

# Azure, Deployment and DevOps

Docker, Azure, Application Insights, DevOps



**SoftUni Team**  
**Technical Trainers**



**SoftUni**



**Software University**

<https://softuni.bg>

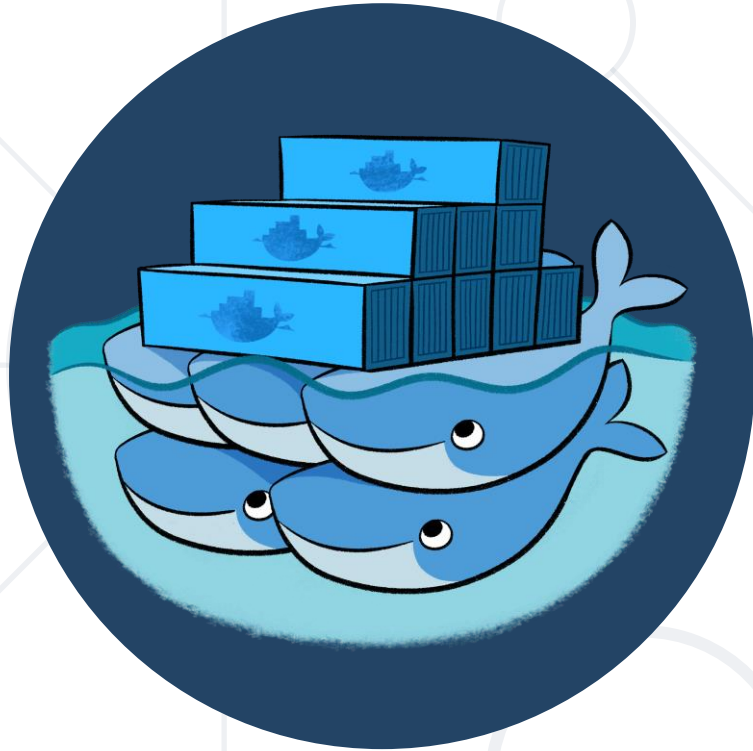
[sli.do](https://sli.do)

**#csharp-web**

# Table of Contents

1. Docker
2. Microsoft Azure
3. Azure DevOps



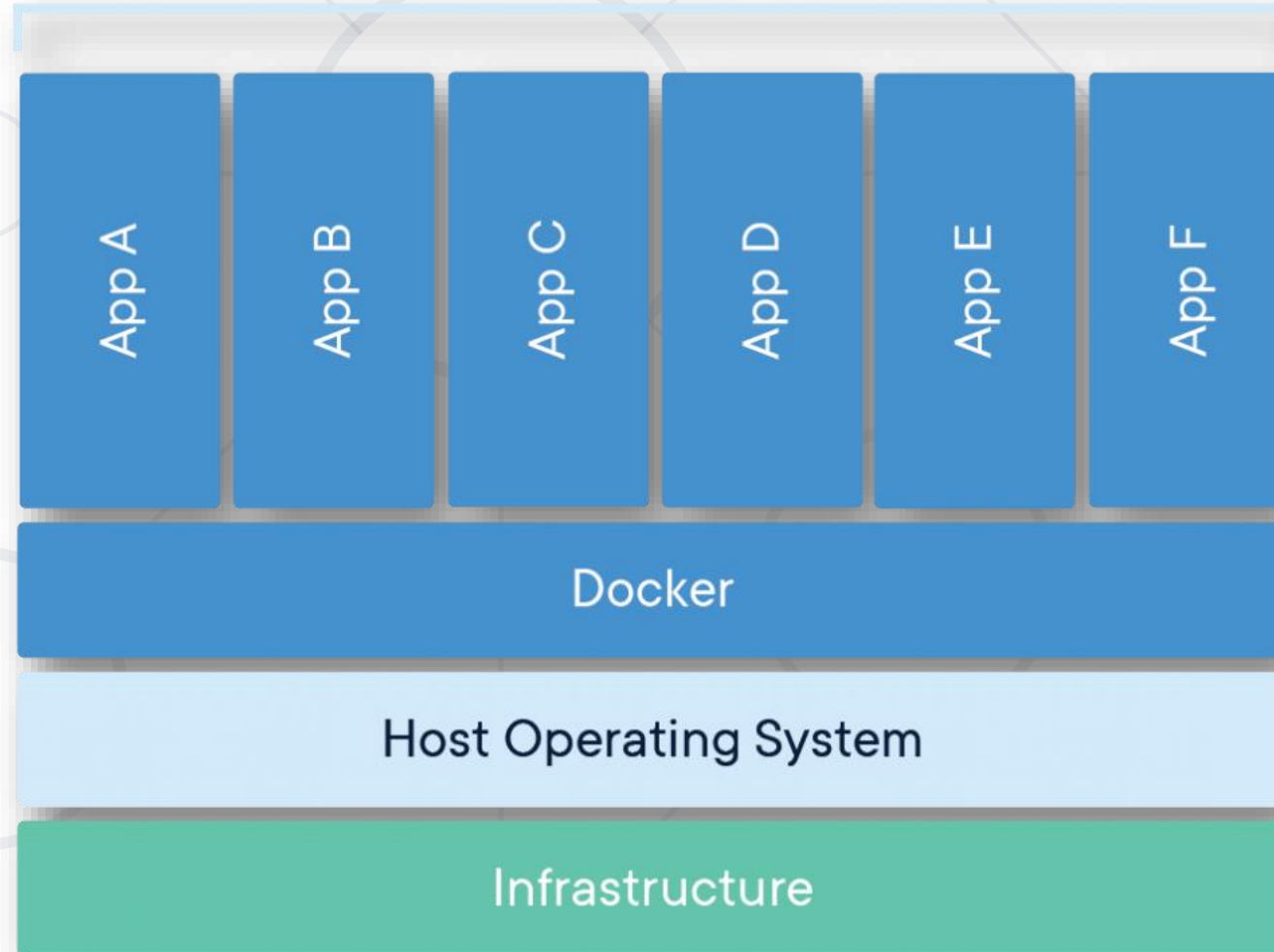


**Docker**

- **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**

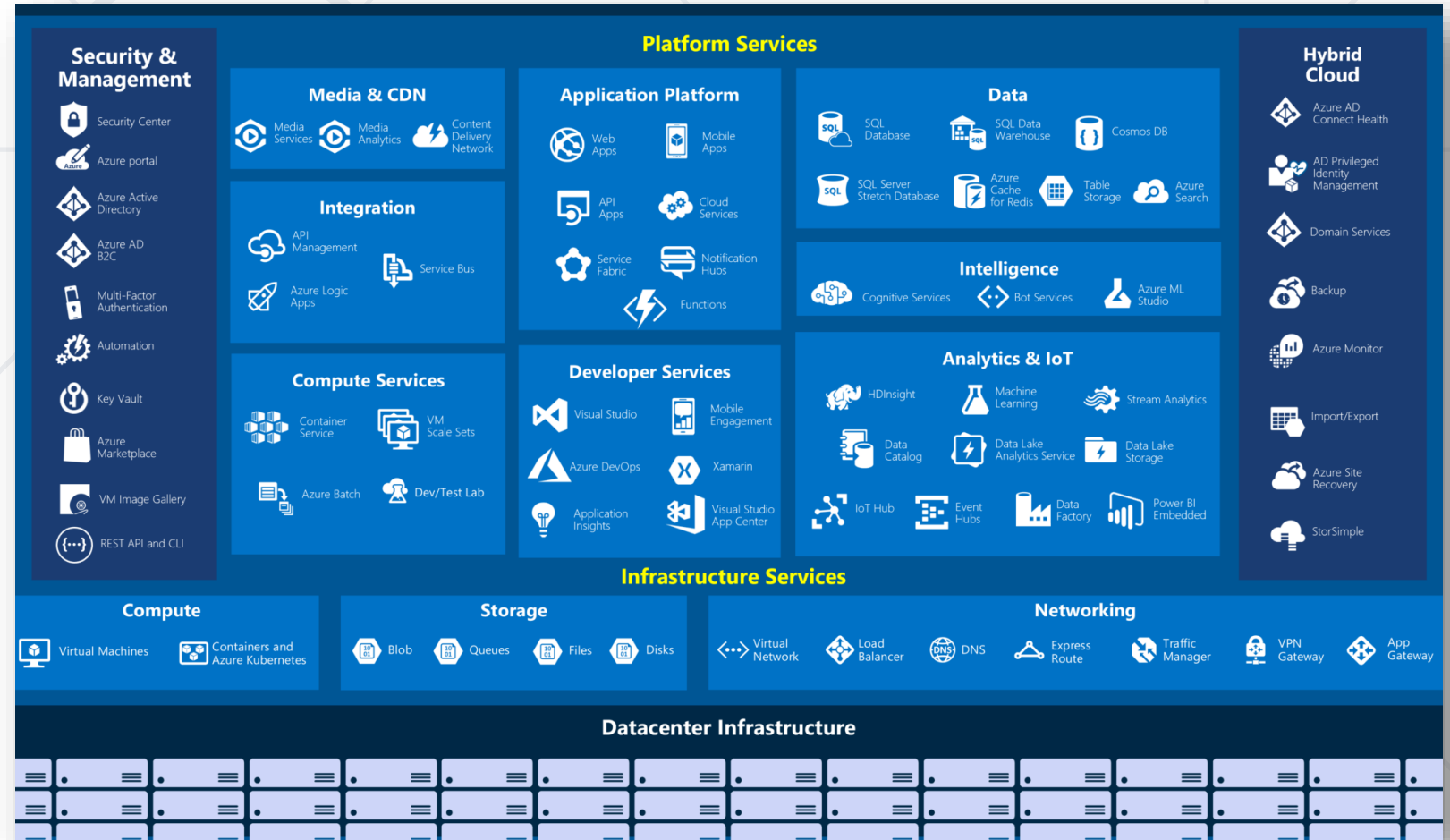


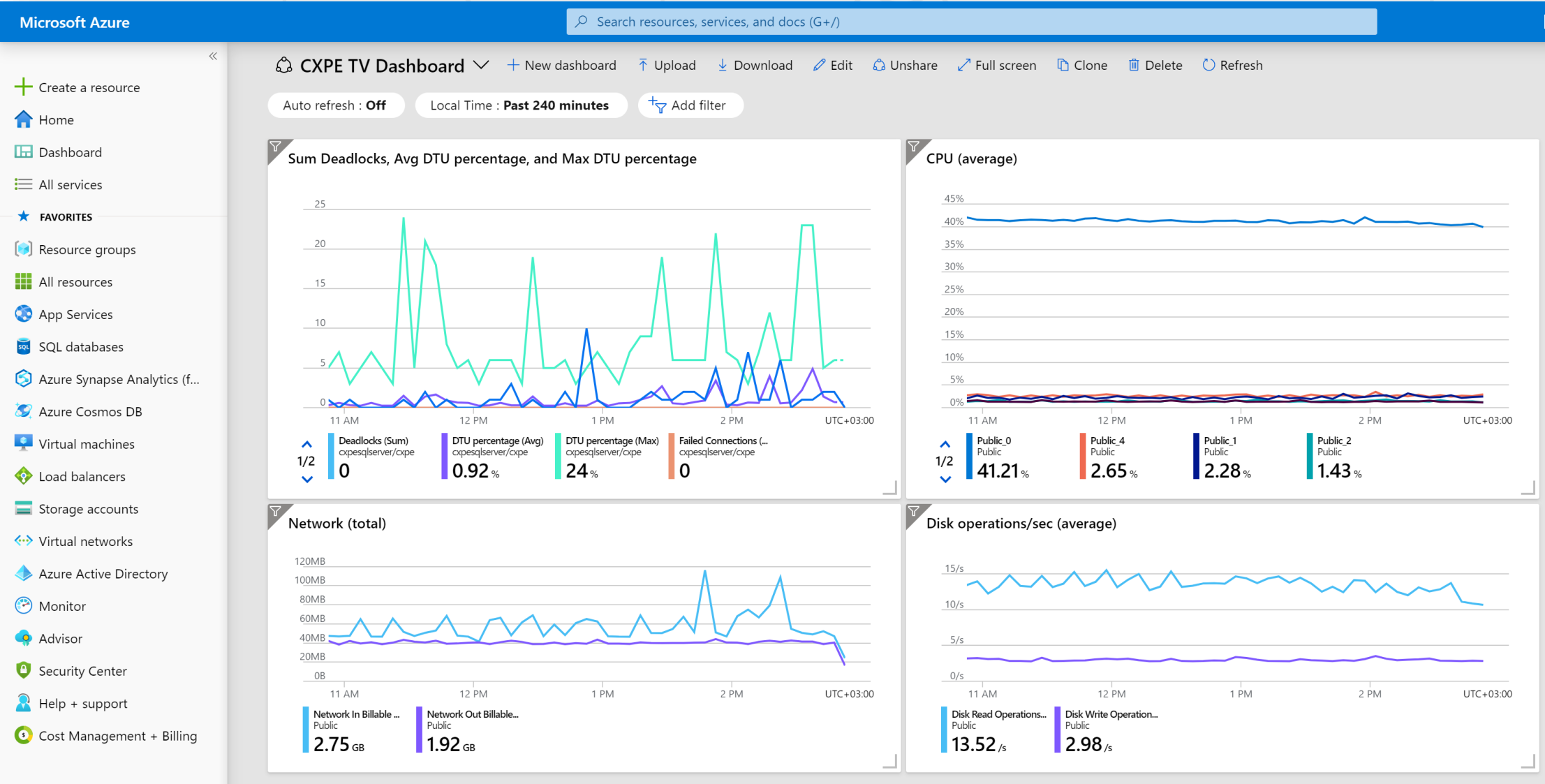
- **Microsoft Azure** is a cloud-computing service
  - Designed for building, testing, deploying and managing apps
  - Applications and services are managed through a global network
- **Microsoft Azure** provides and supports
  - **On-premise**
  - **Infrastructure-as-a-Service (IaaS)**
  - **Platform-as-a-Service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

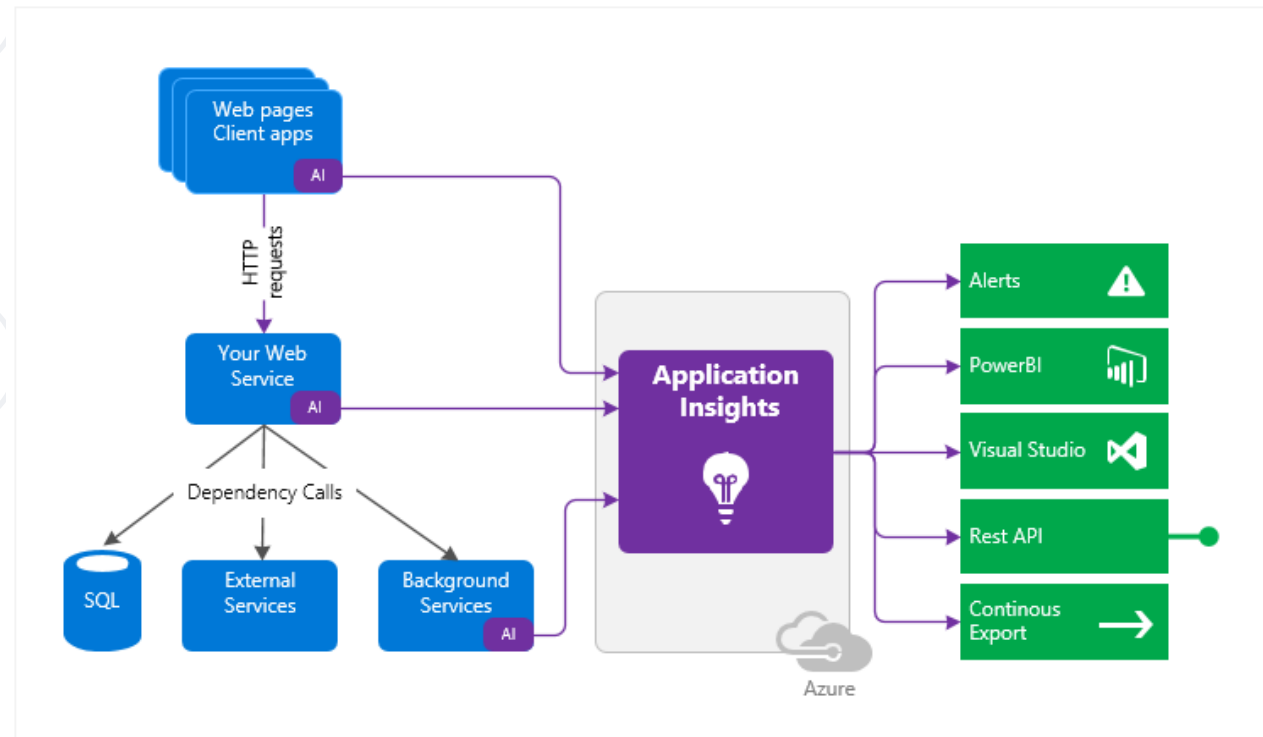
Create Powerful Cloud Apps

- **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**



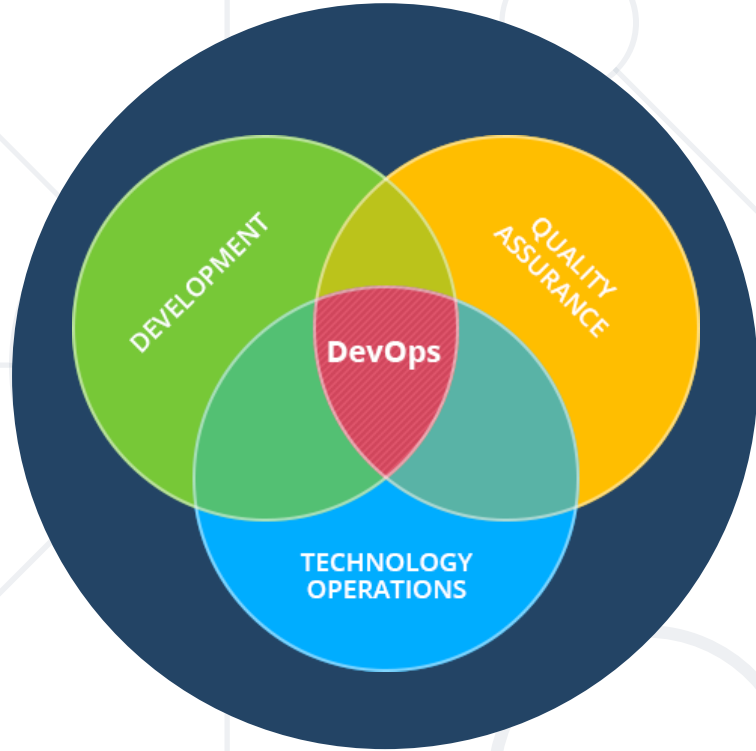


- **Application Insights** Installation is quite simple
  - You install a small instrumentation package in your app
  - You setup an **Application Insights** resource in the Azure portal
- The instrumentation monitors your app and sends telemetry data
  - Data is sent directly to the Azure portal
  - 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





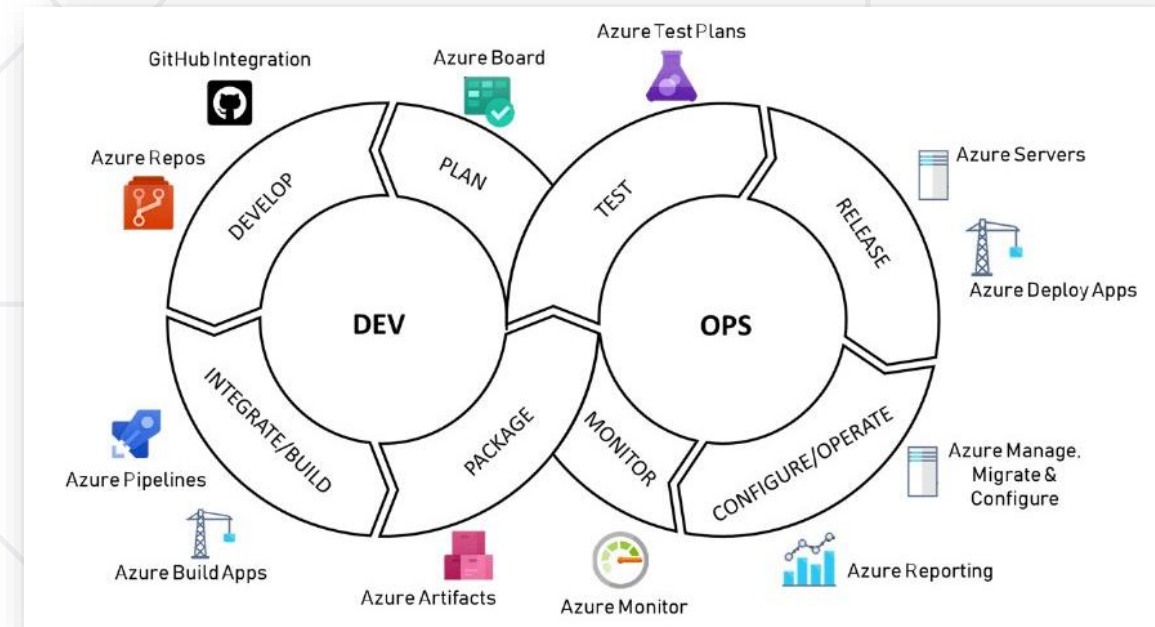
# Azure DevOps

- **DevOps**

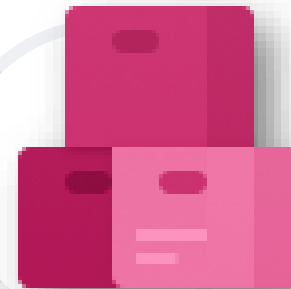
- Software Development (Dev)
- Technology Operations (Ops)

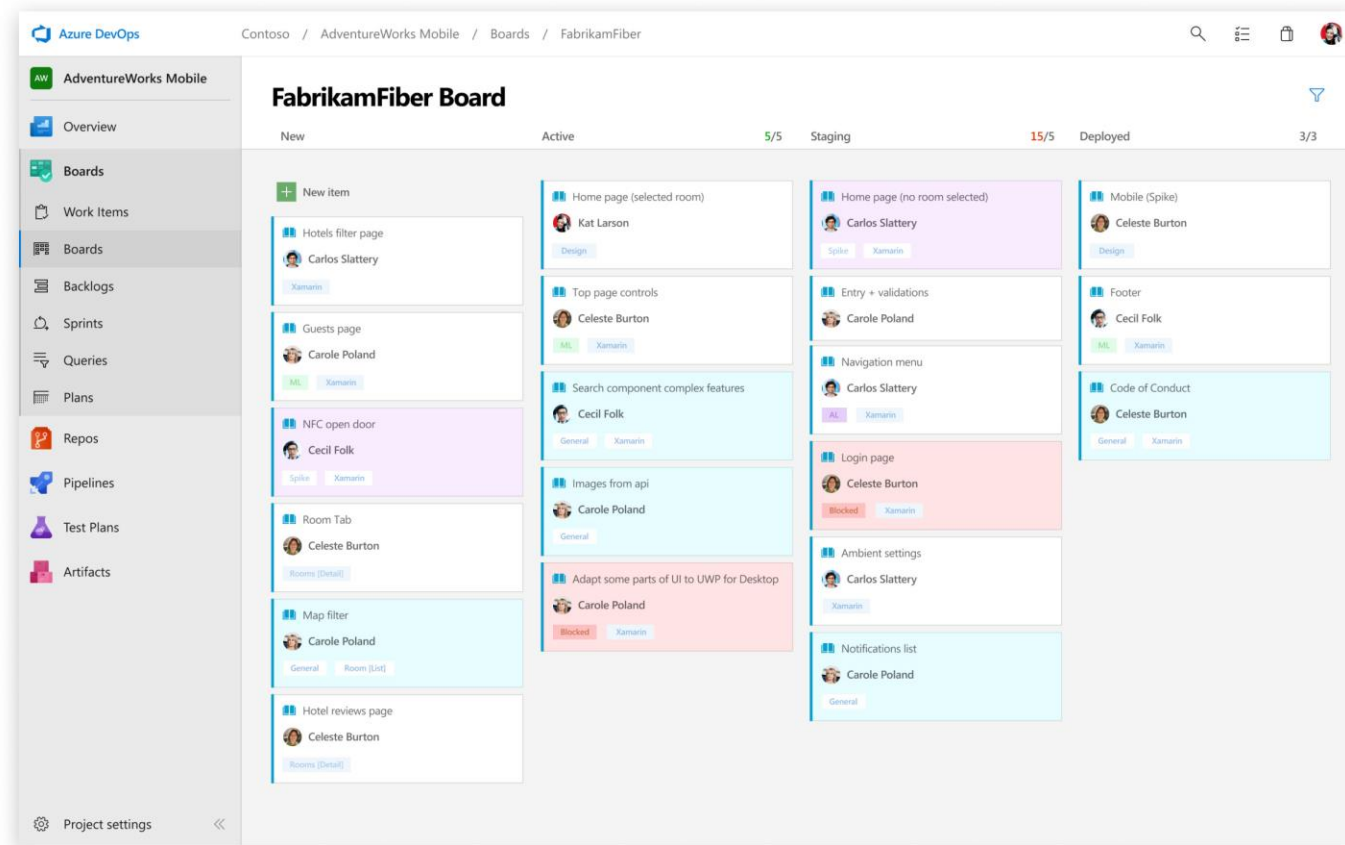
- **DevOps** aims to optimize the systems development lifecycle

- 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

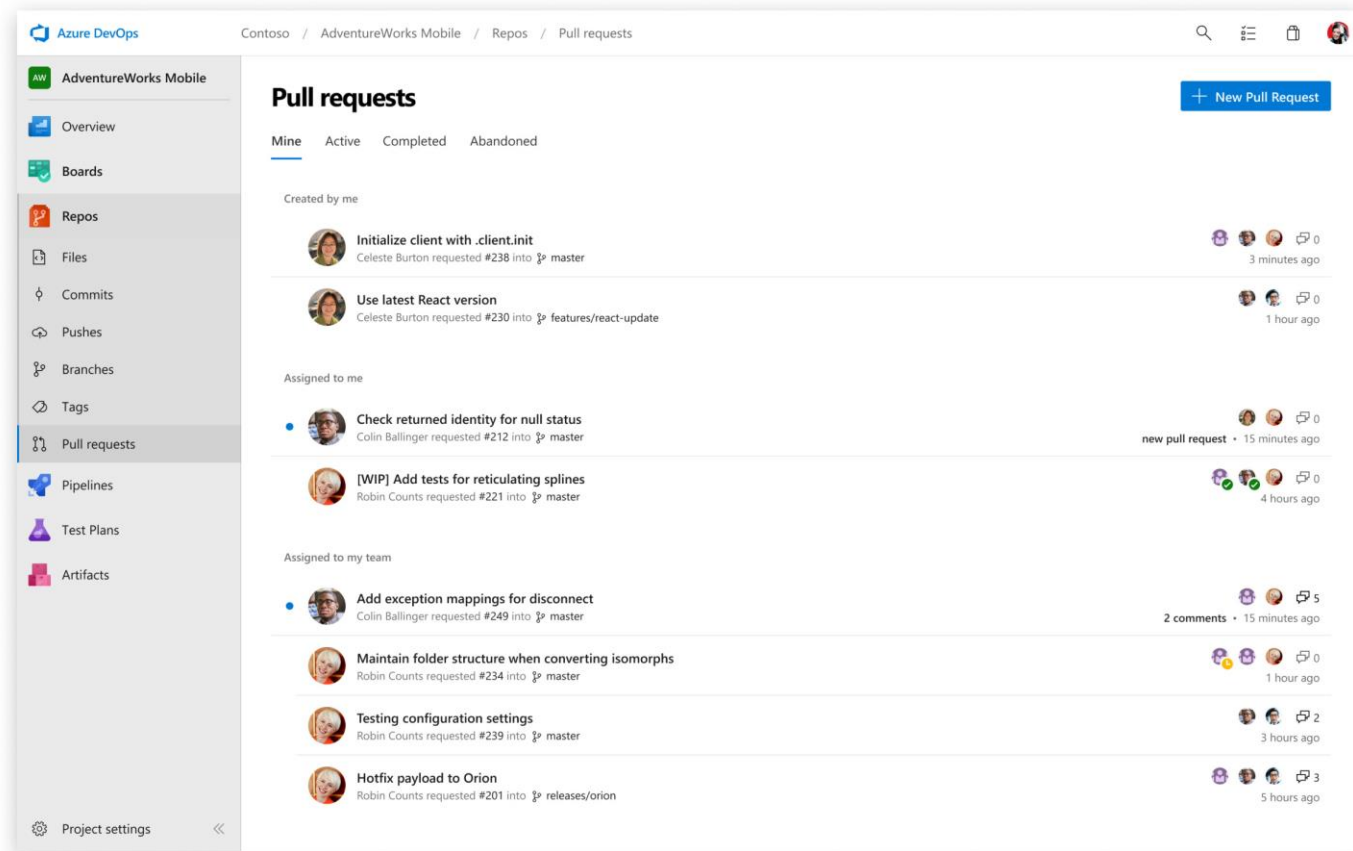




# Azure Boards

## 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

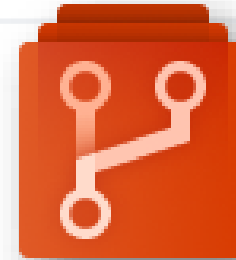


# Azure Repos

## Unlimited, Cloud-hosted Private Git Repos

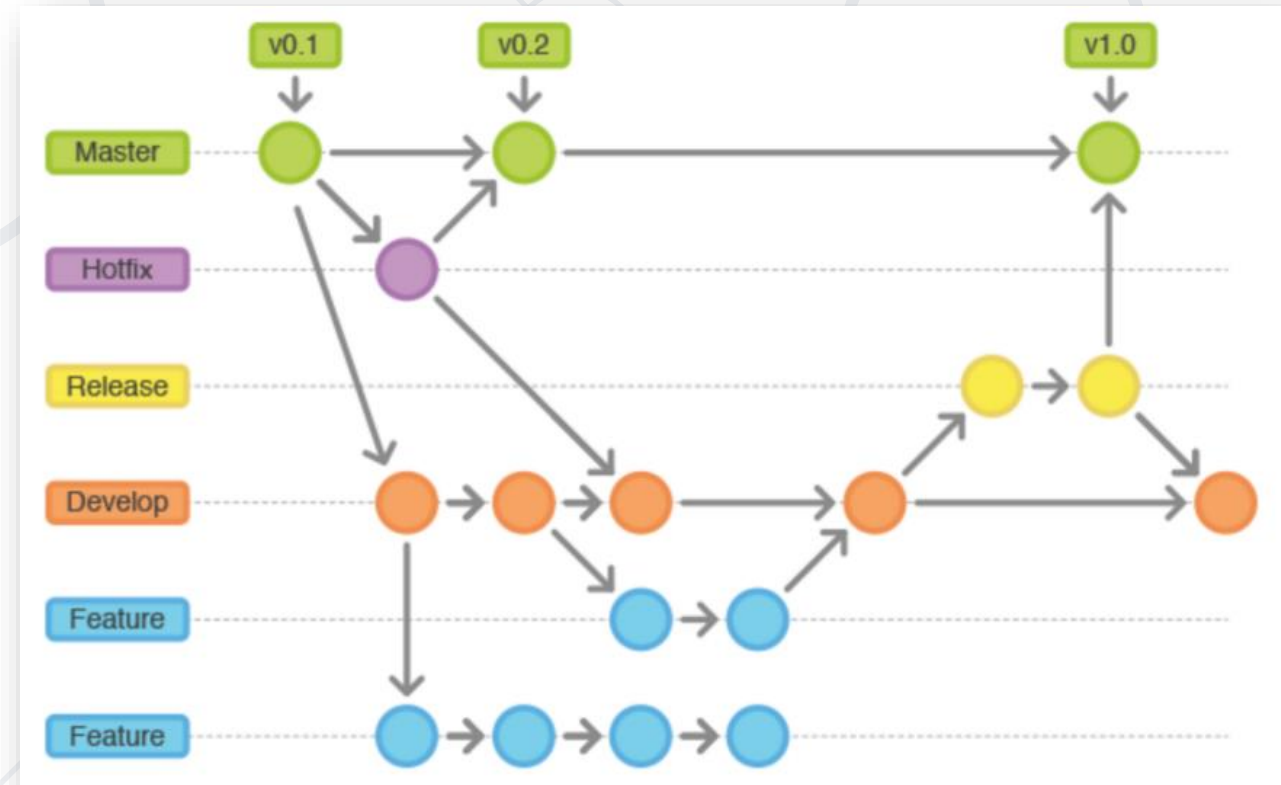


- **Azure Repos** – free private Git repositories, pull requests, etc.
  - Unlimited private Git repositories hosting and support
  - Designed for TFVC
- **Azure Repos** provides
  - Support for any Git client, Automation with built-in CI / CD
  - Web hooks & API integration, Branching policies
  - Semantic 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

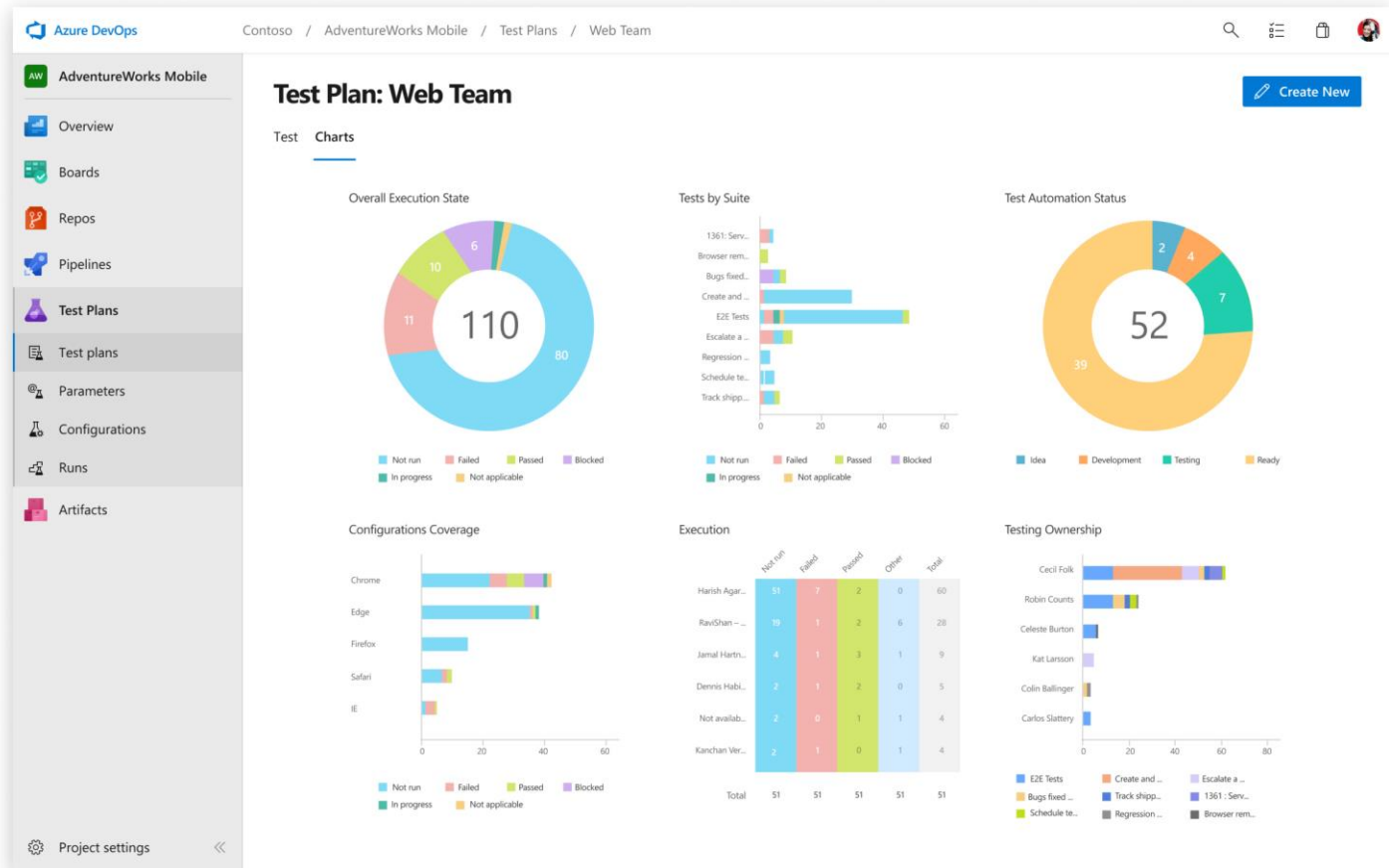
Done in 4.89s.
$ node ./postinstall
[##] 2/2removed './adventureworks/extensions/node_modules/typescript/lib/tsc.js'
removed './adventureworks/extensions/node_modules/typescript/lib/tsserverlibrary.d.ts'
removed './adventureworks/extensions/node_modules/typescript/lib/tsserverlibrary.js'
removed './adventureworks/extensions/node_modules/typescript/lib/typescript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



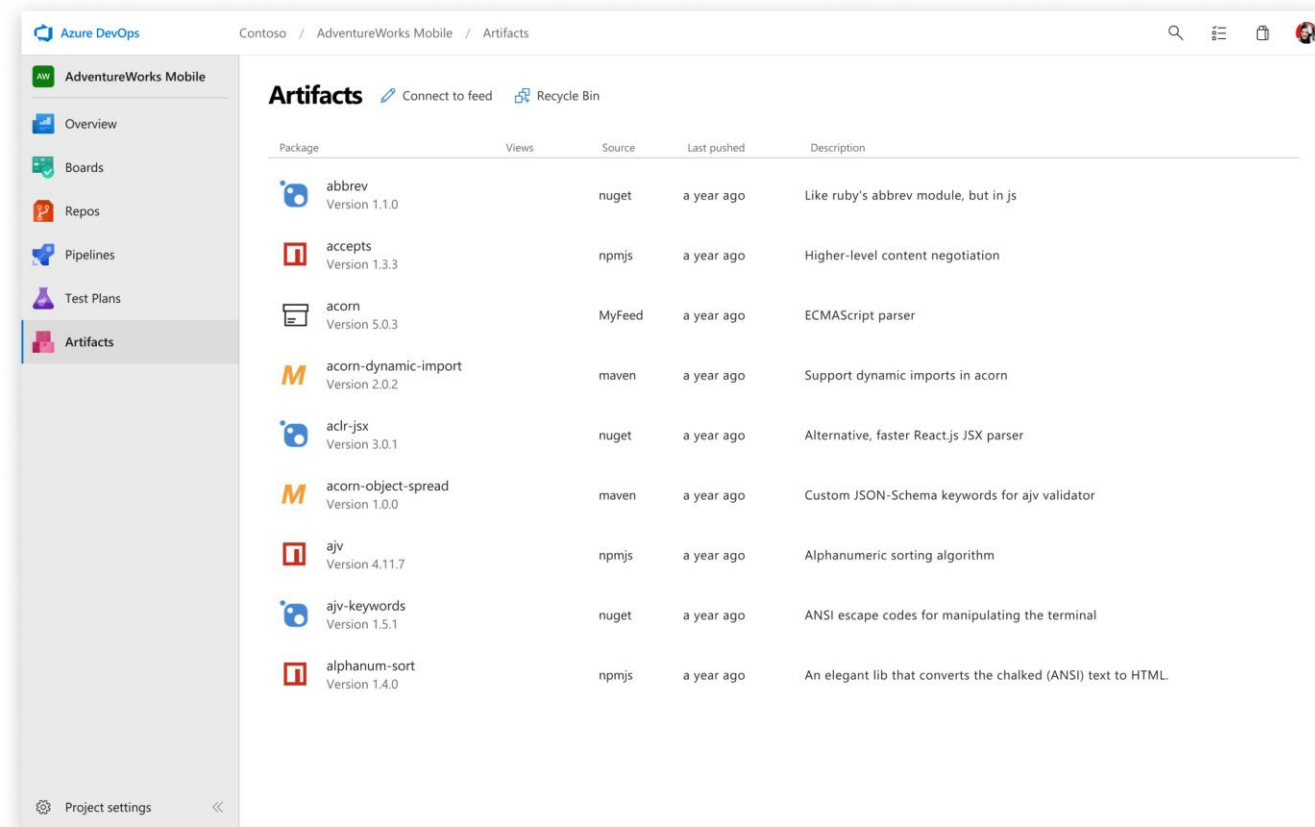


# Azure Test Plans

## 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

 <b>AWS Tools for Micros</b> Amazon Web Servic:  8.3K ★★★★★ FREE	 <b>Timetracker</b> 7pace  7.4K ★★★★★ FREE TRIAL	 <b>SonarCloud</b> SonarSource  2.7K ★★★★★ FREE	 <b>WhiteSource Bolt</b> WhiteSource  1.7K ★★★★★ FREE	 <b>PagerDuty</b> PagerDuty  169 ★★★★★ FREE	 <b>Sentry</b> Sentry  121 ★★★★★ FREE
---	---	--	--	--	--

Most Popular [See more](#)

 <b>Code Search</b> Microsoft  88.4K ★★★★★ FREE	 <b>Test &amp; Feedback</b> Microsoft  73.4K ★★★★★ FREE	 <b>VSTS Open in Excel</b> Microsoft DevLabs  45.7K ★★★★★ FREE	 <b>Azure Artifacts</b> Microsoft  31.4K ★★★★★ FREE TRIAL	 <b>Folder Management</b> Microsoft DevLabs  29.3K ★★★★★ FREE	 <b>Slack Integration</b> Microsoft  25.5K ★★★★★ FREE
--	---	---	--	--	--

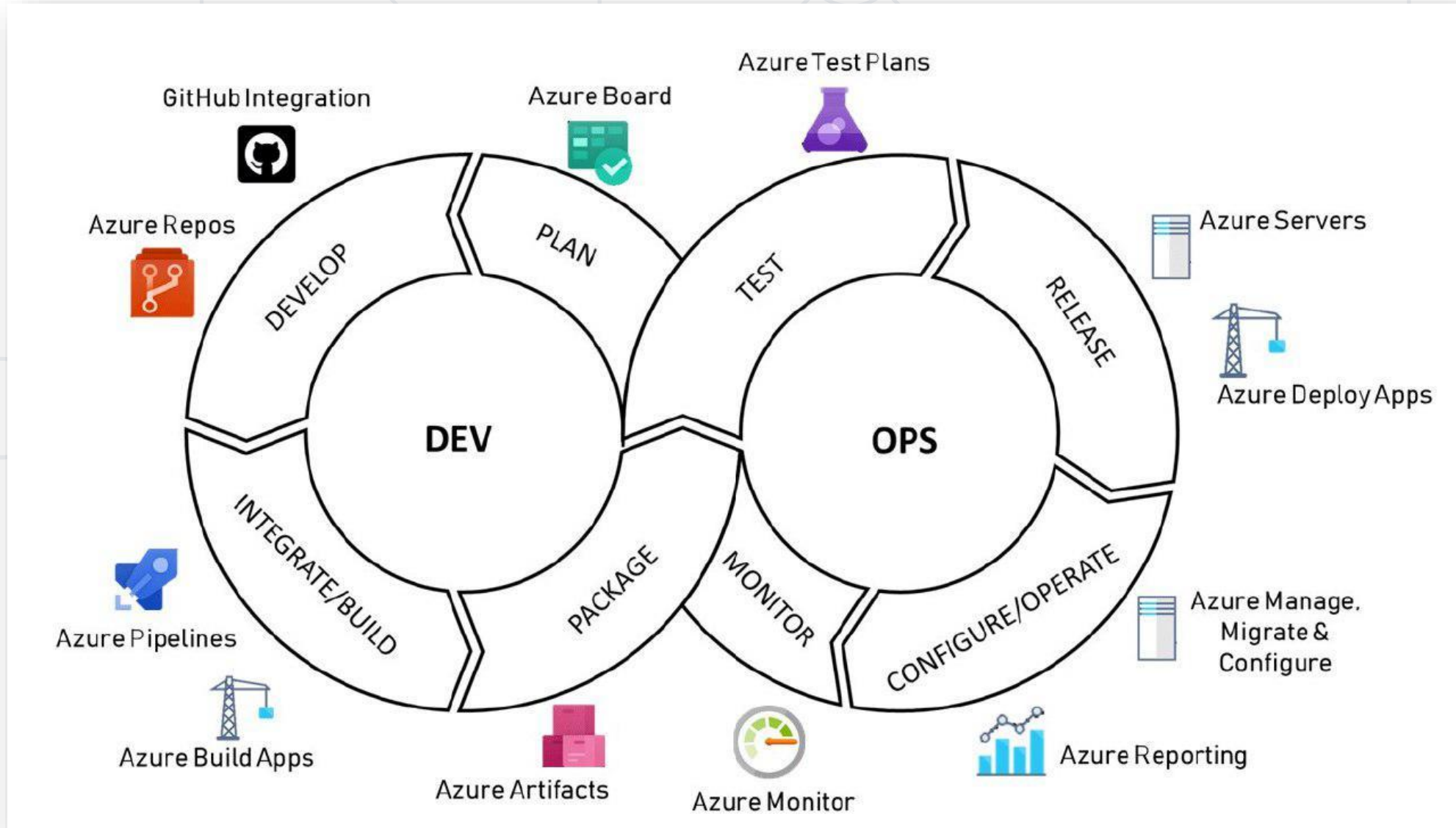
Trending [this week](#)

					
---	--	---	---	---	---

# 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



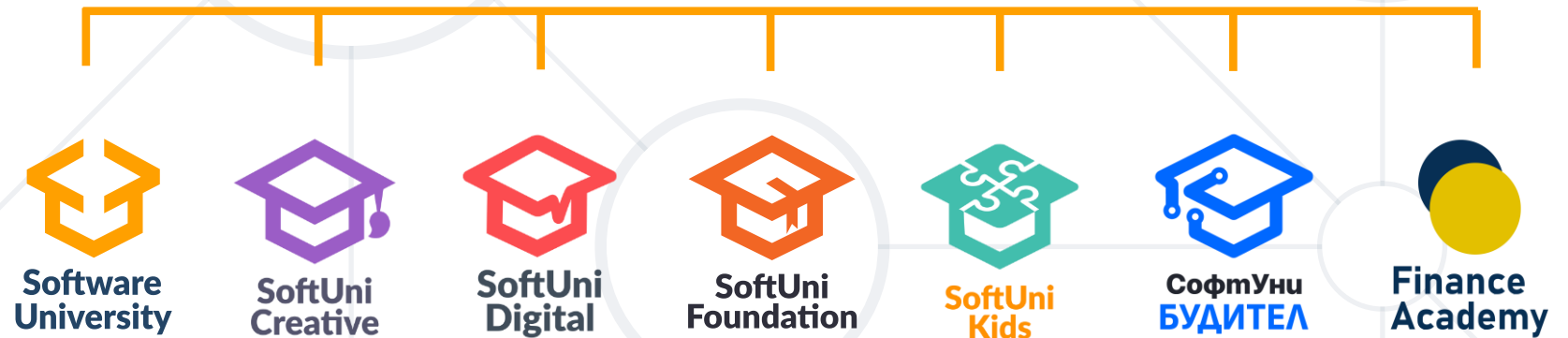
# SoftUni Diamond Partners



THE CROWN IS YOURS



# Questions?



- Software University – High-Quality Education, Profession and Job for Software Developers

- [softuni.bg](http://softuni.bg), [softuni.org](http://softuni.org)

- Software University Foundation

- [softuni.foundation](http://softuni.foundation)

- Software University @ Facebook

- [facebook.com/SoftwareUniversity](https://facebook.com/SoftwareUniversity)



- This course (slides, examples, demos, exercises, homework, documents, videos and other assets) is **copyrighted content**
- Unauthorized copy, reproduction or use is illegal
- © SoftUni – <https://softuni.org>
- © Software University – <https://softuni.bg>

