**Always On Enhancements**

|  |  |  |
| --- | --- | --- |
| **MS SQL Server 2012** | **1 Primary** | **4 Secondary** |
| **MS SQL Server 2014** | **1 Primary** | **8 Secondary** |
| **MS SQL Server 2016** | **1 Primary** | **8 Secondary** |
| **MS SQL Server 2017** | **1 Primary** | **8 Secondary** |
| **MS SQL Server 2019** | **1 Primary** | **8 Secondary** |
| **MS SQL Server 2022** | **1 Primary** | **8 Secondary** |

|  |  |  |
| --- | --- | --- |
| **SQL Server Version** | **Automatic Failovers** | **synchronous mode** |
| MS SQL Server 2012 / 2014 | 2 | 3 |
| MS SQL Server 2016 / 2017 | 3 | 5 |
| MS SQL Server 2019 / 2022 | 5 | 5 |

**2012**: Always on feature was introduced.

**2014**:

Read Intent was introduced

Enhanced availability for read only replicas

With 2014 the availability of secondary replicas has been enhanced to allow workload to continue to run even in the case of lengthy network failure or lose of quorum for windows sever failover cluster.

**2016**: Round robin load balance, in SQL server 2014 redirecting activity to secondary replicas happen through read only routing list. But the first replicas in the list gets the must activity. In SQL server 2016 the list of readable secondary replicas offers up connection information on round robin bases. Also, each replica has its own read only routing list so that read only balancing via availability group listener could route the traffic to secondary replicas.

Auto seeding.

Distributed always on availability groups (DAG) was introduced.

Integration with windows azure: you can configure asynchronous Secondary replica in azure IAAS.

Support for DTC

Enhanced log replication throughput and redo speed: Microsoft has worked to streamline the pipeline between **synchronous** replicas to gain better log data throughput when utilizing sql server always availability group.

Support for group manages service accounts (GMSA):

\*Got introduced in windows server 2012 (GMSA)  
 \* improved in SQL server 2016

Enhanced database level health detection

Always on support TDE.

Enchantment in DMV  
Sys.dm\_hadr\_database\_replica\_stastes: secondary\_log\_seconds(bigint) column added.it is number of seconds that the secondary replicas is behind the primary during synchronization.

**2017:**

Standard Edition supports basic availability groups

Configure always on without clustering.

**2019**: Ag supports for Kubernetes

**2022**:

Configure always on without domain

Contained availability databases

**In short:**  
MS SQL Server 2012: Traditional Availability Groups

MS SQL Server 2016: Distributed & Basic Availability Groups

MS SQL Server 2017: Cluster less Availability Groups

MS SQL Server 2022: Contained Availability Groups