

digatus Guest Lecture

Serverless in Azure

Augsburg, 05th of June 2025

Agenda

08:00 - 08:30	Introduction Who is digatus? Goals of the exercise Azure in a nutshell
08:30 - 09:30	Hands-On I Technical setup Resource creation
-- Break --	
09:50 - 11:00	Hands-On II Intro of the programming part Coding the website and API
Spare time	Questions

digatus IT group



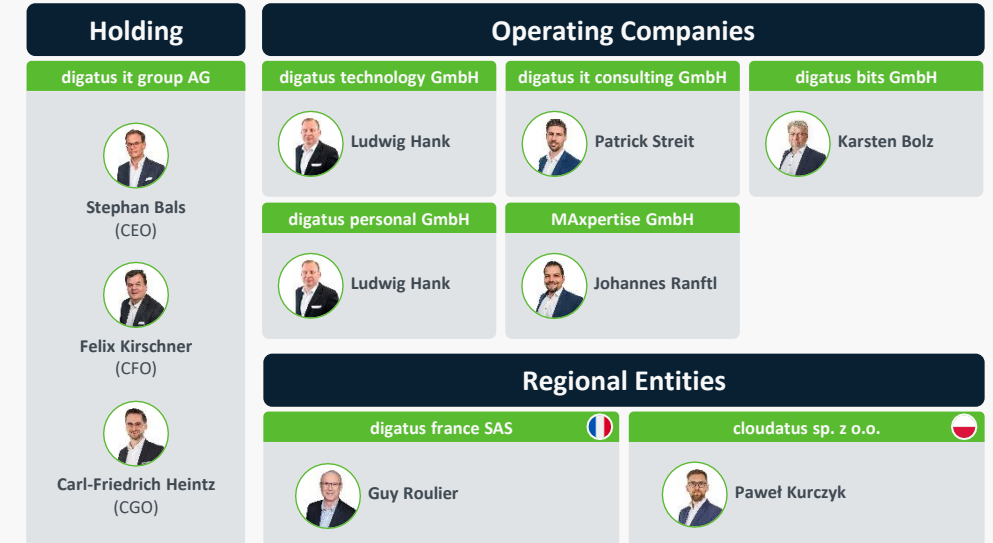
Factsheet



Locations



Organization



Services

IT Mergers & Acquisitions (M&A)	Project Excellence	Technical Consulting & Implementation	IT Services & Operations	Software Development
<ul style="list-style-type: none">› Due Diligence (IT, Tech & SW DD)› TSA lifecycle support› Provider evaluation› Carve-out› Post Merger Integration› M&A Tool "MAXpertise"› Contract & License Management	<ul style="list-style-type: none">› Program and Project Management› Project Management Office (PMO)› Transition & Change Management› Digitalization & Process optimization› Project Management Governance› Project Management majority assessment	<ul style="list-style-type: none">› Public & Private Cloud Services› Microsoft 365 Services› Connectivity & Network Services› Power BI & Power Apps› Digital Workplace› Collaboration Services› SAP Basis & SAP AMS (with Partners)	<ul style="list-style-type: none">› Service Desk, VIP & Onsite Support› Datacenter operation› Network & Security operation› Workplace-as-a-Service› IT Service Management› IT Procurement Services› SAP Basis & AMS operation (with Partners)	<ul style="list-style-type: none">› Process digitalization› Application support› Agile Software Development› Data Engineering› Data Analytics› Deep & Machine Learning & AI› DevOps Architecture & Consulting

Exercise Goal

Context	Surveys
Goal	Conduct surveys and store answers in a database
Objectives	<ul style="list-style-type: none">• Use Public Cloud (Microsoft Azure)• Support text fields• Write results to database
Optional	<ul style="list-style-type: none">• Add support for further datatypes• Add validation

Umfrage

Bitte die folgende Umfrage ausfüllen, Danke!

Firstname

John

Lastname

Doe

Absenden

survey-team0 -... x

SELECT * FROM c

Edit Filter

id	/id	
af27f71a-6b42-4ba0...	af27f71a-6b42-4ba0...	
aec64722-7ede-4a7...	aec64722-7ede-4a7...	
befc327c-ee81-4193...	befc327c-ee81-4193...	
741a4a7e-6af7-4709...	741a4a7e-6af7-4709...	

Load more

1

2

3

4

5

6

7

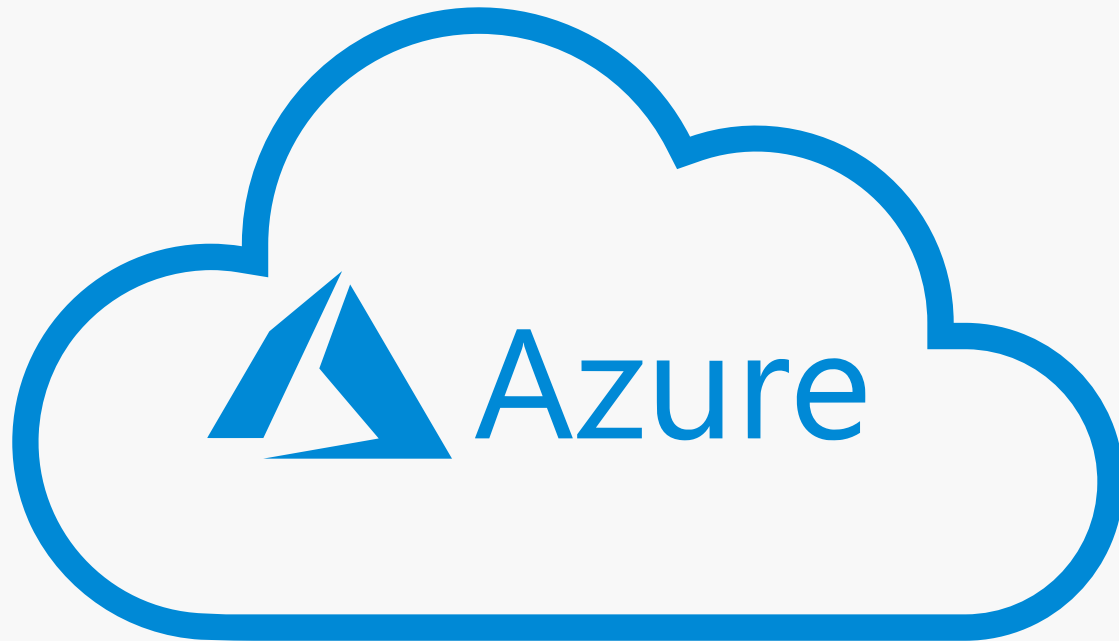
8

9

10

```
"firstname": "John",
"lastname": "Doe",
"id": "741a4a7e-6af7-4709",
"_rid": "+pJxAPnSs0AGAAAA",
"_self": "dbs/+pJxAA==/co",
"_etag": "\"d5009bbd-0000",
"_attachments": "attache",
"_ts": 1652441048
```

Azure in a nutshell



Prerequisites

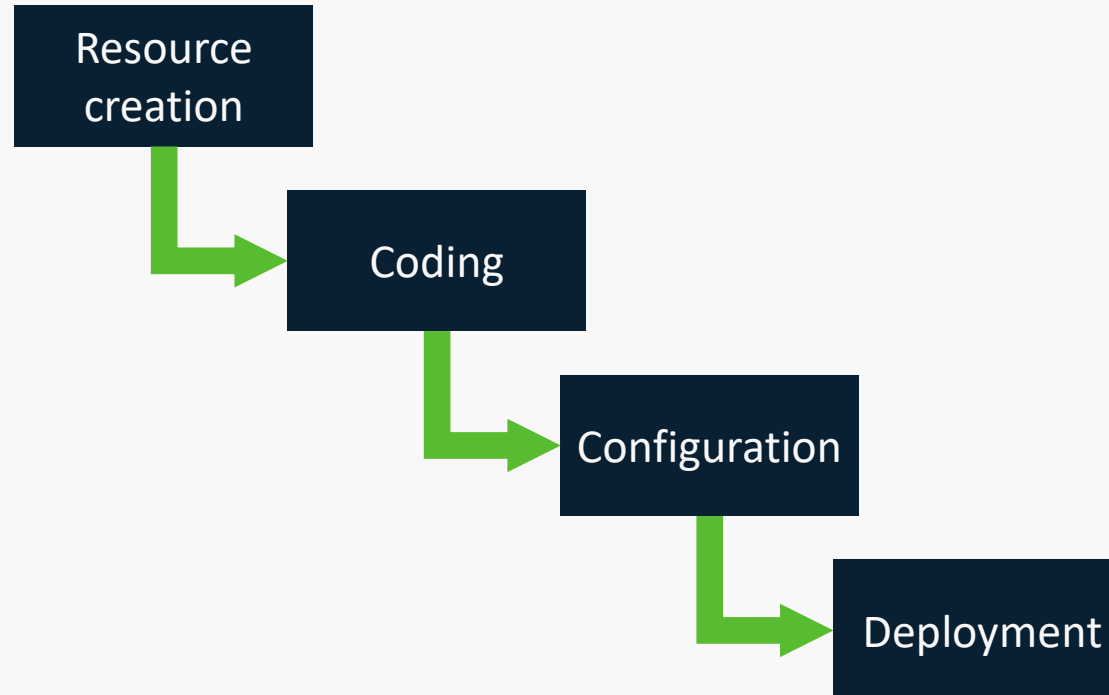
Prerequisites

- I. [digatus Guest Lecture Repository](#)
- II. [Node.js LTS \(22.x\)](#)
- III. [Visual Studio Code](#)
- IV. [Azure Functions Extension](#)
- V. [Azure Functions Core Tools](#)



bitbucket.org/digatus-technology/digatus-public-gastvortrag-serverless/

A 4-step process



Azure Portal Login

URL

<https://portal.azure.com>

Username

hochschule@digatus.com

Password

Gastvortrag05.06.2025!

Break

~20 min

09:50

-

11:00

Hands-On II

Intro of the programming part

Coding the website and API

Spare time

Questions

Further topics

Best Practices?

What are actual use cases?

CoPilot in Azure?

How can I automate the deployment?

How to guarantee IT Security?

How to keep digital sovereignty?

Can I guarantee Privacy?

Is serverless too expensive?

Public Cloud vs Private Cloud?

Appendix

Walkthrough

Azure services

Create a resource

Resource groups

Microsoft Entra Privileged...

Azure Cosmos DB

Function App

Copilot in Azure admi...

Quickstart Center












Azure AI Foundry

Kubernetes services

More services

Resources

Recent Favorite

Name	Type	Last Viewed
 rg-hs-serverless-team-03	Resource group	2 hours ago
 func-hs-serverless-team-03-test	Function App	2 hours ago
 rg-hs-serverless-team-00	Resource group	2 hours ago
 rg-hs-serverless-team-02	Resource group	3 hours ago
 Gastvortrag	Resource group	21 hours ago
 rg-hs-serverless-team-08	Resource group	2 days ago
 rg-hs-serverless-team-05	Resource group	2 days ago
 rg-hs-serverless-team-01	Resource group	2 days ago
 cosmos-gastvortrag-serverless-shared	Azure Cosmos DB account	2 days ago
 stgastvortrag00	Storage account	a year ago
 func-gastvortrag-00	Function App	a year ago

See all

Create Function App

Select a hosting option

These options determine how your app scales, resources available per instance, and pricing. [Learn more about Functions hosting options](#)

Hosting plans	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Flex Consumption Get high scalability with compute choices, virtual networking, and pay-as-you-go billing.	Consumption Pay for compute resources when your functions are running (pay-as-you-go).	Functions Premium Deploy multiple function apps on the same plan with event-driven scaling.	App Service Run web apps and function apps on the same plan with more compute choices and pay for the instances of the plan.	Container Apps environment Host function apps with other containerized microservices and pay for compute capacity.
Scale to zero	✓	✓	-	-	✓
Scale behavior	Fast event-driven	Event-driven	Event-driven	Metrics based	Event-driven with KEDA
Virtual networking	✓	-	✓	✓	✓
Dedicated compute and prevent cold start	Optional with Always Ready	-	Minimum of 1 instance required	Minimum of 1 instance required	Optional with minimum replicas
Max scale out (instances)	1000	200	100	30	300

Select

Create Function App (Consumption) ...

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 * ⓘ
Resource Group * ⓘ

Instance Details

Function App name *

Operating System *

Runtime stack *

Version *

Region *

Microsoft Azure Sponsorship (Gold - 12k \$) ▾

rg-hs-serverless-team-03 ▾
[Create new](#)

func-hs-serverless-team-03 ✓
.azurewebsites.net

☒ Try a secure unique default hostname (preview). [More about this update](#) ↗

☒ Linux (legacy) ☐ Windows

Node.js ▾

22 ▾


West Europe ▾

Create Function App (Consumption) ...

- Basics
- Storage
- Networking
- Monitoring
- Deployment
- Authentication
- Tags
- Review + create

Summary



 Basic authentication for this app is currently disabled and may impact deployments. Click to learn more.

Details

Subscription	5f2205e6-8525-42f7-a40f-8fe4e232628b
Resource Group	rg-hs-serverless-team-03
Name	func-hs-serverless-team-03
Runtime stack	Node.js 22

Hosting

Storage (New)

Storage account	rghsserverlessteam0bd92
-----------------	-------------------------

Plan (New)

Hosting options and plans	Consumption
---------------------------	-------------

Create

< Previous

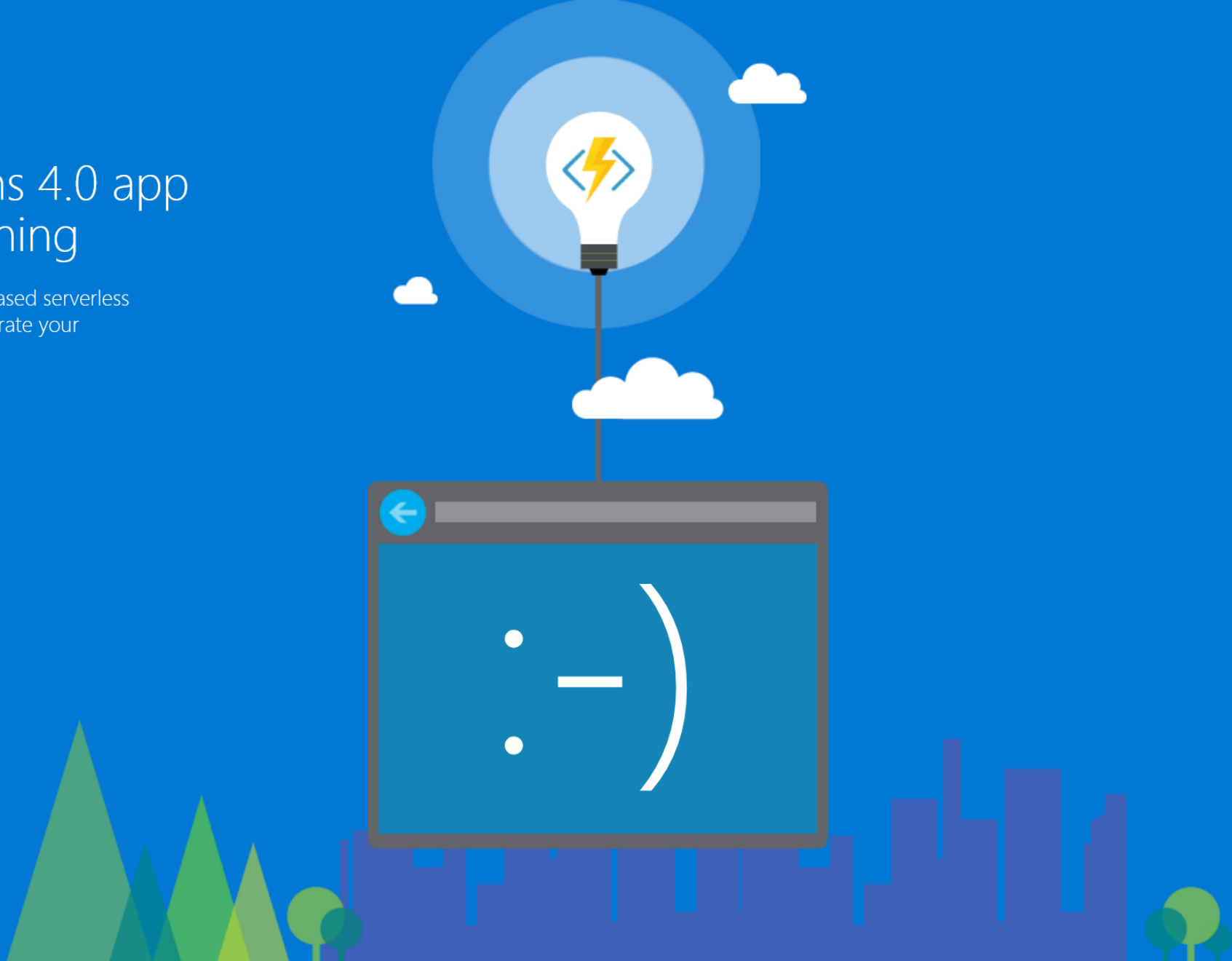
Next >

Download a template for automation

Your Functions 4.0 app is up and running

Azure Functions is an event-based serverless compute experience to accelerate your development.

Learn more 











Home >









Create a resource

- Get Started
- Recently created
- Categories
- AI + Machine Learning
- Analytics
- Blockchain
- Compute
- Containers
- Databases
- Developer Tools
- DevOps
- Identity
- Integration
- Internet of Things
- IT & Management Tools
- Media
- Migration
- Mixed Reality
- Monitoring & Diagnostics

Search services and marketplace

Getting started? [Try our Quickstart Center](#)

-  Web App
[Create](#)
-  Azure OpenAI
[Create](#)
-  Virtual network
[Create](#)
-  SQL Database
[Create](#)
-  Key Vault
[Create](#)
-  Virtual machine
[Create](#)
-  Storage account
[Create](#)
-  Data Factory
[Create](#)

-  Ubuntu Server 22.04 LTS
[Create](#) | [Learn more](#)
-  Free SQL Server License: SQL Server 2022 Developer on Windows Server 2022
[Create](#) | [Learn more](#)
-  Red Hat Enterprise Linux10 (latest minor version)
[Create](#) | [Learn more](#)
-  Debian 12 "Bookworm"
[Create](#) | [Learn more](#)
-  Visual Studio 2022 Pro on Windows 10 Enterprise (x64) + Microsoft 365 Apps (Microsoft Dev Box compatible)
[Create](#) | [Learn more](#)
-  Oracle Linux 9.4 (LVM)
[Create](#) | [Learn more](#)
-  CentOS-based 8.2
[Create](#) | [Learn more](#)
-  AlmaLinux OS 9
[Create](#) | [Learn more](#)

[Give feedback](#)

Create a storage account ...

- Basics
- Advanced
- Networking
- Data protection
- Encryption
- Tags
- Review + create

Azure Storage is a Microsoft-managed service providing cloud storage that is highly available, secure, durable, scalable, and redundant. Azure Storage includes Azure Blobs (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Queues, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below. [Learn more about Azure storage accounts](#)

Project details

Select the subscription in which to create the new storage account. Choose a new or existing resource group to organize and manage your storage account together with other resources.

Subscription *

Resource group *

Microsoft Azure Sponsorship (Gold - 12k \$)

rg-hs-serverless-team-03

Create new

Instance details

Storage account name * ⓘ

Region * ⓘ

Primary service ⓘ

Performance * ⓘ

sthsserverlessteam03

(Europe) West Europe

Deploy to an Azure Extended Zone

Select a primary service

☒ Standard: Recommended for most scenarios (general-purpose v2 account)

☐ Premium: Recommended for scenarios that require low latency.

Create a storage account ... ✕

- Basics
- Advanced
- Networking
- Data protection
- Encryption
- Tags
- Review + create

[View automation template](#)

Basics

Subscription	Microsoft Azure Sponsorship (Gold - 12k \$)
Resource group	rg-hs-serverless-team-03
Location	West Europe
Storage account name	sthserverlessteam03
Primary service	
Performance	Standard
Replication	Read-access geo-redundant storage (RA-GRS)

Advanced

Enable hierarchical namespace	Disabled
Enable SFTP	Disabled
Enable network file system v3	Disabled
Allow cross-tenant replication	Disabled
Access tier	Hot
Enable large file shares	Enabled

Security

Previous

Next

Create

[Give feedback](#)

sthserverlessteam03 | Static website

☆

- Search

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser

Storage Mover

Partner solutions

Resource visualizer

> Data storage

> Security + networking

> Data management

Storage Actions

Redundancy

Data protection

Object replication

Blob inventory

Static website

Lifecycle management

Azure AI Search

Save Discard Give feedback

Enabling static websites on the blob service allows you to host static content. Webpages may include static content and client-side scripts. Server-side scripting is not supported. As data is replicated asynchronously from primary to secondary regions, files at the secondary endpoint may not be immediately available or in sync with files at the primary endpoint. [Learn more](#)

Static website

Disabled Enabled

Improve the page load time of your static website by using the caching features of Azure Front Door (Additional costs apply). [Azure Front Door](#)

Index document name ⓘ
index.html ✓

Error document path ⓘ

Add or remove favorites by pressing Ctrl+Shift+F

21

sthserverlessteam03 | Static website

☆

⋮

×

Storage account

Search

⌵

⏪

Save

Discard

Give feedback

- Diagnose and solve problems
- Access Control (IAM)
- Data migration
- Events
- Storage browser
- Storage Mover
- Partner solutions
- Resource visualizer
- > Data storage
- > Security + networking
- ▼ Data management
 - Storage Actions
 - Redundancy
 - Data protection
 - Object replication
 - Blob inventory
 - Static website
 - Lifecycle management
 - Azure AI Search

Enabling static websites on the blob service allows you to host static content. Webpages may include static content and client-side scripts. Server-side scripting is not supported. As data is replicated asynchronously from primary to secondary regions, files at the secondary endpoint may not be immediately available or in sync with files at the primary endpoint. [Learn more](#)

Static website

Disabled

Enabled

An Azure Storage container has been created to host your static website.
[\\$web](#)

Improve the page load time of your static website by enabling the caching features of Azure Front Door (Additional costs apply). [Azure Front Door](#)

Primary endpoint ⓘ

https://sthserverlessteam03.z6.web.core.windows.net/

Secondary endpoint ⓘ

https://sthserverlessteam03-secondary.z6.web.core.windows.net/

Index document name ⓘ

index.html

Error document path ⓘ

func-hs-serverless-team-03 | CORS

Function App

☆ ...

Save Discard

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Microsoft Defender for Cloud
- Events (preview)
- Recommended services (preview)
- Resource visualizer
- > Functions
- > Deployment
- > Settings
- > Performance
- > App Service plan
- API
 - API Management
 - CORS
- Monitoring
 - Advisor recommendations



CORS

Cross-Origin Resource Sharing (CORS) allows JavaScript code running in a browser on an external host to interact with your backend. Specify the origins that should be allowed to make cross-origin calls (for example: `http://example.com:12345`). To allow all, use `"*"` and remove all other origins from the list. Slashes are not allowed as part of domain or after TLD. [Learn more](#)

Request Credentials

☐ Enable Access-Control-Allow-Credentials ⓘ

Allowed Origins

https://portal.azure.com

https://sthserverlessteam03.z6.web.core.windows.net

✓

⋮

Paste (no trailing "/"!)

Add or remove favorites by pressing Ctrl+Shift+F

The screenshot shows the VS Code interface with the Azure extension sidebar on the left. The sidebar has two sections: 'AZURE' and 'WORKSPACE'. The 'AZURE' section contains a 'Sign in to Azure...' button, which is highlighted with a red rectangle. The 'WORKSPACE' section shows a local project named 'digatus-public-gastvortrag-serverless/api'. The main editor area displays the 'digatus-public-gastvortrag-serverless' project, which is a Node.js application. The terminal at the bottom shows the output of the 'npm prune --production' and 'npm install' commands, both of which executed successfully. The terminal output is as follows:

```

[*] Executing task: npm prune --production
npm WARN config production Use '--omit=dev' instead.
up to date, audited 1 package in 55ms
found 0 vulnerabilities
[*] Terminal will be reused by tasks, press any key to close it.

[*] Executing task: npm install
up to date, audited 1 package in 50ms
found 0 vulnerabilities
[*] Terminal will be reused by tasks, press any key to close it.

```


The image shows a screenshot of the Visual Studio Code (VS Code) interface. The top bar displays the window title "digatus-public-gastvortrag-serverless". The left sidebar contains the Explorer view, which is divided into "AZURE" and "WORKSPACE" sections. Under "AZURE", the "RESOURCES" tree shows a subscription "Oliver's VS Subscription - MPN" with several resource groups. The "func-hs-serverless-team-00" resource group is selected, and a context menu is open over it, showing options like "Browse Website", "Deploy to Function App...", "Configure Deployment Source...", "Start", "Stop", "Restart", "Delete Function App...", "Start Streaming Logs", "Stop Streaming Logs", "Edit Tags...", "View Properties", "Open in Portal", and "Refresh". The "WORKSPACE" section shows a "Local Project" named "digatus-public-gastvortrag-serverless/api". The bottom panel is the "TERMINAL" view, which shows the output of two tasks: "npm prune --production" and "npm install". Both tasks show a warning about the production mode and confirm that no vulnerabilities were found. The status bar at the bottom indicates the user is logged in as "master" and the active account is "Azure: hochschule@digatus.com".

Home > sthserverlessteam03

sthserverlessteam03 | Containers

☆ ...

- Overview
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- Access Control (IAM)
- Data migration
- Events
- Storage browser
- Storage Mover
- Partner solutions
- Resource visualizer
- ▼ Data storage
 - Containers
 - File shares
 - Queues
 - Tables
- > Security + networking
- > Data management
- ▼ Settings

Add container

Upload

Refresh

Delete

Change access level

Restore containers

Edit columns

Only show active containers

Showing all 2 items

<input type="checkbox"/>	Name	Last modified	Anonymous access level	Lease state
<input type="checkbox"/>	\$logs	4.6.2025, 14:12:05	Private	Available ...
<input type="checkbox"/>	\$web	4.6.2025, 14:13:38	Private	Available ...

Add or remove favorites by pressing Ctrl+Shift+F

Home > sthserverlessteam03 | Containers >

\$web

Container

Search

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Shared access tokens

Access policy

Properties

Metadata

Editor (preview)

+ Add Director

Upload

Change access level

Refresh

Delete

Copy

Paste

\$web

Authentication method: Access key (Switch to Microsoft Entra user account)

Add filter

Search blobs by prefix (case-sensitive)

Showing all 0 items

Upload blob

Drag and drop files here

Browse for files

☐ Overwrite if files already exist

Give feedback

Datei hochladen

« Git > digatus-public-gastvortrag-serverless

Search digatus-public-gastv...

Organise

New folder

	Name	Date modified	Type
LehmannVoss			
OneDrive_1_30.5			
This PC			
System (C:)			
Network			
Linux			
	.git	02/06/2025 09:22	File folder
	.idea	02/06/2025 15:51	File folder
	.vscode	28/05/2025 10:27	File folder
	api	28/05/2025 10:27	File folder
	doc	28/05/2025 10:27	File folder
	.gitignore	28/05/2025 10:27	Git Ignore Source File
	index.html	28/05/2025 10:27	Firefox HTML Docum...

File name: index.html

Alle Dateien (*.*)

Open

Cancel

Add or remove favorites by pressing Ctrl+Shift+F

Home >

Azure Cosmos DB

...

×

digatus

+ Create

↶ Restore

⚙️ Manage view ▾

🔄 Refresh

⬇️ Export to CSV

🔗 Open query

|

🏷️ Assign tags

☰ Group by none ▾

ⓘ You are viewing a new version of Browse experience. Some features may be missing. [Click here to access the old experience.](#)

🔍 Filter for any field...

Subscription equals all

Type equals all

Resource Group equals all ✕

Location equals all ✕

+ Add filter

<input type="checkbox"/>	Name ↑		Status	Subscription	Write region	Read Region
<input type="checkbox"/>	<div>🌐 cosmos-gastvortrag-serverless-shared</div>	...	Online	Microsoft Azure Sponsorship (Gold ...	West Europe	West Europe

cosmos-gastvortrag-serverless-shared | Keys

☆

⋮

✕

Azure Cosmos DB account

Search

Refresh

Feedback

- Overview
- Activity log
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- Cost Management
- Quick start
- Data Explorer
- Mirroring in Fabric (Preview)
- Resource visualizer
- Settings
 - Features
 - Replicate data globally
 - Default consistency
 - Backup & Restore
 - Networking
 - CORS
 - Dedicated Gateway

URI

https://cosmos-gastvortrag-serverless-shared.documents.azure.com:443/

Read-write Keys

Read-only Keys

PRIMARY KEY

👁

⚠️ Last regeneration: Not recorded. [Learn more](#)

SECONDARY KEY

👁

⚠️ Last regeneration: Not recorded. [Learn more](#)

PRIMARY CONNECTION STRING

👁

SECONDARY CONNECTION STRING

👁

Copy

Keys

Add or remove favorites by pressing Ctrl+Shift+F

Home > func-hs-serverless-team-03

func-hs-serverless-team-03 | Environment variables

Function App

☆ ...

×

Search

- Overview
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- Recommended services (preview)
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- > Functions
- > Deployment
- Settings
- Environment variables**
- Configuration
- Authentication
- Azure OpenAI
- Vector Database
- Identity
- Backups

App settings

Connection strings

Search

Add

Refresh

Show values

Advanced edit

Pull reference values

Name	Value	Deployment slot setting	Type	Source	Delete
------	-------	-------------------------	------	--------	--------

Apply

Discard

Send us your feedback

Add or remove favorites by pressing Ctrl+Shift+F

Home > func-hs-serverless-team-03

{x} func-hs-serverless-team-03 | Environment variables

Function App

Search

App settings

Configuration

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Microsoft Defender for Cloud

Events (preview)

Recommended services (preview)

Resource visualizer

Functions

Deployment

Settings

Environment variables

Configuration

Authentication

Azure OpenAI

Vector Database

Identity

Backups

Apply

Discard

Add or remove favorites by pressing Ctrl+Shift+F

Add/Edit connection string

Paste (no trailing “/”!)

COSMOSDB

Value

AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA==

Type *

Custom

At runtime, connection strings are available as environment variables. [Learn more](#)

Deployment slot setting

☐

Apply

Discard

Apply

Discard

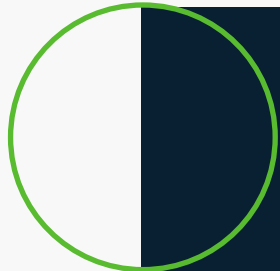
Contact



Simon Brunner

Division Lead DevOps

simon.brunner@digatus.com



Niklas Nett

Senior DevSecOps Engineer

niklas.nett@digatus.com

digatus technology GmbH

Gögginger Straße 49

86159 Augsburg

digatus.com