

Hybrid AI Enablement of Mission Critical Workloads for Local Processing Needs Using Azure Logic Apps

Harold Campos

Principal PM

Azure Logic Apps

PRAIRIE DEV CON

WEB | DEV | CLOUD | AI



Logic Apps Hybrid

The world is Hybrid and so is AIS. Hybrid Logic Apps, APIM Gateway, Event grid, and our on-premises messaging connectors spearhead our hybrid capabilities.

Microsoft Cloud



Infrastructure



Data and AI



Digital and app
innovation



Business
applications



Modern work

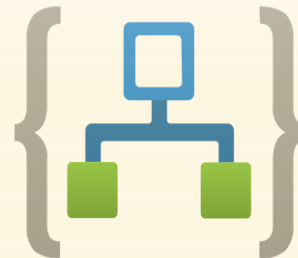


Security

On-premises



APIM Gateway







Event Grid

Logic Apps Hybrid






Why Logic Apps Hybrid?




Local Processing

-  Regulatory and Compliance
-  Financial Services
-  Healthcare
-  BizTalk Migration

Azure-Hybrid

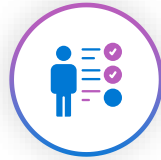
-  Azure first deployments
-  Selective workloads On-Prem
-  Unified Management

Multi-Cloud

-  Multi-cloud strategies
-  Proximity to key LOB systems
-  ISVs

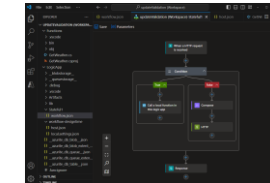
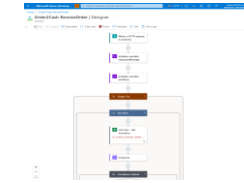
Hybrid Deployment Model

\$0.18 per vCPU/hour (USD)



Develop and Deploy standard Logic Apps to customer managed infrastructure

- On-premises
- Private Clouds
- Public Clouds



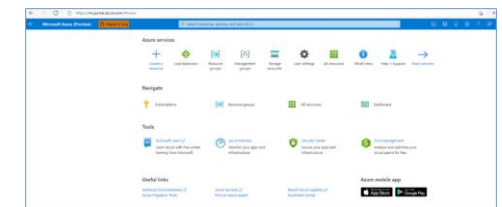
Architecture targets semi-connected scenarios

- Local processing
- Local storage
- Local network access



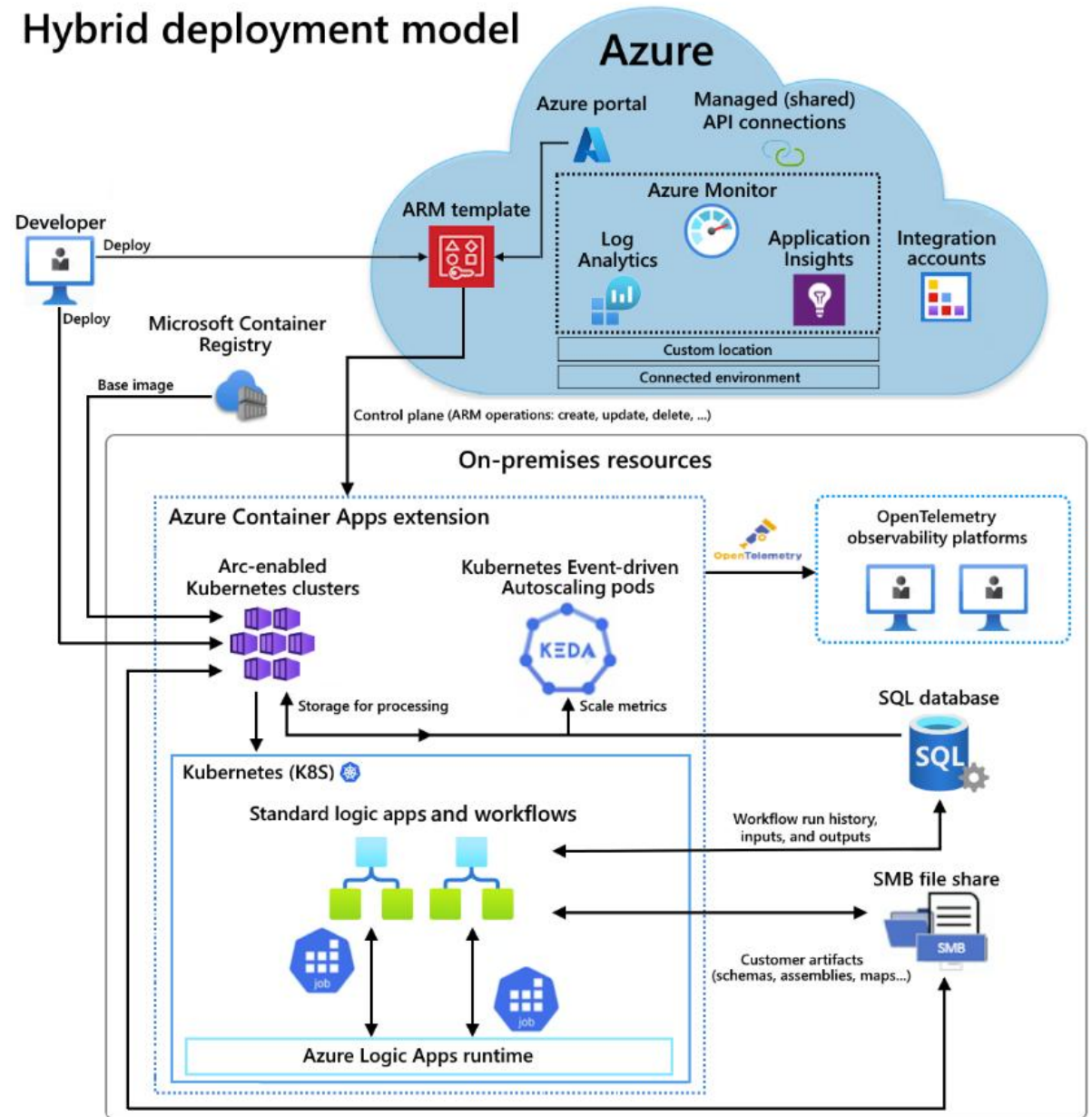
Microsoft-managed and Customer managed Logic Apps from single experience: Azure Portal

- Control plane in Azure accessing data plane through Azure ARC
- Logic Apps deployed into containers within a Connected Environment



Hybrid concepts

- The **connected cluster**, which is an Azure projection of your Kubernetes infrastructure.
- A **cluster extension**, which is a sub-resource of the connected cluster resource. The Container Apps extension installs the required resources into your connected cluster.
- A **custom location**, which bundles together a group of extensions and maps them to a namespace for created resources.
- A **Container Apps connected environment**, which enables configuration common across apps but not related to cluster operations.



Hybrid Experience

Home > hcamposu > Marketplace > Logic App > Create Logic App > Create Logic App (Hybrid) ...

Home > hcamposu > Marketplace > Logic App > Create Logic App > Create Logic App (Hybrid) ...

Create Logic App (Hybrid)

Create Logic App ...

Select a hosting option

These hosting plans determine the resource

Hosting plans

Compute

Networking

Pricing

- Basics
- Storage
- Networking
- Tags
- Review + create

Application ingress settings

Enable ingress for applications that need an HTTP or TCP endpoint.

Ingress traffic

☒ **Accepting traffic from anywhere** Select this option if you want to allow traffic to this container app from anywhere

☐ **Limited to Container Apps Environment**

Ingress type ⓘ

☒ HTTP

☐ TCP

Transport

Auto

Insecure connections

☐

Target port ⓘ

80

Session affinity

☐

Additional TCP ports

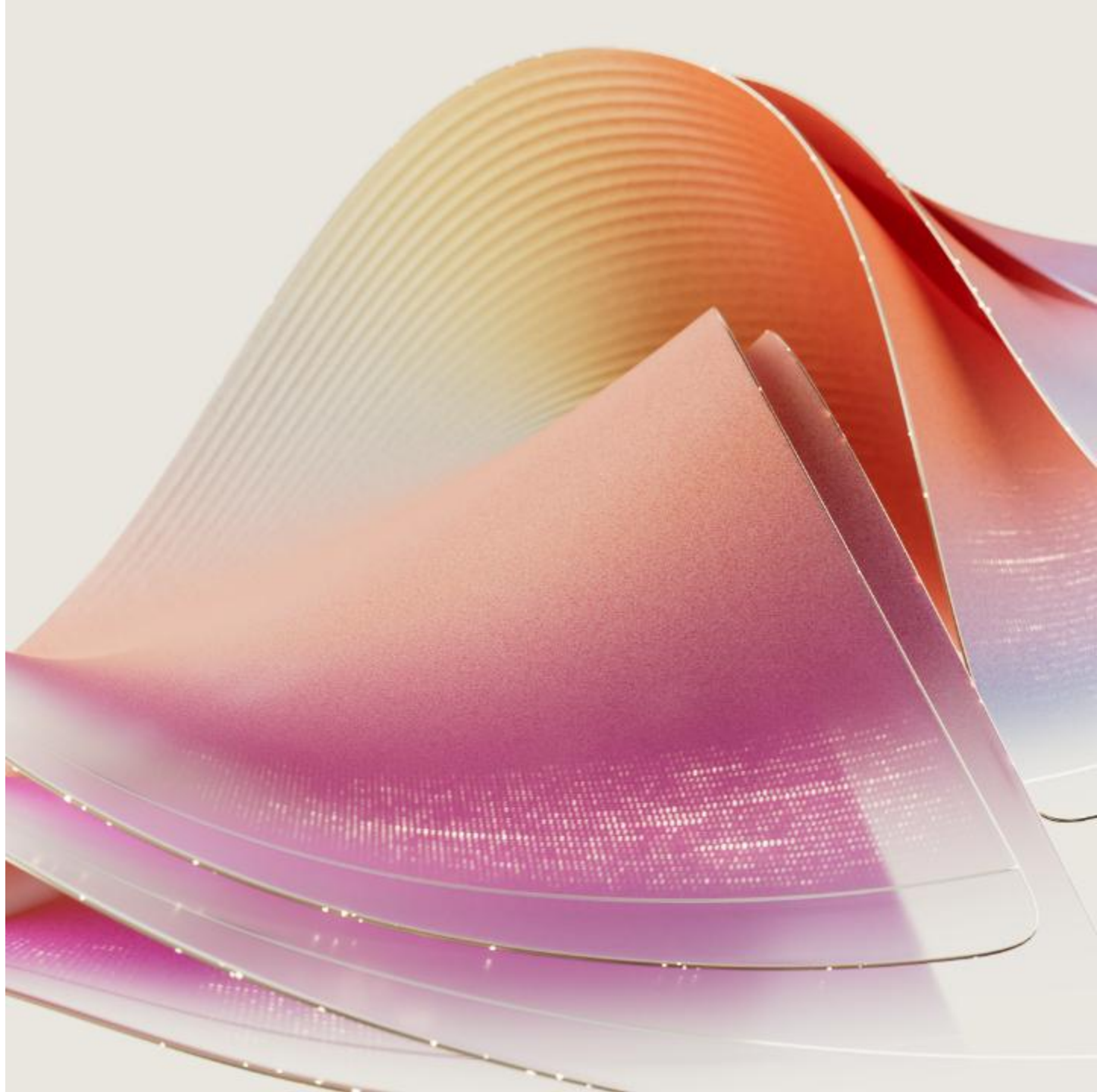
Select

Review + create

< Previous

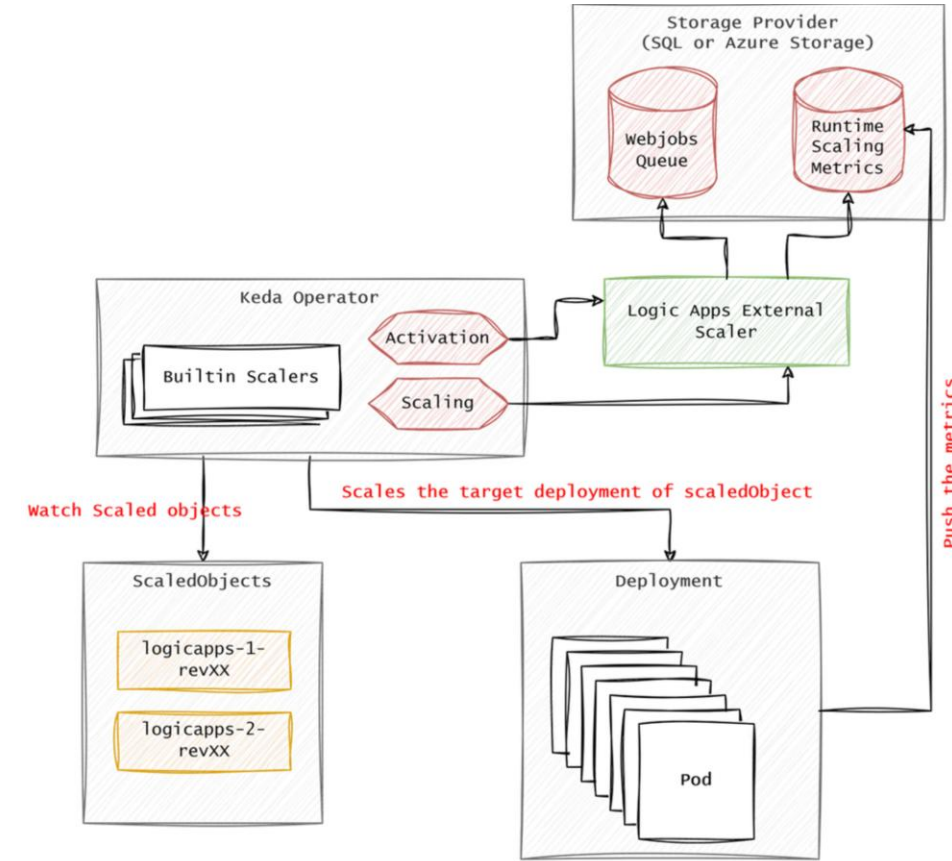
Next : Tags >

**How is Hybrid
different?**



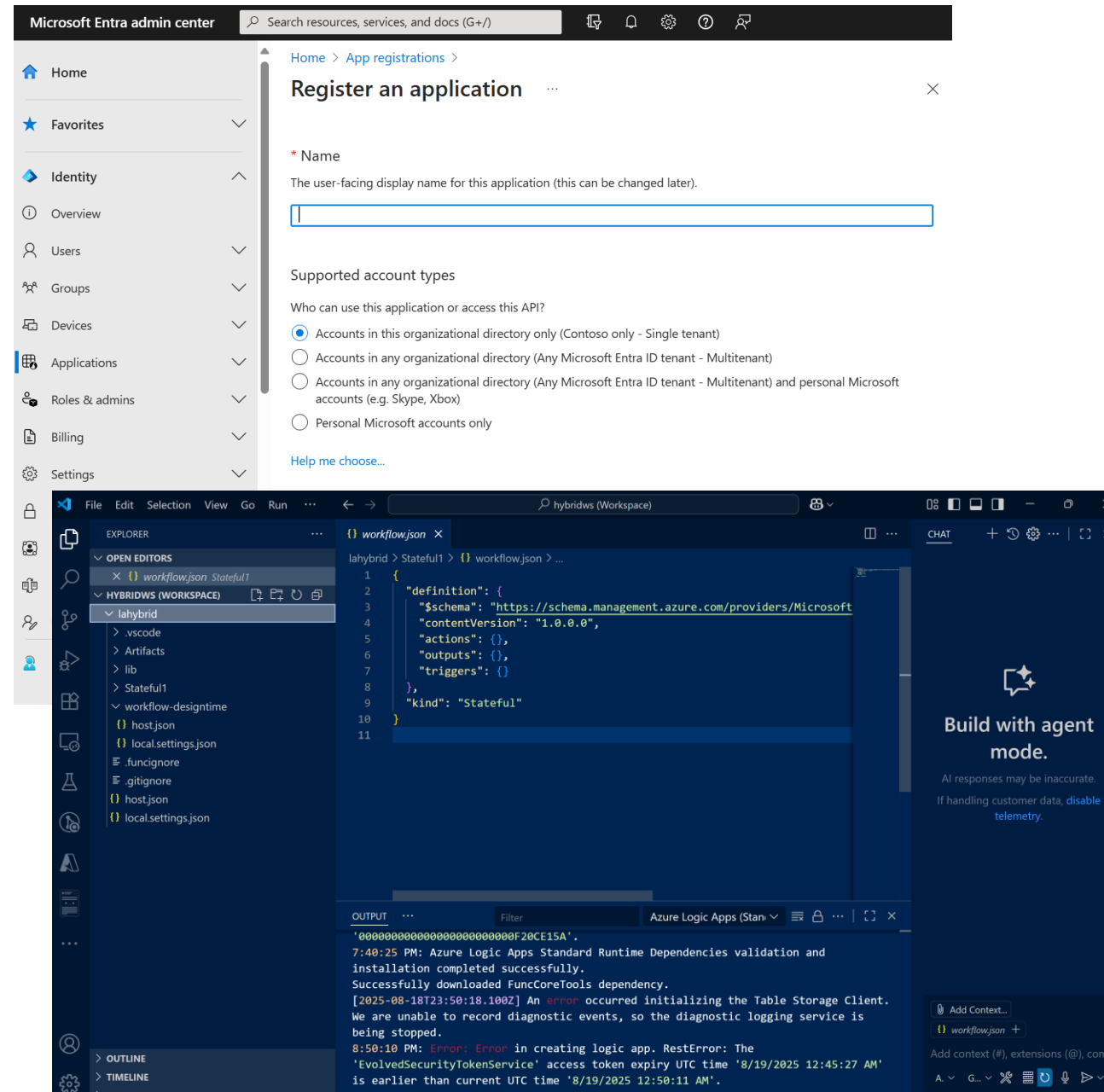
KEDA Scaling

- Enables customers to optimize their compute costs during peak usage.
- Scale up to handle temporary spikes in demand and then scale down to reduce costs when the demand decreases.
- Hybrid Logic Apps provide an external scaler.
- Target concurrency can be changed by using the "Microsoft.Azure.Workflows.TargetScaler.TargetConcurrency" environment variable.
- More information:
<https://techcommunity.microsoft.com/blog/integrationsonazureblog/scaling-mechanism-in-hybrid-deployment-model-for-azure-logic-apps-standard/4389763>



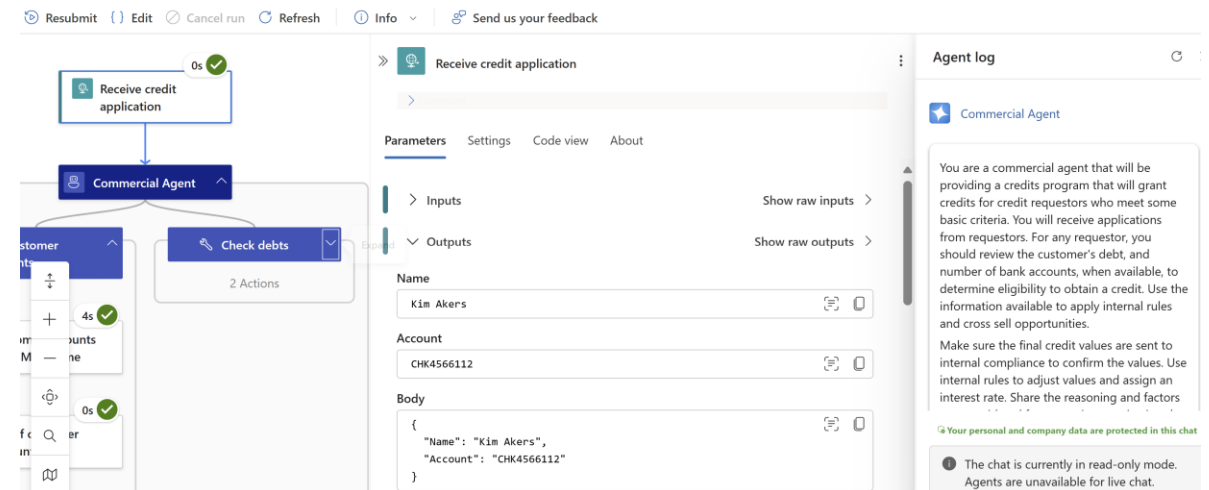
ZIP Deploy

- ZIP deploy was introduced to streamline deployment using VS Code, avoid networking connectivity and platform-related issues.
- This capability is primarily intended for deployment using Visual Studio Code but can also be integrated into broader DevOps workflows.
- Visual Studio Code doesn't need a connection to the SMB file share.
- To enable ZIP deployment, you must configure Azure Active Directory (AAD) for your Logic App.



SQL for Runtime storage

- You can use the SQL Storage Provider instead of Azure Storage for workflow-related storage transactions. This allows running Hybrid anywhere.
- Added flexibility and control over your logic app workflows' runtime environment, throughput, scaling, performance, and management.
- In Logic Apps standard Azure Storage is still required for some connectors.



The screenshot displays the Microsoft Logic Apps interface. On the left, a workflow diagram shows a sequence of steps: 'Receive credit application' (0s, green checkmark), 'Commercial Agent' (blue box), and 'Check debts' (2 Actions, green checkmark). The 'Commercial Agent' step is expanded, showing its configuration. On the right, the 'Receive credit application' step is selected, showing its parameters and outputs. The 'Parameters' tab is active, displaying the following data:

Parameter	Value
Name	Kim Akers
Account	CHK4566112
Body	<pre>{ "Name": "Kim Akers", "Account": "CHK4566112"}</pre>

On the far right, the 'Agent log' panel shows the 'Commercial Agent' log. It contains a message from the agent: 'You are a commercial agent that will be providing a credits program that will grant credits for credit requestors who meet some basic criteria. You will receive applications from requestors. For any requestor, you should review the customer's debt, and number of bank accounts, when available, to determine eligibility to obtain a credit. Use the information available to apply internal rules and cross sell opportunities. Make sure the final credit values are sent to internal compliance to confirm the values. Use internal rules to adjust values and assign an interest rate. Share the reasoning and factors'. Below this, a status message indicates: 'The chat is currently in read-only mode. Agents are unavailable for live chat.'

Open Telemetry

- Unified Observability across partially connected and on-premises scenarios.
- OpenTelemetry (OTel) is an open-source observability framework under the Cloud Native Computing Foundation (CNCF) that provides a unified standard for generating, collecting, and exporting telemetry data such as logs, metrics, and traces.
- Currently only the following triggers support OpenTelemetry outputs: HTTP, Service Bus, and Event Hubs.
- Currently only supports Logs.

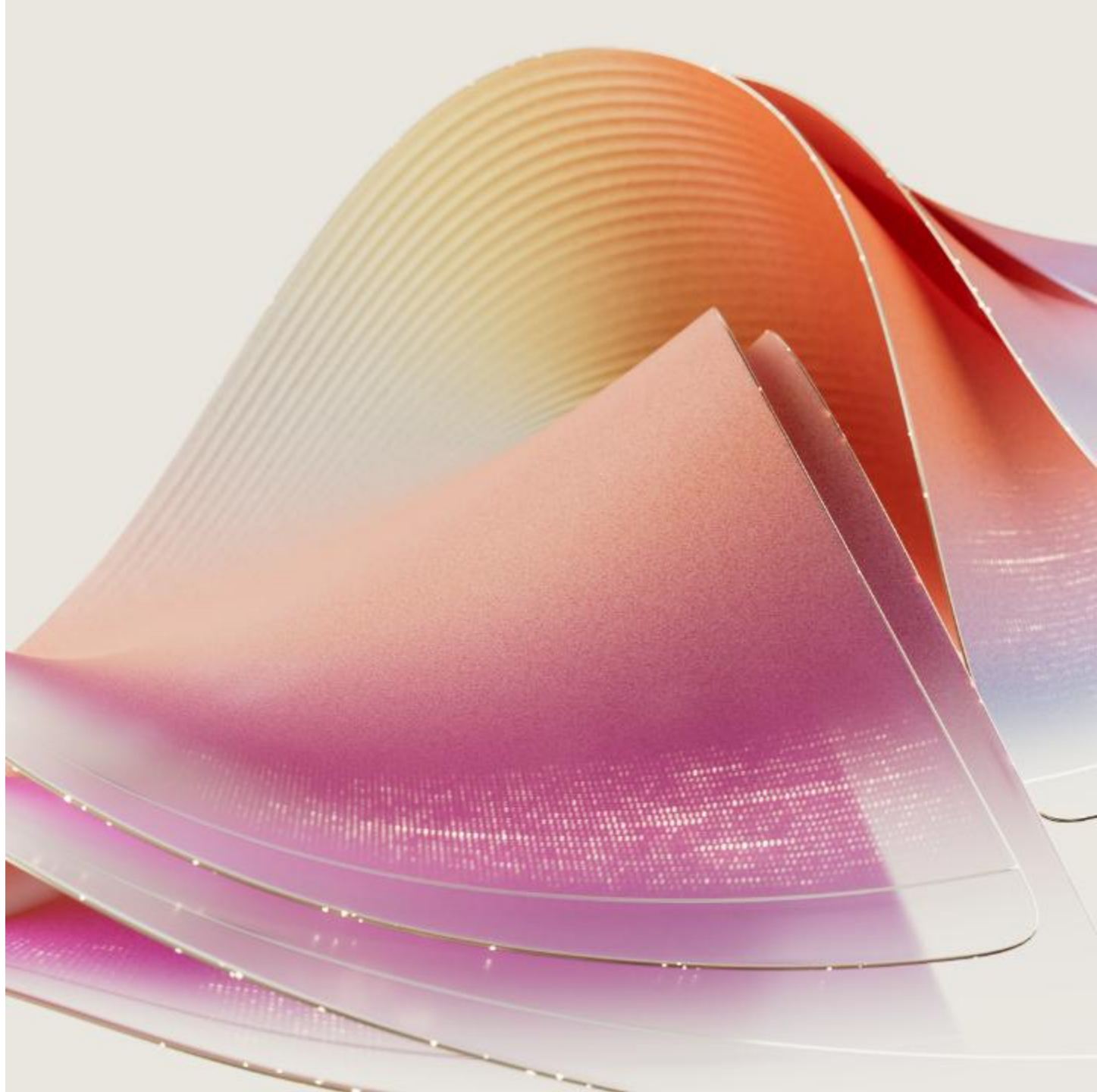
The image displays two screenshots related to OpenTelemetry setup in Azure.

The top screenshot shows the 'Environment variables' section for a Logic App (harshul-hybrid-08042025). The variables are as follows:

Name	Source	Value
Workflows.Sql.ConnectionString	Reference a secret	sqlconnection
APP_KIND	Manual entry	workflowapp
FUNCTIONS_EXTENSION_VERSION	Manual entry	~4
AzureFunctionsJobHost_extensionBundle_id	Manual entry	Microsoft.Azure.Functions.ExtensionBundle.Workflows
AzureWebJobsSecretStorageType	Manual entry	files
WEBSITE_AUTH_ENCRYPTION_KEY	Manual entry	[REDACTED]
OTEL_EXPORTER_OTLP_HEADERS	Manual entry	Authorization: [REDACTED]
FUNCTIONS_EXTENSIONBUNDLE_SOURCE_URI	Manual entry	https://cdnforlogicapps2.blob.core.windows.net/logica...
AzureFunctionsJobHost_extensionBundle_version	Manual entry	[1.127.7.0]
WORKFLOW_LAST_UPDATED_TIMESTAMP	Manual entry	20250410085756
new	Manual entry	11
OTEL_EXPORTER_OTLP_PROTOCOL	Manual entry	http/protobuf
OTEL_EXPORTER_OTLP_ENDPOINT	Manual entry	https://otel.kloudmate.com:4318
WEBSITE_HOSTNAME	Manual entry	testapp
AzureWebJobsStorage	Manual entry	[REDACTED]


The bottom screenshot shows the 'hybridOTelTest' dashboard. It features a search bar, a 'Saved Queries' button, and a time range selector set to 'Jun 10 12:00am - Jun 17 12:00am'. A line graph displays metrics over time. Below the graph, a table lists log entries with columns for TIME, SERVICE, SEVERITY, and ATTRIBUTES. The log entries show errors related to the workflow listener and storage connection, as well as information about service starting and retrying.

**What about
Messaging?**



Hybrid connectivity: IBM MQ

- The IBM MQ In-App connector enables connections between Logic App workflows to IBM MQ server on premises or in Azure.
- The IBM MQ Standard connector is a thin wrapper round the Host Integration Server feature "MQ client".
- Logic Apps workflows can browse, receive and send messages stored in an IBM MQ server.
- The IBM MQ connector supports one-way and two-way secure connections using SSL.
- It also supports the IBM Multi-instance queue manager feature (MIQM).

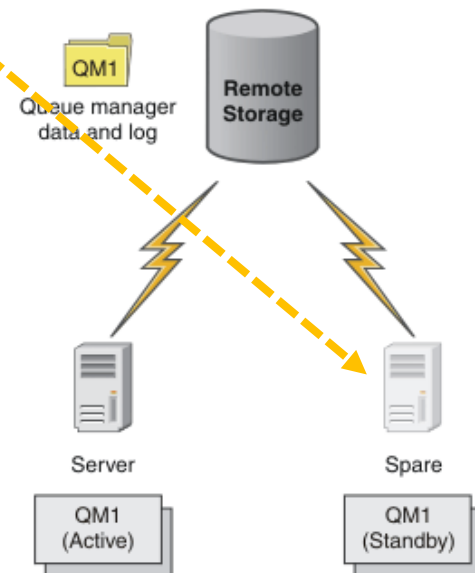
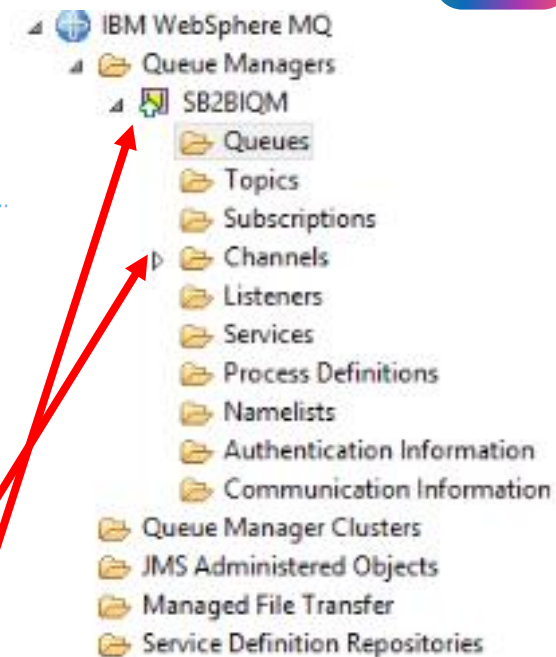
>>  When one or more messages are received from a queue (auto-complete)

Create Connection

* Connection name	<input type="text" value="Enter name for connection"/>
* Server name ⓘ	<input type="text" value="The host name for the MQ server"/>
* Port number ⓘ	<input type="text" value="The TCP port number for connecting to the MQ queue manager on the host"/>
* Channel ⓘ	<input type="text" value="The name for the MQ server connection channel"/>
* Queue manager ⓘ	<input type="text" value="Queue manager name"/>
* Connect As ⓘ	<input type="text" value="Connect As name"/>
Dead-letter queue name ⓘ	<input type="text" value="The dead-letter queue name"/>
Backup server name ⓘ	<input type="text" value="The name for the optional backup MQ server in a multi-instance queue"/>
Backup port number ⓘ	<input type="text" value="The optional backup port number in a multi-instance queue manager setup"/>
User name ⓘ	<input type="text" value="The optional username for connection authentication"/>
Password ⓘ	<input type="text" value="The optional user password for connection authentication"/>
Max connections ⓘ	<input type="text" value="The optional maximum number of pooled connections for the flow. The"/>
Connection timeout ⓘ	<input type="text" value="The optional time out period in seconds for a pooled connection before the"/>
Use TLS ⓘ	<input type="checkbox"/> Use TLS ⓘ
Client Cert Thumbprint ⓘ	<input type="text" value="The client certificate thumbprint for use with Mutual TLS authentication"/>

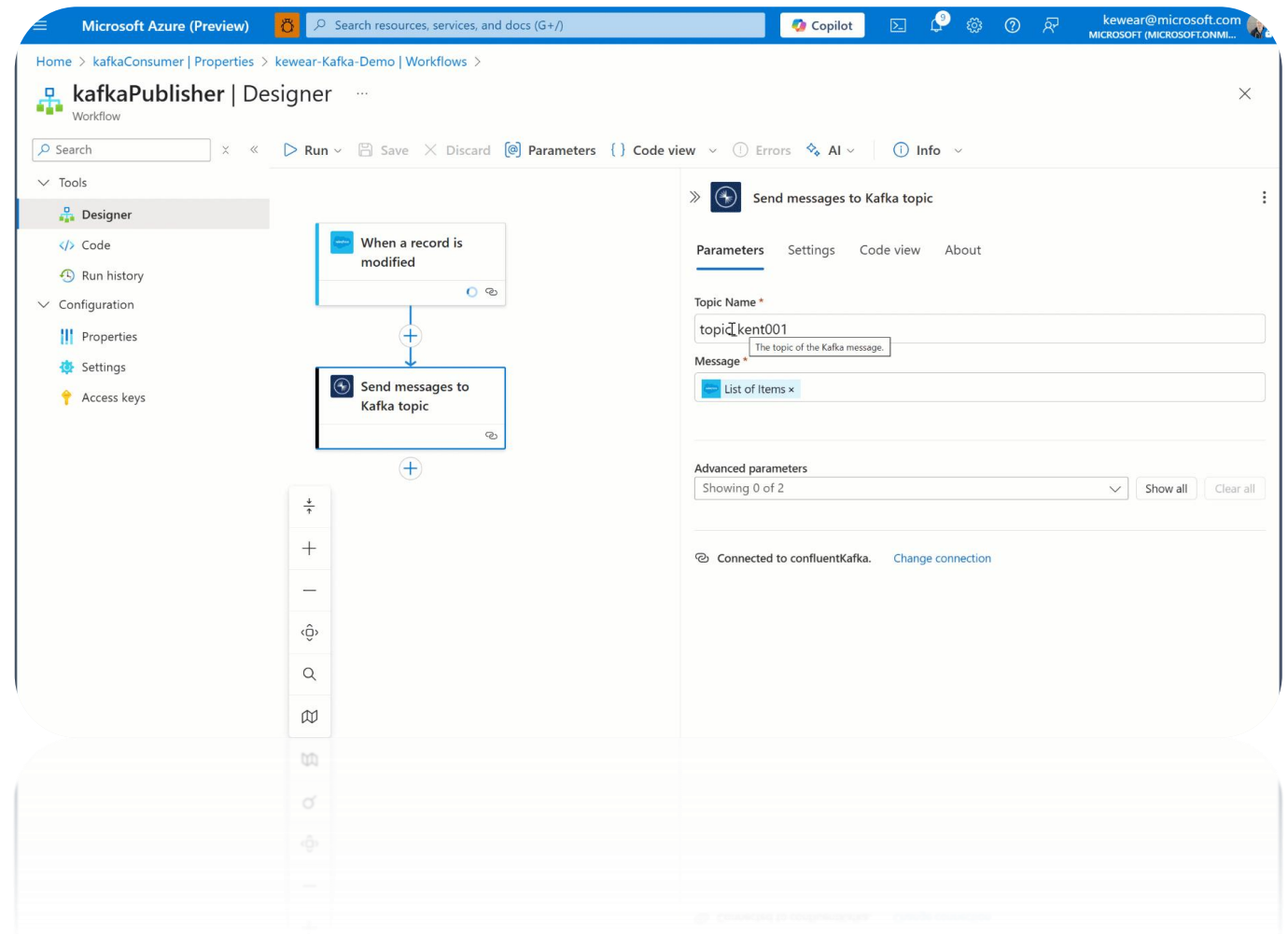
Create

Cancel



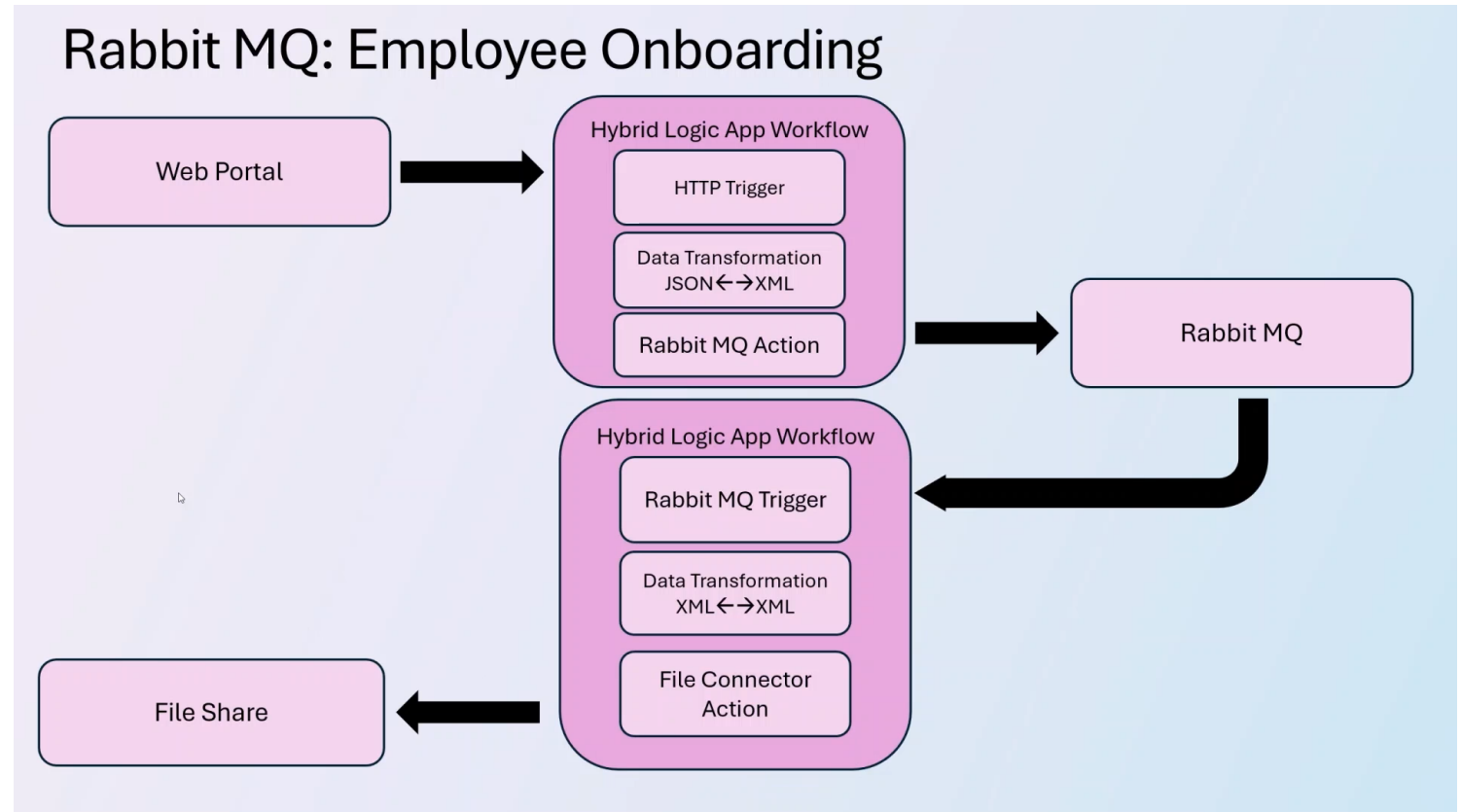
Hybrid connectivity: Confluent Kafka

- Confluent Kafka is a distributed streaming platform for building real-time data pipelines and streaming applications.
- We provide a Built-in Connector for Logic Apps (Standard).
- Logic Apps workflows can receive (Trigger) and send messages (action) stored in Confluent Kafka.
- It can connect to on-prem brokers using Logic Apps (Hybrid) or VNET.



Hybrid connectivity: RabbitMQ

- Built-in Connector for Logic Apps (Standard).
- RabbitMQ is a message broker that enables applications to communicate with each other by sending and receiving messages through queues and topics.
- It supports multiple messaging protocols (like AMQP) and features such as message persistence, delivery acknowledgments, and routing.
- Connect to on-prem brokers using Logic Apps (Hybrid) or VNET.



Hybrid connectivity: JMS

- Built-in Connector for Logic Apps (Standard).
- A JMS (Java Message Service) connector enables applications to send and receive messages using the JMS API, facilitating communication with messaging systems like ActiveMQ.
- The connector supports ActiveMQ OpenWire and AMQP.
- Connect to on-prem brokers using Logic Apps (Hybrid) or VNET.

The image shows two parts of the Logic Apps interface. On the left, a connector card for 'JMS' is shown with the description 'Gets messages in a topic (auto-acknowledgement)'. On the right, the 'Create connection' dialog is open, showing the configuration for a new connection named 'new_conn_02de1'. The dialog includes fields for 'Connection Name', 'Provider Type', 'Server Name', 'Port Number', 'Backup Server', 'Backup Port', 'User Name', 'Password', 'Max Session', and 'Session Time'. Below these fields, there is a 'Send message' connector card. To the right of the connector card, the 'Parameters' tab is selected, showing fields for 'Destination Name', 'Is Topic', 'Content', and 'Content Type'. At the bottom, there is a section for 'Advanced parameters' with a search bar and buttons for 'Show all' and 'Clear all'. The status bar at the bottom indicates 'Connected to new_conn_821c4' with a 'Change connection' link.

Create connection

Gets messages in a topic (auto-acknowledgement)

Create a new connection

Connection Name * new_conn_02de1

Provider Type

Server Name

Port Number

Backup Server

Backup Port

User Name

Password

Max Session

Session Time

Use TLS

Send message

Parameters Settings Code view About

Destination Name * The name of the destination queue or topic

Is Topic * No

Content * The message body content

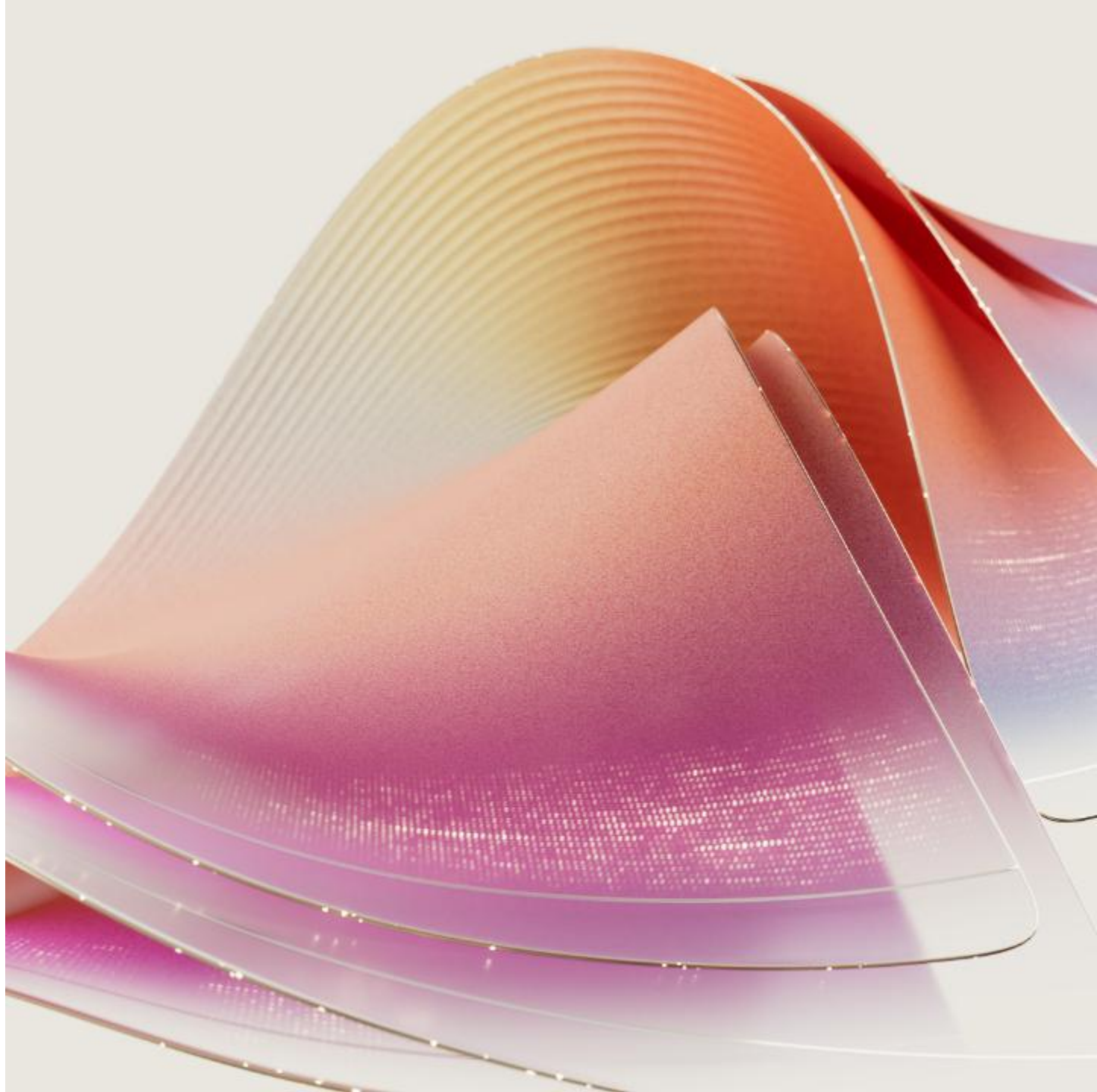
Content Type * Text

Advanced parameters

Search Show all Clear all

Connected to new_conn_821c4 Change connection

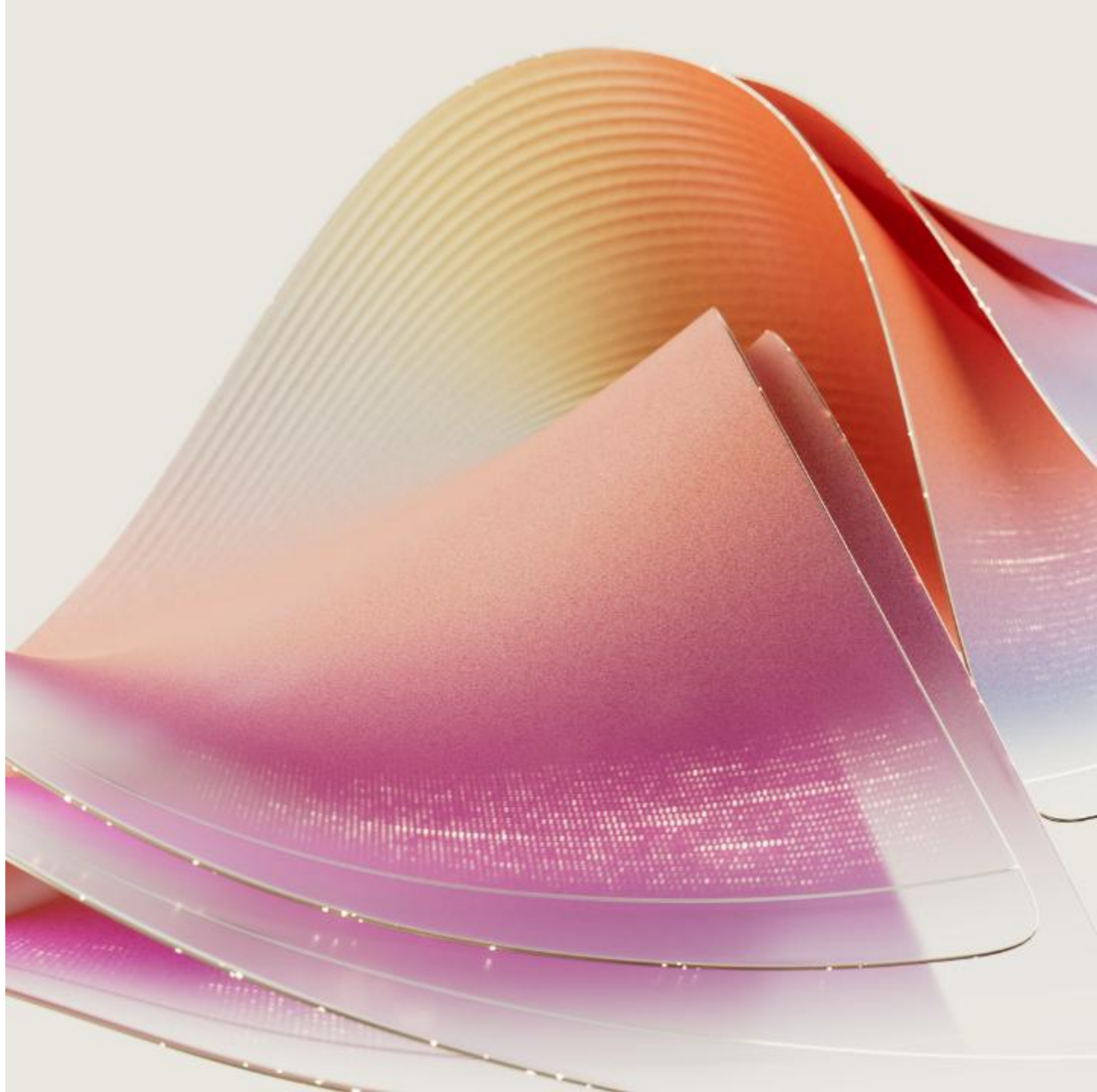
**What does semi-
connected mean?**



The meaning of Semi-connected scenarios

Connectors	Networking	Triggers and Actions	Logs and Traces	Disconnection
<ul style="list-style-type: none">• Built-in connectors work same as Logic Apps Standard: In customers' compute.• Managed connectors require Azure connectivity. They follow the calculator costing model per number of calls.• Custom built-in connector are not available.	<ul style="list-style-type: none">• Configured at the Kubernetes service level.• For other services needs, peered VNETS might be required.	<ul style="list-style-type: none">• Same as Standard.	<ul style="list-style-type: none">• OpenTelemetry for Logs. Traces not available yet.• During disconnection, log data is cached locally and sent to Azure after reconnection.	<ul style="list-style-type: none">• Must be seen as "Emergency mode".• Supports a few days of disconnection.• Logic Apps Runtime continues working.• Control pane operations(CRUD) are not available during disconnection.• Start/stop logic app from local cluster using kubectl.

**What about
Performance?**



Performance

- Logic Apps Hybrid has a different runtime than Logic Apps Standard. This means that while some Logic Apps Standard performance recommendations apply, it has specific configurations that are unique to the hybrid model. Check Divya's blog:
- <https://techcommunity.microsoft.com/blog/integrationsonazureblog/hybrid-deployment-model-for-logic-apps--performance-analysis-and-optimization-re/4401529>

Scale node pool

logicapp



You can scale the number of nodes in your cluster to increase the total amount of cores and memory available for your container applications. [Learn more](#)

Scale method ⓘ

☐ Manual☒ Autoscale - **Recommended**

ⓘ This option is recommended so that the cluster is automatically sized correctly for the current running workloads.

Minimum node count ⓘ *

Maximum node count ⓘ *

The maximum node count allowed for an AKS cluster is 1000 per node pool and 5000 nodes across all node pools in this cluster.

Node pool capacity

Virtual machine size Standard D2s v3 (2 vcpus, 8 GiB memory)

Maximum cores 60 vCPUs

Maximum memory 240 GiB

Logic App (Hybrid)

Scale rule settings

Control automatic scaling by setting the range of application replicas that'll be deployed in response to a trigger event. Use scale rules to determine the type of events that trigger scaling. [Learn more](#)

Min replicas ⓘ

 Min: 0

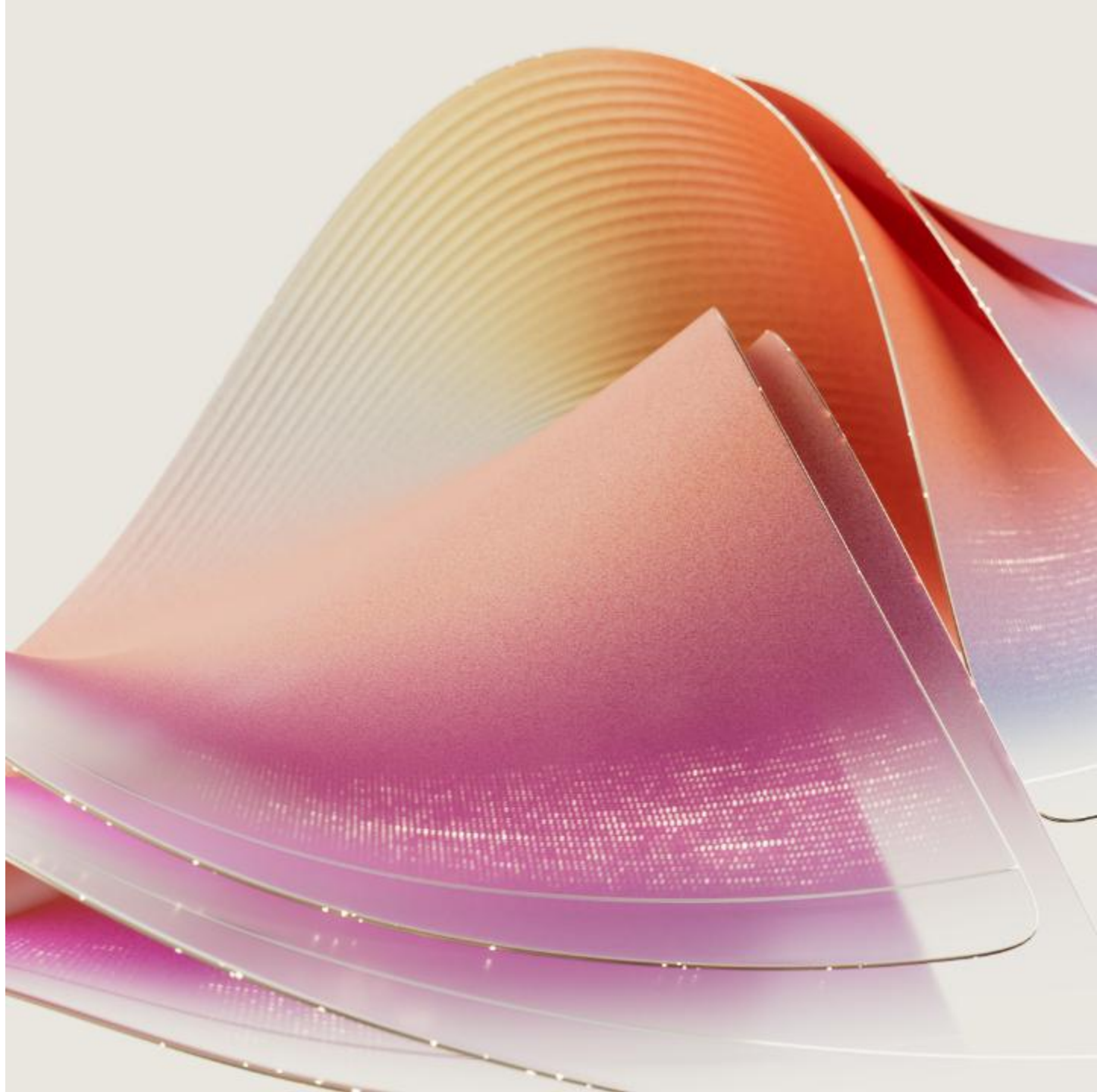
Max replicas ⓘ

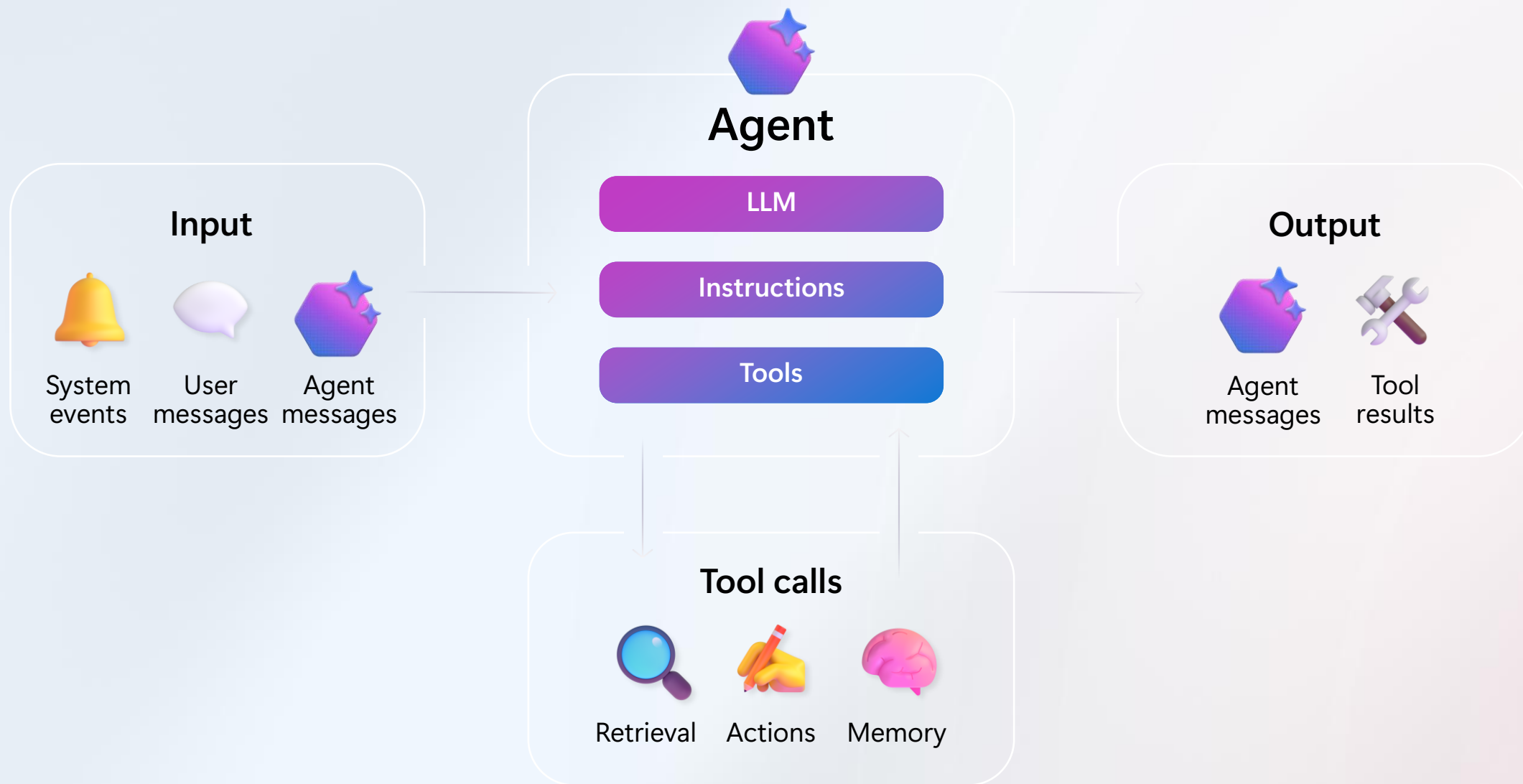
 Max: 1000

Cooldown period ⓘ

Polling interval ⓘ

AI infused in Mission Critical workloads

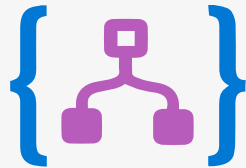




What is an agent loop?

Agents use AI to **automate and execute business processes**, working alongside or on behalf of a person, team, or organization.

Deploy to...



Azure Logic Apps

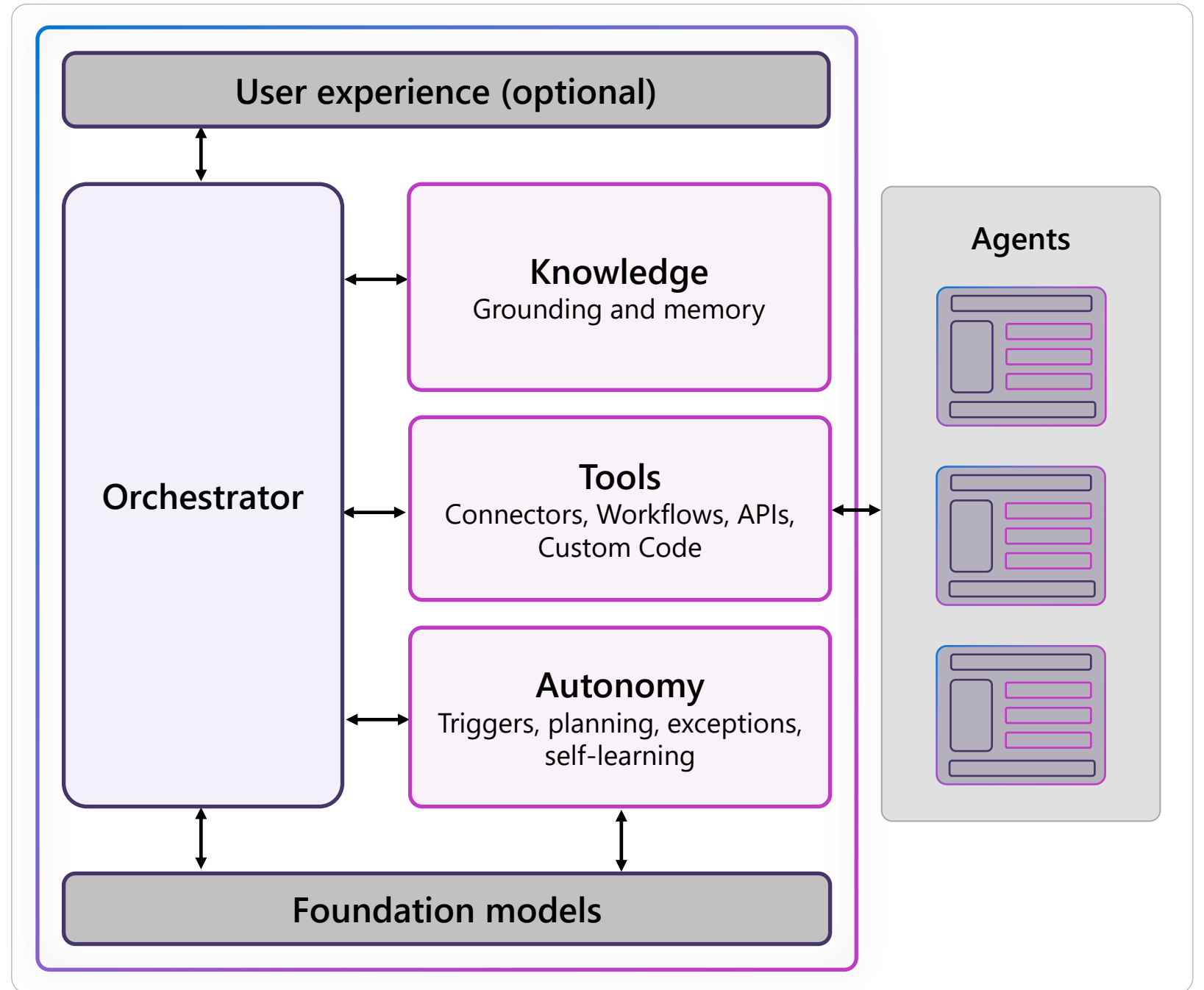


Your applications



Your websites

Key Agent Components

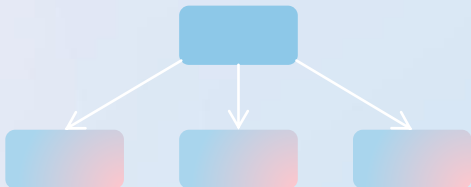


Multi-Agent Orchestration Patterns

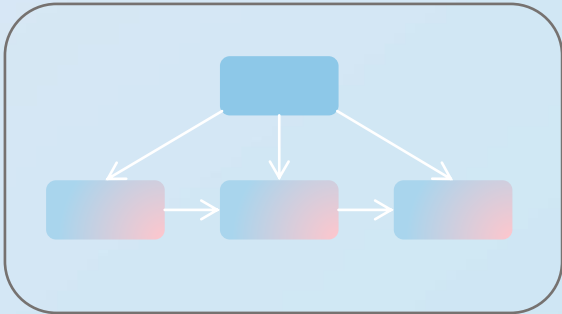
Sequential



Concurrent



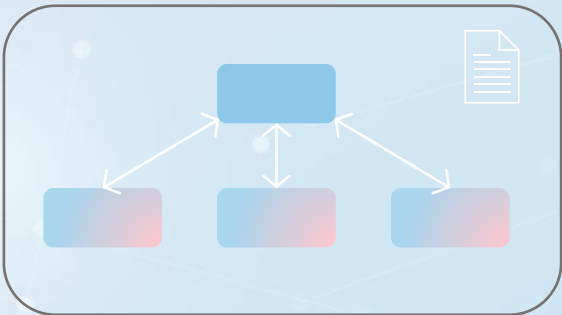
Handoff



Group Chat



Magentic



Workflow Process



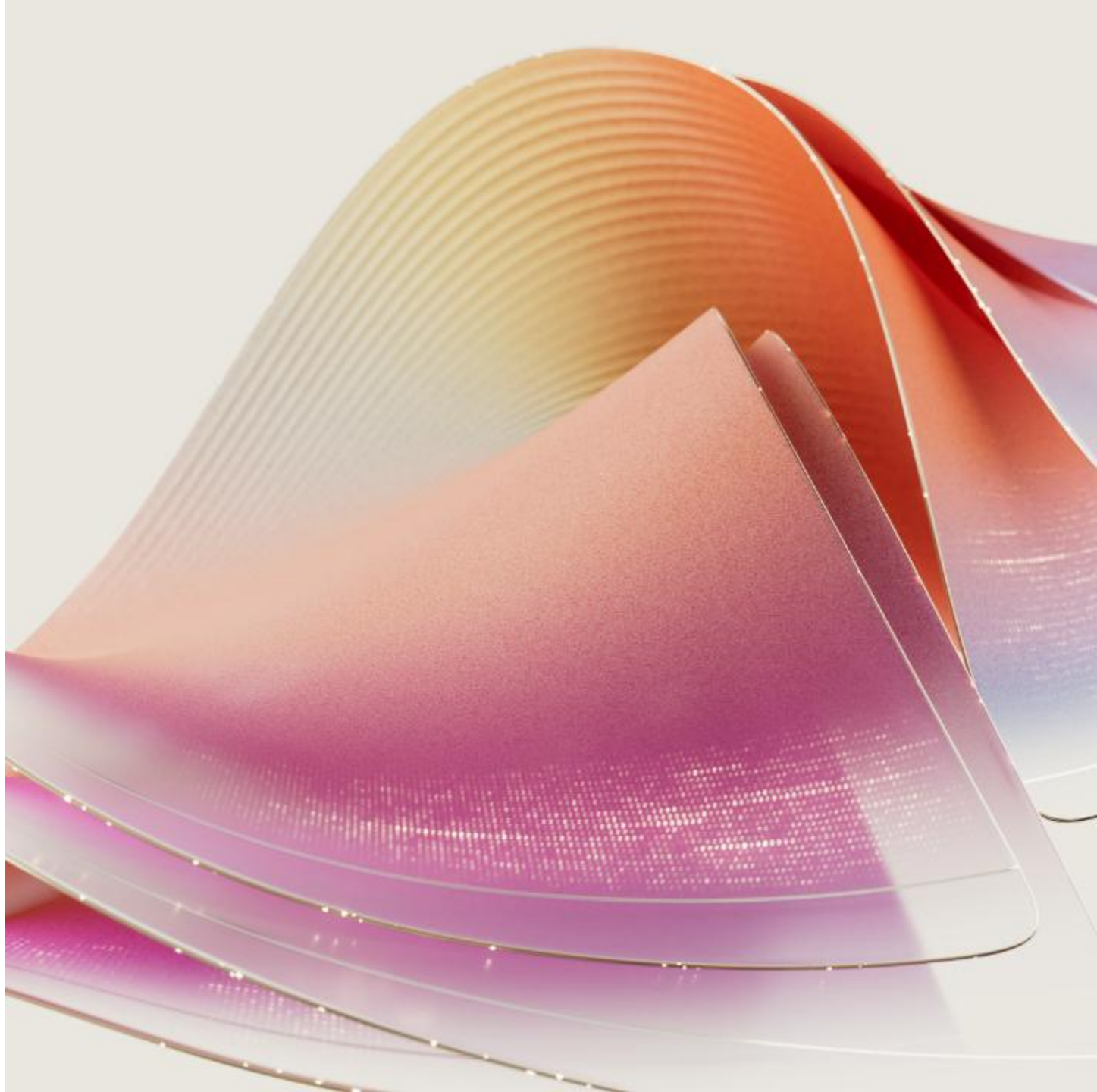
Bringing Cloud-to-Edge AI Deployments

- **Cloud-Based AI Models**
 - Foundry Models deliver advanced generative AI with extensive fine-tuning, serving thousands of customers at scale in the cloud.
- **Edge AI Solutions**
 - Foundry Local enables low-latency, private AI on Windows, macOS, and mobile devices with hardware acceleration support.
- **Hybrid and On-Premises Integration**
 - Azure Arc supports containerized AI models running on customer infrastructure, enabling governance and lifecycle management.
- **Automation and Developer Tools**
 - AI Toolkit in Visual Studio Code and Azure Logic Apps enhance AI model optimization, automation, and integration capabilities.

Demos






**What resources do I
have available?**



How do I get started?

<https://github.com/Azure/logicapps/tree/master/scripts/hybrid>

Name	
	..
	EnvironmentSetup.ps1
	troubleshoot.ps1

- Pre-requisites:
 - Any Arc-enabled Kubernetes cluster. More information here:
https://jumpstart.azure.com/azure_arc_jumpstart/azure_arc_k8s
 - A SQL database to locally store workflow run history, inputs, and outputs for processing
 - A Server Message Block (SMB) file share to locally store artifacts used by your workflows
- Docs, blogs and demos:
 - [Create Standard logic app workflows for hybrid deployment - Azure Logic Apps | Microsoft Learn](#)
 - [Scaling mechanism in hybrid deployment model for Azure Logic Apps Standard | Microsoft Community Hub](#)
 - [Hybrid Logic Apps deployment on Rancher K3s Kubernetes cluster | Microsoft Community Hub](#)
 - [OpenTelemetry in Azure Logic Apps \(Standard and Hybrid\) | Microsoft Community Hub](#)
 - [Hybrid deployment model for Logic Apps- Performance Analysis and Optimization recommendations | Microsoft Community Hub](#)
- Supported regions:
 - Central US, East Asia, East US, North Central US, Southeast Asia, Sweden Central, UK South, West Europe, West US



Thank you!

 @hcamposu

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

 <https://www.youtube.com/@hcamposu>