# High Availability

## Highlights

- **Achieve maximum application availability and data protection using SQL Server AlwaysOn and other high availability features**

- **Help reduce planned downtime significantly with SQL Server on Windows Server Core**

- **Improve IT efficiency and performance using Active Secondaries**

- **Simplify deployment and management of high availability and disaster recovery using integrated tools**

With globalization and an exploding number of business-critical and mission-critical applications, maximum uptime and data availability are paramount to success. SQL Server helps protect an organization's infrastructure – getting the needed nines at the right price, especially for mission critical workloads.

### Maximum Availability

SQL Server provides a comprehensive set of features and capabilities that help enable organizations to achieve the highest level of availability.

**SQL Server AlwaysOn**
The new integrated high availability and disaster recovery solution provides redundancy within a datacenter and across datacenters to help enable fast application failover during planned and unplanned downtime.

✓ **AlwaysOn Availability Groups** is a new feature that greatly enhances the capabilities of Database Mirroring and helps ensure availability of application databases. Availability Groups provides an integrated set of options including automatic and manual failover of a group of databases, support for up to four secondaries, fast application failover and automatic page repair.

✓ **AlwaysOn Failover Cluster Instances** enhance SQL Server Failover Clustering and support multi-site clustering across subnet which helps enable cross-datacenter failover of SQL Server instances. Fast and predictable instance failover is another key benefit which helps ensure fast application recovery.

**Peer-to-Peer Replication**
increase scalability, availability, and processing capacity by configuring applications to use different peers and to failover to another peer in the event of a failure. Protect from data collision using conflict detection and increase availability by dynamically adding a new node to an existing topology.

**Database Mirroring**
helps enable database availability and complete data protection by maintaining a single mirror copy of the data.

## Reduce planned downtime
A key reason for application downtime in any organization is planned downtime caused by OS patching, hardware maintenance, database maintenance operations etc.

SQL Server helps maximize application availability by providing a high availability infrastructure that reduces downtime during planned operations.

**Windows Server Core Support**
SQL Server is supported on Windows Server Core. By running SQL Server on Windows Server Core the OS patching can be reduced significantly which greatly reduces planned downtime.†

**Online Operation Enhancements**
Maintenance operations like re-indexing of large object data types and adding non-null columns are supported as online operations which reduces downtime during database maintenance operations.

**Rolling Upgrade and Patching**
AlwaysOn enable rolling upgrade and patching of instances which help significantly reduce application downtime.

**SQL Server on Hyper-V**
SQL Server instances hosted on the Hyper-V environment get the additional benefit of Live Migration which helps support migration of virtual machines without any downtime. This allows administrators to do maintenance operations on the host without impacting application availability.

## Complete Data Protection
SQL Server helps protect critical data and enable fast recovery in the case of unplanned downtime.

**AlwaysOn Availability Groups**
enable two synchronous secondaries which help provide zero data loss protection for critical data.

**New Database Recovery Advisory** simplifies database restore and helps administrators to quickly and easily restore databases to a point in time from an existing backup set.

**Log Shipping**
helps provide automated backup and restore capabilities within and across data centers and helps protect data from user error by delaying recovery of databases on the secondary.

## Simple and Efficient
Achieving the highest level of application availability need not be complex and costly. SQL Server AlwaysOn helps make deploying and managing a high availability solution extremely easy and improve efficiency by effectively utilizing hardware resources.

Configuration Wizard, Windows PowerShell support, dashboard, system views and System Center integration simplifies deploying and managing of Availability Groups.



Failover Cluster Instances come with easy setup and allows consolidation of greater than 26 instances on a single cluster which helps simplify management and instance sprawl.

**Active Secondaries** enable secondary instances to be utilized for running report queries and backup operations which helps eliminate idle hardware and improve resource utilization.

The ability to utilize the secondaries helps improve performance of primary and reporting workloads by enabling better balancing of workloads across the instances.

**Additional Information**
http://www.microsoft.com/sqlserver/en/us/product-info/future-editions.aspx

**†The percentage reduction in patching and OS reboots can be as much as 50-60% in certain environments depending on the server roles that are enabled and the type of patches that are applied.**