

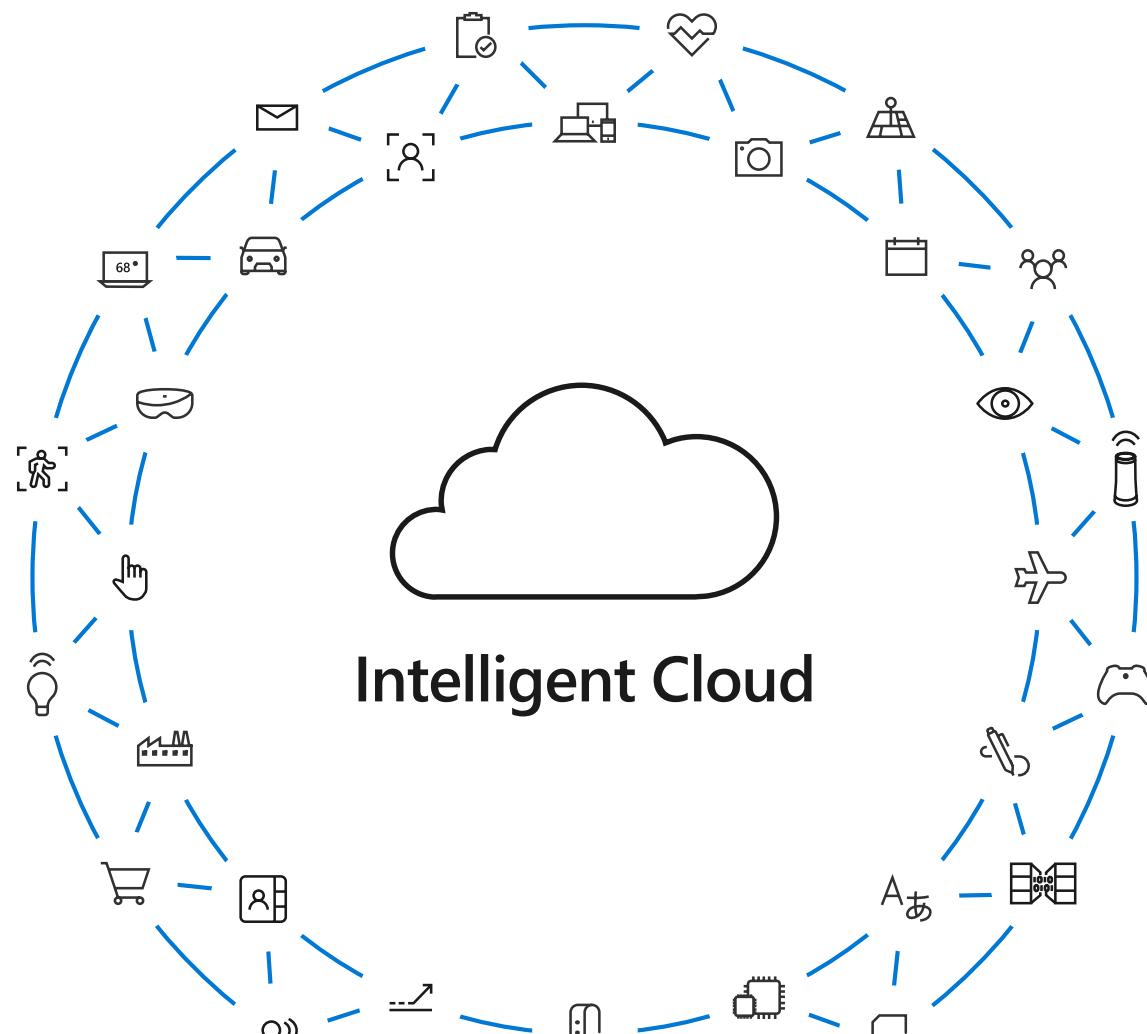


Back to //build 2018

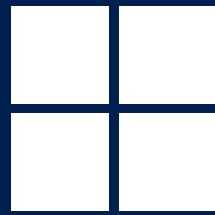
AzureQC + DotNetQC Meetups
June 27, 2018

Hinault Donfack
MVP Visual Studio & Development Technologies

Mathieu Benoit
Cloud Solution Architect - Microsoft



Intelligent Edge



Microsoft Azure

Productive + Hybrid + Intelligent + Trusted

Azure

Infrastructure - IaaS

Dev Tools + DevOps

Containers + Serverless

Internet of Things

Data

.NET & Dev Tools

Artificial Intelligence

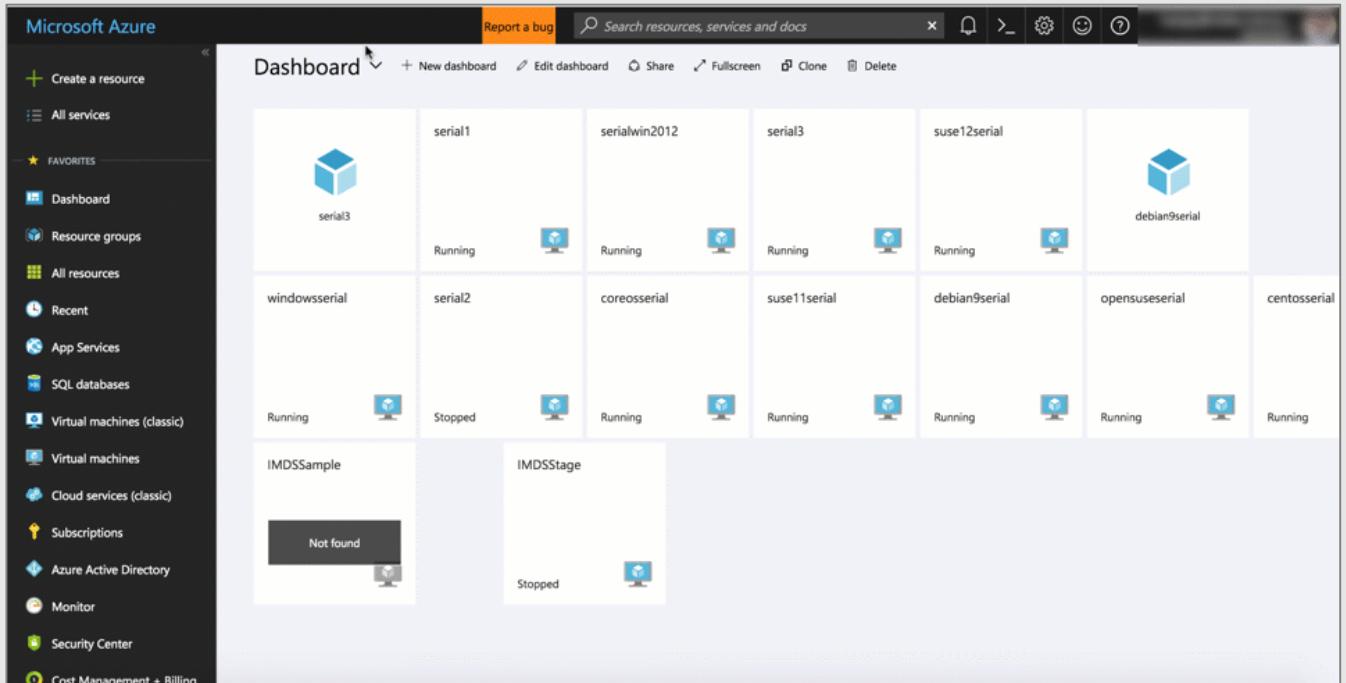
Azure

- Infrastructure - IaaS
DevOps
Containers + Serverless
Internet of Things
Data
.NET & Dev Tools
Artificial Intelligence

Serial Console

With Serial Console in the Azure portal, developers get a full view of the machine's boot process, making managing and securing your VMs easier.

- Supports DevOps: Ansible, Chef, & Puppet
- Works with Windows and Linux
- Easier troubleshooting
- Convenient and secure access
- Faster time to value

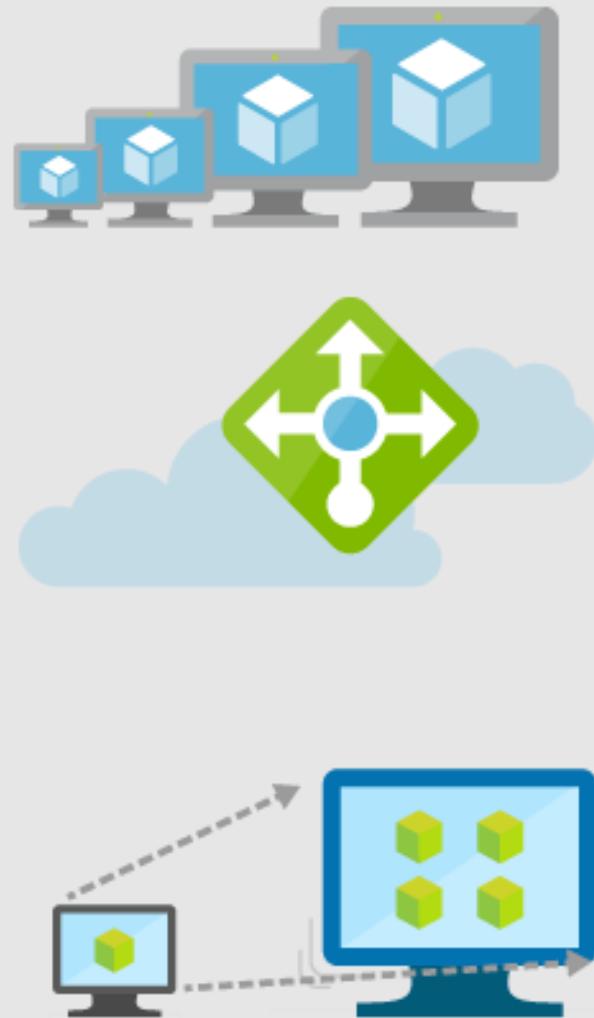


GA Released
April '18

VM Scale Set (VMSS)— PaaS for VM on Azure

With VM Scale Sets, you can confidently deploy hundreds of identical virtual machines in minutes and focus on what matters—your application.

- Deploy 1,000s of VM Scale Sets
- Enables easy integration with Azure Networking resources
- Provides auto scale-out and scale-in
- Auto-OS image update for guest images
- Low-priority VMs
- Support for Availability Zones

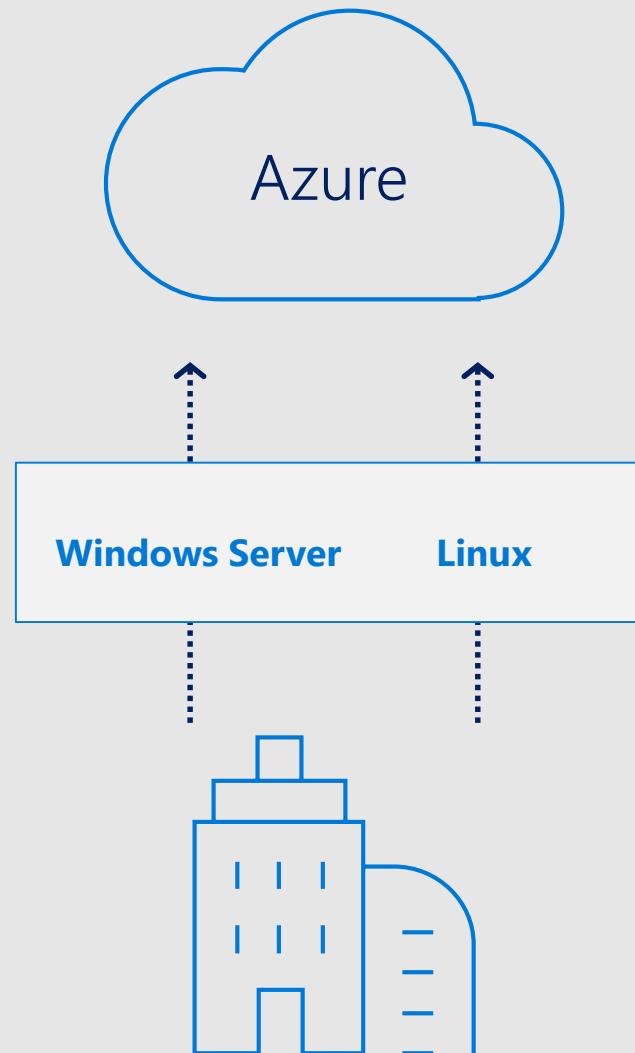


Azure Migrate

Easily discover VMware VMs and applications, including rich service dependency maps.

Insightful workload assessments:

- Right-sized Azure resources based on utilization history.
- Estimated monthly run costs in Azure.
- Migration risks and recommended tools.
- Hyper-V and physical environment assessment coming soon.



Azure AD Authentication for Storage

Use AAD creds and roles / RBAC
directly with their data

- Supported for Blob and Queue services
- Authenticate users, groups and service principals with Azure AD
- Grant Access using Azure RBAC
- Individual blob container or queue

RESOURCE TYPE (DATA)	READ	WRITE	DELETE
▼ Microsoft Storage			
▼ Storage Accounts			
▼ Storage Blob Services			
▼ Storage Blob Service Containers			
Storage Blob Service Blobs	✓	✓	✓
▼ Storage Queue Services			
▼ Storage Queue Service Queues			
Storage Queue Service Messages			

Blob Lifecycle Management Policies

Automate Blob tier moves with simple policies:

- Automatically optimize storage spend by moving data from hot to cooler tiers (cool, archive).
- Define rules at the storage account level.
- Apply policies to all or a subset of Blobs.
- Provide a flexible policy definition (last modified, move/delete, etc.).

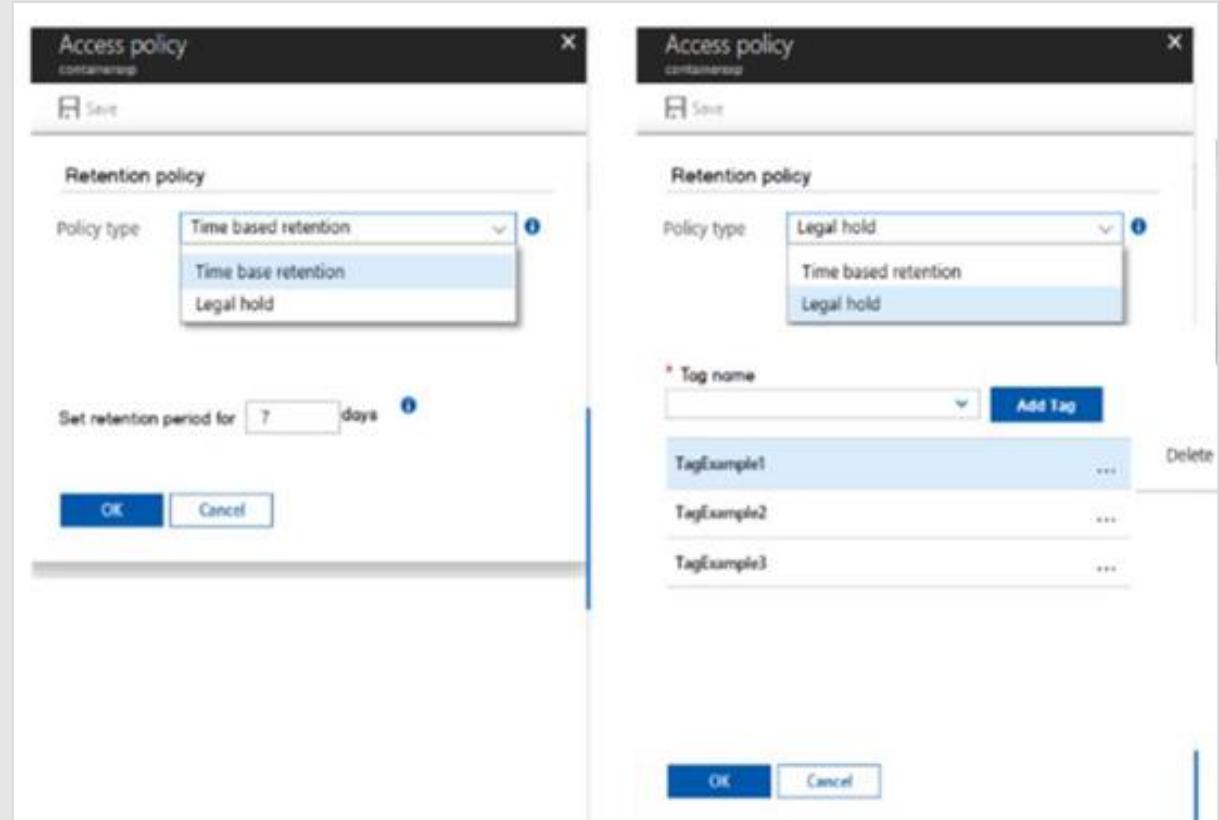
Sample code to tier and delete Blobs

```
{  
  "version": 0.5,  
  "rules": [  
    {  
      "name": "ruleFoo",  
      "type": "Lifecycle",  
      "definition":  
      {  
        "filters": {  
          "blobTypes": [ "blockBlob" ],  
          "prefixMatch": [ "foo" ]  
        },  
        "actions": {  
          "baseBlob": {  
            "tierToCool": { "daysAfterModificationGreaterThanOrEqual": 30 },  
            "tierToArchive": { "daysAfterModificationGreaterThanOrEqual": 90 },  
            "delete": { "daysAfterModificationGreaterThanOrEqual": 2555 }  
          },  
          "snapshot": {  
            "delete": { "daysAfterCreationGreaterThanOrEqual": 90 }  
          }  
        }  
      }  
    ]  
  }  
}
```

Immutable Blob Storage

Write once, read many support (WORM) for Blob storage:

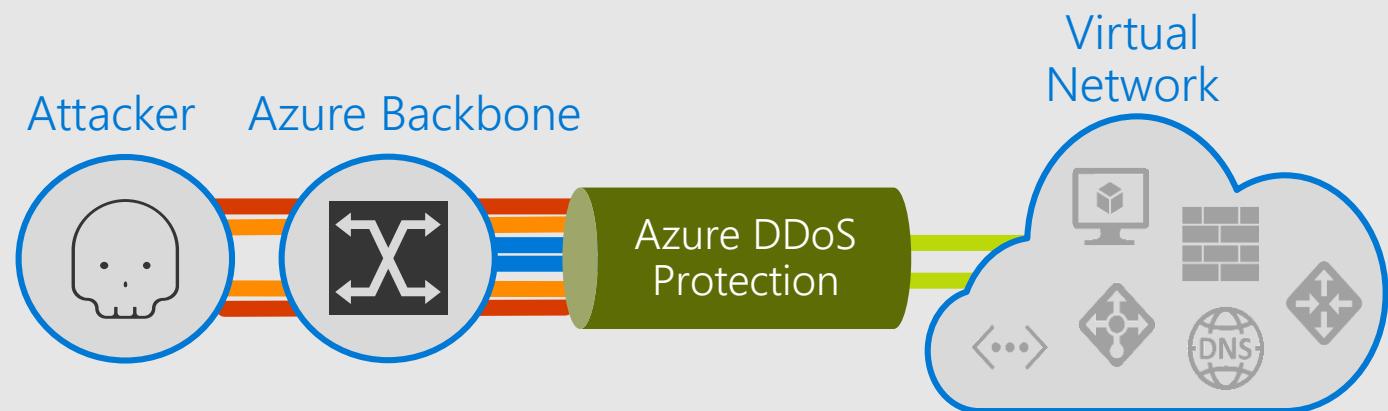
- Designed for SEC 17a-4(f) compliance.
- Time-based retention policies to store data in write-protected, delete-protected mode.
- Support for legal hold.
- Blob tier agnostic—available for hot, cool, archive tiers.
- Audit logging of WORM policy administration activities.
- Container-level policy setting.
- Support for compliance and enterprise modes.



DDoS Protection

Protect your Azure resources from denial of service threats with:

- Advanced protection for your virtual networks.
- Automatic mitigation for 60+ network layer attacks.
- Integration with WAF application layer protection.
- Adaptive tuning via application traffic profiling and machine learning algorithm.
- Real-time monitoring and alerting in Azure Monitor.

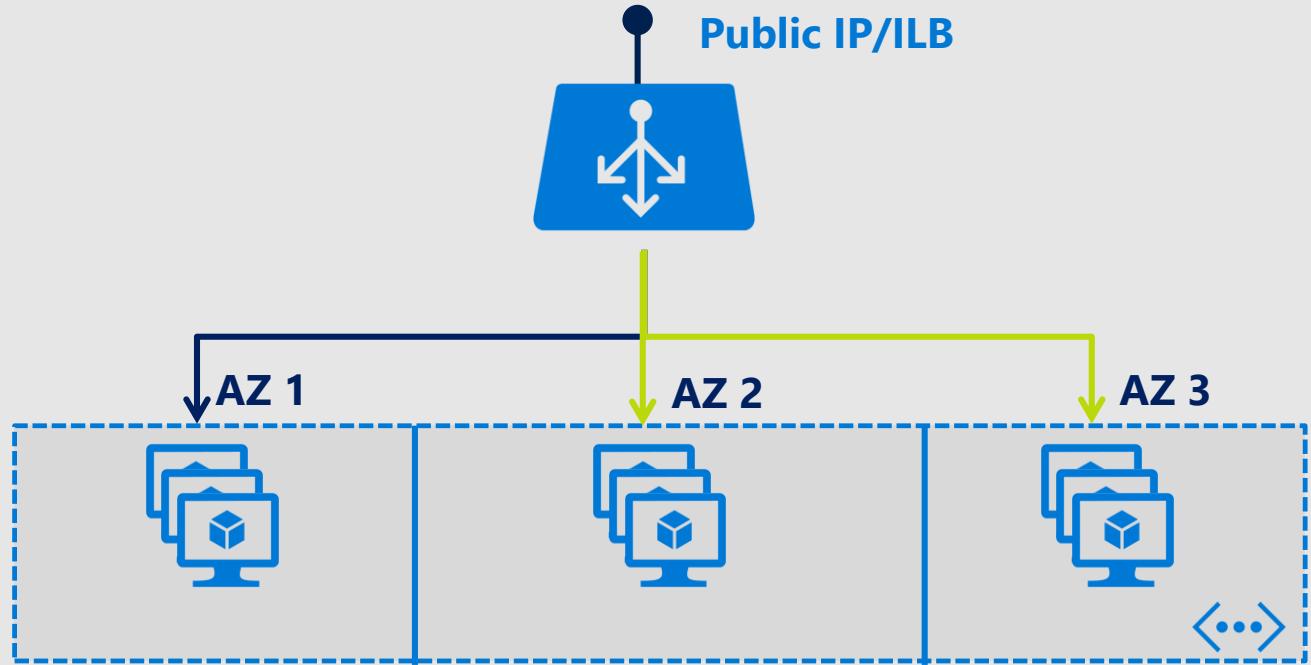


Standard Load Balancer

Azure Standard Load Balancer is now generally available in all public regions with:

- 10x scale improvements—increase from 100 to 1,000 backend VMs.
- High availability through regional *anycast* IPs—single IP across AZs.
- Drastically simplified NVA Resiliency—HA Ports.
- Extensive health and diagnostic metrics.

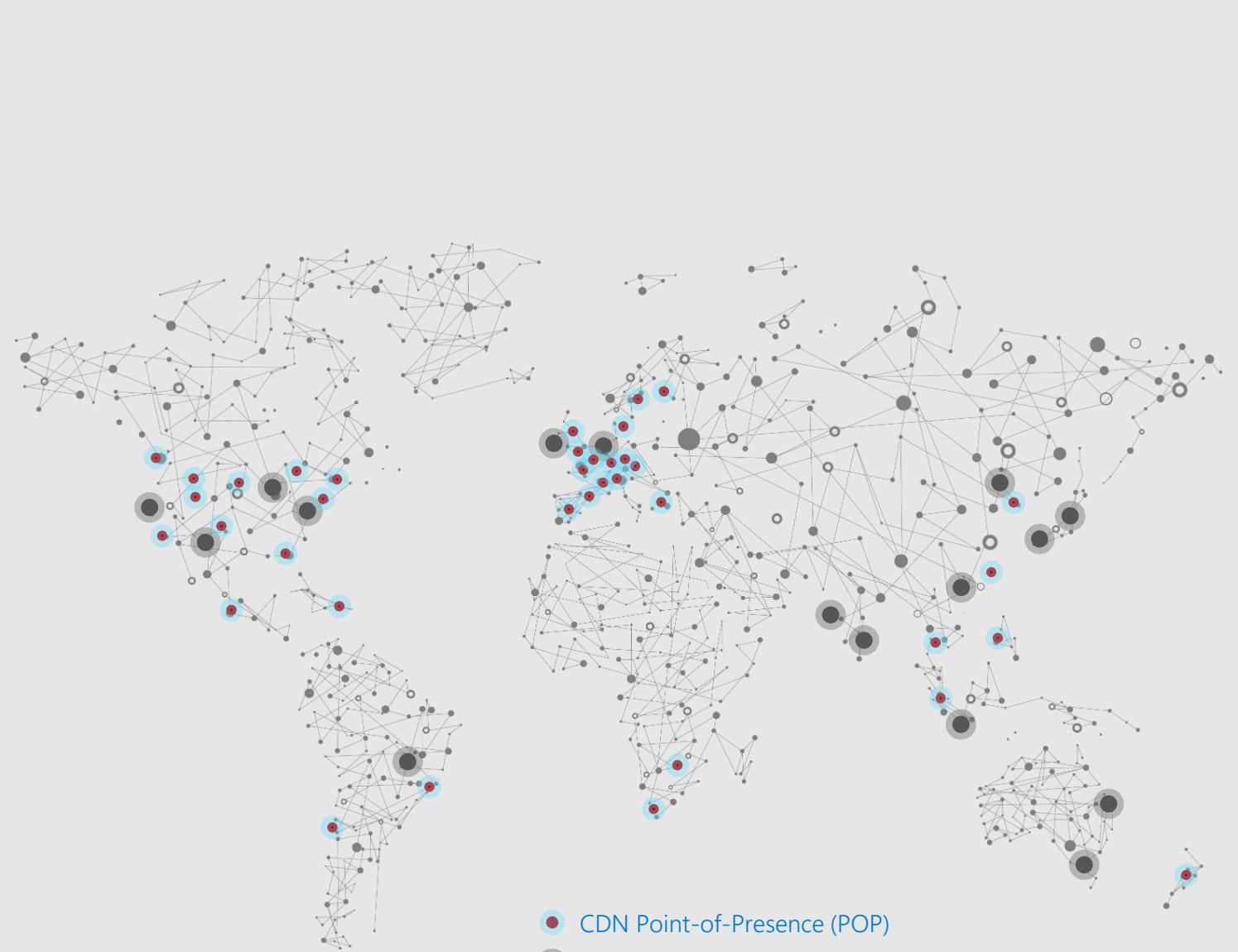
Standard Load Balancer provides new diagnostics insights with multi-dimensional metrics in Azure Monitor.



Azure CDN - New cloud edge delivery options

Scale-out your content delivery from Microsoft's own CDN network:

- 54 global points-of-presence (POPs) deployed on Microsoft's Global Network, which brings your service closer to your end users.
- Reduce traffic spikes and improve origin traffic costs with 16 Regional Caching POPs.
- Bring your own custom SSL certificate.
- Ensure familiar Azure CDN portal experience.
- Globally monitor traffic with Core metrics.



● CDN Point-of-Presence (POP)

● CDN Regional Cache

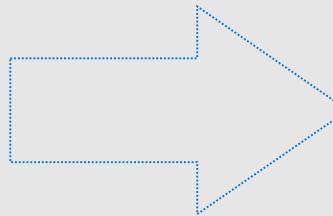
GA Release
May '18

Azure Lab Services

Azure Lab Services makes creating computer labs in the cloud simple and easy.

- Is built on DevTest Labs
- Is easy to set up, easy to use
- Offers spending controls and usage visualization.
- Is simple and quick to configure from Azure Portal or Web interface

Today



Summer 2018

Azure Lab Services



Classroom Lab



Hackathon Lab



Custom Lab



More coming...

Public Preview:
BUILD 2018

Azure Security Center Features

Visibility and governance at the organization level:

- Integrated security configuration in the virtual machine experience.
- Identity & Access Management tile.

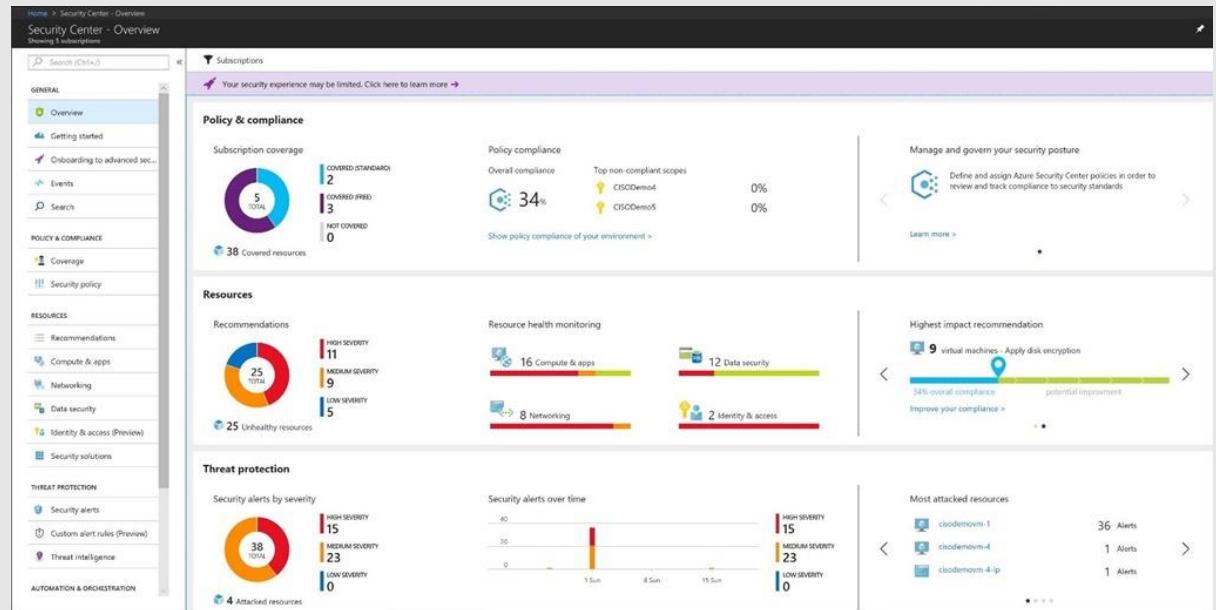
Reduce your exposure to threats:

- Just-in-time VM access general availability.
- Adaptive application controls.
- Interactive network security monitoring.
- File integrity monitoring (FIM).
- Extending threat protection to containers.
- New security configuration assessments for servers.

Quickly detect and respond to threats:

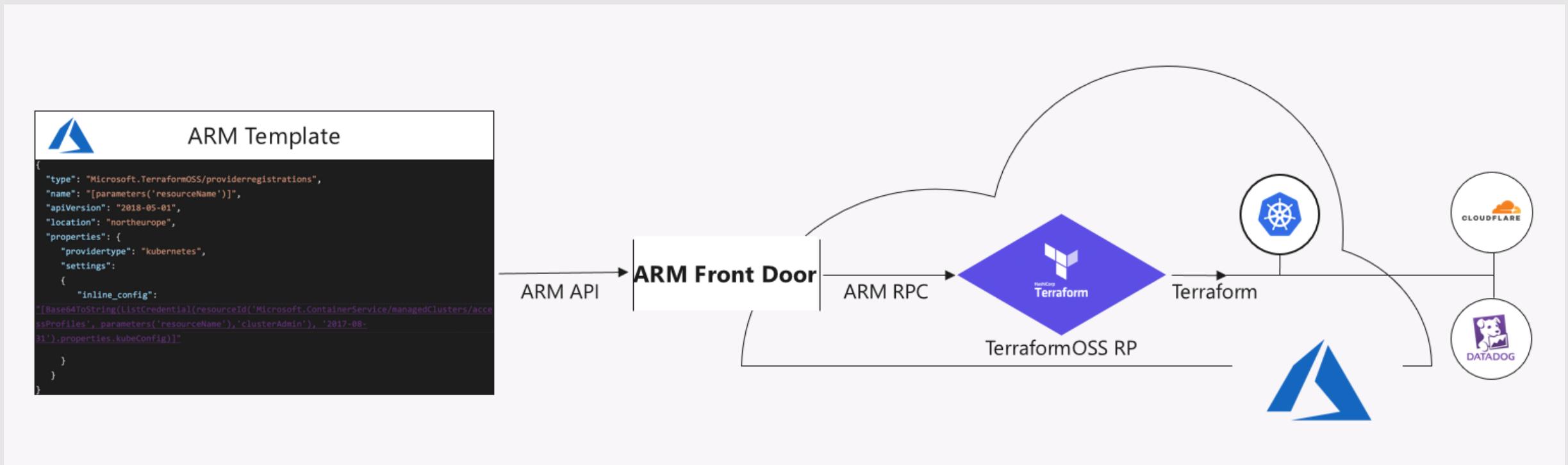
- Integration with Windows Defender Advanced Threat Protection for Servers (WDATP).
- Fileless Attack Detection.
- Threat analytics for admin activity

Integration with new partner solutions from Palo Alto and McAfee.



GA Released
April '18

Azure Terraform Resource Provider



Azure

Infrastructure - IaaS

DevOps

Containers + Serverless

Internet of Things

Data

.NET & Dev Tools

Artificial Intelligence

Microsoft <3 OSS



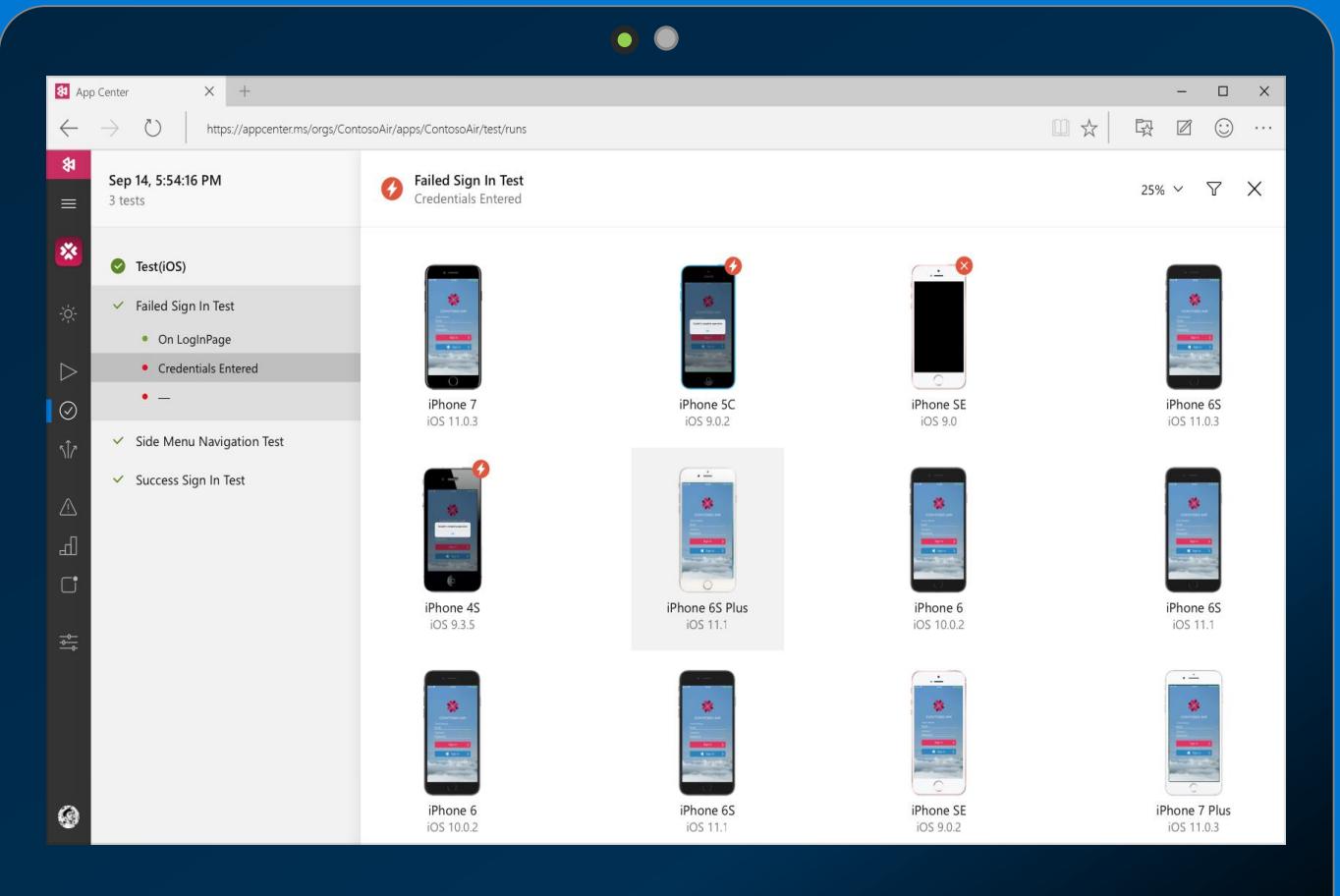
**Microsoft is the largest single corporate
contributor to open source on GitHub**

Visual Studio App Center + GitHub

iOS + Android app development

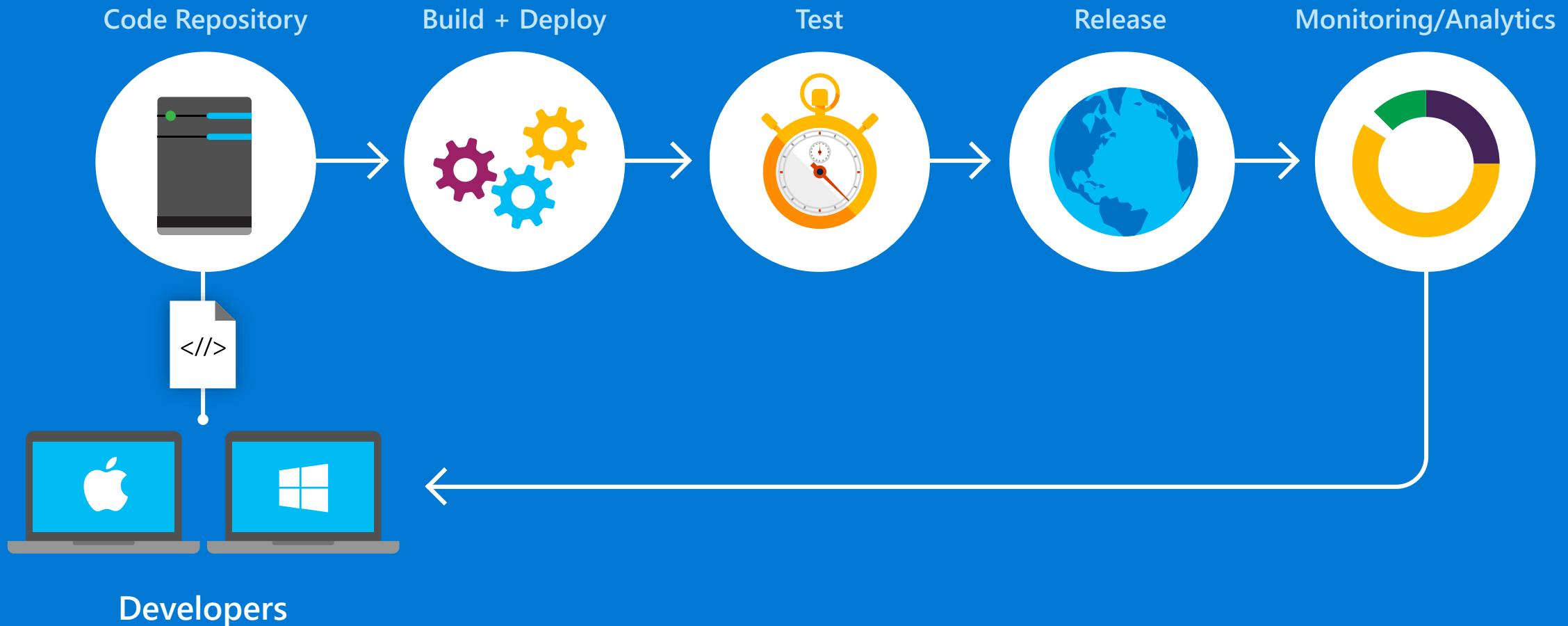
Build, Test, Deploy, Engage, Repeat

Continuous everything



Visual Studio Team Services

Complete DevOps solution



DevOps project with Azure Kubernetes Service (AKS)

Home > New > DevOps Project (preview)

DevOps Project (preview) Create - PREVIEW

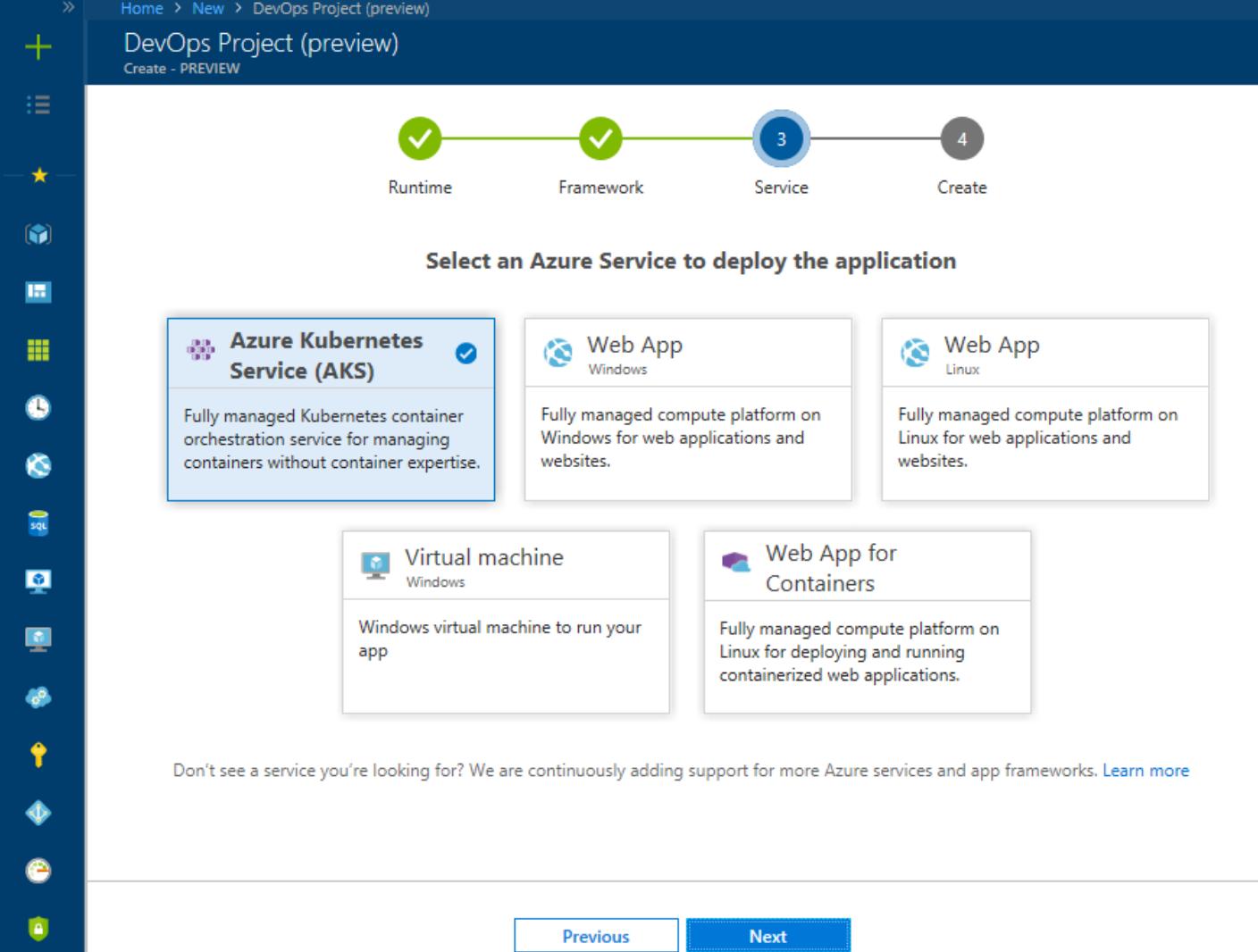
Runtime Framework Service Create

Select an Azure Service to deploy the application

 Azure Kubernetes Service (AKS) <input checked="" type="checkbox"/>	 Web App Windows Fully managed compute platform on Windows for web applications and websites.	 Web App Linux Fully managed compute platform on Linux for web applications and websites.
 Virtual machine Windows Windows virtual machine to run your app	 Web App for Containers Fully managed compute platform on Linux for deploying and running containerized web applications.	

Don't see a service you're looking for? We are continuously adding support for more Azure services and app frameworks. [Learn more](#)

Previous Next



Azure

Infrastructure - IaaS

DevOps

Containers + Serverless

Internet of Things

Data

.NET & Dev Tools

Artificial Intelligence



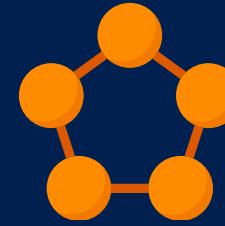
Web Apps



Serverless
Functions



Kubernetes
Service (AKS)



Service Fabric

Azure Platform Services

CONTAINERS | Azure App Service

Preview – multi container, Linux ASE

Multi-container support (Linux)

- Deploy web apps composed of multiple Docker containers easily
- Bring Docker Compose or Kubernetes Pod definition and App Service will automatically pull containers from a registry, instantiating them and configuring communications between them.

Linux support for App Service Environment

- Deploy web applications into an Azure Virtual Network (VNet)
- Both Windows and Linux web applications can be deployed into one ASE, sharing the same VNet.

Learn more about [Azure App Service](#)

CONTAINERS | Azure Container Instances

GA (Windows and Linux) on 4/25

Benefits:

- Fastest and easiest way to run a container in the cloud.
- No VM management.
- Per-GB, per-CPU, and per-second billing.
- Deploy images from DockerHub or Azure Container Registry.
- The ACI connector enables customers to deploy additional container capacity for their AKS cluster using ACI.

This service was launched in public preview in July, announced GA on 4/25



[Learn more about Container Instances](#)



Azure Kubernetes Service (AKS)

Fully managed Kubernetes orchestration service

Auto patching, auto scaling, auto updates

Use the full Kubernetes ecosystem

Dev Spaces for Azure Kubernetes Services (AKS)

Inner-loop development with containers

Edit and debug code instantaneously

Debug and set breakpoints across microservices

Isolated testing in your team's shared environment



Containers | Additional Announcements

- 1) **Private preview** : Windows Server Containers support for App Service
- 2) **Pre-announce**: Azure Service Fabric Mesh; fully-managed Service Fabric in the cloud
- 3) **Private preview**: Fully-managed OpenShift in Azure; demo during RedHat Summit keynote.
- 4) **Azure Container registry, updates:**
 - General Availability of geo-replication, available across all public regions
 - The preview of Azure Container Registry Build— container build capability that enables inner-loop development and supports container lifecycle management including automated OS and framework patching—is now available in East US and will be available in West Europe at //build
 - Private preview of secure by default container registries that lock all image pulls until vulnerability scanners have approved the container image. For the development of this feature, we partnered with the leading vulnerability scanning solutions, Aqua and Twistlock

Loosely coupled serverless architecture



Functions

Serverless Code



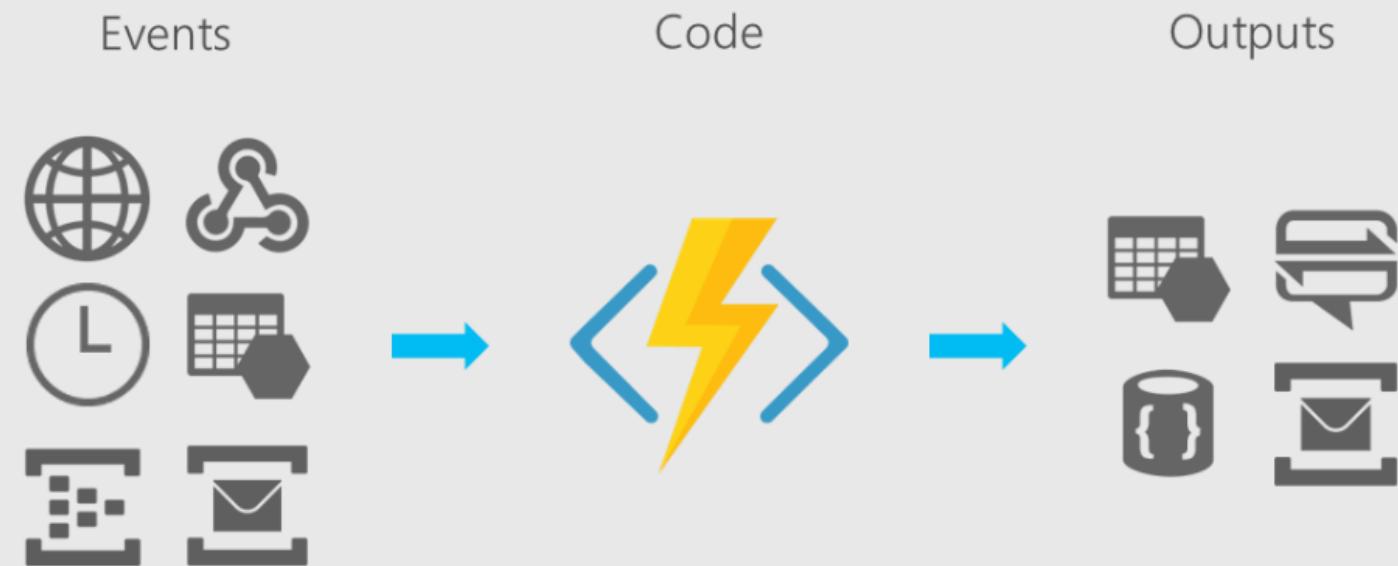
Logic Apps

Serverless Workflow

SERVERLESS | Azure Functions

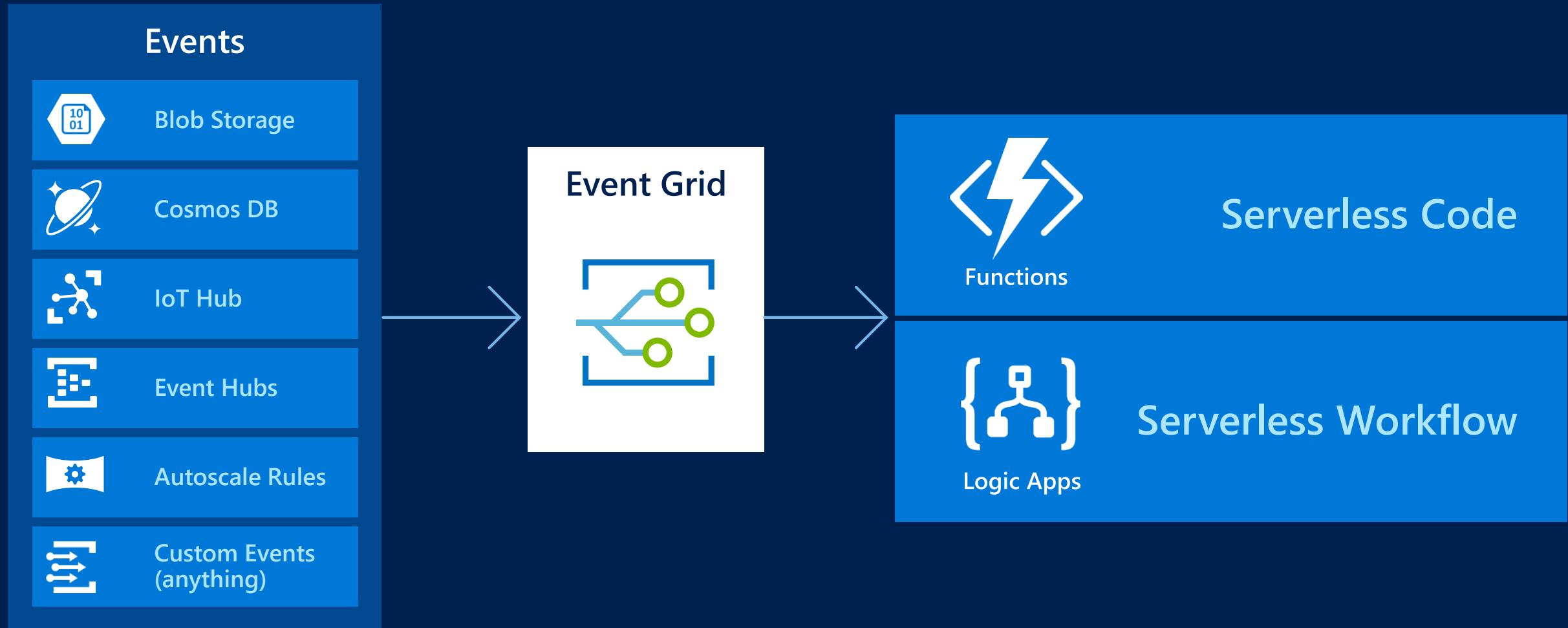
Durable Functions becomes
Generally Available

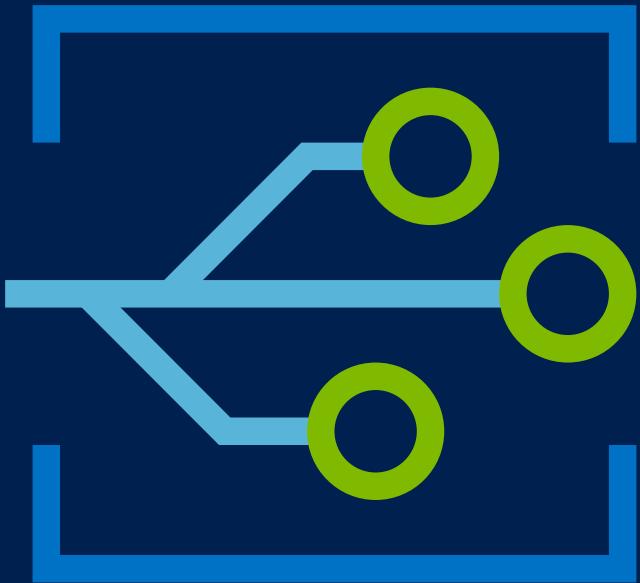
- Allows customers to build stateful scenarios and long-running tasks using Azure Functions
- Provides a code-focused mechanism for orchestrating tasks, the only serverless FaaS service to do so
- Intuitive programming model can be easily adopted by .NET developers



[Learn more about Durable Functions](#)

Loosely coupled serverless architecture





Azure Event Grid

Reliable event delivery

Massive scale: Millions of events per second

Eliminating polling and associated costs of latency

Home > bumperstickerdemov2 - Events

bumperstickerdemov2 - Events

Storage account

Search (Ctrl+ /)

+ Event Subscription Refresh

Get Started Event Subscriptions

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Events

Storage Explorer (preview)

SETTINGS

Access keys

Configuration

Encryption

Shared access signature

Firewalls and virtual networks

Properties

Locks

Automation script

BLOB SERVICE

Browse blobs

CORS

Custom domain

Soft delete

Azure CDN

Add Azure Search

FILE SERVICE

Events, automated.

Build reactive, event-driven apps with a fully managed event routing service that is built into Azure. Event Grid helps you build automation into your cloud infrastructure, create serverless apps, and integrate across services and clouds.

[Learn more](#)

[Logic Apps](#) [Functions](#) [Ecosystem](#)

Create a logic app to respond to events and orchestrate integration with other services. [Learn more](#)

When a new blob is uploaded

Set a time to live on that blob so that it is automatically deleted after a certain amount of time.

[Learn more](#)

[Create](#)

When a new image is uploaded

Perform Cognitive Service's Optical Character Recognition (OCR) on the image and upload the results to SharePoint.

[Learn more](#)

[Create](#)

When a new video is uploaded

Upload the video file to Cognitive Service's Video Indexer to generate video transcripts, metrics and insights.

[Learn more](#)

[Create](#)

+ [Create your own logic app](#)

Logic Apps Designer

Save Discard Run Designer Code view Templates Connectors Help



FAVORITES

Resource groups

Recent

SQL databases

Virtual machines

Subscriptions

App Service plans

Monitor

Cost Management + Billing

Advisor

The screenshot shows the Microsoft Azure Logic Apps Designer interface. A workflow is being created with the following steps:

- When a resource event occurs (Preview)**:
 - Subscription: Logic App PM
 - Resource Type: Microsoft.Storage.StorageAccounts
 - Resource Name: jonsstoragedemos
 - Event Type Item - 1: Microsoft.Storage.BlobCreated
- Create SAS URI by path (Preview)**: This step follows the first one.
- Upload video and index (using a URL) (Preview)**:
 - Video Url: Web Url (selected)
 - Video Name: data.eTag
 - Privacy: Private

At the bottom right, there is a button labeled "+ New step".

Serverless | Additional Announcements

Public preview: Event Grid Support for CloudEvents standard

- Support for CloudEvents in Azure Event Grid.
- CloudEvents is an open standard for events which has been developed as a part of the Cloud Native Computing Foundation (CNCF) in partnership with Microsoft, Google, IBM, Oracle, and other cloud vendors. This standard will allow building applications that span multiple clouds for event-driven scenarios.

Azure

- Infrastructure - IaaS
- Dev Tools + DevOps
- Containers + Serverless
- Internet of Things
- Data
- .NET & Dev Tools
- Artificial Intelligence

>20 Billion connected
devices by 2020

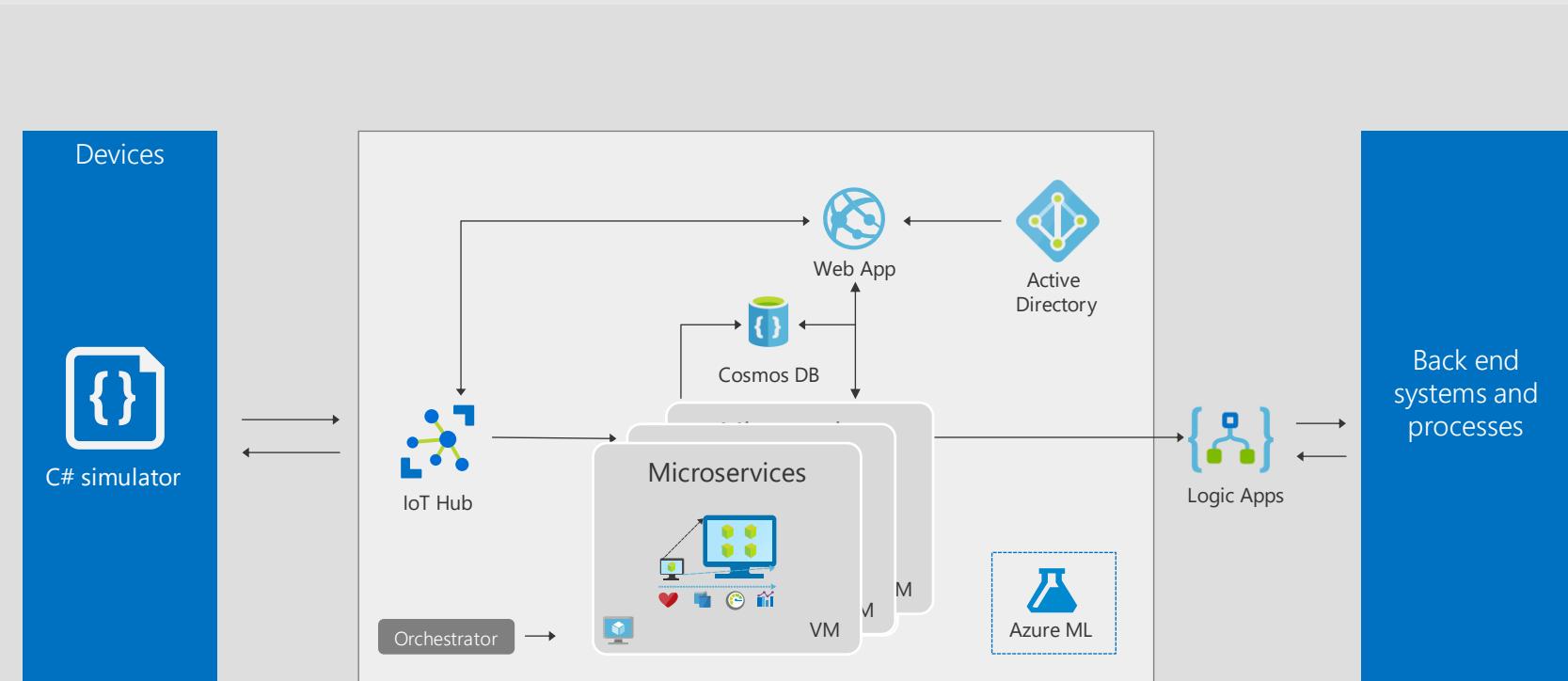


1000's of Azure IoT certified devices from hundreds of partners today

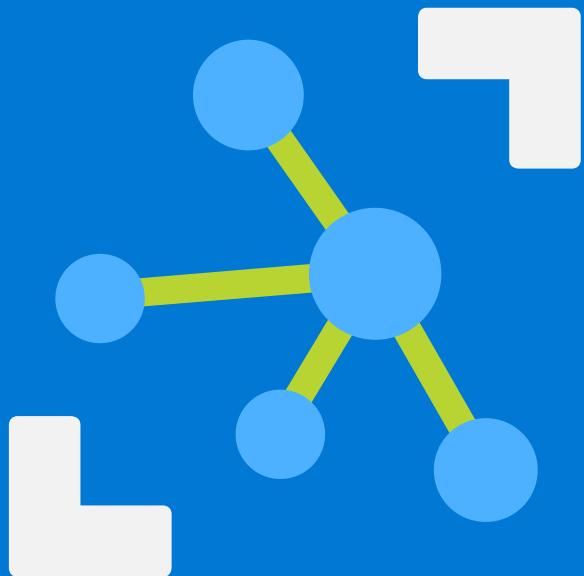
IoT | Azure IoT solution accelerators

Remote Monitoring GA

- Enhanced User Interface, with richer Operator experiences.
- Enhanced operator scenarios, including rules and streaming powered by [Azure Stream Analytics](#).
- Easier device connectivity: see your device details seamlessly light up.
- Better maps: now powered by [Azure Maps](#), the latest technology to provide geospatial context to data.
- Richer integration options with services such as [Power BI](#), [Azure Time Series Insights](#), and [Azure Data Lake](#).



[Learn more about Azure IoT solution accelerators](#)

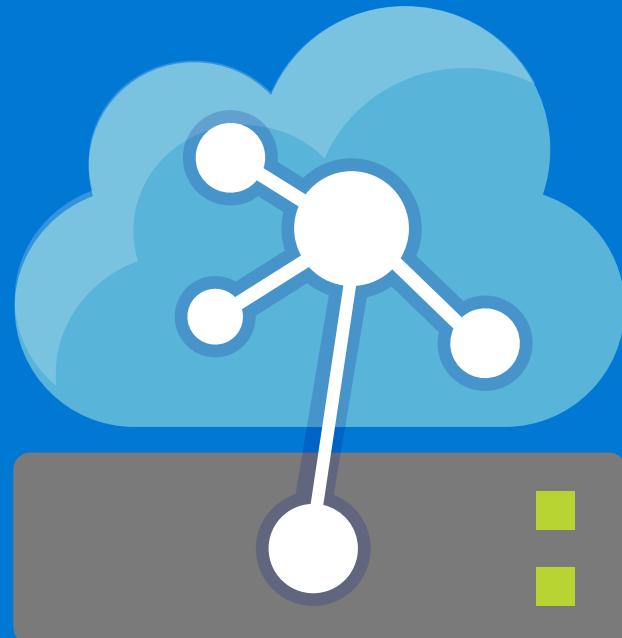


Azure IoT Hub

Securely manage billions of IoT Devices

Works with any IoT Device

Telemetry ingestion and command & control



Azure IoT Edge

Supports Windows and Linux devices

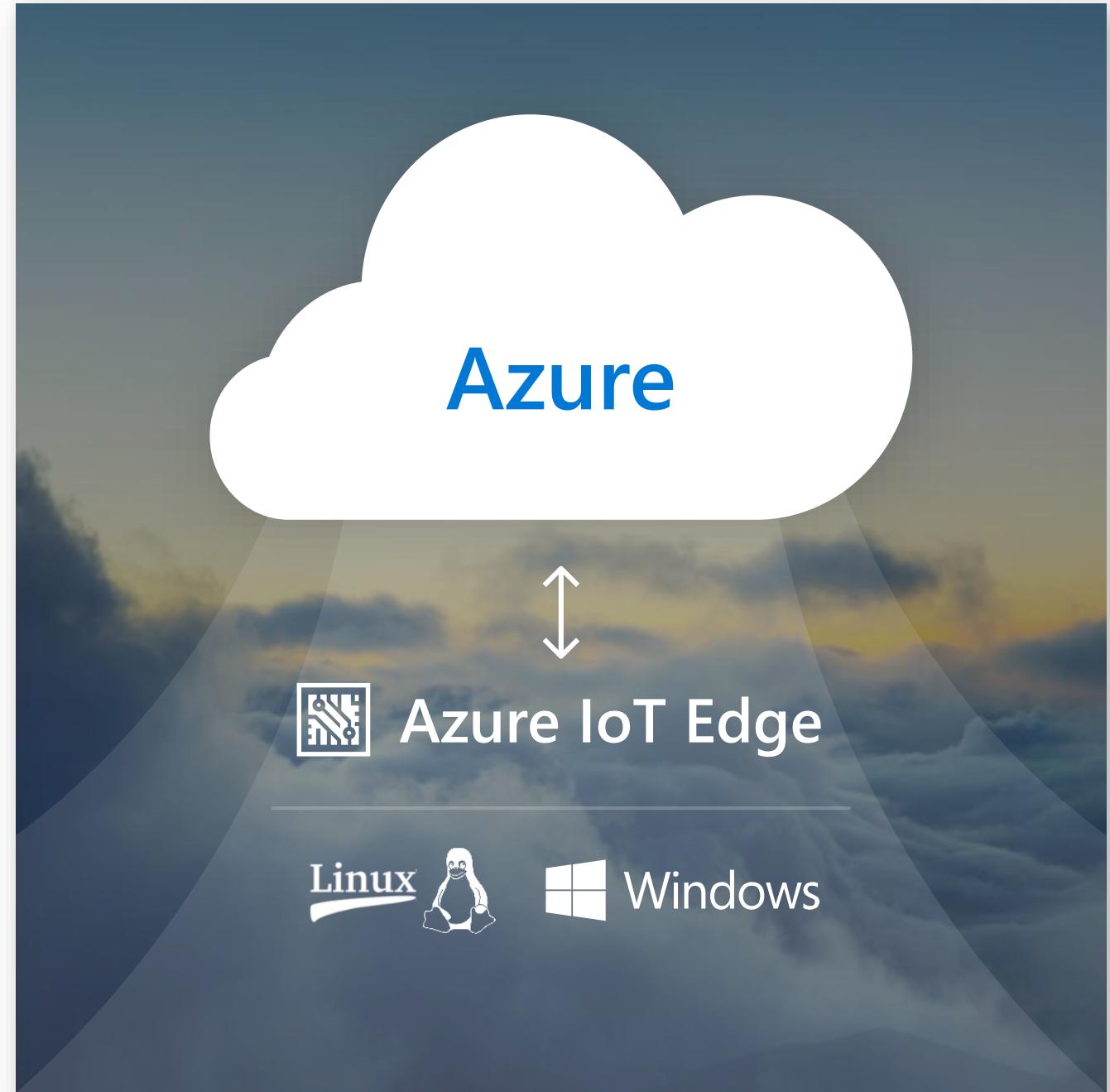
Reliably deploy apps using containers

Supports Azure ML, Functions, Streaming Analytics

End-to-end security from device to cloud

Azure IoT Edge

Announcing Open Sourcing
Azure IoT Edge Runtime



Azure IoT Edge

Announcing
AI Developer Kit

Qualcomm



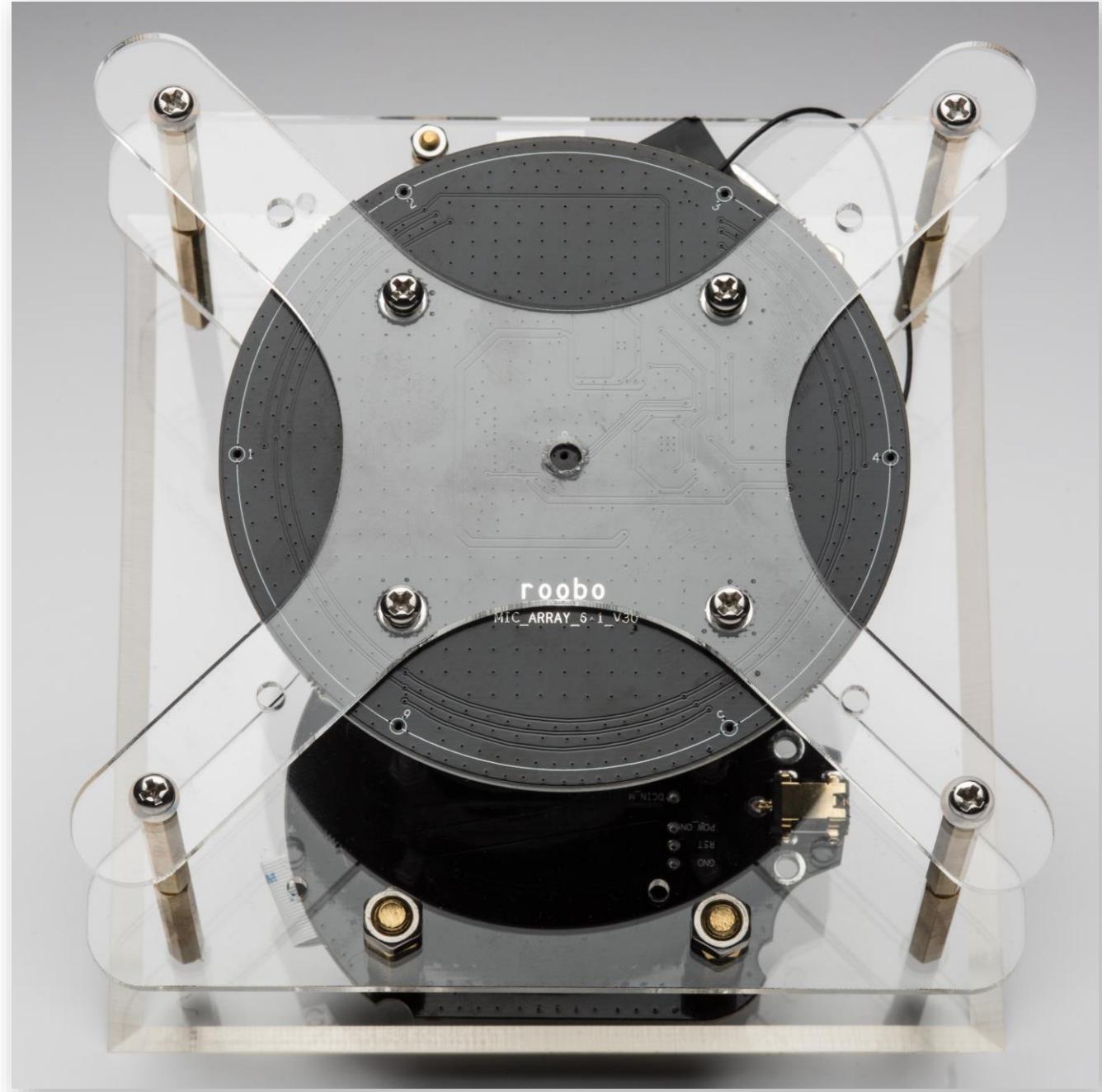
Azure IoT Edge

Announcing
Windows SDK and
Commercial Drone Solutions
with Azure IoT Edge and AI



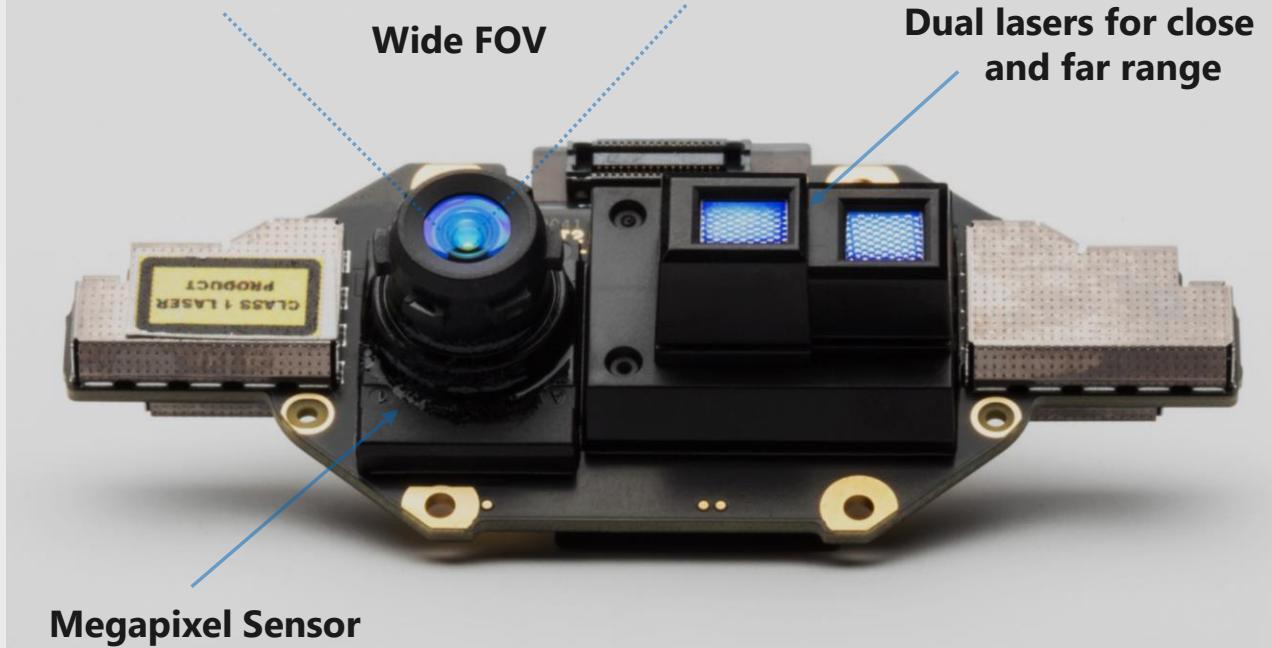
Azure AI-enabled edge devices

Announcing
Speech Devices SDK
& Reference Kits



Azure AI-enabled edge devices

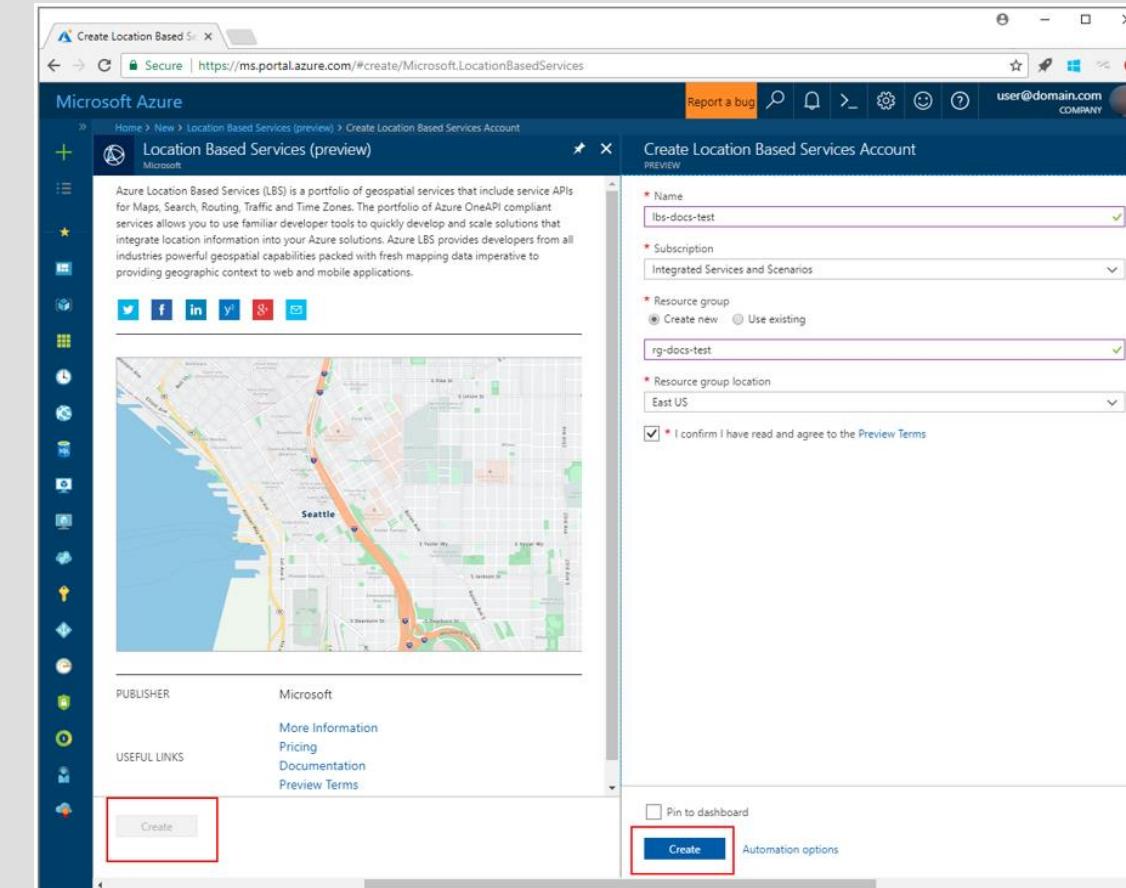
Announcing
Project Kinect for Azure



IoT | Azure Maps

Azure Maps becomes Generally Available

- Azure Maps is a portfolio of geospatial APIs natively built into Azure
- Enables developers to integrate mapping, search, routing, traffic and time zone capabilities to applications
- New at GA:
- Rebranding to “Azure Maps”
- Search API capabilities:
 - Search along Route
 - Nearby Search
 - Geometry Search
- Accessibility features for JS Map Control



[Learn more about Azure Maps](#)

WHY choose Maps?

Key reasons for customers to opt for Azure Maps for their geospatial needs

 In-vehicle use licensing rights

 Commercial routing

 End-to-end location aware solutions

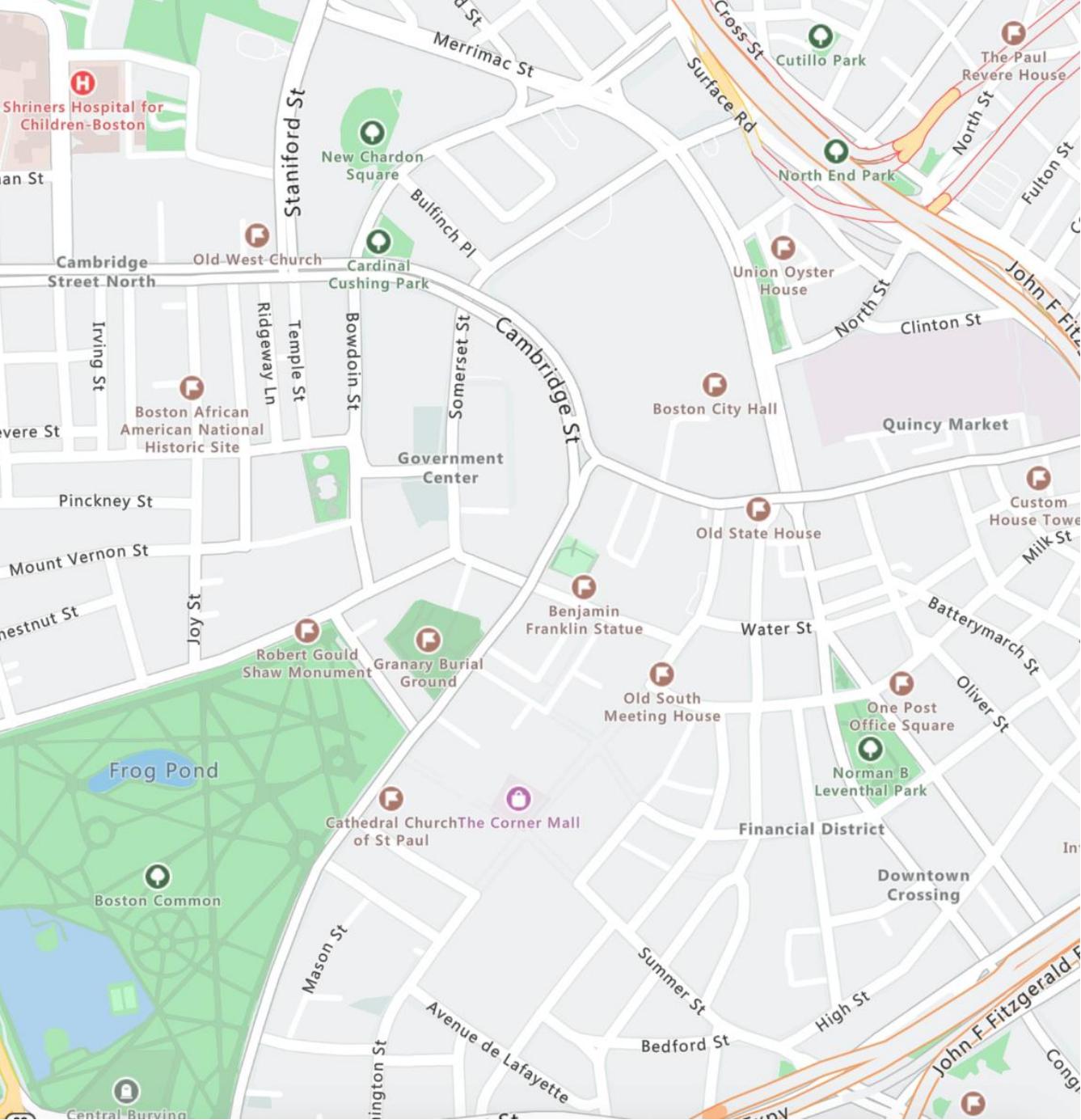
 Best in class traffic data

 Functionality in over 30 languages

 Build on and integrated into Azure!



Powered by leading map supplier TomTom

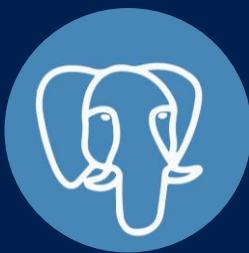


Azure

Infrastructure - IaaS
Dev Tools + DevOps
Containers + Serverless
Internet of Things
Data
.NET & Dev Tools
Artificial Intelligence



SQL DB



PostgreSQL



MySQL



Redis Cache



Cosmos DB

Azure Operational Data Services

Azure Database Migration Service

Confidently migrate databases with Azure Database Migration Service

- **Seamless, end-to-end** solution for moving relational databases to the cloud.
- **Near-zero** downtime as you migrate your business-critical apps.
- Migrate **at scale** from multiple sources to your target database.

Scenarios		Status
Source	Target	
SQL Server	Azure SQL Database (single/elastic)	In preview
SQL Server	Azure SQL Database Managed Instance	GA
SQL Server	SQL Server in Azure VMs	In preview
MySQL	Azure Database for MySQL	In preview
PostgreSQL	Azure Database for PostgreSQL	In preview
MongoDB, Cassandra	Cosmos DB	In preview
Oracle	SQL Server in Azure VMs Azure SQL Database	In preview

Azure Cosmos DB Updates

A globally distributed, massively scalable, multi-model database service.

- Multi-Master at global scale – Private Preview
- Azure Cosmos DB Provision throughput for a set of containers / database level in Azure Cosmos DB – Preview
- Virtual Network Service Endpoint (VNET) – General Availability
- Azure Cosmos DB Bulk Executor library – General Availability



MongoDB
SQL
Table storage
Gremlin Graph
Spark
Cassandra

Azure SQL Data Warehouse

SQL DW Compute Optimized Gen2 tier redefines cloud analytics

ENHANCED CONCURRENCY

128 concurrent queries from a single cluster

IMPROVED QUERY PERFORMANCE

5x query performance improvement with adaptive caching

SCALE WITHOUT LIMITS

5x compute availability and unlimited columnar storage for most complex solutions

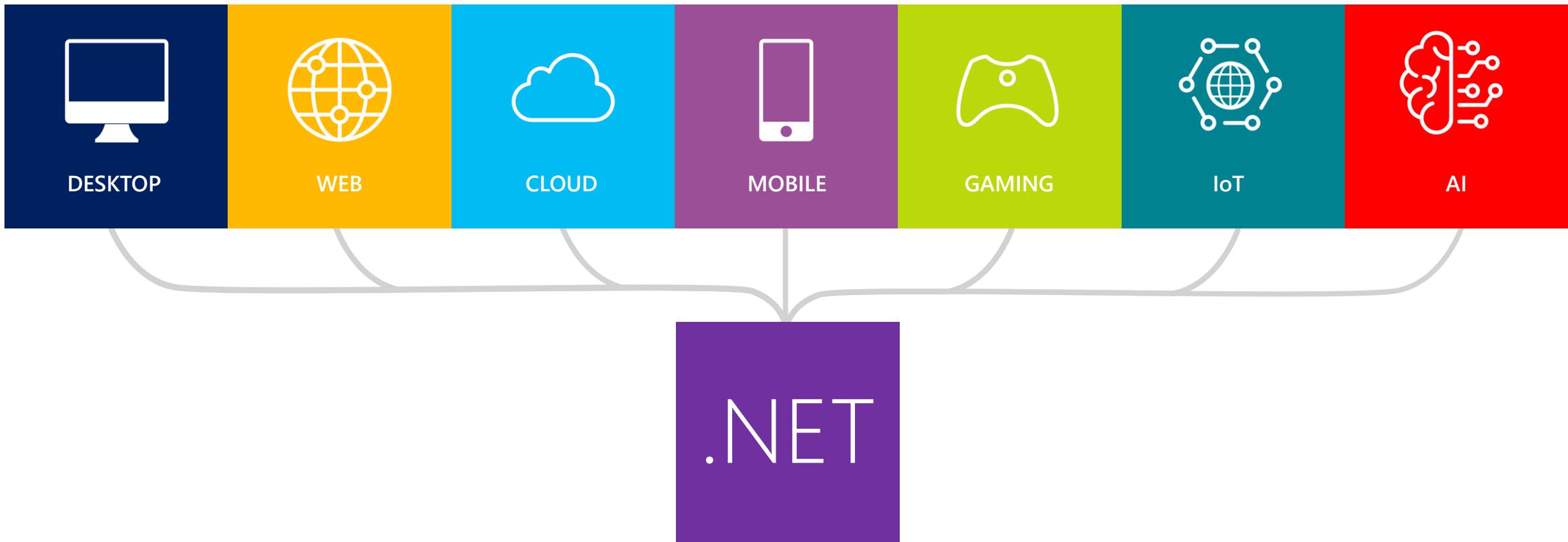
Improved integration across Microsoft and other leading BI & Data Integration services



Azure

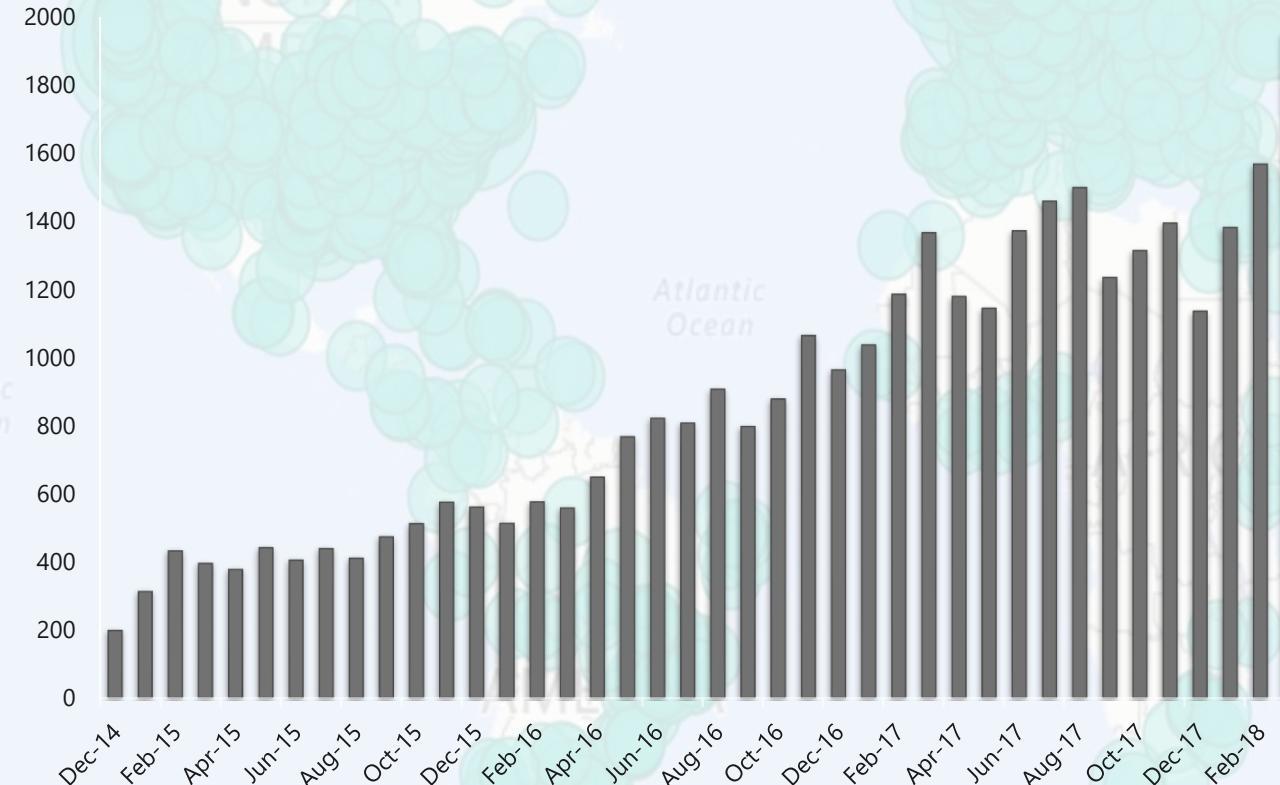
Infrastructure - IaaS
Dev Tools + DevOps
Containers + Serverless
Internet of Things
Data
.NET & Dev Tools
Artificial Intelligence

Your platform for building **anything**



.NET Open Source Success

COMMUNITY ACCEPTED PULL REQUESTS

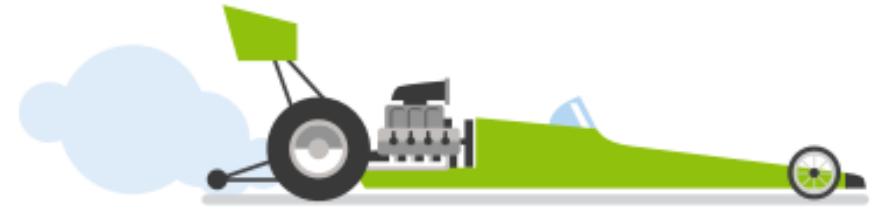


"Samsung is embracing .NET because it is a completely open source project." — Samsung

".NET is open source; that allows us to contribute back to it if we have any performance issues which Microsoft review and together we make a better product." — Illyriad Games

19,000+ Community Contributions from 3700+ Companies outside Microsoft

.NET Core 2.1 Themes



- Faster Build & Runtime Performance
- Close gaps in ASP.NET Core and EF Core
- Improve compatibility with .NET Framework
- GDPR and Security
- Microservices and Azure
- Faster Internal Engineering System

Download .NET Core 2.1 RC
<https://aka.ms/DotNetCore21>

.NET Core 2.1 Major Features

.NET Core

- Global Tools
- Span<T>
- Sockets
- HttpClient Performance
- Windows Compatibility Pack

EF Core

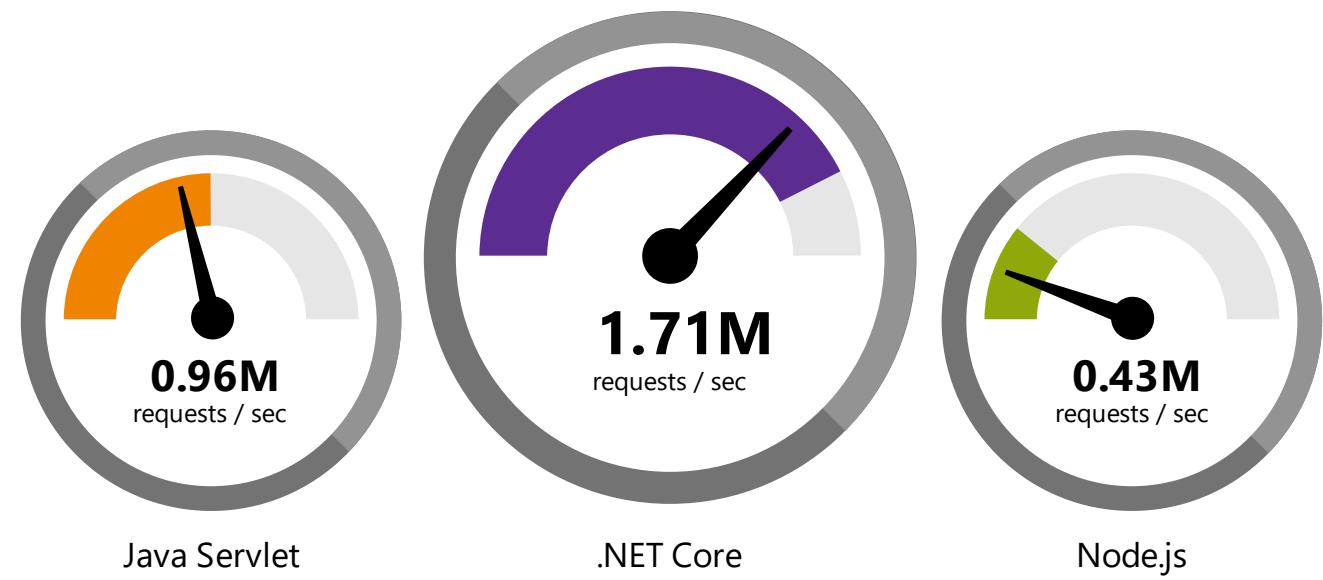
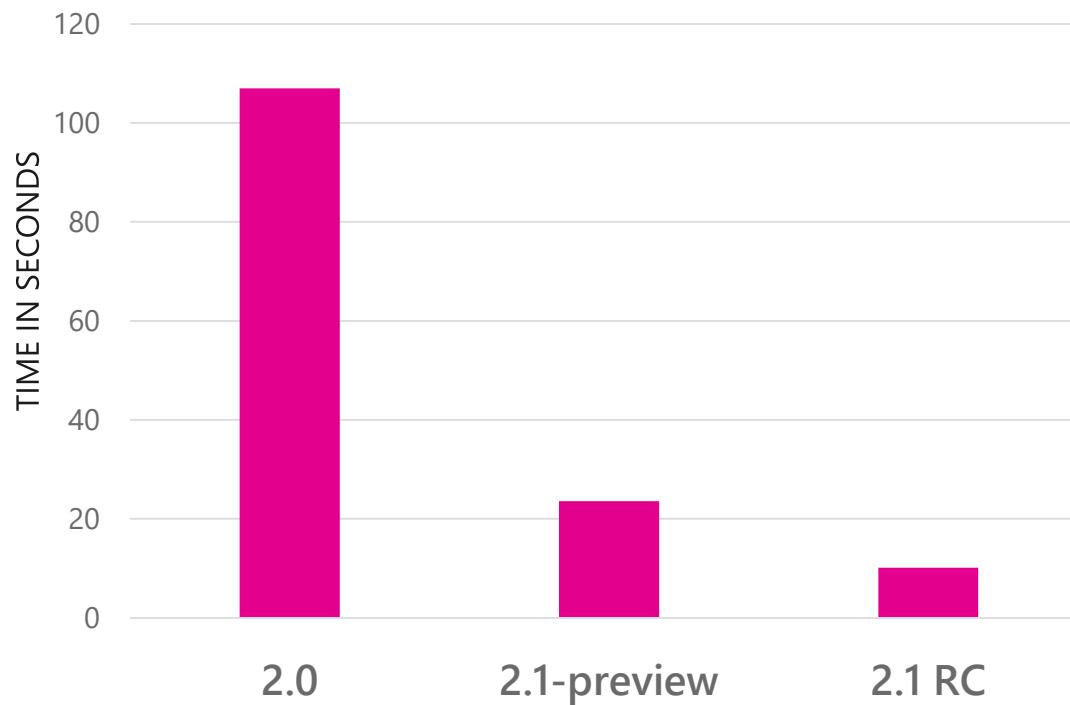
- Lazy Loading
- Value conversions
- Query types
- Data seeding

ASP.NET Core

- HTTPS
- Razor UI as a library
- HttpClientFactory
- ASP.NET Core SignalR

.NET Core 2.1 Tooling Performance

INCREMENTAL BUILD TIME FOR .NET
CORE SDK



Data sourced from official tests available at [TechEmpower Round 14](#).

.NET Core 2.1 for IoT

.NET Core now supported on

ARM32 (armv7+) devices like:
Raspberry PI 2+

Runs on:
Linux (Ubuntu 18.04 and Alpine 3.7)
Win10 IoT

Also supported:
containers on the device

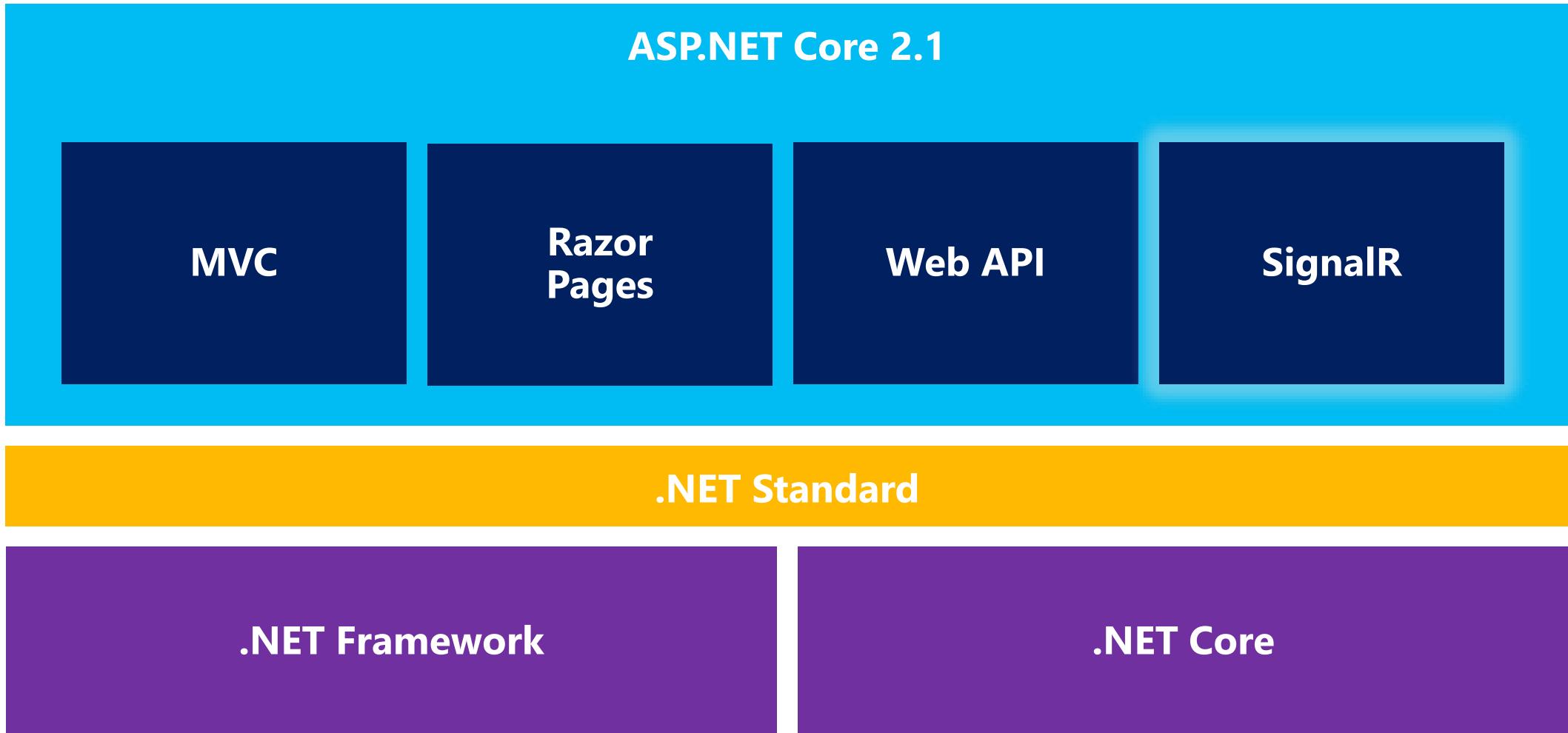
Azure IoT Hub

Support for .NET Core
Bi-directional communication
Authenticate per device
Device registration at scale
Management, etc.

Samsung

Tizen 4.0 Supports .NET Core
Rolling out on all new Smart TVs
.NET powered Start screens
Visual Studio Tools for Tizen
App seller site accepting .NET apps

ASP.NET Core 2.1



New in ASP.NET Core 2.1

SignalR	[ApiController], ActionResult<T>
Razor class libraries	IHttpClientFactory
Identity UI library & scaffolding	Kestrel on Sockets
HTTPS	Generic host builder
GDPR	Performance
MVC functional testing	Updated SPA templates

Azure SignalR Service Preview Now Available

- Add real-time web functionalities easily with Azure and .NET Core 2.1
- Enable via “services.AddSignalR().AddAzureSignalR()”



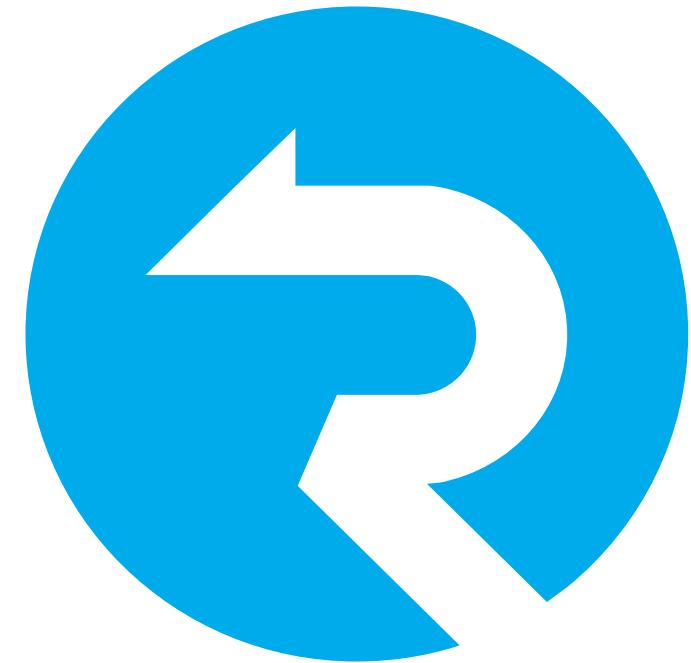
Fully managed service

No more worries about capacity provisioning, scaling, or persistent connections



Native SignalR development

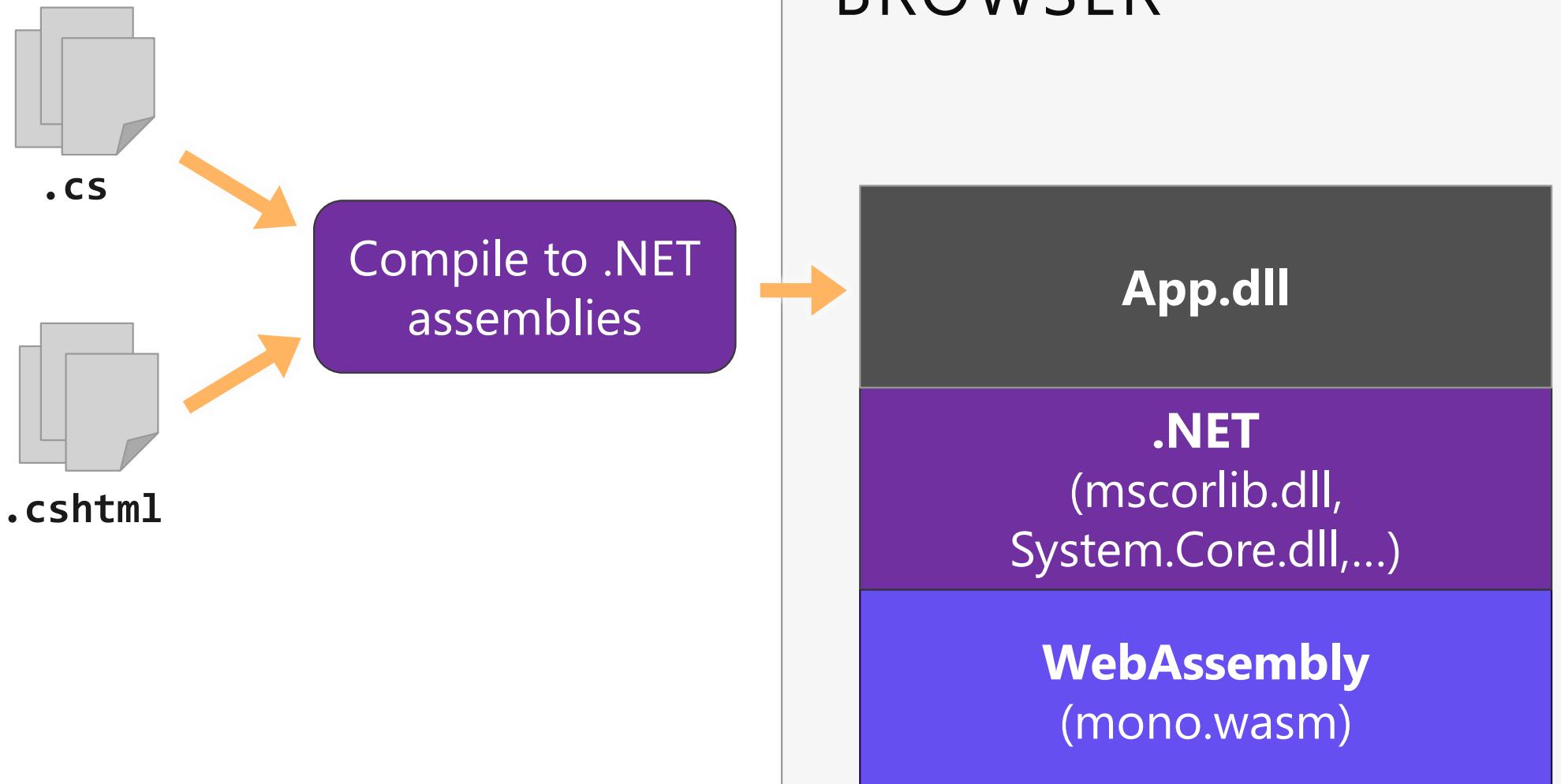
Use ASP.NET Core SignalR to build real-time experiences such as chat, stock tickers, live dashboards, and instant broadcasting



Experimental Blazor: .NET in the Browser

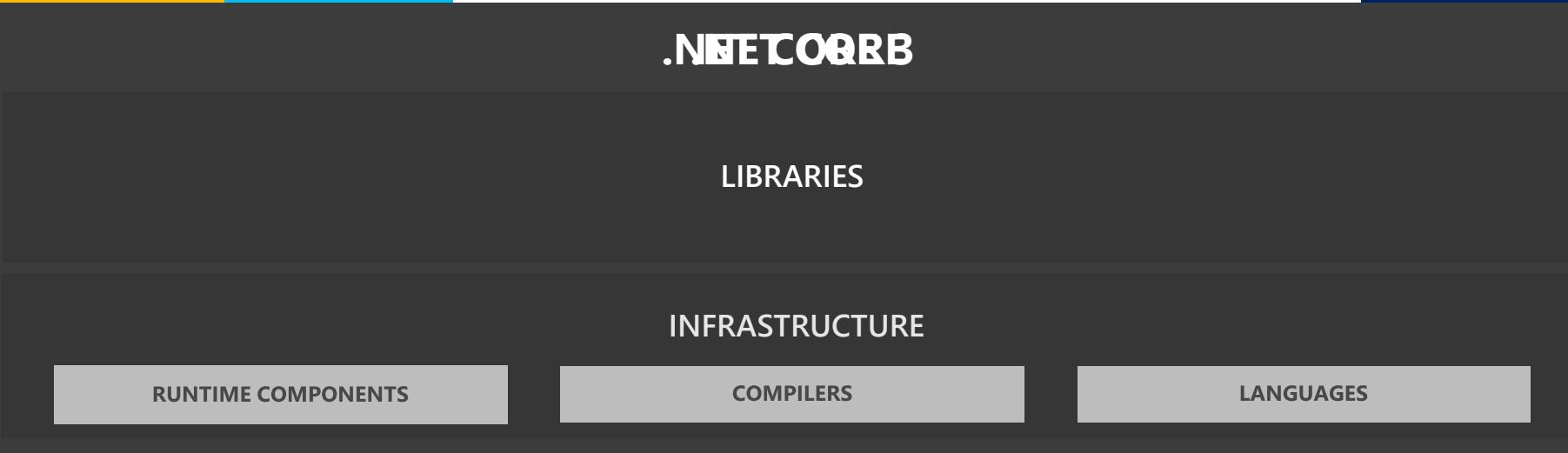
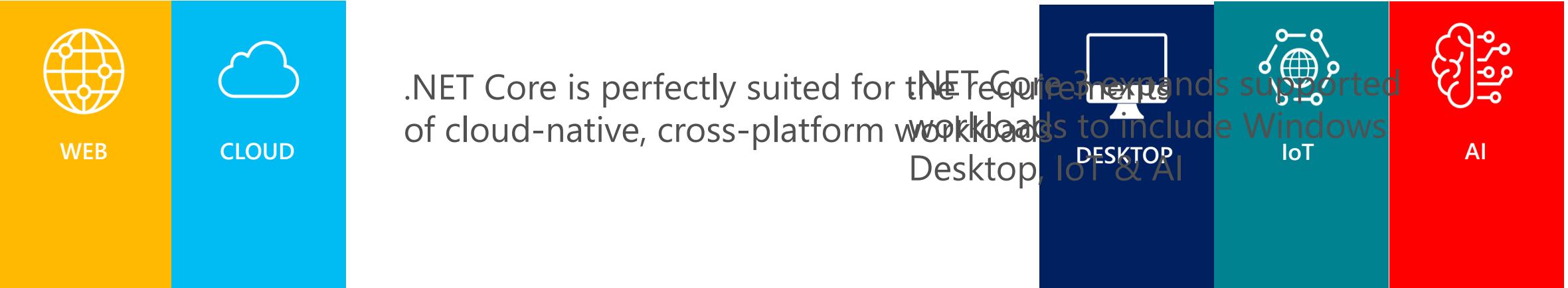
- Build client side Web UI in .NET
 - You don't need to know AngularJS, React, Vue, etc
 - Take advantage of stability and consistency of .NET
- Runs in all browsers
 - Native performance
 - Strongly typed on client and server
 - Requires no plugin or code transpilation
 - Share C# code with the client and the server
- Implemented with WebAssembly

How Blazor works



.NET Core 3.0 Roadmap

.NET Core 3



.NET Core 3 Desktop Improvements

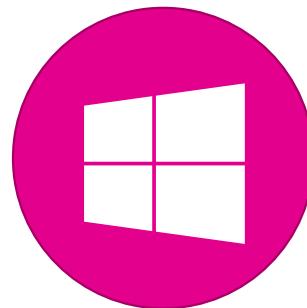
- .NET Core 3 supports WinForms and WPF frameworks
 - XAML Islands - WinForms & WPF can host UWP
 - XAML Controls – WinForms & WPF browser and media UWP controls
 - High DPI fixes for WinForms
- Access to all the Windows 10 API's
- NET Core App Bundler
 - Precompiled, fast startup
 - Small apps by removing unused dependencies, link away unused IL
 - Single self-contained .exe

Why Windows Desktop on .NET Core?

- Side by side
- Machine global or app local framework
- Core runtime and API improvements
- SDK based .csproj project system

Xamarin Forms

- Open Source
- Cross Platform
- Write Once, Run Anywhere



Xamarin Forms

- 3.0 – Released at Build
 - CSS
 - Flex Layout
 - Visual State Manager
 - Support for Right-to-Left languages

BRK2437

What is new in Xamarin Forms 3.0

Visual Studio 2017 15.7 Productivity Improvements

- More refactorings
 - foreach to for and vice versa
 - LINQ query to for loop
 - Toggle between var and explicit type
 - More LINQ refactorings coming in 15.8
- .editorconfig improvements
 - Item template added to Visual Studio
 - One click cleanup for coding conventions (15.8)
 - Compiler support for .editorconfig (15.8)
- Progress icons in Test Explorer

Visual Studio for Mac version 7.5

aka.ms/vs4mac

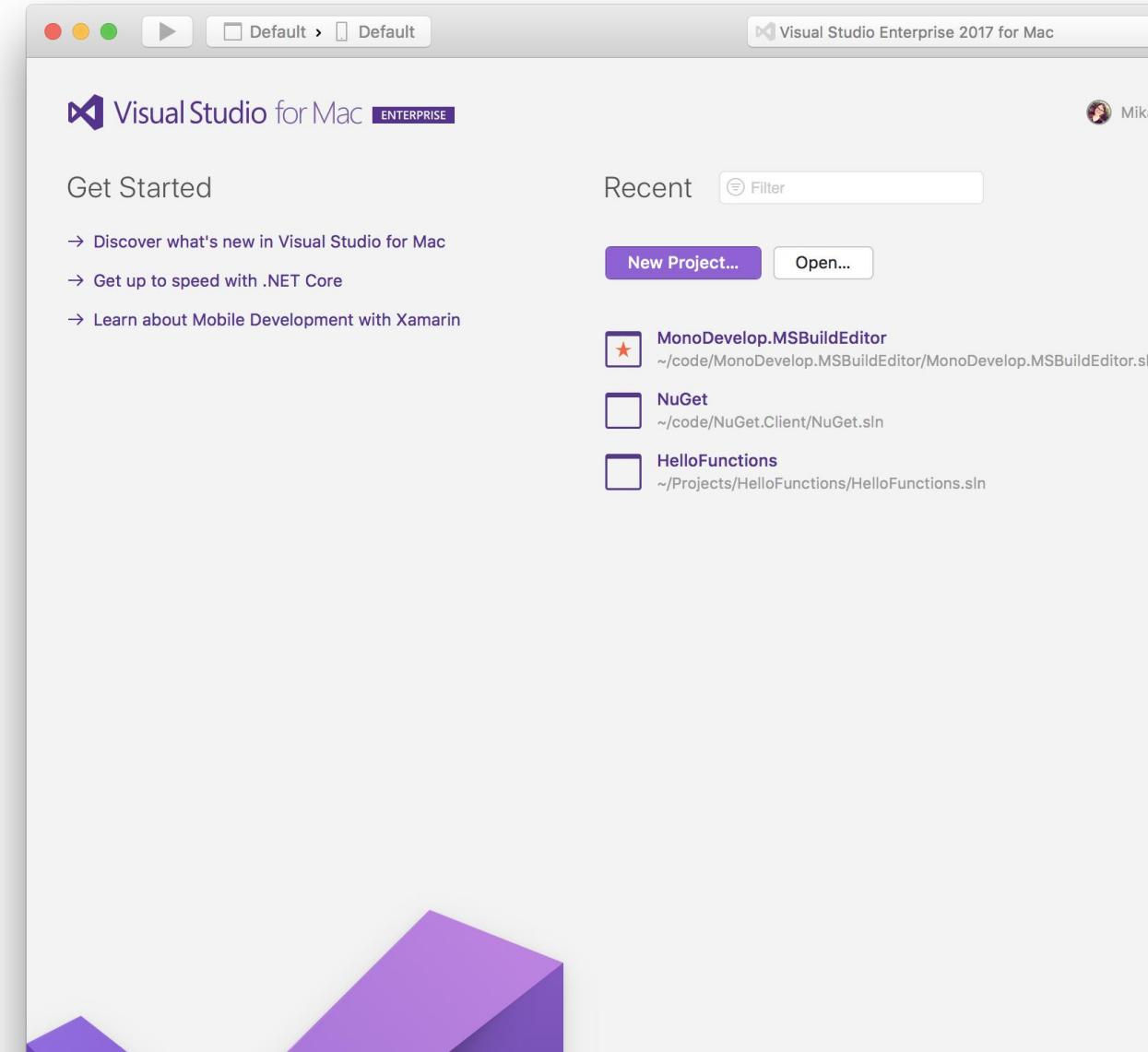
Razor, TypeScript, and JavaScript
language services

Azure Functions powered by
.NET Core

Xamarin.Forms on .NET Standard 2.0

C# 7.2, EditorConfig, .NET Core 2.1 RC
support

Team Foundation Version Control
support (preview)



Visual Studio Live Share

20,000+ users registered for a private preview after Connect()



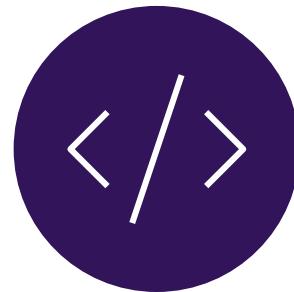
Tools You Love

Real-time sharing in
the tools you love.



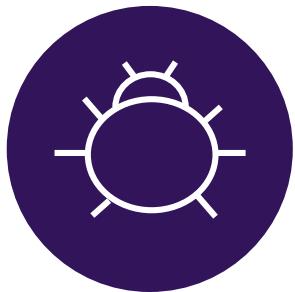
Collaborative Editing

Collaboratively edit.
Navigate independently.



Share Full Context

Share the full context
of your code.



Debug Together

Collaboratively debug.
Inspect on your own.

aka.ms/vsln

Visual Studio Live Share

Using “your” tool with full project context

Collaborative editing

Collaborative debugging

Shared Servers (new!)

Shared Terminal (new!)

*Across Windows, Mac, Linux

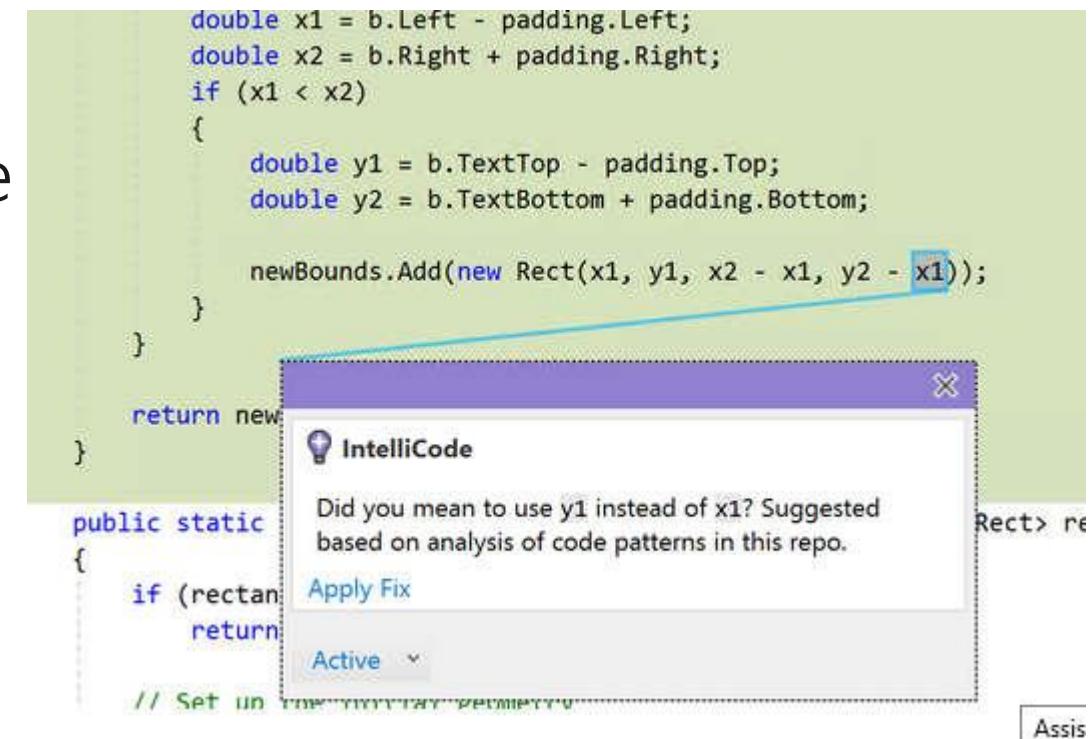
*All programming languages

Visual Studio IntelliCode

Based on an Azure machine learning model that offers :

Better code completion and automatic
code formatting to match your usual style;

Suggest NET related APIs that are likely to
be the most relevant for you given the line
of code you're writing.



Announcing...

.NET Conf 2018

Save the date!

Sept 12-14, 2018

www.dotnetconf.net

A virtual training event brought to you by the community and .NET product teams

Learn. Imagine. Build.

.NET Sessions

.NET Platform

Visual Studio

Azure

BRK2151

What's new in Web Development with ASP.NET Core 2.1

BRK2147

Meet the new stack for real-time web communication: ASP.NET Core SignalR

BRK2155

The Future of C#

BRK2144

Entity Framework Core 2.1: Simple, Powerful Data Access for .NET

BRK2134

The Present and Not-too-distant Future of Visual Studio

BRK2152

What's new with Visual Studio for Mac

BRK2145

Get in the Zone: Visual Studio 2017 Productivity Enhancements

BRK2148

Supercharge your debugging in Visual Studio 2017

BRK3811

Building Resilient Microservices with .NET Core and Azure Kubernetes Services (AKS)

BRK2117

Diagnosing and debugging live cloud applications

BRK3810

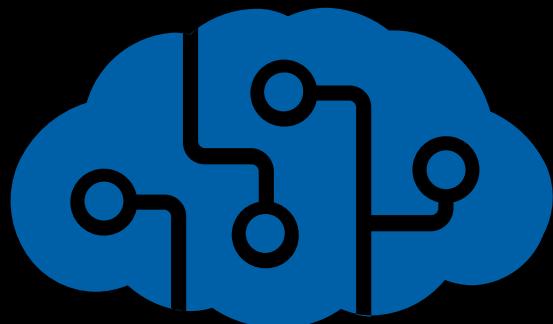
Modernizing existing .NET applications with Windows Containers and Azure cloud

Azure

- Infrastructure - IaaS
- Dev Tools + DevOps
- Containers + Serverless
- Internet of Things
- Data
- .NET & Dev Tools
- Artificial Intelligence

AI Services in Azure

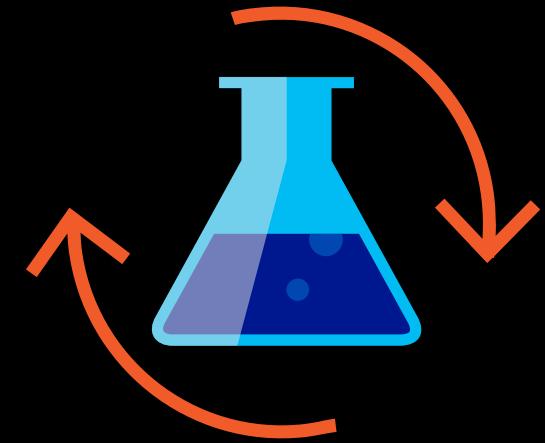
Bringing the best of AI to Azure and the best of Azure to AI



Pre-Built AI
Azure Cognitive Services



Conversational AI
Azure Bot Service



Custom AI
Azure Machine Learning

How Developers Use AI in Azure

Build Modern Applications with AI

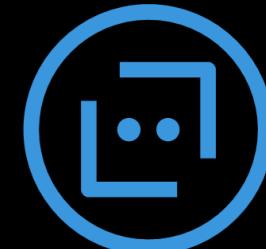
Understand & interpret meaning of data
including text, voice, images



Azure
Cognitive Services

Build Conversational Applications

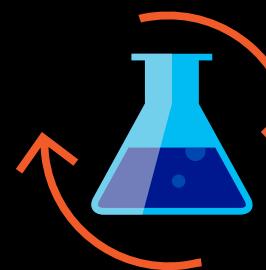
Engage with users in natural ways



Azure
Bot Services

Optimize Business Processes with AI

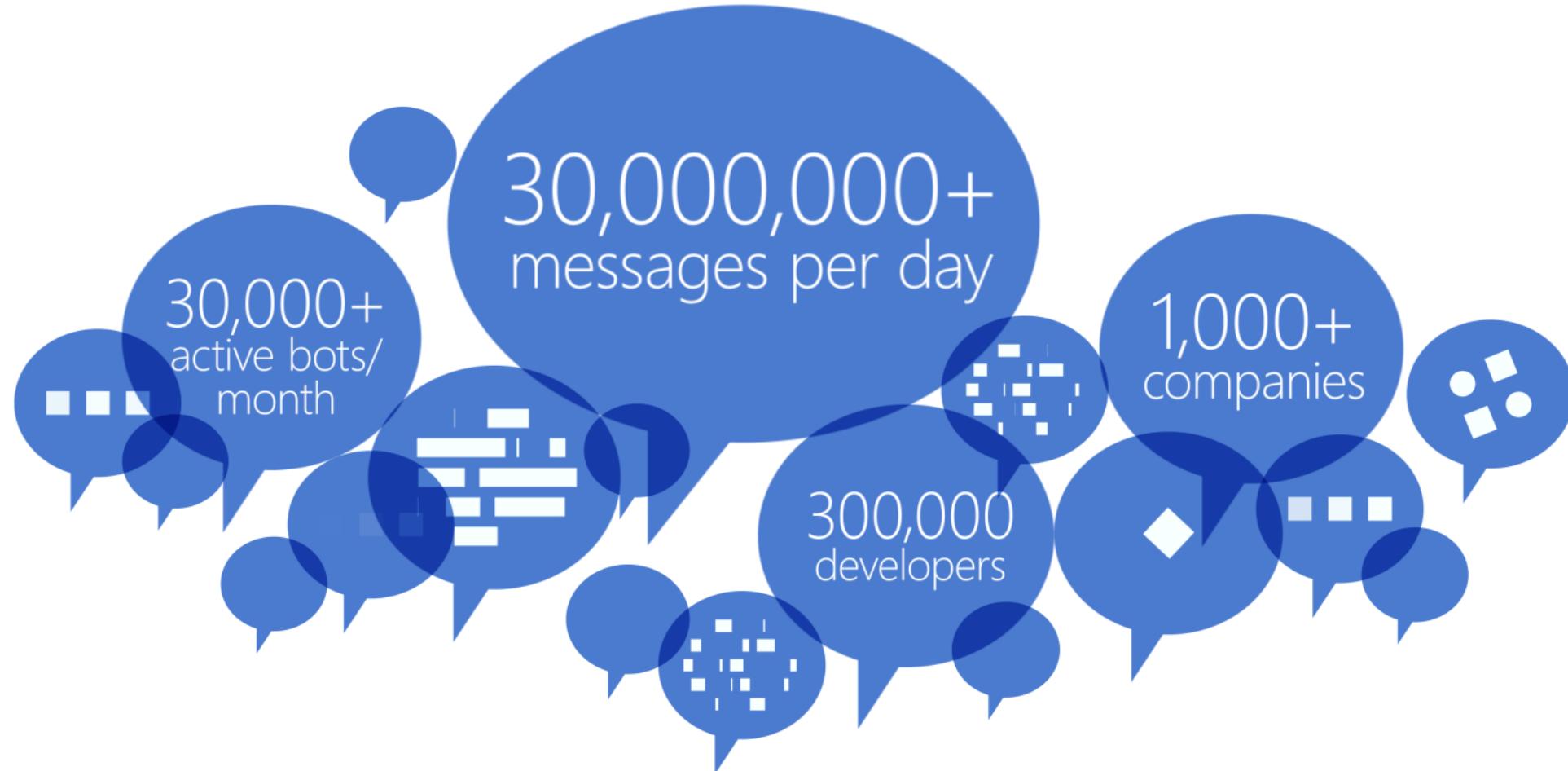
Reason, learn & form conclusions from data



Azure
Machine Learning



Conversational AI: What's New?



Conversational AI : Customers

MIRABEAU *

A Cognizant Digital Business

★**macy's**

viasPORT
BRITISH COLUMBIA

 **stackoverflow**

Sabre

 **Banco Ciudad**
De Buenos Aires

Telefonica

 **UST Global®**

VHV / / /
VERSICHERUNGEN

NAVITIME

ASIANA AIRLINES ↗

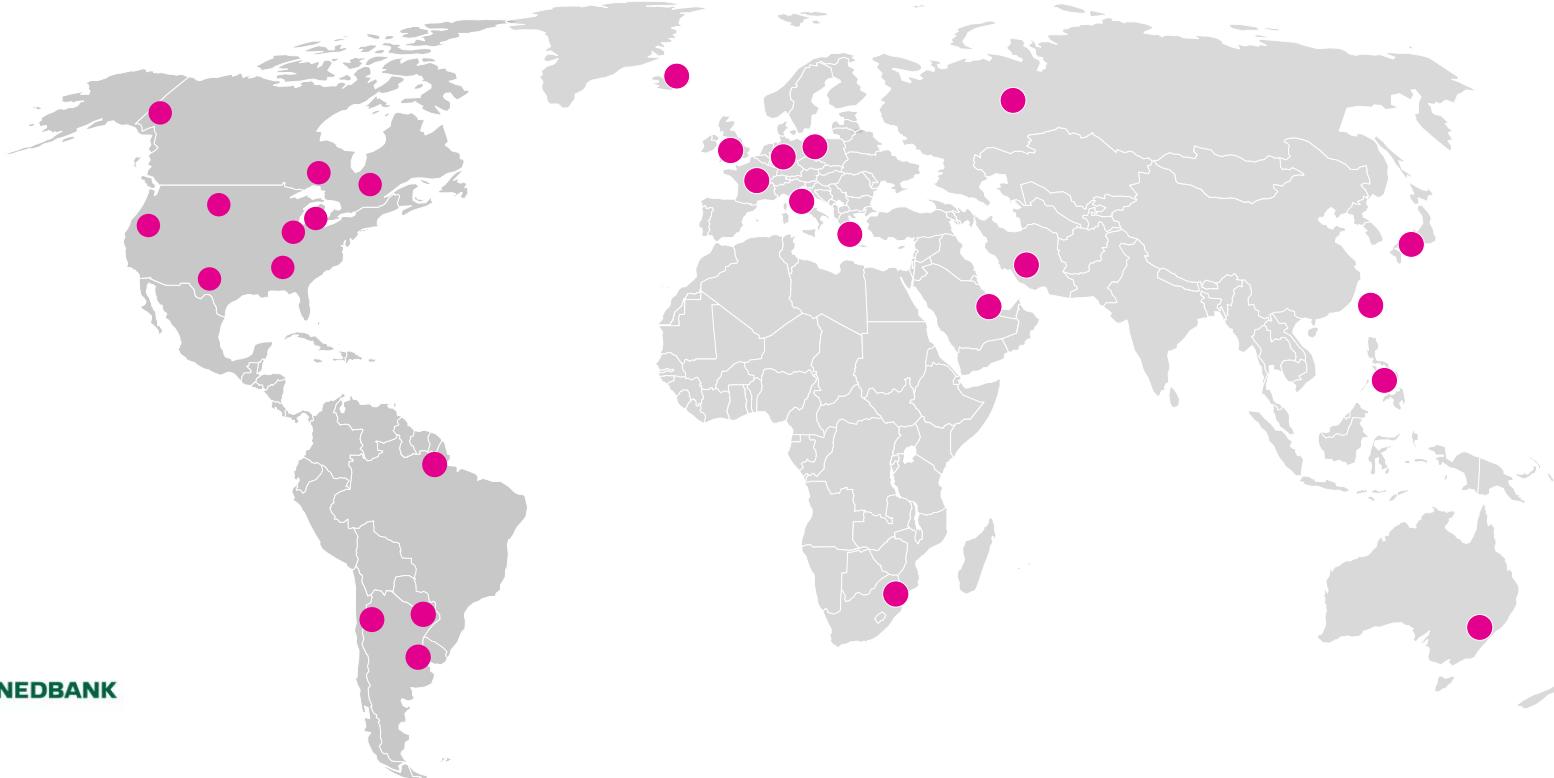
 **Dixons
Carphone**

PROGRESSIVE

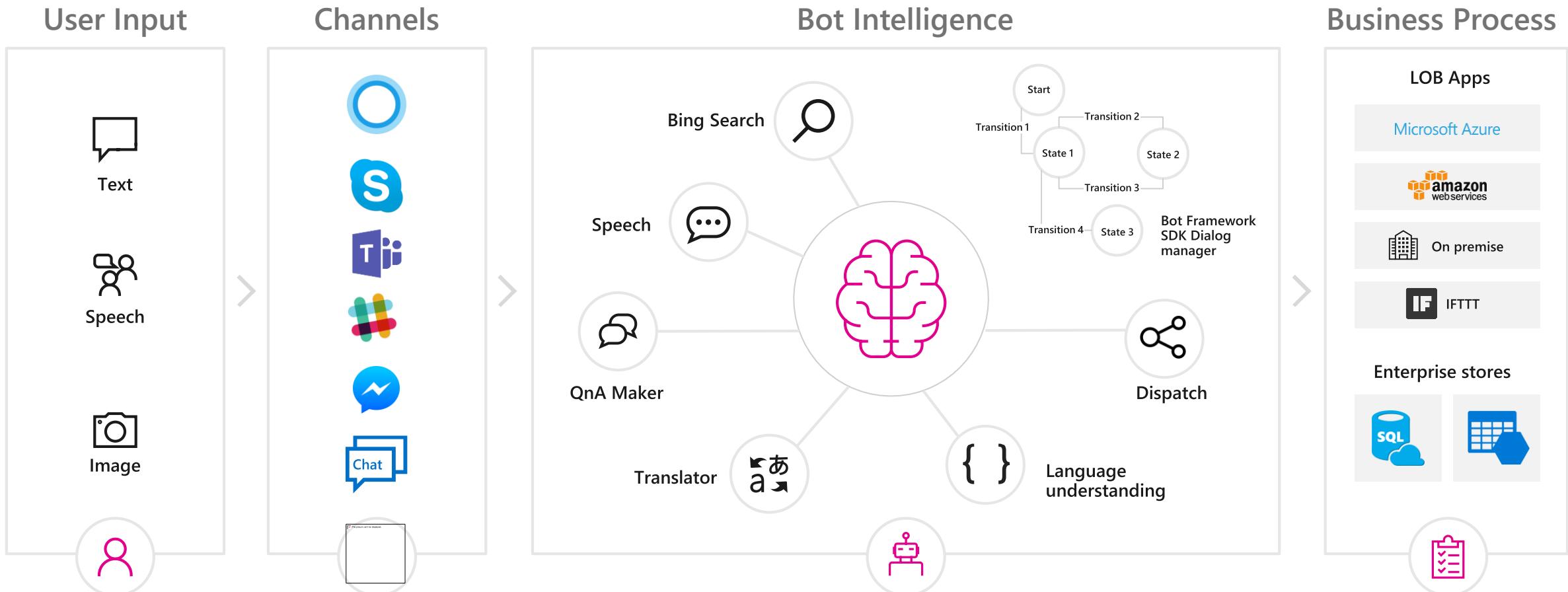
 **AMU** American Public
University System 

 **FIDUCIA GAD**
ZUKUNFTSERFAHREN

audioburst



Conversational AI: Azure Bot Service + Cognitive Services



Azure Tools

Security

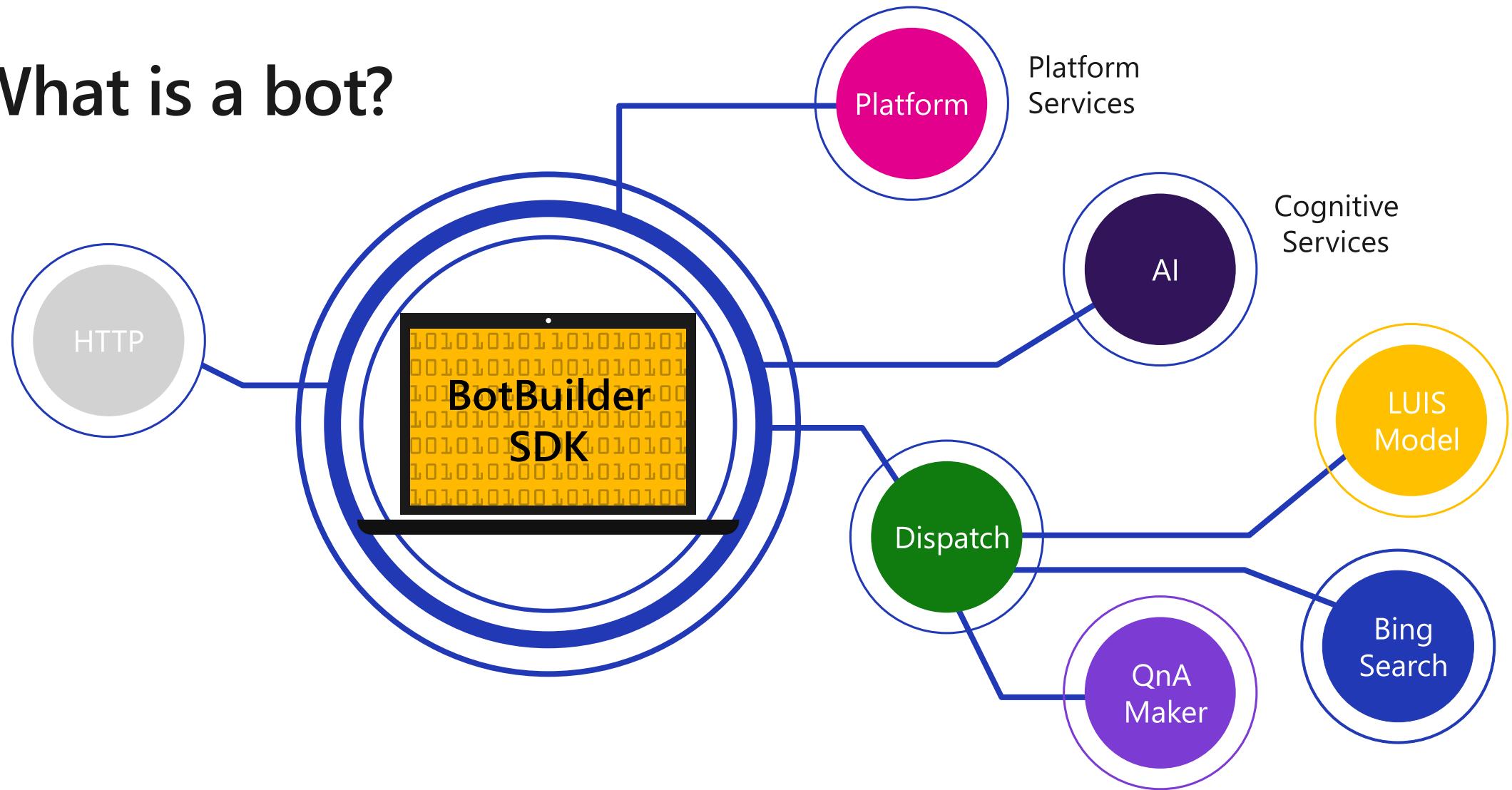
Logging

Auditing

Integration



What is a bot?



REST endpoint

Direct Line Protocol



Conversational and business logic



Context sensitive

Conversational AI

Bot Framework



BOT BUILDER SDK

- Build and connect intelligent bots
- Powerful, easy-to-use framework
- Start quickly with samples & templates
- Open source on GitHub



AZURE BOT SERVICE

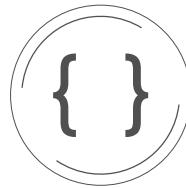
- Accelerated development
- Give your bot intelligence with Cognitive Services
- Engage your audience, wherever they are



CHANNELS

- Connect your bot to Teams, Skype, Cortana, or other channels
- Configure channels via Azure Bot Service
- User discovery of bots

Adding Intelligence



Language Understanding Intelligent Service

Teach your apps to understand commands from your users



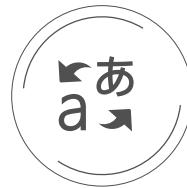
Azure Search

Integrate search into a conversational experience



QnA Maker

Distill information into conversational, easy-to-navigate answers



Bing Speech API

Convert speech to text and back again, and understand its intent

Speaker Recognition API

Give your app the ability to know who's talking

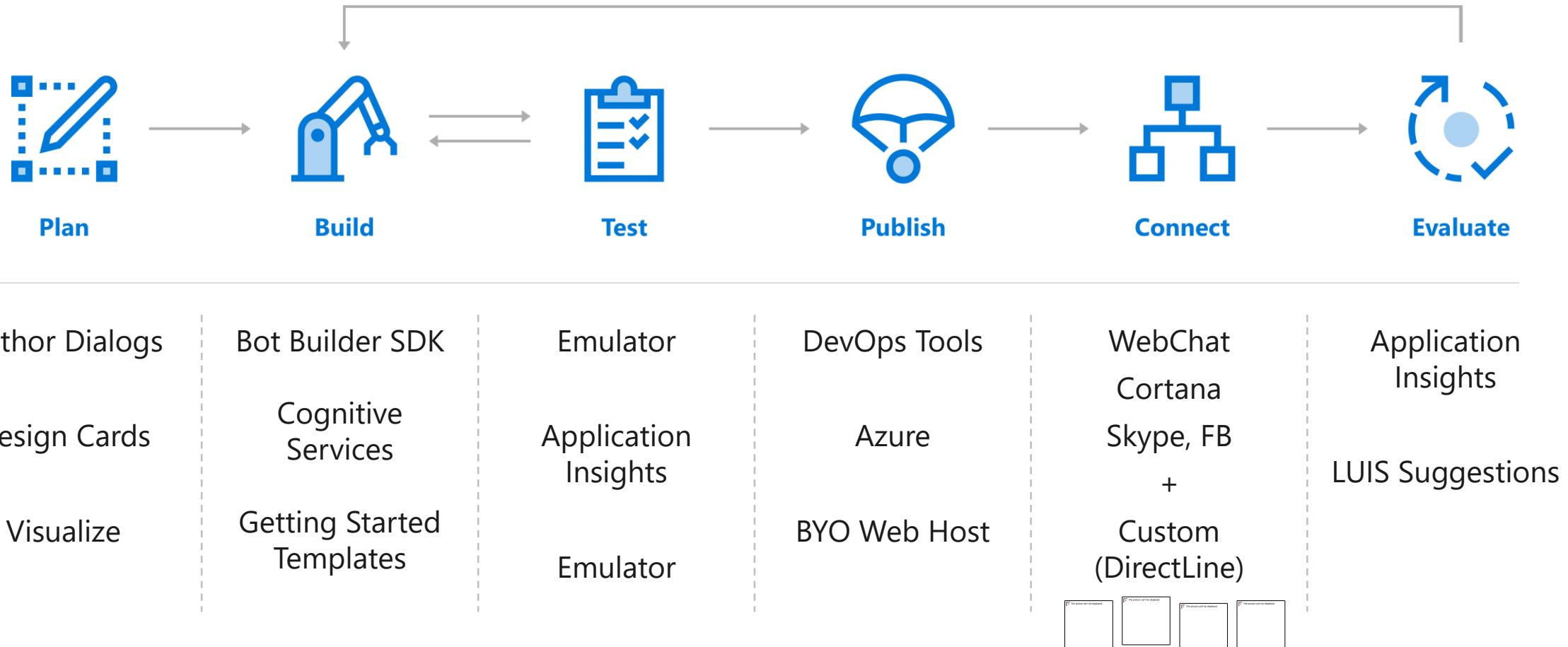
Translator

Easily perform speech and text translation

Custom Speech Service

Fine-tune speech recognition for anyone, anywhere

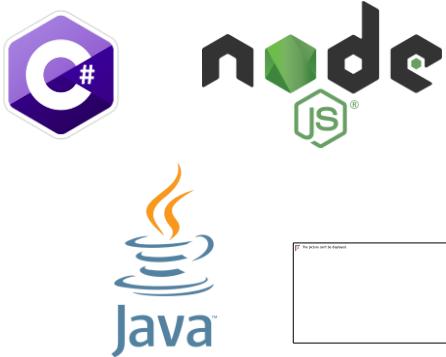
Comprehensive framework for the lifecycle of your project



Building Your Bot

STEP 1

Choose your platform



STEP 2

Quickly get started

- VSIX and Yeoman templates

Scenario focused samples

- Commerce chatbot
- Information chatbot
- Enterprise chatbot

STEP 3

Deploy your bot

- Azure Bot Service
- On-premise hosting
- Hybrid hosting

... YOU HAVE A WORKING BOT!

Command Line Tools



Tools and file formats for building bots with Microsoft Bot Framework

MSBot

Manage your bot configuration file

```
# Connect to an Azure bot  
msbot connect azure [...]  
  
# Connect to LUIS  
msbot connect luis [...]
```

LuDown

Bootstrap language understanding

```
# Greeting  
- Hi  
- Hello  
- Good morning  
- Good evening  
# Help  
- help  
- I need help
```

LUIS

Manage your [LUIS](#) applications

```
# Import LUIS model  
luis import version  
  
# Train  
luis train version  
  
# Publish  
luis publish version
```

Az bot

Manage Azure Bot Services

```
# Create a web app bot  
Az bot create -kind webapp -n "mybot"  
  
# Manage channel registration  
Az bot skype create  
Az bot msteams create  
Az bot directline create
```

BotBuilder SDK

BotBuilder v3

- Current GA release
- Open source
- Strong momentum
- 300k+ developers
- 150k+ bots
- C#, Node.js, samples, docs

BotBuilder v4

- In preview
- Architected for extensibility
- Modular
- C#, JavaScript, Python, Java
- Incorporates feedback from v3

Extensible

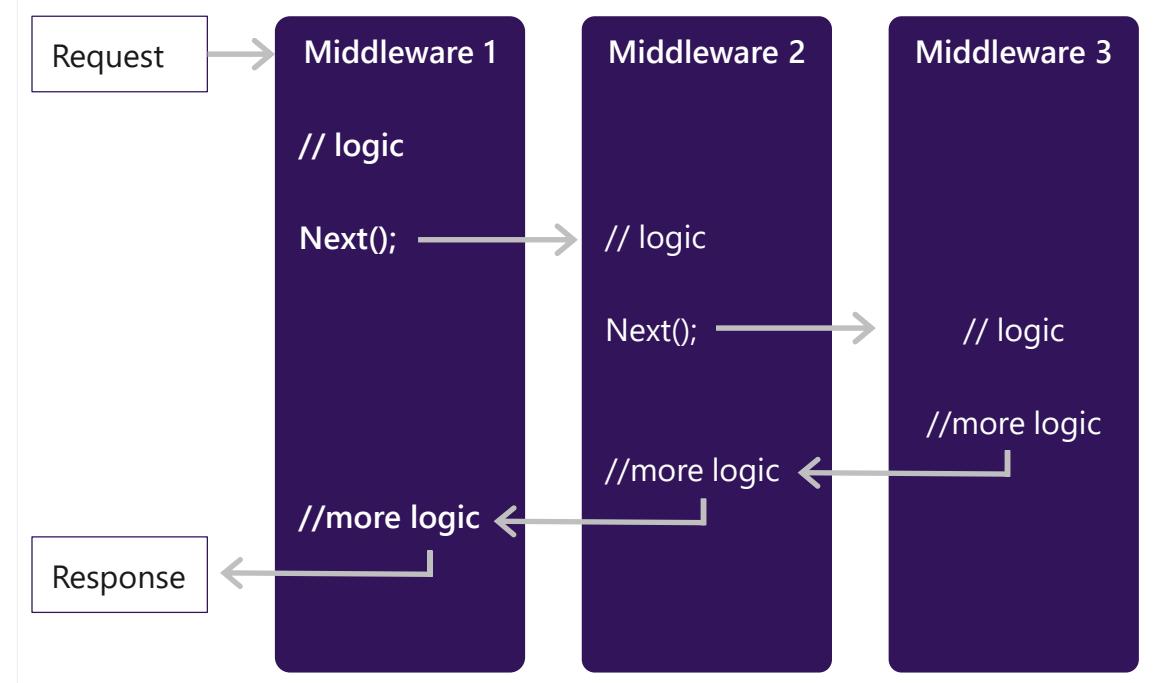
Middleware extends bot's environment and behavior

- Uniform concept across platforms
- Annotating / processing / transforming activities

Adding Machine Translation

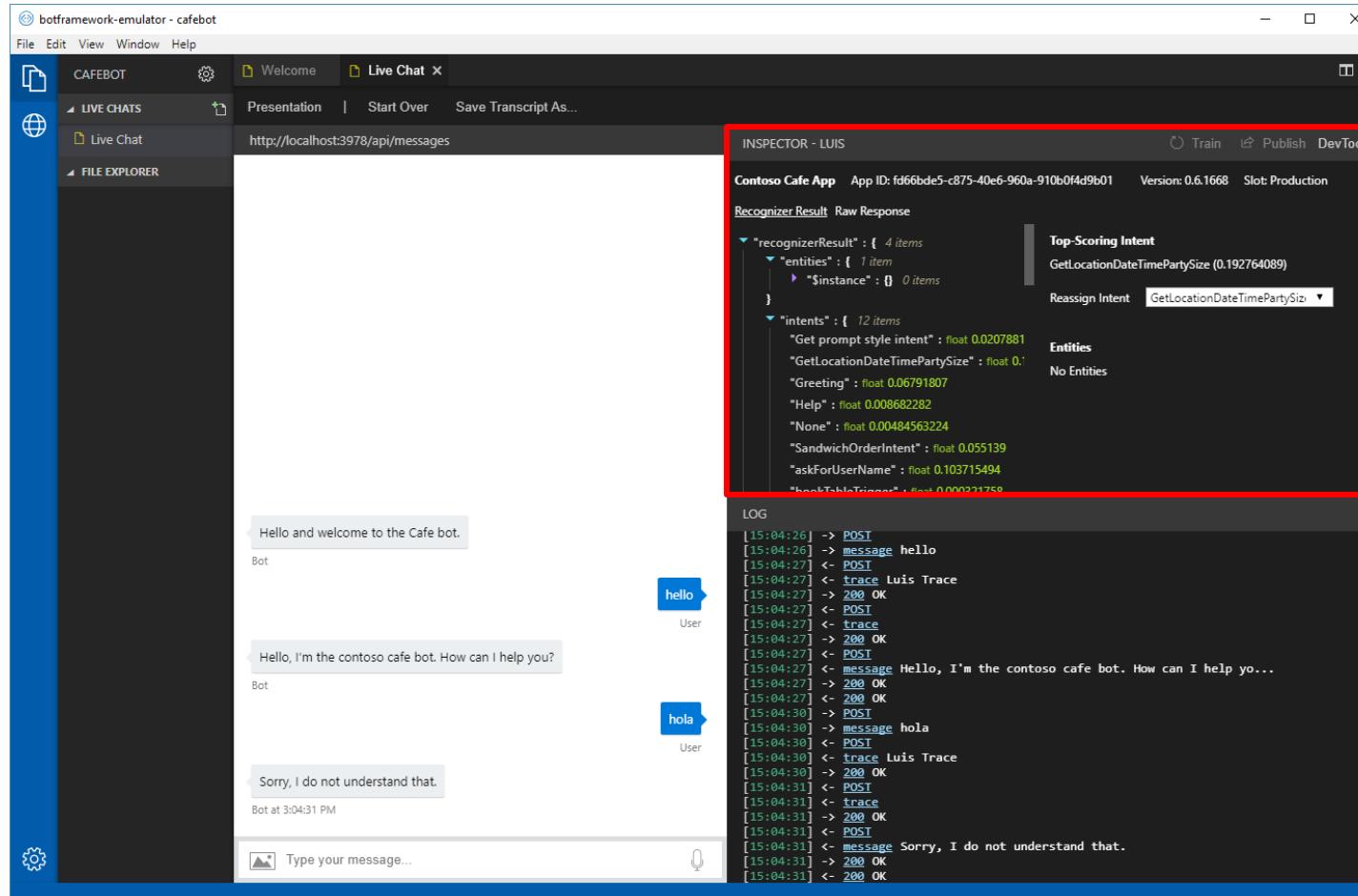
```
69  
70 // Add language translator middleware  
71 const languageTranslator = new LanguageTranslator({  
72     translatorKey: "xxxxxx",  
73     nativeLanguages: ['en'],  
74     setUserLanguage: setUserLanguage,  
75     getUserLanguage: getUserLanguage  
76 });  
77 adapter.use(languageTranslator);  
78
```

Standard Middleware Calling Pattern



Bot Framework Emulator

Extensible plugins for working with services in context of chat



Azure Cognitive Services updates



Vision

Video Indexer
Computer Vision
Face
Content Moderator
Custom Vision



Speech

Speaker Recognition
Bing Speech
Custom Speech
Translator Speech
Unified Speech Speech to Text w. Custom Speech Text to Speech w. Custom Voice Speech Translation w. Custom Translator



Language

Text Analytics
Bing Spell Check
Translator Text
Language Understanding (LUIS)
Content Moderator



Knowledge

QnA Maker

Custom Decision



Search

Bing Entity Search
Bing Autosuggest
Bing Search Web Search, Image Search, News Search, Video Search
Bing Statistics add-in
Bing Visual Search
Bing Custom Search



Labs

Project Gesture
Project Local Insights
Project Academic Knowledge
Project Entity Linking
Project Knowledge Exploration
Project Event Tracking
Project Answer Search
Project URL Preview
Project Anomaly Finder
Project Conversation Learner
Project Personality Chat

Language Understanding (LUIS)

Machine learning-based service to build natural language into apps, bots, and IoT devices.
Quickly create enterprise-ready, custom models that continuously improve.

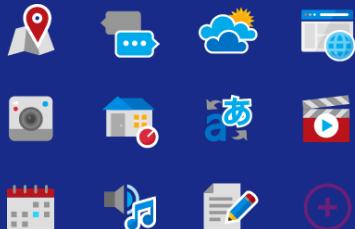
Add natural language to your apps



Designed to identify valuable information in conversations, LUIS interprets user goals (intents) and distills valuable information from sentences (entities), for a high quality, nuanced language model.

Custom Models can be created based on the same technology in Azure Machine Learning

Quickly build a custom language solution



Leverages customizable pre-built apps and entity dictionaries, (e.g. Calendar, Music, Devices).

Dictionaries are mined from the collective knowledge of the web and supply billions of entries, helping your model to correctly identify valuable information from user conversations.

LUIS integrates seamlessly with the Azure Bot Service, making it easy to create a sophisticated bot.

Always learning & improving



Active learning is used to continuously improve the quality of the natural language models.

Once the model starts processing input, LUIS begins active learning, allowing you to constantly update and improve the model.

Enterprise-ready, available worldwide



The service is ready to be deployed in commercial applications and can scale with enterprise quality and performance.

The service meets international compliance standards, supports 12 languages and available worldwide, making it highly accessible around the world

NEW FEATURES

Integrated Experience

- Speech.** Speech priming now happens automatically when the LUIS app is published. A single key works for LUIS & Speech.
- Sentiment.** Sentiment analysis, commonly known as Text Analytics Cognitive Service, is now included as part of LUIS. This is included at no additional charge.
- Multi-lingual.** Build your LUIS application in one language, and Machine Translation is used enable the Bot to work with multiple languages

Core Language Understanding

- Patterns.** Patterns are templates that teach LUIS common utterances with fewer examples. It is fully integrated with machine learning
- Regex entity.** Identifies an entity in the utterance based on a regular expression
- Key phrase entity.** Identifies noun phrases in the utterance using the Cognitive Services Text Analytics APIs

Enterprise-grade Service

- General Availability.** GA Since December 2017, with SLAs, multiple pricing tiers.
- Compliance.** GDPR, ISO & HIPAA compliance
- Worldwide Support.** 12 languages & 13 Azure regions

QnA Maker

Announcing general availability!

New architecture. The data and runtime hosted in your Azure subscription.

No more throttling!

Data privacy and compliance. QnA data is hosted within your Azure compliance boundary.

Azure Application Insights integration.

The screenshot shows the Microsoft QnA Maker interface. At the top, there's a navigation bar with links for 'QnA Maker', 'My knowledge bases', 'Create a knowledge base', 'Documentation', and 'Feedback'. A 'Sign In' button is also present. Below the navigation, a large blue banner features the text 'From FAQ to Bot in minutes.' and a diagram showing three document icons (FAQ, structured document, product manual) leading to a bot icon, which then leads to a chat interface. The chat interface shows a conversation between a user and a bot, with messages like 'What are your hours today?', 'Today we are open from 7:00 AM to 10:00 PM.', 'Do you have vegetarian options?', and 'Yes, we have vegetarian options available.' Below the banner is a 'GET STARTED >' button. The main area is titled 'Test Build' and includes 'Download Knowledge Base' and 'Replace Knowledge Base' buttons, along with 'Save and retrain' and 'Publish' buttons. A message indicates 'Retrained 5 minutes ago'. On the left, a sidebar shows a 'Knowledge Base' section with 'Test' selected and 'Settings' below it. The 'TEST' tab is active, showing a list of alternatives for a question: '**Activating the voice ac...**, **The concept** D-Most ..., **Requirements** Via t..., and None of the above. To the right, the 'Chat' section displays a conversation log. A message from 'You' asks 'how to enable the voice activation system?'. A response from 'Test Build - 5 mins ago' provides instructions: 1. Press button on the steering wheel, 2. Wait for the signal, 3. Say the command. A note explains that this symbol in the instrument cluster indicates the voice activation system is active. A blue arrow points from the 'None of the above' option in the sidebar to this note. Another blue arrow points from the note to the 'Add alternative here +' button at the bottom of the sidebar. The bottom of the interface has buttons for 'Download chat logs' and 'Upload chat logs', and a text input field for 'Type your message...' with a send button.

Cognitive Services Labs

Labs provides developers with an early look at emerging Cognitive Services technologies. Early adopters who do not need market-ready technology can discover, try and provide feedback on new Cognitive Services technologies before they are generally available.

[Filter Labs](#) [Filter by category](#)

Project Gesture

VISION | EXPERIMENTAL[®]

Incorporate gesture-based controls into your apps. Quickly define and implement customized hand gestures, creating a more natural user experience.

[Learn more](#)

Project Personality Chat

DEMO | EXPERIMENTAL[®]

Smart Talk adds conversational capabilities to your bot, so you can build a chatbot that is more empathetic and can hold human-like natural conversations with your users.

[Learn more](#)

Project Local Insights

SEARCH | EXPERIMENTAL[®]

Score the attractiveness of a location, based on how many of a particular amenity are within a specific distance.

[Subscribe](#)

Project Event Tracking

SEARCH | EXPERIMENTAL[®]

Find events associated with Wikipedia entities. Begin with a Wikipedia entity, and receive a list of related events organized by time.

[Subscribe](#)

Project Personality Chat: Build your own personality

Query:

I am going on stage :)

Personality

Professional ▾

Clear Chat

Top Responses & Ranked Score

What are you going to perform?	0.71
What are you going to sing?	0.69
Good luck with that.	0.67
I hope you have a great time.	0.67
Good luck with that...	0.65

Personality

Friendly ▾

Clear Chat

Top Responses & Ranked Score

Oh my gosh that will be amazing	0.69
Oh my gosh that's amazing. Have a great time	0.65
I'm sure you will have a great time	0.65
Oh my gosh that will be amazing. Are you going	0.65
Oh my gosh that's brilliant. Have a great time	0.65

Personality

Humorous ▾

Clear Chat

Top Responses & Ranked Score

With who?! D:	0.77
Really?! Oh my gosh I'm so jealous!	0.77
Oh my gosh you're so lucky! D:	0.77
That's awesome! Good luck! C:	0.77
Good luck! I'm sure you'll be amazing!	0.75

Personality Generation

Query	Professional	Friendly	Humorous	"Andy"
That's interesting	Wasn't it?	Ain't it just. Hows your day?	Tell me about it! :P	Isn't it?
Are you intelligent?	I think so.	What can I say, I'm a smart cookie.	I'm smarter than you..	I think so. I know a couple of things.
Can you sing?	I don't know how to sing.	Not really. I'm not that good at singing.	Haha I can't sing! D:	Of course. I'm an excellent singer!
You are so funny	Why thank you, I try my best.	Am I really though?	Yes, I'm hilarious.	Thanks, I guess.

Adding Personality Chat (v4 SDK)

```
services.AddBot<BasicPersonalityChatBot>(options =>
{
    [...]
    var PersonalityChatOptions = new PersonalityChatMiddlewareOptions();
    middleware.Add(new PersonalityChatMiddleware(PersonalityChatOptions));
});
```

PersonalityChat botPersona = PersonalityChat.Friendly,

```
// Custom Responses, driven from a file
var scenarioResponses = File.ReadAllLines(@"Resources\CustomResponses.txt");
var personalityChatOptions = new PersonalityChatMiddlewareOptions(scenarioResponses);
```

Azure Cognitive Services



Vision



Speech



Language



Conversation



Bing Search



Knowledge



Vision



Speech



Language



Conversation



Bing Search



Knowledge

NEW

Integrating Azure Search with cognitive services

THE  FILES

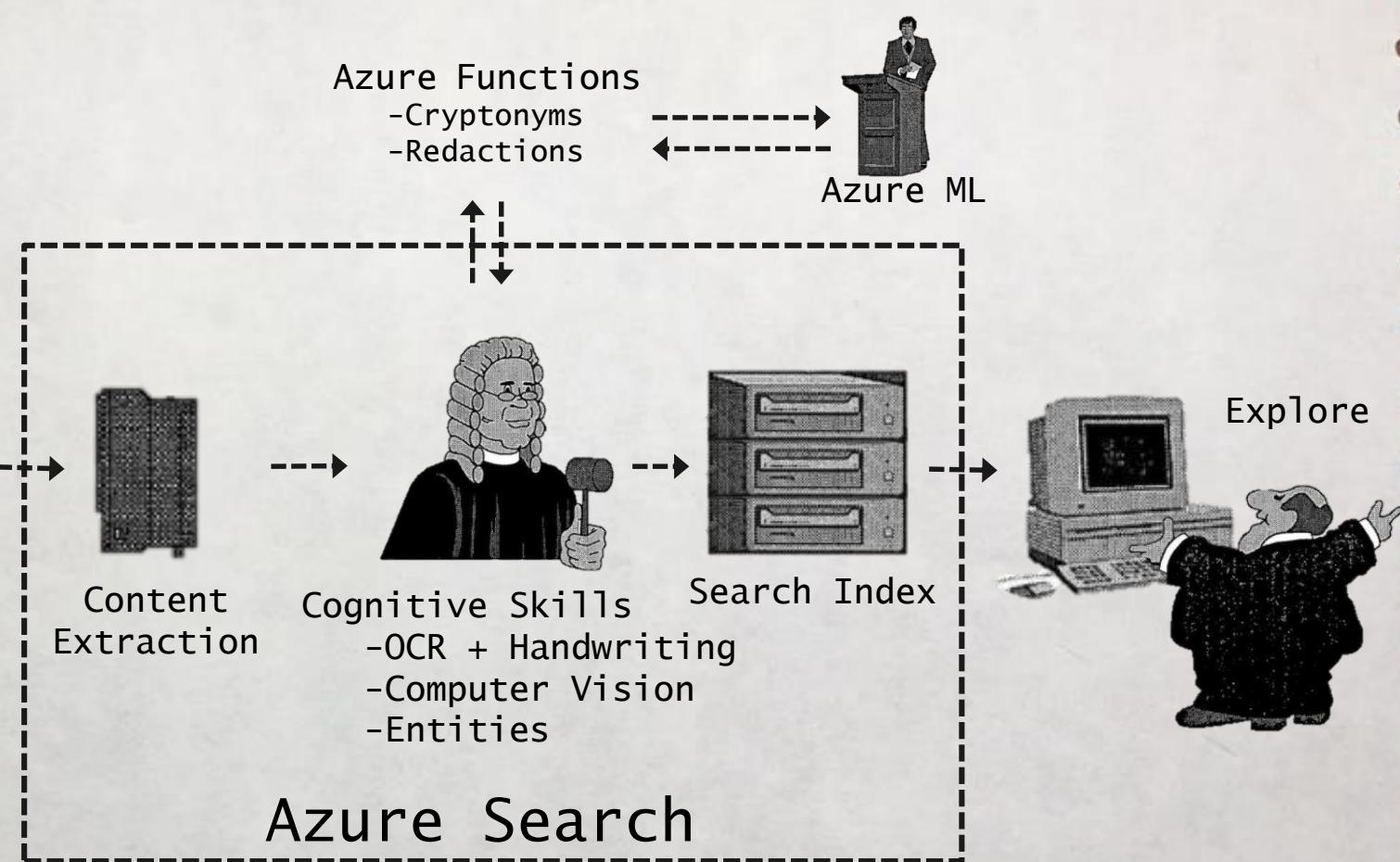
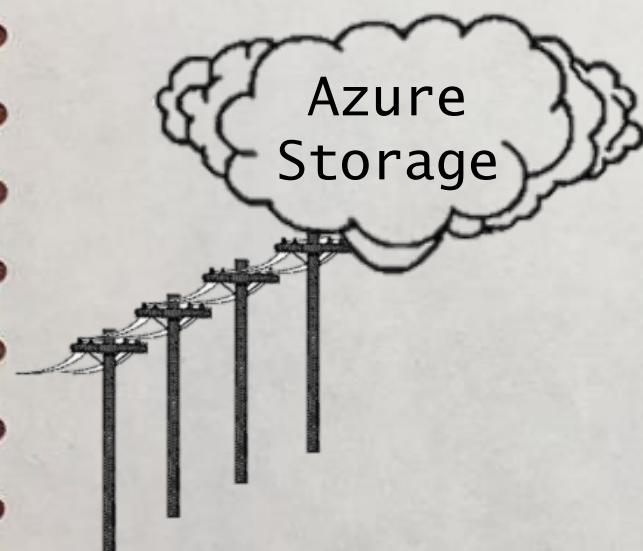
The truth is in there



<https://www.ailab.microsoft.com/>

The JFK Files Architecture

- JFK FILES
- COGNITIVE SEARCH
- ARCHITECTURE
- DECLASSIFIED**



.NET and Machine Learning

Pre-built ML Models (Azure Cognitive Services)



Vision



Speech



Language



Labs



Knowledge



Search

Consume (C#, VB, F#)

e.g. Sentiment Analysis using Azure Cognitive Services

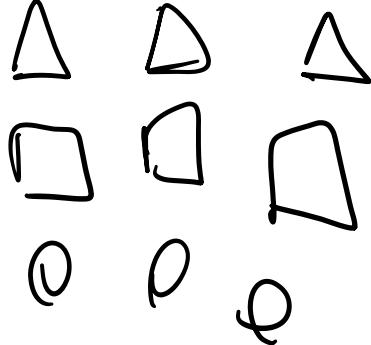
```
TextAnalyticsAPI client = new TextAnalyticsAPI();
client.AzureRegion = AzureRegions.Westus;
client.SubscriptionKey = "1bf33391DeadFish";

client.Sentiment(
    new MultiLanguageBatchInput(
        new List<MultiLanguageInput>()
    {
        new MultiLanguageInput("en", "0",
            "This is a great vacuum cleaner"
        );
    }));

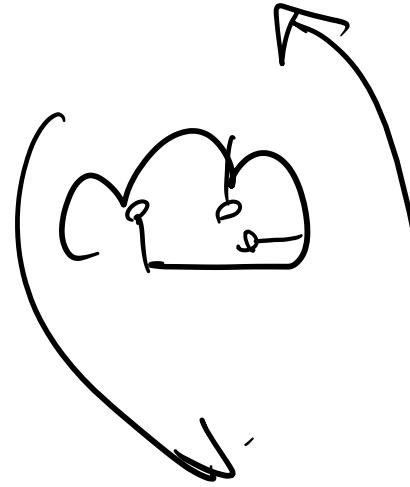
```

 96% positive

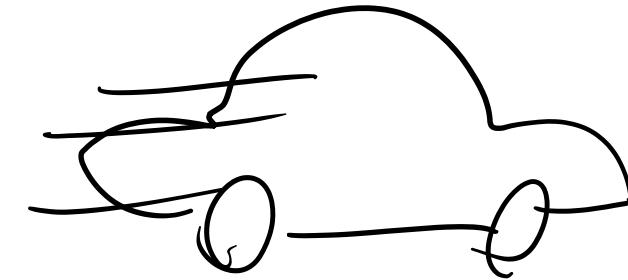
Build your own (custom) ML Models



Prepare Your Data



Build & Train



Run

Build your own (custom) ML Models



Caffe2

Introducing
Open Source, Proven & .NET First



ML.NET 0.1 (Preview)

Machine Learning framework made for .NET developers

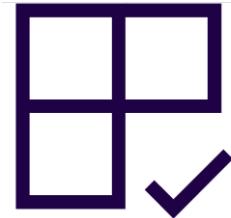
Supported on Windows, Linux, and macOS



Build your own



Developer Focused



Proven & Extensible



Open Source

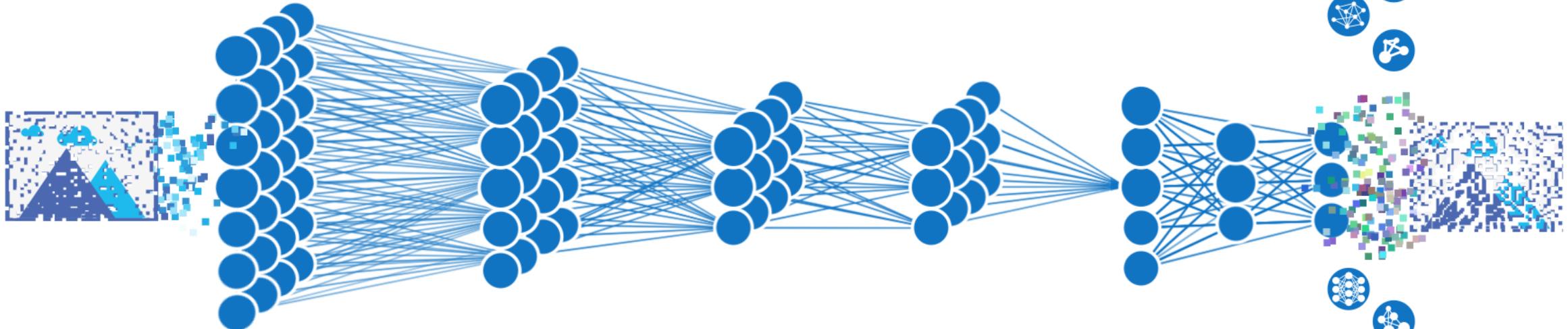
<https://github.com/dotnet/machinelearning>

Azure Machine Learning Accelerated by Project Brainwave

Real-time AI at cloud scale with industry-leading performance and lowest cost

Models are easy to create and deploy into Azure

Write once, deploy anywhere – to intelligent cloud or edge



Record-setting DNN performance with accelerated ResNet50

- Record speed: Object classification on FPGA in <1.8 ms per image
- Lowest cost: Only 21 cents per million images during preview

More accelerated models coming soon



<http://aka.ms/aml-real-time-ai>

Azure

Infrastructure - IaaS

Dev Tools + DevOps

Containers + Serverless

Internet of Things

Data

.NET & Dev Tools

Artificial Intelligence

Get locally involved!

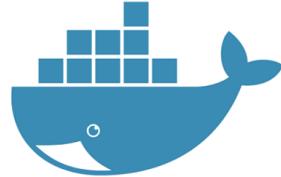
There is Meetups around you.



[AzureQC](#)



[DotNetQC](#)



[DockerQC](#)



[K8S QC](#)



[HashiCorp QC](#)



Microsoft Build

May 7–9, 2018 // Seattle, WA