

Azure SQL Database

Managed Instance



Endlich wieder durchschlafen



Aber wie ?



Björn Peters

Atos Information Technology GmbH
DBA Team Lead (MSSQL)

PASS Deutschland e.V. Member, Volunteer, Speaker
Azure Meetup Hamburg Organizer
Father, Husband, Snowboarder, Cyclist, Geek

www.sql-aus-hamburg.de
bjoern@sql-aus-hamburg.de

[@SQL aus HH](#)

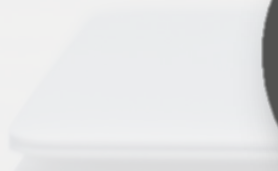
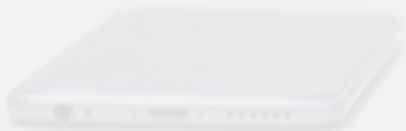


Was macht der DBA heute ?



Wie funktioniert das in der Cloud?





SLA /
Availability

Backup

Point-in-Time-
Restore

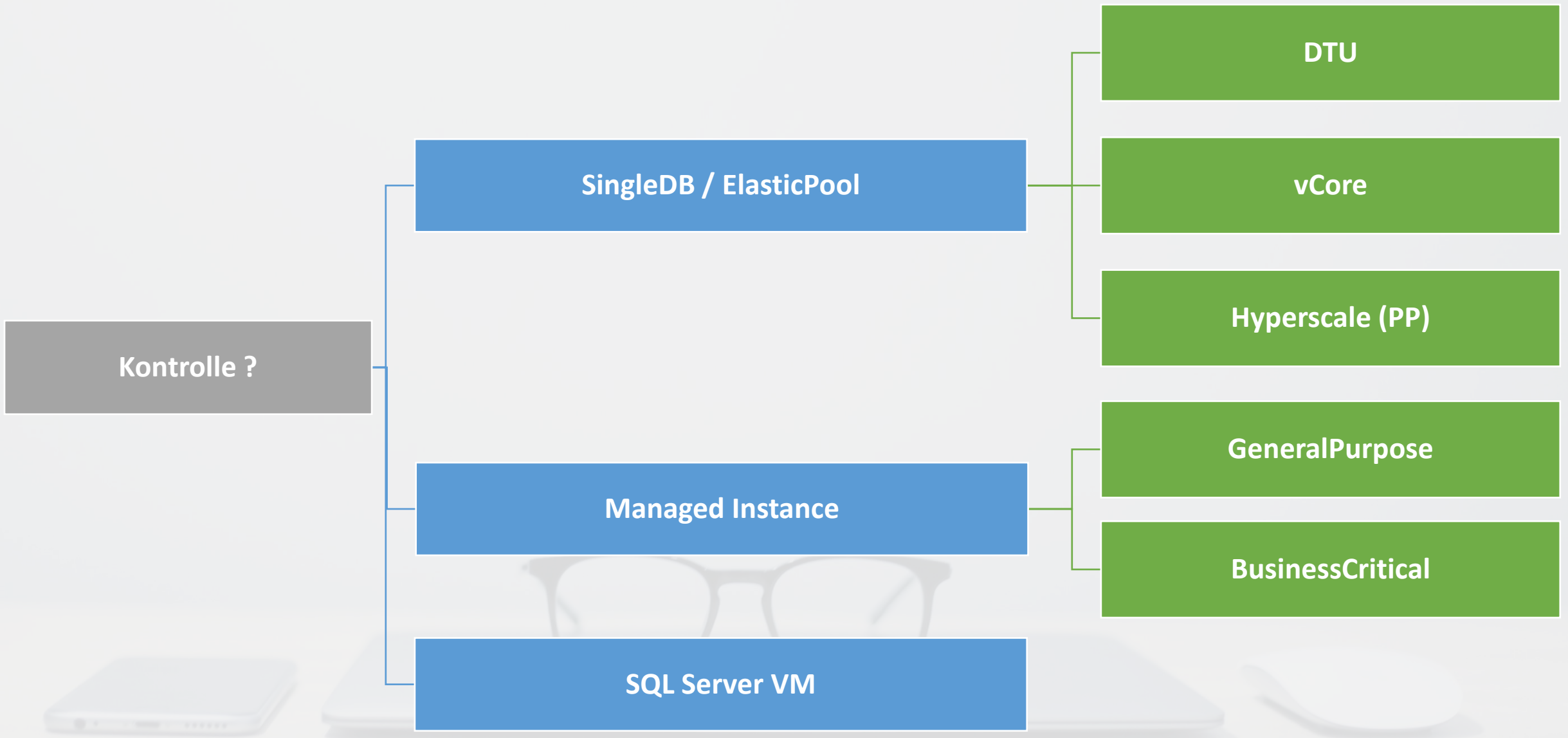
Scalability

Load-
Balancing aka
Elastic Pools

Geo-
Redundance

Firewall





**Was ist jetzt diese
Managed Instance ???**



Was fehlt der Azure SQL DB

im Vergleich zu einer SQL Server VM

???



Seit 01.10. GA

kompletter SQL-
Server

Eigene Instanz
nicht **geshared**

High Availability

Performance

- General Purposes
- Business Critical

Skalierbar

- CPU: 8 – 80 vCores
- RAM: 32GB – 8TB

Easy migration: nearly 100% like SQL Server

Data migration

- Native backup/restore
- Configurable DB file layout
- DMS (migrations at scale)

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Programmability

- Global temp tables
- Cross-database queries and transactions
- Linked servers
- CLR modules

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- Integrated Auth (Azure AD)
- Encryption (TDE, AE)
- SQL Audit
- Row-Level Security
- Dynamic Data Masking

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Operational

- DMVs & XEvents
- Query Store
- SQL Agent
- DB Mail (external SMTP)

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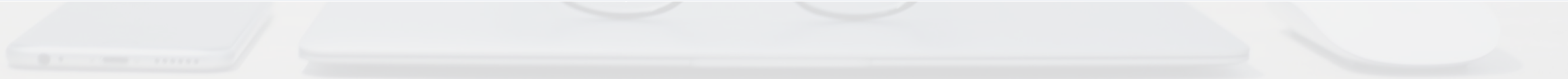
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Scenario enablers

- Service Broker
- Change Data Capture
- Transactional Replication

Feature	Description
SQL Server Version / build	SQL Server Database Engine (latest stable)(SQL 2016)
Managed automated backups	Yes
Built-in instance and database monitoring and metrics	Yes
Automatic software patching	Yes
VNet-ARM deployment	Yes
SLA	99,99 %



Generation 4

- Logische CPUs (physische Kerne)
 - basierend auf Intel-Prozessoren
 - E5-2673 v3 (Haswell) mit 2,4 GHz
- angefügte SSD
- vCPU/RAM-Ratio
 - 7 GB RAM pro Kern
- Computegrößen
 - 8, 16, 24 virtuelle Kerne

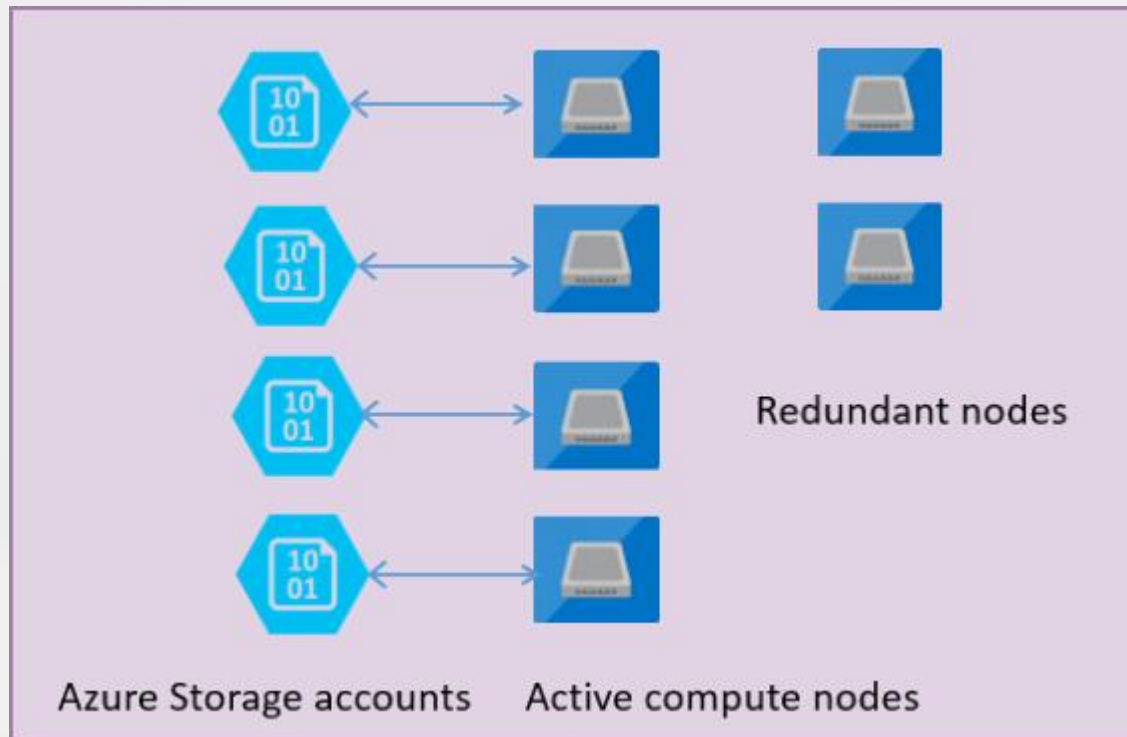
Generation 5

- Logische CPUs (logischer Kern mit Hyperthreading)
 - basierend auf Intel-Prozessoren
 - E5-2673 v4 (Broadwell) mit 2,3 GHz
- schnelle eNVM-SSD
- vCPU/RAM-Ratio
 - 5,1 GB RAM pro Kern
- Computegrößen
 - 8, 16, 24, 32, 40, 64, 80 virt. Kerne



General Purpose

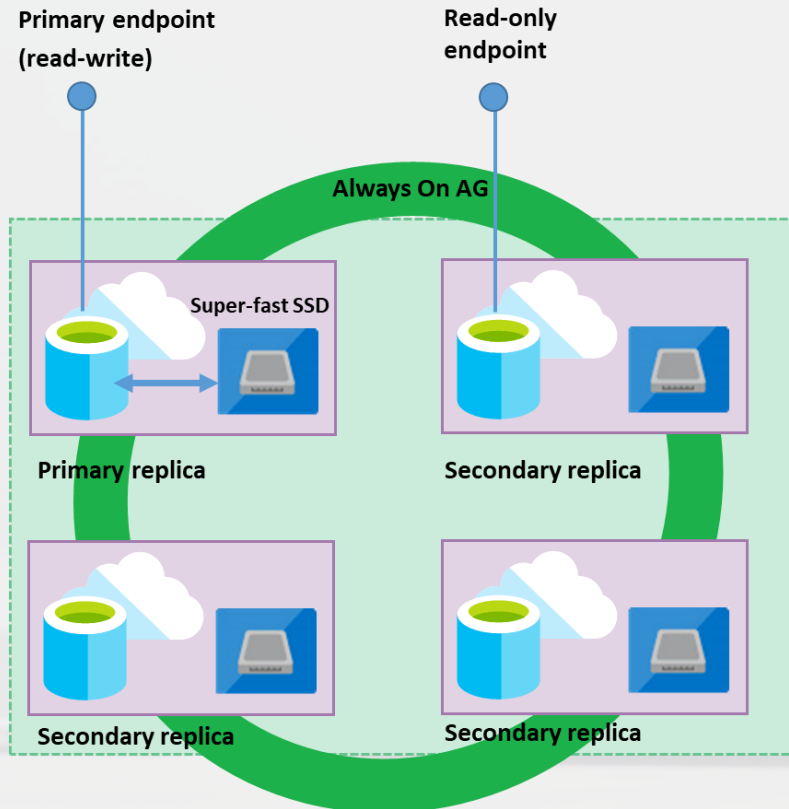
Hochverfügbarkeit durch Separierung



Stateless Compute managed by
[Azure Service Fabric](#) führt sqlserver.exe aus
DB-Files auf Premium Storage

Business Critical

Hochverfügbarkeit durch Replikation



Hochverfügbarkeit via Replikation
über eine 4-Node AlwaysOn Availability Group
Compute und Storage in Single-Node Design
Storage auf lokaler SSD

General Purpose

- Gen4: 8, 16, 24
Gen5: 8, 16, 24, 32, 40, 64, 80
- Gen4: 56 – 156 GB
Gen5: 44 – 440 GB
- Max DB-Size: 8 TB
- Max Databases: 100 / 280 Files
- Data/Log IOPS : 500-7500 per file

Business Critical

- Gen4: 8, 16, 24, 32
Gen5: 8, 16, 24, 32, 40, 64, 80
- Gen4: 56GB-156GB
Gen5: 41GB-408GB
- Gen 4: 1 TB
Gen 5:
 - 1 TB für 8, 16 virt. Kerne
 - 2 TB für 24 virt. Kerne
 - 4 TB für 32, 40, 64, 80 virt. Kerne
- Max Databases: 100 / unlimited Files
- Data/Log IOPS : 11k – 110k (1375 per vCore)

Vnet-Integration

Dediziertes Subnetz

**Komp.
Netzwerksicherheitsgruppe**

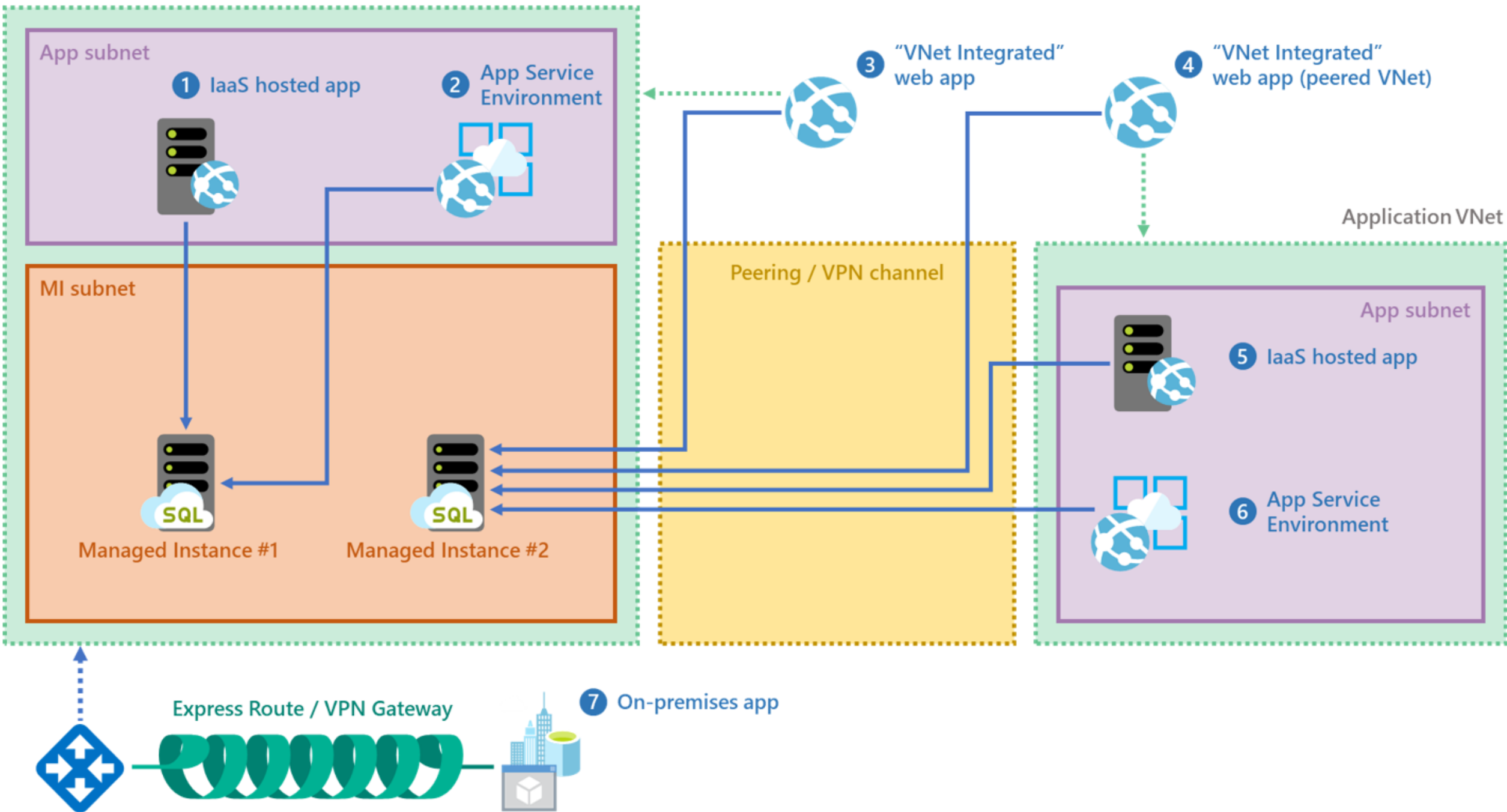
**Komp. benutzerdefinierte
Routingtabelle**

Kein Dienstendpunkte

Ausreichende IP-Adressen

**Optionales
benutzerdefiniertes DNS**

SQL MI VNet



PowerShell !!!



Security - Assessment

db-workload-demo - Advanced Threat Protection
SQL database

Search (Ctrl+/)

Overview

Activity log

Tags

Diagnose and solve problems

Quick start

Query editor (preview)

Settings

Configure

Geo-Replication

Connection strings

Sync to other databases

Add Azure Search

Properties

Locks

Automation script

Security

Advanced Threat Protection

Auditing

SettingsFeedback

Data Discovery & Classification (preview)

0
TOTAL

Recommended columns to classify (showing 3 of 46)

COLUMN	SENSITIVITY LABEL
FirstName	Confidential - GDPR
LastName	Confidential - GDPR
FirstName	Confidential - GDPR

Vulnerability Assessment

0
TOTAL

HIGH RISK FAILURES

MEDIUM RISK FAILURES

LOW RISK FAILURES

Failed Checks

Click to configure a storage account for storing scan results.

SECURITY CHECK	RISK
----------------	------

There are no failing security checks.

Threat Detection

0
TOTAL

HIGH SEVERITY ALERTS

MEDIUM SEVERITY ALERTS

Security Alerts

DESCRIPTION	DATE
There are no alerts or recommendations to display.	

Turn on auditing for full investigation experience

Vulnerability - Assessment

[Home](#) > [SQL databases](#) > [db-workload-demo - Advanced Threat Protection](#) > Vulnerability Assessment



Vulnerability Assessment

[Scan](#) [Export Scan Results](#) [Scan History](#) [Settings](#) [Feedback](#)

Total failing checks

4



Total passing checks

43



Risk summary

High Risk 3

3



Medium Risk 1

1



Low Risk 0

0

Last scan time

Mon, 05 Nov 2018 17:13:47 UTC

[Learn more](#)

[SQL Security Center](#)
[Best Practices for SQL Sec](#)

Failed (4)

Passed (43)

Filter by ID or security check

Category: All selected

Risk: All selected

ID	SECURITY CHECK	APPLIES TO	CATEGORY	RISK	ADDITIONAL INFO
VA1258	Database owners are as expected	db-workload-demo	Auditing & Logging	High	No baseline set
VA2061	Auditing should be enabled at the server level	master	Auditing & Logging	High	
VA2065	Server-level firewall rules should be tracked and maintained at a strict minimum	master	Surface area reduction	High	No baseline set
VA1288	Sensitive data columns should be classified	db-workload-demo	Data protection	Medium	No baseline set

Differences

	AzureSQL-DB	AzureSQL-Managed Instance
Automatic tuning (indexes)	Yes	No
BACPAC file (Im-/Export)	Yes	No
Backups (other than system initiated)	No	Yes, but only „Copy_only“
Change Data Capture	No	Yes
CLR	No	Yes
Cross-Database-Queries/-Transactions	No	Yes
Database-Mail	No	Yes
Geo-Restore/-Replication	Yes	No (Yes, with Copy_only Backups)
Linked Server	No	Yes

SQL Server Agent Job History Limits

Workaround Temporal Table

<https://blogs.msdn.microsoft.com/sqlserverstorageengine/2018/09/20/persisting-job-history-in-azure-sql-managed-instance/>

Hands On – let's go



Fragen?



Conclusion

Prooved High Availiblity

VNet-Separation

Full SQL Server Instance (nearly ;-))

SQL Agent included

Intelligent database as a service

Built-in intelligence

Take this if you need an instance!



Ressourcen zur Managed Instance

- <https://docs.microsoft.com/de-de/azure/sql-database/sql-database-managed-instance-index>
- <https://docs.microsoft.com/de-de/azure/sql-database/sql-database-managed-instance>
- <https://docs.microsoft.com/de-de/azure/sql-database/sql-database-managed-instance-vnet-configuration>
- <https://docs.microsoft.com/en-us/azure/sql-database/sql-database-managed-instance-get-started-restore>
- <https://docs.microsoft.com/en-us/azure/dms/tutorial-sql-server-to-managed-instance>
- <https://blogs.msdn.microsoft.com/sqlserverstorageengine/2018/09/20/persisting-job-history-in-azure-sql-managed-instance/>

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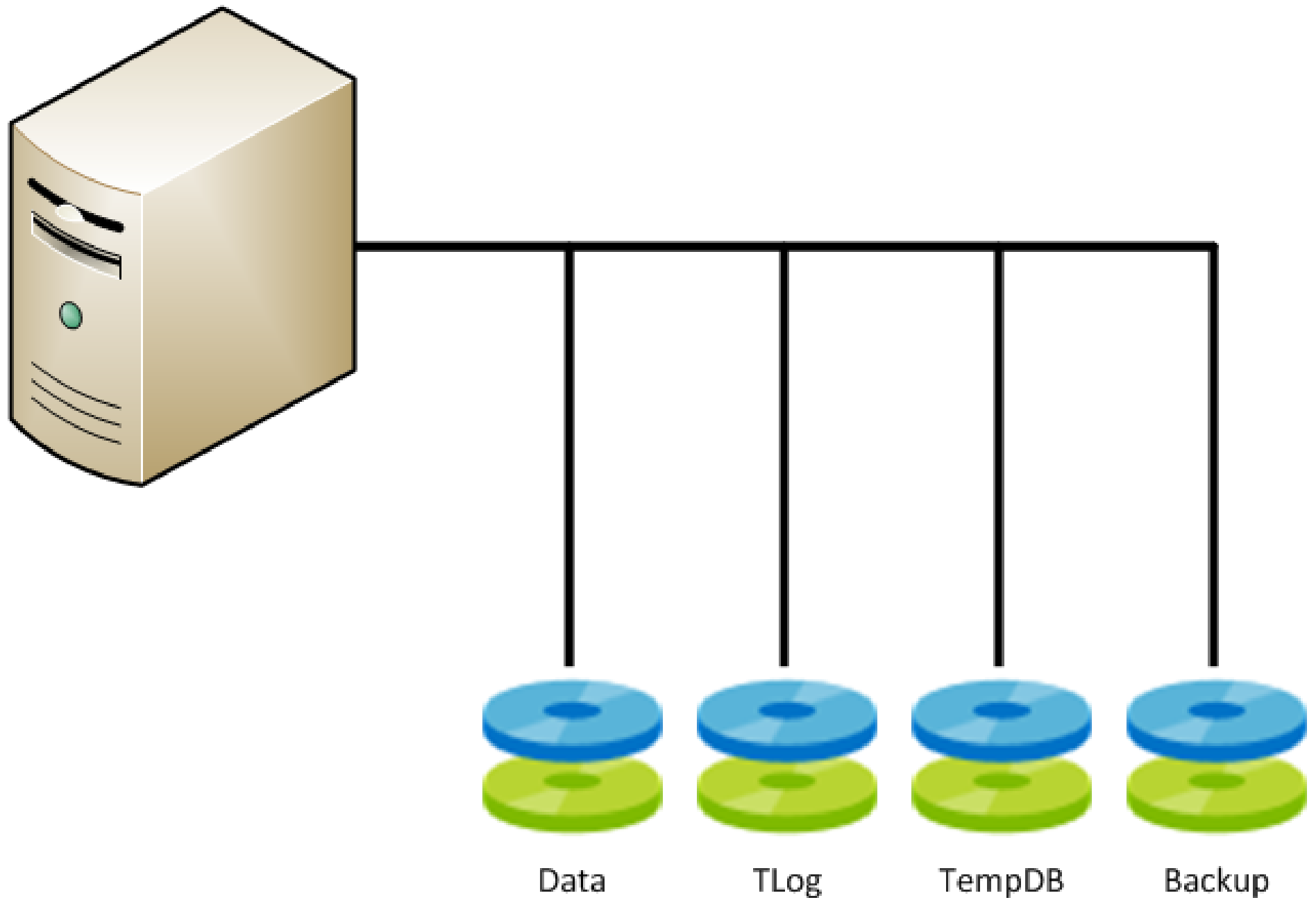
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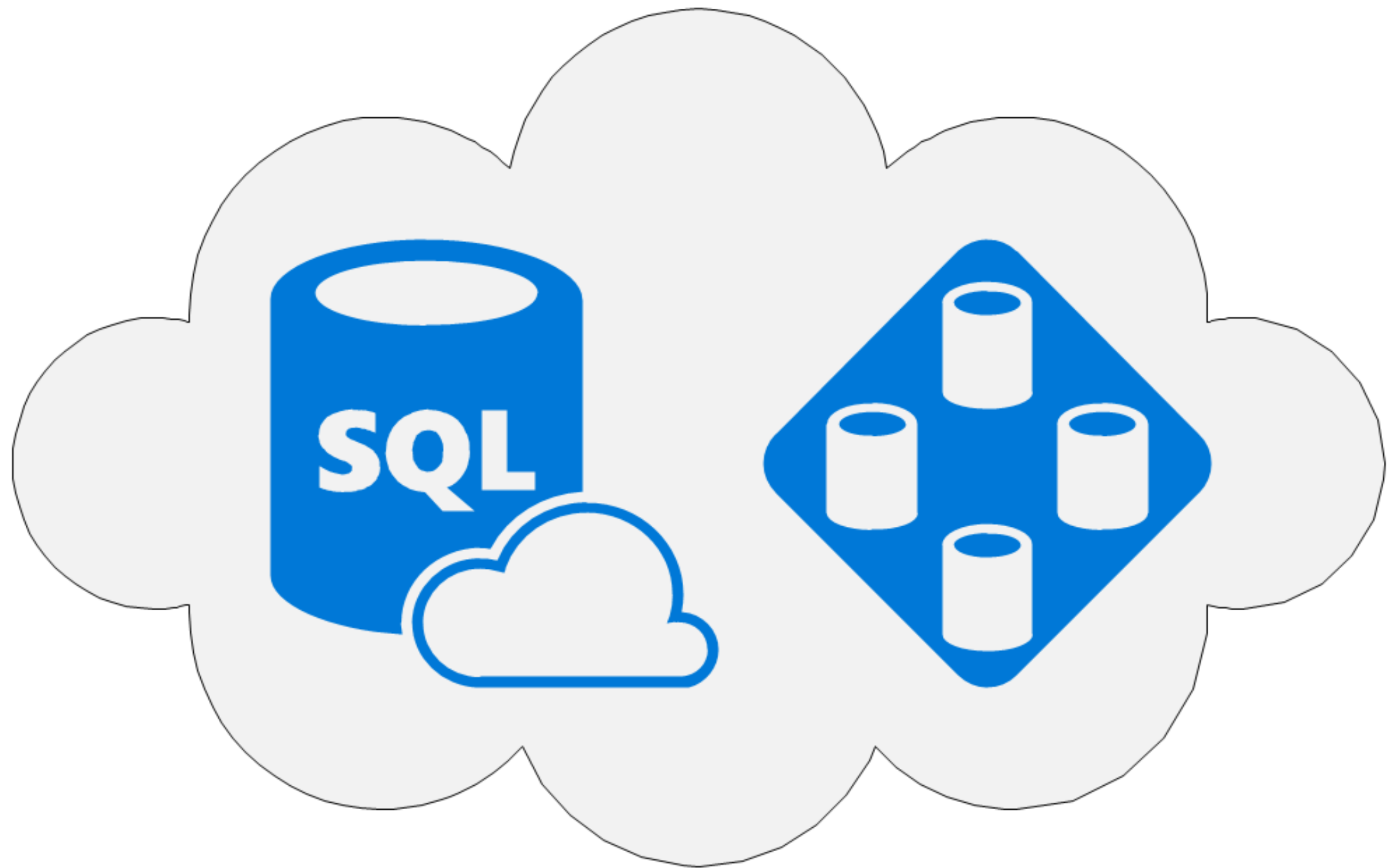
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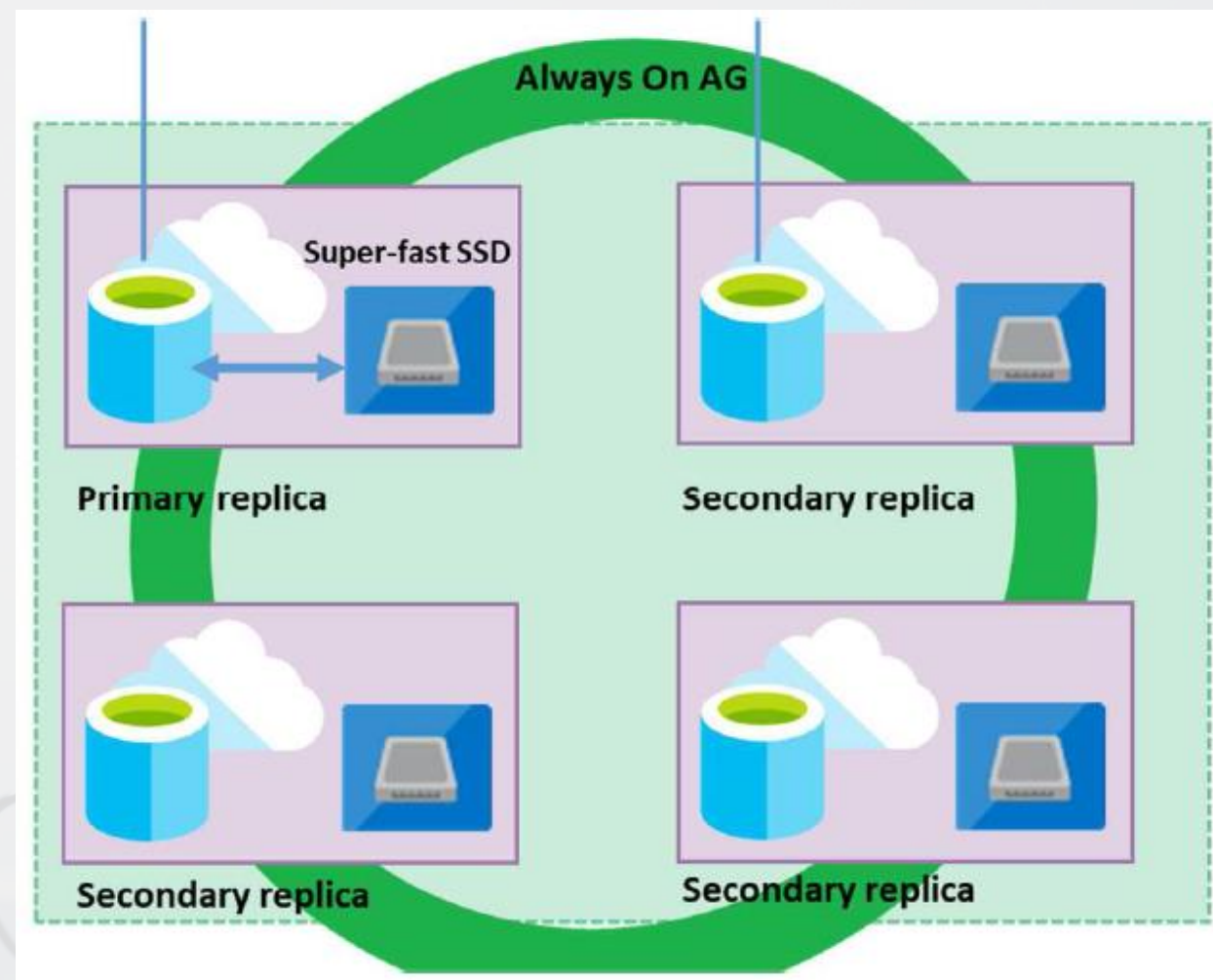
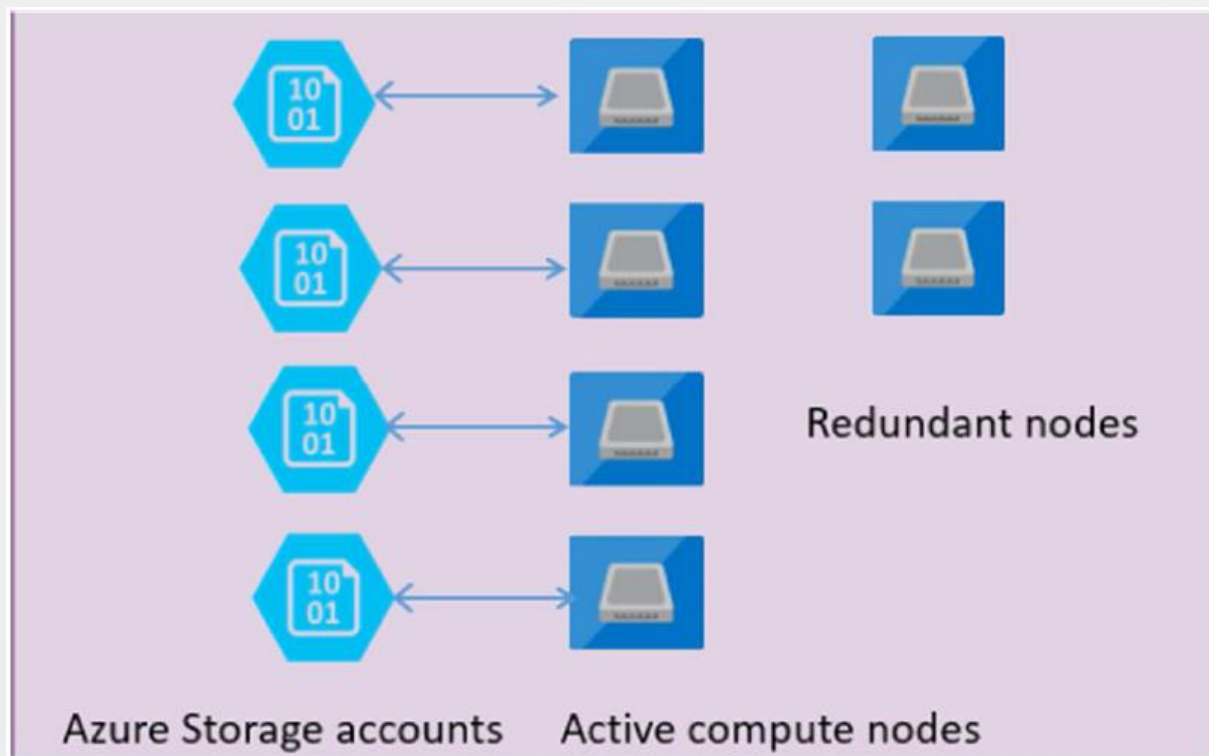


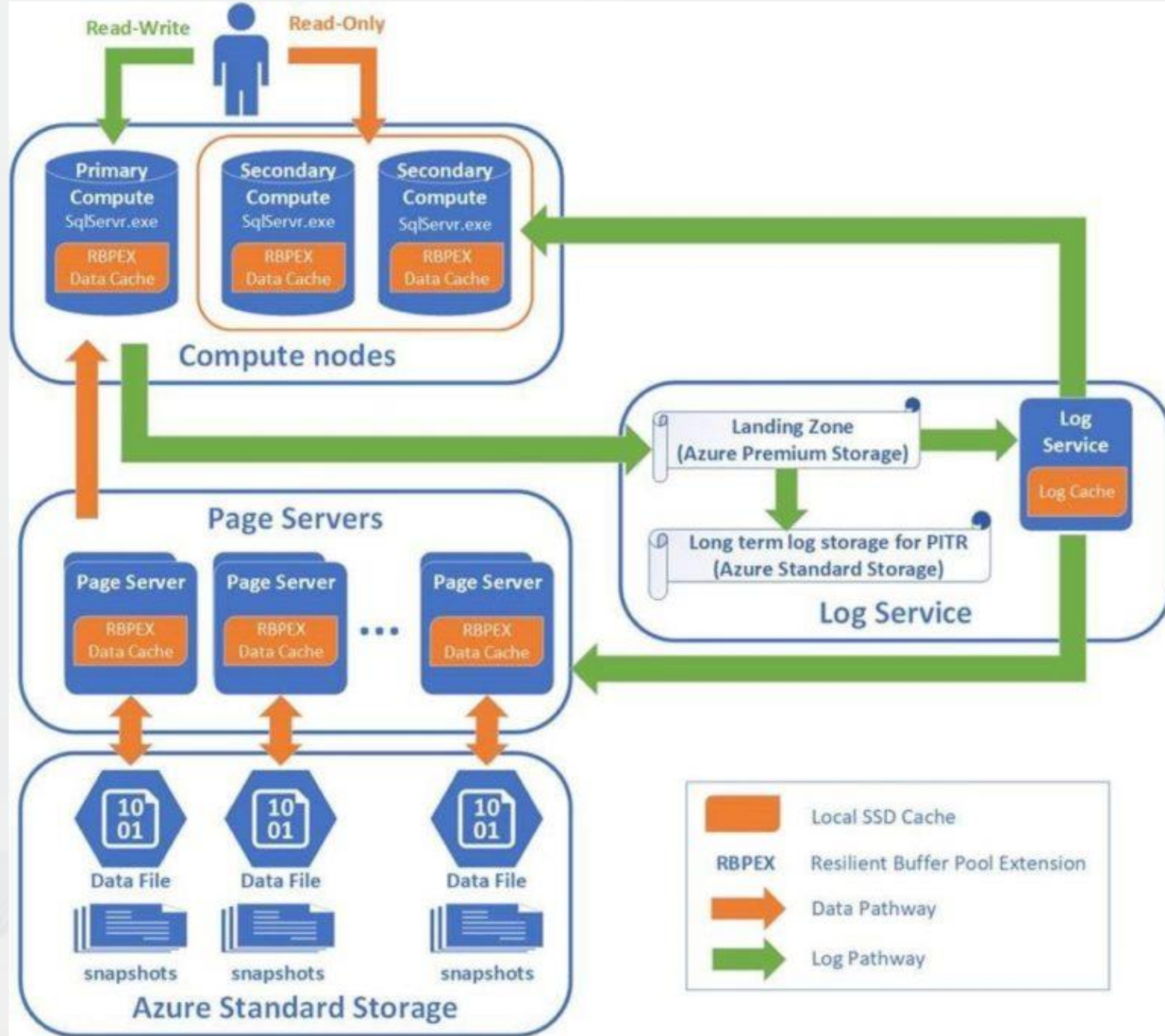
Hyperscale











Große Datenmengen
die schnell
wachsen/schrumpfen
können

schnell und
„ruckelfrei“ skalierbar

1 to 80 vCores

Bis zu 100 TB

Mehrfache Replikate,
bis zu 15 Read-Scales
mit “Partial Local
Cache”

Single database