

FUNDAMENTALS OF
SCM-EWM
A STEP-BY-STEP GUIDE

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We want to thank our parents for their blessings, which are of paramount importance for any venture.

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To our darling daughters

Gia and Nia

Whose share of our time and attention

We have most selfishly devoted to the construction of this book.

About the Authors



Rajesh Mendonca is a leading techno-functional consultant with more than a decade's worth of experience in SAP. His work includes extensive knowledge on extended warehouse management, warehouse management, and inventory and materials management. His clients have included several Fortune 500 companies from industries including manufacturing, chemicals, utility, mill products, and retail industries. He has worked with "The Big Four" consulting firms and currently works for Hitachi Consulting Corporation (USA).



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With several years of teaching and implementation experience behind them and with a good understanding of what students and consultants want, they have put enormous effort in making this book simple and useful not only for experienced consultants, but also for beginners and clients.

SAP Training

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Preface

This book is intended to help beginners, experienced WM consultants, and SAP customers who are looking to implement SCM Extended Warehouse Management (SCM-EWM) solution.

With enormous experience in implementation and training in SAP Warehouse Management (WM) and EWM, we know the kinds of problems and questions consultants will have when learning and implementing the EWM solution. By incorporating all the insights that we have gained into this book, we hope to impart that same learning experience to our readers as well.

SCM-EWM is more complicated than SAP's WM module. Because of that, both beginners and experienced WM consultants often find it difficult to learn this module. Furthermore, SAP customers are often confused about which solution to select to manage their inventory and warehouse needs due to the variety of solutions available to them.

After reading this book, SAP customers will be able to get a good look at the different solutions SAP offers for managing inventory and be able to make an informed selection of the right solution for their warehouse needs. Similarly, this book will help beginners as well as experienced consultants master this module and configure the EWM system on their own. By understanding the hows and the whys, consultants will gain an understanding few have in this exciting field.

The following are the salient features of this book that will help you to read and understand the content easily.

Tables: By glancing at the table, you will be able to absorb a sea of information that otherwise would require pages and pages of text. One look at the table informs you as to exactly where to configure what, which transaction code (TCode) to use for the configuration, what part of the configuration can be transported, and which settings have to be manually performed in each client. This is especially handy for consultants during integration testing and go-live cutover tasks.

Diagrams: One of the limitations of SAP's help-documentation is the lack of good diagrams explaining and connecting configuration objects. The addition of this feature in this book helps you to easily understand and remember the configuration in pictorial format, thus digesting the information faster, with fewer questions.

Step-by-Step Procedures: The sequence of steps involved in the configuration process is laid out in a very lucid, logical manner. This achieves two main objectives: it makes it easier to focus, and also makes it more interesting and understandable.

Screenshots: These help you to visualize the system without actually logging into it and connect the information to the practical environment. A glance at a screenshot gives you a good idea of what the system looks like, what parameter(s) to configure, and what value to select for the given option, besides indicating the actual physical location of various screen elements.

Live Examples: Any SAP book without real-life examples is only half complete. Through the examples provided in this book, you will observe warehouse challenges and how to provide solutions for them. Real-life examples and business scenarios walk consultants through the business requirements, giving them the confidence of an experienced consultant.

100% Guaranteed to Work: When we started authoring this book, we began with a system that had no data and no prior configuration loaded (not even BC sets). We activated everything from scratch and created our own data. During this process, we captured screenshots in every step and incorporated them into our book. Starting from the ground up also ensured a logical flow of information. This guarantees that those who reference our book will be able to confidently and successfully configure the system on their own.

Our aim is to provide a detailed guide on understanding various SAP solutions to manage the inventory and how to configure EWM system independently. Due to the vast amounts of information, we have divided the content of configuration of EWM into two parts: *Fundamentals of SCM-EWM* and *Advanced Concepts in SCM-EWM*.

"*Fundamentals of SCM-EWM*" covers the details of the various SAP solutions available to manage inventory and how to select the solution that best fits each client's requirements. In order to lay a strong foundation to EWM, this book covers in detail the basics of EWM, EWM architecture, how to set up data transfers between ERP and EWM systems, and master data configuration. In the later chapters, consultants will be guided through the configuration of goods receipts, goods issue, handling units (HUs), warehouse documents, internal warehouse movements, physical inventory (PI), Post-Processing Frameworks (PPFs), and exception handling, along with examples. This will build consultants' confidence on how to make the EWM system work. The "Lessons learned" section focuses on overcoming the challenges encountered in EWM implementation.

In "*Advanced Concepts in SCM-EWM*", we will cover additional functionalities like labor management, slotting, rearrangements, warehouse cockpit, and mobile or radio frequency (RF) functionalities, to name a few.

How to Read This Book

EWM is very technical and a highly complicated module to configure and understand. Some readers may find it difficult to understand and master the fundamentals of EWM in the first attempt; but perseverance and practicing it in the system will surely bear results.

Every chapter will have tables, diagrams, and configuration steps along with theory, examples, screenshots, and notes. Tables will help the reader to understand what configuration steps need to be performed, the sequence and importantly whether they can be transported to other systems or not. Diagrams will explain how the different objects are linked in pictorial format.

Configuration steps will cover the theory, information for the important fields, notes, configuration menu path, and screenshots. Theory and field level information will help the reader to understand the purpose of the configuration and the screenshots will help to visualize the system without actually accessing the system.

Readers who are comfortable reading the configuration section only after learning about master data and executing the transactions, can start reading chapters 14 through 20 after reading chapter 1, 2, and 3. Please note, reading chapters 14 through 20 without reading earlier chapters (4 through 13), may not give a clear understanding of the configuration, and abbreviations. On the other hand, if the reader is more comfortable reading and understanding the configuration first, then read this book as it is structured. Those who have already worked in SAP WM and EWM may skip chapters 1 and 2.

We hope you enjoy using this book as much as we have enjoyed writing it.

Software Used

When we wrote this book, the latest software version of EWM was SCM 7.0, and the ERP system connected to it was SAP ERP Central Component 6.0 with enhancement pack 4. Depending on your software version, some of the configuration paths mentioned in this book might vary. In such cases, you can use the transaction code to locate the required transaction.

Chapter 1: Introduction to Warehouse Management

This chapter provides a brief history of the warehouse, the definition of warehouse management, and key warehouse terminologies. For beginners we have also covered a short introduction to SAP, SAP jargon, abbreviations used in SAP, and an introduction to SAP menu.

1.1 Background and History

A warehouse is a building where goods may be received, labeled, catalogued, picked, packed, and shipped. The roots of the warehouse go back to the creation of storehouses to store food, which was historically available for purchase during times of famine. Slowly, as Europeans began to create shipping trade routes with neighboring nations, warehouses grew in importance for the storage of goods from afar.

Before the railroads, warehouses were often located near the major seaports or at the manufacturing facility. Warehouses were mainly operated by a team of workers. As railroads and, later, airports began to expand travel and transportation, the creation of warehouses near the rail depots or airports for the storage of materials became necessary. Since then the warehouse has gained importance in the supply chain, resulting in several different types of warehouses like public warehouses, private warehouses, commercial warehouses, contract warehouses, leased warehouses, and so on.

Warehousing companies are now striving to become more than simply storage facilities. Many companies or department stores like Sam's Club and Costco have turned their warehouses into true commercial buildings. They may be called warehouse stores, but the concept is that instead of spending a lot of money on merchandising and attractive displays, these companies concentrate on maximizing utilization of rack space, minimizing material handling, better control of inventory, and easy replenishment. This allows them to offer much lower prices to the consumers by minimizing the supply chain cost.

1.2 Warehouse Management Definition

Warehouse management is the process of coordinating the incoming goods, the subsequent storage and tracking of the goods, and, finally, the distribution of the goods to their proper destinations. In the past, warehouse management was very paper intensive in its coordination of a multitude of activities. Since early 1990, this has changed with the introduction of warehouse management system software.

Since 1990, warehouse management has drawn the attention of enough software companies to provide good solutions to manage the inventory, resources, and planning in the warehouse. SAP is one such

The consultant has worked hard to provide better solutions to manage and trace inventory, helping warehouse managers to overcome their daily challenges.

Warehouse Terminologies

Putaway: Putaway is the process in which materials are put away after being received.

Material Handling: Material handling is the movement of the material to and from an original location. This includes the travel of both material and the warehouse workers.

Picking: Picking is the process in which materials are picked from the source and taken to a given destination, usually for shipping or production.

Loading and Unloading: Loading is the action in which the materials are loaded on trucks, trailers, or rail cars, usually for shipping. During unloading, materials are removed from trucks, trailers, or rail cars for storage in the warehouse or for consumption.

Cross-docking: Cross-docking is the action of unloading materials from incoming trailers and immediately loading those materials on outgoing or outbound trailers, thus eliminating the need for warehousing.

Forklift Trucks: Vehicles used to lift, move, stack, and pick the materials in the warehouse.

Warehouse Operator: Person in the warehouse who unloads, does putaway, picks, or loads the materials.

Aisles, Racks, Bins: Aisles are spaces for walking or drive forklift trucks between racks. Racks are normally found either side of the aisles and contain several storage spaces or slots, usually labeled for easy identification. Bins are spaces dedicated to storing materials.

Fixed Bin: This is a fixed space dedicated to one or more materials from where the materials are issued to the production or shipping before picking from other bins.

Homogeneous Storage: All materials stored are the same kind.

Mixed Storage: Different materials are stored in the same bin.

Addition to Stock: This is usually performed to maximize the utilization of bin space by adding more stock to the bin.

Multipallet Bins: These are bins where more than one pallet can be stored, whether of the same or a different kind.

Pallet: This is a flat transport structure used to store materials in a stable fashion while being lifted by the forklift trucks.

ABC Indicators: These are used to identify the fast- and slow-moving materials.

Cycle Counting: Cycle counting is an inventory counting method that allows businesses to count materials in a number of areas within the warehouse without having to count the entire inventory.

Physical Inventory (PI): This refers to the process of counting all inventory in the warehouse.

Blind Count: This is a method of inventory where you provide the material numbers and location but no quantities.

Advanced Shipment Notification (ASN): ASN is used to notify a customer by a vendor of a shipment.

Direct or Drop Ship: Direct shipping and drop shipping are two terms generally used interchangeably. In this process, three parties interact with a sales transaction. The buyer orders a purchase from a seller, who then arranges with the supplier to ship the material directly to the buyers.

1.4 Introduction to SAP

SAP was founded in 1972 in Germany. It stands for Systems, Applications, and Products in Data Processing. Over the years, it has grown and evolved into the world premier provider of client/server business solutions for which it is so well known today.

The original SAP idea was to provide customers with the ability to interact with a common corporate database for a comprehensive range of applications. Gradually, the applications have been assembled, and today many corporations, including IBM and Microsoft, are using SAP products to run their own businesses.

The latest SAP R/3 enterprise application suite for open client/server systems has established new standards for providing business information management solutions. SAP applications, built around the R/3 system, provide the capability to manage financial, asset, and cost accounting; production operations; materials; inventory; warehousing; personnel; plants; and many other business needs.

Today, it is the world's largest interenterprise software company and the world's fourth-largest independent software supplier.

1.5 SAP Jargon and Abbreviations

It is important for both SAP consultants and their clients to know and understand the most commonly used SAP jargon and abbreviations and their meaning. In this section we have listed a little jargon and a few abbreviations used in SAP. Warehouse module-specific jargon is explained in the respective chapters in this book.

SAP Abbreviations: It is common to use abbreviations in SAP. In this book we have used several of them. They are ERP for ECC/ERP systems, EWM for SCM Extended Warehouse Management, WM for ERP Warehouse Management, Org Structure for Organizational Structure, IM for Inventory Management, MM for Materials Management, PI for Physical Inventory, FICO for Finance and Costing, QM for Quality Management, SD for Sales and Distribution, and PP for Production Planning.

CIF: In SAP, the term CIF refers to Core Interface. It is the interface that enables master data to be exchanged between an ERP system and a EWM system.

QRFC: In SAP, the term qRFC refers to queued Remote Function Call. It is the interface that enables transactional data to be exchanged between an ERP system and EWM system.

Handling Unit (HU): A HU is a term used in the SAP's packing module to identify a physical unit consisting of packaging materials and the goods contained in it. For example, a TV packed in a cardboard box.

Material Number: This is a unique identifier for each distinct product and services that can be procured internally or externally. It is also called a stock-keeping unit (SKU). In SAP retail, it is called an article number. In EWM, it is called a product number.

Batch: The quantity of a certain material or product that has been produced according to the same recipe, representing one homogenous, non-reproducible unit with unique specifications.

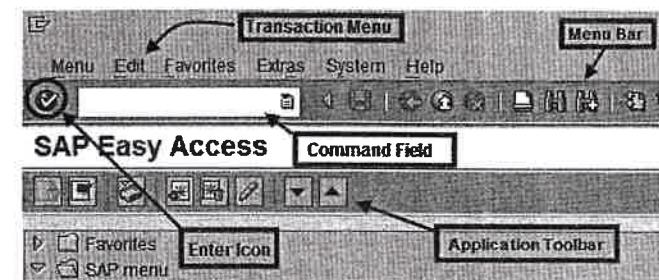
PGR and PGI: In SAP, the term PGR refers to Post Goods Receipts and PGI refers to Post Goods Issue. These are events in SAP that create the material document (i.e., the proof for goods receipts/issues and the accounting documents, if applicable).

1.6 Introduction to SAP Menu

SAP menu is broadly divided into user menu and configuration menu.

User menu is used in day-to-day operations for reporting purposes and to create, change, and display the master and transactional data. The configuration menu is mainly used for configuring the system, both during implementation and in the maintenance phase.

In SAP, any transaction can be accessed in two ways: by navigating through the menu path or by entering TCode in the command field. A TCode can be defined with up to 20 characters and is tied to the program. It is used more like a shortcut key to access the transaction. Instead of navigating through the menu path, one can simply enter the TCode in the command field, which will call the corresponding program and will display the transaction on the screen.



A configuration menu can be accessed by navigating through the menu path, for example: **SAP easy access menu | SAP menu | Tools | Customizing | IMG | Execute Project**, or by directly entering the TCode "SPRO" in the command field. In SAP the configuration menu is also referred as Implementation Guide Menu, or IMG menu.

Summary

In this chapter, you have learned the history of warehouse management; some of the most commonly used warehouse terminologies, SAP jargon, and how to navigate through the SAP menu. In the next chapter, we will look at the different solutions available in SAP to manage the inventory along with the advantages and limitations of each solution.

Chapter 2: Solutions to Manage Inventory in SAP

This chapter describes the different solutions available in SAP to manage inventory. It also describes how to choose the solution that would best fit each client's requirements by explaining the advantages and limitations of each solution. The authors hope this will help consultants in their day-to-day consulting jobs and guide clients in selecting the right solution for their warehousing needs.

2.1 Solutions to Manage Inventory In SAP

Since R/2, SAP has provided eight different solutions to manage and trace the inventory. These include simple solutions like managing the entire inventory in one storage location without bin visibility (IM managed stock); or complex solutions like EWM, where every movement of the stock—for example, unloading, staging, deconsolidating, packing, picking, and so on—is documented and recorded in the system.

Table 2.1A describes the different solutions available in SAP to manage the inventory.

Sol. #	SAP Solutions to Manage Inventory	SAP Modules
1A	IM Managed Stock—No WM	IM Managed Solutions
1B	IM Managed Fixed Bin Warehouse (1 Material, 1 Bin) - No WM	
2A	Lean Warehouse Management	ERP WM Solutions
3A	ERP Standard WM Solution	
3B	ERP Standard WM Solution - with TRM Functionality	
3C	ERP EWM Solution (Yard Management, Carton Picking, VAS)	
3D	ERP EWM Solution & TRM Functionalities	
4A	Supply Chain Management - EWM Solution	SCM EWM Solutions

Table 2.1A

Solution 1A (IM Managed Stock—No WM): In this scenario, the stock is managed only at storage location level. Because the stock is not warehouse managed, in SAP it is called IM managed stock. This solution is more suitable for plants where only a small number of materials is stored in the plant, inventory can be managed without bin visibility, and (during the PI count) the entire stock of a storage location is counted for the selected material. This is the simplest way and a minimum requirement in SAP to manage inventory. However, this solution has certain limitations, namely:

- i. There is no bin-level visibility for the stock
- ii. No separate task can be created to pick or putaway the stock

- iii. During PI, the entire stock of a particular material or material and batch (in case of batch management) needs to be counted

The benefit of this solution is that transactional overhead is at a bare minimum.

Solution 1B (IM Managed Fixed-Bin Warehouse (1 Material, 1 Bin)—No WM): This is almost the same as solution 1A, but with additional bin-level visibility. Here the stock is managed at storage location level, and the bin number is entered as text in the material master, which serves as the bin location for the stock in the system. The limitations of this solution are as follows:

- i. Each material can have only one bin
- ii. No separate tasks for picking and putaway can be created in the system
- iii. As the bin number is just a text entered in the material master, without any bin validation, users can change the bin text in the material master, which can lead to problems during picking, putaway, and PI
- iv. During PI, the entire stock of a particular material or material and batch (in case of batch management) needs to be counted

The benefits are as follows:

- i. The bin number entered in the material master can be displayed in various inventory reports including the in PI document
- ii. It gives the bin visibility without implementing the warehouse management module, hence avoiding all the warehouse management complexity
- iii. Transactional overhead is at a bare minimum

This solution is particularly suitable for plants where the number of materials stored in the plant is few.

Solution 2A (Lean Warehouse Management): Solution 1B is further enhanced to provide some of benefits of warehouse management; this solution is called Lean Warehouse Management. This solution doesn't need the entire warehouse org structure, and no additional master data is maintained for materials. Like solution 1B, bin numbers are maintained in the material master as a text. An additional advantage of this solution over solution 1B is that the system can create a picking task (transfer order), and the warehouse personal can confirm the picking task in the system. The confirmation of the picking task automatically updates the picked quantity in the outbound delivery.

The limitations of this solution are as follows:

- i. One material can have only one bin
- ii. Because the bin number is just a text entered in the material master, without any bin validation, users can change the bin text in the material master, which can lead to problems during picking, putaway, and PI
- iii. During PI, the entire stock of a particular material or material and batch (in case of batch management) needs to be counted

This solution gives all the benefits of solution 1B with the additional benefit of confirming the picking task for the warehouse personal. However, this solution is not recommended if any particular material is stored in more than one bin.

Solution 3A (ERP Standard WM Solution): To implement the standard ERP WM solution, one must implement the SAP WM module. This might be the right solution for a company if its warehouse has a medium to high volume of materials, stock of one material is managed in more than one bin, and most or all movements of the stock are recorded in the system.

It could also be the optimal solution for a company's warehouse if internal replenishment processes such as bin to bin transfer, addition to stock, fixed bin replenishment are followed in the warehouse to maximize bin utilization. Unlike solutions 1A and 1B, during PI, it is not required to count the entire stock of the material in the warehouse. Here, warehouse personnel can count the stock by bins to keep the bin inventory accurate. SAP has provided standard RF or mobile transactions to reduce human error. As of now, there are more than five thousand customers who are using this solution for their warehousing requirements.

Even though this solution has numerous advantages and flexibility in managing the inventory, it is not free from transactional overhead. If the warehouse is managed by only a few people, this solution may be more complicated to operate and can increase operational costs, unless some of the areas are customized and automated in the system.

It can also increase the complexity of warehouse operations if the warehouse stock is linked to HU, QM, PP, batch management modules and or hard allocated/unallocated to the customer sales orders. Changes to stock triggered by these modules could create posting change notices (PCNs) in the WM. Even though most of the transactions in WM can be automated, transactions like PCN cannot be completely automated, if the batch stock is stored in several bins, partially allocated or unallocated, the status of partial batch quantity is changed from one status to another, and so on. Before implementing this solution, the impact of other SAP modules on WM stock needs to be carefully considered.

The major limitation of this solution is that standard WM solutions don't consider labor management, kits, exception handling, warehouse resource capabilities, and internal warehouse routes when creating transfer orders. Hence, creating optimal tasks, optimizing the allocation of these tasks to warehouse resources, controlling task execution to prevent resource bottlenecks, and calculating resource performance in the warehouse is not possible.

Solution 3B (ERP Standard WM Solution—with TRM Functionality): Because of the limitations of solution 3A, in 2002, as part of ERP 4.7 extension set 1.1, SAP introduced a new functionality called Task and Resource Management (TRM).

TRM strengthens the SAP—ERP-WM solution by optimizing material flows via task execution and resource deployment. TRM breaks material movements down to the task and resource levels and optimizes the sequence in which they are executed, ensuring that the right task is completed by the best resource at the most optimal time.

This solution helps companies manage their warehouse processes more efficiently, because it achieves an unparalleled degree of process visibility within the system by tracking any activity performed on the warehouse floor. TRM uses the warehouse's physical layout to deploy resources according to the actual workload, the resource's qualifications, and the current geographic positions of the resources. The efficient deployment of resources can contribute to a considerable reduction of costs in material flow processing.

SAP—ERP-WM and TRM are closely integrated and work hand-in-hand to manage and maintain the workload in warehouses. SAP—ERP-WM provides the movement, operation demands, high-level scheduling, and planning, while TRM distributes the work among the various resources.

The major benefits of TRM are as follows:

- i. Creating optimal tasks
- ii. Optimizing the allocation of these tasks to warehouse resources
- iii. Controlling task execution to prevent resource bottlenecks in the warehouse
- iv. Providing visibility of all warehouse processes

In order get the benefits of task execution and resource management, TRM functionality needs to be implemented along with standard WM module.

Companies may need to opt for TRM solutions if the material movement is to be broken down to the task resource level to optimize the sequence in which the tasks are executed to ensure that the right task is executed by the right resource at the most optimal time.

Solution 3C (ERP EWM Solution): In 2002, when SAP released extension set 2.0 for ERP 4.7C, it introduced yard management, cross-docking, and value added services (VAS) functionalities in the warehouse management area and informally named the ERP warehouse management module "ERP Extended Warehouse Management." Since then, this solution has been available for all clients who have activated extension set 2 or implemented ECC systems. The name ERP EWM is applicable only if the client implements these three functionalities along with other WM functionalities.

This solution enables the following additional functionalities in the warehouse:

- i. Cross-docking of materials from inbound to outbound doors without putting away the material in the bin, minimizing the material handling cost
- ii. Additional value added services to the picked quantity, such as custom packaging
- iii. Yard management to manage the incoming and outgoing trucks in the warehouse yard via check-in, check-out, sealing, loading, and so on

Since 2003, SAP has frozen all its new developments in the WM area and focused on developing EWM solutions.

Solution 3D (ERP EWM Solution with TRM Functionalities): The ERP EWM solution is just an extension of the standard WM solution with three additional functionalities. In order get the benefits of task execution and resource management and ERP EWM functionality, both TRM and ERP EWM must be implemented.

Between 2004 and 2009, many clients upgraded or implemented solution 3D for their warehouses to have system visibility in the areas of yard management, cross- docking, VAS, and warehouse resource optimization. But after the release of EWM 7.0, many new clients have opted for the EWM solution to get the maximum benefits of EWM functionalities and take advantage of SAP's continuous improvements in that domain.

Solution 4A (Supply Chain Management—EWM Solution): This is called the Supply Chain Management—Extended Warehouse Management (SCM-EWM) solution. It is the latest warehouse management solution from SAP, designed from the ground up, keeping in mind the needs of large, complex warehouses and distribution centers with high volume and velocity. Initially this was part of service parts management (SPM) solution. In version EWM 5.1, this function was made available to all customers outside SPM. We will cover this solution in greater detail in the following chapters.

Notes:

Apart from these solutions, some clients also use batch management and HU management to manage their inventory and to have bins visibility. These solutions have several limitations and are not dealt with here.

2.2 Guidelines for Selecting the Right Solution

The purpose of this section is to provide guidance in selecting an approach to managing inventory. Although some technical details are presented in support of the conclusions, intricate details of each solution are not the focus of this book. It is not the objective of this book to position any one approach as being the single best solution; rather, the reader is provided with information to help him or her understand why one approach might be a better fit for a given situation. All of the solutions discussed in this section are standard SAP solutions without any customization.

Guidelines:

Even though SAP has released advanced solutions in the warehouse area, like EWM, ERP EWM, TRM, etc., it is not necessary that companies select one of these advanced solutions for their warehouses. Selecting the right solution to manage inventory is a key thing in SAP. Choosing the wrong solution can have a negative impact on warehouse operations. In SAP, it is possible to implement simple solutions like inventory managed stock for some plants, standard warehouse solutions for small warehouses, and EWM or ERP EWM for large distribution centers.

While selecting a solution, companies should consider what their current and near-future warehouse requirements are and which solution best fit their list of requirements. Consultants also have to consider the transactional overhead and the impact of other SAP modules on the selected solution. It is very important to evaluate the overall impact of all modules on the warehouse management solution as a whole and not just the warehouse management module. Failure to do so can have a negative impact on everyday warehouse operations and might increase operational cost by reducing operational efficiency.

Tables 2.2A and 2.2B will help you understand each solution's supported functionalities, transactional overhead, and overall system complexity.

Notes: In table 2.2A:

- i. The impact of serial number management, HU management, production planning, batch management, and quality management are not taken into account, as they do not have a straightforward effect on the transactional overhead and will give misleading results. Their effect on system complexity is dealt with in table 2.2B.
- ii. Each solution described above has some transactional overhead. In table 2.2A, the numbers in the transactional overhead column indicates the transactional complexity of each solution. A higher number indicates more complexity.
- iii. The numbers in the transactional overhead column are derived based on our consulting experience and might change, depending on the project scope and custom development. They

should be used only as a guideline. Final decisions should be made after consulting with the implementation partners.

- iv. Both WM and EWM are fantastic SAP products for managing bin managed inventory. The final decision, specific to each customer, depends on solution needs, along with licensing, implementation, and maintenance costs.
- v. Two stars (**) in the warehouse requirements column indicate that implementation of HUM, QM, and PP modules required to support the respective functionalities. However, QM and HUM functionalities are built into solution 4A (SCM-EWM); hence, implementing these modules are not mandatory for solution 4A.
- vi. Two checks against functionality indicate that the particular functionality is better supported by that solution in comparison with the others.

Warehouse Requirements / Supported Functionalities	Solutions to Manage Inventory							
	1A	1B	2A	3A	3B	3C	3D	4A
Transactional Overhead	1	1	2	5	6	7	8	7
1 Low Volume - Stock can be managed without bin visibility	✓							
2 Low Volume - Single bin per material		✓						
3 Low Volume - Single bin per material and system driven picking			✓					
4 Pallet Traceability or Handling Unit Management (HUM) **	✓	✓	✓	✓	✓	✓	✓	✓✓
5 Quality Inspection (QM) **	✓	✓	✓	✓	✓	✓	✓	✓✓
6 Production Support (PP) **	✓	✓	✓	✓	✓	✓	✓	✓
7 Bin to Bin Movements				✓	✓	✓	✓	✓
8 RF Support for Putaway, Picking, Loading, Unloading				✓	✓	✓	✓	✓
9 Replenishment				✓	✓	✓	✓	✓
10 Wave Picking / Wave Management				✓	✓	✓	✓	✓✓
11 Delivery Split for Outbound Orders				✓	✓	✓	✓	✓✓
12 Physical Inventory at Bin Level				✓	✓	✓	✓	✓✓
13 Multiple Bins per Material				✓	✓	✓	✓	✓✓
14 System Generated Placement and Picking				✓	✓	✓	✓	✓✓
15 Pallet Traceability or Storage Unit Management				✓	✓	✓	✓	
16 Task Interleaving				✓		✓	✓	
17 Task & Resource Management				✓		✓	✓	
18 Yard Management					✓	✓	✓✓	
19 Value Added Services					✓	✓	✓✓	
20 Cross Docking					✓	✓	✓✓	
21 Multiple Fixed Bins for the Materials						✓		
22 Labor Management						✓		
23 Deconsolidation, Kitting, Slotting and Rearrangement						✓		
24 Stock IDs						✓		
25 RF Screen Enhancement						✓		
26 Serial Numbers, Contract Packaging						✓		
27 Discrepancy Processing for Stock Transport Orders						✓		
28 EH&S Integration						✓		
29 Warehouse Cockpit - Standard Delivered BI content						✓		
30 Service Parts Industry						✓		
31 Material Flow System Support						✓		

Table 2.2A

Table 2.2B will help you understand how other SAP modules like QM, PP, Batch Management, Serial Number Management, and HU Management affect the selected solution and what the overall system complexity will be. The numbers here represent the complexity of the everyday operations. For example, under solution 3A, QM module has its complexity listed as 2, which means solution 3A will be twice as complicated if the QM module is active for the stock.

Impact of Other SAP Modules on the Solutions	Solutions to Manage Inventory							
	1A	1B	2A	3A	3B	3C	3D	4A
Quality Management (QM) - A	1	1	1	2	2	2	2	1
Production Planning (PP) - B	1	1	1	2	2	2	2	2
Batch Management (BM) - C	1	1	1	2	2	2	2	2
Handling Unit Management (HUM) - D	1	1	1	2	2	2	2	1
Serial Number Management (SM) - E	1	1	1	2	2	2	2	1
Total Impact of Other SAP Modules (F) (F=A+B+C+D+E)	5	5	5	10	10	10	10	7
Transactional Overhead of WM Solution (G)	1	1	2	5	6	7	8	7
Overall System Complexity (F + G)	6	6	7	15	16	17	18	14

Table 2.2B

Conclusion

In some cases, transactional overhead may be higher, but it may still be the better solution if it reduces overall system complexity. For example, solution 3D along with batch management, QM, HU management, serial number management, and PP can make overall system complexity very high due to the number of transactions, posting change notices, transfer requirements, etc. Therefore, in such a case, 4A may be a better solution; even though it has more transactional overhead, it can be customized and simplified with some development objects. Finally, licensing fee, server fee and Return On Investment (ROI) may also need to be considered in case of solution 4A.

Summary

In the first part of this chapter, different solutions available to manage the inventory in SAP were discussed. In the second part, guidelines for understanding the transactional overhead and overall system complexity of each of these solutions was introduced. With this information, consultants should be able to guide their clients in choosing better solutions for their warehousing needs.

Chapter 3: Introduction to EWM and Org Structure

This chapter is an introduction to SCM EWM. It explains how EWM has evolved, how it is different from ERP WM, types of data transfer between ERP and EWM, various deployment options, and potential challenges during EWM implementation. It also covers in detail the org structure of warehouse and inventory management, which is the foundation for a good warehouse management solution design.

3.1 EWM Overview

EWM is the latest warehouse management solution from SAP. It was designed from the ground up, keeping in mind the needs of large, complex warehouses and distribution centers with high volume and velocity.

Because of the growing demands in warehouse, planning, and procurement areas, around 2002, SAP stopped all further development in ERP WM and started afresh, with a focus on designing a warehouse solution that could both meet customer demands and compete with the best of breed solutions in the warehouse area.

The development project lasted more than three years, and the first version of EWM (i.e., EWM 5.0) was made available to customers in 2005. Because the primary focus was on high-volume planning, service order fulfillment, and distribution of service parts, EWM became a part of the SCM solution—hence the name SCM-EWM.

Even though the initial focus was on service parts fulfillment, SAP's intent was to design a solution that could be used across multiple industries. Accordingly, it added new functionalities to support the requirements of complex, high-volume warehouses and distribution centers.

Many clients think that implementing EWM is just a technical upgrade from ERP WM. However, this is not true. Both ERP WM and SCM-EWM may share many common themes in terms of functionalities, but they are two different products of SAP and architecturally completely different from one another.

3.1.1 Key Differentiators between EWM and ERP WM

The following are some of the major differences between ERP EWM and EWM systems. They are broadly categorized into infrastructural and functionality differences.

3.1.1.1 Infrastructural and Master Data Differences

1. In ERP WM, organization structure elements like warehouse (WH) number, storage type, and storage sections are three characters long, whereas in EWM they are four characters long.
2. In ERP WM, the maximum length of bin number is ten characters, whereas in EWM it is eighteen.
3. In ERP WM, the bin number need not be unique across the warehouse, whereas it is a requirement of EWM that the bin number be unique across the warehouse.
4. In ERP WM, warehouse-related data is maintained in the material master in "warehouse view 1" and "warehouse view 2." In EWM, warehouse-related data is maintained in the product master of the EWM system.
5. Enhanced master data like supply chain unit, business partners, activity areas, and process types are not required for ERP WM but are mandatory for EWM.
6. In ERP WM, storage section is mandatory to create the bins, whereas in EWM it is not.

3.1.1.2 Functionality Differences

1. In ERP, storage type can be storage unit (SU) managed or non-SU managed. In EWM, the concept of storage unit is replaced with Handling Units (HU), and both HU and non-HU managed stock can exist in the same storage type.
2. In EWM, a graphical warehouse layout feature helps to manage the org elements and monitor material flow systems easily. This feature, however, does not exist in ERP WM.
3. Labor management is only available in EWM.
4. Kitting, slotting, rearrangement, and exception handling functionalities are not available in ERP WM.
5. EWM and ERP WM use different concepts, configuration objects, tables, structures, programs, and transaction codes.
6. Serial number visibility at bin level is possible in EWM. This feature, however, does not exist in ERP WM.
7. The warehouse cockpit is a new and useful feature of EWM that doesn't exist in ERP WM.

3.1.2 Evolution of SAP's EWM Solution

SAP released the first version (5.0) of EWM in 2005, and it was coupled with SCM. It was implemented as part of the SCM solution. In 2007, SAP launched the second version of EWM, version 5.1, with additional functionalities and able to be installed as an add-on to ECC 6.0. This was made available to customers in May 2008. In 2009, SAP released EWM 7.0 with additional functionalities like production staging support, resource management, task interleaving, and graphical warehouse layout. Currently, SAP has released EhP 1 for EWM 7.0. This is also called EWM 7.01. With this release, it is now possible to integrate EWM with ERP transportation management (TMS). You may have to implement EhP 5 in your ERP system in order to use all the functionalities available in EWM 7.01.

Table 3.1.2A will give an overview of the functionalities available in the different versions.

EWM Functionalities	EWM 5.0	EWM 5.1	EWM 7.0	EWM 7.1
Internal routing for Inbound and Outbound process	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Warehouse Order creation (work bundle creation for picking)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
De-consolidation / Packing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Exception Handling	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Warehouse Monitor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Transportation Cross Docking	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Value Added Services	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Capacity checks using Weight, Volume and Dimension	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Packaging Specification	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Slotting and Re-arrangement	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Yard Management	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Kit to Order	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Warehouse Cockpit		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Serial number Support		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Catch Weight Support		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Material Flow System		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Kit to Stock		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Centralized on ERP		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Labor Management		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
RFID Enablement		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Batch Mgmt Enhancements		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Production Receiving		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Production Supply			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Opportunistic Cross Docking			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Graphical Warehouse Layout			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Resource Management			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Task Interleaving			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Transportation Mgmt Integration				<input checked="" type="checkbox"/>

Table 3.1.2A

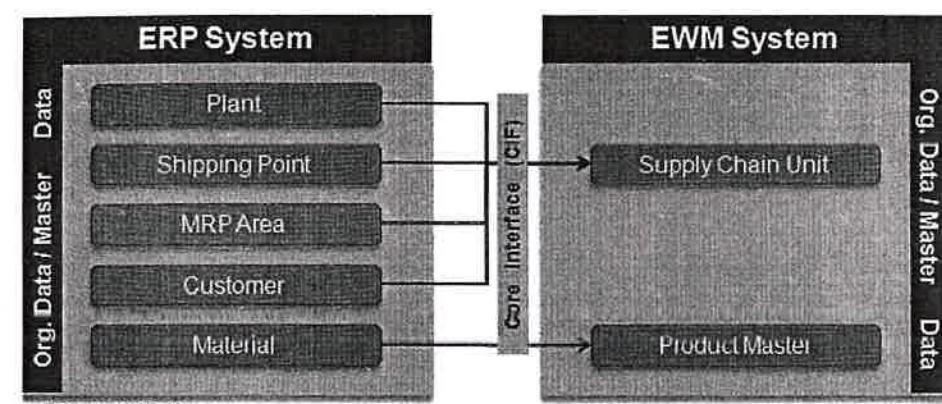
3.1.3 Types of Data Transfer between ERP and EWM

Because ERP and EWM are two different systems, it is important to know how the data is transferred between the systems. For data transfer between ERP and EWM systems, SAP uses CIF and qRFC communication methods.

There are three main types of data transferred between ERP and EWM, namely, organizational data, master data, and transactional data.

3.1.3.1 Organizational Data

Organizational data includes plants, shipping points, and MRP areas. SAP uses CIF technology to transfer the organizational data from ERP to EWM system. If any changes need to be made to organizational data, they have to be made in the ERP system. Initially, all the data is transferred from ERP to the EWM system. After the initial transfer, only the changes or new entries can be sent to the EWM system. Once the data is transferred to the EWM system, the ERP organizational data will become part of the supply chain unit in EWM. Diagram 3.1.3.1A describes how the data is transferred between systems using CIF technology.



3.1.3.2 Master Data

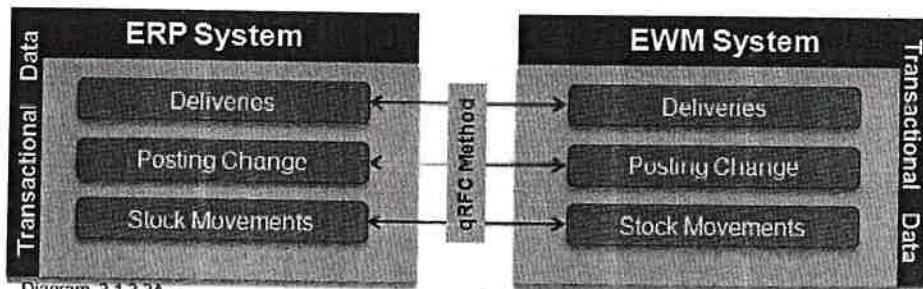
In this context, master data includes material master data, supplier master data, and customer master data. SAP uses CIF technology to transfer the master data from ERP to the EWM system. If any changes must be made to the master data, they have to be made in the ERP system. Initially, all the data is transferred from the ERP to the EWM system. After the initial transfer, only changes or new entries will be transferred to the EWM system.

The supplier and customer master data will also become part of the supply chain unit in EWM, and material master data will become part of the product master data.

3.1.3.3 Transactional Data

Transactional data includes purchase orders, inbound deliveries, outbound deliveries, posting change requests, production order confirmations, and stock movements. SAP uses qRFC technology to move transactional data between ERP and EWM. Only the EWM-related information will be transferred to the EWM system. For example, when a purchase order is created in the ERP system, the plant and storage

location have to be entered for the line items. Based on the plant and storage location of the line item, the warehouse number is determined and assigned to the line item. If the determined warehouse is a EWM warehouse, qRFCs will transfer the information to the EWM system. When goods movements like goods issue or goods receipt is posted in the EWM system, qRFC will send that information back to the ERP system. In this way, data in both the systems are synchronized automatically. Diagram 3.1.3.3A shows the type of transactional data transferred between the ERP and EWM systems.



3.1.4 EWM Deployment Options

Once the decision is made to implement EWM, the next important task will be making a decision on how to deploy it. As of now, architecturally, EWM can be deployed in two ways: on an "SCM server," which is called a "decentralized warehouse"; or on an "ERP server," in which case it is called "add-on to ERP."

SAP recommends deploying EWM on a SCM server under a separate instance, which can yield better performance and availability and be less impacted with upgrades made to other modules. If the client decides to install EWM on a SCM server, along with other SCM components like APO (event management), then the future upgrades to the other components will have to be well thought out to avoid EWM downtime. SAP has given the option to deploy EWM as an add-on to provide the benefits of SCM to clients who are not using the SCM instance.

In either case, the method for integration between ERP and EWM systems will remain the same. The standard method for connecting EWM to ERP is via the Core Interface (CIF) for master data and via queued Remote Function Call (qRFC) for transactional data.

Table 3.1.4A will demonstrate the methods used to transfer data to the EWM system in each ERP release.

ERP Release	Communication Method	
	Master Data	Transactional data
Below 4.6C	Custom IDOCs	Custom IDOCs
4.6C	CIF	IDOC
4.7 (EE Set 2.0)	CIF	IDOC
ECC 5.0	CIF	IDOC
ECC 6.0	CIF	qRFC
Ecc 6.0 (EhP 3.0 and above)	CIF	qRFC

Table 3.1.4A

3.1.5 EWM—Lessons Learned

When a company selects the EWM solution for its warehouse, the following points need to be considered.

Dedicated server: For better performance, it is recommended to have a separate dedicated server for EWM.

Plan enough support resources: EWM implementation is more complex than ERP WM implementation. It may require multiple consultants, depending on the type of implementation and the duration of the project.

Technical upgrade: Transitioning from ERP WM to EWM is not a technical upgrade but a reimplementation project. Proper training has to be given to the end users on the new system and new terminology.

Unique bin requirement: In EWM, the same bin numbers cannot exist more than once. This may require reorganization of the physical warehouse or relabeling of the bins in the warehouse.

Communication structure: Debugging and problem analysis take longer with EWM, and technical knowledge is desirable.

Additional master data: EWM requires more master data than ERP WM.

IT support: Implementation of both ERP WM and EWM solutions can complicate IT support. It may require more than one resource to support these solutions.

Different terminologies: Different terminologies used in ERP WM and EWM can confuse the end users/IT support, if the same resource supports both ERP WM and EWM solutions.

User training: Due to system complexity, a proper user training plan has to be developed, and training has to be initiated well in advance.

Knowledge transfer: EWM is extremely configurable and complex. It may be difficult for a part-time consultant to understand completely and manage the project after go-live. Hence, it is recommended to have full-time resources dedicated for EWM from the early stage of project.

Activate BC sets: SAP has delivered more than four hundred Business Configuration (BC) sets to jump-start your implementation project. Activating them can speed up your implementation process and avoid unnecessary errors during testing.

Future developments: All SAP's future developments in the WM area will remain only on EWM. Even though ERP WM will remain available on all ERP versions, SAP does not intend to extend its capabilities beyond those it has today.

3.2 Introduction to Org Structure

In SAP, every module has its own org structure. In most cases it looks somewhat like a pyramid with the company at the top level and the company code at the next level. Both these elements are part of Finance and Costing (FICO) org structure, usually defined by FICO consultants. Each company code can have several plants assigned to it.

As shown in figure 2.1A, in the IM org structure, plant is the topmost element, is mostly defined by the MM or PP consultant, and is assigned to a company code. Plant is an operating area or branch of the company. Each plant can have one or more physical or virtual storage locations to store the inventory. Storage locations usually represent a physical segregation of inventory within the plant.

An EWM or WM org structure starts with the warehouse number and is defined by the WM consultant. The warehouse number represents a physical warehouse complex and is assigned to one or more storage locations, if the stock is warehouse managed.

The shipping point, in SAP, is used to address the loading / unloading points or the group of people that is responsible for the shipping process. A plant can have more than one shipping point. Shipping points can also be shared by different plants.

In SAP, the company code, plant number, storage location code, and shipping points can be defined with a code having a maximum of four digits.

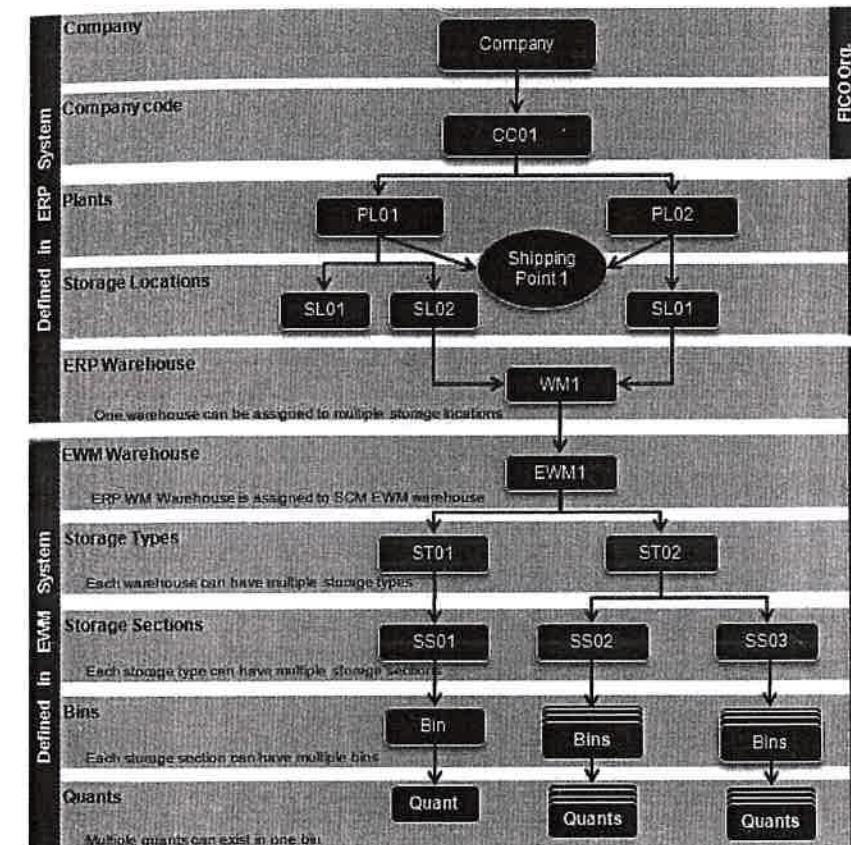


Fig. 2.1A SAP IM and WM organizational structure

3.2.1 IM Org Structure—Plant and Storage Locations

The IM org structure consists of plant and storage locations, the top element being plant. Plant is a subdivision of a company, where either materials are produced, or goods and services are provided.

In SAP, every plant must be assigned to one company code and may contain one or more storage locations. Each company code can have one or more plants, but a plant can be assigned to only one company code. At least one storage location must exist in the plant to manage the inventory. In the plant, if bin visibility is not required, the inventory can be managed at the storage location itself, in which case it will be called *inventory managed stock*. If bin visibility is required, the storage location must be assigned a warehouse org structure, in which case the stock is called *warehouse managed stock*.

3.2.2 WM Org Structure

The WM org structure consists of warehouse number, storage types, storage sections, bins, activity areas, and quants. The following sections will give an overview on each of these org elements.

3.2.2.1 Warehouse Number

The top element in the WM org structure is the warehouse number, which is assigned to the storage locations. In SAP, the warehouse number usually represents a physical warehouse and can be assigned to multiple storage locations of either the same or different plants.

3.2.2.2 Storage Types

The warehouse number is further divided into storage types. In SAP, storage types are segregated as interim and noninterim storage types.

Interim storage types are locations where the inventory is temporarily held until it is put away into the bin or issued from the warehouse. Goods receipt (GR) and goods issue (GI) areas are examples of interim storage types. In general these storage types form a link between WM and Inventory Management (IM).

Noninterim storage types are locations in the warehouse usually used to store the products, for example, finished goods, raw materials, fast-moving materials, etc.

In SAP, the warehouse must have both interim and noninterim storage types.

3.2.2.3 Storage Sections

Storage types are further divided into storage sections. In the physical warehouse, storage sections could represent the type of product (heavy products, small products), or a group of bins (upper level bins, lower level bins), or could represent the velocity of products (fast-moving, slow-moving, etc.). Physically, not all warehouses will have storage sections for each storage type. Even though storage section is required for every storage type in ERP WM, it is not a requirement in EWM to create the bins.

3.2.2.4 Bins

Storage sections are further divided into bins. Bins are locations in the warehouse where inventory is stored. In EWM, bin number should be unique across the warehouse.

3.2.2.5 Activity Area

An activity area is an organizational element and a new feature introduced in EWM. It is a logical group of bins that can have different sorting sequences and can be used in different warehouse activities like PI, picking, putaway, replenishment, and so on. In EWM, activity areas are required and are used by the warehouse-order-creation rules to create the warehouse orders.

Bins from different storage types can be assigned to a given activity area.

Within an activity area, you can also define an activity-dependent bin sorting sequence. The system uses these bin sorting sequences to optimize the execution of warehouse tasks and influence determination of warehouse queues. Diagram 3.2.2.5A is an example for how the activity areas can be created in the warehouse.

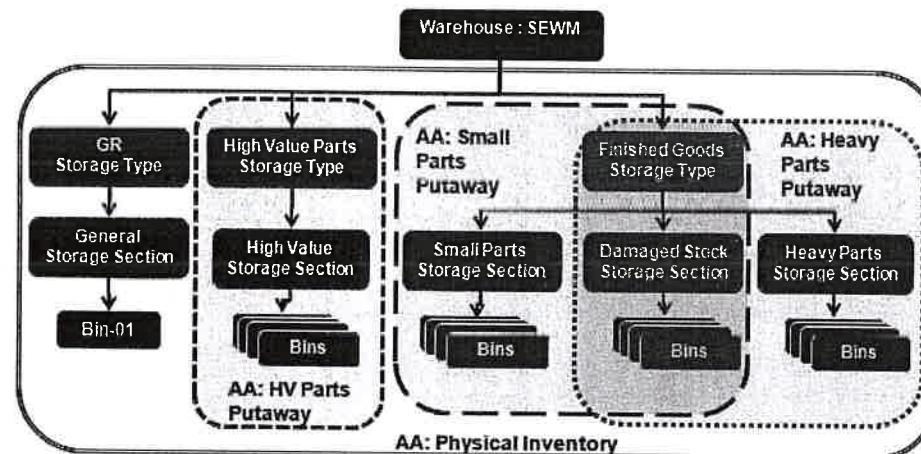


Diagram 3.2.2.5A - Activity Areas

3.2.2.6 Quant

Quant is the lowest level of org element in the warehouse and is within the bin. It represents the stock of material with the same features in one storage bin. It contains information that is used by the system for putaway and for picking from the bin. SAP generates a unique quant based on material number, batch number, stock type, special stock category, and party entitled to dispose.

Notes:

- i. In case of warehouse-managed storage location, inventory is displayed both at the warehouse and the storage location levels.

- ii. In the warehouse, the stock is managed by quantity at the bin level.
- iii. The bin information is mainly used by warehouse personnel to move or manage the inventory inside the warehouse.
- iv. All other modules like MM, IM, QM, PP, and SD only deal with the stock at the storage location level, and the corresponding request or notification is sent to the warehouse to pick, putaway, or change the status of the stock accordingly.

Summary

This chapter has examined how EWM has evolved, how it is different from ERP WM, different types of data transfer between ERP and EWM, various deployment options, and potential challenges during EWM implementation. Org structures covered here will help consultants to understand the configuration activities covered in the next chapter.

Chapter 4: Configuration Requirements in ERP

In chapter 3, we briefly covered the IM and WM org structure. This Chapter will cover how those organizational elements are configured in the ERP system. As EWM is not part of the ERP system, it is necessary to configure qRFC and CIF settings for data transfer between systems along with some basic configuration in the Logistic Execution (LE) section of the ERP system. The "Material Master Enhancements" section covers what EWM specific material master data can be stored centrally in the ERP material master and how to store it.

Diagram 4A gives an overview of how different configuration elements are linked to each other and what information flows to customer and material master.

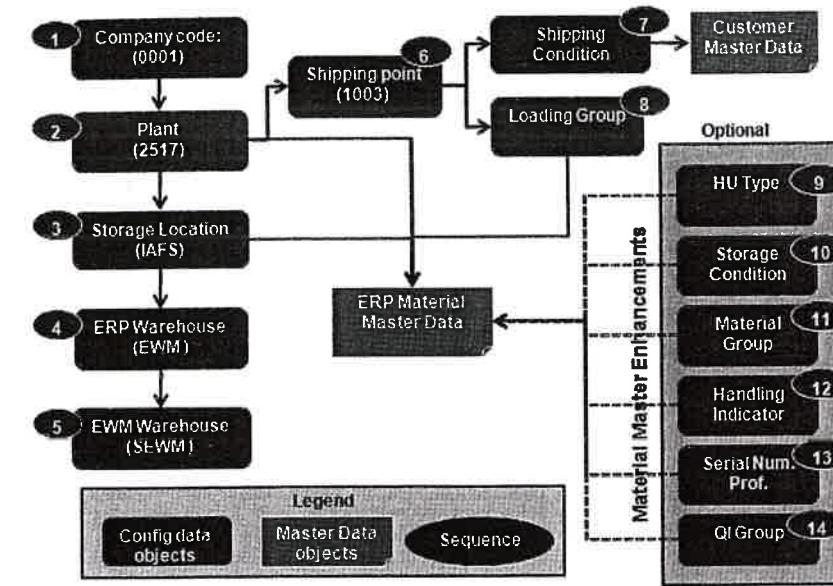


Diagram 4A

Notes:

- i. Each section in this chapter has a table, which gives an overview of the configuration required in the ERP system.
- ii. Items in the table are arranged in logical order to help readers understand better.

- iii. Some configuration settings are highly technical and might require additional authorization or help from the basis team.
- iv. Not all configurations done here are transportable. They are required to be maintained by each client manually.
- v. Most of the configuration screens are accessed through the Implementation Guide (IMG) menu. Henceforth it will be referred as IMG.

4.1 Org Elements

Table 4.1A is the summary of the configuration covered in this section. The column "Transportable" refers to whether or not the configuration for the item can be transported to another system.

S. No	Configuration Check List	TCode	Transportable
1	Define Plants	SPRO	Yes
2	Define Storage Locations	SPRO	Yes
3	Define Warehouse Number	SPRO	Yes
4	Define Shipping Points	SPRO	Yes
5	Define Shipping Conditions	SPRO	Yes
6	Define Loading Groups	SPRO	Yes
7	Assign Plant to Company Code	SPRO	Yes
8	Assign Warehouse Number to Plant and Storage Location	SPRO	Yes
9	Assign ERP Warehouse to EWM Warehouse	SPRO	Yes
10	Assign Shipping Points to Plants	SPRO	Yes
11	Maintain Shipping Points for Outbound Deliveries	SPRO	Yes
12	Maintain Goods Receiving Points for Inbound Deliveries	SPRO	Yes

Table 4.1A

4.1.1 Define Plant

As explained in the chapter 3, the plant is the topmost org level entity in the IM org structure and is defined in the IMG.

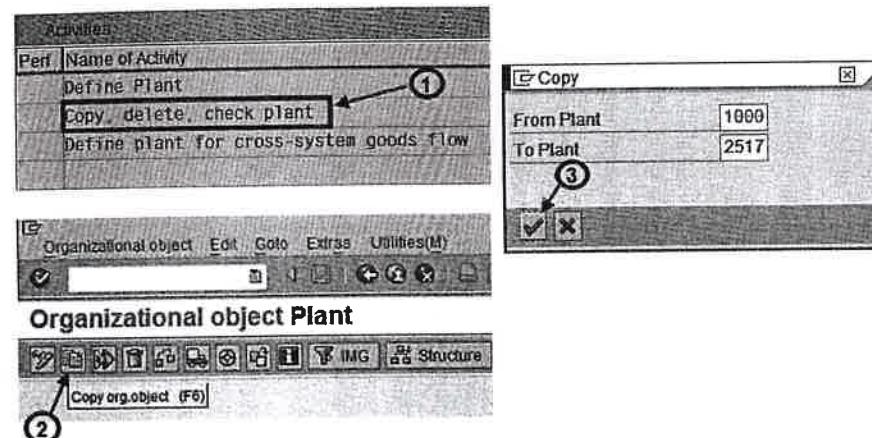
Menu Path: SPRO | IMG | Enterprise Structure | Definition | Logistics—General | Define, Copy, Delete, Check Plant

In this menu, option "Define plant" can be used to create a plant without reference. Here consultants must define the entire required configuration manually. The other option is create a plant with reference to the existing plant. In such a case, the entire configuration defined for the existing plant is copied to the new plant. SAP recommends creating a new plant with reference. Option "Copy, delete, check plant" is used to create a plant with reference.

To create a plant with reference to existing plant, click on option "Copy, delete, check plant" and click on the "Copy org. object" icon located in the application toolbar. Here in the "From Plant," field enter the existing plant number from which you want to copy the configuration to the new plant; and in the "To Plant," field enter the new plant number. Click on green check. This will create a new plant and will copy the reference plant's configuration.

To change the name and address of the plant, click on define plant, select the plant name, click on the details icon on the application bar, and then change the name 1 and name 2 fields. The address can be changed by clicking on the address icon on the application toolbar.

In this example a plant with code 2517 has been defined, and it will be referenced throughout this book.



Notes:

- i. The copy function will not copy all the number ranges for the plant automatically. They have to be maintained separately.
- ii. To make a new plant operational, there may be some additional configuration required in other modules like FICO, MM, PP, SD and QM.
- iii. During practice, we recommend that consultants use existing SAP delivered demo plants to avoid configuration dependency of other modules.

4.1.2 Define Storage Locations

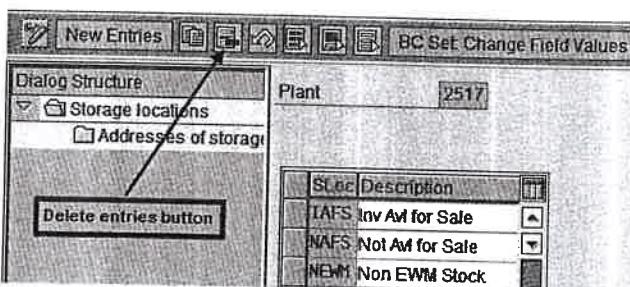
Storage location is the place where stock is physically kept. Both for nonwarehouse managed stock and warehouse managed stock, storage location is required.

Menu Path: SPRO | IMG | Enterprise Structure | Definition | Materials Management | Maintain Storage Location

In this transaction, the system requires that the plant number be entered in the pop-up screen. When the pop-up screen appears, enter the plant number and click on the green check mark. This will display all the existing storage locations defined for the plant. To add a new storage location, click on the "New Entries" button on the application toolbar, enter the storage location code and description, and save the entries.

To delete storage locations, select the nonrelevant entries and click on the delete entries button on the application toolbar.

In this example, we have created three storage locations for plant 2517. Storage locations IAFS and NAFS are defined to manage the inventory at the warehouse bin. Storage location NEWM is defined to manage nonwarehouse managed stock.

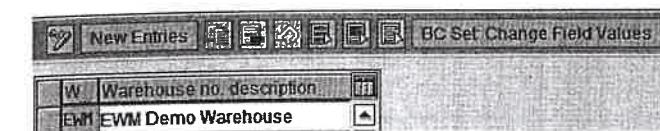


4.1.3 Define ERP Warehouse Number

Because EWM warehouses are configured in the SCM environment and cannot be directly linked to ERP storage locations, we have to first define the ERP warehouse and assign it to the ERP storage location. Later, the ERP warehouse has to be assigned to the EWM warehouse. This will form the link between ERP storage locations and the EWM warehouse. Here, the ERP warehouse will work only as a reference element between the storage locations and the EWM warehouse. No additional structure is required under the ERP warehouse.

Menu Path: SPRO | IMG | Enterprise Structure | Definition | Logistics Execution | Define, Copy, Delete, Check Warehouse Number | Define Warehouse Number

Click on the "New Entries" button on the application toolbar; enter the warehouse number and description, as shown below.



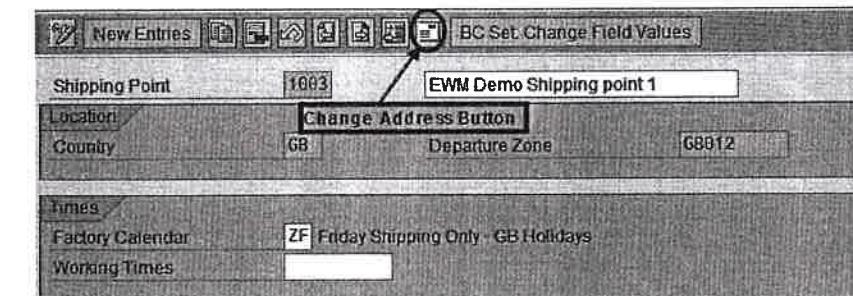
The ERP warehouse defined here will be assigned to storage locations in a later section of this chapter.

4.1.4 Define Shipping Point

In the ERP system, the shipping point is the organizational unit responsible for shipping process which is generally defined by the SD consultant and assigned to the plant. In this example we have defined one shipping point for plant 2517; however, more than one shipping point can exist for a plant.

Menu Path: SPRO | IMG | Enterprise Structure | Definition | Logistics Execution | Define, Copy, delete, check shipping point

Here, select the "Define shipping point" option, click on the "New Entries" button on the application toolbar; enter shipping point code, name, and address.



Notes:

- It is recommended to create the shipping point using the "Copy, delete, check shipping point" option. This will copy the required configuration from the "FROM" shipping point to the "NEW" shipping point.
- Even though ERP systems allow it, do not create a shipping point with the same ID as the plant code. Shipping points and plants will become locations in the EWM system. Hence, having the same code will cause an error during the data transfer.

4.1.5 Define Shipping Condition

Shipping conditions are used to define how the materials are shipped to the customers. They can be by road, air, customer pickup, and so on. Shipping conditions defined here are assigned to the customer master. When the sales order is created for the customer, the shipping condition will be copied to the sales order from the customer master. The system uses this information along with loading group to determine the shipping points in the sales order.

Menu Path: SPRO | IMG | Logistics Execution | Shipping | Basic Shipping Functions | Shipping Point and Goods Receiving Point Determination | Define Shipping Conditions

Click on the "New Entries" button on the application toolbar; enter the shipping condition and the description of the shipping condition.

Shipping Conditions	
SC	Description
01	Standard
02	Pick-up
03	Expedited
04	Truckload/Containers
05	Air
EW	EWM WH Pick-Up

4.1.6 Define Loading Group

"Loading group" refers to how the material is loaded to the delivery vehicle—for example, manually, by forklift, etc. Based on the combination of loading group and shipping condition, a shipping point is determined to load the materials. The loading group defined here is assigned to the material master. In order to determine the shipping point in the sales order, the appropriate loading group must be assigned to the material master.

Menu Path: SPRO | IMG | Logistics Execution | Shipping | Basic Shipping Functions | Shipping Point and Goods Receiving Point Determination | Define Loading Groups

Click on the "New Entries" button on the application toolbar; enter the loading group and the description.

Routes / Loading Groups	
LGGrp	Description
EWCR	Crane - EWM

4.1.7 Assign Plant to Company Code

A plant can belong to only one company code. To assign the plant to a company code follow the menu path SPRO | IMG | Enterprise Structure | Assignment | Logistics—General | Assign Plant to Company Code

Click on the "New Entries" button on the application toolbar; enter the company code and plant number and save your entries.

Assignment Plant - Company Code				
Co	Plant	Name of Plant	Company Name	Status
0001	2517	EWM Demo	SAP A.G.	

4.1.8 Assign Warehouse Number to Plant and Storage Location

Any storage location that is warehouse managed needs to be assigned a warehouse number. Whenever an IM transaction is performed, the system will check whether the entered plant and storage location is warehouse managed. If so, the system will copy the warehouse information to the transaction. Therefore, to avoid any errors, it is recommended that this assignment be completed before creating any transactional data.

Menu Path: SPRO | IMG | Enterprise Structure | Assignment | Logistics Execution | Assign Warehouse Number to Plant/Storage Location

Click on the "New Entries" button on the application toolbar; enter the plant, the storage location, the warehouse number and click on the "Save" button.

Plant	SLoc	W	Warehouse no. description
2517	IAFS	EWM	EWM Demo Warehouse
2517	NAFS	EWM	EWM Demo Warehouse

4.1.9 Assign ERP Warehouse to EWM Warehouse

In this menu we have to specify which of the ERP warehouses is linked to the EWM warehouse. This link is used to transfer materials and transactional data from the ERP warehouse to the EWM warehouse for further processing.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Additional Material Attributes | Assign Warehouse Number to Warehouse Number of Decentralized SCM System

The EWM warehouse number that needs to be linked to the ERP warehouse is entered here.

Assign Warehouse No. to Warehouses No. of Delivery S		
W	Whse no. description	WHN.DecS
EWM Demo Warehouse	SEW1	

Notes:

- i. Here, column WHN.DecS is just a text field. The entries entered in this column are not validated against the EWM system. Hence, wrong entries can cause problems during the data transfer.

4.1.10 Assign Shipping Points to Plants

Menu Path: SPRO | IMG | Enterprise Structure | Assignment | Logistics Execution | Assign Shipping Point to Plant

Here, select the plant, click on the "Assign" button on the application toolbar, select the shipping point that should be assigned to the plant, click on the green check, and save the entries. This will assign the selected shipping points to the plant.

Shipping Points -> Plants: Overview

Assign	Analyze error(s)	Delete	Select/Deselect	Deselected
Plant				
Shipping Points				
2517 EWM Demo				
1003	EWM Demo Shipping point 1			
1007	EWM Demo Shipping point 2			
1009	EWM Demo Shipping point 3			

4.1.11 Maintain Shipping Points for Outbound Deliveries

In order to determine shipping points for the outbound deliveries, the entries for combinations of shipping condition, loading group, and plant must be maintained. This assignment is used only for outbound deliveries.

Shipping Point Determination					
SC	Lsrp	Pint	PrShP	MShPt	MShPI
EW	EWCR	2517	1009	1007	1003

Menu Path: SPRO | IMG | Logistics Execution | Shipping | Basic Shipping Functions | Shipping Point and Goods Receiving Point Determination | Assign Shipping Points

Here, click on the "New Entries" button on the application toolbar; enter the shipping condition, the loading group, the plant, and the shipping points. The shipping point entered in the "PrShP" column will be the default in the sales order. However, shipping points entered in the "MShPt" column can be selected manually in the sales order.

4.1.12 Maintain Goods Receiving Points for Inbound Deliveries

Here, the shipping points that are used for goods receipt are assigned. Only one shipping point per storage location can be assigned. In general, the goods receipt and goods issue points are represented by the same shipping point. In such cases, no separate shipping points are defined for goods receipts.

Menu Path: SPRO | IMG | Logistics Execution | Shipping | Basic Shipping Functions | Shipping Point and Goods Receiving Point Determination | Assign Goods Receiving Points for Inbound Deliveries

Click on the "New Entries" button on the application toolbar; enter the plant, the storage location, the shipping point, and click on the "Save" button to save the changes.

Assign Shipping Point as Goods Receiving Point to Plant/Site			
Plant	Stor. Loc.	Shipping P.	Sequence Number
2517	IAFS	1009	
2517	NAFS	1009	
2517	NEWM	1003	

4.2 Logistics Execution (LE) Requirements

In addition to org elements configuration, it is also necessary to define some additional configuration for EWM in the ERP logistics execution section. Table 4.2A covers an overview of the configuration required in the LE section.

S. No	Configuration Check List	TCode	Transportable
1	Define number range interval for unchecked deliveries	VN01	No
2	Assign unchecked delivery number range for outbound delivery type	SPRO	Yes
3	Assign unchecked delivery number range for inbound delivery type	SPRO	Yes
4	Define Delivery Split by Warehouse Number	SPRO	Yes
5	Activate Enhancements for Service Parts Management	SPRO	Yes
6	Maintain Extended Warehouse Management-Specific Parameters	SPRO	Yes

Table 4.2A

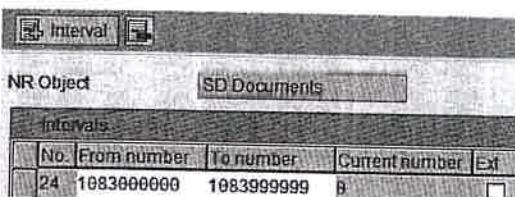
4.2.1 Define Number Range Interval for Unchecked Deliveries

In EWM, unchecked deliveries are used for planning purpose. They cannot be used for shipping or billing. In a direct delivery scenario, an unchecked delivery is created when the sales order is saved in CRM. Transferring these deliveries to the EWM system will lend visibility to the future workload and help in the planning of resources in the warehouse.

Creating a separate number range for unchecked deliveries is optional. To keep the actual deliveries separate from unchecked deliveries, it is recommended that a separate number range interval for unchecked deliveries be defined. This will help to easily identify unchecked deliveries by looking at the delivery number.

Menu Path: SPRO | IMG | Logistics Execution | Shipping | Deliveries | Define Number Ranges for Deliveries or TCode VN01

Click on the "Change Intervals" button to add a new number range. To define a new number range, click on the "insert interval" button on the application toolbar. The new number range should not overlap with a previously defined number range.



The number range defined here is assigned to an inbound and outbound delivery type in the later section.

4.2.2 Assign Unchecked Delivery Number Range for Outbound Delivery

Type

Here, assign the unchecked delivery number range to the outbound delivery type. Whenever an unchecked or temporary outbound delivery is created, the system will assign the delivery number from the number range assigned here.

Menu Path: SPRO | IMG | Logistics Execution | Service Parts Management (SPM) | Outbound Process (SPM) | Unchecked Deliveries | Maintain Deviating Number Range for Unchecked Deliveries

Number Ranges for unchecked Deliveries			
DNr	Description	Tmp	Reuse
LF	Outbound Delivery	24	<input checked="" type="checkbox"/>

4.2.3 Assign Unchecked Delivery Number Range for Inbound Delivery

Type

Temporary inbound deliveries are similar to unchecked outbound deliveries. Whenever a temporary inbound delivery is created, the system will assign a number to the inbound delivery from this number range.

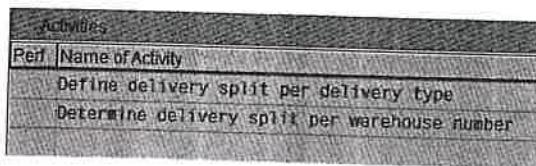
Menu Path: SPRO | IMG | Logistics Execution | Service Parts Management (SPM) | Extended Inbound Delivery Processing (SPM) | Settings for SPM Inbound Delivery Processing

Here, select the appropriate inbound delivery type, click on the "Details" button on the application toolbar, and enter the number range.

4.2.4 Define Delivery Split by Warehouse Number

Sales document may contain materials that need to be delivered from EWM warehouse, ERP warehouse- and non-warehouse-managed storage locations. Because EWM-specific delivery items are picked and post goods issued in the EWM system, a unique delivery must be created for materials belong to the EWM warehouse. Using the delivery split options, it can be ensured that, during the delivery creation process, a unique delivery is created for each warehouse, and only EWM-specific deliveries are sent to the EWM system. If the split indicator is only maintained for the delivery type, no individual delivery will be created for the warehouse number. Therefore delivery split has to be defined both per delivery type and per warehouse number.

Menu Path: SPRO | IMG | Logistics Execution | Shipping | Deliveries | Define Split Criteria for Deliveries | Delivery Split by Warehouse Number



Define delivery split for the delivery type: To define delivery split for the delivery type, click on "Define delivery split per delivery type," select the required delivery types (mainly EL and LF) and check the delivery split—WhNo check box and save the entries.

Delivery Split for Warehouse Number per Delivery Type		
Delivery Type	Description	Delivery Split - WhNo
EL	Inbound Delivery	<input checked="" type="checkbox"/>
LF	Outbound Delivery	<input checked="" type="checkbox"/>

Define delivery split by warehouse number: To define delivery split by warehouse number, click on option "determine delivery split per warehouse number," select the ERP warehouse defined for EWM warehouse, check the delivery split by warehouse number checkbox, and save the entries.

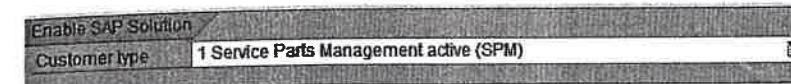
Delivery split by warehouse number		
Warehouse	Warehouse no. description	Deliv. split by whse number
EWM	EWM Demo Warehouse	<input checked="" type="checkbox"/>

4.2.5 Activate Enhancements for Service Parts Management (SPM)

One of the technical requirements of the EWM system is that SPM has to be active in the ERP system. Before activating SPM in the ERP system, all open business documents such as sales orders, deliveries, and invoices must be processed. Once SPM is activated, it may not be possible to process any open business documents created prior to activation.

Menu Path: SPRO | IMG | Logistics Execution | Service Parts Management (SPM) | Activate Enhancements for Service Parts Management (SPM) | Activate Enhancements for Service Parts Management

Click on "New Entries" button on the application toolbar; select the customer type as service parts management active. It will display a warning message. If all business documents are closed and SPM activation is ready, click on "Yes".



4.2.6 Maintain Extended WM-Specific Parameters

This configuration is required only for EWM-specific warehouses. It should not be activated for ERP warehouses. The WM system in ERP is activated by assigning the plant/storage location to the warehouse number. In this configuration, by setting the warehouse number to "ERP with EWM," as shown in the screenshot below, it is ensured that the warehouse stock is managed in the EWM system and not in the ERP WM system.

Menu Path: SPRO | IMG | Logistics Execution | Service Parts Management (SPM) | Integrate SPM with Other Components | Maintain Extended WM-Specific Parameters

In this configuration, enter the EWM warehouse number and maintain the values as follows: "ERP with EWM" for Ext. WM; "Queued and Serialized Asynchronous" for Comm. WM; check the UD check box; and for Dist. Mode, select "Distribution Immediately at Document Creation."

Extended Warehouse Management System					
W	Ext. WM	Comm. WM	UD	Dist. Mode	SN Dec. WM
EWM	ERP with EWM	Queued and Serialized Asynchronous	<input checked="" type="checkbox"/>	Distribution Immediately	<input checked="" type="checkbox"/>

Thus, in column Ext. WM, it is specified that the ERP warehouse is linked to the EWM warehouse. In case the warehouse is only an ERP warehouse, the entry selected should be "ERP with local WM."

The "Comm. WM" column specifies how the communication takes place between ERP and EWM warehouses.

Column "UD" controls whether unchecked deliveries are distributed to the warehouse.

The "Dist. Mode" setting is used to specify when an inbound/outbound delivery is distributed to the decentralized WMS. This setting is valid for all inbound/outbound deliveries that are processed in the relevant warehouse number.

"SN DEC. WM" indicator controls whether serial numbers can be maintained in the EWM system. Set this indicator if you want to maintain serial numbers in EWM. In this case, you should ensure that at the

organization level, the serial numbers are unique across the system boundaries. In the SAP system, there is no cross-system check of serial numbers entered.

4.3 Material Master Enhancements

In ERP, material master data is one of the most important data elements for every module. Along with configuration, it drives the processes in the system. Since EWM is a different system, all master data settings for EWM are maintained in the EWM system under product master. Hence, maintaining EWM-specific data in the ERP material master is not required. But if, for various reasons a client wants to maintain some data elements (like handling unit type, serial number profile, or handling unit group) centrally in the ERP system and wants to transfer such information to the EWM system, they can do so by activating the material master enhancements.

When the material master enhancements are activated, the system will enable two additional views in the material master, called *WM Packaging* and *WM Execution*, along with a few additional fields in the Unit of Measure view. This can be used to maintain certain data centrally in the ERP system and transfer it to the EWM system.

During the material master data transfer from ERP to EWM, the system will transfer only data that is maintained in basic data view 1, basic data view 2, UOM view, WM packaging, and WM execution views. No data from other views will be considered during the data transfer. The data transfer will be done only through CIF technology.

Table 4.3A gives an overview of the configuration required to activate the material master enhancement and the configuration required to populate the values in the additional views.

S. No	Configuration Check List	TCode	Transportable
1	Material Master Enhancements or Activation of BC Sets	SCPR20	Yes
2	Maintain Additional Screen sequences	OMT3R	Yes
3	Attribute Values for Additional Material Master Fields like HU Type, material group etc.	SPRO	Yes

Table 4.3A

4.3.1 Material Master Enhancements or Activation of BC Sets

By default, WM Packaging and WM Execution views are not activated in the ERP system. SAP has developed a new Business Configuration (BC) set named "/SPE/MATERIAL_SCREENS," which has the entire configuration required for WM Packaging and WM Execution views. Activating this BC set will make these views visible in the material master to maintain the data in ERP. SAP stores these data in the MARA and MARM tables. Tables 4.3.1A, 4.3.1B, and 4.3.1C give an overview of all EWM-specific fields available in the material master after activating the BC set.

Field Description	Table Name	Field Name
Handling Unit Type	MARA	HUTYP
Standard HU Type	MARA	HUTYP_DFLT
Max. Allowed Capacity of Packaging Material	MARA	MAXC
Oversize Tolerance of the Handling Unit	MARA	MAXC_TOL
Form Name	MARA	PS_SMARTFORM
Variable Tare Weight	MARA	TARE_VAR
Max. Packing Length of Packaging Material	MARA	MAXL
Unit of Measure for Max. Packing Len/Wid/Hght	MARA	MAXDIM_UOM
Max. Packing Width of Packaging Material	MARA	MAXB
Max. Packing Height of Packaging Material	MARA	MAXH

Field Description	Table Name	Field Name
Handling Indicator	MARA	HNDLCODE
Warehouse Material Group	MARA	WHMATGR
Warehouse Storage Condition	MARA	WHSTC
Standard HU Type	MARA	HUTYP_DFLT
Serial Number Profile	MARA	SERIAL
Pitiable	MARA	PITFERRABLE
Relevant for Hazardous Substances	MARA	HAZMAT
Quarantine Period	MARA	QQTIME
Time Limit for Quarantine Period	MARA	QQTIMEUOM
Quality Inspection Group	MARA	QGRP

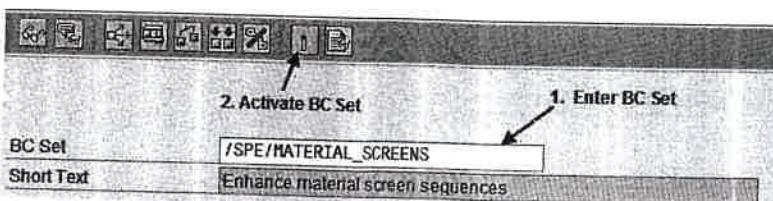
Field Description	Table Name	Field Name
Remaining Volume after Nesting (in Percentage)	MARM	NFST_FTR
Max. Stacking Factor	MARM	MAX_STACK
Capacity Usage	MARM	CAPAUSE
EWM-CW Category of Unit of Measure	MARM	TY2TQ

Notes:

- i. After activating the BC sets and maintaining the screen sequence as described in section 4.3.1.1 and 4.3.1.2, if the above fields are not visible in the material master, it may be necessary to apply SAP note 958143.
- ii. Activating the BC set might change the existing screen sequence. Hence, you may need to rearrange the appropriate screen sequence, as shown below in 4.3.1.2 (TCode OMT3R).

4.3.1.1 Activate Standard BC Set

To activate the BC set, enter TCode SCPR20, enter /SPE/MATERIAL_SCREENS in the BC set field, and click on the "Activate" button on the application toolbar. This will activate the entered BC set and add the additional views and fields in the material master.



4.3.1.2 Maintain Additional Screen Sequence

After activating the BC set, it is important to adjust the screen display sequence. Prior to adjusting the screen sequence, the appropriate screen sequence for the material master should be identified. To do this, go to transaction OMT3E or follow the menu path SPRO | IMG | Logistics—General | Material Master | Configuring the Material Master | Assign Screen Sequences to User/Material Type/Transaction/Industry Sector. Here, double-click on option "Transaction screen reference" and locate the screen reference for the material master creation transaction.

Dialog Structure			
	TCode	Transaction Text	SRef trans.
<input type="checkbox"/> Screen sequence control	MU01	Create Material &	01
<input type="checkbox"/> Transaction screen reference	MH02	Change Material &	01
<input type="checkbox"/> User screen reference	MH03	Display Material &	01
<input type="checkbox"/> Material type screen reference	MH11	Schedule Creation of Material &	01
<input type="checkbox"/> Industry sector screen reference			

Once the screen reference is identified, double click on "Screen sequence control" and locate the appropriate screen sequence number. In most cases, it will be 21.

Dialog Structure		SRef trans.	SRef user	SRef matl type	SRef industry	SSq	Screen seq. description
<input type="checkbox"/> Screen sequence control		01	-	-	-	21	Std Ind. (short) tab pages
<input type="checkbox"/> Transaction screen reference		01	-	MERS	-	12	Manufacturer Parts
<input type="checkbox"/> User screen reference		01	-	LEFR	-	8E	Std Ind Tabs for Emploees
<input type="checkbox"/> Material type screen reference		03	-	-	-	23	Std retail tab pages
<input type="checkbox"/> Industry sector screen ref							

Once the screen sequence number is identified, the screen number in TCode OMT3R can be adjusted. This transaction can also be accessed from menu path SPRO | IMG | Logistics - General | Material Master | Configuring the Material Master | Maintain Order of Main and Additional Screens

Here, select the appropriate screen sequence, click on the "Details" button on the application toolbar, and hit the enter key. This will display the screen number, screen description, and each screen's assigned number. The screen numbers represent the views in the material master. The number represents in what sequence the views are arranged in the material master. The numbers for WM packaging and WM execution view can be changed or assigned as needed.

Order of Main Screens		Order of Add'l Screens	
Screen no.	Screen description	No.	Sc
07	Basic Data 1	10	40 Descriptions
08	Basic Data 2	20	41 Units of Measure
57	WM Packaging	30	44 Additional EANs
56	WM Execution	40	50 Document Data
23	Classification	50	42 Basic Data Text

These changes can be verified in the material master. If the changes are not reflected in the material master, verify the configuration. If necessary, reactivate the BC set and follow the above instructions. If this does not solve the problem, it may be necessary to apply the SAP OSS notes.

Classification		WM Packaging	WM Execution	Sales
Material	EWM Sample Material			
RN 1120				
General Packaging	Maximum Packaging			
HUTyp	Max. Pack Length			
Stand. HU Type	Max. Pack Width			
<input type="checkbox"/> Var. Tare Weight *	Max. Pack Height			

4.3.2 Attribute Values for Additional Material Master Fields

Once the WM Packaging and WM Execution views are activated, several fields will be enabled in these views to maintain data centrally in the ERP system. This information will be transferred to EWM system as part of the master data transfer in the CIF process. In order to populate the values in these two views, the following configuration is required in the ERP system.

4.3.2.1 Define Handling Unit (HU) Type

HU type is used to classify packaging materials and handling units with the same physical properties. Examples of HU types include steel pallet, cardboard box, wooden pallets, etc.

The HU type maintained in the ERP material master under WM packaging view can be transferred to the EWM as part of CIF. If maintaining HU types in the ERP material master is not a requirement, they can be maintained directly in the EWM system in the product master.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Additional Material Attributes | Attribute Values for Additional Material Master Fields | Define Handling Unit Type

Click on the "New Entries" button on the application toolbar; enter the HU type and the description.

Handling Unit Types	
HU Type	Description
STPL	Steel Pallet
WDPL	Wooden Pallet
CBOX	Cardboard Box

4.3.2.2 Define Warehouse Storage Condition

Storage conditions are specified when the materials need to be stored in specific conditions in the warehouse, for example, at a specific temperature. This information is useful for the warehouse operator when the goods are stored in the warehouse.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Additional Material Attributes | Attribute Values for Additional Material Master Fields | Define Warehouse Storage Condition

Click on the "New Entries" button on the application toolbar; enter the WH storage condition and the appropriate description.

Warehouse Storage Condition	
WHS	Description
01	Cool
02	Dry

4.3.2.3 Define Warehouse Material Group

Warehouse material groups defined in this configuration are assigned to the ERP material master and used in EWM to specify that certain materials should always be stored in the same way.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Additional Material Attributes | Attribute Values for Additional Material Master Fields | Define Warehouse Material Group

Click on the "New Entries" button on the application toolbar, enter the material group and description, and click on the "Save" button.

Warehouse Material Group	
WHMatG	Description
HUMS	HU Managed Stock
NHUM	Non HU Managed stock

4.3.2.4 Define Handling Indicator

The handling indicator is used to specify how the material should be handled in the warehouse. Examples include fragile materials, hazardous materials, etc.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Additional Material Attributes | Attribute Values for Additional Material Master Fields | Define Handling Indicator

Click on the "New Entries" button on the application toolbar; enter the handling indicator and the description.

Handling Indicator	
Hand.ind	Description
0001	Fragile handle with Care
0002	Transport in Upright Position
0003	hazardous substance

4.3.2.5 Define Quality Inspection Group

Quality inspection groups are used to group materials together that have to be inspected in a similar fashion. These groups are later used to simplify the maintenance of inspection rules in EWM. When the material is transferred to the EWM system, the quality inspection group is automatically transferred as well.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Additional Material Attributes | Attribute Values for Additional Material Master Fields | Define Quality Inspection Group

Click on the "New Entries" button on the application toolbar; enter the quality inspection group (4 char code) and the description.

Quality Inspection Group	
QualInsGrp	Description
EXSP	Goods Receipts from External Supplier
PROD	Goods Receipt from Production

4.4 qRFC and CIF Configuration

Today, most applications are designed to communicate with other applications through an interface called Remote Function Call (RFC). RFC can be used to start an application remotely or to execute particular functions remotely. The main limitation of the RFC was that both the sending and receiving applications needed to be active to communicate and transfer data. Thus evolved the next generation of RFC, called *queued Remote Function Call* (qRFC). The main advantage of qRFC is that the receiving system doesn't need to be online at the time of data transfer. If the receiving system is not available, the data will be queued and later processed once the receiving system becomes available. SAP uses qRFC with inbound and outbound queues to transfer data between ERP and EWM systems.

Notes:

- i. Some configurations may require additional authorization or Basis team support.
- ii. Most of the configuration done in this section is not automatically transportable. Even though some of it can be transported manually, it is recommended to maintain them manually in each system.
- iii. Some configurations might already exist, if the SCM system is already linked to the ERP system as a part of APO requirements.

4.4.1 Settings Required for Both CIF and qRFC

CIF and qRFC settings are required to transfer the master and transactional data between ERP and EWM systems. Table 4.4.1A gives an overview of the settings required to activate both CIF and qRFC in ERP systems.

Table 4.4.1A - Settings Required for Both CIF and qRFC

S. No	Configuration Check List	TCode	Transportable
1	Name Logical Systems for ERP and EWM Systems	SPRO	Yes
2	Assign ERP Logical System to a Client	SPRO	No
3	Assign EWM Release Version to EWM Logical System	SPRO	Yes
4	Create RFC User for RFC Connection	SU01	No
5	Define RFC Destination for EWM Logical System	SM59	No
6	Assign RFC Destinations to Different Application Cases	SPRO	No
7	Assign RFC Destinations to Method and BAPI Calls	IBD97	No

4.4.1.1 Name Logical Systems for ERP and EWM Systems

During the data transfer, a system uses the "logical systems" to identify the sending and receiving systems. Therefore, we have to define two logical systems: one for the ERP system (sending) and the other for the EWM (receiving) system.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Basic Settings for Setting Up the System Landscape | Name Logical System

Click on the "New Entries" button on the application toolbar; enter the logical system and the name. Click on "Save" to save the entries.

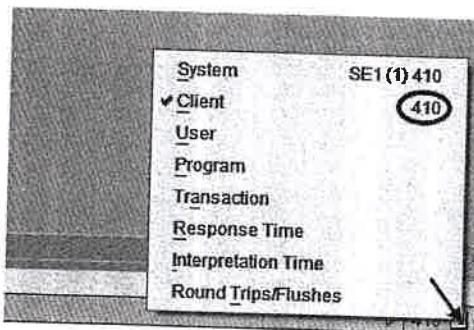
Here, we have defined two logical systems. In the name, the first three letters represent the system ID, and the last three digits represent the client number:

- i. SE1CLNT410—ERP system
- ii. SA1CLNT001—EWM system

Logical Systems	
Log System	Name
SA1CLNT001	SCM EWM Sandbox Client 001
SE1CLNT410	ERP Sandbox Client 410

4.4.1.2 Assign ERP Logical System to a Client

Once the logical systems are defined, the next step is to assign the ERP logical system to the client number. Here, the client number refers to the ERP client number, which will be connected to the EWM system. In SAP, this can be found at the right-hand corner of the status bar, as shown below.



Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Basic Settings for Setting Up the System Landscape | Assign Logical System to a Client

Click on the "New Entries" button on the application toolbar; enter the client number, description, and logical system, and set the client role as Customizing.

The dialog box shows the following fields:

- Client: 410 ERP Sandbox Client 410
- City: [empty]
- Logical system: SE1CLNT410 (circled)
- Std currency: USD
- Client rule: C Customizing

Under 'Changes and Transports for Client Specific Objects':

- Changes without automatic recording
- Automatic recording of changes (circled)
- No changes allowed
- Changes w/o automatic recording, no transports allowed

Under 'Cross-Client Object Changes':

- Changes to Repository and cross-client Customizing allowed

Under 'Protection: Client Copier and Comparison Tool':

- Protection level 0: No restriction

Under 'CATT and eCATT Restrictions':

- X eCATT and CATT Allowed

Notes:

- i. Changes to this setting have to be discussed with the SAP Basis team.
- ii. Assignment of a client number to the logical system is required only for the sending system. In the ERP system, ERP system is considered as a sending system.
- iii. In this configuration, you may have to define settings required for changes for client-specific objects, cross-client objects, and CATT and eCATT restrictions. It is important to discuss this with the Basis team before activating these settings.

4.4.1.3 Assign EWM Release version to EWM Logical System

SAP has released multiple versions of EWM software. In this menu, the appropriate release version must be assigned to the EWM logical system. This is a technical requirement for the data transfer.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Basic Settings for Setting Up the System Landscape | Specify SAP APO Release

Click on the "New Entries" button on the application toolbar; select the EWM logical system defined, always enter Syst.type as "SAP_APO," and select the appropriate release version of the SCM system.

Log System	Syst type	Release
SE1CLNT001	SAP_APO	51

Notes:

- i. This is a cross-client setting. Changes made in one client will apply to all clients in that system.

4.4.1.4 Create RFC User for RFC Connection

During the data transfer, the system uses an internally defined user ID and not the user ID of the user who created the data in the ERP system. Hence, a RFC user ID must be created for data transfer.

An RFC user ID is usually created by the basis team, with the user type "S Service." The RFC user must be assigned to S_BI-WX_RFC, S_ENTW_SHOW or SAP_ALL profiles.

To create a new user ID, enter the TCode SU01, enter user name and password, select the user type as "S Service," add all the above mentioned profiles under the "Profile" tab, and maintain all other required fields values (like name, address, etc.).

The screenshot shows the SAP Fiori interface for creating a new user. The top navigation bar includes 'Logon data', 'Details', 'Parameters', 'Roles', and 'Profiles'. The 'User Type' is set to 'S Service'. Below this, there are tabs for 'Logon data', 'Details', 'Parameters', 'Role', 'Profiles', and 'Groups'. The 'Assigned Authorization Profiles' section lists two profiles: 'S_BI_WX_RFC' (RFC Extractor SAP Business Information Warehouse) and 'SAP_ALL' (All SAP System authorizations).

Notes:

- In order to successfully process the data, the same user ID has to be created in the EWM system with the same password.
- Consult the Basis team before creating a RFC user for security reasons.

4.4.1.5 Define RFC Destination for EWM Logical System

To transfer the data from an ERP to EWM system, it is necessary to define a RFC destination for the EWM system and define technical parameters like the IP address of the destination, logon details, load balancing, and so on. Naming the RFC destination with the same name as the EWM logical system is recommended.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Basic Settings for Setting Up the System Landscape | Set Up RFC Destination or TCode SM59

Here, click on ABAP Connections, choose "Create," and enter the connection type as 3.

The screenshot shows the SAP transaction SM59 for defining RFC destinations. The table lists connections under 'ABAP Connections' and 'HTTP Connections to External Server'. The connection type for the first entry is set to 3.

In the technical tab, specify the target host, system number, host name, or IP address.

The screenshot shows the 'RFC Destination' configuration screen. The 'RFC Destination' field is set to 'SA1CLNT001'. The 'Connection Type' is selected as '3 ABAP Connection'. The 'Description' tab contains three entries: 'Description 1' (EWM Client), 'Description 2' (empty), and 'Description 3' (empty). The 'Logon & Security' tab is highlighted, showing the 'Target Host' as 'sapsandbox1', 'System Number' as '02', and 'Save as' options for 'Hostname' (radio button selected) and 'IP Address'.

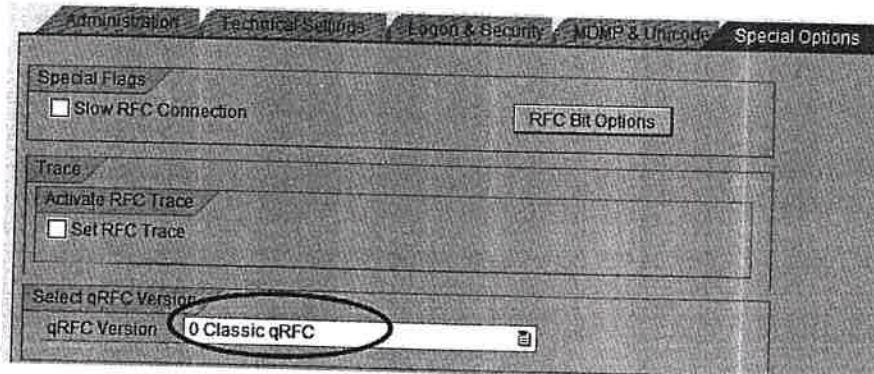
In the "Logon & Security" tab, enter the language as EN for English, the client number (EWM client), the user (RFC user ID) and the password (RFC user password).

The screenshot shows the 'Logon & Security' settings for the RFC destination. It includes sections for 'Security Options' (Trusted System set to 'No', Logon Screen checkbox unchecked), 'Status of Secure Protocol' (SNC selected), and 'Authorization for Destination' (empty). The 'Logon' section displays the following details:

Language	EN
Client	001
User	RPCUSER
PW Status	changed
Password	*****

A checkbox for 'Current User' is also present.

In the "Special Options" tab, for qRFC version, select "Classic qRFC." The remaining values can be set to default values. Logon details defined here will be used during the transfer of data.



After creating RFC destination, click on "Connection Test Button" on the application toolbar to test the connection. In order to connect the EWM system successfully, the RFC user ID defined here must exist in the EWM system with the same user ID and password.

Connection Test SA1CLNT001	
Action	Result
Logon	22 msec
Transfer of 0 KB	1 msec
Transfer of 10 KB	1 msec
Transfer of 20 KB	1 msec

Notes:

- i. The Basis team must be consulted before making any changes to these settings.

4.4.1.6 Assign RFC Destinations to Different Application Cases

Integration via CIF is mostly based upon data transfers between the systems that run in the background without user interaction. However, in some cases (like Availability Check), it may be necessary for the user to access data in the target system, using a synchronous remote function call.

There are different cases available for RFC destinations. They are Availability Check (AC), Display Application Log of Another System (RL), Display qRFC Monitor of Another System (RQ), and Debugging (DG). More suitable cases for EWM are RL, RQ, and DG.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Basic Settings for Setting Up the System Landscape | Assign RFC Destinations to Different Application Cases

Click on the "New Entries" button on the application toolbar; select the EWM logical system, enter the application case and RFC destination, and save the entries.

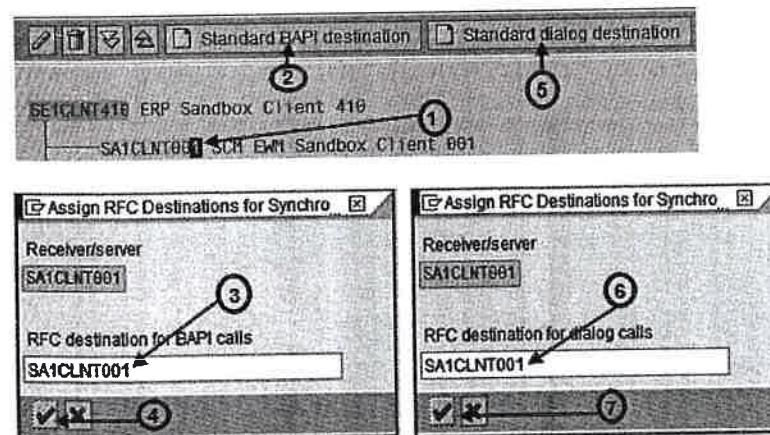
Log System	Appl	RFC Destination
SA1CLNT001	AC	SA1CLNT001
SA1CLNT001	RL	SA1CLNT001
SA1CLNT001	RQ	SA1CLNT001
SA1CLNT001	DG	SA1CLNT001

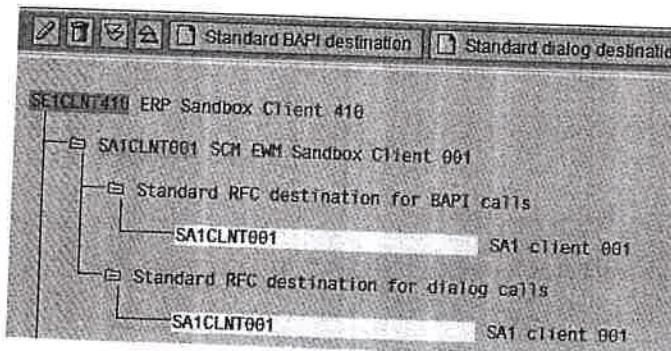
4.4.1.7 Assign RFC Destinations to Method and BAPI Calls

This section deals with assigning the RFC destinations for "synchronous BAPI calls" and "dialog methods."

To assign the BAPI destination to the logical system in the ERP system, enter TCode BD97, click on the logical EWM system, click on the standard BAPI destination button on the application toolbar, enter the RFC destination for BAPI calls, and click on the green check. This will assign the RFC destination for the BAPI calls, as shown below in the figure.

To assign the dialog destination, click on the logical system of the EWM system, click on the standard dialog destination button on the application toolbar, enter the RFC destination for dialog calls, and click on the green check. This will assign the RFC destination for the dialog calls.





4.4.2 qRFC Specific Settings

Table 4.4.2A shows an overview of settings required to activate qRFC in the ERP system.

Table 4.4.2A - qRFC Specific Settings			
S. No	Configuration Check List	TCode	Transportable
1	Maintain qRFC Monitor Settings for QIN Scheduler	SMQR	No
2	Maintain qRFC Monitor Settings for Qout Scheduler	SMQS	No
3	Maintain qRFC administration Settings	SMQE	No
4	Define Controller for RFC Queue Processing	SPRO	No
5	Create Distribution Model View to Transfer Delivery Information from ERP to EWM	BD64	No
6	Assign BAPIs and Message Types to Distribution Model View	/n/SPE/OL19	No
7	Define Log Recording for In and Out Messages	SPRO	No
8	Activate Detailed Navigation for Logs in qRFC Monitor	SPRO	No

4.4.2.1 Maintain qRFC Monitor Settings for QIN Scheduler

Normally, when the data records (LUW/inbound qRFC messages) are received from the EWM system they are automatically written to the inbound queues of the ERP system. However, they are not executed automatically in the ERP system. Each application in the ERP system can activate these queues using APIs. To avoid each application having to write a specific scheduler, qRFC supports a general scheduler, the QIN scheduler. The QIN scheduler looks for registered queues in the database tables and processes them. If a queue is not registered, it is not processed.

To register the QIN scheduler, enter the TCode SMQR, click on the "Registration" button on the application toolbar, enter Queue name = *, Mode = D, Max. Runtime = 30, USERDEST = <blank>, Attempts = 30, Pause = 300, and Scheduler Monitoring = 0.

Queue Name: Here, enter particular queue name, or enter * for all queue name. * will allow the system to process all the queues.

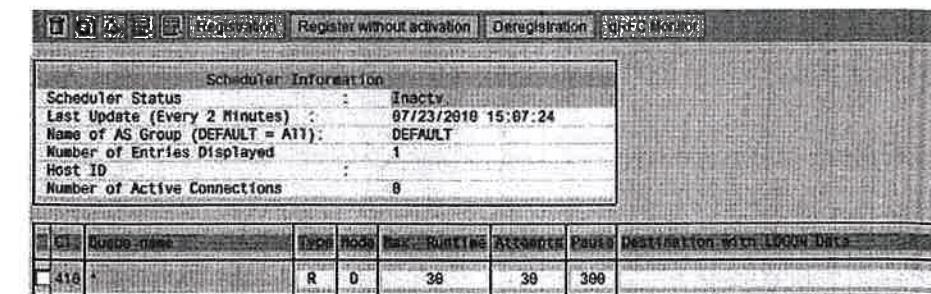
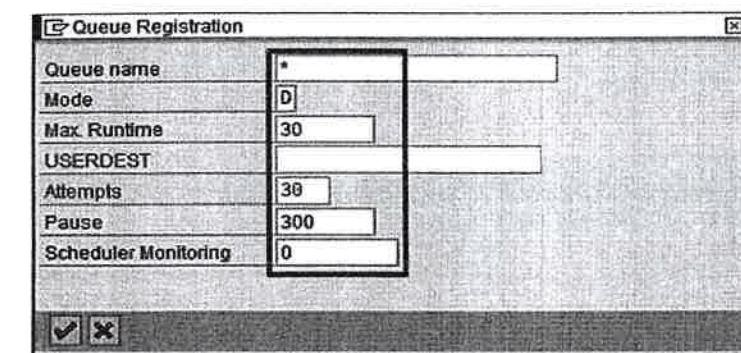
Mode: Mode refers to execution mode (i.e., D for Dialog work process and B for Batch work process).

MAX Runtime: This refers to maximum runtime that the QIN scheduler uses for activating a destination; default value is 30 seconds.

USERDEST: This field refers to the RFC destination with LOGON data. This field value can be left blank.

Attempts: Number of repetitions for failed calls; default value: 30.

Pause: Wait time between individual calls; default value: 300.



4.4.2.2 Maintain qRFC Monitor Settings for QOUT Scheduler

Like the QIN scheduler, ERP system has a QOUT scheduler to manage the outgoing qRFC messages. The QOUT scheduler was introduced to improve the performance when sending the qRFC messages.

Here, available options at the time of registration are as follows:

Type: Following types are available. The appropriate type for the QOUT scheduler is R.

- i. R: The destination is registered; that is, it is started using the QOUT scheduler.
- ii. U: The destination is not registered; that is, it is not processed.
- iii. N: The destination is not registered using the QOUT scheduler; it is sent at the time of the COMMIT WORK by the program.

Max. Connections: Number of connections used to send the qRFC.

Max. Runtime: Time allotted to process the destination for the QOUT scheduler. The default value is 60 seconds.

To maintain the QOUT scheduler enter the TCode SMQS, click on the "Registration" button on the application toolbar, enter RFC destination = <EWM system RFC destination>, MaxConn = Allowable number of processes depending on app servers, Maxtime = 3600, scheduler_Watch = 0, and save the entries.

CIF	Destination	Type	W/o RFC	Max Conn	Max Runtime	Status
418	SA1CLNT001	R		10	60	INACTIVE

4.4.2.3 Maintain qRFC Administration Settings

The qRFC monitor makes it possible to monitor the faulty queue entries, which might occur during delivery data transfer; view the contents of the queues; and carry out follow-up processing for the objects affected. To do this, one must register the program /SPE/QUEUE_DISPLAY_TOOLS as the display program for DLV*, EWM* and QM* queues.

In case of CIF data transfer, if faulty queue entries occur, the CIF queue display can be used to view the contents of the queues and carry out follow-up processing for the objects affected. It is also possible to setup qRFC administration to make it possible to call the CIF queue display from the qRFC monitor.

To do this, the program CIFQE02 must be registered as the display program for CF* queues, as shown below.

To register the programs, enter the TCode SMQE, click on EDIT menu, register display programs, and enter the queue name and program names mentioned above.

qRFC Administration

CF*	P		CIFQE02
DLV*	P		/SPE/QUEUE_DISPLAY_TOOLS
EWM*	P		/SPE/QUEUE_DISPLAY_TOOLS
QM*	P		/SPE/QUEUE_DISPLAY_TOOLS

4.4.2.4 Define Controller for RFC Queue Processing

In qRFC, delivery data is stored temporarily in RFC queues, and the queue type (inbound or outbound) determines whether queue processing is controlled by the sending (ERP) or receiving (EWM) system.

In this configuration, the ERP system defaults the queue type as "Inbound Queue." This setting means that queue processing is controlled by the EWM system. This setting is recommended if a large amount of data is expected or if the EWM system does not have sufficient work processes available to process the queue. If there are not enough work processes available in the EWM system, the data is saved upon entering the EWM system and then processed at a later time.

Queue type "outbound" means that queue processing is controlled by the ERP (sending) system. This may lead to problems if the EWM (receiving) system does not currently have enough free work processes to process the queue. Therefore, it is recommended to set the queue type as inbound.

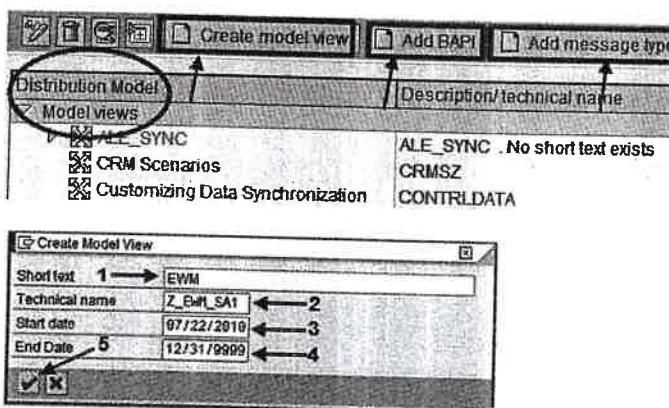
Menu Path: SPRO | IMG | Logistics Execution | Service Parts Management (SPM) | Integrate SPM with Other Components | Define Queue for Transfer to Extended WM

Receiver	Queue Type	Agg SQueue	MQQueue Act	MQQueue Par
SA1CLNT001	Inbound Queue	No Aggregation	Mass queue disable	1

4.4.2.5 Create Distribution Model View to Transfer Delivery Information from ERP to EWM

A distribution model is a group of BAPIs and message types used to move outbound and inbound deliveries from ERP to EWM systems. The first step in defining the distribution model is creating or naming the distribution model view.

In BD64 transaction, click on the "Create model view" button on the application toolbar, enter the name for the distribution model in the short text field, enter the technical name, enter a valid start date and end date, and click on the green check mark. This will create a distribution model view.

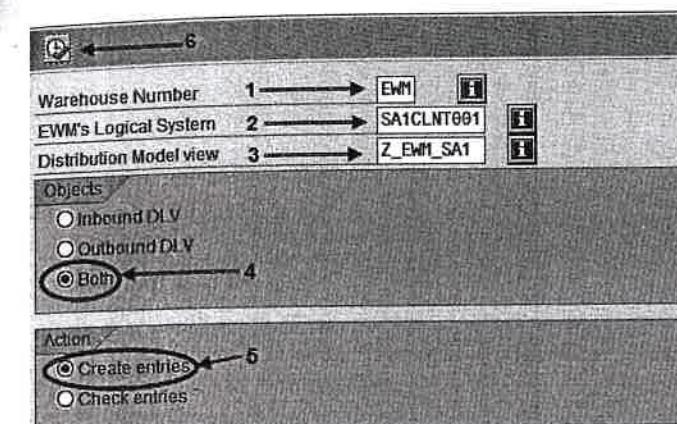


4.4.2.6 Assign BAPIs and Message Types to Distribution Model View

Once the distribution model view is created, the transaction /n/SPE/OL19 can be used to automatically generate the required object types (BAPIs) and methods (Message Types) for the delivery-related data transfer.

To automatically generate the BAPIs and methods automatically in the distribution model view, go to transaction /n/SPE/OL19, enter the ERP warehouse number, select the EWM's logical system, select the distribution model view, select the radio button "Both" for objects section, select the radio button "Create Entries," for the action section and click on the "Execute" button.

This will assign the BAPIs and methods required to transfer both inbound and outbound deliveries.



Go to transaction BD64 to verify the results.

EWM	Z_EWM_SA1
ERP Sandbox Client 410	SE1CLNT410
SCM EWM Sandbox Client 001	SA1CLNT001
OutboundDeliverySPE.DeliveryChange	BAPI for Change to Outbound Delivery
OutboundDeliverySPE.RequestChanges	Change request for delivery quantity reduction
OutboundDeliverySPE.SaveReplica	Duplication of deliveries
InboundDelivery.DeliveryChange	BAPI for Change to Inbound Delivery
InboundDelivery.SaveReplica	Duplication of inbound deliveries

Notes:

- i. In BD64, it is possible to manually add BAPI and message type. In case of manual generation, filter values have to be entered manually.

4.4.2.7 Define Log Recording for IN and OUT Messages

Here, you can define the settings for logging messages that are sent to or received from EWM systems. Due to the high volume of messages, SAP recommends logging only error messages in a production environment. System default settings are set to record only error messages.

Menu Path: SPRO | IMG | Logistics Execution | Service Parts Management (SPM) | Integrate SPM with Other Components | Log Sent and Received Messages

Click on the "New Entries" button on the application toolbar and select the appropriate entries for the log received and for the log send options.

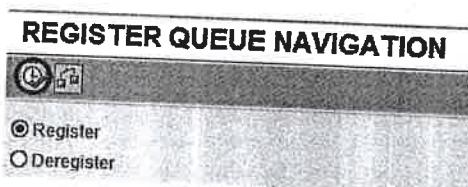
Log messages between ERP and EWM	
Log received	S log success + error messages
Log send	S log success + error messages

4.4.2.8 Activate Detailed Navigation for Logs In qRFC Monitor

In case of an error during data transfer, qRFC monitor displays the status as SYSFAIL in the status column. More details about the error can be found by double-clicking on the status, if the navigation is activated.

Menu Path: SPRO | IMG | Logistics Execution | Service Parts Management (SPM) | Integrate SPM with Other Components | Register Navigation from Queue

Here, select the "Register" radio button and click on the "Execute" button. This will activate the navigation.



4.4.3 CIF Specific Settings

Table 4.4.3A provides an overview of settings required to activate CIF in the ERP system.

Table 4.4.3A - qRFC Specific Settings			
S. No	Configuration Check List	TCode	Transportable
1	Configure Data transfer Log for CIF	SPRO	No
2	Set User Parameters for RFC Mode - CIF	CFC2	No
3	Activate Business Transaction Events (BTEs) for Master Data Changes - CIF	FIBF	Yes
4	Define Master Data Change Transfer Settings - CIF	SPRO	No
5	Activate ALE Change Pointers for Master Data Transfer - CIF	BD61	No
6	Activate ALE Change Pointers by Message Type for Automatic Data Transfer in Background - CIF	SPRO	No
7	Define Controller for Master Data Processing - CIF	CFC1	No
8	Define Number Ranges for Parallelized Data Transfer - CIF	CFC8	No
9	Set Maximum Runtime for CIF Integration Model - CIF	SE38	No

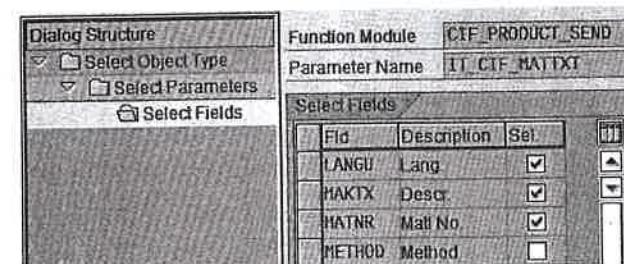
4.4.3.1 Configure Data Transfer Log

Every CIF data transfer is recorded in the transfer log. By default, the system records the log with minimum information. This log can be viewed in transaction CFG1. If you want to record more detailed log or deactivate some of the unimportant data, you can do so in this configuration menu.

SAP recommends restricting the number of object types to be logged, in section "Set User Parameters for RFC Mode". The interface parameters required for most analyses in the CIF application log are already set by default.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Basic Settings for Data Transfer | Configure Application Log

Under "Select Object Type" (for example, Material Master Data), double click on "Select Parameters," select "Interface Parameters," double-click on "Select Fields," and then check the required fields.



4.4.3.2 Define User Parameters for Data Transfer

Here, user-specific settings can be established for the master data transfer. For example, RFC mode's "no calls" can be useful if a certain user makes changes that are not to be transferred to EWM. In the RFC mode, "no calls" or "Queued RFC" can be selected. Queued RFC means data transfer is allowed. Under logging, one can specify how to record the logs, like no logging or normal (X) or detailed (D) logging. Under the "Debug" column, debugging can be activated or deactivated for a specific user. The user name "*" means changes apply to all the users.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Basic Settings for Data Transfer | Set User Parameters or TCode CFC2

Click on the "New Entries" button on the application toolbar; enter user name and select the appropriate values in the RFC mode, Logging, and Debug columns.

User Name	RFC Mode	Logging	Debug
*	Q	D	X

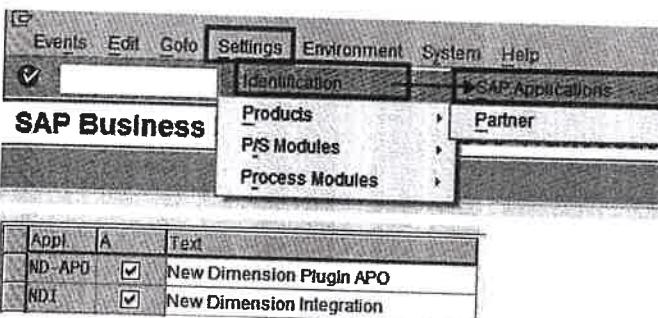
/ Notes:

- i. * means the system will maintain the log for all users.
- ii. Since the log can cause performance issues, it is recommended to set user parameters for the required users.

4.4.3.3 Activate Business Transaction Events (BTEs)

By activating BTEs, the system keeps track of master data changes in the ERP system and replicates them in the EWM system.

To activate BTEs, enter TCode FIBF, click on menu "Settings," "Identification," and "SAP Application," then check the check box for ND-APO and NDI, as shown below.



4.4.3.4 Define Master Data Change Transfer Settings

Here, how master data changes are transferred from the ERP system to the EWM system is specified. If the changes are moved manually, select "No Change Transfer." In case of periodic transfer, select "ALE Change Transfer Periodic." To transfer changes immediately, select the option "BTE transfer, immediately."

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Basic Settings for Data Transfer | Change Transfer for Master Data | Configure Change Transfer for Master Data or TCode CFC9

Chi	Short Descript.
2	No Change Transfer
2	ALE Change Transfer, Periodic
2	BTE Transfer, Immediately

Initial Data Transfer and Change Transfer for Resource

Immediate Transfer
 Use EM Capacity
 Change Transf. Mode
 Days in Past
 Days in the Future
 Type Single Resource
 Type Multiresource

Application-Dependent Settings

Re-Read Stock
 Filter Obj. Req. Reduc.

4.4.3.5 Activate ALE Change Pointers for Master Data Transfer

One of the requirements to move master data changes from ERP to EWM system is the activation of ALE change pointers. This can be done in menu path SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Basic Settings for Data Transfer | Change Transfer for Master Data | Activate ALE Change Pointers Generally or TCode BD61

Activation status

Change pointers activated - generally

4.4.3.6 Activate ALE Change Pointers By Message Type for Automatic Data Transfer in Background

After activating the ALE change pointers, it is also necessary to activate the ALE change pointers by message type for message types CIFCUS, CIFMAT, CIFVEN, and CIFMTMRPA, and the background jobs should be scheduled for the data transfer. With this configuration, whenever the master data is changed for the selected objects in the ERP system, those changes will be pushed to the EWM system automatically by the background jobs.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Basic Settings for Data Transfer | Change Transfer for Master Data | Activate ALE Change Pointers for Message Types

Activate Change pointers for Message Types	
Message Type	active
CIFCUS	<input checked="" type="checkbox"/>
CIFHAT	<input checked="" type="checkbox"/>
CIFHTHRPA	<input checked="" type="checkbox"/>
CIFVEN	<input checked="" type="checkbox"/>

4.4.3.7 Define Controller for Master Data Processing

Just like "delivery data processing," it is necessary to specify who controls the processing of master data transfer queues. Just like controller for RFC queue processing, the controller for the master data queue must be specified. The queue type (inbound or outbound) determines whether the queue processing is controlled by the sending (ERP) or receiving (EWM) system. In this config, the target system and the queue type for the master data transfer are specified.

As explained earlier, when expecting large amounts of integration data and insufficient work process resources, it is recommended to change this setting to Inbound Queues. This means that the queue processing is controlled by the receiving system (EWM). If there are not enough work processes available here, the data is saved upon entering EWM and then processed at a later point in time.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Basic Settings for Setting Up the System Landscape | Set Target System and Queue Type or TCode CFC1

Click on the "New Entries" button on the application toolbar; select the EWM system, and the Q-Type. System will determine the appropriate OPMode automatically.

Log System	Op	Q-Type	Queue Type	Short Description
SA1CLNTB01	T	I	Outbound Queues Inbound Queues	

4.4.3.8 Define Number Ranges for Parallelized Data Transfer

While transferring the master data, one can use the parallelized transfer to influence the performance of the data transfer (covered in chapter 6). If the option "Parallelize Selection in ERP System" is selected,

the system will use the number range defined here to identify each data transfer process uniquely. Therefore, the number range defined here should be an internal range.

Menu Path: SPRO | IMG | Integration with Other mySAP.com Components | Extended Warehouse Management | Basic Settings for Data Transfer | Initial Data Transfer | Determine Number Ranges for Parallelization or TCode CFC8

Click on the "Change interval" button, click on the "Insert interval" button, and add the number range.

Intervals				
No.	Front number	To number	Current number	Excl
1	0001	9999	18	<input type="checkbox"/>

4.4.3.9 Set Maximum Runtime for CIF Integration Model

Finally, before initiating the master data transfer in the CIF integration model, execute the program RCIFIMAX to set the maximum runtime of the active integration model. This is the technical requirement for CIF to avoid program dump during the data transfer.

To execute the program, enter TCode SE38, enter the program name as RCIFIMAX, and click on the "Execute" button on the application toolbar.

Select action to execute = generation, enter the object types = *, logical target system = <EWM logical system name>, and click on the "Execute" button.

Once the program is executed successfully, the following message will appear on the status bar:

Runtime version (table CIF_IMAX) was generated successfully

Summary

In order to implement the EWM solution, consultants must know the configuration that needs to be performed in the ERP system as well as in the EWM system. This chapter explained the configuration required in the ERP system. The CIF and qRFC topics of this chapter gave a detailed explanation of how data transfer can be configured between the two systems.

Chapter 5: Basic Configuration in EWM

Before delving deeper into EWM configuration, consultants must know the basic configuration that needs to be completed in the EWM system for successful communication with the ERP system during the data transfer. Such basic configuration is discussed here under the qRFC section. In the warehouse organizational elements section, the definition and mapping of various warehouse organizational elements is discussed.

5.1 qRFC Settings

In chapter 4, we have discussed in detail the qRFC configuration in the ERP system. Most of the qRFC configurations done in this section are similar to the ERP system.

Usually, qRFC configuration is considered a technical task and is done by the Basis team. But it is very important for every EWM consultant to understand what this configuration is and how it is used for data transfer between ERP and EWM systems. This understanding will help the consultant identify and fix any communication-related issues quickly.

Diagram 5.1A describes how the qRFC settings are defined and mapped in the EWM system.

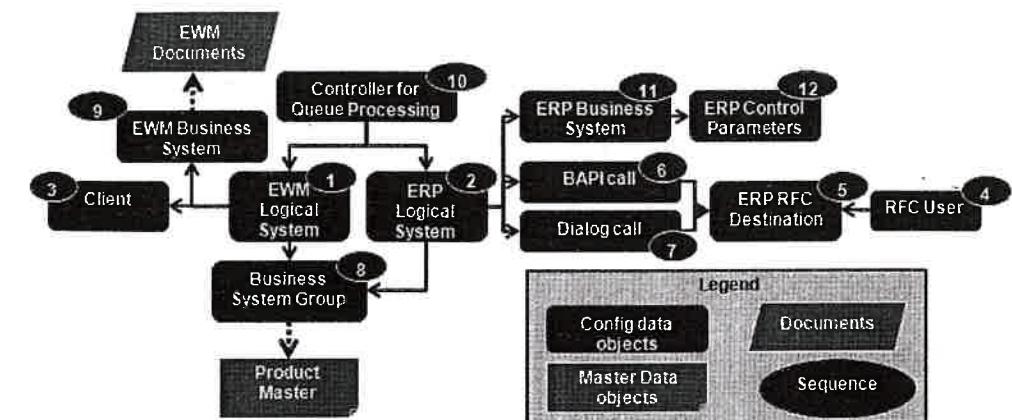


Diagram 5.1A: qRFC Configuration Mapping in EWM System

The following table provides an overview of the configuration required to integrate the EWM and ERP systems. The column transportable shows which of these configurations can be transportable automatically.

Table 5.1B qRFC Settings			
S. No	Configuration Check List	TCode	Transportable
1.	Name Logical Systems for ERP and EWM Systems	SPRO	Yes
2.	Assign EWM Logical System to a Client	SPRO	No
3.	Verify APO Model and Planning Version	SE38	No
4.	Create RFC User for RFC Connection	SU01	No
5.	Define RFC Destination for ERP Logical System	SM59	No
6.	Assign RFC Destinations to Method and BAPI Calls	BD97	No
7.	Create Business System Groups (BSG)	/n/SAPAPO/C1	No
8.	Assign Logical System and Queue Types to BSG	/n/SAPAPO/C2	No
9.	Maintain qRFC Monitor Settings for QIN Scheduler	SMQR	No
10.	Maintain qRFC Monitor Settings for QOUT Scheduler	SMQS	No
11.	Maintain qRFC administration Settings	SMQE	No
12.	Define Business System for EWM	SPRO	No
13.	Define Business System for ERP	SPRO	No
14.	Define Controller for RFC Queue Processing	SPRO	Yes
15.	Set Control Parameters for ERP Version Control	SPRO	Yes
16.	Activate BC Sets	SCPR20	Yes

Notes:

- In EWM systems, we do not need CIF configuration, because CIF is used to transfer master data from the ERP system to the EWM system.
- Since most of the qRFC configuration is covered in detail in chapter 4, we have given only a brief description and the configuration path for it.
- Most of the configurations described in this section are not automatically transportable. Even though some of them can be transported manually, it is recommended to maintain them manually in each system.
- If the SCM system is already linked to the ERP system as part of APO implementation, some of the configurations might already exist.
- The configurations described here may require additional authorization and Basis team help.

5.1.1 Name Logical Systems for ERP and EWM Systems

Like ERP systems, EWM systems also require "logical systems" to identify the sending and receiving systems during data transfer. Here we will define two logical systems i.e. one for EWM (sending) and the other for ERP (receiving) system.

Menu Path: SPRO | IMG | SCM Basis | Integration | Basic Settings for Creating the System Landscape | Name Logical Systems

Logical Systems	
Log System	Name
SA1CLNT001	EWM System SA1 Client 001
SE1CLNT410	ERP System SE1 Client 410

5.1.2 Assign EWM Logical System to a Client

In this step, assign the EWM logical system to the client number. Here, the client number refers to the EWM client number, which will be connected to the ERP system.

Menu Path: SPRO | IMG | SCM Basis | Integration | Basic Settings for Creating the System Landscape | Assign Logical Systems to a Client

Client	001 APO/EWM Client
City	Walldorf
Logical system	SA1CLNT001
Std currency	USD
Client role	C Customizing

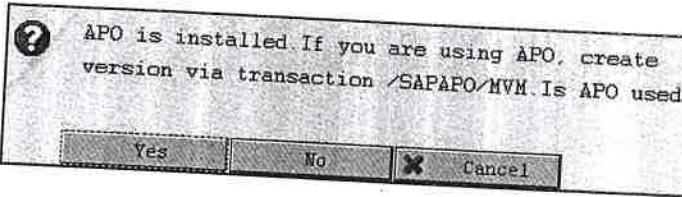
5.1.3 Verify APO Model and Planning Version

Because the EWM system was designed as part of an APO system, for technical reasons, an active APO model and planning version 000 should be active in the EWM system. Before activating an APO planning version and model, verify in TCode /SAPAPO/MVM if version 000 exists for APO Planning and Model in the EWM system.

Model/Planning version	ID	Description
PO_000	000	Active model
PO_000	000	000 - ACTIVE VERSION

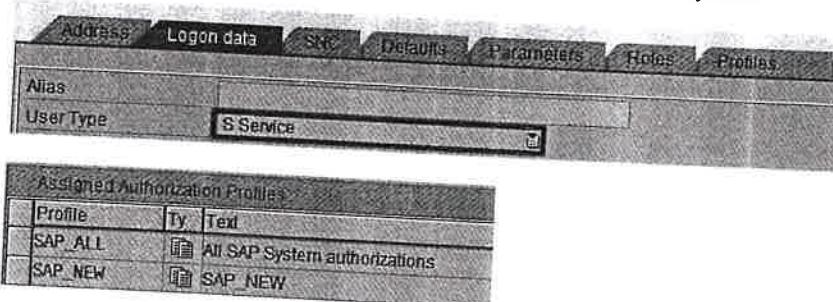
To create the planning version, enter TCode SE38 in the command bar, enter the program name /SAPAPO/VERSION_CREATE_NO_APO, and click on the "Execute" button on the application toolbar.

If the following dialog box appears, choose "Cancel" and check if the planning version 000 and model 000 exist in TCode /SAPAPO/MVM.



5.1.4 Create RFC User for RFC Connection

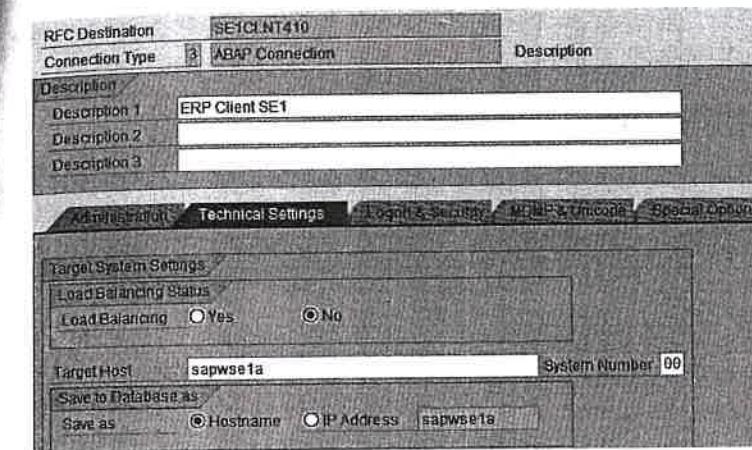
Creating a RFC user ID (TCode SU01) in the EWM system is the same as was explained in the previous chapter. In the EWM system, create an RFC user ID, which will be assigned to the RFC connection and will be used to transfer the data from the EWM to ERP system.



5.1.5 Define RFC Destination for ERP Logical System

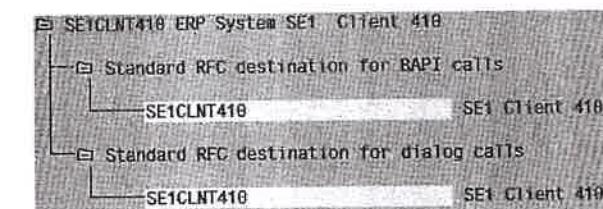
To transfer the data from the EWM to ERP system, a RFC destination for the ERP system must be defined and technical parameters like the IP address of the destination, logon details, load balancing, and so on must also be defined. It is recommended that the RFC destination be named the same as the ERP logical system.

Menu Path: SPRO | IMG | SCM Basis | Integration | Basic Settings for Creating the System Landscape | Set Up RFC Destination or TCode SM59



5.1.6 Assign RFC Destinations to Method and BAPI Calls

Assigning the RFC destinations for "synchronous BAPI calls" and "dialog methods" is done as described in the previous chapter. In TCode BD97, select the ERP logical system name and maintain the RFC destination for both BAPI and dialog calls.



5.1.7 Create Business System Groups (BSG)

The BSG integrates ERP and EWM systems into one higher-level logical unit. By doing this, you create areas with the same naming convention that guarantee the unique naming of master data and its synchronization in distributed system landscapes. It is mainly used during master data transfer. The following two scenarios will explain how it can be useful in EWM systems.

Scenario 1

An EWM System is to be linked with two ERP Systems (A and B), in which two different materials (for example, a hammer and a screw) have the same material number (100). Both materials are to be represented as two different products in the EWM System.

Assign both ERP systems to different BSGs and assign the EWM system to one of the BSGs whose data does not have to be renamed. For example:

SAP ERP System A -> BSG A

SAP ERP System B -> BSG B

EWM System -> BSG A

In order to avoid having two identical names in the EWM system, you need to use SAP enhancement APOCF005 (inbound processing product).

In this example, material number 100 from BSG A receives product number 100 in the EWM system, and material number 100 from BSG B gets product number 100_BSGB. This allows you to uniquely identify both materials in the EWM system.

Scenario 2

An APO System is to be linked with two SAP ERP Systems (A and B). In system A, a screw has material number 110, and in system B, it has material number 120. Both material numbers are represented in the EWM system by one product, with product number 110.

Assign both ERP systems to different BSGs and assign the EWM system to one of the BSGs whose data does not have to be renamed. For example:

SAP ERP System A -> BSG A

SAP ERP System B -> BSG B

EWM System -> BSG A

In order to rename the material, use SAP enhancement APOCF005 to convert material number 120 to the EWM product number 110.

Notes:

- For the time being, this second scenario is only supported for material masters and product masters. If, for example, the same customer is used with different BSGs in ERP Systems A and B, you must create two separate customer locations in the EWM System. This applies for the vendor, plant, and other master data.
- ABAP developer will know how to activate the BADIs.
- For inbound processing in the EWM System, the following SAP enhancements are available for master data:

- a. APOCF001: Inbound processing location
- b. APOCF005: Inbound processing product
- c. APOCF008: Inbound processing resource
- d. APOCF0012: Inbound processing production process model

In the next section, we will see how to assign the ERP and EWM logical systems to the BSG.

Menu Path: SPRO | IMG | Integration with SAP Components | Integration via APO Core Interface (CIF) | Basic Settings for Creating the System Landscape | Maintain Business System Group

BusSys	Description
ZBUSGRP	BSG for ERP (SE1) and EWM (EA1) System

5.1.8 Assign Logical System and Queue Types to BSG

In this IMG activity, logical systems are assigned to appropriate business system groups (BSG). Additionally, a queue type (inbound queue or outbound queue) is assigned to the BSG. In "SAP Sys." field (for ERP logical system), set an indicator "X," which indicates that the logical system belongs to SAP R/3 system.

Menu Path: SPRO | IMG | Integration with SAP Components | Integration via APO Core Interface (CIF) | Basic Settings for Creating the System Landscape | Assign Logical System and Queue Type

Assignment of Logical System in Business System Group						
BusSys	Logical sys.	SAP	Ref	Queue Type	Err. Hndg	Role
ZBUSGRP	SA1CLNT901		70	I Inbound	Strict (Ter)	Not Specified
ZBUSGRP	SE1CLNT410	X	600	I Inbound	Strict (Ter)	Not Specified

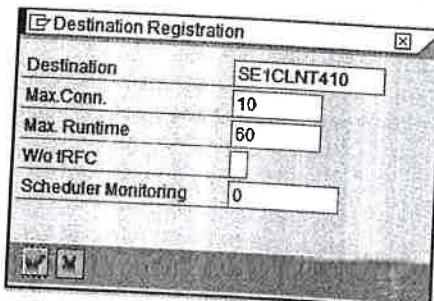
5.1.9 Maintain qRFC Monitor Settings for QIN Scheduler

Just as we defined QIN scheduler settings for ERP systems, we must also maintain similar qRFC monitor settings in the EWM system (TCode SMQR). Here, enter Register Queue Names = *, Mode = D, Max. Runtime = 60, USERDEST = <blank>, Attempts = 30, Pause = 300, and Scheduler Monitoring = 0.

No.	Queue Name	Type	Mode	Max. Runtime	Attempts	Pause	Destination with LOGON Data
001		R	D	60	30	300	

5.1.10 Maintain qRFC Monitor Settings for QOUT Scheduler

The QOUT scheduler in the EWM system is configured much like the QOUT scheduler settings of the ERP system. In TCode SMQS, enter destination as ERP RFC destination name, Max Conn = 10, Max.Runtime = 60, w/o tRFC = <blank>, click on enter, and save the entries.



5.1.11 Maintain qRFC Administration Settings

In TCode SMQE, register the queues for the following programs to monitor the faulty queue entries occur during delivery data transfer.

Queue Name	Type	Action	Event Function	Display Program
CF*	P			/SAPAPO/CIF_QUEUE_EVENT2
DLV*	P			/SCWM/QRFC_APPL_LOG_DISPLAY
QI*	P			QIE_RFC_DISPLAY_QUEUE_LOG
QM*	P			QIE_RFC_DISPLAY_QUEUE_LOG
X*	P			RSXMB_SHOW_ENTRY

5.1.12 Define Business System for EWM

In the EWM system, instead of the EWM logical system name, a business system name is stored in the EWM documents, and this business system name is linked to the logical system. This allows flexibility to change the logical system if required at a later time. During the data transfer, the system uses the

business system name to identify the logical system. Therefore, while defining the business system, it is recommended to enter the same name as the EWM logical system name.

Menu Path: SPRO | IMG | Extended Warehouse Management | Interfaces | ERP Integration | General Settings | Define Own Business System

Name of Own Business System
Business System
SA1CLNT001

5.1.13 Define Business System for ERP

In this step, the business system for ERP logical system is defined, and the EWM logical system is assigned to the EWM business system. This creates the mapping between the logical and business systems. The following are reasons this mapping should exist in the system:

- i. The deliveries sent from the ERP system to EWM contain only the information for the logical system. As EWM stores only the business system name in the warehouse request, when the document is posted, the system performs a mapping of the logical systems to the business systems.
- ii. When sending confirmations from EWM to the ERP system, EWM uses the logical system that originally contained the delivery. EWM therefore maps the business system onto the logical system to send the confirmations.

It is important to assign only one logical system to a business system. Only then can EWM send messages or transfer data to the ERP system.

Menu Path: SPRO | IMG | Extended Warehouse Management | Interfaces | ERP Integration | General Settings | Define Business System

Collector SCD Data of Business Systems		
Business System	Logical sys	Manual Maint
SA1CLNT001	SA1CLNT001	X Flag set. Event has occurred.
SE1CLNT410	SE1CLNT410	X Flag set. Event has occurred.

5.1.14 Define Controller for RFC Queue Processing

This is an optional setting. As discussed earlier, the EWM system uses the RFC-enabled function modules to transfer data to the ERP system. When the data is transferred, the following types of messages are sent from EWM to the ERP system:

- ▶ **Messages with reference to a delivery in the ERP system:** Reporting delivery changes (for example, quantity changes), reporting goods movements for the delivery (goods receipt or goods issue)
- ▶ **Messages without reference to a delivery in the ERP system:** Reporting stock postings without reference to a delivery, posting changes without reference to a delivery, reporting inventory differences, scrapping without a delivery in the ERP system

Here, consultants can specify whether the RFC queue processing is controlled by the sending system or the receiving system. If the processing is to be controlled by the sending system, select the queue type as "Outbound Queues." If it is to be controlled by the receiving system, select the queue type as "Inbound Queue." If these settings are not defined, EWM systems use the inbound queue type for the target system.

Menu Path: SPRO | IMG | Extended Warehouse Management | Interfaces | ERP Integration | General Settings | Control for RFC Queue

Business System	SE1CLNT410
qRFC Configuration for Communication ERP ↔ EWM	
Queue Type	Inbound Queues
Aggr. Single Queues	No Aggregation
Mass Queue Act.	Mass Queue Deactivated (=> Individual Queue)
Parallel Mass Queues	

5.1.15 Set Control Parameters for ERP Version Control

Here define what and how to communicate the changes made to EWM documents like inbound deliveries, goods movements, quality inspection, batch management, or outbound deliveries to the ERP system.

Menu Path: SPRO | IMG | Extended Warehouse Management | Interfaces | ERP Integration | General Settings | Set Control Parameters for ERP Version Control or TCode SCPR20

Business System	SE1CLNT410
SAP Release	603
Package Name	SAPKA70102
General Settings	
Duplicate Check	<input checked="" type="checkbox"/> Do Not Suppress Check
Perform Inb. Deliv. Split	<input checked="" type="checkbox"/> Carry Out Inbound Delivery Split and Reconsolidation
Report In Yard to ERP	<input checked="" type="checkbox"/> Report In Yard to ERP
Confirmation Type of SNs	<input checked="" type="checkbox"/> 1 Communicate All SNS Correspondingly
Batch Control	
Batch Update	<input checked="" type="checkbox"/> Joint Update of Batch and Classification
Changeability of Externally Specified Batch in EWM	<input checked="" type="checkbox"/> Batch Change Can Be Changed Using EWM
Communication of Batch Split of Inbound Delivery Item	<input checked="" type="checkbox"/> Immediate Communication of Batch Split
Report Batch Changes Immediately to ERP	<input checked="" type="checkbox"/> Send Batch Chnage Immediately to ERP
Create / Delete Inbound Deliveries	
Local Creation of Inbound Delivery in EWM	<input checked="" type="checkbox"/> Local Creation of Inbound Delivery in EWM
Local Creation of an Inbound Delivery Item	<input checked="" type="checkbox"/> Inbound Delivery Item Can Be Created
Delete Inbound Delivery	<input checked="" type="checkbox"/> Inbound Delivery Can Be Deleted
Delete Inbound Delivery Item	<input checked="" type="checkbox"/> Inbound Delivery Item Can Be Deleted
Goods movement	
Goods Receipt Mode	<input checked="" type="checkbox"/> Immediately Send GR Postings and Picking
Posting Change wrt Inbound Delivery	<input checked="" type="checkbox"/> Post. Change in Relation to Inb. Deliv.
Quality Inspection	
Possible Usage Decisions	<input checked="" type="checkbox"/> All Inspection Decisions Can Be Made
Quality Confirmation for Returns	<input checked="" type="checkbox"/> Maximum Returns Functionality
Outbound Delivery	
Check for Kit-Header Item in HU at Goods Issue	<input checked="" type="checkbox"/> 1 Carry Out Kit Check
Handling Cross-Delivery HUS	<input checked="" type="checkbox"/> Normal Creation and Communication
Perform GI Cancellation	<input checked="" type="checkbox"/> Perform GI Cancelation
Invoice Creation Before Goods Issue	<input checked="" type="checkbox"/> 2 Invoice Creation Before Goods Issue
Delete Outbound Delivery	<input checked="" type="checkbox"/> Outbound Delivery Can Be Deleted
Send Pick Denial Message to ERP	<input checked="" type="checkbox"/> Send Pick Denial Message to ERP
Batch Split Communication of an Outbound Delivery Item	<input checked="" type="checkbox"/> Immediate Communication of Batch Split
Split Reversal	<input checked="" type="checkbox"/> Split Reversal Allowed
Distributability of Locally Created Outbound Delivery Orders	<input checked="" type="checkbox"/> 1 Outbound Deliveries Cannot Be Created

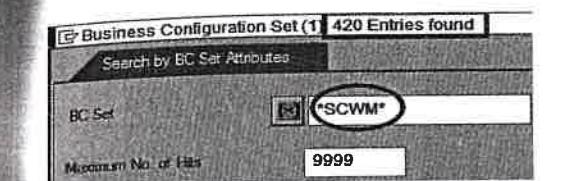
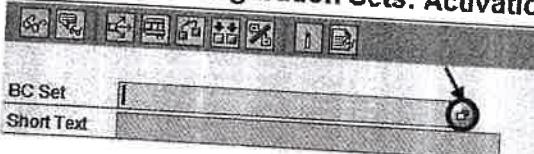
5.1.15 Activate Business Configuration (BC) Sets

BC sets contain important data required for EWM deliveries, non-warehouse-dependent configuration, and the configuration required for the reference warehouse number 0001. During system install, not all required data will be activated in the EWM configuration tables. Hence, BC sets need to be activated in order to populate the required data in the configuration tables. As of SCM 7.0, there are more than four hundred BC sets available. Even though it is not necessary to activate all the BC sets, it is recommended to activate them, as this can minimize configuration efforts and avoid system errors during testing. SAP recommends that minimum the following BC sets must be activated in the following order:

- ▶ /scwm/basic_whs_indep_basis
- ▶ /scwm/basic_whs_indep
- ▶ /scwm/basics
- ▶ /scwm/basic_number_ranges
- ▶ /scwm/process
- ▶ /scwm/inventory
- ▶ /scwm/we_process
- ▶ /scwm/wa_process
- ▶ /scwm/internal_wh_process
- ▶ /scwm/dlv_standard_cw (if you use at least one material for catch weight management)
- ▶ /scwm/dlv_standard (if you do not use any materials for catch weight management)

To activate BC sets in EWM, enter **TCode SCPR20** in the command field, search for *SCWM* relevant BC sets, select the BC set, and click on the "Activate" button. This will copy all the data from the BC set into the relevant config tables. In case of errors, it may be necessary to activate some BC sets more than once or to activate some dependent BC sets first to avoid errors during activation.

Business Configuration Sets: Activation



Business Configuration Sets: Activation



Notes:

In the EWM system, the reference warehouse is not activated at the time of basis system installation. Activation of reference warehouse is part of activating BC sets. A reference warehouse is a standard SAP delivered warehouse (0001), which can be used as a reference during the configuration.

5.2 Warehouse Org Elements and Master Data

In chapter 3, the "warehouse org structure" section briefly covered the key elements of warehouse structure and how they are linked to each other. This section will cover how to configure those org elements in detail.

Before starting the warehouse configuration, consultants should have a clear idea of what their client's WM org structure will look like; what it will be named; how many storage types, storage sections, and bin types are needed for the warehouse; and so on. Once those requirements are ready, they can be configured in the EWM system. Table 5.2A is a summary of the configuration and the master data settings that will be completed in this section. Some settings are done outside SPRO. Some of them are transportable, and some are not. Nontransportable settings have to be performed in every client manually.

Table 5.2A Warehouse Org Elements and Master Data			
S. No	Configuration Check List	TCode	Transportable
1	Define Warehouse Number	SPRO	Yes
2	Define Supply Chain Unit (SCU) for Warehouse	/SCMB/S	No
3	Assign an SCU and Default Business Partners to the Warehouse	/SCWM/L	No
4	Assign the EWM Warehouse to the ERP Warehouse	GNPP	
5	Define Availability Group	SPRO	Yes
6	Define ECC Stock Type	SPRO	Yes
7	Define Stock Types for Warehouse	SPRO	Yes
8	Define Stock Removal Rule	SPRO	Yes
9	Define Storage Types	SPRO	Yes
10	Define Storage Sections	SPRO	Yes
11	Define Storage Bins	SPRO	Yes
12	Define Number Ranges for Warehouse Documents	SPRO	Yes
13	Define Activity Areas	SPRO	No
14	Define Staging Areas and Warehouse Doors	SPRO	Yes
15	Define Work Centers	SPRO	Yes
16	Map Storage Locations from ERP System to EWM	SPRO	Yes
17	Assign Control Parameters to Warehouse	SPRO	Yes

5.2.1 Define Warehouse Number

When creating a new warehouse, it is highly recommended to create one with reference to the SAP-delivered template warehouse "0001," using "copy warehouse function." This will copy all the configuration settings from the template warehouse to the new warehouse. This way, it is not necessary to build the entire required configuration from the ground up. Once the configuration is copied, the required settings for the new warehouse can be changed. However, in this section, the warehouse has been created from scratch (without using the copy function) so consultants are cognizant of both methods.

In chapter 4, the ERP warehouse called "EWM" was defined and assigned to the SCM-EWM warehouse called "SEWM." Here, the "SEWM" warehouse in the EWM system will be defined.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Define Warehouse Numbers

Warehouse No.	SEWM
Define Warehouse Number	
Description	EWM Demo Warehouse

Click on the "New Entries" button on the application toolbar; enter the warehouse number and the description and click on the "Save" button.

Note:

- i. SAP recommends defining separate warehouse numbers for each warehouse complex.
- ii. The copy warehouse function is available in SPRO | IMG | Extended Warehouse Management | Cross-Process Settings | Copy Warehouse Number Customizing. Here, the existing setup of the warehouse can be copied to the new warehouse. This will copy all data in the dependent tables automatically, except the number range intervals. It is also necessary to define the assignment of the warehouse to the supply chain unit separately.

5.2.2 Define Supply Chain Unit (SCU) for Warehouse

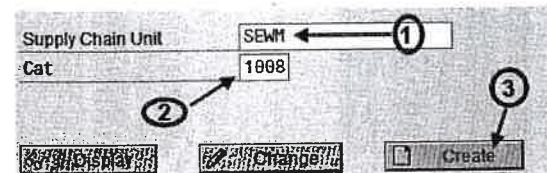
SCU is a master data that contains information like country, region code, time zone, address, and essential business attributes of the warehouse. Business attributes describe how the SCU is used in the EWM system, like whether it is a warehouse; goods receipt office, ship-to party, and so on.

For every EWM warehouse, there should be one SCU assigned to it. The SCU assigned to the warehouse should be defined with the category code 1008—warehouse. The system uses the time zone information of the SCU when displaying all date and time fields for the warehouse.

Since SCU is part of master data and is not transportable, it has to be manually maintained in every client. Assigning the SCU to a warehouse can be done either as part of configuration or in the user menu (SAP easy access menu), which is covered in the next section.

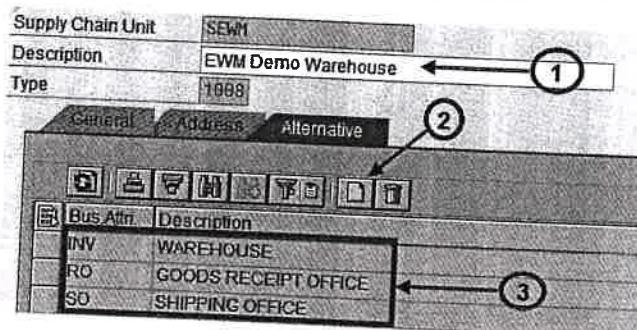
Menu Path: SAP Easy Access | SAP menu | Extended Warehouse Management | Master Data | Maintain Supply Chain Unit or TCode /SCMB/SCUMAIN.

Here, enter the name of Supply Chain Unit, select the category as 1008 (warehouse), and click on the "Create" button.



In the "General" tab, maintain the time zone. Other details like geographical data and partner data are optional. Under the "Address" tab, specify the country and the region. In the "Alternative" tab, click on

the "Add Role" button to select the essential business attributes for the warehouse. Multiple business attributes can be assigned to one warehouse, as shown below.

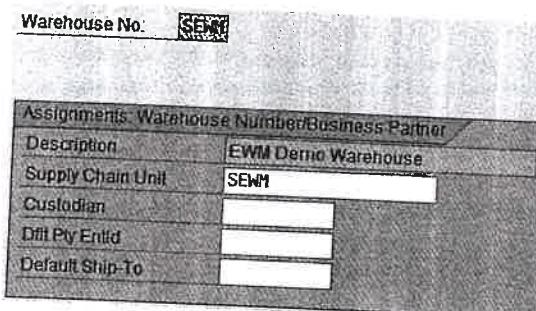


5.2.3 Assign an SCU and Default Business Partners to the Warehouse

In this step, an SCU and default business partners are assigned to the warehouse. The assignment can be done in the configuration menu or from the SAP easy access menu. Even though the assignment can be done in configuration menu path, this setting is not transportable. Hence, it must be manually maintained in every client.

A default party entitled to dispose and a default ship-to party should be assigned only if the warehouse is linked to only one ERP plant. The default data maintained here will be used as default data when maintaining the product master and in some of the transactional data.

Menu Path: SPRO | Extended Warehouse Management | Master Data | Assign Warehouse Numbers or TCode /SCWM/LGNBP.



Note:

- i. SAP recommends that the assignment of SCU to a warehouse should not be changed after defining the product master data or transactional data. Doing so can cause errors.

5.2.4 Assign the EWM Warehouse to the ERP Warehouse

Now that the warehouse has been defined in the SCM system, it is important to link it to the ERP warehouse. In this menu link the EWM warehouse to the ERP warehouse and ERP business system. This link is used to transfer the transactional or goods movement data from EWM to the ERP warehouse.

Menu Path: SPRO | IMG | Extended Warehouse Management | Interfaces | ERP Integration | General Settings | Map Warehouse Numbers from ERP System to EWM

Here, select the ERP business system in "Business System" field; enter the ERP warehouse number in the WNoERP field and the EWM warehouse number in the warehouse number field.

Mapping for Warehouse Number		
Business System	WNoERP	Warehouse Number
SE1CLNT410	EWM	SEWM

5.2.5 Define Availability Group

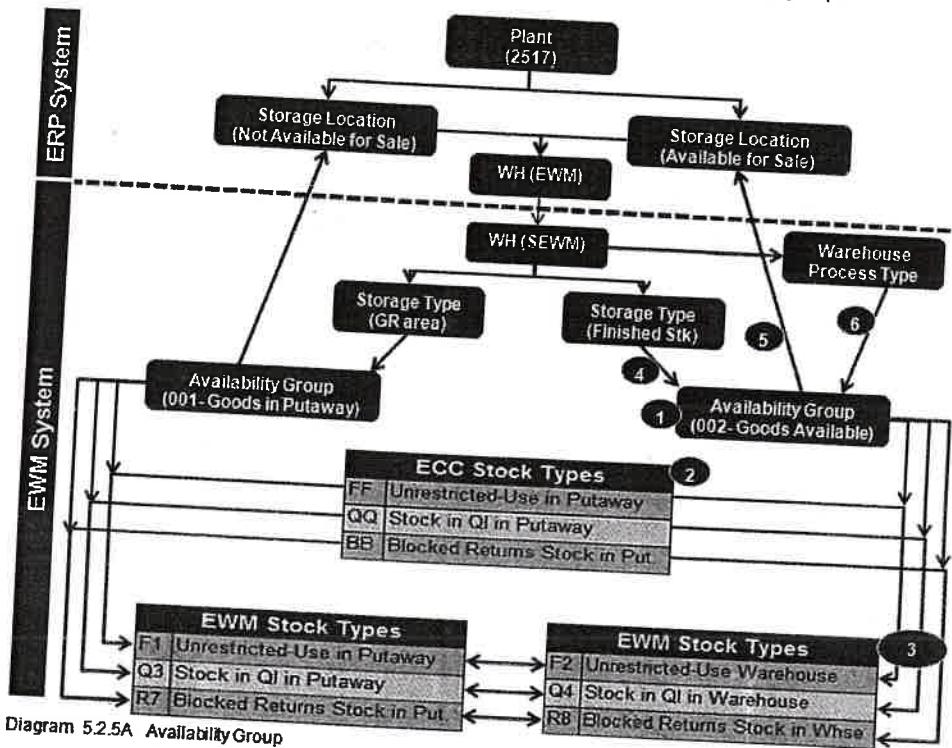
The availability group is used to group different stock types (Unrestricted-use stock, Stock in quality inspection, Blocked stock, Restricted-use Stock) in the EWM system. Once it is defined, this group can be assigned to a storage type to allow certain stock types in the storage type. Other than this, the availability group is also used for communication with the ERP system.

In the configuration, storage type, stock type, and WPTs are assigned to the availability group, and the availability group is assigned to the ERP storage location. In this way, the system can find an ERP stock type and a specific storage location for every EWM stock type during the data transfer.

Menu Path: SPRO | IMG | Extended Warehouse Management | Goods Receipt Process | Configure Availability Group for Putaway | Define Availability Group

Customizing Table - Availability Groups			
War	ACr	Description	DTypr ERP
SEWM 001		Goods in Putaway	IDRECDOCK
SEWM 002		Goods Available to Sell	IDAVAILFS
SEWM 003		Stock in Production	

Diagram 5.2.5A shows how different org elements are linked to the availability group.



The numbers specified in the diagram are the steps involved in defining and setting up the availability group, stock types, and their assignments.

The availability group must also be assigned to a WPT, because when the system defines the stock type of a delivery, it uses the availability group of the WPT and not the availability group of the storage

5.2.6 Define ECC Stock Types

In the ERP system, stock type is referred to as unrestricted-use, quality inspection, or blocked. In EWM, they are referred as non-location-dependent stock types.

In EWM, these stock types can be further divided into multiple different stock types like unrestricted under putaway, unrestricted available to sell, and so on. But they all have to be assigned to non-

location-dependent stock types, because during the data transfer, the ERP system recognizes only the non-location-dependent stock types.

In this section, we will define the following nondependent stock types for the warehouse.

- ▶ FF: Unrestricted-use stock
- ▶ QQ: Quality inspection stock
- ▶ BB: Blocked stock
- ▶ RR: Returns blocked stock (non-valuated and not visible in SAP APO)

The main usage of non-location-dependent stock types in the EWM system is determining the subsequent stock type for a transfer between two storage types that belong to different availability groups or mapping between EWM stock type and ERP stock type.

Menu Path: SPRO | IMG | Extended Warehouse Management | Goods Receipt Process | Configure Availability Group for Putaway | Define Non-Location-Dependent Stock Type

Customizing Table: Non-Location-Specific Stock Type		
War	N	Description
SEWM	BB	Blocked Stock
SEWM	FF	Unrestricted-Use Stock
SEWM	QQ	Stock in Quality Inspection
SEWM	RR	Blocked Stock Returns

Note:

- i. The SAP ERP system only recognizes the above stock types.

5.2.7 Define Stock Types for Warehouse

In this configuration, the non-location-dependent stock types are further divided into multiple warehouse specific stock types and assigned to different availability groups. This helps maintain more meaningful stock status in the warehouse under different storage types—for example, stock under putaway and not available for picking, stock available for picking, and so on.

Menu Path: SPRO | IMG | Extended Warehouse Management | Goods Receipt Process | Configure Availability Group for Putaway | Configure Stock Type

Warehouse	ST	Description	Storage Type	AGr	Description	N	Description	R
SEWM	B5	Blocked In Putaway	BB	Blocked Stock	N	Normal Stock		
SEWM	B6	Blocked Warehouse	BB	Blocked Stock	N	Normal Stock		
SEWM	D1	Free for Cross Docking	FF	Unrestricted Use	N	Normal Stock		
SEWM	F1	Unrestricted-Use	FF	Unrestricted Use	N	Normal Stock		
SEWM	F2	Unrestricted-Use	FF	Unrestricted Use	N	Normal Stock		
SEWM	P2	P2	FF	Unrestricted Use	N	Normal Stock		
SEWM	P4	P4	QQ	Stock in Production	N	Normal Stock		
SEWM	P4	P4	QQ	Stock in Quality	N	Normal Stock		

5.2.8 Define Stock Removal Rule

The stock removal rule defines the sequence in which the quants found by the program should be sorted before proposing the bins and quantity for picking. For example, First in First Out (FIFO), Last in First Out (LIFO), and so on. In ERP WM, stock removal rules are preconfigured, and very few changes can be made to the existing defined rules without a user exit. In EWM, SAP has provided more flexibility to define one's own rules.

Menu Path: SPRO | IMG | Extended Warehouse Management | Goods Issue Process | Strategies | Specify Stock Removal Rule

Here, enter the warehouse number, stock removal rule code and the description for each warehouse. Hit "Enter" and save the entries. Select the stock removal rule and double-click on "Stock Removal Rule" in the dialog structure to assign the sort fields, sort type and the sequence.

Definition of Stock Removal Rules		
Warehouse	Rule	Description
SEWM	FIFO	First In First Out
SEWM	LIFO	Last In First Out
SEWM	BIND	By Bin (Descending order)

Consultants can add thirty sort fields for the stock removal rules and then specify how the results should be sorted (i.e., ascending or descending order).

Dialog Structure		Warehouse No.	SEWM
		Stock Removal Rule	FIFO
Stock Removal Rule			
Sequence No.	Sort Field	Descending	
1	VFDAT	<input type="checkbox"/>	
2	WDATU	<input type="checkbox"/>	
3	LGPLA	<input checked="" type="checkbox"/>	
4	QUAN	<input type="checkbox"/>	

5.2.9 Define Storage Types

The above sections covered the data elements required to configure storage types.

In EWM, storage types are a further division of warehouse number and play an important role during product movement and storage in the warehouse. There are several control indicators available for storage types, which can influence the behavior of putaway, stock removal, replenishment, and goods movement. This is further explained below.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Define Storage Type

Storage type configuration is broadly divided into five sections. They are general control, putaway control, stock removal control, replenishment settings, and goods movement control. Each section will have many control keys, representing the configuration for that section of the storage type.

Notes:

- i. Settings made under storage type are storage-type specific. Therefore, these settings have to be defined for every storage type. The settings can be copied from one storage type to another with the copy function.
- ii. In EWM, interim storage types are normally defined with starting number 9. This helps the consultant and warehouse team to easily distinguish between the interim and noninterim storage types.

5.2.9.1 General Controls

This section controls some of the important settings of the storage type, like storage type role, fixed bin settings of the storage type, storage behavior, and HU requirements. Some of the important settings in this section are covered in detail below.

Warehouse No.	SEW1	EWM Demo Warehouse
Storage Type	8005	Finished Goods (HU and Non HU items)
General		
Storage Type Role	<input type="checkbox"/>	Storage Behavior
Level of Avail. City	1	Avail. City Batches
HU Requirement	<input type="checkbox"/>	Hazard Sub Mgmt
Max No. Bins	<input type="checkbox"/>	City Classific.
<input type="checkbox"/> Check Max No. Bins	<input type="checkbox"/>	External Step
<input type="checkbox"/> Use Fixed Bins	<input type="checkbox"/>	<input type="checkbox"/> Do Not Explode Prod.
Fixed Bins Mode	<input type="checkbox"/>	Default Distance
<input type="checkbox"/> Do Not Assign Fixed Storage Bin Aut.	<input type="checkbox"/>	Storage Type Level
		1

Storage Type Role

Storage type role is used to define how the storage type is used in the warehouse. Each storage type will be defined for a specific purpose or to play a specific role and will influence the goods movements. Following is the list of storage type roles provided by SAP:

Role Description	
A	Standard Storage Type
B	Identification Point
C	Pick Point
D	Identification and Pick Point
E	Staging Area Group
F	Work Center

Role Description	
G	Doors
H	Yard
I	Automatic Storage Retrieval (Material Flow Control)
J	Work Center in Staging Areas Group
K	Automatic Warehouse (Controlled by MFS)
L	Production Supply

- ▶ **Standard Storage Type:** This represents a physical area in the warehouse where the products are finally stored as the last step in the putaway process. Control parameters configured for putaway and picking will influence product putaway and picking from this storage type. In the warehouse, the majority of storage types usually have "standard storage" roles assigned to them, which are used for final storage of products.
- ▶ **Identification point (ID point):** ID point represents an area in the warehouse where the products are taken for verification, labeling, and so on during goods receipt and before final putaway. It is mainly used in the Automated Storage and Retrieval System (ASRS).
- ▶ **Pick Point:** Just like ID point, pick points are used at the time of goods issue for labeling, inspection, or packing. They are mainly used for ASRS.
- ▶ **Identification and Pick point:** If the ID and pick points comprise one common area in the warehouse, this role can be assigned to the storage type.

- ▶ **Work Center:** This is the area within the warehouse where inspection, packing, labeling, and value added services are performed for both incoming and outgoing products.
- ▶ **Yard:** For yard management, define a yard as a storage type and each space or dedicated area for truck in the yard is defined as a bin.
- ▶ **Material Flow Control:** This role is used for storage types that represent ASRS or conveyor systems.

Level of Available Quantity

If the stock is HU managed, sometimes it is more practical if warehouse personnel makes the decision on which HU to pick from the bin for delivery, rather than having the system suggest which HU to pick. This gives more flexibility to the warehouse personnel. On the other hand, if the products have batch constraints or shelf life expiry, it is appropriate if the system suggests what to pick. This can reduce human error at the time of picking. In this configuration, consultants specify which of these options they want for the storage type.

The two available options are "Highest-Level HU," in which case the system is suggesting the HU in the warehouse task, and the user has to pick the system-suggested HU. If it is preferable for the user to make the decision at the time of picking, the value in this field should be "storage bin."

HU Requirement:

In EWM, SAP has withdrawn the functionality of storage units and provided HU functionality to track pallets and products. Now it is possible to store both HU and non-HU-managed stock in the same bin. In this setting, consultants specify whether HU functionality is required for the storage type or not. The default value for this setting is that HU is allowed but not a requirement. Available options are as follows:

- ▶ HU Allowed but not a Requirement
- ▶ HU Requirement
- ▶ HU not Allowed

Max No. Bins

One of the common problems in the warehouse is that a few materials occupy most of the storage space, leaving very little or no space for other materials in the primary storage type. This often triggers rearrangement of the stock or delay in picking for outbound deliveries. To avoid such problems, SAP has a "Max No. Bins" provision, allowing consultants to specify the number of bins for each material in the primary storage type. This ensures that all materials will get space in the primary storage type, and overflow of product stock will be stored in the secondary storage types.

The setting at storage type is applicable for all the products stored in that storage type. The same option is available at the product level. If it is specified in the product master as well as at the storage type, the product master settings will take precedence.

Check Max. No. Bins

The value entered in the "Max No. Bins" field will be active only if the "Check Max No. Bins" indicator is active. If it is not checked, the value entered in the "Max. No. Bins" field (both in product master and storage type) has no impact.

Use Fixed Bins

If the storage type defined is fixed-bin storage, the check box "Use Fixed Bins" should be checked. If this indicator is checked, the system will consider the value in the "Fixed Bins Mode" field to determine the proper fixed bin.

Fixed Bins Mode

The fixed bins mode defines how the fixed bins will be selected for stock putaway. The system uses the following two options to select the bins:

- ▶ **Put Away to Optimum Fixed Storage Bins Only:** Here, only those bins that the system has determined, with a combination of putaway and slotting algorithm, will be selected for putaway. The slotting algorithm plays an important role here in determining bins.
- ▶ **Put Away to Optimum Fixed Storage Bins Preferred:** In this case, the system will first try to suggest optimal bins. If none are found, it will suggest other available bins in the storage type.

Do Not Assign Fixed Storage Bin Automatically

The EWM system allows multiple fixed bins for the products. If the fixed bins are not assigned to the product, or the assigned fixed bins are full, new fixed bins will be determined for the products at the time of putaway. The system will automatically add those bins to the fixed bin table for the products, if this checkbox is not checked. Fixed bins can be assigned in TCode /SCWM/FBINASN (menu path: SAP Easy access | Extended Warehouse Management | Master Data | Storage Bin | Assign Fixed Storage Bins to Products).

Storage Behavior

Storage behavior describes how the products, or pallet of products, are managed in the storage type. Options available include the following:

- ▶ **Standard Warehouse:** Here Standard warehouse is referred to normal storage space where products are stored with or without pallets in the bin.

- ▶ **Pallet Storage:** For pallet storage, identical subdivision will be done, depending on the pallet type at the time of initial putaway. These divisions are used to know the exact position of the pallets in the bin, and they become part of the bin name.
- ▶ **Bulk Storage:** If the bins are large, or the products are stored in the open where pallets are stacked on top of another, a bulk storage option is recommended.

Available Quantity (Batches)

If the products are batch managed, in some industries it is more practical if the warehouse personnel decides which batch to pick from the bin for the delivery. This can reduce the picking effort. On the other hand, if the products have shelf life expiry or batch dependency (all pick quantity of the product should belong to same batch), it is more practical to pick a system-suggested batch.

If the warehouse personnel specifies which batch is picked for the warehouse task at the time of picking, then the colored option in this field for the storage type should be "Available Quantity: Batch-Neutral."

If the system suggests the batch based on sales order or delivery, select the option "Available Quantity: Batch-Specific."

Hazardous Substance Management (HSM)

HSM is used to check whether products can be mixed in the storage type, according to hazardous substance rules. If the value in this field is blank, it means no check will be performed. The other two available options are "Hazardous substance check only at storage type level" and "Haz.sub.check at stor.type and stor.section levels."

Quantity Classification

Quantity Classification describes the packaging in which the products are stored in the storage type. For example, pallets, loose products, bags, boxes, and so on. This information is used, along with the packaging specification, to determine the right storage type for picking based on the pick quantity. This can help in reducing partial pallets in the storage type. The allowed values for quantity classification can be configured in the menu path SPRO | IMG | Extended Warehouse Management | Cross-Process Settings | Warehouse Task | Define Quantity Classifications

External Step

External steps represent the actions or activities performed in the warehouse—for example, Unload, Count, Deconsolidate, Putaway, Remove from Stock, Pack, Stage, Load, and so on.

External steps assigned to the storage type are used only for HU-managed stock, if the crucial step is not performed before the process is completed. If the material has not yet achieved the assigned external step, the last completed step will be replaced with the assigned external step.

In EWM, SAP has predefined internal process steps, which have to be assigned to the external steps. This is covered in more detail in chapter 15. To define external steps, follow the menu path **SPRO | IMG | Extended Warehouse Management | Cross-Process Settings | Warehouse Task | Define Process-Oriented Storage Control**

Do Not Explode Product

In the warehouse, products can be moved with a product warehouse task (WT) or as a HU WT (if the product is HU managed). For HU WT, it is also possible to track the warehouse movements of the products individually by product. If tracking the movements individually by product is not desired, check this box.

The effect of checking this indicator is that in the warehouse monitor, it will not be possible to query the warehouse tasks by product. If the indicator is not checked, the system will populate the additional values for the products in the tracking table. This gives more visibility in the warehouse monitor and can be queried by product. The other impact of selecting this indicator is confirming the HU WT can take more system resource and can cause performance issue.

Default Distance

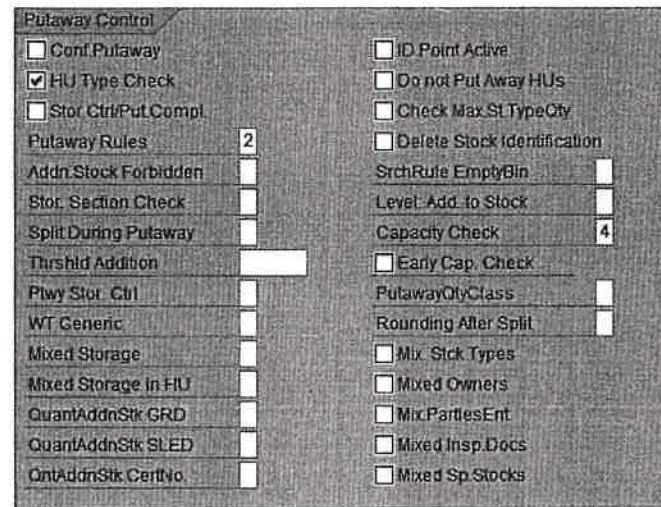
The default distance defined in the storage type is used to record the distance traveled in labor management, if the warehouse task is confirmed using desktop transactions. In case of RF devices, the system uses the last WT confirmation bin and the current WT bin to calculate the actual distance traveled, using the bin coordinates and travel path defined in labor management.

Storage Type Level

This field value is used to show the different levels in the graphical view of the warehouse. It defines what level the storage type is located, for example, ground floor, first floor, or second floor. If the value in this field is not maintained, the system will consider that all storage types are located in the same levels.

5.2.9.2 Putaway Control

The parameters defined here are used to control the putaway into the storage type. Putaway here refers to all inward movements of products into the storage type. It could be goods receipts putaway, transfer of products between two storage types, replenishment, bin to bin movements, and so on.



Confirm Putaway:

In the warehouse, WTs are used to confirm goods movements and update the bin stock. They can be confirmed manually by an operator or can be confirmed automatically by the system in the background. If you prefer the operator to confirm the WT manually, check this indicator. To confirm the WT automatically in the background, the "Confirm putaway" indicator should not be checked for the destination storage type, and the "Confirm removal" checkbox should not be checked for the source storage type.

HU Type Check

The warehouse may use more than one type of HU to store the materials. For example, small boxes, large boxes, industrial size pallet, and so on. If not all types of HUs are allowed in a storage type, this box must be checked. If this indicator is active, the system will check whether the HU type associated with the HU in the warehouse task is allowed in the storage type.

Storage Control/Putaway Completed

This indicator determines that the storage type is a final destination for the putaway activity. This indicator is useful only for process-oriented storage control (POSC), which is covered in chapter 15.

Putaway Rules

The putaway rule specifies the logic that the EWM system will use to find destination bins during putaway of products. The following four rules are available for the storage type. (If these rules do not meet some companies' warehouse requirements, consultants can activate available Business add-ins

(BADIs) and write their own custom logic in addition to standard code to find the appropriate destination bins.)

- ▶ **Empty Bin:** During putaway, the system only searches for empty bins in the storage type.
- ▶ **Addition to Existing Stock/Empty Bin:** The system searches for partially occupied bins first. If it does not find partially occupied bins, the system then searches for empty bins. While searching the partial bins, the system also will consider other rules specified for the storage type, such as mixed stock types, mixed storage, split during putaway rules, and so on.
- ▶ **Consolidation Group:** Storage bins from the storage type assigned to the consolidation group. If this option is selected, during putaway the system searches for the bin that matches the stock consolidation group. This is very useful in the packing area, where products being stored in a bin by consolidation group help to speed up the packing process. Consolidation groups help clarify what products can be packed and stored together.
- ▶ **General Storage Area:** This is more applicable for interim storage types, staging areas where there is only one bin and there are no restrictions on the stock that can be stored in the bin. These storage types allow mixed stock, addition to existing stock, and mixing of all types of products.

Addition to Stock Forbidden

In some storage areas, it is practical to add stock to the existing stock in the bin to make use of maximum bin capacity. To manage this feature in EWM, there are three options: addition to stock allowed, addition to stock not allowed, or product putaway profile decides. The selected option in this configuration will affect what can be defined in other fields of storage type configuration. For example, if "addition to stock not allowed" is selected for the storage type, the putaway rule "addition to existing stock" cannot be selected. If such conflicts occur, the system will give an error message.

Storage Section Check

It is possible that some storage types might have many storage sections, and some restrictions might apply while putting away products in the storage sections. For example, heavy products may not be suitable for putaway in the top-level bins. In case of such restrictions, the storage section check should be activated. During putaway the product master drives the products to the appropriate storage section. If the warehouse operator tries to locate the product in the wrong storage section, the system will indicate an error at the time of WT creation or confirmation.

Split During Putaway

This configuration controls how the quantity should split in the warehouse task, in case the full quantity does not fit into one bin. This is applicable only for non-HU stock.

Split during putaway is performed only for product WTs as per maximum storage type quantity, weight, volume, and capacity key figures. Options available are "Do Not Split," "Split During Putaway," and "Product Master Decides".

Threshold Addition

If either the "Split During Putaway" or "Product Master Decides" option is selected in split during putaway configuration, the system will refer the value of "threshold addition" before the warehouse task created for the split quantity. If the quantity expected in the bin is less than the threshold value, the system will not split the putaway quantity. This field will avoid unnecessary small quantity split, which could reduce operational efficiency. The threshold value is defined in percentage of the storage bin capacity.

Rounding after Split

This configuration controls how the split quantity should be rounded. If the "no rounding" option is selected, the total quantity will be put away into one bin. In case selected option is round down WT qty to a multiple of a unit, the system will round down the WT quantity to multiples of the pallet quantity, and the remaining quantity will be put away in a different bin. For example, if the putaway quantity is two and a half pallets, and the rule is round down the WT quantity to the multiple of pallet quantity, there will be two WTs: one WT for two pallets and one for the partial pallet.

Putaway Storage Control

This configuration defines how to create a warehouse task for a handling unit. You can specify whether the putaway is to be performed with a HU WT, performed with a product WT, evaluated dynamically based on the settings of the field "Create Putaway WTs," or HU Pick-WTs.

This is only valid in the case of process-oriented storage control. If process-oriented storage control is not used, the setting is made at WPT level based on the field value of "Select HU w/o Storage Process."

WT Generic

This configuration lets you define how generic the WT destination data should be. WTs can have all three destination data, that is, destination storage type, storage section and the bin, or only storage type or only storage section and storage type.

For example, if the storage type is a packing station, it is not necessary for the WT created to move the stock to the packing station to contain the destination storage bin. Instead, the WT can contain only destination storage type, and when the WT is confirmed, the warehouse personnel can specify the destination storage bin for putaway based on physical availability.

Mixed Storage

This parameter indicates how the mixed stock is managed in the bin. In case of non-HU stock, the entire bin behaves like a HU, and the option specified for HU will apply to the bin. Here, the following options are available:

- ▶ **Mixed Storage without Limitations:** More than one HU can be stored in the storage bin. There are no dependencies between the individual HUs. However mixing of products and batches within an HU is controlled by the "Mixed Storage in HU" indicator.
- ▶ **Several Non-Mixed HUs with the Same Product/Batch:** Several HUs can be stored in a storage bin simultaneously. However, the individual HUs must contain the same product and the same batch number.
- ▶ **Several HUs with Different Batches of the Same Product:** Several HUs can be stored in a storage bin simultaneously. However, the HUs must contain the same product. If the product is batch managed, several batches of the product can be stored in the bin.
- ▶ **One HU Allowed per Bin:** Here, only one HU can be stored in a bin. Because the system treats the bin also as one HU, storing of both non-HU and HU materials in the same bin is not allowed.

Mixed Storage in HU

This configuration describes how products and batches can be mixed in one HU. Options available include the following:

- ▶ **Mixed Storage Not Allowed:** This means only the same product and batch can be stored in one HU.
- ▶ **Several Batches of the Same Product per HU:** Different batches can be packed together, but the product should be same.
- ▶ **Mixed Storage Without Limitation in HU:** This means any products of any batches can be packed into one HU.

Quant

Quant is the unique number in the bin that represents the quantity of a specific product with the same characteristics. It contains product number, batch number, stock type, stock category, and stock usage. You can alter the quant by adding more stock to existing stock. In such cases, the system will first determine if there is an existing quant for the stock; if so, certain values like GR date, SLED, and certificate number will be updated based on the configuration specified in the storage type. The following few sections will describe how this can be configured in the storage type.

Quant Addition Stock GR Date

If addition to stock is allowed in the storage bin, it is possible that the GR date of the new stock could be different than the date already existing in the quant. The quant can contain only one GR date. In this scenario, define how the system should behave when updating GR date for the quant. Here, the options available include the following:

- ▶ **Allowed—Most Recent Date Dominant:** In case of addition to stock, if the quant already exists for the product or batch, the GR date of the quant will be replaced with the latest GR date of the stock.
- ▶ **Allowed—Earliest Date Dominant:** In case of addition to stock, if the quant already exists for the product or batch, the GR date of the quant will be replaced with the oldest GR date of the stock.
- ▶ **Not Allowed:** If the new stock has a different GR date than the GR date of the existing quant, the system will not allow addition to stock.
- ▶ **Product Putaway Profile Decides:** In this case, the product profile will decide at the time of putaway.

Quant Addition Stock Shelf Life Expiry Date (SLED)

If addition to stock is allowed in the storage bin, it is possible that the SLED date of the new stock could be different than the one existing in the quant. The quant can contain only one SLED date. In this scenario, it is necessary to define how the system should behave while updating SLED date for the quant. The options available are very similar to the GR date explained above.

Quant Addition Stock Certificate No.

If the addition to stock allowed in the storage bin, it is possible that the certificate number of the new stock could be different than the one existing in the quant. The quant can contain only one certificate number. In this scenario, define how the system should behave while updating the certificate number for the quant. The options available are very similar to the GR date explained above.

ID Point Active

ID points are areas in the warehouse where the products are moved to soon after unloading for further processing, like palletizing or labeling, before putting them away in the bin. This indicator should be checked if the storage type is one of those interim points.

Do Not Putaway HUs

This indicator is used when Process Oriented Storage Control (POSC) is being used in the goods putaway process, and the retaining of the HU number is not required in the final storage type. If the HU is not removed when the stock is confirmed in its final putaway bin location, at the time of picking, it is necessary to specify the HU. If this parameter is checked, the system will use a product WT for the final putaway step instead of HU WT.

Check Maximum Storage Type Quantity

This indicator specifies whether or not the product should be put away into the storage type, if the maximum storage type quantity is exceeded for the product. If this indicator is not set, the product is put away, even though the maximum storage type quantity is exceeded. The maximum storage type quantity can be defined in the product master in storage type view.

Delete Stock Identification

Stock ID is a unique number that can be used to identify the stock with all of its attributes like product number, batch, stock type, stock category, quantity, and so on. This can be printed on labels and can be used to track the products throughout the picking and putaway process. If POSC is used, and the storage type is checked as final destination (i.e., the "Stor. Ctrl/Put. Compl" indicator is checked), the "Delete Stock Identification" check box must be checked for the storage type.

Search Rule Empty Bin:

In addition to the putaway rule, the system will consider the configuration defined here to search the empty bin. Here, specify how the system should select the empty bins for putaway strategy (e.g., "Next Empty Bin"). The options available are as follows:

- ▶ **Sorting According to Definition:** If this option is selected, the system will use the sort field defined in the storage bin master to sort and select the empty bins.
- ▶ **Near To Fixed Bin:** The empty bins are prioritized according to their closeness to a fixed bin.
- ▶ **Product Decides:** The setting for the search rule in the product decides the course of action.

Level: Addition to Stock

If addition to existing stock is allowed in the storage type, the system uses this configuration to control at which level the stock should be added at the time of WT creation, for example, whether the warehouse personnel or the system will decide which HU to add the stock to. The following two options are available:

- ▶ **Addition to Stock at Bin Level:** If this option is selected, the system will not suggest any HUs in the WT. Warehouse personnel will manually decide which HU to add the stock to. This will give more flexibility to the operator to make the decision at the warehouse.
- ▶ **Addition to Stock at Highest HU level:** In this case, the system determines the HU during the WT creation, and the operator can't change the HU.

Capacity Check Method

In many warehouses, bin capacity is strictly followed during putaway to avoid bin damage, due to overloading the bins, or damage to the product due to the product dimensions.

To calculate total capacity of the bin, required parameters should be maintained in the product master under the "unit of measure" view, and also for HU type (in case of HU management).

In this configuration, specify whether the capacity check is active for the storage type, and if so, how the capacity is calculated. Options available include the following:

- ▶ **No Check According to Key Figure:** According to this option, the system will not perform any capacity check against the total capacity assigned to the bin. But the system will always perform a capacity check against the weight and volume if they are maintained in the storage bin.
- ▶ **Check Acc. to Key Figure Product:** Only product master capacity consumption information (defined under the "Unit of Measure" tab) is used to check the total capacity assigned to the bin.
- ▶ **Check Acc. to Key Figure HU Type:** Only the packaging material capacity consumption information (defined in the "Unit of Measure" tab) is used to check the total capacity assigned to the bin.
- ▶ **Check Acc. to Key Figures Product and HU Type:** Here, both products and packaging material capacity consumption information (defined in the "Unit of Measure" tab) is used to check the total capacity assigned to the bin.
- ▶ **No Check Against Key Figure, Weight, and Volume:** No capacity check is carried out, either against capacity consumption or against the maximum weight and volume. This option should be selected for all storage types where the capacity check should not be carried out.

Note:

- i. If no capacity check should be performed for the storage types, the "No Check Against Key Figure, Weight, and Volume" option should be selected. If this is not selected, the system will always perform a capacity check against weight and volume, if they are maintained in the storage bin.

Early Capacity Check

If this indicator is checked, the EWM system does the early check on the bin type capacity before it checks the individual bins, eliminating all bins and bin types that are not suitable for the putaway. This helps increase the performance of the system.

Mix. Stock Types

In this configuration, specify whether or not multiple stock types are allowed in the bin (for example, unrestricted stock, inspection stock, or blocked stock). If multiple stock types are allowed in a bin, a unique quant will be created for all owners, parties entitled, material, batch, stock type, and stock category combination. Check this indicator if mixed stock types should not be allowed in the bin.

Mixed Owners

Every stock in EWM is assigned to an owner. Hence, bins may contain stock belonging to different owners. Check this indicator if multiple owners' stock should not be allowed within a bin.

Mixed Parties Entitled

Every stock in EWM is assigned to a party entitled to dispose. In this configuration, specify whether or not stock belonging to multiple parties should be allowed in a bin; check this indicator if not.

Mixed Insp. Docs

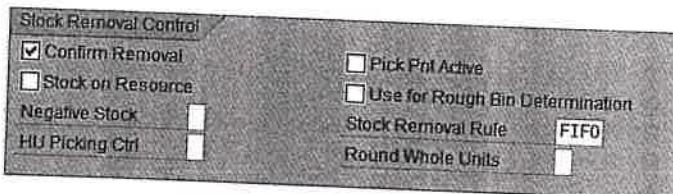
Usually, stock belonging to multiple inspection documents is allowed in one bin. Check this indicator if multiple inspection documents should not be allowed in a bin.

Mixed Sp. Stock

If this indicator is checked, the system will not allow mixed special stock in one bin. Special stock is customer stock, project stock, consignment stock, and so on.

5.2.9.3 Stock Removal Control

The parameters defined here are used to control the picking behavior from the storage type. "Picking" here refers to all outward movements of products from the storage type. Examples include outbound delivery, bin to bin movement, replenishment, and so on.



Confirm Removal

In the warehouse, WTs are used to confirm goods movements and update the bin stock. These can be confirmed manually by an operator or can be confirmed automatically by the system in the background. If it is preferred that the operator confirm the WT manually, check this indicator. To confirm the WT automatically in the background, the "Confirm Removal" indicator should not be checked for the source storage type, and the "Conf. Putaway" indicator should not be checked for the destination storage type.

Stock on Resource

If this indicator is selected, while searching the storage types for stock removal, the system will consider both stocks in the bin as well as stock that is on resources like forklifts, conveyor belts, and so on.

Negative Stock

This configuration controls whether negative stock is allowed in the storage type. The available options include the following:

- ▶ **Negative Stocks Not Allowed:** In this case, the system will not allow picking quantity more than the available quantity in the bin.
- ▶ **Negative Available Quantity Allowed:** In this case, at the time of WT creation, warehouse personnel can specify the removal quantity more than bin available quantity. In this case, the total available quantity is "available quantity plus total quantity scheduled for putaway."
- ▶ **Negative Stocks Allowed:** In this case, stock removal quantity can be more than the available plus scheduled for putaway quantity.

HU Picking Ctrl

Here, what should be the pick HU is defined. The available options are as follows:

- ▶ **Adopt Source HU with Lower-Level HUs Into Pick HU:** In this case, the system will create a new pick HU and adopt the source and lower-level HUs into the pick HU.
- ▶ **Propose Source HU as Destination HU:** Here, the system will use the picked source HU as the destination HU.
- ▶ **WPT Controls Proposal for Destination HU:** In this case, the WPT determines the destination HU.
- ▶ **Only Adopt Contents (Prod. and Lower-Level HUs) into Pick HU:** Only the contents of the source HU are copied to the destination pick HU.

Pick Point Active

The pick point is the actual place in the warehouse to where the entire pallet is taken and only the required quantity is picked, in case of partial picking.

In case of partial picking, if all HUs should be directed to the pick point, this checkbox should be checked.

Use for Rough Bin Determination

If this indicator is checked, the storage type will be assigned to the delivery line item during the rough bin determination, even though the storage types do not have sufficient stock to fulfill the picking requirement. This information is used to drive the order-related replenishment in the warehouse.

Stock Removal Rule

Here, select the stock removal rule for the storage type. These rules can be defined in **SPRO | IMG | Extended Warehouse Management | Goods Issue Process | Strategies | Specify Stock Removal Rule.**

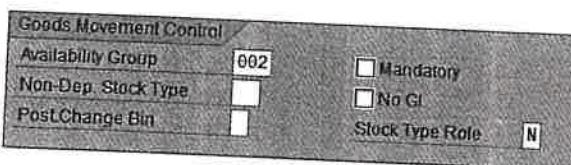
Round Whole Units

Here, configure how the picking WT quantity should be rounded. This can be defined at the storage type level as well as in the WPT. For example, if the pick quantity is 2.5 pallets, the system will behave following way:

- ▶ **No Rounding:** One WT will be created for quantity 2.5 pallets
- ▶ **Round Down WT Quantity to Single Unit:** Three WTs will be created: two WTs for full pallets and one WT for partial pallet
- ▶ **Round Down WT Quantity to a Multiple of a Unit:** There will be two WTs: one for two pallets and one for partial pallet
- ▶ **Round Up WT Quantity to a Multiple of a Unit:** In this case, there will be one WT for three pallets.

5.2.9.4 Goods movement control

In this section, the goods movement control parameters, which influence the goods movements in the ERP system, will be defined.



Availability Group

Availability groups were explained in detail earlier in the "Define Availability Group" section. Here, the appropriate availability group is assigned to the storage type. When putaway is confirmed, the stock type will be automatically changed to the stock type of the availability group. If required, posting change will be performed to move the stock from one storage location to another.

Nondependent Stock Type

This is explained earlier in the "Define Nondependent Stock Type" section. This configuration is required only if the stock in storage type belongs to one particular nondependent stock type. In such cases, assign the relevant value.

Posting Change Bin

Posting change in SAP refers to change of stock status with or without physical movement of the stock. For example, posting change will be created when the stock type is changed from blocked stock to unrestricted stock, or the stock category is changed from customer stock to own stock, and so on. This configuration specifies how to process the posting changes created in the system. The available options are:

- ▶ **Posting Change Always In Storage Bin:** For example, if the stock category is changed for the stock, it is not necessary that for the stock to be physically picked from the bin. In such cases, posting change can be performed in the same bin. Hence, no WT will be created.
- ▶ **Posting Change According to Mixed Storage Setting:** In this case, if mixed stock is allowed in the storage type, posting change will be performed in the same bin. If mixed stock is not allowed in the storage type, the system will create a WT to move the stock to a different storage bin.
- ▶ **Posting Change Never In Storage Bin:** In this case stock will always be moved to a different bin whenever posting change occurs.

Mandatory

This indicator specifies that stock can be posted only to the assigned availability group for the storage type. If a stock quantity is put away with a stock type from a different availability group into the storage type, the system automatically performs a posting change for the quantity into the relevant stock type of the mandatory availability group, during warehouse task confirmation.

No GI

This indicator restricts the storage type from posting goods issue from the storage type. In the warehouse, this indicator should be set to all storage types, which should not allow goods issue directly from the storage type without moving material to the interim storage type.

Stock Type Role

In the warehouse, if the storage type is always used to store a particular stock type (scraped stock, customs blocked stock, or blocked stock), select the appropriate stock type role for the storage type. Based on this indicator, whenever the stock is put away into the storage bin, the stock type will be changed automatically for the material.

5.2.9.5 Replenishment

In this section, the controls required for replenishment will be defined.

Replenishment Level

Replenishment level specifies whether the replenishment in this storage type is requested at storage bin level (fixed-bin storage only) or at storage type level. Options available include the following:

- ▶ **Storage Bin Level for Fixed Bins:** In this option, the replenishment quantities will be calculated for individual fixed bins as per the stock levels defined for the bins.
- ▶ **Storage Type Level:** In this option, the stock levels will be read for the entire storage type, and the replenishment quantities will be calculated based on the available stock in the storage type, compared with the stock level at the storage type.

Tolerance

Tolerance is defined in percentages, and it is used to check whether the replenishment quantity is sufficient to create a WT for replenishment.

5.2.10 Define Storage Sections

Storage types are further divided into storage sections. In the physical warehouse, storage sections could represent the type of product stored in the area (for example, heavy materials, small products, etc.), or a combination of bins (high racks, upper-level bins, lower-level bins, etc.) or could represent the velocity of products (fast-moving, slow-moving, etc.).

Not all warehouses will have storage sections for every storage type. This was mandatory until EWM 5.0 version. From EWM 5.1 onward, it is no longer the requirement to create bins and for bin determination for putaway. Stock can be put away into bins without a storage section. For example, interim storage types usually do not need a storage section.

Even though multiple storage sections can be created for a type, it should be thought out carefully. Increased storage sections can affect maintenance.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Define Storage Section

Storage Sections			
WhN	Typ	Sec	Description
SEW1	0005	0001	Heavy Parts
SEW1	0005	0002	Small Parts
SEW1	0005	0003	Damaged Stock
SEW1	0006	0001	High Value
SEW1	9002	0001	High Value Parts Staging Area
SEW1	9002	0002	Regular Parts Staging Area
SEW1	9020	0001	GI Staging Area

5.2.11 Define Storage Bins

Storage bins represent the physical location in the warehouse where the products are physically stored. This contains the details of the bin attributes, stock information, bin sectioning, production supply areas (PSA), activity areas, and PI data.

Even though creating bins is not part of configuration, the required information to create bin like different bin types, bin access types are defined in the configuration. This information is stored in the bin master and used during the products storage. This section will cover the required bin-related configurations and how to create and change them in EWM.

In EWM, a minimum of one storage bin should exist in every storage type. Bins can be created individually from SAP easy access menu (**Menu Path:** SAP Easy Access | Extended Warehouse Management | Master Data | Storage Bin | Create Storage Bin or TCode /SCWM/LS01) or automatically through a bin structure (**Menu Path:** SAP Easy Access | Extended Warehouse Management | Master Data | Storage Bin | Generate Storage Bins or TCode /SCWM/LS10).

TCode /SCWM/LS01 is mostly used to create individual bins as a daily maintenance activity, and bin structures are mostly used to create a large group of bins automatically, especially at the time of go-live.

While defining the bins following configuration data may be used depending on the warehouse requirements and the type of products storage.

5.2.11.1 Define Storage Bin Types

If a warehouse uses different bin types to store products, the bin types have to be defined in the configuration. Bin types are used to guide the right products into the right bins to avoid damage to the bins or products. For example, in an electronics warehouse, small bins may be used to store small products like cell phones, USB drives, and so forth; large bins may be used to store products like large

refrigerators, TVs, and so on, and standard-sizes bins may be used to store products like microwaves, air conditioning units, and so on.

In EWM, different types of bins can be configured. Usage of bin types in the bin master is an optional feature. However, if storage types are HU managed, knowing the bin type is mandatory for creating the bins. Here, bin types are used to specify what HU types are allowed for each bins, for example standard-sized pallets, large-sized pallets, medium-sized boxes, etc. Based on this information, HU putaway will be restricted to those bins that are not suitable for the storage of HU.

Storage Bin Types		
War	Stor	Description
SEWM_BTGB	Big Bins	
SEWM_REGB	Regular Bins	
SEWM_STMB	Small Bins	

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Storage Bins | Define Storage Bin Types

For capacity management, maximum weight, volume, capacity, length, width, and height must be defined for the bin types. The system will automatically copy this information to the bins at the time of bin creation.

5.2.11.2 Define Bin Access Types

Bin access types are used to better manage resources in EWM. They can represent a qualification of a resource type. For example, if a warehouse has bins at different heights or levels (say, five levels), some resources like forklifts may be capable of reaching only to certain levels (i.e., one or two), and some may be capable of reaching all the levels in the warehouse. In such scenarios, for the system to use proper resources for the WTs, it is very important to assign bin access types to the bins and resources. This information is used by resource management in determining the right resources for the execution of tasks.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Storage Bins | Define Bin Access Types

Bin Access Types		
War	Acc Type	Description
SEWM_LVL1	LVL1	Level 1
SEWM_LVL2	LVL2	Level 2
SEWM_LVL3	LVL3	Level 3
SEWM_LVL4	LVL4	Level 4
SEWM_LVL5	LVL5	Level 5

5.2.11.3 Define Storage Bin Identifiers for Storage Bin Structures

In the warehouse, the storage bin name usually consists of aisle identification, level identification, and the position of the bin. In some cases, the bin name might have additional information like stack, subdivision, and so on. For example, if the warehouse has triple-deep bins, with aisles and multiple levels, the bin name might look like A01-001-01-01, where A01 could be an aisle, 001 could be a level, 01 might represent the bin position, and the last two digits might represent the depth of the bins.

Subdivisions of the bins are mostly used in most cases where the warehouse has multiple depth bins like double-deep or triple-deep bins. Double-deep and triple-deep bin concepts are used for maximum utilization of the warehouse space by reducing aisle space used.

In EWM, storage bin identifiers represent Aisle, Stack, Level, Subdivision, and Bin depth. You can define a letter as the storage bin identifier for these identifiers. These are later used to define the storage bin structures and the activity areas independently of the storage type.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Storage Bins | Define Storage Bin Identifiers for Storage Bin Structures

Warehouse No.	SEWM
Storage Bin Identifier	
Aisle ID	A
Stack Descriptn	S
Level Descriptn	L
ID for Bin Subdivsn	B
Bin Depth Indicato	D

5.2.11.4 Define Storage Bin Structure

Bin structure is a template where all the required values for the bins like storage type, section, bin types, bin access types, weight, volume, capacity, fire containment sections, XYZ coordinates, bin start

value, bin end value, and increment number are defined. The bin attributes defined in bin structure will be copied to the bins when the bins are generated from the bin structures. In order to create bin structures, bin identifiers are essential.

The bin structure template can be defined using the characters N, A, and C, where N is used for numerical values, A is used for alphabetic characters, and C is used for a constant value. For example, template ACCCCCNCNNNNNNNN can be used to define the bin structure that starts with A01-001-01 and ends at D01-001-09. In the template, "A" represents an alphabetic character, "N" represents numeric values, and C represents the constant value (i.e., dashes and numbers that don't change). In the above example, the last five Cs represent the blank spaces. Because the bin number is eighteen digits, the template also should have eighteen digits.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Storage Bins | Define Storage Bin Structure

Warehouse No.	SEWM	EWM Demo Warehouse
Sequence number	001	

Bin Definition	
Template	ACCCCCNCNNNNNNNN
Structure	A L BB
Start Value	A01-001-01
End Value	D01-001-09
Increment	1 1 02

The X, Y, and Z coordinates specify the location of the bin and the distance between bins. In this template, aisle is defined in the X-axis; level is defined in the Y-axis, and bin ID is defined in the Z-axis.

XYZ-Coordinates	
X-Start	1,000
Y-Start	
Z-Start	1,000
X-Increment	4,000
Y-Increment	1,000
Z-Increment	1,000
X in Structure	A
Y in Structure	L
Z in Structure	B
Alignment	in Dgns

Additional Data	
Storage Type	0005 Finished Goods (HU and Non HI)
Storage Section	0001 Heavy Parts
Stor. Bin Type	BIGB Big Bins
Bin Access Type	LVL1
Maximum Weight	20.000,000 LB
Max. Volume	M3
Total Capacity	
Fire-Cont Sect.	
Storage Group	

This structure can create twenty bins for storage type 0005, storage section 0001, and bin type Big Bins, with a maximum bin capacity of 20,000 pounds. There is no unit of measure for bin coordinates. Hence, they can be defined as per the warehouse diagram or by manually measuring in meters, feet, or yards.

Based on the fire containment section indicator, the storage bin is assigned to a particular fire-containment section in the warehouse. This field appears in reports (for example, the inventory list for the fire department) that list the different hazardous substances per fire-containment section.

Storage Bin Generation								
War	Sq	Stor	Stor	Template	Start Value	End Value	Acc.	Storage Section
SEWM	001	0005	BIGB	ACCCCCNCNNNNNNNN	A01-001-01	D01-001-09	LVL1	0001
SEWM	002	0005	BIGB	ACCCCCNCNNNNNNNN	A01-001-02	D01-001-10	LVL1	0001
SEWM	003	0005	BIGB	ACCCCCNCNNNNNNNN	A01-002-01	D01-002-09	LVL2	0001
SEWM	004	0006	SMAB	ACCCCCNCNNNNNNNN	F01-001-01	I01-001-09	LVL1	0001

5.2.11.5 Generating Storage Bins from Bin Structures

After defining the bin structures, TCode /SCWM/LS10 can be executed to generate storage bins automatically. In the transaction, enter the warehouse number, select the structure, click on the "Choose" button on the application toolbar, and click on the "Create Bins" button located on the application toolbar. This will display a preview of the number of bins the system will generate, along with the bin details. Verify the bin details and click on the "Create" button to create the bins.

To Generate (20) To Delete (0) To Change (1)									
Storage Bin	Aisle	Stack	Level	Bin Sectn	Bin Depth	X Coord.	Y Coord.	Z Coord.	Angle
A01-001-01	A	1	01			1,000	0,000	1,000	0,0
A01-001-03	A	1	03			1,000	0,000	2,000	0,0
A01-001-05	A	1	05			1,000	0,000	3,000	0,0
A01-001-07	A	1	07			1,000	0,000	4,000	0,0
A01-001-09	A	1	09			1,000	0,000	5,000	0,0
B01-001-01	B	1	01			5,000	0,000	1,000	0,0
B01-001-03	B	1	03			5,000	0,000	2,000	0,0

Notes:

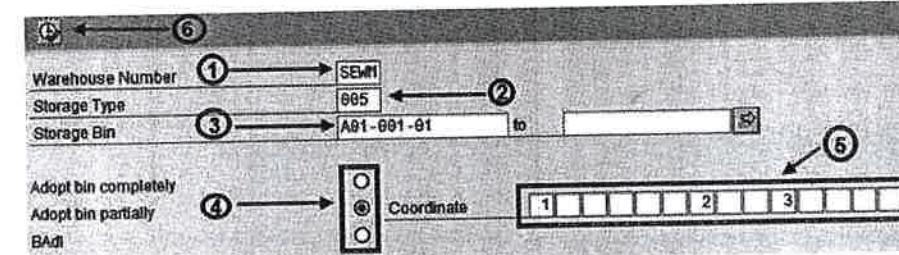
- i. The "storage group" field, under additional data for **Resource Execution Constraint (REC)**, can be used to control the number of working resources in different storage groups of the warehouse. Each bin of the warehouse can be grouped into different REC storage groups. With this assignment, the number of working resources in each REC managed warehouse area can be restricted to optimize warehouse resource efficiency. In the bin structure, the REC cannot be specified. However, it is possible to enter REC when creating a bin individually in TCode /SCWM/LS01 or the bins can be mass updated in TCode /SCWM/LS11. The values for the REC field come from the configuration table (**SPRO | IMG | Extended Warehouse Management | Cross-Process Settings | Resource Management | Control Data | Assign Resource Execution Constraints to REC Storage Group**).
- ii. In case the bins are created using bin structure, the bin values can be mass updated using TCode /SCWM/LS11—Mass Change to Storage Bins.

5.2.11.6 Maintain Verification Field

A verification field value is used on RF or mobile devices to ensure that warehouse personnel confirm the task in the right bin. The values in this field can be defined the same as bin name or different, depending on the warehouse requirements.

To maintain verification field data for a bin, go to TCode /SCWM/LX45; enter the warehouse number, storage type, and the bin details. For updating all the bins in the warehouse, leave the storage type and bin numbers blank. Check the radio button "Adopt bin completely" to copy the bin name into the verification fields. Under the "Adopt bin partially" option, it is possible to specify what position value of the bin name should be copied to the verification field. If these two options do not solve the problem, BADI can be used to write a custom code.

After entering the required values, click on the "Execute" button on the application toolbar. This will provide a preview. After verifying the data, click on the "Update" button. This will update the values for the selected bins.



① Warehouse Number: SEW1
② Storage Type: 0005
③ Storage Bin: A01-001-01
④ Adopt bin completely (radio button)
⑤ Coordinate: 1 2 3
⑥ Execute button
⑦ Update button

Change Storage Bin

Warehouse No.	SEW1 EWM Demo Warehouse
Storage Bin	A01-001-01
<input checked="" type="radio"/> Stor Bin <input type="radio"/> Stock <input type="radio"/> Invent. <input type="radio"/> Bin Screening <input type="radio"/> Sample <input type="radio"/> Quality Assess.	
Storage Type	0005
Storage Section	0001 Heavy Parts
Bin Access Type	LVL1 Level 1
Fire Cont. Sett.	
Stor. Bin Type	BIGB
Stor. Group	
REC SL Group	
Verification	A11

5.2.11.7 Other Important TCodes

The following TCodes are available for different bin-related activities. TCodes /SCWM/SEBA and /SCWM/SBST are used for the activity area, which will be covered in the Activity Area section. TCodes /SCWM/BINMAT, /SCWM/FBINDEL, /SCWM/FBINASN, and /SCWM/PRFIXBIN are related to fixed bins, which are covered in the replenishment section of chapter 19. TCode /SCWM/PRBIN can be used to print the storage bin labels.

System	Transaction code	Description
EWM	/SCWM/LS02	Change Single Storage Bin
EWM	/SCWM/LS03	Display Storage Bin
EWM	/SCWM/SBST	Sort Storage Bins
EWM	/SCWM/SEBA	Assign Start/End Storage Bin for Activity Area
EWM	/SCWM/BINSTAT	Add User Status for Storage Bins
EWM	/SCWM/BINMAT	Maintain Fixed Storage Bin
EWM	/SCWM/FBINDEL	Delete Fixed Storage Bin Assignment
EWM	/SCWM/FBINASN	Assign Fixed Storage Bins to Products
EWM	/SCWM/PRFIXBIN	Print Fixed Bin Label
EWM	/SCWM/PRBIN	Print Storage Bin Label

5.2.12 Define Number Ranges for Warehouse Documents

In EWM, number ranges should be defined to the following warehouse documents and have to be assigned to the warehouse. These number ranges are used to identify the warehouse documents uniquely.

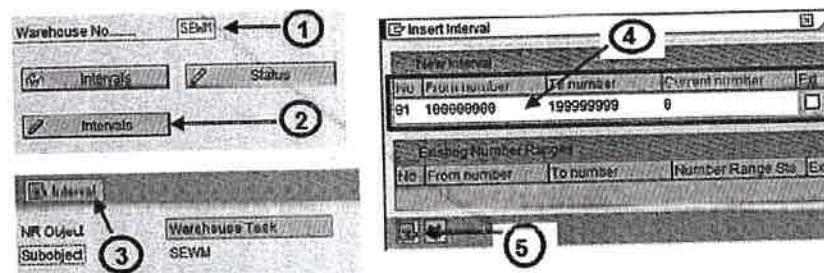
- ▶ Warehouse Tasks/Warehouse Documents
- ▶ Wave
- ▶ Warehouse Order
- ▶ Consolidation Group
- ▶ VAS Order
- ▶ Indirect Labor Tasks
- ▶ PI Documents

These warehouse documents are covered in detail in chapter 10.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Define Number Ranges

- 1 Define Number Ranges for Warehouse Tasks/Warehouse Documents
- 2 Define Number Range Intervals for Wave
- 3 Define Number Range Intervals for Warehouse Order
- 4 Define Number Range Intervals for Consolidation Group
- 5 Number Ranges for VAS Order
- 6 Define Number Ranges for Indirect Labor Tasks
- 7 Number Ranges for Physical Inventory Documents
- 8 Assign Number Range Intervals to Warehouse Number

Here, the number ranges for each warehouse document types must first be defined, and then assigned to the warehouse as a last step. To define number ranges for each document type, double-click on the documents, enter the warehouse number, click on the "Change Interval" button, click on the "Insert Interval" button (in the following screen), in the popup window enter the sequence number, the number range ("From number" and "To number"), click on the "Insert" button, and save the entries.



Repeat the steps for all document types. After defining the number ranges, click on the "Assign Number Range Intervals to Warehouse Number" menu to assign the defined number ranges to the warehouse.

Number Ranges for Ware Management							
Wareh...	No Rng	No Range	WaveNoRg	NRIInt_WO	VAS No Rge	NRIInd...	NRI PI Docum...
SEWM	01	01	01	01	01	01	01

Number ranges defined for the consolidation group are assigned to the warehouse in SPRO | IMG | Extended Warehouse Management | Goods Receipt Process | Deconsolidation | Assign Number Range Intervals to Consolidation Groups

Here, click on the "New Entries" button on the application toolbar, enter warehouse number, select the type of consolidation group, enter the number range, and click on the "Save" button.

Number Ranges for Hiling Consolidation Groups	
Ware Type	Int
SEWM A Internal Consolidation Group for SE	01
SEWM B Unique Consolidation Group for SE	01
SEWM C Consolidation Group for Putaway	01
SEWM D Manual Consolidation Group	01
SEWM E External Consolidation Group for SE	01

Notes:

- Even though number ranges can be transportable, it is recommended to maintain them manually in every client.
- Assignment of number ranges is transportable.

5.2.13 Define Activity Areas

An activity area is an organizational element and a new feature introduced in EWM. These areas are logical groups of bins that can have different sorting sequence and can be used in different warehouse activities like PI (picking), putaway, replenishment, and so on. In EWM, activity areas are required and are used by warehouse-order-creation-rules to create warehouse orders.

Bins from different storage types can be assigned to activity areas.

Within an activity area, an activity-dependent bin sorting sequence can also be defined. The system uses these bin-sorting sequences to optimize the execution of warehouse tasks and influence determination of warehouse queues. Diagram 3.2.2.5A is an example of how activity areas can be created in the warehouse.

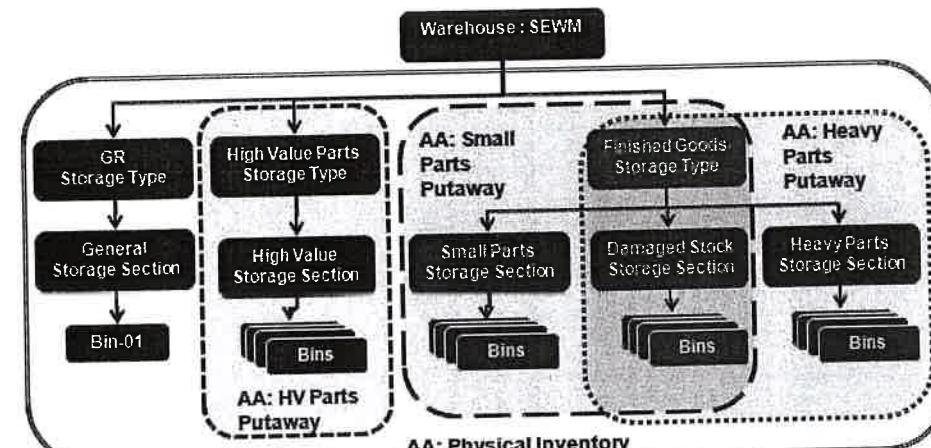


Diagram 3.2.2.5A - Activity Areas

The next few sections will cover the required configuration for activity areas.

5.2.13.1 Define Activities

In EWM, an activity triggers the goods movements. In this section, different activities can be defined. All defined activities must be assigned to a warehouse process category. Warehouse process categories are predefined in the system and used to classify the type of goods movements of the activities. More than one activity can be assigned for the same warehouse process category; for example, one activity can be defined for bin-to-bin movement and another for replenishment with the same warehouse process category, "Internal Stock Transfer."

The following warehouse process categories are predefined in the system. Only goods receipt and goods issue warehouse process categories are not available for the activities. They are used by the system internally during goods receipt and issue.

- ▶ Putaway
- ▶ Stock removal
- ▶ Internal stock transfer
- ▶ PI
- ▶ Posting change
- ▶ Cross-line stock putaway
- ▶ Goods Receipt
- ▶ Goods Issue

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Activity Areas
| Activities | Define Activities

Click on the "New Entries" button; enter warehouse number, activity code, description, process category, and process step. Process step is required only for labor management.

Define Activity			
War	Activity	Description	C
SEWM CLSP	Cross Line Stock Putaway	8	
SEWM INTM	Internal Warehouse Movements	1	
SEWM PCNS	Posting Change Nations	7	
SEWM PHYS	Physical Inventory Movement	4	
SEWM PICK	Picking	2	
SEWM PUTW	Putaway	1	
SEWM REPL	Replenishments	3	

5.2.13.2 Define Activity Areas

As mentioned earlier, activity areas play an important role in the warehouse and are used by warehouse-order-creation rules to create warehouse orders. The system uses these bin-sorting sequences to optimize the execution of warehouse tasks. It is also an influencing parameter in determining warehouse queues.

Notes:

- Bin sorting must be performed whenever activity areas or the bin master data are changed (i.e., addition, change, or deletion).
- To work with activity areas, bin sorting is essential.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Activity Areas
| Define Activity Area

Here, click on the "New Entries" button on the application toolbar; enter warehouse number, activity area, and the description.

Define Activity Area			
War	AA	Description	Joined
SEWM HPIK	HPIK	Heavy Parts Picking	<input type="checkbox"/>
SEWM HPUT	HPUT	Heavy Parts Putaway	<input type="checkbox"/>
SEWM PHYS	PHYS	Physical Inventory	<input type="checkbox"/>
SEWM PICK	PICK	Picking	<input checked="" type="checkbox"/>
SEWM PUTW	PUTW	High Value Parts Putaway	<input type="checkbox"/>
SEWM SPTK	SPTK	Small Parts Picking	<input type="checkbox"/>
SEWM SPUT	SPUT	Small Parts Putaway	<input type="checkbox"/>

It is also possible to define an activity area that groups more than one activity area by checking the "Joined" checkbox.

To assign an activity area to a group activity area, follow the menu path SPRO | IMG | Extended Warehouse Management | Cross-Process Settings | Warehouse Order | Join Activity Areas Together

Assign Activity Areas to Joined Activity Areas			
War	H Ad A	AA	Sort Sequence
SEWM PICK	HPIK	1	
SEWM PICK	SPIK	2	

5.2.13.3 Assign Storage Bins to Activity Areas

An activity area consists of one or more storage bins. Bins can be assigned explicitly to more than one activity areas if the entire storage type bins do not belong to one activity area. Bins can be assigned using aisle, stack, level, and bin section. For every activity area, you can define a unique consolidation group ID by clicking on the "Pull Consolidation Group" button, or manually enter a consolidation group if more than one activity area shares a consolidation group. Consolidation groups are used to determine which products are packed together or can be stored together. This helps to initiate deconsolidation activity, if required.

Warehouse No.	SE01	EWM Demo Warehouse
Activity Area	HPUT	Heavy Parts Putaway
Sequence No.	1	
Activity Area		
Storage Type		
Aisle Start	A	
Aisle End	E	
Stack Start		
Stack End		
Level Start	1	
Level End	2	
Bin Section Start	B1	
Bin Section End	10	
Cons Grp	0004000001	Pull Deconsolidation Group
Wt Storage Type		
Interim Stor. Sec		
Int. Storage Bin		

Warehouse No.	SE01	EWM Demo Warehouse
Activity Area	SPUT	Small Parts Putaway
Sequence No.	1	
Activity Area		
Storage Type		
Aisle Start	A	
Aisle End	E	
Stack Start		
Stack End		
Level Start		
Level End	3	
Bin Section Start	B1	
Bin Section End	10	
Cons Grp	0004000002	Pull Deconsolidation Group
Int. Storage Type		
Interim Stor. Sec		
Int. Storage Bin		

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Activity Areas | Assign Storage Bins to Activity Areas

Here, click on the "New Entries" button on the application toolbar; enter warehouse number, select the activity areas previously defined, specify the bin parameters, and assign a consolidation group manually or by clicking on the "Pull Consolidation Group" button.

5.2.13.4 Define Sort Sequence for Activity Area

In this section, the sort sequences for the activity area and for the activity are defined. Bins can be sorted differently for different activities to optimize WTs. Many activities can be assigned to one activity area.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Activity Areas | Define Sort Sequence for Activity Area

Warehouse No.	SE01	EWM Demo Warehouse
Activity Area	HPTK	Heavy Parts Picking
Activity	PICK	Picking
Sequence No.	1	
Sort Sequence for Storage Bins		
Storage Type		
Sort Sequence	4 Sort Sequence: Level, Bin Subdivision, Stack	<input type="checkbox"/>
Sort Dir. Aisle	1 Ascending	<input type="checkbox"/>
Sort Dir. I. Stack		<input type="checkbox"/>
Path Dir. Stack		<input type="checkbox"/>
Sort Dir. Level	2 Descending	<input type="checkbox"/>
Path Dir. Level		<input type="checkbox"/>
Sort Dir. Bin Subd.		<input type="checkbox"/>
Path Dir. Bin Subd		<input type="checkbox"/>
Picking Mode	3 Both Sides	<input type="checkbox"/>
<input type="checkbox"/> Fixed Sorting		

5.2.13.5 Generate Activity Area from Storage Type

If you do not want to define activity areas manually, storage type-dependent activity areas can be generated in menu path SPRO | IMG | Extended Warehouse Management | Master Data | Activity Areas | Generate Activity Area from Storage Type

Here, enter the warehouse number, storage type, and activity. To assign all activities automatically to the activity areas, leave the activity blank. However, the bin sort sequence for the activity area must be specified manually.

5.2.13.6 Generate Bin Sorting

In this final step, perform the bin sorting that creates the internal sequences the system uses in warehouse order (WO) creation and sequencing warehouse tasks within the warehouse order. This is not part of configuration and cannot be transportable. It has to manually maintained in every system in menu path SAP Easy Access | Extended Warehouse Management | Master Data | Storage Bin | /SCWM/SBST—Sort Storage Bins or TCode /SCWM/SBST

Here, enter warehouse number, activity area, and activity, and click on the "Execute" button. This will display the results in a simulation screen. Click on the "Execute" button in the simulation screen to create the sequence.

Simulation of Bin Sorting

WhN	Storage Bin	Activity	Seq. No.	AA	Typ	Section	Sort Seq.
SE-WM	F01-001-01	PICK	1	PICK	0005	0001	1
SE-WM	F01-001-02	PICK	1	PICK	0006	0001	2
SE-WM	F01-001-03	PICK	1	PICK	0005	0001	3
SE-WM	F01-001-04	PICK	1	PICK	0008	0001	4

5.2.14 Define Staging Areas and Warehouse Doors

Staging areas are used for the interim storage of goods in the warehouse and are usually located near the doors assigned. They are used mainly for unloading and loading activities.

This section will cover the details and required configuration for staging areas and warehouse doors. Diagram 5.2.14A gives an overview of the configuration of staging areas and warehouse doors and its mapping.

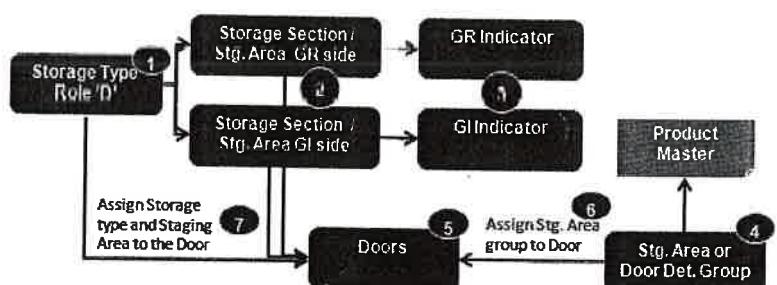


Diagram 5.2.14A-Mapping of Staging Areas and Warehouse Doors

5.2.14.1 Define Staging Areas

In EWM, staging areas can be defined to specific or multiple purposes, for example, only for goods receipt, only for goods issue, or for both. They are defined as storage sections to the storage type with role "D."

A loading rule can also be selected for the staging areas. Possible options include the following:

- ▶ HUs should be sent to the warehouse door immediately after arrival
- ▶ All HUs must arrive before loading can begin
- ▶ There needs to be a wait of twenty-four hours before loading can begin

Multiple bins can be created in each staging area (storage sections), which can represent the loading sequence of the products.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Staging Areas |

Define Staging Areas

Click on the "New Entries" button on the application toolbar; enter warehouse number, select storage type, select storage section, and specify the type of staging area.

Define Staging Areas					
War	Stor	Stor	GR	GI	Load Rule
SEWM	9002	0001	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
SEWM	9002	0002	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
SEWM	9020	0001	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

5.2.14.2 Define Staging Area and Door Determination Groups

Staging area groups and door determination groups are used for door determination for the loading and unloading of products. For example, in large distribution centers, products like frozen products are loaded and unloaded at different doors than are regular products. This configuration is used for such warehouse requirements.

These staging area and door determination groups are available in the product master, which then influences the staging area and door determination for loading and unloading activities.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Staging Areas | Define Staging Area and Door Determination Groups

Staging Area/Door Determination Group		
War	SA/DoorGrp	Description
SEWM	HEVY	Heavy Products (Stg. Group)
SEWM	HVAL	High Value Products (Stg. Group)
SEWM	REGL	Regular and Small Products(Stg. Group)

5.2.14.3 Define Warehouse Door

In EWM, a door is a location assigned to the warehouse where vehicles drive up to load or unload products.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Warehouse Door | Define Warehouse Door

Here, specify loading direction, action profile, default staging area group, default staging area, and means of transport.

The system will use the default values defined here in the warehouse documents if it cannot find staging area group, staging area, or means of transport.

Door Determination						
War	Whse Door	Load Dir	Action	NR	Def Stg A Grp	Def Stg Are
SEWM TS01		O Outbound		01	9020	0001
SEWM TS02		O Outbound		01	9020	0001
SEWM TS03		O Outbound		01	9020	0001
SEWM RE01		I Inbound		01	9002	0001
SEWM RE02		I Inbound		01	9002	0001
SEWM RE03		I Inbound		01	9002	0001

5.2.14.4 Assign Staging Area/Door Determination Group to Door

Here, a staging area group can be assigned to permitted warehouse doors.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Warehouse Door | Assign Staging Area/Door Determination Group to Door

Staging Area/Door Determination Gru		
War	Whse Door	SVDDetGrp
SEWM RE01		REGL
SEWM RE02		REGL
SEWM RE03		HEVY
SEWM RE03		HVAL

5.2.14.5 Assign Staging Area to Warehouse Door

Here, staging areas are assigned to warehouse doors. During this assignment, the system takes into account the possible loading and unloading activities for the staging areas and doors. These assignments form the basis for the determination rules (staging area, group, and door) in the delivery.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Warehouse Door | Assign Staging Area to Warehouse Door

Assignment of Staging Area to Warehouse Door			
War	Whse Door	StgAreaGrp	StgArea
SEWM TS01		9020	0001
SEWM TS02		9020	0001
SEWM TS03		9020	0001
SEWM RE01		9002	0001
SEWM RE02		9002	0001
SEWM RE03		9002	0002

5.2.15 Work Center

The work center is the physical location in the warehouse where warehouse activities such as deconsolidation, counting, quality inspection, value added service, or packing are performed. In EWM, the following transactions or activities can be performed in the work center:

- ▶ **Packing General—TCode /SCWM/PACK:** Work center can be used for all general packing. The transaction code for general packing is /SCWM/PACK. Menu path is SAP Easy Access | Extended Warehouse Management | Execution | Packing—General
- ▶ **Deconsolidation In Goods Receipt—TCode /SCWM/DCONS:** This transaction is used to segregate the mixed HUs into non-mixed HUs using deconsolidation groups. Menu path is SAP Easy Access | Extended Warehouse Management | Execution | Deconsolidation in Goods Receipt
- ▶ **Quality Inspection and Count—TCode /SCWM/QINSP:** This transaction is used for counting, recording, and confirming inspection results. Menu path is SAP Easy Access | Extended Warehouse Management | Execution | Quality Inspection and Count
- ▶ **Create Confirmation for VAS—TCode /SCWM/VASEXEC:** This transaction is used to perform value added services like packing, printing, and relabeling products with customer-specific labels and so on. Menu path is SAP Easy Access | Extended Warehouse Management | Execution | Create Confirmation for VAS

The following configuration and master data must be set up for the work center:

- ▶ Define storage type with an appropriate role
- ▶ Minimum of one storage section should exist for the storage type
- ▶ At least one bin must be created
- ▶ Specify work center layout
- ▶ Define a work center

- ▶ Define master data attributes (/SCWM/TWORKST)
- ▶ Define scales (/SCWM/SCALE)
- ▶ Determine work center in goods issue (/SCWM/PACKSTD)
- ▶ Printer control (/SCWM/TCPPRINT)
- ▶ Optimize work center determination in goods issue

Diagram 5.2.15A provides an overview of how the work center is linked to different configuration objects in EWM.

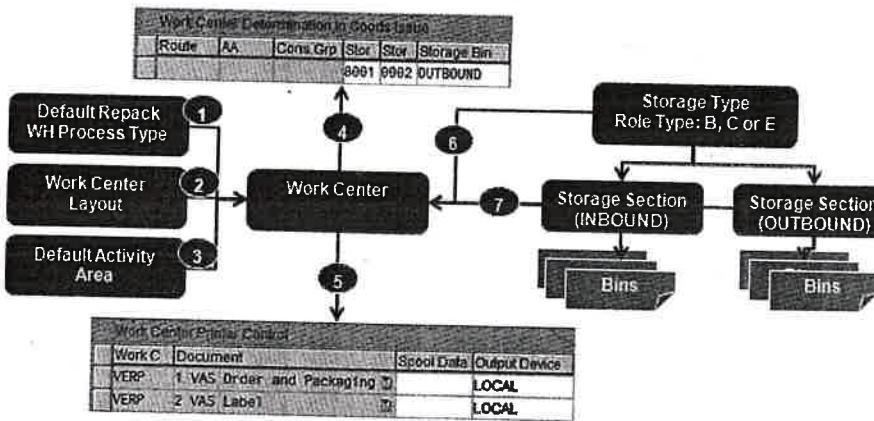


Diagram 5.2.15A – Mapping of Work Center

In EWM, to define work centers, storage types should be created with the role "Work Center (E)," "Pick Point (B)," or "Identification and Pick Point (C)." Defining the storage type, section, and bin has already been covered above. Here, the remaining configuration and master data setup for the work center will be covered.

5.2.15.1 Specify Work Center Layout

The work center layout is used to specify which options to make available, which functions to allow, and which tab pages to show in the work center-related transactions. In this IMG activity, define which of the available tab pages the user should be offered for the transaction.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Work Center | Specify Work Center Layout

Here, enter the warehouse number and layout code; select the transaction type; and specify the values for the "tab pages in scanner area," "tab pages in detail area," and "different functions" that the work center can perform.

- ▶ **Tab pages In the scanner area:** These tab pages appear in the upper right screen. These tab pages are necessary when working in a work center with a keyboard scanner or without a mouse.
- ▶ **Tab pages In the detail area:** These tab pages appear in the lower right screen. This is used to see detailed information about the storage bin and HU. The detail area can only be used in connection with tree control. Double-click on the object in the tree control (HU, storage bin, and so on), and the system adds the detailed information to the tab page.
- ▶ **Tree control:** The tree control appears in the left screen of the work center. This can be used to perform repacking transactions using Drag & Drop.
- ▶ **Different Functions:** Here, different functions for the work center like packing in bin, delete HU, empty HU etc. can be enabled.

Tab Pages in Scanner Area	Tab Pages in Detail Area	Different Functions
<input checked="" type="checkbox"/> Display Scanner Area <input checked="" type="checkbox"/> Create HU <input checked="" type="checkbox"/> Repack HU <input checked="" type="checkbox"/> Repack Product <input checked="" type="checkbox"/> Enter Differences <input checked="" type="checkbox"/> Change HU <input checked="" type="checkbox"/> Deconsolidate <input checked="" type="checkbox"/> Assign Shs. <input checked="" type="checkbox"/> Assign Shs to Deliv. <input checked="" type="checkbox"/> Focus on Stock <input type="checkbox"/> VAS Order Confirm. <input type="checkbox"/> VAS Activity Conf. <input type="checkbox"/> VAS Item Confirm. <input type="checkbox"/> VAS Aux Product <input type="checkbox"/> Focus to VAS <input type="checkbox"/> BAdl 1 <input type="checkbox"/> BAdl 2 <input type="checkbox"/> BAdl 3 <input type="checkbox"/> BAdl 4 <input type="checkbox"/> BAdl 5	<input checked="" type="checkbox"/> VAS Order <input type="checkbox"/> Activity & Aux Prods <input type="checkbox"/> Activity & Aux Prod <input checked="" type="checkbox"/> Delete HU <input checked="" type="checkbox"/> Empty HU <input checked="" type="checkbox"/> HU Header Choole <input checked="" type="checkbox"/> Pack Add/Pack Mat. <input type="checkbox"/> Change Kit <input type="checkbox"/> Reason Required <input type="checkbox"/> Exception Code <input type="checkbox"/> Move VAS Stock	
Tree		
<input checked="" type="checkbox"/> Display Tree Control <input type="checkbox"/> Display 2nd TreeCtrl <input type="checkbox"/> Expand Tree Control 3 <input checked="" type="checkbox"/> Drag&Drop <input type="checkbox"/> Display VAS TreeCtrl		

5.2.15.2 Define Work Center

In this configuration, one can create a work center for a warehouse and assign attributes like storage type, inbound and outbound section, repack process type, and storage bin. The following are the details of the attributes that are assigned to the work center:

- ▶ **External Step:** The external step represents the action or activity performed in the work center. It is applicable only to HU-managed stock.

- ▶ **Storage Type:** This specifies the storage type of the work center.
- ▶ **Inbound Section:** This is defined as storage section under storage type and is used in the work center to store products that need to be processed.
- ▶ **Outbound Section:** This is also defined as storage section under storage type and is used in the work center to store products that have been already processed.
- ▶ **Rewrap Warehouse Process Type:** This is the WPT that needs to be used for repacking. You can specify default WPT for repacking for warehouse number. If the WPT is not assigned here, and no process type is determined, the system will use the WPT defined for the warehouse number. WPT is covered in chapter 11.
- ▶ **Layout:** Specify which layout to use for the work center.
- ▶ **Return Storage Type and Return Storage Section:** These are used if the work center is to be used as a pick point.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Work Center | Define Work Center

Define Work Center												
War	Work	Description	Step	Stor	ISec	OSec	R	Layout	RF-HU	Print	Process	Ref
SEWM	VERP	Packaging Work	0001	0001	0002		VPMX		<input checked="" type="checkbox"/>			

5.2.15.3 Define Master Data Attributes

The storage bin and scales assignment is not a configuration activity. You can specify the bin and name of the scale in case the weight is automatically captured using program SCALE_FOR_SCMD.exe or some other custom program. This assignment can be done in SAP's easy-access menu: **Extended Warehouse Management | Master Data | Work Center | Define Master Data Attributes or TCode /SCWM/TWORKST**

Work Center: Define Master Data Attributes	
Warehouse No.	SEWM
Work Center	VERP
Description	Packaging Work Center
Storage Bin	OUTBOUND
Terminal	
Pack Material	
Scales	8861
Weight Tolerance	
Storage Type	8861

5.2.15.4 Define Scales

Defining scales is required only if it is necessary to capture the weights directly from the scales and update the weights in EWM. For this, the RFC destination has to be defined for the PC connected to the scales. Once the RFC destination is defined, it has to be assigned to the scales in EWM. These are the settings required in the EWM system. Additionally, to pull the data from the PC, the SCALE_FOR_SCMD.exe program must be registered on the PC connected to the scales. In addition to this, there may be some additional programs/services that need to be registered on the PC to transfer the data from the scales to the PC, depending on the hardware.

More help on SCALE_FOR_SCMD.exe along with software to download is available at service.sap.com/scm.

The menu path to define scale and assign the RFC destination is **SAP Easy Access Menu | Extended Warehouse Management | Master Data | Work Center | Define Scales or TCode /SCWM/SCALE**

Scales		
Scales	Description	RFC Dest. for Scale
NETTLER	VERTEX Floor Scales	CALL_MLR

5.2.15.5 Determine Work Center In Goods Issue

Here, specify which work center should be used for outbound-related activities like packing, VAS, and so on. The work center is assigned to the combination of route, activity area, and consolidation group.

Menu Path: SAP easy access menu | Extended Warehouse Management | Master Data | Work Center | Determine Work Center in Goods Issue or TCode /SCWM/PACKSTDT

Work Center Determination in Goods Issue						
Route	AA	Cns.Grp	Stor	Stor	Storage Bin	
8001	0002	OUTBOUND				

5.2.15.6 Printer Control

Here, consultants can specify which printer to be used to print the labels, delivery note, or packaging specifications in the work center. This transaction can be accessed from SAP easy access menu | Extended Warehouse Management | Master Data | Work Center | Printer Control or TCode /SCWM/TWCPRINT

Warehouse No. <input type="text" value="SEWM"/>			
Work Center Printer Control			
Work C	Document	Spool Data	Output Device
VERP	1 VAS Order and Packaging	<input checked="" type="checkbox"/>	LOCAL
VERP	2 VAS Label	<input checked="" type="checkbox"/>	LOCAL
VERP	3 Delivery Note	<input checked="" type="checkbox"/>	LOCAL

5.2.15.7 Optimize Work Center Determination in Goods Issue

In the "Optimize Work Center Determination" table, the sequence to use to determine the work center during work center determination can be specified for better performance. The system will first determine the work center defined in "Determine Work Center in Goods Issue." If it doesn't find one, it will use the access optimization table to find work center.

Menu Path: SPRO | Extended Warehouse Management | Master Data | Work Center | Optimize Work Center Determination in Goods Issue

Optimize Work Center Determination in Goods Issue				
Wareh	Sequence No.	Route	Activ.Area	CnsGrp
SEWM	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SEWM	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SEWM	3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

5.2.16 Map Storage Locations from ERP System to EWM

Earlier in this chapter, the topics of availability group, warehouse stock types, ERP stock types, were covered in detail. This section will explore how to map ERP storage locations to the availability group. The major advantage of this setting is that when the putaway is confirmed, stock can be transferred from one storage location to another automatically (for example, from "not available to sell" storage location to "available to sell" storage location), based on the availability group assigned to the source and destination storage types.

Menu Path: SPRO | Extended Warehouse Management | Interfaces | ERP Integration | Goods Movements | Map Storage Locations from ERP System to EWM

Here, click on the "New Entries" button on the application toolbar; enter plant, storage location, and logical system as the ERP logical system; warehouse number as the EWM warehouse number; and the appropriate availability group for the storage location.

Customizing Mapping Table for ERP Plant Storage Location						
Plnt	SLoc	Logical sys	War	AGr	Ent. to Dispose	Desc Person Ent to Dis
2517	IAFS	SE1CLNT410	SEWM	002	2517	EWM Demo Plant
2517	NAFS	SE1CLNT410	SEWM	001	2517	EWM Demo Plant

Notes:

- i. Entries made in plant, storage locations, and logical systems are not verified by the system. Therefore, wrong entries can cause incorrect results.
- ii. Value for "Ent. To dispose" will be copied automatically from the supply chain unit master data of the plant (i.e., value from business partner field). This is covered in chapter 6.

5.2.17 Assign Control Parameters to Warehouse

Here, the basic data and default values for each warehouse number are defined. Default values will be used if the system does not find the required configuration to process the transaction.

Menu Path: SPRO | Extended Warehouse Management | Master Data | Define Warehouse Number Control

Warehouse No.	SEWM		
Description	EWM Demo Warehouse		
Warehouse Number Control			
Weight Unit	LB	Time Unit	MIN
Volume Unit	M3	Unit of Length	M
Currency	USD	Factory Calend	US
Exception Wave	WAV1		
Replenishment St. Tpe	F2		
Stat. Prof. Bin			
Default Storage Process Types for Special Activities			
WPT Distr. Pwy	1012		
WPT HU on Dest.	3050		
WPT HU for Res.			
Rewrap WPT	3040		
WPT Putback			
WPT Loading RF			
WPT UnloadAddHUs	9010		
WPT Load Rev. RF			
Determination Procedures for Condition Technique			
Proced. Whse-Int Pro	GWHTA		
Pick-HU Procedure	GBDL		
Palletization Proc	GPAL		
Proc. Deconsolidation	GDKS		
PhysInv Print. Proc			
Proc. Q. City			

5.3 Number Ranges for Other Documents

In addition to the number ranges defined in 5.2.12, it is necessary to define number range intervals for inbound deliveries, outbound deliveries, expected goods receipt documents, and handling units, which are created in the EWM system; and for ERP inbound deliveries and outbound deliveries, which are transferred from the ERP system. The following sections will cover more details on this.

5.3A Number Ranges for Other Documents			
S. No	Configuration Check List	TCode	Transportable
1	Number Range Intervals for Other EWM Documents	SPRO	No
2	Define Number Ranges for ERP Delivery Documents	SPRO	No
3	Define Number Range for HU Identification	SPRO	No

5.3.1 Number Range Intervals for Other EWM Documents

In this section, define the number range intervals for various other EWM documents like outbound deliveries, inbound deliveries, outbound delivery orders, posting changes, and for expected goods receipts (EGR). These documents are originated in the EWM system and not transferred from ERP. Details of these documents are covered in chapter 10.

Menu Path: SPRO | Extended Warehouse Management | Cross-Process Settings | Delivery Processing | Number Ranges

Number Ranges				
<input type="checkbox"/>	<input type="radio"/>	Define Number Range Intervals for Technical Keys		
<input type="checkbox"/>	<input type="radio"/>	Define Number Range Intervals for Outbound Deliveries		
<input type="checkbox"/>	<input type="radio"/>	Define No. Range Intervals for Inbound Deliveries and Outbound Del. Orders		
<input type="checkbox"/>	<input type="radio"/>	Define Number Range for Posting Changes and Stock Transfers		
<input type="checkbox"/>	<input type="radio"/>	Define Number Range Intervals for Expected Goods Receipt		
NR Object: Technical Key				
Intervals				
No.	From number	To number	Current number	Ext.
01	900000000000000001	999999999999999999	9	<input type="checkbox"/>
NR Object: Outbound Delivery Object Name: /SCDL/FD				
Intervals				
No.	From number	To number	Current number	Ext.
01	000000000000000001	0000000000999999999	0	<input type="checkbox"/>
02	00000000010000000000	0000000001999999999		<input checked="" type="checkbox"/>
NR Object: Processing Document Object Name: /SCDL/PRD				
Intervals				
No.	From number	To number	Current number	Ext.
01	000000000000000001	000000000999999999	0	<input type="checkbox"/>
02	00000000010000000000	0000000001999999999		<input checked="" type="checkbox"/>
NR Object: Expected GR Object Name: /SCDL/EGR				
Intervals				
No.	From number	To number	Current number	Ext.
01	9000000000	9999999999	0	<input type="checkbox"/>

5.3.2 Define Number Ranges for ERP Delivery Documents

Here, number ranges must be defined for inbound delivery notification (IDN) and outbound delivery requests (ODR) created in the EWM system due to delivery split.

When the ERP inbound and outbound deliveries are transferred to the EWM system, they become IDN and ODR in the EWM system. During this transfer, the system copies the same number to the IDN and ODR, which in turn helps users search the corresponding EWM documents or refer to document flow created in the EWM system for ERP documents.

In certain cases, it is possible that the delivery quantities may need to be adjusted in the EWM system due to reasons like short supply and short pick, in which case the EWM system adjusts the original document quantity and creates the new document, using delivery split functionality. In such scenarios, the new IDN/ODR documents are being created in the EWM system, using the internal number range of the EWM system, and will be transferred to the ERP system. In order to avoid any data transfer issues, the internal number range defined for IDN/ODR should be the same as the one defined for the deliveries (external number range) in the ERP system. If the number ranges are not defined properly in both systems, it can cause errors while transferring the data.

The number ranges for deliveries in the ERP system can be found under **SPRO | Logistics Execution | Shipping | Deliveries | Define Number Ranges for Deliveries**.

Number ranges in ERP system			
No.	From number	To number	Current number
17	8886000000	8883999999	8880032282
18	8885000000	8888999999	<input checked="" type="checkbox"/>
41	1180000000	1182999999	<input type="checkbox"/>
42	1185000000	1186999999	<input checked="" type="checkbox"/>

In this screenshot, number ranges 18 and 42 are defined as external number ranges and assigned to inbound delivery type EL and outbound delivery type LF.

In the following menu, these number ranges are defined as an internal number range in the EWM system.

Number ranges in EWM system			
No.	From number	To number	Current number
01	1185000000	1186999999	1185000000
02	8885000000	8888999999	8885000000

Menu Path: SPRO | Extended Warehouse Management | Interfaces | ERP Integration | Delivery Processing | Define Number Ranges for ERP Documents

5.3.3 Define Number Range for HU Identification

To use handling unit functionality in EWM, it is necessary to define the internal or external number ranges and should be assigned to packaging material types. The internal number range of the EWM system should be defined as an external number range and should be assigned to the appropriate packaging material types in the ERP system. Otherwise, it can cause errors during data transfer.

Menu Path: SPRO | Extended Warehouse Management | Cross-Process Settings | Handling Units | External Identification | Define Number Range for HU Identification

Summary

This chapter has explained qRFC configuration, warehouse org structure, and basic configurations required for various master and transactional data in the EWM system. By now, readers have a good understanding of basic configuration requirements in both ERP and EWM systems. The following chapters will build on the information defined in these two chapters, rather than explaining it again.

Chapter 6: Data Transfer and Business Partners

Before data transfer to the EWM system is initiated, certain data-dependent settings must be enabled in the EWM system. This includes product master-dependent settings; delivery-related settings, and business partner-dependent settings. This chapter covers configurations required for such data transfer settings as well as actual transferring of master data from the ERP system to the EWM system via CIF. The business partner sections explain how to create business partner data for the transferred master data (customers, vendors, employees, and plants) in the EWM system.

6.1 Master Data-Dependent Settings

In order to initiate the data transfer from ERP system to EWM system, we must define product master-dependent settings; delivery-related settings, and business partner-dependent settings. Once these settings are completed it is recommended to do the table comparison between ERP and EWM system to verify if any data inconsistencies exist in the database tables. Following sections will cover more details on each of these settings.

6.1.1 Product Master-Dependent Settings

In chapter 4, section 4.3.2 covered how to define "Attribute Values for Additional Material Master" in the ERP system. This section will cover how to define those values in the EWM system. Table 6.1.1A gives an overview of required product master dependent settings in the EWM system.

6.1.1A Product Master Dependent Settings				
S. No	Configuration Check List	TCode	System	Transportable
1	Define HU Types	SPRO	EWM	Yes
2	Define Warehouse Storage Condition	SPRO	EWM	Yes
3	Define Warehouse Product Group	SPRO	EWM	Yes
4	Define Handling Indicator	SPRO	EWM	Yes
5	Define Quality Inspection Group	SPRO	EWM	Yes
6	Maintain Transportation Group	SPRO	EWM	Yes

6.1.1.1 Define HU types

In EWM, storage unit management is replaced with HU management. In order to activate HU management, an HU type is essential. HU type is used to classify packaging materials and HUs with the same physical properties—for example, steel pallet, cardboard box, or wooden pallet.

HU type can be centrally maintained in the ERP material master under WM packaging view and can be transferred to EWM as part of CIF. In such cases, HU types defined in the ERP system should match the HU types defined in the EWM system.

If maintaining HU type in the ERP material master is not a requirement, it can be directly maintained in the EWM product master.

Menu Path: SPRO | IMG | Extended Warehouse Management | Cross-Process Settings | Handling Units | Basics | Define HU Types

Handling Unit Types	
Han	HU Type Description
BOX	Box
CBOX	Cardboard Box
E1	Europallet - 1m Height
E2	Europallet - 2m Height
STPL	Steel Pallet
WDPL	Wooden Pallet

6.1.1.2 Define Warehouse Storage Condition

Storage conditions are defined when the materials need to be stored in specific conditions in the warehouse, for example, at a specific temperature. This information is useful for the warehouse operator when the goods are placed in the warehouse.

Like HU type, warehouse storage condition can also be maintained centrally in the ERP material master under the WM Execution view and can transferred to EWM as part of CIF. If it is maintained in ERP, the storage condition defined in EWM should match with the warehouse storage condition of ERP.

If maintaining storage condition in the ERP material master is not a requirement, it can be maintained in the product master of EWM.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Product | Define Warehouse Storage Condition

Warehouse Storage Condition	
Waren	Description
01	Cool
02	Dry

6.1.1.3 Define Warehouse Product Group

In ERP system, the warehouse product group is called *warehouse material group*. It is used to specify that certain materials should always be stored in the same way.

This can be centrally maintained in the ERP material master under the WM execution view and transferred to EWM as part of CIF. If maintaining warehouse product group in the ERP material master is not a requirement, it can be maintained in the EWM product master. If it is maintained in ERP, warehouse product group defined in EWM should match with the warehouse product group of ERP.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Product | Define Warehouse Product Group

Warehouse Product Group	
Warehou	Description
0001	Small Parts
0002	Large Parts
HUMS	HU Managed Stock
NHUM	Non HU Managed stock

6.1.1.4 Define Handling Indicator

The handling indicator is used to specify how the material should be handled in the warehouse. Examples include fragile materials, hazardous materials, and so on.

The handling indicator can be centrally maintained in the ERP material master under the WM execution view and transferred to EWM as part of CIF. If maintaining the handling indicator in the ERP material master is not a requirement, it can be maintained in the EWM product master. If it is maintained in ERP, the handling indicator defined in EWM should match the ERP handling indicator.

Menu Path: SPRO | IMG | Extended Warehouse Management | Master Data | Product | Define Handling Indicator

Handling Indicator	
HandInd	Description
0001	Fragile handle with Care
0002	Transport in Upright Position
0003	hazardous substance

6.1.1.5 Define Quality Inspection (QI) Group

Quality inspection groups are used to group materials together that have to be inspected in a similar fashion. These groups are used to simplify the maintenance of inspection rules in EWM. If the QI group is maintained in the ERP material master under the WM execution view, when the material is transferred to the EWM system, the quality inspection group is automatically transferred as well.

If maintaining a QI group in the ERP material master is not a requirement, it can be maintained in the EWM product master. If it is maintained in ERP, the QI group defined in EWM should match the HU QI group of the ERP system.

Menu Path: SPRO | IMG | Extended Warehouse Management | Cross-Process Settings | Quality Management | Settings for Inspection Rules | Define Quality Inspection Group

Quality Inspection Group	
QualiGrp	Description
EXSP	Goods Receipts from External Supplier
PROD	Goods Receipt from Production

6.1.1.6 Maintain Transportation Group

When the material master data is transferred to EWM, the transportation group assigned to the material master gets copied to the product master. It is used by EWM to determine the route assignment for deliveries.

Menu Path: SPRO | IMG | SCM Basis | Master Data | Product | Maintain Transportation Group

Transportation groups defined in EWM should match the transportation groups defined in ERP under the menu path SPRO | IMG | Logistics Execution | Shipping | Basic Shipping Functions | Routes | Route Determination | Define Transportation Groups

6.1.2 Delivery-Related Settings

When deliveries are transferred to the EWM system, along with product and quantity details, some of the delivery header information like delivery priority, shipping conditions, and incoterms are transferred also. In the warehouse, this information is used to determine the appropriate WPT to process the deliveries. Table 6.1.2A provides an overview of what delivery related settings need to be configured in the EWM system.

6.1.2A Delivery Dependent Settings		TCode	System	Transportable
S. No	Configuration Check List			
1	Define the Delivery Priority	SPRO	EWM	Yes
2	Define Shipping Condition	SPRO	EWM	Yes
3	Define Incoterms	SPRO	EWM	Yes

6.1.2.1 Define Delivery Priority

In ERP, delivery priority is used to control delivery processing and give priority to individual customers. When the deliveries are created, this information is automatically copied into the delivery header from the sales order, and when the ERP delivery is sent to EWM for picking, the same information will be copied into the item details of the warehouse delivery request document.

In EWM, this information is used to determine the appropriate WPT through which the warehouse can handle specialized picking for high-priority deliveries and normal picking for regular orders.

To avoid errors during data transfer, the delivery priorities defined in the EWM system should match the delivery priorities defined in the ERP system. In ERP, these can be found in SPRO | IMG | Sales and Distribution | Master Data | Business Partners | Customers | Shipping | Define Delivery Priorities

To define delivery priority in the EWM system, follow the menu path SPRO | IMG | Extended Warehouse Management | Cross-Process Settings | Delivery Processing | General Settings | Define Delivery Priority

Delivery Priority	
Del Prio	Description
1	High
2	Normal
3	Low
4	Next day
5	2 day

6.1.2.2 Define Shipping Conditions

Shipping conditions are used to define how the materials are shipped to the customers. This can be by road, air, customer pick-up, and so on.

This is assigned to the customer master, and the same will be copied to the sales order from the customer master record. The shipping condition and loading group are used to determine the shipping

points in the sales order. Shipping points and shipping conditions get copied to the header of the ERP delivery number. When the delivery is transferred to EWM for picking, the shipping condition will be copied to the item details of the warehouse delivery request document.

Menu Path: SPRO | IMG | Extended Warehouse Management | Cross-Process Settings | Delivery Processing | General Settings | Define Shipping Conditions

Click on the "New Entries" button on the application toolbar; enter the shipping condition and the description of the shipping condition.

Shipping Conditions	
SC	Description
01	Standard
02	Pick-up
03	Expedited
04	Truckload/Containers
05	Air
EW	EWM WH Pick-Up

6.1.2.3 Define Incoterms

Incoterms specify certain internationally recognized procedures that both the shipper and the receiving party must follow for the shipping transaction to be successfully completed.

This is assigned to the customer master and will be copied to the sales order from the customer master record. When delivery is created for the sales order, this information is copied to the header of the ERP delivery number. When the delivery is transferred to EWM for picking, this information will be copied into the header details of the warehouse delivery request document.

Incoterms defined here should match those defined in ERP system. In ERP, these can be found in SPRO | IMG | Sales and Distribution | Master Data | Business Partners | Customers | Billing Document | Define Incoterms

To define incoterms in the EWM system, follow the menu path SPRO | IMG | Extended Warehouse Management | Cross-Process Settings | Delivery Processing | General Settings | Define Incoterms

Incoterms	
Incoterms	Description
EXW	Ex Works
FCA	Free Carriage and Freight
FOB	Free On Board ship

6.1.3 Business Partner (BP) Dependent Settings

In order to transfer master data like vendor, sold-to-party, ship-to-party, customer, plant, and so on to the EWM system, BP-dependent settings need to be configured in the EWM system. Table 6.1.3A gives an overview of the configuration required to transfer this data into the EWM system. Later, in section 6.3, more details will be provided on who BPs are, why they are needed, and how they are mapped in the EWM system.

6.1.3A Business Partner Dependent Settings				
S. No	Configuration Check List	TCode	System	Transportable
1	Verify BP Identification Categories	SPRO	EWM	Yes
2	Verify Business Partner (BP) Role	SPRO	EWM	Yes
3	Verify Number Ranges and Groupings for BP	SPRO	EWM	Yes

6.1.3.1 Verify BP Identification Categories

In order to transfer the data, the identification types CRM002 and CRM004 should not be defined as "Display Only" in the EWM system. This indicator influences the creation of business partners for vendors and customers. Creation of business partners can be automated as part of CIF data transfer, or it can be done manually in the EWM system.

Menu Path: SPRO | Cross-Application Components | SAP Business Partner | Business Partner | Basic Settings | Identification Numbers | Define Identification Categories

Identification Categories			
Identifi	Description	ID Unique	Display Only
CRM002	R/3 Customer Number	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CRM003	External System Identifier for ICM	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CRM004	R/3 Vendor Number	<input type="checkbox"/>	<input checked="" type="checkbox"/>

6.1.3.2 Verify BP Role

Before initiating the data transfer, it is important to verify that the following business partner roles exist in EWM. If they do not exist, they must be defined—one for each BP role category, as show below.

Menu Path: SPRO | Cross-Application Components | SAP Business Partner | Business Partner | Basic Settings | Business Partner Roles | Define BP Roles

The screenshot shows the SAP interface for defining Business Partner Roles. It includes:

- BP Roles Table:** A grid showing various roles like Business Partner (Gen.), Vendor, Plant, etc., with their titles and descriptions.
- BP Role Selection:** A dropdown menu showing "BBP000" selected.
- General Data:** Fields for Title (Vendor) and Description (Vendor), with a "Hide" checkbox.
- BP Role Category:** A section showing "BP Role Cat." set to "BBP000" (Vendor) and a checked checkbox for "Std Assignment BP Role -> BP Role Cat."
- Additional BP Roles for BP Role Category BBP000:** A table showing standard roles assigned to BBP000.
- Interface Control:** A section showing "BP View" set to "BBP000" (Vendor) and a "Position" field.

6.1.3.3 Verify Number Ranges and Groupings for BP

In EWM, BP data is master data created for customers, vendors, carriers, plants, and employees. This can be created either as part of CIF data transfer or manually in the EWM. In order to create a BP, number ranges should be defined and assigned to the BP groups. To create BPs with the same number as the ERP number, appropriate external number range must be defined.

Menu Path: SPRO | Cross-Application Components | SAP Business Partner | Business Partner | Number Ranges and Groupings | Define Number Ranges

NR Object: Business partner				
Intervals				
No.	From number	To number	Current number	Ext
1	0000000001	0000400000	0	<input type="checkbox"/>
AA	AAAAAAA	ZZZZZZZ		<input checked="" type="checkbox"/>

After defining the number range, define the groups and assign the number range to the groups in SPRO | Cross-Application Components | SAP Business Partner | Business Partner | Number Ranges and Groupings | Define Groupings and Assign Number Ranges

Group	Short name	Description	Nu	External	Int Std	Ex Std	Hide
0001	Int.no.assgnmnt	Internal number assignment	1	<input type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="checkbox"/>
0002	Ext.no.assgnmnt	External number assignment	AA	<input checked="" type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="checkbox"/>

6.1.4 Verify Table Entries between ERP and EWM Systems

Finally, before initiating the data transfer, it is recommended to compare the data in following tables to check for any inconsistencies between the ERP and EWM systems. Most errors during data transfer are caused by such inconsistencies. Tables can be compared manually, using TCode SE16 in both systems.

SNo	Table Description	EWM Table	ERP Table
1	Handling ID	/SCMB/THNDLCD	THNDLCD
2	Handling Unit Type	/SCWM/THUTYP	THUTYP
3	Packing Material Type	/SCWM/TPMTYP	V_TVTY
4	Packing Group	/SCWM/TPACKGR	V_TVEGR
5	Warehouse Product Group	/SCMB/TWHMATGR	TWHMATGR
6	Warehouse Storage Condition	/SCMB/TWHSTC	TWHSTC
7	Delivery Priority	/SCDL/TDLVPRIOR_V	V_TPRIO
8	Shipping Condition	/SCDL/TSRVVL	V_TVSB
9	Incoterms	/SCMB/TSINC	V_TINC
10	Address Types	TB009	TB009
11	Unit of measure	T006	T006
12	Dangerous Goods Ind. Profile	/SEHS/DGC_041	TDG41

6.2 Master Data Transfer—CIF

This section will cover how to transfer plants, shipping points, customers, vendors, and materials master data from ERP to EWM systems. If the materials are batch managed, it is necessary to complete batch management-related configuration settings to transfer additional data like batches, classes, and characteristics. This is discussed in chapter 8. Table 6.2A provides an overview of the topics covered in this section.

Table 6.2A Master Data Transfer - CIF			
S. No	Configuration Check List	TCode	System
1	Create Customers	XD01	ERP
2	Create Vendors	MK01	ERP
3	Create Materials	MM01	ERP
4	Creating an Integration Model in the ERP System	CFM1	ERP
5	Activate the Integration Model in the ERP System	CFM2	ERP
6	Display CIF Log	CFG1	ERP
7	Send Changes Manually	CFP1	ERP
8	Create Variants for Background Jobs	SE38	ERP
9	Define Background Jobs	SM26	ERP
10	Monitor the Queues	CFQ1	ERP
11	Verify Data Transfer in EWM System		EWM
			Not Applicable

6.2.1 Create Customers

Customer master data is created in the ERP system (TCode XD01) and transferred to the EWM system via CIF data transfer. In EWM, customers are called BPs. Once customer data is transferred to the EWM system, appropriate ID types and roles should be assigned. This is covered in more detail in

section 6.3. During the data transfer, all or selected customers can be transferred to the EWM system. Creating customers is part of the sales process; hence, it will not be covered in detail in this book.

6.2.2 Create Vendors

Vendor master data is also created in the ERP system and transferred to EWM as part of a CIF data transfer. In EWM, vendors are also called BPs. After transferring vendors to the EWM system, appropriate ID types and roles should be assigned. This is covered in more detail in section 6.3. Vendors are usually created as part of the purchasing process in transaction MK01.

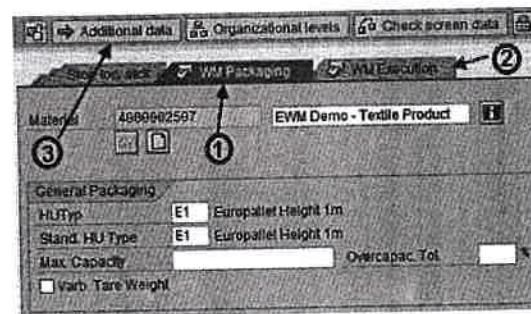
All or selected vendors can be transferred to the EWM system.

6.2.3 Create Materials

Material master data is created in the ERP system and transferred to the EWM system via CIF data transfer. In EWM, material master data is called product master data. After transferring material master data to the EWM system, warehouse-specific data must be maintained for the products; this is covered in detail in chapter 7.

In ERP, creation of material master is managed by the master data team. The TCode to create material master is MM01.

As discussed in chapter 4, it is not necessary to maintain EWM specific data in the ERP material master. However, if a client wants to maintain certain data centrally in the ERP system, this can be done by activating BC sets. This will enable the WM execution view, WM packaging view, and some additional fields for unit of measure in the material master, which can be used to maintain EWM-specific data. This data will be transferred to the EWM system when the CIF interface is activated.



6.2.4 Creating an Integration Model In the ERP System

Once the master data (materials, vendors, customers) and org elements (plants, shipping points, classes/characteristics, batches) are created in the ERP system, they need to be transferred to the EWM system. This can be done using CIF—or IDOCs, (for older ERP versions).

To transfer data, first create a CIF integration model specifying what data should be transferred. Either all data or selected data can be transferred by adding filters in the selection screen. If the SCM system has other components like APO, additional precautions should be taken when defining the integration model. Wrong selections or data without appropriate filters can cause problems like unwanted data getting transferred to the SCM system or overwriting existing data. This can have a negative impact on other components of the SCM system, such as APO. Hence, it is recommended to have fewer integration models and not to include the same data in multiple models.

Menu Path: SAP Easy Access | SAP menu | Logistics | Central Functions | Supply Chain Planning Interface | Core Interface Advanced Planner and Optimizer | Integration Model | Create or TCode CFM1

Here we have used the following data to demonstrate the creation of an integration model and transferring of the data from the ERP system.

Table 6.2.4A Master Data

Materials	Vendors	Customers
4000014262	1003387	1002845
4000014264	P2517	C2517

Table 6.2.4B Org Elements

Plants	Shipping Points
2517	1003
	1007
	1009

Table 6.2.4C Batch Characteristics Data

Batch	Class	Characteristics
FINISHED_TILE	023	Quality
		Off Quality Reason
		Roll Width
		Roll Width
		Batch Number
		Country of Origin
		Expiration date, shelf life
		Status of Batch
		Date when Batch Was Produced
		Deletion Ind. for Batches
		Availability Date
		Next Insp. Date for Batch

In order to create an integration model for CIF data transfer, go to transaction CFM1, enter model name <free text>, select the logical system as EWM logical system, and enter "free text" in the APO application field, as shown in the screenshot below. Under "Material Dependent Objects," select materials and plants, and maintain the filter values under "General Selection Options for Materials." Under "Material Independent Objects," select batch, customers, vendors, shipping points, and Classes/Charact. You can also maintain filter values for each of these objects.

For both vendors and customers, select value "2" in "create Loc/BP" field. This is required to create both location and business partners in the EWM system for vendors and customers.

Model Name	ZCIFDEMO
Logical System	SA1CLNTB01
APO Application	ZCIFDEMO
Material Dependent Objects	
<input checked="" type="checkbox"/> Materials	<input checked="" type="checkbox"/> Plants
<input checked="" type="checkbox"/> Batches	
Material Independent Objects	
<input checked="" type="checkbox"/> Customers	<input type="button" value="..."/>
<input checked="" type="checkbox"/> Vendors	<input type="button" value="..."/>
<input checked="" type="checkbox"/> Shipping Points	<input type="button" value="..."/>
<input checked="" type="checkbox"/> Classes/Chargel	<input type="button" value="..."/>
General Selection Options for Materials	
Material	<input type="text"/> to <input type="button" value="..."/>
Plant	<input checked="" type="text"/> 2517 to <input type="button" value="..."/>
Matl Type	<input checked="" type="text"/> FERT to <input type="button" value="..."/>
Customers	
Customer	<input checked="" type="text"/> 1002845 to <input type="button" value="..."/>
Create Loc./BP	<input type="button" value="2"/>
Vendors	
Vendor	<input checked="" type="text"/> 1003387 to <input type="button" value="..."/>
Create Loc./BP	<input type="button" value="2"/>
Shipping Point	
Shipping Point	<input checked="" type="text"/> 1003 to <input type="text"/> To 1009 <input type="button" value="..."/>
Classes and Characteristics	
Org.area Ind.	<input type="text"/> A to <input type="button" value="..."/>
Class Type	<input checked="" type="text"/> 023 to <input type="button" value="..."/>

Click on the "Execute" button (F8) on the application toolbar. This will display a summary of the data transfer. After verifying the data, click on the "Generate IM" button. This will generate a CIF integration model.

Filter Object	No. Filter Objects
Material Master Data	2
Plants	1
Customers	2
Vendors	2
Characteristics	12
Classes	1
Shipping Point	7
Batches	2

Verify the data and click on 'Generate IM' button

6.2.5 Activate the Integration Model in the ERP System

After creating an integration model, the model should be activated in order to initiate the data transfer from the ERP to EWM system. Once the CIF integration model is activated, the data will be transferred to the EWM system, and any changes to the data elements specified in the integration model will be redistributed automatically. If new data is added, the integration model has to be recreated and reactivated. This can be automated with a background job.

Menu Path: SAP Easy Access | SAP menu | Logistics | Central Functions | Supply Chain Planning Interface | Core Interface Advanced Planner and Optimizer | Integration Model | Activate or TCode CFM2

Selection Criteria	
Model	<input type="text"/>
Logical System	<input type="text"/>
APO Application	<input type="text"/>
	<input type="button" value=""/>
	<input type="button" value=""/>
	<input type="button" value=""/>

Parallelized Transfer	
<input type="checkbox"/> Parallelize Selection in ERP System	<input type="checkbox"/> Processes
<input checked="" type="radio"/> Absolute Max. No. Processes	<input type="checkbox"/> % of Processes
<input type="radio"/> Relative Max. No. Processes	<input type="checkbox"/>
Server Group	<input type="checkbox"/>
<input type="checkbox"/> Parallelize Processing in APO	<input type="checkbox"/>

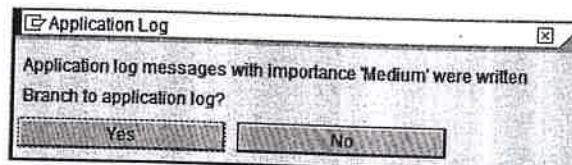
Here, enter the model name or EWM logical system and click on the "Execute" button. This will display the integration model on the left side of the screen. Click on the integration model to display the status of the integration model on right side of the screen.

Integration Models	SA1CLNT001 - ZCIFDEMO	- ZCIFDEMO		
Created on	Changed at	Created by	Prev Status	New Status
09/13/2010	12:35:38	RM0015	X	X

Click on "New Status" to change the status from inactive to active.

Integration Models		SA1CLNT001 - ZCIFDEMO			- ZCIFDEMO	
		Created on	Changed at	Created by	Prev. Status	New Status
	ZCIFDEMO	09/13/2010	12:35:38	RM0015	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Click on the "Start" button to activate the integration model. If all values are transferred to the target system, it will display the following popup. Click "yes" to show the status of the data transfer. If the data is transferred properly, the green message will be displayed.



Date/Time/Year	Numb	External ID	Object br.	Sub-object text	Tran	Program	Mode
09/13/2010 12:55:31 RM0015	16	CIFLOA...	Core Interface A...	Initial Data Tran...	CFM2	SAPLCIFG	Dialog pro...
09/13/2010 12:55:31 RM0015	73	CIFLOA...	Core Interface A...	Initial Data Tran...	CFM2	SAPLCIFG	Dialog pro...
09/13/2010 12:55:31 RM0015	80	CIFLOA...	Core Interface A...	Initial Data Tran...	CFM2	SAPLCIFG	Dialog pro...
09/13/2010 12:55:32 RM0015	42	CIFLOA...	Core Interface A...	Initial Data Tran...	CFM2	SAPLCIFG	Dialog pro...
09/13/2010 12:55:32 RM0015	28	CIFLOA...	Core Interface A...	Initial Data Tran...	CFM2	SAPLCIFG	Dialog pro...

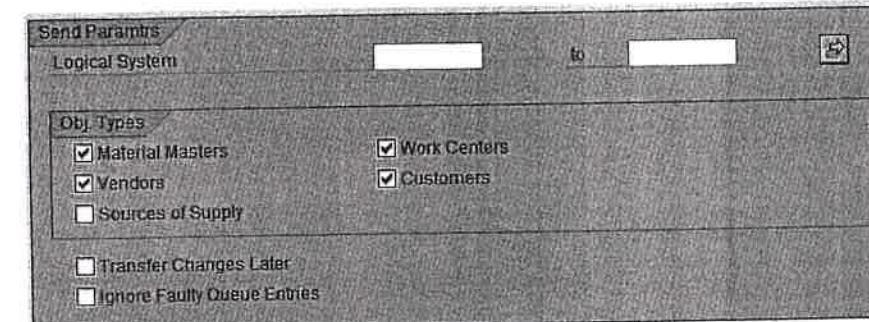
6.2.6 Display CIF Log

The TCode to display the CIF log is CFG1. Here, enter CIF in the object field; enter date and other required filter values like user, transaction code, program name, and so on. Click on F8 to display the log.

6.2.7 Send Master Data Changes Manually

After the initial data transfer, it is possible to transfer the changes manually or automatically with background jobs. To transfer the data manually, the transaction code is CFP1. This transaction can be accessed from **SAP Easy Access | SAP menu | Logistics | Central Functions | Supply Chain Planning Interface | Core Interface Advanced Planner and Optimizer | Integration Model | Change Transfer | Master Data**

Here, enter the logical system, select the object types, and click on the "Execute" button on the application toolbar to initiate the data transfer.



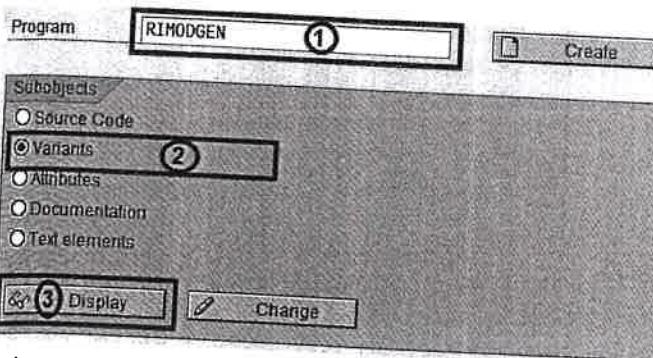
6.2.8 Create Variants for Background Jobs

If the master data is constantly changed in the ERP system, it is recommended to schedule a background job to regularly update the integration model to the newest status and transfer the changes to SAP APQ. It is also necessary to delete the old versions of the integration model on a regular basis to avoid any performance issues. To do this, SAP recommends creating the following programs as periodic jobs:

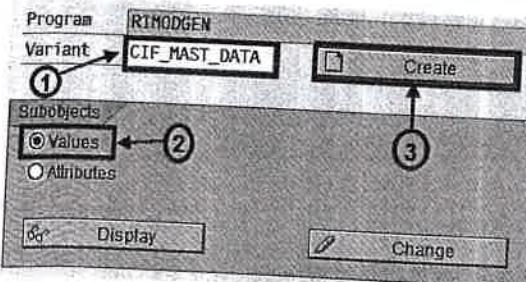
- Generate new versions of the integration model (RIMODGEN)
- Activate the newest versions (RIMODAC2)
- Optional: Delete the old versions (RIMODEL)

► Generate new versions of the Integration model (RIMODGEN)

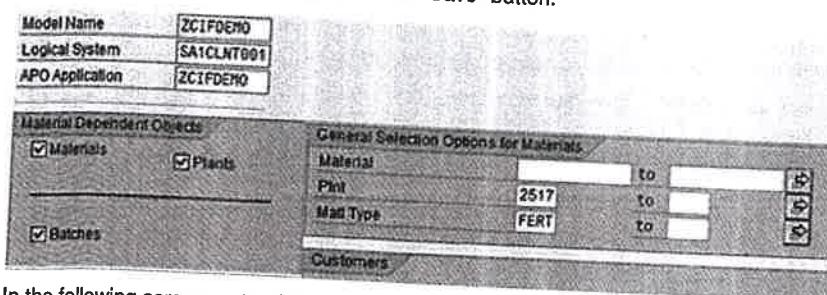
In this step, create a variant for the integration model, which will be used in the background job later. To create a variant, go to transaction SE38, enter program name RIMODGEN, select the "Variants" radio button, and click the "Display" button.



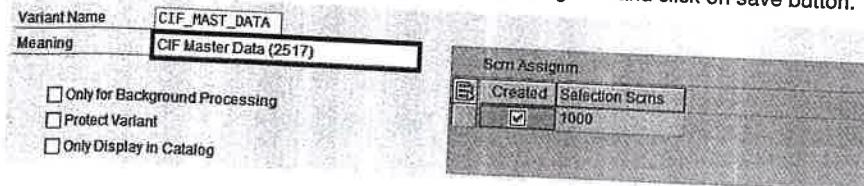
In the next screen, enter a variant name, select the "Values" radio button, and click the "Create" button.



In the following screen, enter model name, logical system name, and APO application name; select the objects; enter the filter values; and click the "Save" button.



In the following screen, enter the description in the meaning field and click on save button.



This will create a variant, which will be used later while defining the background job.

► Activate the newest versions (RIMODAC2)

As explained in the above step, create two variants for program RIMODAC2: one variant to activate the newest integration model version and one to deactivate the all older active integration model versions, as explained below.

In the active version, enter the model, logical system, and APO application that were created in the earlier step. In the "Action to Execute" section, select "Activate Newest Version." In the special CIF settings, check "Ignore Faulty Queues" and other appropriate options. Click on the "Attributes" button on the application toolbar to create a variant.

In the deactivate version, enter the model, logical system, and APO application that were created in the earlier step. In the "Action to Execute" section, select "Deactivate all versions." Deactivation is required, because in the system, only deactivated versions can be deleted.

► Optional: Delete the old versions (RIMODDEL)

Even though this is optional, it is still recommended to delete the older versions, because these can hinder performance. Create a variant for program RIMODDEL.

6.2.9 Define Background Jobs

After defining the variants, background jobs can be created and scheduled to run as per client requirement. To create a background job,

- i. Enter TCode SM36 in the command bar, specify a job name, and click the "Step" button.
- ii. In the screen, change the user name to the one created to run the background job. In the production system, usually a separate user ID is created to run background jobs.
- iii. To delete the older versions, it is necessary to first deactivate all active versions of the integration model. Therefore enter the program name RIMODAC2 and select the variant created to deactivate the integration model. Click the "Save" button.
- iv. Click the "Create" button, repeat step 2, enter the program name RIMODDEL, and select the variant created above. Click the "Save" button. This will delete all inactive versions of the integration model.
- v. Click "Create," repeat step 2 for program RIMODGEN, and select the variant created above. Click "Save." This will create a new integration model for CIF.

- vi. Click "Create," repeat step 2 for program RIMODAC2, and select the variant created to activate the integration model. Click "Save." This will activate the integration model, and the data transfer will begin.
- vii. Click on back button (arrow key) or F3 to define start condition.
- viii. Click the "Start condition" button, click the "Immediate" button, check the "Periodic Job" checkbox to define a periodic job, click on the "Periodic Values" button, select appropriate values (like hourly, daily), and click "Save." Click "Save" again. Click "Save" once more to save and release the job.

The following screenshot shows the job log of a background job that was executed successfully.

Time	Message Text
07:53:04	Job started
07:53:04	Step 001 started (program RIMODAC2, variant CIF_2517_VER_D, user ID RM0015)
07:53:07	Step 002 started (program RIMODDEL, variant CIF_2517_DEL, user ID RM0015)
07:53:07	You have deleted 14 models
07:53:07	Step 003 started (program RIMOGEN, variant CIF_MAST_DATA, user ID RM0015)
07:53:07	Integration model ZCIFDEMO generated for target system SA1CLNT001 and application ZCIFDEMO
07:53:07	Step 004 started (program RIMODAC2, variant CIF_2517_VER, user ID RM0015)
07:53:11	Application log messages with importance 'Medium' were written
07:53:11	Job finished

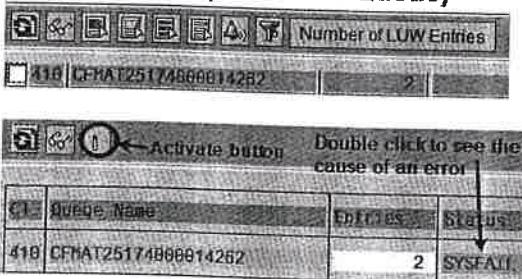
Notes:

Usually, scheduling jobs is managed by the Basis team. Consultants may need to consult with their Basis team before scheduling jobs.

6.2.10 Monitor Error Queues

To monitor errors, go to TCode CFQ1. Here, double-click on the status column to analyze the cause for the error. To reactivate the failed records, click the activate button.

qRFC Monitor (Outbound Queue)



The screenshot shows a table with two columns: Queue Name and Status. The Queue Name column contains '418 CFMAT25174000014282'. The Status column contains '2 SYSFAIL'. A callout box points to the 'Activate button' (indicated by a circled '1') and the text 'Double click to see the cause of an error'.

Queue Name	Status
418 CFMAT25174000014282	2 SYSFAIL

Notes:

- i. Some screenshots might show a destination as APO_00_001, and in a few cases the destination might appear as SA1CLNT00. However, they both refer to the EWM system.

6.2.11 Verify Data Transfer In the EWM System

Finally, verify the data transfer in the EWM system. In our example, we have transferred two types of data: material master data, which becomes the product master in the EWM system; and other master data like plant, shipping point, customer, and vendor become part of the locations and Supply Chain Unit (SCU) in EWM.

Product master data can be verified in TCode /SAPAPO/MAT1. To verify SCU-specific data, go to TCode /SCMB/SCUMAIN.

Supply Chain Unit	Type	Description
0001002845	1010	EWM Demo Customer
2517	1001	EWM Demo Plant
1003	1003	EWM Demo Shipping point 1
1007	1003	EWM Demo Shipping point 2
1009	1003	EWM Demo Shipping point 3
0001003387	1011	EWM Demo Vendor
P2517	1011	EWM Demo Vendor (Plant 2517)

All location data can be viewed in TCode /SAPAPO/LOC3.

Location	LT	Location Description
2517	1001	EWM Demo
0001002845	1010	EWM Demo Customer
1003	1003	EWM Demo Shipping point 1
1007	1003	EWM Demo Shipping point 2
1009	1003	EWM Demo Shipping point 3
0001003387	1011	EWM Demo Vendor
P2517	1011	EWM Demo Vendor (Plant 2517)

Customers and vendors will also become BPs automatically. This data can be accessed in TCode BP.

The screenshot shows the SAP EWM Business Partner (BP) Data maintenance screen. At the top, there are fields for 'BP Number' (1003387) and 'Display in BP role' (000000 Business Partner (Ge)). Below these are search fields: 'Find' (1 Business Partner), 'By' (1 Number), and 'BP Number' (1003387). A 'Start' button is highlighted with a callout. The main area contains tabs for Address, Address Overview, Identification, Control, and Payment. Under 'Identification', there is a table with columns for ID Type, Description, Identification number, Responsible Institution, and Entry date. The table shows one row with ID Type 'CRM004', Description 'I/3 Vendor Number', Identification number '0001003387', Responsible Institution 'SE1CLNT410', and Entry date '2010-01-01'.

6.3 Business Partner (BP) Data

Business partners are parties with whom business transactions are conducted. Examples include customers, vendors, plants, and so on. The key business partners are the sold-to, ship-to, bill-to, and payer. In EWM business partners must also be created for vendors, plants, employees, carriers, and freight forwarders. Each of these business partners can be classified as a person, organization, or group. They can be manually created in TCode BP, or created automatically for parties like vendor and customer, if the data is transferred via CIF. The menu path to access transaction code is **SAP Easy Access | SAP menu | Extended Warehouse Management | Master Data | Maintain Business Partner**

The same transaction can be used to create, locate, change, or delete existing BPs.

Each BP can be assigned to multiple roles. For example, customers may be defined strictly as sold-to or ship-to, or both. To assign multiple BP roles to an existing BP, first locate the BP with the "Start" button, double-click on the BP, and click on the "Change" button, as shown below.

The screenshot shows the SAP EWM Business Partner (BP) Data maintenance screen with numbered steps: 1. Click on the 'Start' button. 2. Double click on the BP number (1003387). 3. Click on the 'Change' button. 4. Select additional BP roles from the dropdown and click on the 'Save' button. The main area contains tabs for Address, Address Overview, Identification, Control, and Payment. Under 'Identification', there is a table with columns for ID Type, Description, Identification number, Responsible Institution, and Entry date. The table shows one row with ID Type 'CRM004', Description 'I/3 Vendor Number', Identification number '0001003387', Responsible Institution 'SE1CLNT410', and Entry date '2010-01-01'.

To assign a new BP role, select a BP role from the dropdown list and click on "Save" button. This will add the new role to the existing BPs. All assigned BP roles can be viewed by clicking the "Role Detail" button as shown below.

The screenshot shows the SAP EWM Business Partner (BP) Data maintenance screen with the 'Role Detail' button highlighted. The main area contains tabs for Address, Address Overview, Identification, Control, and Payment. Under 'Identification', there is a table with columns for ID Type, Description, Identification number, Responsible Institution, and Entry date. The table shows one row with ID Type 'CRM004', Description 'I/3 Vendor Number', Identification number '0001003387', Responsible Institution 'SE1CLNT410', and Entry date '2010-01-01'.

From the BPs, information like address, identification numbers, responsible institution, and business hours are used in the warehouse documents. Addresses can be updated in the "Address" tab; business hours are used in the warehouse documents. Addresses can be maintained in the "Control" tab. The hours like calling hours, GR hours, and visiting hours can be maintained in the "Control" tab. The identification numbers and responsible institution can be maintained in identification tab.

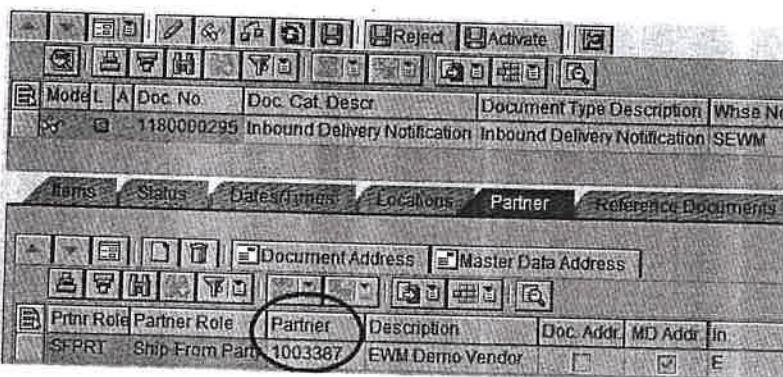
The screenshot shows the SAP EWM Business Partner (BP) Data maintenance screen with the 'Identification' tab selected. It displays a table for 'Identification Numbers' with columns for ID Type, Description, Identification number, Responsible Institution, and Entry date. The table shows one row with ID Type 'CRM004', Description 'I/3 Vendor Number', Identification number '0001003387', Responsible Institution 'SE1CLNT410', and Entry date '2010-01-01'.

One BP can have more than one ID type. Maintaining ID type, number, and responsible institution is important in the EWM system, because they are used to determine the relevant BP data to be used for warehouse documents based on the BP number in the source document. For example, the

identification type CRM004 is used to determine the vendor number for the IDN, with inbound delivery based on the vendor number assigned to the inbound delivery in ERP.

It is not necessary that the ID number be the same as the BP number; however, in most cases it will be defined the same for easy identification.

An example of IDN in the EWM system follows.



Even though there are several types of business partners, only vendor, customer, employee and plant BPs are generally used in EWM documents. They are usually created in the ERP system and transferred to the EWM system as part of a CIF data transfer. Business partners for plants have to be created manually. The following section will give an overview of each of these master data and what ID types are defined for them.

6.3.1 Customer BP Data (TCode BP)

Customers are created in the ERP system and transferred to EWM system as part of the CIF data transfer process. As explained earlier, BP records for customers can be created automatically by selecting value 2 in field "Create Loc/BP" in the CIF integration model. Once the business partner record is created, ensure that the identification type CRM002—customer; identification number (can be the same as the BP number); responsible institution; and appropriate BP roles like business partner general, sold-to, ship-to, and financial services BP are assigned to the customer BP record. TCode BP is used to create, edit or view customer BP data in EWM.

Diagram 6.3.1A provides an overview of how the customer BP data is linked to different BP objects and how they are linked to different warehouse documents.

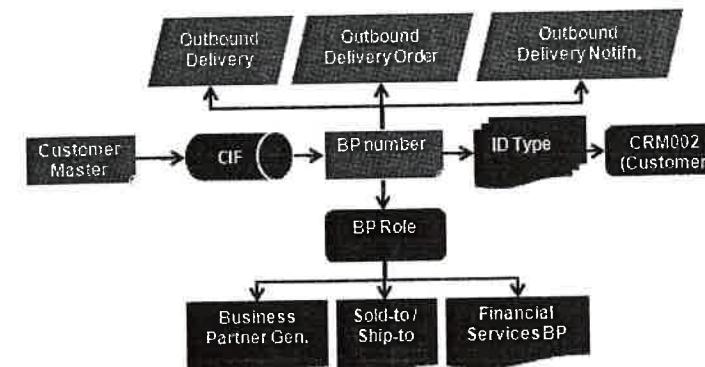


Diagram 6.3.1A – Mapping of Customer BP Data

6.3.2 Vendor BP Data

Vendors are created in the ERP system and transferred to the EWM system as part of the CIF data transfer process. For vendors, BP records can be created automatically by selecting value 2 in field "Create Loc/BP" in the CIF integration model. Once the business partner record is created, ensure that "Create Loc/BP" is selected; identification type CRM004—vendor; identification number (can be the same as the BP number); responsible institution; and appropriate BP roles like business partner general, vendor, and financial services are maintained to the vendor BP. TCode BP is used to create, edit or view vendor BP data in EWM.

Diagram 6.3.2A is an overview of how vendor BP data is linked to different BP objects and how they are linked to different warehouse documents.

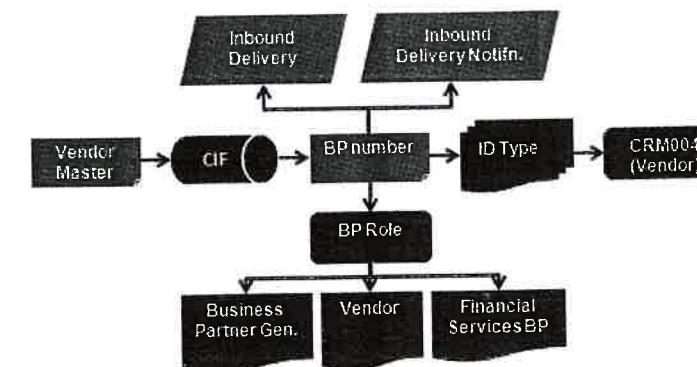


Diagram 6.3.2A – Mapping of Vendor BP Data

6.3.3 Employee BP Data

Employee data created in the Human Capital Management (HCM) module of the ERP system can be transferred to the EWM system as part of a CIF data transfer process. For employee data, BP records can be created automatically by selecting value 2 in field Create Loc/BP in the CIF integration model. Once the business partner record is created, only the appropriate BP roles need to be assigned. ID types are not applicable for employee BP data. The typical BP roles used for employees are business partner general, financial services BP; and employee. In EWM, employee data is required only if labor management performance data is interfaced with HCM or Human Resource (HR) applications. In BP roles, a personal number and user name can be assigned to the employee BP record. TCode BP is used to create, edit or view employee BP data in EWM.

Diagram 6.3.3A shows how employee BP data is linked to different BP objects and how they are linked to warehouse documents.

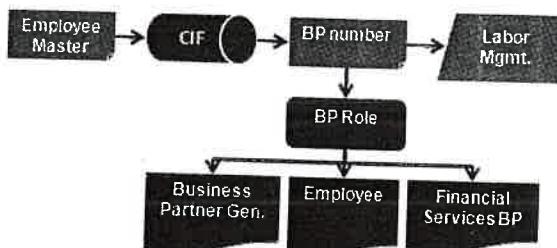


Diagram 6.3.3A—Mapping of Employee BP Data

6.3.4 Plants BP Data

Plants are created in the ERP system and transferred to EWM as part of the CIF data transfer process. Like customers, BP records for plants cannot be created automatically as part of a CIF data transfer. They have to be manually created in TCode BP.

Plants require business partner records mainly for stock transfers. They are created with the BP roles of business partner general, financial service BP, vendor, and sold-to/ship-to party, and assigned to ID types CRM002—Customer, CRM004—Vendor, and CRM011—Plant. Like other BP records, ID type, ID number, and responsible institution are essential for plant BP records.

Diagram 6.3.4A demonstrates how plant BP data is linked to different BP objects and how they are linked to different warehouse documents.

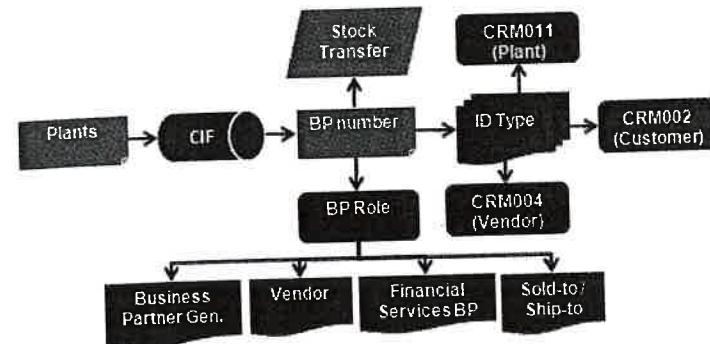


Diagram 6.3.4A—Mapping of Plant BP Data

6.4 Supply Chain Unit (SCU) Data

SCU is master data containing information like BP number, country, region code, time zone, addresses, and essential business attributes. Business attributes describe how the SCU is used in the EWM system, like whether SCU is a warehouse, goods receipt office, ship-to party, and so on.

SAP will create a SCU record for every ERP plant, customer, vendor, shipping point, and MRP area when the data is transferred from ERP to EWM. SCU records have to be created manually for the data defined locally in the EWM system, such as warehouse doors, shipping zones, and so on.

Supply Chain Unit	Description	Type
0001002845	EWM Demo Customer	1010
2517	EWM Demo Plant	1001
1003	EWM Demo Shipping point 1	1003
0001003387	EWM Demo Vendor	1011

SCU data can be created, changed, or displayed in transaction /SCMB/SCUMAIN (SAP Easy Access | SAP menu | Extended Warehouse Management | Master Data | Maintain Supply Chain Unit). Here, select SCU and click the "Change" button.

Supply Chain Unit	2517	
Cat	1001	
<input type="button" value="Display"/>	<input type="button" value="Change"/>	<input type="button" value="Create"/>

In the general tab, maintain the business partner data and the time zone.

Supply Chain Unit	2517
Description	EWM Demo Plant
Type	1001
<input type="button" value="General"/> <input type="button" value="Address"/> <input type="button" value="Alternative"/>	
Partner	
Bus. Partner	<input type="text" value="2517"/>
Time Zone	Time Zone
	EST

In the "Alternative" tab, click on the "Add Role" button to specify the essential business attributes. Business attributes can be selected from the dropdown list.

Supply Chain Unit	2517
Description	EWM Demo Plant
Type	1001
<input type="button" value="General"/> <input type="button" value="Address"/> <input type="button" value="Alternative"/>	
<input type="checkbox"/>	
Bus Attri	Description
PLOC	<input checked="" type="checkbox"/> PLANNING LOCATION

Notes:

Even though the SCU entry is created automatically for plants, business partner information has to be updated manually in the SCU record. This information will be automatically copied to the "Map Storage Locations from ERP System to EWM" configuration.

Summary

This chapter has explained how to define integration models for CIF data transfer, transferring master data from ERP to EWM systems, and configuring business partners in the EWM system. In the next chapters, the information defined here will be used in various examples, rather than be explained again.

Chapter 7: Product Master in EWM

In every system, master data play an important role. In EWM, both product master data and the configuration are used to guide the products into appropriate warehouse processes during different warehouse activities like putaway, picking, and internal warehouse movements. It is important for consultants and users to understand product master data and maintain appropriate values to achieve the desired results. This chapter will cover the various product master views in EWM in detail.

7.1 Product Master Data Views

In EWM systems, the product master data are broadly divided into two parts:

- i. Basic product master data
- ii. Warehouse-specific product master data

Basic Product Master Data (TCode /SAPAPO/MAT1)

Basic product master data are also known as global data. This information is used by all warehouses and other SCM components like APO, SNP, and Event Management. Hence, any changes to this data should be done with caution.

Basic product master data can be accessed from SAP Easy Access | SAP menu | Extended Warehouse Management | Master Data | Product | Maintain Product or TCode /SAPAPO/MAT1

Here, enter the product number, select the "Global Data" radio button, and click the "Display" button. This will display the global data of the product master data.

<input checked="" type="radio"/> Product	4000014265
Product Description	
EWM Demo - Simple Example	
View	
<input checked="" type="radio"/> Global Data	
<input type="radio"/> Location	
<input type="button" value="Display"/> <input type="button" value="Change"/> <input type="button" value="Create"/>	

The global data of product master have eight views, but only the "Properties," "Classification," "Unit of Meas.," "Pkg Data," and "Storage" views are applicable for warehouses. Any changes in global data of

product can affect all the warehouses as well as APO, SNP, and Event Management. Therefore, caution should be used when changing any existing data there.

Warehouse-Specific Product Master Data (TCode /SCWM/MAT1)

Warehouse-specific product master data is accessed using TCode /SCWM/MAT1. In order to display the warehouse product data, it has to be first created. The CIF data transfer creates only the global data for the product and not the warehouse-specific data. To create warehouse-specific data, go to TCode /SCWM/MAT1 and enter product number, warehouse number, and party entitled to dispose, and click "Create."

Here, the warehouse number and party entitled to dispose fields are mandatory because the warehouse dependent data is created only to the specified warehouse and to the party entitled to dispose. It is one of the limitations of ERP warehouse where the data for plant and warehouse combination can't be defined. For example, two different putaway or picking indicators for different plants cannot be defined for the same warehouse, whereas this is possible in EWM systems. This allows more flexibility for storing products from different plants separately in large distribution centers (DCs).

The warehouse-specific product master data also shows eight views. The first five views (properties, unit of measure, classification, package data, and storage) are part of the basic product master data or global product master data. The last three views (Whse Data, Slotting, and St. Type Data) belong to the

warehouse, and the data maintained in these views is specific to the warehouse and party entitled to dispose.

7.1.1 Unit of Measure View

This view contains the unit of measure (UOM) conversion data from alternative UOM to base UOM. Here, alternative UOMs, dimensions, capacity consumption, and so on can be defined. For the most part, this information is used during packing, capacity check at the time of putaway, and slotting.

Denom	ALin	↔	Num	B	EAN/UPC	E	V	Gross	Net weight	Unit	Volume	U/Capac	L	WH	U/M	R	UOM Category
1	PC	↔	1					1.170	1.170	KG	0.000	0.000	0	0	0	0	Alternative
1	BOX	↔	20					0	23.400	KG	0.000	0.000	0	0	0	0	Alternative
1,170	KG	↔	1,000					0	1.170	KG	0.000	0.000	0	0	0	0	Alternative
200	m2	↔	1,000					0	1.170	KG	0.000	0.000	0	0	0	0	Alternative
1	Y2	↔	4					0	4.680	KG	0.000	0.000	0	0	0	0	Alternative

7.1.2 Properties View

This view contains general information related to the product such as description, weight, volume, grouping codes, and shelf life related information. Even though most of this information is transferred from the ERP system, not all field values are used in the day-to-day warehouse operation. Some field values defined here are used only for information purpose. Fields that are currently used in EWM

include transportation group, to determine the route assignment for deliveries; batch management requirement, filed to specify whether or not products are batch managed; gross weight and volume, which are used at the time of packing and capacity check; and shelf life, minimum shelf life, required minimum shelf life, and percent remaining shelf life, to calculate the shelf life expiry of the products. As of now, all other fields are used for information purposes only.

This screenshot shows the SAP Fiori Classification View interface. It displays the following data:

- External Product Number:** 00000004000014265
- Bus. System Grp:** 2BUSGRP
- General Data:**
 - Material Group: 52100000
 - Product Determ: 1
 - Prod.Hierarchy: 2192001001
 - City of Origin: 0001
 - Transport Group: 0001
 - Other: CDP Relevance
- Measurements and Weights:**
 - Gross Weight: 1.178 KG
 - Volume: 0.886
 - Stacking Factor: 6
- Shelf Life:**
 - Shelf Life: 0 days
 - Shelf Life: 0 days
 - Shelf Life: 0 days
 - Reg.Unt.Sh.Life: 0 days
 - Reg.Max.Sh.Life: 0 days
 - Remaining SL: 0

7.1.3 Classification View

This view provides information for batch-managed products like reference products, class name, and characteristics of the class. This is required when products are batch managed.

This screenshot shows the SAP Fiori Classification View interface. It displays the following data:

- Reference Product (Loc. Indep.):** (empty)
- CDP Class:** FINISHED_TILE
- Class Description:** Finished Tile
- Further Classes:** (button)

The image displays three stacked SAP Fiori screens:

- Object Details:** Shows the object key `ty88b3Z11)6UXm1GLg`, Class Type `232`, Class `FINISHED_TILE`, and Class Type `232 PS`.
- Assignments:** Shows an assignment for `FINISHED_TILE` with the description `Finished Tile`, status `10`, and item `1`. It includes a toolbar with icons for search, refresh, and save.
- Values for Class FINISHED_TILE:** Shows the **General** section with characteristic descriptions and their corresponding values. The characteristics listed are:

Characteristic	Description	Value
Quality		
Off Quality Reason		
Roll Width		
Roll Width		
Batch Number		
Country of Origin		
Expiration date, shelf life		
Status of Batch		
Date when Batch Was Pro		

7.1.4 Packaging Data (Pkg Data) View

The fields defined here are mainly used for product master data that represent packaging materials. The data is broadly divided into three sections.

Pack section: This is used to define packing group, reference products for packing and standard HU type for the products that go inside packaging materials at the time of packing.

Packaging Material Section: This is mainly used for packing products to define the packaging material type, HU type, and label forms. Either smart or PDF forms can be used to define the labels' format; and are assigned to the packing material here.

Capacities: The information in the capacities sections is also mainly used for packing materials to define the capacities of the packing materials. Values that can be maintained here include maximum weight, excess weight tolerance in percentage, maximum volume, excess volume tolerance in percentage, tare weight variable, maximum capacity, and excess capacity tolerance, along with maximum length, width, and height.

7.1.5 Storage Data View

The storage data view contains data pertaining to the storage of the product. Since it belongs to global data and any changes to values of these fields will be applicable to all warehouses which use this information. The values for the following fields of storage data view can be transferred from the ERP system.

Warehouse product group: This groups products by warehousing points of view.

Warehouse storage condition: This describes how the product should be stored in the warehouse.

Warehouse handling indicator: This is used to determine how the product should be handled when moving from one location to another.

Item category group: As of now, this is used for information purposes only.

Serial number profile: This controls the serialization level and number assignment of serial numbers.

Quality inspection group: This is the group that identifies products that behave or are handled in the same way in a quality inspection. It is used for various purposes, like to group materials together for determination of quality inspection relevance, determination of value intervals for counting, to specify the forbidden goods movements from inspection, and so on.

Pilferable: The product is pilferable, and possibly requires special storage in a secure storage type/section within the warehouse. As of now, it is not used in EWM. This indicator can be used in BADI.