Relational VS Object Database

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1 INTRODUCTION

VelocityDB is a NoSQL object database. Microsoft SQL Server is a relational database.

2 FEATURE COMPARISON

In table below, support for a feature is one of: ☺ (great) 😐 (ok) ☹ (bad).

Feature	VelocityDB	SQL Server
Acid Transactional	☺	☺
Android	☺	☹
Any CPU (32bit/64bit)	☺	☹
Array support	☺	☹
Auto Increment on a field	☺	☺
Backup & Restore	😐	☺
Change event subscription & notification	☺	☺
Choice of data structure to use	☺	☹
Compression of data	☺	😐
Data Fragmentation	☺	☹
Data Integrity options	😐	☺
Database level locking	☺	☺
Distribution ability	☺	☹
Embed ability	☺	☹

Feature	VelocityDB	SQL Server
Encryption of data	☺	☺
Enum support	☺	😐
High levels of concurrent updates	😐	😐
High Performance	☺	☹
Indexes	☺	☺
In-Memory Only Option	☺	😐
iOS	☺	☹
LINQpad	☺	☺
Linux	☺	😐
No object relational mapping required	☺	☹
Object/Row level locking	😐	☺
Optimistic Concurrency Support	☺	😐
OS X (Mac)	😐	☹
Page level locking	☺	☺
Page level versioning	☺	☹
Pure C#, no other language required	☺	☹
Required Database Administration	☺	☹
Scalability	☺	😐
Small footprint	☺	☹
Store graphs of connected objects	☺	😐
Universal Windows	☺	☹

Feature	VelocityDB	SQL Server
Variable page size	☺	☹

3   PROS AND CONS

In table below, pros are highlighted yellow and cons are highlighted turquoise

VelocityDB Pros/Cons	SQL Server Pros/Cons
Capable of unbeatable performance and scalability	Simple applications perform well but as data model gets more complex and data size grows performance suffer
Use class inheritance, polymorphism and composition	Hard to mimic all object oriented features
Limited testing	Very well tested
Not very many have used	Many know how to use
Use any data structure	Limited to table data structure
Standardized Object identifier	Each table defines a primary key
No mapping required	An object relational mapping tool such as EntityFramework or Dapper is required
Field can store multiple values	Limited to single value in each cell
Integrated Client Caching Facility	Client caching has to be done with separate tool(s)
No Database Administration Required	Database Maintenance/Administration Required
No empty space on pages and fragmentation avoided by using variable page size	Database tables and indexes are usually fragmented with empty/unused space on pages.
Good for supporting storage of binary data such as video & audio	Although BLOB storage is supported, data is more difficult to work with and not easy to segment
Low Licensing Costs	High Licensing Costs
22,409 lines of C# code	More than 1 million lines of C++/C code