Migration validation process

# summary

SAP is in the process of migrating its SuccessFactors data centers from their current database solution to SAP’s HANA database. Each customer schema migration follows a rigid process to ensure data validity between the source (Oracle) and target (HANA) schemas. Migration process includes an intensive validation procedure to aid informed decision on whether to switch over or backout. All of this is completed within the downtime window without an impact to the end user.

# data validation and cutover process

During the entire migration process, there are 3 stages of validation to ensure the data is same on Oracle and HANA.

* **Convert oracle schema as read-only** –
  + The source schema is converted as a read-only schema inside the maintenance window and before the downtime migration begins. This ensures no unknown inserts, updates or deletes occur on the source DB which may eventually cause a validation failure.
* **Post migration data validation** –
  + Once all tables have been successfully migrated to HANA, our tool starts an automated validation process. This is the one of the most important steps in the entire migration process. The validation process considers each cell of data on source and compares it to the target. The tool uses checksum based custom developed algorithm and performs data intensive aggregation operations to ensure 100% data integrity. The process has gone through a stringent quality process and is sensitive to even an additional or missing white space on the target. At the time of creating this document, over 27,000 schemas have been validated using this procedure and we have had no complains about missing or additional data on HANA.
  + The tool creates an excel file with the report detailing each table from the schema. This report is checked for correctness by three separate and independent teams (migration execution, DB operations and engineering) If any of the teams flag an issue, the process stops there, and we initiate a rollback to Oracle for the customer pending investigation from all involved teams.
* **Application validation** –
  + Once we have passed the data validation stage, the tenant goes through another round of automated processes to ensure that the customer URL now points to HANA schema. We have 2 automated steps to ensure that the application URL points to correct HANA schema and that the application comes up as expected.
  + Once the tenant is active, we have proactive monitoring on all customer tenants provided by our Hypercare team for next 3 days post migration.

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