Digitale Innovationen und Developer Productivity

Minimierung von Reibungsverlusten im DevOps-Prozess durch Einsatz verschiedener Azure-basierter Entwicklerdienste.

Holger Sirtl

Cloud Solution Architect

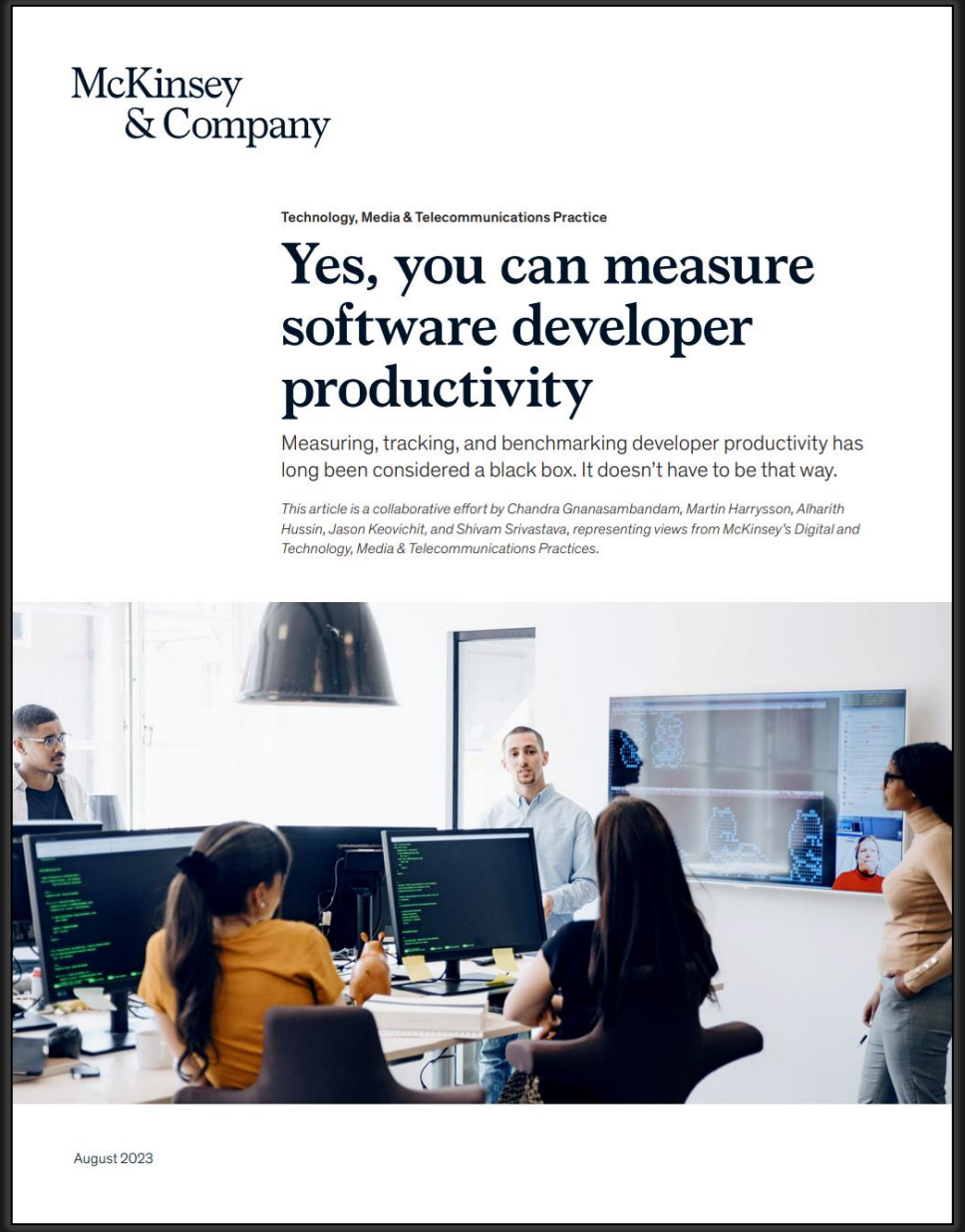
DevOps

"DevOps is the union of people, process, and products to enable continuous delivery of value to our end users."

"Find the part of your process in getting value to customers that slows you down or hurts the most. Make it incrementally better each sprint. Re-evaluate and improve the next most painful."

Donovan Brown
Ex-Partner Program Manager, Microsoft

Developer Velocity



Source: https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/yes-you-can-measure-software-developer-productivity#/

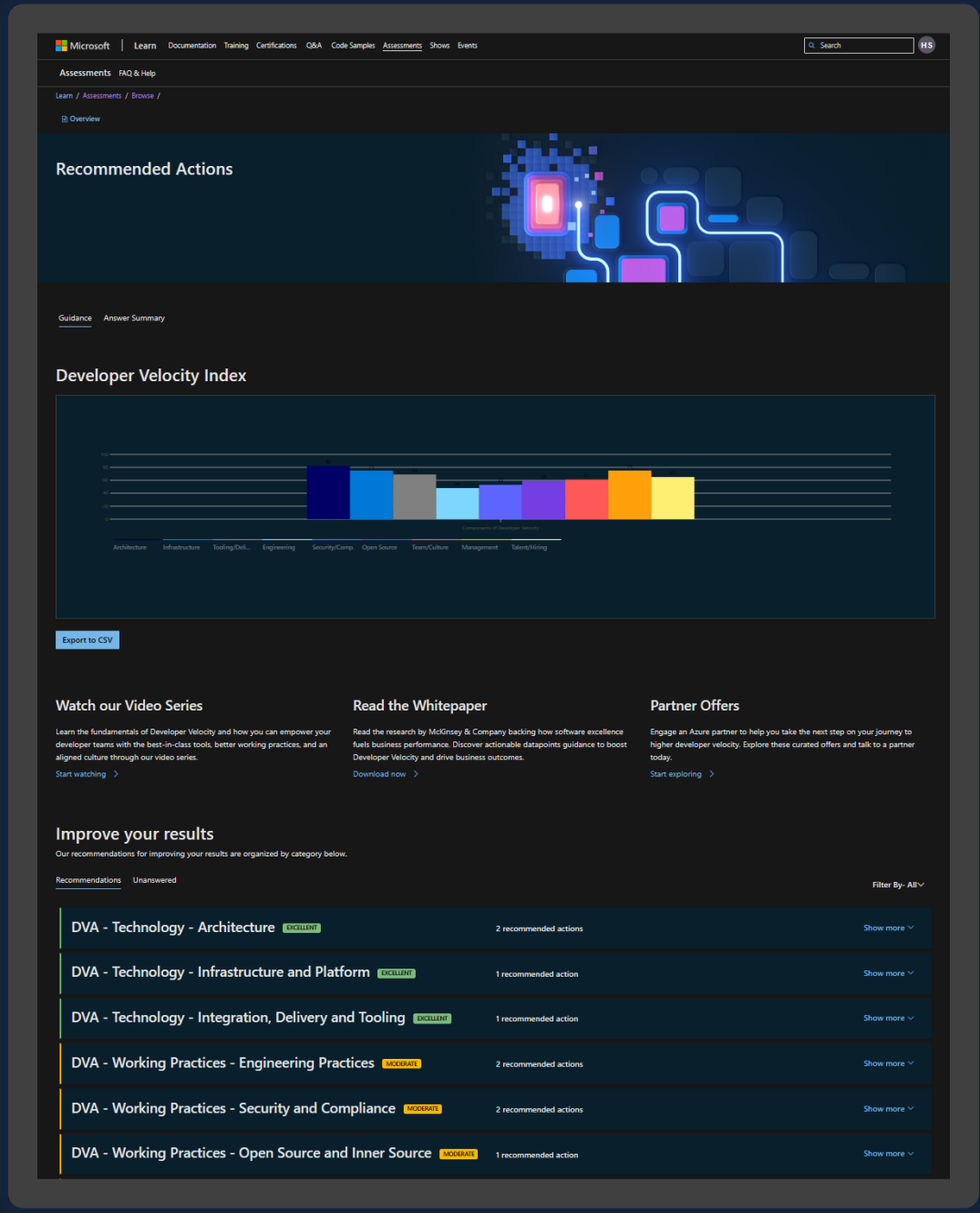
Developer Velocity Assessment (DVA)

Guidance on how to improve developer process performance

Assessment of different categories:

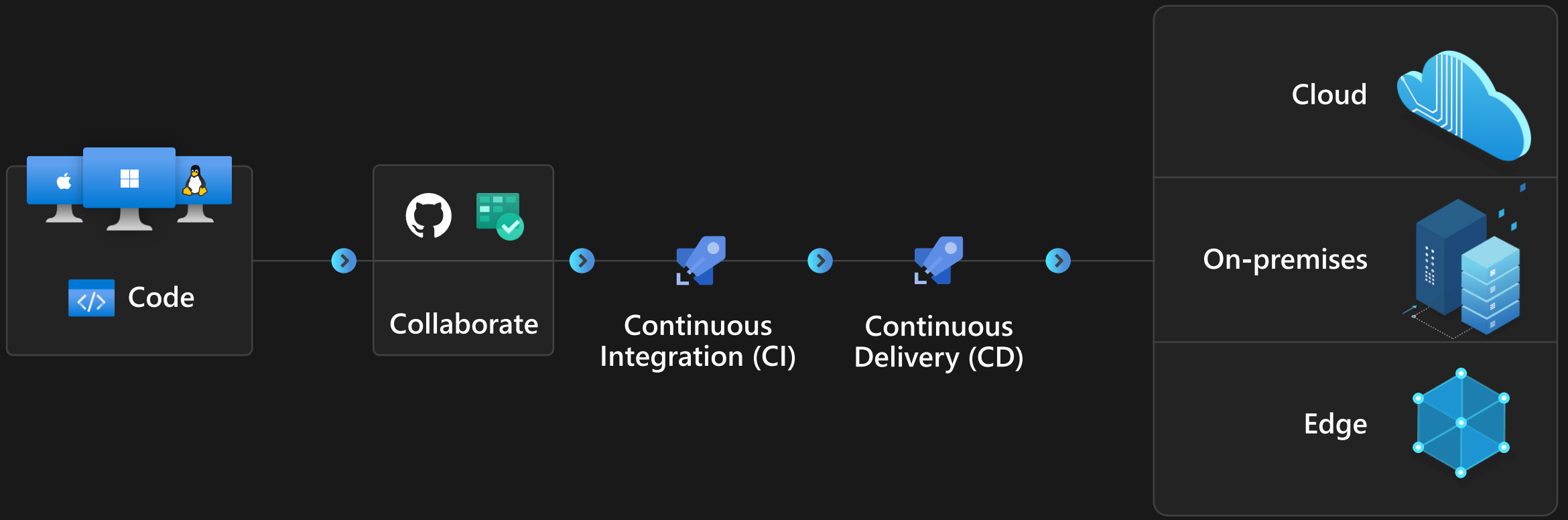
- Technology
  Architecture, Infrastructure and Platform Integration, Delivery and Tooling
- Working Practices
  Engineering Practices, Security and Compliance, Open Source and Inner Source
- Organizational Enablement
  Team and Culture, Management Practices, Talent Management

Source: https://learn.microsoft.com/en-us/assessments/e50f7040-f235-4360-9d1d-cf753e12fed1/



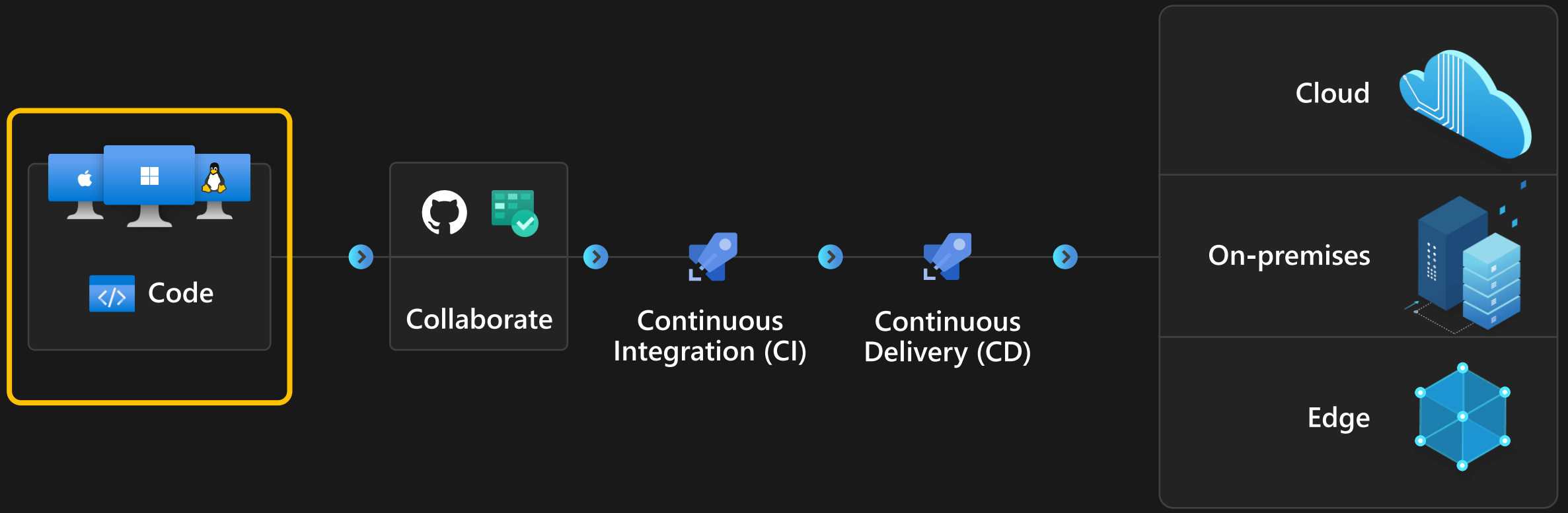
Developer Productivity = $\frac{\text{Value}}{\text{Time}}$

Code to Cloud



Code to Cloud

Development Environment



Development Environment

DVA - Organizational Enablement - Team and Culture

What's the time frame between a developer joining the organization and them having all the hardware and software tools to start writing code?

- ◯ more than a month
- ◯ less than a month
- ◯ less than a week
- ◯ less than 3 days
- ◯ less than 24 hours

GitHub Codespaces

Blazing fast container-based cloud developer environments

Accessible from anywhere

Write code, build your applications, run test suites, debug issues, and deploy all in your browser

Use web-based Visual Studio Code or your favorite IDE

Customizable

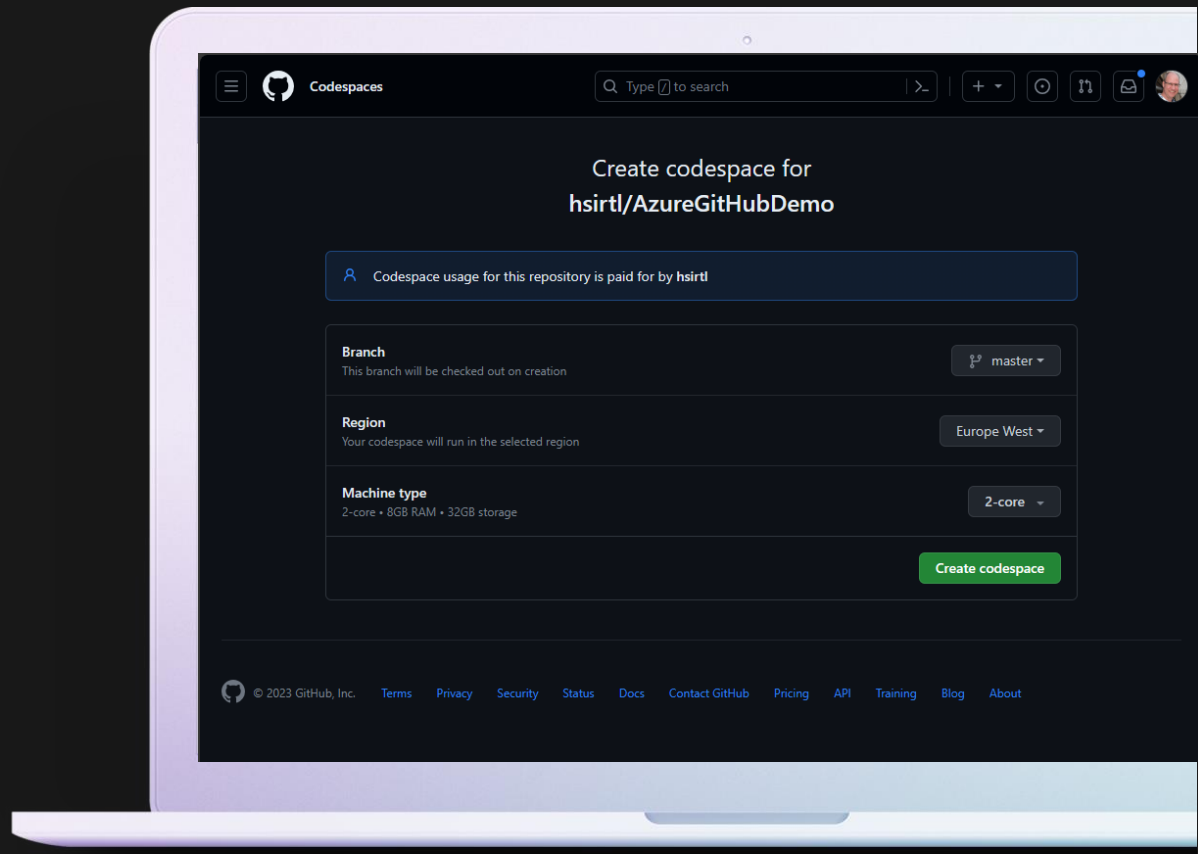
Customize with extensions, settings, scripts, and features

Customize further using Docker and Docker Compose

Integrated into GitHub

Standardize developer environments within your organization

Distribute developer environment configuration as part of your demos



Microsoft Dev Box

Secure and managed cloud workstations built for developer productivity

Ready-to-code:

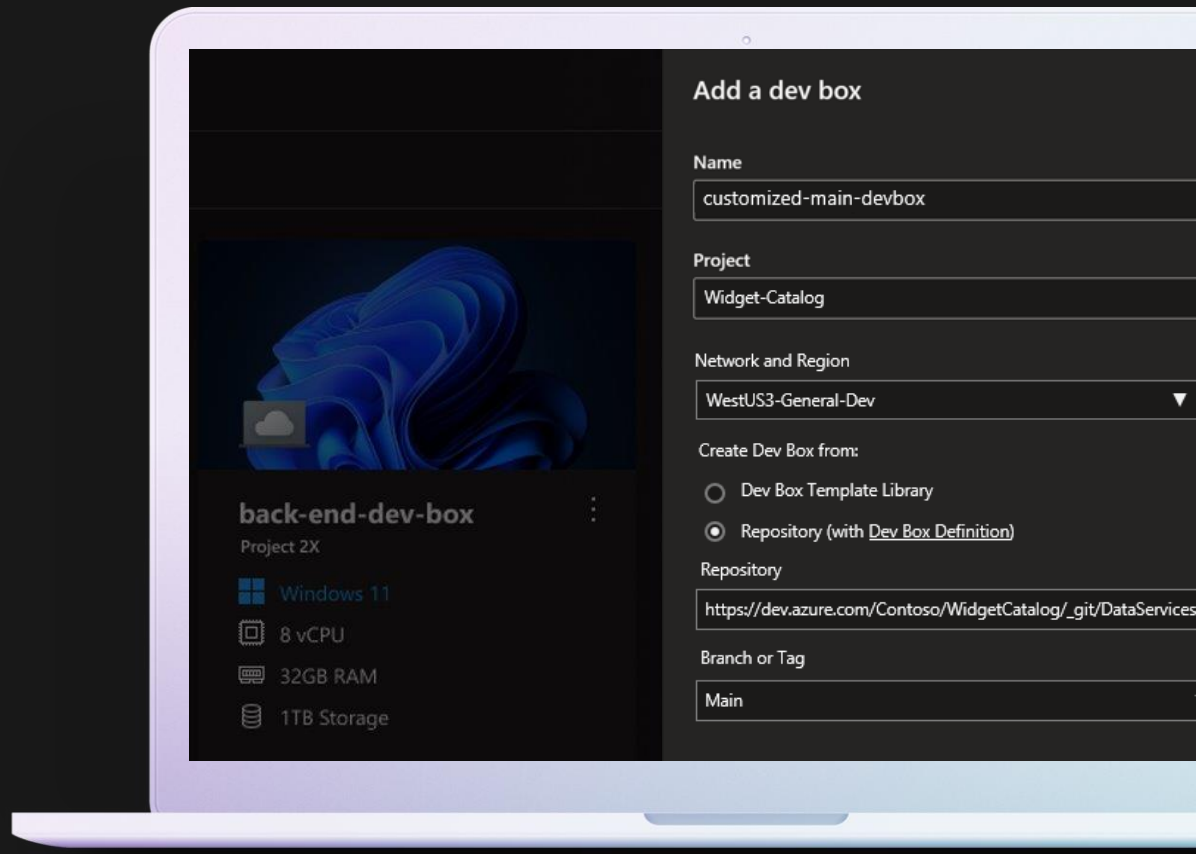
Self-service, on-demand access to task-specific workstations with scalable compute, available instantly.

Project-based:

Preconfigured workstations built by dev teams with the right tools and resources for their projects

Managed and secure:

Centralized governance based on organizational standards for security, compliance, and cost controls.

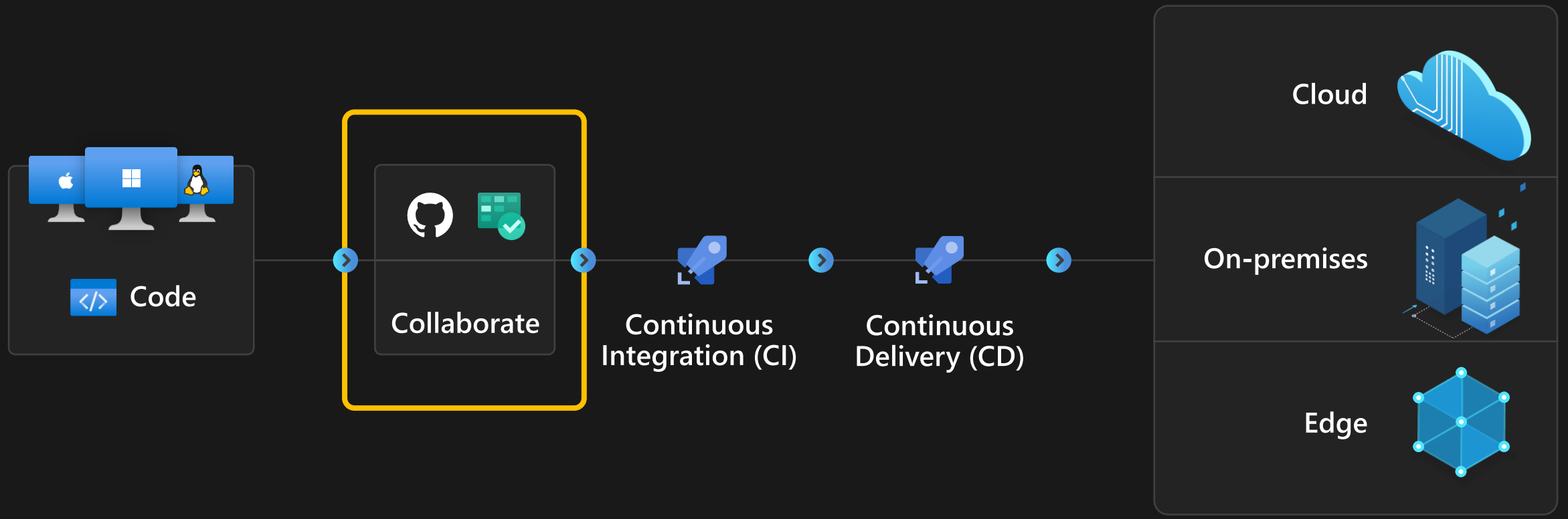


GitHub Codespaces vs. Microsoft Dev Box

	Microsoft Dev Box Full dev workstations in the cloud optimized for enterprise-grade dev productivity and security	GitHub Codespaces Cloud-based dev environments for fast, on-demand coding on any device
Operating system	Windows	Linux
SCM Support	Any version control system	Repos on GitHub
Tool support	Any Windows-based tool	Visual Studio Code
Target workloads	Any workload Including: Desktop, IoT, mobile, games, & more (Windows or cross-plat)	Cloud native apps Including: web apps, APIs, backends
IT management	Microsoft Intune, Microsoft Azure	GitHub.com

Code to Cloud

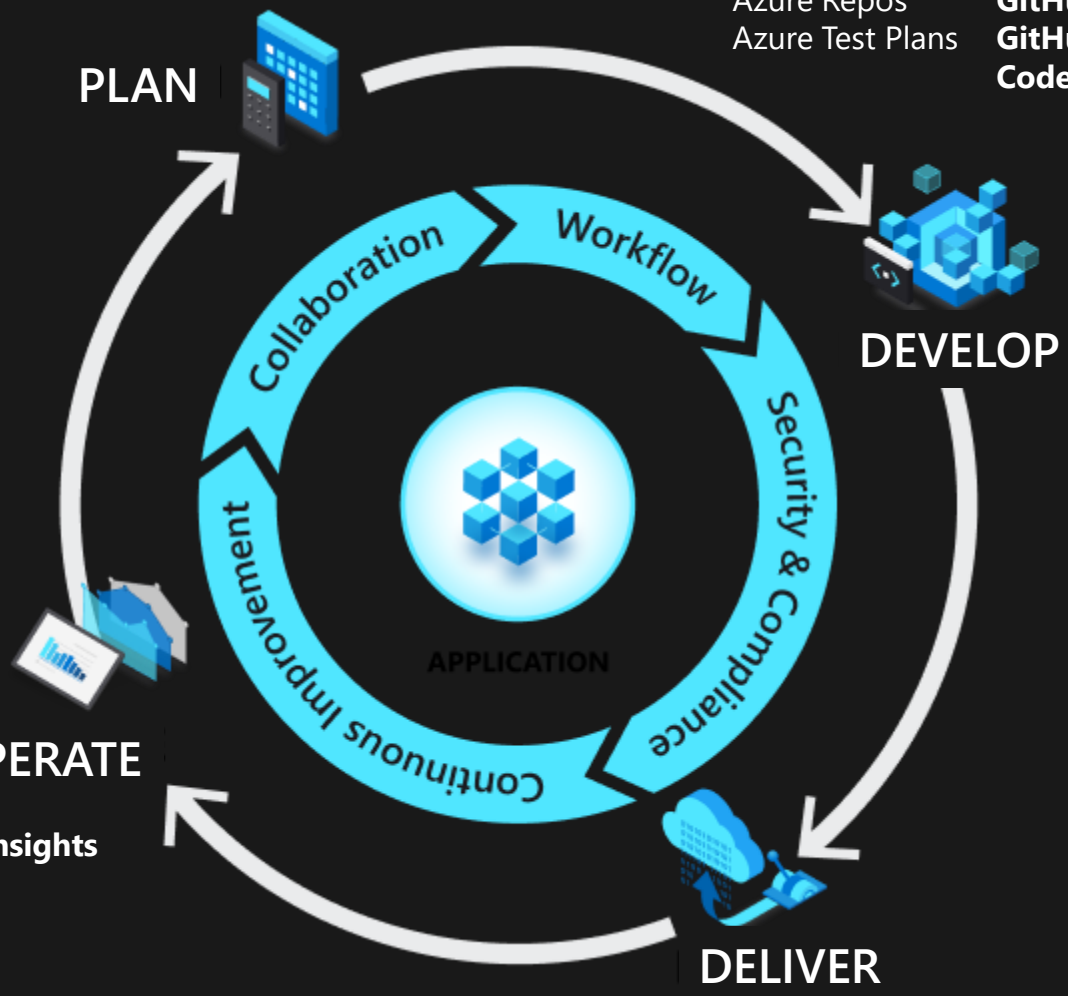
Collaboration in your development process



GitHub and Azure DevOps

Azure Boards **GitHub Planning**

Visual Studio **GitHub**
VS Code **GitHub Advanced Security**
Azure Repos **GitHub Discussions**
Azure Test Plans **GitHub Mobile**
Codespaces

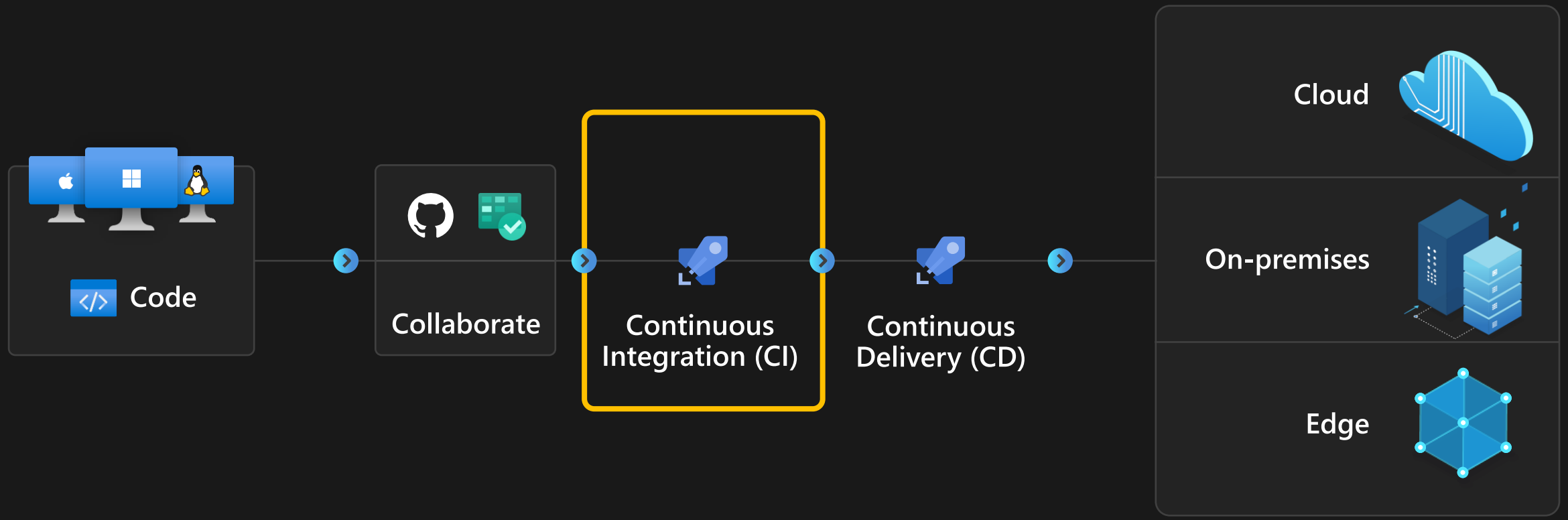


App Insights **GitHub Insights**
App Center
Azure Monitor
Defender for Cloud
Network Watcher
Azure Advisor
Azure Sentinel

Azure Pipelines **GitHub Actions**
Azure Artifacts **GitHub Packages**
GitHub Advanced Security

Code to Cloud

Quality Assurance and Continuous Integration



Demand for tools to efficiently ensure app quality

47%

of organizations cite testing as the most likely reason for delays in development

40%

of testers are dissatisfied with their current processes, and 74% have adopted new tools in the last year

Testing

DVA - Technology - Integration, Delivery and Tooling

Which of the following testing procedures are carried out regularly and in a fully automated way?

consider the most common practices in your organization for production software select all that apply

- [ ] Unit testing
- [ ] Integration Testing
- [ ] Acceptance Testing
- [ ] Performance Testing
- [ ] Chaos Testing
- [ ] None of the above

Azure Load Testing

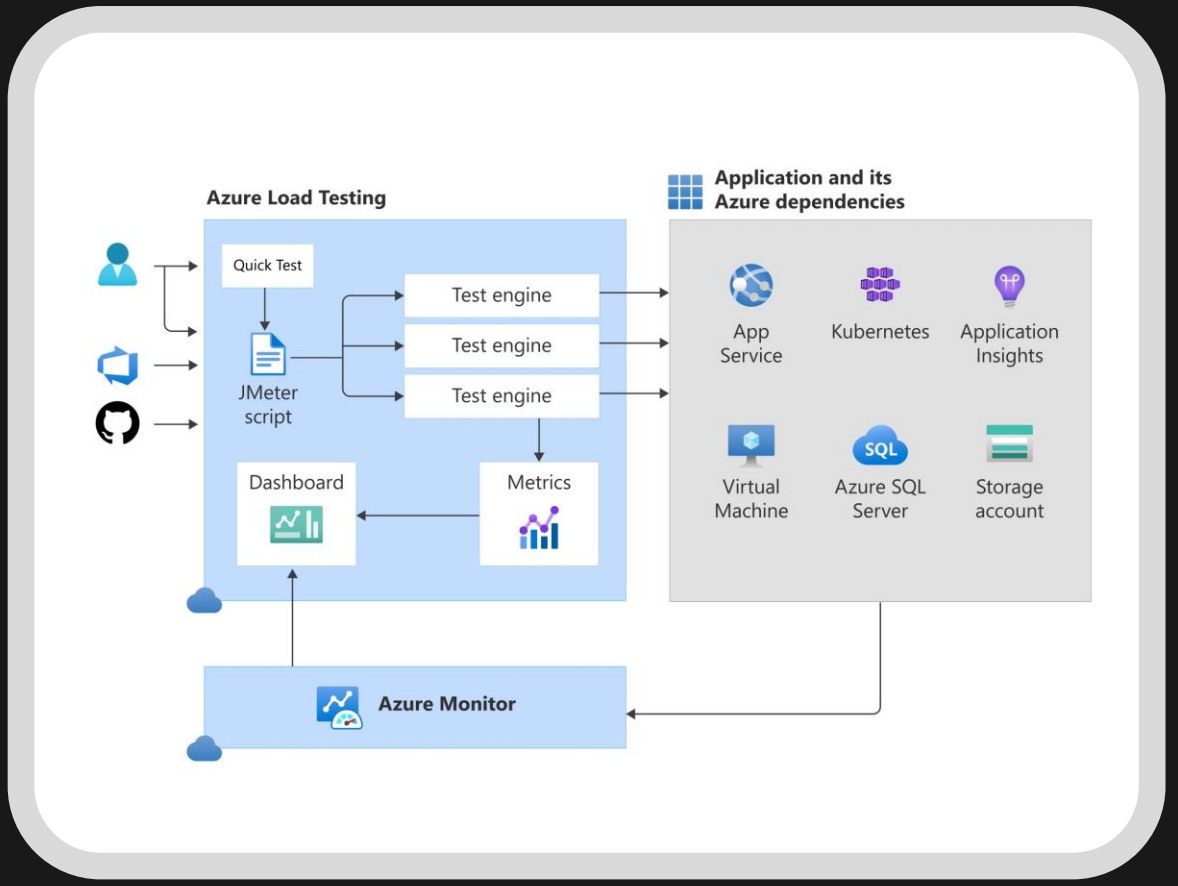
Generate high-scale load without the need for complex infrastructure

Create tests quickly without prior knowledge of load testing tools

Run existing test scripts at scale with high-fidelity JMeter support

Eliminate infrastructure needs with a fully managed service

Gain actionable insights into performance, scalability, and capacity and support continuous improvement through automated CI/CD workflows.



Azure Chaos Studio

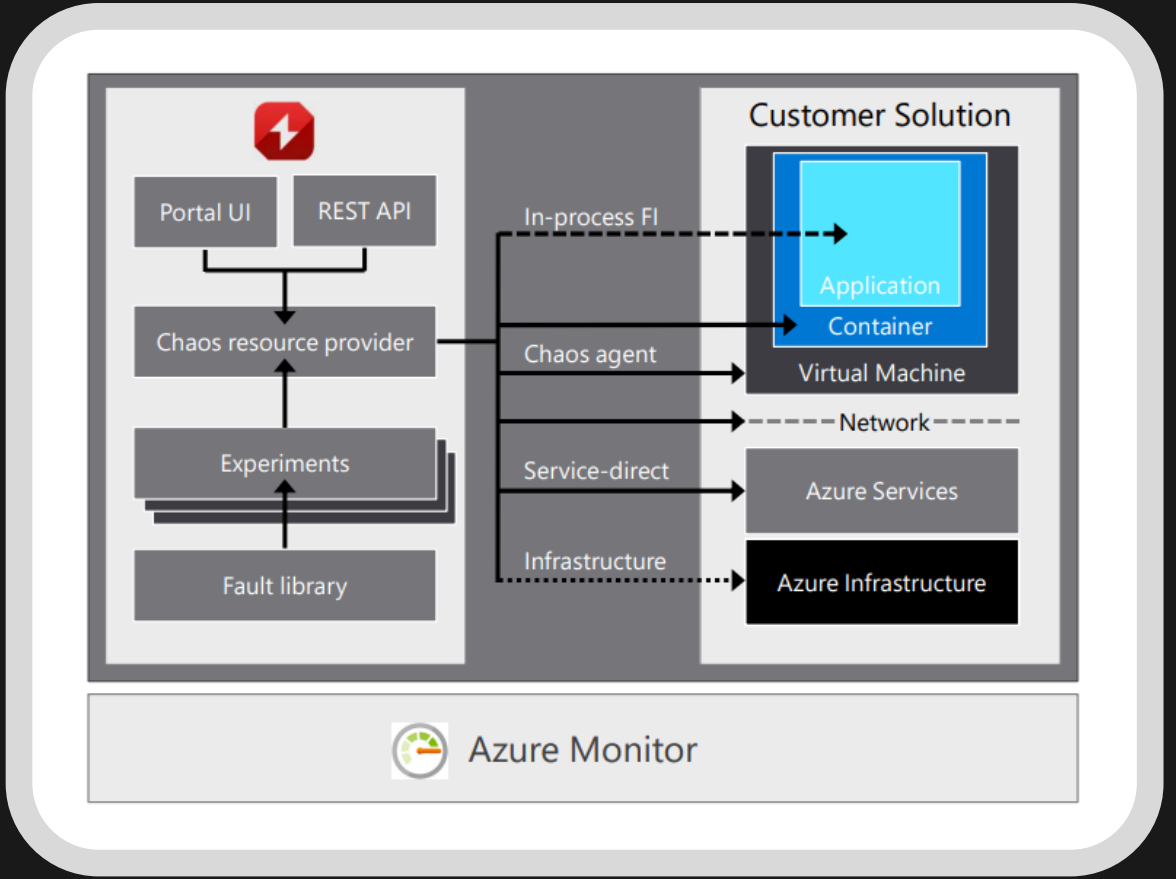
Measure, understand, improve, and maintain product resilience

Fully managed
service for building resilience into your Azure services

Azure Monitor integration
Impact analysis in observability tools with Azure Monitor

Expanding library of faults
for common Azure service issues

Simulation of real-world scenarios
using orchestrated parallel and sequential fault injection



Tools and services for validating app quality and resilience

Azure Load Testing

Generate synthetic loads to identify app performance issues at high scale

Azure Chaos Studio

Stress-test apps against simple and complex failure scenarios

Playwright

Open-source tools for end-to-end cross-browser testing

Azure Test Plans

Support manual and exploratory testing with testing tools and toolkits

Azure Dev/Test Labs

Create test environments from reusable templates and artifacts

Azure Dev/Test Pricing

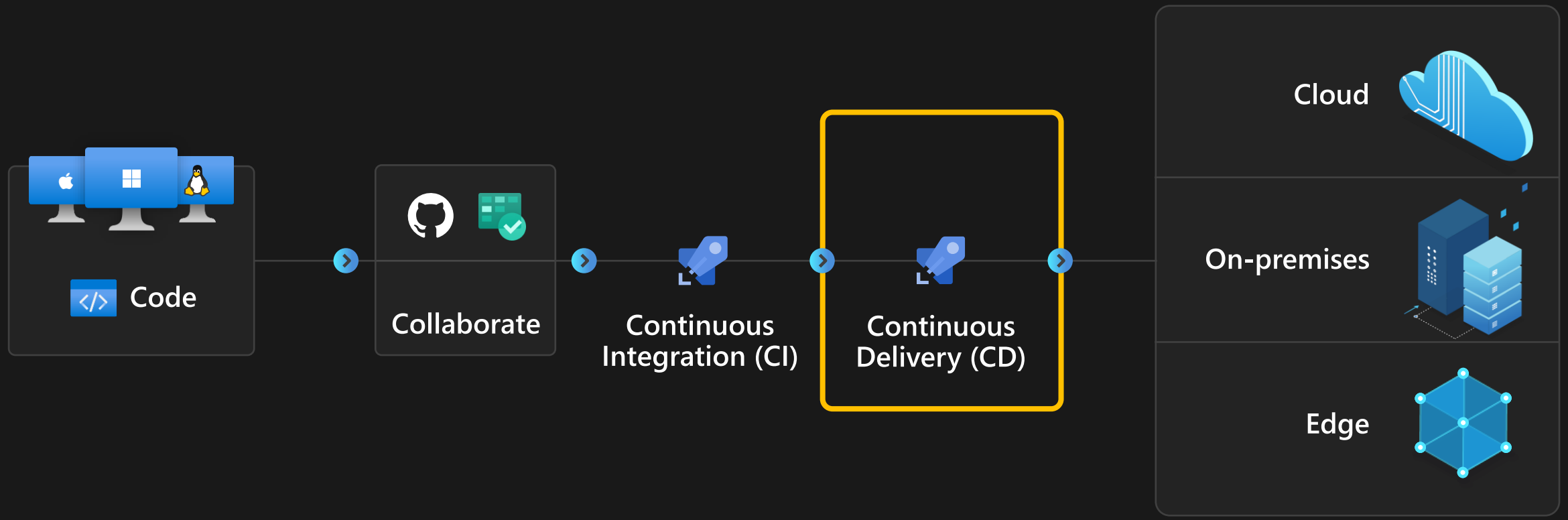
Discounted rates on Azure services that significantly reduce the costs of ongoing dev/test workloads

Well-architected framework

Assessments and architectural guidance to help customers get started quickly, easily, and efficiently

Code to Cloud

Readiness to deliver to any target environment



Deployment Environments

DVA - Technology - Infrastructure and Platform

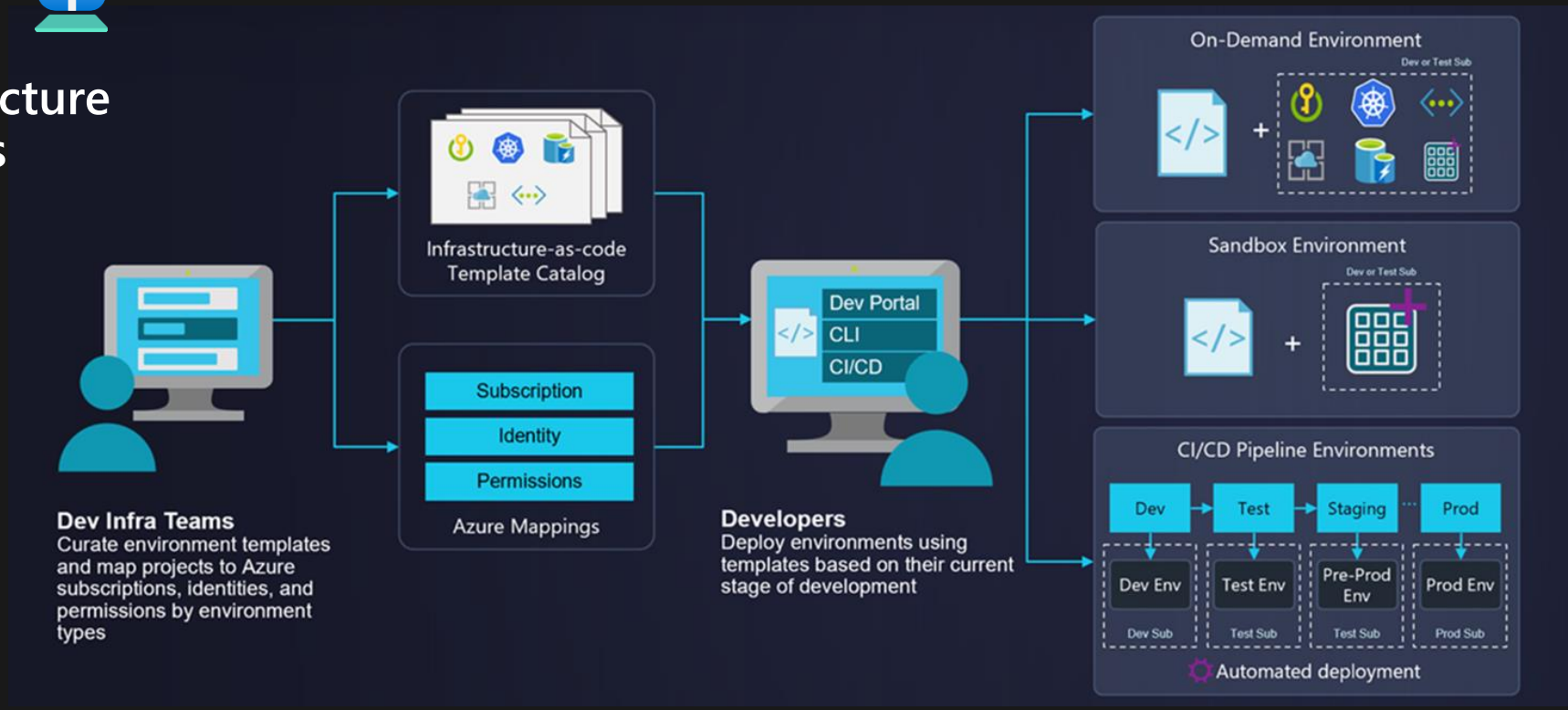
In general, how often do teams have easy access to fully standardized environments that mirror production?

- ◯ Almost never
- ◯ Occasionally
- ◯ Sometimes
- ◯ Often
- ◯ Almost always

Azure Deployment Environments

Quickly spin up app infrastructure with project-based templates

- Self-service access
- Automated deployment
- Infrastructure templates
- Cost management
- Built-in governance



Azure Configuration

DVA - Technology - Integration, Delivery and Tooling

Considering the most common practices within your organization, how do you roll out new features to end users?

if no option matches your exact situation, choose the one that most closely aligns to your experience

- ◯ We deploy to all end users when the appropriate manager approves
- ◯ We run a full test suite in a production-realistic environment and then deploy to all end users
- ◯ We use progressive deployment with feature flags or exposure control and monitor metrics to determine whether to continue rollout
- ◯ All changes gets deployed continuously but we use feature flags to control which users have access to new features in production
- ◯ We roll out new features to a subset of users for experimentation or A/B testing using feature flags and leverage monitoring data to inform next steps

Azure App Configuration

Fully managed service for centrally managing app settings and feature flags

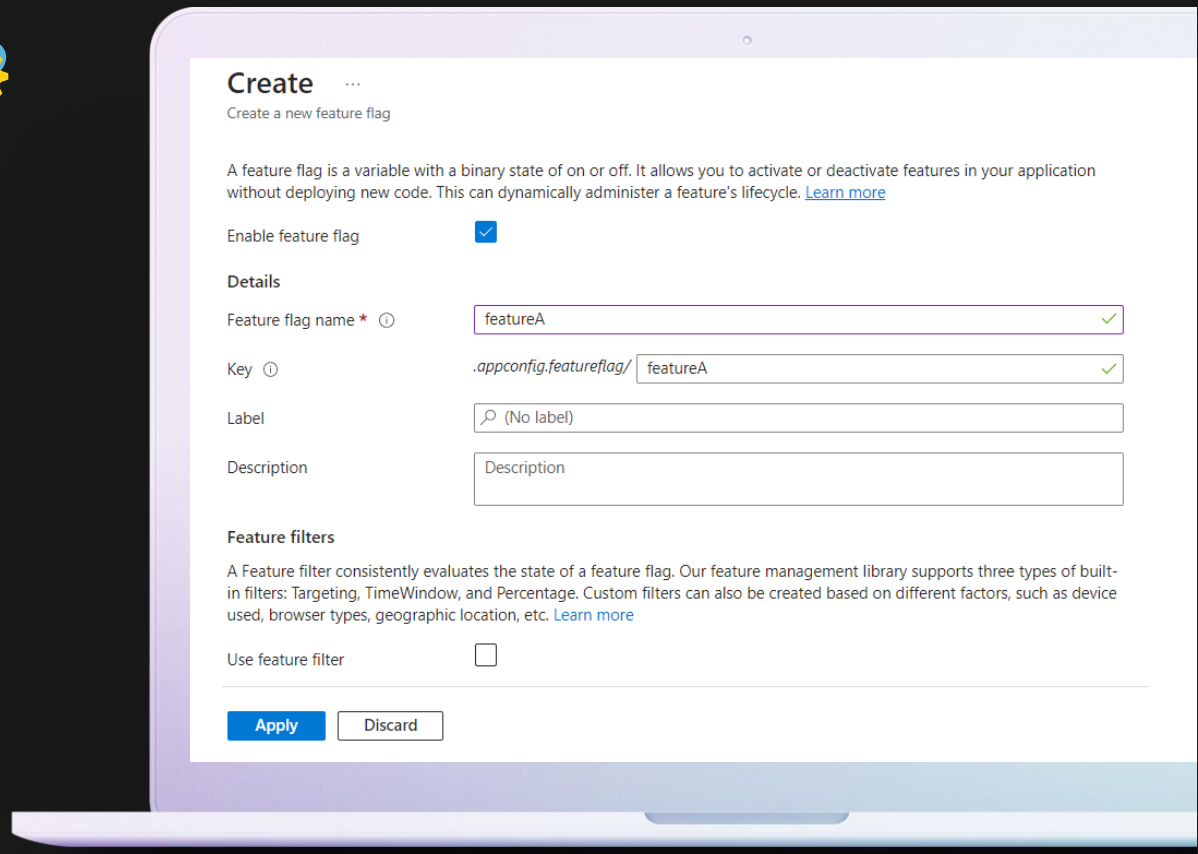
Flexible key representations and mappings

Point-in-time replay of settings

Feature flag management
With dedicated UI

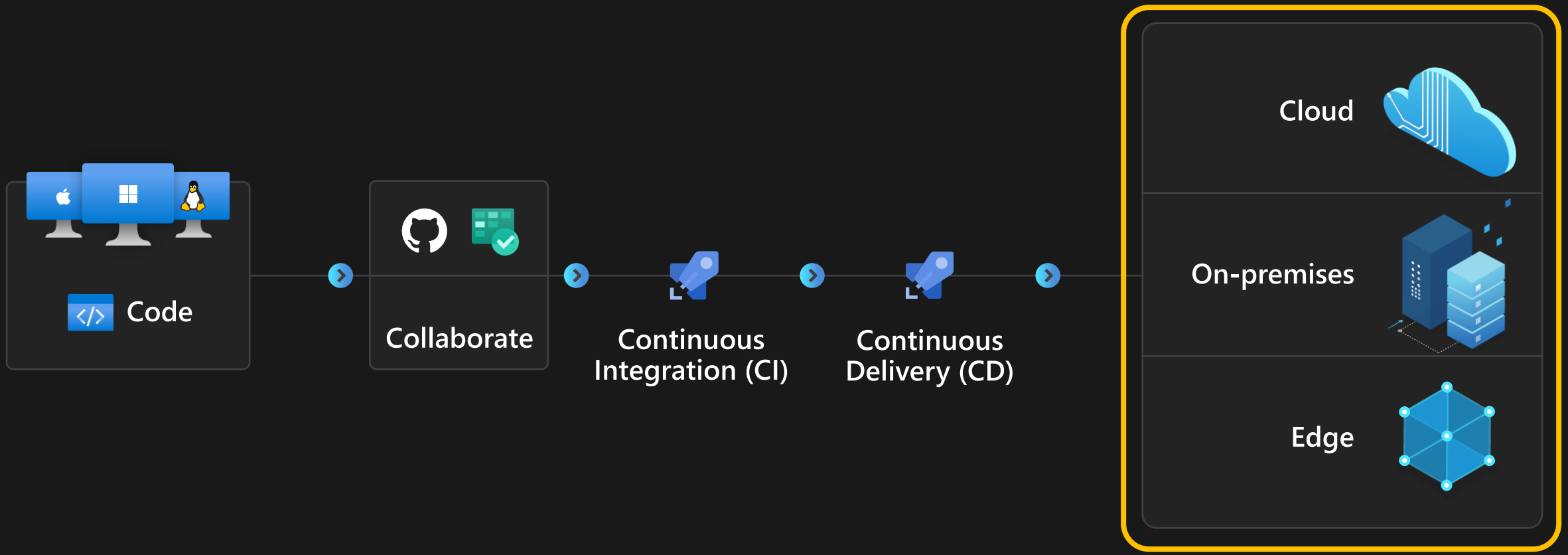
Configuration comparison
Comparison of two sets of configurations on custom-defined dimensions

Enhanced security
through Azure-managed identities and encryption of sensitive information at rest and in transit



Code to Cloud

Operate apps in any target environment



Azure App Insights

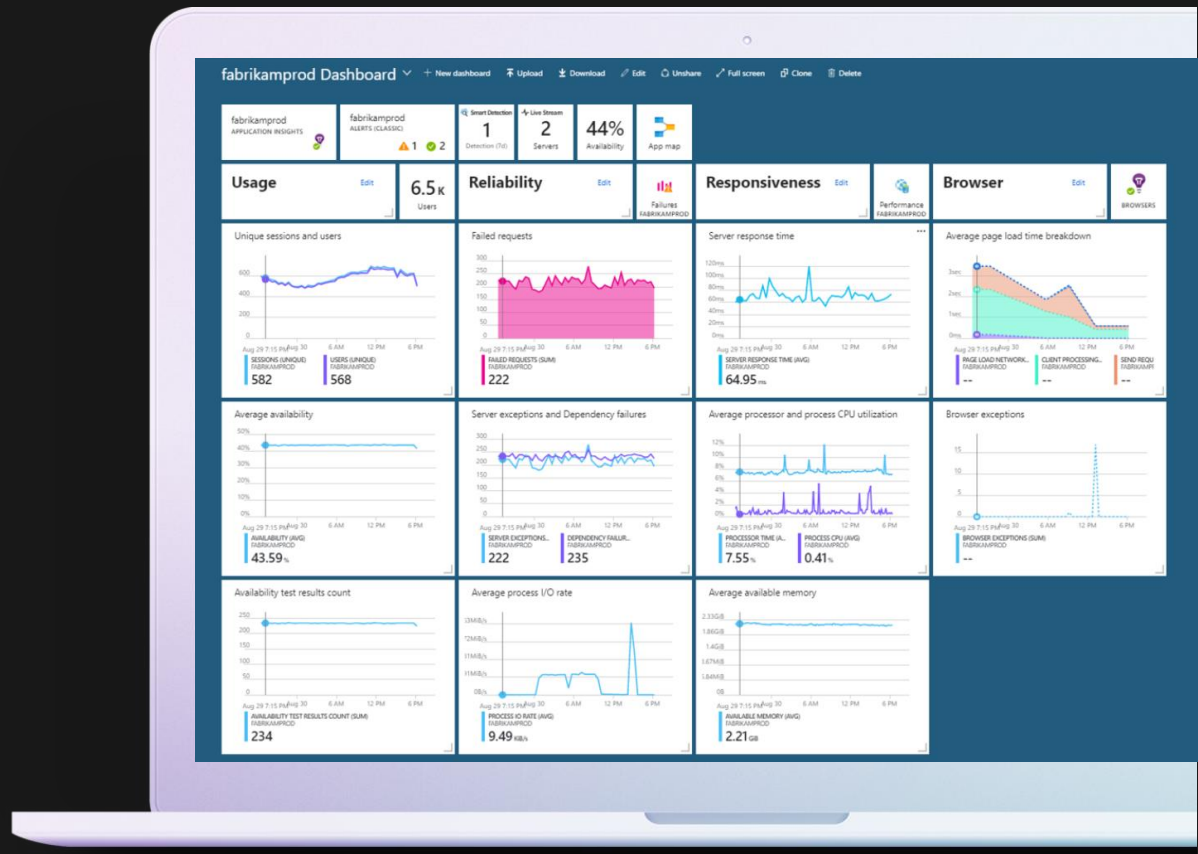
Application performance monitoring (APM) for web and desktop applications

Monitors and alerts on many aspects
Availability
Performance
Failures
Usage

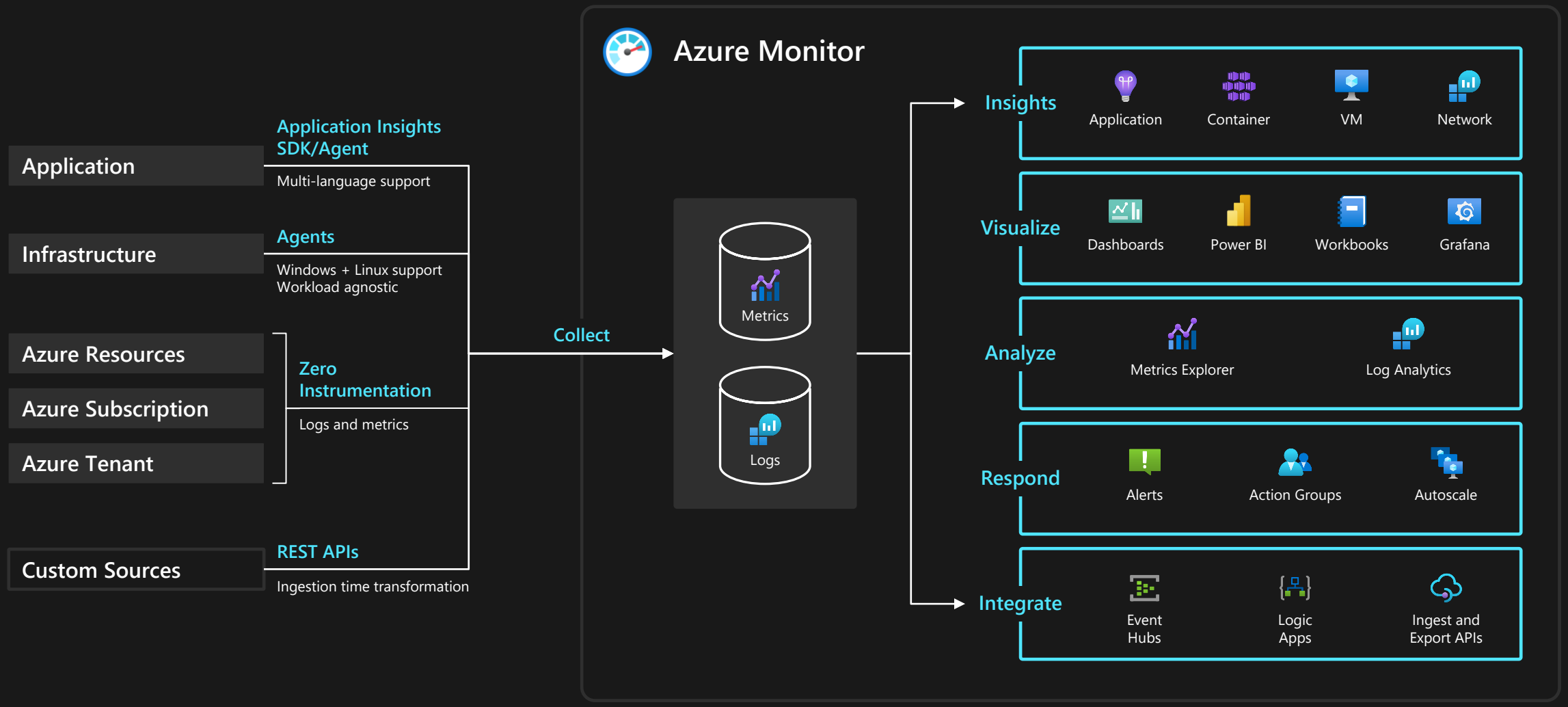
Ping and multi-step tests

Integration with Azure Monitor and Log Analytics

Application Map with dependency graphs



Azure Monitor



Core observability scenarios

- Detect and diagnose issues across apps and dependencies with application insights
- Correlate issues at infra level with insights for VMs, containers, network, etc.
- Operationalize at scale with smart alerts and automated actions
- Drill down with Log Analytics for troubleshooting and deeper diagnostics
- Create visualizations with Azure dashboards, workbooks, and Grafana

Monitoring Services in Azure

Application Insights

Monitor a web or desktop application

App Center

Monitor a mobile application

Network Watcher

Inspect network traffic to diagnose problems

Azure Monitor

Get an overview of all monitoring data

Defender for Cloud

Monitor and prevent security issues

Azure Advisor

Get an overview of actionable recommendations

Azure Sentinel

Investigate and respond to security issues

Application-level

Subscription-level

Well-architected framework

Assessments and architectural guidance to help customers get started quickly, easily, and efficiently

Our vision

Setup a complete, secure engineering system in seconds, contribute from any device, to efficiently build for any platform, collaborate with anyone with confidence, and scale without limit.

Code to Cloud
Summary

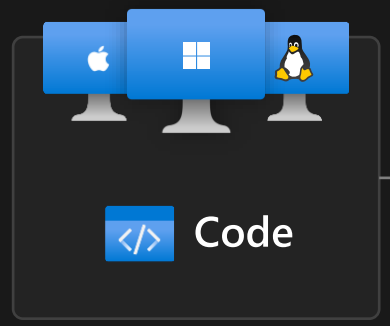
Development Environment as a Service
Microsoft DevBox
Codespaces

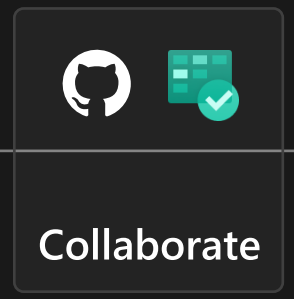
DevOps
Azure Boards
GitHub

Azure Pipelines
GitHub Actions
Azure Test Plans

Azure Load Testing
Deployment Environments
Azure Chaos Studio

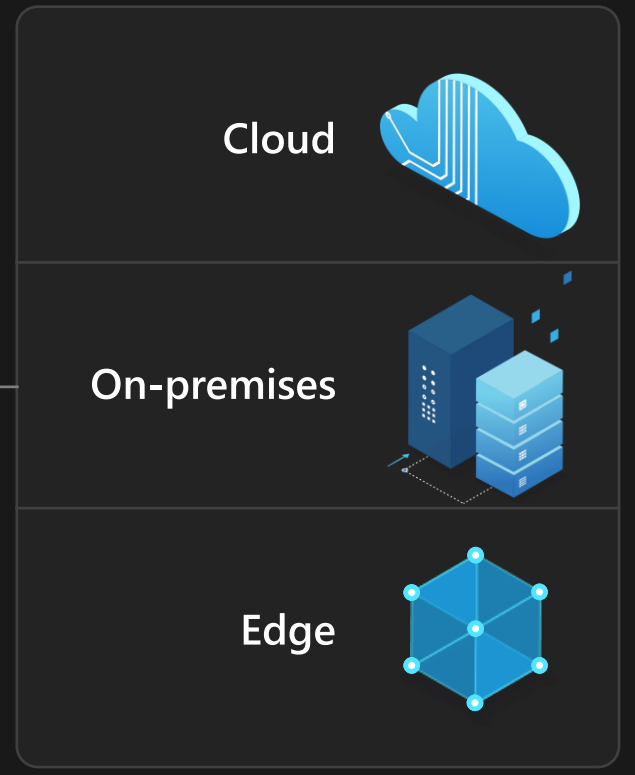
Monitoring & Operations
Azure Monitor
Application Insights
Azure App Configuration





Continuous Integration (CI)

Continuous Delivery (CD)



Code Editing
Visual Studio, VS Code
GitHub Copilot

Security, Governance, Cost Management

GitHub Advanced Security | Defender for Cloud | Azure Policy | Azure Monitor | Azure Resource Manager

Call to Action

Conduct your Developer Velocity Assessment
https://learn.microsoft.com/en-us/assessments/e50f7040-f235-4360-9d1d-cf753e12fed1/

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GitHub Codespaces
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Online Training

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Demos

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Talk to your Cloud Solution Architect about developer productivity!

SESSION FEEDBACK

Session Title: Digitale Innovationen und Developer Productivity

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