



Azure

# OSS and Microsoft Azure

McGill Azure Bootcamp – Montréal  
November 2018

# Mathieu Benoit

Cloud Solution Architect

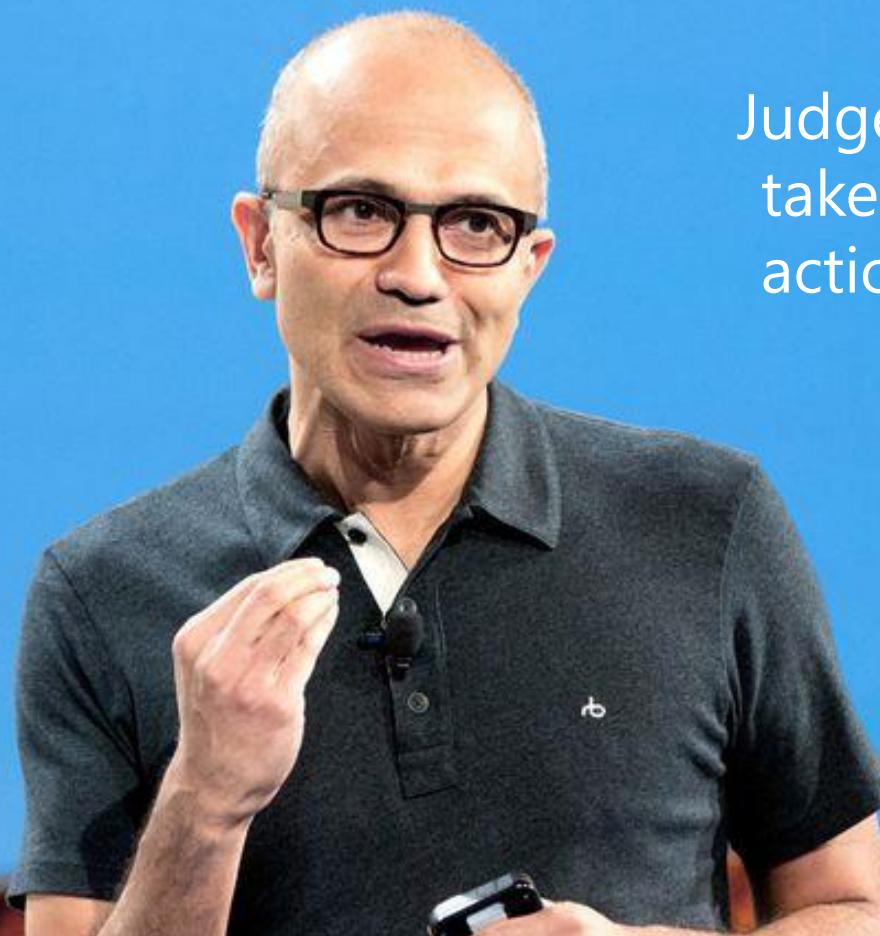
Microsoft Canada



<https://aka.ms/mabenoit>

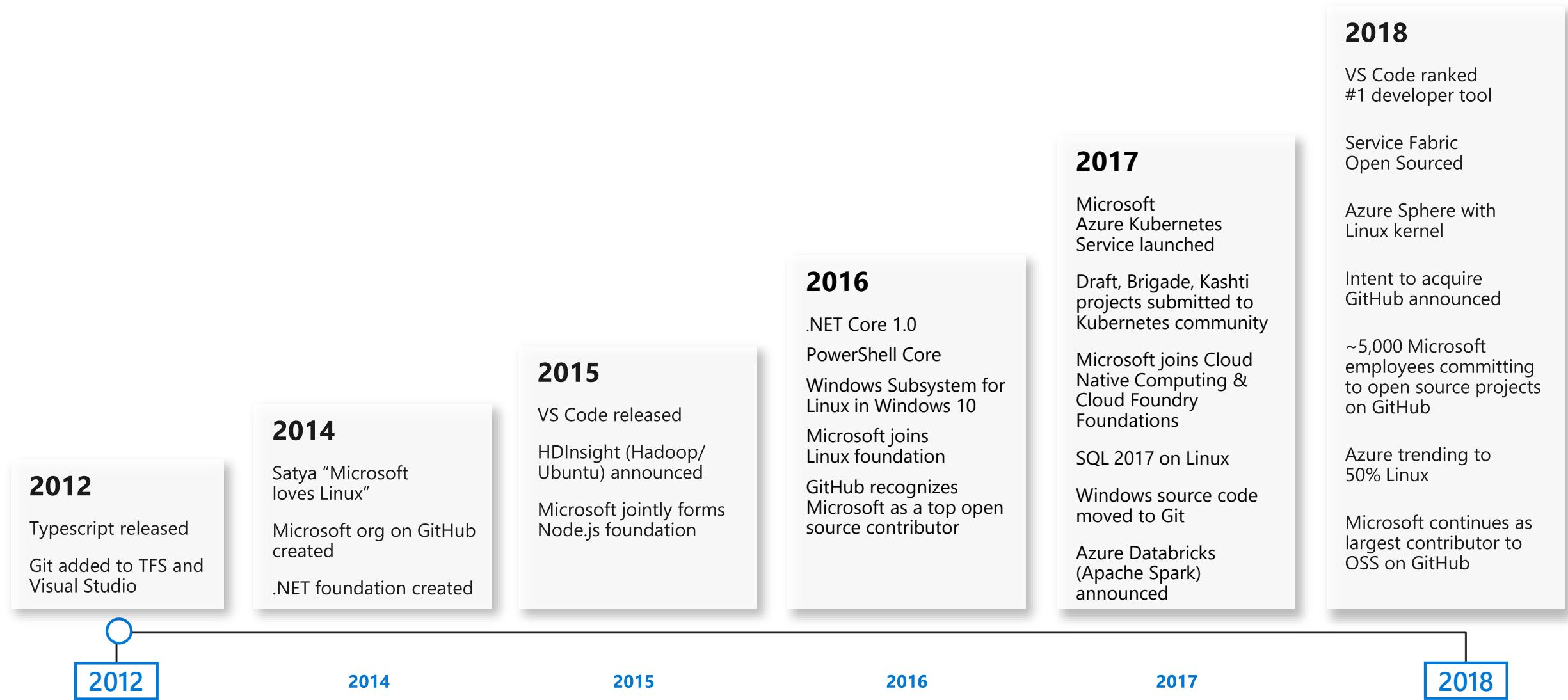


Microsoft ❤️ Linux

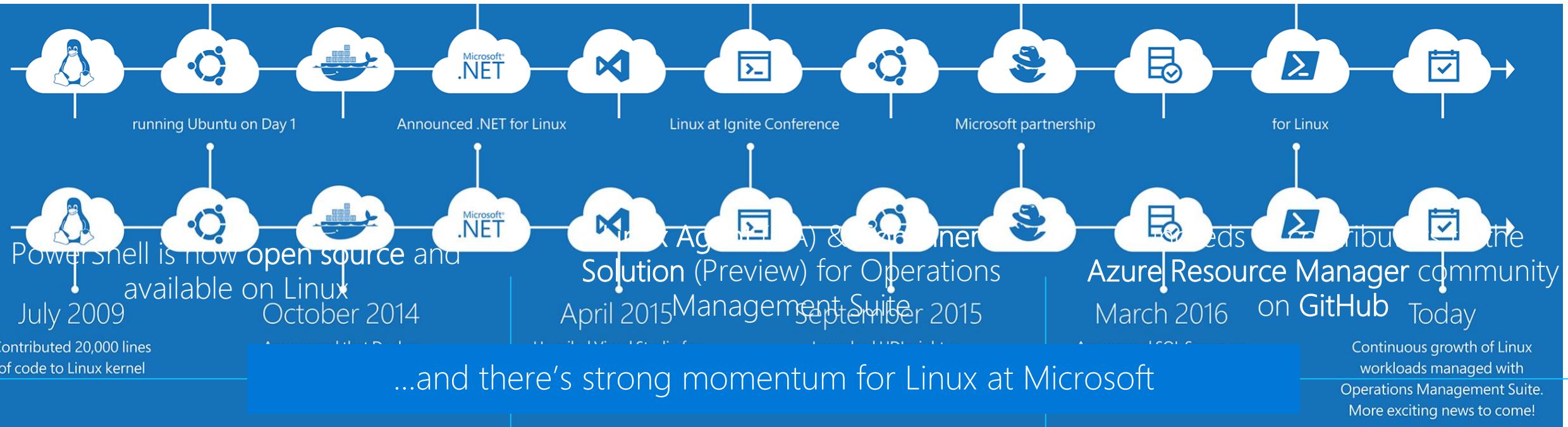


Judge us by the actions we have  
taken in the recent past, our  
actions today and in the future

# Microsoft ❤️ Open Source



# Microsoft + Linux: It's been a journey



4x growth in container customers in Azure since January, all with Docker on Linux!

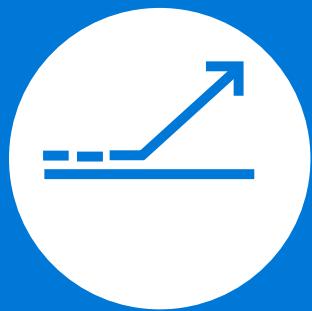
1 in 3 VMs in Azure run Linux today

60% of Azure Marketplace Images are Linux based!

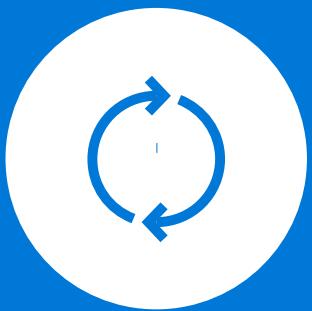
# Azure is an Open Cloud

DevOps	<b>Nagios®</b>	 VAGRANT		 GRUNT				 Xamarin	
Management	 CHEF™	 puppet labs	 ANSIBLE	 SALTSTACK		 mist.io	 libcloud		 SCALR CLOUD MANAGEMENT
Applications		 Joomla!	 Drupal™		 APPRENDA				
App frameworks & tools	 php	 nodeJS		 JS	 Ruby	 IJ	 eclipse	 Azure Container Service	 GO
Databases & middleware		 redis	 CLEARDB	 cloudera	 MySQL™	 mongoDB	 Couchbase	 Microsoft SQL Server	 SAP S/4HANA
Infrastructure			 redhat	 SUSE		 bitnami	 ORACLE LINUX	 FreeBSD	 docker
									 OPENSHIFT

Enabling is  
one thing,  
but there is  
more!



Enable



Integrate



Release



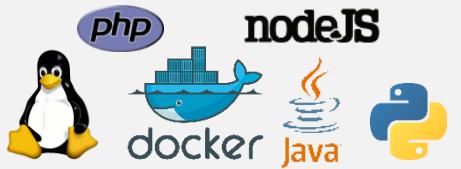
Contribute

# Enable



Enable

Enable Linux and Open  
Source technology to be first  
class citizens on Microsoft  
Platforms



# VS Code - Multi platform, it's same application

The screenshot shows the official Visual Studio Code website. On the left, there's a large purple banner with the text "Code editing. Redefined." and "Free. Open source. Runs everywhere." Below this is a green "Download for Windows" button. To the right of the download section is a table showing download links for different platforms: macOS, Windows x64 (32 bit versions), and Linux x64 (32 bit versions). The table has columns for "Stable" and "Insiders" builds, and rows for Package (.deb, .rpm, .tar.gz) and Installer (.zip). On the far right, the main content area displays the VS Code interface. It shows a file explorer sidebar with icons for files, folders, and search. The main workspace shows several tabs: "app.ts", "www.ts", "package.json", and "README.md". The "app.ts" tab is active, displaying TypeScript code for a Node.js application. The status bar at the bottom provides information about the file ("master"), line count ("11 / 131"), and encoding ("UTF-8").

		Stable	Insiders
macOS	Package	<a href="#">Download</a>	<a href="#">Download</a>
Windows x64 32 bit versions	Installer	<a href="#">Download</a>	<a href="#">Download</a>
Linux x64 32 bit versions	.deb	<a href="#">Download</a>	<a href="#">Download</a>
	.rpm	<a href="#">Download</a>	<a href="#">Download</a>
	.tar.gz	<a href="#">Download</a>	<a href="#">Download</a>

File Edit View Goto Help

EXTENSIONS

- @popular
- C# 122 ⚡ 356K ★★★★★ C# for Visual Studio Code (p... Microsoft [Install](#)
- Python 0... ⚡ 211K ★★★★★ Linting, Debugging (multi-t... Don Jayamane [Install](#)
- Debugger for Chrome ⚡ 148 Debug your JavaScript code... Microsoft JS Diagn... [Install](#)
- C/C++ 0.7... ⚡ 143K ★★★★★ Complete C/C++ language ... Microsoft [Install](#)
- Go 0.639 ⚡ 99K ★★★★★ Rich Go language support f... lukehoban [Install](#)
- ESLint 0.10... ⚡ 88K ★★★★★ Integrates ESLint into VS Co... Dirk Baeumer [Install](#)

```
1 import app from './app';
2 import debugModule = require('debug');
3 import http = require('http');
4
5 const debug = debugModule('node-express-typescript:server');
6
7 // Get port from environment and store in Express.
8 const port = normalizePort(process.env.PORT || '3000');
9 app.set('port', port);
10
11 // create
12 const server = exports;
13 server.listen(port, () => {
14   console.log(`Server running in ${process.env.NODE_ENV} mode`);
15   console.log(`Server listening on port ${port}`);
16 });
17
18 /**
19 * Normalize a port into a number, string, or boolean.
20 * @param {string|number|boolean} val - a port value or false
21 * @return {number|string|boolean}
22 */
23 function normalizePort(val: any): number|string|boolean {
24   const port = parseInt(val, 10);
25   if (port < 0 || port >= 65536) {
26     throw new Error(`Invalid port ${val}, must be between 0 & 65535`);
27   }
28   return port;
29 }
```

master 11 / 131 0 ▲ 0

Ln 9, Col 21 Spaces: 2 UTF-8 LF TypeScript

<https://code.visualstudio.com>

# Azure Open Source Data Platform on IaaS

Infrastructure-as-a-Service (IaaS)

### Relational



MariaDB  
PostgreSQL  
**bitnami**

Collective set of multiple data sets organized by tables, records and columns

### NoSQL & Cache



mongoDB  
redis  
DATASTAX  
Couchbase

Non-relational DBs where data is modelled in means other than the tabular relations used in relational databases

### Big Data



cloudera  
Hortonworks  
**MapR**

Accept data at a very high velocity, and store structured and unstructured data in an efficient and scalable way across nodes



# Azure Open Source Application Platform

Adding value to your existing investments

Developers



Operations



Data analysts



Business



Virtual  
Machines

Stateful and  
stateless one-  
off solutions

VM Scale  
Sets

Scalable  
solutions

Kubernetes  
Service

Scalable,  
orchestrated  
Docker  
images  
deployed into  
containers

Batch

Custom High  
Performance  
Computing  
solutions

Open  
Source  
PaaS

OpenShift,  
Cloud  
Foundry &  
others

Service  
Fabric

Custom  
Microservice-  
based stateless  
and stateful  
solutions

App Service

Environments	Web, Mobile & API	Logic	Functions
All the goodness of App Service in a dedicated environment	Template based rapid development web, mobile and API solutions	Orchestrat workflow based integratio solutions	On-demand serverless architecture

Infrastructure-as-a-Service (IaaS)



Platform-as-a-Service (PaaS)



Microsoft Azure

# Azure Open Source Container Platform

Enabling agility with containers in the cloud

## Developers



## Operations



## Data analysts



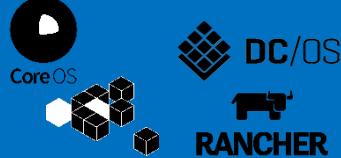
### Docker VM Extension for Azure

Easy and programmatic way to add Docker capabilities to your VMs



### Azure Marketplace container partners

Partner solutions that address management challenges of containers



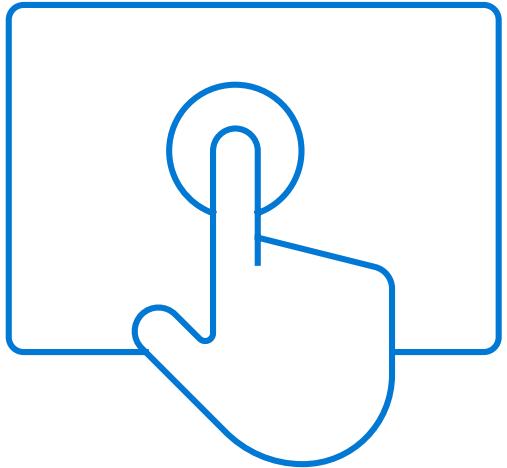
### Open source container-based PaaS platforms in Azure

Container-ready application platforms that benefit from Azure's native partitioning, capacity management and high availability



Infrastructure-as-a-Service (IaaS)

Platform-as-a-Service (PaaS)



## Demos

Get started with the Azure Marketplace (Linux VM) via the Azure portal  
[portal.azure.com](https://portal.azure.com)

Get started with Docker via the Azure Cloud Shell  
[shell.azure.com](https://shell.azure.com)

# Infrastructure and Configuration as Code

## Azure Resource Manager, Automation & 3<sup>rd</sup> Party Integrations

→ Infrastructure as Code,  
built-in

→ Azure Config & Automation

→ Support for 3<sup>rd</sup> party and OSS  
tooling such as Terraform,  
Ansible, Chef, Puppet &  
SaltStack



TERRAFORM



ANSIBLE



CHEF



puppet



SALTSTACK

The screenshot shows the Microsoft Azure portal interface. On the left, the navigation menu includes 'Create a resource', 'All services', and various resource groups like 'AustraliaSEDevelopment', 'AustraliaSEProduction', 'autoShutdown', 'cloud-shell-storage-westus', 'DefaultResourceGroup-EUS', and 'securitydata'. The main area displays the 'AustraliaSEProduction - Automation script' resource group. The 'Automation script' blade is open, showing the 'Template' tab with an ARM template JSON code. The template defines a deployment schema, parameters, variables, and resources, including DNS zones and SOA records.

```
$schema: "https://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#"
contentVersion: "1.0.0.0"
parameters: {
  "dnszones_onazure.io_name": {
    "defaultValue": "onazure.io",
    "type": "String"
  },
  "NS_@_name": {
    "defaultValue": "@",
    "type": "String"
  },
  "SOA_@_name": {
    "defaultValue": "@",
    "type": "String"
  },
  "A_vote_name": {
    "defaultValue": "vote",
    "type": "String"
  },
  "A_draft_name": {
    "defaultValue": "draft",
    "type": "String"
  },
  "A_devops_name": {
    "defaultValue": "devops",
    "type": "String"
  },
  "A_*_draft_name": {
    "defaultValue": "*_.draft",
    "type": "String"
  }
}
variables: {}
resources: [
  {
    "type": "Microsoft.Resources/deployments",
    "name": "[concat(parameters('dnszones_on...', 'dnszones_on...', 'NS_@_name'), 'nsRecordSet')]",
    "apiVersion": "2015-01-01",
    "dependsOn": [],
    "properties": {
      "mode": "Incremental",
      "templateLink": {
        "uri": "[concat('https://', parameters('dnszones_on...', 'dnszones_on...', 'SOA_@_name'), '.storage.netapp.com:443/management/api/2015-01-01/deployment?deploymentName=nsRecordSet')]"
      }
    }
  }
]
```

# Introducing Azure DevOps

Better together



Azure Boards



Azure Repos



Azure Pipelines



Azure Test Plans



Azure Artifacts

An end-to-end solution for organizations looking for an enterprise-grade toolchain

Fully Integrated  
with end  
to end  
traceability

Scalable to  
any team  
and project  
size

Highly  
available,  
multi region,  
hybrid  
cloud &  
on-prem

Customer  
Support

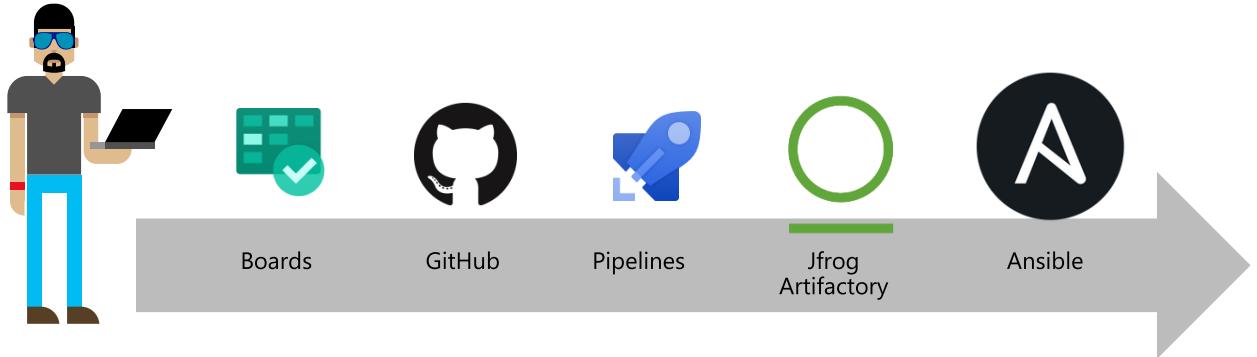
Consistent  
admin  
and access  
control



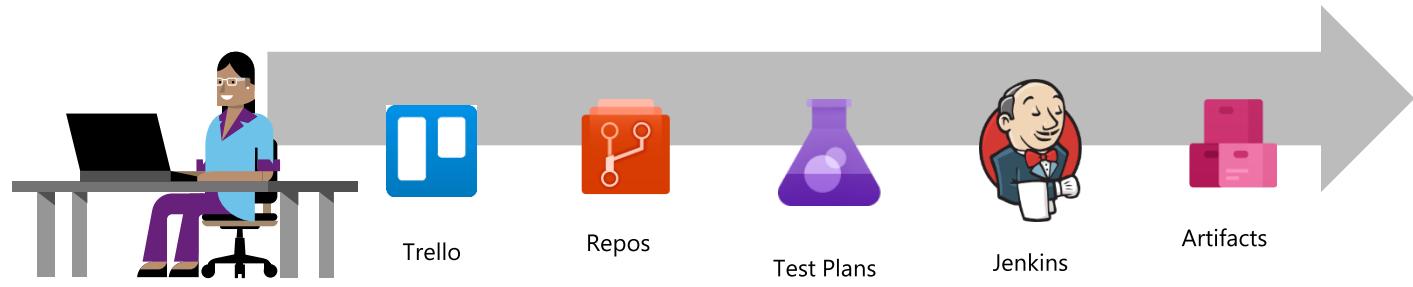
<https://azure.com/devops>

# Azure DevOps, choose the tools and clouds you love

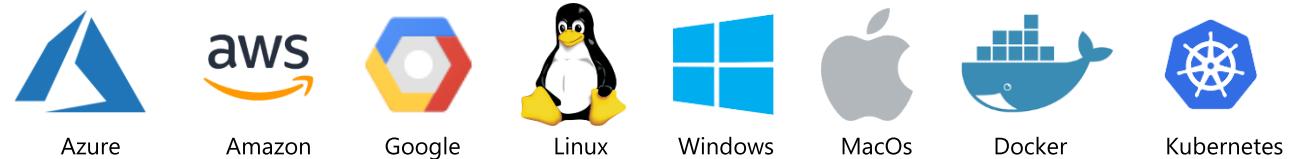
DevOps lets developers choose the tools that are right for them



Mix and match to create workflows with Microsoft 1<sup>st</sup> party or 3<sup>rd</sup> party tools



Target the clouds and systems you need





# Azure Pipelines

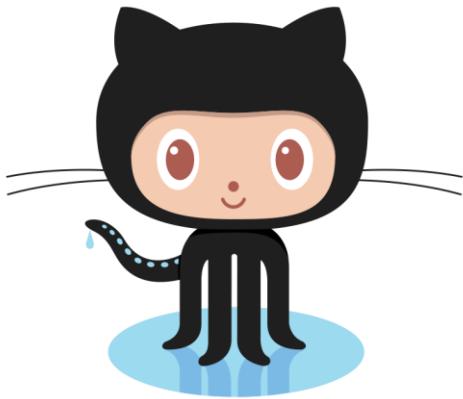
Free **unlimited** build minutes for  
public projects

Up to 10 free parallel jobs across  
Windows, Linux and macOS



<https://azure.com/pipelines>

Microsoft ❤️ Open Source



## Integrated with GitHub

Azure Pipelines available now to any developer from the GitHub Marketplace

The screenshot shows the GitHub Marketplace page for Azure Pipelines. At the top, there's a navigation bar with links for Pull requests, Issues, Marketplace, and Explore. Below the navigation, the page title is "Marketplace // Azure Pipelines". A large button on the left says "Set up a new plan". To the right, there's a section titled "Azure Pipelines" with a sub-section titled "Continuously build, test, and deploy to any platform and cloud". It mentions that Azure Pipelines offers cloud-hosted pipelines for Linux, macOS, and Windows with 10 free parallel jobs and unlimited minutes for open source projects. There's also a "Read more..." link. On the far right, there's a large blue box illustrating the pipeline process with steps like "Test", "Build Linux", "Build Windows", "Build macOS", and "Distribute".

Marketplace // Azure Pipelines

Set up a new plan Edit your plan ▾

### Azure Pipelines

Continuously build, test, and deploy to any platform and cloud

Azure Pipelines offers cloud-hosted pipelines for Linux, macOS, and Windows with 10 free parallel jobs and unlimited minutes for open source projects.

Read more...

Linux, macOS, and Windows agents

Simplify managing hardware and VMs by using Microsoft cloud-hosted agents. Get full CI/CD pipeline support for every major platform and tool.

Test 27 succeeded

Build Linux 6 succeeded

Distribute

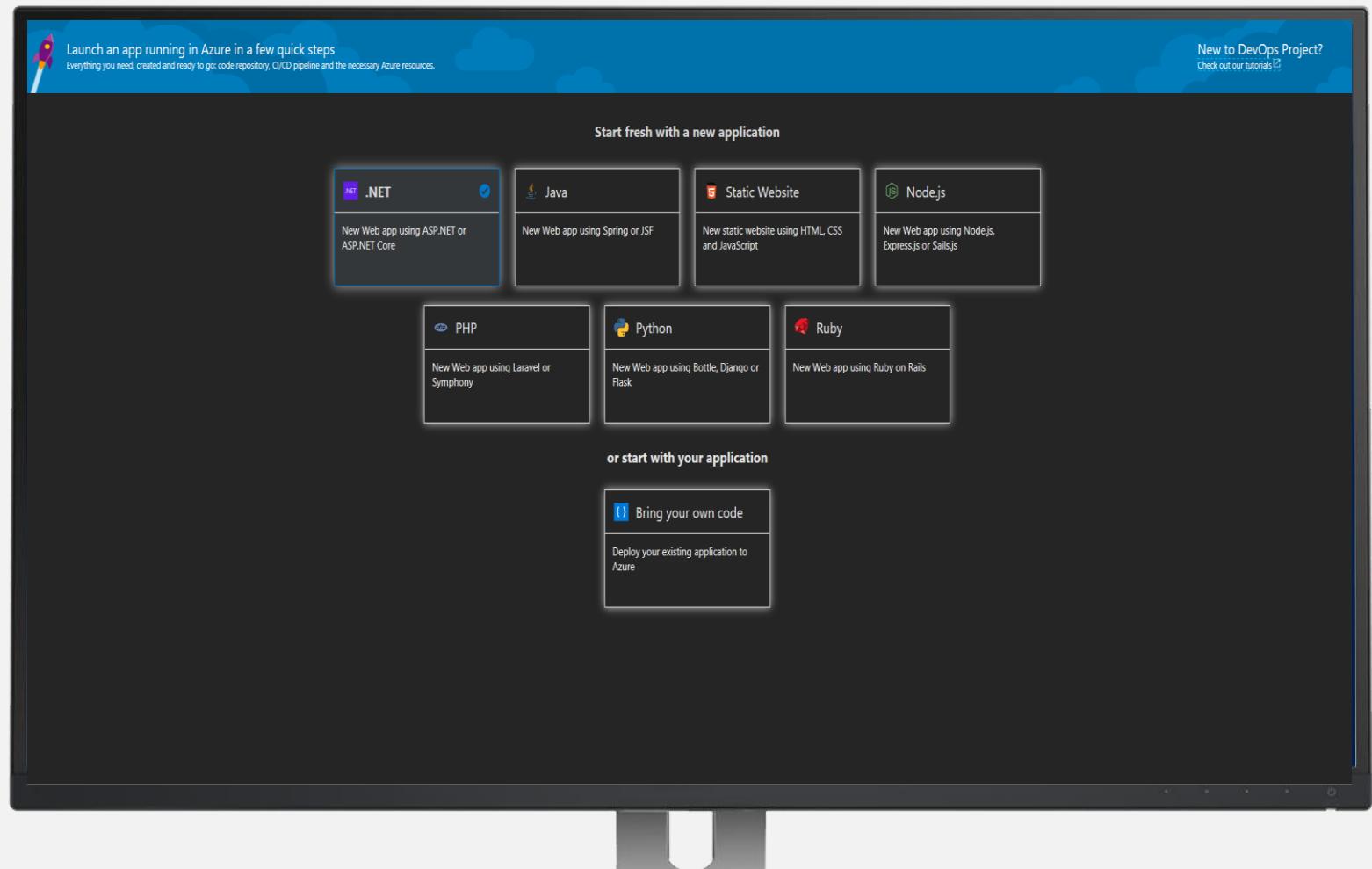
Build Windows 2 succeeded

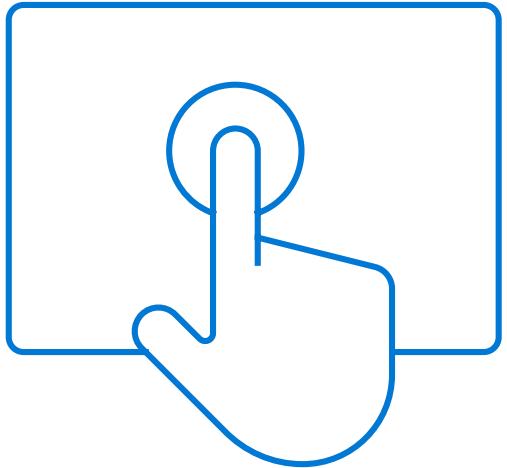
Build macOS 64% in progress...

# Azure DevOps Projects

Build any Azure application, on any Azure service, in less than five minutes

- Create a full CI / CD pipeline with 3 easy steps from the Azure Portal
- Start with a Git repo and any source language
- Target any Azure service. Currently web apps, VMs or a Kubernetes cluster
- Powered by Azure DevOps - Customize, extend and scale when needed.





## Demos

Get started with Public Projects

<https://github.com/Microsoft/vscode>

Get started with Azure DevOps Projects

# Integrate

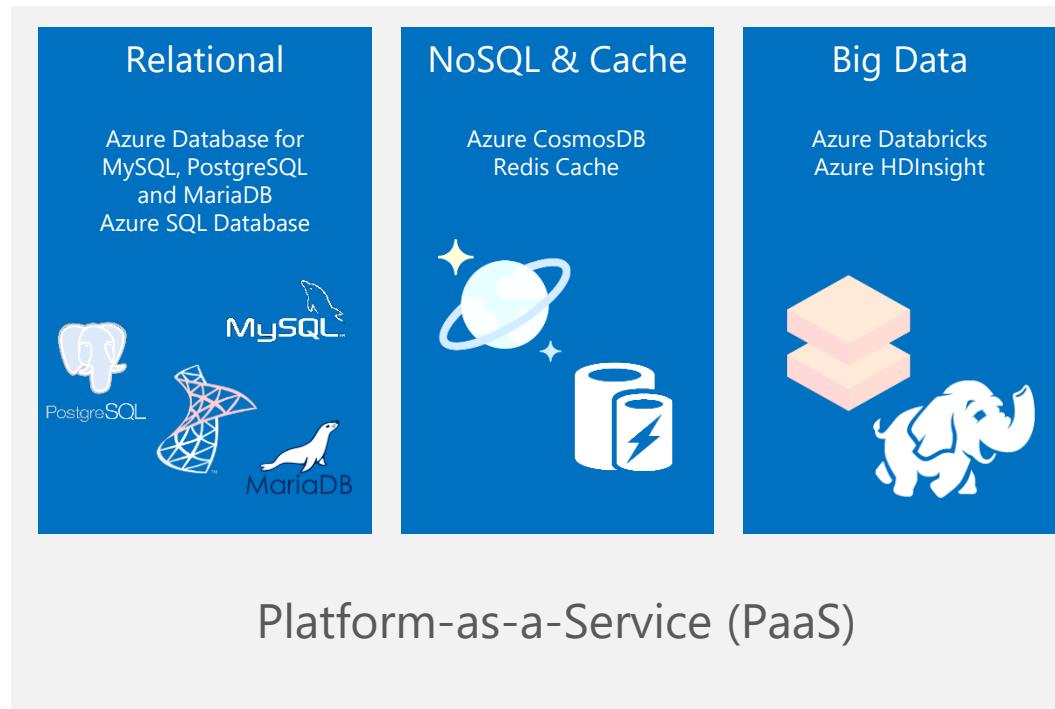


## Integrate

Embrace leading Open  
Source ecosystems and  
integrate Microsoft products  
with agility and consistency



# Azure Open Source Data Platform on PaaS



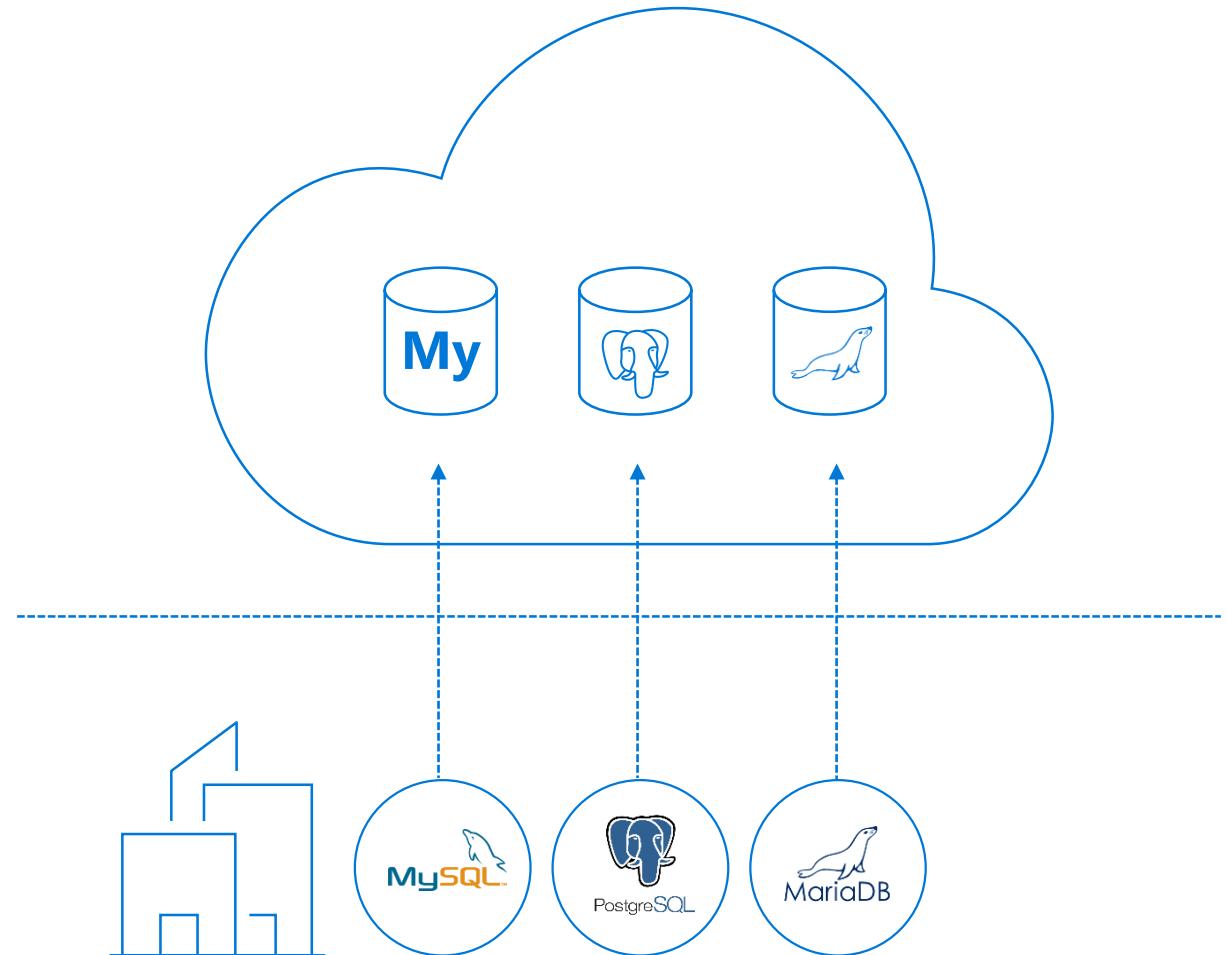
# MANAGED COMMUNITY MYSQL, POSTGRESQL, AND MARIADB

Focus on your apps by leaving the management and patching of your infrastructure and database to an enterprise-ready cloud service

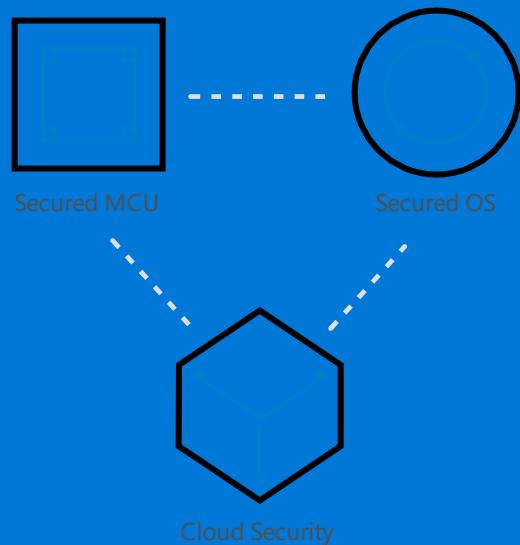
Automatic updates

Automatic security fixes

Automatic new feature updates



# Azure Sphere



## For the first time ever, Microsoft will distribute its own version of Linux



Matt Weinberger

11 uur 573



TWITTER



FACEBOOK



LINKEDIN



EMAIL



PRINT

- Microsoft on Monday announced Azure Sphere, a new technology to protect the processors that power smart appliances, connected toys, and other gadgets.
- Azure Sphere is powered in large part by Linux, a free operating system that Microsoft once viewed as a major threat.
- It's the first time ever that Microsoft has made Linux part of a product offering.



Foto: Microsoft Microsoft President Brad Smith

Microsoft announced on Monday a new technology called Azure Sphere, a new system for securing the tiny processors that power smart appliances, connected toys, and other gadgets.

We'll get to the specifics in a moment, but here's the really notable part: To power Azure Sphere, Microsoft has developed its own, custom version of Linux – the free, open source operating system that Microsoft once considered the single biggest threat to the supremacy of its Windows software.

"After 43 years, this is the first day that we are announcing, and will be distributing, a custom Linux kernel," Microsoft President Brad Smith said on stage at an event in San Francisco.

# Azure Terraform Resource Provider

<https://azure.microsoft.com/en-us/blog/introducing-the-azure-terraform-resource-provider/>

Microsoft Azure

Why Azure Solutions Products Documentation Pricing Training Marketplace Partners Support

Blog > Announcements

## Introducing the Azure Terraform Resource Provider

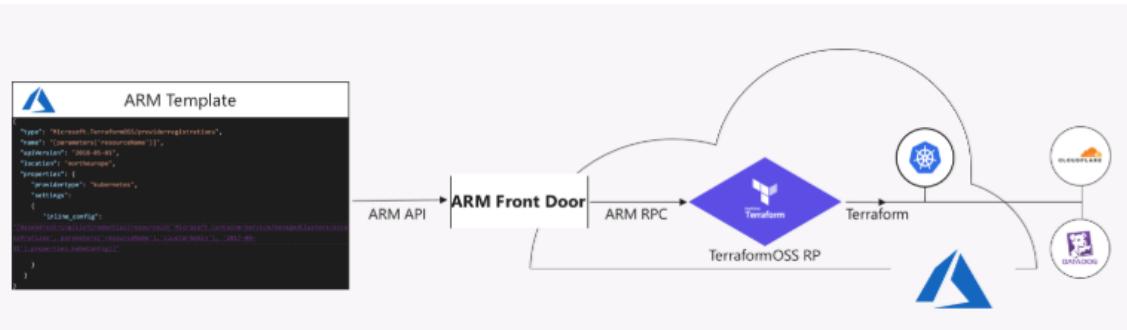
Posted on May 7, 2018

 Simon Davies, Principal Program Manager, R&D Compute

We are pleased to announce a private preview of a new Azure Resource Provider for HashiCorp Terraform which will enable Azure customers using Azure Resource Manager (ARM) to provision and configure dependent resources with Terraform Providers as if they were native Azure Resource Providers.

We have been investing heavily in Terraform and partnering closely with HashiCorp on enabling deep and rich support of Azure for customers who use Terraform to manage their resources. This new capability seeks to enable customers who choose to use ARM directly to enjoy the benefits of Terraform's broad and diverse set of providers directly through Azure.

There are many scenarios that will be enabled by this new Azure Resource Provider (RP). For example, a customer can now write an ARM template that creates a new Kubernetes Cluster on Azure Container Service (AKS) and then, via the Terraform OSS provider, Kubernetes resources such as pods, services, and secrets can be created as dependant resources.



Provision 3rd party resources inside or outside of Azure using ARM APIs using Terraform RP.

# Containers in Azure



App Service



Service Fabric



Kubernetes Service



Container Instance



Ecosystem

Deploy web apps or APIs using containers in a PaaS environment

Modernize .NET applications to microservices using Windows Server containers

Scale and orchestrate Linux containers using Kubernetes

Elastically burst from your Azure Kubernetes Service (AKS) cluster

Bring your Partner solutions that run great on Azure



Azure Container Registry



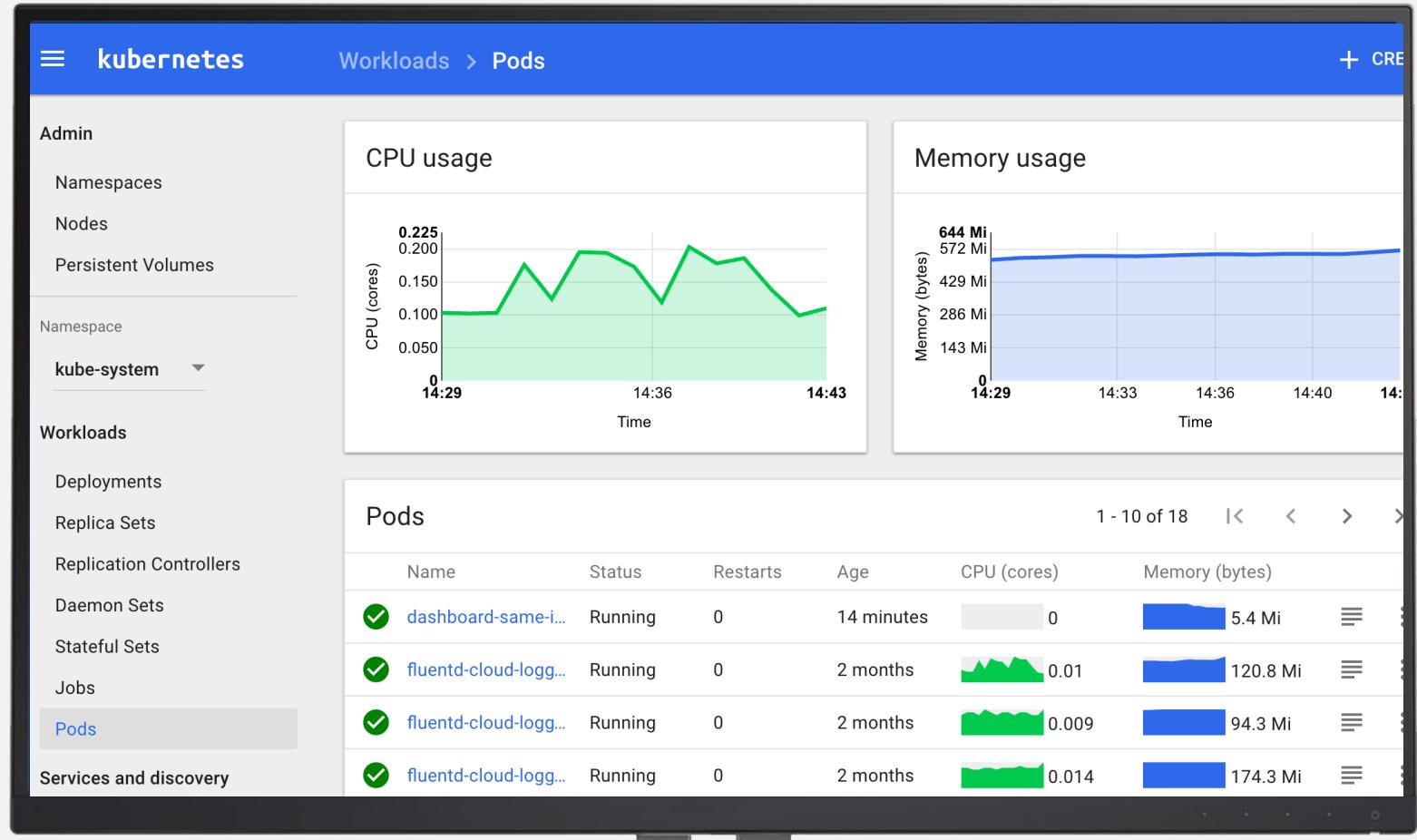
Docker Hub

----- Choice of developer tools and clients -----

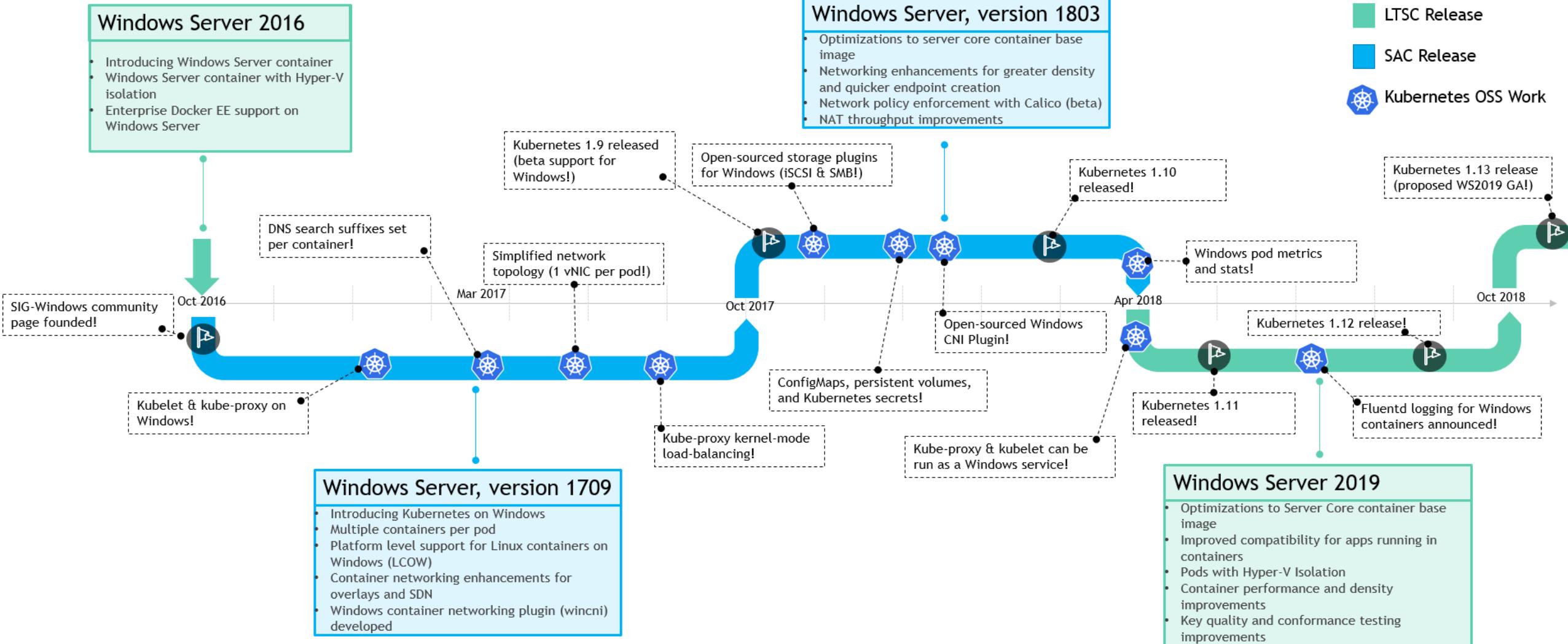
# AKS - Managed Kubernetes

Simplified deployment, scaling, and operations

- Quickly deploy a production ready Kubernetes cluster
- Automated Kubernetes version upgrades and patching
- Self-healing hosted control plane
- Pay only for running agent pool nodes
- Use all of the Kubernetes tools you like

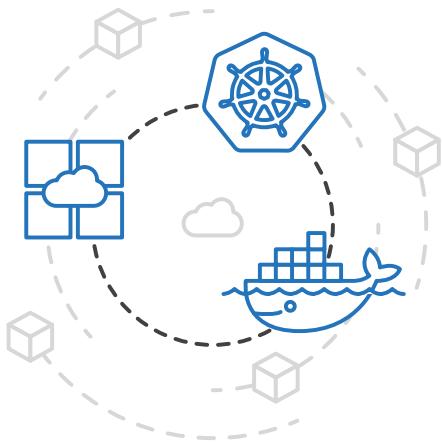


# Kubernetes on Windows Server

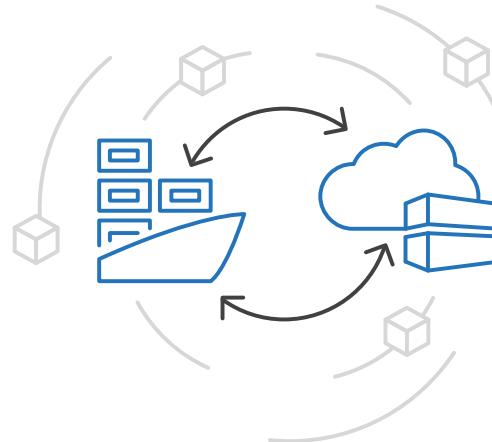


# Azure Container Registry

Manage a Docker private registry as a first-class Azure resource



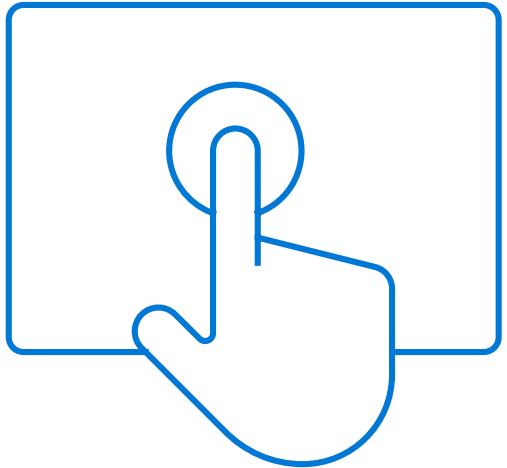
Manage images for all  
types of containers



Use familiar, open-  
source Docker CLI tools



Azure Container Registry  
geo-replication



## Demo

Get started with Azure Kubernetes Service (AKS)

# Release



## Release

Release key Microsoft technologies into the Open Source domain to build a strong ecosystem

**R Server**

**.NET Core**

**Roslyn**

**TypeScript**

**F#**

**autorest**

**PowerBI Visuals**

**Office UI Fabric**

**Tools plugins**

# Open source releases from Microsoft

[All repositories](#)[!\[\]\(f985c1b56f6a89991588bb83755d7e08\_img.jpg\) Trending](#)[!\[\]\(67337fe6bf23598d4c837f80569dc56b\_img.jpg\) Stars](#)[!\[\]\(b9dd0a8b640efb5e99b498245af8b0e7\_img.jpg\) Forks](#)[!\[\]\(8f3ec3126694d835f2e1584652e390da\_img.jpg\) Name](#)

Search Repos ...



Search Tags ...

Search

[← Previous](#)

1 of 845

[Next →](#)

## Microsoft/MS-DOS

The original sources of MS-DOS 1.25 and 2.0, for reference purposes

12746

ms

1828

## Microsoft/vscode

Visual Studio Code

63890

8501

## Microsoft/ailab

Experience, Learn and Code the latest breakthrough innovations with Microsoft AI

4225

672

## Microsoft/FASTER

Fast key-value store from Microsoft Research

3136

190

## Microsoft/TypeScript

TypeScript is a superset of JavaScript that compiles to clean JavaScript output.

41280

5933

## aspnet/Blazor

Blazor is an experimental .NET web framework using C#/Razor and HTML that runs in the browser with WebAssembly

ASP.NET



Octoverse

## People

## Projects

## Platform

# Repositories

# Top open source projects

VS Code, React, and Tensorflow once again top our list of open source projects by contributor count. New to the list are projects that manage containerized applications, share Azure documentation, and consolidate TypeScript type definitions: Kubernetes, Azure Docs, and DefinitelyTyped. \*

## Contributors

1	<a href="#">Microsoft/vscode</a>	19K
2	<a href="#">facebook/react-native</a>	10K
3	<a href="#">tensorflow/tensorflow</a>	9.3K
4	<a href="#">angular/angular-cli</a>	8.8K
5	<a href="#">MicrosoftDocs/azure-docs</a>	7.8K
6	<a href="#">angular/angular</a>	7.6K
7	<a href="#">ansible/ansible</a>	7.5K
8	<a href="#">kubernetes/kubernetes</a>	6.5K
9	<a href="#">npm/npm</a>	6.1K
10	<a href="#">DefinitelyTyped/DefinitelyTyped</a>	6.0K



Docs

Windows

Microsoft Azure

Visual Studio

Office

More ▾

Docs / Team Blog

Filter by title

New and Updated Offline Books

A New Feedback System Is Coming to docs.microsoft.com

Microsoft Writing Style Guide Released

Help make docs.microsoft.com better

Rewarding Our Community & Fans

Help shape the future of docs.microsoft.com!

Announcing New International Features

Announcing PowerShell Module

# A New Feedback System Is Coming to docs.microsoft.com

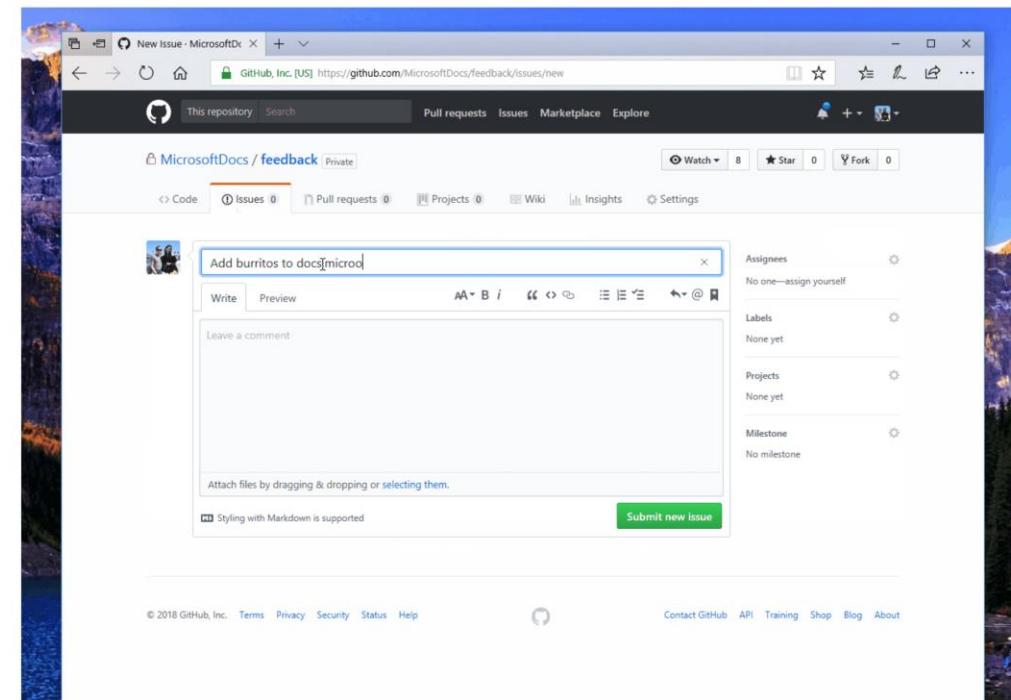
2018-07-02 • 3 minutes to read • Contributors  

*This post was written by [Rob Eisenberg](#), Senior Prog*

Microsoft's mission is to empower every person and of our considerations as we [built docs.microsoft.com](#) the next level with the move to a new GitHub-based

## Content Feedback on GitHub

While our documentation has been on GitHub since Livefyre for comments on articles. While Livefyre is a



## Azure Service Fabric Team Blog

# Service Fabric is going open source

Rate this article 

 Service Fabric Team March 14, 2018

 Share 642

 790

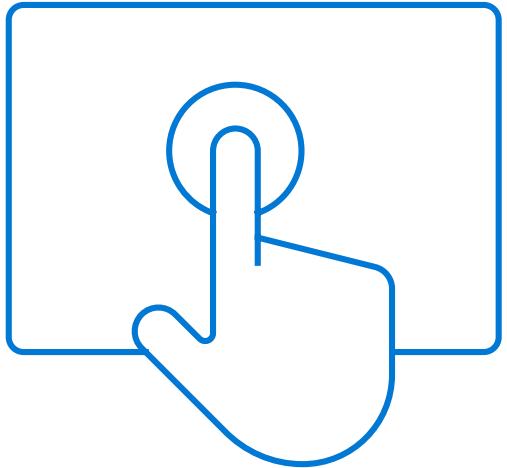
 0

 2

Happy Pi Day everyone! We have some exciting news to share today.

We're happy to announce that **Service Fabric is going open source under the MIT license** and over the coming months we will be transitioning to a completely open development process on GitHub.

We've heard from many of you about the importance of being able to participate in the development and direction of the platform that you depend on to run your mission-critical applications. We stay active on GitHub and Stack Overflow for that reason, and open sourcing the platform is the natural evolution to make that collaboration even better. That's why we're committed to making Service Fabric a successful open source project by moving our entire development and planning process onto GitHub, where we can openly collaborate with the community to make Service Fabric better for everyone.



## Demos

Get started with [docs.microsoft.com](https://docs.microsoft.com)

# Contribute



## Contribute

Microsoft engineers to participate in communities and contribute to key Open Source projects



# Contribute

Microsoft – #1 Organization with the most OSS contributors

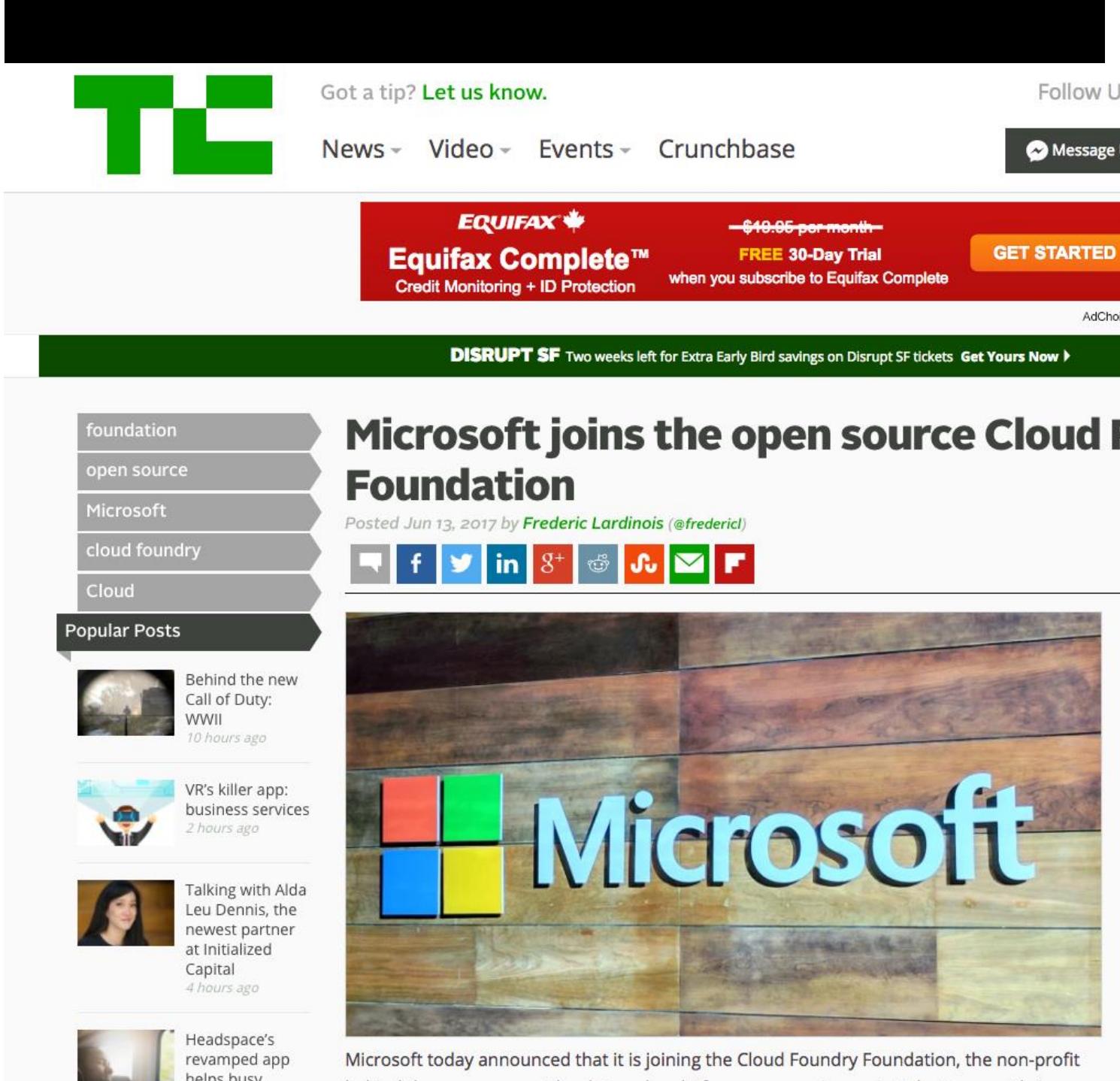
## Organizations with the most open source contributors

	Microsoft	16,419
	facebook	15,682
	docker	14,059
	angular	12,841
	google	12,140
	atom	9,698
	FontAwesome	9,617
	elastic	7,220
	Apache	6,999
	npm	6,815

# Microsoft Joins Linux Foundation



# Microsoft Joins Cloud Foundry Foundation



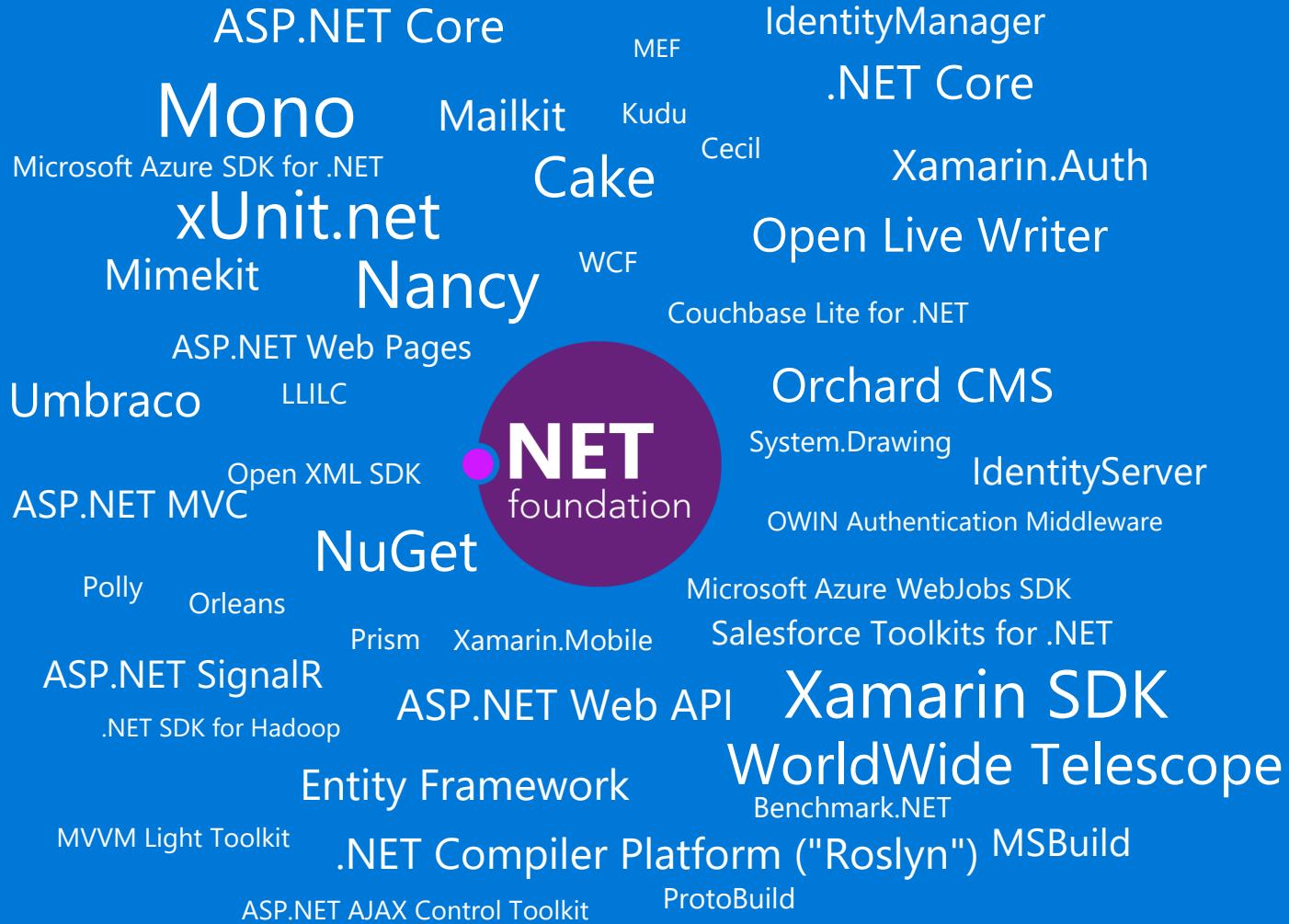
# .NET Foundation



SAMSUNG



Google



# Microsoft Joins Open Invention Network

https://azure.microsoft.com/en-us/blog/microsoft-joins-open-invention-network-to-help-protect-linux-and-open-source/



Microsoft Azure

Overview ▾ Solutions Products ▾ Documentation Pricing Training Marketplace ▾ Partners ▾ Support ▾ Blog More

Blog / Developer

## Microsoft joins Open Invention Network to help protect Linux and open source

Posted on October 10, 2018



Erich Andersen, Corporate Vice President, Deputy General Counsel

I'm pleased to announce that Microsoft is joining the Open Invention Network ("OIN"), a community dedicated to protecting Linux and other open source software programs from patent risk.

We know Microsoft's decision to join OIN may be viewed as surprising to some; it is no secret that there has been friction in the past between Microsoft and the open source community over the issue of patents. For others who have followed our evolution, we hope this announcement will be viewed as the next logical step for a company that is listening to customers and developers and is firmly committed to Linux and other open source programs.

Since its founding in 2005, OIN has been at the forefront of helping companies manage patent risks. In the years before the founding of OIN, many open source licenses explicitly covered only copyright interests and were silent about patents. OIN was designed to address this concern by creating a voluntary system of patent cross-licenses between member companies covering Linux System technologies. OIN has also been active in acquiring patents at times to help defend the community and to provide education and advice about the intersection of open source and intellectual property. Today, through the stewardship of its CEO Keith Bergelt and its Board of Directors, the organization provides a license platform for roughly 2,650 companies globally. The licensees range from individual developers and startups to some of the biggest technology companies and patent holders on the planet.

Joining OIN reflects Microsoft's patent practice evolving in lock-step with the company's views on Linux and open source more generally. We began this journey over two years ago through programs like Azure IP Advantage, which extended Microsoft's indemnification pledge to open source software powering Azure services. We doubled down on this new approach when we stood with Red Hat and others to apply GPL v. 3 "cure" principles to GPL v. 2 code, and when we recently joined the LOT Network, an organization dedicated to addressing patent abuse by companies in the business of assertion.

At Microsoft, we take it as a given that developers do not want a binary choice between Windows vs. Linux, or .NET vs Java – they want cloud platforms to support all technologies. They want to deploy technologies at the edge – on any device - that meet customer needs. We also learned that collaborative development through the open source process



## Microsoft DevOps Blog

Latest

CI/CD

Git & Version Control

Agile

Azure & Cloud

Test

### Microsoft's Performance Contributions to Git in 2017



Derrick Stolee

January 11, 2018

Visual Studio Team Services (VSTS) hosts the largest Git repository in the world: the Windows source code. Keeping a primary copy of the code available in the cloud and having it be performant while being updated by over 4000 users at the same time is a monumental achievement, but it is only useful if engineers can use the core Git client on their machines. We made this possible by building GVFS.

The Windows repository is larger than any other Git repository by orders of magnitude, and that exposed a few performance issues in core Git that we needed to fix to make it work with the large repositories we see at Microsoft. Thanks to Git being open source, we are improving Git for all users, on all platforms by contributing these modifications back.

Microsoft ❤️ Git

# Open Source @ Microsoft



**Ross Gardler**

Apache Foundation  
Principal Program Manager



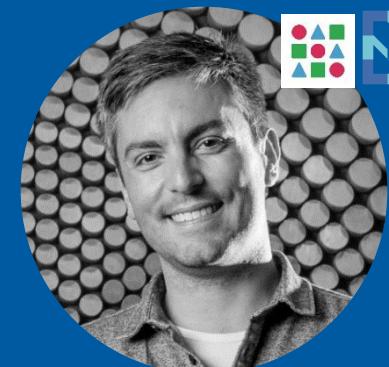
**Jessie Frazelle**

Docker / Linux  
Principal Cloud Developer Advocate



**Brendan Burns**

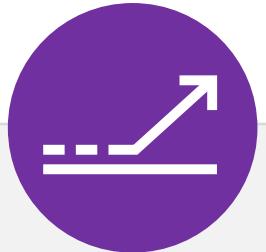
Kubernetes  
Distinguished Engineer



**Gabe Monroy**

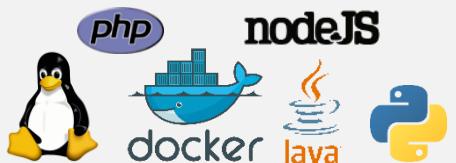
Deis / CNCF  
Principal Program Manager

# Wrap-up: The Approach to Open Source



## Enable

Enable Linux and Open Source technology to be first class citizens on Microsoft Platforms



## Integrate

Embrace leading Open Source ecosystems and integrate Microsoft products with agility and consistency



## Release

Release key Microsoft technologies into the Open Source domain to build a strong ecosystem



## Contribute

Microsoft engineers to participate in communities and contribute to key Open Source projects



Open Source Partners & Ecosystem

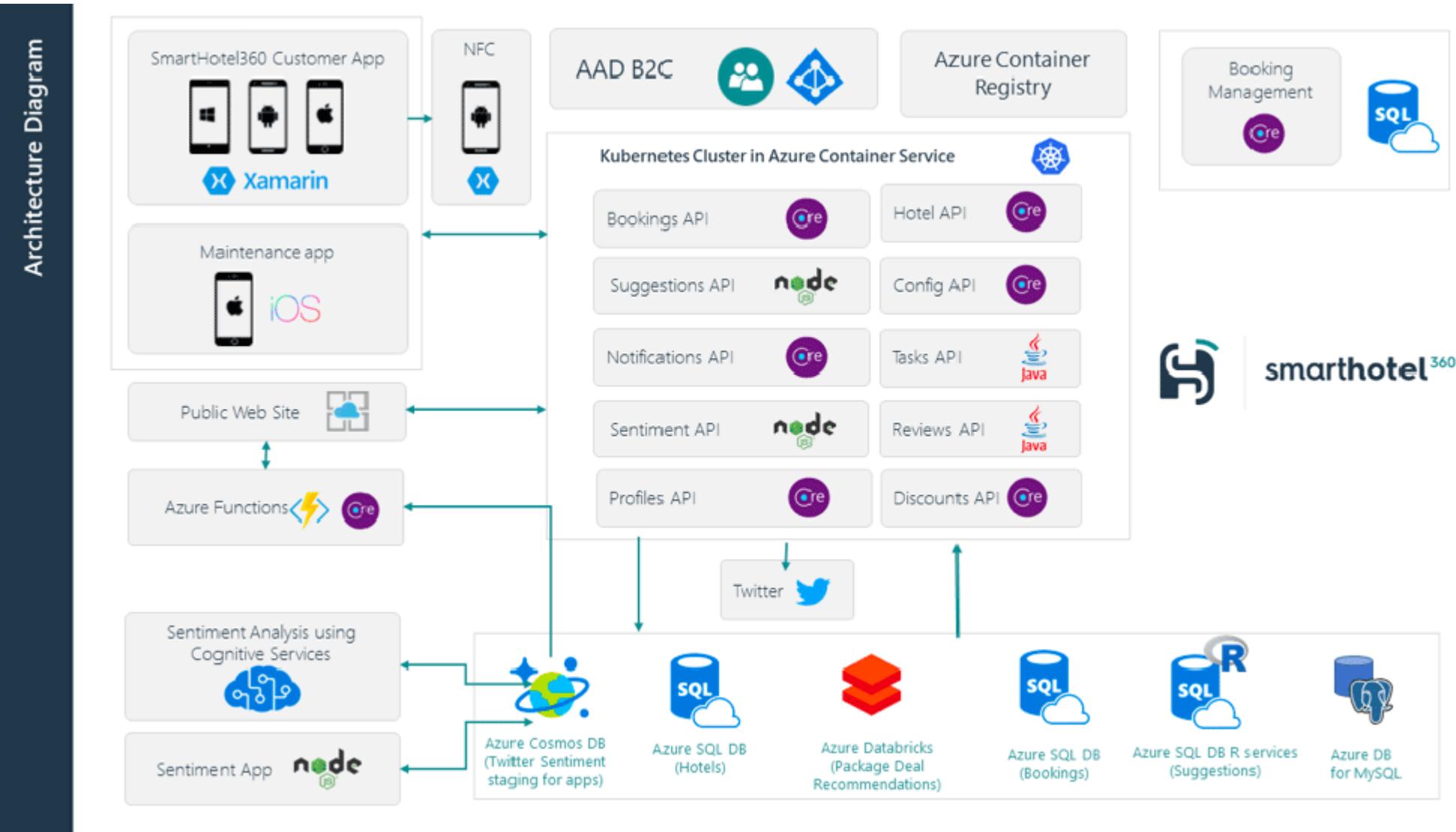
# Azure is an Open Cloud

DevOps	<b>Nagios®</b>	 VAGRANT		 GRUNT				 Xamarin	
Management	 CHEF™	 puppet labs	 ANSIBLE	 SALTSTACK		 mist.io	 libcloud		 SCALR CLOUD MANAGEMENT
Applications		 Joomla!	 Drupal™		 APPRENDA				
App frameworks & tools	 php	 nodeJS		 JS	 Ruby	 IJ	 eclipse	 Azure Container Service	 GO
Databases & middleware		 redis	 CLEARDB	 cloudera	 MySQL™	 mongoDB	 Couchbase	 Microsoft SQL Server	 SAP S/4HANA
Infrastructure			 redhat	 SUSE		 bitnami	 ORACLE LINUX	 FreeBSD	 docker
									 OPENSHIFT

Microsoft ❤️ Open Source

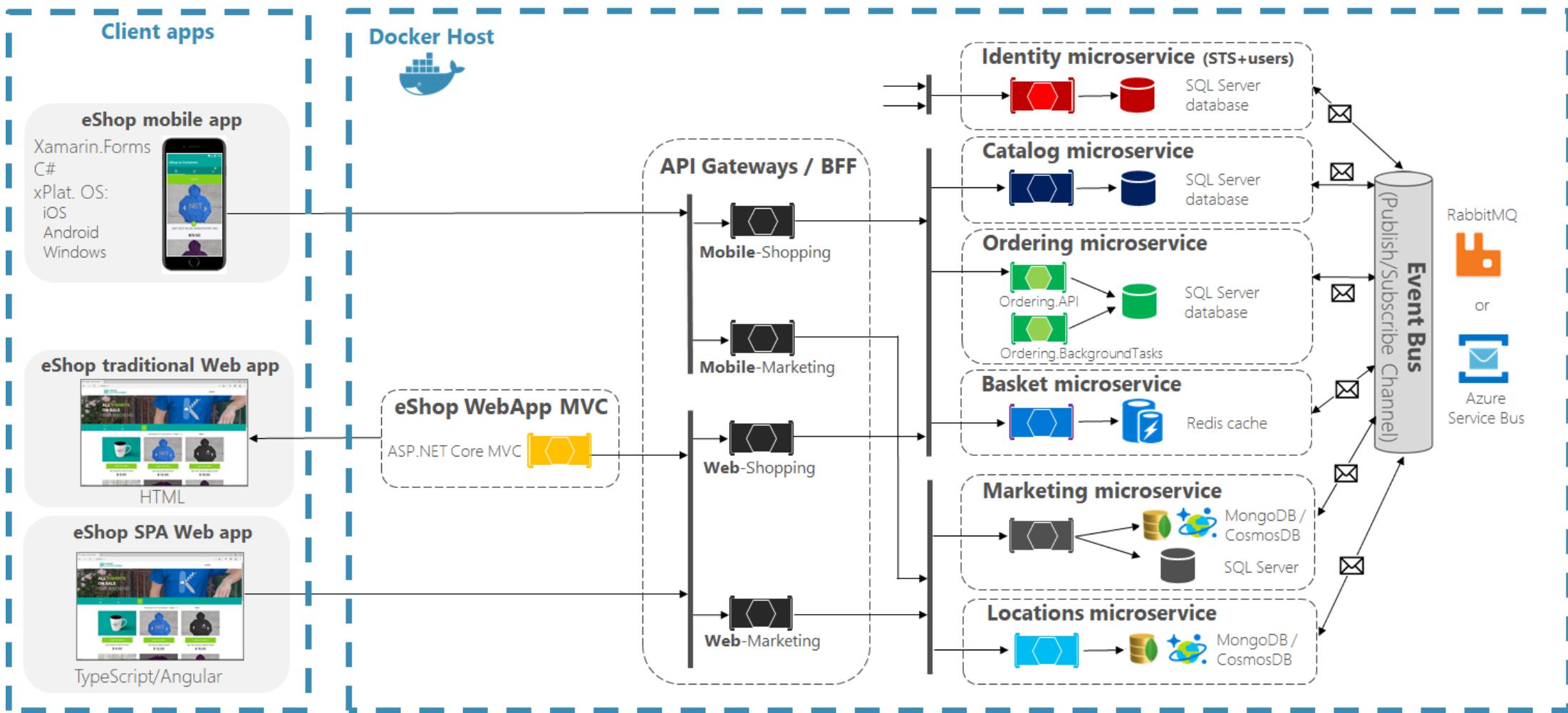
Open Source ❤️ Microsoft

# SmartHotel 360



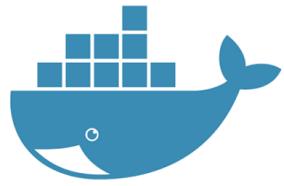
# eShopOnContainers

## eShopOnContainers reference application (Development environment architecture)



# Get locally involved!

There are Meetups around you.



[Docker](#)



[K8S](#)



[HashiCorp](#)



[Azure + .NET](#)



**ANSIBLE**

[Ansible](#)

New!

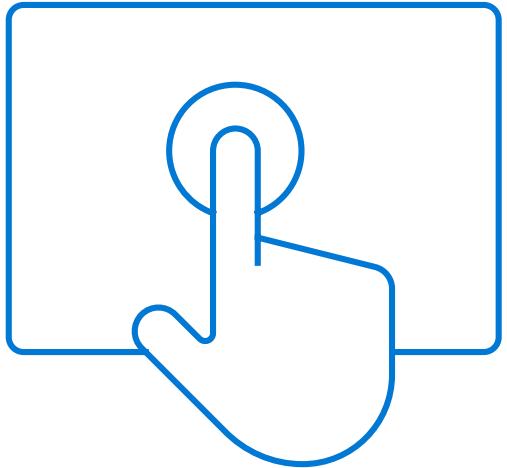
# Microsoft Learn – Free!

Build your skills fast with free, interactive tutorials at Microsoft Learn, a new training experience for technical users.

- Step-by-step training to fit your schedule
- Interactive coding environments for hands-on experience
- Earn achievements and recognition for your Azure skills



Start today at [Microsoft.com/Learn](https://Microsoft.com/Learn)



## Hands-on labs

Build and store container images with Azure Container Registry (ACR)  
<https://aka.ms/bolt-osslab>

**Note: please open an incognito/in private web browser**



Merci ! Thank You!