Microsoft

AZ-400.1 Module 5: Implement a Mobile DevOps Strategy

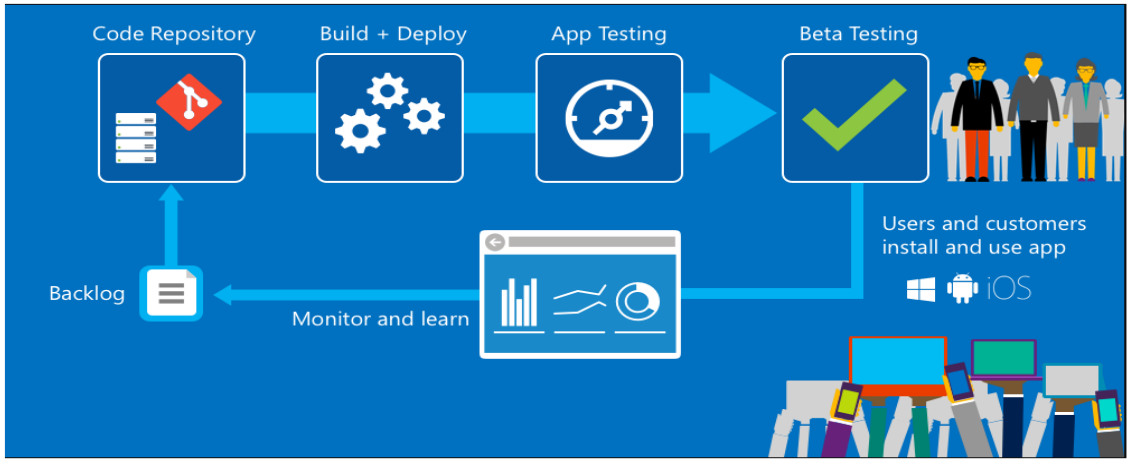
Lesson 01: Introduction to Mobile DevOps

Mobile DevOps vs DevOps

- Mobile DevOps practices and the culture are the same as DevOps, but the tooling is different

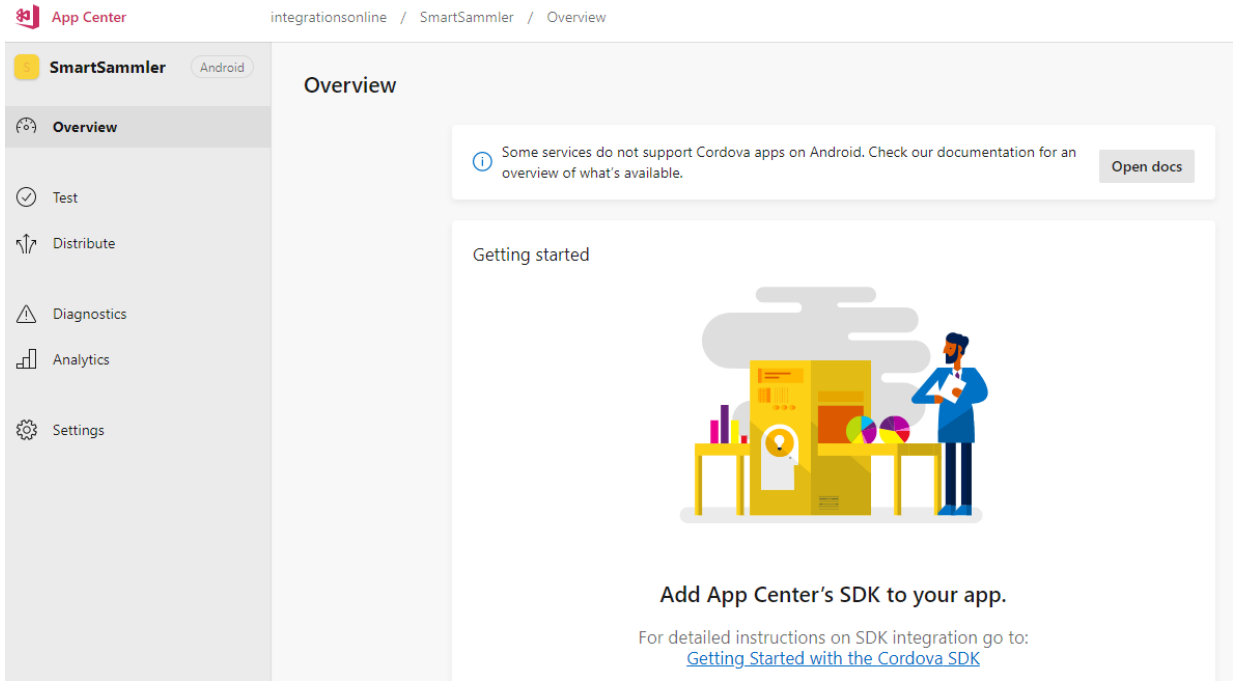
App Center is awesome for:

iOS apps	Android apps	Windows apps	React Native apps	Xamarin apps	Unity
Swift and Objective-C	Java and Kotlin	UWP, WPF and WinForms	iOS and Android	iOS and Android	Game development



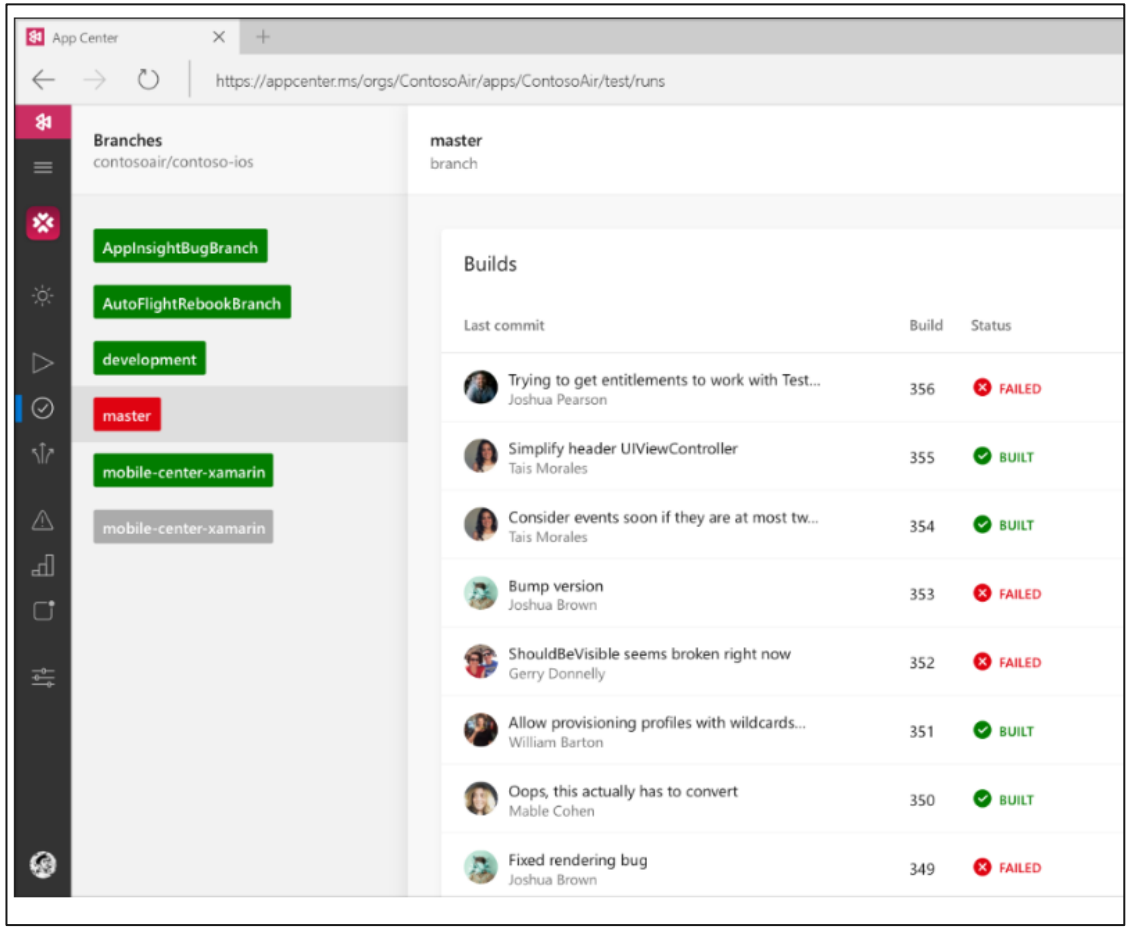
Visual Studio App Center

- App Center brings together multiple services into an integrated cloud solution
- Developers use App Center to Build, Test, and Distribute applications
- Once the app's deployed, developers can monitor the status and usage of the app



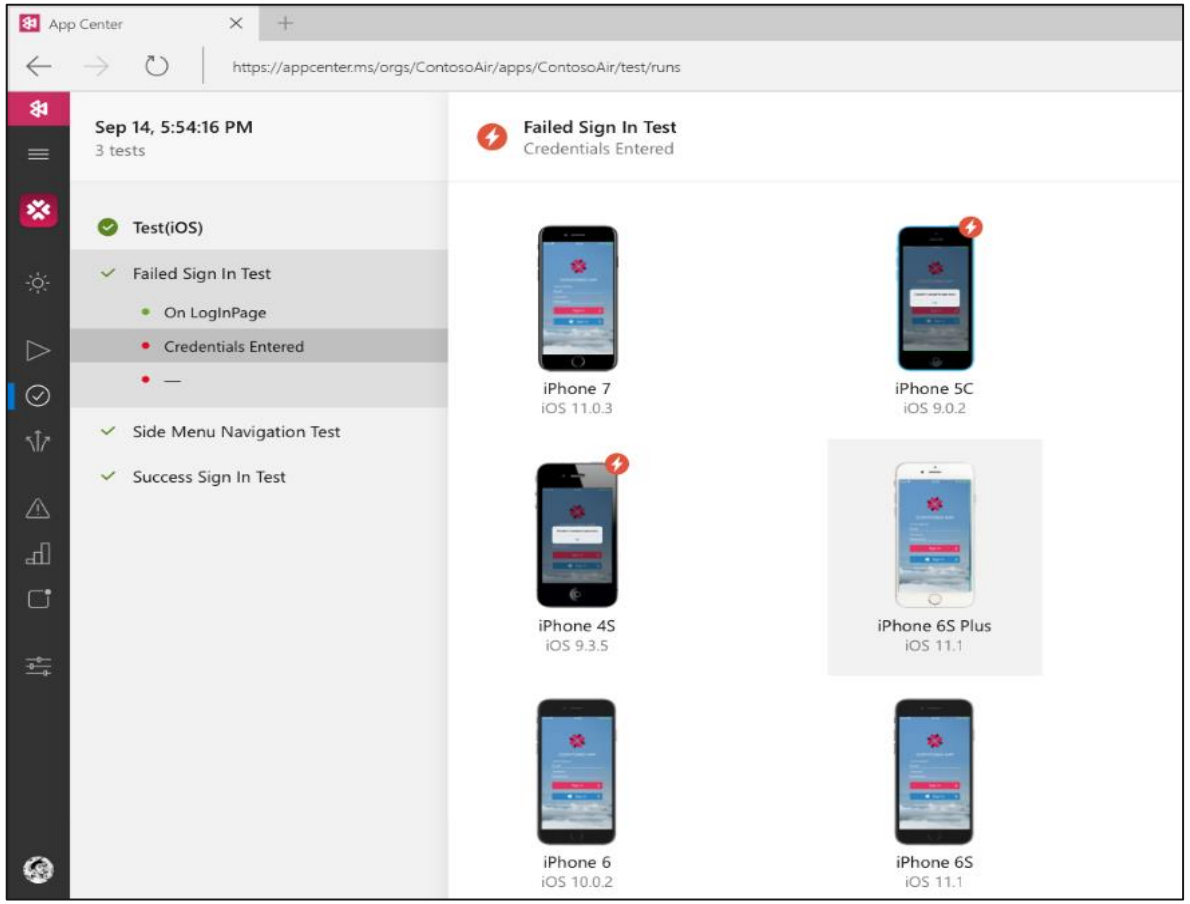
Continuous Integration in Minutes

- Build apps more frequently and faster- iOS, Android, Windows, and macOS
- Connect to your GitHub, Bitbucket or Azure repos and build your apps
- Create an installable app package - GitHub, or Git repos on Bitbucket and Azure DevOps



Continuous Quality on Real Devices

- Automate UI tests with frameworks like Appium, Espresso, and XCUITest
- Test and diagnose bugs and performance problems
- Run your tests for iOS and Android apps with Xamarin.UITest, Appium, Espresso (Android), and XCUITest (iOS).

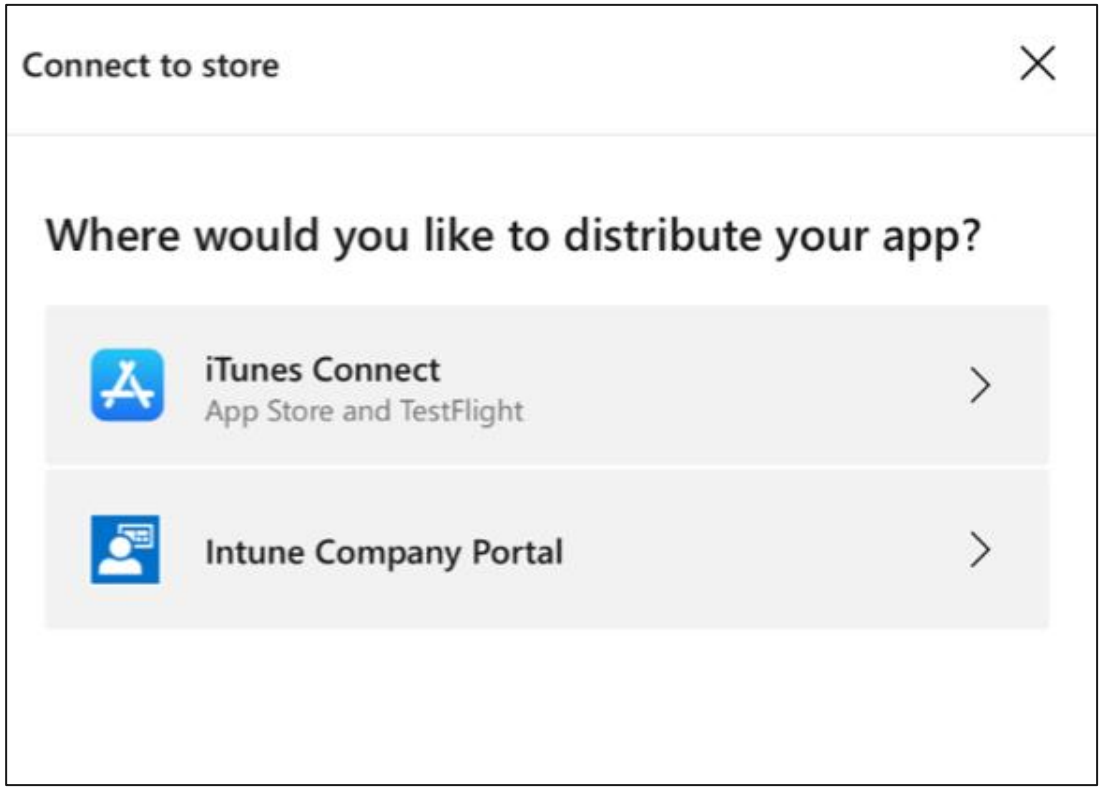


Run UI Tests

- Upload your test suite after completing a build
- Generate a test upload shell command, add it to your app's repo
- When your test code finishes executing, a detailed report will appear in the App Center Test
- App Center provides device logs, test framework logs, and the line in which the failure occurred

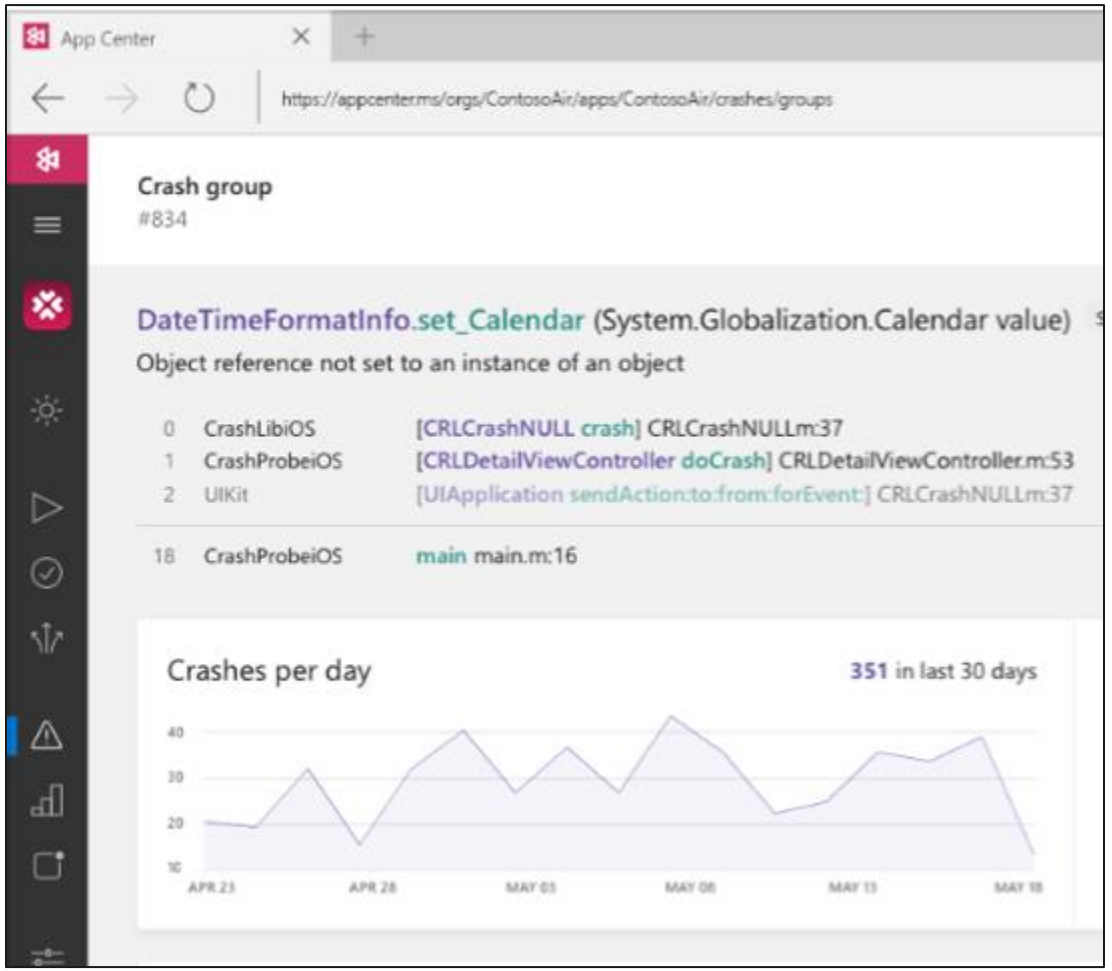
Continuous Delivery that Works

- Deploy everywhere with ease
- Distribute your app to beta testers and users on Android, iOS, Windows, and
- Send different builds to different groups of testers and notify them via in-app updates
- Release to Apple's App Store & Google Play Store



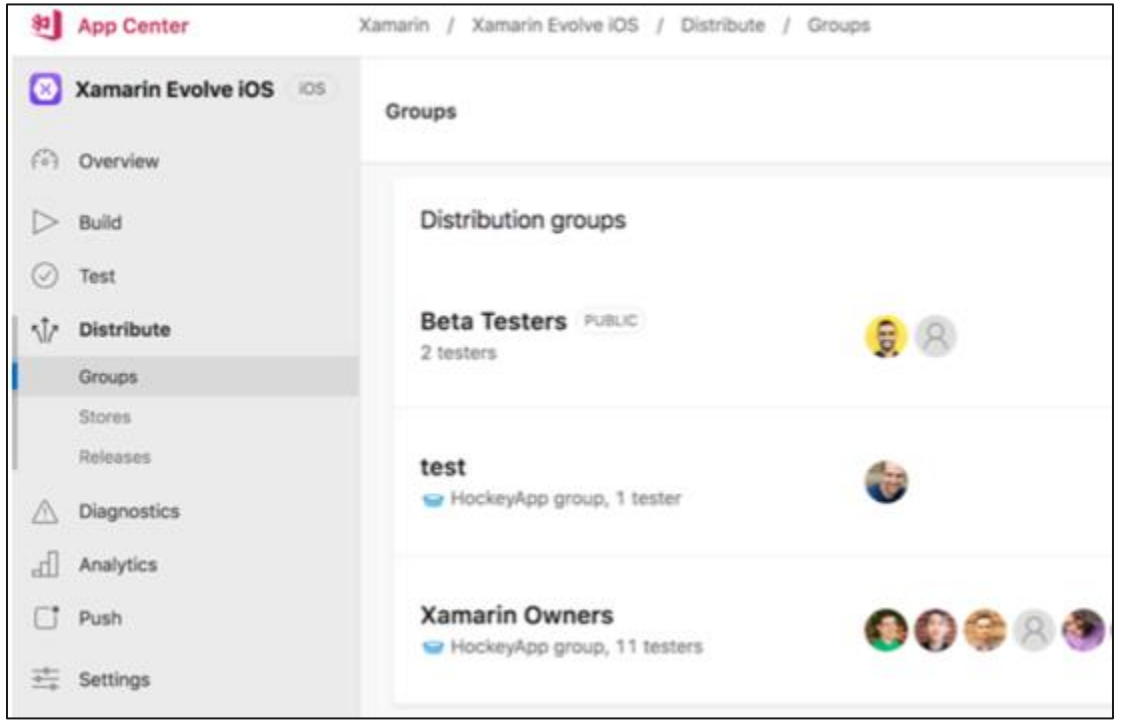
Continuous Learning for Growth

- **Insightful crash reports** that monitor the health of your app with faster debugging and detailed crash reports. Get notified and fix issues as they come up.
- **Real-time analytics** for deep insights about user sessions, top devices, OS versions, behavioral analytics and event trackers for your apps.



Distribution Groups

- Distribution Groups are used to control access to releases
- Distribution Group represents a set of users that can be managed jointly and can have common access to releases
- You create the groups and can now add AAD groups to the distribution group

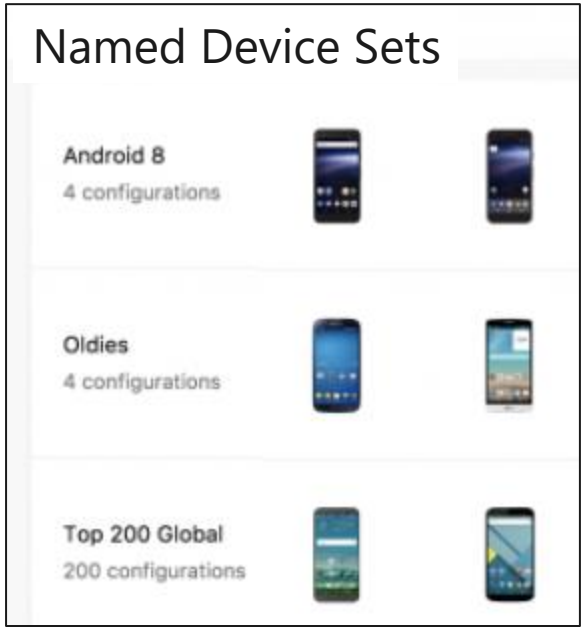


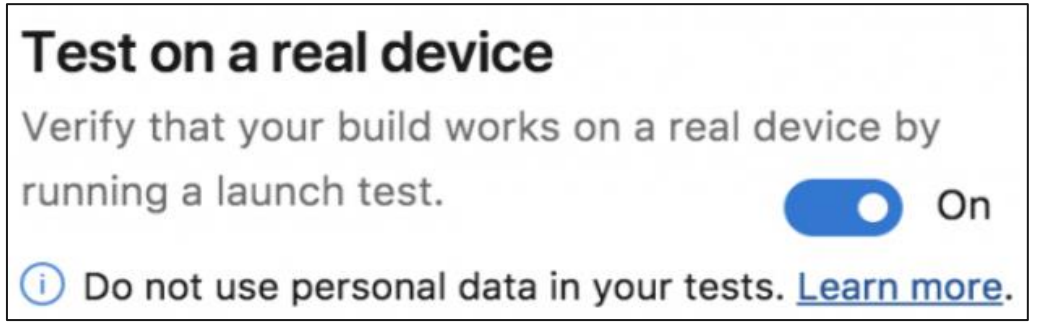
Types of Distribution Groups

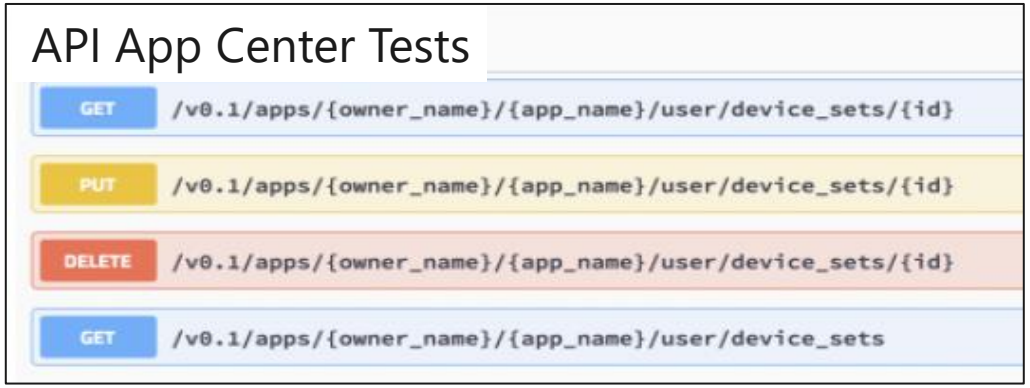
- Private Distribution Groups
  - This is the default
  - Only testers invited via email can access the releases available to this group
- Public Distribution Groups
  - Used when you want enable unauthenticated installs from public links
  - Testers will receive an email notifying them that they've been invited to test the app and when a release is available to them
- Shared Distribution Groups
  - Private or public distribution groups that are shared across multiple apps in a single organization
  - Shared distribution groups eliminate the need to replicate distribution groups across multiple apps

App Center Distribution

- Developer tool to release application binaries to their end user devices
- Distribute packages for iOS, Android, UWP, and macOS

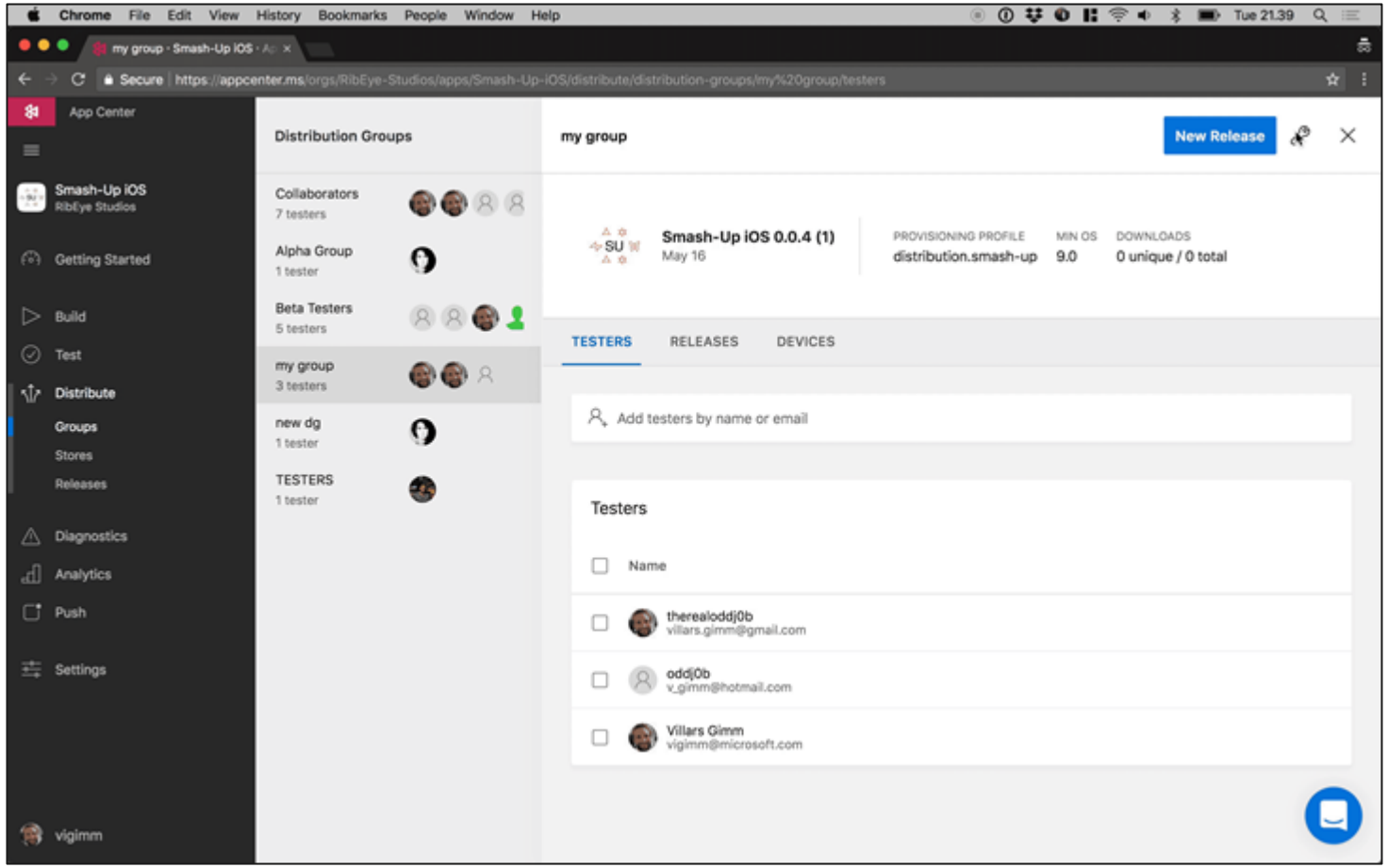






Provision Tester Devices for Deployment

- App Center supports the release of auto-provisioning capabilities
- You can automate the distribution process and enable testers and team members to install your app with one click

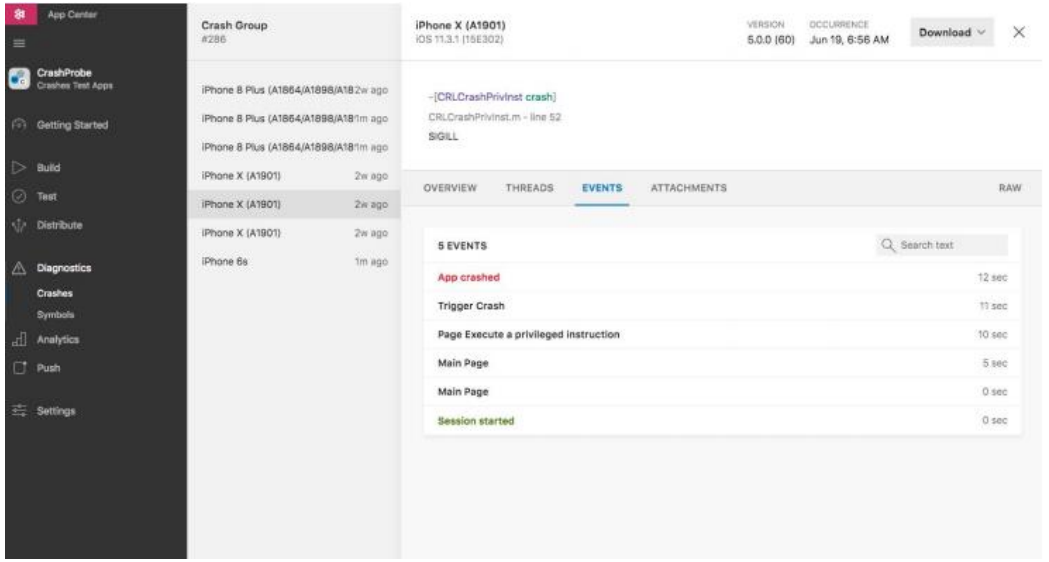


App Center Diagnostics

- App Center Diagnostics is a cloud service that helps developers monitor the health of an application, delivering the data needed to understand what happens when an app fails during testing or in the wild.
- In the App Center Diagnostics UI, you can attach, view and download one binary and one test attachment to your crash reports.
- Track events leading up to a crash to capture useful information about the state of your app.

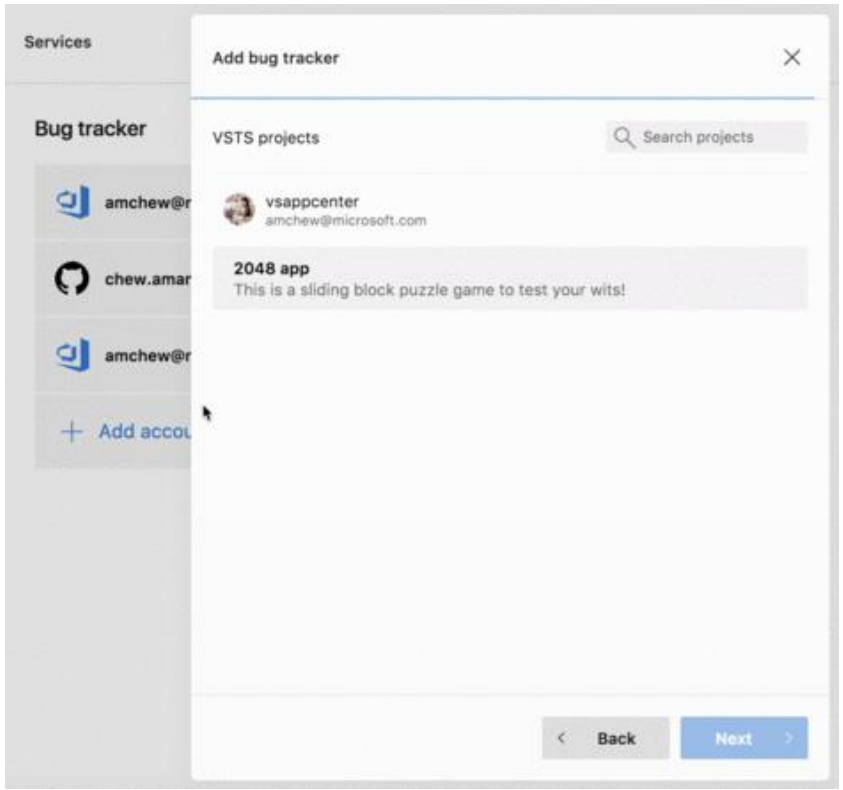
Configure alerts

1. Log into App Center and select your app.
2. In the left menu, navigate to Settings.
3. Click on Email notifications.
4. Select the box next to crashes.



Bug Tracker

- You can integrate third party bug tracker tools with App Center to stay informed and better manage your crashes



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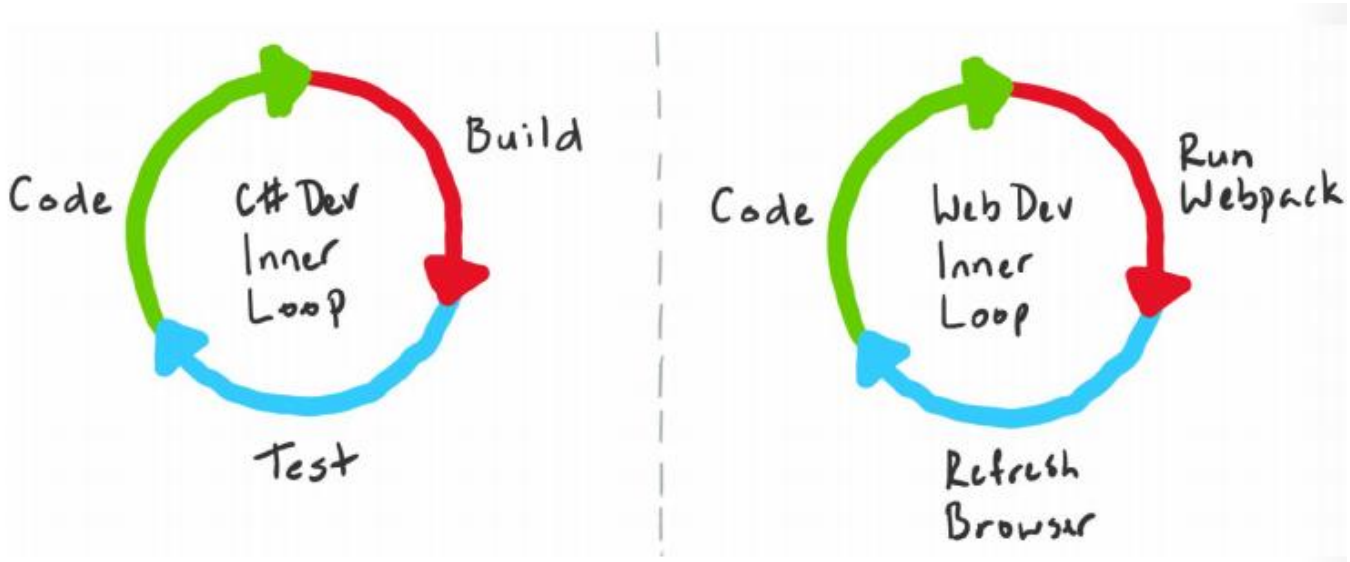
AZ-400.6 Module 1: Recommend and Design System Feedback Mechanisms

The inner loop

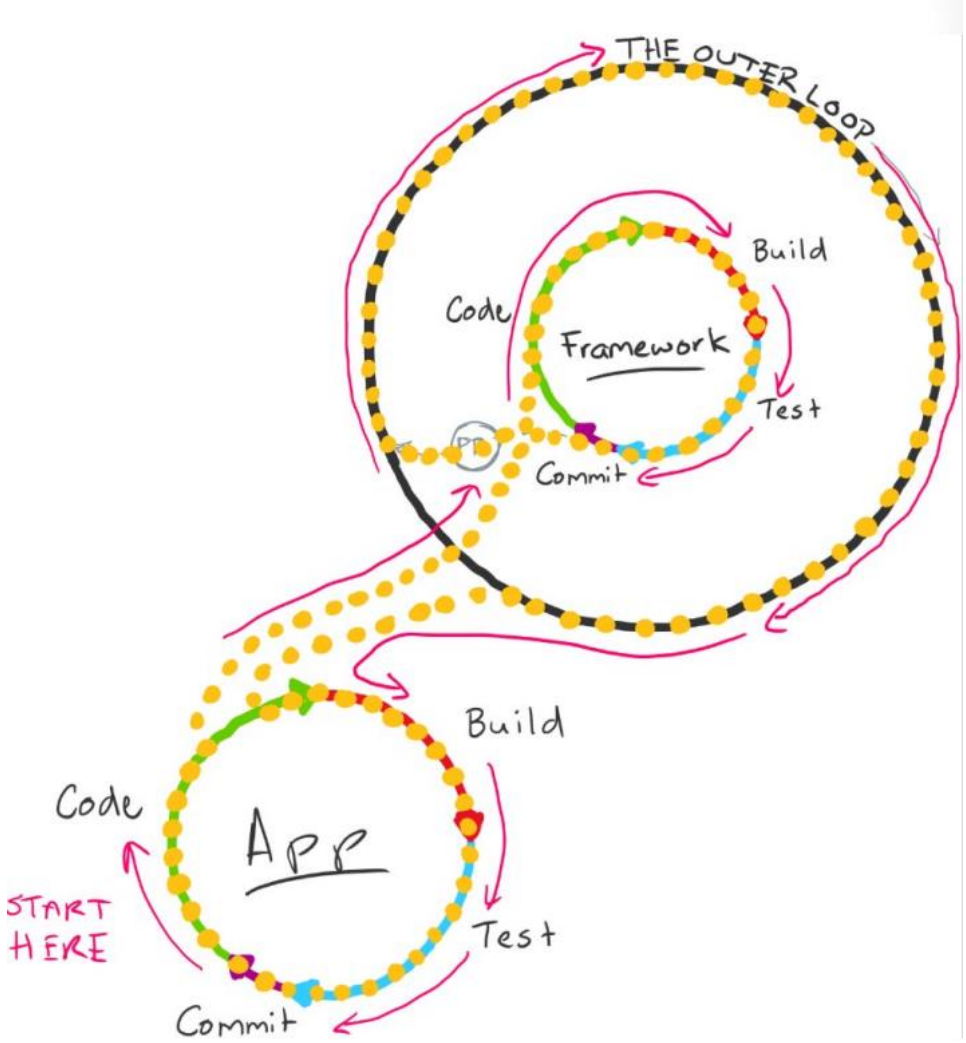
Inner loop is the iterative process that a developer performs when they write, build, and debug code.



Tangled Loops

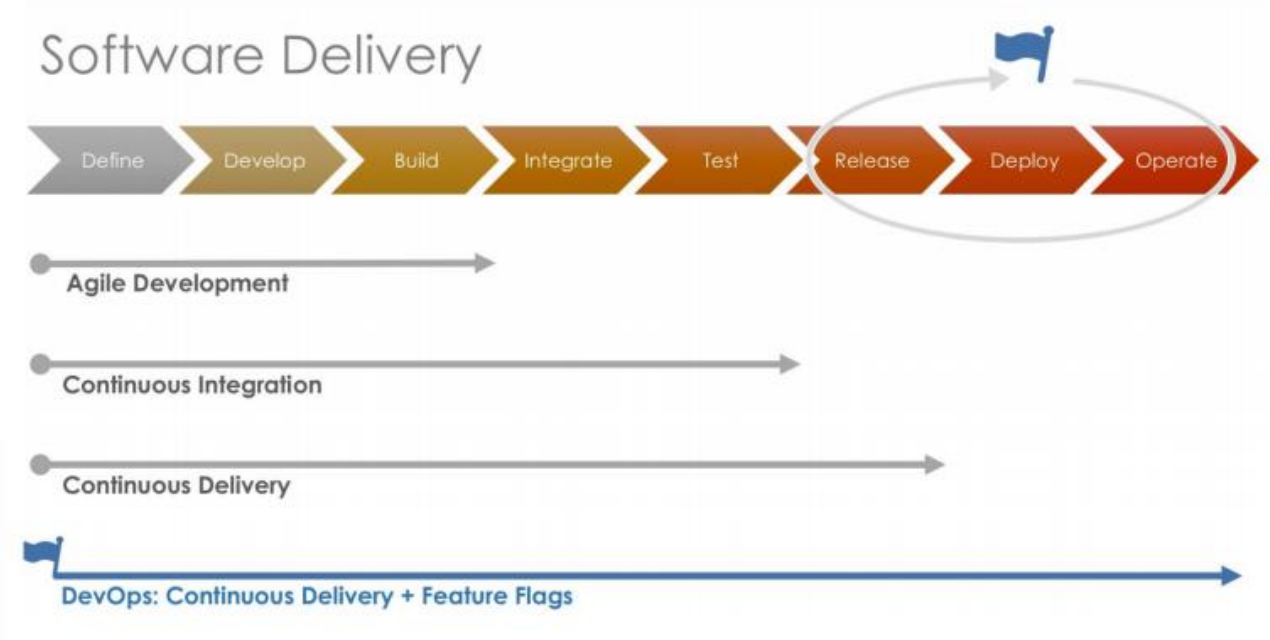
Let's say that our monolithic codebase has an application specific framework which does a lot of heavy lifting

- Extract to Framework
- Use Pull Requests



Feature Flags

By using feature flags in the continuous delivery process, teams can efficiently integrate release, deployment, and operational management into the software development cycle.



Continuous Delivery

Benefits

- Faster software development
- Smaller and more frequent releases
- Automated testing
- Reduced development risk
- Better development coordination
- Quickly adapt to shifting markets

Benefits with Feature Flags

- Decouple rollout from code deployment
- Releases with substantially mitigated risk
- Customer feedback loop
- Percentage rollouts and targeted releases
- Feature rollbacks without redeploying
- Configuration and long-term management

Design Practices to Measure End-User Satisfaction

Design Practices to Measure End-User Satisfaction

The only real measure of software quality that's worth its salt is end-user satisfaction

Five steps to easily measuring customer satisfaction:

1. Outline your goals and plan.
2. Create a customer satisfaction survey.
3. Choose your survey's trigger and timing.
   - Whom you send the survey and when you send it
4. Analyze the survey data.
5. Make adjustments and repeat.

In product feedback

It’s very likely that if you visit a web property for a little while, you’ll eventually be prompted to provide some feedback or sign up for something

Benefits	Weaknesses
Context-sensitive feedback	Not enough detail
Always on	Always on
High response rates	Too. Much. Feedback
	Limited future follow up

Feedback on product roadmap

Effective communication on your product roadmap helps keep your customers engaged

Pros	Cons
Customers feel that they're an active part of building your product roadmap.	Likely biased towards your highest-intent customers.
Builds a sense of community and heightened loyalty.	Low volume.
Provides a channel through which you can make users feel appreciated.	

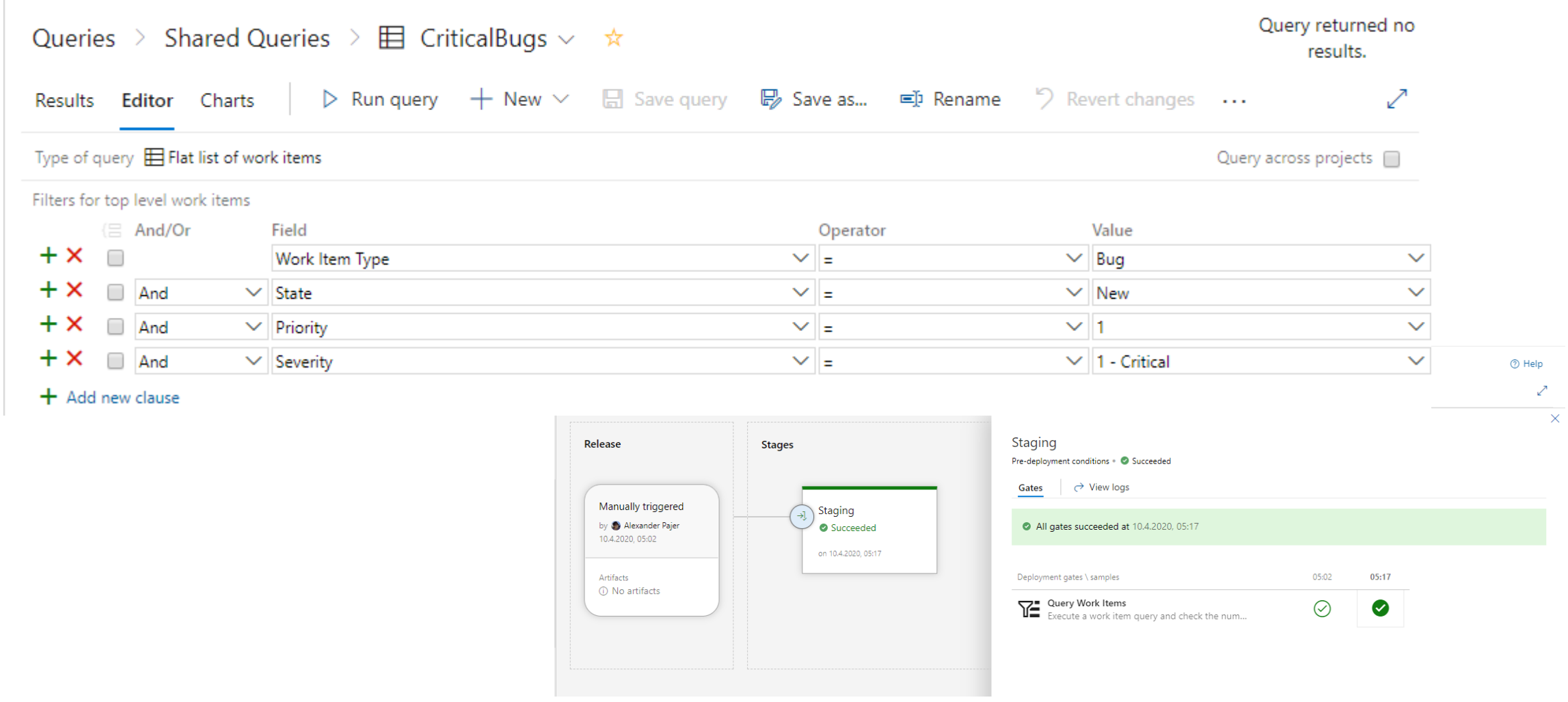
Feature Request Board

A massive part of build a product is identifying new features customers desire

Should contain:

- Link Azure DevOps work items to Features and Ideas
- Updated Status
- See which work items are linked to UserVoice

Demo: Query Work Item



Design Process to Automate Application Analytics

Automate Application Analytics

- In an Agile environment, you may typically find multiple development teams that work simultaneously, introducing new code or code changes on a daily basis, and sometimes several times a day
- Teams must examine the infrastructure and application logs as part of this investigation process -> Assisting DevOps with Augmented Search
- Augmented Search will display a layer which highlights critical events that occurred during the specified time period instead of going over thousands of search results
- A key factor to automating feedback is telemetry

What is Telemetry and Why Should I Care

- In the software development world, telemetry can offer insights on which features end users use most, detection of bugs and issues, and offering better visibility into performance without the need to solicit feedback directly from users

- The primary benefit of telemetry is the ability of an end user to monitor the state of an object or environment while physically far removed from it
- That telemetry data comes from application logs, infrastructure logs, metrics and events
- Telemetry is not Logging

Benefits of Telemetry

Telemetry enables you to answer questions such as:

- Are your customers using the features you expect? How are they engaging with your product?
- How frequently are users engaging with your app, and for what duration?
- What settings options to users select most? Do they prefer certain display types, input modalities, screen orientation, or other device configurations?
- What happens when crashes occur? Are crashes happening more frequently when certain features or functions are used? What's the context surrounding a crash?

Monitoring Tools that collect Telemetry

- Synthetic monitoring
  - Monitoring the Applications
- Alert Management
  - Automatic using Mail, Slack, Teams
- Deployment Automation
- Analytics
  - Ability to look for patterns in Logs

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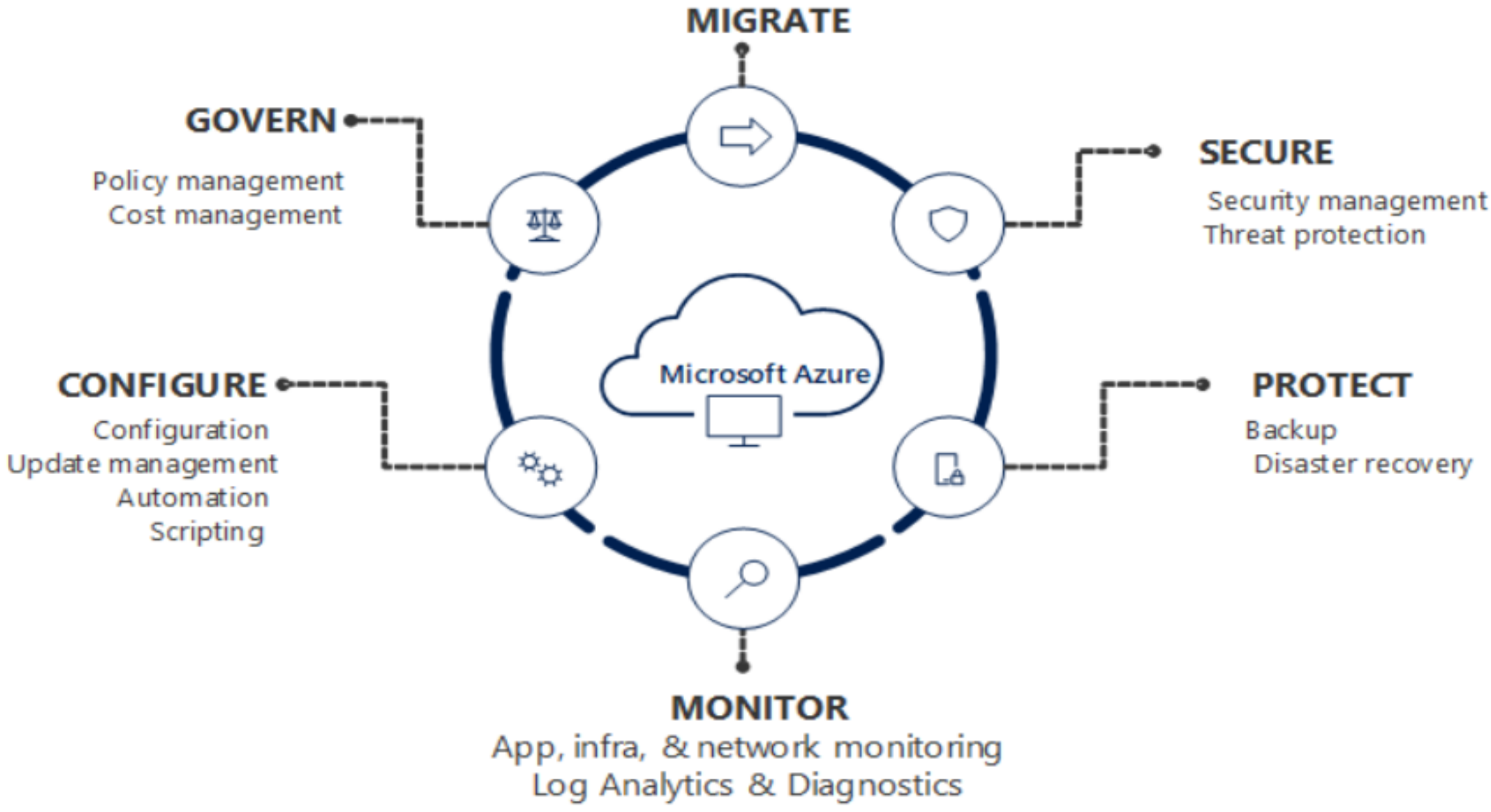
AZ-400.6 Module 2: Implement Process for Routing System Feedback to Development Teams


MIGRATE
GOVERN
Policy management
Cost management
SECURE
Security management
Threat protection
Microsoft Azure
CONFIGURE
Configuration
Update management
Automation
Scripting
PROTECT
Backup
Disaster recovery
MONITOR
App, infra, & network monitoring
Log Analytics & Diagnostics

Enable monitoring for all your applications

In order to gain observability across your entire environment, you need to enable monitoring on all your web applications and services

- Azure DevOps Projects
- Continuous monitoring in your DevOps release pipeline
- Status Monitor
  - https://status.azure.com/de-de/status
- Application Insight

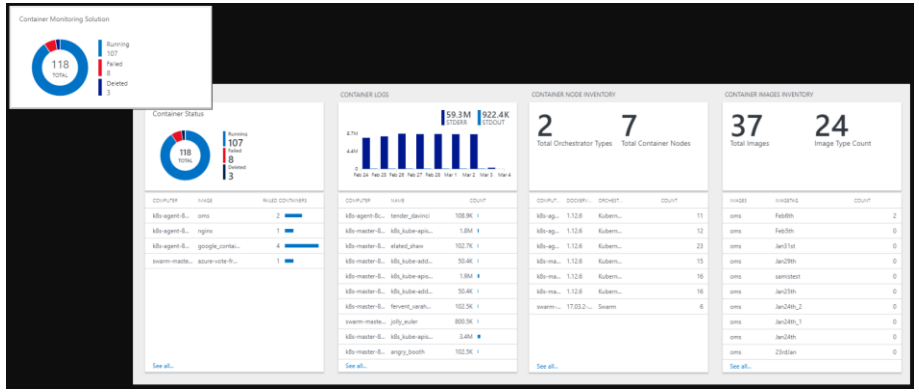
Enable monitoring for your entire infrastructure

- Make it easier to discover a potential root cause when something fails
- Azure Monitor helps you track the health and performance of your entire hybrid infrastructure
  - Azure Monitor for VMs
  - Azure Monitor for containers
- Use Azure Policy to enforce different rules over your resources

Azure Monitor

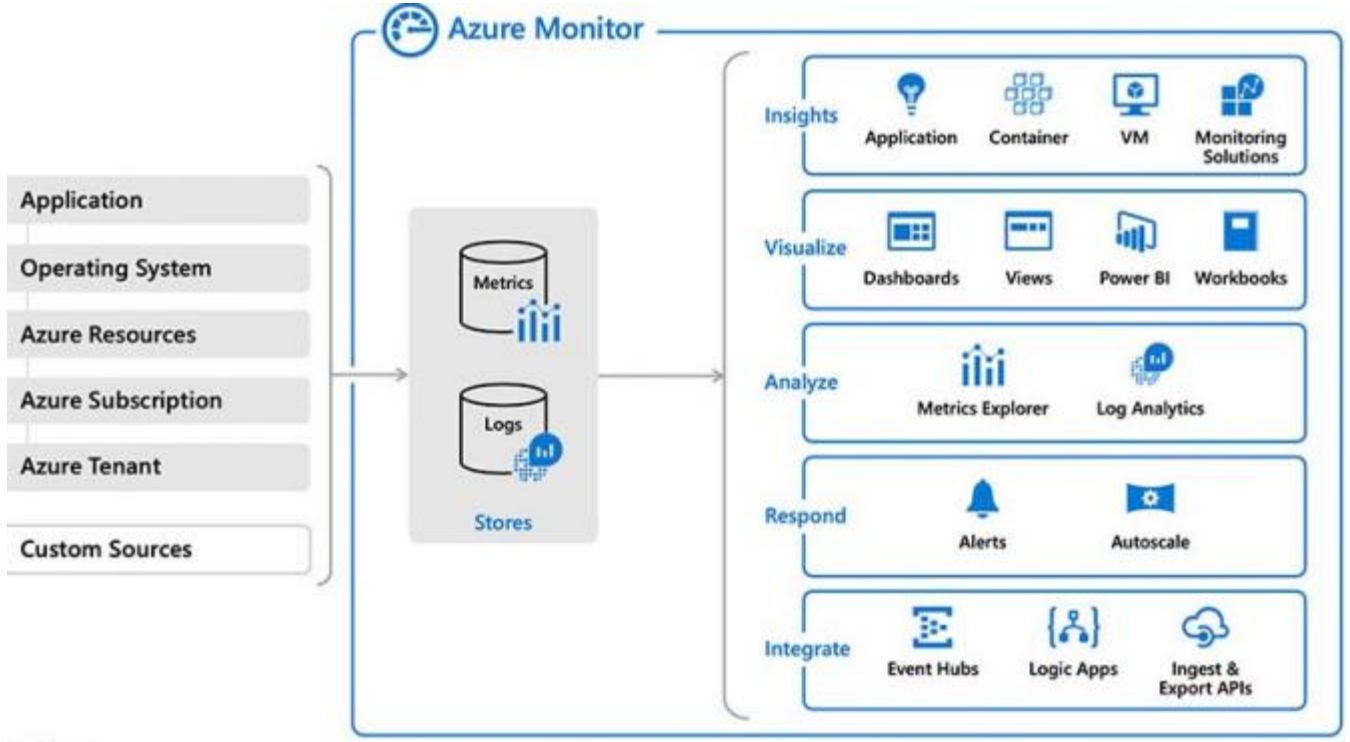
Use Azure Monitor for:

- Detect and diagnose issues across applications and dependencies with Application Insights.
- Correlate infrastructure issues with Azure Monitor for VMs and Azure Monitor for Containers.
- Drill into your monitoring data with Log Analytics for troubleshooting and deep diagnostics.
- Support operations at scale with smart alerts and automated actions.
- Create visualizations with Azure dashboards and workbooks.

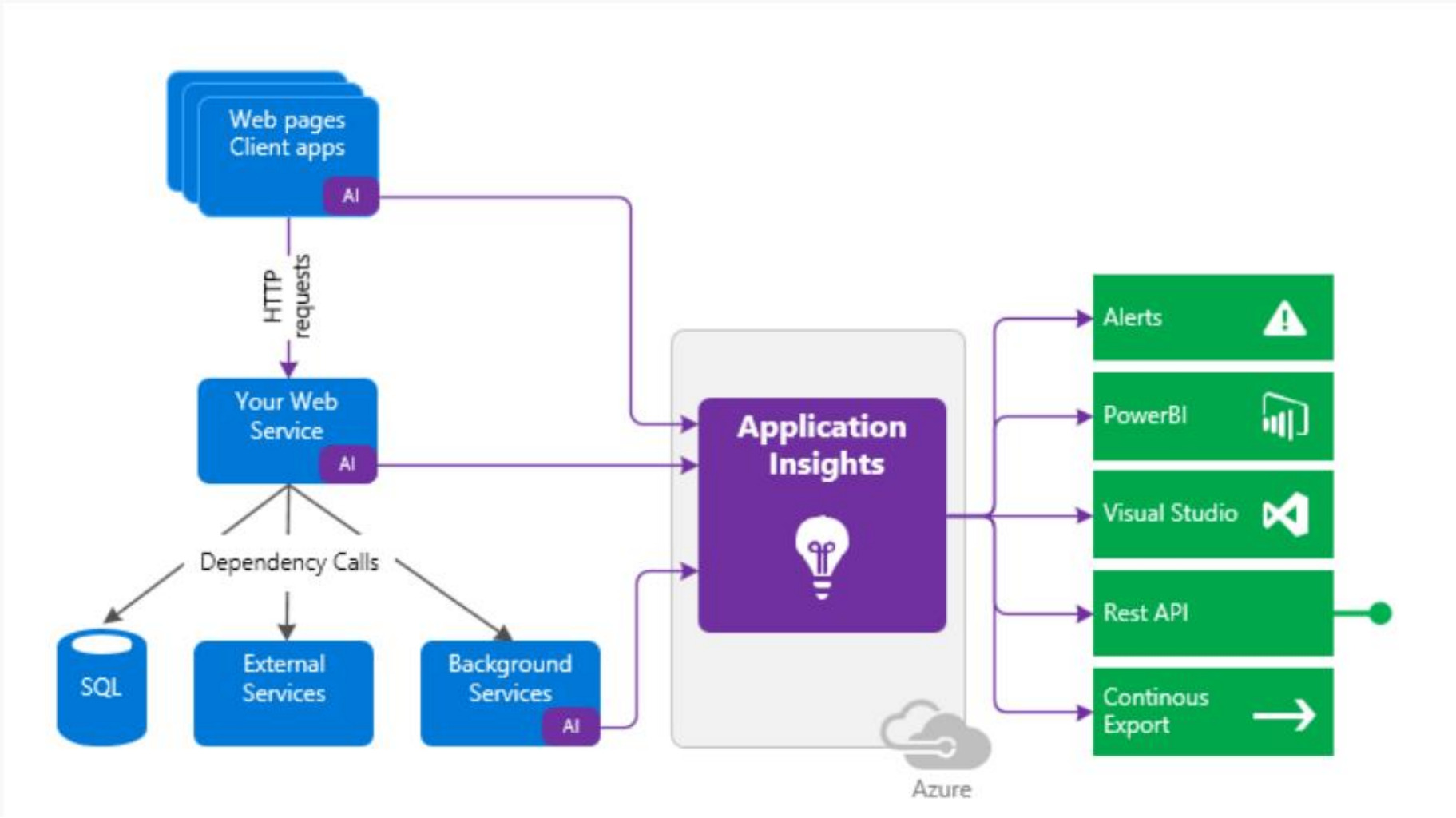


Azure Log Analytics

With Azure Monitor you can analyse data, set up alerts, get end-to-end views of your applications, and use machine learning-driven insights to quickly identify and resolve problems

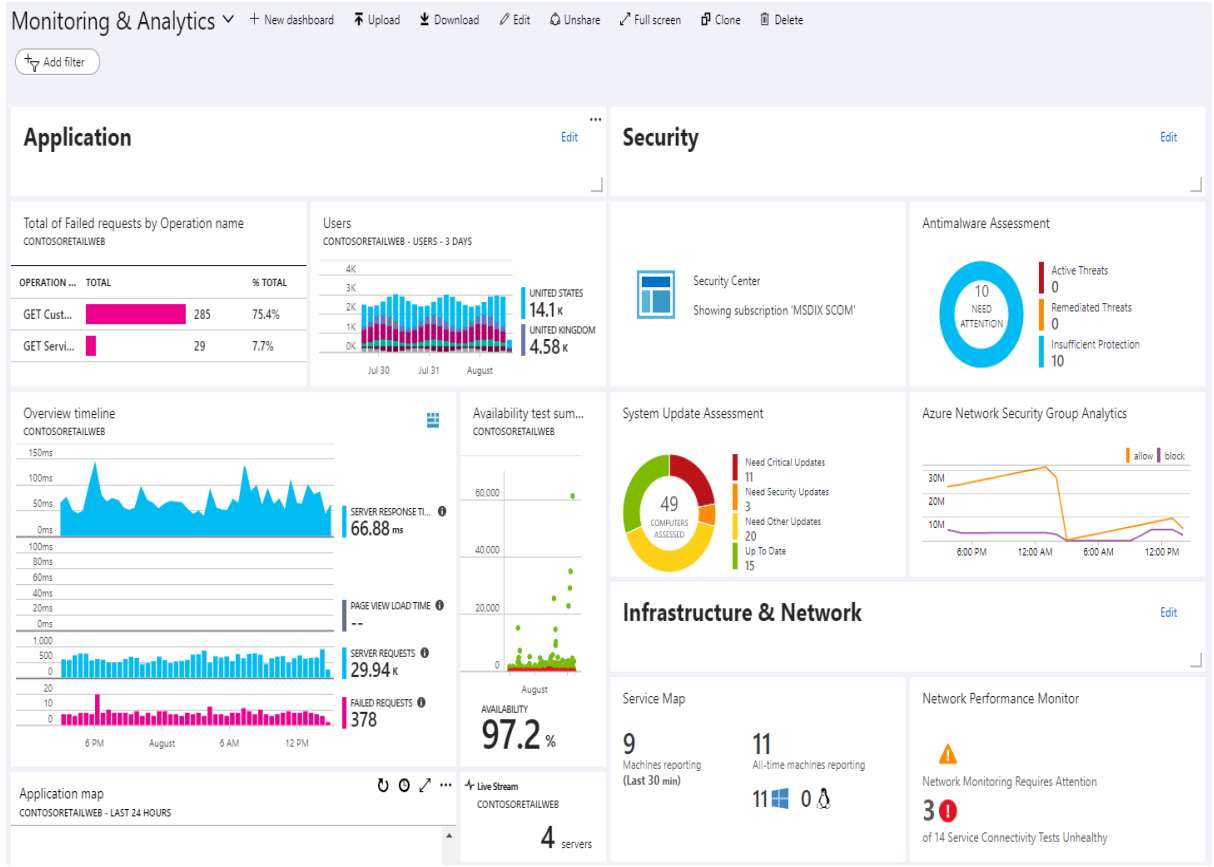


How Does Application Insights Work



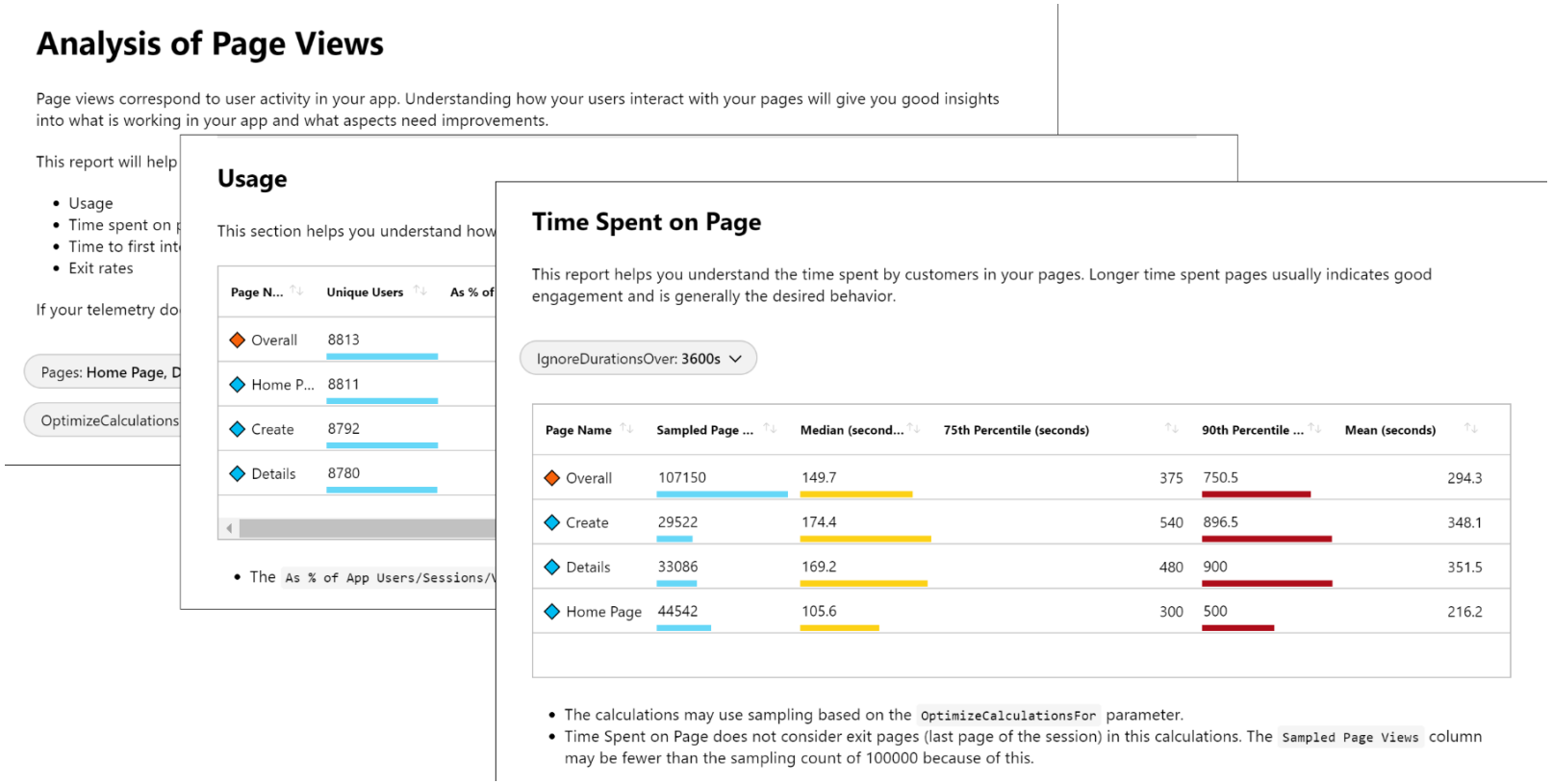
Azure Dashboards

- Dashboards are a focused and organized view of your cloud resources in the Azure portal
- The Azure portal provides a default dashboard as a starting point. You can edit the default dashboard. Create and customize additional dashboards



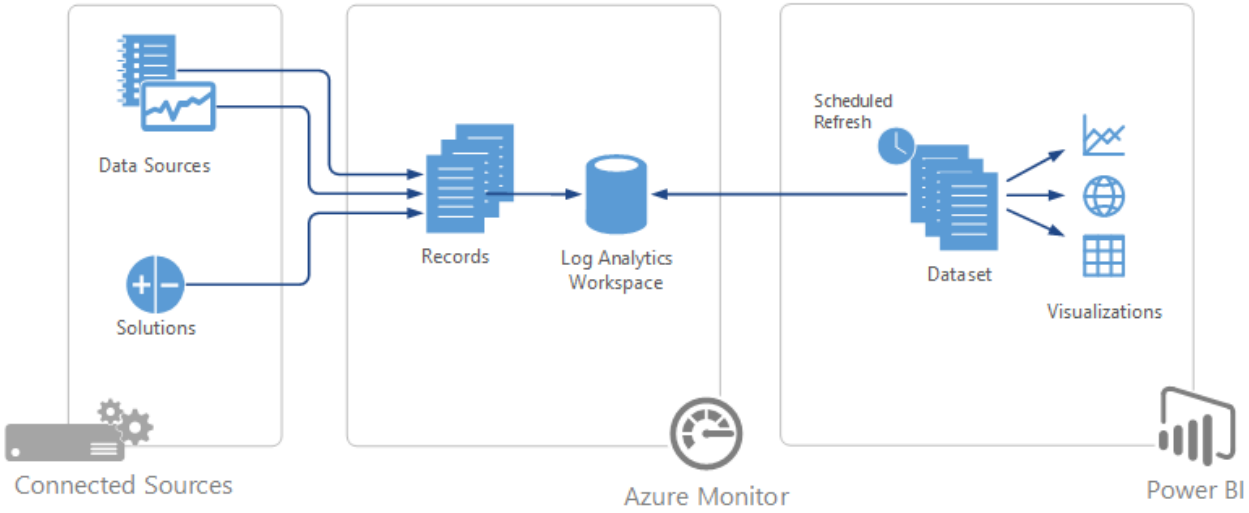
Workbooks

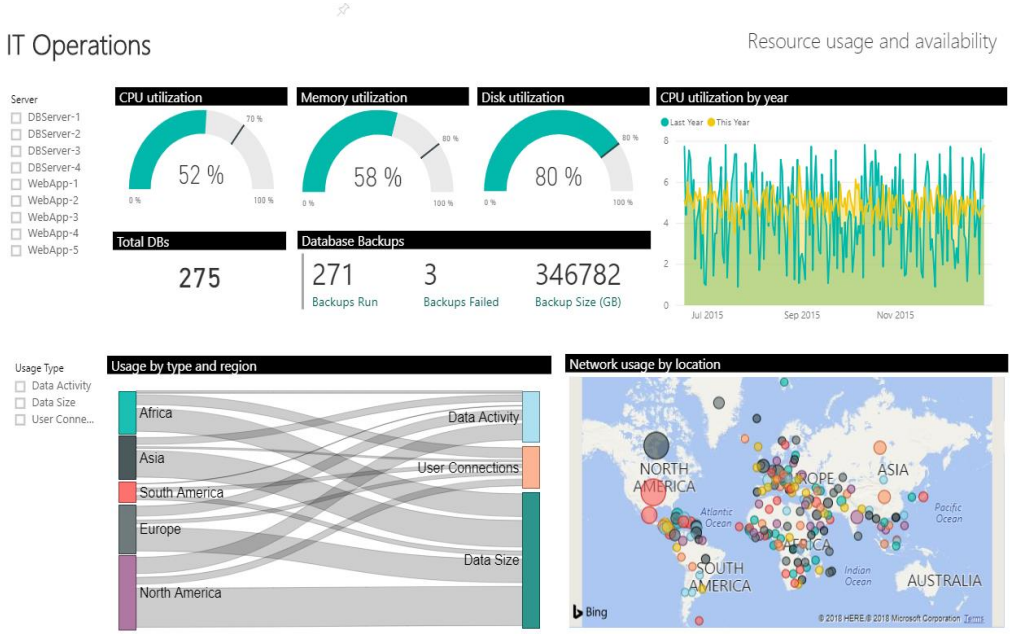
Workbooks combine text, log queries, metrics, and parameters into rich interactive reports



Power BI

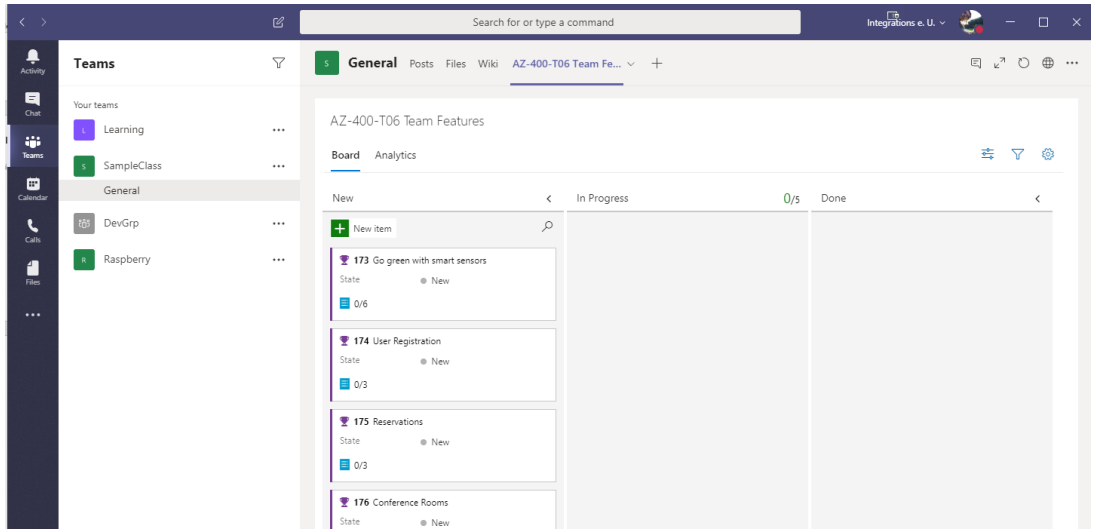
To import data from a Log Analytics workspace in Azure Monitor into Power BI, you create a dataset in Power BI based on a log query in Azure Monitor

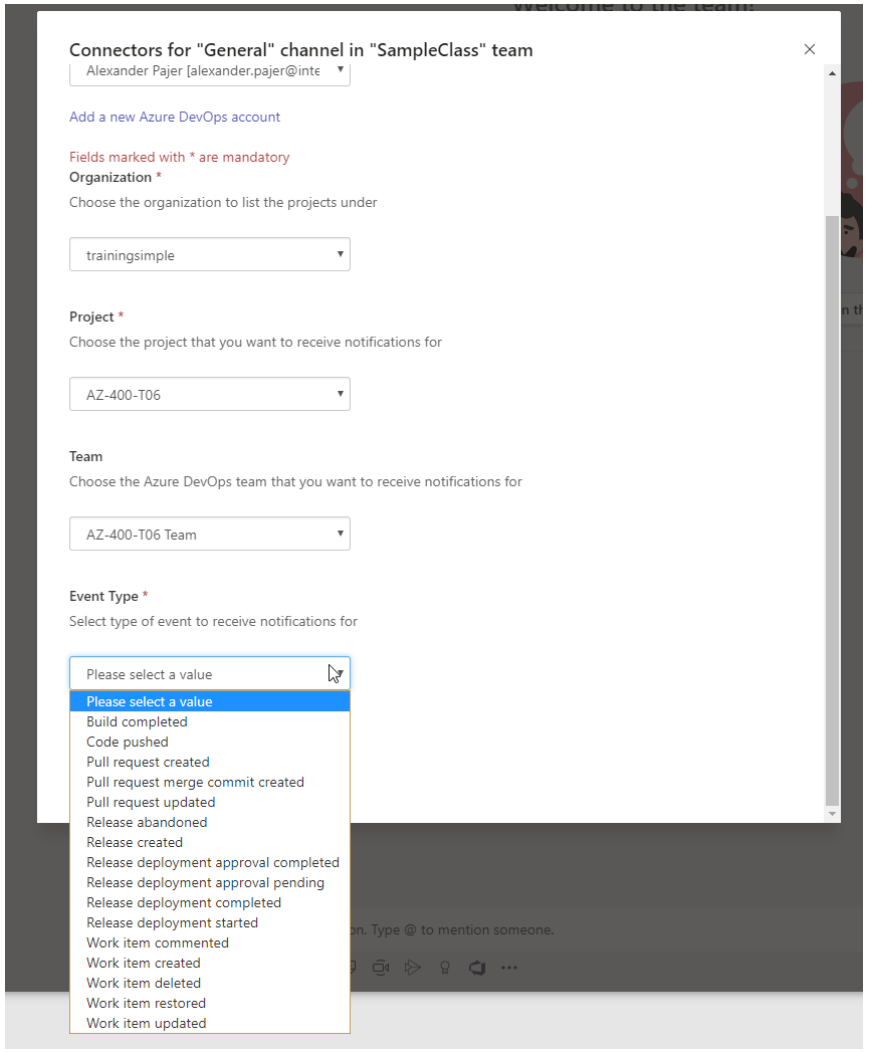




Microsoft Teams

- Microsoft Teams can be used as a Hub for modern Software Development
- DevOps can be integrated using:
  - Connectors
  - Tabs

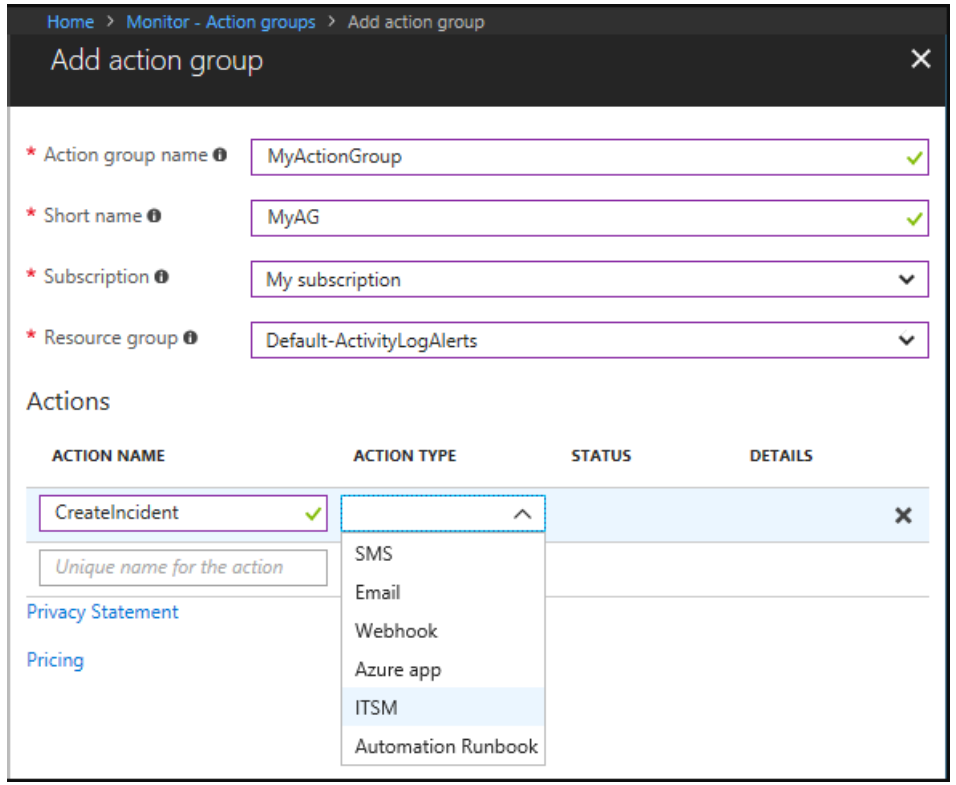




Integrate and Configure Ticketing Systems

Azure DevOps supports integration to existing Ticketings Systems such as

- Remedy ITSM
- ServiceNow



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AZ-400T06
Module 3: Implement and Manage Build Infrastructure

Site Reliability Engineering

- Site reliability engineering (SRE) empowers software developers to own the ongoing daily operation of their applications in production
- Bridge the gap between the development team that wants to ship things as fast as possible and the operations team that doesn’t want anything to blow up in production
- 50% caretaking - 50% coding

Site Reliability Engineering Responsibilities

- Proactively monitor and review application performance
- Handle on-call and emergency support
- Ensure software has good logging and diagnostics
- Create and maintain operational runbooks
- Help triage escalated support tickets
- Work on feature requests, defects and other development tasks
- Contribute to overall product roadmap

Smart detection notification

Application Insights automatically analyzes the performance of your web application and can warn you about potential problems like:

- Response time degradation
- Dependency duration degradation
- Slow performance pattern

Alerting

Alerts proactively notify you when important conditions are found in your monitoring data.

- Metric values
- Log search queries
- Activity Log events
- Health of the underlying Azure platform
- Tests for web site availability

Configure email notifications

Smart Detection notifications are enabled by default and sent to those who have owners, contributors and readers access to the Application Insights resource

Emails about Smart Detections performance anomalies are limited to one email per day per Application Insights resource