

Hybrid scenarios and Security

Adastra

Pavel Stejskal, Consultant
Pavel.Stejskal@adastragr.com
[linkedin.com/in/pavelstejskal](https://www.linkedin.com/in/pavelstejskal)

Josef Pinkr, Consultant
Josef.Pinkr@adastragr.com
[cz.linkedin.com/in/josefpinkr](https://www.linkedin.com/in/josefpinkr)



20.4.2016



SQL Server 2016 Enhanced backup



Enhanced backup in SQL 2016 – key features



Managed backup

- Granular control of the backup schedule
- Local staging support for faster recovery and resilient to transient network issues
- Support for system databases
- Supports simple recovery mode



Backup to Azure block blobs

- Cost savings on storage
- Significantly improved restore performance
- More granular control over Azure Storage



Azure Storage snapshot backup

- Fastest method for creating backups and running restores
- Uses SQL Server database files on Azure Blob storage

Backup to Azure block blobs

- 2x cheaper storage – **page** blob vs. **block** blob
- Backup striping and faster restore
- Maximum backup size is 12.8 TB (1 TB in SQL 2014)
- Granular access and unified credential story (SAS URIs)
- Supports all existing backup/restore features (except append)



**Azure
Blob
Storage**

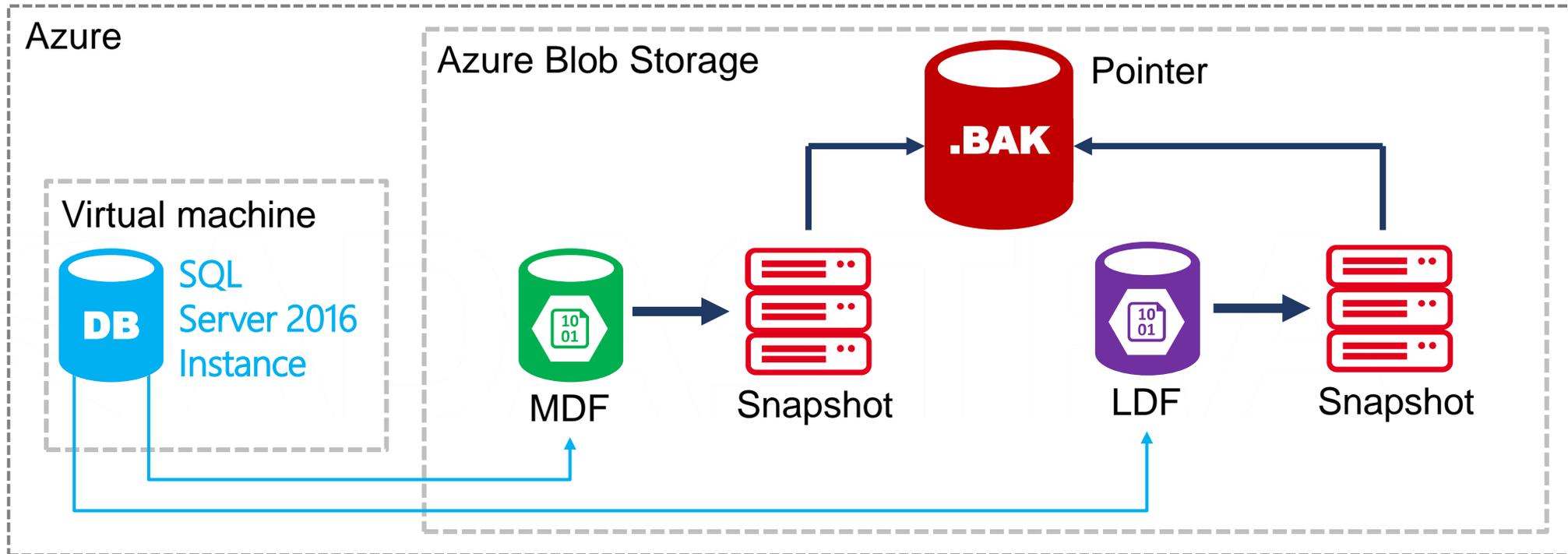
```
CREATE CREDENTIAL [https://<account>.blob.core.windows.net/<container>]
WITH IDENTITY = 'Shared Access Signature',
SECRET = 'sig=mw3K6dpwV%2BWUPj8L4Dq3cyNxCI'
```

```
BACKUP DATABASE database TO
URL = N'https://<account>.blob.core.windows.net/<container>/<blob1>',
URL = N'https://<account>.blob.core.windows.net/<container>/<blob2>'
```

Backup to Azure with file snapshots

BACKUP DATABASE DB TO

URL = N'https://<account>.blob.core.windows.net/<container>/<backupfile.bak>'
 WITH FILE_SNAPSHOT



Stretch Database in SQL 2016



Maintain large data volumes with shrinking IT?

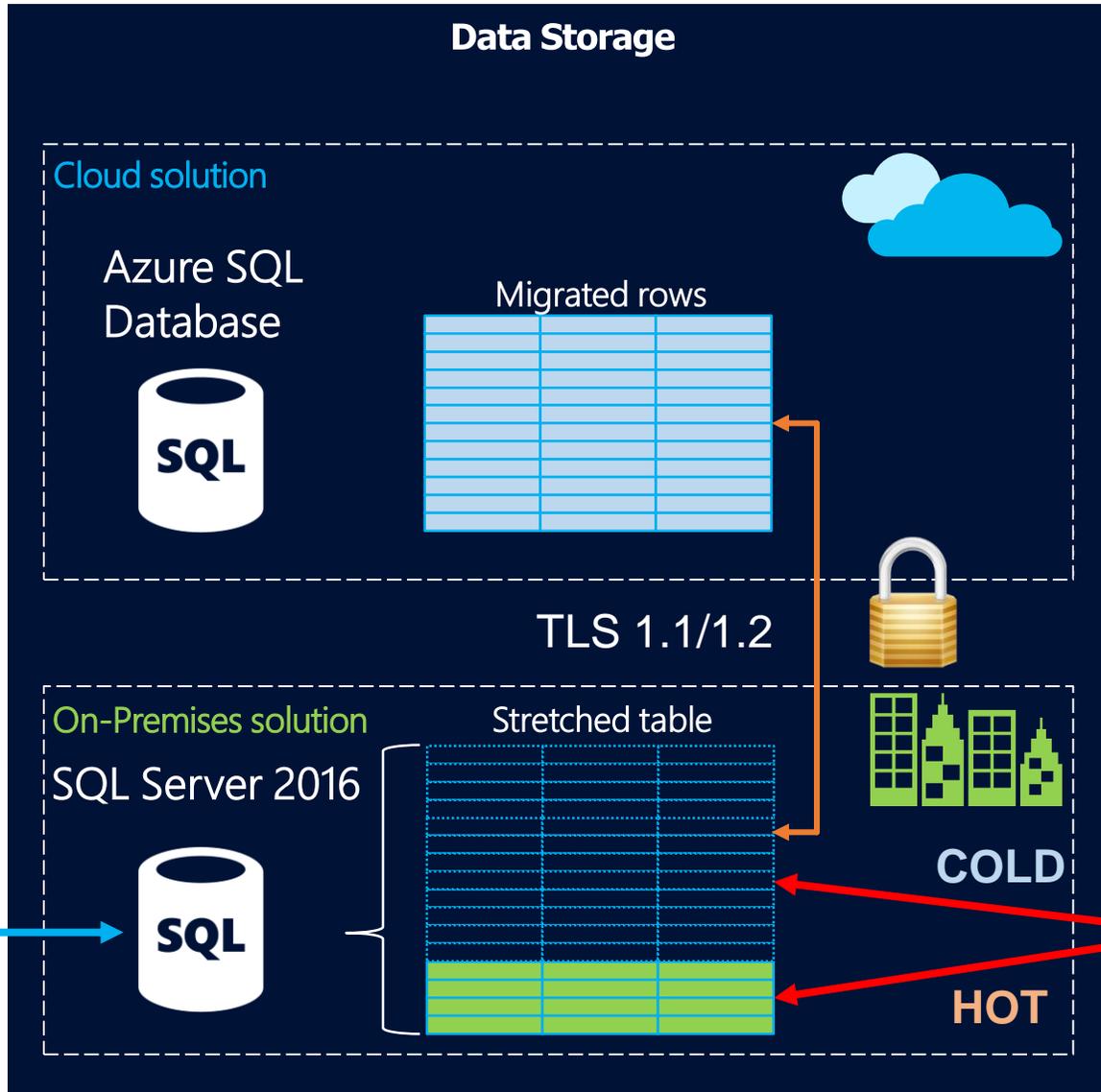
- Massive tables
(hundreds of millions/billions of rows, TBs size)
- Users want/need to retain data indefinitely
- Cold data infrequently accessed but must be online
- Datacenter consolidation
- Maintenance challenges
- Business SLAs at risk

Solutions:

1. Expand server and storage
2. Move data elsewhere

Hybrid solution with Stretch Database

- All queries to On-Premises SQL
- No changes in existing scripts/app



Pricing based on

Performance (DSU)

Storage (Page Blob)

Scale up/down anytime



```
CREATE TABLE <table name> ...
WITH (
    REMOTE_DATA_ARCHIVE = ON (
        FILTER_PREDICATE =
            dbo.fn_stretchpredicate(date),
        MIGRATION_STATE = PAUSED
    )
);
```

Enhanced Availability in SQL 2016

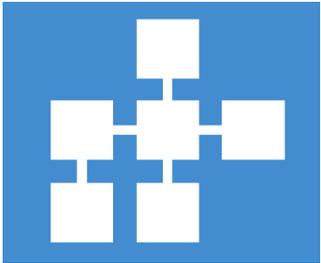


The need for mission-critical availability



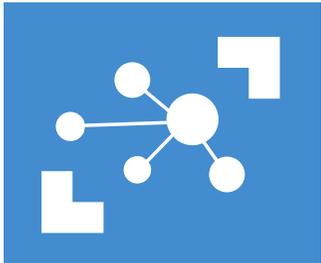
Reliable

- ✓ Detects failures reliably
- ✓ Able to handle multiple failures



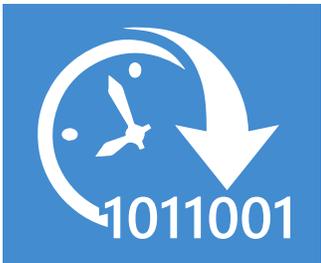
Integrated

- ✓ Unified, simplified solution
- ✓ Easy to deploy, manage, and monitor



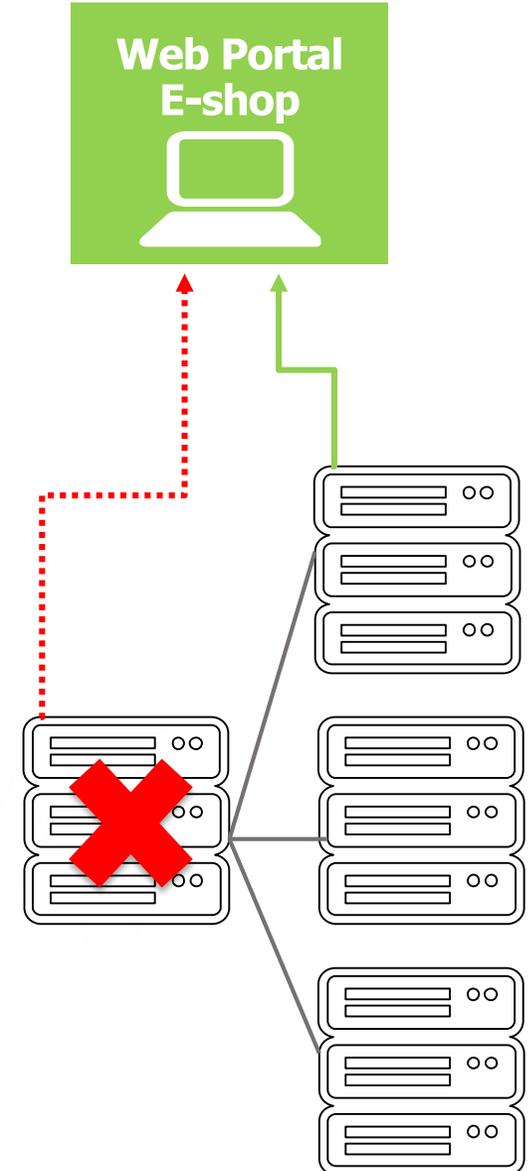
Flexible

- ✓ Reuse existing investments
- ✓ SAN/DAS environments

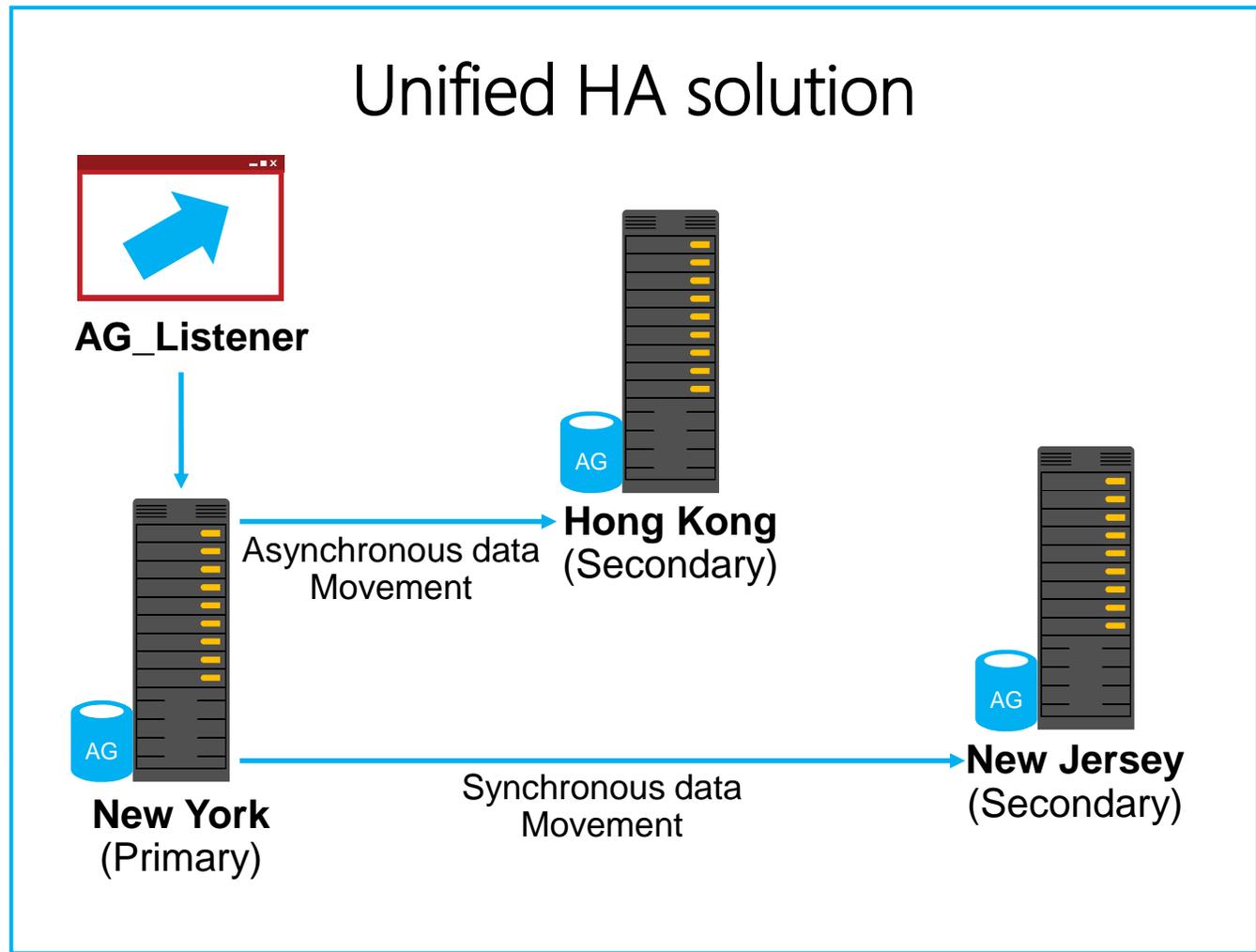


Efficient

- ✓ Able to use HA hardware resources
- ✓ Fast, transparent failover



Enhanced AlwaysOn Availability Groups



Operational Analytics



Greater scalability

- Load balancing **readable secondaries**
- Increased number of automatic failover targets
- Log transport performance

Improved manageability

- DTC support – Distributed Transactions
- Database-level health monitoring
- Group Managed Service Account
- Domain-independent Availability Groups

In Summary

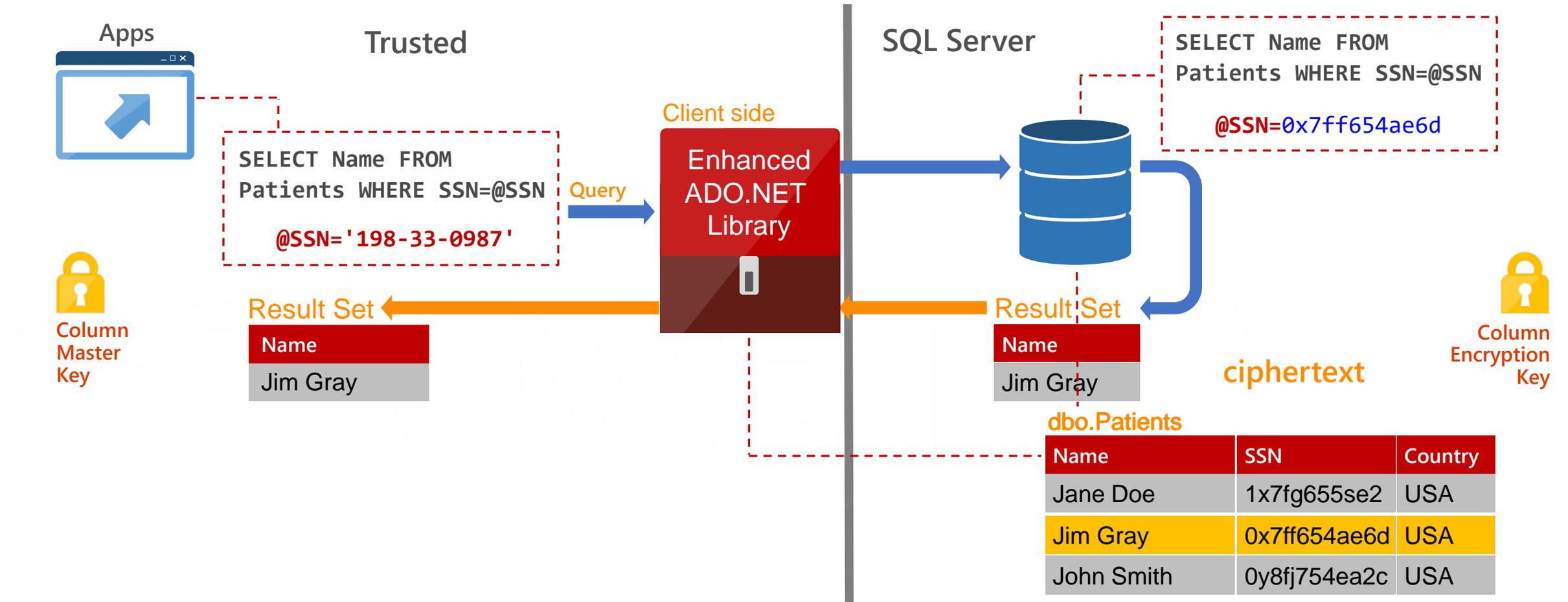
2005 / 2008 / 2008 R2	2012 / 2014	2016
<ul style="list-style-type: none"> ○ Failover Clustering ○ Database Mirroring ○ Replication ○ Transaction Log Shipping 	<ul style="list-style-type: none"> ○ AlwaysOn Availability Groups 	<ul style="list-style-type: none"> ○ Increased Auto Failover Targets ○ Automatic failover based on DB Health ○ Cross / No Domain Support ○ DTC Support ○ Round robin load balancing of replicas ○ SSISDB Support ○ GMSA support ○ Online Operations ○ Log Transport Performance ○ Standard Edition Support

Always Encrypted



Always Encrypted

- To protect sensitive data
- Separatio between those who own the data and those who manage the data



Row-Level Security

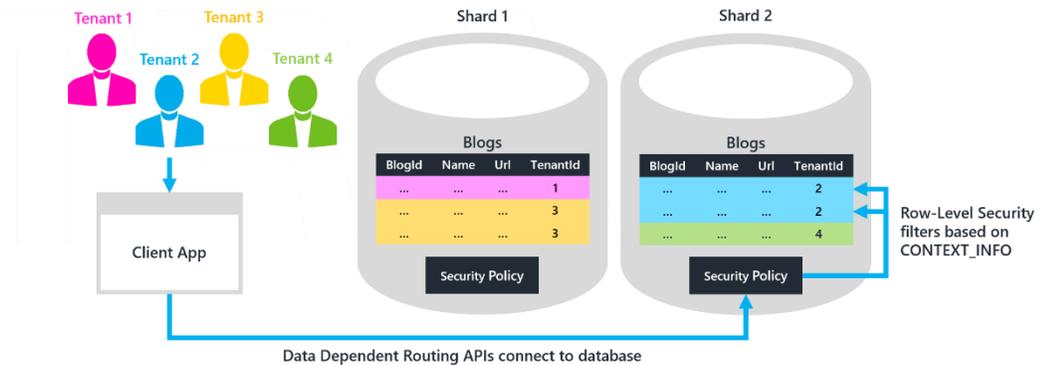
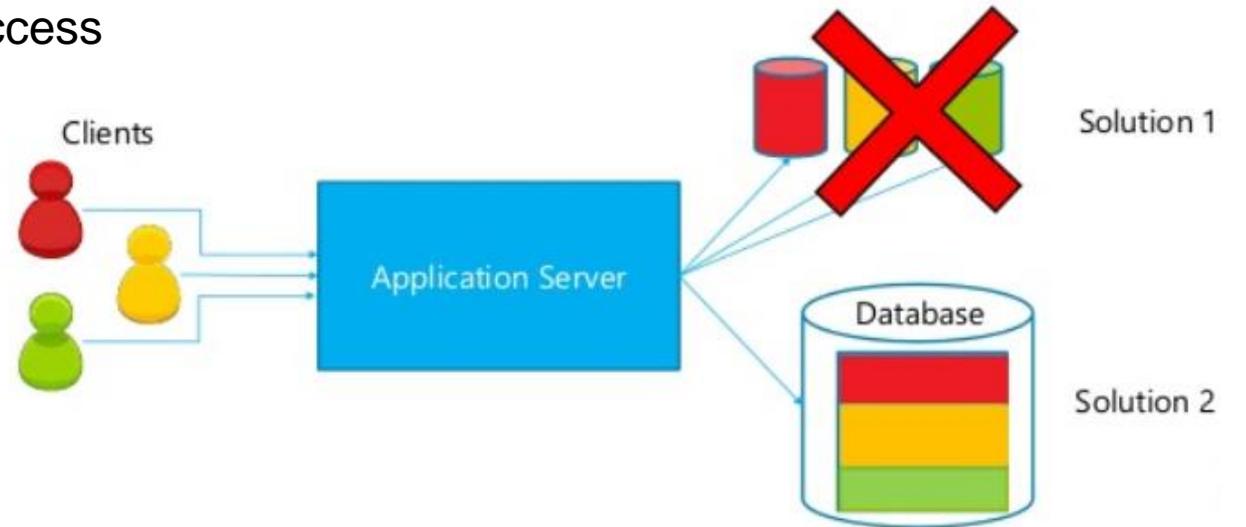


Row-Level Security

- enables you to implement restrictions on data row access
 - access to only the relevant data
- access restriction logic is located in the database

Scenarios

- Sales
 - Allows Managers to view data rows for their own region only
- Finance
 - Restrict access to rows of financial data based on the employee's business division, or based on the employee's role within the company
- Multi-tenant app
 - A multi-tenant application can create a policy to enforce a logical separation of each tenant's data rows from every other tenant's rows. Efficiencies are achieved by the storage of data for many tenants in a single table. Of course, each tenant can see only its data rows.



Thank you!

Restrictions for public release and use:

This document can comprise confidential information. As such it may not, without Adastrá's prior consent, be copied or transferred.

Important:

All brands and names of products given in this documentation are or can be registered trademarks of their owners.

© 2016 Adastrá, all rights reserved.



ADASTRA

ADASTRA CZECH REPUBLIC

Adastrá, s.r.o.

Karolinská 654/2, 186 00 Praha 8

Tel.: +420 271 733 303

infocz@adastragr.com

www.adastra.cz

ADASTRA GROUP North America

8500 Leslie St.

Markham, Ontario, L3T 7M8

Tel: +1 905 881 7946

info@adastragr.com