



# Hunde & Katzen

und was diese mit  
**Datenbanken** und deren  
**Admins** zu tun haben



# About Me

## Björn Peters

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**Microsoft®**  
Most Valuable  
Professional

# Agenda

Azure SQL Database - General

Features

Performance-Levels / Kosten

Legal / Availabilities

Backup / Restore

Tuning

Particularities

Migration

Q & A

A close-up photograph of a small, fluffy puppy lying on a weathered wooden plank. The puppy has white fur with dark patches, particularly around its eyes and ears. A semi-transparent green horizontal band is superimposed over the middle of the image, containing the text 'First Steps' in a large, white, serif font. The background is dark and out of focus, showing more of the puppy and the wooden surface.

# First Steps

# Connectivity

How to connect with my application

ADO.NET

Java

PHP (Windows only)

Node.js

Python

Ruby



# Feature-Overview

## What does my application really need

Microsoft continues to add features to Azure SQL Database. Visit the Service Updates webpage for Azure for the newest updates using these filters:

- Filtered to the SQL Database service.
- Filtered to General Availability (GA) announcements for SQL Database features.

### SQL Server and SQL Database feature support

The following table lists the major features of SQL Server and provides information about whether the feature is partially or fully supported and a link to more information about the feature.

SQL Feature	Supported in Azure SQL Database	Managed Instance (preview)
Always Encrypted	Yes - see Cert store and Key vault	Yes - see Cert store and Key vault
AlwaysOn Availability Groups	High availability is included with every database. Disaster recovery is discussed in Overview of business continuity with Azure SQL Database	High availability is included with every database. Disaster recovery is discussed in Overview of business continuity with Azure SQL Database
Attach a database	No	No
Application roles	Yes	Yes
Auditing	Yes	Yes
Automatic backups	Yes	Yes
Automatic tuning (plan for gen1)	Yes	Yes



# What to consider?

Are there any legal or technical topics to be observed





A black and tan dog, possibly a Rottweiler, is lying down on a light-colored surface. The dog's head is turned slightly to the right, and its eyes are looking off-camera. A semi-transparent green horizontal band is overlaid across the middle of the image, containing the text "Power ?" in a large, white, sans-serif font. The background is blurred, showing some foliage and a tree trunk.

# Power ?

# Performance

## Which one fits for my application

	Basic	Standard	Premium
Target workload	Development and production	Development and production	Development and production
Uptime SLA	99.99%	99.99%	99.99%
Backup retention	7 days	35 days	35 days
CPU	Low	Low, Medium, High	Medium, High
IO throughput (approximate)	2.5 IOPS per DTU	2.5 IOPS per DTU	48 IOPS per DTU
IO latency (approximate)	5 ms (read), 10 ms (write)	5 ms (read), 10 ms (write)	2 ms (read/write)
Columnstore indexing	N/A	S3 and above	Supported
In-memory OLTP	N/A	N/A	Supported

# Performance – Extended

Microsoft is listening ;-)

Standard

For most production workloads

Starting at 12.65 EUR / month

100

200

General Purpose

Scalable compute and storage options for budget-oriented applications

1-16 vCores  
Starting at 158.85 EUR / month

Business Critical

For applications with high transaction rate and highly resilient to failures

1-16 vCores  
Starting at 427.66 EUR / month

Looking for basic, standard premium?

Compute Generation

Gen4

up to 16 vCores  
up to 112 GB memory  
158.22 / vCore

Save money

Save up to 30% with a license you already own. Already have a SQL Server license?

Yes

No

vCores

How do vCores compare with DTUs?

1

2

4

8

16

1 vCore

Max data size

32 GB

1 TB

32 GB

ALLOCATED LOG STORAGE

9.6 GB

7 days of backup retention

Enjoy a free trial of our point-in-time restore capability within the public preview time period

Preview terms

Please accept preview terms to use the VCore Model option.

Cost Summary

Gen4 - General Purpose (GP\_Gen4\_1)

Cost per vCore (in EUR)

158.22

vCores selected

x 1

Cost per GB (in EUR)

0.10

Max storage selected (in GB)

x 41.6

EST. COST PER MONTH

162.26 EUR

based purchasing options

Click here to customize performance using vCores

way to configure your database.

performance solutions

control of storage costs

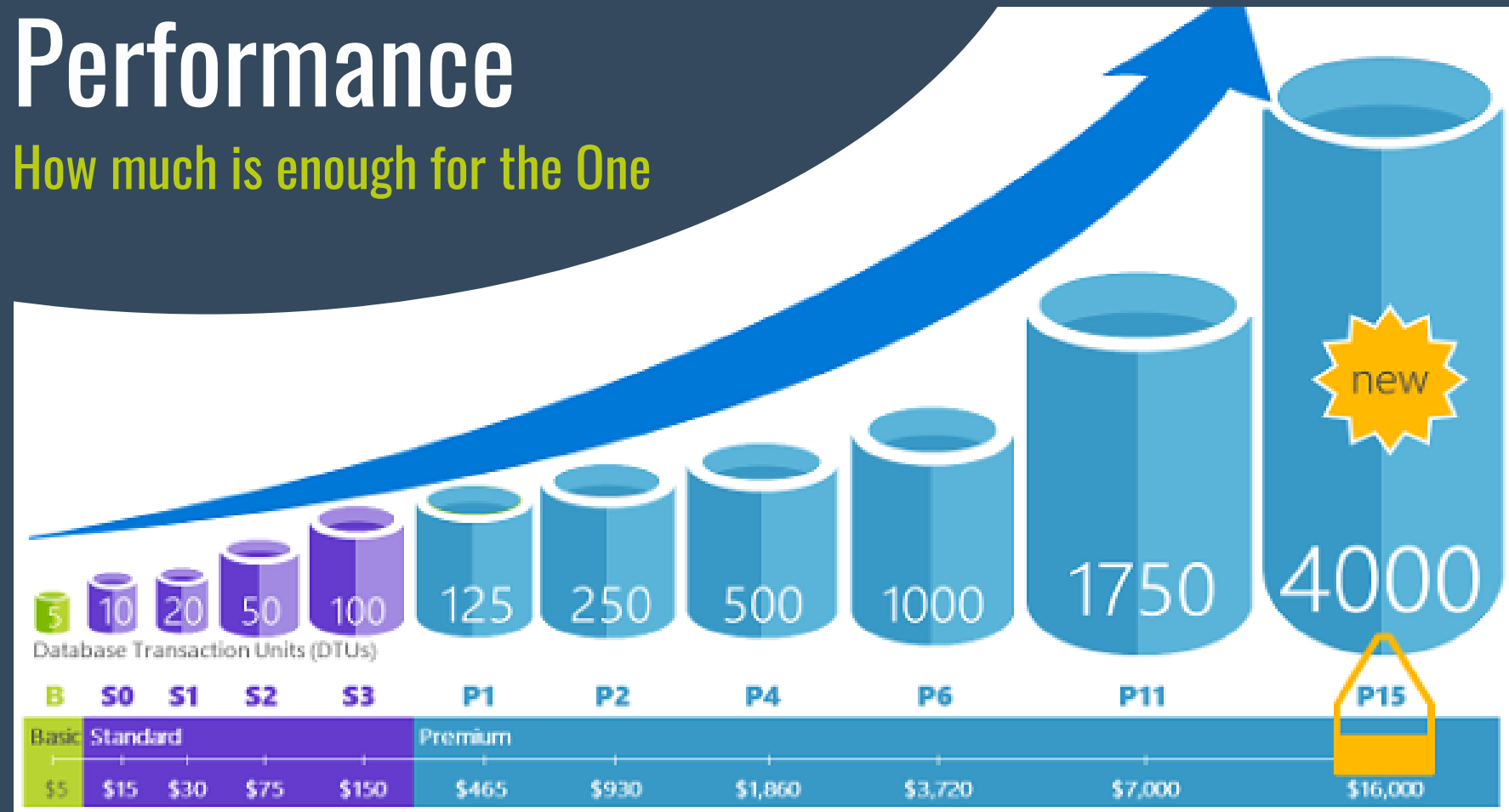
Hybrid Benefit for SQL Server

your database zone redundant

Not now

# Performance

How much is enough for the One



# Performance

Or are there more than one...



Auto-scale up to 5 eDTUs per DB

Basic



Auto-scale up to 100 eDTUs per DB

Standard



Auto-scale up to 1000 eDTUs per DB

Premium

The background of the slide is a blue-toned landscape. In the foreground, there is a vast, textured expanse of white clouds or mist, resembling a sea of clouds. In the background, dark, silhouetted mountains or hills stretch across the horizon under a pale blue sky with soft, wispy clouds.

# Demo

AZURE SQL DATABASE DEPLOYMENT



# Conclusion

What do you need

Cats are very smooth

Dogs are more powerful

What about their reliability ?





# Reliability ?

# ServiceLevel

How much of those „9“

	Basic	Standard	Premium
Target workload	Development and production	Development and production	Development and production
Uptime SLA	99.99%	99.99%	99.99%
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CPU	Low	Low, Medium, High	Medium, High
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Columnstore indexing	N/A	S3 and above	Supported
In-memory OLTP	N/A	N/A	Supported

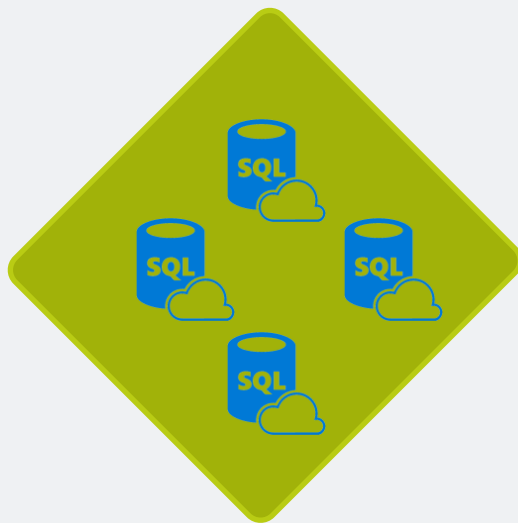
# ServiceLevel

What's in there

Single Database



Elastic Pool



Internet Gateway

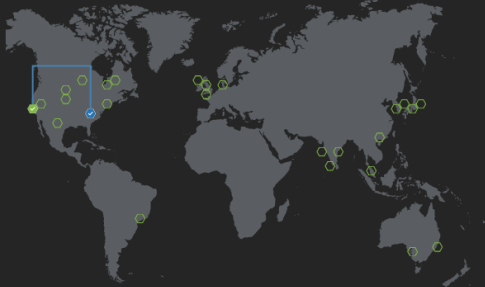





# Geo-Redundance

Be more secure and more global

Select a region on the map or from the Target Regions list to create a secondary database.

**i** You can now automatically manage replication, connectivity and failover of this database by adding it to failover group.



	SERVER/DATABASE	FAILOVER POLICY	STATUS
PRIMARY			
 East US	tenants1-wingtipuserdemo/contosoconcerthall	None	Online
SECONDARIES			
 West US	tenants1-wingtipuserdemo-secondary/contosoconcerthall		
TARGET REGIONS			
 West US			

Pin to dashboard

Forced Failover

Stop Replication

# Failover-Groups

## Automation of Availability

fg-contosoconcerthall

tenants1-wingtipuserdemo

Save

Discard

Add databases

Edit configuration

Remove databases

Failover

Forced Failover


Delete



Configuration details

Databases within group

Databases selected to be added (0)


Databases selected for removal (0)



SERVER	ROLE	READ/WRITE FAILOVER POLICY	GRACE PERIOD
 tenants1-wingtipuserdemo (East US)	Primary	Automatic	1 hours
 tenants1-wingtipuserdemo-secondary (West...	Secondary		


Read/write listener endpoint

fg-contosoconcerthall.database.windows.net



Read-only listener endpoint

fg-contosoconcerthall.secondary.database.windows.net



The background of the slide is a blue-toned landscape. In the foreground, there is a vast, textured expanse of white clouds, resembling a sea of clouds. In the background, dark, silhouetted mountains or hills stretch across the horizon under a cloudy sky. The overall color palette is monochromatic, consisting of various shades of blue and white.

# Demo

AZURE SQL DATABASE AVAILABILITY



# Calmness ?



# Automated Backup

No more matter about how and when to backup

How much backup storage is included at no cost?

How often do backups happen?

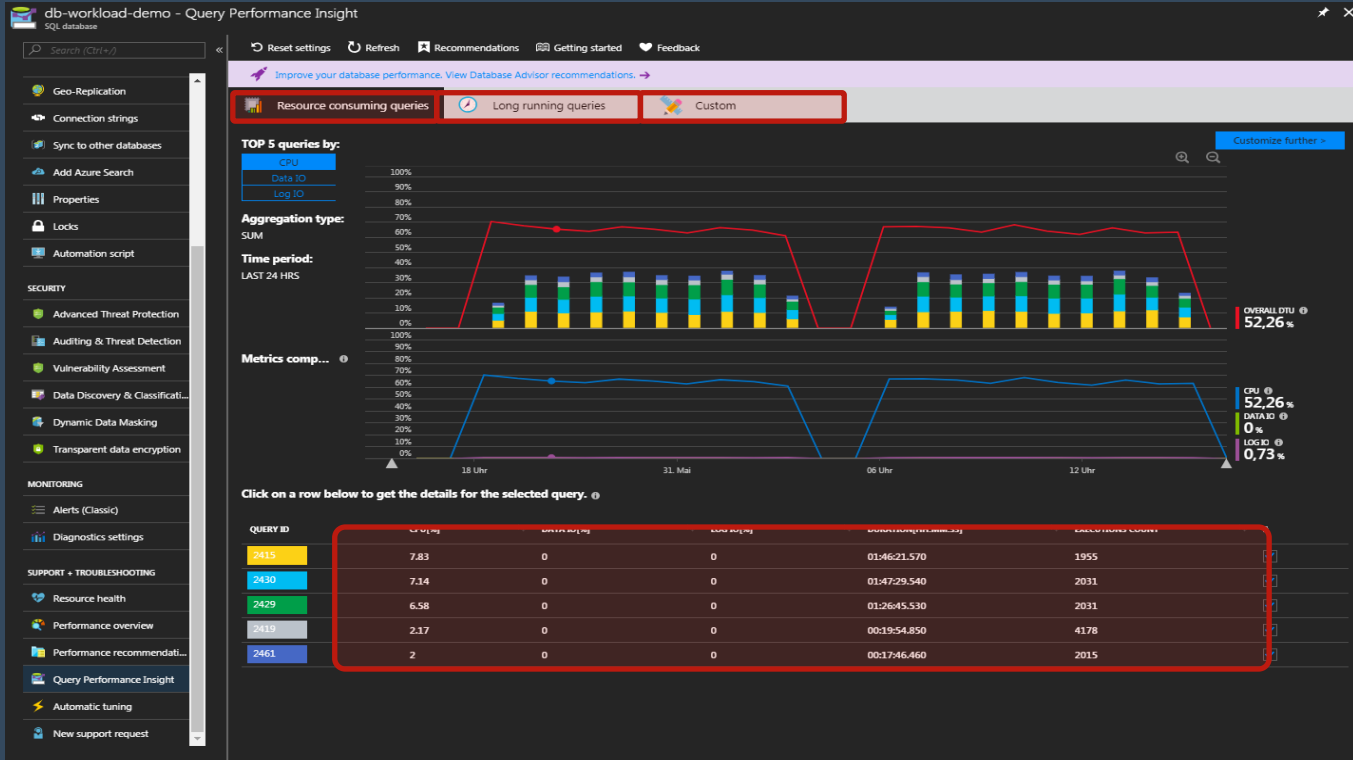
How long do you keep my backups?

# Long-Time-Retention Backup

For special requirements and archiving



# Monitoring



A photograph of four huskies running through a snowy field. The dogs are in motion, with their legs and tails blurred. They are wearing harnesses and leashes. The background shows snow-covered ground and some trees. A semi-transparent green banner is overlaid across the middle of the image, containing the text 'Movement ?'.

# Movement ?

# Options to Migrate

How to move my data

with  
Downtime

without  
Downtime

Backup / Restore

Data Migration  
Assistant

Replication

Azure Data  
Migration Service

# Backup

Full database backups  
are created weekly

Differential backups  
every few hours

Transaction log backups  
every 5 - 10 minutes

First full backup is  
scheduled immediately

# Restore

Point-in-Time-Restore

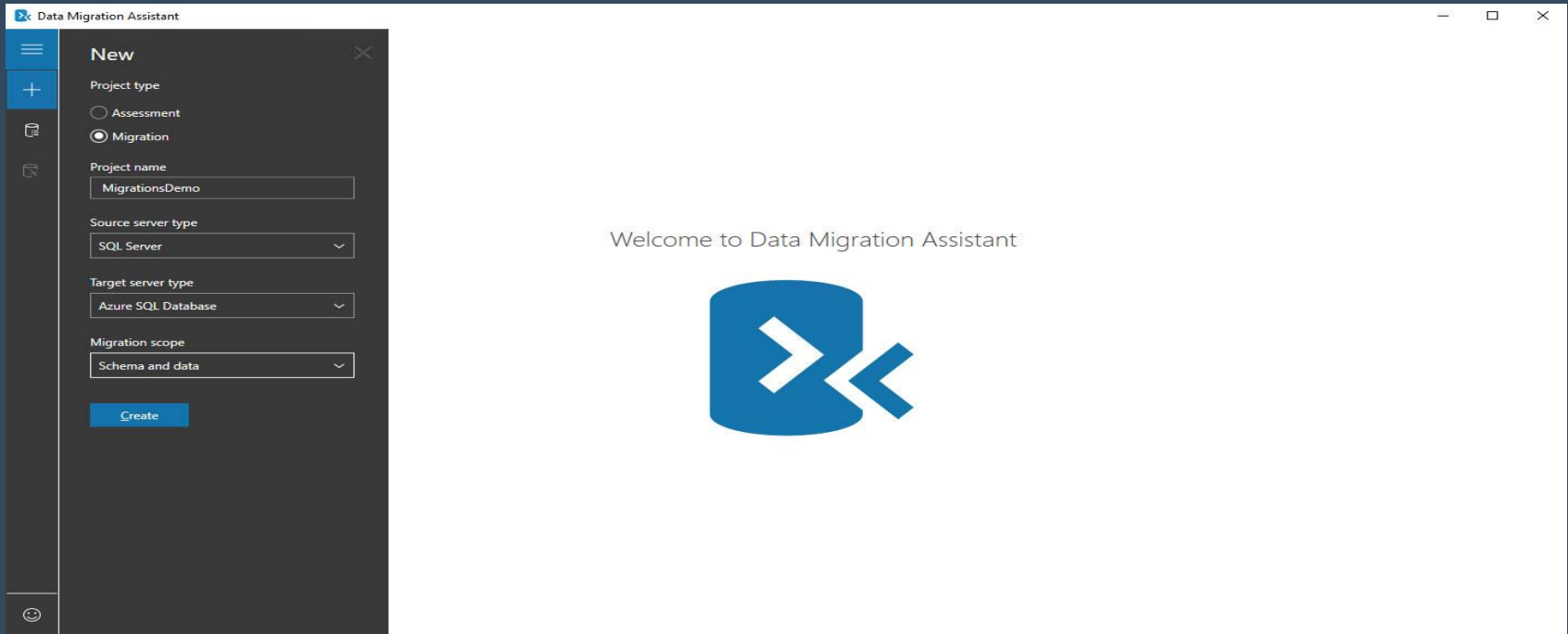
Geo-Restores

Deleted Databases

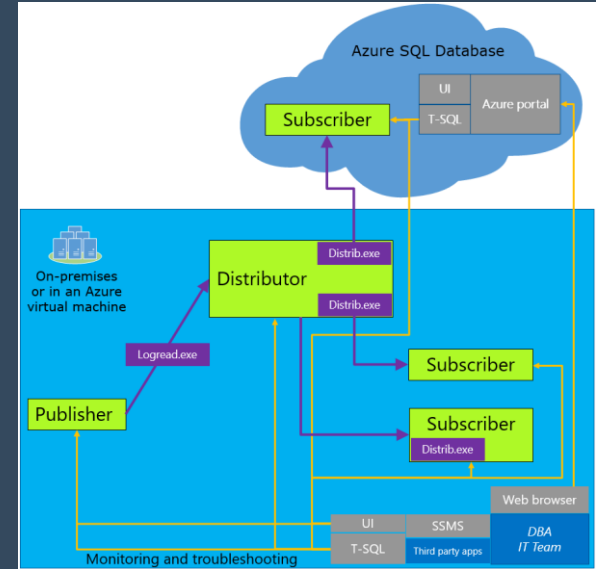
Backup / Restore =>  
Pause



# Data Migration Assistant



# Replication



# Azure Database Migration Service

## Service availability by region

AMERICAS (10/11)	US								LATAM	CANADA	
	Central US	East US	East US 2	North Central US	South Central US	West Central US	West US	West US 2	Brazil South	Canada Central	Canada East
Availability	●	●	●	●	●	○	●	●	●	●	●

EUROPE (4/8)	EUROPE				UNITED KINGDOM		AZURE GERMANY	
	North Europe	West Europe	France South	France Central	UK South	UK West	Germany Central	Germany NE
Availability	●	●	○	○	●	●	○	○

ASIA PACIFIC (9/14)	SE ASIA		AUSTRALIA			INDIA			JAPAN		KOREA		AZURE CHINA	
	East Asia	SE Asia	Australia East	Australia Central	Australia SE	Central India	South India	West India	Japan East	Japan West	Korea Central	Korea South	China East	China North
Availability	●	●	●	○	●	●	●	●	●	●	○	○	○	○

Legend ● Available ○ Not available

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# Demo

AZURE SQL DATABASE MIGRATION



# Conclusion

Why a DBA should love Azure SQL DB

Cats are self-determined, easy to handle and very quite  
so they like a Azure SQL DB

Dogs want to be guided, are most of the time loud and often hard to handle  
so they like a SQL Server

but both of them might be very powerful !!!



# Conclusion

Fast & Easy Deployment

Easy to Manage

Automatic Backup

Automatic Tuning





# Helpful Links

- **ARM Templates**

- <https://github.com/Azure/azure-quickstart-templates>

- **Documentation**

- <https://docs.microsoft.com/en-us/azure/sql-database/>
- <https://docs.microsoft.com/en-us/azure/sql-database/sql-database-cloud-migrate>
- <https://docs.microsoft.com/en-us/azure/sql-database/sql-database-libraries>
- <https://docs.microsoft.com/en-us/azure/sql-database/sql-database-dtu-resource-limits>
- <http://dtucalculator.azurewebsites.net/>

# CREATIVE COMMONS PHOTOS



Photos are provided under a similar license to Creative Commons Zero or under Creative Commons Zero license: You are free to use the images. No attribution required.

- **Pictures from pexels.com**

- <https://www.pexels.com/photo/black-ball-point-pen-on-white-notebook-158771/>
- <https://www.pexels.com/photo/brown-grey-brick-old-building-161928/>
- <https://www.pexels.com/photo/hand-thumbs-up-thumb-black-and-white-8252/>
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