed Instance
- Management Tools
  - On-premises and in Azure

# Review

- **The Challenge**
- **Azure Arc Overview**
- **Azure Arc Enabled Data Services**
  - **Architecture and Data Services**
  - **Deployment Scenarios**

# More Resources

- **Azure Arc enabled Servers**
  - <https://docs.microsoft.com/en-us/azure/azure-arc/servers/overview>
- **Azure Arc enabled Kubernetes**
  - <https://docs.microsoft.com/en-us/azure/azure-arc/kubernetes/overview>
- **Azure Arc enabled SQL Servers**
  - <https://docs.microsoft.com/en-us/sql/sql-server/azure-arc/overview>
- **Azure Arc enabled Data Services**
  - <https://docs.microsoft.com/en-us/azure/azure-arc/data/overview>
  - Storage - <https://docs.microsoft.com/en-us/azure/azure-arc/data/storage-configuration>
  - Compute - <https://docs.microsoft.com/en-us/azure/azure-arc/data/sizing-guidance>
- **Pluralsight**
  - <https://app.pluralsight.com/profile/author/anthony-nocentino>



# Need more data or help?

**<http://www.github.com/nocentino/presentations>**

Links to resources

Demos

Presentation

Pluralsight

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# Thank You!