



# Azure Logic Apps – Deep Dive

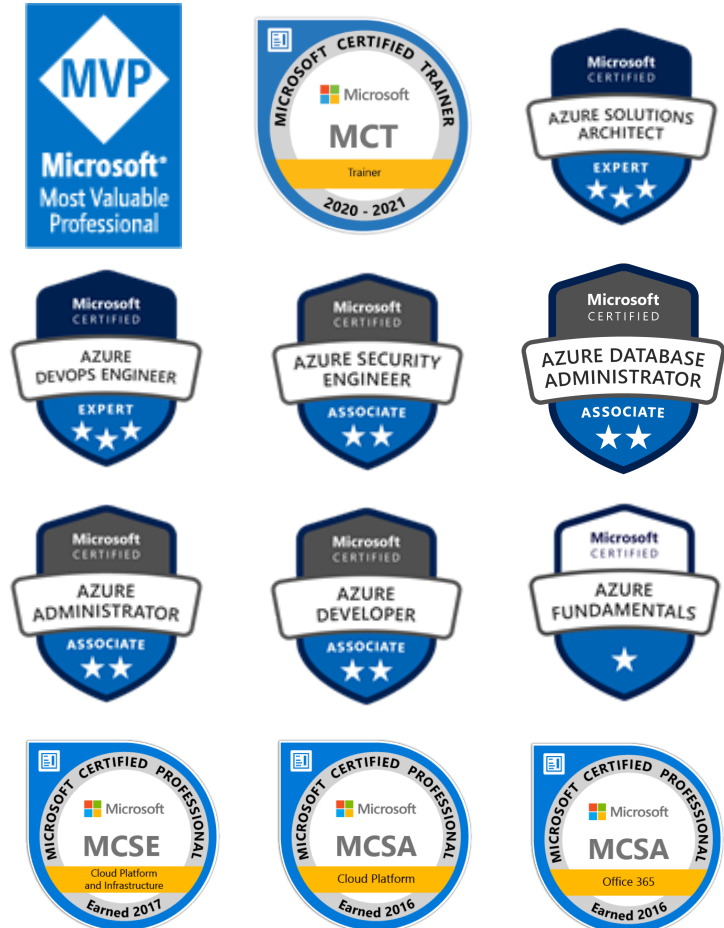
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VAIBHAV GUJRAL  
MICROSOFT MVP - AZURE

# About Me



- Cloud Architect at Kiewit Corp
- Microsoft Most Valuable Professional (MVP) – Azure
- Microsoft Certified Trainer (MCT)
- Microsoft Certified Azure Solutions Architect Expert
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- <http://www.vaibhavgujral.com>
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- #AzureHeroes Community & Content Hero
- Top 50 Microsoft Azure Blogs, Websites & Influencers in 2020



# Agenda

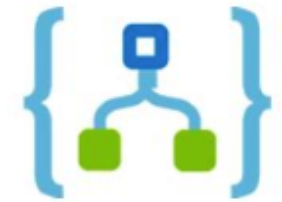
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- What are Azure Logic Apps?
- Different Connector Types
- Different Trigger and Action Types
- Create Logic Apps
  - Through Azure Portal
  - Through Visual Studio 2019
  - Through Visual Studio Code
- Deploy Logic apps through Azure DevOps
- Connect Azure Logic Apps to on-premises systems
- Pricing

# What are Azure Logic Apps?

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# What are Azure Logic Apps?

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Integration platform as a Service (iPaaS)

Schedule, automate, and orchestrate tasks, business processes, and workflows

Design and build scalable solutions for

- App integration
- Data integration
- System integration
- Enterprise application integration (EAI)
- Business-to-Business (B2B) communication

Ready-to-use and custom connectors

# Azure Logic Apps

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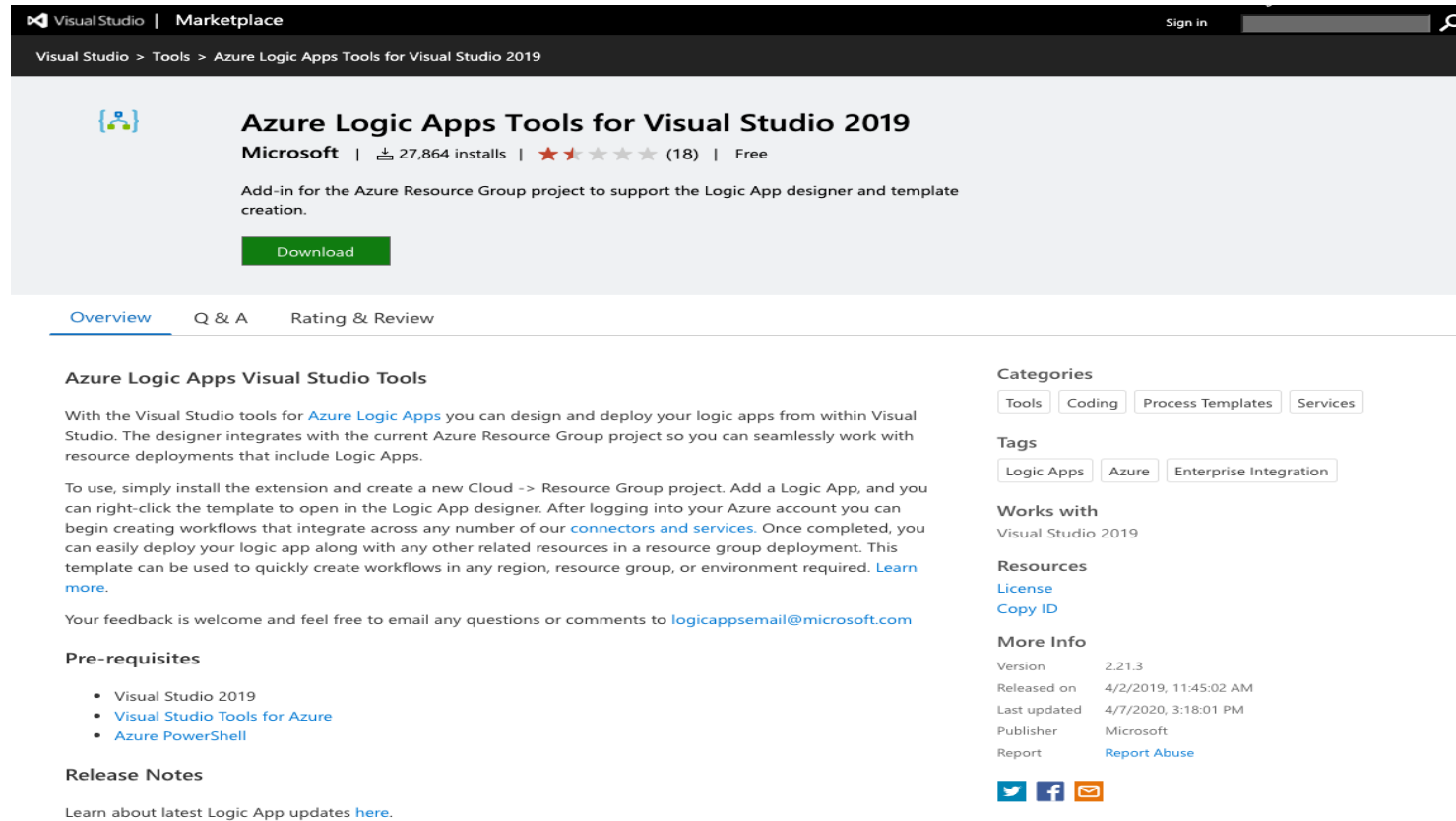
Designer options –

1. UI-based designer
2. Code-based Designer

Deployment options –

1. Through Azure Portal
2. Through Visual Studio
3. Through ARM templates
  - Using Azure CLI / PowerShell
  - Can be checked into version control and can enable CI/CD.

# Creation in Visual Studio 2019



The screenshot shows the Visual Studio Marketplace interface. At the top, the breadcrumb navigation reads 'Visual Studio > Tools > Azure Logic Apps Tools for Visual Studio 2019'. The main header area displays the extension's icon (a blue square with a white 'A' and a green square with a white 'L'), the title 'Azure Logic Apps Tools for Visual Studio 2019', the publisher 'Microsoft', and statistics: '27,864 installs', a star rating of 4.5 (18 reviews), and 'Free'. A description states it is an 'Add-in for the Azure Resource Group project to support the Logic App designer and template creation.' A green 'Download' button is prominent. Below the header, there are tabs for 'Overview' (selected), 'Q & A', and 'Rating & Review'.

**Azure Logic Apps Visual Studio Tools**

With the Visual Studio tools for [Azure Logic Apps](#) you can design and deploy your logic apps from within Visual Studio. The designer integrates with the current Azure Resource Group project so you can seamlessly work with resource deployments that include Logic Apps.

To use, simply install the extension and create a new Cloud -> Resource Group project. Add a Logic App, and you can right-click the template to open in the Logic App designer. After logging into your Azure account you can begin creating workflows that integrate across any number of our [connectors and services](#). Once completed, you can easily deploy your logic app along with any other related resources in a resource group deployment. This template can be used to quickly create workflows in any region, resource group, or environment required. [Learn more.](#)

Your feedback is welcome and feel free to email any questions or comments to [logicappsemail@microsoft.com](mailto:logicappsemail@microsoft.com)

**Pre-requisites**

- Visual Studio 2019
- [Visual Studio Tools for Azure](#)
- [Azure PowerShell](#)

**Release Notes**

Learn about latest Logic App updates [here](#).

**Categories**

Tools Coding Process Templates Services

**Tags**

Logic Apps Azure Enterprise Integration

**Works with**

Visual Studio 2019

**Resources**

[License](#)  
[Copy ID](#)

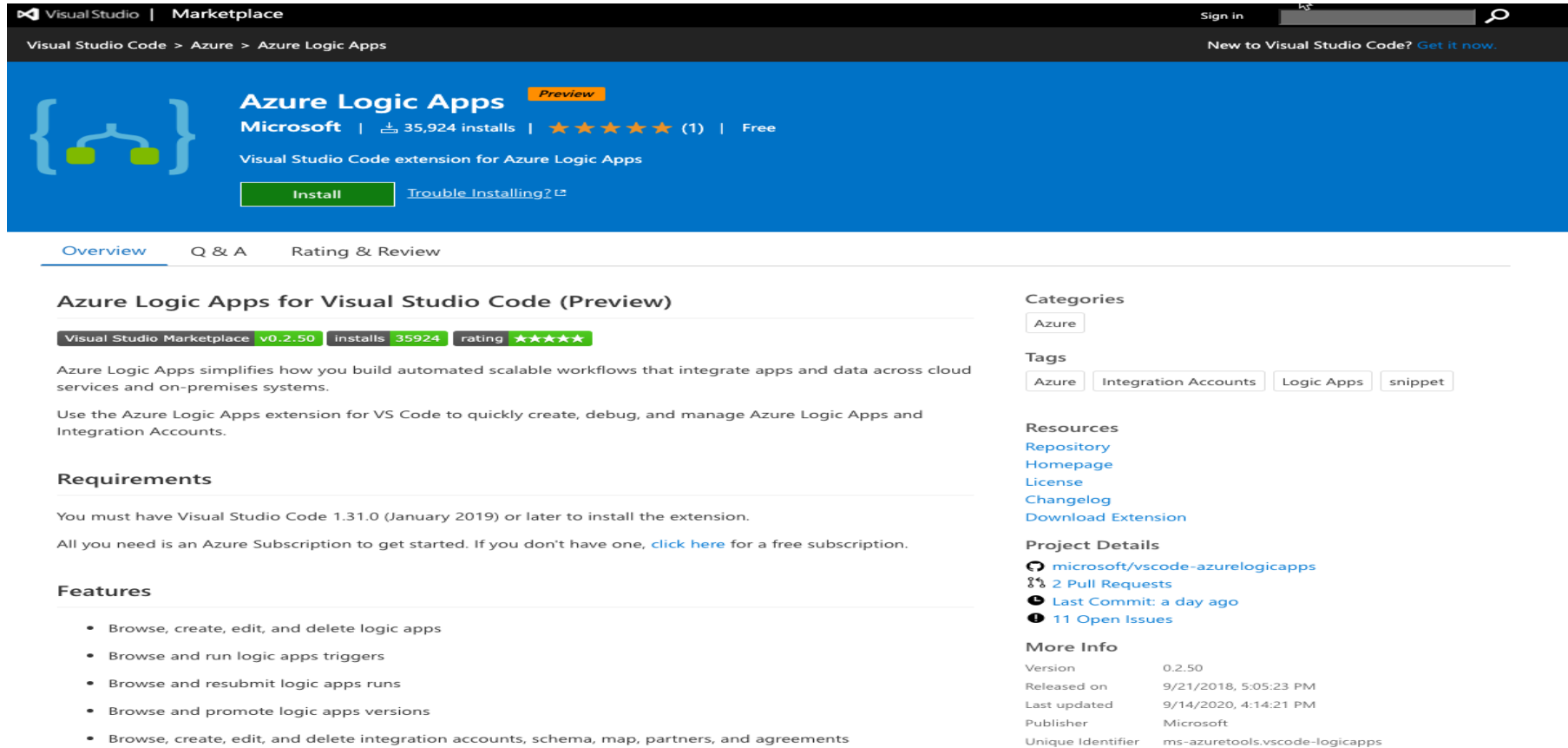
**More Info**

Version	2.21.3
Released on	4/2/2019, 11:45:02 AM
Last updated	4/7/2020, 3:18:01 PM
Publisher	Microsoft
Report	<a href="#">Report Abuse</a>

[Twitter](#) [Facebook](#) [Email](#)

<https://marketplace.visualstudio.com/items?itemName=VinaySinghMSFT.AzureLogicAppsToolsForVS2019>

# Creation in Visual Studio Code



The screenshot shows the Visual Studio Marketplace page for the 'Azure Logic Apps' extension by Microsoft. The page is titled 'Azure Logic Apps' with a 'Preview' badge. It shows 35,924 installs, a 5-star rating (1 review), and is free. The extension is described as a 'Visual Studio Code extension for Azure Logic Apps'. There is an 'Install' button and a 'Trouble Installing?' link. The page is divided into sections: Overview, Q & A, and Rating & Review. The Overview section includes a description of the extension, its requirements (Visual Studio Code 1.31.0 or later, and an Azure Subscription), and a list of features. The right sidebar contains categories, tags, resources, project details, and more info.

**Azure Logic Apps** Preview  
Microsoft | 35,924 installs | ★★★★★ (1) | Free  
Visual Studio Code extension for Azure Logic Apps  
[Install](#) [Trouble Installing?](#)

[Overview](#) [Q & A](#) [Rating & Review](#)

### Azure Logic Apps for Visual Studio Code (Preview)

Visual Studio Marketplace **v0.2.50** | installs **35924** | rating **★★★★★**

Azure Logic Apps simplifies how you build automated scalable workflows that integrate apps and data across cloud services and on-premises systems.

Use the Azure Logic Apps extension for VS Code to quickly create, debug, and manage Azure Logic Apps and Integration Accounts.

#### Requirements

You must have Visual Studio Code 1.31.0 (January 2019) or later to install the extension.

All you need is an Azure Subscription to get started. If you don't have one, [click here](#) for a free subscription.

#### Features

- Browse, create, edit, and delete logic apps
- Browse and run logic apps triggers
- Browse and resubmit logic apps runs
- Browse and promote logic apps versions
- Browse, create, edit, and delete integration accounts, schema, map, partners, and agreements

#### Categories

Azure

#### Tags

Azure Integration Accounts Logic Apps snippet

#### Resources

[Repository](#)  
[Homepage](#)  
[License](#)  
[Changelog](#)  
[Download Extension](#)

#### Project Details

[microsoft/vscode-azurelogicapps](#)  
2 Pull Requests  
Last Commit: a day ago  
11 Open Issues

#### More Info

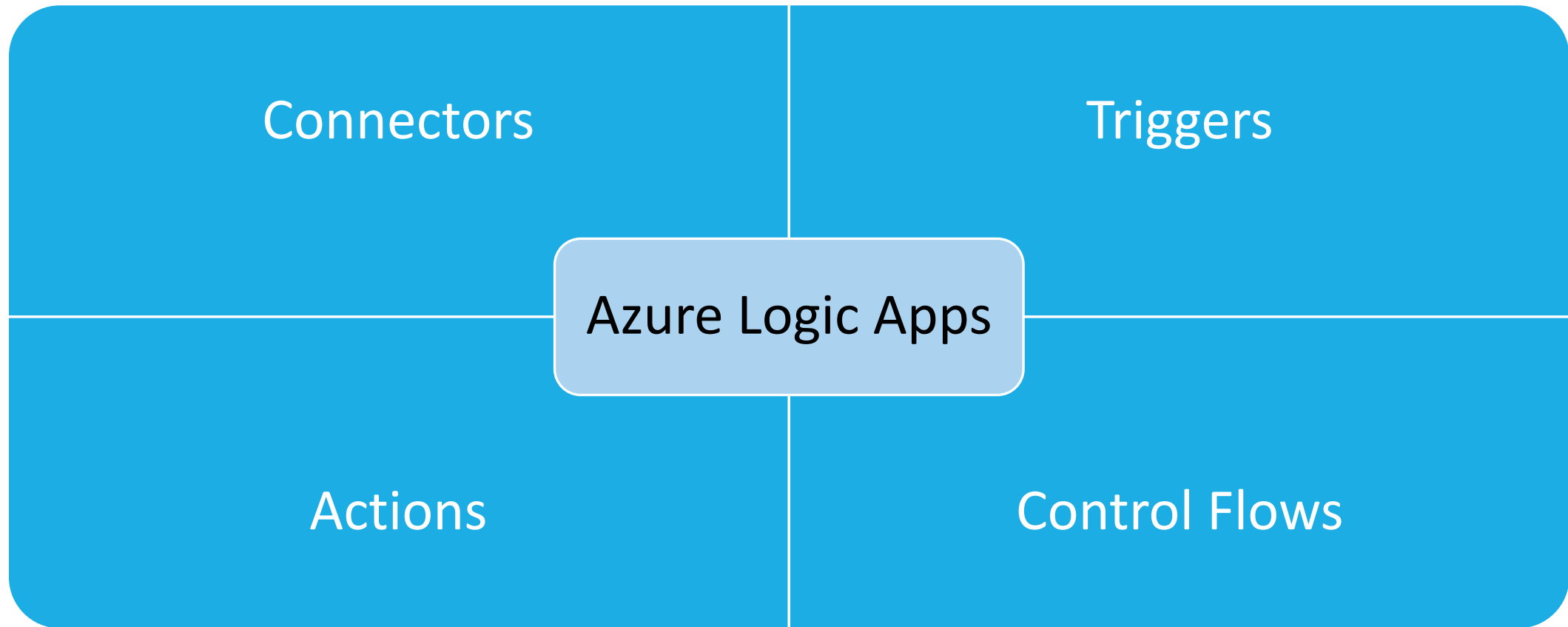
Version	0.2.50
Released on	9/21/2018, 5:05:23 PM
Last updated	9/14/2020, 4:14:21 PM
Publisher	Microsoft
Unique Identifier	ms-azuretools.vscode-logicapps

<https://marketplace.visualstudio.com/items?itemName=ms-azuretools.vscode-logicapps>



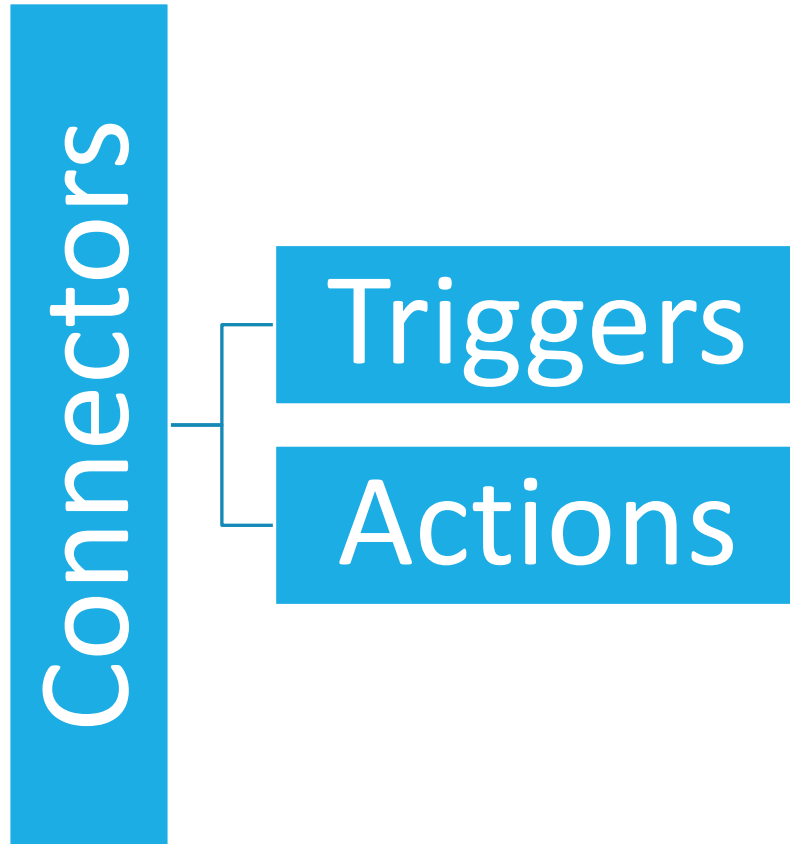
# Azure Logic Apps

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# Connectors

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Each connector offers:

- Triggers
- Actions

Triggers and Actions form an Activity

Use Control flows to define your workflows built on triggers and actions


Azure Logic Apps offers 200+ connectors

You can create your own custom connectors

# UI Designer in Azure Portal

[Home](#) > [Microsoft.EmptyWorkflow](#) > [test](#) >

## Logic Apps Designer



Introducing Azure Logic Apps

Watch later Share

{ } Azure Logic Apps

Database, Folder, Graph, Cloud icons









Building integration solutions is easier than ever

Logic Apps brings speed and scalability into the enterprise integration space. The ease of use of the designer, variety of available triggers and actions, and powerful management tools make centralizing your APIs simpler than ever. As businesses move towards digitalization, Logic Apps allows you to connect legacy and cutting-edge systems together.

- Create business processes and workflows visually
- Integrate with SaaS and enterprise applications
- Unlock value from on-premises and cloud applications

### Start with a common trigger

Pick from one of the most commonly used triggers, then orchestrate any number of actions using the rich collection of connectors

	When a message is received in a Service Bus queue		When a HTTP request is received		When a new tweet is posted		When an Event Grid resource event occurs
	Recurrence		When a new email is received in Outlook.com		When a new file is created on OneDrive		When a file is added to FTP server

# UI Designer in Azure Portal













Home > Microsoft.EmptyWorkflow > test >

## Logic Apps Designer

Templates

Choose a template below to create your Logic App.

Category: All Sort by: Popularity

 <b>Blank Logic App</b>	 <b>Azure Monitor - Metrics Alert Handler</b>	 <b>Cancel runs by tracking id</b>	 <b>Delete old Azure blobs</b>
 <b>HTTP Request-Response</b>	 <b>Peek-lock receive a Service Bus message and complete it</b>	 <b>Correlated In-order delivery using service bus sessions</b>	 <b>Receive an X12 EDI document over AS2 and transform it to XML</b>
 <b>Send an email when an item in a Sharepoint list is</b>	 <b>Receive an AS2 payload and reply with an</b>	 <b>Peek-lock receive a Service Bus message with</b>	 <b>Get daily reminders emailed to you</b>

# Code Designer in Azure Portal

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```
"definition": {  
  "$schema": "<workflow-definition-language-schema-version>",  
  "actions": { "<workflow-action-definitions>" },  
  "contentVersion": "<workflow-definition-version-number>",  
  "outputs": { "<workflow-output-definitions>" },  
  "parameters": { "<workflow-parameter-definitions>" },  
  "staticResults": { "<static-results-definitions>" },  
  "triggers": { "<workflow-trigger-definitions>" }  
}
```

# Triggers and Actions



A *trigger* is the first step in any logic app, usually specifying the event that fires the trigger and starts running your logic app.

Actions are the steps that follow the trigger and perform tasks in your logic app's workflow.

After a trigger fires, Azure Logic Apps creates an instance of your logic app and starts running the *actions* in your logic app's workflow.

3 kinds of triggers –

1. Recurrence Trigger
2. Polling Trigger
3. WebHook Trigger

Every time a Logic App definition runs the triggers, action and connector executions are metered.

# Built-in Connectors



**Schedule**



**HTTP**



**Request**



**Batch**



**Azure  
Functions**



**Azure API  
Management**



**Azure App  
Services**



**Azure  
Logic Apps**

# Control Workflow



Condition



For each



Terminate



Scope



Switch



Until



# Data Manipulation

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**Data  
Operations**



**Date Time**



**Variables**

# Standard Connectors



**Azure  
Service  
Bus**



**SQL Server**



**SFTP**



**SharePoint  
Online**



**Salesforce**



**Twitter**



**Office 365  
Outlook**



**Azure  
Blob  
Storage**



**Dynamics  
365  
CRM  
Online**



**FTP**



**Azure  
Event  
Hubs**



**Azure  
Event  
Grid**

# Enterprise Connectors

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**IBM 3270**



**IBM MQ**



**SAP**

# Demo

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# Azure Logic Apps - IAM

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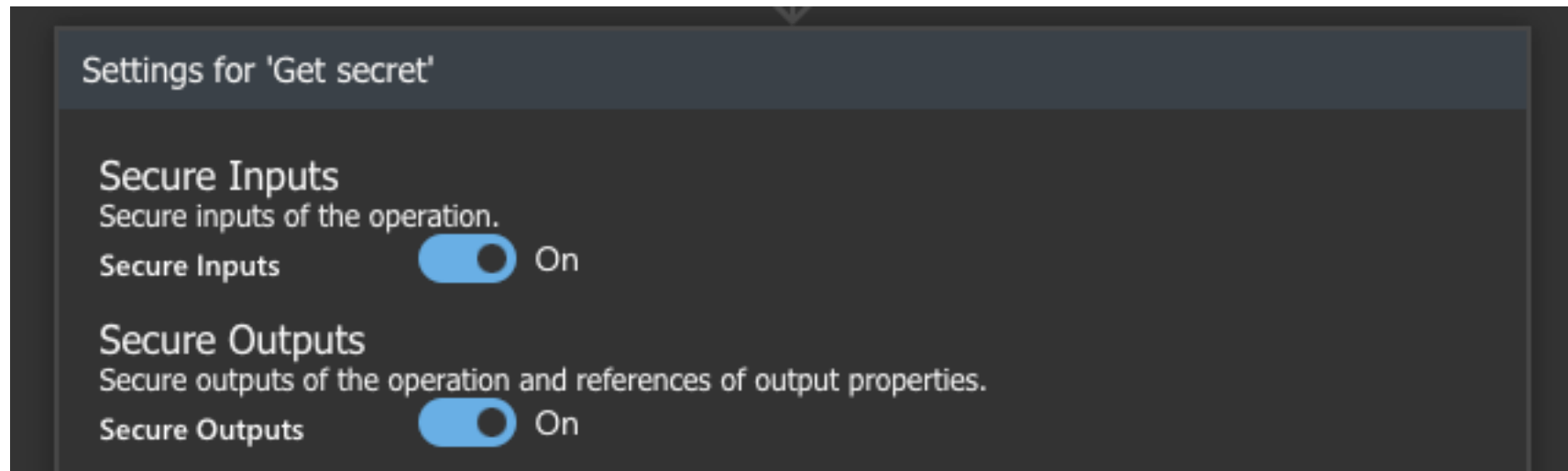
Two built-in roles-

1. **Logic App Contributor** – can manage logic apps, but, can't give access to others
2. **Logic App Owner** – can read, enable and disable logic apps, but, can't modify

Use ***Azure resource locks*** for accidental modification or deletion of Azure logic apps

# Securing Run History Data by obfuscation

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# Restricting access from specific IP ranges

## Access control configuration

### Allowed inbound IP addresses

Restrict calls to triggers in this logic app to the provided IP ranges. IP addresses can be either IPv4 or IPv6 and accepts range and bitmask range formats.

Trigger access option

Specific IP ranges

### IP ranges for triggers

input the valid IP ranges, format like x.x.x.x/x or x.x.x.x-x.x.x.x

10.0.0.1/16

Restrict calls to get input and output messages from run history to the provided IP ranges. IP addresses can be either IPv4 or IPv6 and accepts range and bitmask range formats.

### IP ranges for contents

input the valid IP ranges, format like x.x.x.x/x or x.x.x.x-x.x.x.x

10.1.0.0/16

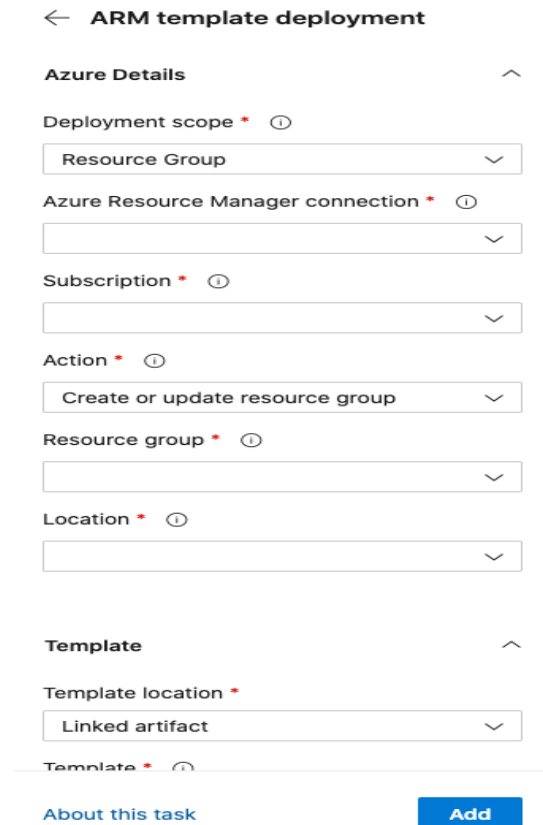
# Continuous Delivery

Logic Apps essentially uses ARM templates (JSON)

Can be version controlled in a repo and can be deployed through pipelines

Azure logic apps deployment samples at -

<https://github.com/Azure-Samples/azure-logic-apps-deployment-samples>



The screenshot shows the 'ARM template deployment' configuration page. It is divided into two main sections: 'Azure Details' and 'Template'. The 'Azure Details' section includes fields for 'Deployment scope' (set to 'Resource Group'), 'Azure Resource Manager connection', 'Subscription', 'Action' (set to 'Create or update resource group'), 'Resource group', and 'Location'. The 'Template' section includes a 'Template location' field set to 'Linked artifact'. At the bottom, there is a link 'About this task' and a blue 'Add' button.

← ARM template deployment

**Azure Details**

Deployment scope \* ⓘ  
Resource Group

Azure Resource Manager connection \* ⓘ

Subscription \* ⓘ

Action \* ⓘ  
Create or update resource group

Resource group \* ⓘ

Location \* ⓘ

**Template**

Template location \*  
Linked artifact

Template \* ⓘ

About this task **Add**



# Demo

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# On-premises Connectors



**BizTalk  
Server**



**File  
System**



**IBM DB2**



**IBM  
Informix**



**MySQL**



**Oracle DB**



**PostgreSQL**



**SharePoint  
Server**



**SQL  
Server**



**Teradata**

<https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-gateway-install>

# Integration Account Connectors



**AS2  
decoding**



**AS2  
encoding**



**EDIFACT  
decoding**



**EDIFACT  
encoding**



**Flat file  
decoding**



**Flat file  
encoding**



**Integration  
account**



**Liquid  
transforms**



**X12  
decoding**



**X12  
encoding**



**XML  
transforms**

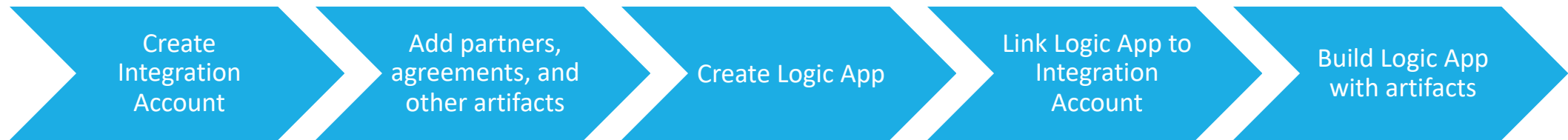


**XML  
validation**

<https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-enterprise-integration-create-integration-account>

# Enterprise Integration Pack / B2B

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# Integration Service Environment (ISE)

Provides access to Azure Virtual Network resources from Azure Logic Apps

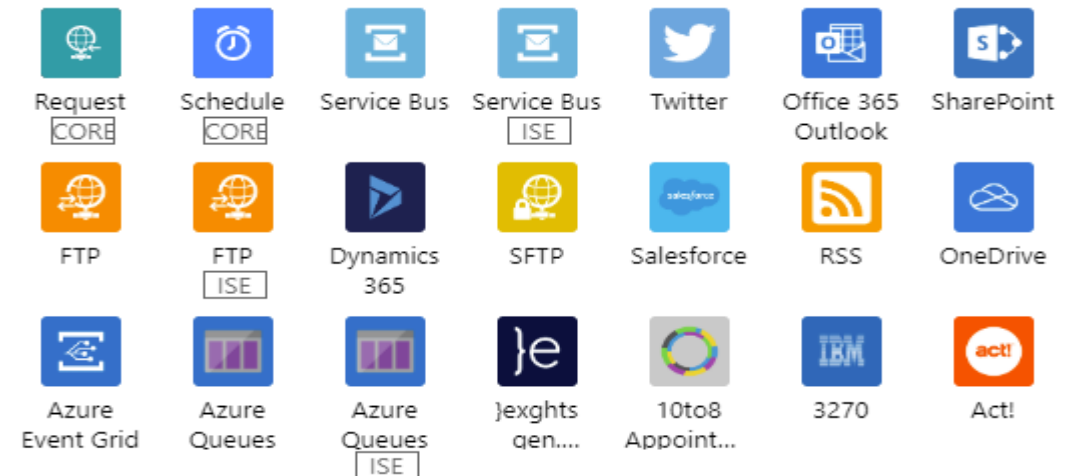
Comes with dedicated resources

Runs separately from the "global" multi-tenant Logic Apps service

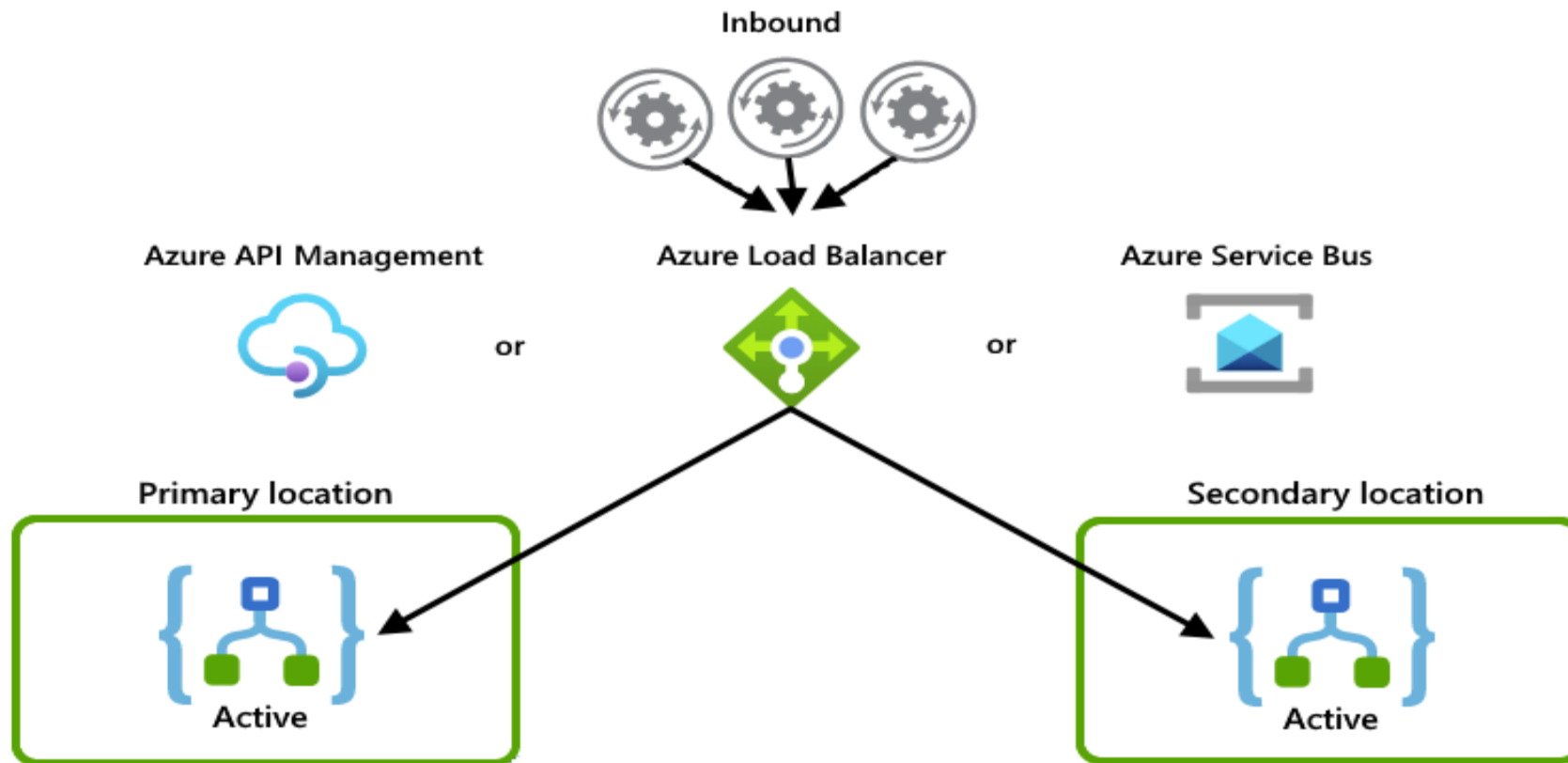
Deployed into your Azure virtual network

Static IP Addresses for Logic apps

Increased limits compared to multi-tenant logic apps

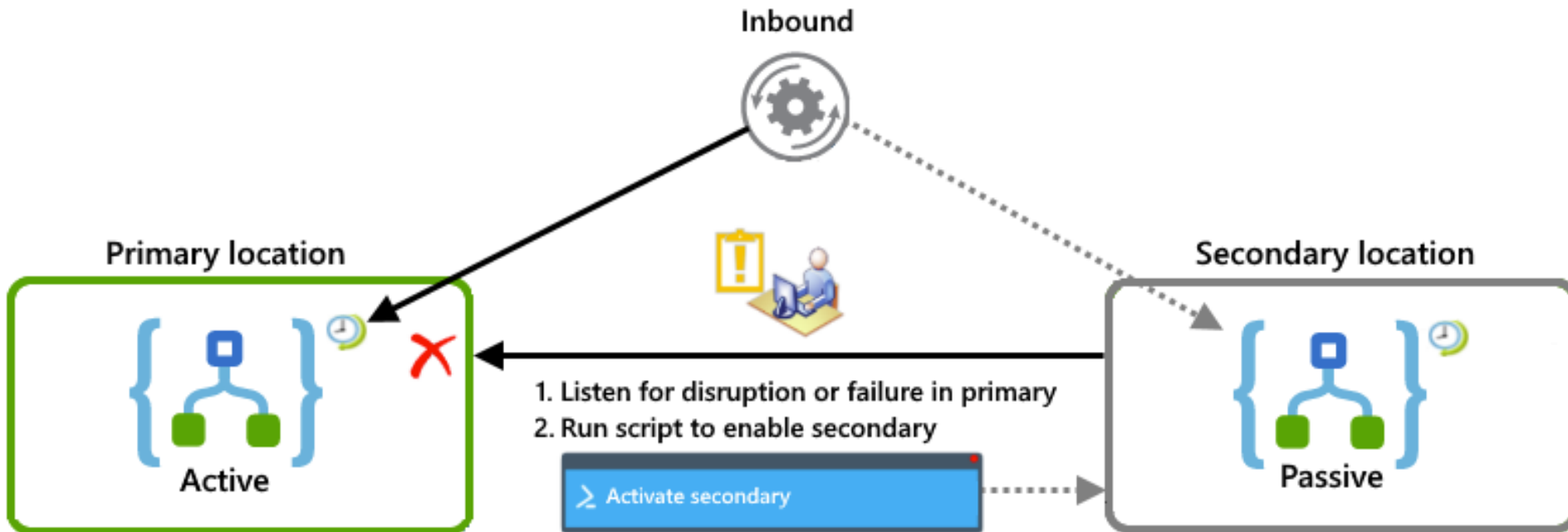


# Business Continuity / Disaster Recovery



<https://docs.microsoft.com/en-us/azure/logic-apps/business-continuity-disaster-recovery-guidance>

# Business Continuity / Disaster Recovery



<https://docs.microsoft.com/en-us/azure/logic-apps/business-continuity-disaster-recovery-guidance>

# Monitoring Azure Logic Apps

Home > New > Logic App >

## Logic App

\* Basics   Tags   Review + create

### Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription \*

Resource group \*

[Create new](#)

### Instance details

Logic App name \*

Select the location ☒ Region ☐ Integration Service Environment

Location \*

Log Analytics ⓘ ☒ On ☐ Off

Log Analytics workspace \*





No Log Analytics workspace found



# Monitoring Azure Logic Apps

[Home](#) > [la-miaug-demo-3](#) >

## Diagnostics setting

 Save  Discard  Delete  Provide feedback

A diagnostic setting specifies a list of categories of platform logs and/or metrics that you want to collect from a resource, and one or more destinations that you would stream them to. Normal usage charges for the destination will occur. [Learn more about the different log categories and contents of those logs](#)

Diagnostic setting name \*

Category details	Destination details
<p><b>log</b></p> <hr/> <p><input type="checkbox"/> WorkflowRuntime</p> <hr/>	<p><input type="checkbox"/> Send to Log Analytics</p> <hr/>
<p><b>metric</b></p> <hr/>	<p><input type="checkbox"/> Archive to a storage account</p> <hr/>
<p><input type="checkbox"/> AllMetrics</p> <hr/>	<p><input type="checkbox"/> Stream to an event hub</p> <hr/>

# Azure Logic Apps Pricing

For azure logic apps, all the triggers, actions and connector executions are metered.

	PRICE PER EXECUTION
Actions	\$0.000025
Standard Connector	\$0.000125
Enterprise Connector	\$0.001

Data retention: \$0.12 GB/month

ISEs and Integration accounts are billed differently

<https://azure.microsoft.com/en-us/pricing/details/logic-apps/>

# Azure Logic Apps Pricing

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ISEs are billed differently

	PRICE PER EXECUTION
Actions	\$0.000025
Standard Connector	\$0.000125
Enterprise Connector	\$0.001

Data retention: \$0.12 GB/month

# Azure Logic Apps Updates (in Preview)

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Logic Apps will now run on a new containerized runtime, the same runtime powering Azure Functions, providing hosting flexibility to:

- Run on Functions, App Service, Kubernetes, Docker and any cloud.
- Deploy multiple workflows to a single Logic App simplifying automated deployments and CI/CD pipelines.
- Enable enterprise features such as private endpoints, simpler and more cost effective VNET access, deployment slots and more.

New Visual Studio code extension that allows local development.

Integration with Github Actions for better developer tool consistency.

Stateless workflows that can significantly enhance performance for request/ response scenarios.

Modern and compact design making it easier to author larger, more complex workflows and view more steps at once without scrolling.

<https://azure.microsoft.com/en-us/updates/logic-apps-updated-with-new-hosting-options-improved-performance-and-developer-workflows/>

# Benefits

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Visually build workflows with easy-to-use tools

First-class support for enterprise integration and B2B scenarios

Write once, reuse often

Built-in extensibility

Pay only for what you use

# Azure Logic Apps vs. Power Automate

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## Azure Logic Apps –

- Targeted for IT Pros / Developers
- Advanced workflows / integration
  - SAP Connector
  - Integration Accounts
  - B2B connectors
  - Liquid Connectors
- Designers:
  - Azure portal-based
  - Visual Studio designer
- Part of Azure ecosystem
- Continuous Integration/Delivery

## Power Automate (prev. Microsoft Flow) –

- Targeted for power users / citizen developers
- Simple workflows / integration
- Designers:
  - Web-based designer
- Part of Power Platform

<https://docs.microsoft.com/en-us/azure/azure-functions/functions-compare-logic-apps-ms-flow-webjobs>

# Q&A

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thank  
you