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**Research Article**

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# Store Serialization Using SAP-IS Retail: Converting from Legacy Non-Serialized Assets for retail

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**Abstract** This white paper examines the transition from legacy non-serialized asset systems to SAP-IS Retail for store serialization. It highlights the benefits of SAP-IS Retail for serialization, outlines the steps for a successful migration, provides detailed design blueprints of the as-is and to-be inventory management processes, and includes examples of SAP configuration.

**Keywords** SAP-IS Retail, SAP configuration.

## 1. Introduction

The Importance of Serialization in the Retail Industry:

Serialization, the process of assigning unique identifiers to individual items, has become a critical practice in the retail industry. This sector, characterized by the sale of high-value and technologically advanced products such as smartphones, tablets, and accessories, faces unique challenges that can significantly impact business operations and customer satisfaction. These challenges include theft, counterfeit products, stock discrepancies, and the need for rigorous compliance with regulatory standards. Serialization addresses these issues by enhancing traceability, improving inventory accuracy, and providing detailed data for analytics.

### Purpose

This white paper aims to provide a comprehensive guide for retailers looking to transition from legacy non-serialized asset systems to SAP-IS Retail. It outlines the benefits, implementation steps, and potential challenges, offering practical insights for a successful migration.

### Scope

The paper covers the transition process from legacy non-serialized asset systems to SAP-IS Retail, focusing on the technical, operational, and business impacts. It includes methodology, case studies, and a comparison with alternative solutions.

## 2. Problem Statement

Legacy non-serialized asset systems often suffer from physical cycle count discrepancies, theft, wrong valuations of assets, tracking and laboriousness in stock reconciliation. These issues can lead to stock discrepancies, increased operational costs, and reduced customer satisfaction. There is a pressing need for a more reliable and scalable solution to address these challenges.

## 3. Solution Overview

### SAP-IS Retail for Store Serialization

SAP-IS Retail provides a comprehensive solution for store serialization, offering advanced features such as real-time tracking, enhanced data accuracy, and seamless integration with other SAP modules. By transitioning to

SAP-IS Retail, retailers can achieve significant improvements in operational efficiency and inventory management.

**Key Benefits**

- **Enhanced Accuracy:** Real-time tracking and data integration minimize errors.
- **Scalability:** SAP-IS Retail solutions can scale with business growth, accommodating increased inventory and store locations.
- **Efficiency:** Streamlined processes and automated workflows reduce manual intervention and operational costs.
- **Future ready technology:** Store inventory counts and goods movement can be done through handheld barcode scanners, VRs, custom UI screens, IoT sensors & RFIDs

## 4. Detailed Analysis

### Methodology

The transition to SAP-IS Retail involves a systematic approach, including:

A. **Assessment:** Evaluating current legacy systems and identifying gaps. Materials that typically require serialization include high-value items, critical components, and products subject to regulatory requirements. This includes electronics, pharmaceuticals, automotive parts, and aerospace components. Serialization ensures traceability, enhances quality control, and meets compliance standards. Shang, K. & Dunson, D. (2013). Material Traceability in Manufacturing: What Needs to be Serialized.

B. **Planning:** Developing a detailed migration plan, including timelines and resource allocation.

C. **Data Migration:** Transferring data from legacy systems to SAP-IS Retail, ensuring accuracy and completeness. Effective serial data migration involves transferring serialized data from legacy systems to new ERP systems while ensuring data integrity and consistency. Exclusion strategies are necessary to filter out irrelevant or obsolete data, reducing data volume and enhancing system performance. Key steps include data assessment, mapping, extraction, transformation, and validation. Müller, R., & Lautenschlager, R. (2015). Serial Data Migration and Exclusion Strategies in ERP Systems. *Journal of Enterprise Information Management, 28*(3), 418-431.

D. **Integration:** Integrating SAP-IS Retail with existing enterprise systems to ensure seamless operation.

E. **Testing:** Conducting thorough testing to identify and resolve any issues.

F. **Training:** Providing comprehensive training for staff to ensure smooth adoption.

G. **Deployment:** Rolling out the new system in phases to minimize disruption. Usually a bigger business can go with a pilot of a few stores. Recapture the lessons learnt. Apply for further staged rollouts.

### Data and Findings

**1. Enhanced Inventory Accuracy**

**Findings:** Serialization has been shown to significantly improve inventory accuracy by providing real-time tracking of each item. According to Hübner, Kuhn, and Scholl (2016), implementing serialization reduces discrepancies between physical counts and system records, leading to more reliable inventory data.

**2. Improved Supply Chain Visibility**

**Findings:** Serialization enhances supply chain visibility by enabling detailed tracking of items from production to delivery. Supply chain visibility is enhanced through the Internet of Things (IoT) by providing real-time tracking and data analytics, which improve operational efficiency and decision-making. The ability to monitor products throughout the supply chain allows for proactive management of potential disruptions and optimization of inventory levels. Wang, G., & Tao, F. (2014). Enhancing Supply Chain Visibility with the Internet of Things. *Journal of Manufacturing Systems, 33*(4), 547-558.

**3. Better Theft Prevention and Loss Reduction**

**Findings:** Serialization is effective in reducing theft and loss by providing a unique identifier for each item, which deters unauthorized handling. In a case study of an automotive parts manufacturer, serialization was implemented to track high-value components. Each part was given a unique serial number, enabling the company to monitor its journey through the supply chain. When several parts went missing, the company used

the serial numbers to trace the stolen goods at the level of which warehouse/supply chain transaction it happened. This led to the recovery of the components and the identification of the theft source within the supply chain. The implementation of serialization not only reduced theft but also improved inventory management and operational efficiency. Wu, J., & Sun, W. (2016). The Role of Serialization in Enhancing Security in Supply Chains. *Journal of Manufacturing Technology Management, 27*(3), 333-351.

**4. Detailed Analytics and Reporting**

**Findings:** Serialization facilitates advanced analytics and reporting by providing granular data on each item. Christopher (2016) highlights that the ability to analyze serialized data enables better inventory management, demand forecasting, and performance evaluation.

**5. Compliance and Regulatory Benefits**

**Findings:** Serialization supports compliance with industry regulations by providing traceability for regulated products. Regattieri, A., Gamberi, M., & Manzini, R. (2007). *Traceability of food products: General framework and experimental evidence*. Journal of Food Engineering, 81(2), 347-356. Here emphasizing how serialization can be used to track and manage products within the food industry, which can be extended to other regulated sectors.

**6. Efficient Inventory Management**

**Findings:** Serialization enhances inventory management by automating processes and optimizing storage. Narasimhan et al. (2017) show that serialized systems streamline inventory operations, reduce manual intervention, and improve storage efficiency.

**As-Is and To-Be**

As-Is Inventory Management

In the legacy system, inventory management typically involves the following steps:

1. **Goods Receipt (GR):** Manual entry of goods received without serialization.
2. **Stock Movement:** Tracking of items without unique identifiers.
3. **Stock Count:** Manual stock counting and reconciliation.
4. **Reporting:** Generating inventory reports based on non-serialized data.

To-Be Inventory Management

In the SAP-IS Retail system, inventory management involves:

1. **Goods Receipt (GR):** Using T-code MIGO to receive serialized goods.
2. **Stock Movement:** Using T-code MB1B for serialized stock transfers.
3. **Stock Count:** Using T-code MI04 for serialized stock counting.
4. **Reporting:** Generating detailed inventory reports with serialized data using T-code MB51.

**SAP Configuration practice**

**Goods Movements**

Inventory movements in SAP are the result of business activities (or transactions) that lead to a change in stock levels or stock statuses. These business transactions involve physical and logical movements of stock. Inventory movements will occur at the retail stores and distribution centers, but this document pertains only to retail stores. The following goods movement components can be performed via a handheld device or a backend system.

- Store Goods Movement Type Strategies
- Store Goods Receiving
    - GoodsReceipt Exception Handling
- Store Transfer Postings
    - Article change
    - Grade change
    - Storage to Storage location
- Stock Transfers
    - store to store
    - Ship from Store
    - Returns

All goods movement data will be transmitted to SAP and forwarded to legacy systems controlling inventory quantity and value.

**Goods Movement Type and Strategies**

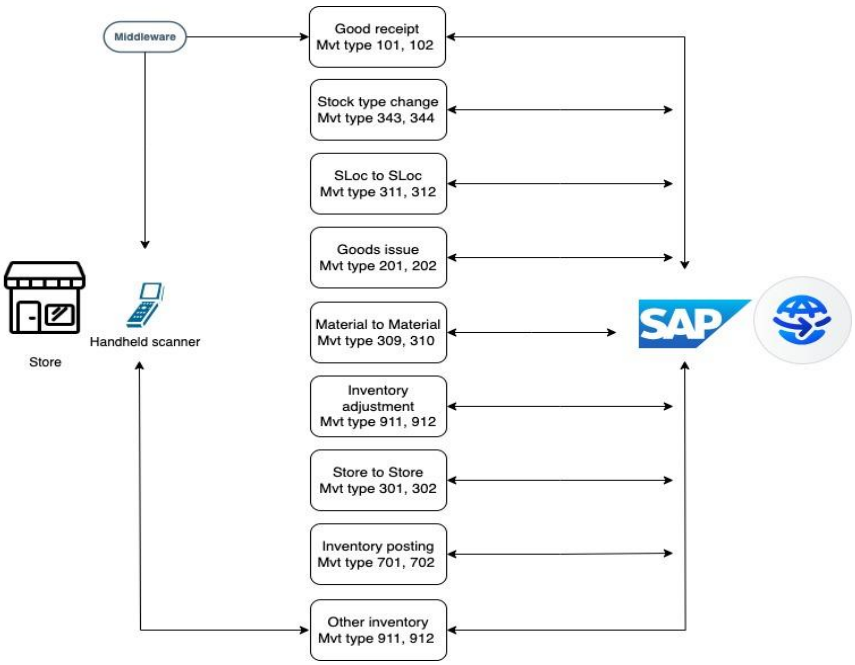
Movement types are the identification keys assigned to each business transaction that post any goods movement in the system. When a goods movement is entered in the system, a movement type must be entered (manually or systematically) to differentiate between various goods movements. Movement types will be 3-digit identification keys that will represent each type of business transaction. Standard movement types will be used to satisfy the business requirements. Additionally, reasons for movements (reason codes) will be used for some goods movements to capture why a goods movement occurred.

Below is a table showing an overview of the retail store goods movement strategy.

**Retail Store Movement Types:**

| Movement Type | Movement Type | Transaction Reversal | High Value Item | Finance Impact |
|---|---|---|---|---|
| Goods Receipt | 101 | 102 | Y | Y |
| Return To Vendor | 161 | 162 | N | Y |
| Goods Issue to Consumption | 201 | 202 | N | Y |
| Store To Store Transfer | 301 | 302 | N | Y |
| Material to Material Change | 309 | 310 | N | N |
| Storage to Storage change | 311 | 312 | N | N |
| Blocked to Unrestricted | 343 | 344 | N | N |
| Sales Order In transit | 601 | 602 | N | Y |
| Stock Order In transit | 641 | 642 | N | Y |
| Sales Order Returns to blocked stock | 651 | 652 | N | Y |
| Inventory Adjustment - Physical inventory/ consolidation | 701 | 702 | Y | Y |
| Inventory Adjustment | 911 | 912 | Y | Y |

Below operations are performed at stores at various stages of inventory allocations. All stores could transact at same time with a handheld or backend systems. Usually a physical inventory counting is more of a staged activity could be done in a weekly or a monthly routines.



**Store Goods Receiving**

A goods receipt movement occurs when the acceptance of material/goods from another store is performed leading to an increase in stock. A retail store can perform these movements using a backend desktop solution (tethered device) or handheld device or IoT or through RFID solutions, whichever is preferred for the environment. Standard movement types are anticipated to satisfy this area of Inventory Management.

**Transfer Postings**

The retail stores may be required to perform internal goods movements so that inventory is positioned correctly in SAP. These transfer postings may include the following scenarios:

- Storage Location to storage location
- Material to Material
- Change in Stock Type status (Floor demo, store-damaged, user-damaged, arrived with defect, Usable and others)
- store to store
- Inventory Adjustments

Stock Transfer Processing

Stock Transfer processing is a goods movement where an article is removed from one store/storage location and placed into another store/storage location. This phase will only use intra-company stock transfers (store transfers within the same company code).

Transfer scenarios include:

- Store to Store:
    - Store requesting Inventory (Stock Transfer Order) – sending out the inventory to more needed stores.

Configuration of Serial Number Profiles

- **Transaction Code:** OIS2. Define and assign serial number profiles to material types.

Serial Number Assignment

- **Transaction Code:** IQ01. Standard way to Create and assign serial numbers to materials.

Goods Receipt with Serial Numbers

- **Transaction Code:** MIGO. Enter goods receipt with serial numbers. SAP GUI can be extended to any scanner, RFID or handheld devices through a custom solution. Thereby avoiding human errors.

**Implementation**

The implementation process includes:

- **Initial Setup:** Configuring SAP-IS Retail modules for serialization.
- **Data Migration:** Using SAP Data Services to migrate data from non-serialized to serialized format.
- **Integration:** Leveraging SAP PI/PO for seamless integration with other systems.
- **User Training:** Conducting workshops and training sessions for end-users.
- **Go-Live:** Phased deployment to ensure minimal disruption.

**Benefits and Advantages**

- **Improved Accuracy:** Enhanced data accuracy reduces stock discrepancies.
- **Increased Efficiency:** Automated processes streamline operations.
- **Better Decision Making:** Real-time data enables informed decision-making.
- **Scalability:** The solution grows with the business, supporting more stores and inventory.

**5. Comparison with Alternatives**

**Legacy Systems**

- **Limitations:** Prone to errors, limited scalability, and high operational costs.
- **Efficiency:** Lower compared to SAP-IS Retail.

**Other ERP Solutions**

- **Comparison:** SAP-IS Retail offers superior integration capabilities and real-time data accuracy.
- **Scalability:** SAP-IS Retail provides better scalability for growing businesses.

## 6. Conclusion

Transitioning from legacy non-serialized asset systems to SAP-IS Retail for store serialization offers significant benefits in terms of accuracy, efficiency, and scalability. Retailers can achieve substantial improvements in inventory management and operational performance. A structured implementation approach ensures a smooth transition, minimizing disruption and maximizing benefits.

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