

Azure IoT Operations: il "nuovo" modo di fare IoT secondo Microsoft

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Azure IoT Operations

Now Generally Available



AI is transforming every industrial sector



The changing face of Industrials

Together with modern
infrastructure and compute,
AI gives all data value

17%

Inventory cost
reduction

20%

Throughput
increase

22%

Productivity
increase

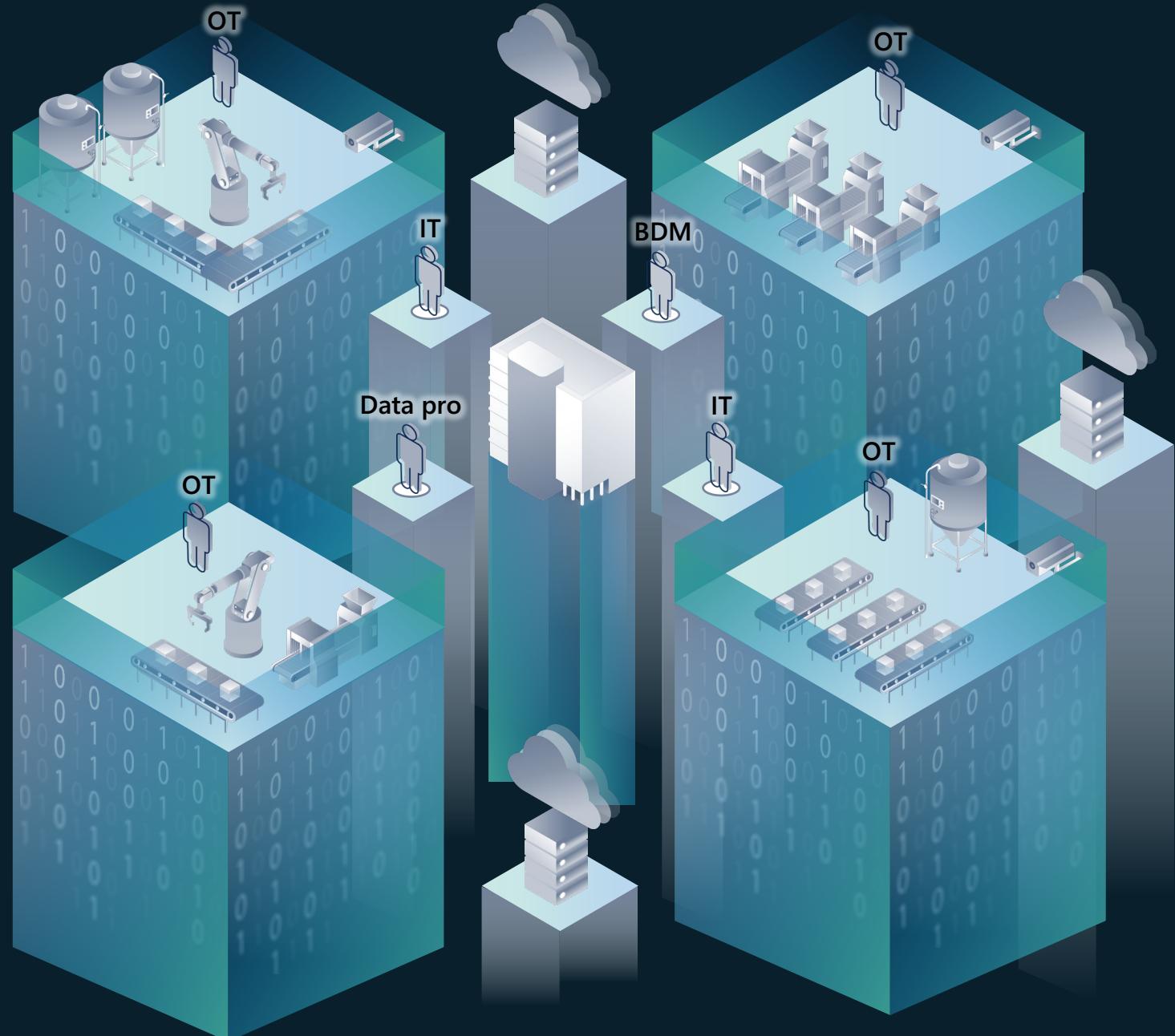
40%

Downtime
reduction

AI with data silos is impractical

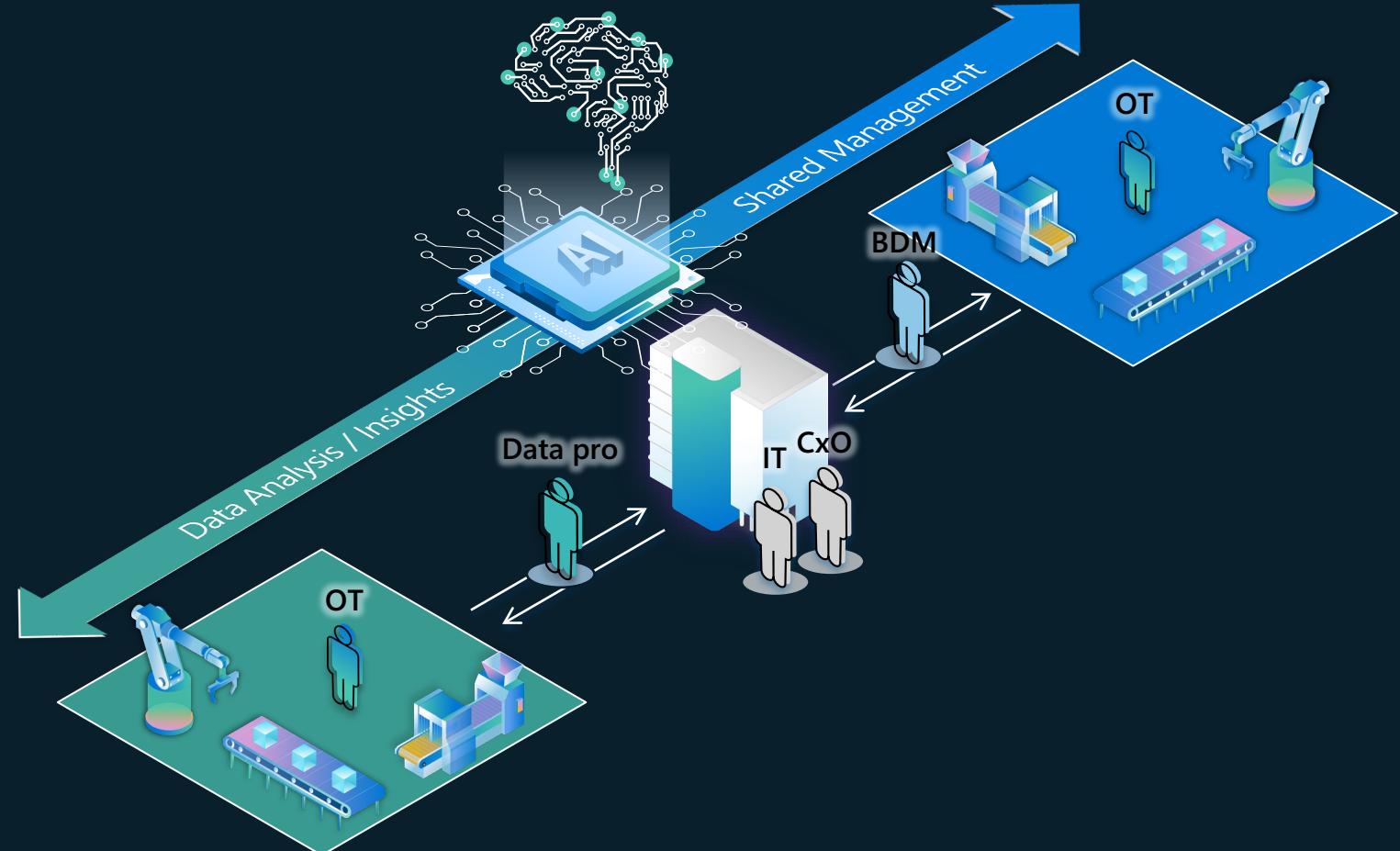
Data is stuck in silos and hard
to make semantically ready
from the sources for AI

Managing infrastructure
policy, security, health and
edge + cloud compatibility
across siloed systems is
unfeasible



AI needs a unified approach to data and management

AI solutions need to scale across cloud and edge, cross lines and sites, and deliver insights from the shop floor to the board room



Solving with Azure's adaptive cloud approach

Shared Data Plane



Enterprise-wide
data accessibility

Common



Established on
open standards
and frameworks

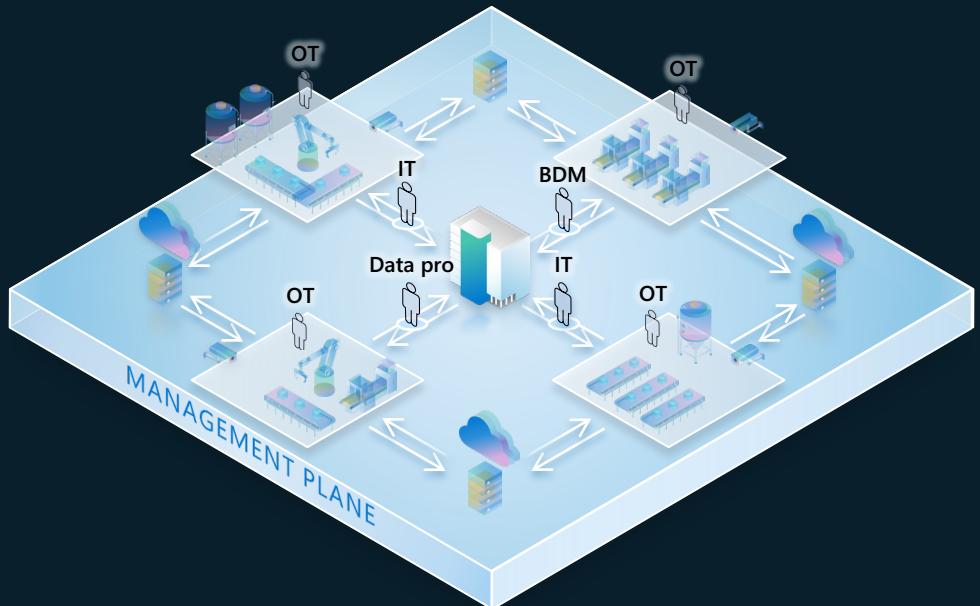


Cross company
identities and
authorizations



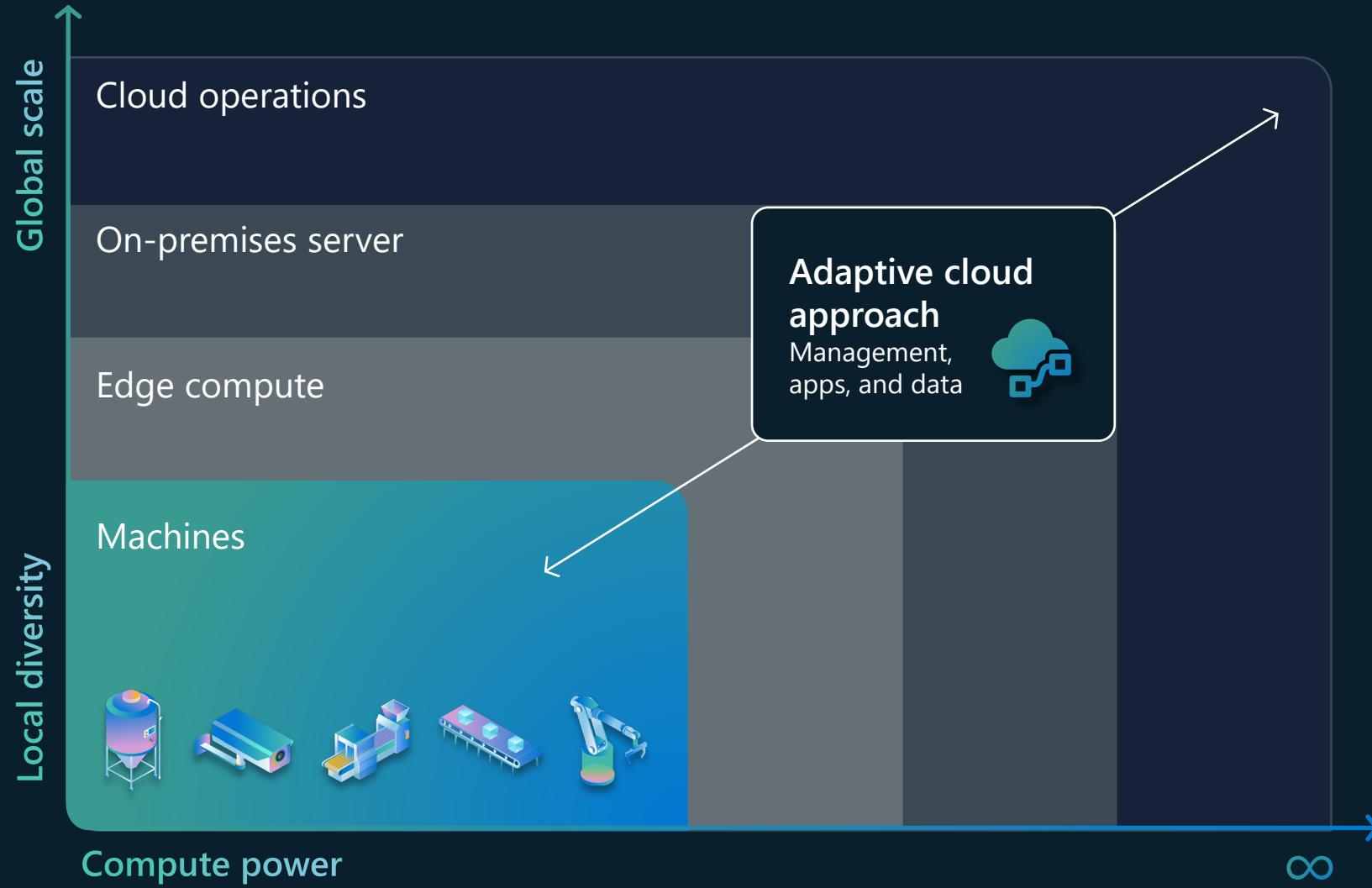
Unified cloud
and edge
platforms

Shared Management Plane



AI-enhanced central management
with security and health monitoring

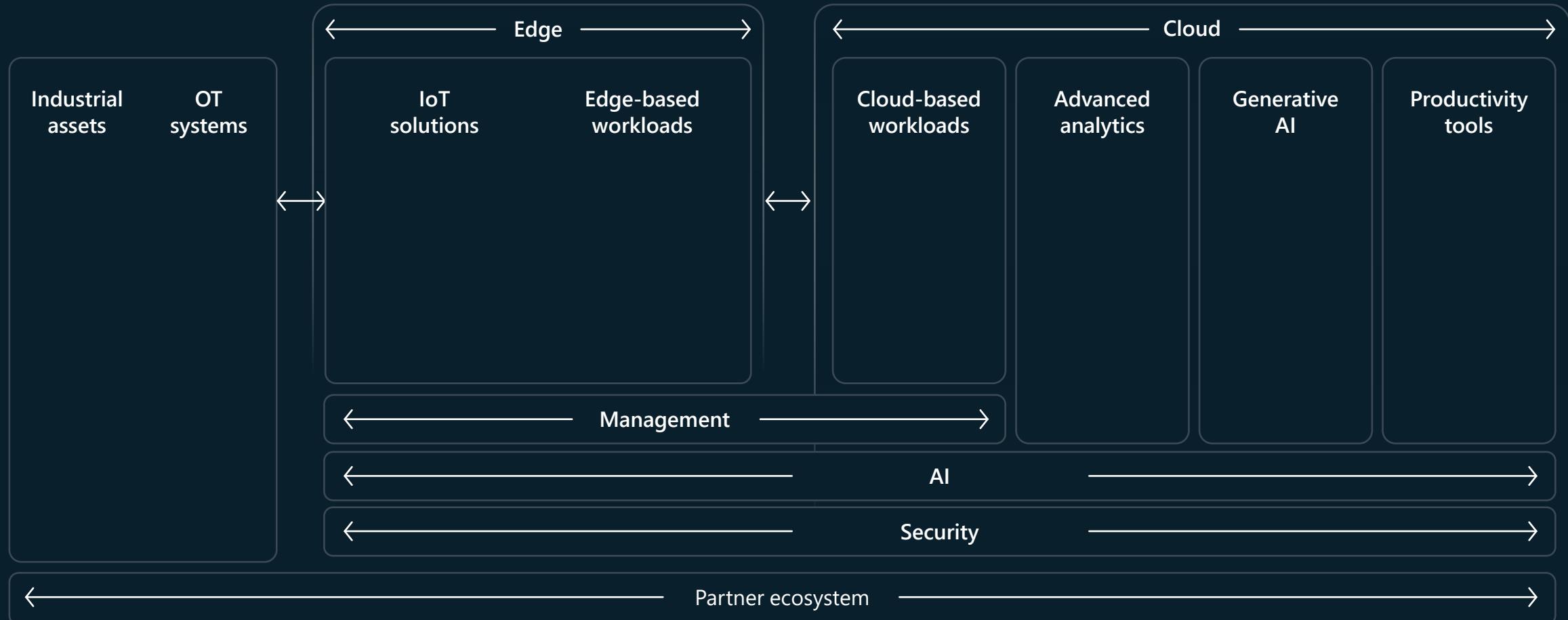
Adaptive cloud approach



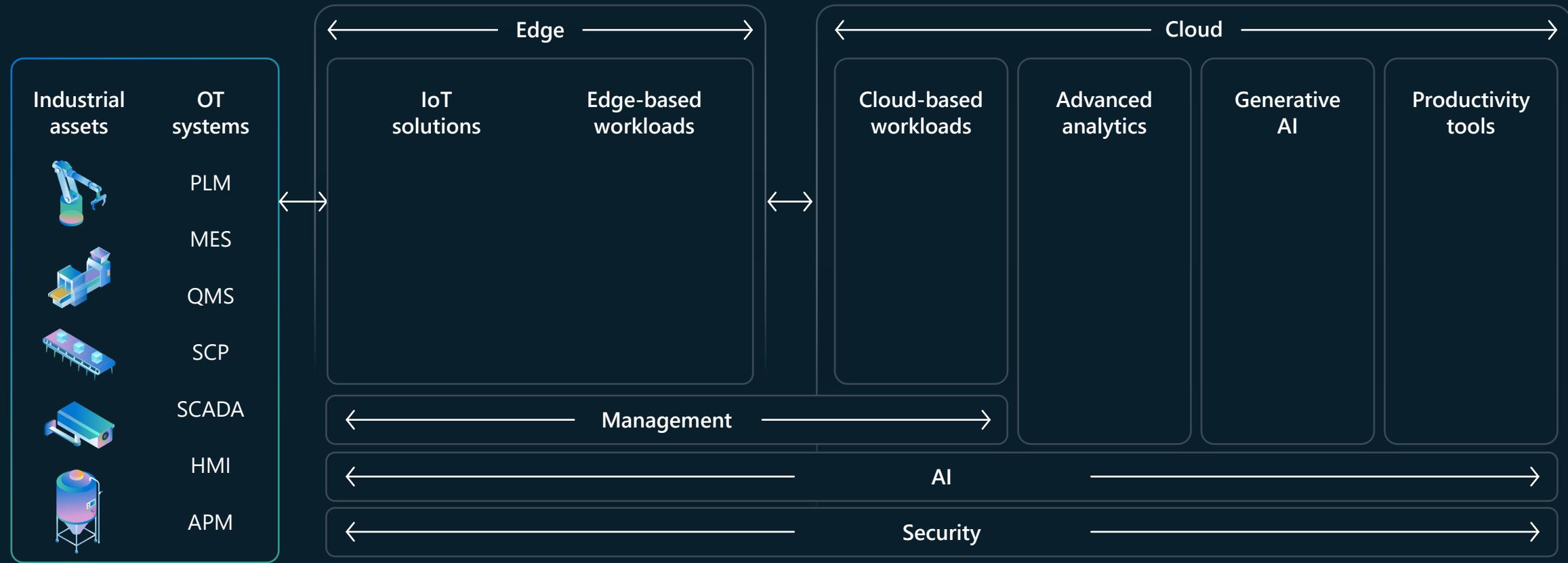
Outcomes

- Lower TCO
- Better margins
- Higher quality
- Faster deployment
- Enhanced efficiency
- Cloud innovation

Industrial transformation across the enterprise



The ecosystem



Works with existing
partner ecosystem

SIEMENS

ABB

ptc

Rockwell
Automation

ADVANTECH

optimized
softing

avade

DXC
TECHNOLOGY

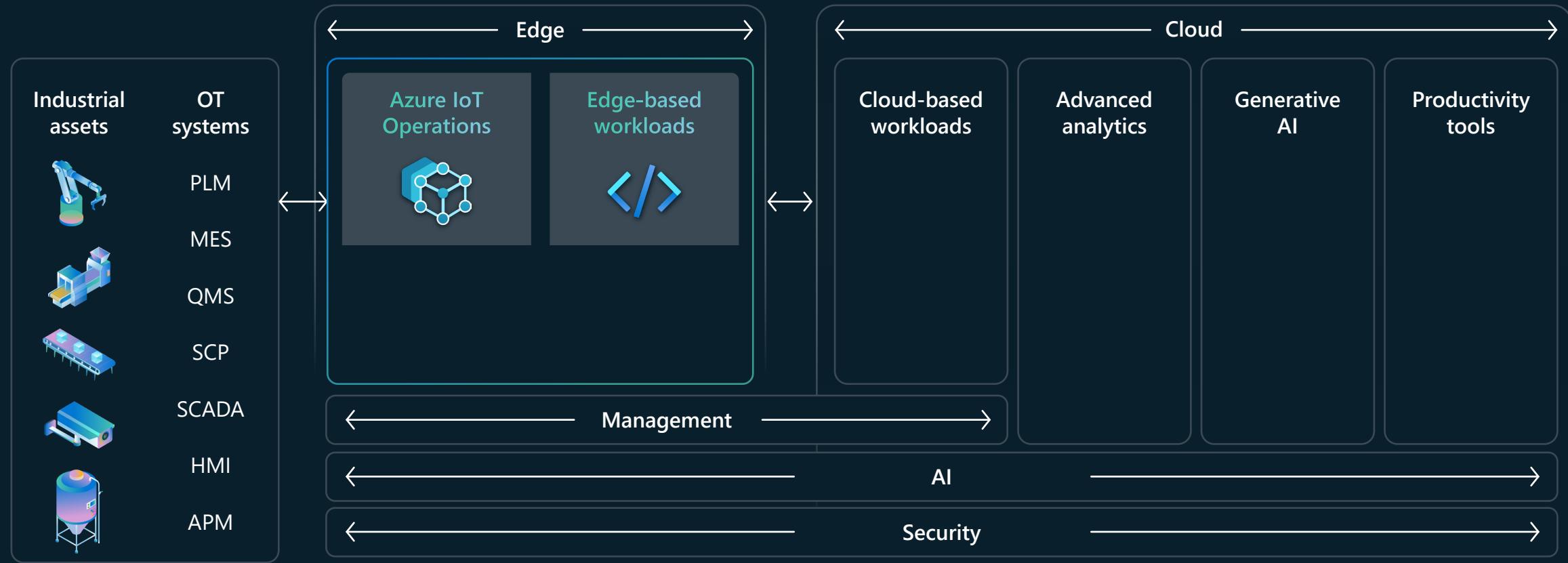
tcs
TATA
CONSULTANCY
SERVICES

accenture

nVIDIA

... more

Local needs at the edge



Works with existing partner ecosystem

SIEMENS

ABB

ptc

Rockwell Automation

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TECHNOLOGY

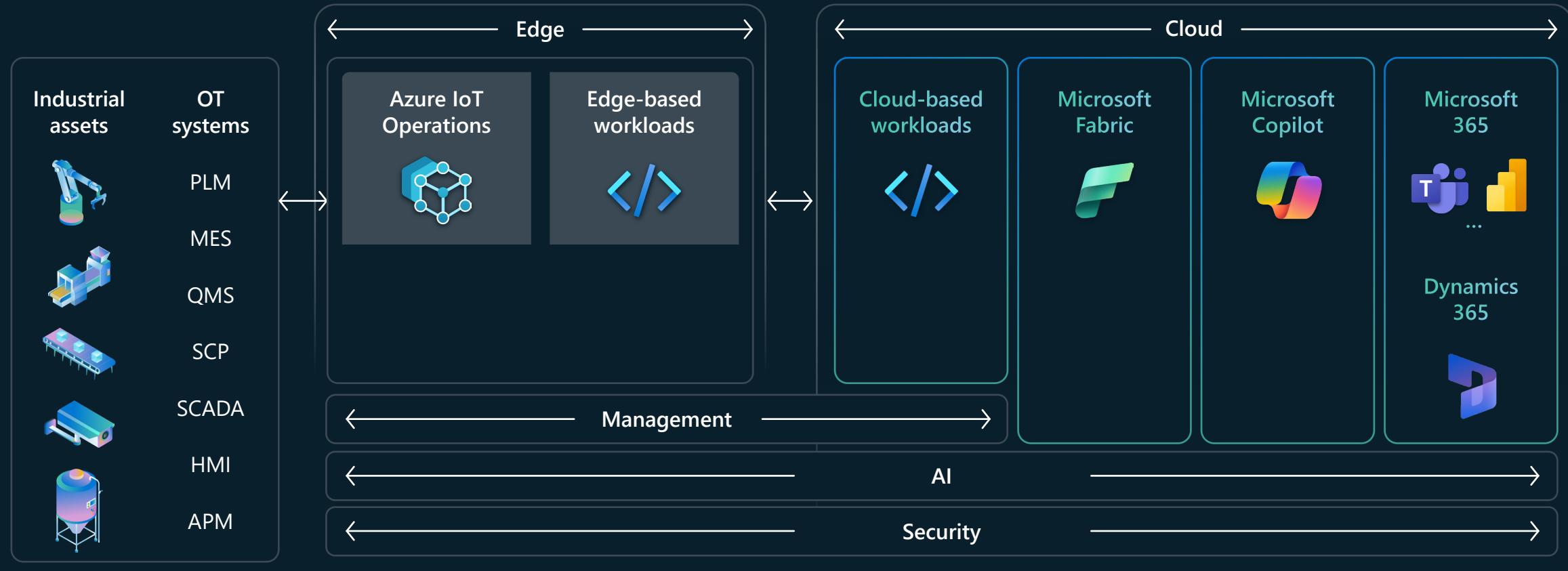
tcs
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... more

Global needs in the cloud



Works with existing
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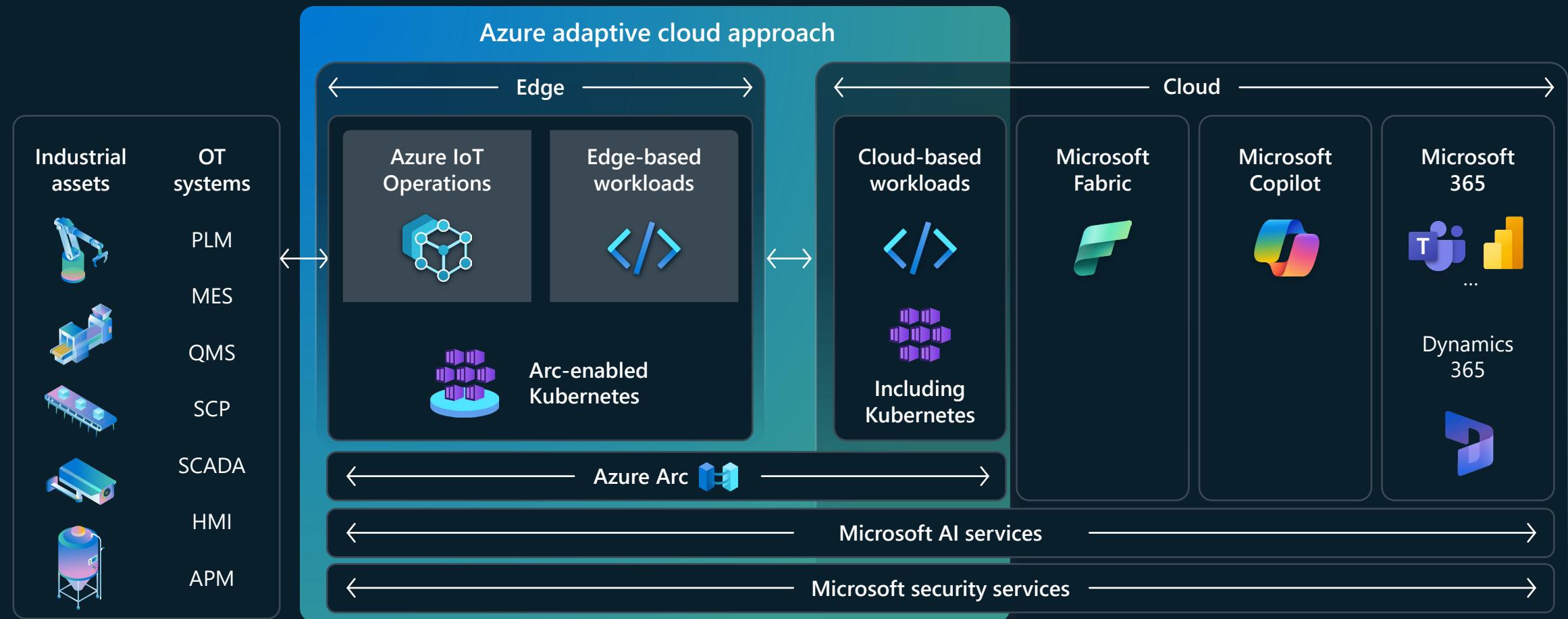
TCS
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SERVICES

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nVIDIA

... more

Uniting a distributed estate

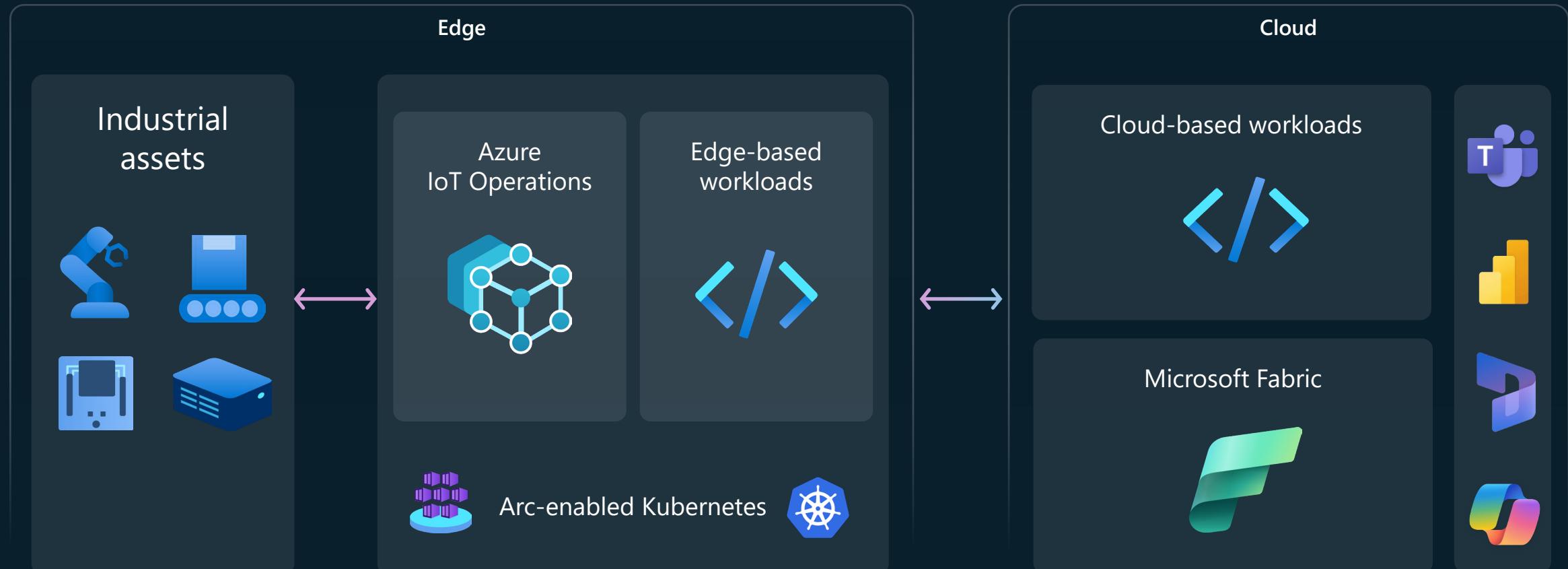


Works with existing partner ecosystem



... more

Azure IoT Operations enabled by Azure Arc



Azure operations, management and security spanning cloud and edge





Azure IoT Operations



Data

Process edge data with high availability and send it to Azure services using the latest service features and security



AI Foundation

Enable low-latency ML models using your data in your edge cluster. Copilots enhance both cloud data and data management



Resource management

Configure edge assets for data sampling, endpoints for protocol connectivity, and data service flows using Azure Resources

Built-in Support for OPC UA, MQTT, Camera, and 3rd Party Connectivity solutions



AI-enhanced central management with security and health monitoring



Established on open standards and frameworks



Enterprise-wide data accessibility



Cross company identities and authorizations



Unified cloud and edge platforms

Azure adaptive cloud approach

Azure IoT Operations

GA Release

Features of

Connector for OPC UA connects and communicates with OPC UA Servers

Data processor as part of data flows provides customer defined data transformation and contextualization to make near real-time decisions

MQTT broker scalable and bi-directional edge/cloud communication and powers event-driven apps at the edge through a Kubernetes-native MQTT Broker

Operations experience provides simple User Interface to manage assets and configure data pipelines

Azure Services for building edge to cloud solutions

Connect & Integrate

Azure Arc

Azure IoT Operations

Logic Apps

IoT Hub / Event Hubs

Azure Event Grid

Operate & Simulate

AKS (on Stack HCI, EE)

Azure Container Instance

Azure Scale Sets / HPC

Azure App Service

Azure Data Explorer

Model, Train & AI

Azure Machine Learning

Azure Cognitive Services / Search

Azure OpenAI Services

Azure AI Bot Service

Azure AI Model Catalog

Store & Manage

OneLake (Azure SQL Database)

Azure Cosmos DB / PostgreSQL

Fabric (Azure Data Warehouse)

Fabric (Azure Synapse Analytics)

Azure Key Vault

Azure Monitor

Analyze, Visualize

Fabric (Azure Stream Analytics, Synapse)

Azure Maps

Power BI Embedded

Azure Remote Rendering

Notification Hubs

Azure Communication Services

25+ Azure Services/SKUs

Azure IoT Operations

Features of

GA Release



Collect data from your machines



Flow data to Azure transformed
and contextualized with data flows



over OT to create pipelines and
with operations experience

edge data configurations
Azure Device Registry

a connectors

ult

Riccardo Cappello Marco Parenzan

Soluzioni IoT moderne in Azure nell'era dell'analytics e dell'AI

Quale è lo stato dell'arte delle soluzioni IoT? In Azure? E come si relazionano con servizi moderni come Kubernetes, AKS, Arc, Fabric, Data Lake? Lo vedremo in questa sessione.

gio 10:00 - 10:50

- Azure Container Storage connection to Azure Blob/Fabric
- Azure Arc gateway connection to Azure Arc



DEMO



Azure IoT Operations instances

In the Azure IoT Operations portal, an instance represents an Azure IoT Operations cluster. [Learn more](#)

Instance name	Subscription	Resource group	Provisioning state	Connectivity status
 aiovm03	50a6222f-9144-411d-9ea9-c18d562275f3	aiovm03arc	Succeeded	Connected

Previous Page 1 ^ ▼ of 1 Next Showing 1 to 1 of 1

Home > Sites > Unassigned instances > aiovm03 > Overview

aiov03 overview

An instance may have multiple resources associated with it, as well as multiple AIO extensions installed. [Learn more](#)

Instance details

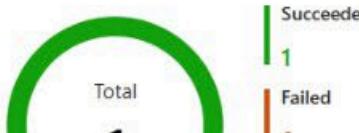
Connectivity status: Connected Instance version: 1.0.9
Provisioning state: Succeeded

Resource summary

Total resources	Resources succeeded	Resources failed	Resources accepted ⓘ
12	12	0	0

Resource details

Assets
Provisioning state of all configured assets



Asset endpoints
Provisioning state of all configured asset endpoints



Dataflows
Provisioning state of all configured dataflows



Dataflow endpoints
Provisioning state of all configured dataflow endpoints



Assets

An asset is a logical entity created to represent a real-world asset. It can have properties, tags, and events that describe its behavior and characteristics. [Learn more](#)



[+ Create asset](#) Refresh Delete [Create dataflow](#)

Filter by keyword

Name	Description	Provisioning state	...
wpc2024opcuavm		Succeeded	

[Previous](#) [Page](#) [1](#) of 1 [Next](#) Showing 1 to 1 of 1

wpc2024opcuavm

Save Delete View activity logs

Asset details Tags Events

Description

Endpoint profile *

wpc2024opcuavm

Description

Enter description

[View details](#)

Default MQTT topic

<namespace>/data/<asset-name>

Custom properties

Add custom property

Reset to defaults

Home > Sites > Unassigned instances > aiovm03 > Assets > wpc2024opcuavm

wpc2024opcuavm

 [Save](#) [Delete](#) [View activity logs](#)[Asset details](#) [Tags](#) [Events](#)

+ Add tag or CSV Manage default settings Export all Remove tags <input type="text"/> Filter by keyword				
<input type="checkbox"/> Node Id	Tag name	Observability mode	Sampling interval (milliseconds)	Queue size
<input type="checkbox"/> ns=4;i=15013	Boiler #1 Status	Log	1000	1
<input type="checkbox"/> ns=3;s=SpikeData	SpikeData	Gauge	1000 (default)	1 (default)
<input type="checkbox"/> ns=3;s=DipData	DipData	Histogram	1000 (default)	1 (default)

Previous Page of 1 Next Showing 1 to 3 of 3

Home > Sites > Unassigned instances > aiovm03 > Asset endpoints

Asset endpoints

An asset endpoint connects servers (example: OPCUA) to Azure IoT Operations on the edge, allowing access to the asset's datapoints. [Learn more](#)

Total resources

1

Resources succeeded

1

Resources failed

0

Resources accepted

0

[Create asset endpoint](#)[Refresh](#)[Delete](#)[Manage secrets](#) Filter by keyword

Name

OPC UA server URL

Provisioning state

 wpc2024opcuavm

opc.tcp://wpc2024opcuavm.northeurope.cloudapp.azure.co...

Succeeded

...

[Previous](#)

Page

1

of 1

[Next](#)

Showing 1 to 1 of 1

Home > Sites > Unassigned instances > aiovm03 > Dataflows

Dataflows

Dataflows allow users to configure and manage data flows for efficient data integration and transformation. [Learn more](#)

Total resources

6

Resources succeeded

6

Resources failed

0

Resources accepted

0

[+ Create dataflow](#)[Refresh](#)[Delete](#)

Dataflow Name	Provisioning State	Status
wpc2024opcuavm-to-wpc2024aio-eh	Succeeded	Disabled
wpc2024opcuavm-to-wpc2024dl	Succeeded	Disabled
wpc2024opcuavm-to-wpc2024dl-parquet	Succeeded	Disabled
wpc2024opcuavm-to-wpc2024lh-aio03	Succeeded	Disabled
wpc2024opcuavm-to-wpc2024aio-eh-boiler1	Succeeded	Enabled
wpc2024opcuavm-to-wpc2024aio-eh-allopcua	Succeeded	Enabled

[Previous](#)

Page

1

of 1

[Next](#)

Showing 1 to 6 of 6

Sites

Instances

Overview

Assets

Asset endpoints

Dataflows

Dataflow endpoints

Activity logs

Microsoft Fabric Real-Time Intelligence

[+ New](#)

Send your data to Microsoft Fabric Real-Time Intelligence for scalable data ingestion and real-time analytics.

Azure IoT Operations Local MQTT

[+ New](#)

Send your data here to publish messages to the MQTT broker using the topic and payload format.

Azure Event Grid MQTT

[+ New](#)

Send your data to Azure Event Grid MQTT, a highly scalable messaging service on the cloud.

Azure Event Hubs

[+ New](#)

Send your data to Azure Event Hubs for scalable data ingestion and real-time analytics.

Custom Kafka Broker

[+ New](#)

Send your data to Kafka for high-throughput data streaming to handle real-time data feeds.

Custom MQTT Broker

[+ New](#)

Send your data to a custom MQTT broker using the appropriate topic and payload format.

Azure Data Explorer

[+ New](#)

Send your data to Azure Data Explorer for fast, scalable data analytics and interactive querying.

Azure Data Lake Storage (2nd generation)

[+ New](#)

Store your data in Azure Data Lake Storage V2 for scalable and secure data storage solutions.

Local Storage

[+ New](#)

Store your data to a local storage on the edge after configuration.

Microsoft Fabric OneLake

[+ New](#)

Send your data to a single, unified, logical data lake designed to be the central hub for all your data.

[Refresh](#)[Import](#)[Manage secrets](#)

Dataflow endpoint name	Host name	Last updated on	Provisioning state	
<input type="radio"/> default	aio-broker:18883	11/17/2024, 8:37:54 PM	Succeeded	...
<input type="radio"/> wpc2024aio-eh	wpc2024aio.servicebus.windows.net:9093	11/17/2024, 11:02:49 PM	Succeeded	...
<input type="radio"/> wpc2024dl	https://wpc2024dl.blob.core.windows.net	11/17/2024, 11:41:26 PM	Succeeded	...
<input type="radio"/> wpc2024-aio03	https://onelake.dfs.fabric.microsoft.com	11/18/2024, 12:27:53 AM	Succeeded	...

[Previous](#)

Page

1

of 1

[Next](#)

Showing 1 to 4 of 4

Azure IoT Operations drives end-to-end transformation



Chevron



Azure IoT Operations Partners

System Integrators (SIs)



Technology Providers



Additional IoT Services



Azure IoT
Central



Azure IoT
Hub



Azure IoT
Edge



Defender
for IoT



Device
Provisioning Service



Device
Update



Azure IoT's in-market IoT services are feature complete and widely used by customers globally



Continue to maintain security, health, and operational stability of these services to ensure they meet the needs of customers over the long term



Customers are supported in their ongoing use of these services, enabling continuity for deployed solutions

OVERNET.

- 30+ years in IT (Developer, Architect, Consultant, PM, Trainer)
- Speaker, Community addicted
- IoT Influencer
- Microsoft Certified Trainer

Marco Dal Pino
Technical Consultant
Microsoft



<https://www.linkedin.com/in/marcodalpino>



@marcodalpino.bsky.social



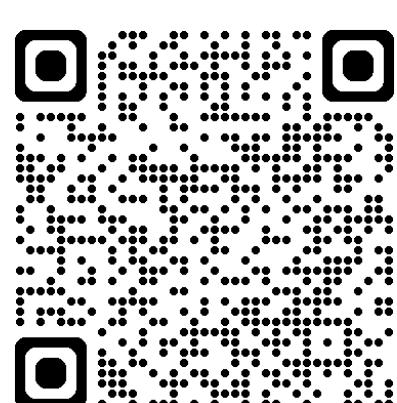
<https://twitter.com/marcodalpino>



info@contoso.blog



<https://www.twitch.tv/dpcons>
<https://www.twitch.tv/techchat>





Valutazioni da 5 stelle sono le benvenute... 😊
GRAZIE!