Project0

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A. General Purpose:

System	Pros	Cons
1 Lotus Notes:[1]	♦ Better security control than its competitor ♦ Supports more platforms than its competitor ♦ Support hardware as well as software virtualization	♦ It's not very flexible in term of using because it's a little bit too secure
2 Actian Versant[2]	♦ It's Object Oriented! It's simple and straight forward to build complex data models which are hierarchical. ♦ No need to use a query language ♦ No primary keys ♦ Make developer's life easier by allowing database to process complex objects models without writing mappings. ♦ Allows you to change database schema while your service is on-line. ♦ Good Scalability ♦ Full support for transactions, logging and locking.	♦ Lack of solid theoretical basis. ♦ API is language dependent ♦ Schema change may need a system-wide compile(not in Versant's case)
3 InterSystems Cache[3]	♦ A fully persistent database with high throughput even comparing with in-memory database ♦ Good scalability and performance when hosted	♦

	on inexpensive machines.	
4 McObject:	♦ Memory data base with good scalability. ♦ ACID-Compliant ♦ It’s Object Oriented! It’s simple and straight forward to build complex data models which are hierarchical. ♦ No need to use a query language ♦ No primary keys	♦ Lack of solid theoretical basis. ♦ API is language dependent ♦ Schema change may need a system-wide compile(not in Versant’s case)
5 ObjectStore:	♦ It’s Object Oriented! It’s simple and straight forward to build complex data models which are hierarchical. ♦ No need to use a query language ♦ No primary keys	♦ Lack of solid theoretical basis. ♦ API is language dependent ♦ Schema change may need a system-wide compile(not in Versant’s case)
6 WakandaDB:[4]	♦ Everything(schema, server-side processing, querying) can all be done in JavaScript ♦ Open Source	♦ Open Source and not mature
7 IBM IMS:[5]	♦ It’s a full function database ♦ Optimized for high transection rates. ♦ High Availability ♦	♦ Developers may need to write more code.
8 Adabas[6]	♦ Is able to work close with previously existing database system	♦ No access control in term of native network encryption
9 UniVerse:[7][8]	♦ Multi-valued database ♦ High Availability ♦ Good Scalability ♦ Intuitive database design ♦ High Performance ♦ Does not constrain by 1st Normal Form	♦ The fact that it does not adhere to 1FN can be abused
10 UniData	♦ Secure ♦ Similar to UniVerse	♦ Similar to UniVerse
11 Documentation xDB	♦ XML-based Database ♦ Allows the schema to be easily modified.	♦ Not ACID-compliant

	♦ Flexible schema compared to relational database ♦ EMC^2's disaster-recovery options	
12 Tamino XML Server	♦ XML-based Database advantage described in Documentation xDB	♦ Not ACID-compliant like many other document based database
13 Ipedo XML Database	♦ XML-based Database advantage described in Documentation xDB	♦ Not ACID-compliant like many other document based database
14 OrientDB:[9][10]	♦ Document oriented database with graph database feature ♦ Open Source ♦ Can be queried using SQL ♦ AICD	♦ Not Mature, API changes over time.
15 SQLite	♦ Easy to use ♦ Consumes less resources	♦ Doesn't scale very well
16 Firebird[11]	♦ Free open source ♦ Relational database ♦ Well established and tested based on solid theoretical foundation ♦ ACID ♦ SQL as access language ♦ Join! ♦ Large Throughput	♦ Not very scalable in term of horizontal scaling ♦ Difficult to model complex data model because it is table based
17 SAP Sybase ASE:[12]	♦ Relational database advantages as described in Firebird	♦ Relational database disadvantages described in Firebird
18 SAP SQL Anywhere	♦ Relational database advantages as described in Firebird ♦ Embed: consume less resources. ♦	♦ Relational database disadvantages described in Firebird
19 Postgres-XL:	♦ ACID ♦ Open Source ♦ Cluster-wide Consistency ♦ Secure ♦ SQL ♦ Horizontal scaling ♦ Rich feature set.	♦ Too complex for simple stuff
20 Pecona	♦ Same as MySql	♦ Same as MySql

21 MySQL	♦ Relational database advantages as described in Firebird	♦ Not very Scalable
22 Oracle Database	♦ Relational database advantages as described in Firebird ♦ Commercial	♦ Price ♦ Relational database disadvantages as described in Firebird
23 IBM DB2	♦ Relational database advantages as described in Firebird ♦ Commercial	♦ Price ♦ Relational database disadvantages as described in Firebird

B. Specialist analytic

System	Pros	Cons
25. Google BigQuery	♦ Allows users to use SQL-like queries to query massive datasets ♦ Rest API ♦ Google's infrastructure makes the operation fast and economic. ♦ Makes ad-hoc and trial-and-error interactive query on large dataset possible	♦ Not able to do complex data processing. ♦ You can't update your data, only appending is allowed. ♦ No large Join.
26. InfluxDB[13]	♦ Open Source ♦ SQL-like language ♦ Native HTTP API ♦ Can process big amount of data. ♦ Focus on time series.	♦ Maturity
27. 1010data	♦ Interactive analytical service. ♦ A rich set of analytic functions are integrated. ♦ Suit for very large data set. ♦ Decent performance with high scalability.	♦ Price. ♦ Should support more complex database operations.
28. BitYota:[14]	♦ Data warehouse as a service ♦ SQL	♦

	♦ Real time data analysis	
29. AWS RedShift[15]	♦ Scaling is easy ♦ You can use SQL to query ♦ Can work seamlessly with other AWS services	♦ Because RedShift does not maintain the uniqueness of data, programmer are responsible for their data integrity.
30. SpaceCurve:[16]	♦ Focus mainly on spatial data. ♦ Good at real-time location analysis	♦ Query: Some patent-pending strategies that optimize quires ♦ View: Algorithm that make updating views more efficient ♦ Supports serializable concurrent transection
31. LogicBlox:	♦ Query: Some patent-pending strategies that optimize quires ♦ View: Algorithm that make updating views more efficient ♦ Supports serializable concurrent transection	♦
32. MonetDB: [17]	♦ Column oriented store: ♦ Good at OLAP scenario ♦ Higly Compressed	♦ Increased disk seek time ♦ Insertion costs more
33. Pivotal GreenPlum:[18]	♦ Supports both row and column-oriented storage ♦ Highly scalable	♦ Column oriented store disadvantage ♦ Increased disk seek time ♦ Insertion costs more ♦
34. HP Verica	♦ Column Oriented ♦ Highly compressed ♦ Good at log parsing	♦ Immaturity ♦ Increased disk seek time ♦ Insertion costs more
35. SAP Sybase IQ[19]	♦ Column Oriented	♦ Increased disk seek time ♦ Insertion costs more
36. ParStream:[20]	♦ Real time analysis ♦ Focus on IOT(Internet of Things) data	
37. IBM InfoSphere	♦ Real-time analytic platform ♦ Merge diverse data	♦ Rapid deployment analysis ♦ Column-oriented database ♦ In memory ♦ Highly compressed
38. Kx Systems:[21]	♦ Column store database advantages described in MonetDB	♦ Column store database disadvantages described in MonetDB
39. LucidDB:[22]	♦ Column store database	♦ Column store database

	advantages described in MonetDB ♦ Open Source ♦ Bitmap indexing ♦ Hash join/aggregation ♦ Multiversioning	disadvantages described in MonetDB
40. Kognitio[23]:	♦ In memory ♦ Support SQL ♦ integrated with HADOOP	♦
41. Actian Vector	♦ A high performance analytic frame built on Hadoop ♦ Developer can use SQL to interact with the system	♦
42. MetaMarkets Druid:[24]	♦ A distributed real-time data store ♦ Real time ingestion ♦ Column-oriented storage's advantage ♦ Bitmap indexing ♦ Fault tolerance	♦ Column-oriented storage's disadvantage
43. Teradata[25][26]	♦ A decent data warehouse system ♦ Developers can choose to store the data either based on row or column	♦ Price
44. SQream	♦ Scalable SQL data base ♦ GPU based database brings high parallel processing ability ♦ Column oriented storage advantages	♦ Column oriented storage disadvantages
45. RainStor	♦ Can work with different data types	♦
46. HPCC[27]	♦ Introduced a new programming language: ECL ♦ It is more complex than a key-value pair storage. ♦ High availability, scalability and consistent	♦ Still growing.
47. Teradata Aster:[28]	♦ Allows users to write map reduce code that manipulate relational data base data.	♦

	♦ Graph analytics engine ♦ Support massive parallel processing	
48. SciDB[29]	♦ Array data model ♦ Supports complex mathematic processing on the arrays ♦ Can model uncertainty	♦ Focus mainly on Mathematic operations
49. Hadapt[30]	♦ Brings SQL to Hadoop, which allows users to write SQL to query on massive amount of data ♦ Uses a hybrid storage engine which stores structured data in a traditional relational database while unstructured data in HDFS.	♦ No transections
50. JethroData[31]	♦ Like Hadapt, it builds a layer on top of Hadoop that allows user to write SQL on Hadoop ♦ Unique index strategy ♦ Scalability that comes with HDFS	♦ No transections
51. CitusDB: [32]	♦ SQL on Hadoop ♦ Also suppor semi-structured data ♦ Optimized specially for time-series data.	♦ No transections
52. Impala:[3334]	♦ SQL on Hadoop ♦ It's supported by Cloudera	♦ No transections ♦ Data need to be stored in a specific data format
53. IBM Big SQL[35]	♦ SQL on Hadoop	♦ No transections
54. Presto	♦ Sql on Hadoop ♦ Can query data from different source and bring them together	♦ No transections
55. Apache Drill:[36]	♦ SQL on Hadoop ♦ Apache license ♦ Can work with semi-structured or nested data ♦ Low latency	♦ No transections
56. Apache Hive:[3738]	♦ Data warehouse built on	♦ No update and delete

	Hadoop ♦ Use a SQL like language ♦ Bitmap index ♦ Supports different storage type. ♦ Data are compressed ♦	operation ♦ No access control ♦ The overhead brought by Map Reduce make it a little bit slow
57. Apache Tajo[39]	♦ Fully distributed SQL ♦ Various query optimization ♦ Supports ANSI/ISO SQL ♦ Has a shell	♦ No transections

C. Big Tables

System	♦ Pros	♦ Cons
58. Google Cloud Datastore[40][41]	♦ No schema is needed, Aims at storing non-relational data ♦ Write scale and read scale. ♦ Supports transection	♦ No database layer caching ♦ No Join ♦ Filter results using a subquery is not supported
59. Google App Engine Datastore[42]	♦ Key-value pair store makes it more flexible	♦ Does not support ACID transactions ♦ No join
60. Cassandra.io[43][44]	♦ Linear scalability(All nodes are identical) ♦ Fault-tolerance on inexpensive hardware ♦ The language it uses(CQL3) is very similar to SQL ♦ Constant-time writes ♦ Integrated with Hadoop	♦ No Join ♦ Does not support ACID
61. Accumulo[45][46]	♦ Wode Column Store DB similar to Cassandra and HBase ♦ Better Performance(can scan 800k entries per second per node) compare to HBase ♦ Provides cell-level security	♦
62. Hbase[47]	♦ Works hand in hand with Hadoop	♦ No strict ACID ♦ Because of its master and

	♦ Specially optimized for real time analysis ♦ Also linear scalability ♦ Consistent reads and writes ♦ Row level Atomic	slave architecture, Hbase has the problem of single point failure ♦ No join
63. HyperTable[48]	♦ Implements using c++ ♦ Runs on haddop ♦ SQL like language ♦ Faster and smaller than HBase	♦
64. DataStax Enterprise[49]	♦ Built on Cassandra ♦ Comercial ♦ Similar to Cassandra	♦ Similar to Cassandra

D. Key value stores

System	Pros	Cons
65. AWS DynamoDB[5051]	♦ Supports both document and key-value data ♦ Low latency ♦ Highly scalable ♦ Highly available ♦ Strong consistency on read ♦ Supports atomic counters ♦ Secure: find access control	♦ Consume more resource because its stronger Consistent constrain ♦ No join ♦ No support for transection ♦ No ACID
66. AWS SimpleDB[5253]	♦ Fit for smaller workloads ♦ Automatically index all things	♦ Table cannot grow over 10 GB ♦ Not as scalable as DynamoDB ♦ No joins
67. MagnetoDB[54]	♦ A key-value storage for open stack ♦ Highly scalable ♦ Supports both eventual and strong consistency reads ♦ Fault tolerance	♦ No join ♦ No support for transection ♦ No ACID
68. Redis Cloud[55]	♦ In memory non-relational database ♦ Scale out seamlessly ♦ Zero Down time ♦ Secure	♦ No ACID
69. Redis Labs[56]	♦ Similar to Redis Cloud	♦ Similar to Redis Cloud
70. AWS ElastiCashe[57]	♦ You can choose from two in memory cache options: Redos or Memcached	♦ Disadvantages are similar to Redis

	♦ The advantages are similar to those two	
71. Redis-to-go	♦ A redis management tool	♦ Redis’ disadvatages
72. RedisGreen[58]	♦ A redis hosting service	♦ Redis’ disadvatages
73. ObjectRocket Redis[59]	♦ A redis hosting service	♦ Redis’ disadvatages
74. HyperDex[60]	♦ Key-value storage ♦ Strong consistency ♦ Fault tolarence ♦ ACID	♦ No Join
75. LevelDB[61]	♦ Key-value ♦ Comparison function can be customized ♦ Compressed	♦ No indexes ♦ It only allows one process to access the database at a time
76. BerkeleyDB[62]	♦ Provides building blocks that can help you develop your own data management solution	♦
77. Oracle NoSQL[63]	♦ Key value storage with secondary indexes ♦ ACID ♦ Secure	♦ No Join
78. Voldemort	♦	♦
79. Redis[64]	♦ In memory non-relational database ♦ Scale out seamlessly ♦ Zero Down time ♦ Secure	♦ No ACID
80. Couchbase[65]	♦ Key-value ♦ Document(Json) ♦	♦ No join ♦ No transection
81. FatDB	♦ Tight intergration with SQL Server	♦
82. Riak[66]	♦ Buck key together ♦ Strongly consistent ♦ Non-key based query use map reduce to get the answer	♦ ACID ♦ Join
83. ArangoDB[67]	♦ Multi-model database:S upport documents, graphs and key-values data model ♦ SQL-like ♦ Joins like operation ♦ Transections	♦

84. Aerospike[68]	♦ Handle real time data ♦ ACID ♦ Flash as storage ♦ Mainly key-value ♦ Map reduce	♦ Join

E. Hadoop

System	Pros	Cons
85. GridGain[69]	♦ In Memory data faric ♦ Can act as a cache layer to accelerate Hadoop ♦ Realtime streaming ♦ Linearly scale out ♦ ACID transection	♦ history
86. ScaleOut [70]Software	♦ In memory storage	♦
87. Pivoutal GenFire XD[71]	♦ Helps SQl to scale out using Hadoop ♦ High availability ♦ In memory ♦	♦ Transection and ACID
88. Sqrrl Enterprise	♦ Based on Apache Accumulo ♦ Advantages similar to Accumulo	♦ disadvantages similar to Accumulo
89. LucidWorks Big Data[72]	♦ A big data platform brings together Hadoop solr and etc.	♦
90. Trafodion[73]	♦ SQL on Hbase ♦ ACID Transection ♦ scaling	♦
91. Splice Machine[74]	♦ Full function SQL on Hadoop ♦ Scale out ♦ Transection ♦ High concurrency ♦ Real time updates	♦
92. Apache Tajo - Pivaotal HD	♦ Already described in Specialist analytic	♦ Already described in Specialist analytic

F. Appliance

System	Pros	Cons
93. Oracle Big Data Appliance[75]	♦ Cloudera Enterprise Technology software ♦ Oracle NoSQL database ♦ Integrated solution	♦ Integrated solution ♦ price
94. Oracle Exalytics[76]	♦ In memory integrated solution	♦ Integrated solution ♦ price
95. Microsoft SQL Server PDW	♦ Integrated solution	♦ Integrated solution
96. SAP HANA[77]	♦ In memory ♦ Column oriented ♦ Relational databse	♦ Increased disk seek time ♦ Insertion costs more
97. IBM Pure Data	♦ Integrated solution	♦ Integrated solution
98. Oracle Exadata	♦ Integrated solution ♦ flash	♦ Integrated solution

G. Graph

System	Pros	Cons
99. infiniteGraph[78]	♦ Distributed graph database ♦ graph specific queries ♦ Policy-driven consistent ♦ Data visualization is integrated	♦ Does not support map reduce ♦ Does not support data compression ♦ Eventual consistency
100. HypergraphDB[79]	♦ Graph oriented ♦ graph specific queries ♦ Transection	♦ Does not support map reduce
101. Allegrograph[80]	♦ ACID transection ♦ Automatic indexing ♦ SOLR and MongoDb are integreted ♦ Secure ♦ Sharding	♦ Does not support map reduce
102. Giraph[81]	♦ Data analysis tool on graph data ♦ Apache ♦ Used by Facebook ♦ Runs as map reduce jobs	♦
103. SPARQLBASE[82]	♦ Graph databse ♦ In memory	♦

	♦ Uses HDFC to store data	
104. Trinity[83]	♦ Embed or distributed graph storage ♦ In memory ♦ Data compressed	♦ Not mature
105. Titan[84]	♦ Distributed graph database ♦ Support Transection and eventual consistency ♦ Can use Cassandra, HBse or BerkeleyDB to store data. ♦ Support geo, numeric and text search ♦ Map reduce	♦
106. Objectivity:[85]	♦ Graph NoSQL database ♦ Good at exploring relationships in data. ♦ Suits for areas like social networks.	♦
107. Stardog	♦ Graph database ♦ ACiD	♦
108. FlockDB [86]	♦ Graph database ♦ Twitter uses it to store social graphs ♦ Designs for websites	♦ Fewer function cause it’s simpler(maybe it’s an advantage)
109. GrapheneDB	♦ Cloud hosting Neo4j	♦ Same as Neo4j
110. Sparksee[87]	♦ Data compression(use bitmap to represent data)	♦
111. Neo4j[88]	♦ High Availability ♦ Data compression ♦ Fully ACID ♦	♦ Does not support map reduce ♦ Has Max size value limitation
112. CortexDB[89]	♦ Multiple data model: key-value, graph, multi value column ♦ Distributed	♦

H. Data Caching

System	Pros	Cons
113. MemCachier[90]	♦ In memory scalable key value pair cache ♦ Better reliability and usability than memcached	♦ No ACID

114. Redis	♦ In memory non-relational database ♦ Scale out seamlessly ♦ Zero Down time ♦ Secure ♦ Persistent	♦ No ACID
115. Redis Labs Memcached Cloud[91]	♦ Cloud hosting Memcached ♦ Similar as Memcached	♦ Similar as Memcached
116. IronCache[92]	♦ Key value cache ♦ Cloud service ♦ Can persist the data	♦ No ACID
117. AWS ElastiCache	♦ You can choose from two in memory cache options: Redos or Memcached ♦ The advantages are similar to those two	♦ Disadvantages are similar to Redis and Memcached
118. BigMemory[93]	♦ In memory data store ♦ Supports SQL ♦ Runs Ehcache	♦
119. Ehcache[94]	♦ Im memory data store ♦ Schema less ♦ ACID ♦ Sharding and replication	♦
120. InfiniSpan[95]	♦ In memory key value data store ♦ Support Map reduce ♦ Support data compression ♦ Support full text search, and graph data ♦ Persistent ♦ ACID transection	♦
121. RedHat JBoss Data Grid[96]	♦ In memory distributed caching ♦ Support map reduce ♦ Supports replication ♦ Transection ♦ Redhat support	♦
122. Memcached[97]	♦ In memory key value pair cache ♦ Simpler than Redis makes it easier to scale out ♦ ACID	♦ Value is limited to 1MB

I. Document

System	Pros	Cons
123. Informix[98]	♦ Real time processing ♦ Availability: zero down time ♦ Supports SQL, JSON, and even time/special data ♦ Support Rest API	♦ Comercial
124. JumboDB[99]	♦ Supports indexing on Json ♦ Supports data compression ♦ Supports complex data model	♦ No sharding and replication yet ♦ Immaturity ♦ Join ♦ No ACID Transection
125. RethinkDB[100]	♦ Use Json as storage ♦ Supports complex data model ♦ Sharding and replication ♦ Fault tolerance ♦ MapReduce ♦ Schema-less	♦ No Join ♦ No ACID Transection
126. CouchDB[101]	♦ JSON as storage ♦ Supports features that important to web development such as real time change notification ♦ Supports complex data model ♦ MapReduce ♦ Eventual consistency ♦ Schema-less	♦ No ACID Transection ♦ No join
127. RavenDB[102]	♦ Schema-less ♦ Data compression ♦ ACID ♦ MapReduce	♦
128. TokuMX[103]	♦ A high performance distribution of MongoDB ♦ Better caching strategy ♦ Optimized IO ♦ Supports document-level locking allows better concurrency	♦ No ACID Transection
129. MongoDB	♦ Use Json as storage ♦ Supports complex data	♦ No ACID ♦ No Join

	model ♦ Supports immediate and strong consistency ♦ Supports Sharding and replication ♦ Schema-less	
130. Compose	♦ Cloud hosting mongodb ♦ Similar as mongodb	♦ Similar as mongo db
131. Iris Couch	♦ Cloud hosting CouchDB ♦ Similar as CouchDB	♦ Similar as CouchDB
132. MongoLab	♦ Cloud hosting mongodb ♦ Similar as mongodb	♦ Similar as mongo db
133. Object Rocket	♦ Cloud hosting mongodb and redis ♦ Similar as mongodb	♦ Similar as mongodb
134. Azure DocumentDB	♦ Use Json as storage ♦ Supports complex data model ♦ Schema-free ♦ Supports different level of consistency ♦ Transection	♦ No Join
135. Cloudant	♦ Use Json as storage ♦ Supports complex data model ♦ Schema-free ♦ Supports Full-text search ♦ Supports sptial indexes ♦ Data compression	♦ No ACID

To be continued…

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