

Hack Together from 16 August

JavaScript on Azure

aka.ms/JavaScriptonAzure





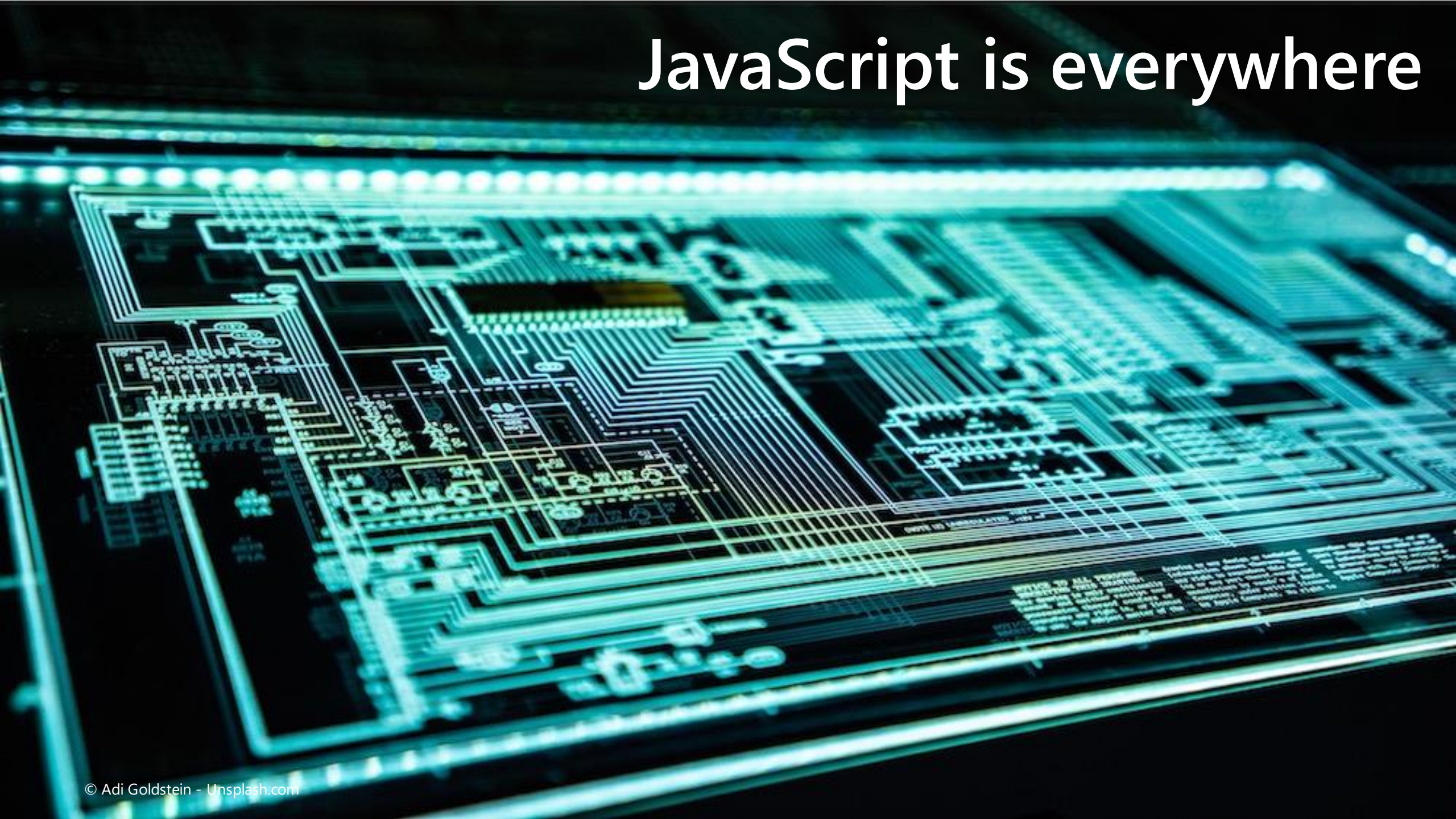
The JavaScript Ecosystem
is like the Universe...



**It hosts
16M
developers**

From 1.9 billion websites, 98% use JavaScript

JavaScript is everywhere



JavaScript Developer Hub @Microsoft



```
{  
  "name": "John",  
  "age": 30,  
  "address": "New York",  
  "phone": "123-456-7890",  
  "email": "john.doe@example.com",  
  "gender": "male",  
  "hobbies": ["reading", "golfing", "traveling"],  
  "pets": [{"name": "Fido", "species": "dog"}, {"name": "Whiskers", "species": "cat"}],  
  "favorite": "pizza",  
}
```

<https://developer.microsoft.com/javascript/>



Your hosts today



Natalia Venditto

*Principal Lead e2e
JavaScript DX on Azure*

@anfibiacreativa



Nitya Narasimhan

*Senior Cloud Advocate
JavaScript on Azure*

@nitya

Code to Azure: Want to get a head start?

Quickstart

Validate setup with GitHub Codespaces



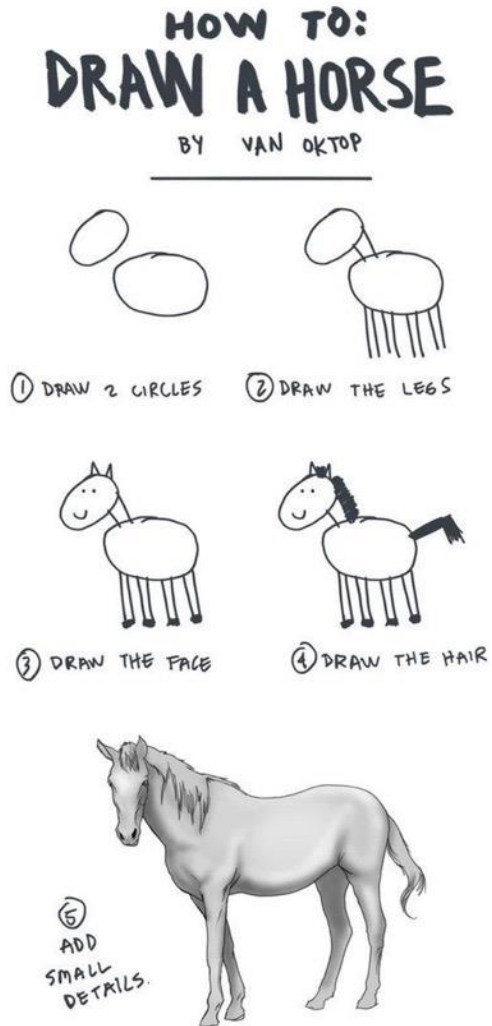
1. **Visit** - <https://aka.ms/contoso-real-estate/github>
2. **Fork the repo** (and give us a star!)
3. **Launch Codespaces on `main`** branch

*Setup takes around 10 minutes to complete –
and will help ensure your development environment is ready for the hackathon.
We will have **a checkpoint later** for questions.*

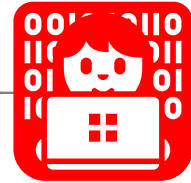
  **Need help or have questions?**

<https://aka.ms/contoso-real-estate/discussions>



Learning to Build Complex Apps is Hard!



QuickStart – validate dev environment

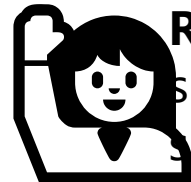


How-To – learn to use core features or tools

The Missing Trail –
how do I go from
building blocks 
to building apps 



Real-World App – build a secure, scalable, multi-scenario, multi-team solution that is reliable, performant!



We need a
paved path
that explains “the small details”.

Hello, Contoso Real Estate Sample!



@nitya 2023

Let's define a

paved path

for JavaScript developers to build an end-to-end composable architecture on Azure!

And let's use

best-in-class

Azure services and Developer Tools to enhance end-to-end developer experience (DX)

- ❑ **Define** – Prioritized Scenarios
- ❑ **Develop** – Composable Architecture
- ❑ **Deploy** – Cloud-native, Serverless, Azure
- ❑ **Deliver** – Architecture, Docs, Dev Experience























Contoso In A Nutshell

<https://www.youtube.com/watch?v=GxeENsvwZrI>



Azure Storage Decisions

Storage

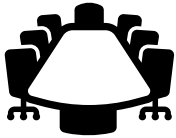
 Archive Storage Industry leading price point for storing rarely accessed data	 Avere vFXT for Azure Run high-performance, file-based workloads in the cloud	 Azure Backup Simplify data protection and protect against ransomware	 Azure confidential ledger Tamperproof, unstructured data store hosted in trusted execution environments (TEEs) and backed by cryptographically verifiable...
 Azure Container Storage Manage persistent volumes for stateful container applications	 Azure Data Lake Storage Massively scalable, secure data lake functionality built on Azure Blob Storage	 Azure Data Share A simple and safe service for sharing big data with external organizations	 Azure Elastic SAN (Preview) Elastic SAN is a cloud-native Storage Area Network (SAN) service built on Azure. Gain access to an end-to-end experience like your o...
 Azure Files Simple, secure and serverless enterprise-grade cloud file shares	 Azure FXT Edge Filer Hybrid storage optimization solution for HPC environments	 Azure HPC Cache File caching for high-performance computing (HPC)	 Azure Managed Lustre A fully managed, cloud based parallel file system that enables customers to run their high performance computing (HPC)...
 Azure NetApp Files Enterprise-grade Azure file shares, powered by NetApp	 Blob Storage REST-based object storage for unstructured data	 Data Box Appliances and solutions for data transfer to Azure	 Disk Storage High-performance, highly durable block storage for Azure Virtual Machines
 Queue Storage Effectively scale apps according to traffic	 Storage Durable, highly available, and massively scalable cloud storage	 Storage Explorer View and interact with Azure Storage resources	 StorSimple Lower costs with an enterprise hybrid cloud storage solution

What about our data and storage needs?

- Unstructured blob storage – static files
- Structured data storage – dynamic activity
- Secrets storage – keys and credentials
- Content Management System – blog
- Application Insights – log analytics

Why Serverless (On Azure)?

Serverless means using cloud-provider *managed services* while you focus on application logic. Get *auto-scaling* (up or down to zero) and *cost-effective pricing* (pay as you go, for what you use)



Use case:

We are developing and deploying an application that introduces new features and capabilities to an existing platform, the Contoso platform.



No infrastructure management

Using fully managed services enables developers to avoid administrative tasks and focus on core business logic. With a serverless platform, you simply deploy your code, and it runs with high availability.



Dynamic scalability

With serverless computing, the infrastructure dynamically scales up and down within seconds to match the demands of any workload.



Faster time to market

Serverless applications reduce the operations dependencies on each development cycle, increasing development teams' agility to deliver more functionality in less time.

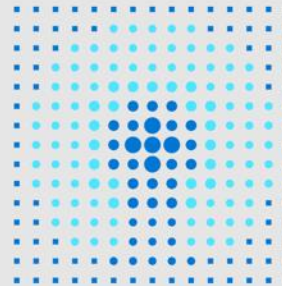


More efficient use of resources

Shifting to serverless technologies helps organizations reduce TCO and reallocate resources to accelerate the pace of innovation.

Serverless application patterns

Developers build serverless applications using a variety of application patterns—many of which align with approaches that are already familiar—to meet specific requirements and business needs.



Serverless functions

Serverless functions accelerate development by using an event-driven model, with triggers that automatically execute code to respond to events and bindings to seamlessly integrate additional services. A pay-per-execution model with sub-second billing charges only for the time and resources it takes to execute the code.

Serverless Kubernetes

Developers bring their own containers to fully managed, Kubernetes-orchestrated clusters that can automatically scale up and down with sudden changes in traffic on spiky workloads.

Serverless workflows

Serverless workflows take a low-code/no-code approach to simplify orchestration of combined tasks. Developers can integrate different services (either cloud or on-premises) without coding those interactions, having to maintain glue code, or learning new APIs or specifications.

Serverless application environments

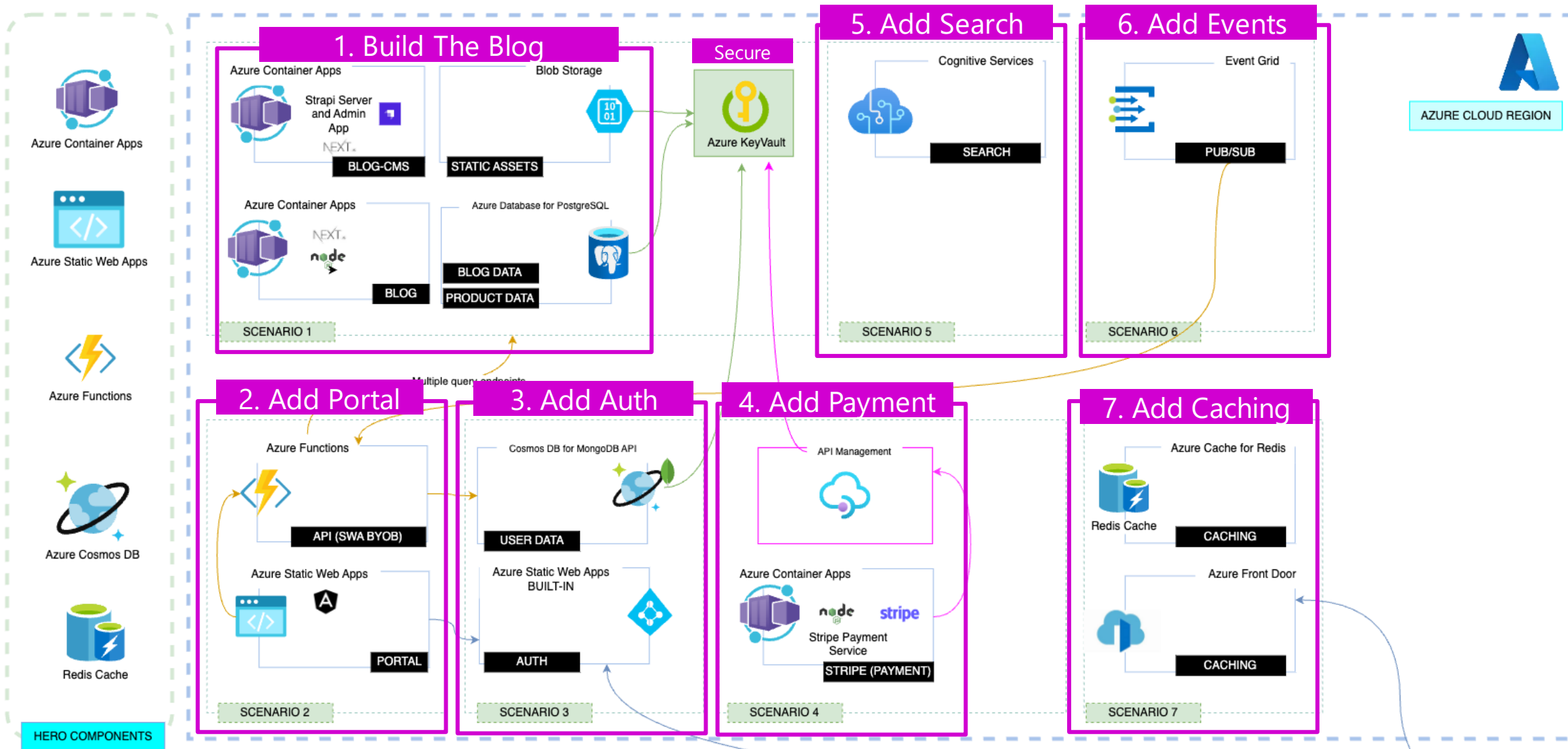
With a serverless application environment, both the back end and front end are hosted on fully managed services that handle scaling, security, and compliance requirements.

Serverless API gateway

A serverless API gateway is a centralized, fully managed entry point for serverless backend services. It enables developers to publish, manage, secure, and analyze APIs at global scale.

See: <https://aka.ms/cloud-native/serverless>

Why Composable Enterprise Architecture?



Serverless Hero Services



Azure Container Apps



Azure Static Web Apps



Azure Functions



Azure Cosmos DB



Redis Cache

HERO COMPONENTS



Microsoft
Reactor

Azure Static Web Apps

Build and deploy serverless full-stack applications in a managed environment.



Azure Container Apps

A fully managed Kubernetes-based application platform to deploy apps.



Microsoft
Reactor

Azure Functions

Serverless development experience for event triggers and data bindings.



Microsoft
Reactor

Azure Cosmos DB

Fully managed and distributed serverless database for high-performance apps.



Serverless { Fully managed
Scales down to zero

Reduced TCO (Total Cost of Ownership)

Serverless + Intelligent Apps



GitHub Copilot

The world's most trusted and widely used AI development assistant tool.

Using AI to **improve the developer experience** for authoring, testing, debugging and task automation



Azure OpenAI Service

Large scale generative AI models that enable apps with new reasoning capabilities.

Using AI to **improve the end-user experience** by integrating AI-generated content, AI-driven conversations and AI-enabled suggestions

What's new!



Azure SDK for JavaScript | OpenAI



[Libraries - OpenAI API](#)

[azure-sdk-for-js/sdk/openai/openai at main · Azure/azure-sdk-for-js \(github.com\)](#)



Azure | Node.js LTS



Node.js version 20 will be available in public preview for Azure functions, this September.



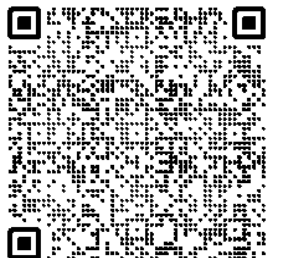
Azure Functions | Node.js programming model v.4



[Migrate apps from Azure Functions version 3.x to 4.x | Microsoft Learn](#)

[Step by step guide to migrating from v.3 to v.4 for Contoso Real Estate](#)

[Azure Functions: Version 4 of the Node.js programming model is in preview - Microsoft Community Hub](#)



Azure Static Web Apps | Next.js hybrid rendering



[Next.js support on Azure Static Web Apps | Microsoft Learn](#)

[Tutorial: Deploy hybrid Next.js websites on Azure Static Web Apps | Microsoft Learn](#)



Azure Cosmos DB | Data API Builder



| Diagnostic logs using JavaScript SDK

| Vercel seamless integration

[Announcing Data API builder for Azure Cosmos DB - \(microsoft.com\)](https://aka.ms/DataAPIBuilder)

[azure-sdk-for-js/sdk/cosmosdb/cosmos/README.md at main · Azure/azure-sdk-for-js \(github.com\)](https://github.com/Azure/azure-sdk-for-js/tree/main/sdk/cosmosdb/cosmos/README.md)

<https://aka.ms/Vercel-Integration>



Playwright

Reliable, E2E Testing
for Modern Web Apps



playwright.dev | Read the Docs
dev.to/playwright | Catch up on News
aka.ms/playwright/discord | Community
github.com/microsoft/playwright | Repo

Cross-Browser



Cross-Language



python™



Code to Azure: Development Walkthrough

Checkpoint

Stop Your
Running
Codespaces
(cost optimization)

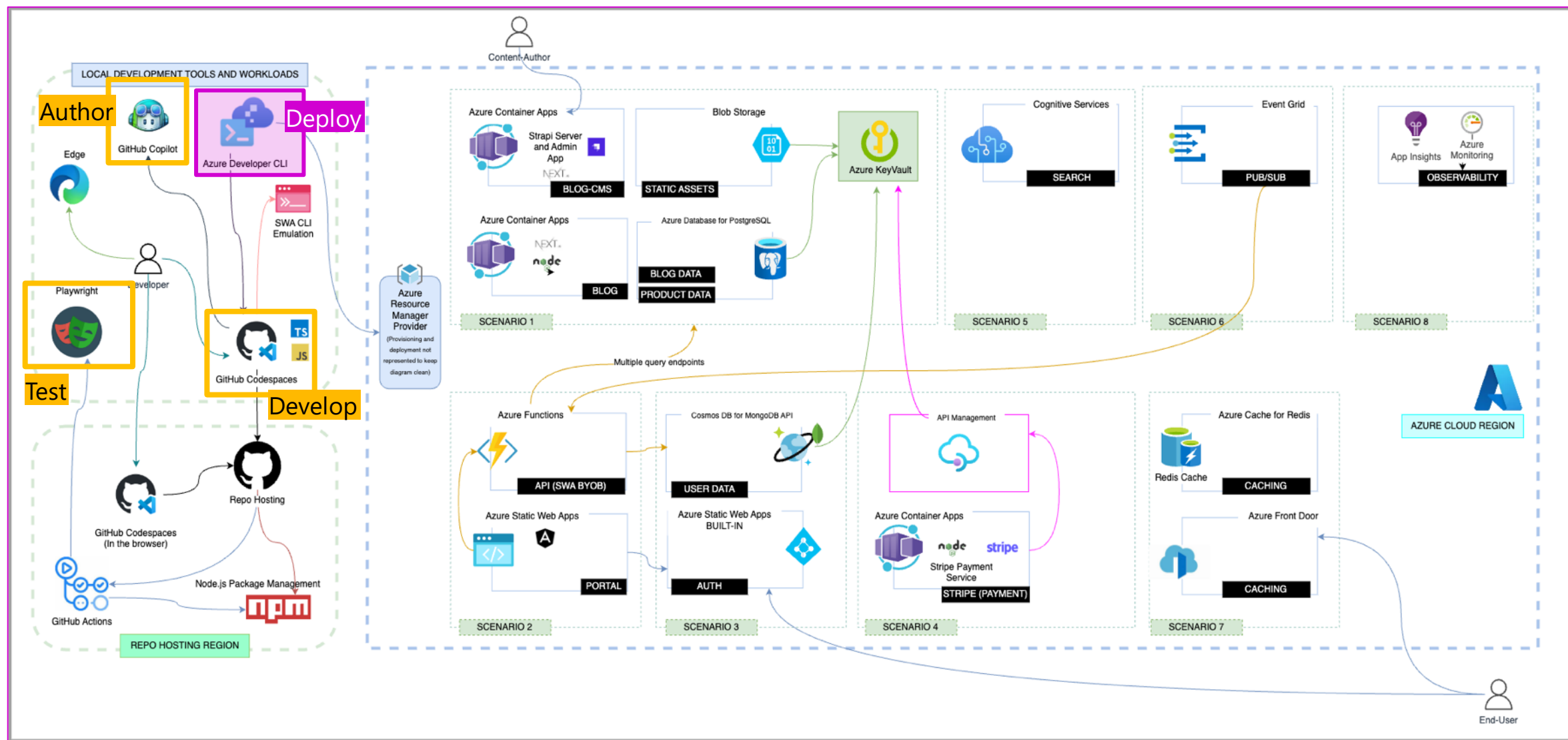


Need help or have questions?

<https://aka.ms/contoso-real-estate/discussions>



Code to Azure: Developer Tooling



Code to Azure: Deployment Guidelines

Deploy App with Azure Developer CLI

You will need an active Azure subscription to try this on your own later. Please refer to the documentation for a discussion on costs and suitable regions for successful deployment.

Deploy to Azure

Prerequisites

This project uses [GitHub Codespaces](#) as the main development environment. The following steps assume you are using GitHub Codespaces. If you are not using GitHub Codespaces, you can open the project in a Dev Container locally following the instructions [here](#).

Deploy to Azure

This project uses [Azure Developer CLI \(azd \)](#) to provision infrastructure, package, and deploy the application to Azure. Running the following commands will get you started with deployment.

```
# Login to azd. Only required once per install.  
azd auth login  
  
# Provision infrastructure and the azd development environment  
azd provision  
  
# Package the app using the environment variables in .azure/env + deploy the code on Azure  
azd deploy
```

Code to Azure: AZD Templates Gallery

Discover, Use & Deploy Templates

The awesome-azd gallery provides a quick look-up directory for discovering AZD-compliant templates for various languages and architectures. Find featured templates – or contribute your own

<https://aka.ms/awesome-azd>

The screenshot shows the 'Awesome AZD Templates' website. The header includes 'awesome-azd', 'About', and 'Contribute' links. The main title is 'Awesome AZD Templates' with the subtitle 'A community-contributed templates gallery'. A button 'Contribute Your Template!' is visible. Below the header is a 'Filters' section with '3 sites' and a grid of filter tags. The tags include: Featured, Help Wanted, JavaScript, TypeScript, .NET/C#, Java, Python, Django, React.js, Node.js, PHP, Bicep, Terraform, MongoDB, FastAPI, FHIR Service, Flask, NestJS, SAP, SAP Cloud SDK, Spring, Thymeleaf, Dapr, Azure App Service, Azure Monitor, Azure Key Vault, Azure Container Apps, CosmosDB, Azure SignalR, Azure Functions, Azure Blob Storage, Web Apps, Azure SQL, Azure DB For PostgreSQL, Azure Static Web Apps, Azure Service Bus, Virtual Networks (VNET), Azure Cognitive Search, Azure OpenAI Service, Azure AI Service, Azure API Management, Azure Kubernetes Service, Azure Content Delivery Network, Azure Front Door, Grafana, Prometheus, Azure Spring Apps, Azure Redis Cache, Azure Application Gateway, Data Science, Enterprise App Patterns, and Artificial Intelligence. The 'Enterprise App Patterns' tag is highlighted with a blue border. Below the filters is a search bar labeled 'Search for site name...'. The main content area displays three template cards. The first card is 'Azure API Management with Azure OpenAI' by Pascal van der Heiden. The second card, 'Enterprise-Grade Reference Architecture for JavaScript', is highlighted with a red border and lists tags: javascript, bicep, azure key vault, azure container apps, cosmosdb, azure blob storage, azure db for postgresql, azure static web apps, azure api management, and enterprise app patterns. The third card is 'Reliable Web App Pattern for .NET' by the Azure Content Team, listing tags: .net/c#, bicep, azure app insights, azure app service, azure key vault, azure blob storage, web apps, azure sql, azure front door, and enterprise app patterns.

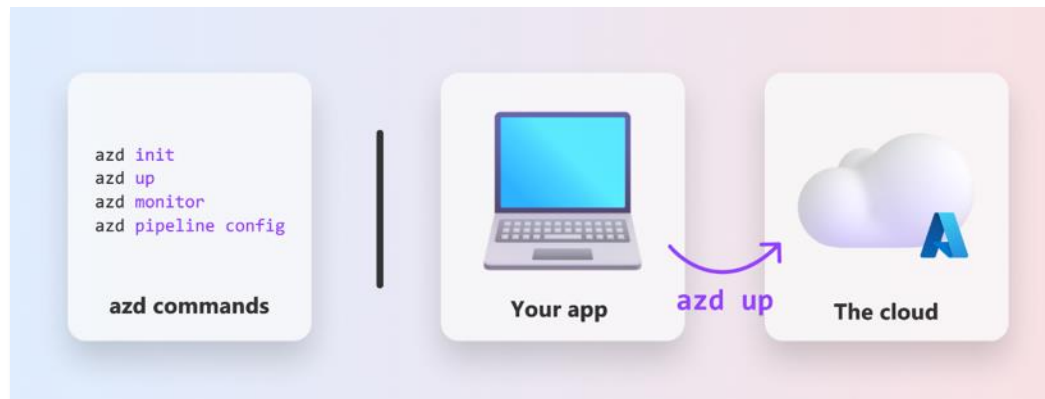
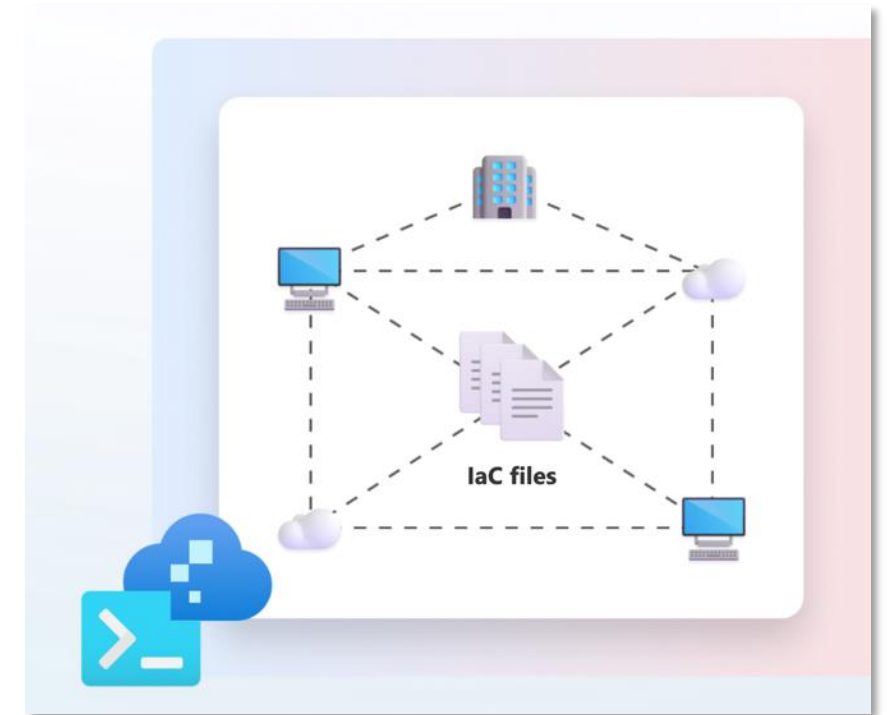
Code to Azure: Deployment Guidelines

Why Azure Developer CLI?



Infrastructure As Code

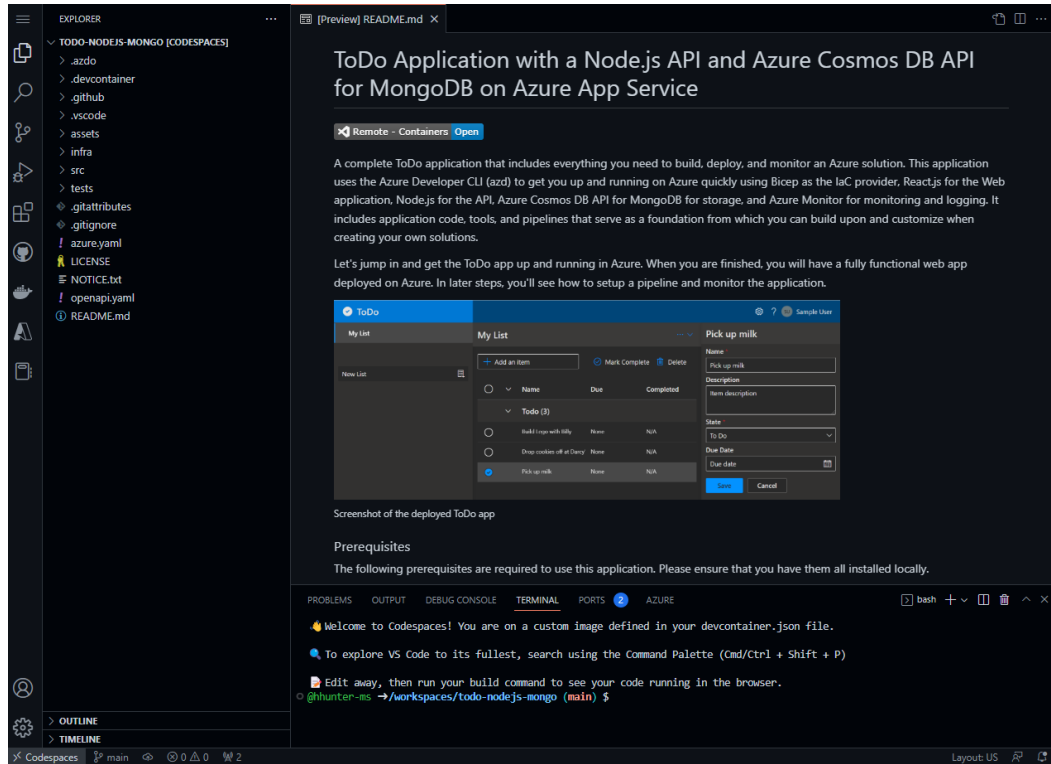
Infrastructure as code (files)
enable version control.
Declarative IaC enables
repeatability and reusability



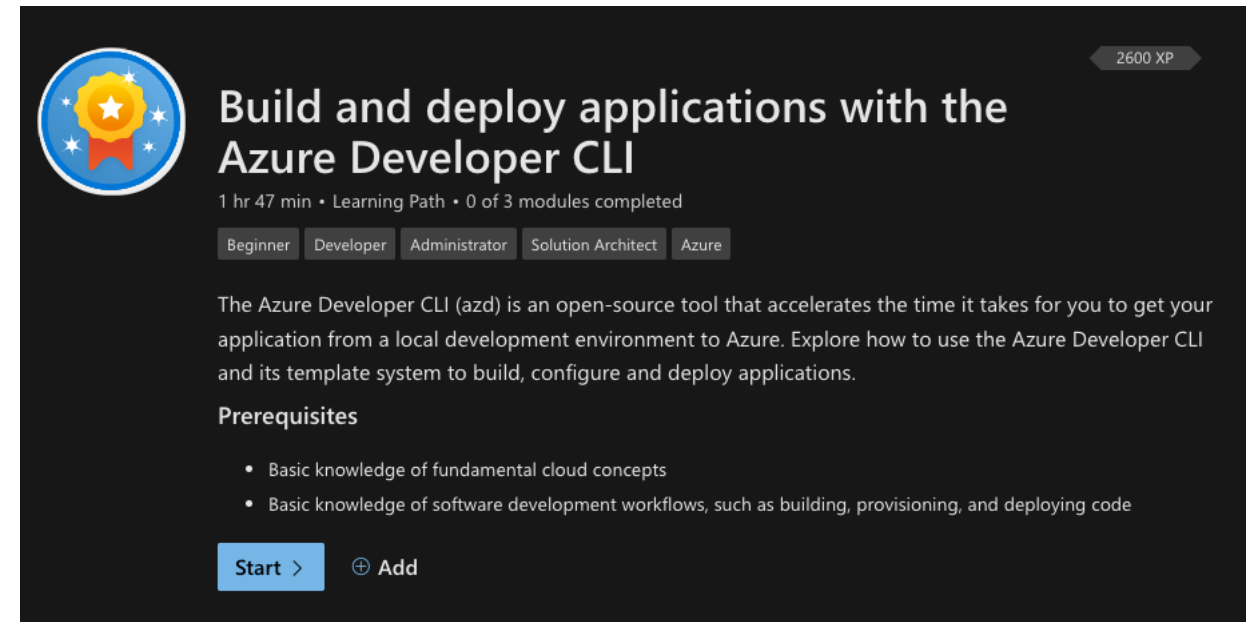
Seamless Developer Experience

From local development (code) to
Azure deployment (cloud) **in one step**

Code to Azure: Keep on learning IaC



<https://learn.microsoft.com/training/paths/azure-developer-cli/>



Docs | Tutorial
Learn to deploy existing AZD Template

Training | Learn Path
Learn to build your first AZD Template!

Open-Source Contribution Guidelines

Visit - <https://aka.ms/contoso-real-estate-github>

Login and fork the repo

Launch Codespaces on `main`
branch

And start contributing, today!





Thank You For Learning & Hacking With Us!



#HackTogether | Learn to build JavaScript Apps On Azure