

Azure, Deployment and DevOps

Docker, Azure, Application Insights, DevOps



SoftUni Team
Technical Trainers



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Software University

<https://softuni.bg>

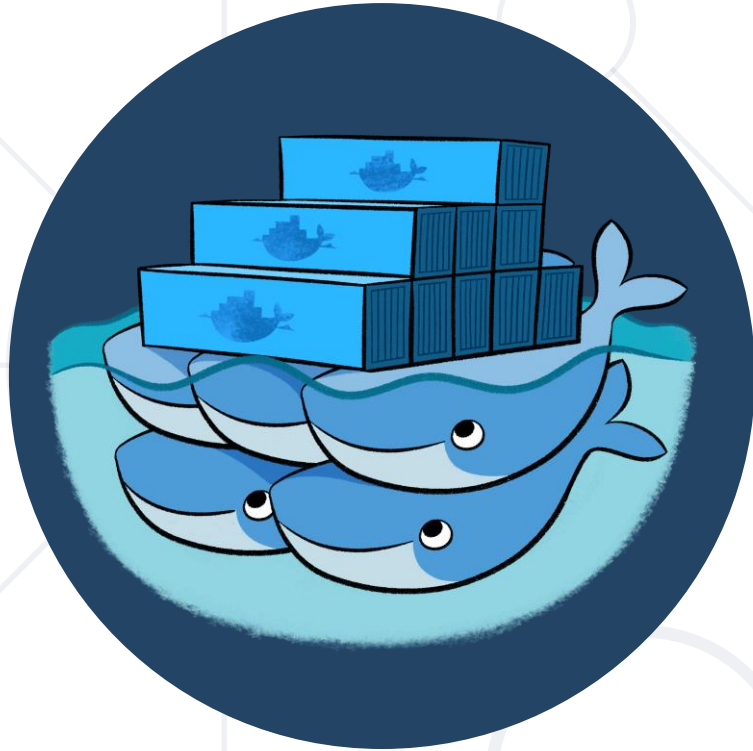
sli.do

#csharp-web

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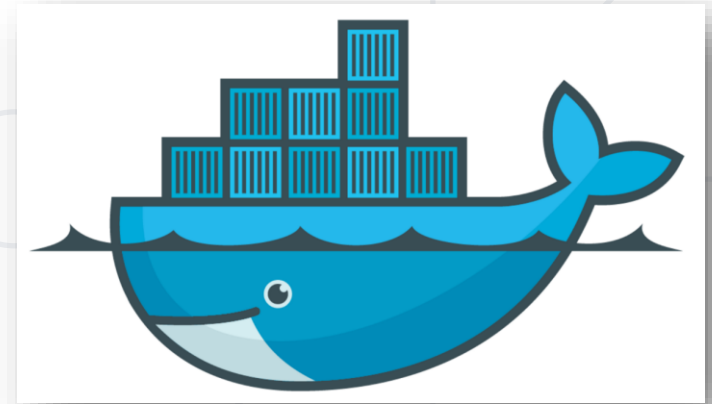
1. Docker
2. Microsoft Azure
3. Azure DevOps



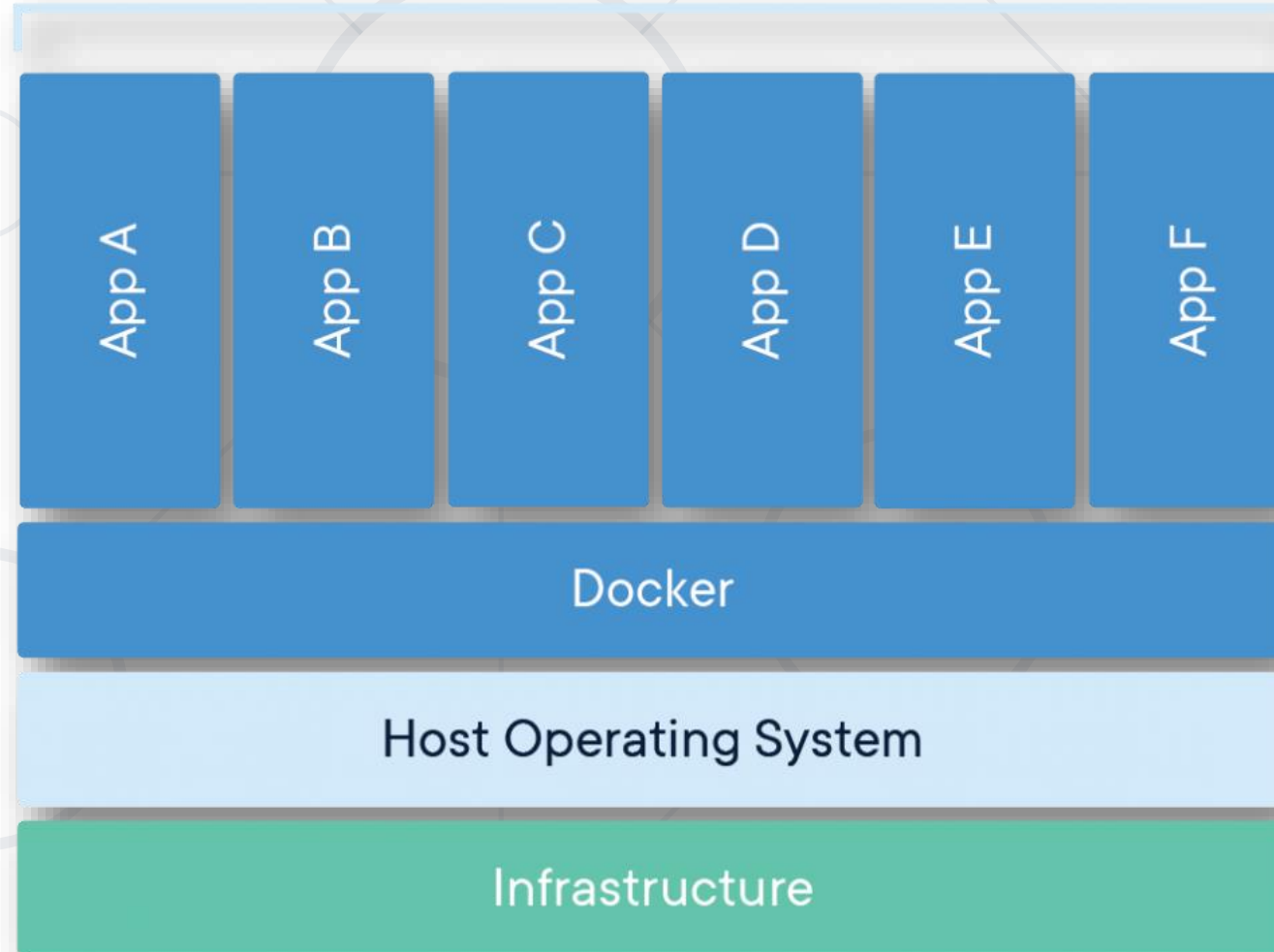


Docker

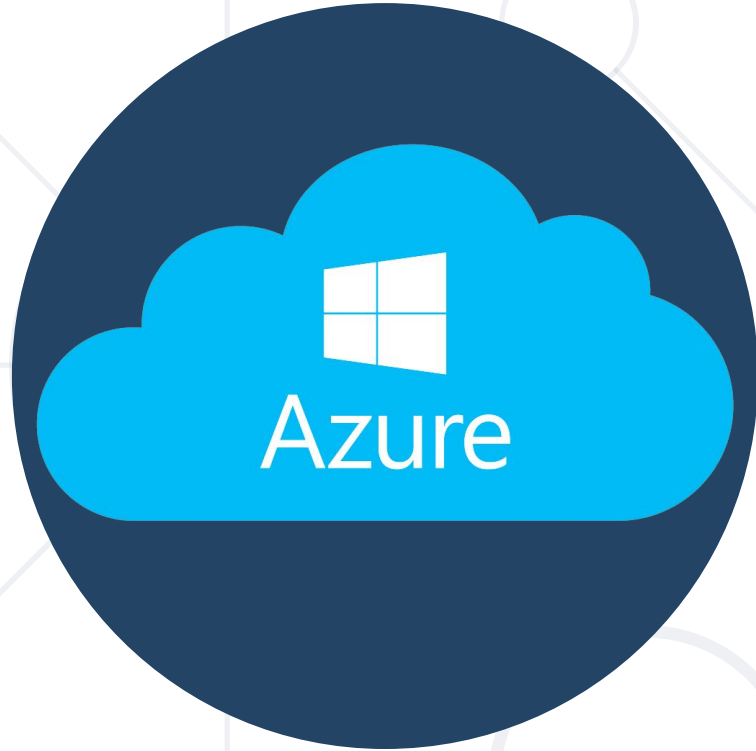
- **Docker** is a software that performs operating-system-level **virtualization**
 - The process is also known as "**containerization**"
- **Docker** runs software packages called "**containers**"
 - **Containers** are isolated from each other
 - Each bundles its own application, tools, libraries, configuration files, etc.
 - They can **communicate** with each other through well-defined channels
 - All containers are run by a single **Operating System**
 - This makes them significantly more lightweight than virtual machines
 - **Containers** are created by "**images**" that specify their contents



Containerized Applications



- **Containers** are standard units of software
 - Each packages up code and dependencies to improve the app
 - Images are lightweight, standalone, executable packages of software
- **Containers** Images become containers at runtime
 - In Docker, they become containers when ran on **Docker Engine**
 - Always runs the same way, regardless of the Operating System
- **Containers** that run on the **Docker Engine** include:
 - Standard Containers, Lightweight Containers, Secure Containers



Microsoft Azure

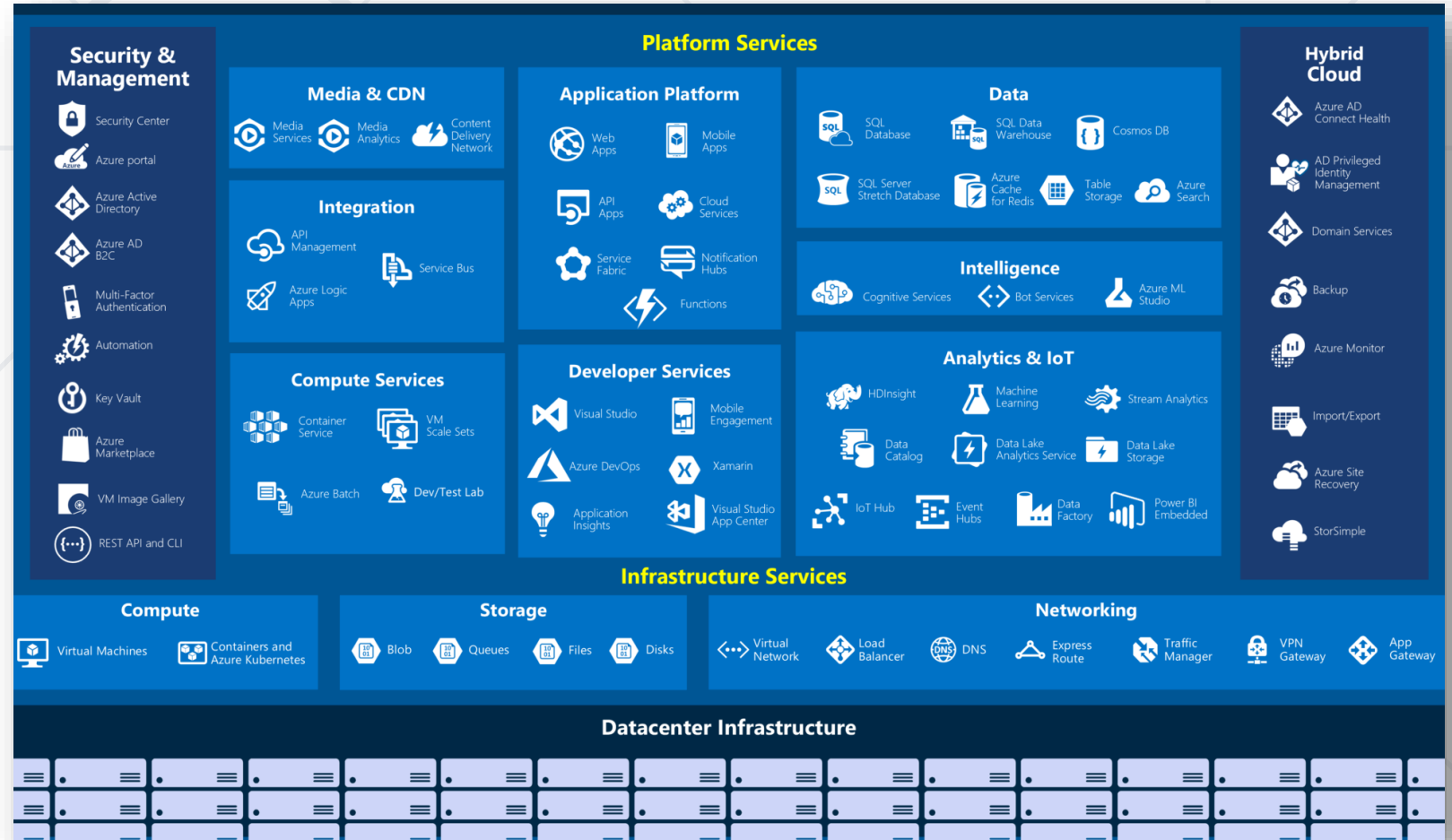
- **Microsoft Azure** is a cloud-computing service
 - Designed for building, testing, deploying and managing apps
 - Applications and services are managed through a global network
- **Microsoft Azure** provides and supports
 - **On-premise**
 - **Infrastructure-as-a-Service** (IaaS)
 - **Platform-as-a-Service** (PaaS)
 - **Software-as-a-Service** (SaaS)
 - Many different languages, tools and frameworks

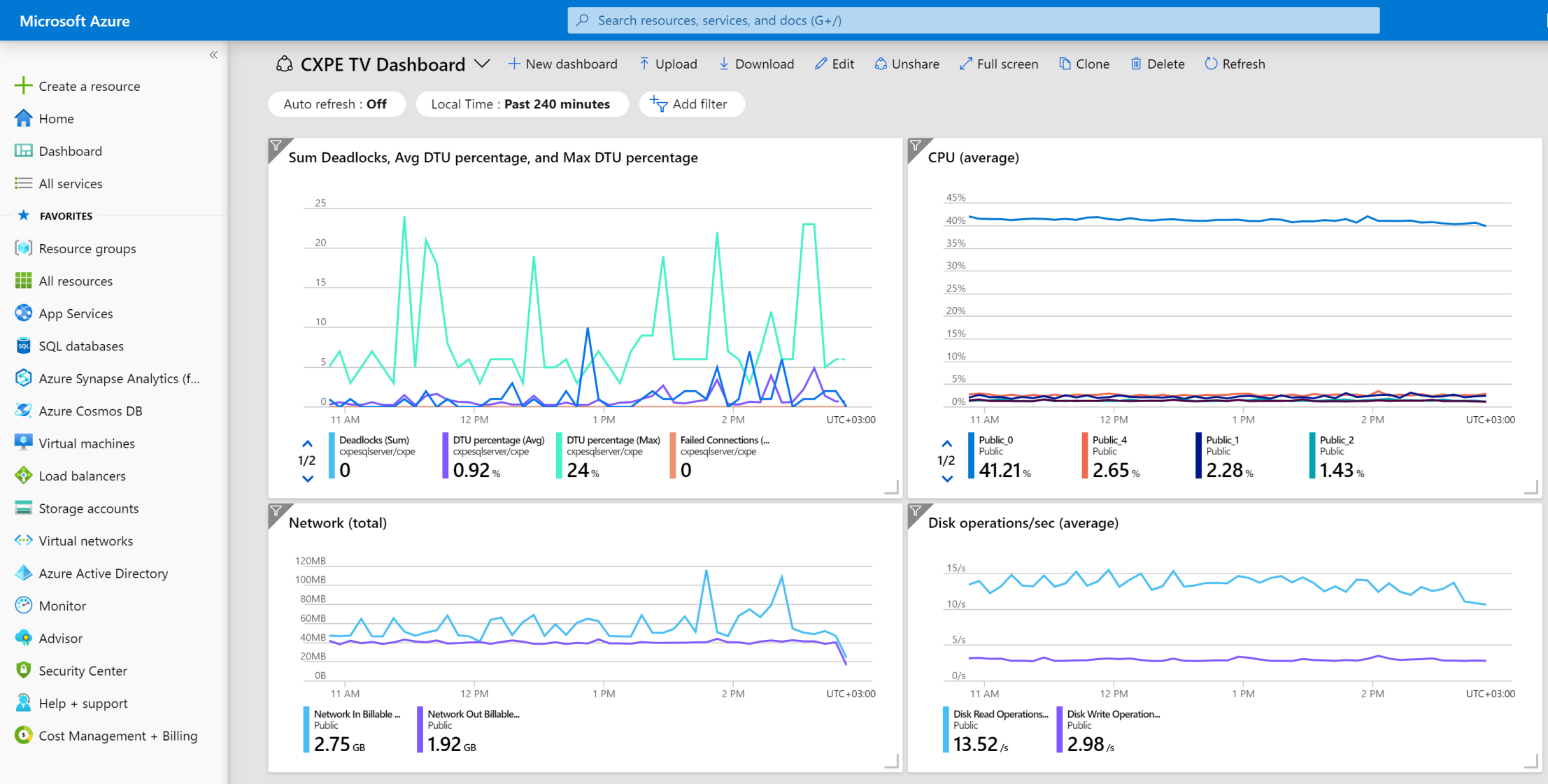


Responsibility	On-prem	IaaS Build from the ground up	PaaS Some assembly required	SaaS Move-in ready
Applications				
Data				
Runtime				
Middleware				
Operating system				
Virtualization				
Servers				
Storage				
Networking				

- Some of the most important **Microsoft Azure Services** include:

- Application Services
- Storage Services
- Data Management
- Data and Analytics
- Networking/Security
- ML and AI
- **Developer**
 - **Azure App Service**
 - **Application Insights**
 - **Azure DevOps**







Azure App Service

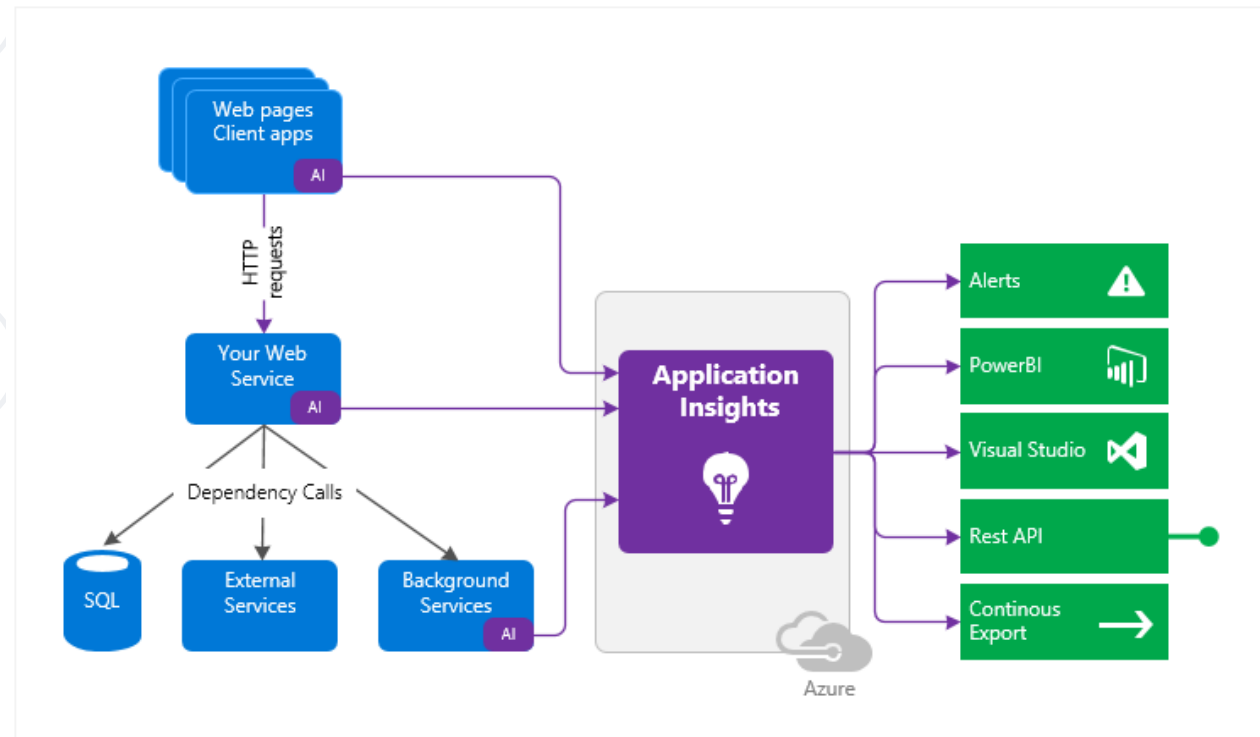
Create Powerful Cloud Apps

- **Deployment** includes all the activities, making a system available for use
 - Naturally, it is to be referred to as a general process
 - Most systems have little to nothing in common in terms of business logic
 - Therefore, every system has its own precise processes and procedures
- **Deployment** activities include:
 - Configuration, Testing
 - Installation & Activation
 - Deactivation & Uninstallation
 - Release, Deploy, Update, Version Tracking, Adaptation, etc...



- **Azure App Service** is a platform for build / host web apps
 - The applications can be on a technology of any choice
 - Infrastructure management is non-mandatory
 - Offers Auto-Scaling, High Availability
 - Supports both Windows & Linux
- **Azure App Service** offers automated deployment
 - Deployment can be done from different platforms
 - GitHub, Azure DevOps, or any Git repo





Application Insights

- **Application Insights** is an extensible **APM** service for web developers
 - **A**pplication **P**erformance **M**anagement
 - Used to monitor live web applications
 - Automatically detects performance anomalies
- **Application Insights** includes
 - Powerful analytics tools for diagnostics
 - Analytics over client usage on the app
- Designed to help with improvement of **performance** and **usability**

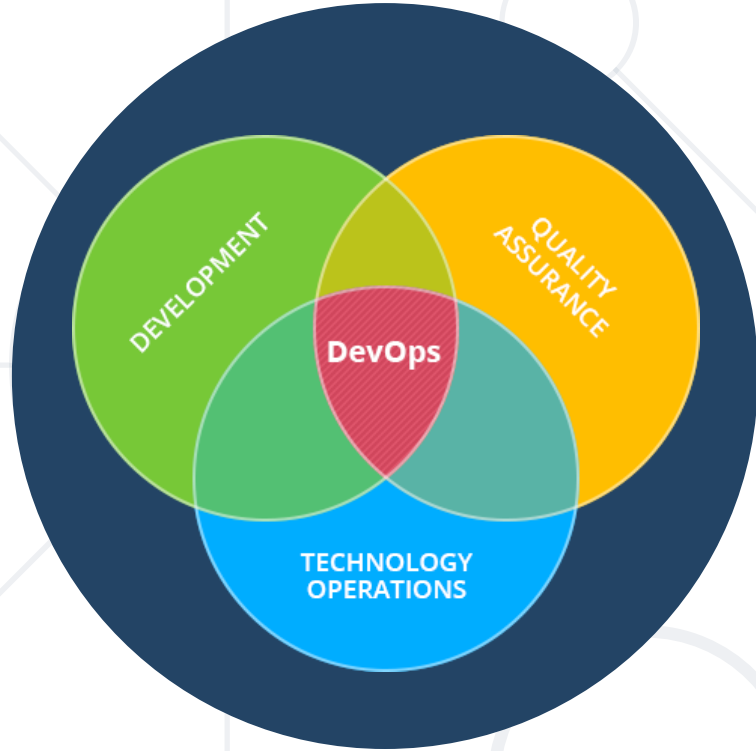


- **Application Insights** Installation is quite simple
 - You install a small instrumentation package in your app
 - You setup an **Application Insights** resource in the Azure portal
- The instrumentation monitors your app and sends telemetry data
 - Data is sent directly to the Azure portal
 - The application can run anywhere
 - It doesn't have to be hosted on Azure
- Aside from the web services, you can instrument other components



- **Application Insights** monitors several essential things
 - Request rates, Response times, Failure rates
 - Dependency rates, Exceptions, AJAX calls
 - Page views and load performance
 - User and session counts, Performance counters
 - Host diagnostics, Diagnostic trace logs
 - Custom events and metrics





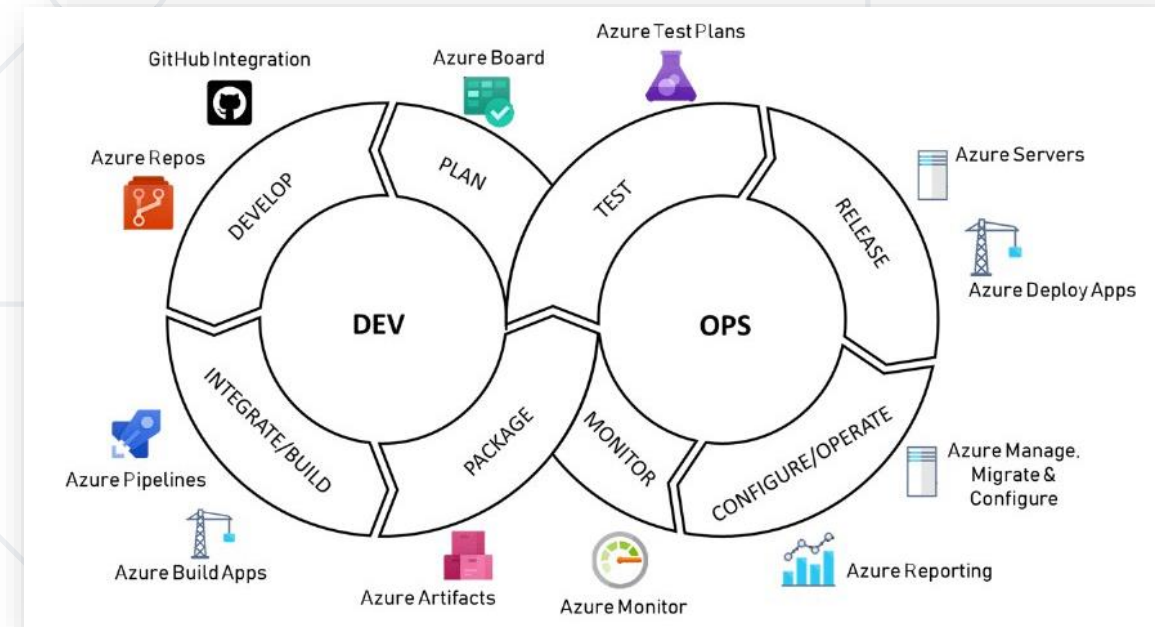
Azure DevOps

- **DevOps**

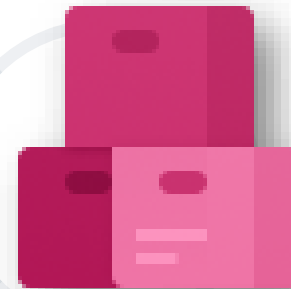
- Software Development (Dev)
- Technology Operations (Ops)

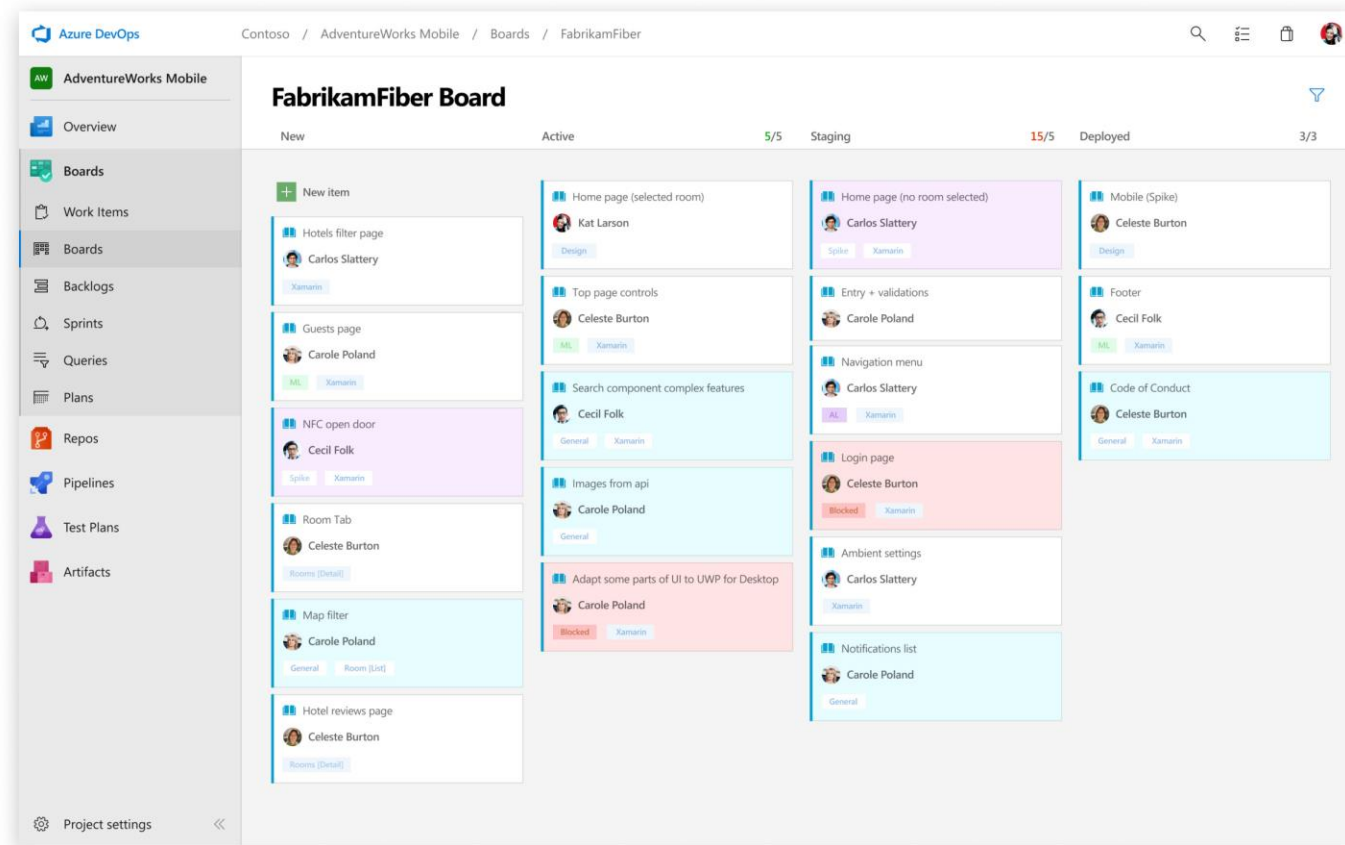
- **DevOps** aims to optimize the systems development lifecycle

- Unifies processes such as **code**, **build**, **test**, **deliver**, **monitor** etc.
- **DevOps Engineers** are treated as the "**Special Forces**" of a company
- Basically, If you are a **DevOps Engineer**, you do all the stuff...



- **Azure DevOps** is a set of tools and services for DevOps
 - Azure **Boards**
 - Azure **Pipelines**
 - Azure **Repos**
 - Azure **Test Plans**
 - Azure **Artifacts**
 - Extensions Marketplace
 - A catalog of **Azure DevOps** extensions

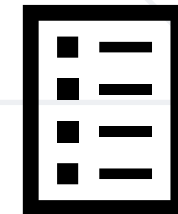


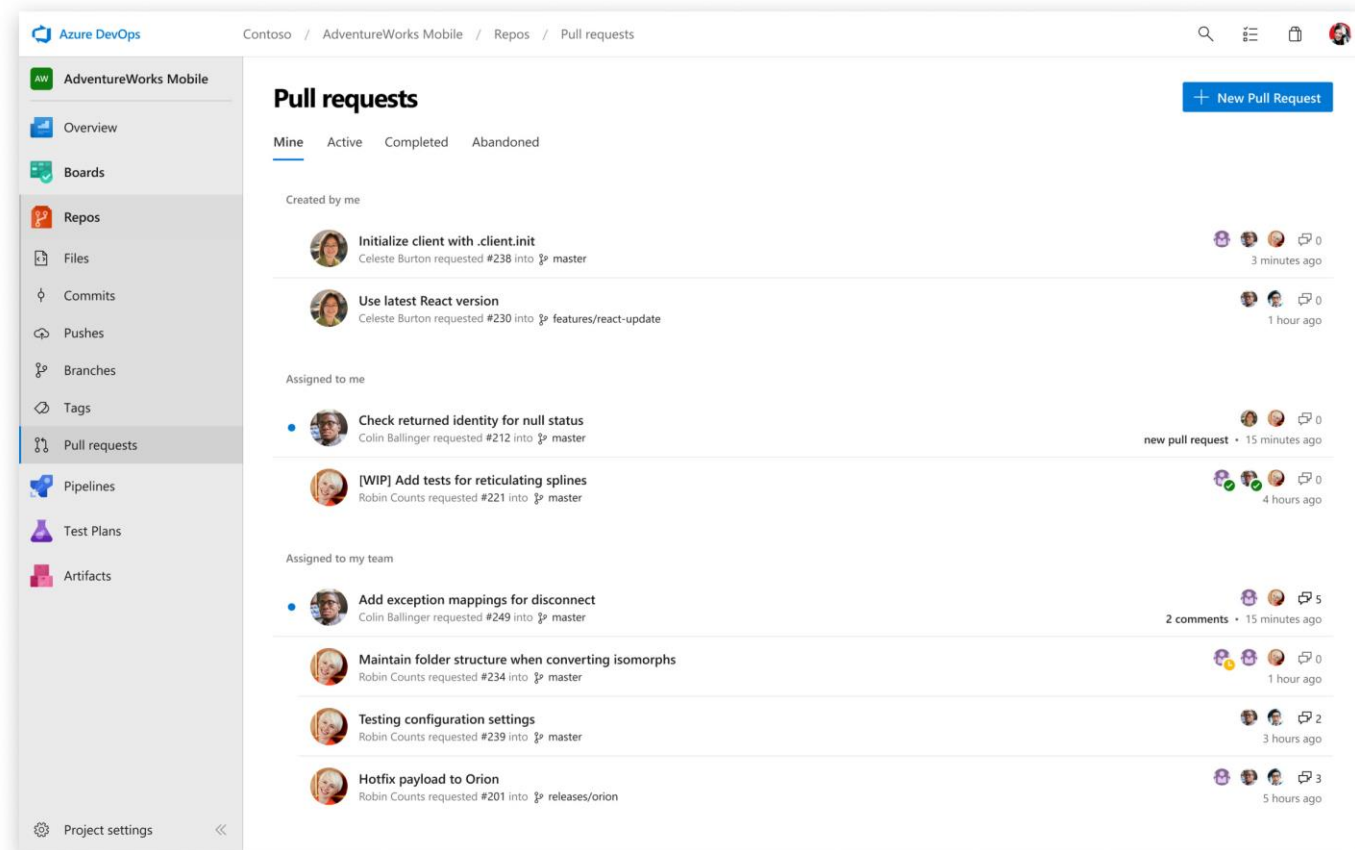


Azure Boards

Plan, Track and Discuss Work Across Teams

- **Azure Boards** is a set of tools for **Agile Development**
 - Kanban Boards, backlogs, team dashboards, custom reporting
 - Drag-and-Drop sprint planning, Flexible work item tracking
- **Azure Boards** is extremely convenient and widely used
 - Customizable dashboards, workflows, boards...
 - Scrum ready, Built for insights
 - Absolutely free for Open-source projects and small teams

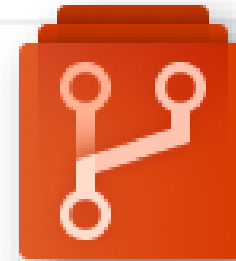




Azure Repos

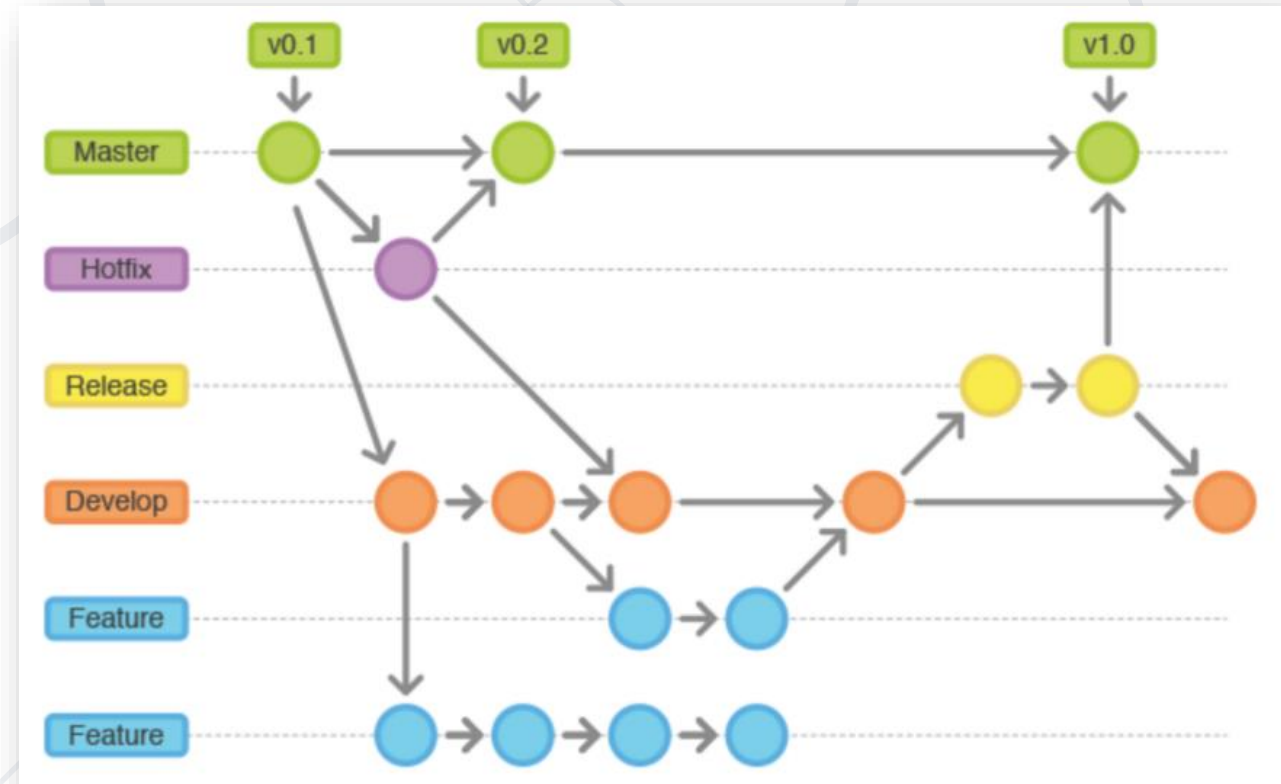
Unlimited, Cloud-hosted Private Git Repos

- **Azure Repos** – free private Git repositories, pull requests, etc.
 - Unlimited private Git repositories hosting and support
 - Designed for TFVC
- **Azure Repos** provides
 - Support for any Git client, Automation with built-in CI / CD
 - Web hooks & API integration, Branching policies
 - Semantic code search, code reviews, threaded discussions
 - Absolutely free for open source projects and small teams



Gitflow Workflow

- Defines a strict git branching model designed around the project release. All work is done in the dev branch.
 - The **master** branch is the production-ready version
 - The **dev** branch is where all feature branches are merged after pull requests
 - Once it's time for a **release**, a release branch should be created from the dev branch



Azure DevOps

Contoso / AdventureWorks Mobile / Pipelines / Builds / 10382

AdventureWorks

Overview

Pipelines

Builds

Releases

Library

Deployment groups

Project settings

Enabling feature flags for Preview Attachment and Grid Views

AdventureWorks/PackageFramework master #889

Summary Logs Tests YAML

Windows Job Running 1m 53s

Linux Job Running 3m 29s

macOS Job Running 3m 07s

Linux Job

Agent: Hosted Linux

Started: Sep 5 at 11:12am 3m 29s

Prepare job	<1s
Initialize job	1s
Get sources	24s
Cmdline	28s
Nodetool	3s
Install dependencies	2m 31s

```
yarn install v1.7.0
$ node build/npm/preinstall.js
[1/4] Resolving packages...
[2/4] Fetching packages...
[3/4] Linking dependencies...
[4/4] Building fresh packages...
$ npm run compile
[#####] 152/243
> code-oss-dev-build@1.0.0 compile ./adventureworks/build
> tsc -p tsconfig.build.json

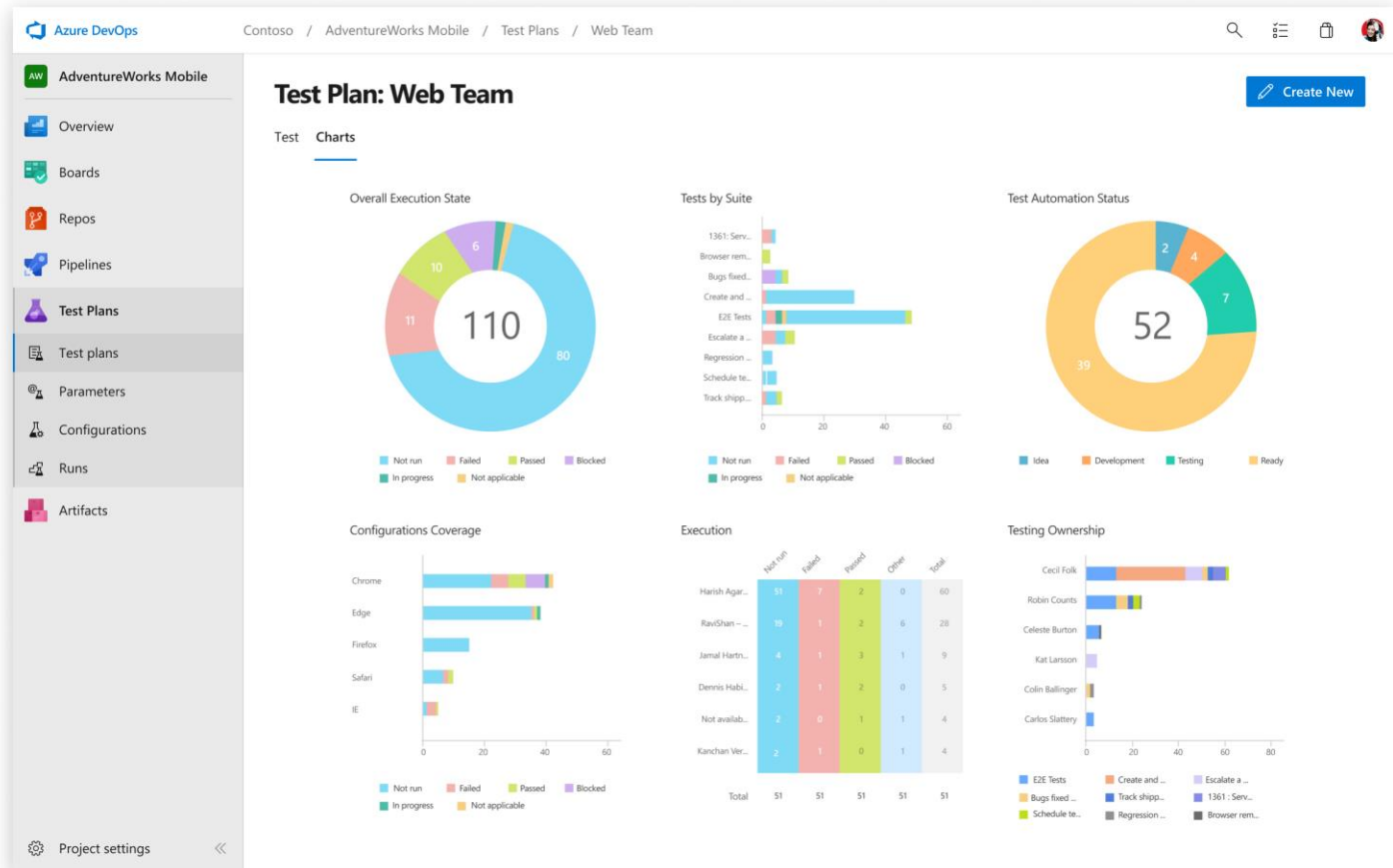
Done in 4.89s.
$ node ./postinstall
[##] 2/2removed './adventureworks/extensions/node_modules/typescript/lib/tsc.js'
removed './adventureworks/extensions/node_modules/typescript/lib/tsserverlibrary.d.ts'
removed './adventureworks/extensions/node_modules/typescript/lib/tsserverlibrary.js'
removed './adventureworks/extensions/node_modules/typescript/lib/typescriptServices.d.ts'
removed './adventureworks/extensions/node_modules/typescript/lib/typescriptServices.js'
```

Azure Pipelines

Continuously Build, Test and Deploy

- **Azure Pipelines** is a set of tools for building, testing & deployment
 - Cloud-hosted pipelines for Linux, macOS and Windows
 - Unlimited time + 10 free parallel jobs for Open-Source projects
- **Azure Pipelines** automates build and deployment processes
 - Optimizing your time with the "nuts & bolts"
 - Any language, any platform. Deploy to any cloud
 - Containers & Kubernetes. Best-in-class for Open Source
 - Extensible. Advanced Workflows and Features



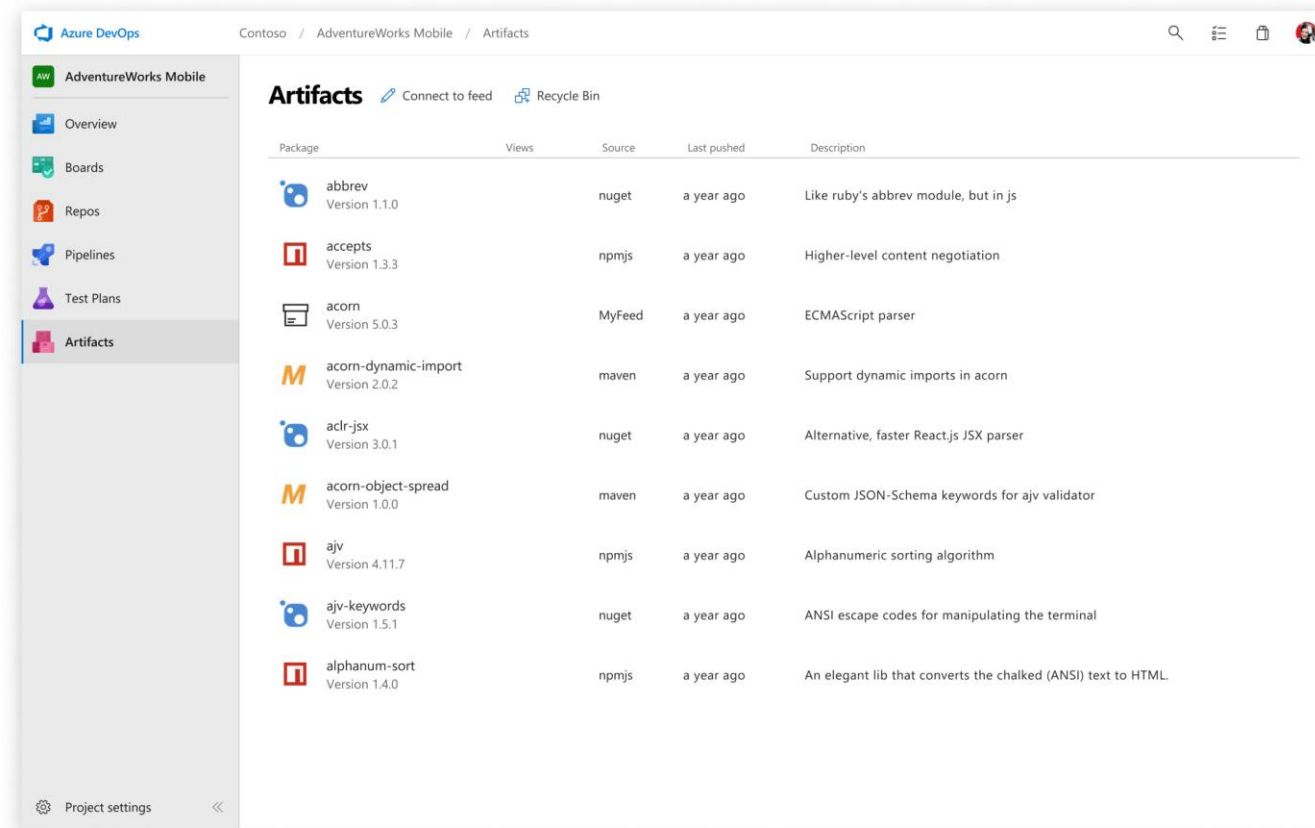


Azure Test Plans

Test and Ship With a Testing Toolkit

- **Azure Test Plans** – planned and exploratory testing solution
 - A toolkit for manual and exploratory testing
 - If you aim for Automation of CI / CD workflow – **Azure Pipelines**
- **Azure Test Plans** provides many convenient features
 - Capturing rich data, End-to-End traceability
 - Testing across web and desktop
 - Planned manual testing
 - Exploratory testing

















Azure Artifacts













Create, Host, and Share Packages with Your Team

- **Azure Artifacts** is a package management tool
 - Create and share packages from Maven, npm, NuGet etc
 - Provides fully integrated package management for CI / CD
- **Azure Artifacts** includes many features, such as:
 - Sharing code efficiently, Adding packages to any pipeline
 - Managing all package types, Protecting packages
 - Simplifying complex build jobs, Organizing artifacts
 - Integrating package handling to CI / CD Pipelines







Featured

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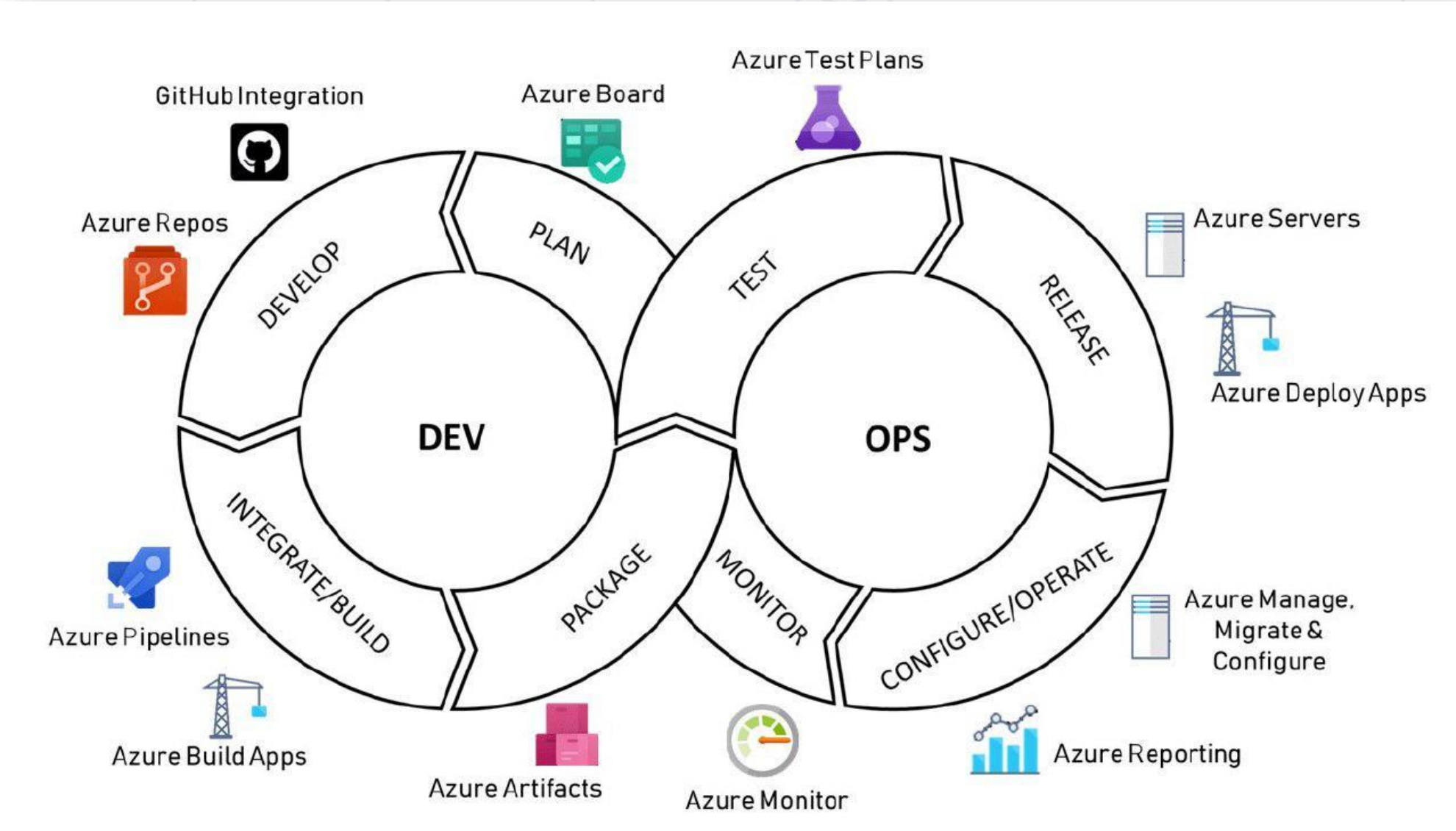
Trending [this week](#)

					
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Extensions Marketplace

Extensions for Azure DevOps

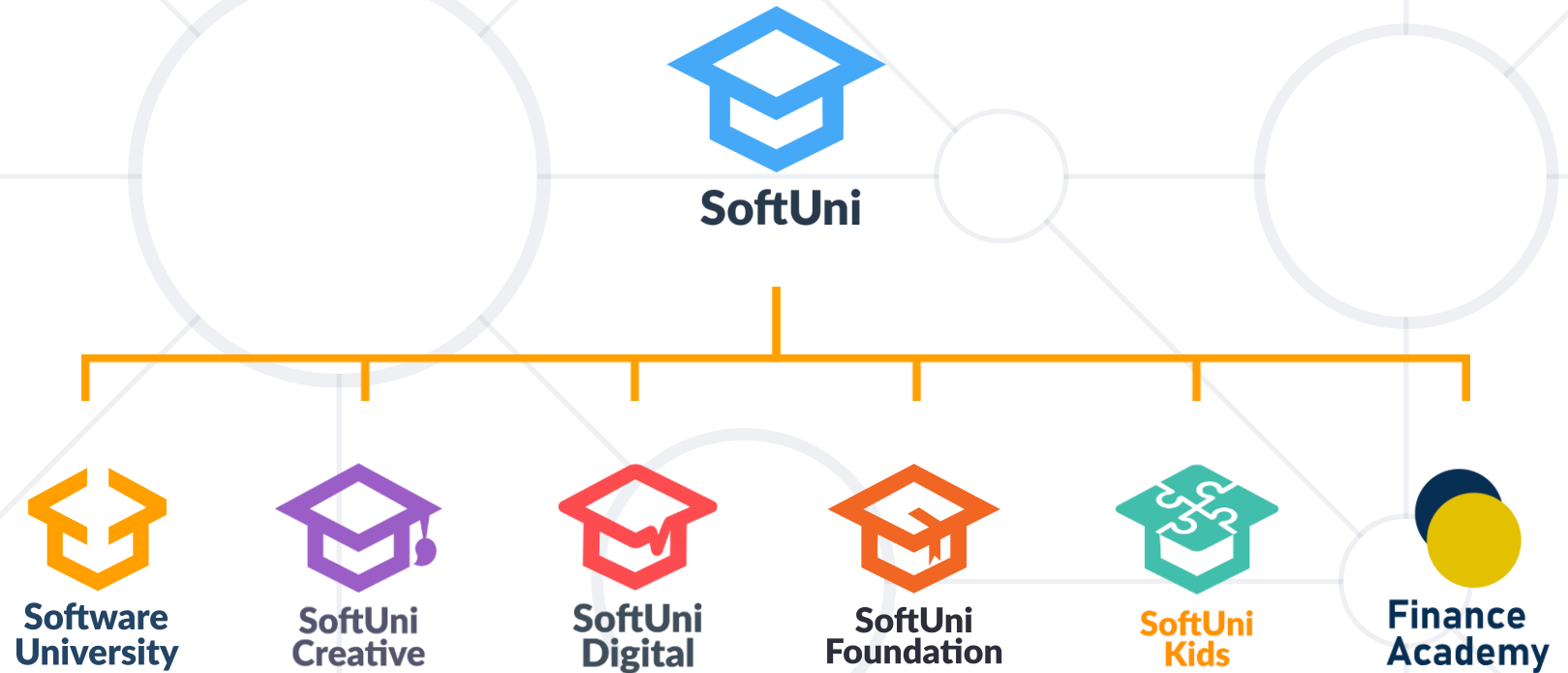
Extensions Marketplace



- **Docker**
- **Microsoft Azure**
 - Azure Portal, Azure App Service
 - Application Insights
- **Azure DevOps**
 - Azure Boards, Azure Repos
 - Azure Pipelines
 - Azure Test Plans, Azure Artifacts



Questions?



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