Microsoft

Azure Intelligent Edge Brief

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Agenda

- Azure Intelligent Edge Overview and News
- Today's Focus Area: **Review of Edge Announcements from Ignite**
- Q&A

But First - What is the AIEB?

30-minute briefing open to everyone to discuss a specific area within our ‘Intelligent Edge’ offerings

Not a forum to share NDA information

Using ‘regular’ Teams for now for easier collaboration (Q&A, discussion, etc.)

Calls will be recorded and posted here: https://aka.ms/aieb-channel

Some quick news…

- Ignite was earlier this month: https://myignite.techcommunity.microsoft.com/sessions
- Azure Stack Hub 1910 Now Released: https://docs.microsoft.com/en-us/azure-stack/operator/release-notes?view=azs-1910
- Lots and lots of announcements – we'll discuss in a moment…

Relevant Ignite Sessions

Edge Platform

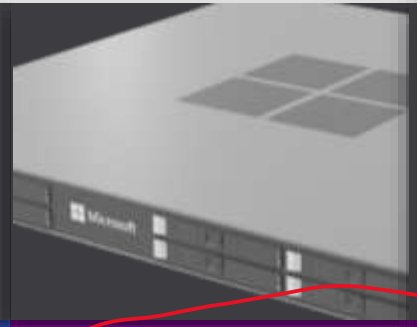
Azure Edge Computing Solutions - https://myignite.techcommunity.microsoft.com/sessions/82901
Business Value of Edge to Cloud with Microsoft - https://myignite.techcommunity.microsoft.com/sessions/83909
Integrated Datacenter solutions with Azure Stack Hub - https://myignite.techcommunity.microsoft.com/sessions/82908
Azure Stack Edge Overview - https://myignite.techcommunity.microsoft.com/sessions/82900
Do more at the Edge with Azure Stack Edge - https://myignite.techcommunity.microsoft.com/sessions/83536
AI Solutions at the Edge with the Azure Stack Family - https://myignite.techcommunity.microsoft.com/sessions/81965
AI on the Edge - https://myignite.techcommunity.microsoft.com/sessions/89335

Azure Arc

Introducing Azure Arc - https://myignite.techcommunity.microsoft.com/sessions/84179?source=sessions
Extending Management and Governance with Azure Arc - https://myignite.techcommunity.microsoft.com/sessions/83989
Azure Arc in Action - https://myignite.techcommunity.microsoft.com/sessions/87250?source=sessions
Azure Arc for Server - https://myignite.techcommunity.microsoft.com/sessions/89331
Azure Data Service with Azure Arc - https://myignite.techcommunity.microsoft.com/sessions/81042

Azure Intelligent Edge + Cloud Taxonomy



Sensors + Control | **Sensors to Interactive** | **Integrated Platform** | **Global scale processing**

Microcontroller
Azure Sphere

- Highly-secured, connected MCU
- Azure Sphere Linux OS for modern MCUs
- Public Preview as of September 2018
- Included Azure IoT Device SDK

IoT Devices
Azure IoT Device SDK

- 1000+ devices
- 250+ partners
- All certified to work great with Azure IoT Hub

Edge Devices
Azure IoT Edge

- Deploy and manage Azure Services in containers on any IoT device
- AI, AzureML, Azure Stream Analytics and more
- Generally available

Edge Appliances
Azure Data Box Edge

- Data Box Edge: AI-Enabled, Storage and compute Azure Edge appliance
- Data Box: Offline, ruggedized data transport, 100 TB – 1 PB
- Includes Azure IoT Edge

Edge Cloud
Azure Stack

- Cloud Consistent Edge
- Edge and Disconnected Scenarios
- Regulatory Requirements
- Cloud app model on-premises

Hyperscale Cloud
Azure Regions

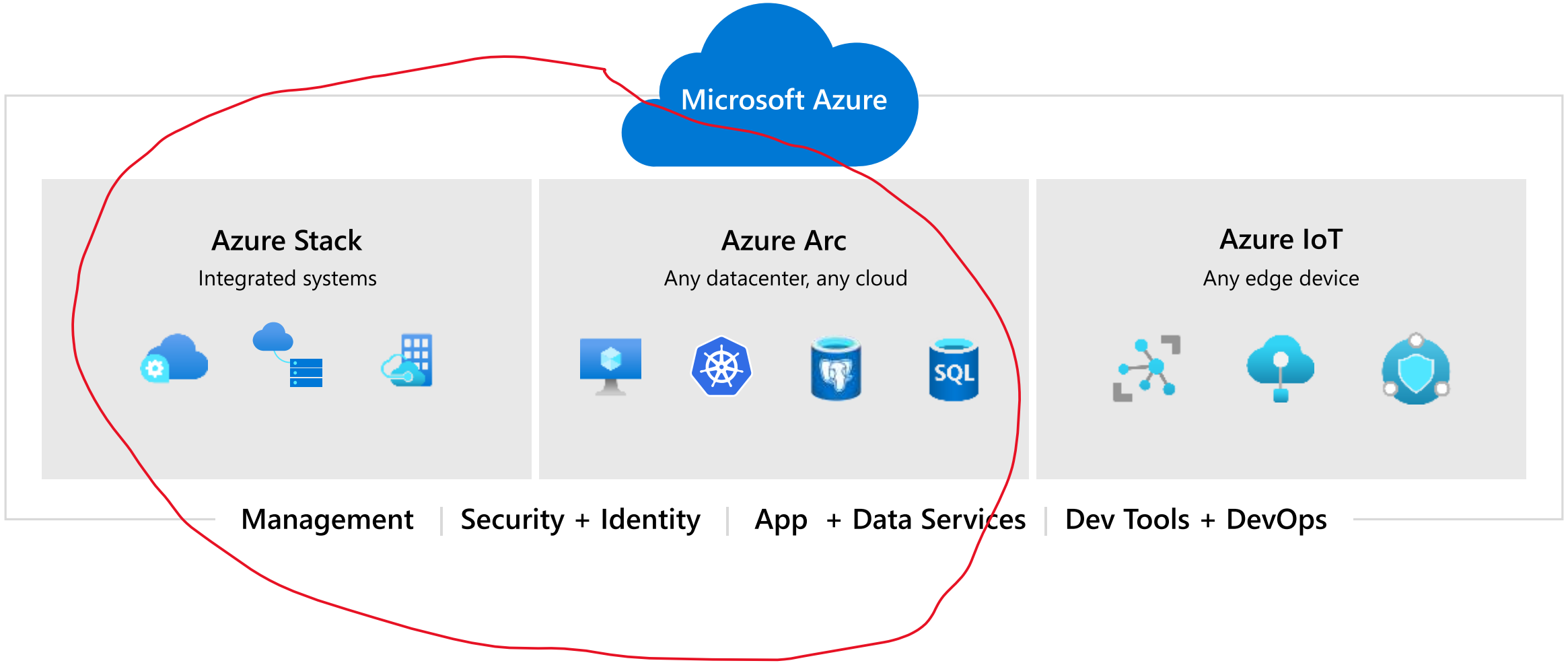
- Full Range Hyperscale Cloud Services
- Tiered Service availability: Heroes > Hubs > Satellites
- Open Source Based Services & Tools

Most specialization — Full Spectrum of Cloud + Edge Form Factors — Fewest form factors

Fewest services — Intentional & Appropriate Azure Service Availability — Most services

Azure Hybrid

Innovation anywhere with Azure



Microsoft

Azure Stack Family: Azure Stack Hub and Azure Stack Edge

Azure Stack Hub: Today... and tomorrow

Consistent application development

Azure services available on-premises

Purpose-built integrated system

Available now

- Virtual Machines
- AKSengine
- Networking
- Storage
- Key Vault
- Databases
- Service Fabric
- Azure App Service
- Azure Functions
- Azure Marketplace

In development

- API Management Preview H120
- Cognitive Services - In Preview -
- Event Hubs Preview H120
- IoT Hub Preview TBD
- Azure Arc Several Previews
- SQL Server 2019 Support AI & Analytics
- Blockchain - In Preview -
- Stream Analytics Preview H120

A flurry of innovation

Azure Kubernetes Engine

Now GA!

Engineering alliance with Red Hat in support of OpenShift and Ansible on Azure Stack Hub

GPU Nodes and N-Series VMs announced

Join the Preview: https://aka.ms/azurestackhubgpupreview

Hybrid Application Patterns

Big portfolio including Machine Learning at the Edge

Upcoming Azure Service Public Previews

Windows Virtual Desktop, Azure API Management, Stream Analytics, Event Hubs

~~Data Box Edge~~ Azure Stack Edge

Azure-managed, edge computing appliance

Hardware - accelerated machine learning

- Choose from Nvidia T4 GPU ★ or Intel Arria 10 FPGA
- Use Azure ML or open source AI models
- Train and run inferencing at the edge with the GPU

Edge compute

- Run Azure services at edge locations
- Deploy workloads on VMs ★ or containers
- Use a single appliance or scale across a Kubernetes cluster of appliances ★

Azure-managed appliance

- Order from Azure portal and pay as you go
- Manage workloads at scale from Azure
- Use Azure identity and monitoring tools across the cloud and the edge

Cloud storage gateway

- Transfer data to Azure for additional analysis, training, backup, or archival
- Optimize data transfer using bandwidth throttling and local caching

★ = Preview coming soon!

Compute on Azure Stack Edge

Cloud-managed edge compute with your choice of platform

IoT Edge

Deploy and manage containers from IoT Hub and integrate with your Azure IoT solution at the edge

Kubernetes

Scale compute across a cluster of appliances for more powerful workloads, and deploy and manage your workloads from cloud or edge

Coming Soon

VMs

Bring your workloads to the edge that aren't yet containerized – for Windows and Linux VMs

Coming Soon

Preview coming soon!

Virtual Machines

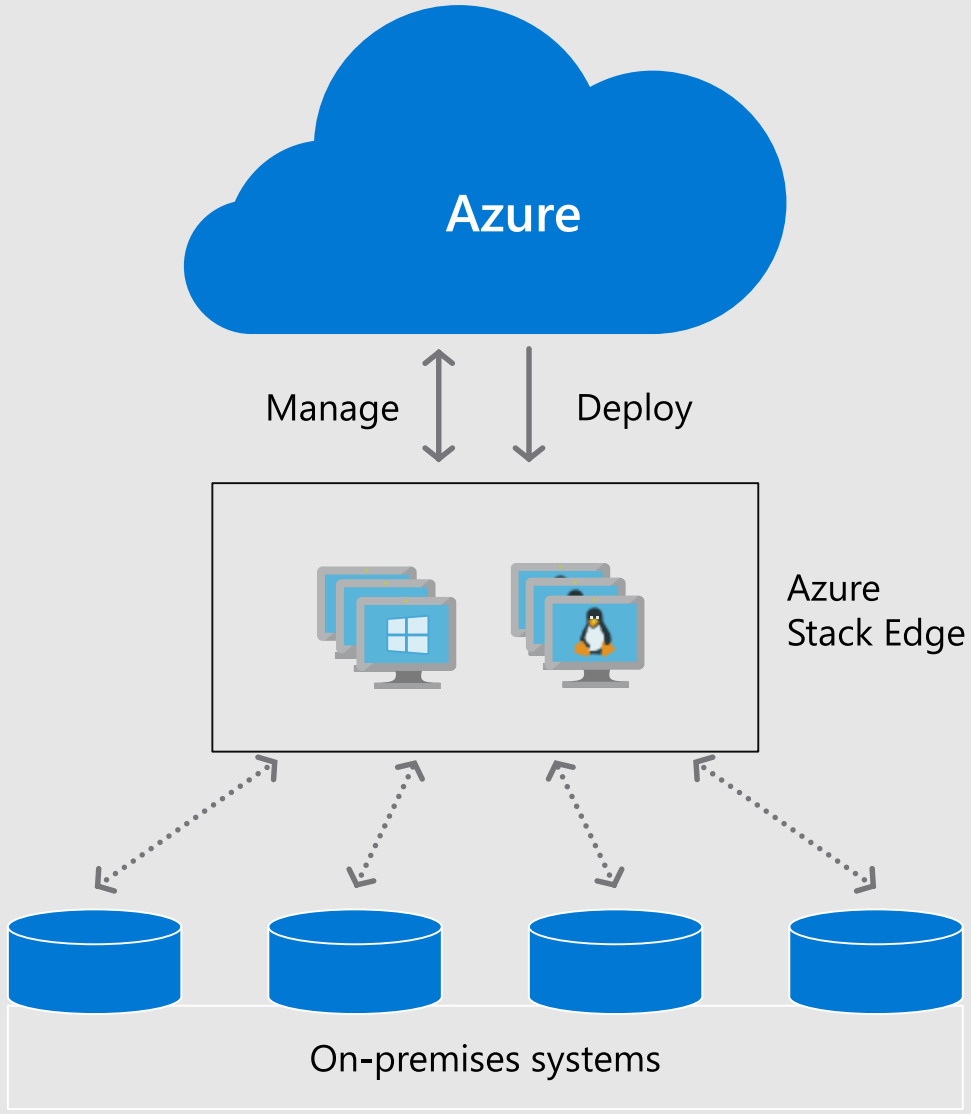
Run VMs at your location, deployed and managed from Azure

Great option for compute tasks that aren't in containers yet

Both Linux and Windows

Designed for basic configurations

More details coming soon



Preview coming soon!

Kubernetes on Azure Stack Edge

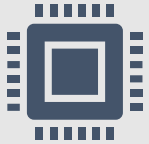
End-to-end first-party, cloud-managed, at-scale support for Kubernetes at the edge

Create a cloud-managed, Kubernetes cluster of Azure Stack Edge appliances in a few clicks

In under an hour, go from plugging in your Azure Stack Edge appliances to running applications in your Azure Stack Edge Kubernetes cluster

Get end-to-end support for both hardware and cluster

Azure Stack Edge is hardware-as-a-service. So you get a security-hardened solution with both hardware support and cluster lifecycle management



Scale workloads for more powerful edge solutions

Scale compute: Leverage hardware acceleration (FPGA or GPU) across the cluster

Scale storage: Leverage persistent storage volumes across the cluster

Improve resiliency: Leverage high availability in a cluster of two or more appliances

Deploy and manage applications via cloud or edge

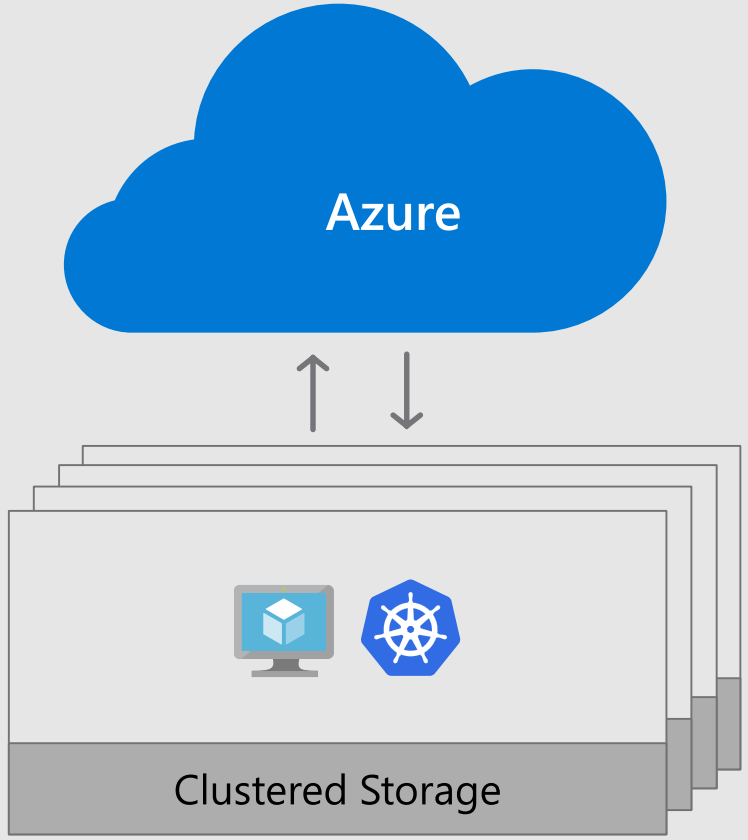
- Azure Arc for Kubernetes
- Azure IoT Edge
- Native Kubernetes tools (kubectl) over your local network

Preview coming soon!

Cluster Azure Stack Edge devices

Clustering helps your edge infrastructure stay reliable or scale up to workloads that require more than one appliance.

Clusters are easy to create and managed from the Azure cloud.



Azure Stack Edge Cluster

Preview coming soon!

Hardware Acceleration Options

FGPA with Azure Machine Learning

- Use Azure Machine Learning's supported models and train with your data via transfer learning in the cloud.
- Automatically accelerated on the FPGA.

Nvidia T4 GPU

- Supports full GPU ecosystem. Use Azure ML, ONNX, Nvidia EGX and Deepstream, tensorflow, and more.
- Preview coming soon

Choose the appliance model best suited for the job

Commercial (C) series

Enterprise-ready form factors for use within a traditional business setting

Rugged (R) series

Ruggedized, portable, battery-operated form-factors for harsh field conditions

Join previews for new functionality!

- Previews coming soon for
  - GPU Acceleration
  - Virtual Machines
  - Kubernetes
  - Clustering

If you're interested in joining these previews, sign up here:

aka.ms/StackEdgePreviews

For more info about Azure Stack Edge:

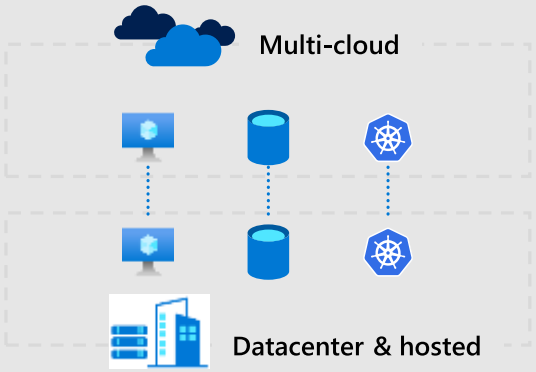
aka.ms/AzureStackEdge

Microsoft

Azure Arc

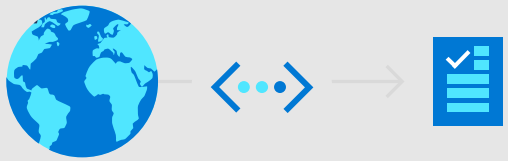
Azure Arc

Customer use cases



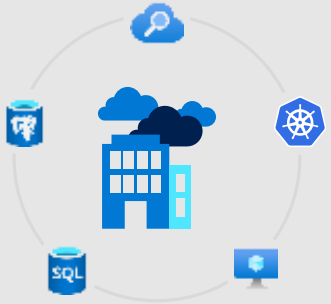
Organize and govern across environments

Get Kubernetes clusters and servers that are sprawling across clouds, datacenters and edge under control by centrally organizing and governing from a single place.



At-scale Kubernetes app management

Deploy and manage Kubernetes applications at scale across environments using DevOps techniques. Ensure that applications are deployed and configured consistently from source control, at scale.



Run data services anywhere

Deploy and manage data services where you need it for latency or compliance reasons. Always use the most current technology and seamlessly manage and secure your data assets across on-premises, clouds and edge.

Key takeaways for Azure Arc for servers

Inventory

Windows and Linux servers

Physical and virtual machines

Private datacenter and other hosted cloud

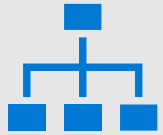
Domain agnostic

Governance and security

Available built-in policies manage Azure and Azure Arc servers

Security baseline policy

One place to view compliance



Role based access

Central IT at scale operations

Workload owners manage based on their access

Lighthouse for MSPs

Resource centric log access

One central place to manage at-scale

Searchable inventory

Consistent experience through the Portal

Organize resources using Tag

Key takeaways for Azure Arc for Kubernetes

Central management

Cluster organization and inventory with a unified view in the Azure Portal across all locations

At-scale control

At-scale configuration and workload management

GitOps

GitOps model for configuration and app deployment from single sources of truth to one or many clusters

Integrates with your dev tooling and CI pipeline

Azure management

Azure management capabilities brought to all clusters for consistent management

Azure Arc for Kubernetes - Lifecycle

Create

- Open Source Ecosystem – DIY
- Partners to integrate support directly
- Microsoft first-party Kubernetes offerings
- AKS/Azure Stack Hub & Edge/AKS Engine

Connect

- Deploy Arc agents to existing K8s cluster
- Azure Arc enabled clusters gain secure access to the Azure Resource Manager ecosystem
- Secure Kubernetes API access
- Azure DevOps

Configure

- Manage, apply, monitor, and enforce Kubernetes configuration across one or more clusters from the Azure Portal and GitOps workflows

App delivery/ Management

- Deploy custom in-house applications, ecosystem/partner solutions, and Microsoft services

Operations

- Azure Resource Manager capabilities for ongoing operations

Any infrastructure

Use familiar tools and skillsets

Azure Arc for Kubernetes is…

- ✓ Single pane of glass across your entire cluster inventory
- ✓ At-scale, multi-cluster configuration and workload management
- ✓ Azure management capabilities brought to all clusters for consistent management
- ✓ GitOps for at-scale CD to clusters that integrates with your dev CI pipeline
- ✓ Separation of concerns for IT and AppDev

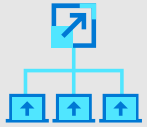
Azure Arc for Kubernetes is not…

- ≠ Cluster provisioning
- ≠ Cluster upgrade and patch management
- ≠ Cluster lifecycle management

Key takeways: Azure Arc Data Services

Always current

Automated updates
Evergreen SQL
Hyperscale on-premises



Elastic scale

Deploy in seconds
Scale up, scale out
Automation at scale

Unified management

Single view for
on-prem and clouds
Use familiar tools

Unmatched security

Advanced Data Security
Azure Policy
Role-based Access Control

Cloud billing

Cloud billing on-premises
Cost efficiency

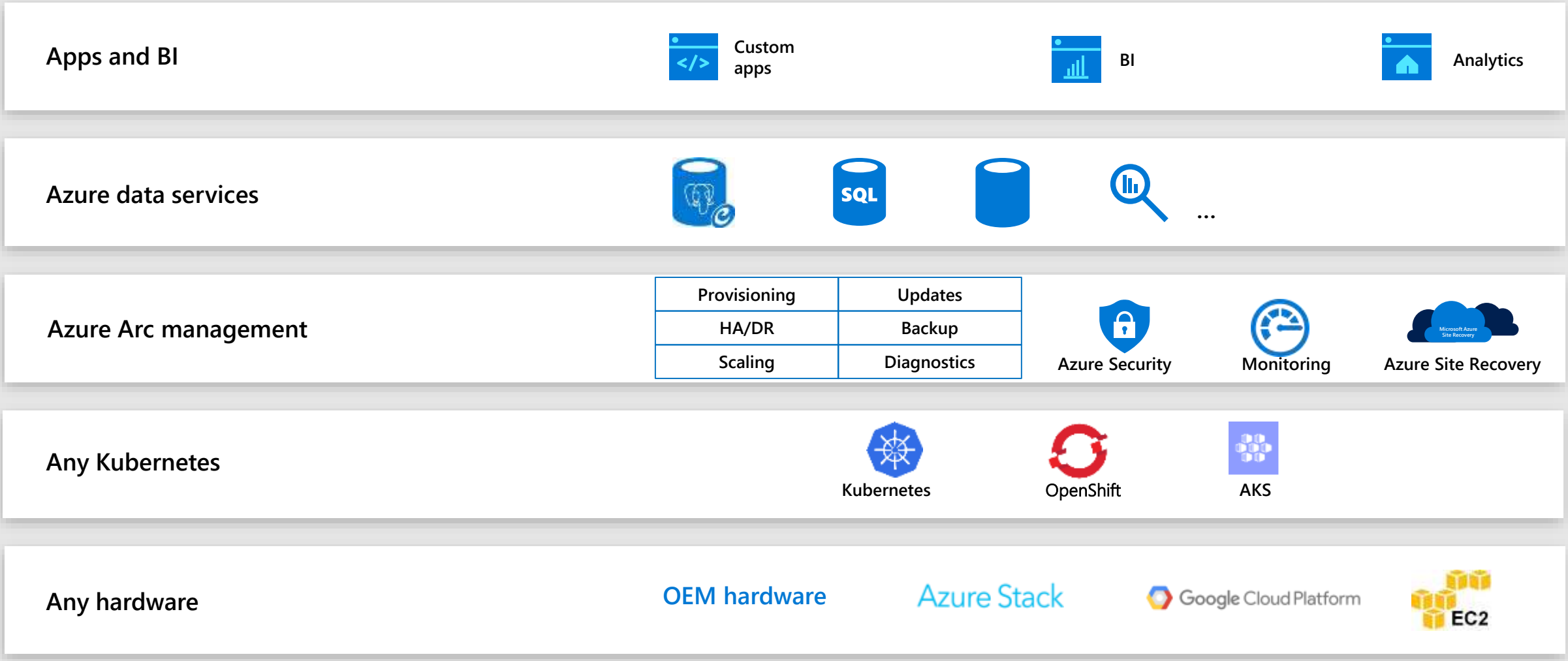
Any hardware, any Kubernetes

OEM hardware

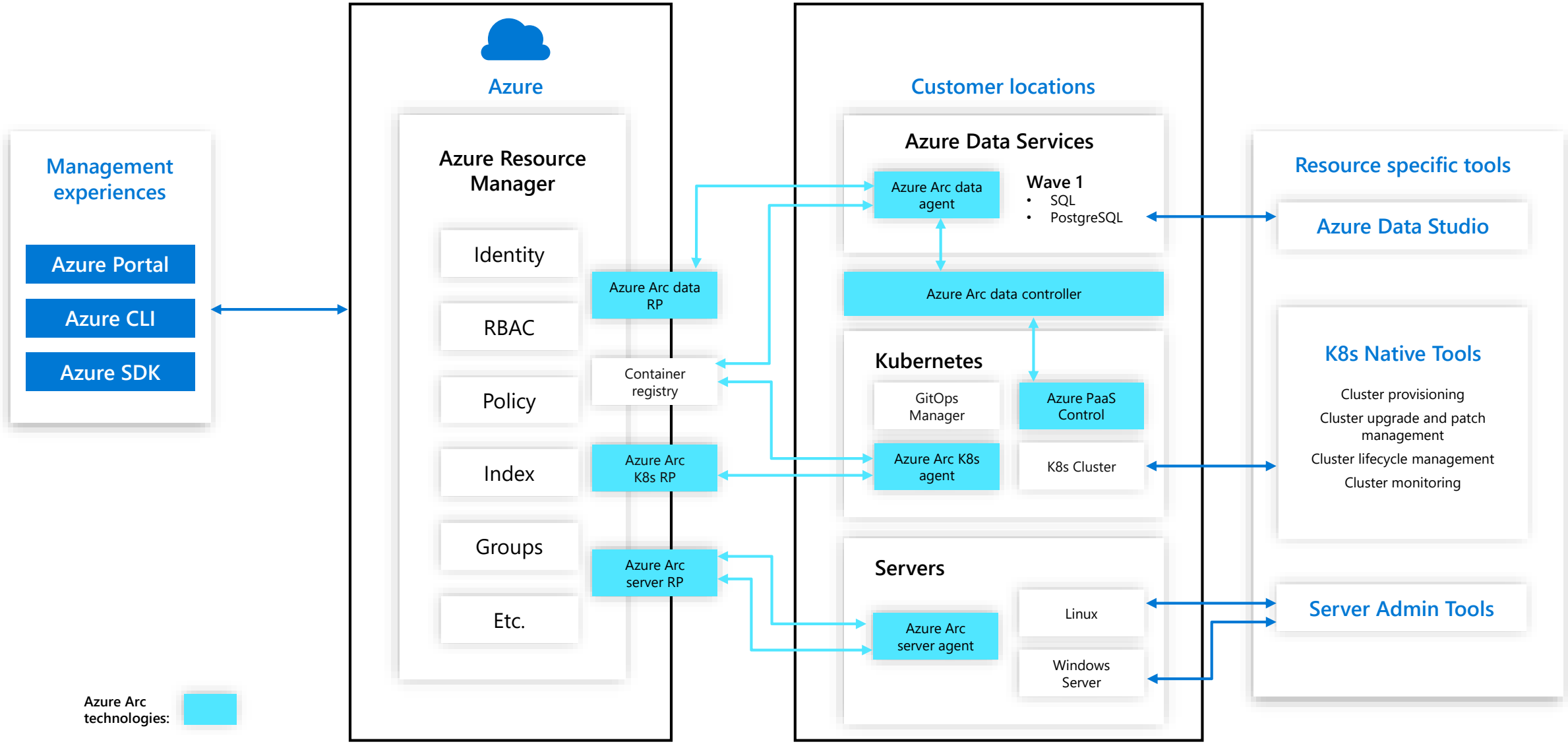
Azure Stack

Google Cloud Platform

Azure data services anywhere at a glance



Azure Arc


Management experiences
Azure Portal
Azure CLI
Azure SDK
Azure
Azure Resource Manager
Identity
RBAC
Policy
Index
Groups
Etc.
Azure Arc data RP
Container registry
Azure Arc K8s RP
Azure Arc server RP
Customer locations
Azure Data Services
Azure Arc data agent
Wave 1
SQL
PostgreSQL
Azure Arc data controller
Kubernetes
GitOps Manager
Azure PaaS Control
Azure Arc K8s agent
K8s Cluster
Servers
Azure Arc server agent
Linux
Windows Server
Resource specific tools
Azure Data Studio
K8s Native Tools
Cluster provisioning
Cluster upgrade and patch management
Cluster lifecycle management
Cluster monitoring
Server Admin Tools
Azure Arc technologies:

Microsoft

Next AIEB Call will be 12/06 @ 11AM US Central Standard Time

https://aka.ms/aieb-topics