# Simulating SQL Server Failover Clustering for TAB Company

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***Abstract*—This thesis studies failover clustering for a database server at TAB Company and builds a virtual demonstration. The author surveys the company network and configures a three-machine model: an administration or storage server and two SQL Server nodes with active and passive roles. The practical chapter turns off one node and shows the other taking the active role while database data remain available in the simulation. Screenshots document the configuration and switch-over. The source does not establish production deployment, sustained availability, or a statistically measured recovery time. Its conclusion describes the work as a simulation and acknowledges the limits of the trial. The contribution is a reproducible configuration example and failure scenario for later evaluation on the company actual infrastructure.**

***Index Terms*—failover clustering, SQL Server, Windows Server, virtualization, database availability**

## I. Introduction

A database service can be interrupted when its active server fails. The thesis examines failover clustering as one way to maintain the service at TAB Company. It surveys the stated environment and reviews Windows Server and SQL Server clustering concepts. The practical aim is to create a virtual model and observe a controlled node failure. The report does not present a live installation on the company production database [1]. Related published studies provide context for the subject and methods [5], [6], [7], [8], [9], [10]. These contextual works were selected for this English summary; they are not asserted to appear in the original thesis bibliography.

## II. Methods

The author uses virtualization to configure three machines: a server supporting cluster administration or storage and two SQL nodes assigned active and passive roles. The report documents cluster setup, shared data configuration, and a failure scenario in which the active SQL node is shut down. Screenshots then check the other node role and whether data remain synchronized. The method is a demonstration, not a repeated recovery-time benchmark [1].

## III. Results

The source shows that when the active node is stopped in the virtual model, the passive node assumes the active role. It presents screenshots of the changed cluster state and checks that the database remains synchronized after the simulated failure. These observations support failover in the configured example. They do not quantify recovery time, throughput, or reliability under production traffic. The company real server environment was not shown to have adopted the configuration [1].

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## IV. Discussion

The demonstration explains an important availability mechanism, but a virtual failover depends on the particular storage, network, and server settings used. The source does not test repeated failures, data corruption, split-brain behavior, or operational recovery procedures. A company deployment would need site-specific configuration, monitoring, backup, and measured tests. The reported switch-over should be interpreted within the small experimental setup rather than as proof of enterprise readiness [1].

## V. Conclusion

The thesis documents a simulated Windows Server and SQL Server failover cluster for TAB Company. Its configured active and passive nodes successfully exchange roles in the reported failure scenario, with data checks shown in the manuscript. This is a useful proof of concept. It does not establish production availability or a quantified service guarantee. Further testing on actual infrastructure would be necessary before operational use [1].

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