

Most Practical and Efficient Way of Migrating Purchase Orders during S4HANA Go-Live

Satya Venkata Naga Ganesh Nanduri

SAP Functional Lead
J.R.Simplot Company

Abstract

Organizations shift from outdated or homegrown ERPs to robust ERP Platforms such as S4HANA to address various challenges such as need for an integrated application that can handle all the functions that an organization needs, requirements for real-time reporting, security considerations, compatibility with various external applications or platforms, obligation to quickly adopting to changing legal or statutory regulations. Companies decided to move to any other ERP has to go through migration process which is a complex task as this requires extracting all the data from legacy applications, map them to new ERP attributes, decide on the strategy to migrate, migrate them to new ERP system and reconciling the migrated data between Legacy systems and S4HANA. This article provides insights into what are different types of SAP implementation methodologies, what is migration and a strategy that was proven successful in migrating Purchase Orders from legacy systems to S4HANA.

Keywords: SAP S4HANA Migration, Legacy Data, Purchase Orders Conversion, Reconciling between Legacy and S4HANA

Introduction:

Implementation of new tools or technologies as per the organizational needs and industry standards has become a routine in business environment. Implementations can range from a small task to large projects depending on various factors such as technology that is being implemented, implementation methodology chosen, number of users effected, level of testing, time that the implementation takes etc. Deploying S4HANA is considered as one of the biggest projects in implementing ERP systems. Implementing S4HANA requires proper planning and execution as it would become an organization wide integrated application once implemented and lack of proper planning can cause significant delays in deploying solutions thereby requiring additional time and effort to take the implementation to closure, so leadership must plan and execute any implementation with utmost care.

SAP Implementation Strategy:

There are various types of strategies available in implementing SAP ERP S4HANA. Each type of implementation has its own features and specific journey. Type of implementation strategy that an organization chose depends on various factors such as their current state, time and budget, impact to business etc. Below are the various strategies that are widely adopted while implementing SAP S4HANA Solutions.

1. **Greenfield Implementation:** Greenfield implementation means starting with a new, clean SAP system from scratch, without any existing configurations or data from a previous system. It's like building a new home on a blank canvas, offering the flexibility to design the system and processes from the ground up.
2. **Brownfield Implementation:** A brownfield implementation is a system conversion, where an existing SAP system (like ECC) is upgraded to a new version like S/4HANA, while retaining much of the existing configurations, data, and even some legacy processes. Unlike a greenfield implementation which starts fresh, brownfield focuses on building upon the existing foundation.
3. **Bluefield Implementation:** The Blue Field Implementation with Selective Data Transition approach is a migration strategy that enables organizations to adopt the SAP S/4HANA platform while minimizing business disruption and data loss. It involves creating a new SAP S/4HANA system that is configured and customized based on the preserved existing SAP system, with only critical data and processes migrated to the new system. This approach provides several benefits, including reduced business disruption, faster implementation, improved data quality and better performance. Organizations are also able to adopt new features and functionality of the SAP S/4HANA platform gradually.
4. **Rapid Deployment Solutions (RDS):** RDS is a pre-configured SAP solution that is designed to meet specific business requirements. It is a fast and cost-effective implementation model that involves minimal customization.
5. **Big Bang Implementation:** Big Bang approach involves a single, simultaneous go-live for all modules and business units, replacing the existing system entirely in one go. It's a direct changeover where the old system is no longer used after a specific date.
6. **Phased Implementation:** A phased implementation is an approach where the SAP software is implemented in stages, starting with the most critical modules and functionalities, and then adding additional modules and functionalities over time (minimum viable product (MVP)). This approach reduces the risk of the implementation and allows the organization to see benefits as they are delivered.

Migration of Data from Legacy Systems to S4HANA:

Migration of data from old systems to new systems is one of the key elements in any ERP implementation projects during Cut-Over phase. Migration of data is to be very accurate and detailed enough to serve various functions such as historical reporting is still available in new system, source of truth is retained for audit purpose, in-flight transactions are brought into new system for driving subsequent processes for them etc. Data migration includes bringing in different types of data such as Master Records and Transaction Records across multiple functional areas such as Finance, Procurement, Sales, manufacturing, forecasts etc.

S/4HANA 1809 Migration Cockpit Available Migration Objects (68)			
Activity Price (restricted)	Equipment task list	Material - extend existing record by new org levels	Purchasing info record- extend existing record
Activity Type	FI - Accounts payable open item	Material BOM	Purchasing info record with conditions
Bank	FI - Accounts receivable open item	Material classification	QM selected set
Bank Account balance	FI – G/L account balance and open/line item	Material consumption	QM selected set code
Batch (if Batch is unique at material level)	Fixed asset (incl. balances and transactions)	Material inspection setting	QM/PM catalog code group/code
Batch (if Batch level is at plant level)	Functional location	Material inventory balance	Routing
Cash memo record	Functional location task list	Material long text	Sales Contract
Characteristics	G/L account	Material trade classification	Sales Order (Only open SO)
Class	General task list	Pricing condition (general, purchasing and sales)	Software/Hardware constraint
Condition Contract	Inspection method	Production Version	Source List
Consent	Inspection plan	Profit Center	Supplier
Cost Center	Internal order (restricted)	Purchase Contract	Supplier - extend existing record by new org levels
Customer	Legal transaction	Purchase info record- extend existing record	VC- Variant Configuration Profile
Customer- extend existing record by new org levels	Maintenance item	Purchase info record with conditions	Work Center
Customer material	Maintenance plan	Purchase Order (Only Open PO)	Xceptional case - Material price change for global currencies
Exchange rate	Master inspection characteristic	Purchase Scheduling Agreement	Xceptional case - Material price chng for global currencies
Equipment	Material	Purchasing contract	

Figure 1: Summary of various master data and transactions data objects that go through migration

Migration of Purchase Orders:

Purchase Order is the most complex item among any data that is migrated from Legacy to S4HANA since there can be various scenarios that exist in legacy systems and purchase orders are to be migrated to reflect data as per all these scenarios in S4HANA. Below are the possible purchase order scenarios that can exist for clients with most complex purchasing process.

1. Purchase Orders where no stock is received from supplier and no invoice is received
2. Purchase Orders where stock is received full from supplier and no invoice is received
3. Purchase Orders where stock is received full from supplier, but invoice is received partly
4. Purchase Orders where stock and invoice from supplier are received in full
5. Purchase Orders where stock is received partly from supplier and no invoice is received
6. Purchase Orders where stock and invoice is received partly from supplier
7. Purchase Orders where no stock received, but invoice is received partly
8. Purchase Orders where no stock received, but invoice is received in full

Resources implementing ERP Systems suggest organizations to close all the existing open purchase orders in legacy systems to avoid complexity involved in migrating various possible scenarios whereas closing all the existing open purchase orders in legacy systems is practically impossible.

SAP has tools and functionalities for migrating Purchase Orders, but they have some limitations. Not all the above scenarios can be migrated into S4HANA similar to how they are in legacy systems whereas it is important to migrate all the above mentioned scenarios as they are in Legacy to S4HANA to ensure validations, identifying discrepancies, workflow approvals can be run as per the business process. The limitations and complexities would force organizations to bring in some of the scenarios through General Ledger Balance Migration which results in losing some of the checks and validations that usually take place while processing goods receipt and invoice receipt with reference to Purchase Order.

I have come up with below approach which was proven successful for migrating all the open purchase orders for all the possible scenarios. It helped clients to migrate all the possible scenarios without losing the functionalities they require in S4HANA.

Approach Adopted for Migrating all Open Purchase Orders:

Migrating Open Purchase Orders where stock is received and waiting for an Invoice from supplier can become challenging when the received stock is already consumed in legacy system. Migrating Purchase Orders for them and posting goods receipt would result in artificially increasing the stock which may not exist anymore or it might have brought in as part of Inventory Cut-Over. So there should be a provision to migrate these Purchase Orders, post goods receipt and still don't impact the current inventory levels.

Ex: There is a Purchase Order created for a quantity of 100 units with \$10 each being \$1000 as the value of the Purchase Order, stock is received and waiting for invoice to be received. Meantime received stock is already consumed. Balance Sheet is as below during migration.

Liabilities		Assets	
Particulars	Amount	Particulars	Amount
Accrued Expenses	1000	Cash and Cash Equivalents	2000
Other Liabilities	9000	Property Plant and Equipment	8000
Total	10000	Total	10000

Figure 2: Sample Snippet of Trial Balance during Migration Activity

“Account Assignment Category” is a critical attribute on Purchase Order and it determines the purpose for which the purchase order is raised. Any of the SAP Standard delivered “Account Assignment Categories” such as “K- Cost center” can be modified to mark SAP Mandatory requirement for field “Cost Center” to “Optional” and for field “Profit Center” from “Hidden” to “Optional” during migration period.

The screenshot displays the SAP configuration for Account Assignment Category K. The top section shows the category name 'K Cost center'. Below this, the 'Detailed information' section contains various checkboxes and dropdowns for configuration, such as 'Acct. assg. changeable', 'AA Chgable at IR', 'Derive acct. assgt.', 'Del. CstsSep.', 'Goods Receipt', 'GR Ind. Firm', 'Consumption posting', 'Account Modification', 'ID: AcctAssgt Scrn', 'Special Stock', 'Distribution', 'Partial invoice', 'Invoice Receipt', and 'IR Ind. Firm'. The 'Fields' section at the bottom lists various fields with their status: Mand. Ent., Opt. Entry, Display, and Hidden. The 'Cost Center' field is highlighted with a blue box, and a blue arrow points from its 'Mand. Ent.' status to the 'Opt. Entry' status, indicating the modification being made. The page number '1 / 5' is visible at the bottom right.

Figure 3: Modifying SAP Standard Delivered Accounting Assignment Category K to mark Cost Center Field as Optional instead of SAP Standard classification as “Mandatory”

Acct Assignment Cat. **K** Cost center

Detailed information

☐ Acct.assg.changeable Consumption posting ☐ V Distribution
☒ AA Chgable at IR Account Modification Partial invoice
☐ Derive acct. assgt. ID: AcctAssgt Scrn Single account assig
☐ Del.CstsSep. Special Stock
☐ Goods Receipt ☐ GR non-valuated ☒ Invoice Receipt
☐ GR Ind. Firm ☐ GR NonVal. Firm ☐ IR Ind. Firm

Fields

Field Label	Mand. Ent.	Opt. Entry	Display	Hidden
Profit Center	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Profitability Segment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Qty./percent. mat. acct. assgt	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Real Estate Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Sales Order	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Sales document schedule	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

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Figure 4: Modifying SAP Standard Delivered Accounting Assignment Category K to mark Profit Center Field as Optional instead of SAP Standard classification as “Hidden”

All the open Purchase Orders can now be migrated from legacy systems to S4HANA using “Account Assignment Category – K”. Using this account assignment category requires General Ledger Account and Profit Center or Cost Center while creating Purchase Orders. We need to maintain Migration General Ledger Account and Profit Center responsible for the Purchase Order so that when the goods receipt is posted with reference to these Purchase Orders, they are posted to Data Migration General Ledger Account instead of posting on Inventory Account. This ensures no duplicate inventory and enables business to process invoices using the required workflow whenever they are received from supplier. This approach remains consistent for migrating purchase orders irrespective of any possible scenario and still entire available stock can be brought in with Inventory Cut-Over activity without breaking into pieces.

Accrued Expenses Brought in during migration can be offset against Data Migration General Ledger Account so that this posting has no net effect on financial statements. Open Purchase Order migration for the scenarios mentioned earlier is to be managed as stated below so that the migration would be smooth, reconciliation will be easy and subsequent functions such as supplier invoice processing and managing exceptions are no different from the regular business process even-though they are migrated Purchase Orders. This process offers a great flexibility and proven highly successful in several deployments I have handled.

1. Purchase Orders where no stock is received from supplier and no invoice is received:

Migrating purchase orders in this scenario is relatively straight forward. They are created as like any other PO created for the full quantity in run state In any ERP system and does not require any special considerations.

Scenario	Legacy			Migration Approach	S4 (SAP)		
	Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity		Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity
Purchase Order With No Goods Receipt No Invoice Receipt	100	0	0	Create Regular PO	100	0	0

Figure 5: Migration Strategy in S4 for the Scenario No 1

2. Purchase Orders where stock is received full from supplier and no invoice is received:

Purchase Orders in this scenario are to be recreated in S4HANA for full quantity with Account Assignment Category-K and Data Migration General Ledger Account at purchase order line item. Goods Receipt with reference to this Purchase Order is to be reposted so that the financial posting would hit Data Migration General Ledger Account instead of Revenue Account. PO is now open for Supplier Invoice which can be processed with all the regular checks, validations and exception handling if there are any variances.

Scenario	Legacy			Migration Approach	S4 (SAP)		
	Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity		Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity
Purchase Order With Goods Receipt in Full No Invoice Receipt	100	100	0	Create PO with Account Assignment Category "K" that will post to Data Migration GL when Goods Receipt is reposted in S4	100	100 Dr Data Migration Cr GRIR	0

Figure 6: Migration Strategy in S4 for the Scenario No 2

3. Purchase Orders where stock is received full from supplier, but invoice is received partly:

Since Invoice is received partly in this scenario, Purchase Orders are to be recreated in S4HANA only to the extent of pending invoice quantity with Account Assignment Category-K and Data Migration General Ledger Account at purchase order line item. Goods Receipt with reference to this purchase order is to be reposted similar to Scenario 2 and this PO will wait for the supplier invoice to be received.

Scenario	Legacy			Migration Approach	S4 (SAP)		
	Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity		Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity
Purchase Order With Goods Receipt in Full Invoice Receipt in Partial	100	100	60	Create PO (for the Un-Invoiced Quantity) with Account Assignment Category "K" that will post to Data Migration GL when Goods Receipt is reposted in S4	40	40 Dr Data Migration Cr GRIR	0

Figure 7: Migration Strategy in S4 for the Scenario No 3

4. Purchase Orders where stock and invoice from supplier are received in full:

Since Stock is received and invoice is processed, no migration is needed for these Purchase Orders in S4HANA.

Scenario	Legacy			Migration Approach	S4 (SAP)		
	Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity		Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity
Purchase Order With Goods Receipt in Full Invoice Receipt in Full	100	100	100	No Migration Needed	N/A	N/A	N/A

Figure 8: Migration Strategy in S4 for the Scenario No 4

5. Purchase Orders where stock is received partly from supplier and no invoice is received:

Purchasing Order falling into this scenario is to be broken down into two parts into S4HANA. First part is to create a line item in Purchase Order for the quantity that has been received with Account Assignment Category-K, Data Migration General Ledger Account at purchase order line item and reposting the goods receipt so that this line item can wait for the invoice from the supplier. Second part is to create another line item for the remaining quantity like how a fresh Purchase Order line item is created (Not with Accounting Assignment Category K) so that goods receipt and invoice receipt can be processed whenever they are received.

Scenario	Legacy			Migration Approach	S4 (SAP)		
	Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity		Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity
Purchase Order With Goods Receipt in Partial No Invoice Receipt	100	60	0	Create Two Line Items in the PO: One Item for the Goods Received Quantity with Account Assignment Category "K" that will post to Data Migration GL when Goods Receipt is reposted in S4 Another Line Item as Regular PO for the remaining Quantity	Item 10: 60 Item 20: 40	GR for Item 10 for Quantity 60: Dr Data Migration Cr GRIR No GR for Item 20	0

Figure 9: Migration Strategy in S4 for the Scenario No 5

6. Purchase Orders where stock and invoice is received partly from supplier:

This scenario also gets the treatment same as Scenario 5 with a slight change i.e. instead of creating first line item for the entire quantity that has been received, it has to be created for the quantity that is pending for the invoice. Second line item is to be created for the remaining quantity for which there is no stock received and no invoice processed like how a fresh Purchase Order line item is created (Not with Accounting Assignment Category K).

Scenario	Legacy			Migration Approach	S4 (SAP)		
	Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity		Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity
Purchase Order With Goods Receipt in Partial Invoice Receipt in Partial	100	60	50	Create Two Line Items in the PO: One Item for the un invoiced Quantity with Account Assignment Category "K" that will post to Data Migration GL when Goods Receipt is reposted in S4 Another Line Item as Regular PO for the remaining Quantity	Item 10: 10 Quantity Item 20: 40 Quantity	GR for Item 10 for Quantity 10: Dr Data Migration Cr GRIR No GR for Item 20	

Figure 10: Migration Strategy in S4 for the Scenario No 6

7. Purchase Orders where no stock received, but invoice is received partly:

Purchase Order falling under this category are to be created as regular Purchase Orders, post invoice receipt and knock off Supplier Line Item with the advance payments that has been brought in during General Ledger Balance Migration.

Scenario	Legacy			Migration Approach	S4 (SAP)		
	Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity		Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity
Purchase Order With No Goods Receipt Invoice Receipt in Partial	100	0	40	Create PO, Post Invoice Receipt and knock off Invoice with Advance Payment which is brought in with General Ledger Balance Migration	100	0	40

Figure 11: Migration Strategy in S4 for the Scenario No 7

8. Purchase Orders where no stock received, but invoice is received in full:

Purchase Order falling under this category are to be created as regular Purchase Orders, post invoice receipt and knock off Supplier Line Item with the advance payments that has been brought in during General Ledger Balance Migration.

Scenario	Legacy			Migration Approach	S4 (SAP)		
	Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity		Purchase Order Quantity	Goods Receipt Quantity	Invoice Receipt Quantity
Purchase Order With No Goods Receipt Invoice Receipt in Full	100	0	100	Create PO, Post Invoice Receipt and knock off Invoice with Advance Payment which is brought in with General Ledger Balance Migration	100	0	100

Figure 12: Migration Strategy in S4 for the Scenario No 8

Conclusion:

Organizations whenever they are moving from one ERP System to another ERP System would find the data migration activity as complex and challenging, still the entire migration process can be made simple and efficient by adopting appropriate strategies so that we can avoid business disruptions post migration activity. Quality in migrated data would also help in creating confidence on the new systems for the end user community.

References:

1. Varad, “SAP Projects”, 02.18.2022, [online]. Available: <http://softat.co.in/sap-projects/>
2. Knowledge Article, “SAP projects”, [Online]. Available: <https://www.tmap.net/wiki/sap-projects>
3. Knowledge Article, “2iSolution’s Guide to Understanding SAP Implementations: Types, Characteristics, and Goals” , [online]. Available: <https://2isolutions.com/2isolutions-guide-to-understanding-sap-implementations-types-characteristics-and-goals/>
4. SAP Knowledge Article, “Available Migration Objects” , [online]. Available: https://help.sap.com/docs/SAP_S4HANA_ONPREMISE/d3a3eb7caa1842858bf0372e17ad3909/8dd142b479f9481891fa8b3f86648df3.html
5. SAP Community Network, “Migrating PO (GR done but not invoiced)”, 02.10.2011, [online]. Available: <https://community.sap.com/t5/enterprise-resource-planning-q-a/migrating-po-gr-done-but-not-invoiced/qaq-p/8262133>