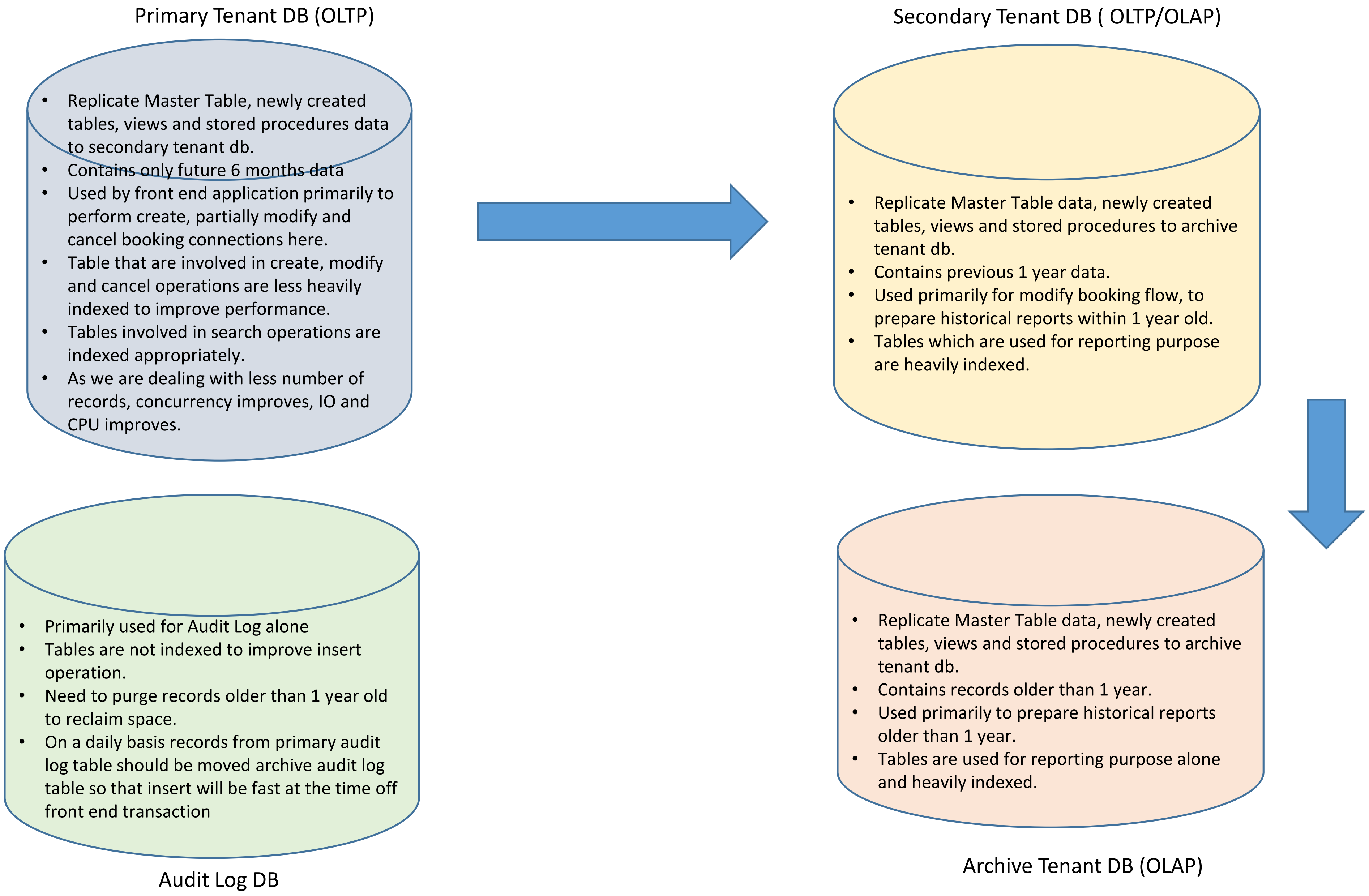
Rezopia -Enterprise DB Architecture Proposal

Prepared by – Santhosh
Document version – 1.0.0.0
28/1/2014

How - Rezopia - Enterprise DB Architecture Diagram Proposal



Primary Tenant DB (OLTP)

- Replicate Master Table, newly created tables, views and stored procedures data to secondary tenant db.
- Contains only future 6 months data
- Used by front end application primarily to perform create, partially modify and cancel booking connections here.
- Table that are involved in create, modify and cancel operations are less heavily indexed to improve performance.
- Tables involved in search operations are indexed appropriately.
- As we are dealing with less number of records, concurrency improves, IO and CPU improves.

Secondary Tenant DB (OLTP/OLAP)

- Replicate Master Table data, newly created tables, views and stored procedures to archive tenant db.
- Contains previous 1 year data.
- Used primarily for modify booking flow, to prepare historical reports within 1 year old.
- Tables which are used for reporting purpose are heavily indexed.

Audit Log DB

- Primarily used for Audit Log alone
- Tables are not indexed to improve insert operation.
- Need to purge records older than 1 year old to reclaim space.
- On a daily basis records from primary audit log table should be moved archive audit log table so that insert will be fast at the time off front end transaction

Archive Tenant DB (OLAP)

- Replicate Master Table data, newly created tables, views and stored procedures to archive tenant db.
- Contains records older than 1 year.
- Used primarily to prepare historical reports older than 1 year.
- Tables are used for reporting purpose alone and heavily indexed.

<u>Why the above Architecture is proposed</u>:-

1. Standard edition doesn’t support horizontal partitioning, it is mandatory to distribute the data accordingly to optimize the performance off the application.
2. Indexing tables will not be more efficient unless and until you distribute data.
3. Reduce index rebuild time.
4. Improve I/O speed across multiple instances.
5. Maximize the number off connections and pools.
6. Utilize CPU cores and improve CPU to perform parallel processing.
7. Increase the number of concurrent users.
8. Isolate operations to specific db servers which improves debugging efficiency.
9. Hardware scalability is possible due to different set off workload operates in different servers.
10. Reduce deadlock by increasing isolation level to provide integrity.
11. Batch jobs are targeted for specific database to operate efficiently and reduce downtime during operation hours.

Primary Tenant DB (OLTP)

1. Whenever a DML operation is performed in the master table of the primary tenant db, it should be replicated across secondary db. The same holds good when a Sql object is created in the primary db, it should be replicated to secondary db so the schema are in sync and it reduces build time(need not have to execute scripts in all the db).
2. Primary Tenant DB focuses mainly on the product search operation and create booking operation.
3. Partially it supports modify booking and cancel booking, which means, when a person books a product and if he cancels or modifies on the same day, then it connects to the primary tenant db else for all the previous days modification and cancellation will go to secondary db.
4. A batch job moves the records from primary tenant db to secondary tenant db on a scheduled basis, updates the statistics, reorganize/re index the tables to remove sparse columns, fragmented data, it also take a transaction log backup and leaves space for insert operations to perform efficiently.
5. Benefits – minimize scan and seek operation as less number of records to retrieve, product search and create booking are isolated to a single db to accept more connections. DB Maintenance operation can be performed easily and efficiently. Even without less maintenance, the performance holds good for longer duration due to less number of records.
6. Gives an opportunity to upgrade the isolation level to Readcommitted/ Serializable to maintain data integrity and security without getting into deadlocks.

Secondary Tenant DB (OLTP/OLAP)

1. Whenever a DML operation is performed in the master table of the secondary tenant db, it should be replicated across secondary db. The same holds good when a Sql object is created in the secondary db, it should be replicated to secondary db so the schema are in sync and it reduces build time(need not have to execute scripts in all the db).
2. Secondary Tenant DB focuses mainly on the modify operation and cancel booking operation.
3. Partially it supports report generation
4. A batch job moves the records from secondary tenant db to archive tenant db on a scheduled basis, updates the statistics, reorganize/re index the tables to remove sparse columns, fragmented data, it also take a transaction log backup and leaves space for insert operations to perform efficiently.
5. Benefits – minimize scan and seek operation as less number of records to retrieve, modify and cancel booking are isolated to a single db to accept more connections. DB Maintenance operation can be performed easily and efficiently. Even without less maintenance, the performance holds good for longer duration due to less number of records.
6. Gives an opportunity to upgrade the isolation level to Readcommitted/Serializable to maintain data integrity and security without getting into deadlocks.

Arhive Tenant DB (OLAP)

1. Archive Tenant DB focuses mainly only on historic report generation which are older than a year.
2. It doesn’t support insert, update and delete.
3. A batch job moves the records from secondary tenant db to archive tenant db on a scheduled basis, updates the statistics, reorganize/re index the tables to remove sparse columns, fragmented data, it also take a transaction log backup and leaves space for insert operations to perform efficiently.
4. This is just a dump off old records, sort of a warehouse holding old books.

Audit Log DB

1. Primarily used for Audit Log alone
2. Tables are not indexed, this improves insert operation.
3. Need to purge records older than 1 year old to reclaim space.
4. Batch job executes on a daily basis records from primary audit log table should be moved archive audit log table so that insert will be fast at the time off front end transaction

To Whomsoever it may concern - Let me know your thoughts on this design and will enhance further.

Thanks !!!