Choosing the Right Data Store--An Overview of Azure Data Platform Choices

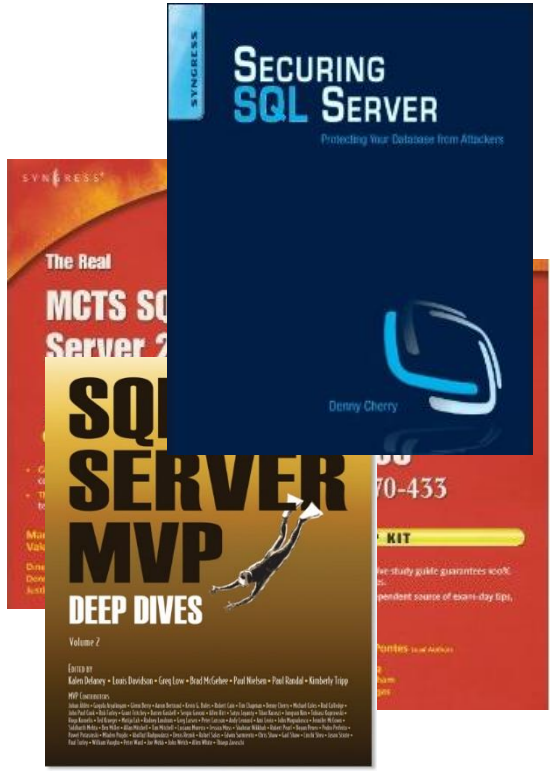
SQL VM, SQL DB, Managed Instance, Cosmos, Synapse, Hadoop

Denny will be played by John Morehouse

DCAC

About Me

- Denny Cherry & Associates Consulting
- 8 books
- Dozens of articles
- Microsoft MVP
- Microsoft Certified Master
- VMware vExpert



Microsoft Most Valuable Professional | Microsoft Certified Master SQL Server 2008 | vmware vEXPERT

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MVP - Data Platform

VMWare vExpert

Friend of Red Gate

Nerd

Agenda

SQL VM

SQL DB

Managed Instance

Cosmos

~~Synapse~~

~~Hadoop~~

Platform Services

- Portal
- Active Directory
- Multi-Factor Authentication
- Automation
- Key Vault
- Store / Marketplace
- VM Image Gallery & VM Depot

Compute

- Cloud Services
- Service Fabric
- Batch
- Remote App

Web and Mobile

- Web Apps
- API Apps
- API Management
- Mobile Apps
- Logic Apps
- Notification Hubs

Developer Services

- Visual Studio
- Azure SDK
- Team Project
- Application Insights

- Azure AD Connect Health
- AD Privileged Identity Management
- Backup
- Operational Insights
- Import/Export
- Site Recovery
- StorSimple

Integration

- Storage Queues
- Biztalk Services
- Hybrid Connections
- Service Bus

Media & CDN

- Media Services
- Content Delivery Network (CDN)

Analytics & IoT

- HDInsight
- Machine Learning
- Data Factory
- Event Hubs
- Stream Analytics
- Mobile Engagement

Data

- Azure SQL DB
- Synapse
- Redis Cache
- Search
- Cosmos
- Tables

Infrastructure Services

Compute

- Virtual Machines
- Containers

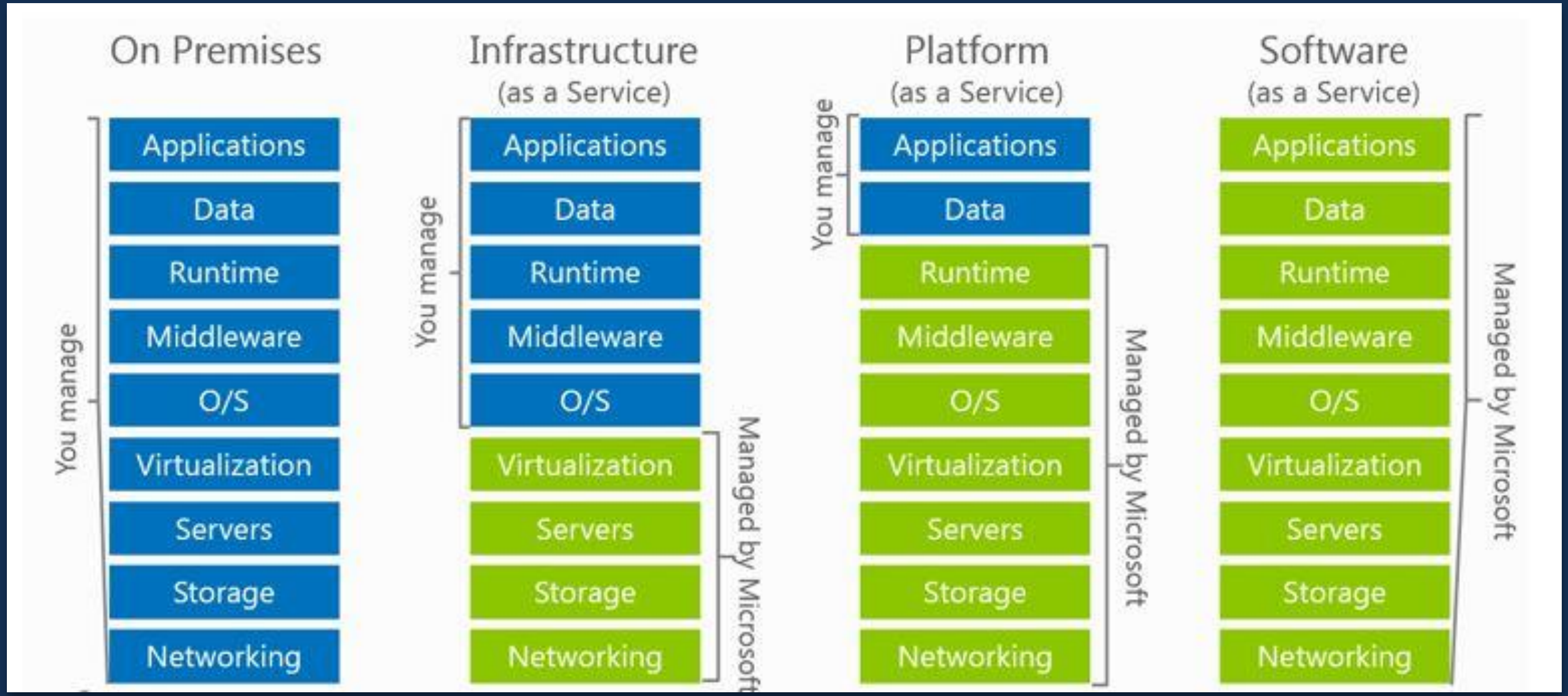
Storage

- BLOB Storage
- Azure Files
- Premium Storage

Networking

- Virtual Network
- Load Balancer
- DNS
- Express Route
- Traffic Manager
- VPN Gateway
- Application Gateway

Datacenter Infrastructure (55+ Regions)


On Premises
Applications
Data
Runtime
Middleware
O/S
Virtualization
Servers
Storage
Networking
You manage
Infrastructure
(as a Service)
Applications
Data
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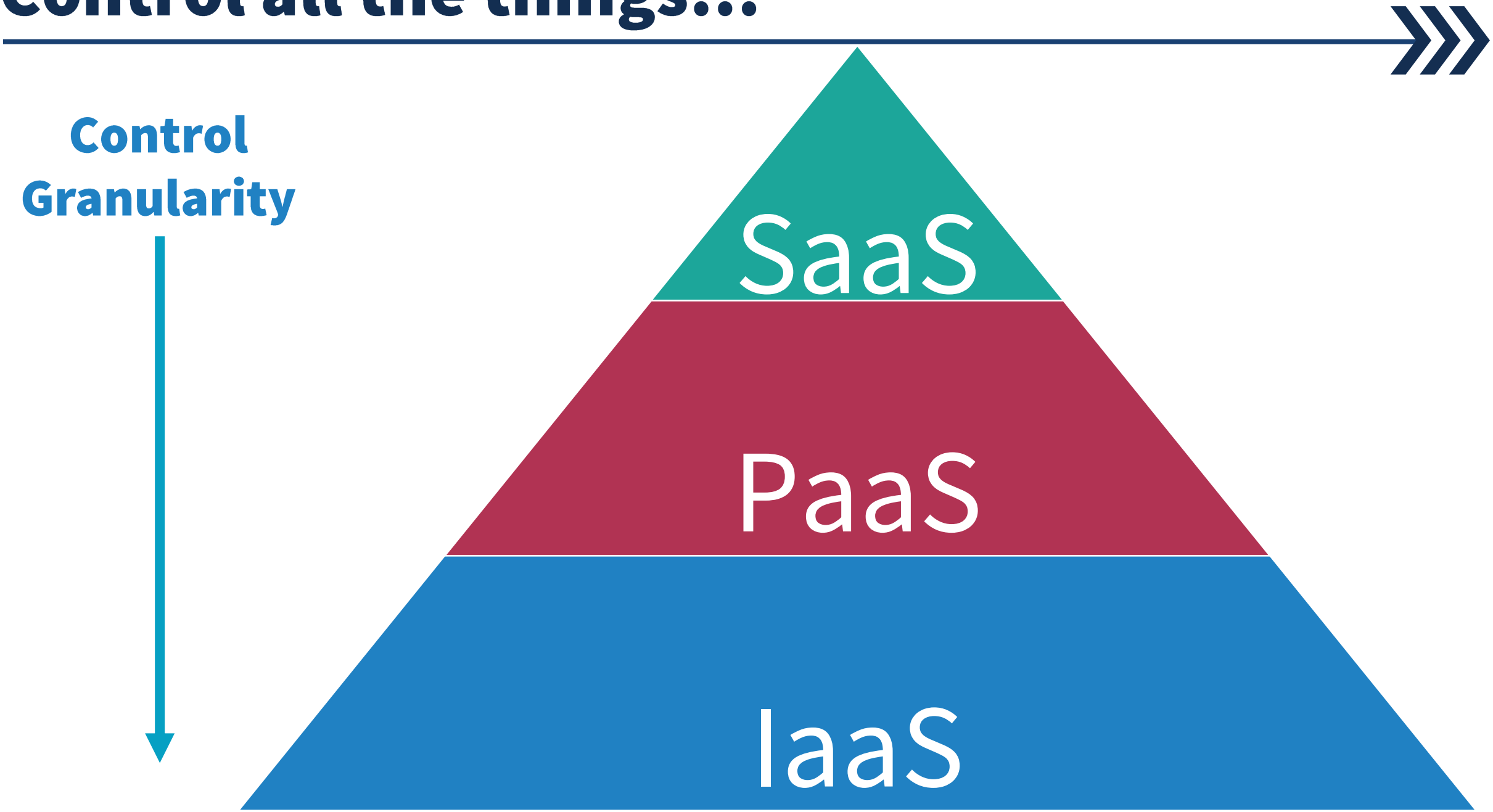
Control all the things...



SQL VMs

SQL VMs

Gives you full control over the SQL Server Instance and the VM OS

Gives you full control of the HA and DR configuration to meet your requirements

Allows for specific versions of SQL Server to be deployed

Allows for a specific build of SQL Server to be used for as long as needed by the application

SQL VMs

Running SQL VMs allows you to control the OS and SQL Patching schedules

Gives fine grained control of firewall rules allowing specific servers access

Allows for storage size only limited by the size of the VM

Allows for different data files or databases to be placed on different storage configurations

SQL VMs

SQL is used for relational systems, either OLTP workloads or data warehouse workloads

Databases can be configured across multiple disk volumes allowing for maximum IO throughput

Everything you expect from SQL Server works, as it is just SQL Server

Monolithic databases can be created without issue

Reserved Instances are available for most VM sizes

Azure SQL

SQL DBs

Four flavors of SQL DB

Azure SQL – SQL Server Based

Azure Database for MySQL

Azure Database for PostgreSQL

Azure Database for MariaDB

Azure SQL

Cloud hosted database

Cloud database platform

Databases can be configured as a single database or within an elastic pool

Applications can be migrated from on-prem to Azure SQL DB but the most successful migrations will involve application redesign

Azure SQL

By scaling horizontally across Azure an application can have limitless scale

Single databases are scaled independently from the other databases

Elastic Pools are a group of databases which share resources single a single pool of CPU and memory resources

Azure SQL

SQL DBs are available as DTU or vCore

vCore is available in two models

- Gen 4 – Physical Cores – Only for legacy deployments
- Gen 5 – Threaded Cores
- FSv2 Series
- M-Series

Azure SQL

Gen 4 vCores

Limited to 24 Cores per database / pool

Azure SQL

Gen 5 Cores

Limited to 80 cores and 396 GB of RAM

Based on a variety of CPUs

- Intel E5-2673 v4 (Broadwell) 2.3 GHz
- Intel SP8160 (Skylake) processors
- Intel Xeon Platinum 8272CL 2.5 GHz (Cascade Lake) processors.

Azure SQL

Hyperscale databases are available

Available in all Azure regions

Supports Serverless

Azure SQL

FSv2 Series

Limited to 72 vcores and 136 GB of RAM

Based on Intel Xeon® Platinum 8168 (SkyLake) processors

Hyperscale databases are available

Available in a lot of Azure regions including: Australia Central, Australia Central 2, Australia East, Australia Southeast, Brazil South, Canada Central, East Asia, East US, France Central, India Central, Korea Central, Korea South, North Europe, South Africa North, Southeast Asia, UK South, UK West, West Europe, West US 2

Supports Serverless

Azure SQL

M-Series

Limited to 128 vcores and 3,767 GB of RAM

Based on a variety of CPUs

Intel Xeon® E7-8890 v3 2.5 GHz (Haswell)

Intel Xeon Platinum 8280M 2.7 GHz (Cascade Lake) processors

Azure SQL

Hyperscale databases are available

Available in: East US, North Europe, West Europe, West US 2

Supports Serverless

Azure SQL

Perfect for OLTP databases

Best use involves a scale out configuration of the database tier

Open Source Databases

More like Managed Instance than SQL DB

Hosted as a MySQL/PostgreSQL/MariaDB instance

Managed Instances

Managed Instance

SQL Server Instance in the cloud

Solves the issues that come from Azure SQL DB

- Cross database queries
- MSDB / SQL Server Agent
- Linked Servers

Managed Instance

Limited to 100 database per Managed Instance

Limited to 4 TB per database

Limited to 8 TB per Managed Instance

Great for OLTP databases that can’t be scaled out in SQL DB, or applications that need a feature not supported by SQL DB

Cosmos

Cosmos

Autoscale platform

Several different engines and APIs within the cosmos platform

Can be configured within multiple regions

Can be configured as multi-master

Data is partitioned for maximum performance

Cosmos

Gremlen API

Cassandra API

SQL API

MongoDB API

Table API

Cosmos

Infinite scale of the data store

Billing is priced in RUs

The more data that is returned to more RUs that are used

Large data sets can be very expensive

Reserved instances are available

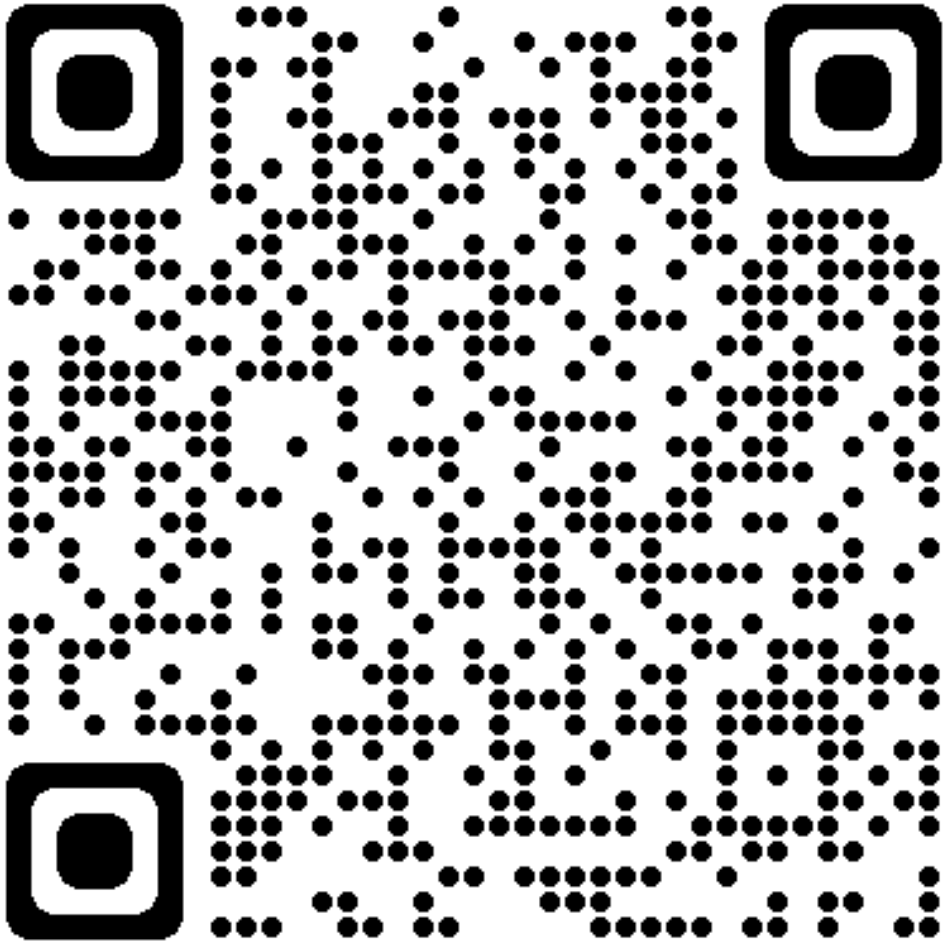
Cosmos

Ideal for logging applications

Great for application with small consistent query workloads

Questions?

Evaluations



https://evals.datagrillen.com/evals.aspx

Selecting the Correct Azure Data Solution for your Application

DCAC

Email us to help you select the correct data solution!

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