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# Migration of Database from Oracle to Sybase System

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## ABSTRACT

***This Migration intends to give the relocation interaction from an Oracle database to Sybase ASE (Adaptive Server Enterprise). By "migration " we mean the most common way of changing a client-server application at present involving the Oracle database as its RDBMS, to such an extent that it utilizes the Sybase ASE database instead. This Migration has as its essential concentration to move usefulness from Oracle to Sybase ASE. Execution related parts of Sybase ASE are covered Sybase ASE is the data set that powers Wall Street. ASE has been conveying unshakable dependability and top-level performance for the beyond 25 years. Sybase ASE has a lower total cost of ownership than Oracle, and delivers better performance on the same hardware. Sybase ASE is ready to be the database in any application that runs on Oracle today.***

***Keywords***: *JEE Spring Architecture, Hibernate, Oracle, Sybase*

## 1. INTRODUCTION

Database migration has been an ongoing issue since data has been collected. Inevitably, new frameworks are planned which are expected to be more proficient, easy to understand, comprehensive, and current than more established frameworks. In some cases, new systems are developed simply to replace older systems, and the justification may be new software trends, financial constraints or windfalls, new management initiatives, user complaints, or other reasons. In other some instances, new systems are developed to replace older ones that have become too complex or outdated and which resist further modification and evolution. These systems are known as "legacy" systems .This rate of upgrading or at least changing from one system to another is not likely to slow down anytime soon.

This Migration Guide aims to provide guidance and assistance with the migration process from an Oracle database to Sybase ASE (Adaptive Server Enterprise). By "migration" we mean the method involved with changing a client-server application as of now involving the Oracle information base as its RDBMS, to such an extent that it utilizes the Sybase ASE database all things being equal. This Migration Guide has as its essential concentration to relocate usefulness from Oracle to Sybase.

**Table 1: Oracle vs. Sybase**

| Oracle | Sybase |
|---|---|
| Oracle Database Server | Sybase ASE |
| Oracle OLAP and DW | Sybase IQ |
| Oracle RAC | Sybase ASE Cluster Edition |
| Oracle Times Ten | Sybase's In-Memory Database |
| Oracle Streams | Sybase Replication Server |

**Motivation**

- The Oracle to Sybase Migration Tool aids in the conversion of Oracle data to Sybase ASE. When enterprises migrate from Oracle to Sybase, application migration is one of the tedious tasks and there are no good tools which can ease the process of migrating Oracle to Sybase. Using this application - Oracle to Sybase Migration Tool and through superior support, enterprises can realize significant time and cost savings during the migration and testing process.

### 1.1 Objectives

Following objectives derived by Oracle to Sybase migration system:

1. The process of changing a client-server application on architecture or on front-end or on back end level.
2. In today's digitized transaction era, it is required to have relational database which supports to millions of transactions per minute. For this we will mostly prefer Sybase database.
3. The migration tool can be used for migrations of any type of Oracle-based system. While it does not focus on a specific type of application, workload or system design, the majority of Oracle-based migration candidate systems are expected to be transactional systems.
4. The main parts of the migration process are, migration of master data, migration of transaction data into migration schema, test on development system and write to production or live system.

### 1.2 Scope

The Oracle to Sybase Migration Tool aids in the conversion of Oracle data to Sybase ASE. When companies switch from

Oracle to Sybase, application migration is one of the most time-consuming activities, and there are no appropriate tools to help with the process. Enterprises can save time and money throughout the migration and testing process by using this program - Oracle to Sybase Migration Tool - and receiving superior assistance.

The solution being developed will be capable of migrating from an Oracle database to Sybase ASE (Adaptive Server Enterprise). As a result, the recommended solutions are frequently employed by any organization, company, or individual who want to use Sybase ASE as a project database. Businesses must transfer data from one source to another from time to time. When transferring data across different types of databases, this can be a huge difficulty. Furthermore, some firms require these data transfers to occur on a regular basis.

Cloud system provides software, infrastructure and cloud services for deployment and hosting of the application. Minimum required compute, it is also provide compute, storage, and bandwidth requirements may be auto-scaled (additional capacity based on the demand and auto-scaling rules) over the period of the. The application are architected and designed to leverage the cloud characteristics such as rapid elasticity and handle transient and hardware failures without downtime.

Cloud system is responsible for adequately sizing the necessary compute, memory, and storage required, building the redundancy into the architecture (including storage) and load balancing to meet the service levels. Also provide servicer, based on the growth in the user load (peak and non-peak periods; year-on-year increase), will scale up or scale down the compute, memory, storage, and bandwidth requirements to support the scalability and performance requirements of the solution and meet the SLAs.The solution is architected to run on cloud services offered from multiple data center facilities to provide business

### 1.3 Background History

This Migration Guide focuses on the technical components of an Oracle to Sybase database migration project that are database-specific. Its goal is to assist in identifying and assessing the migration's complexity while scoping out a migration project, so that potentially challenging components of the system to be moved are not overlooked or undervalued. It also aids in the development of a migration strategy by presenting and recommending technical choices for various areas of the migration process.

## 2. SYSTEM DESIGN

### 2.1 System Architecture

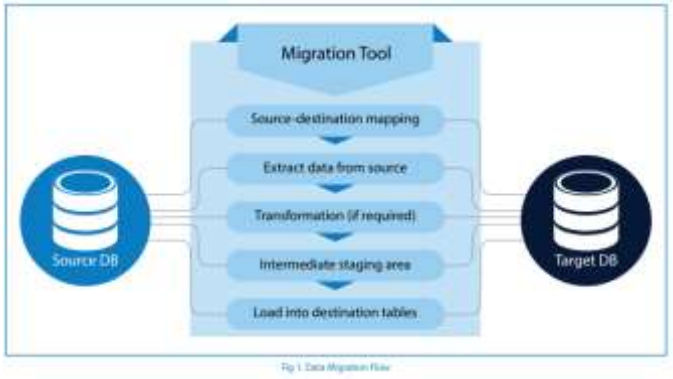



**Fig 1: Data Migration Flow**

Above fig. 1 represents overall Data migration flow of proposed system. With the help of migration, how applications will migrate data. At source database first housekeeping of data will perform. After that source schema is mapped with destination schema. Data will extract with the help of application .If duplication found then , redundant data will remove .and data will store at intermediate level i.e. migration schema. Finally from migration schema data will store at destination.

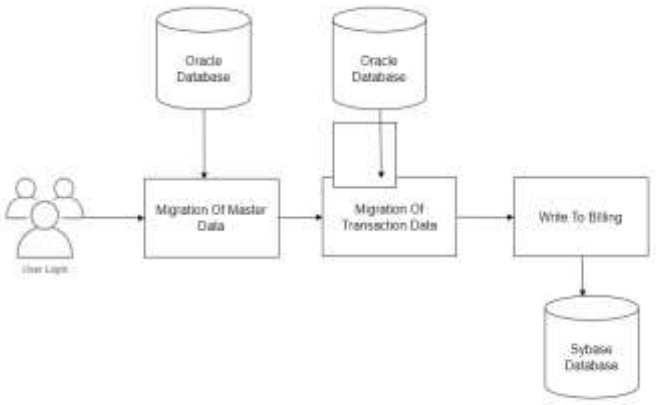



**Fig. 2. System Architecture**

Above fig. 2 represents overall system architecture of proposed system. It consists of following models,

1. **User Login:** This module restricts the accessibility of a user publicly domain. User has got to register before to access to develop system. However any users from any community, age, gender etc. can register access this develops system.
2. **Migration of Master data**
3. First migrate Master data to migration schema. After successful migration of master data to migration schema, insert master data to production environment.
4. **Migration of Transaction data to migration schema.**
5. **Write to production system.**
6. After migration of transaction process, insert data from migration schema to production environment.
7. Write error/every table migration to process to error log. Generate reports from complete migration process.

**There are some steps for migration of complete database**

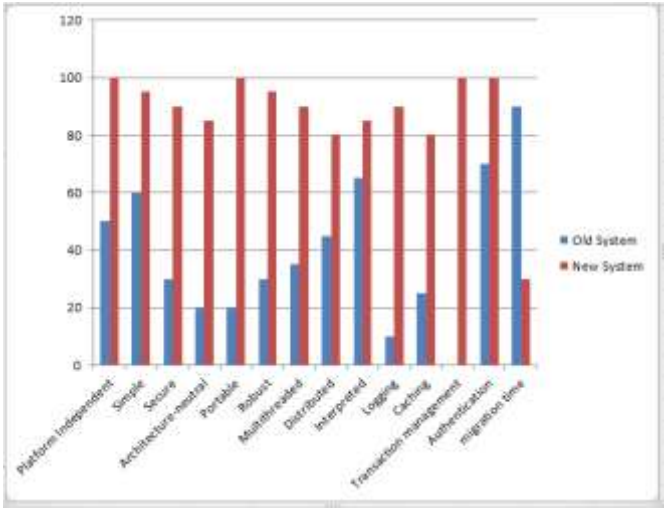
- Housekeeping of database tables (Means how many data you want to migrate to Sybase database).
- Create middle level migration schema (Intermediate level) for migrate from oracle to Sybase. After successful migration of oracle to migration schema, insert data to production environment.

**Application levels**

1. Migration of Master data
2. First migrate Master data to migration schema. After successful migration of master data to migration schema, insert master data to production environment.
3. Migration of Transaction data to migration schema.
4. Write to production system.
5. After migration of transaction process, insert data from migration schema to production environment.

Write error/every table migration to process to error log. Generate reports from complete migration process.




Project is developed with the help of Spring, hibernate so it has lots of advantaged over the old project. With Java's secure feature it enables to develop virus-free, tamper-free systems. Authentication techniques are based on public-key encryption. Because of using java compiler generates an architecture-neutral object file format, which makes the compiled code executable on many processors, with the presence of Java runtime system. Being architecture-neutral and having no implementation dependent aspects of the specification makes Java portable. It makes an effort to eliminate error-prone situations by emphasizing mainly on compile time error checking and runtime checking.With Java's multithreaded feature it is possible to write programs that can perform many tasks simultaneously. So our applications run smoothly. Logging- Deeper information about Log back is available, Spring Framework provides caching in a Spring Application, transparently. In spring, the cache abstraction is a mechanism that allows consistent use of various caching methods with minimal impact on the code.

Transaction management: Spring Boot implicitly creates a proxy for the transaction annotated methods. So for such methods the proxy acts like a wrapper which takes care of creating a transaction at the beginning of the method call and committing the transaction after the method is executed.

Authentication - Users will start by authenticating with a username and password managed by Auth0.Once authenticated, the client will receive a JWT representing an access token. The client will include the access token in the authorization header of every request to a secure endpoint. So migration time require is very low.

## 3. APPLICATIONS AND ADVANTAGES

This chapter covers various applications and advantages of proposed system as compare toexisting system.

**Applications**

Application offers a complete Data Migration Tool that helps the migration and transfer of database schemas and data across Leading databases such as Oracle to Sybase. It offers an open, user-friendly, and extensible migration process ensuring reliability and data integrity.

**Advantages:**

- Flexible, open and extensible migration process.
- Rapid data migration across databases ensuring data integrity with no loss of data.
- Restructure/Transform schema and data with ease during migration.
- Migrate/Transfer data across databases deployed on different platforms (Windows or Unix or Linux).
- Provides an uniform approach for migration across different databases.
- Offers a unique mechanism to verify the migrated data using "Database Migration Verifier".
- Easy to Install and Easy to Use tool with user friendly & intuitive GUI.
- It is straightforward to work.
- Low cost, less complex and time effective.
- It is best than existing techniques.

**Limitations:**

Here are some typical challenges that must be met when transferring data

- Data type conversion - Often databases use different set of data types, which differ in precision and names. It is important to match data types closely as possible to avoid data truncation
- Binary data transfer - Often text files are used to transfer data. This method is fine for alphanumeric data types but falls short if you have binary data types like images, audio, and video
- Logging - It is important to log errors that occur during data transfer. This way users can take appropriate action in case something goes wrong.
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## 4. CONCLUSION

Considering the result analysis we conclude that the scope of the project was met and proposed methodologies have achieved better result. The result analysis tables show that result indexing with multiple parameters meet user requirement to look at obtained results.

It has been observed that the Average migration time has been improved by approximately 12% to 18% depends on the duplication consumer numbers and meter numbers. It has been observed that average waiting time has been improved by 5% to 10% maximum.If we improve computing system configuration with higher processor speed, license OS, license database tool, and license spring tool Suite etc., there's great scope to enhance the performance of proposed system.

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