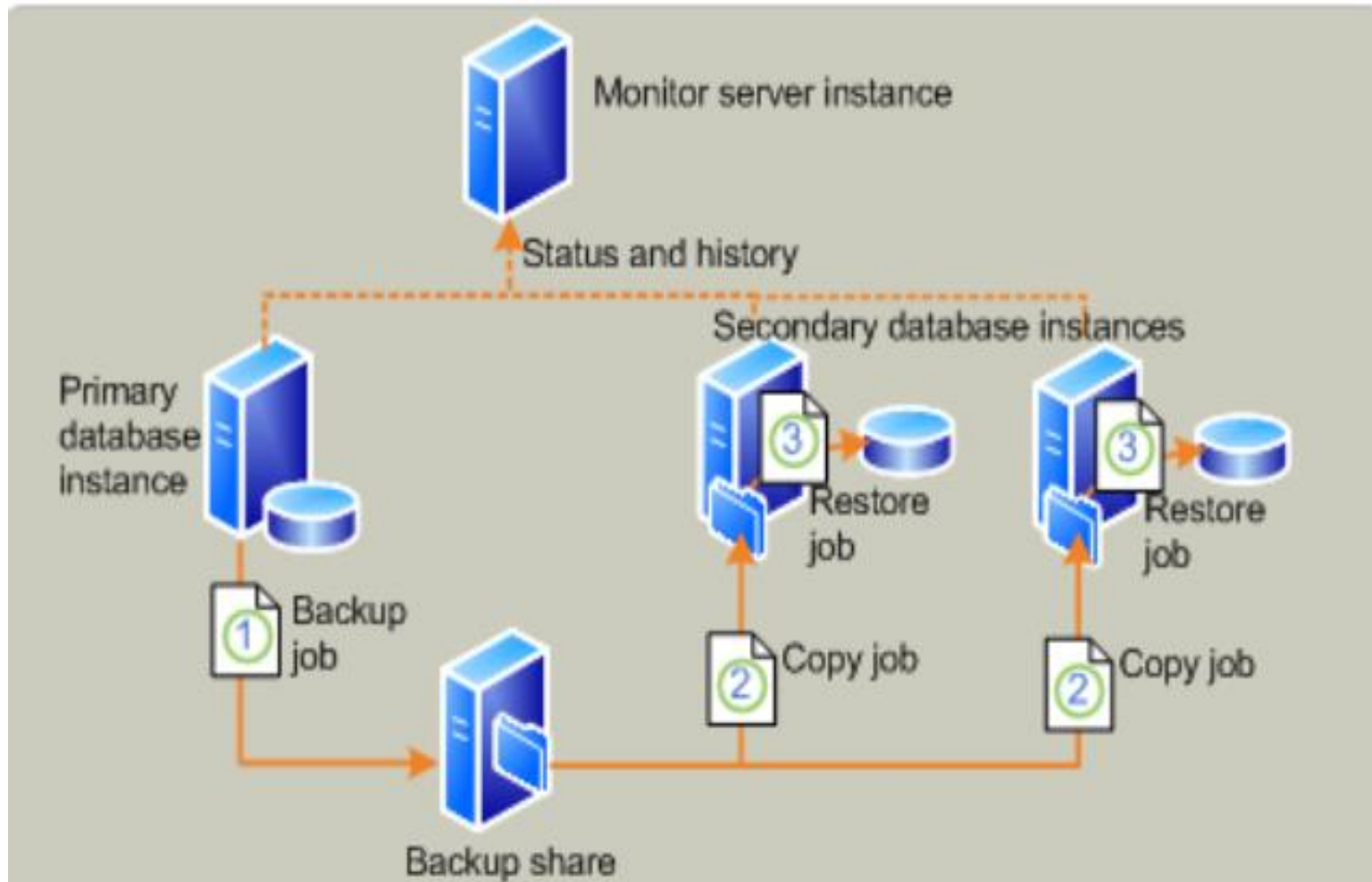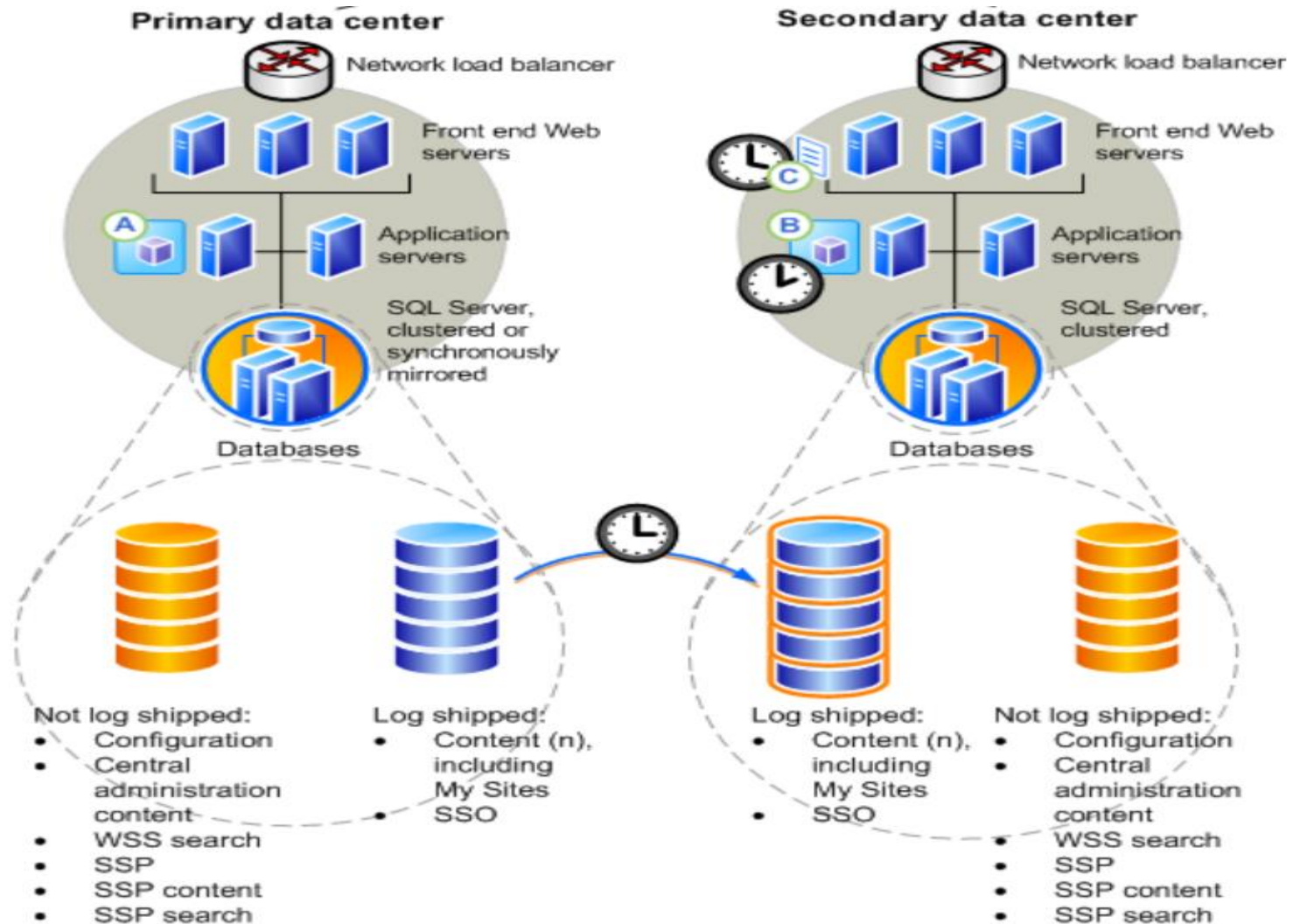# SQL Server Database Redundancy Options

Log Shipping Architecture

Log Shipping Example

Database Snapshots

- Read-only, consistent view of a database
    - Specified point-in-time
- Modifying data
    - Copy-on-write of affected pages
- Reading data
    - Accesses snapshot if data has changed
    - Redirected to original database otherwise

Database Snapshot Implementation

-- Create snapshot

```
CREATE DATABASE AdventureWorks_dbss1800 ON

( NAME = AdventureWorks_Data, FILENAME =

'C:\Program Files\Microsoft SQL
      Server\MSSQL12.MSSQLSERVER\MSSQL\Data\AdventureWorks_data_1800.ss' )

AS SNAPSHOT OF AdventureWorks;

GO
```


-- Revert to snapshot

```
USE master;

-- Reverting AdventureWorks to AdventureWorks_dbss1800

RESTORE DATABASE AdventureWorks from

DATABASE_SNAPSHOT = 'AdventureWorks_dbss1800';

GO
```

Database mirroring for high availability and log shipping for disaster recovery
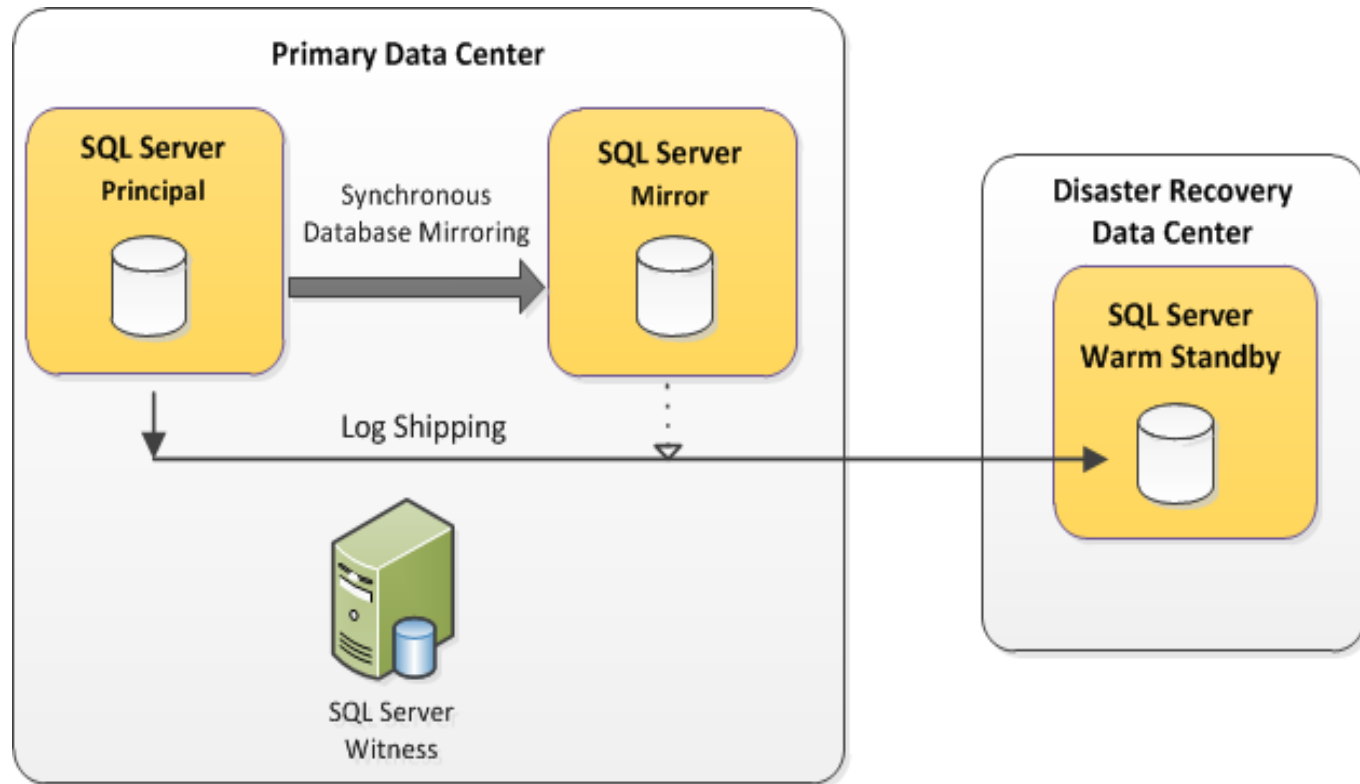
Using availability groups for high availability and disaster recovery
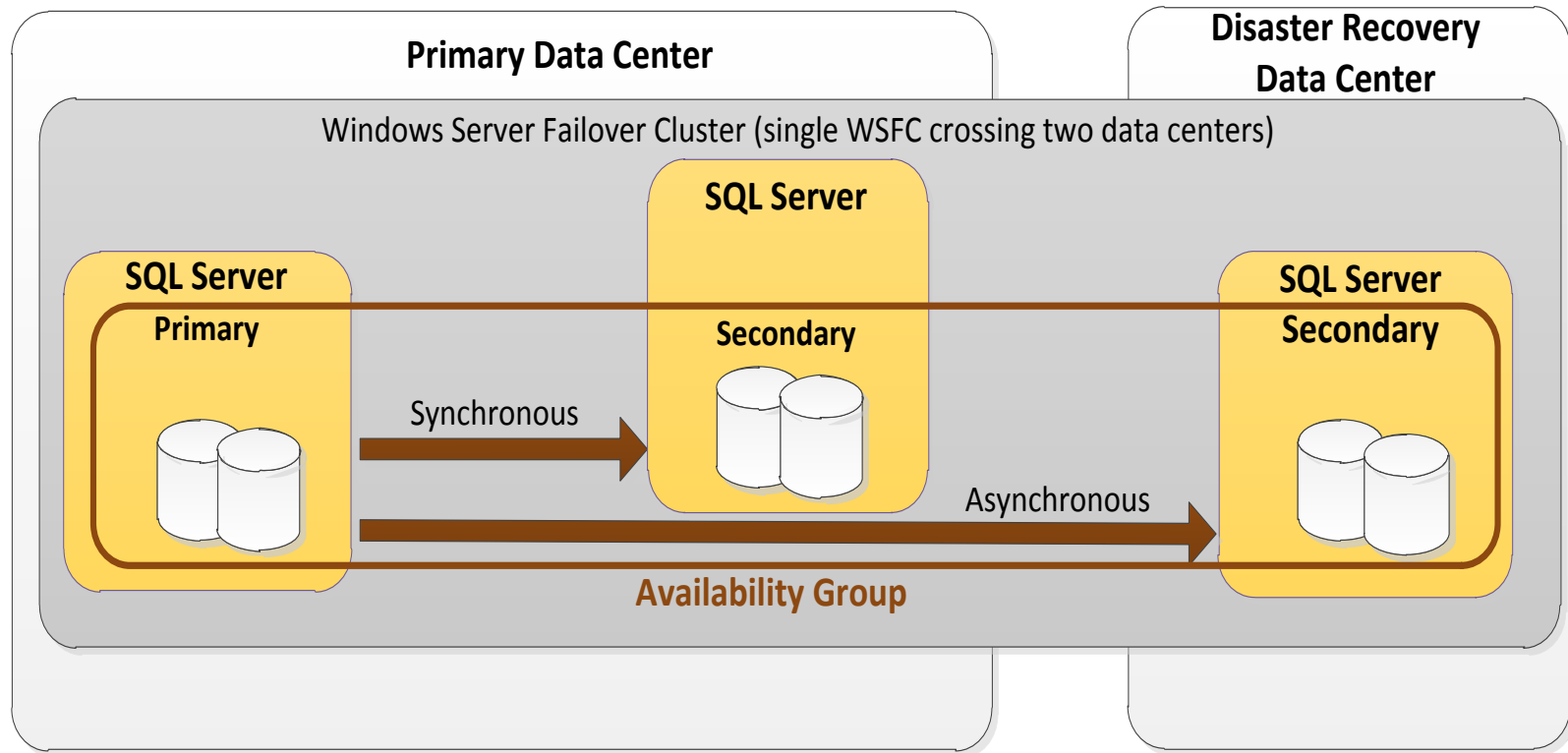
AlwaysOn Availability Group Architecture

Synch

Secondary Replica

Windows Server Failover Cluster

Asynch

Primary Replica

Secondary Replica

Listener
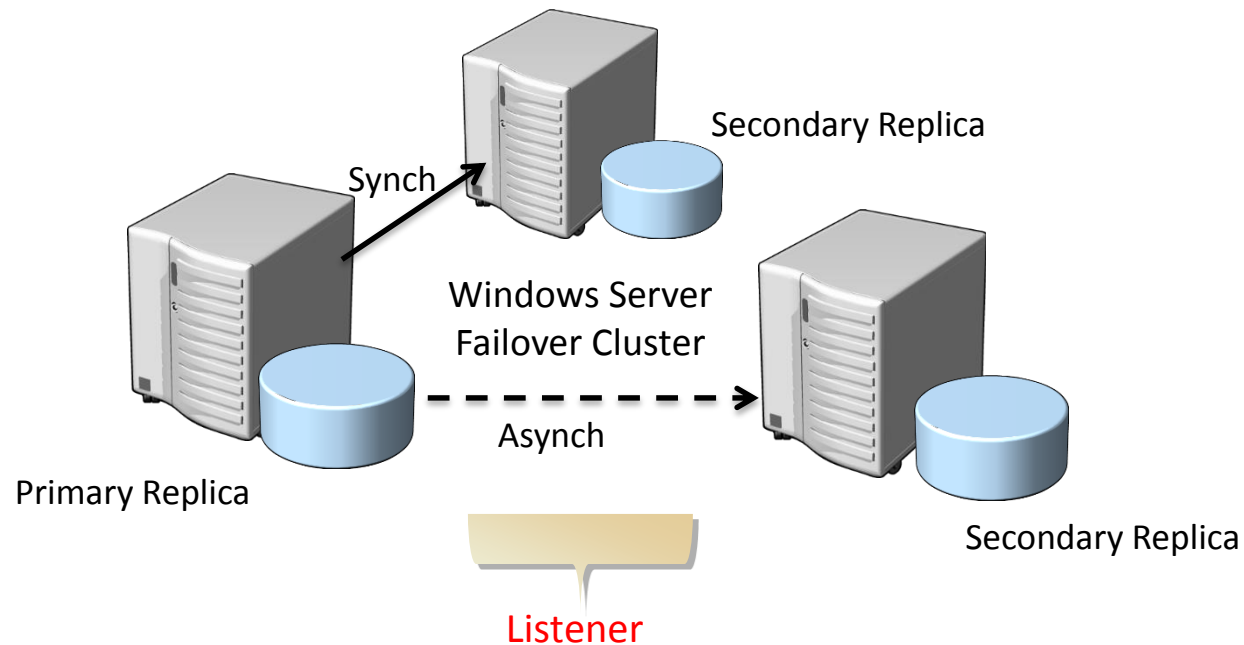
AlwaysOn Availability Group Example in SSMS

```
☐ 📁 AlwaysOn High Availability
   ☐ 📁 Availability Groups
      ☐ 📁 JRMSQL01AG (Primary)
         ☐ 📁 Availability Replicas
              📄 TK5-TWIXSQL-01 (Primary)
              📄 TK5-TWIXSQL-02 (Secondary)
         ☐ 📁 Availability Databases
              📗 cim_Content
              📗 CorpHBI_Audit
              📗 CorpHBI_ER
              📗 CorpHBI_Gpay
              📗 DefaultPowerPivotServiceApplicationDB-d82
              📗 JuniorMin_ReportingServicesDB
              📗 JuniorMin_ReportingServicesDB_Alerting
              📗 JuniorMin_ReportingServicesDBTempDB
              📗 JuniorMint_BDCApplication
              📗 JuniorMint_CA_Content
              📗 JuniorMint_Config
              📗 JuniorMint_ContentDB_Default
              📗 Juniormint_Finance_BI
              📗 Juniormint_FinApp
              📗 JuniorMint_PPS
              📗 JuniorMint_ReportingServicesDB
              📗 JuniorMint_ReportingServicesDB_Alerting
              📗 JuniorMint_ReportingServicesDBTempDB
              📗 JuniorMint_SSSApplication
              📗 JuniorMint_StateServiceDatabase
              📗 PowerPivotServiceApplication2
              📗 WSS_Content_karnak
              📗 WSS_Logging
              📗 xcAdmin
         ☐ 📁 Availability Group Listeners
              📄 JRMSQL01
      ☐ 📁 JRMSQL02AG (Secondary)
         ☐ 📁 Availability Replicas
              📄 TK5-TWIXSQL-01 (Secondary)
              📄 TK5-TWIXSQL-02
         ☐ 📁 Availability Databases
              📗 CorpHBI_IR
              📗 CorpHBI_root
              📗 CorpHBI_SLT
              📗 CorpHBI_VI
         ☐ 📁 Availability Group Listeners
              📄 JRMSQL02
```