Azure Arc Solutions on AIS Cloud
Azure Arc-enabled Data Services Architecture

- **Azure Portal**
- **Azure CLI**
- **Azure Data Studio**
- **Microsoft Container Registry**
- **Azure Arc data controller**
  - Controller
  - Azure Arc integration
- **Monitoring and logs**
- **Backup**
- **Patching/updates**
- **Deployments/Actions**
- **Advanced Data Security**
- **Resource Inventory**
- **Billing**
- **Logs & Metrics**
- **Backup Retention**
- **PostgreSQL Hyperscale**
- **SQL MI**
- **SQL MI w/ HA**
- **Database services (Future)**
- **Analytics services (Future)**
- **Kubernetes API**
- **kubectl CLI**
- **Persistent storage**
- **HA/DR**
- **Scaling**
- **Provisioning**

Diagram Elements:
- Azure CLI
- Azure Portal
- Azure Data Studio
- Microsoft Container Registry
- Azure Arc data controller
- Monitoring and logs
- Backup
- Patching/updates
- Deployments/Actions
- Advanced Data Security
- Resource Inventory
- Billing
- Logs & Metrics
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- PostgreSQL Hyperscale
- SQL MI
- SQL MI w/ HA
- Database services (Future)
- Analytics services (Future)
- Kubernetes API
- kubectl CLI
- Persistent storage

Diagram Notes:
- Diagram depicts an architecture diagram for Azure Arc-enabled data services, integrating various components and services.
Innovation anywhere with Azure

Single control plane with Azure Arc

Bring Azure services to AIS Cloud Infrastructure

Bring Azure Services to your datacenters

Bring Azure Services to the edge
Flexible Edge, Cloud Deployment for your Agile and Intelligent Applications

- Modern Application Development
  - Cloud Native Platform as a Service

- Modern Cloud Infrastructure
  - Hybrid / Multi Cloud Deployment
  - 5G Intelligent Connectivity

- Modern Data Protection
  - B-Log: Business Log Platform as a Service
  - Veeam Back Up Platform as a Service
  - AIS Cloud X | Sovereign Cloud

- Cloud Availability management
  - On boarding and Migration
  - Move On-Premise to Cloud
  - Cloud to Cloud Disaster Recovery
  - Near Zero
  - Recovery Point Objective (RPO)
Azure Arc-enabled Services by AIS
On-premises and multi-cloud integration

User Interface
- Azure Portal
- Azure REST API
- Azure CLI
- PowerShell
- kubectl CLI
- AWN Portal

Azure Arc Integration
- Azure Policy
- Azure AD (RBAC)
- Azure ARM Templates
- Azure Tags
- Azure Resource Graph
- Azure Audit
- Azure Automation
- Azure Security Center
- Azure Monitor
- Azure Log Analytics
- Azure Defender
- Azure Sentinel
- Azure Key Vault
- Azure Automanage

Resource Inventory
- Billing
- Monitoring & Logs
- Secrets Management
- Governance
- Compliance & Security

Azure Arc-enabled services
- Azure Arc-enabled servers
- Azure Arc-enabled SQL servers
- Kubernetes clusters
- Azure Arc-enabled services (data service)
- AWS & Linux
- VMware vSphere VMs
- SQL Servers
- VMware vSphere VMs
- VMware Tanzu Clusters (TKC)
- Kubernetes Resources
- Custom Location Mapping

AWN Cloud (powered by VMware vSphere)
Secure by default configuration
- Non-root containers
- Least privilege deployment configuration
- Security enabled via HTTPS/TLS/SSL for external endpoints
- System managed certificates

Directly connected mode
- Azure RBAC integration
- Azure AD Authentication for management operations
Azure Arc-enabled Data Services Security (2 of 2)

**Azure Arc-enabled SQL Managed Instance**
- Encryption at rest – Transparent Data Encryption
- SSL/TLS encryption on the wire
- SQL login or Active Directory authentication

**Azure Arc-enabled PostgreSQL Hyperscale**
- Encryption with pgcrypto extension
- Audit with pgaudit extension
Arc Data Services Maintenance updates

Directly Connected Mode
• Azure Based System Maintenance Window Updates
• Flexibility to choose your Maintenance Windows

Indirectly Connected Mode
• Single Maintenance Window for all services

Rolling upgrades without application downtime
Point-In-Time Restore [PITR]

Simple enablement of Point in Time Restore

Highly configurable settings during create
• PITR settings:
  • Recovery Point Objective as frequently as every 5 minutes, default is 15 minutes
  • Backup retention time is 7 days by default
• Storage settings:
  • Storage class where backups will be stored
  • Volume size for the backup volume
  • Optionally create a persistent volume just for backups

Simplified Restore Operations
• Simply specify point in time to restore to

Long term retention data can be sent to Azure storage
Scaling: Azure Arc-enabled SQL Managed Instance

Scale up via Azure portal and CLI cmd:
- Increase processing power on your instances in few seconds by adding more vCores and Memory
- Dynamically adjust your SQL instances capacity to match your business demand
- Pay only for the resources consumed.
- Set limits on how much instances can go up to
- Set request are reserved instance will get entire amount allocated

Scale down:
- Scale your memory and vCores down as demand decreases

Read Scale out:
- Scale out your read workloads to secondary replica
Azure Arc-enabled SQL Managed Instance High Availability

- Deploy Azure Arc-enabled SQL Managed Instance with 2 or 3 replicas for increased reliability and scale out performance
- Automated failovers and instance redeployment in event of pod/node failure
- Ability to run read workloads on secondary instances

Resources
https://docs.microsoft.com/en-us/azure/azure-arc/data/managed-instance-high-availability