

Administering Microsoft SQL Server Availability Groups

EXPLORING THE CAPABILITIES OF SQL SERVER
AVAILABILITY GROUPS



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Availability Groups Are the SQL Server Go to Technology for Enterprise HA/DR and Load Management



Features!



Load Management

Automatic Failovers

Automatic Traffic Routing



Why a Dedicated Course?



Existing course on high availability and disaster recovery

<https://bit.ly/2BhPkZn>



Availability Groups is a very broad topic



Availability Groups have come a long way in the past two years



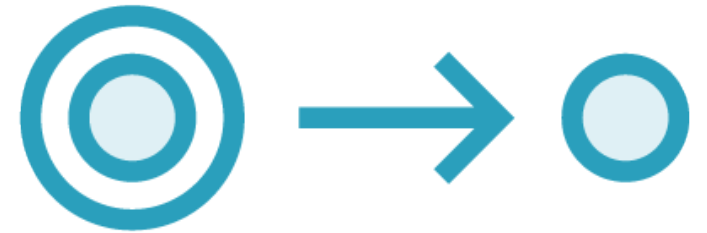
Availability Groups Overview



Background



Capabilities



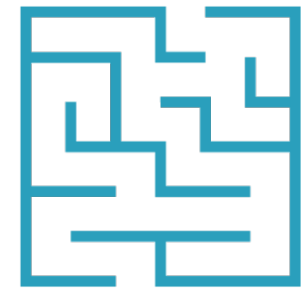
Features Replaced



Early Adoption Issues



New Features



Future Direction



Microsoft SQL Server Always On Availability Groups Checklist

*Node = each individual windows server participating in the cluster
Replica = each individual sql server instance participating in the group
Database = each individual database participating in the group*

Configure Always On

(Operating System)

- Enable windows clustering on each node
- Add participating nodes to cluster
- Validate cluster
- Create cluster
- Multi-subnet?

Configure Availability Groups

(SQL Server)

- Enable AG on each SQL Server instance through configuration manager
- Create endpoint on each replica
- Grant connect on each endpoint/replica
- Create an Availability Group (primary replica)
- Join each secondary to the new Availability Group (secondary replicas)

Configure Databases

(Database)

- Join database to AG
- Configure synchronous / asynchronous replication
- Configure manual / automatic failover
- Configure read only / non-read only secondary

Configure a Listener

(Availability Group)

- Select IP for each subnet
- Configure listener
- Test listener
- Test failovers

Configure Advanced Options

- Read only routing
- Offloading backups
- Failover behavior
- Setup monitoring

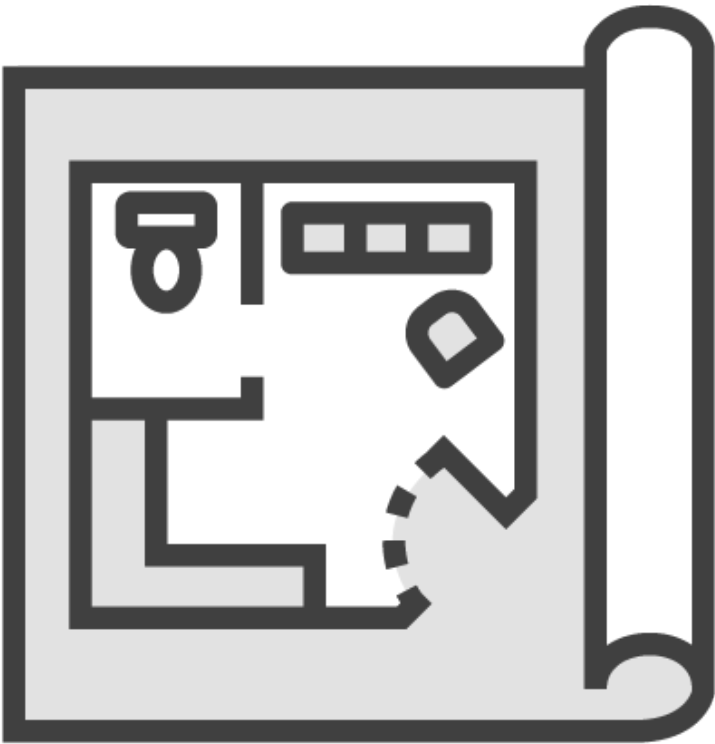


Configure Always On (*Operating System*)



- Enable Windows Clustering on Each Node
- Add Participating Nodes to Cluster
- Validate Cluster
- Create Cluster
- Multi-subnet Considerations
- *Linux?*
- *AG Without a Domain?*

Configure Availability Group (*Instance*)



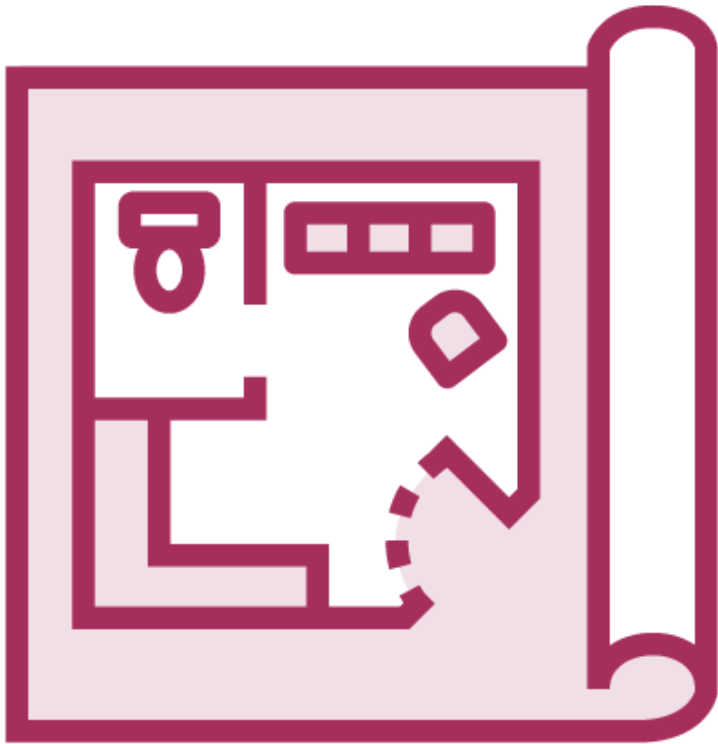
- Enable AG on Each Instance
- Create Endpoint on Each Replica
- Grant Connect on Each Endpoint
- Create Availability Group on Primary
- Join Each Secondary to Group
- AG is Database Level Protection

Configure Databases



- Join Database to AG
- Configure Synchronous / Asynchronous Replication
- Configure Manual / Automatic Failover
- Configure Read-only / Non Read-only Secondary

Configure Listener



- Select IP for Each Subnet
- Configure Listener
- Test Listener
- Test Failovers

Configure Advanced Options



- Read-only Routing
- Offloading Backups
- Failover Behavior
- Setup Monitoring

Significant down time

Backups

Potential for data loss
No auto-failover

Log
Shipping

AG



Mirrors

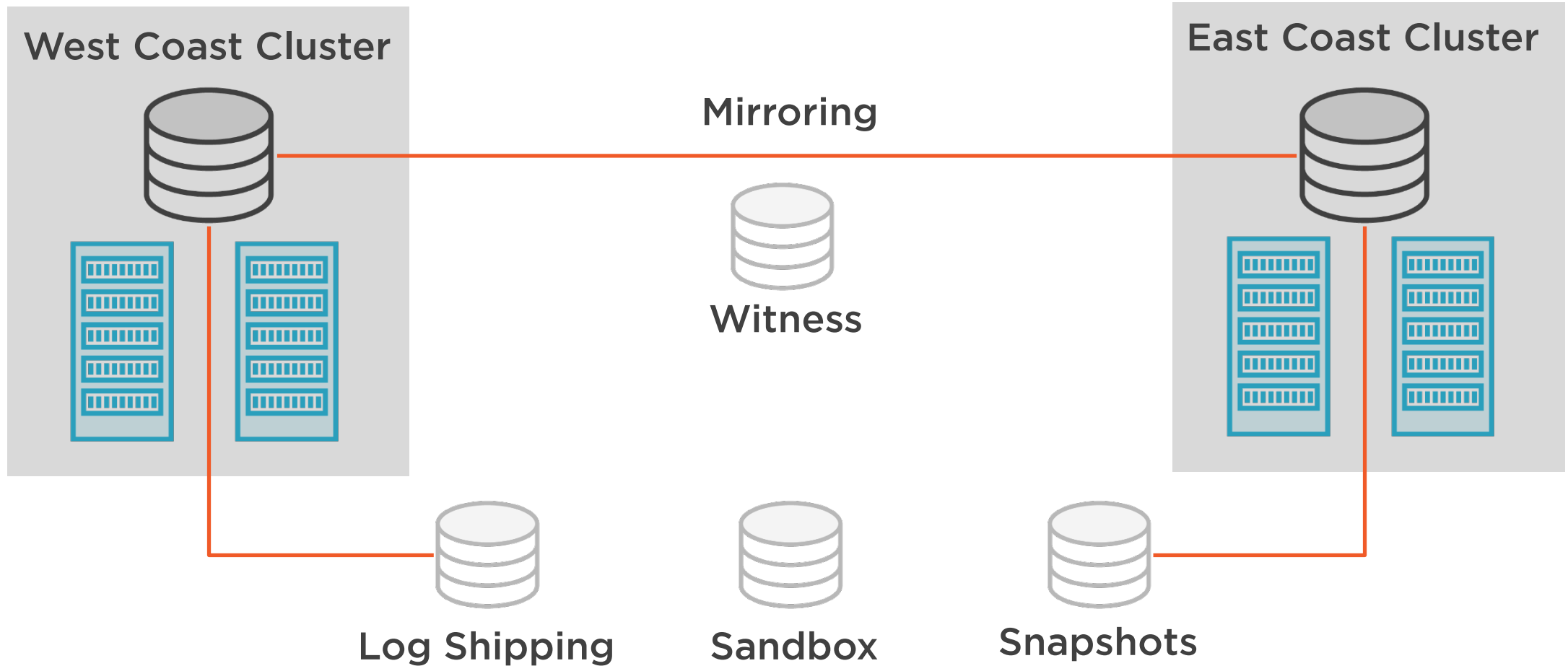
Snapshots
Per database protection
Limited to two nodes

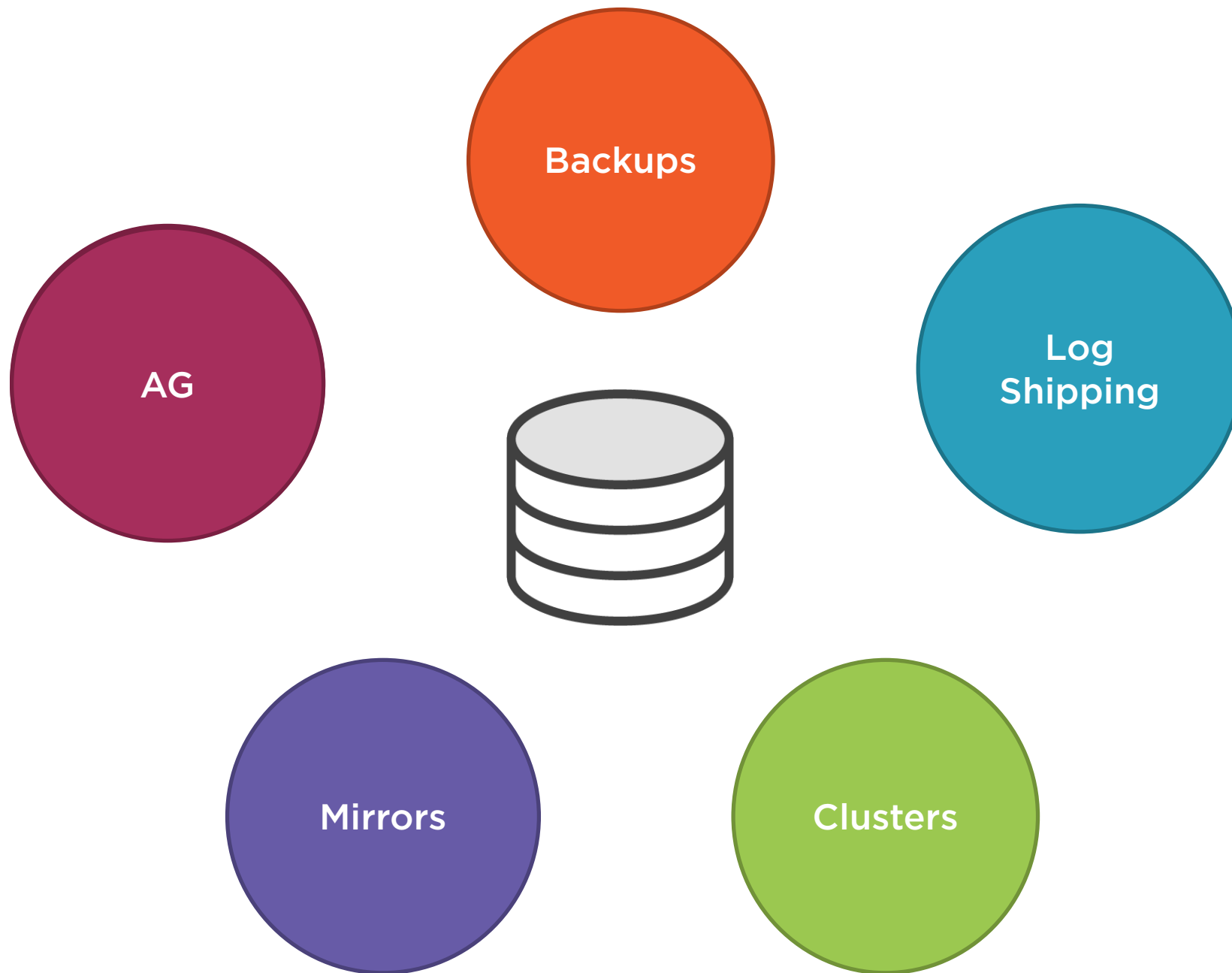
Clusters

Tricky to disperse
Shared storage

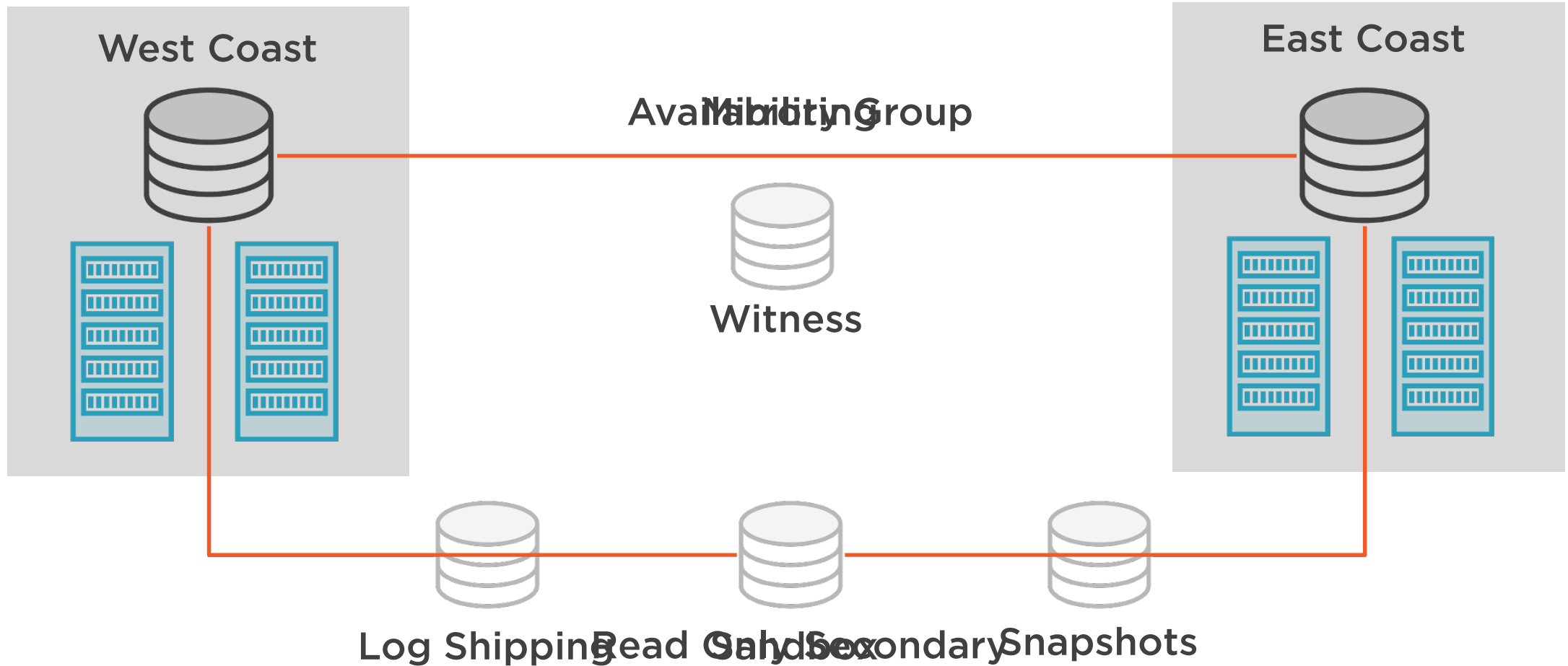


Sample Enterprise Environment

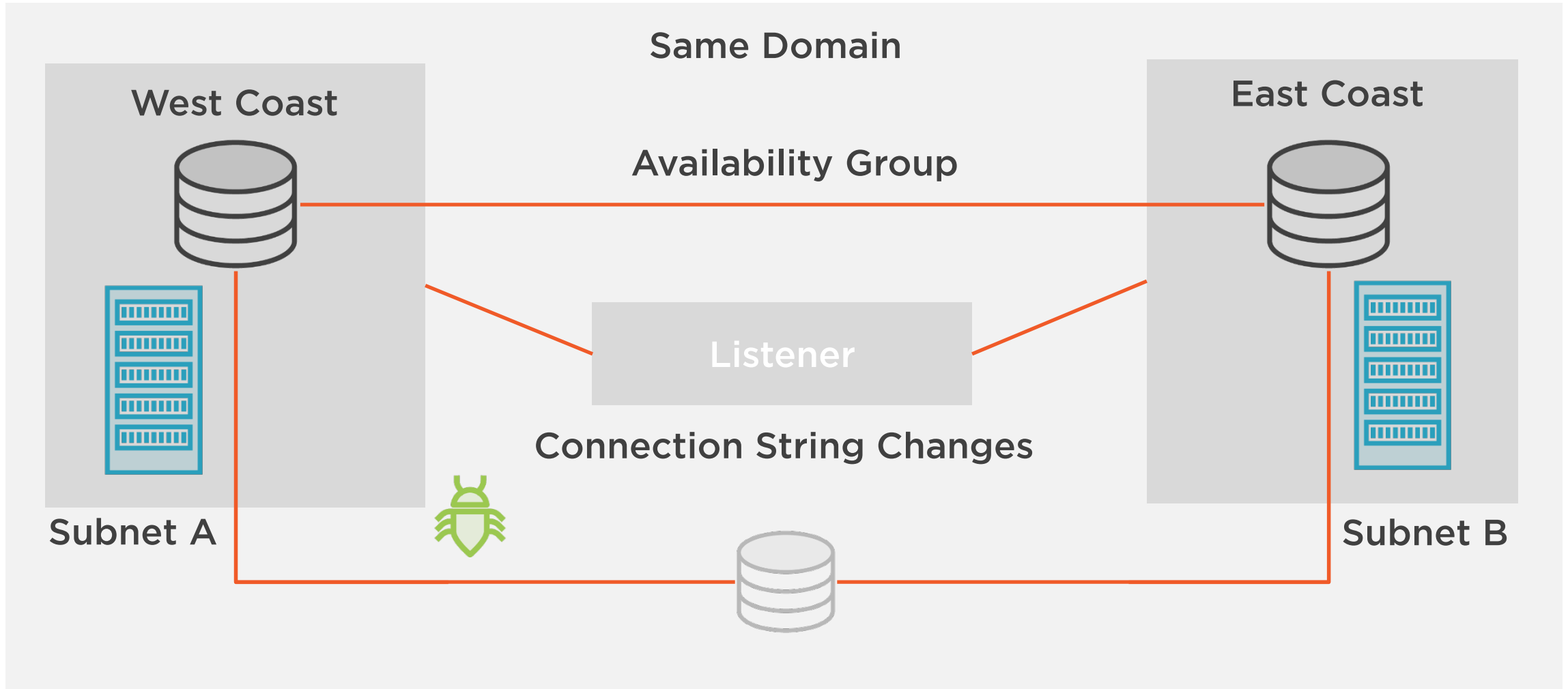




Availability Groups First Release



Availability Groups First Release



Enterprise Only



Significant Improvements in AG Since 2012



- No Need For `multisubnetfailover=true`
- Basic AG Available in SQL Standard Edition
- Can Run Without a Domain / Cluster
- Many Minor Bug Fixes
- Installing WFCS Nodes is Much Simpler
- Tools, Support, Features Much More Robust

What You Should Already Have



- Basic Knowledge of HA / DR Concepts
- Windows/Linux Operating System Basics
- SQL Server Management Studio / TSQL
- Basics of the SQL Server RDBMS

