AZURE SQL DATABASE

Quality Thought

Relational Database

The term “relational” has nothing to do with data in tables being related to data in other tables

It is based on relational model of data used in set theory

Data is stored in tables which are made up of rows and columns

A row represents an item while the column is an attribute

Each table has a strict schema to which all data must adhere to

Each table will have a primary key which must be unique within the table

Indexes provide fast access to data that is commonly searched/referenced by

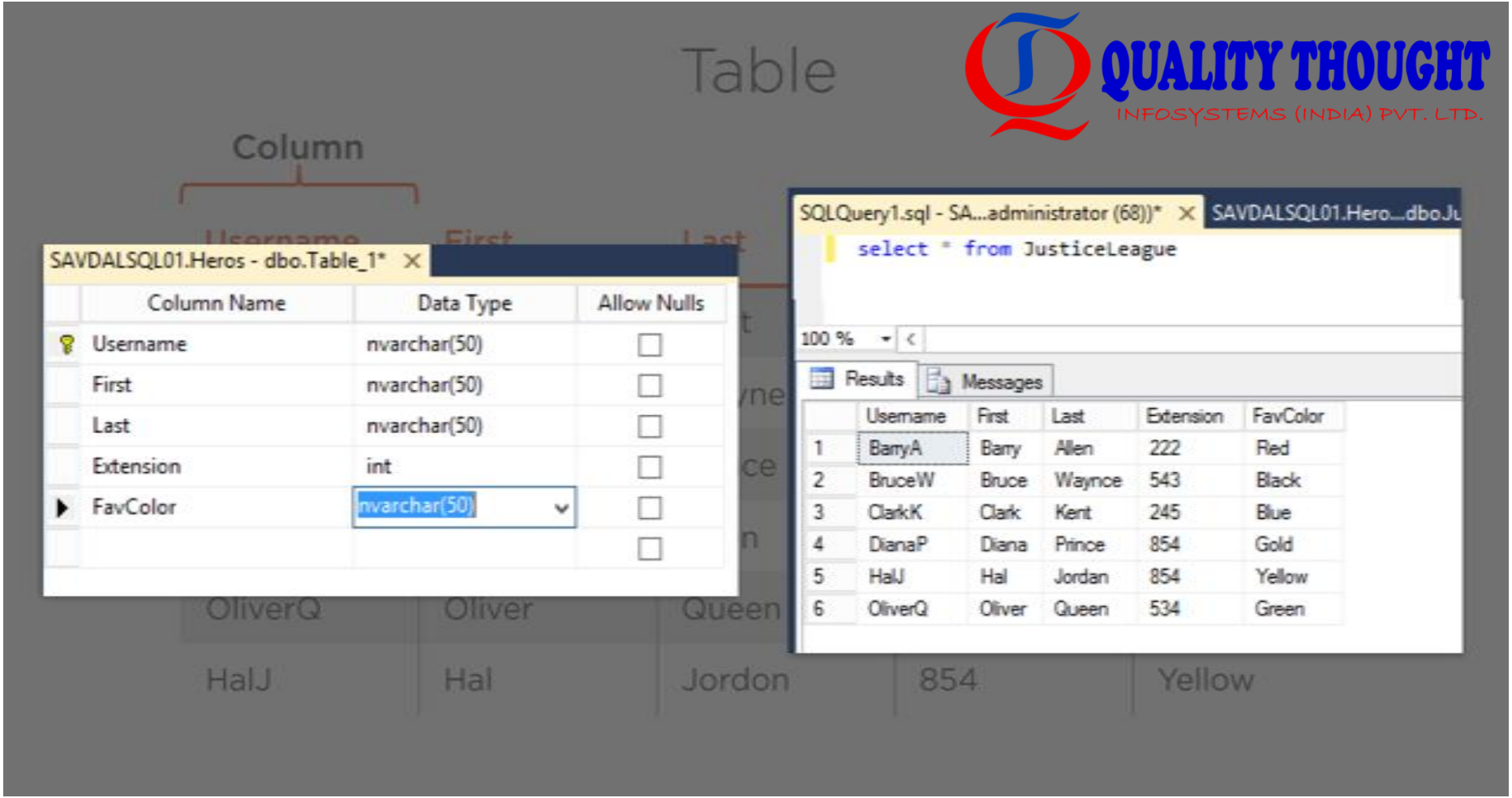
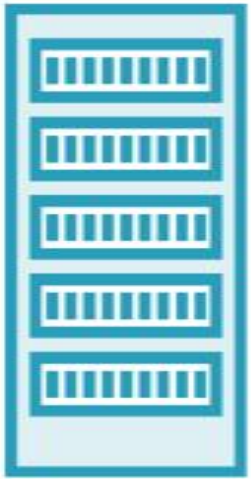


Table
Column
QUALITY THOUGHT
INFOSYSTEMS (INDIA) PVT. LTD.
SAVDALSQL01.Heros - dbo.Table_1*
Column Name
Data Type
Allow Nulls
Username
nvarchar(50)
First
nvarchar(50)
Last
nvarchar(50)
Extension
int
FavColor
nvarchar(50)
SQLQuery1.sql - SA...administrator (68))*
SAVDALSQL01.Hero...dboJu
select * from JusticeLeague
100 %
Results
Messages
Username
First
Last
Extension
FavColor
1 BarryA Barry Allen 222 Red
2 BruceW Bruce Waynce 543 Black
3 ClarkK Clark Kent 245 Blue
4 DianaP Diana Prince 854 Gold
5 HalJ Hal Jordan 854 Yellow
6 OliverQ Oliver Queen 534 Green
OliverQ
Oliver
Queen
HalJ
Hal
Jordon
854
Yellow

Microsoft SQL Server



Microsoft's enterprise relational database implementation

Available in various SKUs

Utilizes Structured Query Language (SQL) for the querying and maintaining of the database

Databases contains one or more tables

Write-ahead logging

Supports various features including replication, security and analytics

Azure SQL Database

A Database-as-a-Service providing SQL instances without the maintenance of the OS or SQL Server

Evergreen SQL running latest SQL branch with database compatibility level available where specific functionality version required

Different tiers and sizes that impact number of databases, performance and size

Features are mainly the same across tiers with a few minor exceptions

Single database provides one database in the instance while elastic pool enables multiple databases that share a pool of capacity and collectively scale

Supports transparent data encryption which is enabled by default

Can be accessed like a regular SQL instance

Database Transaction Units (DTUs)

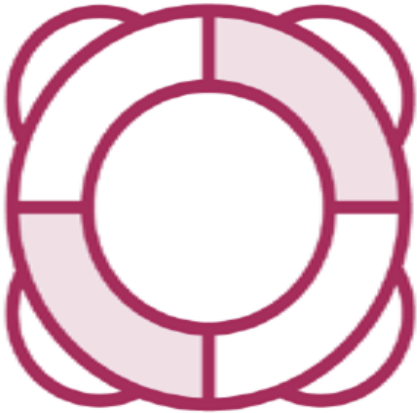
Also eDTU (elastic) when using an elastic instance which are shared between databases that can auto-scale within the instance

A blend of CPU, memory and I/O (data and transaction log)

Azure SQL Database Query Performance Insight can be used to drill into the exact utilization

http://dtucalculator.azurewebsites.net/ to estimate requirements

Recovery



5 minute interval point-in-time recovery backups available through a combination of database backups and log backups

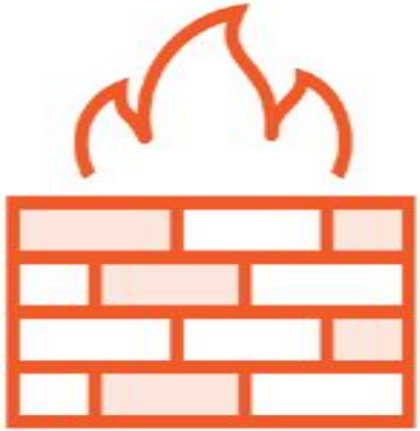
7 day retention for basic, 35 for other tiers

Local HA provided with sub 10 second failovers

Optional active geo-replication available for all tiers with up to 4 read-only asynchronous replicas available in user-defined regions across the globe

Can also export/import to bacpac/dacpac

Azure SQL Database Firewall



The service is Internet facing

If ExpressRoute public peering access can be via a private connection

A basic firewall is provided that controls who can communicate to the service

- Azure services (all!)
- IP addresses

Communication from a vnet would mean enabling all Azure services to access unless an appliance with public IP is utilized on the edge

Still need to authentication (which must be SQL authentication or Azure AD authentication)

Azure SQL Database vs. SQL on IaaS

In general start with Azure SQL Database and use SQL on IaaS if a requirement cannot be met

For example:

- Customized environment
- Very large databases (greater than 1 TB)
- Version requirements for third-party software

Azure SQL Database vs. SQL on IaaS

Detailed document at

https://docs.microsoft.com/en-us/azure/sql-database/sql-database-paas-vs-sql-server-iaas

References

Documentation: https://docs.microsoft.com/en-us/azure/sql-database/

DTU and eDTU: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-what-is-a-dtu