SAPSOL Technologies Inc.

SAP ECC to S/4 HANA
DATA MIGRATION COOKBOOK

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A brief overview of this cookbook

This cookbook is a collection of steps that SAPSOL followed in its journey of migrating data from its SAP ECC system (SNC client 400) to freshly installed S/4 HANA system (S1H client 600). It captures all the phases of this project including the research and planning before commencing the project, the discussions on what all options are available for data migration and which one is finally chosen to go ahead, what all data and how much of it is to be migrated, how SAPSOL actually migrated the data from ECC to S/4 HANA, the errors and challenges that team faced in the process and how those were resolved for successful completion of the Data Migration.

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1. INTRODUCTION TO SAP S/4 HANA AND HOW IT IS DIFFERENT FROM SUITE ON HANA

SAP ERP has been evolving and improving since the 1970s, but the release of SAP HANA represented a sea of changes in the SAP landscape. Rather than continuing to design their enterprise software to run on databases built by other companies, SAP SE created their own innovative database HANA. This was designed to move customers toward a faster, more flexible all-SAP landscape.

HANA stands for **High performance Analytical Appliance** which means it is a combination of hardware and software. SAP HANA is an in-memory database that can process real-time data. The speed needed to analyze this data is a result of storing the data in RAM and in columnar DB structure.

When ECC users perform an **SAP HANA migration** without changing the application version to S/4 it becomes **SAP Business Suite on HANA**. This lets businesses benefit from the performance boost of SAP HANA without restructuring the application layer; the process is relatively simple, and users don't have to adapt to a new system.

Now, **SAP S/4 HANA (SAP Business Suite for SAP HANA) is a next generation SAP Business Suite** and the company's biggest innovation since SAP R/3 and it is **specifically designed for and fully built on the SAP HANA platform** and it offers **a personalized user experience with SAP Fiori.** SAP S/4HANA delivers massive simplifications (customer adoption, data model, user experience, decision making, business processes and models) and innovations (Internet of Things, Big Data, business networks, and mobile-first) to help businesses **Run Simple in the digital economy.**

Following are some of the innovations which come with S/4 HANA:

● **Application optimizations specific for SAP HANA in-memory platform**: With SAP S/4HANA, SAP optimizes the application to make best use of the capabilities of the SAP HANA database. For example, SAP removed aggregates, and reduced the data footprint.

● **Responsive user experience design**: With SAP S/4HANA, SAP designs the application with the latest role-based user experience (UX) in the form of Fiori.

● **Unifying functionality in the core**: With SAP S/4HANA, SAP removes redundancy by providing one functionality for one objective.

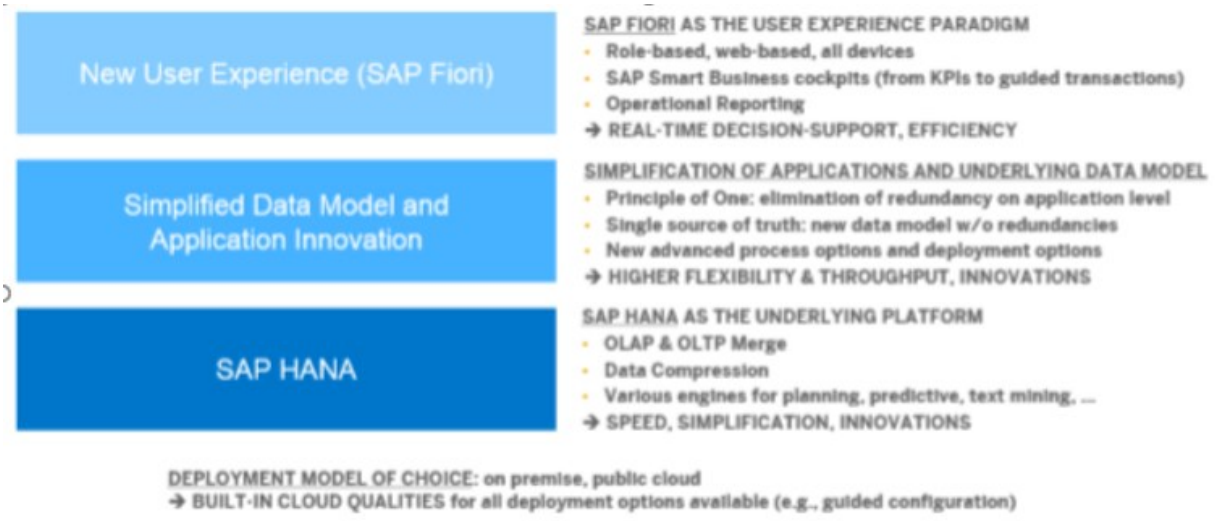


Figure 1: Main innovation pillars of SAP S/4 HANA

Image Source: https://d.dam.sap.com/a/OymUv/VA_S4HANA_17Q4_Dsgn_Trans_Rdmp_Whitpaper.pdf

2. S/4 HANA EDITIONS

S/4HANA comes with two choices, S/4HANA on premises and S/4HANA on cloud. Choice of edition depends on Source system and S/4HANA target edition.

1. S/4 HANA On-Premises

SAP S/4HANA, on-premise edition covers functionality, industries, and languages that are similar to current SAP Business Suite. For the move to the SAP S/4HANA, on-premise edition SAP offers a **one-step** procedure for the majority of the current SAP Business Suite customer. This one-step procedure includes the **database migration** (for those customers not yet on SAP HANA database) plus the **installation of the SAP S/4HANA Core** with the appropriate innovation packages.

2. S/4HANA on Cloud

SAP S/4HANA, cloud edition covers specific business scenarios for the marketing line of business and for the professional services industry as well as the most essential scenarios **to run an entire enterprise in the cloud with a digital core**, which includes: finance, accounting, controlling, procurement, sales, manufacturing, plant maintenance, project system, and product lifecycle management, plus integration with SAP SuccessFactors Employee Central, SAP Ariba Network, SAP Hybris Marketing, SAP Fieldglass and SAP JAM.

3. TYPES OF TRANSITION SCENARIOS

There are 3 different scenarios for how the customer wants to implement S/4HANA:

1) **New Implementation** –

In this scenario, new system (Greenfield) will be implemented in S/4HANA from the legacy system or existing SAP system. Here, an organization would be a new or existing SAP customer implementing a new SAP S/4HANA system beginning with an initial data load. In this case, the SAP S/4HANA system is implemented, and data (master and transactional) are migrated from the legacy system.

2) **System Conversion** –

In this scenario, existing SAP system will move into S/4HANA system. Technically seen, system conversion is a complete technical in-place conversion of an existing SAP Business Suite ERP system to SAP S/4 HANA, that means, that this process changes an existing system into an S/4 HANA system.

3) **Landscape Transformation** –

In this scenario, system landscape will transform into S/4HANA for existing SAP business suite. This is a kind of value driven, selective data migration to the new S/4 HANA platform. So, the focus is not on migrating a whole system, but rather on pick and choose of entities which you want to carve out and move on to the SAP S/4 HANA platform.

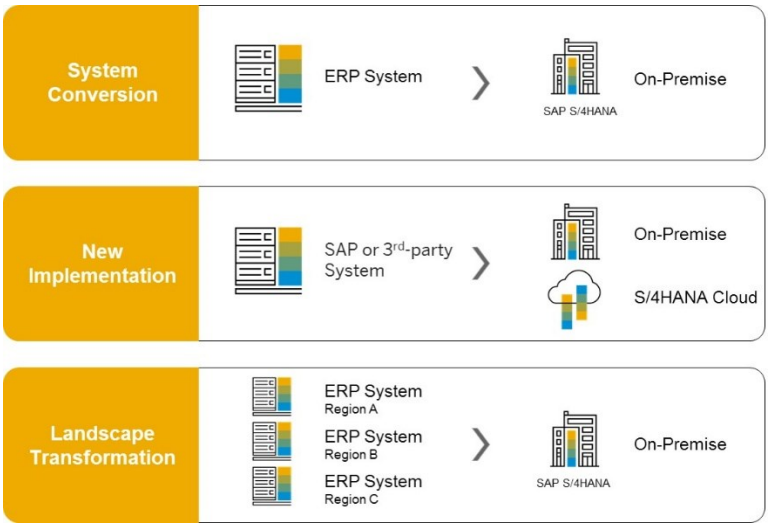


Figure 2: Three Transition scenarios for S/4 HANA implementation

Image Source: https://blogs.sap.com/2017/07/06/how-to-find-my-path-to-sap-s4hana-understand-the-available-transition-options/

Let us discuss all these options in detail in next sections.

3.1. System Conversion

As stated earlier, in System Conversion, you can take an existing SAP ERP system and completely convert it to SAP S/4HANA, including all configuration, code, and data.

You should choose this option if:

- Your main goal is to **bring your current business processes to the new platform**.
- You want to keep your **investment in custom code**.
- You want to **mitigate the risk and investment of a big bang conversion** project by reducing the scope of the transition project to a pure technical conversion project, and plan to adopt new innovations at your speed at a later point of time and in a phased approach.
- You want **to go-live pretty fast** while keeping most of your current business processes and want to realize smaller innovations quick and independent from each other afterwards.
- Most of your important business processes still fit to the current requirements, but you want to uplift them to the new S/4HANA platform in order to enable your system to add/change applications in smaller portions in a phased approach.

Technical view:

What	How
In-place technical conversion	tool-based technical conversion process of a SAP Business Suite ERP system to SAP S/4 HANA using SUM; Downtime minimizing options available.

Benefits for the customer are:

- It facilitates a database migration from a classical AnyDB to SAP HANA database, in case your SAP ERP system was running on a classical AnyDB.
- It migrates the ERP data model into the S/4HANA data model with all the invented data model simplifications and data volume reductions
- It replaces the old SAP ERP application Code with SAP S/4HANA Application Code

Note: ***It does not force you to migrate your classical SAP GUI UIs to Fiori Apps! You can do this selectively in a later step.***

Prerequisites for a one-step conversion of SAP ERP systems on any DB (not including SAP HANA):

1) The SAP ERP system is on at latest release SAP ERP 6.0 (no EHP required)
2) The system is UNICODE.
3) The system is single stack (ABAP only stack).

When converting an existing SAP ERP system to SAP S/4 HANA, several things have to happen:

- Software components need to be updated, including an upgrade of the underlying SAP Netweaver stack and an exchange of the SAP application software components (for example, SAP_APPL) with SAP S/4 HANA software components (**S4CORE**).

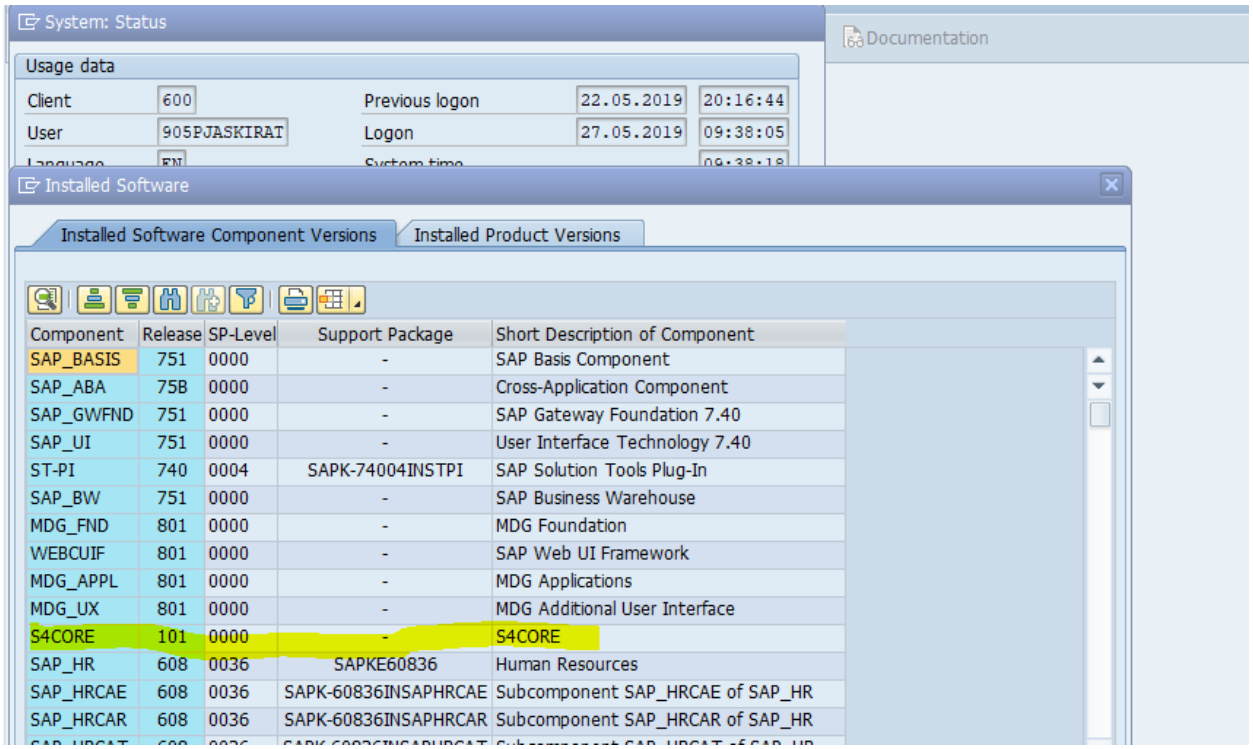


Figure 3: SAP S/4 HANA software component (S4CORE)

If the SAP ERP system is not already on SAP HANA, the database has to be migrated to SAP HANA. **With the change to SAP HANA, the operating system of the database service has to be Linux.**

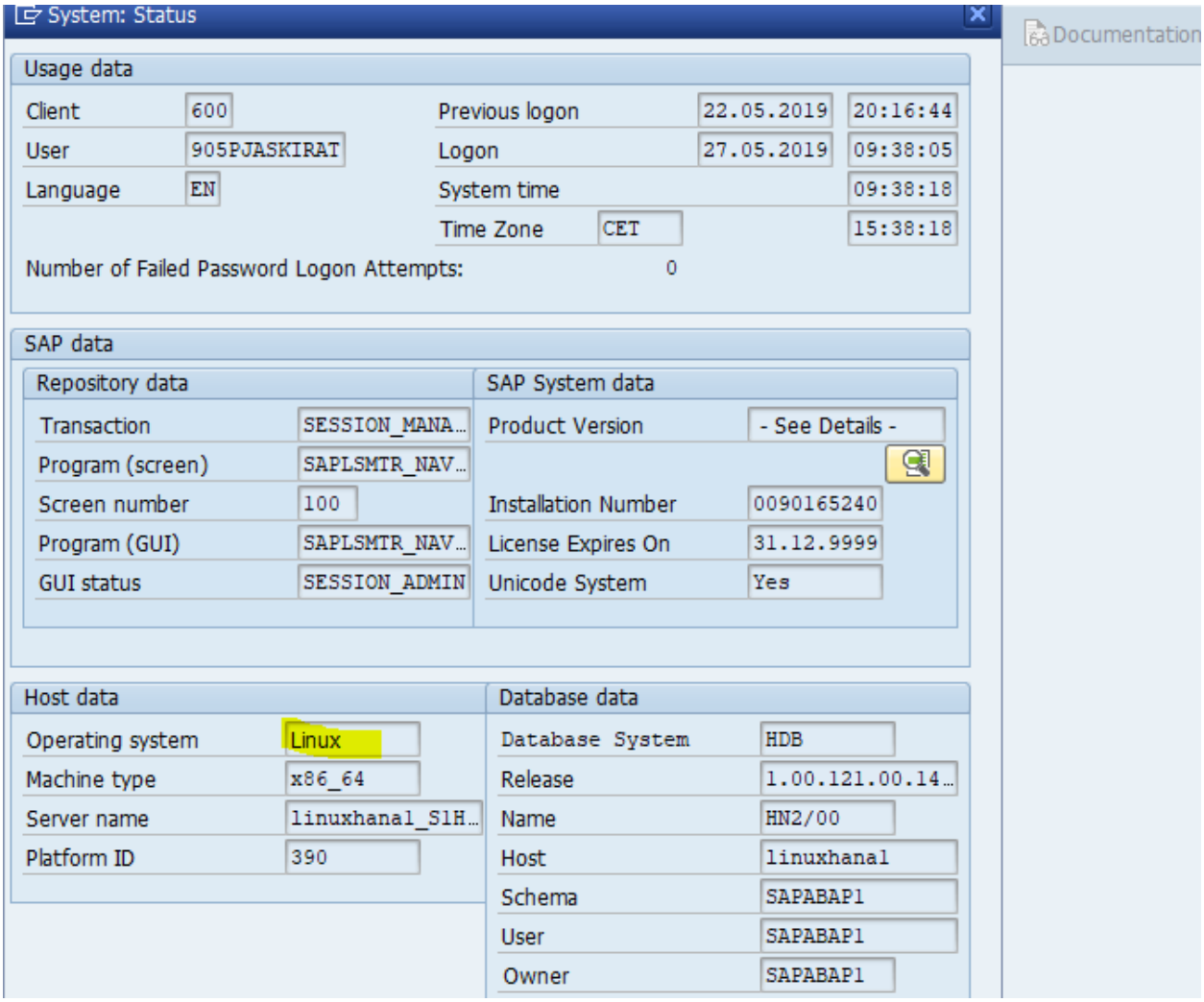


Figure 4: Operating system of the database service is LINUX in S/4 HANA system

• To support the new SAP S/4HANA data model, the data in the system has to be converted into the new tables and fields.

All these activities can be done in one single project and a single downtime, as **the Software Update Manager supports a one-step conversion to SAP S/4HANA**.

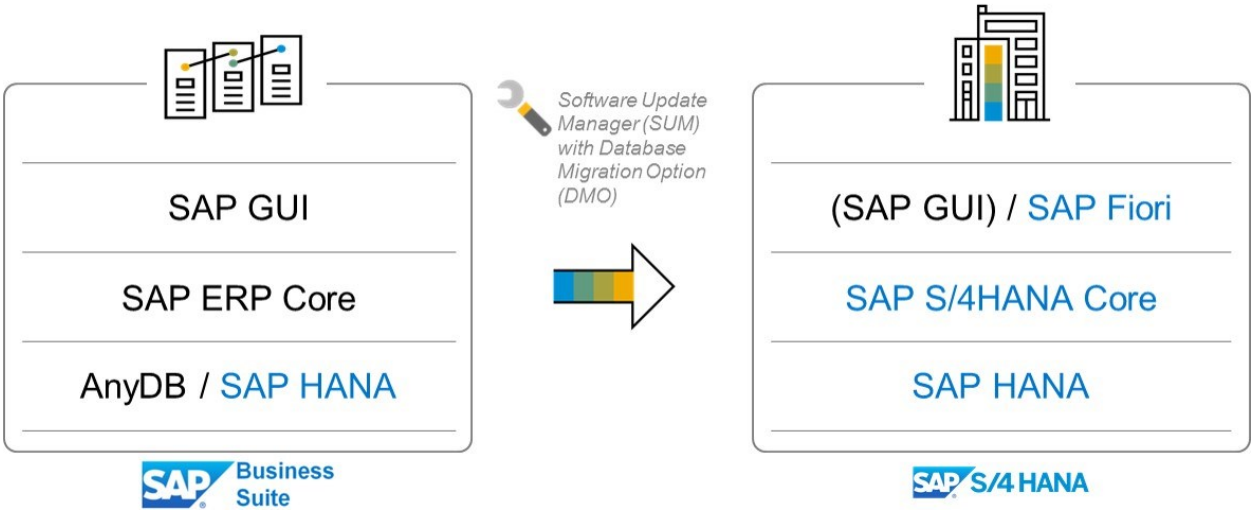


Figure 5: System conversion

Image Source: Source: https://blogs.sap.com/2017/07/06/how-to-find-my-path-to-sap-s4hana-understand-the-available-transition-options/

The entire task of the Conversion to S/4 HANA can be broadly categorized into three segments.

1. Pre-Conversion Activities
2. System Conversion
3. Post-conversion Activities

3.1.1. Pre-Conversion Activities

- The basis consultant should create a **Sandbox System** where we should perform the dry run. The Sandbox should be the copy of Production System where "Realistic" tests can be executed.
- Basis consultant needs to **apply necessary notes** to enable the functional consultants do the consistency check.
- Functional consultants do the **consistency check** and rectify all the errors found.
- **ABAPers change the custom code** and make it compatible to HANA system. (This includes identifying the unused custom code using tools like **UPL or SCMON** and then decommissioning the unused code using **CCLM**. Then identifying which custom code needs to be modified to adapt to HANA as well as S/4 HANA using the tool **ATC (ABAP Test Cockpit)** and finally doing the required modifications.)

3.1.2. System Conversion

- Once all the errors are rectified and custom codes are changed, then starts the actual process of the system conversion. Basis consultants start the conversion with the help of **SAP Provided tool SUM (Software Update Manager) with DMO (Database Migration Operation)**
- This tool will help the Basis consultant to convert the **ECC system to S/4 HANA system** and migrate the data from the **legacy database to Hana Database**.

3.1.3. Post-Conversion Activities

- Once the Conversion is done, functional consultants have to check **the impact of the conversion** and they might need to perform some additional activities.

3.2. New Implementation

This scenario describes a **fresh, new installation of a SAP S/4 HANA** (either on-premise or cloud-based), also known as 'Greenfield' approach.

You should choose this option if:

- Your primary focus is reengineering and process simplification based on latest innovations i.e.
  a) **redesign your business processes** to enable the use of modern technology, such as predictive analysis, business insight, IOT etc.
  b) **getting rid of outdated custom code**, which makes maintenance even more expensive and hinders the quick adoption of new functionality and technology.
- You are planning to migrate **a non SAP/ 3rd party legacy system**
- Your current SAP system is
  a) of an **older release** and/or
  b) is **highly customized** or modified and/or
  c) does not meet the system requirements for a technical system conversion.

Technical view:

Steps	How
Install SAP S/4HANA (Cloud or on premise)	Software Provisioning Manager
Initial data load from source system	• SAP S/4HANA Migration Cockpit • SAP Data Services (SAP DS) both with Best Practice Migration content
Retire old landscape	

Benefits for the customer are:

- Reengineering and process simplification based on pre-configured business processes (best practise content available)
- Predefined migration objects & best practices available which does not require intensive migration logic programming
- Rapid adoption of new innovations in a standardized manner

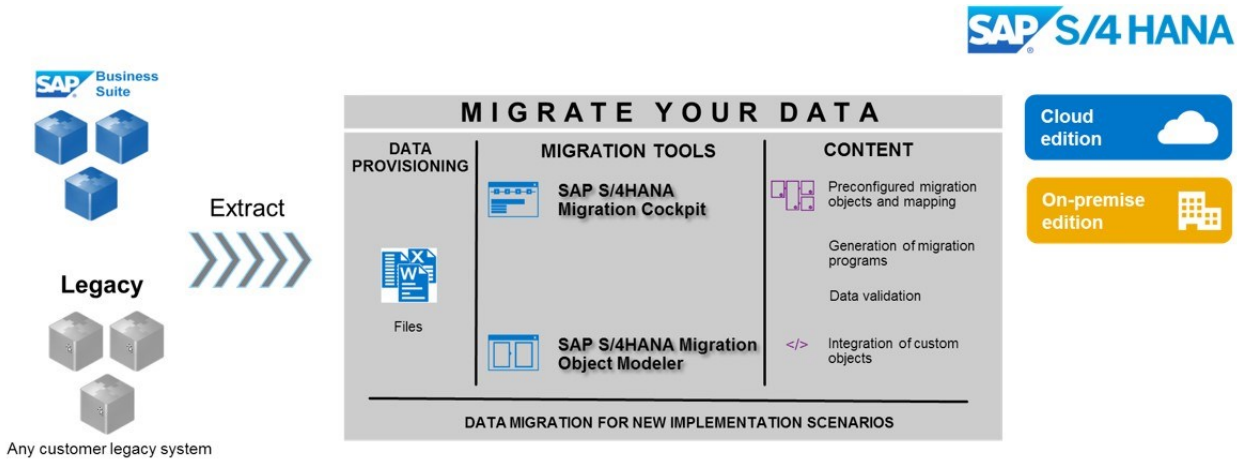


Figure 6: New implementation scenario

Image Source: Source: https://blogs.sap.com/2017/07/06/how-to-find-my-path-to-sap-s4hana-understand-the-available-transition-options/

Following are different options available for data migration in **SAP S/4HANA on premises**:

- S/4HANA **Migration Cockpit** (MC) with **Migration Object Modeller** (MOM)
- **SAP DATA Services** (SAP DS)
- SAP **Information Steward**
- **SAP Rapid Data Migration Content**

LSMW (Legacy system migration workbench) is available in S/4HANA but it is not recommended to use this tool as it can provide an incorrect interface for some applications of S/4HANA.

For our project of Data migration at SAPSOL, we analyzed and compared first two tools to decide which option will we use.

3.2.1. MIGRATION COCKPIT

S/4HANA Migration Cockpit (MC) is a new migration tool that is **shipped exclusively with SAP S/4 HANA** i.e. no additional add-ons or special UI activation activities need to take place after you have installed, upgraded or converted to SAP S/4HANA 1610 or higher. It was initially designed for S/4HANA cloud edition but now it is also available for 1610 S/4HANA on premises and later versions.

It is accompanied by **Migration Object Modeler (referred to as MOM hereafter**), which is a design tool delivered in On-Premise edition only and is used for enhancements and modifications of pre-defined migration objects.

Migration Cockpit is **browser based (WebDynpro) interface**. **No additional setup or activation** is required once we setup SAP S/4HANA system.

- To access MC on premises, **use transaction LTMC**. It will open MC on a new web browser.
- To access MC on cloud, **choose the option 'Manage your solutions'** on Launchpad.

Key Features of Migration Cockpit

- This tool is **embedded and delivered** with S/4HANA system.
- **No programming** is required by the customer.
- As the name suggests, this tool is used for migrating data from **SAP or non-SAP system to S/4HANA**.
- This tool has **predefined migration object** which contains the mapping for all master and transactional data. It reduces migration cost and time.
- Migration activities are predefined and easy to use.

There are following concepts employed within MC:

- **Migration Object:** Migration Objects are defined and delivered by SAP and describe how to migrate data from the source system (which tables are needed and the relationships between the tables) to SAP S/4HANA. Custom Migration Objects are not yet supported, but on the roadmap – refer to section on Migration Object Modeler further in this blog.
- **Migration Project:** Migration Projects are used to facilitate the transfer of data from a source system to SAP S/4HANA. In order to migrate data to SAP S/4HANA, you must first create a migration project. You use a migration project to specify the source system and the data that you want to transfer, and to monitor the status of the migration.

Migration Project has a **transfer ID associated** with it – concept taken from System Landscape Transformation capabilities. The transfer ID acts as unique identifier per project in order to facilitate transfer of project specific settings (including value mappings) between environments in the landscape – for example between QA and Production systems.

It is important to understand that APIs used to post data to the target SAP S/4HANA system only support INSERT actions. In other words, there are no UPSERT or UPDATE actions supported. Thus, any data already loaded to the target system cannot be re-loaded. Similarly, if a particular data file has been partially successful, you should filter only failed records for subsequent re-run to avoid errors associated with attempts to create duplicate records (for those which were successful during first run).

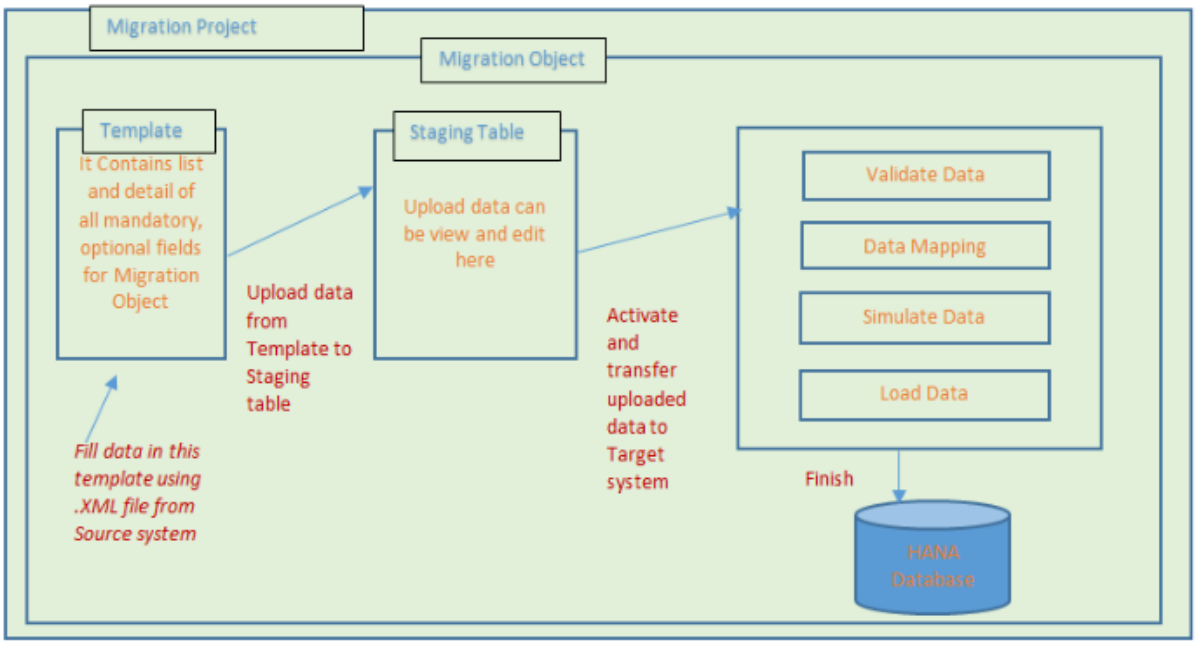


Figure 7: S/4 HANA Migration Cockpit

Image Source: https://sapyard.com/sap-s-4hana-technical-part-5-data-migration-in-s-4hana-via-migration-cockpit/

3.2.2. SAP RAPID DATA MIGRATION WITH DATA SERVICES

Prior to introduction of SAP S/4HANA Migration Cockpit to on-premise world, SAP Data Services were the only tool recommended and fully supported for the purposes of data migration to SAP S/4HANA (on-premise). SAP Rapid Data Migration is a tool which **must be installed on your system separately**.

SAP Data Services provides capabilities for **data extraction, transformation, and load (ETL),** as well as data quality management, and text data processing. The ETL capabilities of the tool can be used free of charge, but the data quality features require a Data Services license. The Rapid Data Migration package also contains sample migration content in the form of e.g. business partners, materials, sales document etc.

SAP Data Services use IDocs to post data into SAP S/4HANA, therefore respective configuration on the SAP S/4HANA target system is a common requirement for all migration objects. There is a custom program delivered to create required partner profiles for each required message type.

When sourcing data from your legacy system, you will have a choice of using flat files (text or XLS) as intermediary or to connect directly to your source system or database.

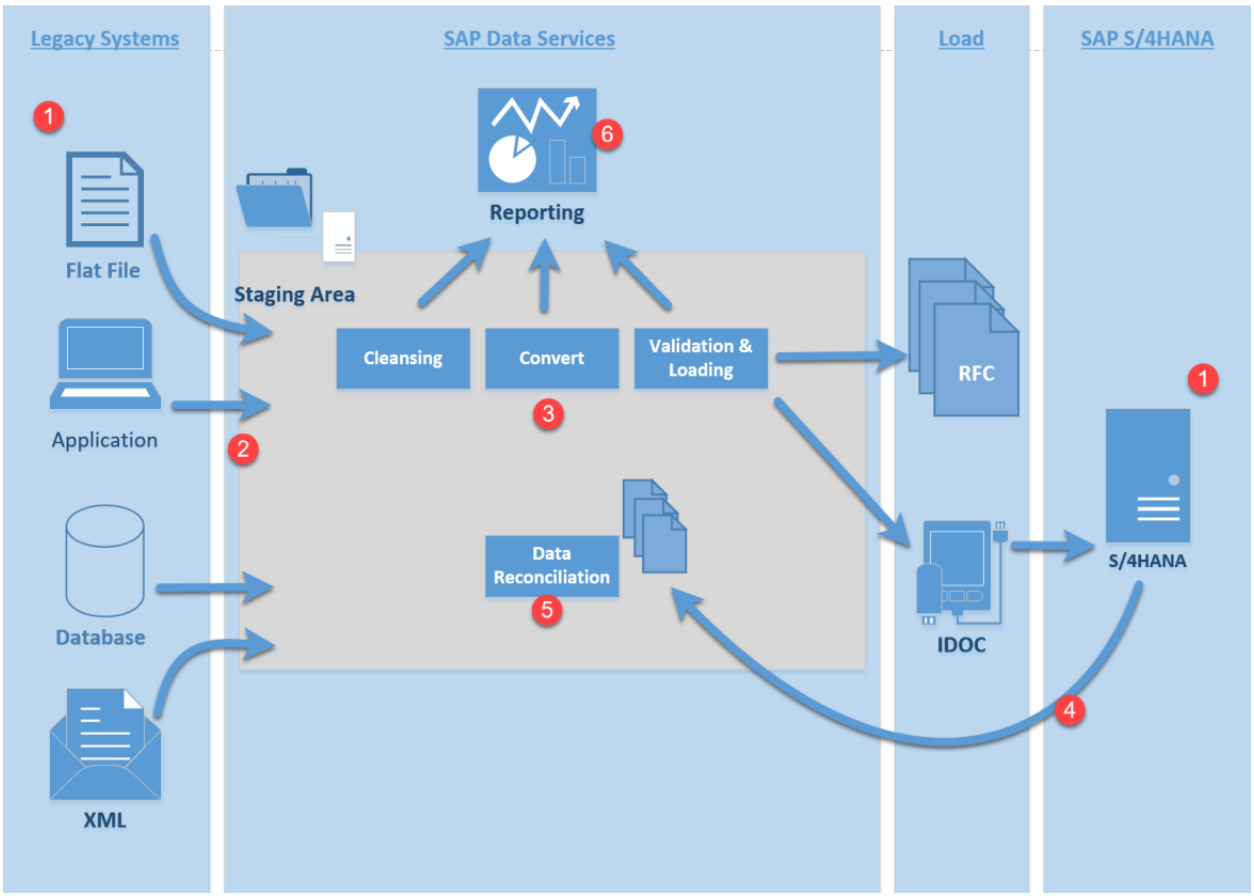


Figure 8: Rapid Data Migration with SAP Data services

Image Source: https://s4hanablog.com/2017/11/17/data-migration-in-s4hana-revamped/

1. **Source and Target system**
   - On the left side the system is integrated with one or more SAP or non-SAP legacy systems via different interfaces (flat file, data base, etc.)
   - On the right side the S/4 HANA system is connected.
2. **Extraction and profiling**
   - This is the staging area between the source and target system. The area is provided by the database on which SAP Data Services runs.
   - In this step the data is extracted and analyzed (profiled)
3. **Cleansing, Conversion, validation and loading**
   - In this step the cleansing of data records is done. You ensure that the data comply to certain rules and the customizing settings in the S/4HANA system. Data cleansing can include e.g. dividing fields, merging field and converting values to certain formats.
   - The cleansed and verified data is then imported to S/4HANA
4. **Customizing extraction from SAP S/4HANA**
   - The customizing settings in the S/4HANA system are extracted and replicated to the intermediate layer so you can ensure that the data is compatible with these specific customizing settings (e.g. plants, material types, customer groups, etc.).
5. **Data Reconciliation**

- The actual imported data to S/4HANA is reconciled with the expected data for the Data Services migration.

6. **Dashboard and Reporting**
   - The entire migration process can be tracked and traced with dashboards and reports. The pre-defined reports are delivered in the SAP BusinessObject BI WebIntelligence tool. The reports can be used as is or can be used as a template to create own reports.

3.2.3. Comparison of MC and Data Services

Tool/Method **Aspect**	**SAP S/4HANA Migration Cockpit (MC) and SAP S/4HANA Migration Object Modeler (MOM)**	**Rapid Data Migration with SAP Data Services (DS)**
Technical deployment	Built into the SAP S/4HANA 1610 and later	Separate deployment and set-up necessary for SAP Data Services, BI Platform and optionally Information Steward.
Commercial aspects	Capability provided as part of SAP S/4HANA license.	Core capability included in selected SAP HANA licenses. Advanced functionality (for data cleansing) requires full SAP Data Services license.
Pros	Ready to use solution with standard available templates for the covered objects.	Data cleansing and direct connection with source system
Cons	No data cleansing, no data extractions, only pre-defined migration templates.	Separate installation, data cleansing required additional license.

3.3. Landscape Transformation

For this third scenario, an organization would consolidate their current regional SAP Business Suite landscape into one global SAP S/4HANA system.

Sub-scenarios:

- consolidation of a current SAP Business Suite landscape (multiple systems, or selectively clients of multiple systems) into one global SAP S/4HANA system, or
- selective data migration based on legal entities, such a clients or company codes
- Implementation of SAP Central Finance Scenario

You should choose this option if:

- You want to consolidate your landscape or to selectively transform data into an SAP S/4 HANA system.

Benefits

- **Value-based migration**: selective data transformation allows a phased approach focusing the first SAP S/4HANA migration phase on parts of the business with highest ROI and lowest TCI
- **Agility**: stay on current business processes but move gradually to SAP S/4HANA innovations (Move to SAP S/4HANA at your own pace!)
- **TCO reduction**: system and landscape consolidation with harmonized/ simplified processes and unified master data lead to lower cost of operations

NOTE: *Other than the system conversion scenario and the new implementation scenario, the landscape transformation scenario requires currently a service or consulting engagement with SAP. There is not generally released toolset with documentation available which you can use to configure, test und execute your own, individual data migration to the SAP S/4HANA platform. The currently available tools and technology are only available via SAP Value Assurance Services or Consulting service Engagements*.

Technical view:

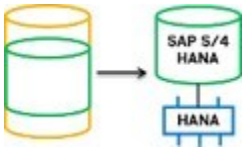
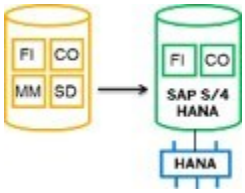
SAP Landscape Transformation: Technical migration on table level using pre-configured transformation solutions		
	**Consolidation**	System Merge of multiple source systems into one new or existing SAP S/4HANA system (build-up multiple client system)
	**Selective Data Transformation**	Migration of business units/single entities such as company code
	**Implementation of SAP Central Finance**	Implementation of S/4HANA Central Finance including real-time reposting of financial transactions into Central Finance instance (synchronization of systems)

Figure 9: SAP Landscape Transformation

Image Source: https://blogs.sap.com/2017/07/06/how-to-find-my-path-to-sap-s4hana-understand-the-available-transition-options/

4. KEY QUESTIONS TO UNDERSTAND YOUR DATA MIGRATION REQUIREMENTS

Following are some of the questions that the business needs to answer before deciding on final route to migration to S/4 HANA:

- What deployment option is the target / receiver of the data?
  S/4HANA or S/4HANA Cloud
- Which data is needed from sources to operate S/4HANA the way you want?
  Customizing? Master data? Open items? Balances?
- What are the sources / sender systems of the data?
  Number and type of source systems? Central master data management active?
- Migrate data “as is” or transform on the fly?
  Data transformations needed? Data quality improvement necessary?
- Who needs to be involved?
  Decisions to be taken? Major stakeholder?

5. PROJECT AT SAPSOL

We, at SAPSOL, after discussions on pros and cons of all the options available, concluded to use **NEW IMPLEMENTATION** scenario and for this we will use **MIGRATION COCKPIT** and **MIGRATION OBJECT MODELLER** tools.

S/4 HANA system deployed at SAPSOL is **On-Premise edition and 1610 release.**

6. LIST OF MIGRATION OBJECTS AVAILABLE FOR 1610 RELEASE

In 1610 release of S/4 HANA system, SAP has provided **32 migration objects**. The number has been increased to 52 in 1709 release and even more in 1809 release.

Following is the list of migration objects available in S/4 HANA 1610 release:

Business Object Name	Area	Business Object Type	Migration Cockpit Object Name	Technical Object Name
Activity Types	CO	Master data	Migration of Activity types (FILE2S4)	SIF_LSTAR_CREATE

Business Object Name	Area	Business Object Type	Migration Cockpit Object Name	Technical Object Name
Cost Center	CO	Master data	Migration of Cost centers (FILE2S4)	SIF_KOSTL_MASTER
Activity Price	CO	Master data	Migration of Activity prices (FILE2S4)	SIF_ACT_PRICE
Internal Order	CO	Transactional data	Migration of Activity prices (FILE2S4)	SIF_INTORDER
Profit Center	FI	Master data	Migration of Profit centers (FILE2S4)	SIF_PRCTR_MASTER
Bank Master Data	FI	Master data	Migration of Banks (FILE2S4)	SIF_BANK_MASTER
Customer Master	FI, SD	Master data	Migration of Customer (FILE2S4)	SIF_CUSTOMER
Vendor Master	FI, MM-PUR	Master data	Migration of Vendor (FILE2S4)	SIF_VENDOR
Customer Open Items	FI	Transactional data	Migration of Customer open items (FILE2S4)	SIF_AR_OPEN_ITEM
Vendor Open Items	FI	Transactional data	Migration of Vendor open items (FILE2S4)	SIF_AP_OPEN_ITEM
Fixed Asset incl. Balances	FI-AA	Master data + Transactional data	Migration of Fixed assets (FILE2S4)	SIF_FIXED_ASSET

Business Object Name	Area	Business Object Type	Migration Cockpit Object Name	Technical Object Name
G/L Account Balances	FI	Transactional data	Migration of G/L balances (FILE2S4)	SIF_GL_OPEN_ITEM
G/L Account Open Items	FI	Transactional data	Migration of G/L open items (FILE2S4)	SIF_GL_OPEN_ITEM
Exchange Rate	FI	Master data	Migration of Exchange rates (FILE2S4)	SIF_EXCH_RATE
Inventory Balances	MM-IM	Transactional data	Migration of Material inventory balances (FILE2S4)	SIF_INVENTORYBAL
Material Master	LO-MD	Master data	Migration of Materials (FILE2S4)	SIF_MATERIAL
Material Long texts	LO-MD	Master data	Migration of Material long texts (FILE2S4)	SIF_MAT_LONGTEXT
Material Consumptions	LO-MD	Master data	Migration of Consumptions (FILE2S4)	SIF_MAT_CONSUMP
Purchasing Info Record	MM-PUR	Master data	Migration of Purchasing info records (FILE2S4)	SIF_PURCH_INFREC
Purchase Order	MM-PUR	Transactional data	Migration of Purchase orders (only open) (FILE2S4)	SIF_PURCH_ORDER
Pricing Conditions	SD, CO, MM-PUR	Master data	Migration of Pricing conditions (FILE2S4)	SIF_CONDITIONS

Business Object Name	Area	Business Object Type	Migration Cockpit Object Name	Technical Object Name
			(Currently Cloud Only)	
Contracts (Purchasing)	MM-PUR	Transactional data	Migration of Purchasing contracts (FILE2S4)	SIF_CONTRACTS
Source List	MM-PUR	Transactional data	Migration of Source lists (FILE2S4)	SIF_SOURCE_LIST
Sales Order	SD	Transactional data	Migration of sales orders (only open) (FILE2S4)	SIF_SALES_ORDER
Batches	QM, SD, PP-PI	Master data	Migration of Batches (FILE2S4)	SIF_BATCHES
Bill of Material (BOM)	PP	Master data	Migration of Bill of materials (FILE2S4)	SIF_BOM
Work Center	PP, QM	Master data	Migration of Work centers (FILE2S4)	SIF_WORK_CNTR
Equipment	PM	Master data	Migration of Equipment (FILE2S4)	SIF_EQUIPMENT
Equipment Task List	PM	Master data	Migration of Equipment task lists (FILE2S4)	SIF_EAM_TASKLIST
Functional Location	PM	Master data	Migration of Functional locations (FILE2S4)	SIF_FUNC_LOC
Characteristics	CA	Master data	Migration of Characteristics (FILE2S4)	SIF_CHARACT
Classes	CA	Master data	Migration of Classes (FILE2S4)	SIF_CLASS

7. MIGRATION COCKPIT STEPS

The migration cockpit is designed for customers who have just installed SAP S/4 HANA and want to move their legacy data from SAP or non-SAP software systems. It allows you to migrate your master data and

transactional data to SAP S/4 HANA, and it facilitates this process by providing predefined migration content and mapping. The migration cockpit is part of both SAP S/4 HANA and SAP S/4 HANA Cloud and is included in these licenses.
For the SAP S/4 HANA on premise and the private option of SAP S/4 HANA Cloud, the SAP S/4 HANA migration cockpit allows you to integrate custom data into the migration project using the SAP S/4 HANA migration object modeler.

Transaction Code

- **LTMC - Migration Cockpit**: **Usage**: To transfer the legacy data to SAP S/4HANA.
- **LTMOM - Migration Object Modeler: Usage**: If a standard template for migration object (e.g. Material Master, Sales order, Purchase Order etc.) does not meet your business requirement (for example if the relevant Microsoft Excel XML file does not contain all the fields that you need, you want to make certain fields mandatory etc.), you can use the SAP S/4HANA Migration Object Modeler to adjust the relevant migration object.
- **Note**: SAP S/4HANA Migration Object Modeler is only relevant for the on-premise edition of SAP S/4HANA.

Prerequisite

- Web service has to be activated by using T-code SICF
- To transfer legacy data using SAP S/4 HANA Migration Cockpit (LTMC), authorization role SAP_CA_DMC_MC_USER is required.
- To use SAP S/4 HANA Migration Object Modeler, role SAP_CA_DMC_MC_DEVELOPER is required.

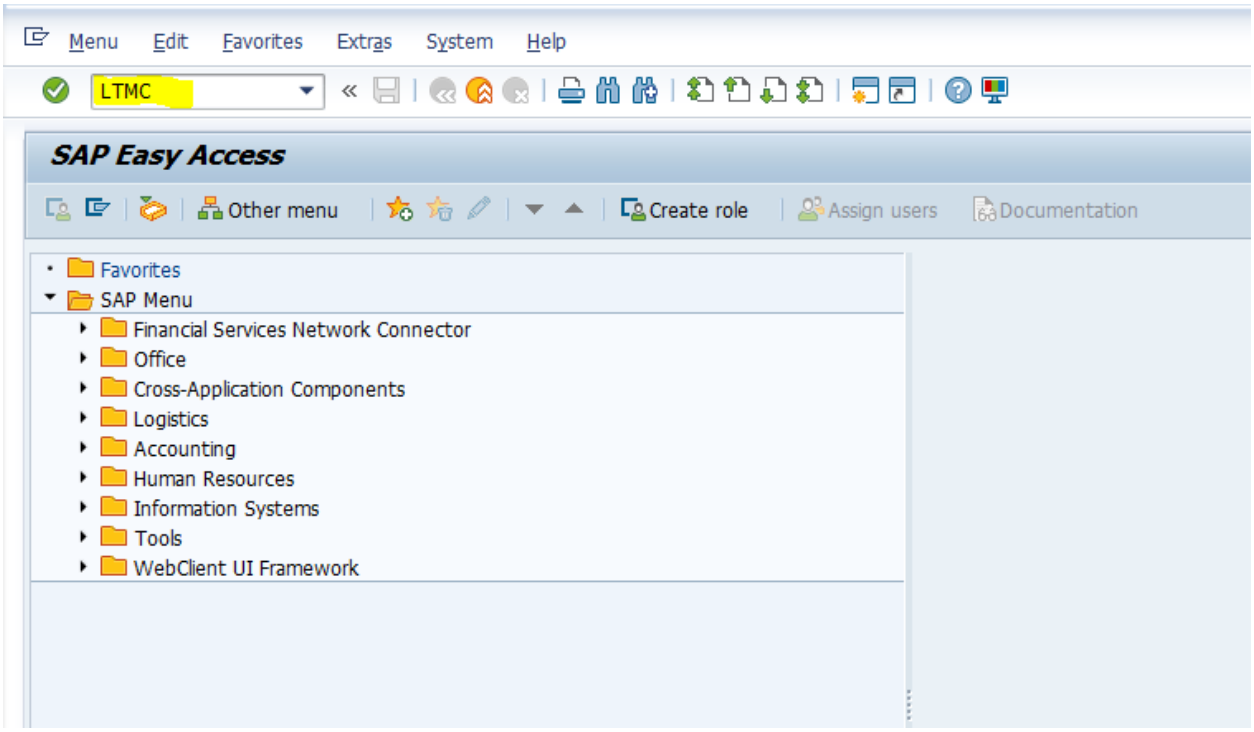
Important SAP Notes

Below are some important SAP notes for SAP S/4HANA Migration Cockpit. You can have a look at these.

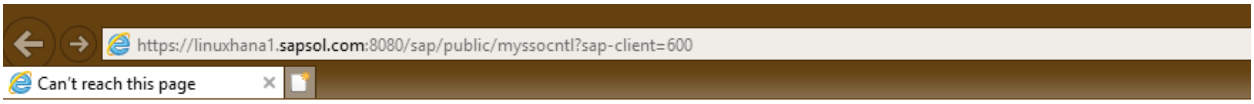
- **2537549** - Collective SAP Note and FAQ for SAP S/4HANA Migration cockpit (on premise)
- **2481235** - SAP S/4HANA Migration Cockpit (on premise) - restrictions and extensibility of pre-delivered migration objects
- **2506041** - S4TWL: API RFC_CVI_EI_INBOUND_MAIN is not supported from the release S/4 HANA OP 1709 FPS2 and in Cloud Edition 1805 onwards
- **2650201** - Migration Cockpit How to create/update data records

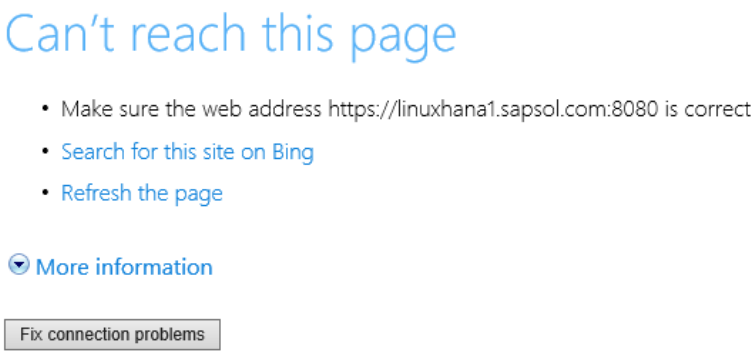
Steps:

1. Run transaction LTMC in your S/4 System (Migration cockpit opens in your default web browser)



At SAPSOL, we were not able to open the migration cockpit using LTMC. We got blank web browser screen.



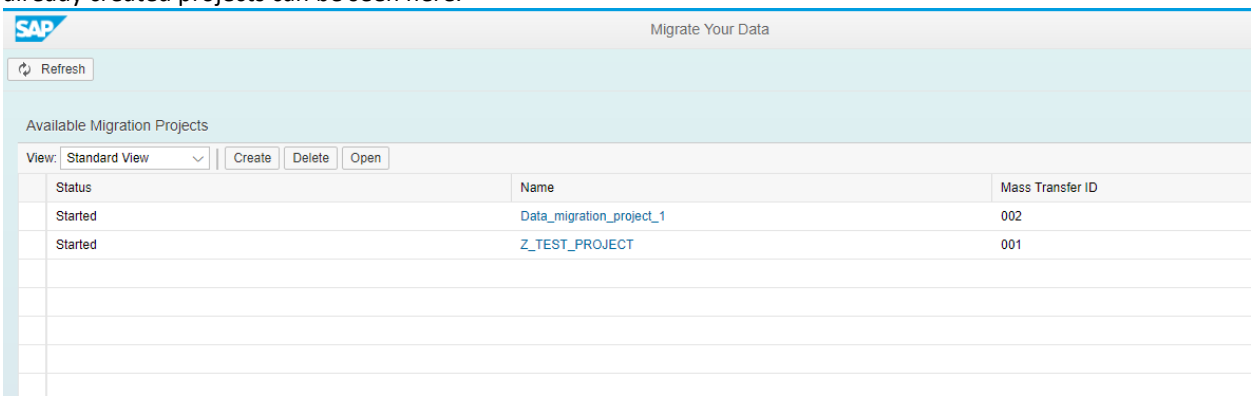


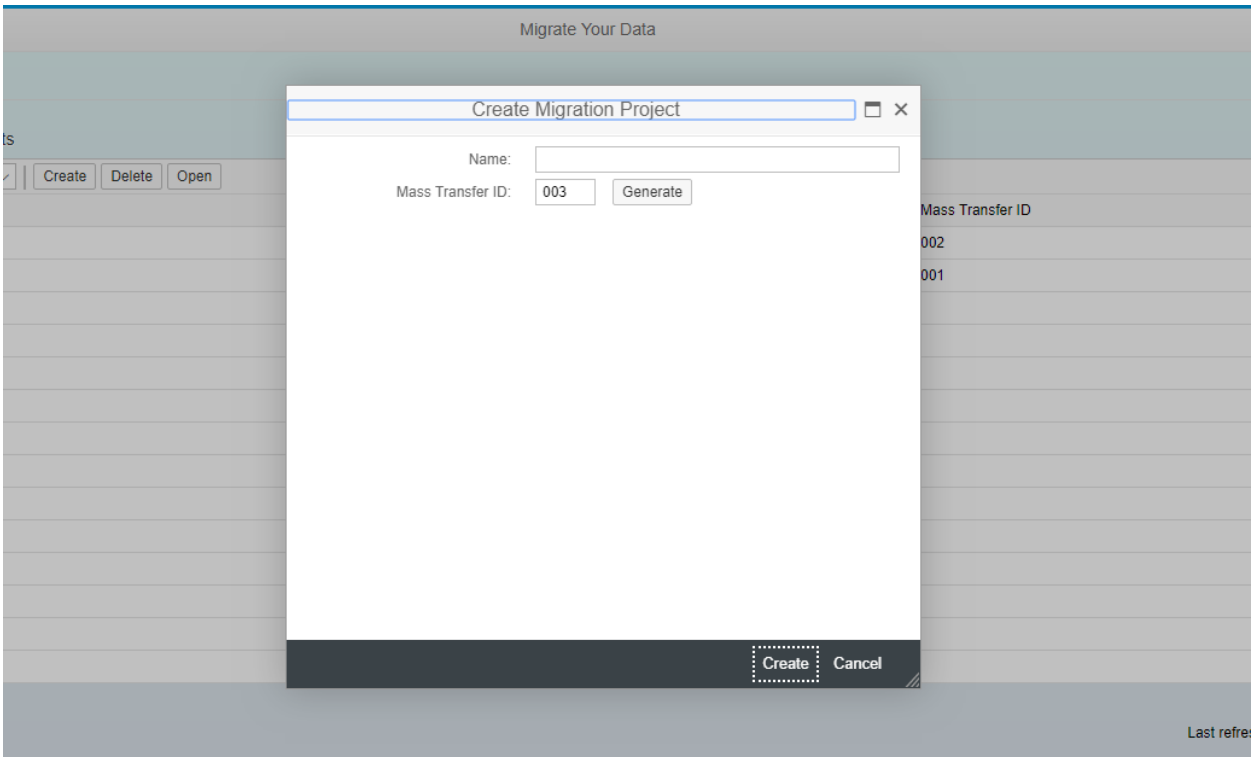
So, we directly used below weblink to open MIGRATION COCKPIT:
https://192.168.2.150:8080/sap/bc/webdynpro/sap/dmc_wda?WDCONFIGURATIONID=DMC_WDA_APP&sap-client=600 (For inside premises of SAPSOL)

https://70.25.73.204:28080/sap/bc/webdynpro/sap/dmc_wda?WDCONFIGURATIONID=DMC_WDA_APP&sap-client=600 (For outside SAPSOL)

Login with your S/4 HANA system credentials:

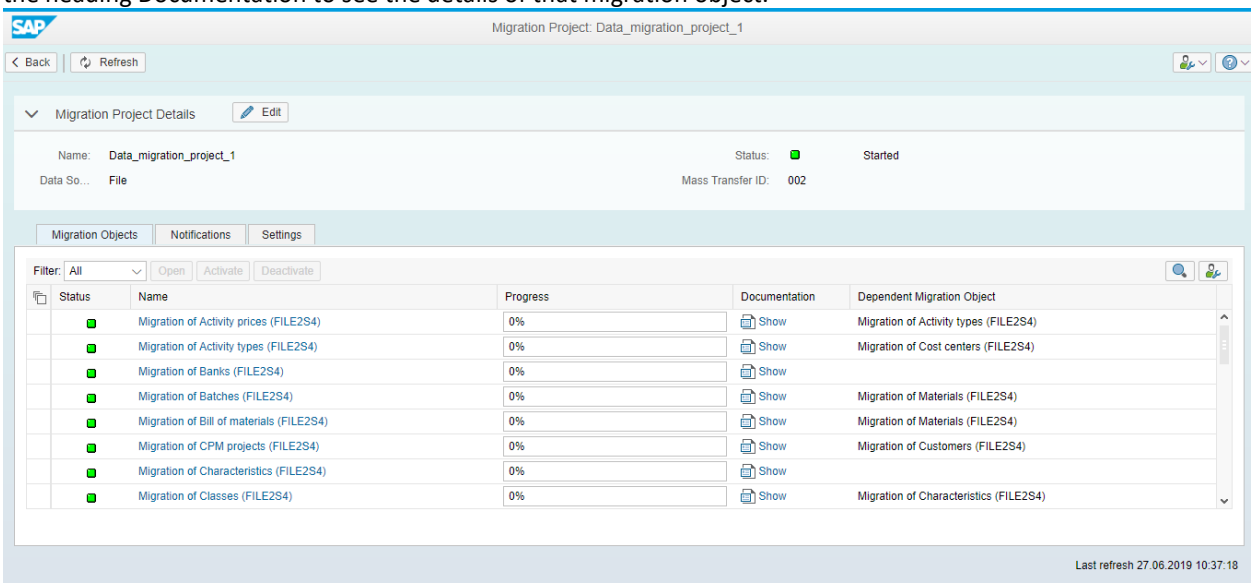
2. Create a new migration project by clicking on 'CREATE' button. (Pop up for new project will appear) The already created projects can be seen here.



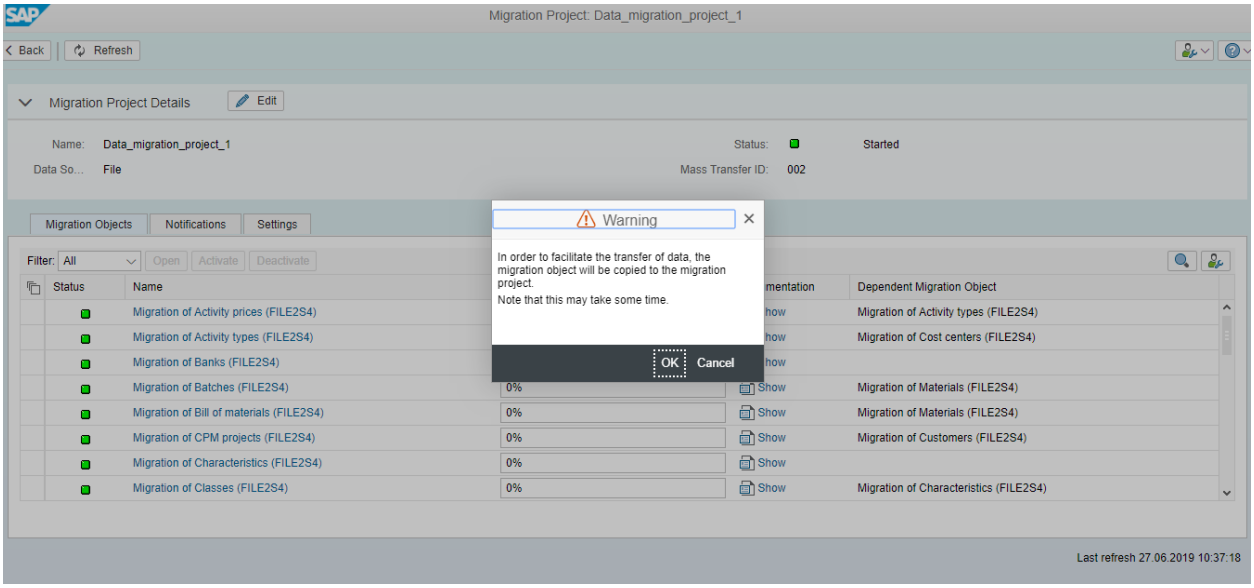


As seen above, a Mass Transfer ID is associated with every project and this ID is unique.

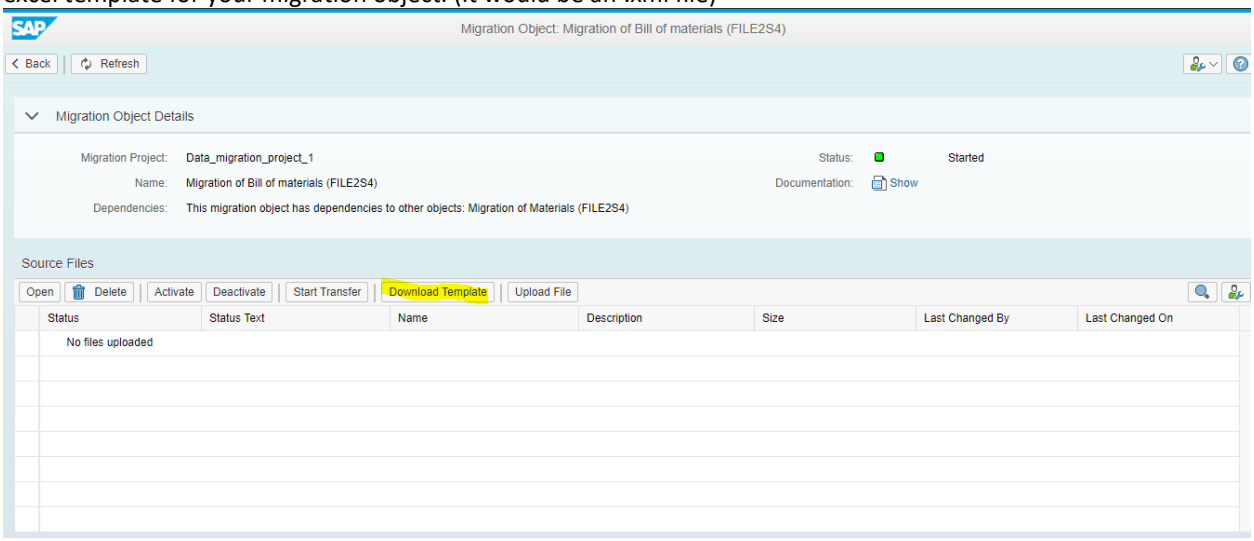
3. Enter Name of the project and click **Create**. (Project will be created)
4. Migration Objects available in your SAP S/4 HANA version will be available in the list. Locate your desired migration object (e.g. Purchase orders, sales orders, cost center etc.). You can also click on **SHOW** under the heading Documentation to see the details of that migration object.



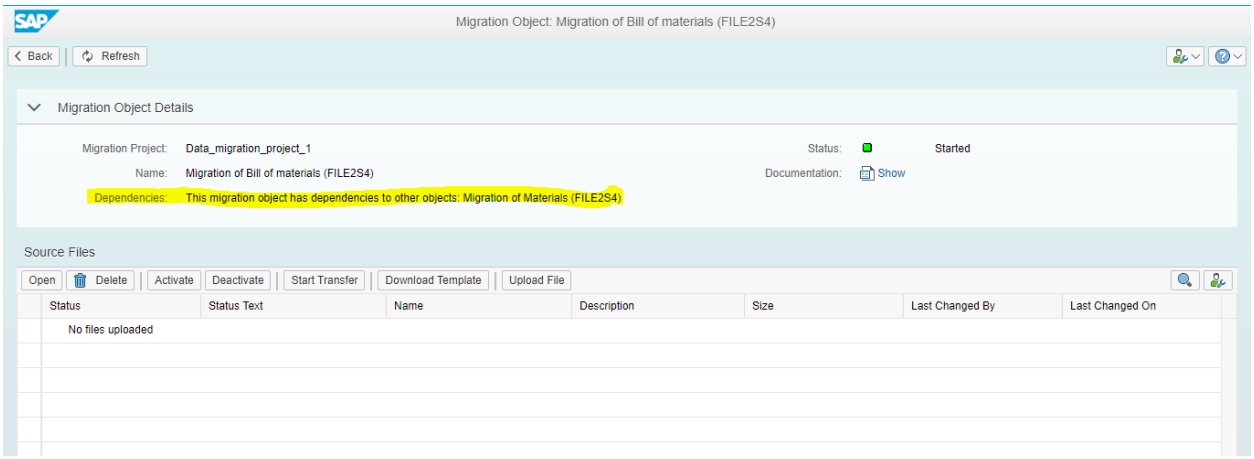
5. Select the row for your migration object and click on OPEN button. (A pop up appears, click OK)



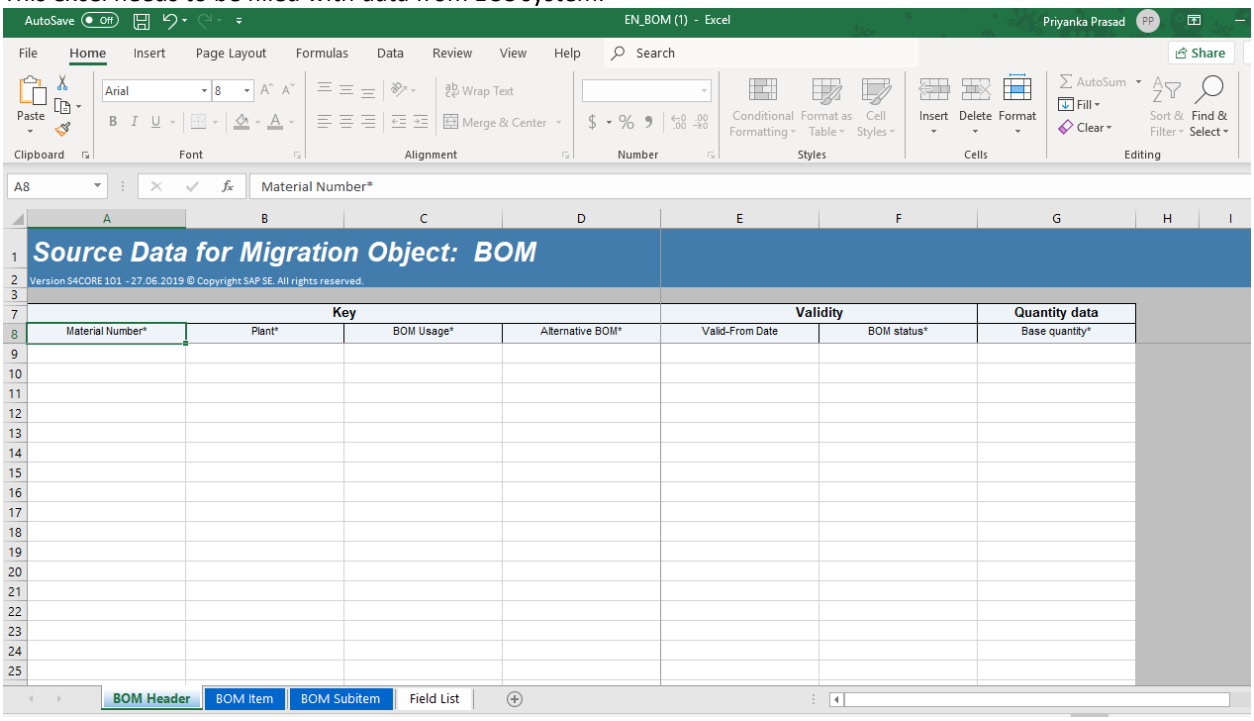
6. Next screen, 'Migration Object Details' appear. Click on button 'DOWNLOAD TEMPLATE' to download the excel template for your migration object. (It would be an .xml file)



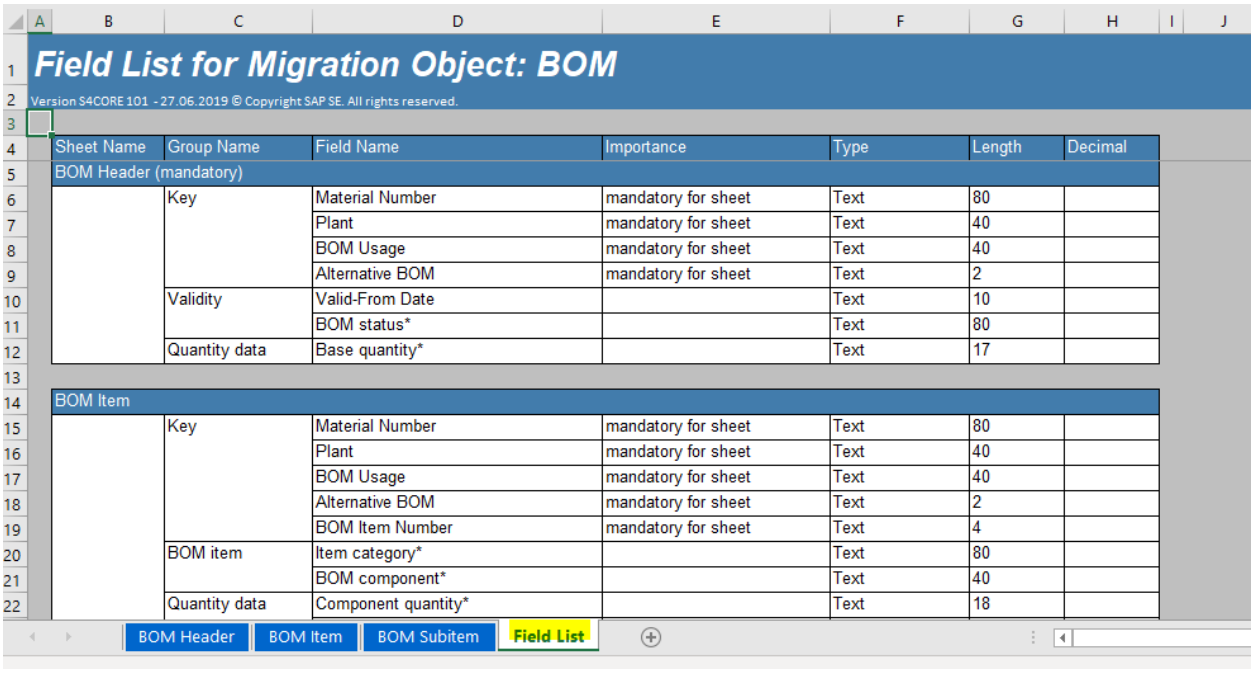
Also, check the field **DEPENDENCIES** to see if there are any dependencies to other migration objects. If yes, then first that migration object has to be migrated before this one. For example, in below screenshot, the Migration object **BILLS OF MATERIALS** has dependency on **Migration of Materials.** So, Materials will be migrated first and then Bills of Materials should be migrated.



7. This excel needs to be filled with data from ECC system.



Also, check the sheet '**FIELD LIST'** to see the mandatory fields to be filled in the excel as well as types and lengths of that field.



Field List for Migration Object: BOM

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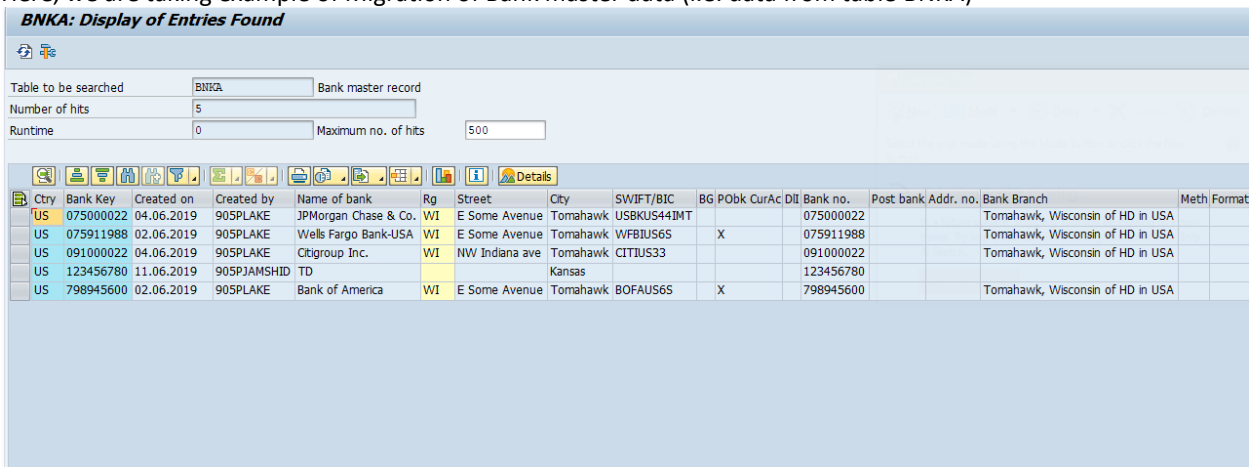
Sheet Name	Group Name	Field Name	Importance	Type	Length	Decimal
BOM Header (mandatory)						
	Key	Material Number	mandatory for sheet	Text	80	
		Plant	mandatory for sheet	Text	40	
		BOM Usage	mandatory for sheet	Text	40	
		Alternative BOM	mandatory for sheet	Text	2	
	Validity	Valid-From Date		Text	10	
		BOM status*		Text	80	
	Quantity data	Base quantity*		Text	17	
BOM Item						
	Key	Material Number	mandatory for sheet	Text	80	
		Plant	mandatory for sheet	Text	40	
		BOM Usage	mandatory for sheet	Text	40	
		Alternative BOM	mandatory for sheet	Text	2	
		BOM Item Number	mandatory for sheet	Text	4	
	BOM item	Item category*		Text	80	
		BOM component*		Text	40	
	Quantity data	Component quantity*		Text	18	

BOM Header | BOM Item | BOM Subitem | Field List

8. Download the corresponding data from ECC system (SNC client 400).
   Here, we are taking example of Migration of Bank master data (i.e. data from table BNKA)



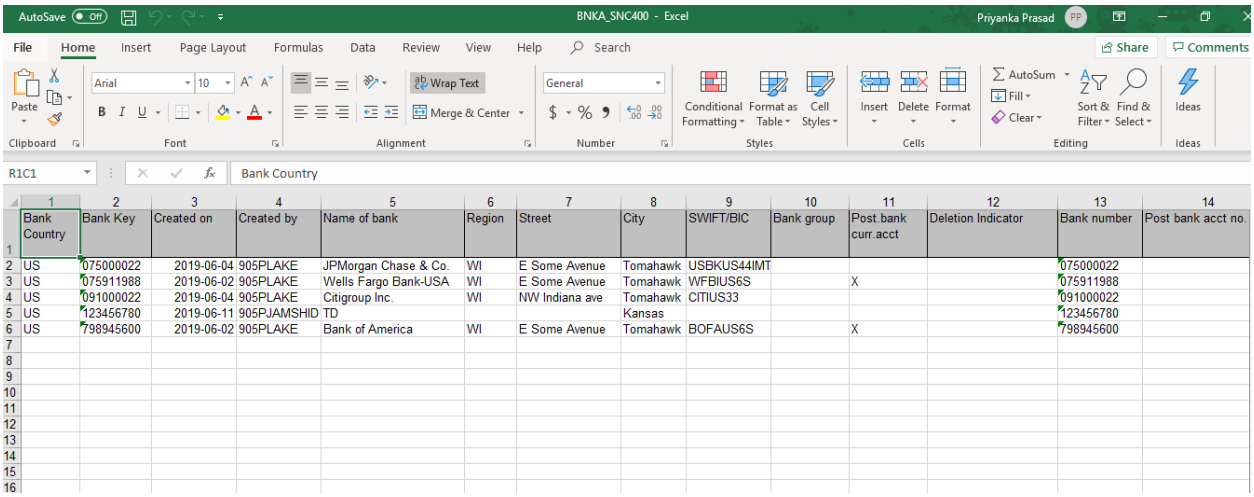
BNKA: Display of Entries Found

Table to be searched: BNKA Bank master record
Number of hits: 5
Runtime: 0 Maximum no. of hits: 500

Details

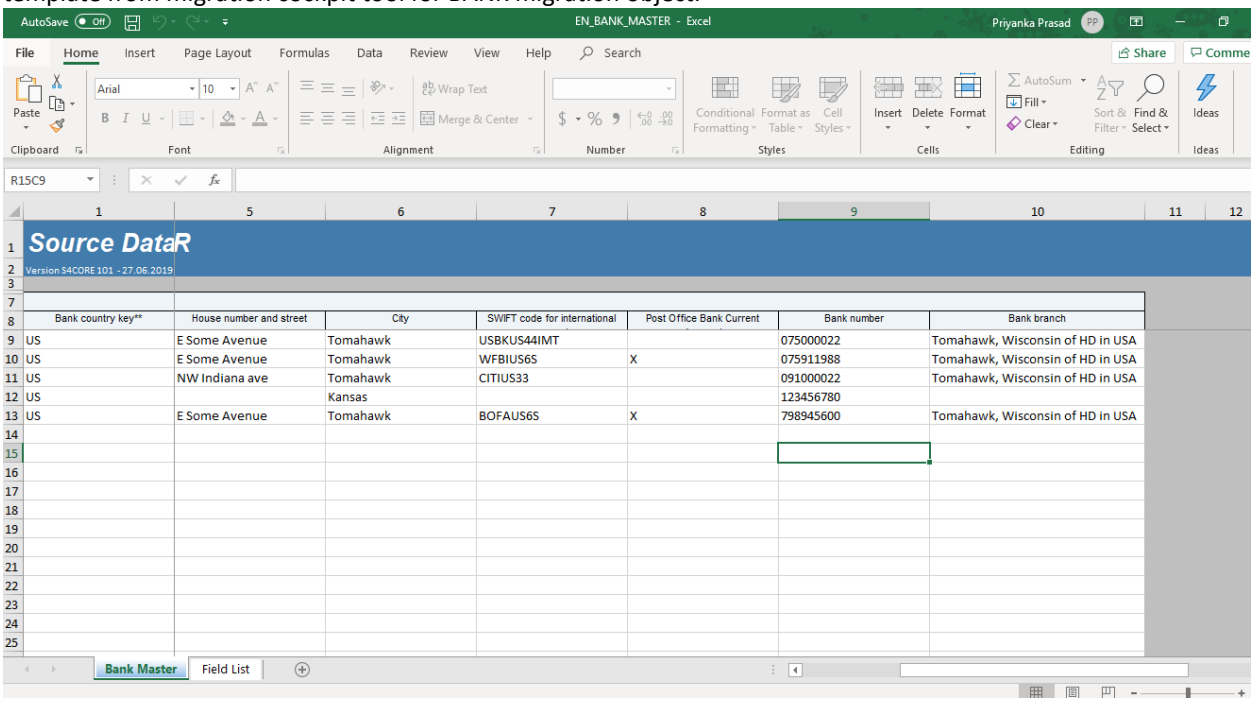
Ctry	Bank Key	Created on	Created by	Name of bank	Rg	Street	City	SWIFT/BIC	BG	POBk CurAc	DII	Bank no.	Post bank	Addr. no.	Bank Branch	Meth	Format
US	075000022	04.06.2019	905PLAKE	JPMorgan Chase & Co.	WI	E Some Avenue	Tomahawk	USBKUS44IMT				075000022			Tomahawk, Wisconsin of HD in USA		
US	075911988	02.06.2019	905PLAKE	Wells Fargo Bank-USA	WI	E Some Avenue	Tomahawk	WFBIUS6S		X		075911988			Tomahawk, Wisconsin of HD in USA		
US	091000022	04.06.2019	905PLAKE	Citigroup Inc.	WI	NW Indiana ave	Tomahawk	CITIUS33				091000022			Tomahawk, Wisconsin of HD in USA		
US	123456780	11.06.2019	905PJAMSHID	TD			Kansas					123456780					
US	798945600	02.06.2019	905PLAKE	Bank of America	WI	E Some Avenue	Tomahawk	BOFAUS6S		X		798945600			Tomahawk, Wisconsin of HD in USA		

Import the data to a spreadsheet and save it to your local system.



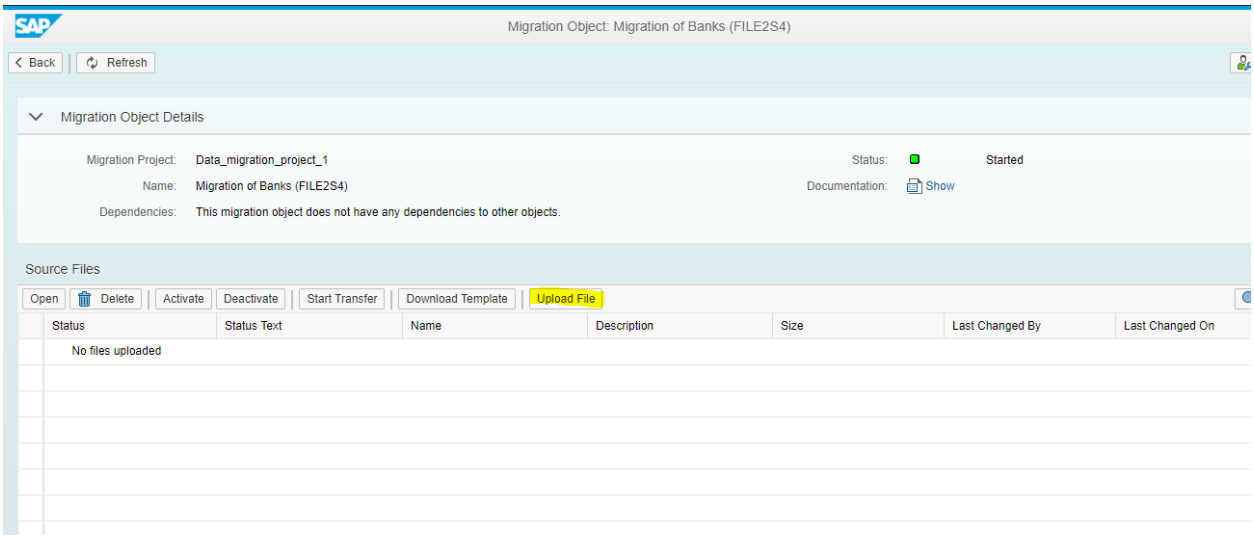
	Bank Country	Bank Key	Created on	Created by	Name of bank	Region	Street	City	SWIFT/BIC	Bank group	Post bank curr.acct	Deletion Indicator	Bank number	Post bank acct no.
2	US	075000022	2019-06-04	905PLAKE	JPMorgan Chase & Co.	WI	E Some Avenue	Tomahawk	USBKUS44IMT				075000022	
3	US	075911988	2019-06-02	905PLAKE	Wells Fargo Bank-USA	WI	E Some Avenue	Tomahawk	WFBIUS6S		X		075911988	
4	US	091000022	2019-06-04	905PLAKE	Citigroup Inc.	WI	NW Indiana ave	Tomahawk	CITIUS33				091000022	
5	US	123456780	2019-06-11	905PJAMSHID	TD			Kansas					123456780	
6	US	798945600	2019-06-02	905PLAKE	Bank of America	WI	E Some Avenue	Tomahawk	BOFAUS6S		X		798945600	

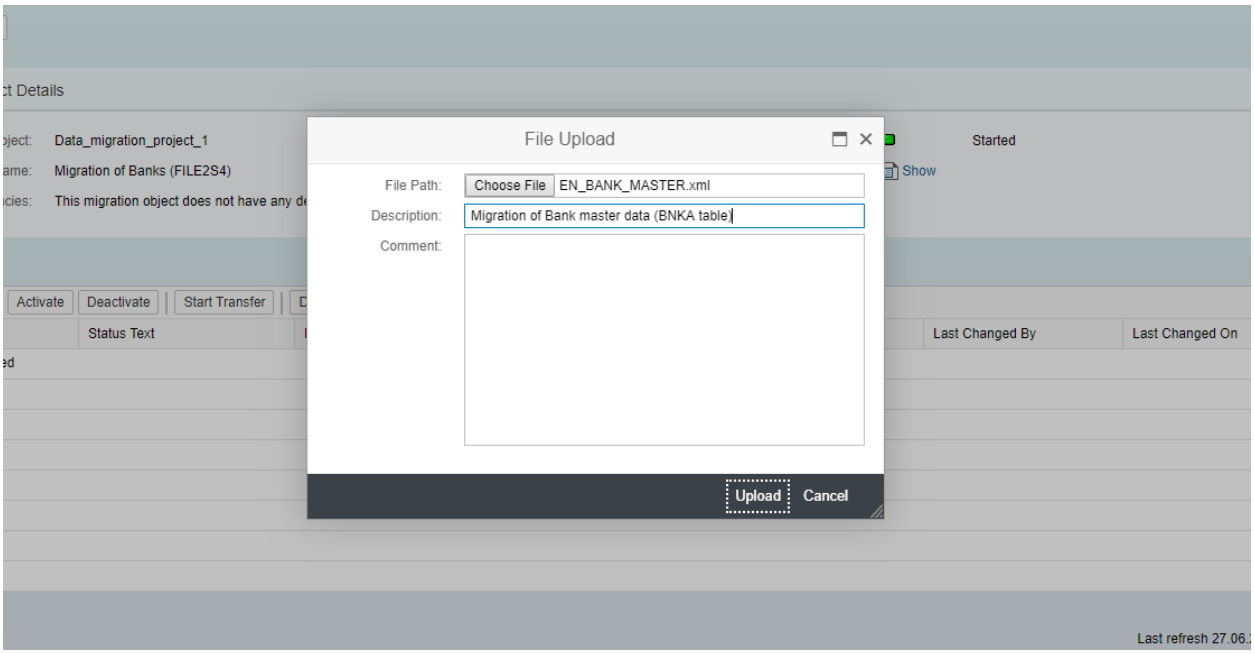
9. Fill the template with data to be uploaded and save the file.
   As you can see in below screenshot, the data from above excel has been copied to the downloaded template from migration cockpit tool for BANK migration object.



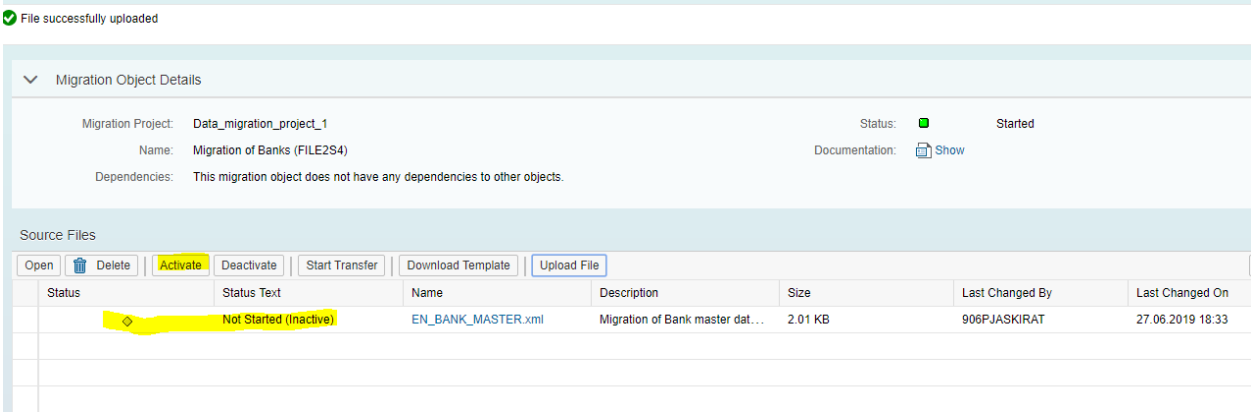
	Bank country key**	House number and street	City	SWIFT code for international	Post Office Bank Current	Bank number	Bank branch
9	US	E Some Avenue	Tomahawk	USBKUS44IMT		075000022	Tomahawk, Wisconsin of HD in USA
10	US	E Some Avenue	Tomahawk	WFBIUS6S	X	075911988	Tomahawk, Wisconsin of HD in USA
11	US	NW Indiana ave	Tomahawk	CITIUS33		091000022	Tomahawk, Wisconsin of HD in USA
12	US		Kansas			123456780	
13	US	E Some Avenue	Tomahawk	BOFAUS6S	X	798945600	Tomahawk, Wisconsin of HD in USA

10. Switch back to LTMC and click on ‘UPLOAD FILE’ button. (Choose the file and upload)

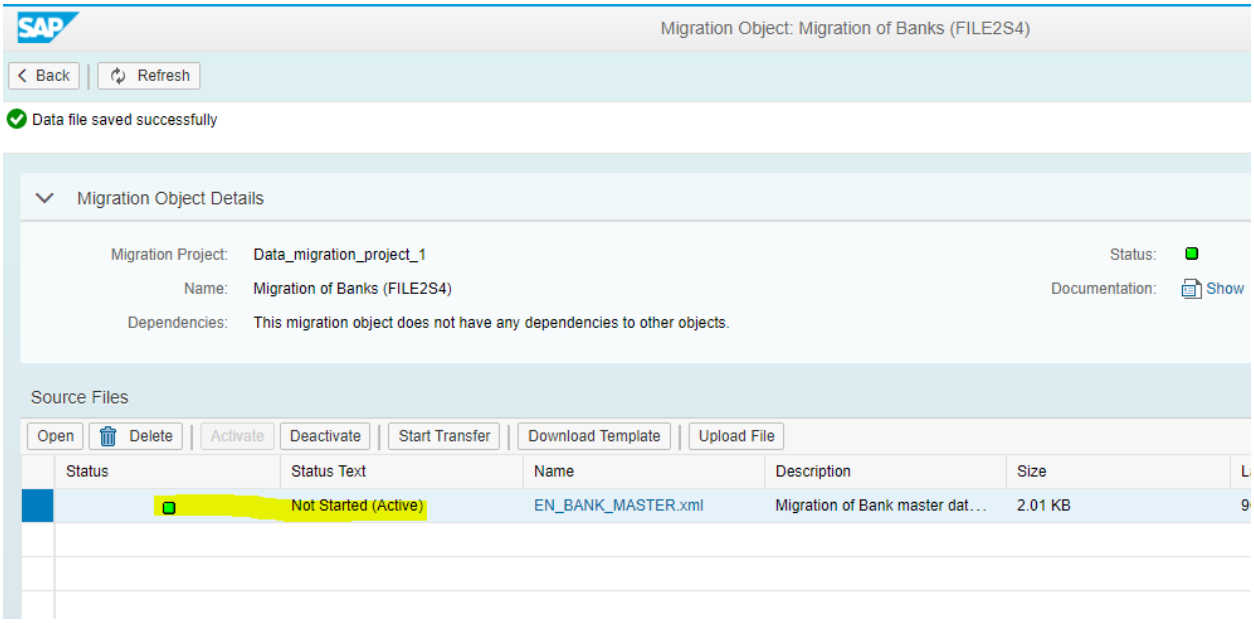




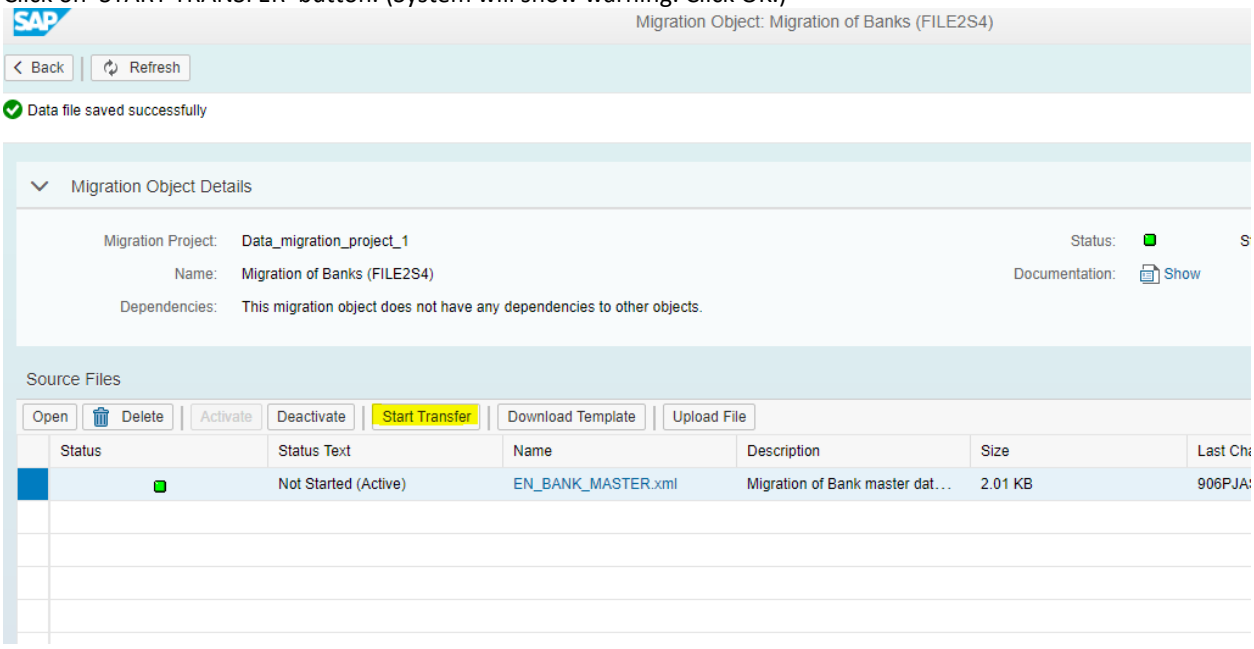
11. File will be uploaded, and migration status will be ‘NOT ACTIVE’.



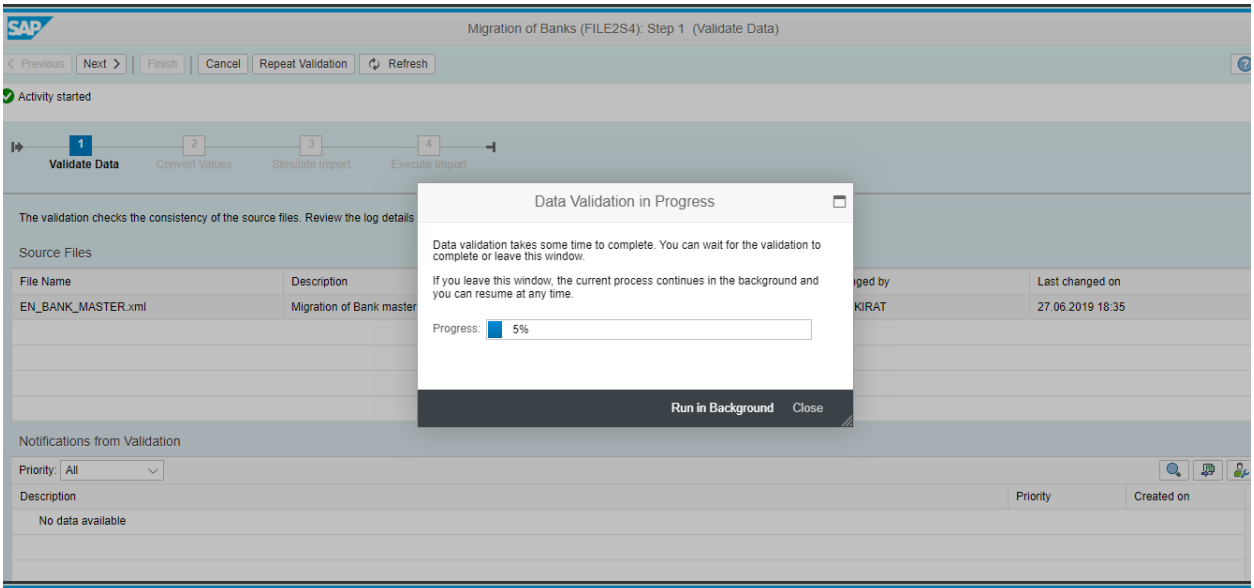
12. Select the file and click on ‘ACTIVATE’ button.

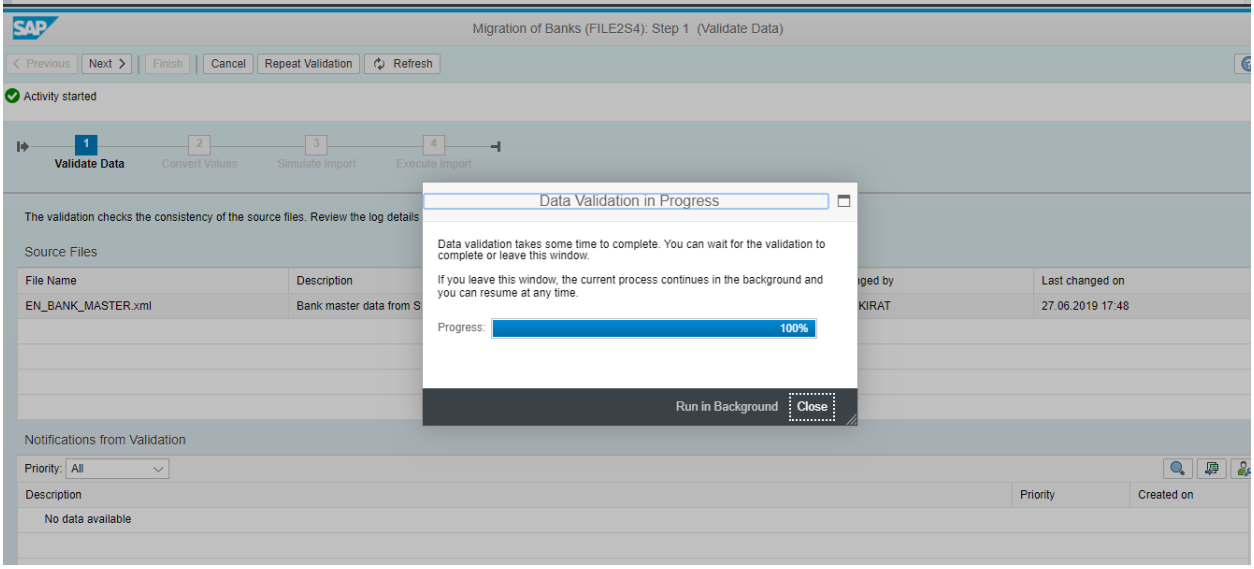


13. Click on ‘START TRANSFER’ button. (System will show warning. Click OK.)

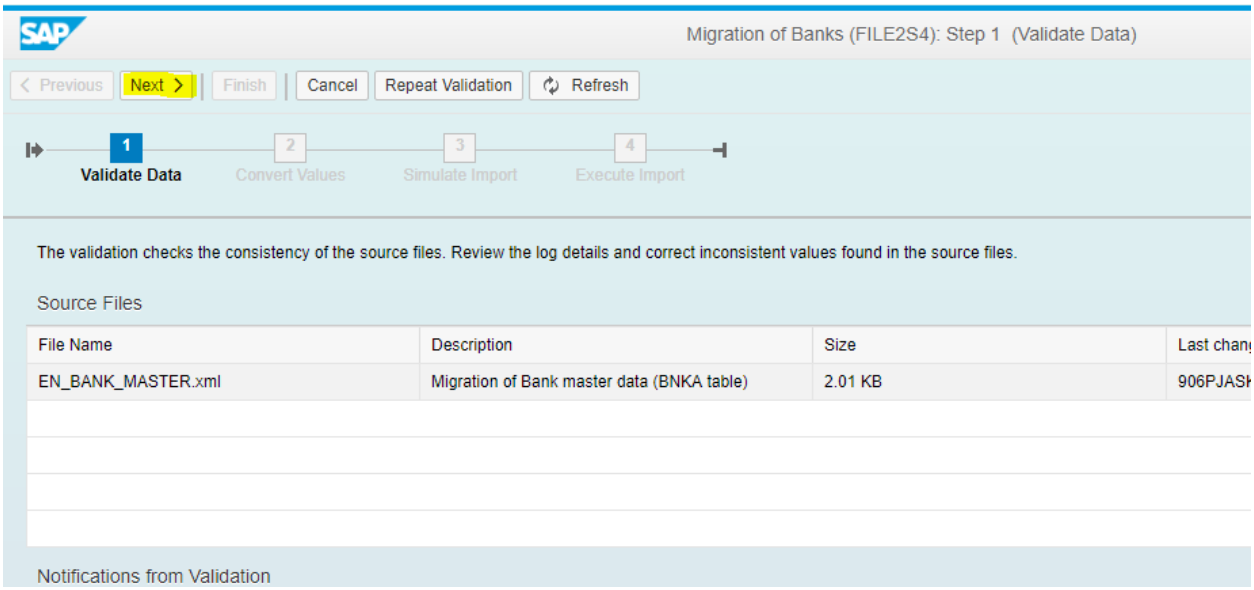


14. Next screen shows the activity progress. Once, it reaches 100%, click on CLOSE button.

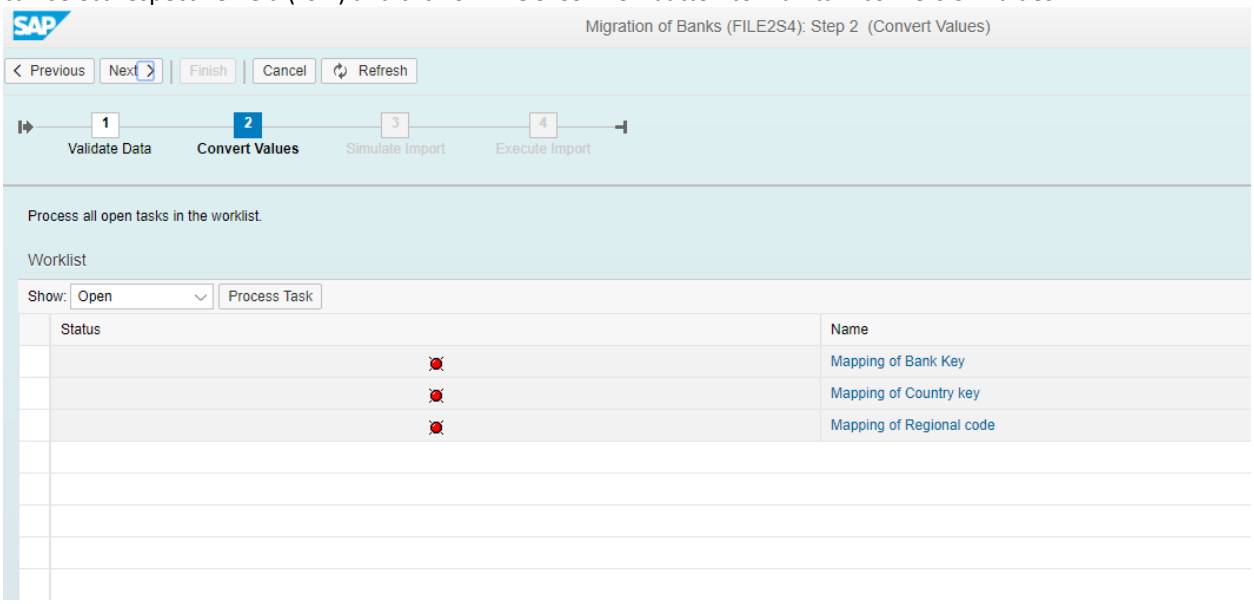




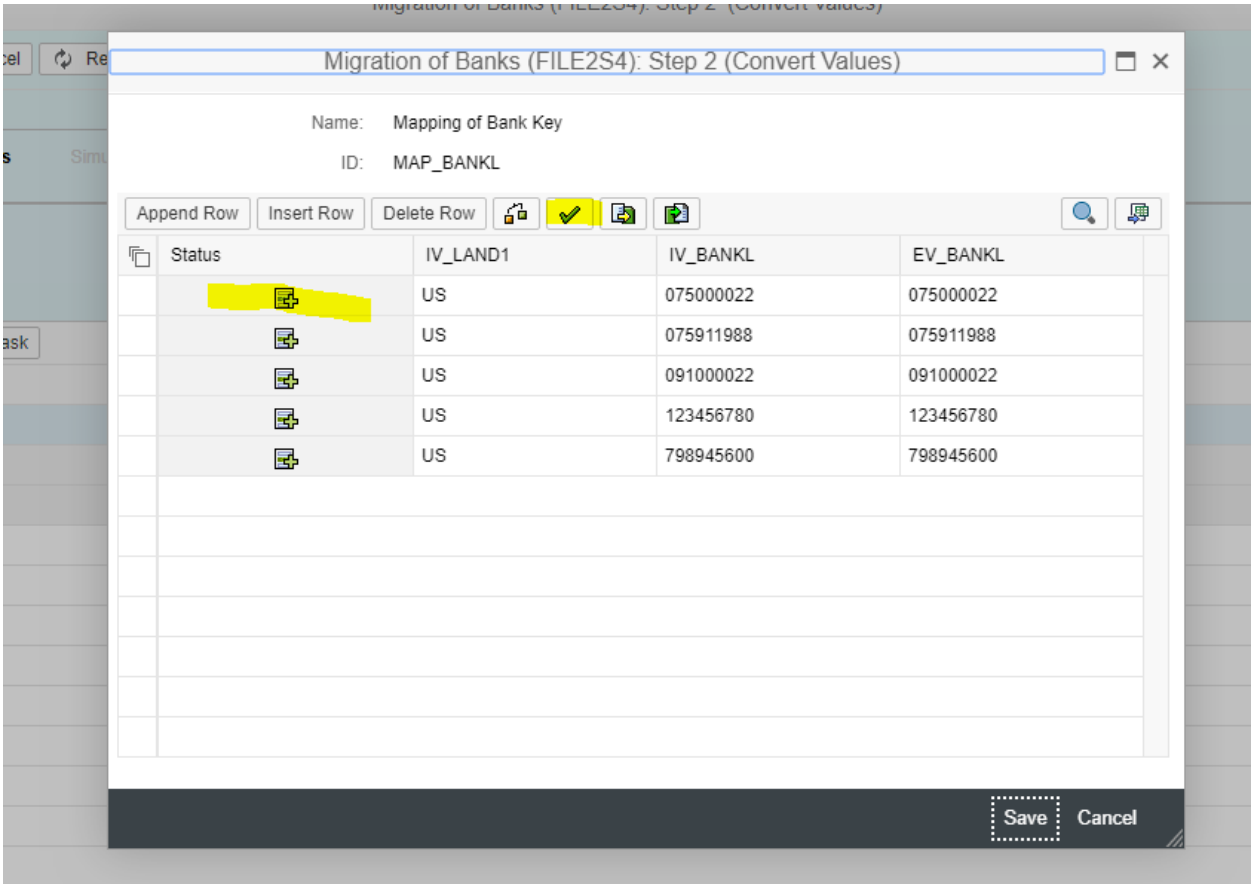
15. In Notification area, you can check the results. (You can click on export to Excel button to export the log file to Excel. This log, you can check in SAP system also in Application Log (Transaction SLG1).)
16. Click on NEXT button to start activity ‘CONVERT VALUES’.

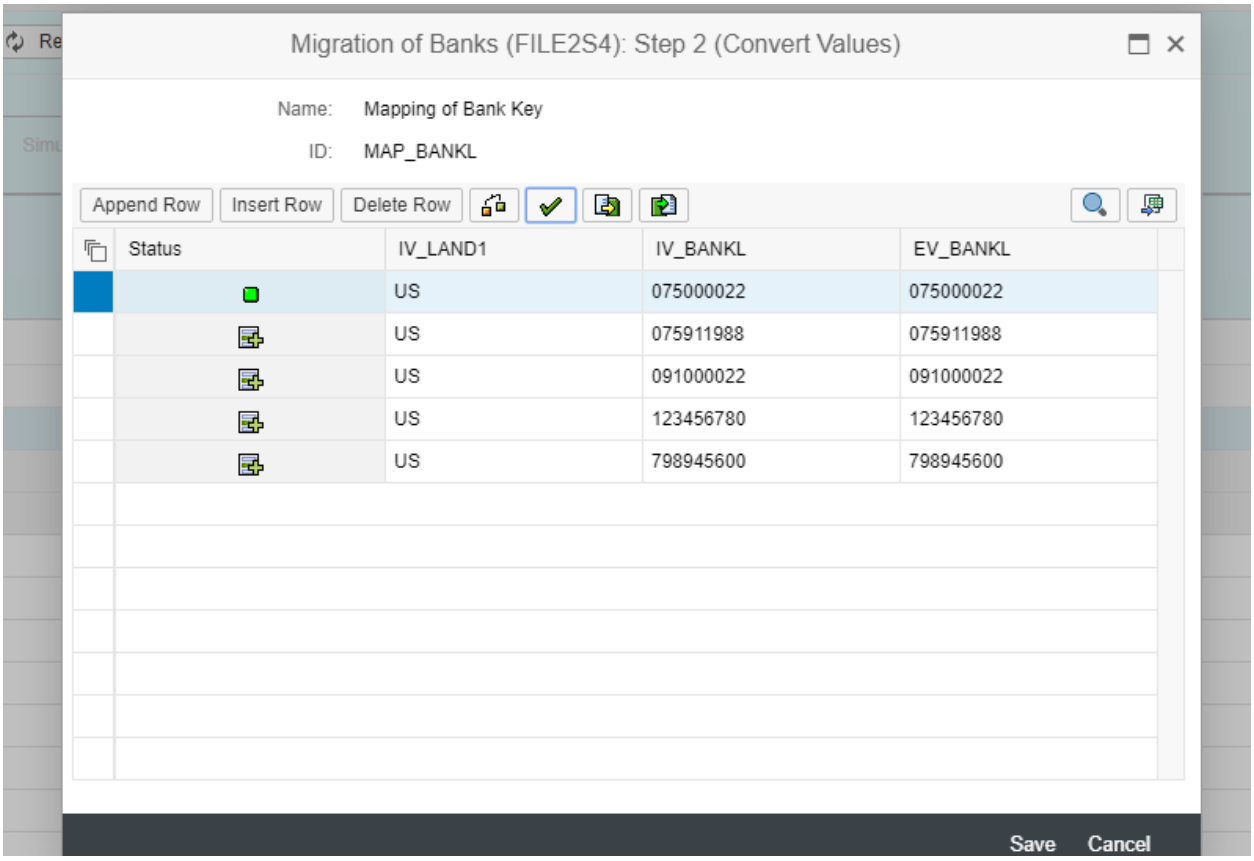


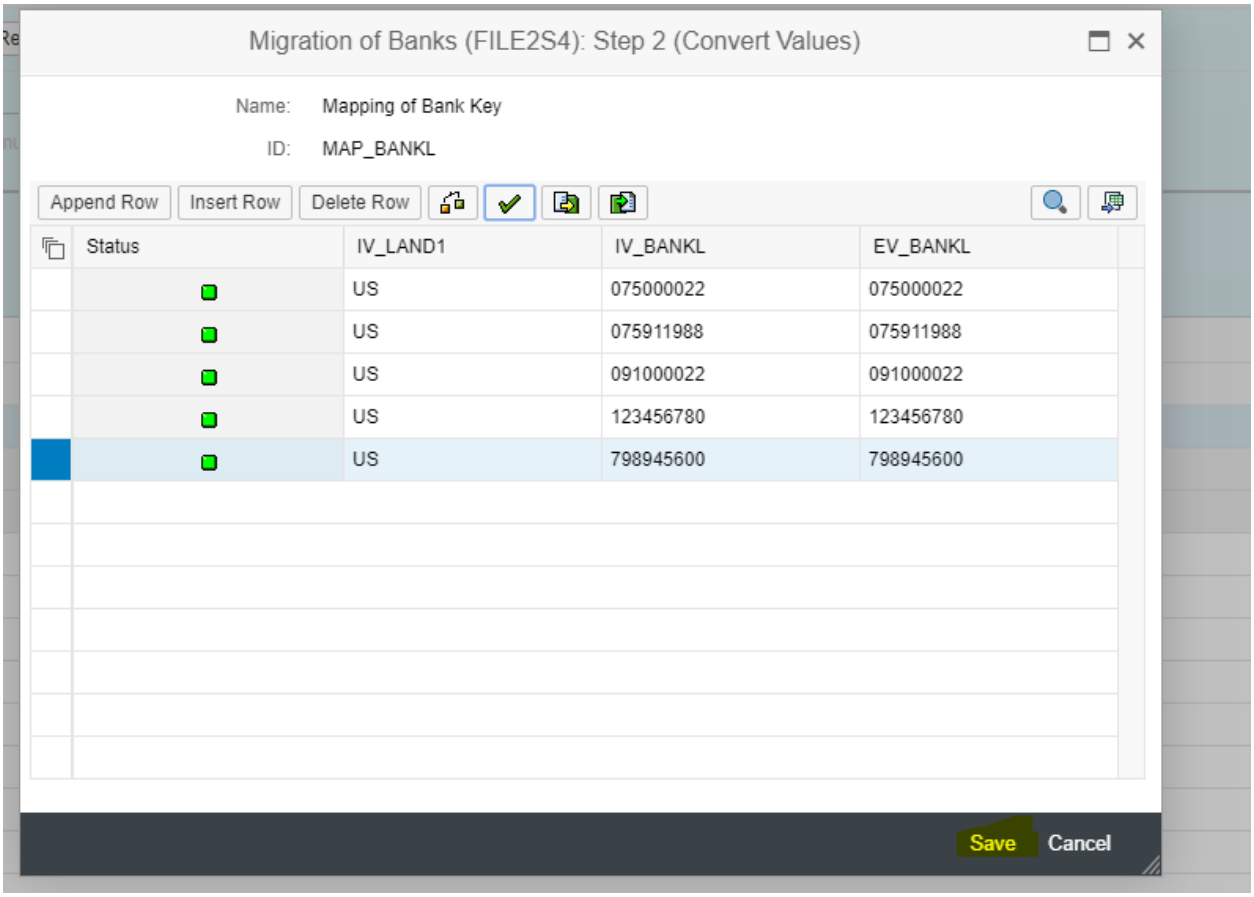
17. System will show all fields where system expects conversion i.e. target value needs to be confirmed. (You can select respective field (row) and click on PROCESS TASK button to maintain conversion values.



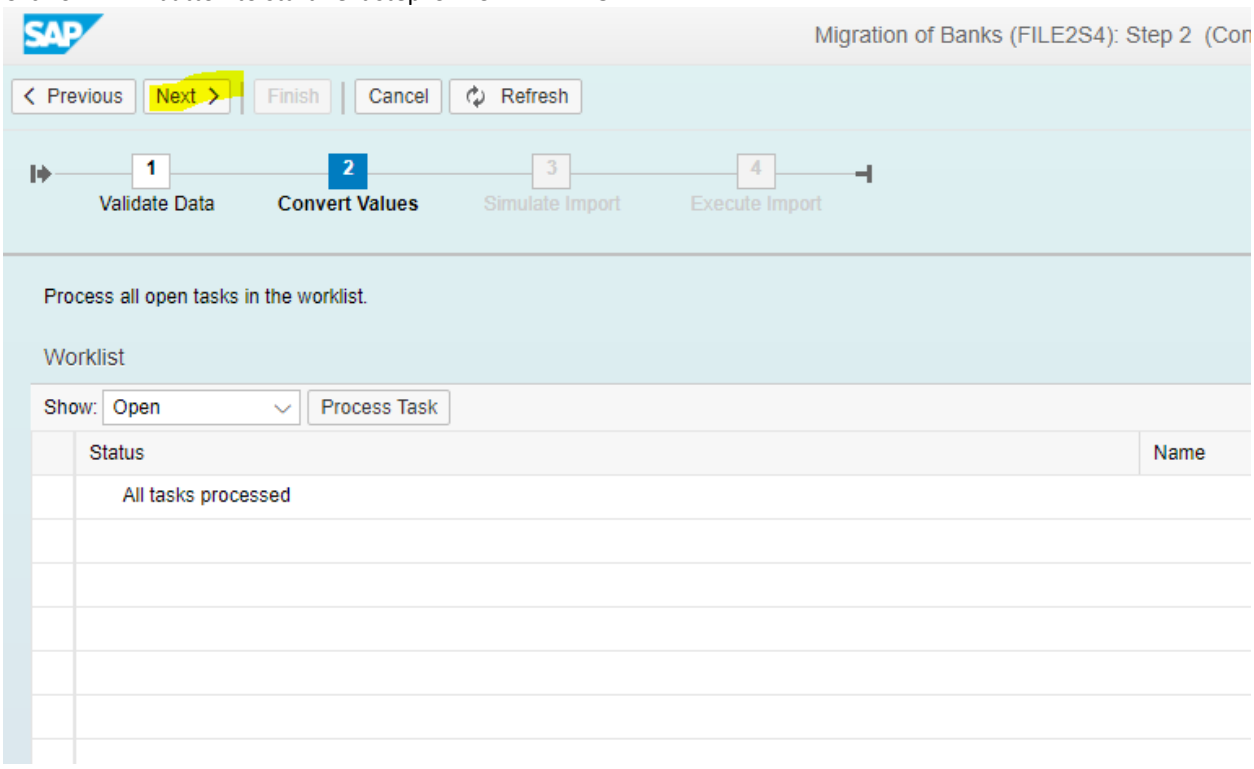
18. If you have filled the Excel template with S/4 HANA target values i.e. no conversion necessary, then select all fields/rows by clicking on select all button and click on 'Confirm Mapping Values' button.

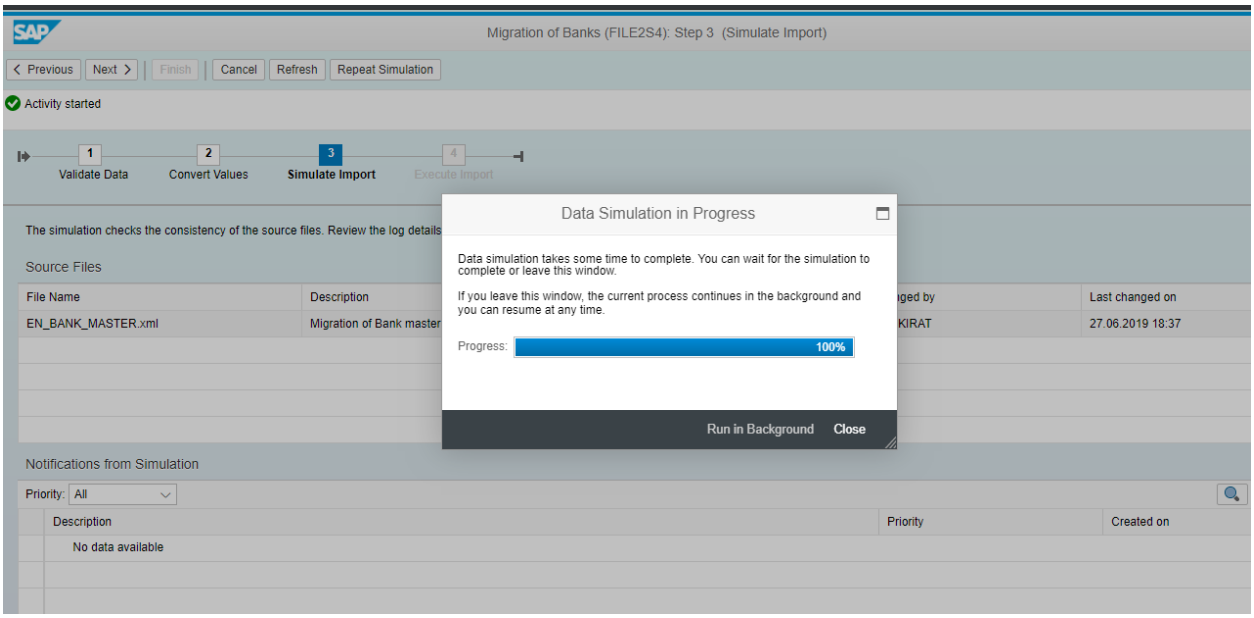




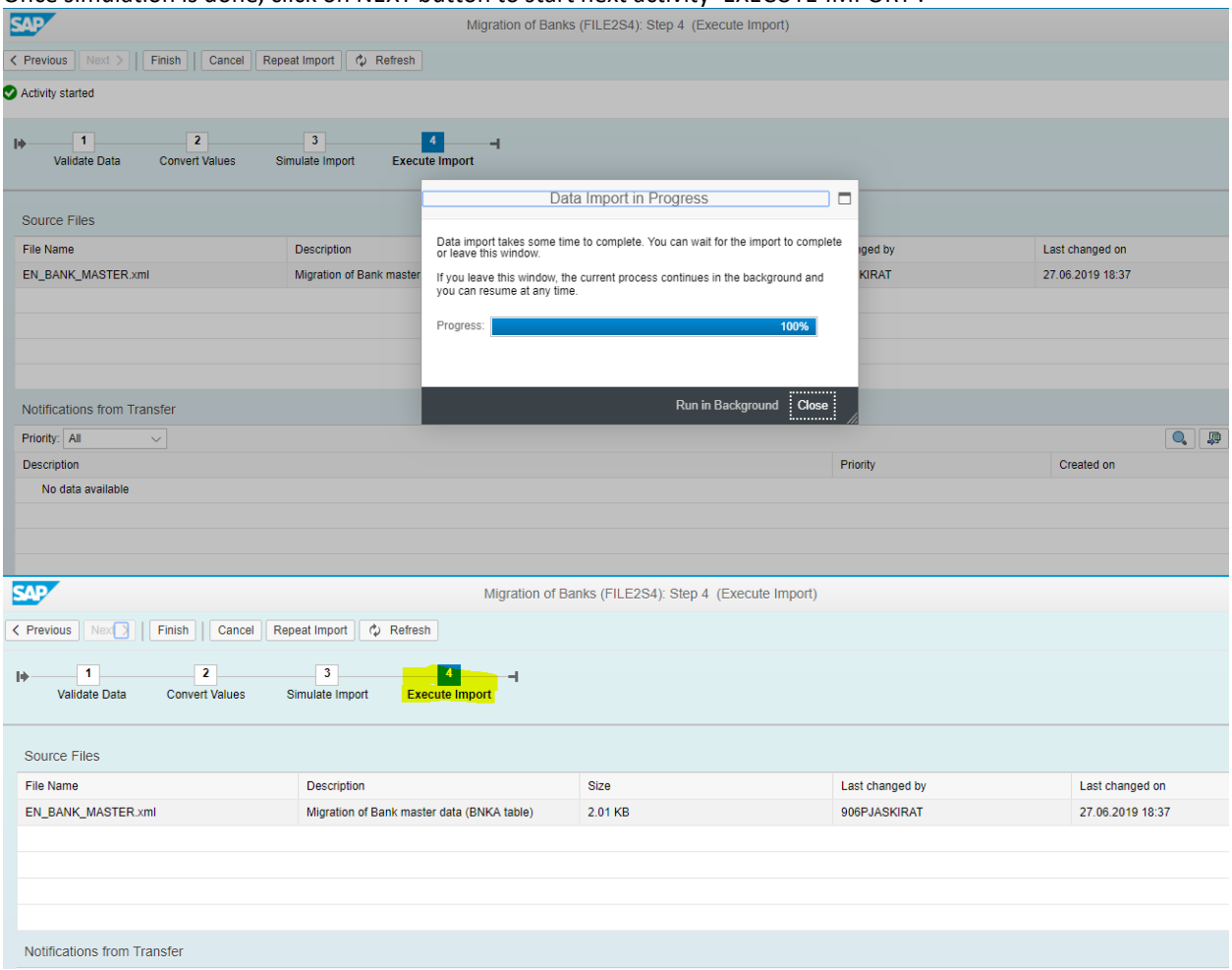


19. Click on NEXT button to start next step 'SIMULATE IMPORT'.



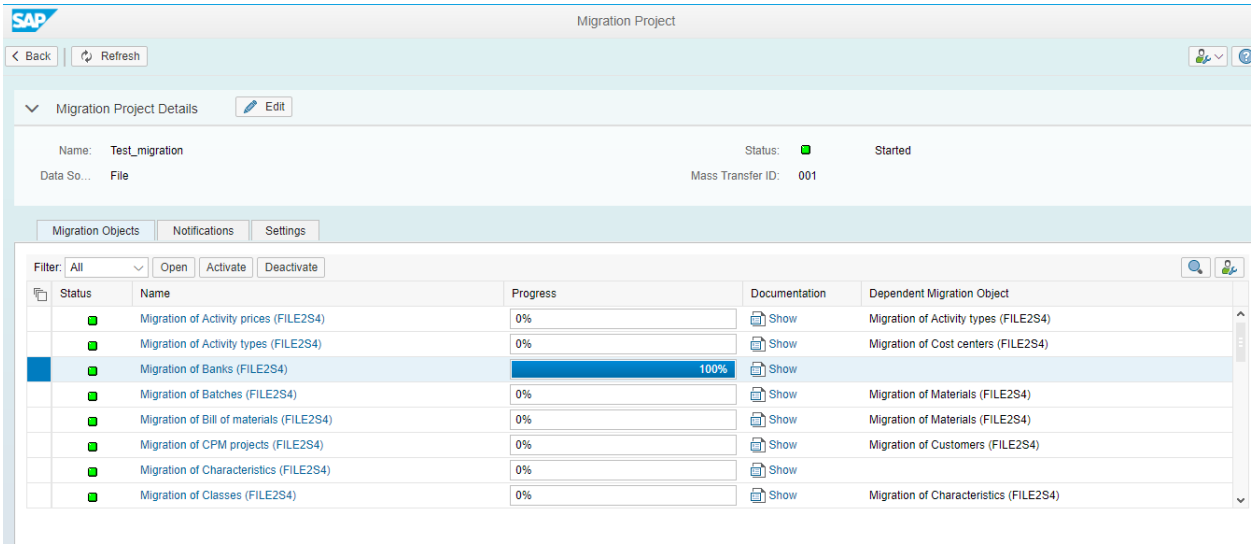


20. Once simulation is done, click on NEXT button to start next activity ‘EXECUTE IMPORT’.



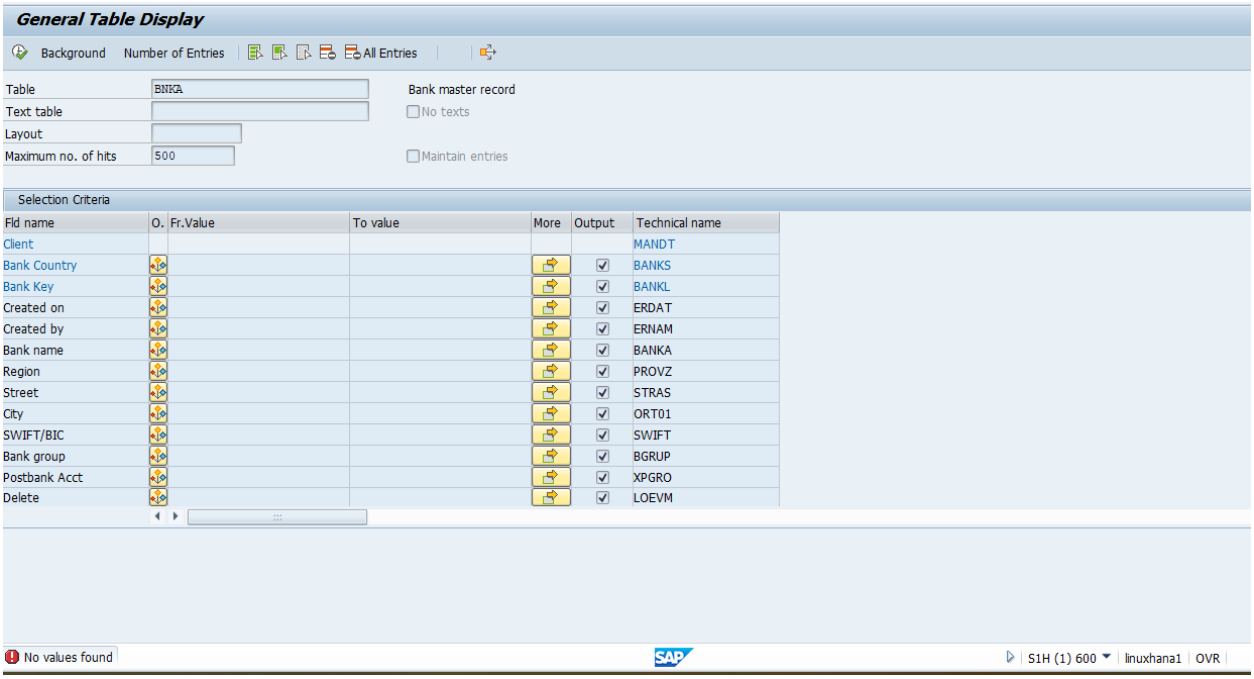
21. If there is no error, the data will be uploaded into S/4 HANA system.

22. Click on FINISH button (Migration status of the file will be changed to FINISHED)



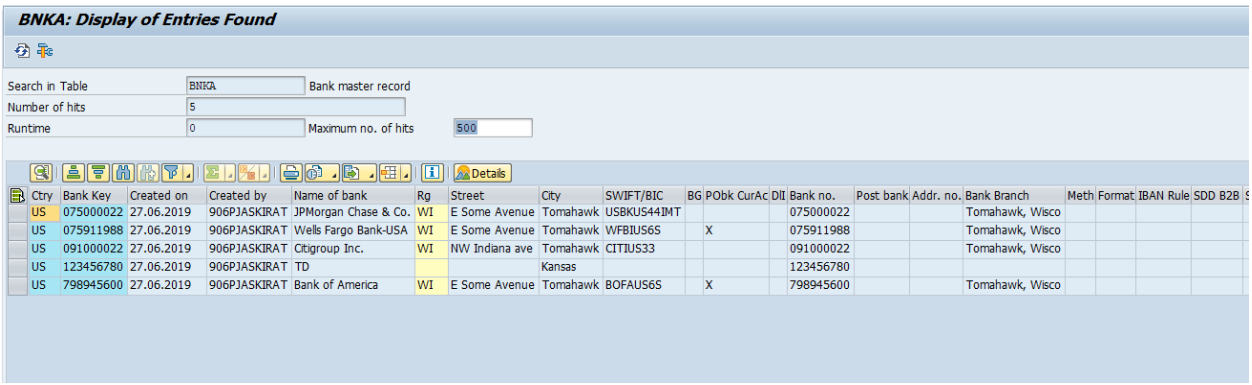
Now let's compare the BEFORE and AFTER migration screenshots of BNKA table in S/4 HANA system.

Before migration:



No values found.

After migration:



Ctry	Bank Key	Created on	Created by	Name of bank	Rg	Street	City	SWIFT/BIC	BG	PObk CurAc	DII	Bank no.	Post bank	Addr. no.	Bank Branch	Meth	Format	IBAN Rule	SDD B2B
US	075000022	27.06.2019	906PJASKIRAT	JPMorgan Chase & Co.	WI	E Some Avenue	Tomahawk	USBKUS44IMT				075000022			Tomahawk, Wisco				
US	075911988	27.06.2019	906PJASKIRAT	Wells Fargo Bank-USA	WI	E Some Avenue	Tomahawk	WFBIUS6S		X		075911988			Tomahawk, Wisco				
US	091000022	27.06.2019	906PJASKIRAT	Citigroup Inc.	WI	NW Indiana ave	Tomahawk	CITIUS33				091000022			Tomahawk, Wisco				
US	123456780	27.06.2019	906PJASKIRAT	TD			Kansas					123456780							
US	798945600	27.06.2019	906PJASKIRAT	Bank of America	WI	E Some Avenue	Tomahawk	BOFAUS6S		X		798945600			Tomahawk, Wisco				

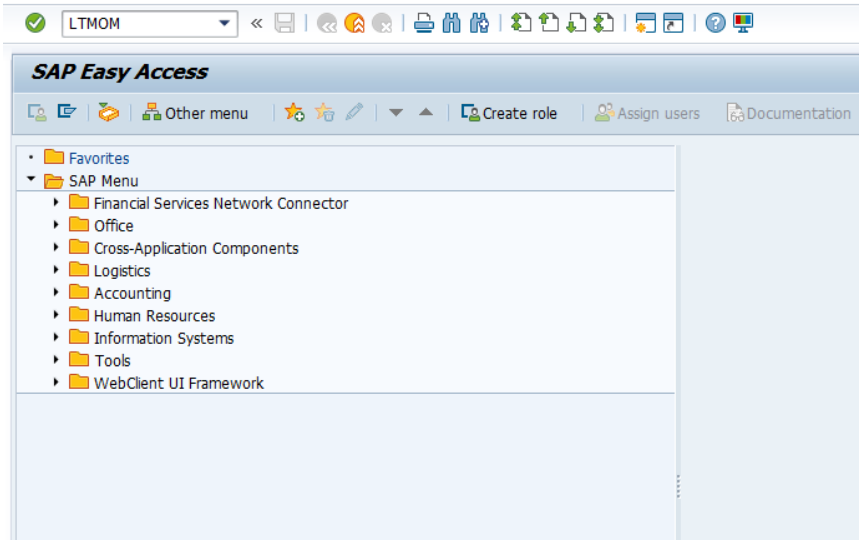
Now, table BNKA has same values in S1H (S/4 HANA system) as table BNKA in SNC (ECC system).

8. MIGRATION OBJECT MODELER

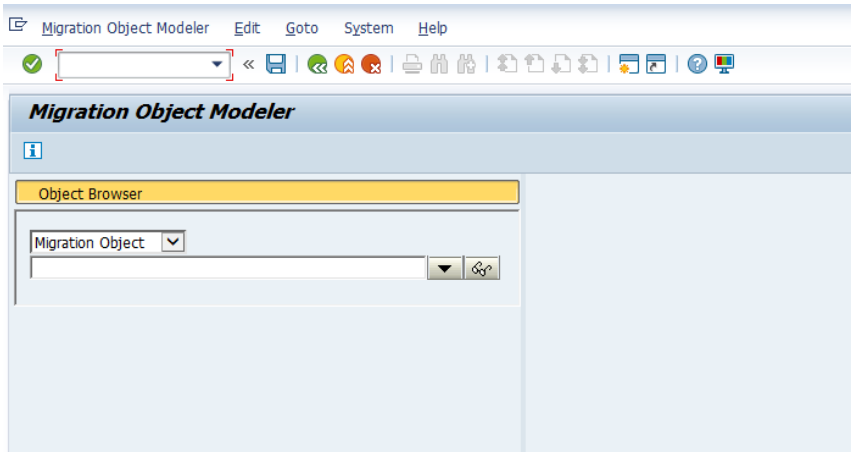
As SAPSOL is working with 1610 release of S/4 HANA, there weren't many capabilities that come with 1610 release of MOM.

Here is how you can access MIGRATION OBJECT MODELLER in S/4 HANA system:

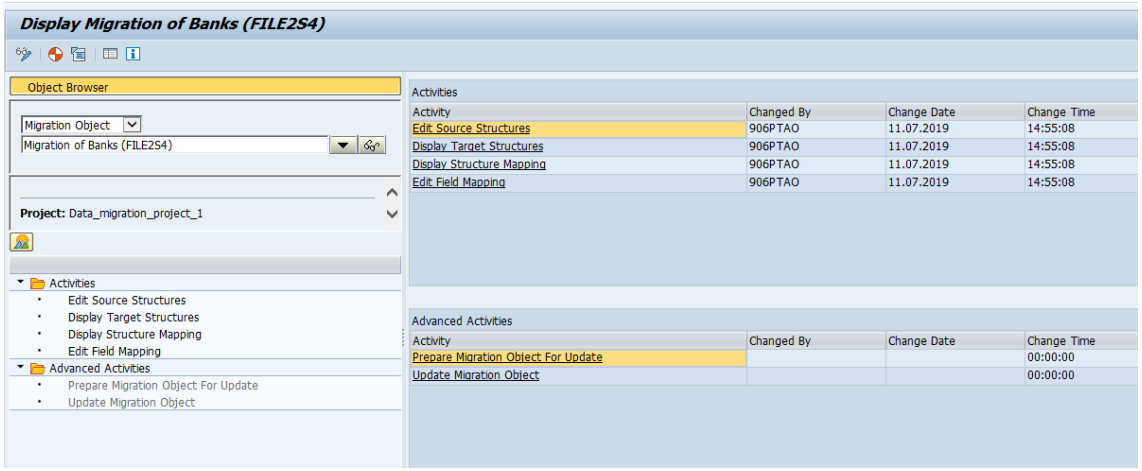
1. Go to transaction LTMOM



2. Migration Object Modeller screen opens up:



3. You can open any Data migration object from your Migration project (created in Migration cockpit) and work with various options available like :- Edit Source structure, Display target structure, Display structure mapping, and Edit field mapping.



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