Gallagher Command Centre

SQL Always On Availability Groups Compatibility

Technical Information Paper

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Document History

Edition	Date	Author	Comment
1.0	20/10/2020	Aaron D	DRAFT
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1 Background

This Technical Information Paper contains information describing the compatibility of Command Centre with SQL Always On Availability Groups.

This document does not explain how to setup “SQL Always On Availability Groups” as this function lives in the realm of the SQL Administrator. It does touch on some configuration items required by Command Centre.

During compatibility testing the following systems were used

- Command Centre 8.20.1166 (MR3)
- SQL Server 2017
- Windows Server 2019

2 Compatibility

Compatible with some limitations

Command Centre is compatible with SQL Always On as a “High Availability” solution, however for “Fault Tolerant” there are some limitations. Understanding the difference between “Fault Tolerant” and “High Availability” is key to understand what can be achieved with “SQL Always On Availability Groups”, definitions below.

*Fault Tolerant – No (Zero) downtime on Software / Hardware failure.

*High Availability – Secondary server takes over but with some downtime.

For High Availability, the failover time is very quick, however because there is a momentary disconnection to the database from Command Centre “Fault Tolerant” compatibility cannot be claimed.

- During failover, whether user initiated or system failure a “Active” Command Centre will not be able to read or write to the database for a short period, this will cause a SQL “Connection may have been terminated” state, the Command Centre service will intentionally watchdog and restart; Workstations and Controllers will disconnect at this point, Workstations that are not using Active Directory Single Sign-on will need to log on again, Controllers will automatically reconnect.

  *Active Command Centre, Operators making changes eg configuration changes, running reports.

- During failover whether user initiated or system failure an “Idle” Command Centre will not disconnect; it may freeze for a short while and display “Database call unsuccessful” on the workstation screen momentarily before normal activity continues.

  *Idle Command Centre, No operator activity

During Command Centre “high load” testing, measured performance against a “control server” was comparable, little overhead was seen or measurable.

*High Load is simulated with large access group changes

*Control Server is a cloned server without SQL Always On

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Configuration notes

- Command Centre
  - There is no special Command Centre license required for Command Centre to connect SQL Always On.
    - SQL Administrator will need to Manage SQL licensing.
  - Command Centre is not aware it is connected to SQL Always On, the connection as far as Command Centre is concerned is the same as a remote SQL instance.
  - Setup Command Centre server with remote SQL Instance and point to the listener name and instance name.
  - Command Centre Service to run as domain account.
  - Connection between Command Centre and the SQL Listener must be very low latency, Gallagher recommends 1ms but in practice this can be a little higher, keep in mind as latency increases performance will decrease.
- SQL
  - For Command Centre Databases, CCFTCentral and CCFTEvent
    - Set “Recovery Model” to Full
    - Set “Auto Close” to False
  - Latency between Primary and Secondary SQL Always On servers must also be very low, Servers in synchronous step will all be impacted by any one slow server or slow network connection.
  - Set Databases to “Synchronous” replication
    - Synchronous replication lock steps the databases, making sure a transaction is completed on primary and any secondary database(s) before committing the next transaction.
    - Asynchronous replication does not guarantee that the database are in lock step when a fail over occurs, some data loss is possible in this configuration

3 Summary

- SQL Always On can be used as a ”High Availability” Failover solution for Command Centre.
  - SQL Always On is Not currently suitable for a “Fault Tolerant” solution for Command Centre
- SQL Always On can be used to supply a separate read-only database.
  - Asynchronous replication could be used in this case if suitable for what is being achieved.

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