Microsoft

Azure Intelligent Edge Brief

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Agenda

- Azure Intelligent Edge Overview and News
- Today's Focus Area:
  - **Cognitive on Containers: Learn what is available today and the use cases with Azure Stack**
- 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

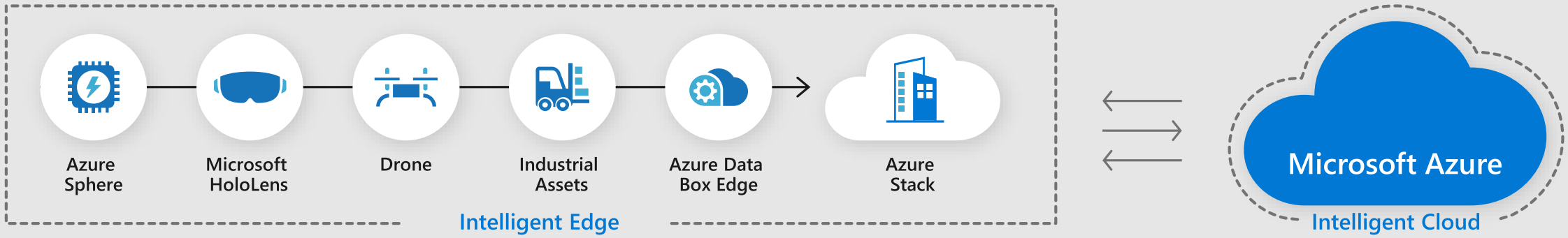
Using ‘regular’ Teams for now for easier collaboration (Q&A, discussion, etc.)

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

Some quick news…

- Be sure to check out the AIEB archive: https://aka.ms/aieb-channel
  - ASDK Configurator
  - Walkthrough of an AI Inferencing POC at a Manufacturing Customer using DBE
  - Overview of Azure Stack HCI
  - Overview of Migration Resources and EOS benefit of Azure Stack
- Not 'new' but 'new' to me: Azure Stack + ATT 5G + Vorpal = Anti-drone Solution
  - https://about.att.com/innovationblog/2019/06/vorpal.html
- Azure Stack Customers: 1908 Update is coming very soon…

Microsoft Azure approach



Azure IoT Edge	Azure Services

Azure Serverless

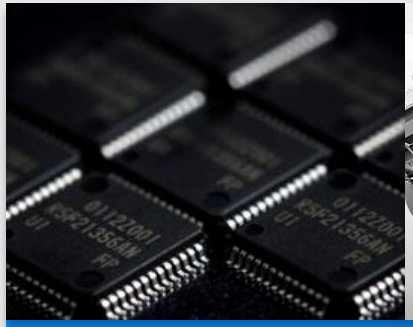
Azure Security Center

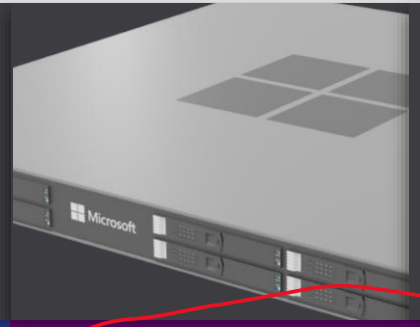
Azure Active Directory

Azure Management

Azure AI & Machine Learning

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

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Cognitive on Containers: Learn what is available today and the use cases with Azure Stack

AEIB – Azure Stack and Cognitive Services

Ricardo Mendes

Principal Program Manager Lead

Azure Stack Engineering - Intelligent Edge Solutions Group

Azure Intelligent Edge

Sensors + control | Sensors to interactive | Integrated platform

MCU based | IoT devices | Edge devices | Edge appliances | Edge cloud

Azure Sphere

Cameras

Industrial Assets

Azure Data Box Edge

Azure Stack

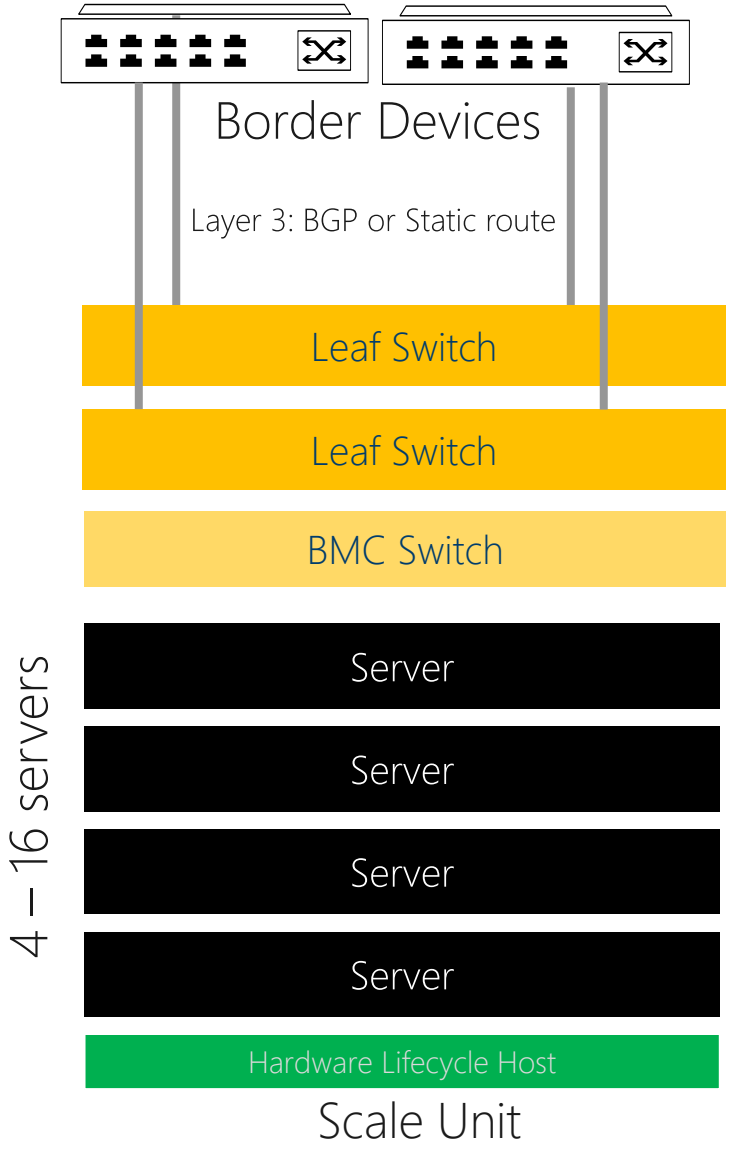
Rough Scale Unit Sizes

Capacity - Small End

4 Hosts
64 Cores
6 TB of RAM
384 TB of Storage

Capacity - Large End

16 Hosts
448 Cores (physical)
24 TB of RAM
1 PB of Storage



Azure Data Box Edge

An AI-enabled Edge computing appliance with network data transfer capabilities

Network Storage Gateway

Network data transport to Azure while retaining local access to files

Edge compute/data preprocessing

Use IoT Edge compute modules to analyze, filter, and transform data as it moves to Azure

FPGA powered by Azure Machine Learning

Accelerate ML inferencing of images and video streams to get results close to the data source

Cloud managed

Easily manage your fleet from the Azure portal

Edge Devices

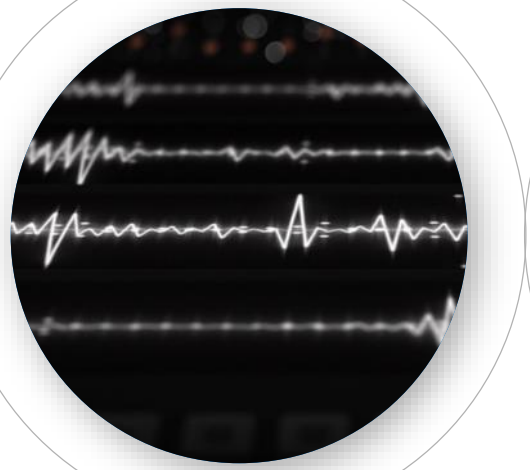
Microsoft Vision AI Dev Kit

Industrial and Ruggedized

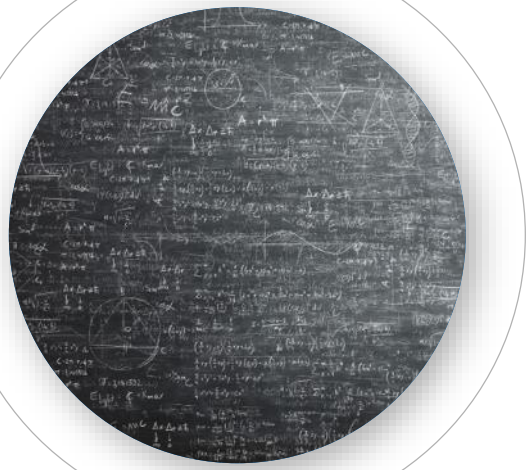
Cognitive Services

Azure Cognitive Services

Perception



Comprehension



Azure Cognitive Services

Vision

Speech

Language

Conversation

Bing Search

Knowledge

Powerful prebuilt AI models exposed as API services

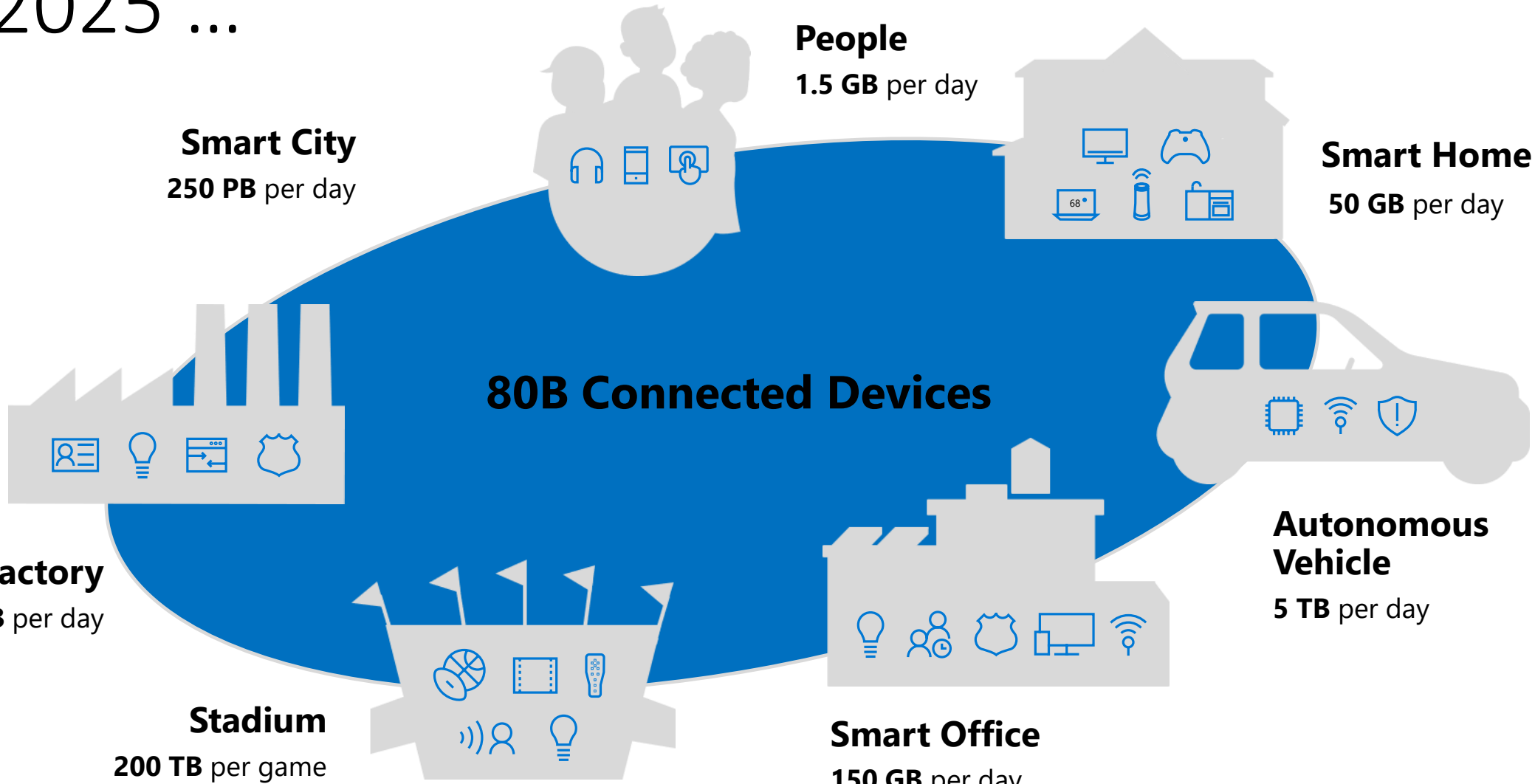
Process images, video, speech, language and more

Simple REST APIs with .NET, Java, Python, Node SDKs

Infuse your apps, websites, and bots with human-like intelligence

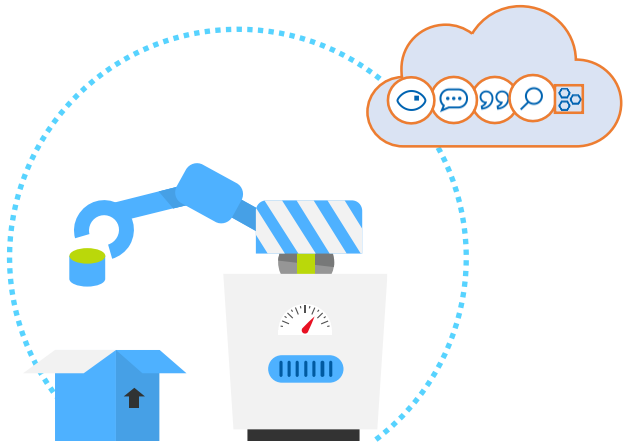
- **14 GA services deployed in 25 Azure regions worldwide**
- **Added 31 new certifications**
  - SOC, ISO, HIPAA/BAA, HITRUST compliance
  - PCI & FedRAMP coming in H2
- **Containers support**
  - Face, Computer Vision (OCR), Text Analytics, and Language Detection.
- **Single API key for improving developer productivity**
- **Launched unified Speech service API**
  - Speech to Text (speech transcription)
  - Text to Speech (speech synthesis)
  - Real-time Speech Translation
  - New Speech devices SDK & Speech client SDK.

By 2025 …


People
1.5 GB per day
Smart City
250 PB per day
Smart Home
50 GB per day
80B Connected Devices
Connected Factory
1 PB per day
Autonomous Vehicle
5 TB per day
Stadium
200 TB per game
Smart Office
150 GB per day

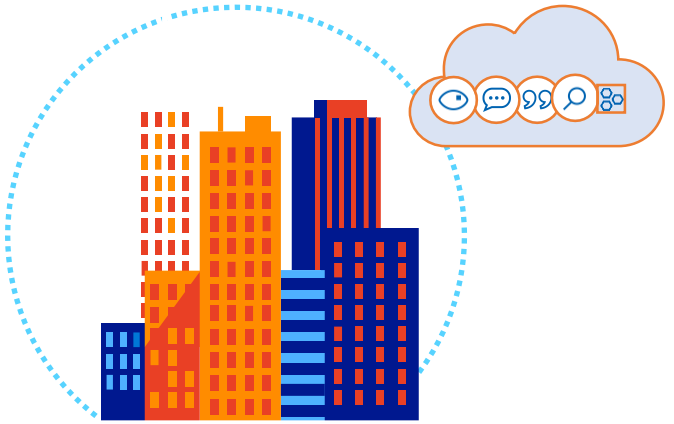
Containers

Azure Cognitive Services in Containers



At the edge and close to the data

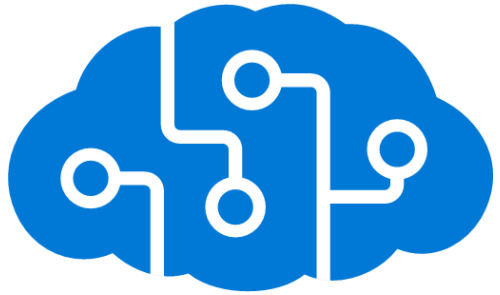
Meet every regulatory requirement



Cloud application model on-premises

Azure Cognitive Services

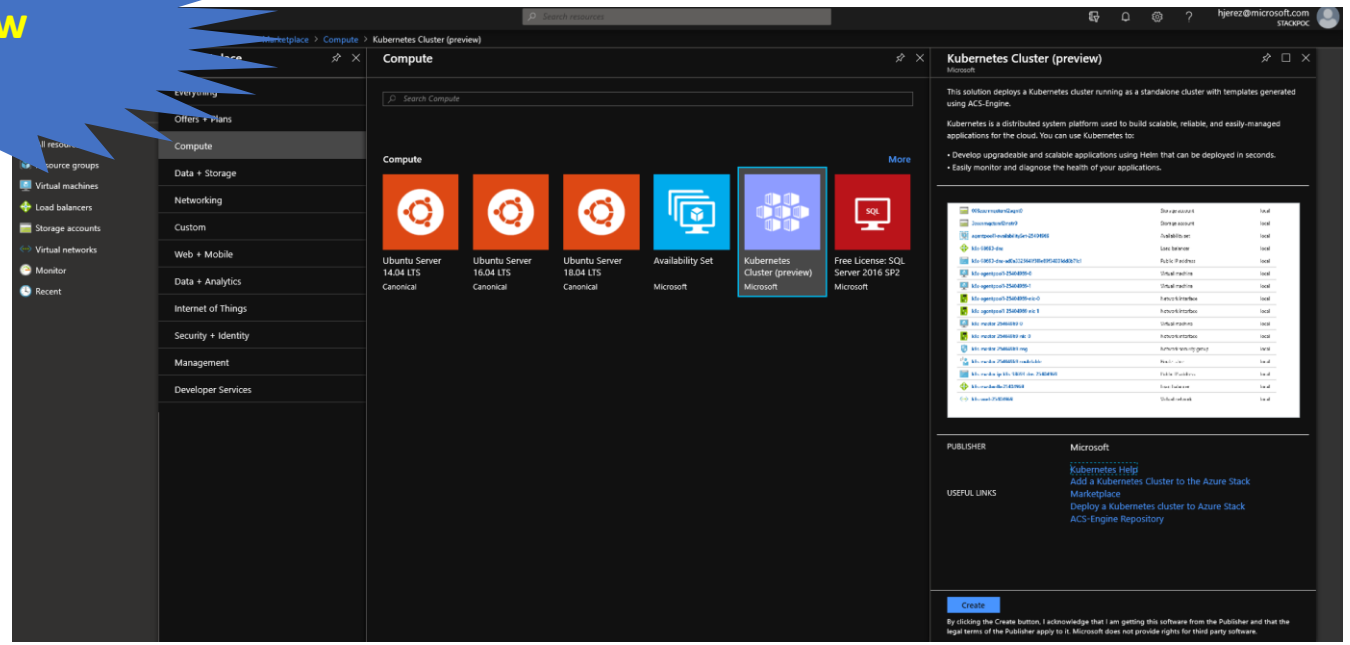
- Now on Public preview in Azure Stack and DBE
- Leverage K8s (az Stack) or IoT Edge (DBE)
- Use Cognitive services on Azure stack:
  - Anomaly Detector
  - Computer Vision
  - Face
  - Form Recognizer
  - Language Understanding (LUIS)
  - Speech Service API
  - Text Analytics
- Cloud connected billing with local execution
- Details : https://docs.microsoft.com/en-us/azure-stack/user/azure-stack-solution-template-cognitive-services

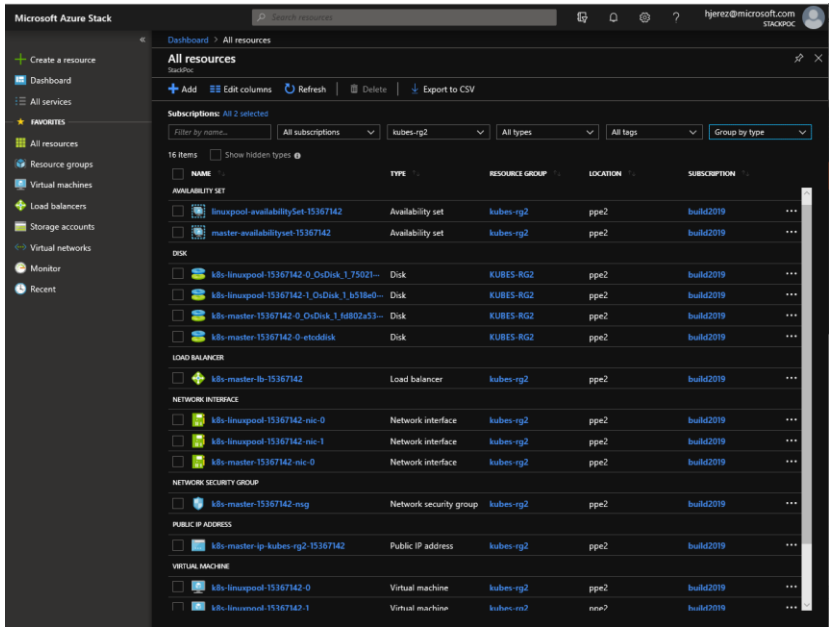


AKS Engine

Public Preview

- Public Preview available now
- Create K8s clusters in minutes
- Supports manual upgrade and scale
- Same engine as AKS
- Requires Operator involvement
- https://github.com/Azure/aks-engine/blob/master/docs/topics/azure-stack.md



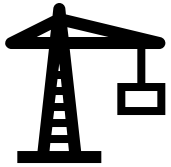


Guidance and Artifacts

Edge Patterns & Solutions

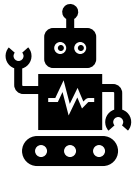
Guidance

Tailored to the audience



Architecture

Prescriptive references



Deployable Code

Available on GitHub

Edge Patterns

Common threads from customer scenarios.

For architects and developers to design edge applications.

Includes best practices for efficient and secure development.

Release Channels

Azure.com

Easy-to-digest solution architectures.

https://aka.ms/azssolarch

Azure Docs

Tutorials, best practices, and architectures.

https://aka.ms/azsdevtutorials

GitHub

Deployable, open-source code.

https://aka.ms/intelligentedgepatterns

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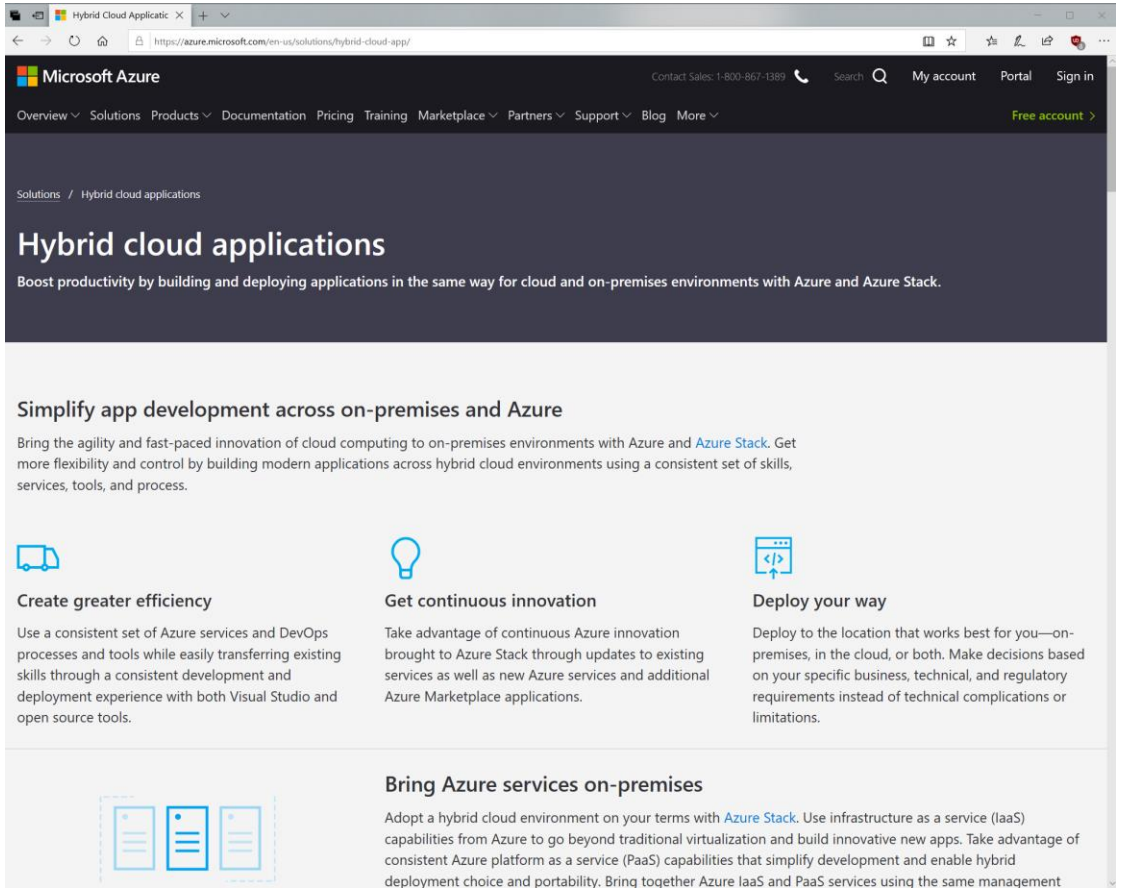

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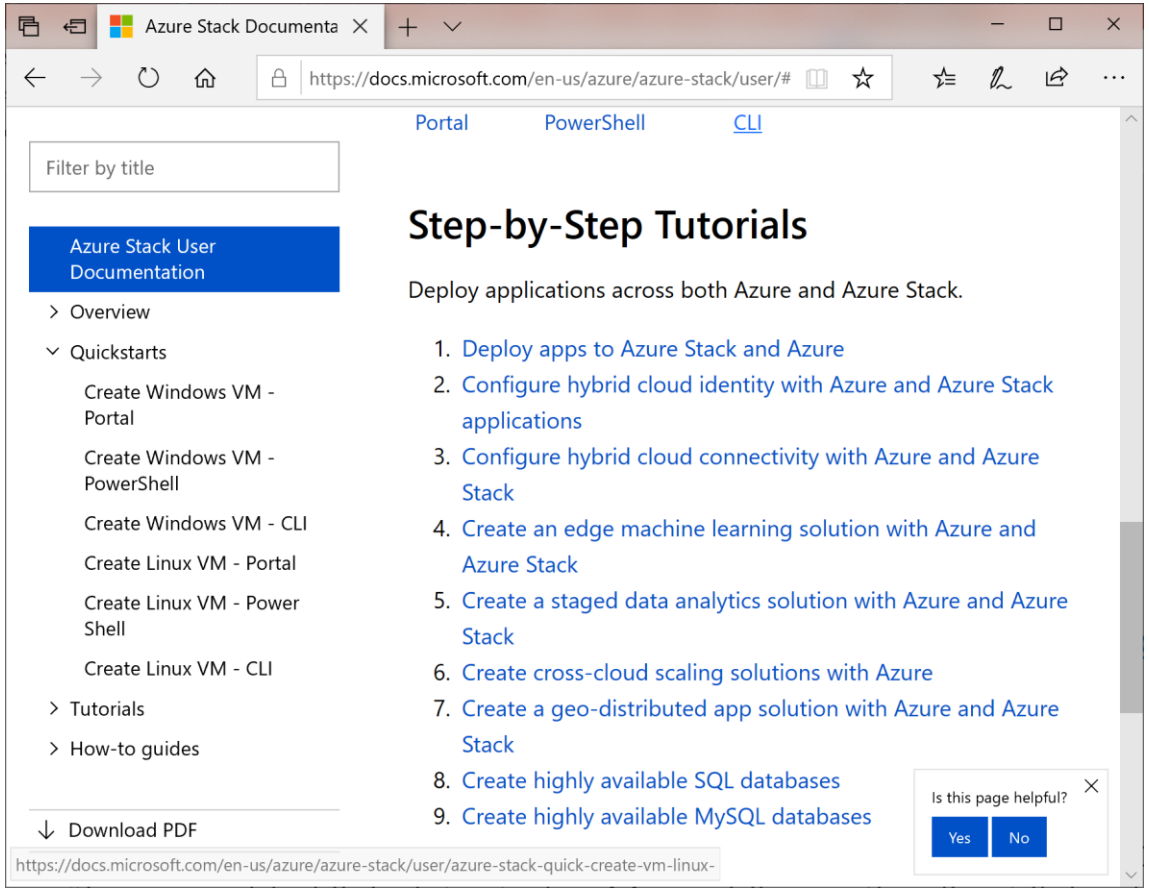

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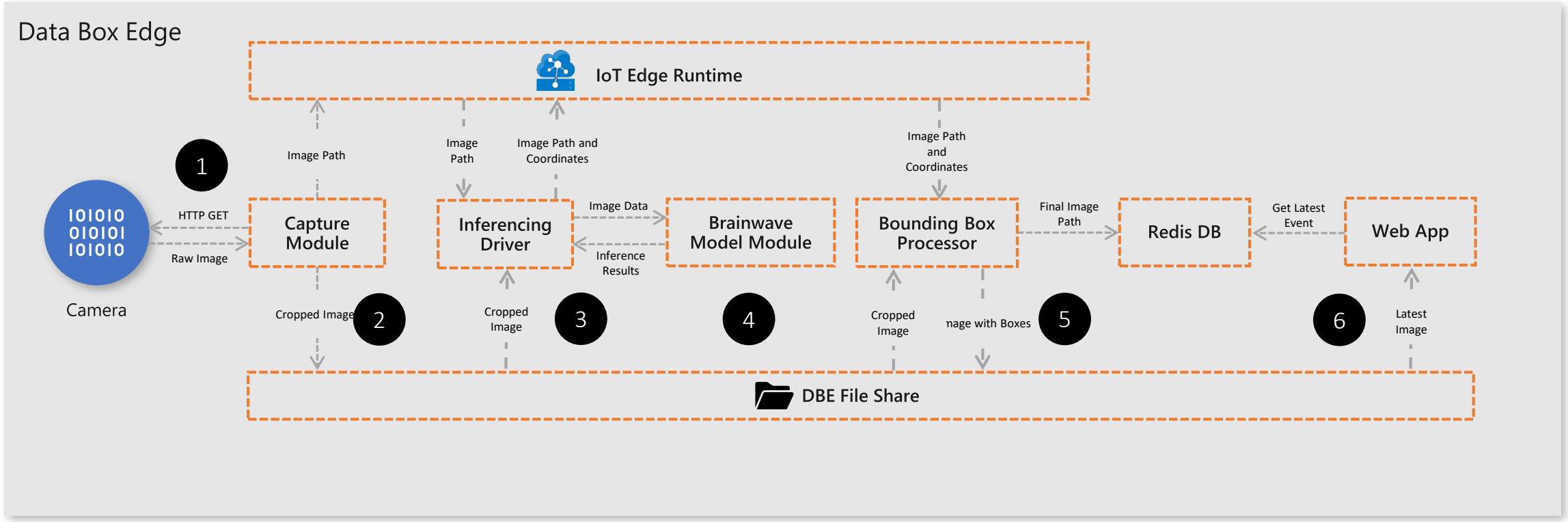
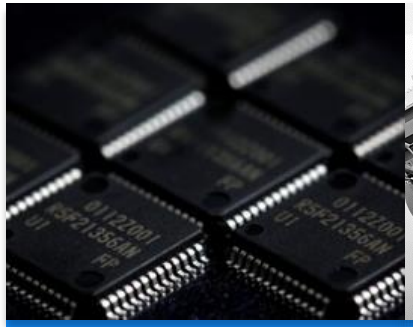
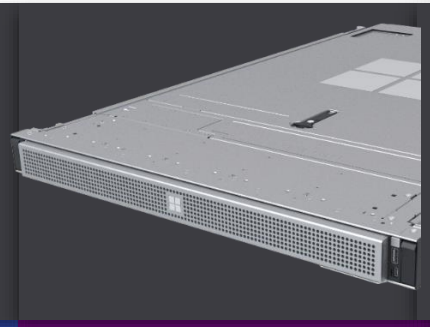
AI Enabled Retail - Video

Retail App Architecture



Intelligent Cloud & Intelligent Edge Examples





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Next AIEB Call will be 9/13 @ 11AM US Central Standard Time

https://aka.ms/aieb-topics