Contents

[About this book i](#_Toc7172303)

[Acknowledgements iii](#_Toc7172304)

[Chapter 1: Introduction 7](#_Toc7172305)

[The problem 7](#_Toc7172306)

[The challenge of explosive growth 7](#_Toc7172307)

[No end-to-end reference implementation 10](#_Toc7172308)

[The solution 10](#_Toc7172309)

[DevOps architecture 11](#_Toc7172310)

[DevOps methodology 19](#_Toc7172311)

[How to get started 22](#_Toc7172312)

[Application runtime architectures 22](#_Toc7172313)

[The necessary tools 23](#_Toc7172314)

[The sample application 24](#_Toc7172315)

[About the book 25](#_Toc7172316)

[Wrap up 27](#_Toc7172317)

[Bibliography 27](#_Toc7172318)

[Chapter 2: Zero to Azure in 60 minutes 29](#_Toc7172319)

[Deploy an app to App Service 29](#_Toc7172320)

[Download and test the app 29](#_Toc7172321)

[Create the Azure App Service Web App 31](#_Toc7172322)

[Deployment with Visual Studio 33](#_Toc7172323)

[Deployment slots 36](#_Toc7172324)

[Summary 40](#_Toc7172325)

[Additional reading 40](#_Toc7172326)

[Continuous integration and deployment 40](#_Toc7172327)

[Publish the app's code to GitHub 41](#_Toc7172328)

[Disconnect local Git deployment 42](#_Toc7172329)

[Create an Azure DevOps organization 42](#_Toc7172330)

[Configure the Azure Pipelines pipeline 44](#_Toc7172331)

[Commit changes to GitHub and automatically deploy to Azure 52](#_Toc7172332)

[Examine the Azure Pipelines pipeline 54](#_Toc7172333)

[Additional reading 60](#_Toc7172334)

[Monitor and debug 61](#_Toc7172335)

[Basic monitoring and troubleshooting 61](#_Toc7172336)

[Advanced monitoring 63](#_Toc7172337)

[Profile with Application Insights 63](#_Toc7172338)

[Logging 67](#_Toc7172339)

[Log streaming 68](#_Toc7172340)

[Alerts 68](#_Toc7172341)

[Live debugging 69](#_Toc7172342)

[Conclusion 69](#_Toc7172343)

[Additional reading 69](#_Toc7172344)

[Wrap up 70](#_Toc7172345)

[Chapter 3: The Professional-Grade DevOps Environment 71](#_Toc7172346)

[The state of DevOps 72](#_Toc7172347)

[Removing the ambiguity from DevOps 73](#_Toc7172348)

[A professional-grade DevOps vision 74](#_Toc7172349)

[DevOps architecture 75](#_Toc7172350)

[Version control 76](#_Toc7172351)

[Private build 77](#_Toc7172352)

[Continuous integration build 77](#_Toc7172353)

[Package management 79](#_Toc7172354)

[Test-driven development environment (TDD environment) 79](#_Toc7172355)

[Manual test environment 80](#_Toc7172356)

[Production environment 81](#_Toc7172357)

[Production monitoring and diagnostics 82](#_Toc7172358)

[Tools of the professional DevOps environment 82](#_Toc7172359)

[Azure DevOps Services 84](#_Toc7172360)

[Azure subscription 84](#_Toc7172361)

[Visual Studio 2019 85](#_Toc7172362)

[A DevOps-centered application 86](#_Toc7172363)

[Using Onion Architecture to enable DevOps 86](#_Toc7172364)

[Implementing Onion Architecture in .NET Core 89](#_Toc7172365)

[Integrating DevOps assets 91](#_Toc7172366)

[Wrap up 92](#_Toc7172367)

[Bibliography 92](#_Toc7172368)

[Chapter 4: Tracking Work 95](#_Toc7172369)

[Change your process template 95](#_Toc7172370)

[Types of work items 99](#_Toc7172371)

[Customizing your process 101](#_Toc7172372)

[Working with the process 105](#_Toc7172373)

[Linking commits 106](#_Toc7172374)

[Branching from Azure Boards 108](#_Toc7172375)

[Merging using pull requests 111](#_Toc7172376)

[Wrap up 114](#_Toc7172377)

[Bibliography 116](#_Toc7172378)

[Chapter 5: Tracking Code 117](#_Toc7172379)

[How many repositories? 117](#_Toc7172380)

[What should be in your Git repository 119](#_Toc7172381)

[The structure of the Git repository 121](#_Toc7172382)

[Choosing a branching pattern 124](#_Toc7172383)

[Useful tips in Azure Repos configuration 126](#_Toc7172384)

[How does GitHub fit in? 126](#_Toc7172385)

[Wrap up 127](#_Toc7172386)

[Bibliography 128](#_Toc7172387)

[Chapter 6: Building Code 129](#_Toc7172388)

[Structure of a build 129](#_Toc7172389)

[Flow of a build on a feature branch 129](#_Toc7172390)

[Flow of a build on the master branch 130](#_Toc7172391)

[Steps of a build 131](#_Toc7172392)

[Using builds with .NET Core and Azure Pipelines 135](#_Toc7172393)

[Enabling continuous delivery’s Commit stage 135](#_Toc7172394)

[Wrap up 143](#_Toc7172395)

[Bibliography 147](#_Toc7172396)

[Chapter 7: Validating the Code 149](#_Toc7172397)

[Strategy for defect detection 149](#_Toc7172398)

[Strategy and execution of defect detection 151](#_Toc7172399)

[Code validation in the DevOps pipeline 153](#_Toc7172400)

[Static analysis 155](#_Toc7172401)

[Testing 155](#_Toc7172402)

[Inspections 158](#_Toc7172403)

[Implementing defect detection 160](#_Toc7172404)

[Static Analysis 160](#_Toc7172405)

[Testing 164](#_Toc7172406)

[Inspections 171](#_Toc7172407)

[Wrap up 172](#_Toc7172408)

[Bibliography 172](#_Toc7172409)

[Chapter 8: Release Candidate Creation 173](#_Toc7172410)

[Designing your release candidate architecture 173](#_Toc7172411)

[Creating and using release candidate packages 174](#_Toc7172412)

[Defining the bounds of a package 176](#_Toc7172413)

[Azure Artifacts workflow for release candidates 177](#_Toc7172414)

[Specifying how packages are created 180](#_Toc7172415)

[Use release candidate packages in deployment configurations 185](#_Toc7172416)

[Wrap up 187](#_Toc7172417)

[Bibliography 187](#_Toc7172418)

[Chapter 9: Deploying the release 189](#_Toc7172419)

[Designing your deployment pipeline 189](#_Toc7172420)

[Determining environments 190](#_Toc7172421)

[Assigning validation steps to environments 192](#_Toc7172422)

[Deploying data changes across environments 194](#_Toc7172423)

[Choosing your runtime architecture 197](#_Toc7172424)

[Implementing the deployment in Azure Pipelines 199](#_Toc7172425)

[Deploying an application component 207](#_Toc7172426)

[Running test suites using a release configuration 217](#_Toc7172427)

[Differences in the UAT and Production environments 227](#_Toc7172428)

[Wrap up 232](#_Toc7172429)

[Bibliography 232](#_Toc7172430)

[Chapter 10: Operating and Monitoring the Release 233](#_Toc7172431)

[Principles 234](#_Toc7172432)

[Architecture for observability 236](#_Toc7172433)

[Jumpstarting observability 239](#_Toc7172434)

[Wrap up 251](#_Toc7172435)

[Bibliography 251](#_Toc7172436)

[Afterword 253](#_Toc7172437)