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## Vorträge des heutigen Abends:

1. Einführung in Azure Web Apps



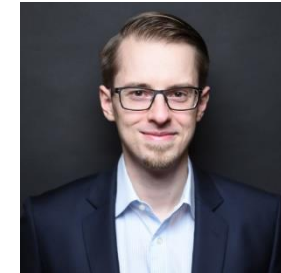
Dr. Matthias Liebeck



Vielen Dank an Computer Futures!



- Software-Entwickler seit 2009, Full Stack im .NET-Umfeld
  - ASP.NET Core MVC / Web API / C#
  - Bootstrap / JavaScript
  - SQL Server
  - Azure
- Studium Informatik + Mathematik
- Doktorarbeit im Bereich machine learning / natural language processing zum Thema „Automated Discussion Analysis in Online Participation Projects“
- Organisation Azure Meetup Düsseldorf
- Zertifikate-Sammler:



Microsoft Certified:  
Azure Data  
Fundamentals  
Microsoft



Microsoft Certified:  
Azure AI  
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Microsoft Certified:  
Azure Administrator  
Associate  
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Microsoft Certified:  
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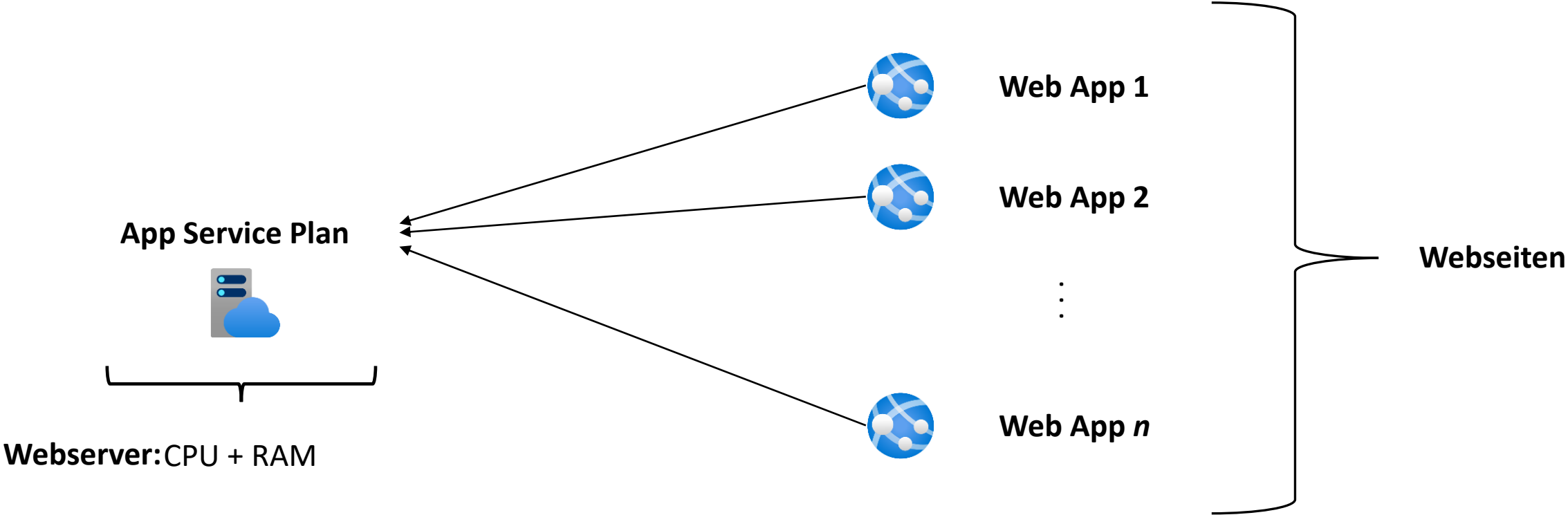
Microsoft Certified:  
Azure  
Fundamentals  
Microsoft




Microsoft Certified:  
Azure Data Scientist  
Associate  
Microsoft

- Grundlagen
  - Azure App Service Plan
  - Azure Web App
  - Pricing
- Konzepte / Features
  - Scaling (manuell + automatisch)
  - Custom Domain / DNS
  - Deployment Slots
  - Application Settings
  - SSL / Let's Encrypt
- Limitierungen Web Apps

- Demo
  - ASP.NET Core MVC 5 Projekt anlegen
  - Ressourcen über Azure Portal anlegen
  - Deployment über Visual Studio
  - Custom Domain / DNS einrichten
  - SSL über Let's Encrypt



- App Service Plan  : Windows oder Linux
- Was kann in einer Web App gehosted werden?
  - ASP.NET Core (MVC, Web API, SignalR, Blazor etc.)
  - ASP.NET (MVC, Webforms, WCF Services, etc.)
  - Node.js
  - PHP
  - Java
  - Python [Linux App Service plan only]
  - Ruby [Linux App Service plan only]
  - Docker Container (single or multiple containers, siehe <https://docs.microsoft.com/en-us/azure/app-service/tutorial-multi-container-app>)
- Static Content (z.B. Angular) → besser Blob storage + CDN, sehr günstig

- App Service Plan: Pricing Tiers

- Dev / Test (for less demanding workloads)

- Free
    - Shared (Preview)
    - Basic

Anzahl an CPU-Minuten limitiert, Ressourcen geteilt mit anderen Personen

- Production

- Standard
    - PremiumV2
    - PremiumV3

dedicated resources, Ressourcen nur für einen selbst

- Isolated

- Free Plan

## Included hardware

Every instance of your App Service plan will include the following hardware configuration:



### Memory

Memory available to run applications deployed and running in the App Service plan.



### Storage


1 GB disk storage shared by all apps deployed in the App Service plan.



- **Shared Plan**



## Included features

Every app hosted on this App Service plan will have access to these features:

-  **Custom domains**  
Configure and purchase custom domain names.

## Included hardware

Every instance of your App Service plan will include the following hardware configuration:


-  **Memory**  
Memory available to run applications deployed and running in the App Service plan.
-  **Storage**  
1 GB disk storage shared by all apps deployed in the App Service plan.


- **Basic Plan**

99,95% SLA (4,38 hours per year)

## Included features


Every app hosted on this App Service plan will have access to these features:


 **Custom domains / SSL**  
Configure and purchase custom domains with SNI SSL bindings


 **Manual scale**  
Up to 3 instances. Subject to availability.

## Included hardware

Every instance of your App Service plan will include the following hardware configuration:

 **Azure Compute Units (ACU)**  
Dedicated compute resources used to run applications deployed in the App Service Plan. [Learn more](#)

 **Memory**  
Memory per instance available to run applications deployed and running in the App Service plan.


 **Storage**  
10 GB disk storage shared by all apps deployed in the App Service plan.


## • Standard Plan


99,95% SLA (4,38 hours per year)


### Included features


Every app hosted on this App Service plan will have access to these features:

 **Custom domains / SSL**  
Configure and purchase custom domains with SNI and IP SSL bindings

 **Auto scale**  
Up to 10 instances. Subject to availability.


 **Staging slots**  
Up to 5 staging slots to use for testing and deployments before swapping them into production.


 **Daily backups**  
Backup your app 10 times daily.


 **Traffic manager**  
Improve performance and availability by routing traffic between multiple instances of your app.

### Included hardware

Every instance of your App Service plan will include the following hardware configuration:

 **Azure Compute Units (ACU)**  
Dedicated compute resources used to run applications deployed in the App Service Plan. [Learn more](#)

 **Memory**  
Memory per instance available to run applications deployed and running in the App Service plan.


 **Storage**  
50 GB disk storage shared by all apps deployed in the App Service plan.


## • Premium Plan


99,95% SLA (4,38 hours per year)


### Included features


Every app hosted on this App Service plan will have access to these features:

 **Custom domains / SSL**  
Configure and purchase custom domains with SNI and IP SSL bindings

 **Auto scale**  
Up to 20 instances. Subject to availability.


 **Staging slots**  
Up to 20 staging slots to use for testing and deployments before swapping them into production.


 **Daily backups**  
Backup your app 50 times daily.


 **Traffic manager**  
Improve performance and availability by routing traffic between multiple instances of your app.

### Included hardware

Every instance of your App Service plan will include the following hardware configuration:

 **Azure Compute Units (ACU)**  
Dedicated compute resources used to run applications deployed in the App Service Plan. [Learn more](#)

 **Memory**  
Memory per instance available to run applications deployed and running in the App Service plan.

 **Storage**  
250 GB disk storage shared by all apps deployed in the App Service plan.

- App Service Plan: Windows oder Linux
  - Preise unterschiedlich
- Beahlt wird der App Service Plan, nicht für Web Apps
- Ausnahmen:
  - Traffic! (siehe <https://azure.microsoft.com/en-us/pricing/details/bandwidth>)
  - App Service Domains: Eigene Domains über Azure gekauft
  - App Service Certificates (siehe <https://docs.microsoft.com/en-us/azure/app-service/configure-ssl-certificate>)
  - Shared Tier (Preview), Pricing per Web App

## Free and Shared <sup>PREVIEW</sup>

## Windows

Price for Shared (preview) plan reflects a preview discount.

Instance	Cores	Ram	Storage	Pay as you go
F1 <b>Free</b>	Shared (60 CPU minutes / day)	1 GB	1.00 GB	€0
D1 <b>Shared</b>	Shared (240 CPU minutes / day)	1 GB	1.00 GB	~€8.003/month per site

## Basic Service Plan

Instance	Cores	Ram	Storage	Pay as you go
B1	1	1.75 GB	10 GB	~€46.171/month
B2	2	3.50 GB	10 GB	~€92.342/month
B3	4	7 GB	10 GB	~€184.683/month

## Standard Service Plan

Instance	Cores	Ram	Storage	Pay as you go
S1	1	1.75 GB	50 GB	~€61.561/month
S2	2	3.50 GB	50 GB	~€123.122/month
S3	4	7 GB	50 GB	~€246.244/month

## Linux

## Free Plan

Instance	Cores	Ram	Storage	Pay as you go
F1 <b>Free</b>	Shared (60 CPU minutes / day)	1 GB	1 GB	€0

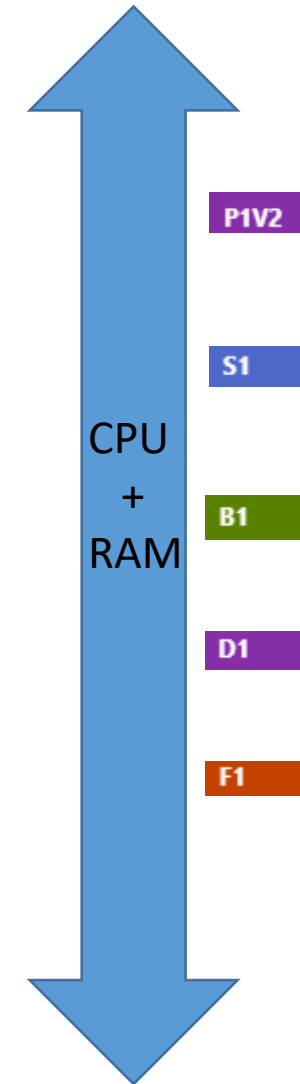
## Basic Service Plan

Instance	Cores	Ram	Storage	Pay as you go
B1 <sup>1</sup>	1	1.75 GB	10 GB	~€11.081/month
B2	2	3.50 GB	10 GB	~€22.162/month
B3	4	7 GB	10 GB	~€43.709/month

## Standard Service Plan

Instance	Cores	Ram	Storage	Pay as you go
S1	1	1.75 GB	50 GB	~€58.483/month
S2	2	3.50 GB	50 GB	~€116.966/month
S3	4	7 GB	50 GB	~€233.932/month

- Scaling / Skalierung: Sinnvoll bei (erwarteter) Last
  - Ziel: Webanwendung soll für die Kunden flüssig laufen
- **Scale up / vertikales Skalieren**
  - mehr bzw. weniger Power (CPU/RAM) für den App Service Plan





- **Scale out / horizontales Skalieren**

- Anzahl an Webservern erhöhen oder verkleinern
- „Loadbalancing“ zwischen Webservern

- **Manuelles horizontales Skalieren:**

Choose how to scale your resource

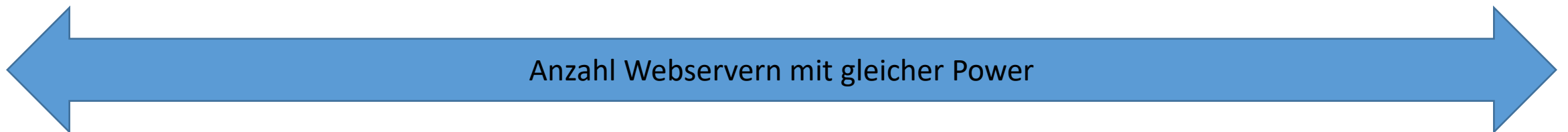
 **Manual scale**   
Maintain a fixed instance count

 **Custom autoscale**   
Scale on any schedule, based on any metrics

Manual scale

Override condition

Instance count  2



Free: 1

Shared: 1

Basic: 3

Standard: 10

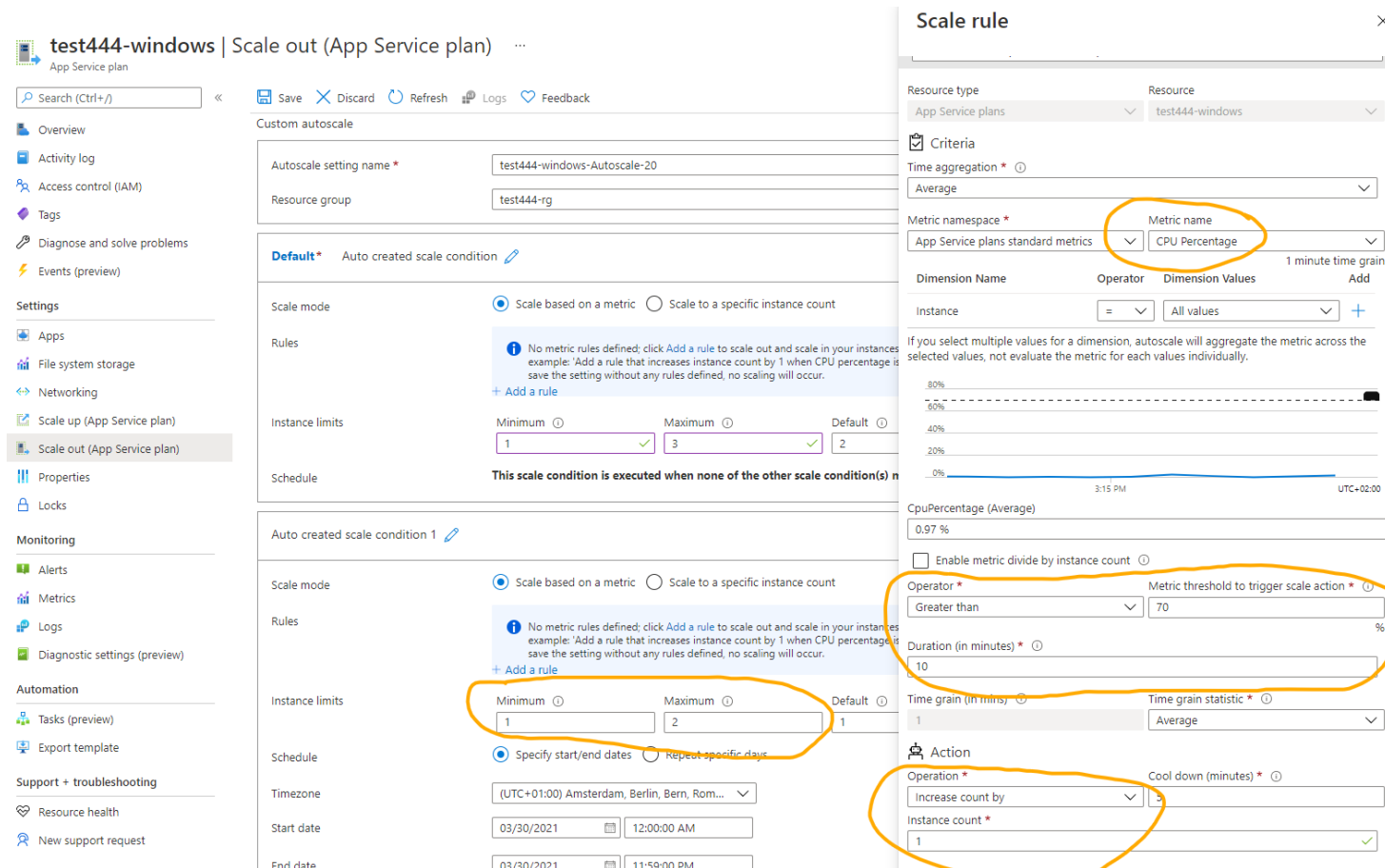
Premium: 20/30

Isolated: 100



## • Automatisches horizontales Skalieren:

- nach Uhrzeit
- über Regel, z.B. bei Last bzw. Leerlauf skalieren



The screenshot displays the 'Scale rule' configuration interface in the Azure portal. Key elements include:

- Resource type:** App Service plans
- Resource:** test444-windows
- Criteria:**
  - Time aggregation: Average
  - Metric namespace: App Service plans standard metrics
  - Metric name: CPU Percentage
  - Dimension Name: Instance
  - Operator: =
  - Dimension Values: All values
- Instance limits:** Minimum: 1, Maximum: 2, Default: 1
- Action:** Operation: Increase count by 1, Instance count: 1



Free: 1

Shared: 1

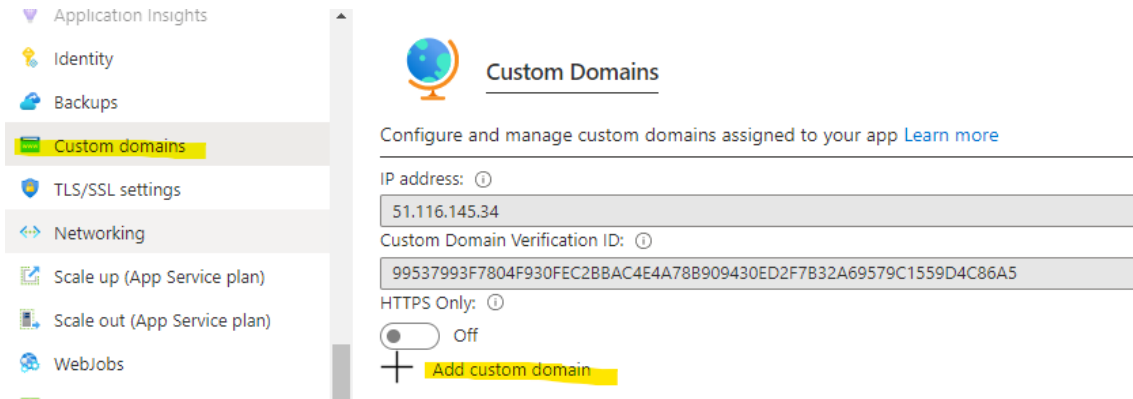
Basic: 3

Standard: 10

Premium: 20/30

Isolated: 100

- Jede Web App hat einen global unique name, z.B. *FOO*.
  - ⇒ *FOO.azurewebsites.net*
- Custom Domains möglich ab B1 (bzw. D1 preview, ohne SSL)
- DNS records:
  - subdomain ([www.contoso.com](http://www.contoso.com)), CNAME record / A record
  - root domain (contoso.com), A record
  - wildcard domain (\*.contoso.com), CNAME record



- Domain ownership muss durch DNS-Einträge bestätigt werden
- Üblicherweise in der Domainverwaltung des Domainproviders
- HTTPS only an
- SSL fehlt

### Add custom domain ✕

test444-webapp


**Custom domain \***  
 ✓

**Validate**

---

**Hostname record type**

---



**A record configuration**

An A record should map your domain to the IP address of your app. In your scenario, that means mapping test4444.azureus.de to your IP address 51.116.145.34. Along with an A record, you also need to add a TXT record. The TXT record should point to your custom domain verification id below. [Learn More](#)

Custom Domain Verification ID: ⓘ

---

HTTPS Only: ⓘ  
 On  
+ Add custom domain

---

Status Filter  
All (2) Not Secure (1) Secure (1)

SSL STATE	ASSIGNED CUSTOM DOMAINS	SSL Binding
! Not Secure	test4444.azureus.de	<a href="#">Add binding</a>
✓ Secure	test444-webapp.azurewebsites.net	

**External IP address**

**Add custom domain**

---

**DNS propagation**  
 Please be aware that depending on your DNS provider it can take up to 48 hours for the DNS entry changes to propagate. You can verify that the DNS propagation is working as expected by using <https://digwebinterface.com/>. [Learn more](#)

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**Hostname availability**  
✓ Hostname availability

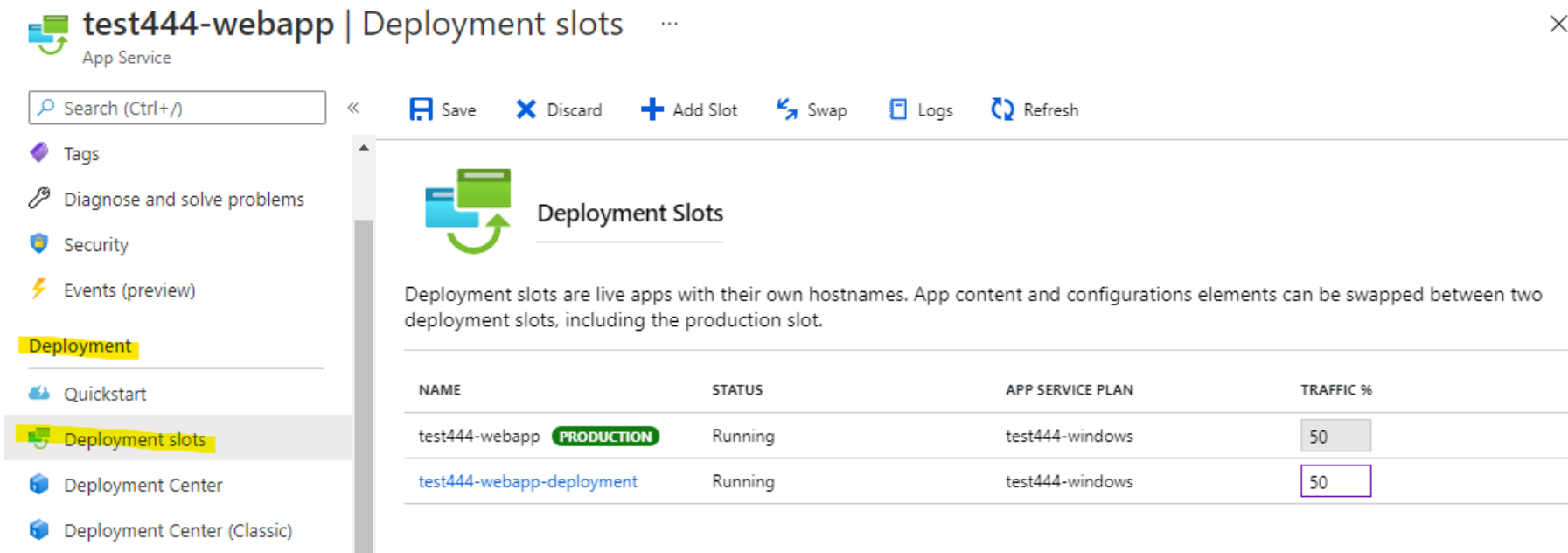
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**Domain ownership**  
! Domain ownership

To verify domain ownership create TXT and A records with your DNS provider using the configuration below. [Learn more](#)

Type	Host	Value
TXT	asuid	99537993F7804F930FEC2BBAC4E4A78B909430ED2F7B32
A	@	51.116.145.34

- Eine Web App in mehreren Slots gleichzeitig



The screenshot shows the 'Deployment slots' page for the web app 'test444-webapp'. The page includes a navigation sidebar on the left with options like 'Tags', 'Diagnose and solve problems', 'Security', 'Events (preview)', 'Deployment' (highlighted), 'Quickstart', 'Deployment slots' (selected), 'Deployment Center', and 'Deployment Center (Classic)'. The main content area features a toolbar with 'Save', 'Discard', 'Add Slot', 'Swap', 'Logs', and 'Refresh' buttons. Below the toolbar, there is a 'Deployment Slots' section with a descriptive paragraph: 'Deployment slots are live apps with their own hostnames. App content and configurations elements can be swapped between two deployment slots, including the production slot.' A table below this text lists the deployment slots:

NAME	STATUS	APP SERVICE PLAN	TRAFFIC %
test444-webapp <b>PRODUCTION</b>	Running	test444-windows	50
test444-webapp-deployment	Running	test444-windows	50

- Einsatzszenarien:

- Traffic verteilen:

- Unsicher, ob neues Deployment funktioniert (z.B. 5% auf neues Deployment, 95% auf altes)
    - In A/B Test verteilen, z.B. 50% Traffic Startseite in blau, 50% in rot

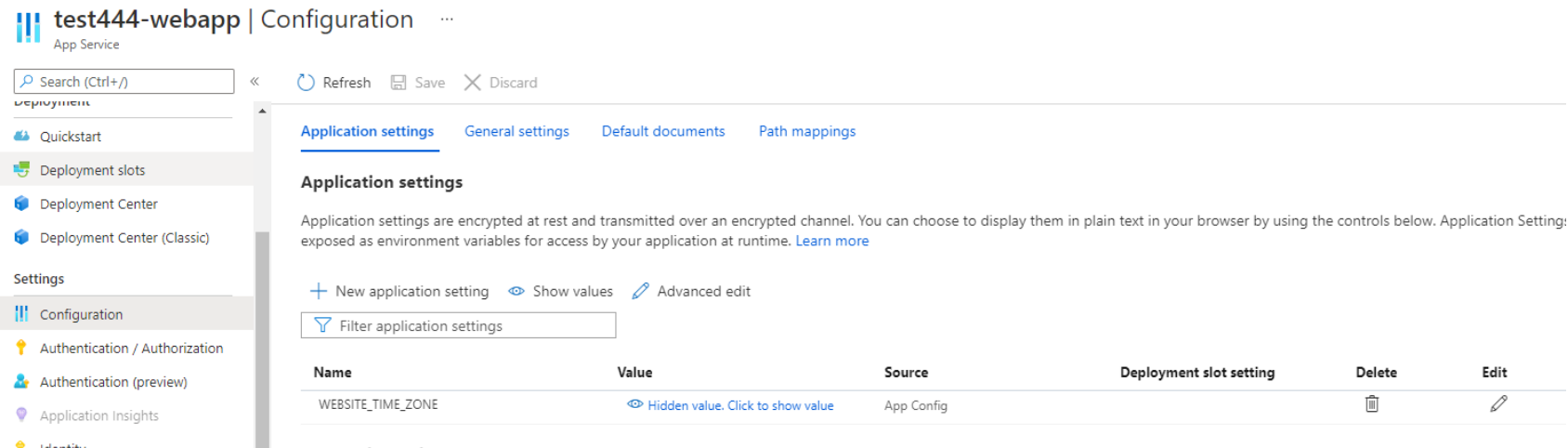
- Downtime beim Deployment reduzieren

- Swap von Slots!
    - Startup Zeit der Webanwendung, bevor sie live geht
      - Datenbank-Migrationen
      - Laden von Ressourcen in InMemory-Cache
    - Nach Deployment nochmal manuell Verfügbarkeit testen

- Ab Standard App Service Plan verfügbar



- Im Azure Portal lassen sich Application Settings und Connection Strings setzen
  - Umgebungsvariablen setzen
  - ggf. connection string für Produktivsystem, geringe Personenanzahl, keine Developer (oder über CI/CD-Pipeline)
  - Wichtigste Einstellung: *WEBSITE\_TIME\_ZONE: W. Europe Standard Time*

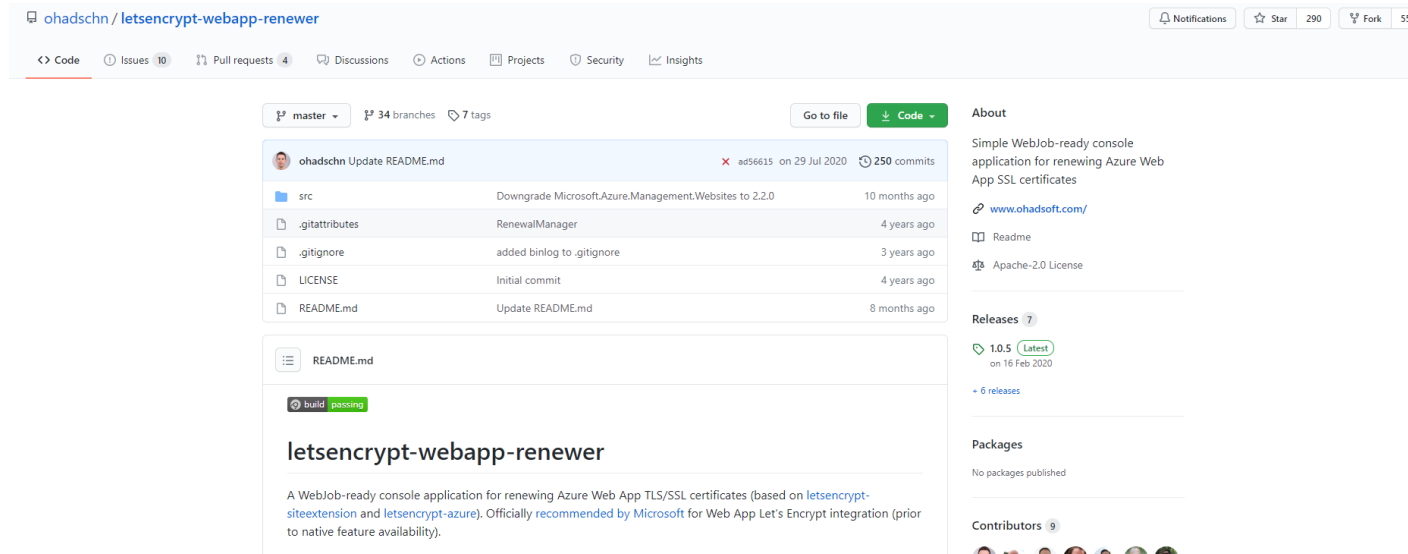


The screenshot shows the Azure Portal Configuration page for 'test444-webapp'. The left sidebar contains navigation options like 'Quickstart', 'Deployment slots', and 'Settings'. The main content area is titled 'Application settings' and includes a table of application settings. The table has columns for Name, Value, Source, Deployment slot setting, Delete, and Edit. One setting is visible: WEBSITE\_TIME\_ZONE with a hidden value and source 'App Config'.

Name	Value	Source	Deployment slot setting	Delete	Edit
WEBSITE_TIME_ZONE	<a href="#">Hidden value. Click to show value</a>	App Config			

- Änderung erzwingt Neustart der Web App

- SSL-Verschlüsselung de facto standard
- kostenlos für eigene Domains mit Let's Encrypt (<https://letsencrypt.org>)
- Gültigkeit der Zertifikate: 3 Monate  
⇒ Zertifikate automatisch einbinden sinnvoll
- Per WebJob automatisieren: <https://github.com/ohadschn/letsencrypt-webapp-renewer>



The screenshot shows the GitHub repository page for `ohadschn/letsencrypt-webapp-renewer`. The repository is a simple WebJob-ready console application for renewing Azure Web App SSL certificates. It has 290 stars and 55 forks. The repository is currently on the `master` branch with 34 branches and 7 tags. The commit history shows a recent update to `README.md` by `ohadschn` on July 29, 2020, with 250 commits. The repository includes a `src` directory, `.gitattributes`, `.gitignore`, `LICENSE`, and `README.md`. The `README.md` file is currently being built and is passing. The repository is licensed under Apache-2.0 and has 6 releases, with the latest version being 1.0.5, released on February 16, 2020. The repository is also recommended by Microsoft for Web App Let's Encrypt integration.

- Eigene Web App anlegen, always on
- Alle 2 Monate ausführen lassen: 0 0 0 1 1,3,5,7,9,11 \*
- Azure AD application user + service principal anlegen:  
<https://docs.microsoft.com/en-us/azure/active-directory/develop/howto-create-service-principal-portal>

### Application settings einrichten:

- letsencrypt:webAppName-subscriptionId
- letsencrypt:webAppName-tenantId
- letsencrypt:webAppName-resourceGroup
- letsencrypt:webAppName-hosts
- letsencrypt:webAppName-email
- letsencrypt:webAppName-clientId
- letsencrypt:webAppName-clientSecret



- main thread execution timeout: 240 seconds  
⇒ background thread
- Html2PDF Renderer mit custom fonts funktioniert nicht wegen Sandbox der Web App

- Demo
  - ASP.NET Core MVC 5 Projekt anlegen
  - Ressourcen über Azure Portal anlegen
  - Deployment über Visual Studio
  - Custom Domain / DNS einrichten
  - SSL über Let's Encrypt

Danke für eure Aufmerksamkeit!