PowerShell Saturday 2019 - Hannover

PowerShell in Azure Functions v2

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Agenda

- **Azure Functions Overview**

- **PowerShell in Azure Functions**

- **Demo**

- **Best Practices**

- **Question**

Azure Functions Overview - Azure Orchestration Services

	Azure Automation	
Description	Runbook Automation	
Specifics	PowerShell/Pyth on only Very basic Integration	
Use Case	Runbooks/Power Shell Scripts	

Azure Functions Overview - Azure Orchestration Services

	Azure Automation	Flow	
Description	Runbook Automation	Simple automation	
Specifics	PowerShell/Pyth on only Very basic Integration	Not suitable for business workflows	
Use Case	Runbooks/Power Shell Scripts	Consumer focus, personal/team optimization	

Azure Functions Overview - Azure Orchestration Services

|	Azure Automation	Flow	Logic Apps
Description	Runbook Automation	Simple automation	Business workflow
Specifics	PowerShell/Python only Very basic Integration	Not suitable for business workflows	Service "glueing"
Use Case	Runbooks/Power Shell Scripts	Consumer focus, personal/team optimization	Integrated enterprise level workflow automation

Azure Functions Overview - Azure Orchestration Services

	Azure Automation	Flow	Logic Apps	WebJobs
Description	Runbook Automation	Simple automation	Business workflow	CronJob
Specifics	PowerShell/Python only Very basic Integration	Not suitable for business workflows	Service "glueing"	No integrations
Use Case	Runbooks/Power Shell Scripts	Consumer focus, personal/team optimization	Integrated enterprise level workflow automation	Very specific usecases

Azure Functions Overview - Azure Orchestration Services

	Azure Automation	Flow	Logic Apps	WebJobs	Functions
Description	Runbook Automation	Simple automation	Business workflow	CronJob	FaaS
Specifics	PowerShell/Pyth on only Very basic Integration	Not suitable for business workflows	Service "glueing"	No integrations	
Use Case	Runbooks/Power Shell Scripts	Consumer focus, personal/team optimization	Integrated enterprise level workflow automation	Very specific usecases	WebJobs + scalability and integrtion

Azure Functions Overview – Development Workflow

Trigger

Inputs

Outputs

Development

Production

Continuous Deployment

Monitoring
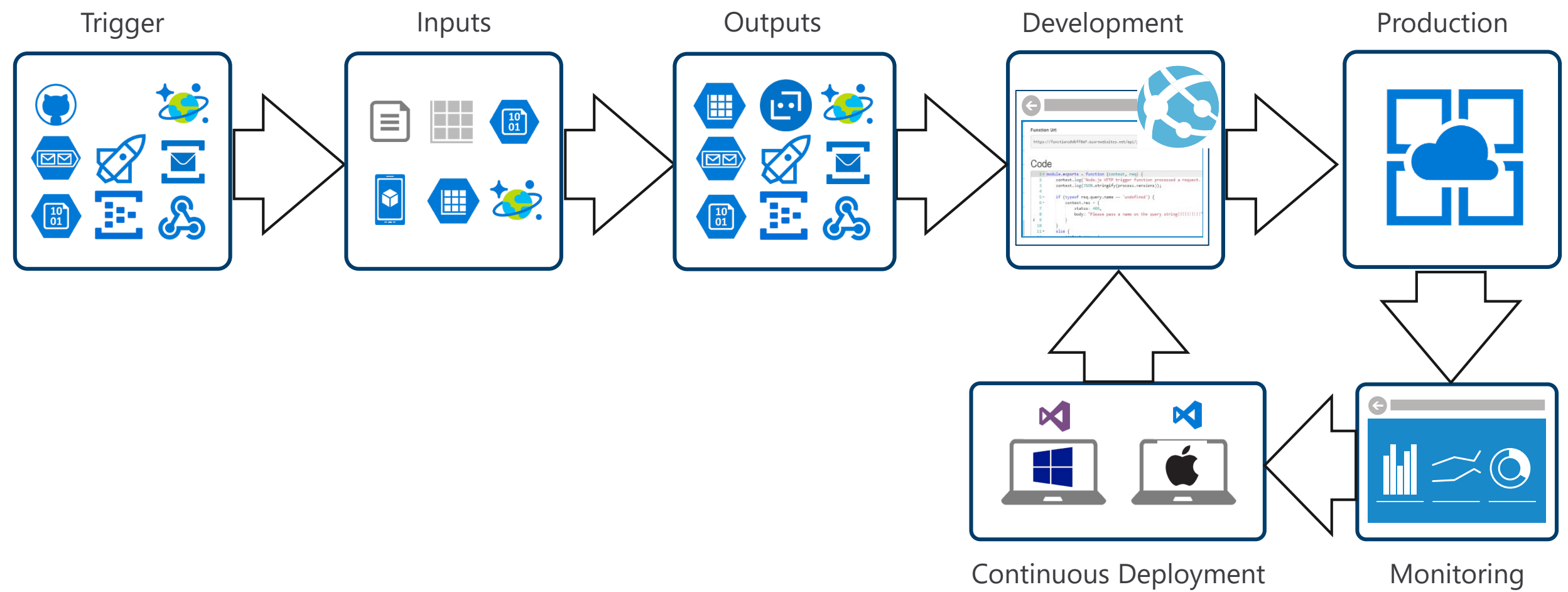
Azure Functions Overview - Features

- Azure FaaS (Serverless) offering
- Smallest execution unit (function level)
- Based on Azure App Service
- Multi language workers (C#, F#, JavaScript, Python, PowerShell, Bash Batch, PHP)
- Two Function App versions available (v1 and v2)
- Integrated development
- Local development with azure-functions-core-tools

Azure Functions Overview - Trigger

- Blob Storage
- Cosmos DB
- Event Grid
- Event Hubs
- HTTP & Webhooks
- IoT Hub
- MS Graph Events

Azure Functions Overview - Bindings

- Blob/Tabel Storage (I/O)
- Queue Storage (O)
- Cosmos DB (I/O)
- Event/Notification Hubs (O)
- HTTP & Webhooks (O)
- IoT Hub (O)
- MS Graph Services (I/O)
- Service Bus (O)
- SignalR (I/O)
- Third party (SendGrid, Twilio, etc.) (O)

Azure Functions Overview - Proxies

- Design (external) API endpoints
- Redesign exisiting API
- Consistently access multiple internal and external functions
- HTTP overrides for e.g. Status codes

Azure Functions Overview - Pricing

App Service Plan	Consumption Plan	Premium Plan
Basic, Standard, Premium	GB-s+ Executions (400.000 GBs/Monat inkl.) €0.000014/GB-s €0.169 per million executions	GB-s + vCPU-s €0.000380/100 GB-s €0.001535/100 vCPU-s
Per instance	Per Function	Per Function
Skaling with multiple instances	Autoscale	Autoscale

PowerShell in Azure Functions

- v1
  - experimental
  - Windows PowerShell 5.1
- v2
  - public preview
  - PowerShell Core on Windows 6.2

PowerShell in Azure Functions

* Basics   * Hosting   * Monitoring   Tags   Review and create

Create a function app, which lets you group functions as a logical unit for easier management, deployment and sharing of resources. Functions lets you execute your code in a serverless environment without having to first create a VM or publish a web application.

Project Details

Select a subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

* Subscription ⓘ   Microsoft Azure Sponsorship (3a56326d-8d54-4260-9187-1d65c85e82af)   ⌄

        * Resource Group ⓘ   psugh   ⌄
                            Create new

Instance Details

* Function App name   psughfacbu   ✓
                                             .azurewebsites.net

* Runtime stack   Select a runtime stack.   ⌃

                              .NET Core

* Region   Node.js

                              Python

                              Java

                              PowerShell Core (Preview)
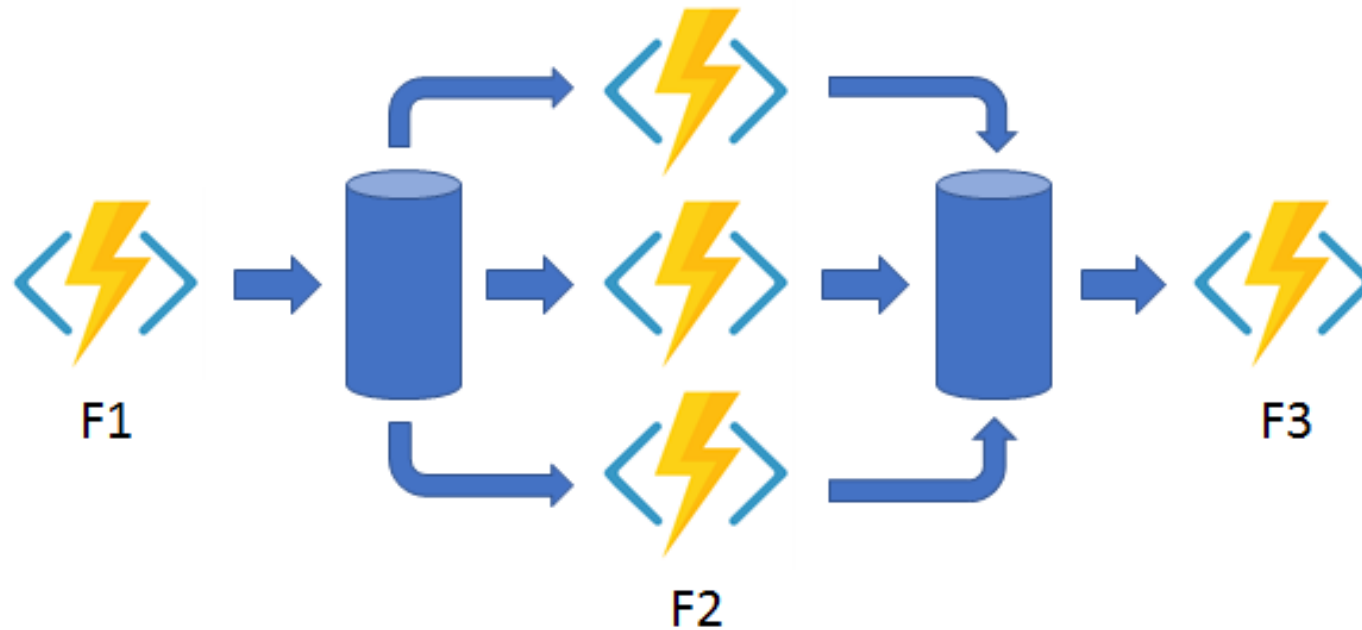
DEMO

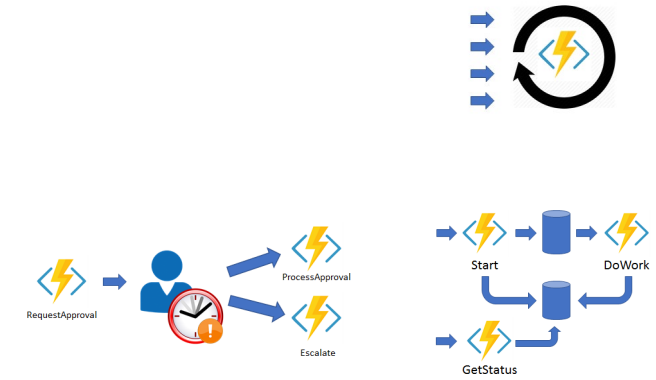VS Code
Azure Function VS Code Extension
Function Core Tools

DEMO

Input Output Bindings

Ausblick: Durable Functions
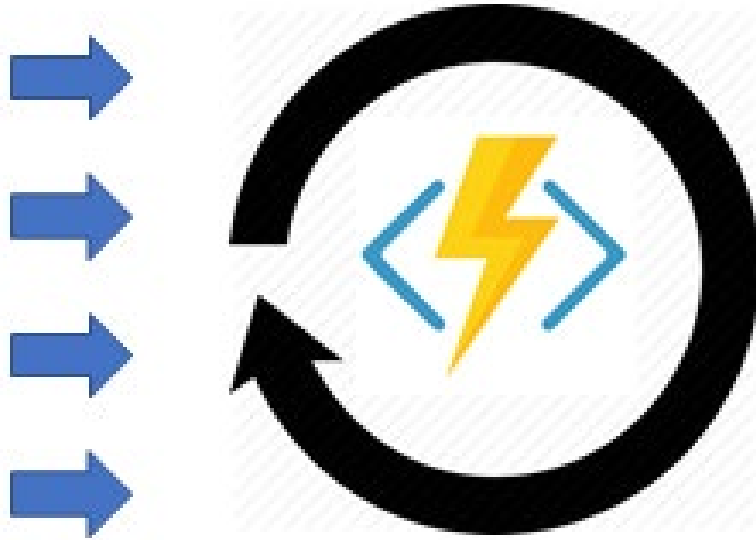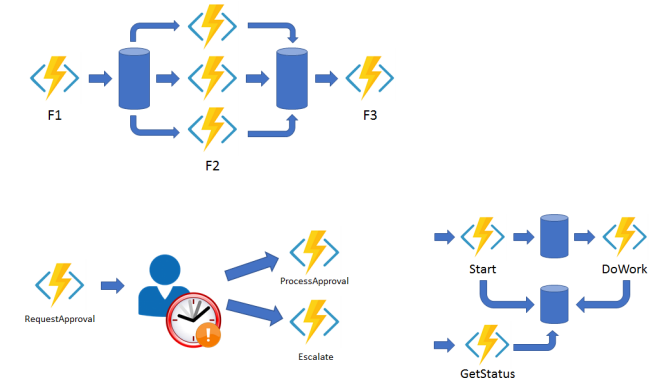

Fan-out/fan-in

Stateful Singleton

Async HTTP APIs

Human interaction

Ausblick: Durable Functions

Stateful Singleton

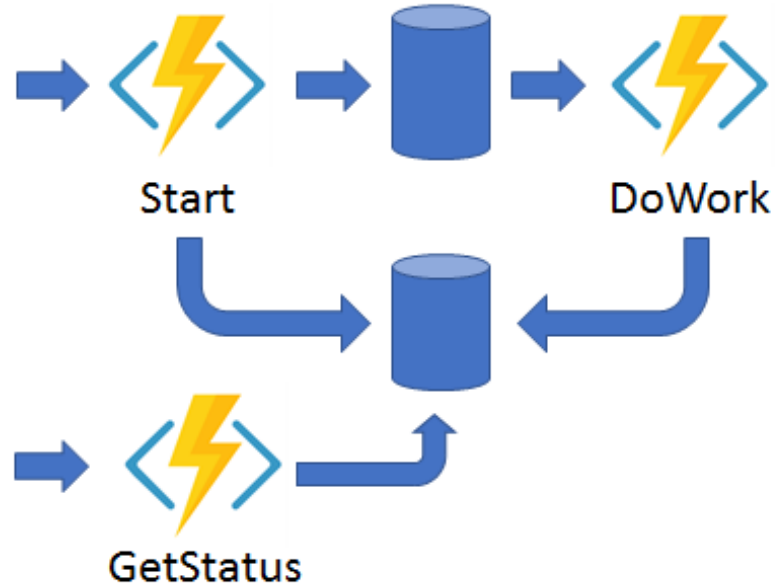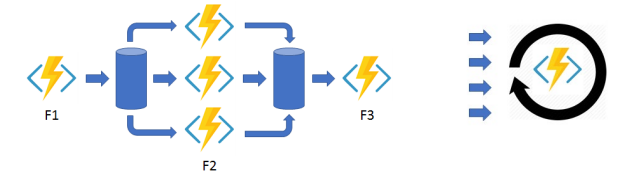Async HTTP APIs

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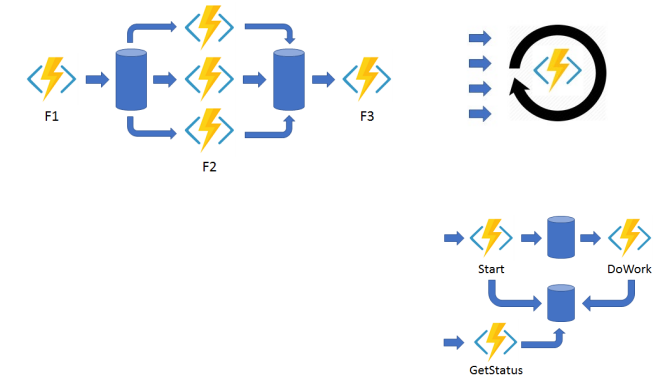
Stateful Singleton

Async HTTP APIs

Fan-out/fan-in

Azure Function – PowerShell 🖳 Best Practices

- Treat functions like REST-APIs
  - http responses
  - allow only required request methods
  - no post request for retrieving data
- each function has one purpose and one purpose only
  - Microservice Architecture
  - Stateless
- functions are meant to be fast
  - avoid long running executions
- use console output

Azure Function - PowerShell

Logging Console

Cmdlet	Type
Write-Host	information
Write-Output	regular output
Write-Warning	waring message (marked orange)
Write-Error	error message (regular PS error output) doesn't cause a function fail
Write-Verbose	verbose output – requires to change host.json
Write-Debug	debug output – requires to change host.json

Links

- https://www.itinsights.org/Static-Websites-with-Azure-Part-5/
- https://docs.microsoft.com/en-us/azure/azure-functions/functions-overview
- https://docs.microsoft.com/en-us/azure/azure-functions/functions-reference
- https://docs.microsoft.com/en-us/azure/azure-functions/functions-reference-powershell
- https://marketplace.visualstudio.com/items?itemName=ms-azuretools.vscode-azurefunctions
- https://docs.microsoft.com/en-us/azure/azure-functions/functions-create-first-function-powershell
- https://docs.microsoft.com/en-us/azure/azure-functions/supported-languages
- https://github.com/Azure/azure-functions-powershell-worker
- https://github.com/Azure/azure-functions-core-tools