Microsoft

Free 2-day technical training (level 300)

Practical DevOps

Agile Software Engineering with Visual Studio, Microsoft Azure & Open Source tools

Exercise no.	Main Topic	Possible discussion points besides practical exercises (expand "+" on the left to see details for each section)	Recommended Duration (min)
0	**Welcome, introduction, organizational matters, brief overview of the workshop**		15
0	**DevOps Introduction**		45
1	**Microsoft Developer Platform**		60
		- Evolution of .NET (3.x, 4.x, Core)	
		- Motivation of Microsoft to not just continue the way of the past with .NET (importance of cross-platform, modern architecture, open-source, etc.)	
		- Describe that we now focus on the production version of .NET (4.6), ASP.NET Core Preview follows later.	
		- NuGet as a delivery mechanism for .NET components	
		- Growing importance of NuGet for Microsoft-oriented development teams	
		- nuget.org vs. private feeds in the cloud (e.g. myget) vs. private feeds on-premise	
		- Describe OWIN architecture	
		- Describe OWIN's pipeline concept	
		- Difference to "old" ASP.NET web apps	
		- Note that a practical use of OWIN (self-host web server in automated test) will follow later	
		- Code walkthrough (depth depends on existing knowledge and interests of the audience)	
		- Describe the use of MEF for dependency injection (INameGenerator , BooksDemoDataOptions)	
		- Point out that this will work entirely different in ASP.NET Core 1.0	
		- Describe the problem of stage-related settings (e.g. different configuration options for dev/test/prod)	
		- Point out the importance of correct handling of security-critical settings (e.g. checked-in connection strings as an anti-pattern)	
		- (Option if you have some Devs in the audience) Debug the application to give attendees a deeper insight into the structure of the application	
	HOL time for participants / Q&A / Discussion		30
2	**DevOps capabilites using Azure**		45
		- If some attendees are completely new to Azure, demonstrate the features of the portal	
		- Talk about security aspects of Azure administration	
		- Describe the importance of resource groups	
		- Talk about RBAC and resource groups	
		- Brief overview about different storage offerings in Azure (PaaS, IaaS)	
		- Short introduction into the features of blob storage (access via HTTPS, redunancy options, account name/key, private vs. public containers, etc.)	
		- PowerShell vs. Azure CLI	
		- Code walkthrough for PowerShell script	
		- Structure of a SAS	
		- Demonstrate downloading of book name tokens from Blob Storage in the debugger	
		- Point out that it is inefficient to download the tokens whenever a book title is generated. However, this "bug" is in the sample by design as we can later "find" this potential for optimization using telementry data.	
	HOL time for participants / Q&A / Discussion		20

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3	**Importance of testing your projects**		60
		- Describe why test automation is very important for short iteration times and continuous delivery	
		- Discuss different types of automated tests (e.g. unit tests, integration tests, automated UI tests, etc.)	
		- Discuss the importance of fast tests (e.g. less costs for hosted build controllers, fast tests are executed more often, less waiting time for dev teams, etc.) and how mocking of backend services can help to achieve that	
		- Describe the concept of mocking	
		- Short introduction to Microsoft Fakes (shims vs. stubs)	
		- Short introduction into unit testing with Visual Studio	
		- Describe how OWIN is used to host a web server in an integration test (IntegrationTest.cs)	
	HOL time for participants / Q&A / Discussion		30
4	**Application Operations with Application Insights**		60
		- Discuss why telemetry and logging are important especially in Microservices architectures	
		- Describe the basics of Application Insights (e.g. high-level features, architecture, pricing models, etc.)	
		- Let people play a bit with building Application Insights dashboards in the Azure portal	
		- Describe concept of custom processing of Application Insights data	
		- Brief overview about other Application Insights modules (e.g. for IaaS)	
		- Point out how calls to dependent services are tracked automatically	
		- Show how unnecessary calls to Blob Storage in our app become visible by analyzing Application Insights telemetry data	
	HOL time for participants / Q&A / Discussion		30
5	**Deploying ASP.NET web app into Azure Web Apps**		45
		- Introduction to Azure App Services Web Apps	
		- Difference IaaS vs. PaaS (control vs. cost-efficiency)	
		- Why manual deployment only for dev environments?	
		- Value of automating build-, test-, and deployment processes	
		- Describe different publishing methods for Web Apps (WebDeploy, FTP, Kudu/Git)	
		- Security-related issues regarding publishing profiles, publish settings files, etc.	
		- Troubleshooting options for Web Apps	
	HOL time for participants / Q&A / Discussion		30
6	**Intro VSTS: Setting up Build, Release Management**		120
		- Brief overview about Visual Studio Team Services (high-level features, relation to TFS, pricing models, etc.)	
		- Overview about functionality of Visual Studio's Team Explorer	
		- Point out that VSTS works with any Git client (e.g. demo git CLI or Git Extensions)	
		- Speak about how branches, build processes and deployment slots can be used for dev/test/prod	
		- Build process walk-through	
		- Overview about additional build steps that would be possible	
		- Describe concept of cross-platform build agents	

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		- Point out security-related issues with handling publish settings files (again)	
		- Describe concepts of VSTS's release management	
		- Release process walk-through	
		HOL time for participants / Q&A / Discussion	**45**
7	**Basics about ARM deployments**		**45**
		- Describe basic concepts of Azure Resource Manager and ARM templates	
		- Speak about structure of ARM templates (e.g. parameters, variables, resources, etc.)	
		- Point out the use of template functions	
		- Code walk-through for generated PowerShell scripts	
		HOL time for participants / Q&A / Discussion	**30**
8	**Using Docker to deploy your ASP.NET Core web application**		**60**
		- New project structure (.xproj)	
		- New configuration system (JSON instead of XML, options-pattern, etc.)	
		- Dependency injection in ASP.NET Core 1.0	
		- Integration of web development tools like NPM, Node.js, Gulp, etc. in Visual Studio	
		- Code walk-through for Angular 2.0 code	
		- Describe basics of ASP.NET Core 1.0 tools like dnvm , dnu , and dnx	
		- Speak about upcoming changes in the next RC (dotnet CLI)	
		- Relation of Kestrel and IIS on Windows	
		- Short introduction into Docker's basic concepts	
		- Speak about differences to virtual machines	
		- Describe concept of volume mappings (-v) and port mappings (-p)	
		- Speak about basic concepts of Dockerfiles	
		- Code walk-through for Dockerfile	
		HOL time for participants / Q&A / Discussion	**30**
Total	Minutes		**800**
Total	Hours		**13,3**