Document Name	**White Paper**
Title	**SQLite <-> SQL Server Data SYNC**
Version	**1.0.0**
Author	**Peketi Venkata Krishna Reddy**
Company	**MYSOURCE DIGITAL & INTERACTIVE MEDIA (OPC) PRIVATE LIMITED.**

Introduction

SQLite:

SQLite is an in-process library that implements a **self-contained, serverless, zero-configuration**, and transactional SQL database engine. The code for SQLite is in the public domain and is thus free for use for any purpose, commercial or private. SQLite is the most widely deployed database in the world with more applications than we can count, including several high-profile projects.

SQL Server:

Microsoft SQL Server is a proprietary relational database management system developed by Microsoft using Structured Query Language (SQL, often pronounced "sequel"). As a database server, it is a software product with the primary function of storing and retrieving data as requested by other software applications—which may run either on the same computer or on another computer across a network (including the Internet). Microsoft markets at least a dozen different editions of Microsoft SQL Server, aimed at different audiences and workloads ranging from small single-machine applications to large Internet-facing applications with many concurrent users.

Purpose:

SQLite is the most convenient way of storing data in android mobile applications. **Microsoft Introduced SQLite Provider in the .net framework in 2011** to facilitate mobile applications to store data. The main purpose of this application is to maintain data sync between SQLite and SQLServer and load balance…. etc.

Scope: **SQLite is a good fit for Lightweight devices** like use in cell phones, set-top boxes, televisions, game consoles, cameras, watches, kitchen appliances, thermostats, automobiles, machine tools, airplanes, remote sensors, drones, medical devices, and robots: the "internet of things".

Limitations:

SQLite is a file-based data base, even though SQLite DB has unlimited data storage capacity **281 terabytes** (approximately 2^{48} bytes), but lightweight applications/devices have data storage limit (mobile 128/256 GB, SD cards 16/32 GB) and **insufficient data base administration**.

References:

https://www.sqlite.org/about.html
https://learn.microsoft.com/en-us/sql/sql-server/what-is-sql-server?view=sql-server-ver17
https://system.data.sqlite.org/home/doc/trunk/www/news.wiki
https://www.mysourceblog.com

Author Note

- SQLite is a good fit for Lightweight devices with a features of large data storage capacity,self-contained and serverless, the concept behind this project is to make use of Microsoft SQLite provider and transfer data between SQLite and SQL Server. Author created a POC with an intention to transfer data between SQLite and SQL Server (windows only). Asper Microsoft framework updates dot net supporting multi-platform and multi-device applications. Author thought is to create an Artifact in nuget.org and a sample application**. SQLite is a file-based database it is very difficult to join multiple DB's from different sources due to security constrains.** Instead of that it is a good practise to convert it into a RDBMS DB(SQLSERVER). Based on the requirement make the relation and provide the data in a SQLite DB. It is flexible to the data analysis projects (AI Projects) by enclosing the client's identity (PI, PII) data will be provided to the Practitioners (Doctor, Lawyers, Police, CA, Scientist) to analyse the fair and transparency of the data, further investigations and case studies. **With client consent only.** SQLite DB files can be stored in a **S3 bucket with advance security administration and load** balance for further analysis and processing.

IMAGE -1

Description:

The above image shows that, based on a project requirement, include the SQLite and SQL Server Data Sync (.dll) in an application. The functionality of this .dll is on a call; the respective method will transfer data between SQLite and SQLserver.

This symbol  represents as MODEM, if the above image is considered as a Sigle Unit.

This symbol  represents as ROUTER, if the above image is considered multiple of a single Unit.

This symbol  represents as SIGNAL TOWER, if the above image is considered as a multiple Units of a city.

This symbol  represents as SATILITE TOWER, if the above image is considered as a multiple Units of a country.

USAGE:

Example:

CCTV camera has a limitation on a data storage, whenever it reaches to the data storage limit, manual intervention is required to backup /copy/erase the data from the storage (SD cards or limited storage capacity devices). Instead of storing the data in a SD card only. A new version of CCTV camera contains IOT integration and SQLite as a DB. Data will be transferred to the respective customers Cloud SQL Server DB (eg: one table for one customer) in a timely manner. Further continues data transfer to the respective area CI for analysis and monitoring.

***Suggestion*:** In future people are requested to use only gov approved CCTV cameras at least in a public/common area.

Assumptions & Dependencies

Assumptions:

Data bypass /Data Hack: As we are providing .dll file there is no chance for data persistence. The functionality of the .dll is to transfer data from trusted source to trusted target.

Unauthorized access:

There are no third part libraries are used. Once .dll is included/referred in an application then it will be under the scope of that application.

Out of Scope:

After integration it is a developer & admin responsibility to follow the industry standers like exception handling, data encryption/decryption, firewall configurations and continues monitoring Etc. As it is a **bidirectional data transfer** it is a DBA responsibility to restrict the access and configure as per project requirement.

Overall Description:

It is a future project release from the company MYSOURCE DIGITAL & INTERACTIVE MEDIA. The aim of this project is to create an Artifact SQLite <-> SQLServer SYNC bidirectional data transfer and a sample app using this artifact. Developers will refer to this artifact in their lightweight applications and perform data SYNC activities as per their project requirement.

PEKETI VENKATA KRISHNA REDDY

Digitally signed by PEKETI VENKATA KRISHNA REDDY
Date: 2026.05.19 11:07:52 +05'30'

PEKETI VENKATA KRISHNA REDDY
Author