

Cloud Application Development – Bootcamp

Singapore, May 2017

Uli Hitzel
Practice Development Asia-Pacific



Uli

- App Dev Cloud Architect at Microsoft
- based in Singapore
- covering South East Asia, New Zealand and Korea
- Working with Partners
- Linux, Open Source, Python, Containers, DevOps



@u1i

Agenda – Morning

- Selling PaaS Solutions (Chris) 9:00 – 10:00 am
- Introduction & Basics (Uli) 10:00 – 11:00 am
 - Azure Concepts and Core Services
 - Resource Groups & Templates
 - Storage and Data Structures
- Platform-as-a-Service (Uli) 11:00 – 12:00 pm
 - Web
 - Mobile
 - API

Agenda – Afternoon

- Modern Apps (Uli) 1:00 – 3:00 pm
 - Containers & Microservices
 - API Management
 - Cognitive Services
 - Serverless Code – Functions & Logic Apps
- DevOps (Uli) 3:00 – 4:00 pm
 - Automated Build & Test, Immutable Infrastructure
 - ARM templates & Automated provisioning, Testing in Production
- Wrap-Up & Current Projects & 4:00 – 5:00 pm

The cloud is
changing expectations.

Every company is a software company

“Silicon Valley is coming. We are going to work hard to make our services as seamless and competitive as theirs.”

Jamie Dimon
JP Morgan CEO

J.P.Morgan

“Walmart is redefining the next generation of retail growth and is the best-positioned retailer to win at the convergence of digital and physical retail.”

Doug McMillon
Walmart CEO

Walmart 

“We are putting 70% of our applications on the cloud to improve flexibility. And, we are launching game-changing applications to improve our efficiency.”

Jeffrey Immelt
GE CEO

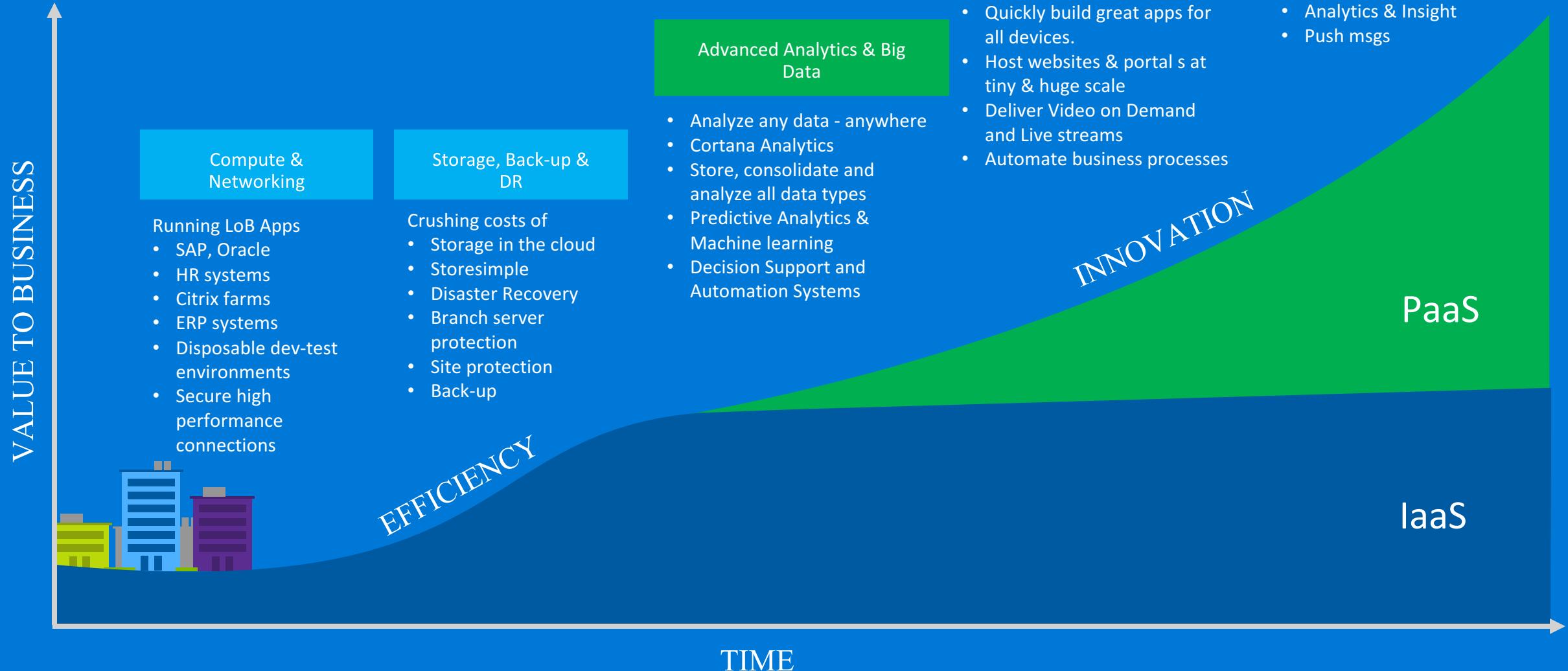


“It's about looking ahead to the changes coming to the global auto business, particularly from potential "disruptors" in Silicon Valley—and preparing Ford to thrive through those changes.”

Mark Fields
Ford Motor Company CEO



IaaS >>> Innovation



Benefits of Microsoft Azure PaaS

Forrester Total Economic Impact results

Interviewed organizations reported on the financial and business benefits of shifting application development and deployment from Azure IaaS to Azure PaaS



466%
Return on
Investment



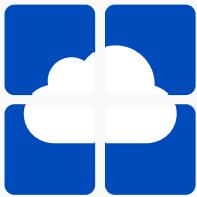
\$5.91M
Net
Present Value



80%
IT
Time Saved



50%
Faster
Service Deployment Time to
Market



Azure App Service

Use
Cases

Apps

Services

Platform



Web Presence

- Corporate sites
- CMS
- eCommerce



App Modernization

- LOB application
- Mobile Applications
- Custom Apps



Digital Marketing

- Mktg Campaigns
- Social Media
- Events



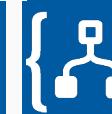
Web
apps



Mobile
apps



API apps

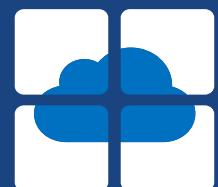


Logic
Apps

Notification
hubs



Azure
functions

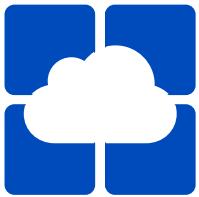


App Service

Enterprise
Grade Apps

Fully
Managed
Platform

High Productivity
Development



Azure App Service

Enterprise-grade apps



Global data center footprint



Hybrid support



AAD integrated



Secure + compliant

Fully managed platform



Built-in auto scale and load balancing



High availability with auto-patching



Reduced operations costs



Backup and recovery

High productivity development



.NET, Java, PHP, Node, and Python



Staging and deployment

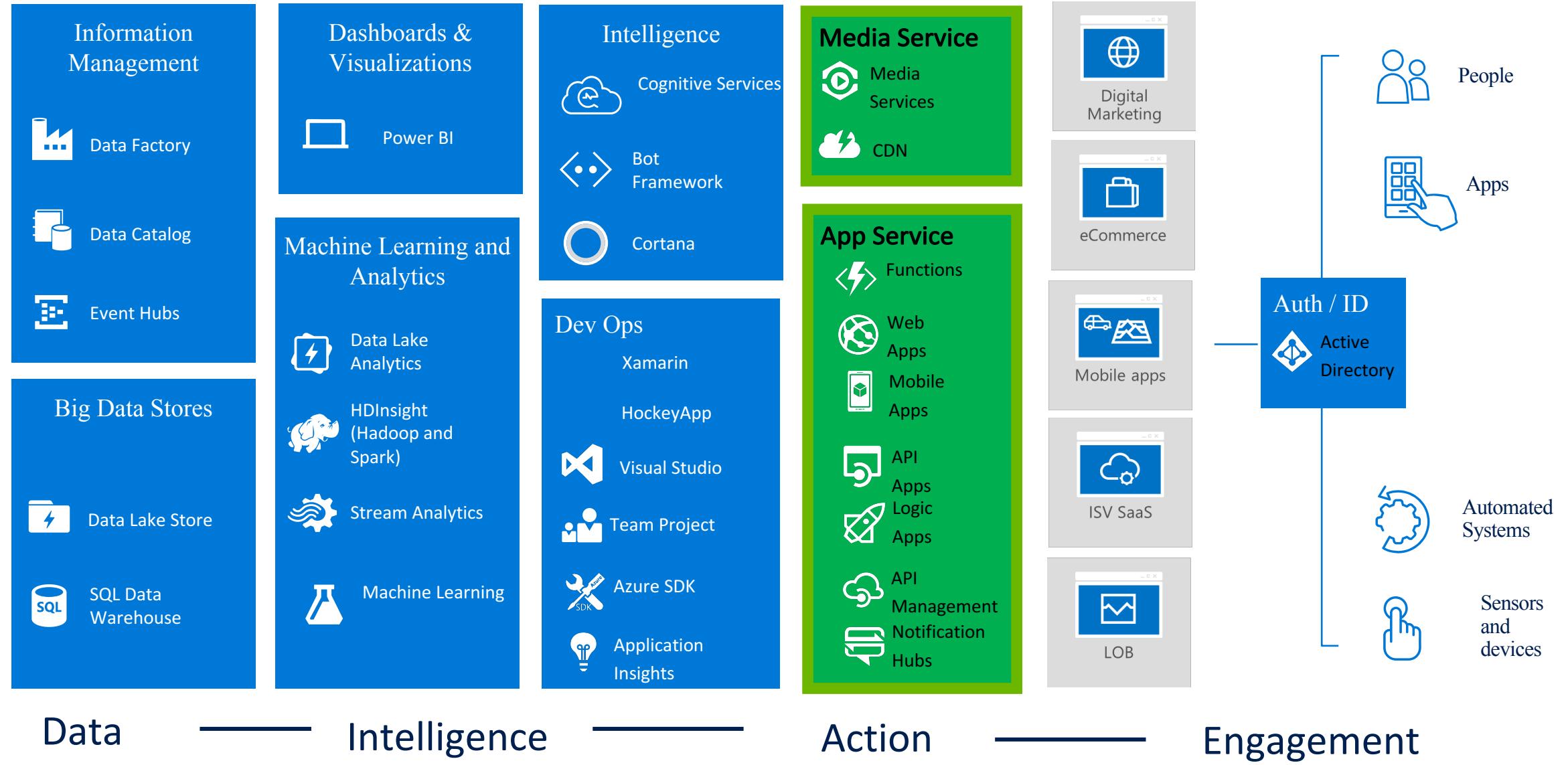


Testing in production



App gallery marketplace

Cloud App Dev – the front door to Azure



Data

Intelligence

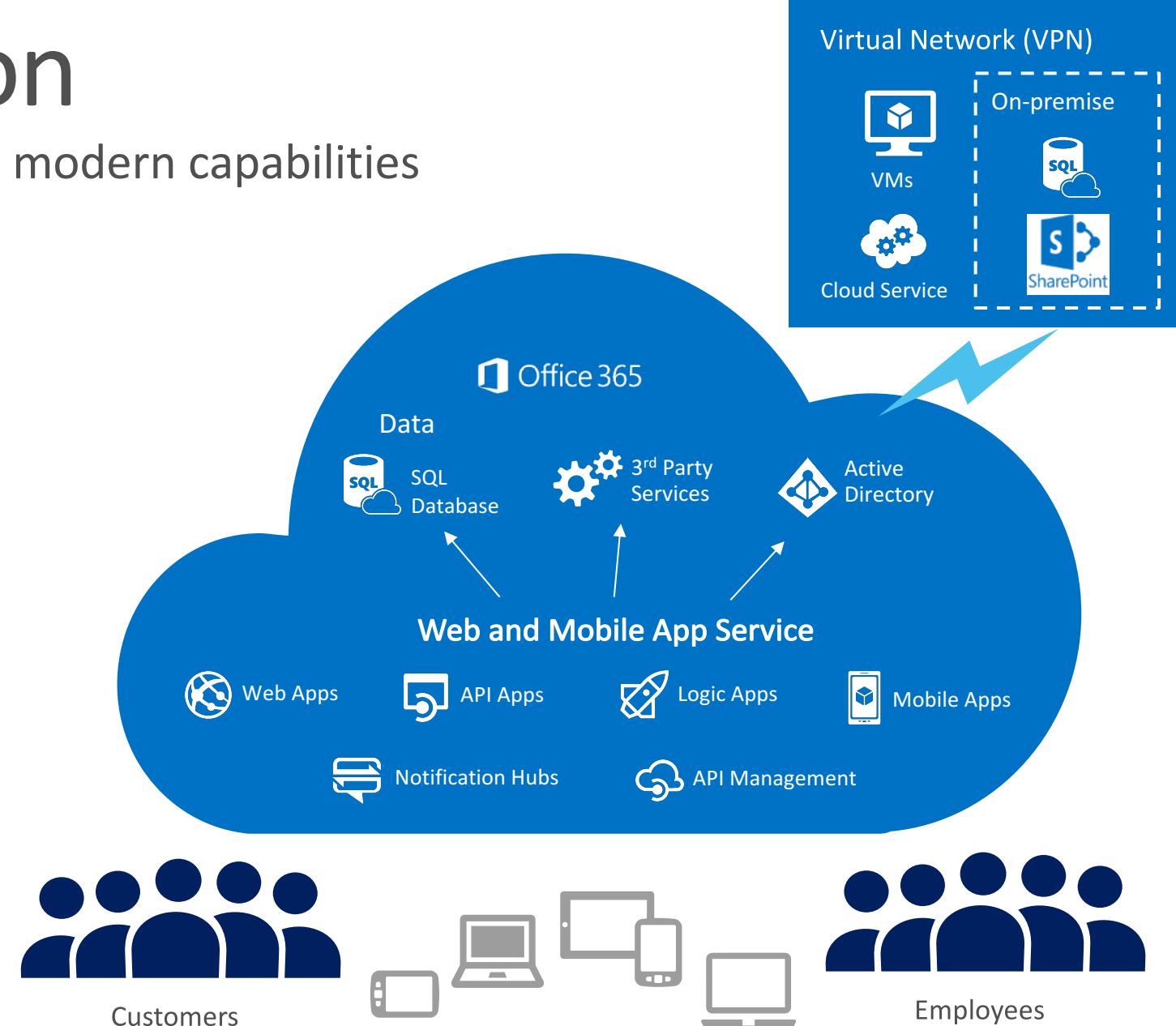
Action

Engagement

App Modernization

Enhance existing enterprise apps with modern capabilities

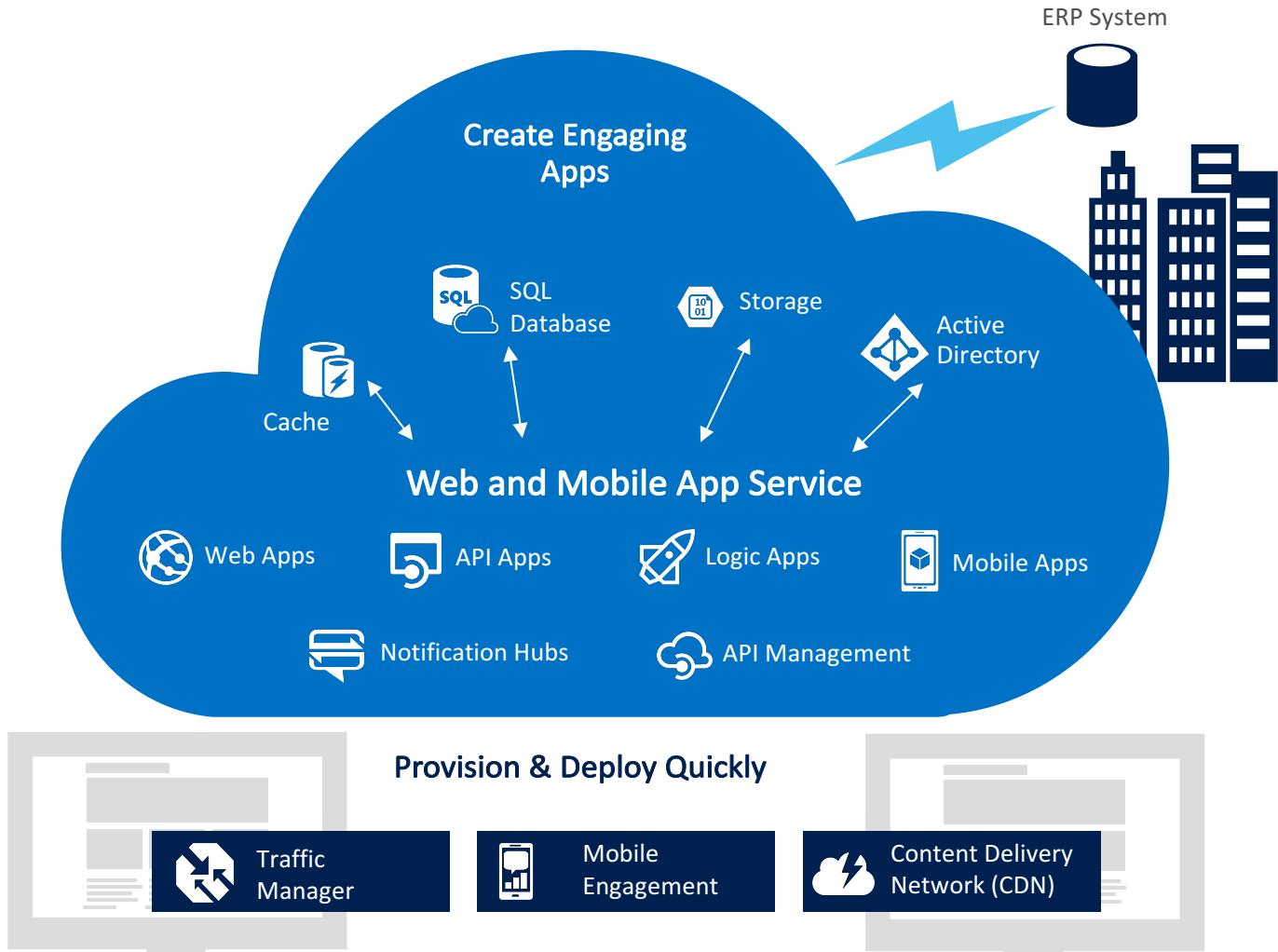
- ➔ Enable mobile access for all device types, protected through identity authorization .
- ➔ Create dashboards, social, video, and other rich media capabilities to better engage your customers and employees.
- ➔ Easily scale applications up or down on demand and achieve high availability across different geographical regions.
- ➔ Seamlessly connect to your business systems, SaaS applications and corporate data.



Website Migration

Move your website easily from on-premise to cloud

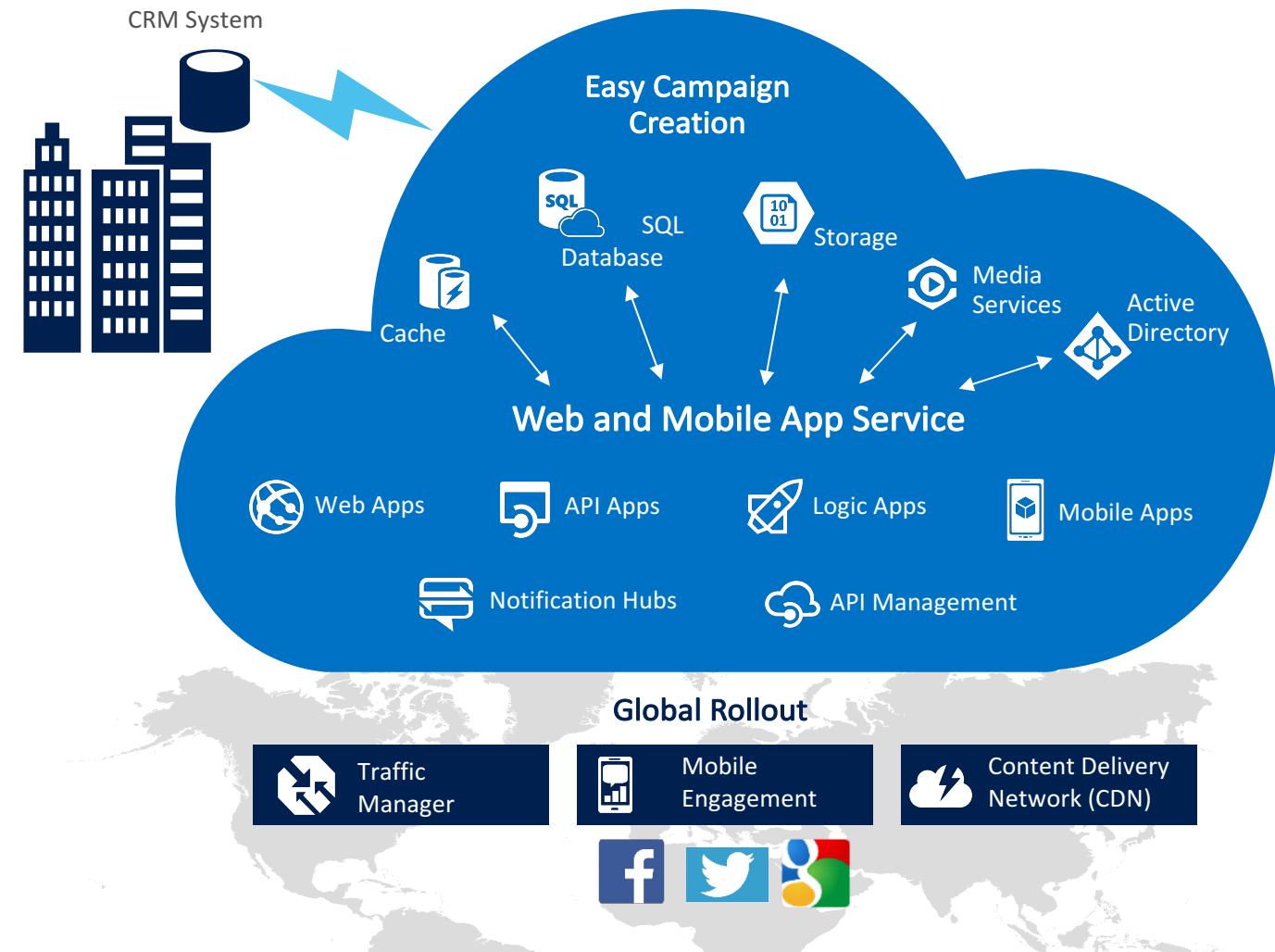
- ➡ Reduce the cost of provisioning, deploying, and scaling Sites and Apps.
- ➡ Add mobile capabilities to existing sites and turn them into **engaging mobile apps** for iOS, Android and Windows.
- ➡ Securely deliver APIs that enable additional apps and devices from partners and 3rd party applications.
- ➡ Securely connect enterprise data, systems or SaaS services easily with built-in connectors.
- ➡ Stay protected with **modern security and compliance standards**.



Digital Platform Marketing

Enable global campaigns, digital events, and rich customer communications

- ➔ Create and manage campaigns and use existing assets to deploy directly.
- ➔ Go social and integrate with popular social media sites.
- ➔ Reach all devices, with a diversity of rich media.
- ➔ Go global, then host or route by region.
- ➔ Scale up and out quickly.
- ➔ Stay agile and publish from existing source control then deploy your web apps to a staging slot for test.



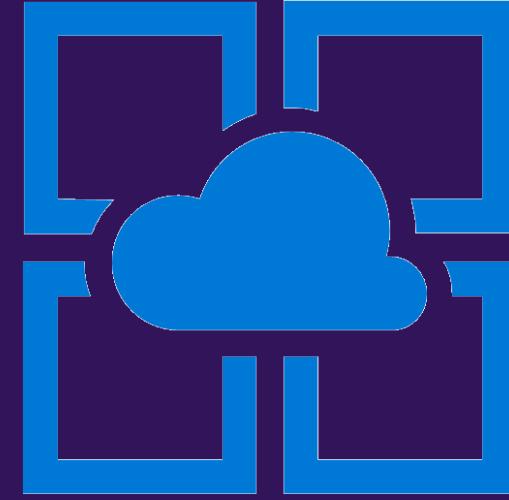
App Service

From on-premises to the Cloud



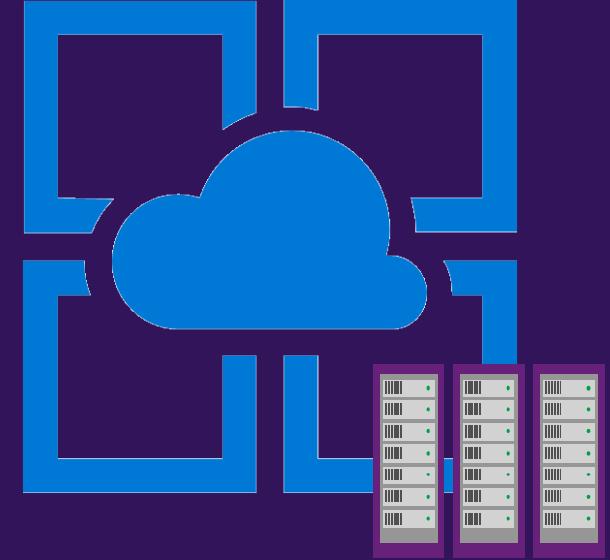
Azure App Service (Multi-tenant)

Get your API, Mobile App or Web App created in seconds in the cloud. We provide the infrastructure, you provide your application code.



App Service Environment

Take control of your entire cloud environment. Manage all of the servers behind your public endpoint creating an isolated environment specifically for your organization.



Azure Stack

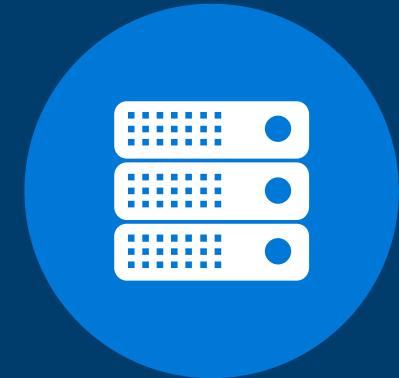
Not able to take advantage of the Cloud? App Service on Azure Stack brings the power of Azure App Service to your own data centers.

The changing world of app development

Mainframe
Monolithic
Client/Server
3 Tier
Component
RAD
Distributed
SOAP
SOA
Web
REST
Mobile
Microservices
Containers
Serverless



Physical
Machines



Virtual
Machines



Cloud
Infrastructure



Born in
the Cloud

Build on a developer
platform (PaaS)



Balance of responsibility

Balance of control and responsibility depends on the category of the service

MOVE-IN READY

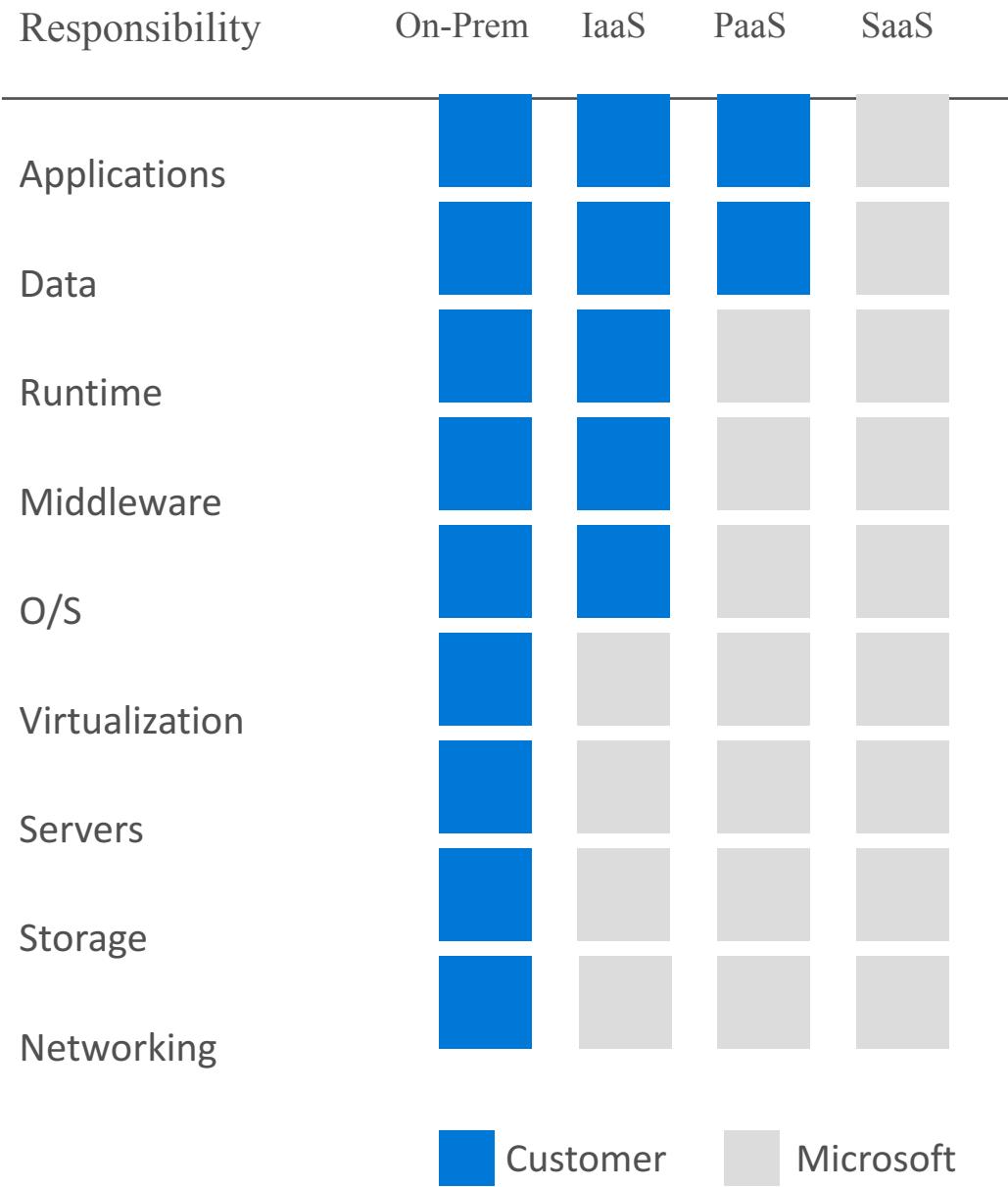
Use immediately with minimal configuration

SOME ASSEMBLY REQUIRED

Existing services are a starting point, with additional configuration for a custom fit

BUILD FROM THE GROUND UP

Building blocks, create your own solution or apps from scratch



The breadth of Azure

'We've services in the business of creating new databases, new queuing methodologies, new storage mechanisms. Compose highly functional apps. Maximize app lifecycle efficiencies and tools on the Azure platform we've gone from zero to a fully fledged ecommerce marketplace in less than 12 months'

Mike Hanrahan CTO
JET.com





The Microsoft Application Innovation Solution

Amazing digital experiences, connected to your business

A cloud that supports your stack and your app

A data platform for applications that predict and take action

Open and extensible tools and services for developers

Microsoft Application Platform

Build the next generation of intelligent apps with an open, comprehensive solution for any developer and any platform



Target any platform,
use any technology

- ✓ Custom or template based solutions
- ✓ Multiple languages, frameworks, tools, and databases
- ✓ iOS, Android, Windows, and Linux

Flexible & open



Develop apps with
speed and agility

- ✓ Integrated cloud platform, DevOps, and tools
- ✓ Build, deploy, manage apps faster
- ✓ Work across teams and disciplines

Productive



Gain the broadest reach
for every line of code

- ✓ Target on-premises, hybrid, cloud, and multi-cloud
- ✓ Write once, run anywhere
- ✓ Leverage 60+ enterprise grade services

Reach

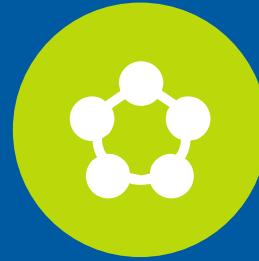
Azure Application Platform

Build on a Developer Platform (PaaS)



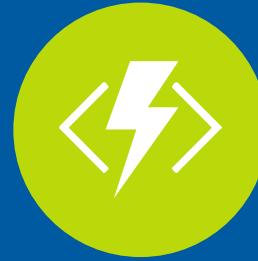
App Service

Web, mobile, API,
and logic apps



Service Fabric

Cloud native,
microservices based apps



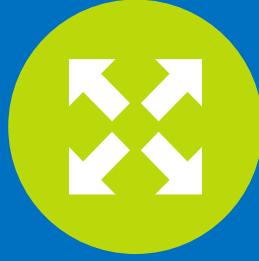
Functions

Serverless,
event driven functions



Cloud Services

Custom monolithic
3-tier stateless apps



Other PaaS

Cloud Foundry, OpenShift,
Apprenda, Jetlastic, etc.

Web and mobile

Microservices

Serverless
Compute

Existing
Frameworks

Third-party
Frameworks

1 – Azure 101

Platform Services

Security & Management

- Azure Portal
- Active Directory
- Multi-Factor Authentication
- Automation
- Key Vault
- Store / Marketplace
- VM Image Gallery & VM Depot

Compute

- Cloud Services
- Service Fabric
- Batch
- Remote App

Web and Mobile

- Web Apps
- API Apps
- Mobile Apps
- Logic Apps
- Notification Hubs

Developer Services

- Visual Studio
- Azure SDK
- Team Project
- Application Insights

Hybrid Operations

- Azure AD Connect Health
- AD Privileged Identity Management
- Backup
- Operational Insights
- Import/Export
- Site Recovery
- StorSimple

Integration

- Storage Queues
- Biztalk Services
- Hybrid Connections
- Service Bus

Media & CDN

- Media Services
- Content Delivery Network (CDN)

Analytics & IoT

- HDInsight
- Machine Learning
- Data Factory
- Event Hubs
- Stream Analytics
- Mobile Engagement

Data

- SQL Database
- SQL Data Warehouse
- Redis Cache
- Search
- DocumentDB
- Tables

Infrastructure Services

Compute

- Virtual Machines
- Containers

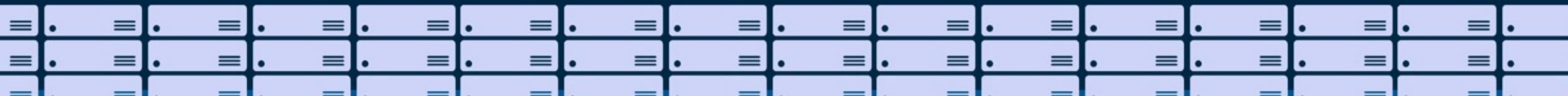
Storage

- BLOB Storage
- Azure Files
- Premium Storage

Networking

- Virtual Network
- Load Balancer
- DNS
- Express Route
- Traffic Manager
- VPN Gateway
- Application Gateway

Datacenter Infrastructure (24 Regions, 19 Online)



34

Azure regions

More than AWS and Google combined





portal.azure.com

Microsoft Azure

Search resources

Jon Harris (AZURE UX)
MICROSOFT

+ New

Resource groups

All resources

Recent

Web Apps

SQL databases

Virtual machines (classic)

Virtual machines

Cloud services (classic)

Subscriptions

Virtual networks

Storage accounts

SQL servers

Browse >

Dashboard

Edit

Windows Azure MSDN - Visual Studio Ultimate
MONETARY CREDITCREDIT LEFT
111.25 USDDAYS LEFT
25Service health
MY RESOURCESpartnerwebsite
WEB APP

Running

Accounts
SQL DATABASE

Online

oneweek
WEB APP

Stopped

CPU percentage today
AZUREEMIJENKINS

Edit

100%

80%

60%

40%

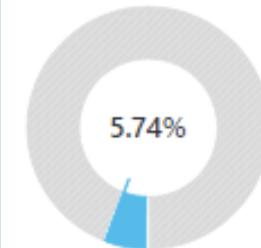
20%

0%

NOV 22 12 PM

CPU PERCENTAGE TODAY

4.28 %

Database Size
PORTALFXANALYTICSCURRENT
15.42 GBTHRESHOLD
268.44 GB

Help + support



Tour



What's new



Feedback



Marketplace

Azure is an open cloud

DevOps



Management



Applications



App frameworks and tools

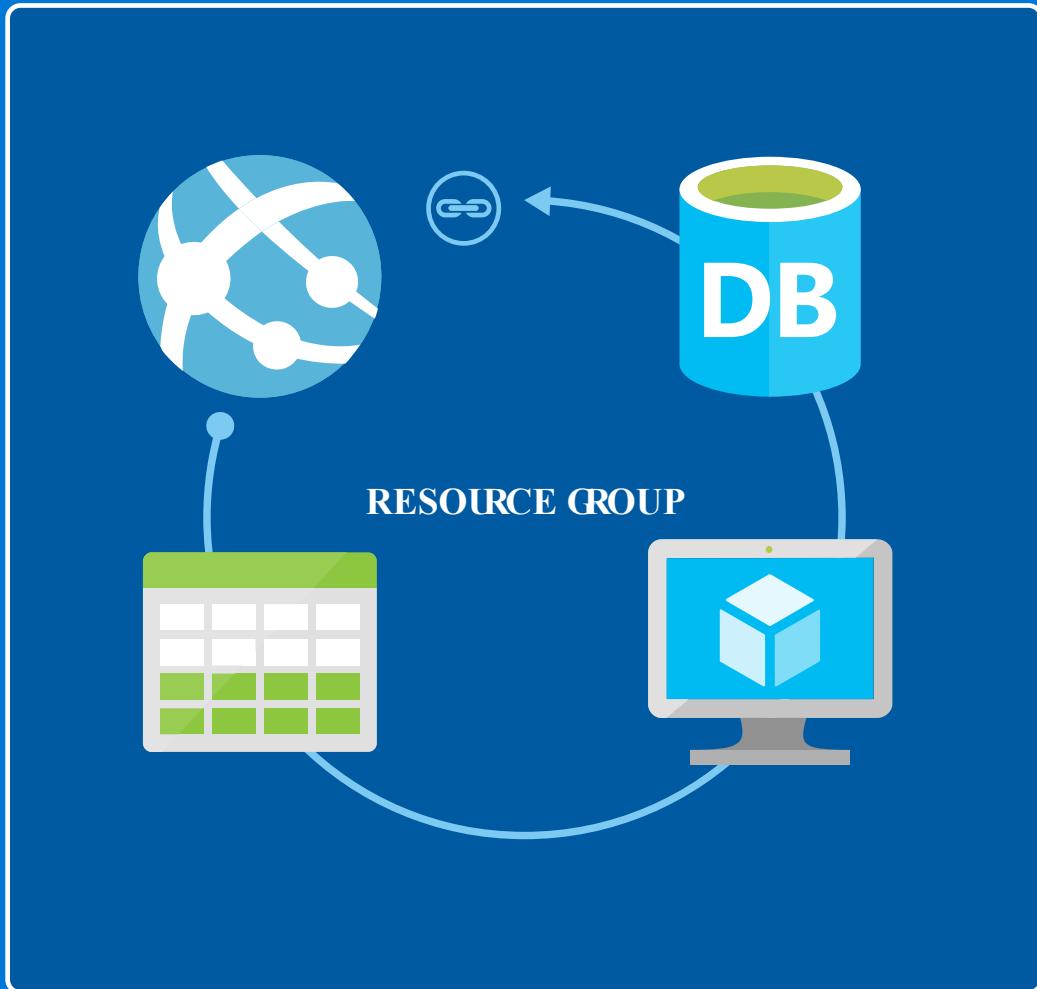


Databases and middleware



Infrastructure

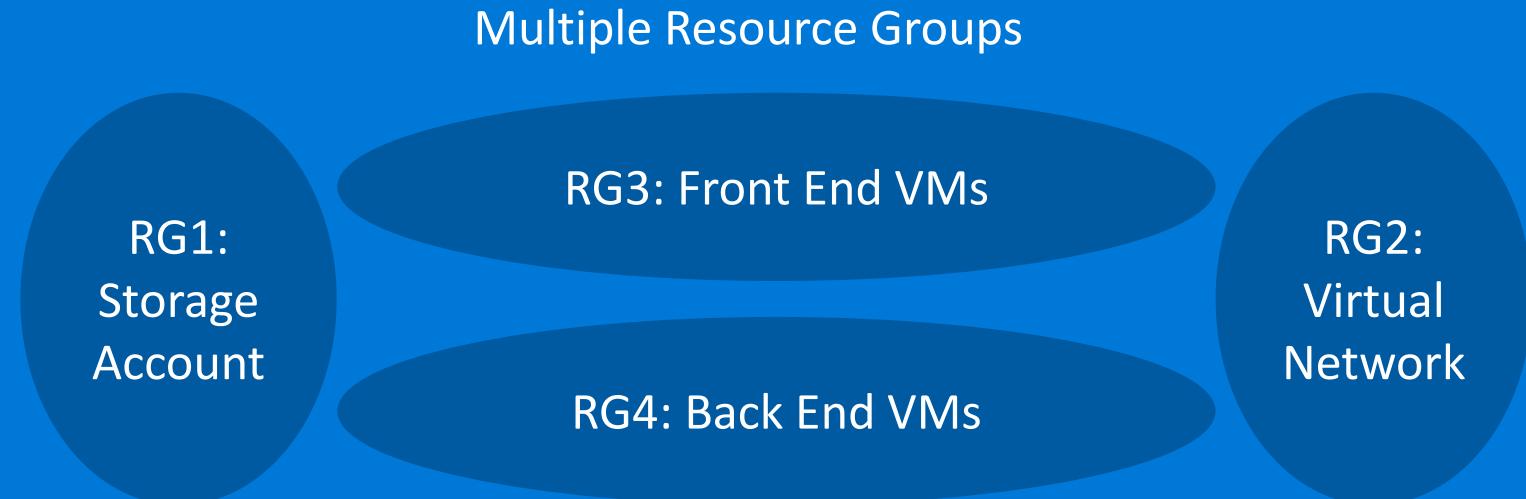
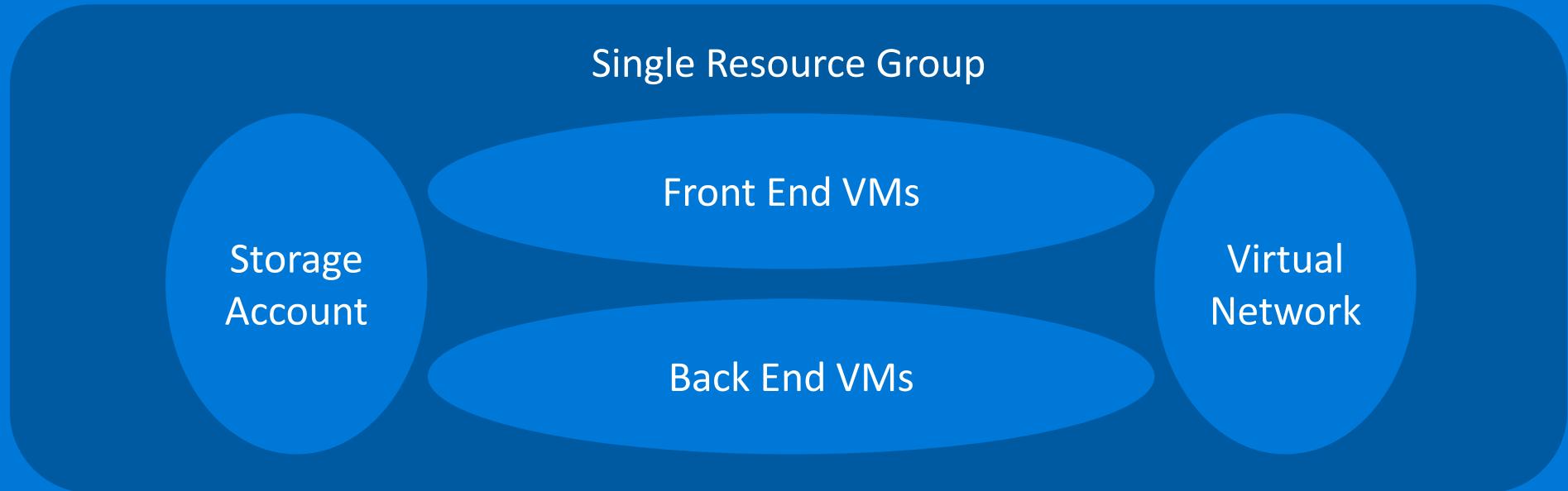




Resource Groups

- Tightly coupled containers of multiple resources of similar or different types
- Every resource ***must*** exist in one and only one resource group
- Resource groups can span regions

Single or multiple resource groups?



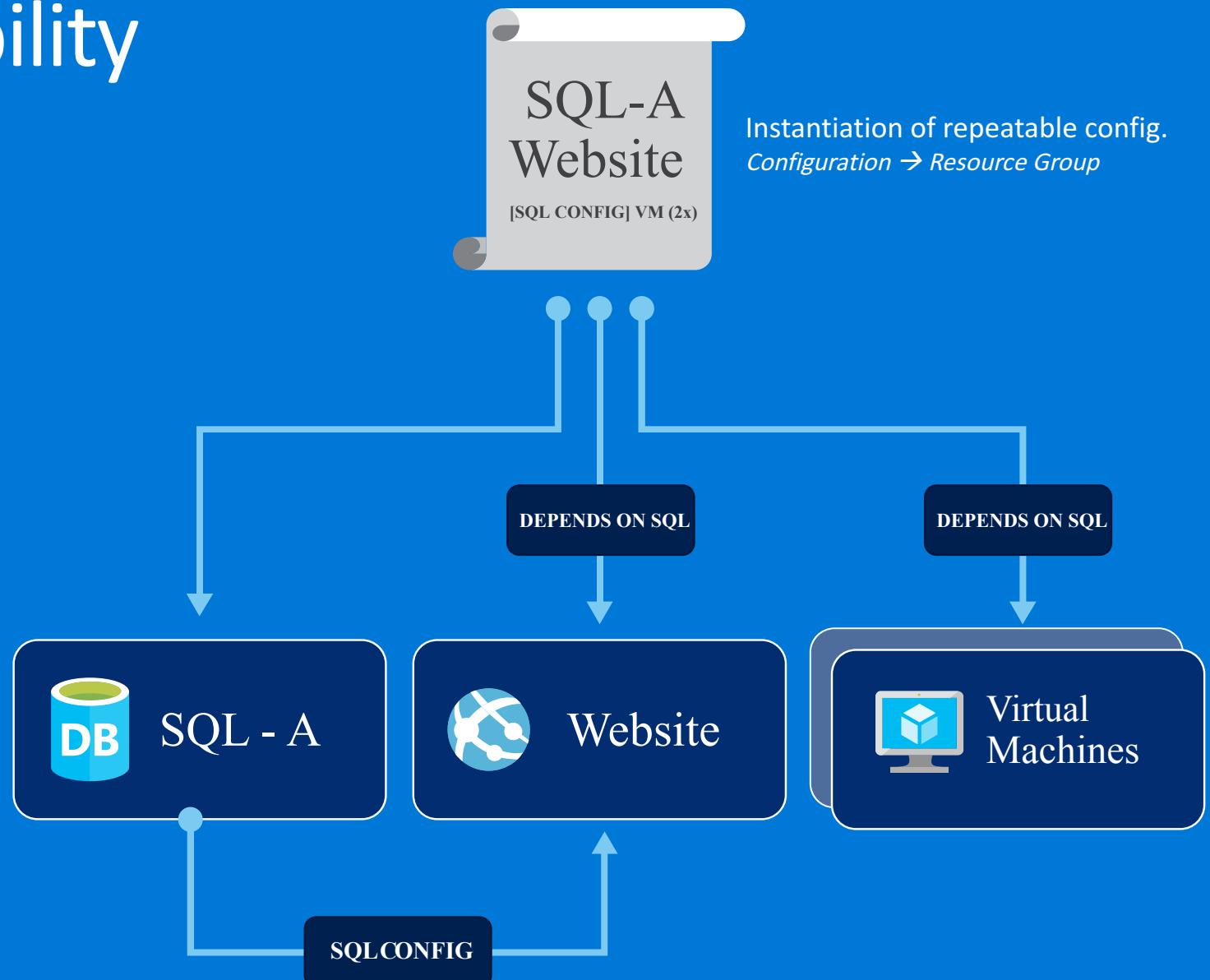
Power of Repeatability

Azure Templates can:

- Ensure Idempotency
- Simplify Orchestration
- Simplify Roll-back
- Provide Cross-Resource Configuration and Update Support

Azure Templates are:

- Source file, checked-in
- Specifies resources and dependencies (VMs, WebSites, DBs) and connections (config, LB sets)
- Parametrized input/output



Role Based Access Control

SUBSCRIPTION



RESOURCE GROUPS



RESOURCES



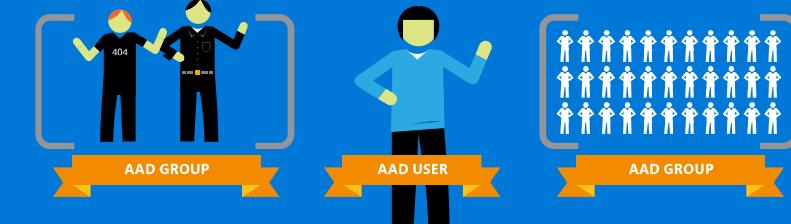
ACCESS INHERITANCE



CONTRIBUTORS

OWNER

READERS



CONTRIBUTORS

OWNER

READERS



CONTRIBUTORS

OWNER

READERS

Azure Storage & Data Services

Storage for VMs

Disks

Persistent block storage for Azure IaaS VMs

Files

Fully Managed File Shares in the Cloud

Unstructured Data

Blobs

Highly scalable, REST based cloud object store

Data Lake Store

HDFS as a service

Structured Data

Tables

Key Value, high scale, auto-scaling NoSQL store

DocumentDB

NoSQL document database service

Azure SQL DB

Fully managed database-as-a-service built on SQL

SQL Data Warehouse

Elastic data warehouse as a service

Azure Storage Services

Blobs

Highly scalable, REST based cloud object store

Block Blobs: Sequential file I/O

Page Blobs: Random-write pattern data

Tables

Massive auto-scaling NoSQL store

Dynamic scaling based on load

Scale to PBs of table data

Fast key/value lookups

Queues

Reliable queues at scale for cloud services

Decouple and scale components

Message visibility timeout and update message to protect against unreliable dequeuers

Disks

Persistent disks for Azure IaaS VMs

Built on page blobs

Premium Storage Disks: SSD based, high IOPS, low latency

Files

Fully Managed File Shares in the Cloud

Map to file share, standard file system semantics

“Lift and shift” legacy apps

Code against
(REST API)

Use on Windows & Linux VMs

What is the Blob Storage Service?

Object Storage: Store and serve unstructured data

App and Web scale data

Big Data from IoT, Genomics, etc.

Backups and Archive

Key Features

Store PBs of data

Durable – Choose level of durability: LRS, ZRS, GRS

Highly Available - 99.9% SLA, 99.99% for reads (RA-GRS)

Strongly consistent

Dynamically scale up on bandwidth and TPS

Cost Effective

Blob Storage: Ideal for PaaS

Why?

Limitless Scale

Globally accessible

Cost Efficient

Scenarios for application data:

Live Data Repository

Active or Deep Archive

Big Data Analytics

Complete services for all database needs

Whether on-prem, cloud, relational, or NoSQL, Microsoft has you covered

Fully featured RDBMS

On-Premises

Cloud

SQL Server

Azure SQL
Database



Azure
DocumentDB



HBase on Azure
HDInsight



Azure Redis
Cache



Azure Tables



Elastic scale

SQL query

Transactional processing

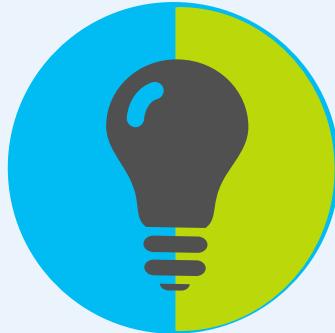
Managed as a service

Distributed data at scale

Schema-free data model

Azure SQL Database

Learns
& adapts



Scales
on the fly



Redefines
multi-tenancy



Works in your
environment



Secures
& protects



Why PaaS for data stores?

If you host your database in an Azure VM,
you are responsible for...

App Optimization

Scaling

High Availability

Disaster Recovery

Backup

Database Patches

OS Patches

Why PaaS for data stores?

If you use a managed Data Service,
you are responsible for...

Focus on your app and your business. Achieve a 406% ROI.
Let Azure Data Services help you build, scale, and innovate.

App Optimization

Scaling



High Availability



Disaster Recovery



Backup



Database Patches



OS Patches



What is Redis?

- An in-memory data store with many built-in data structure types - something between NoSQL and shared memory
- Designed for very fast read/write performance
- Additional support for replication, persistence and clustering
- Optimized as a cache, but also for many other scenarios (message broker, queue, leaderboard, ...)

Why Redis?

- Well supported open source project
- Proven scale for the largest Internet services: Twitter, Instagram, Snapchat, Alibaba, Weibo, Uber, Airbnb, Slack, Hulu, Pinterest, Shopify, GitHub, Stack Overflow, ...
- Growing popularity: #9 in DB management systems, #1 in key-value stores¹
- Knowledgeable community and a expanding ecosystem
- Rich support for many platforms, languages and frameworks

¹ Current ranking by DB-Engines

Azure Redis service

- A fully managed, ISO/SOC-compliant service
 - Windows port of Redis engine
 - Enhancements by leveraging Windows server OS (e.g., SSL) and Azure services and infrastructure (e.g., storage, virtual network, management, monitoring/diagnostics)
 - Dedicated instance(s) per cache: built on top of cloud services today; plan to move to VM
- Available in three service tiers and all Azure regions
 - Basic: single cache node
 - Standard: cache node + one replica (SLA 99.9%)
 - Premium: data persistence, cluster (up to 10 shards), Azure virtual network support, highest network performance and client connections
- Multiple client-side libraries, ASP.NET session & output cache providers, WordPress integration

MovemetothCloud.Net

- Migration assessment tool
- Free
- Windows and Linux
- Assess your Customers web and Intranet sites and migrate them to Azure App Service in 2 clicks!

Azure App Service Migration Assistant

[FAQ](#) [Compatibility](#) [Windows Tool](#) [Linux Tool](#) [Readiness Assessment](#)

Azure App Service Migration Assistant

The Azure App Service Migration site and the tool can be utilized to migrate sites from Windows and Linux web servers to Azure App Service. As part of the migration the tool will create Web Apps and databases on Azure if needs be, publish content and publish your database.

Azure App Service

Azure App Service is a fully managed cloud offering that enables you to deploy and scale Web Apps in seconds. Focus on your application code, and let Azure take care of the infrastructure to scale and securely run it for you.

[Learn more about Azure App Service ▶](#)

Migrate from Windows

The Azure App Service Migration Tool supports migrating from IIS running on Windows Server to the cloud. We support Windows Server 2003 onwards.

[Install Migration Tool for Windows ▶](#)



Migrate from Linux

The Azure App Service Migration Tool supports migrating from Linux servers too! We support most distributions and several popular frameworks.

[Install Migration Tool for Linux ▶](#)

Customers running Web Apps on Azure today



Heineken



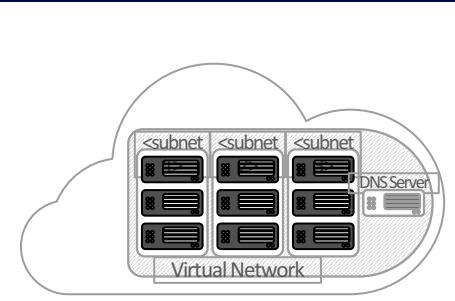
Wellmark



[View more customers ▶](#)

Cust New to Azure? Choose one of five Fast Starts

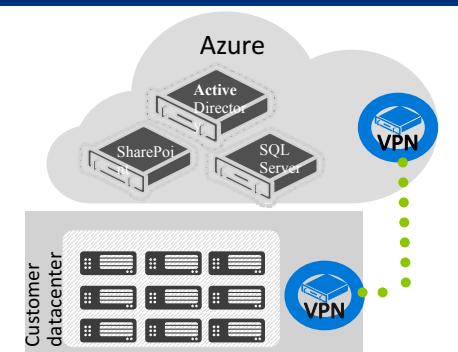
IaaS Foundation



Extend your infrastructure

- Provides education and guidance on extending or expanding on-premises data centers by helping you:
- Understand how to leverage Infrastructure as a service capabilities and optimize workload hosting in the cloud
- Identify, plan, and build a functioning environment in the cloud leveraging Azure networking, storage and VM hosting capabilities of Azure
- Plan Active Directory integration and/or federation to enable hybrid workloads

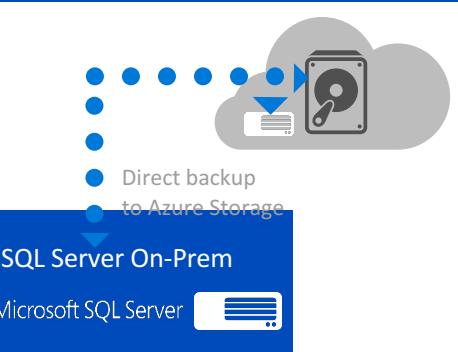
SharePoint on IaaS



Collaboration and Content Management in Azure

- Education and guidance on planning, configuring and provisioning collaboration workloads using SharePoint in Azure
- Education and planning for SharePoint 2013 disaster recovery and business continuity in Azure
- Planning and configuration of networking infrastructure required to extend on premises network
- Configuration and deployment of required database and Active Directory resources
- Assistance migrating a single SharePoint instance into Azure

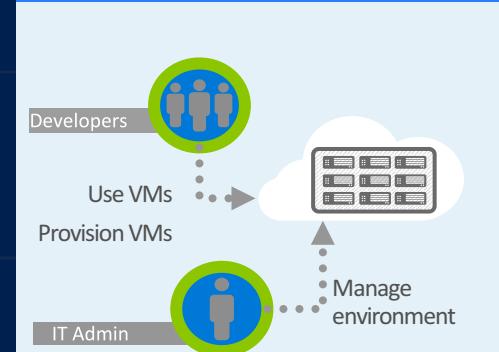
SQL on IaaS



Run, Backup or Archive Database Workloads in Azure

- Education, planning, guidance and assistance configuring a SQL VM in Azure IaaS
- Guidance on best practices for configuring Azure and the VM for optimal performance SQL Workload (data warehouse or transactional)
- Planning and configuration of networking infrastructure required to extend on premises network
- Planning and configuration of workload to secure your environment
- Planning and guidance on using Azure for disaster recovery or SQL backups

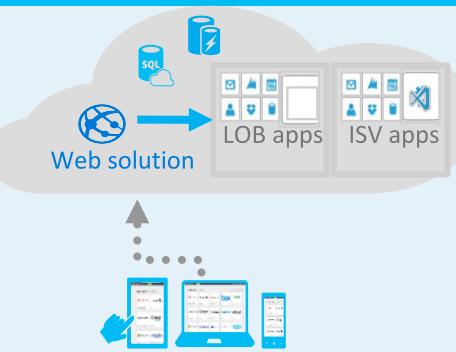
Azure Dev/Test



Develop, test, run your applications

- Provides education and guidance for providing a test and development environment on Microsoft Azure.
- Helps you understand the power of automatic scripting for deploying test and development environments on Microsoft Azure.
- Helps you build three different types of test and development environments for technologies such as SQL or SharePoint using scripts.

Azure Modern Apps



Develop modern cloud solution and target Mobility, Web and APIs application on Azure

- Understand how to leverage Platform as a service capabilities and optimize workload hosting in the cloud
- Helps you understand the power of managed service and how those can support your business on Azure.
- Provides education and guidance for designing PaaS enabled application and choose the right service according to your specific need.
- Helps you target different scenarios : integration, Front-end and API hosting, Telemetry, monitoring and diagnostics .

2 – Platform-as-a-Service (PaaS)

Azure App Service

Build and scale great web and mobile apps



Auto-patching and auto-scale

.NET, Java, Node.js, PHP, Python

Integrate with SaaS and on-premises

Continuous integration with VSTS,
Github, BitBucket, and more

Azure Web Apps

High Availability & Disaster Recovery

Replicate

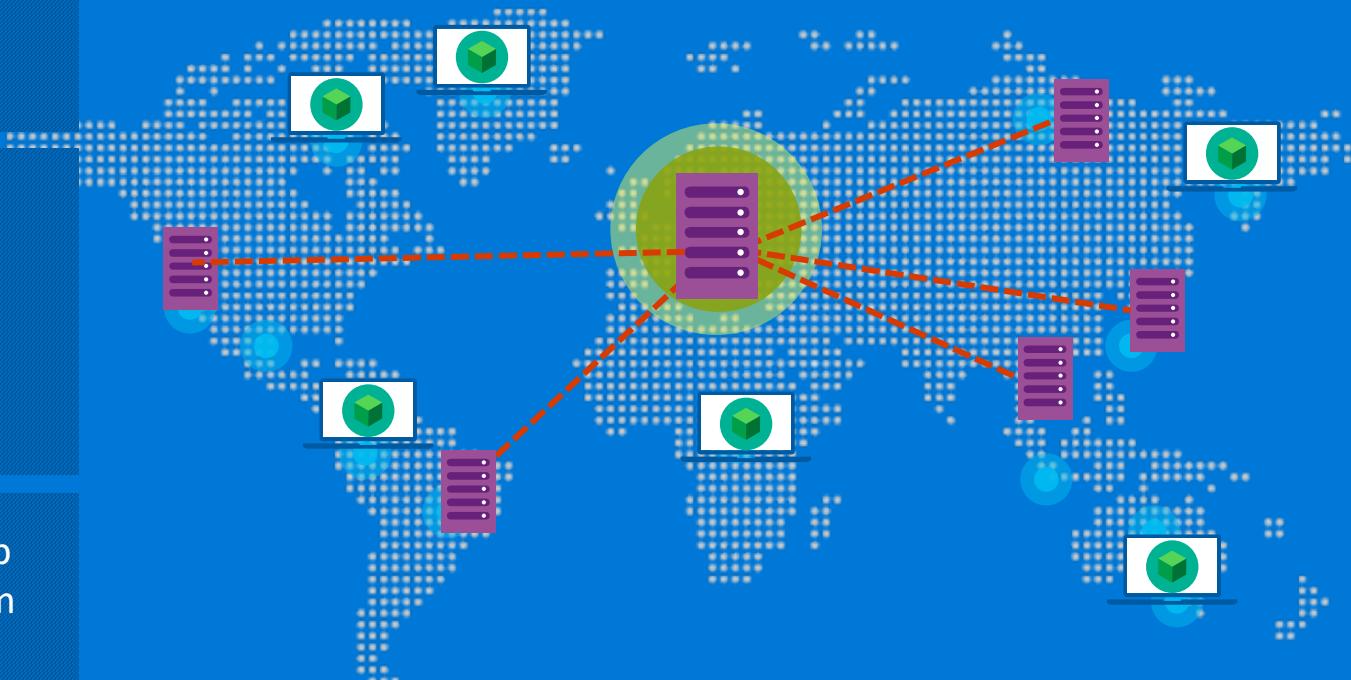
Ensure web app availability with site cloning and traffic manager while protecting data with SQL Database active geo-replication which also allows reads from secondaries.

Restore

Enable self-service data restoration with automatic database backups with up to 35-day retention to any point in time.

Protect

Schedule daily backups of both your web application and database for longer-term data protection.



Security & Hybrid Connectivity

Built-in

Secure app data to browser or hand-held client applications with complete for SNI or IP-Based SSL certificates.

Flexible

Leverage Hybrid Connections or VPN support to connect applications to legacy on-premises data, VMs, Azure services or to a corporate network. Enable Azure Active Directory for federated application logins.

Compliance

Verified by key auditors, key Azure certifications and approvals such as HIPAA BAA, ISO/IEC 27001:2005, FedRAMP, and E.U. Model Clauses. Audit application activity with operation logs and database activity with SQL Database auditing.



Industry-leading SLA's & Support

SLA's

99.95% uptime Websites SLA

SQL Database uptime SLA of 99.99%*

Support

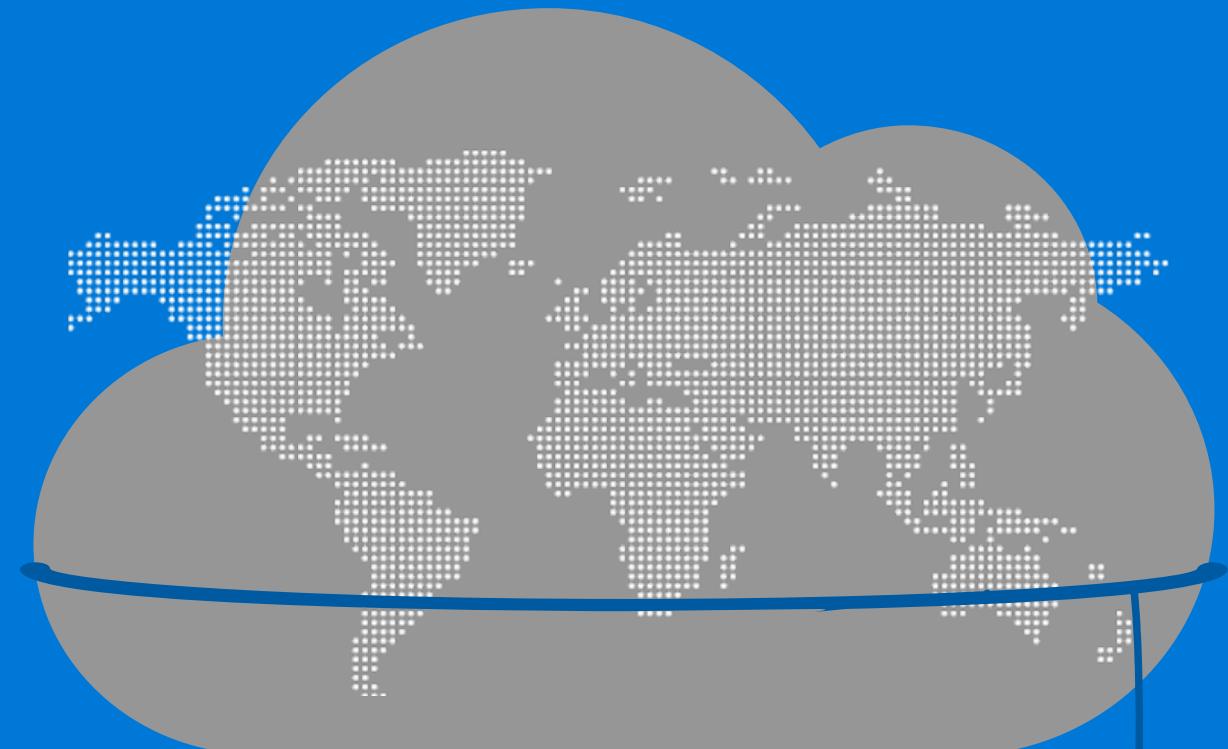
Single vendor support across Azure and across hybrid deployments

Microsoft Premier Support,
Paid Azure support

Proven

50% of Fortune 500 use Azure

12B+ weekly Azure Active Directory authentications



Global scale

Provide high-performance to applications with seamless and automatic scalability, load balancing and performance features across the web and database tiers.



Scale up + out

Automatic

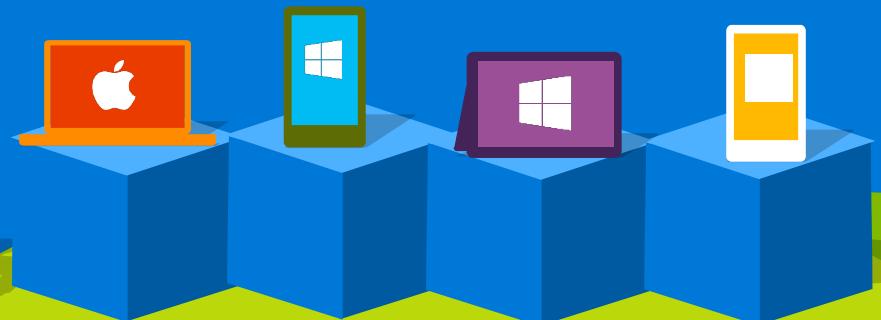
AutoScale your web application based on either a schedule or rules you define to ensure consistent performance.

Flexible

Programmatically scale up and down SQL Database throughput to support performance needs or scale out and in across thousands of databases to support multi-tenancy or sustained workloads.

Global

Extend your global reach and presence with 17 global datacenters and counting and leverage the footprint to balance the needs of your applications and business.



Load balanced

Built-in

Web applications are load-balanced by default when scaled to two plus instances which saves time and ensures performance. Databases are load-balanced in the system to ensure fair use of resources.

Global

Deploy your application in multiple data centers world-wide and leverage Traffic Manager to provide low-latency for your global business or high availability to redirect all traffic to another data center.

Active

Take pressure off your primary database by moving read workloads, like reporting, to your readable secondaries with SQL Database active geo-replication.



Superior performance

Powerful

Dial up the required resources for Websites and SQL Database to support bursts or sustained heavy application workloads; backed by 64-bit VMs and the ability to support up to 5,000 concurrent connections.

Predictable

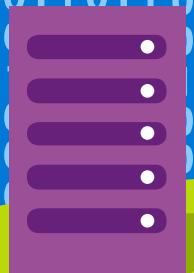
Achieve predictable performance with SQL Database performance levels which deliver defined throughput units.

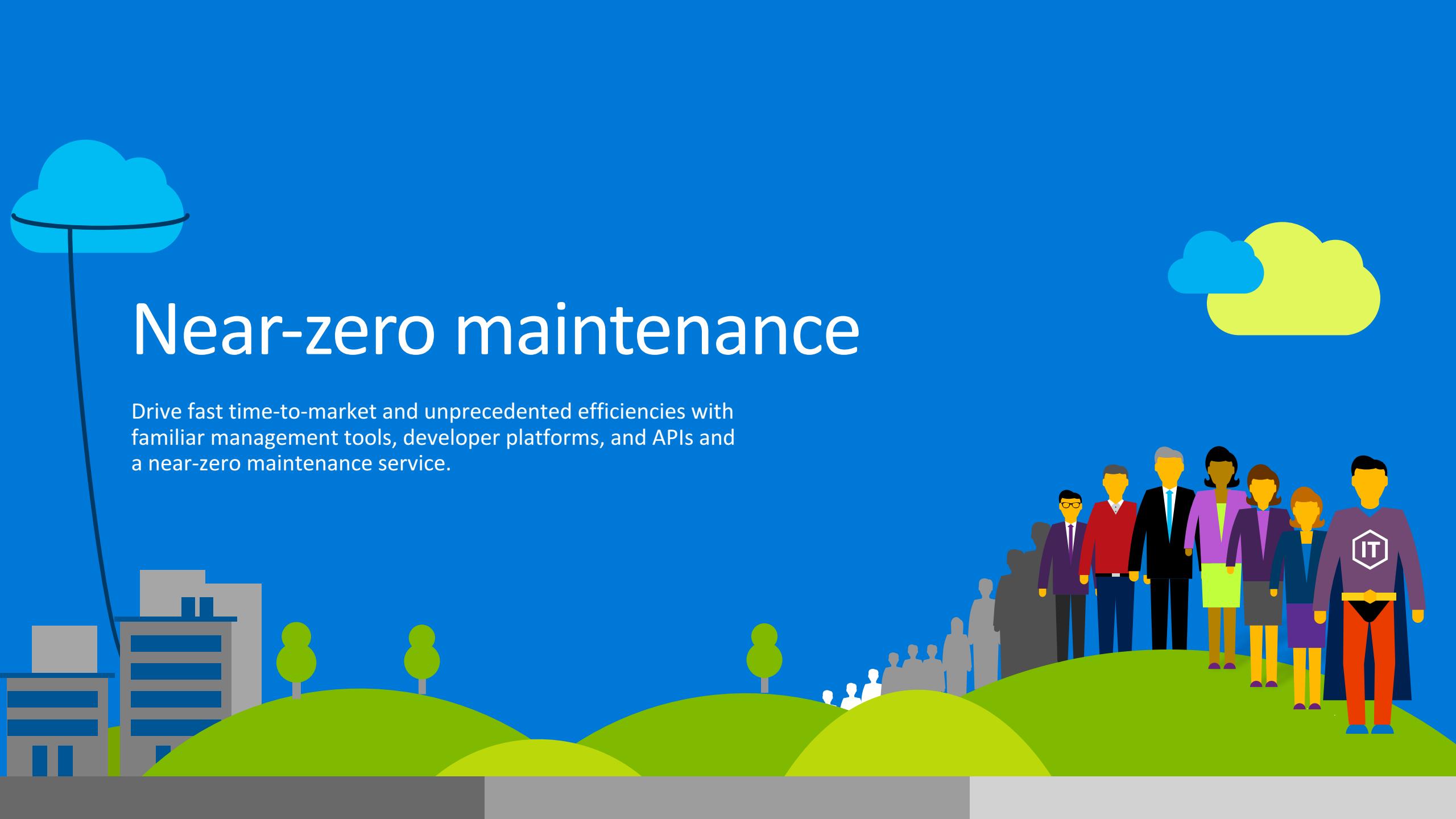
Efficient

A choice of cache technologies and a global CDN network to bring content closer to users reducing the load on origin servers and brings faster response times while reducing compute costs.



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Near-zero maintenance

Drive fast time-to-market and unprecedented efficiencies with familiar management tools, developer platforms, and APIs and a near-zero maintenance service.

Familiar tools

Productive

Drive productivity with management tools; REST APIs, PowerShell, Azure Management Portal, Visual Studio and SQL Server Management Studio across a familiar relational and T-SQL foundation.

Open

Develop with a choice of popular platforms and technologies, including .NET, Java, PHP, Python, Node.js and even Classic ASP.

Seamless

Support seamless development on or offline and across on-premises and cloud-designed apps with Visual Studio integration.



Productivity
Management
Tools

.NET
Java
PHP
Python
Node.js
Classic ASP

Self-healing

Hassle-free

Remove virtually all infrastructure maintenance with Websites and SQL Database which provide automatic OS and framework patches and data backups as part of the service.

Automatic

Built-in database replicas help deliver inherent system stability which means less IT tax. System replicas are automatically moved to new machines on-the-fly.

Continuous

Enjoy continuous deployment with Visual Studio Online (TFS), Git, GitHub, and Mercurial and Website Site Slots for a hot swap between staging and production.



Mobile backend as a service with App Service

Add must-have functionality to your mobile app, quickly

Add corporate sign-on in seconds

Use offline data sync to build responsive apps

Connect your apps to on-premises data

Broadcast push notifications to millions in minutes

Autoscale to fit your business



Push is transforming businesses

Broadcast breaking news to millions of customers using their preferences



Send notifications based on account changes or actions



Engage customer to improve your brand, customer satisfaction, and business metrics



Increase employee productivity and responsiveness



Azure Notification Hubs

Register device handle at app launch

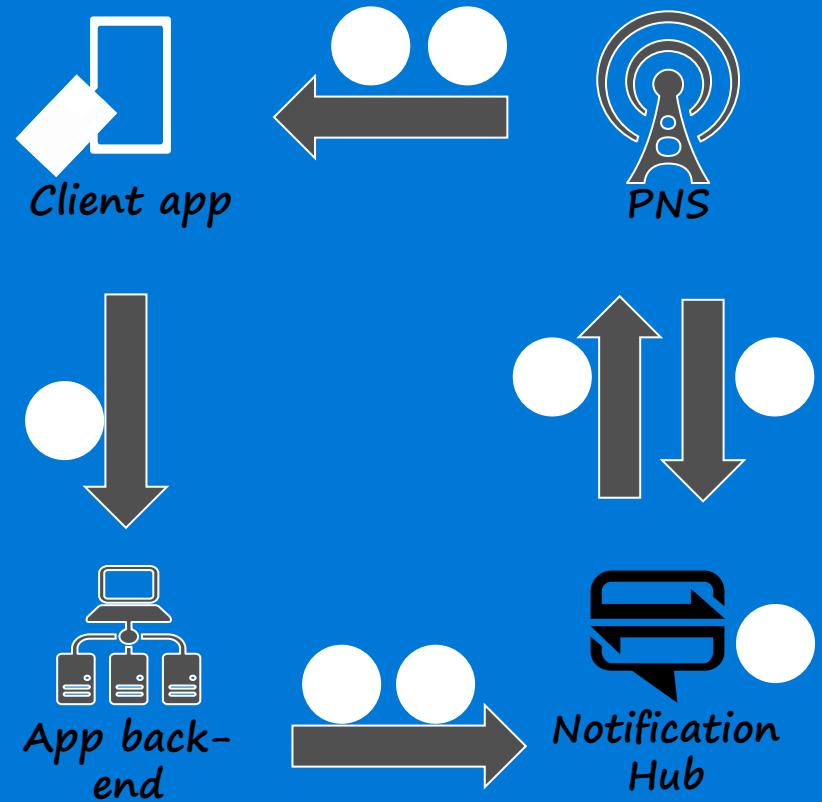
1. Client app retrieves handle from Platform Notification Service (PNS)
2. App passes the handle to the back-end, back-end registers handle with Notification Hubs, using *tags* to represent logical users/groups

Send Notification

3. App back-end sends notification to logical users or groups of users using Notification Hubs *tags*
4. Notification Hubs delivers notifications to matching devices via PNS

Maintain device handles

5. Notification Hubs deletes expired handles when PNS rejects them
6. Maintains mapping between logical users/groups and device handles



Xamarin

Create native apps with beautiful UX and native performance for Windows, iOS and Android

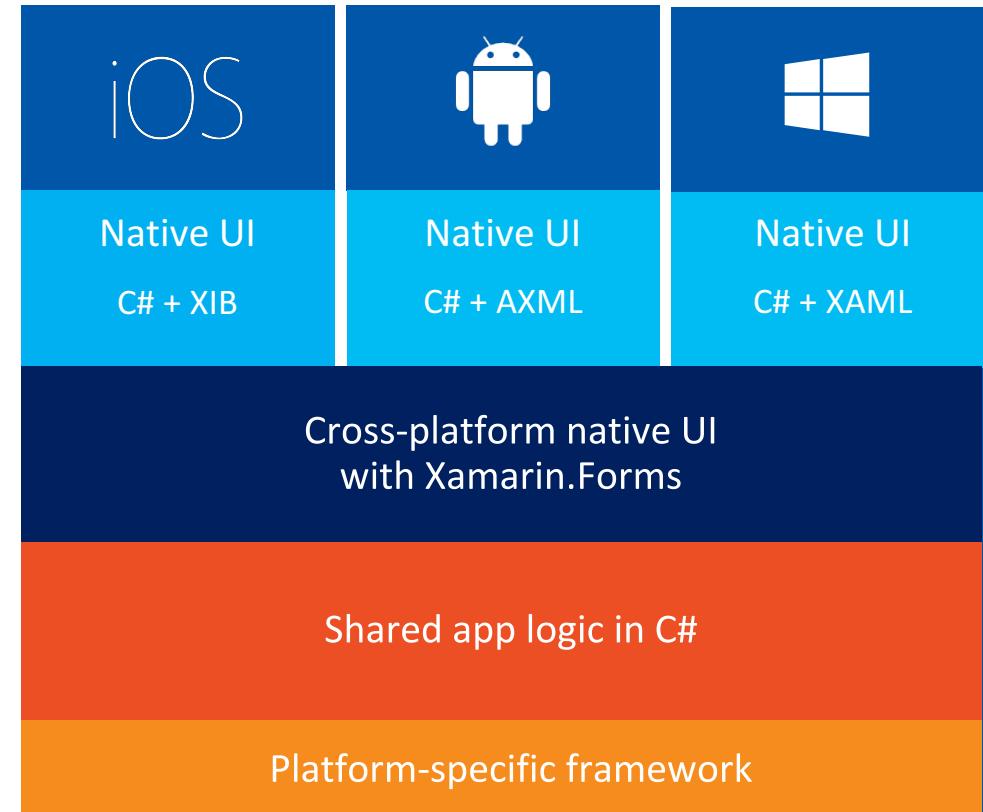
Create native apps for Windows, iOS and Android devices using .NET and Visual Studio

Use C# with 100% of platform APIs exposed

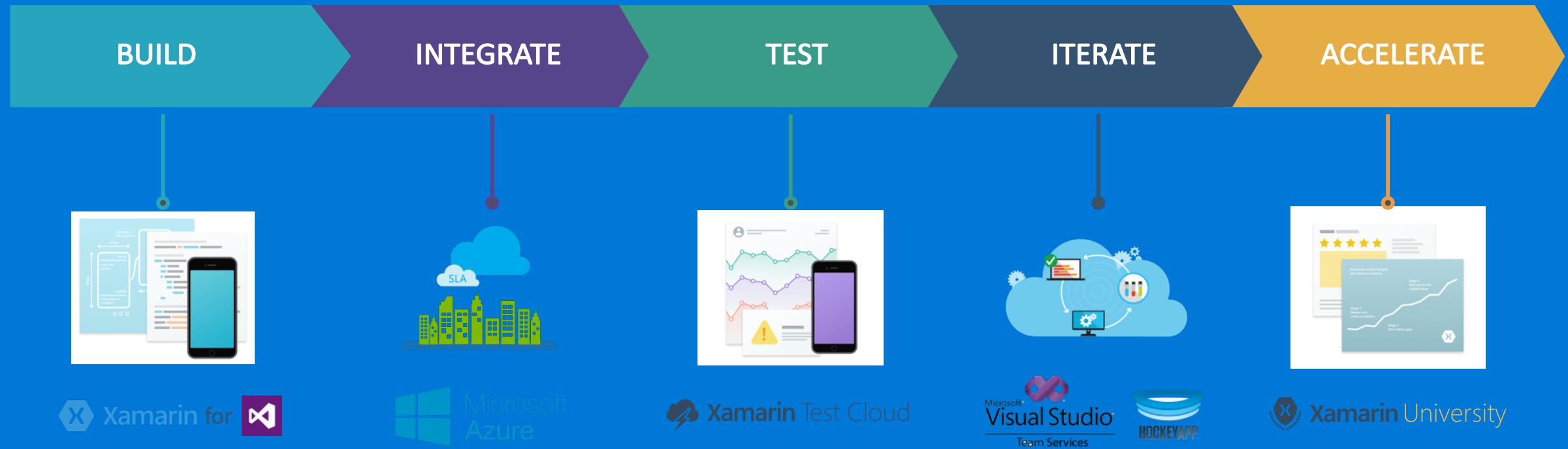
The most productive and powerful platform for creating native cross-platform applications

Maximize code reuse with Universal Projects and Portable Class Libraries

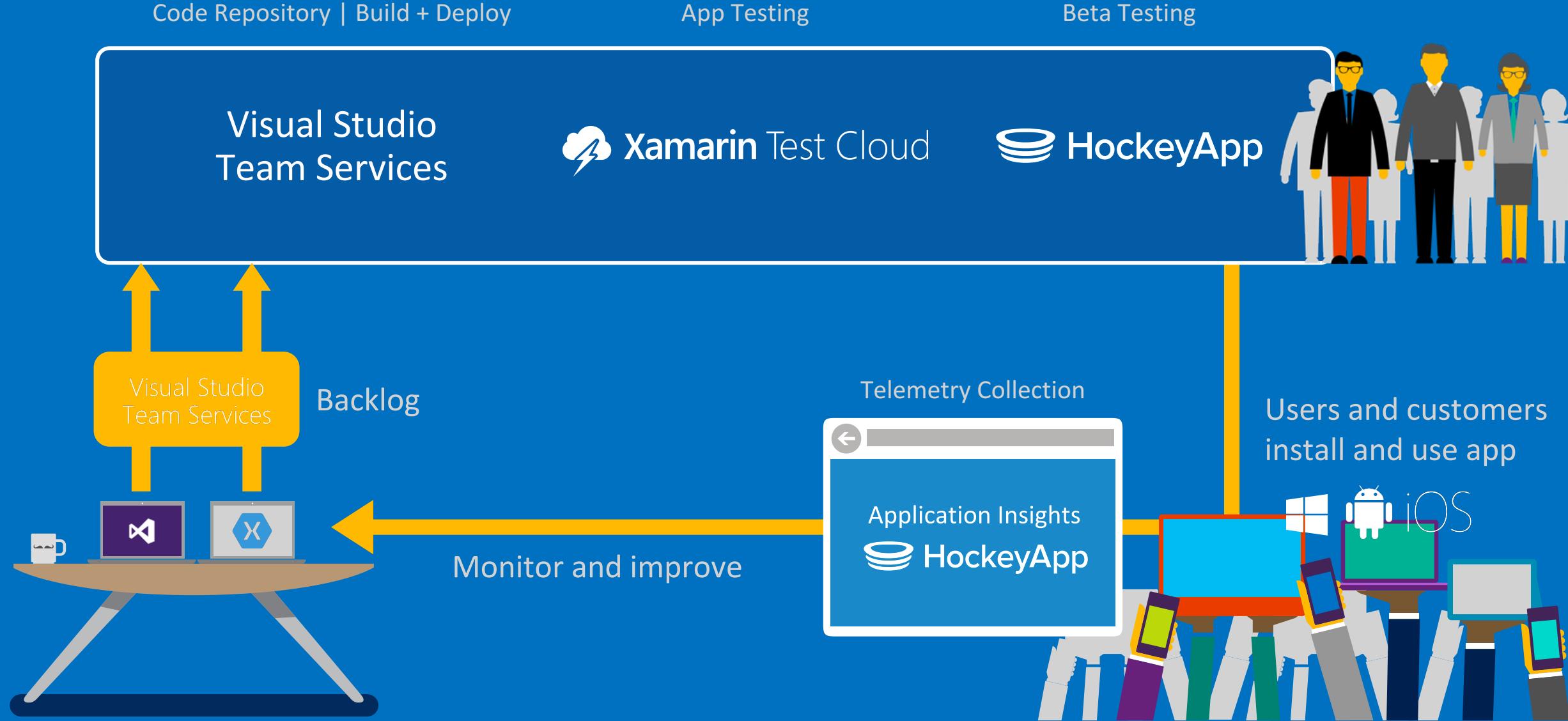
Create shared UI with Xamarin.Forms



Mobile Lifecycle Solution



Mobile app lifecycle with Microsoft



The mobile app dilemma

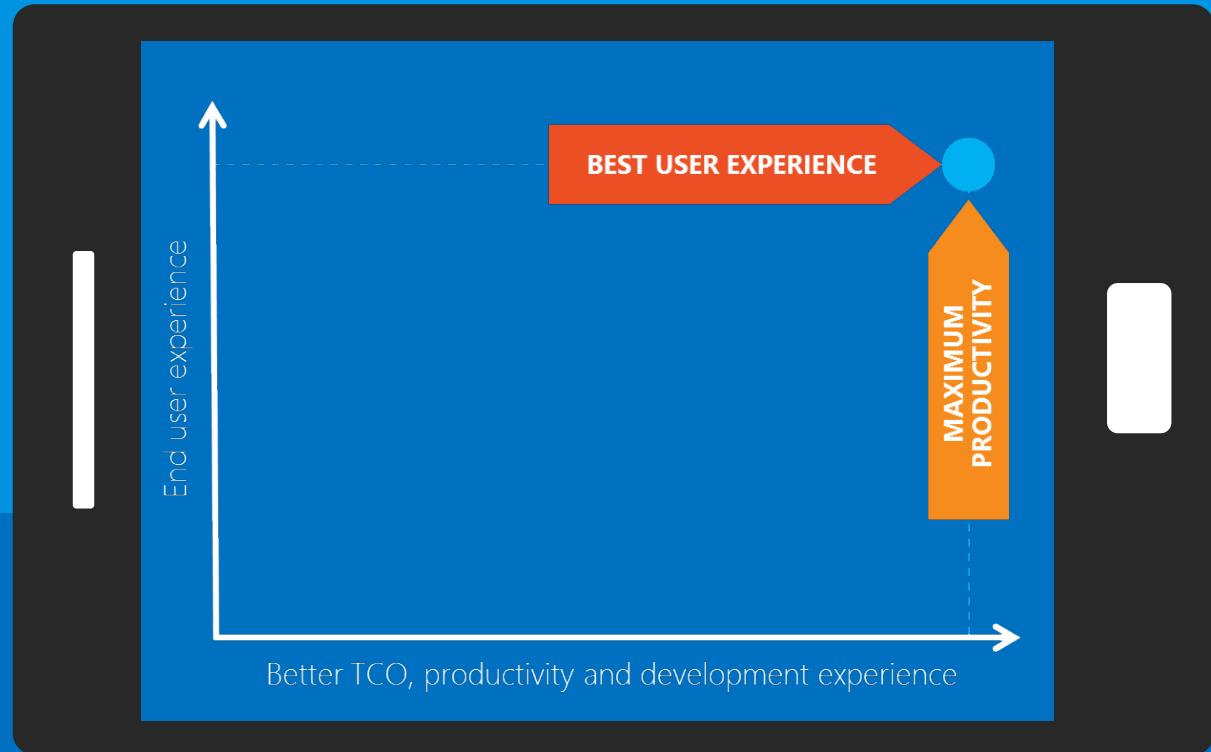
trade-off

noun

noun: tradeoff

A balance achieved between two desirable but incompatible features; a compromise.

"a trade-off between objectivity and relevance"



Platform silos



iOS Objective-C + Xcode



Java + Eclipse



.NET + Visual Studio

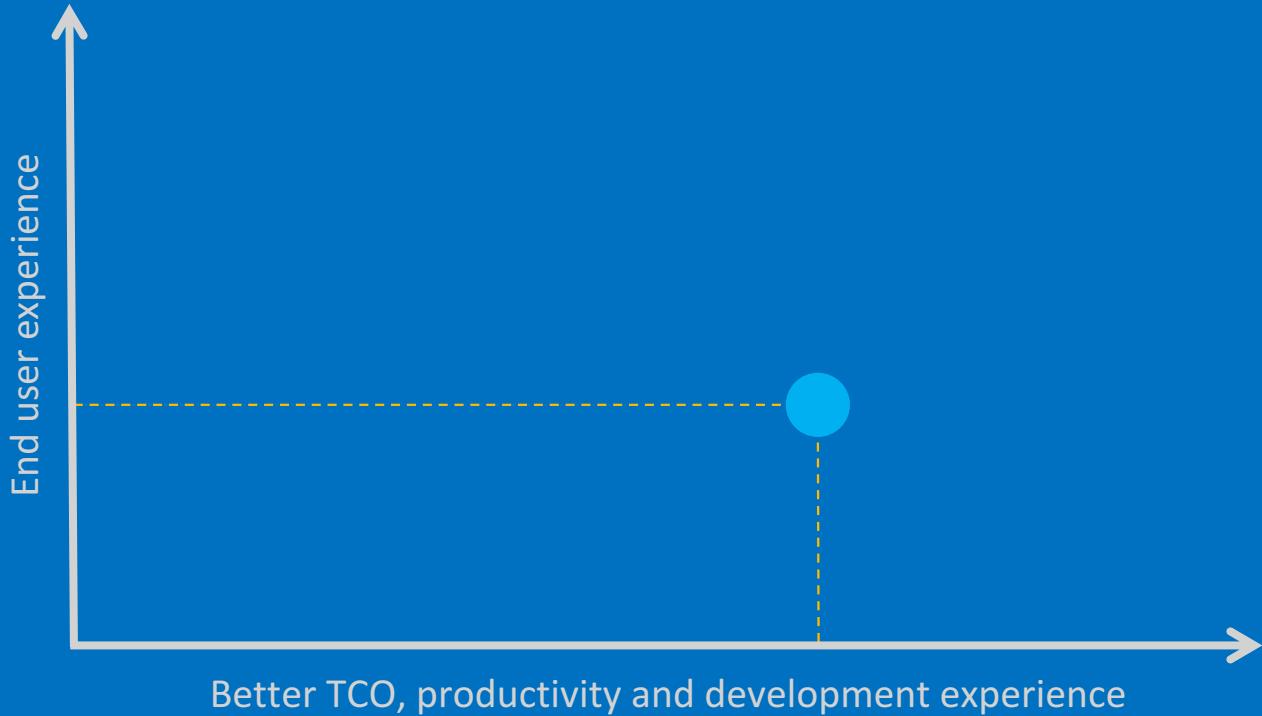
End User

- ✓ Platform-native UX
- ✓ Full performance
- ✓ Native service integration

Developer

- ✗ Only services (server-side) can be re-used
- ✗ Dev experience is different for each platform and device type
- ✗ Higher TCO due to multiple code bases and requirements for developer skills

Hybrid & Web



End User

- ✖ Non-native UX
- ✖ Performance tradeoff
- ✓ Works across devices

Developer

- ✓ Great for teams with HTML/JavaScript skills
- ✖ Scaling to enterprise complexity challenging

Cross-platform native with Xamarin



End User

- ✓ Platform-native UX
- ✓ Full performance
- ✓ Native platform service integration

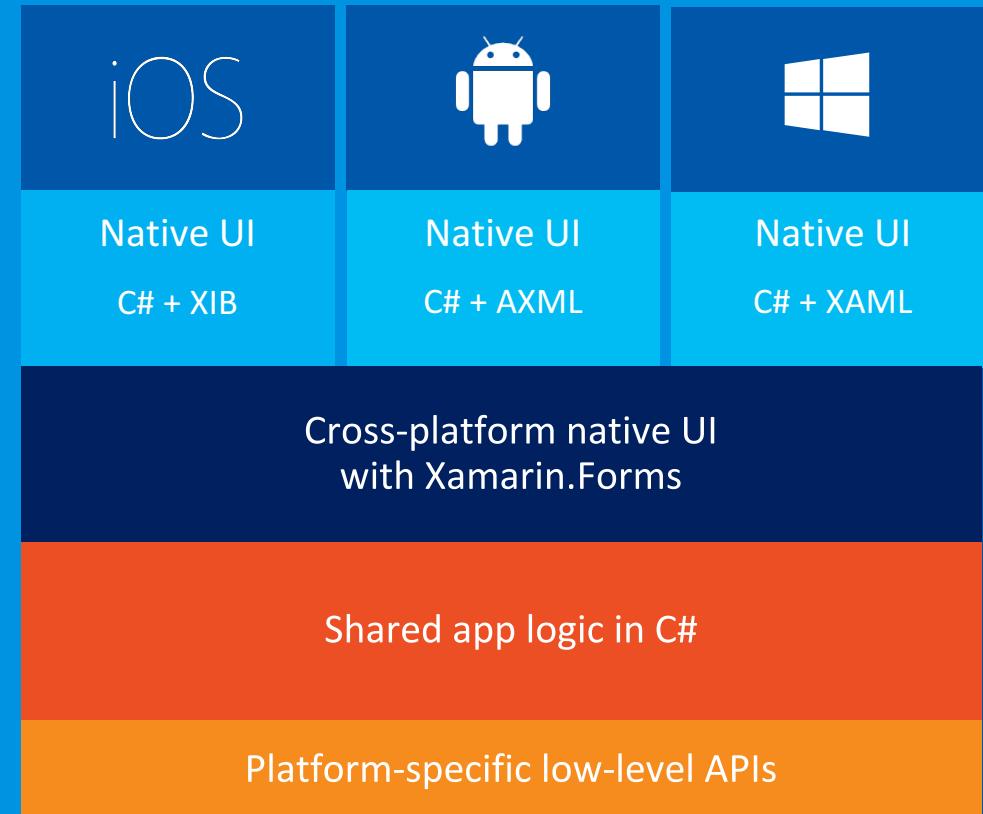
Developer

- ✓ 100% C# with 100% of platform APIs exposed
- ✓ More productivity and faster development
- ✓ Avg 20-40% code reuse across platforms
- ✓ One code base & IDE for client and backend

Cross-platform native

Anything you can do in
Objective-C, Swift or Java,
you can do with Xamarin

- Native user interface
- Native performance
- High-fidelity API access



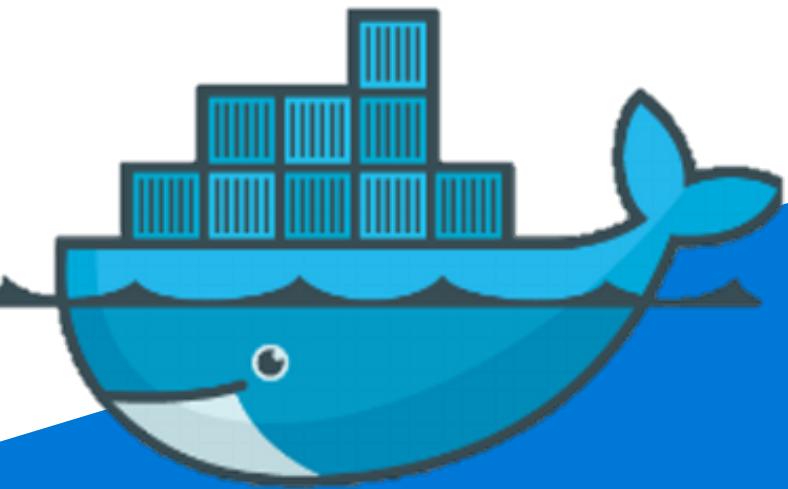
3 – Modern Apps & Distributed Applications

Containers

- OS virtualization (*)
- lightweight & isolation
- “execution unit”
- have been around for quite some time
- Docker did not invent them



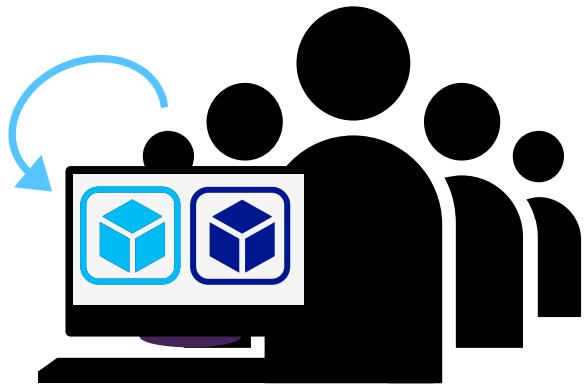
Portability



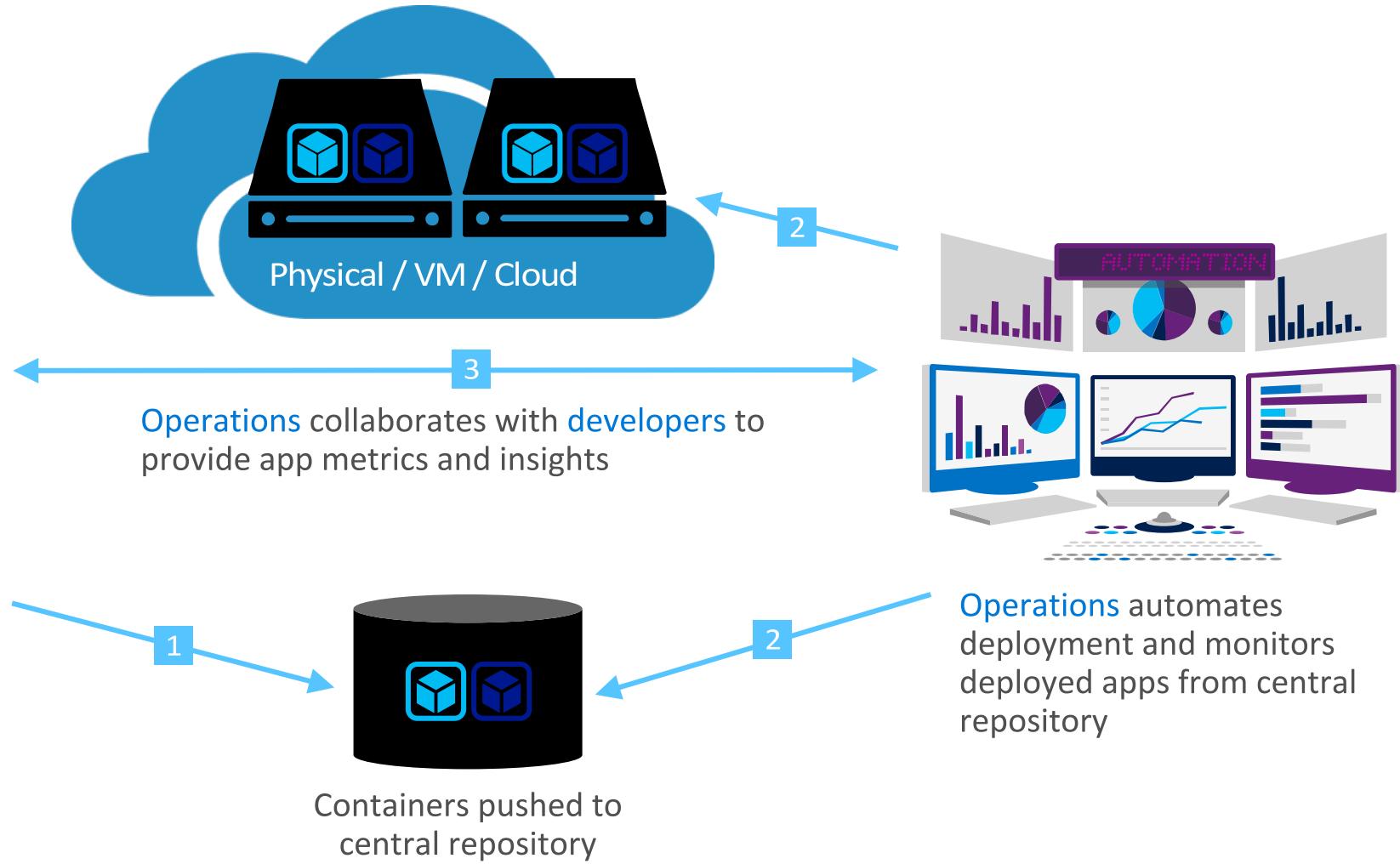
scale

Portability

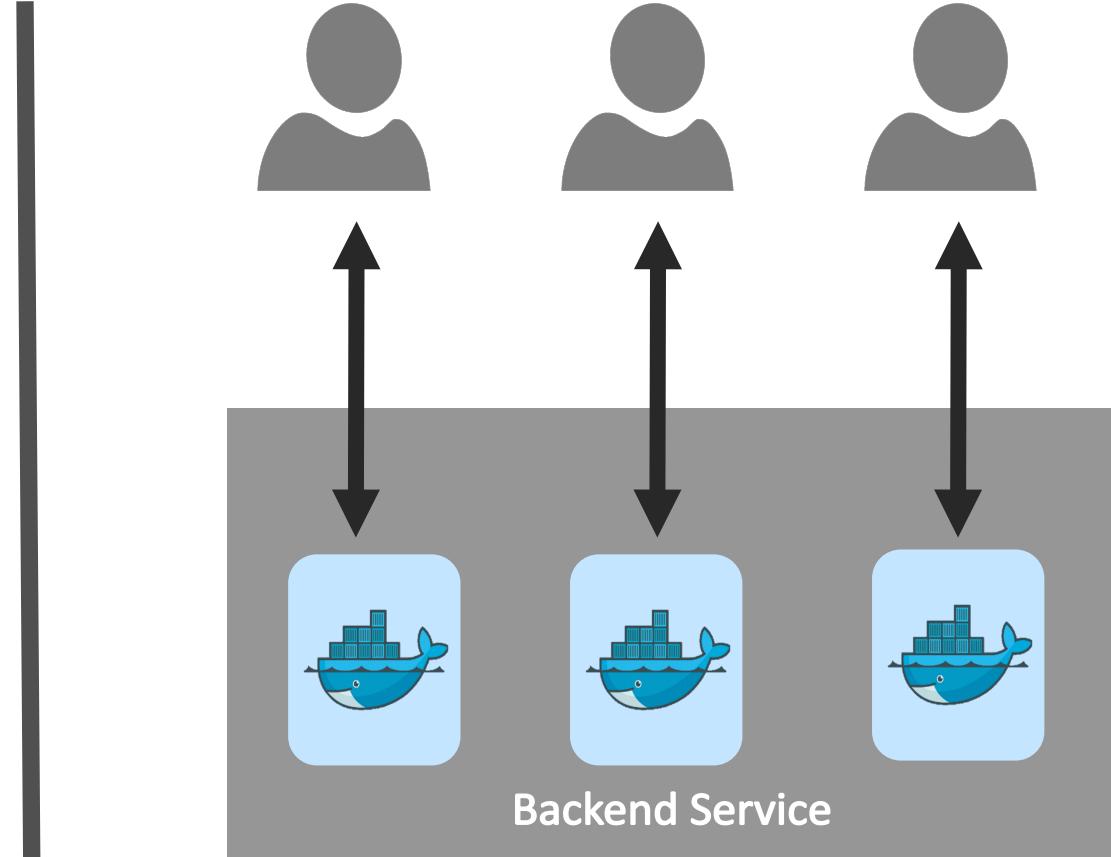
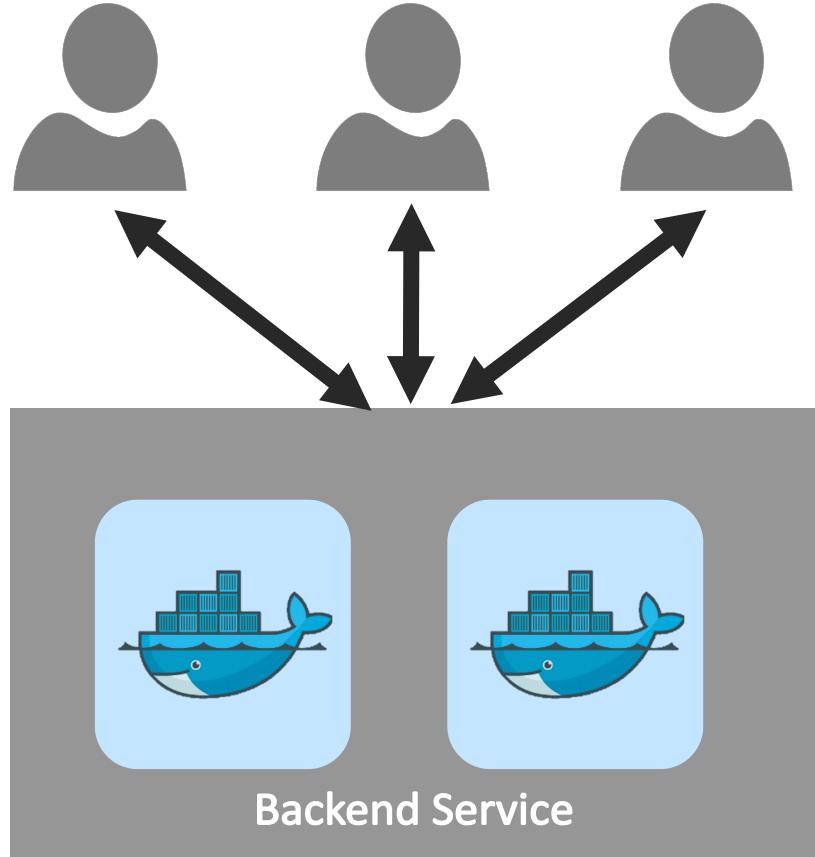
Developers update, iterate, and deploy updated containers



Developers build and test apps in containers, using development environment



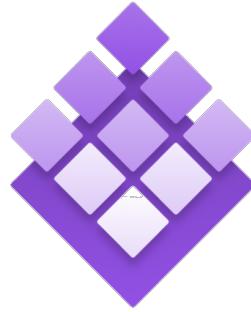
Scale



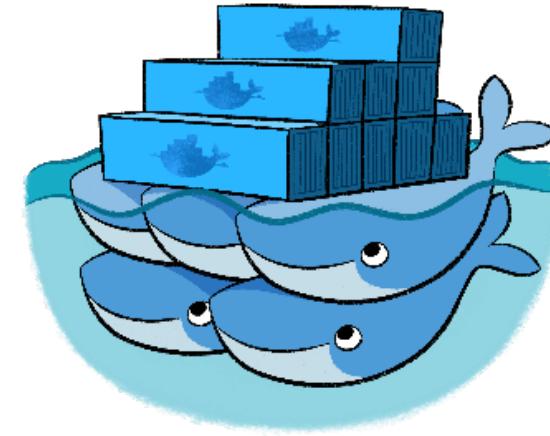
Container Orchestration



Kubernetes



DC/OS



Swarm

Containers on Azure

Docker support for
Azure VMs



Container-based
PaaS



Service
Fabric &
App Service



CLOUD
FOUNDRY™



OPENSIFT

Azure
Container Service



DC/OS



docker



kubernetes

Container
Management



docker



DC/OS



kubernetes

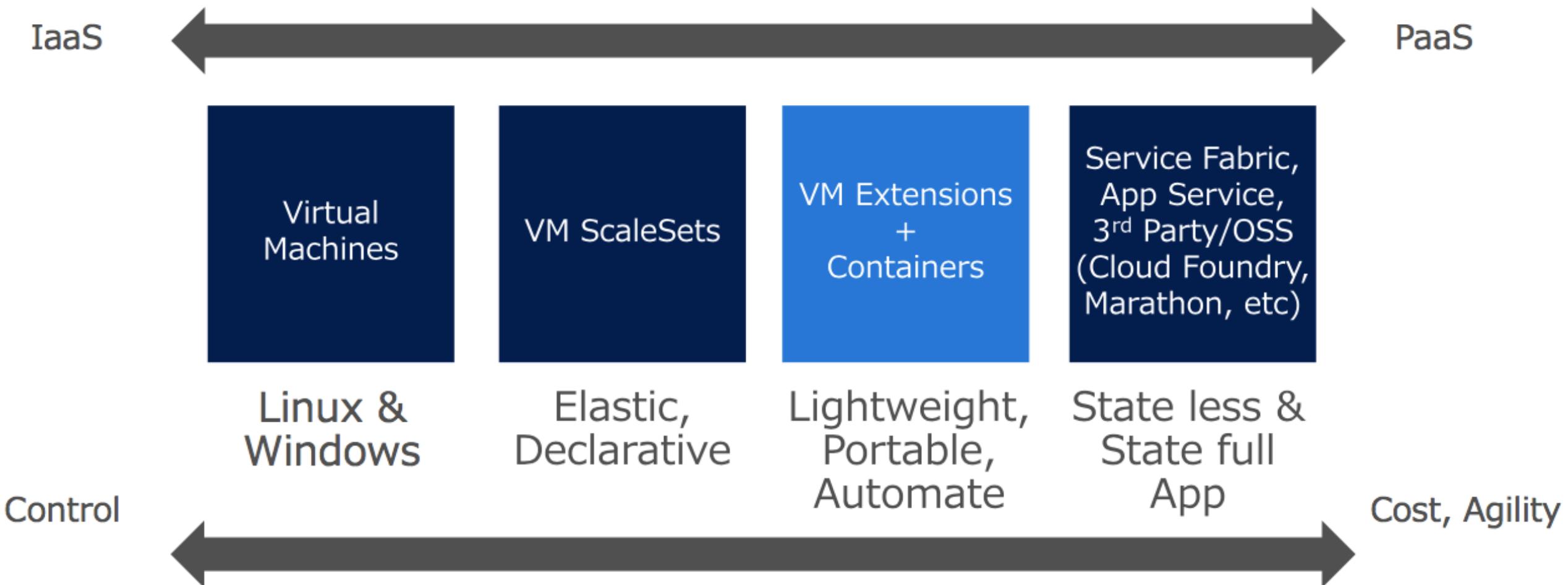


Core OS



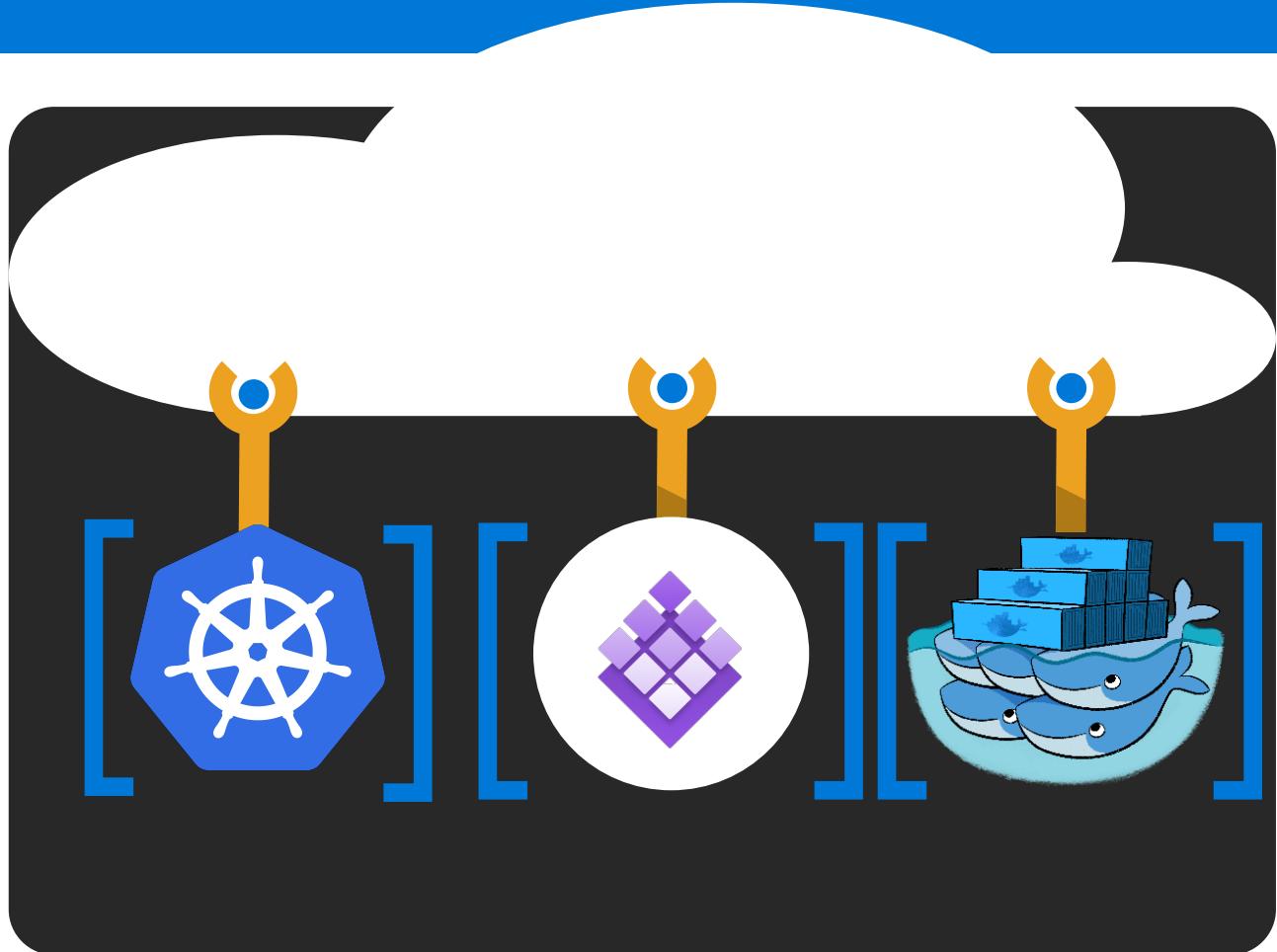
RANCHER

Which one for what?



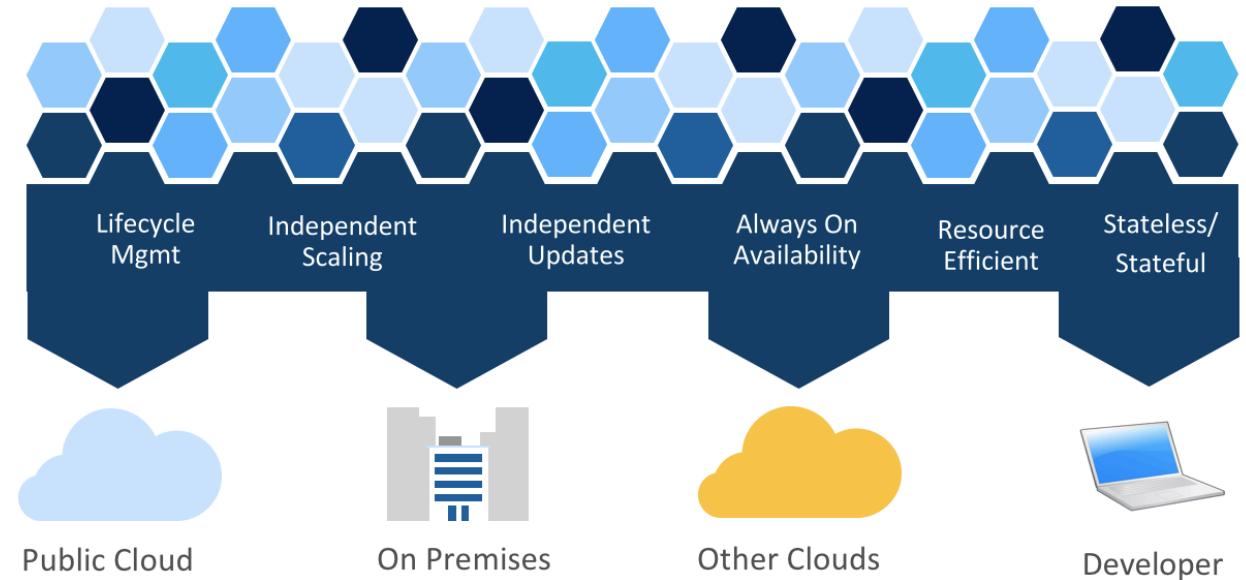
Azure Container Service

- Azure Infrastructure & orchestration of your choice
- Run containerized applications
- Open Standards



Azure Service Fabric

- Prescriptive guidance & SDK for Microservices based applications
- Runs on any cloud and infrastructure
- Many Azure services are built using SF



Azure Functions

CODE

AZURE FUNCTIONS + DATA



+



Azure functions

Asynchronous, event-driven,
serverless experience

AZURE FUNCTIONS

Respond to events occurring in
other Azure services, SaaS products
(e.g., Office365, Salesforce),
on-premises systems



Only pay while function is executing

Fully open source

Azure API Management

API consumers



AZURE API MANAGEMENT

Facade

decouple
modernize
optimize
...

Middleware

secure
protect
cache
...

Monitoring

usage
health
monetization
...

Developer

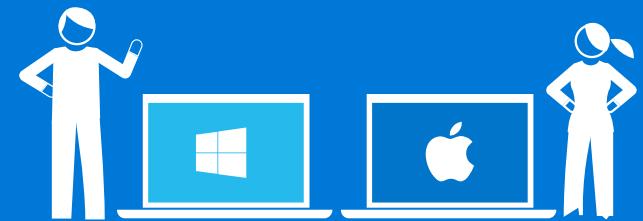
discover
document
on-board
...

APIs on Azure

Azure APIs

On-prem APIs

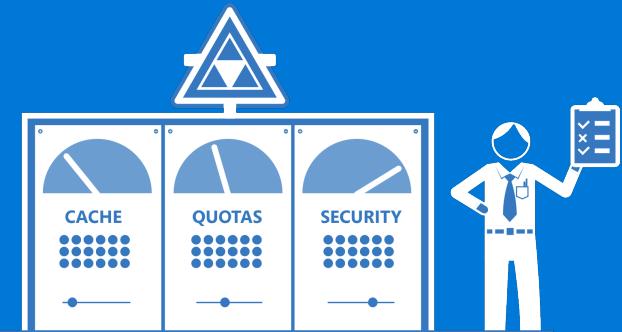
3rd party APIs



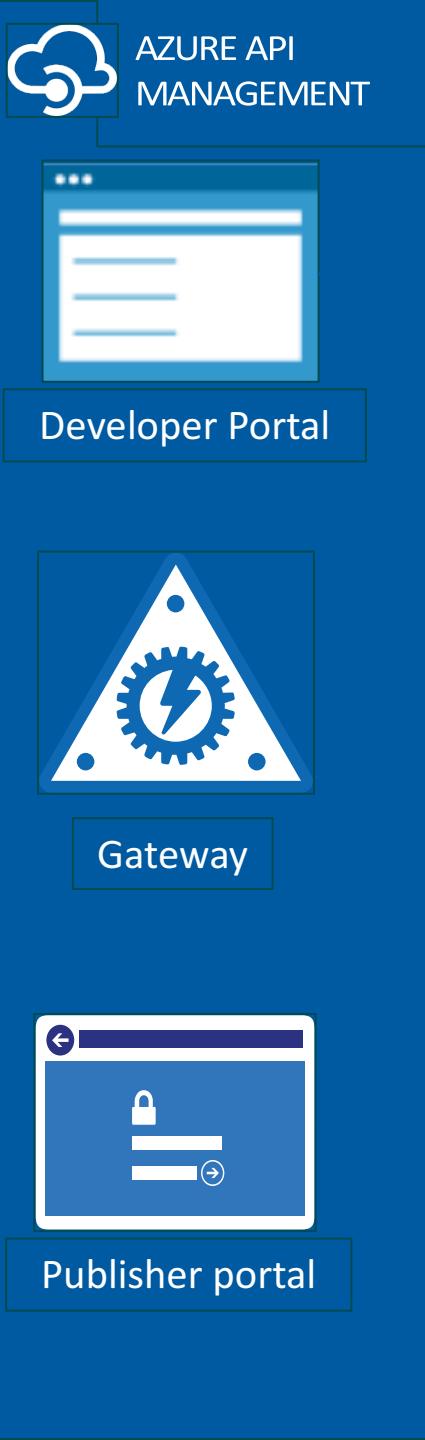
APP DEVELOPERS



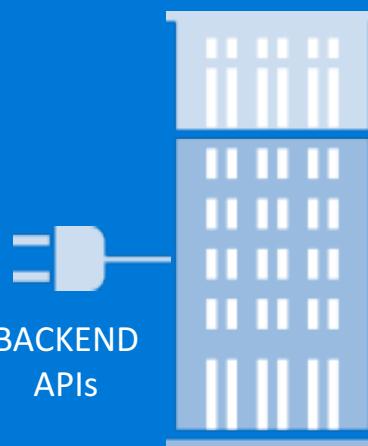
APPS



API PUBLISHERS



DIRECT OR
VPN



BACKEND
APIs

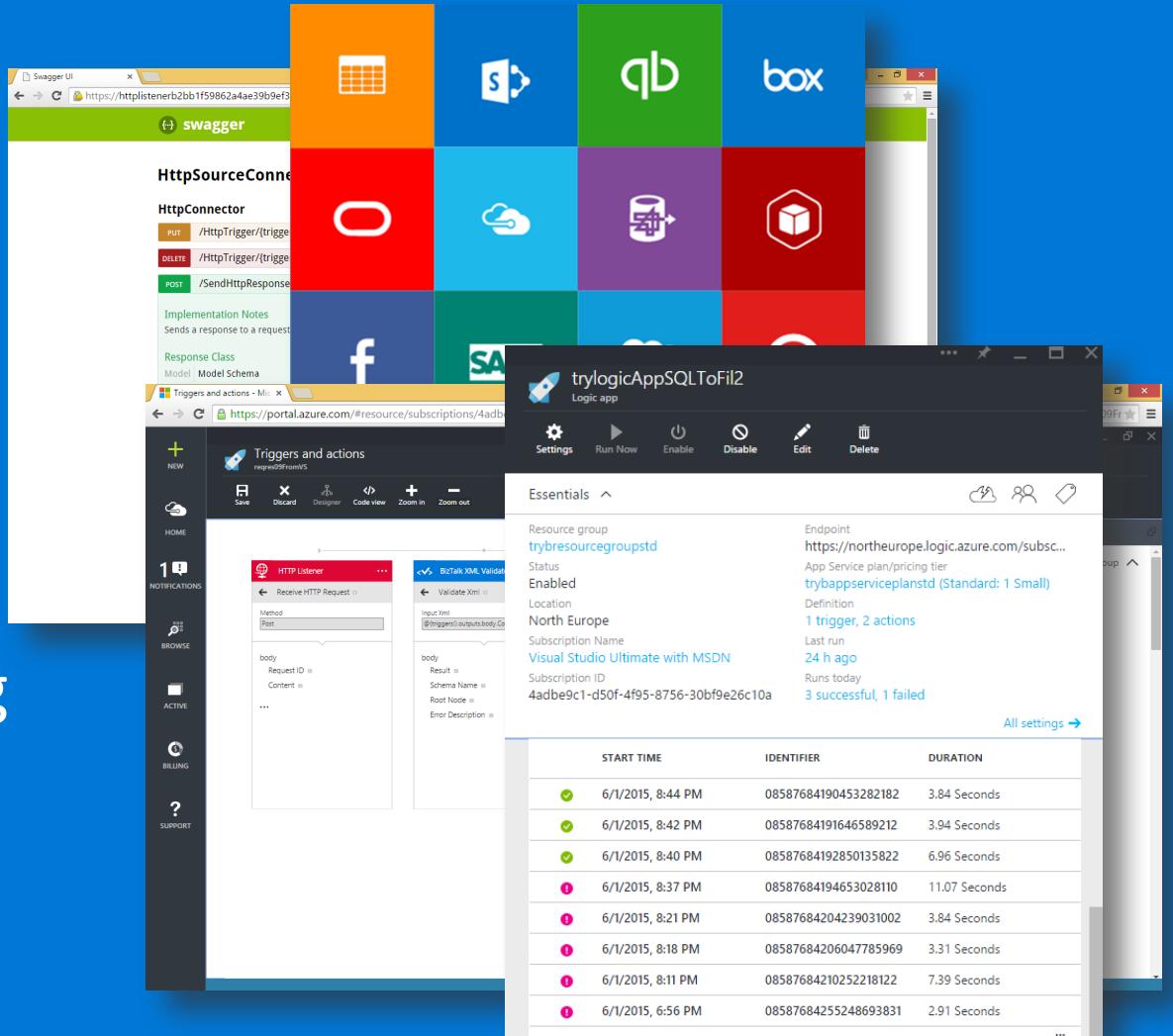
Hosted anywhere.

Developed using any
technology.



Logic Apps

- Browser-based work flow engine
- With pre-built connectors
- With BizTalk API Apps
- Enables use of custom API apps
- Provides built-in support for tracking
- Provides Role-based Access Control
- Manage deployment lifecycle with Resource Manager



SaaS Connectors

Connectors

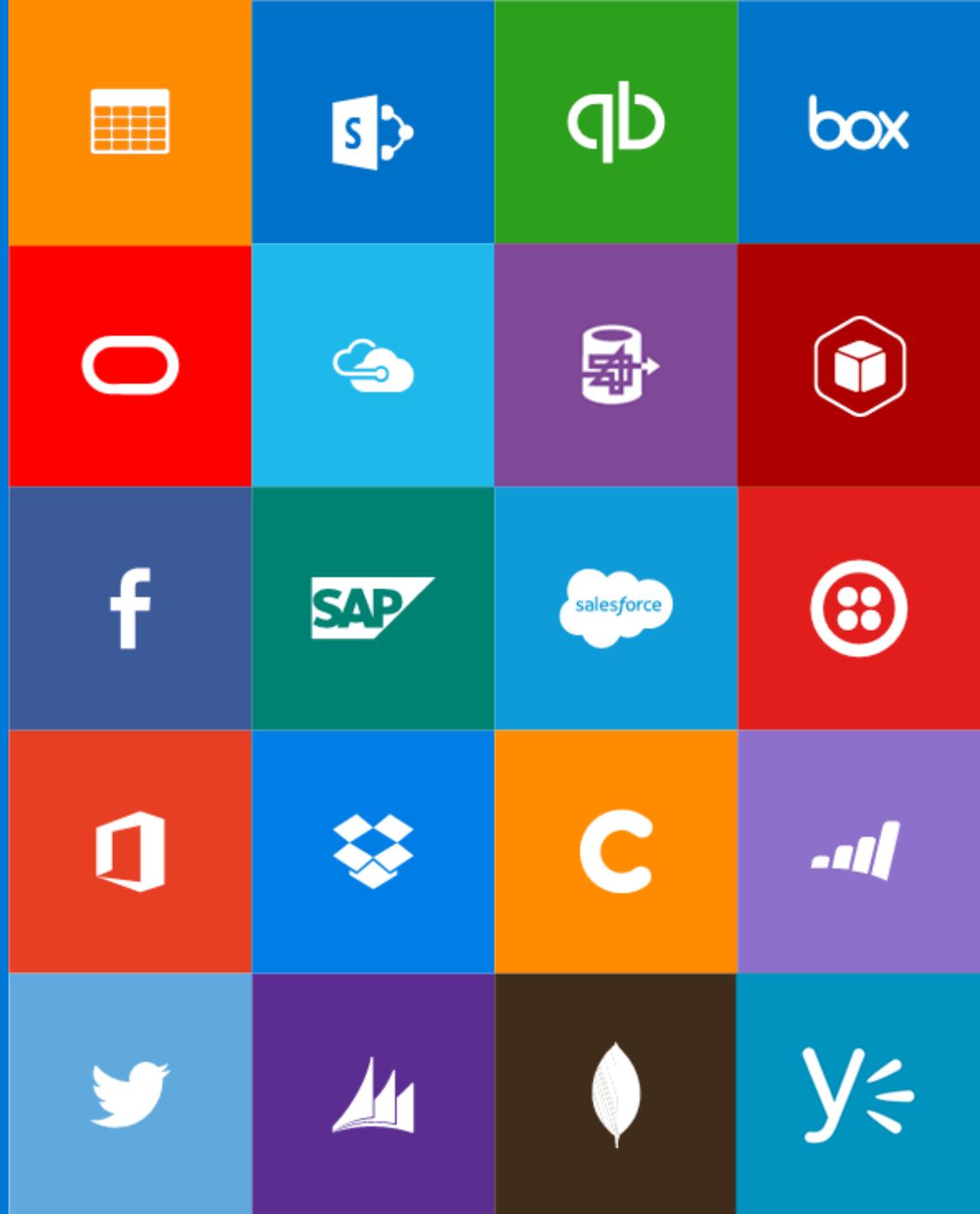
- Box
- Chatter
- Delay
- Dropbox
- Azure HD Insight
- Marketo
- Azure Media Services
- OneDrive
- SharePoint
- SQL Server
- Office 365
- Oracle
- QuickBooks
- SalesForce
- Sugar CRM
- SAP
- Azure Service Bus
- Azure Storage
- Timer / Recurrence
- Twilio
- Twitter
- IBM DB2
- Informix
- Websphere MQ
- Azure Web Jobs
- Yammer
- Dynamics CRM
- Dynamics AX
- Hybrid Connectivity

Protocols

- HTTP, HTTPS
- File
- Flat File
- FTP, SFTP
- POP3/IMAP
- SMTP
- SOAP + WCF

BizTalk Services

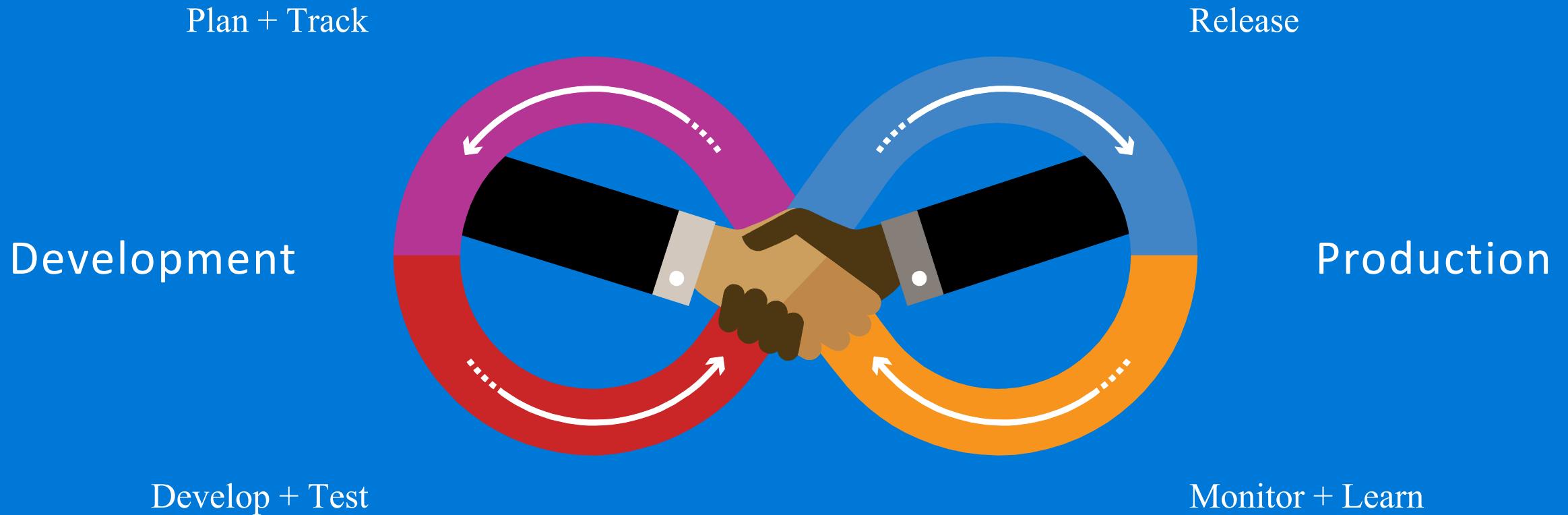
- Batching / Debatching
- Validate
- Extract (XPath)
- Transform (+Mapper)
- Convert (XML-JSON)
- Convert (XML-FF)
- X12
- EDIFACT
- AS2
- TPMOM
- Rules Engine



4 – DevOps

DevOps?

The converged DevOps lifecycle

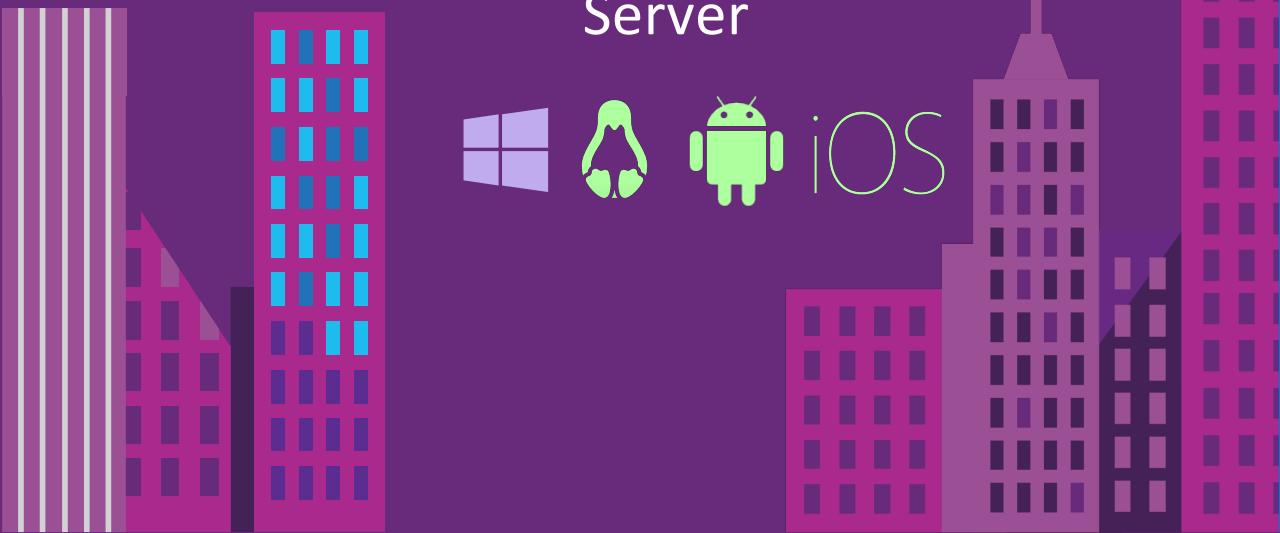




Visual Studio
Team Services



Team Foundation
Server



Plan & Track Work

Source Code Management

Package Management

Quality Management

Cross-platform Build

Continuous Deployment

Release Management

Feedback Management

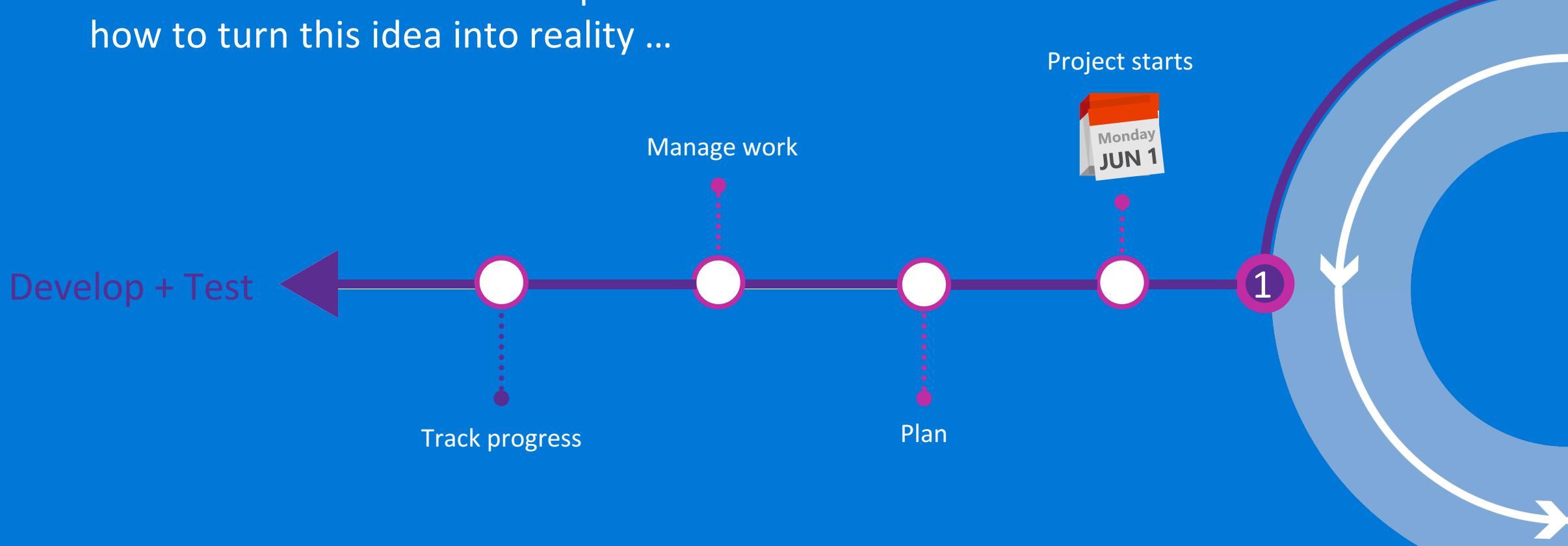
Application Telemetry

Extend and Customize



Plan

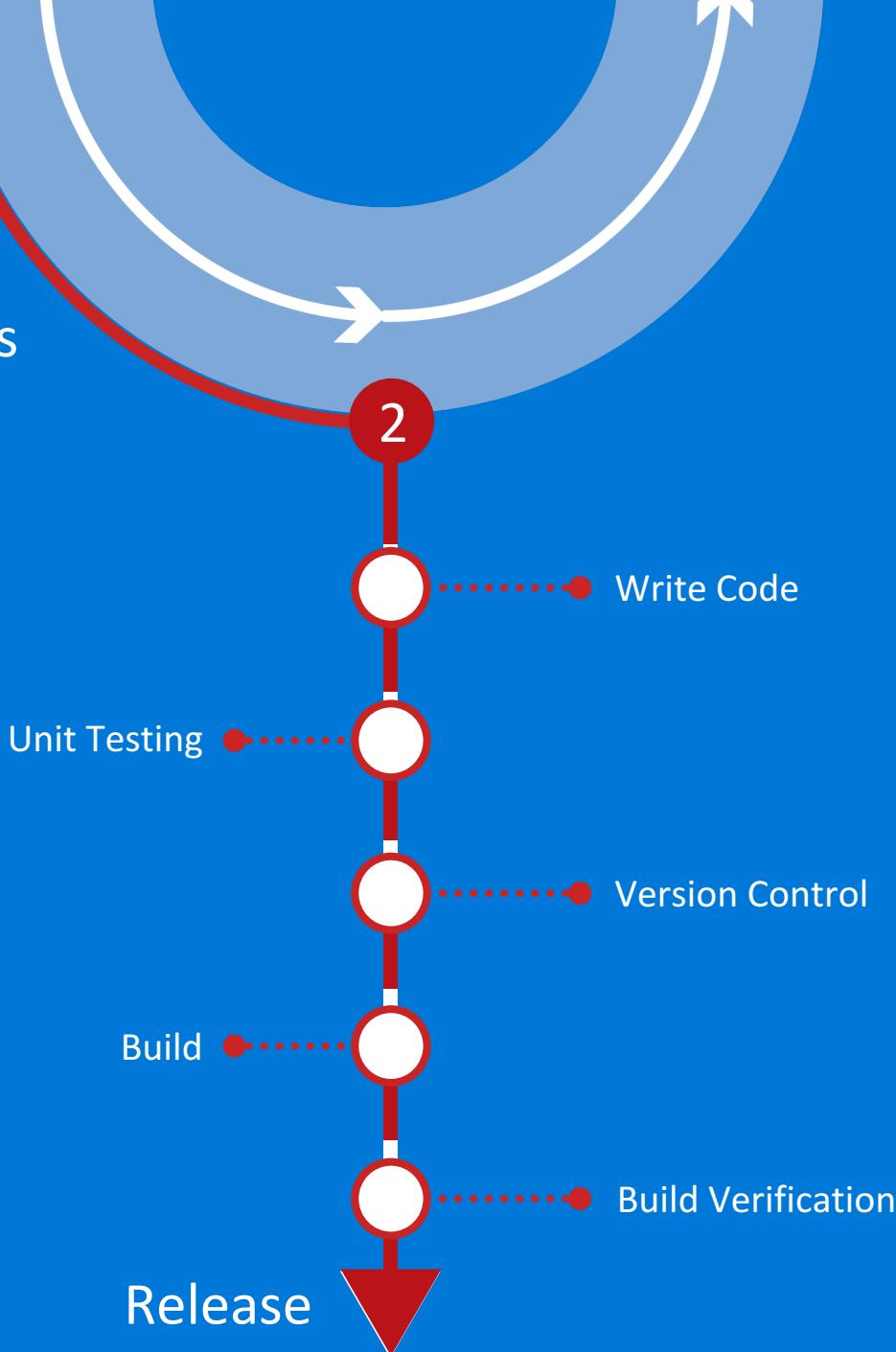
It starts with an idea – and a plan
how to turn this idea into reality ...



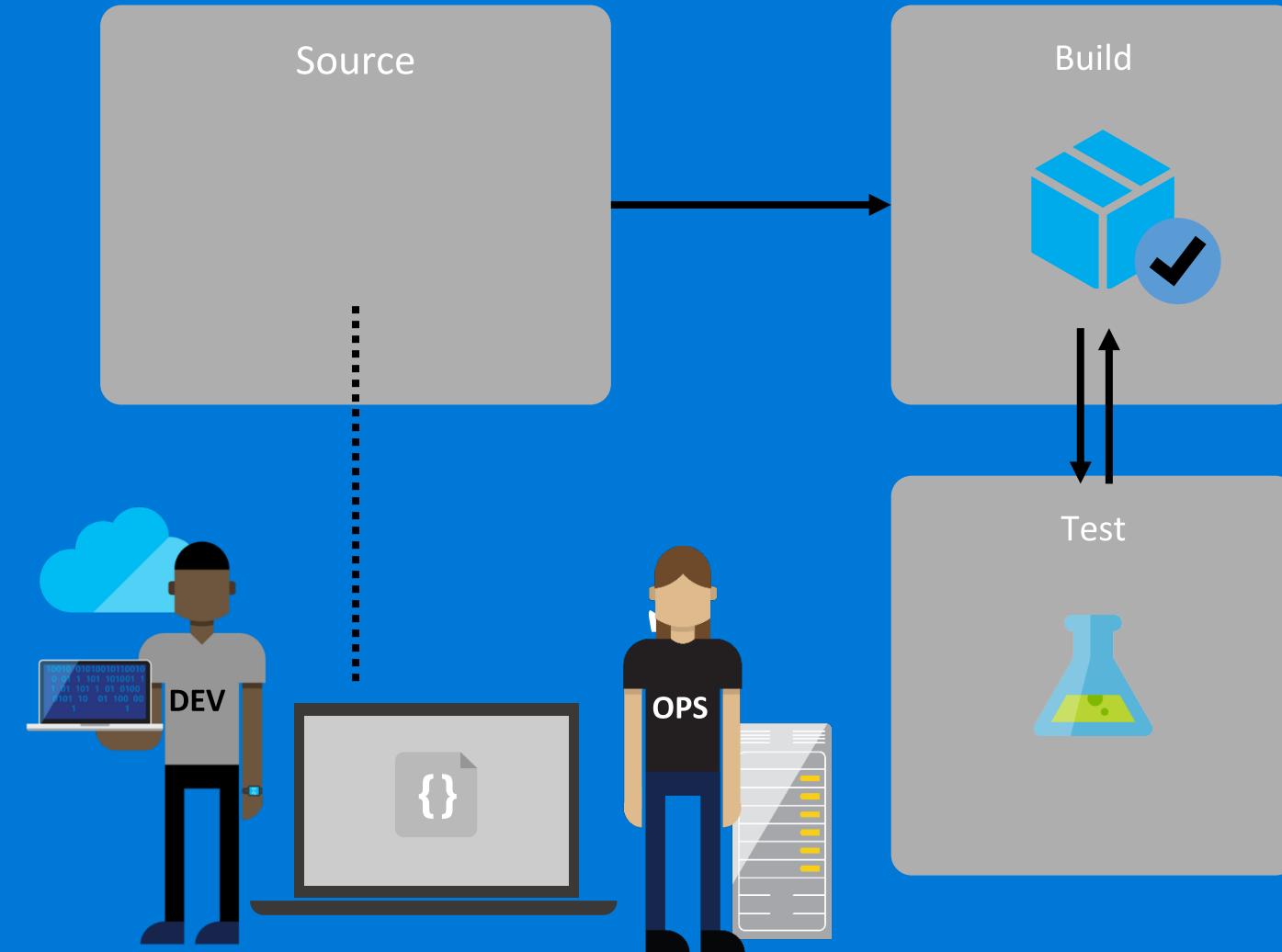


Develop, Build, Test

Once the iteration starts, developers turn great ideas into features ...



Continuous Integration



Value

- Accelerate Delivery
- Repeatability
- Optimized Resources

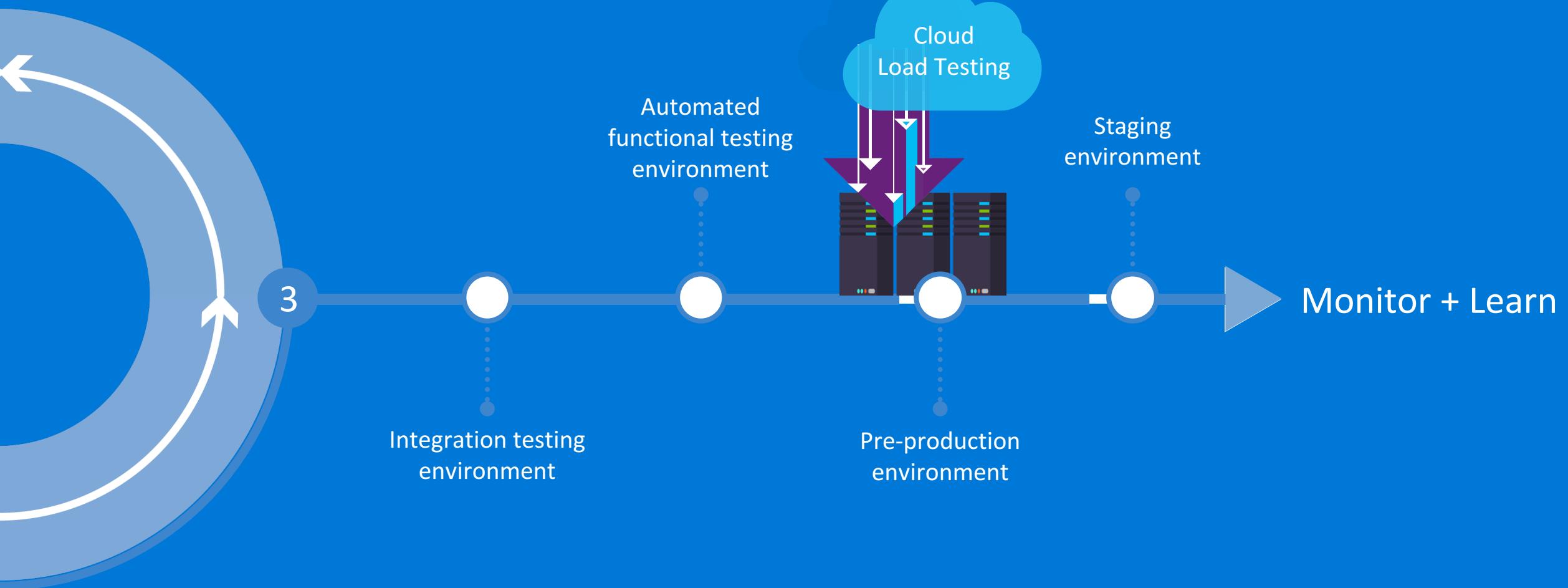
Measure

- More frequent releases
- MTTR
- MTTD



Release

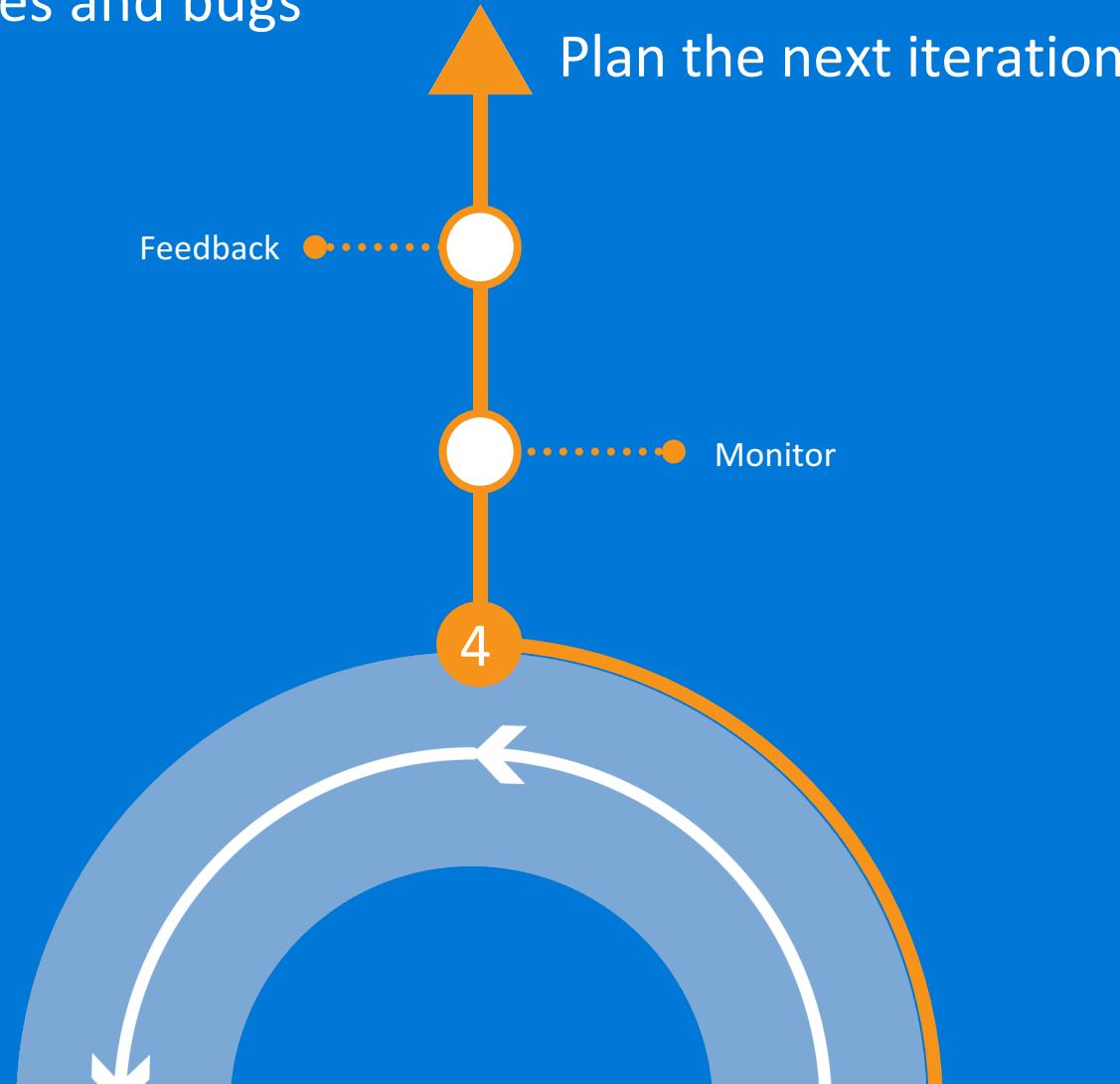
When unit tests pass, the build is deployed and tested for each stage in the release process





Monitor + Learn

Learn and understand how users use your app, how it reacts and quickly fix issues and bugs



Monitor and Learn

