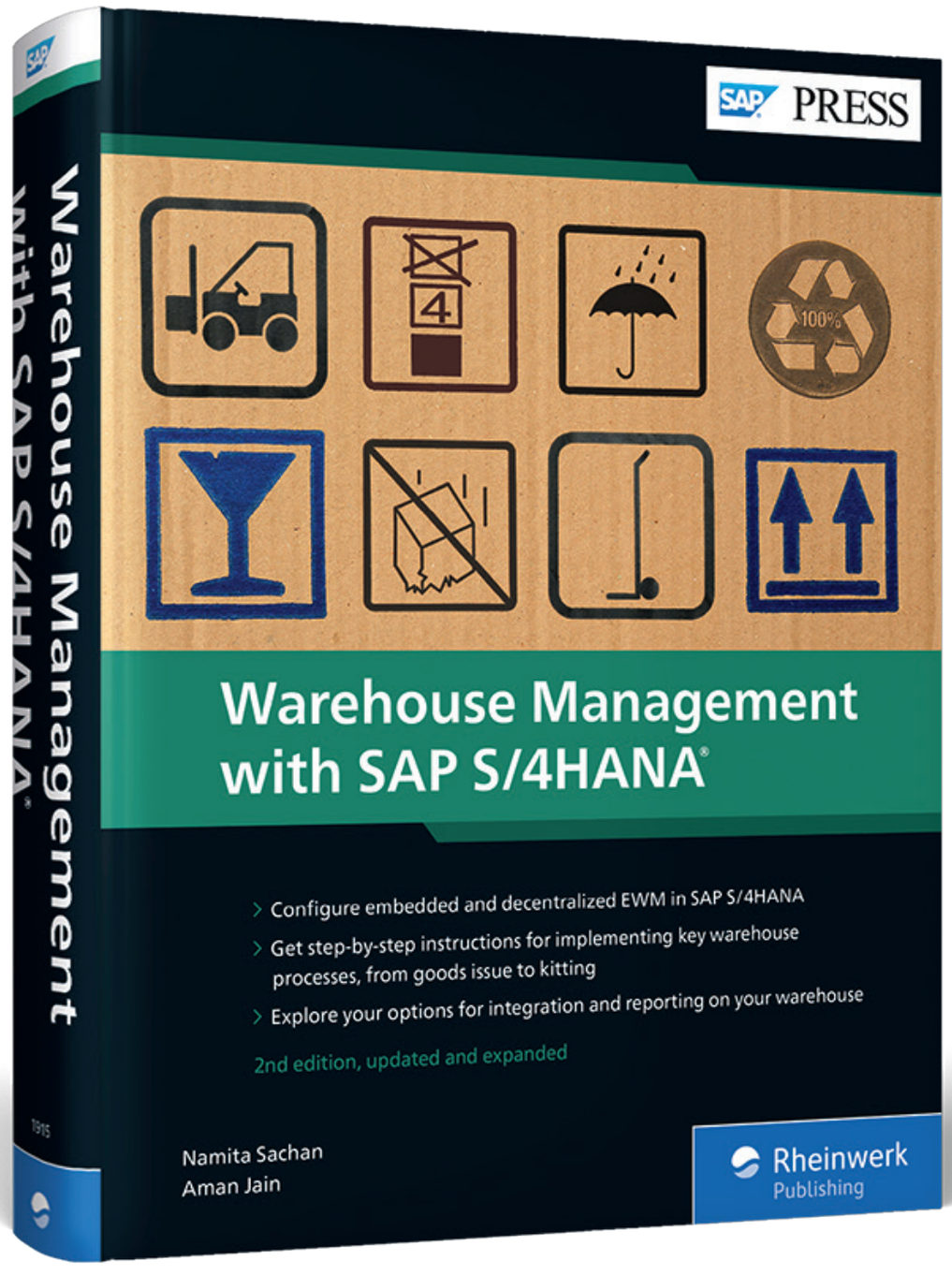

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This sample chapter covers goods receipt in embedded EWM for inbound deliveries created in the SAP S/4HANA system. It discusses the basic inbound process, the configuration settings required to set up goods receipt, and the delivery document created in embedded EWM. Finally, it covers how TUs are checked in for inbound warehouse requests, unloading and goods receipt, and putaway.

Inbound Processing

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Chapter 7
Inbound Processing

Goods receipt in embedded EWM refers to movement of goods into the warehouse. Embedded EWM offers a wide array of functionalities for managing goods receipt and putaway in the warehouse, as we'll discuss in detail in this chapter.

Inbound processing is one of the key processes in warehouse management. You can receive goods in the warehouse via a purchase order if you're getting stock from a vendor, a stock transfer order if you're receiving stock from another facility, through production receipts, or from customer returns.

The process starts with the arrival of a transportation unit (TU) or vehicle in the warehouse, unloading of goods, and carrying out a set of activities on the received goods, such as counting, quality inspection, unpacking, or deconsolidation, before goods are finally put away in the warehouse. The nature of activities that need to be performed on a product before they're stocked depends on a wide array of factors, including the nature of the product, where it must be stocked, storage conditions, and so on. You also need to make sure that goods move optimally in the warehouse during putaway to ensure maximum utilization of warehouse resources and storage space. Embedded EWM offers a wide range of functionalities for goods receipt in the warehouse to handle both simple and complex inbound processes.

In this chapter, we'll cover goods receipt in embedded EWM for inbound deliveries created in the SAP S/4HANA system. We'll discuss the basic inbound process (Section 7.1), the configuration settings required to set up goods receipt (Section 7.2), and the delivery document created in embedded EWM after the inbound delivery is distributed to the system (Section 7.3). Next, we'll discuss how TUs are checked in for inbound warehouse requests (Section 7.4), unloading and goods receipt (Section 7.5), and, finally, putaway and putaway strategies for optimizing warehouse capacity and material flow (Section 7.6).

Note

The delivery created in SAP S/4HANA is now called logistics execution delivery in embedded EWM.

7.1 What Happens During Inbound Processing?

You can perform goods receipt for external procurement, production receipt, internal stock transfer, and customer returns. In this section, we'll discuss goods receipt from external procurement and production receipt, both from a business process and system process point of view.

7.1.1 Business Process

If you're receiving goods from an external vendor, the goods receipt process may vary depending on whether you're using an advanced shipping notice (ASN). Whether you require an ASN from the vendor is controlled by setting the confirmation control key at the purchase order item level. If the confirmation control key is set, then you need to create an inbound delivery to complete goods receipts in embedded EWM.

Based on the material requirements planning (MRP) run, you decide to go ahead with the creation of a planned order or purchase requisition. You can create the purchase order manually or convert the purchase requisition to form a purchase order. The purchase order is sent to the supplier, and the supplier can either physically send the goods or send an ASN to confirm when the goods will arrive in the warehouse. The receipt of an ASN creates the inbound delivery in SAP S/4HANA.

If you're working with ASNs, the inbound process in embedded EWM begins with the receipt of an ASN sent from the vendor and the creation of an inbound delivery in SAP. The SAP S/4HANA system is the leading system for creation of purchase orders and inbound deliveries. The complete process of goods receipt and putaway is then carried out in embedded EWM. You can post the goods receipt when the goods physically arrive in the warehouse.

When an ASN is created, the system checks for the plant and storage location in the ASN and validates whether the corresponding warehouse for that plant and storage location is managed by embedded EWM. If it is, then the system distributes the

inbound delivery to embedded EWM and creates the inbound delivery by calling function module enabled by a queued remote function call (qRFC). This document becomes the warehouse request in embedded EWM for goods receipt management and putaway.

Figure 7.1 summarizes how the inbound delivery document is created in embedded EWM using an ASN in SAP S/4HANA.

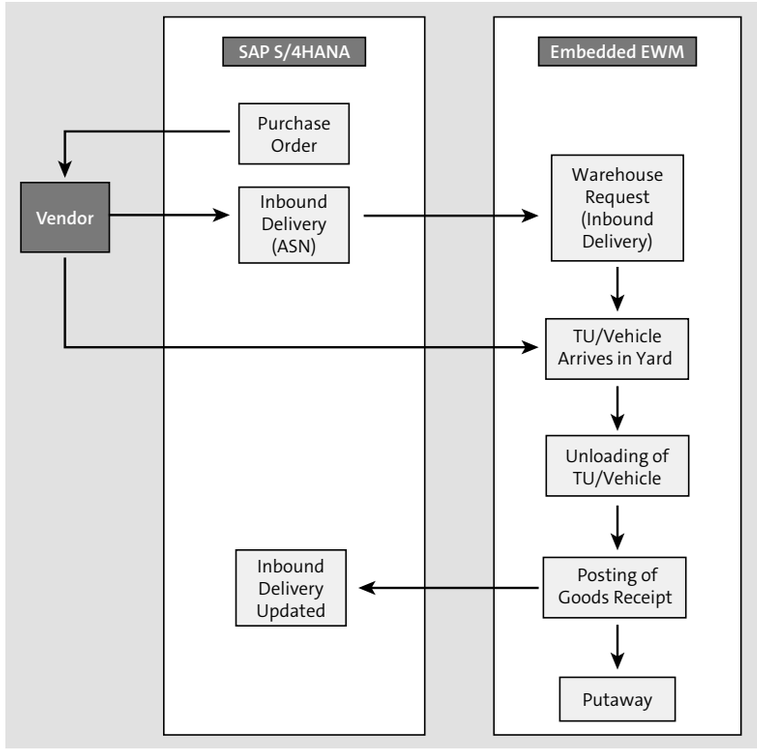

Figure 7.1 Goods Receipt in Embedded EWM Based on the Advanced Shipping Notice

Note

Users with prior experience working with decentralized EWM will notice that an inbound delivery notification is no longer created in SAP S/4HANA. This is one of the simplification strategies in embedded EWM.

After the inbound delivery is created, you can progress to the next steps in the inbound process, which may include the following:

- Arrival of vehicle or TU in the yard
- Unloading of TU for delivery
- Posting of goods receipt
- Putaway of products/handling units (HUs)

Note

Creation of an expected goods receipt document for goods receipt isn't required in embedded EWM. The inbound delivery gets information directly from the purchase/manufacturing order in SAP S/4HANA.

The inbound process in embedded EWM also can be used to receive finished goods in the warehouse. Depending on settings in SAP S/4HANA, you can trigger goods receipt posting directly from SAP S/4HANA or from embedded EWM. We'll discuss these settings in detail in Chapter 13, Section 13.6.

You can trigger goods receipt posting directly from SAP S/4HANA by using the inbound delivery created in SAP S/4HANA as soon as you've executed the last step in the production or process order. The inbound delivery is created in embedded EWM only if the receiving plant and storage location are managed by embedded EWM. The finished products are moved into the warehouse from the assembly line, and goods receipt is posted in embedded EWM. The same is also updated in the inbound delivery in SAP S/4HANA. You then create warehouse tasks for putaway and complete the putaway in embedded EWM.

To continue our running example, American company Alpha Medicals sends an order to one of its vendors based in Mexico. The order sent by Alpha Medicals contains various pharmaceutical products that are to be delivered to them in a timely manner. An Alpha purchase representative keys in the order in SAP S/4HANA and, based on material requirements, creates an inbound delivery in SAP S/4HANA that contains the products to be supplied as part of a single delivery.

As shown in Figure 7.2, after the inbound delivery is saved in SAP S/4HANA, it flows through to embedded EWM and is saved as an inbound delivery order. After the goods are received in the goods receipt area of the warehouse, goods receipt is posted in the staging area of the warehouse. Goods may also be flagged for quality inspection if quality management (QM) is activated for the product. After the checks and

any ongoing packaging requirements, the goods are put away by the warehouse worker in the final putaway area based on the destination bin that the embedded EWM system proposes. The warehouse workers usually get putaway warehouse tasks on their Process Warehouse Tasks – Putaway app or the RF device they use to work in the warehouse.

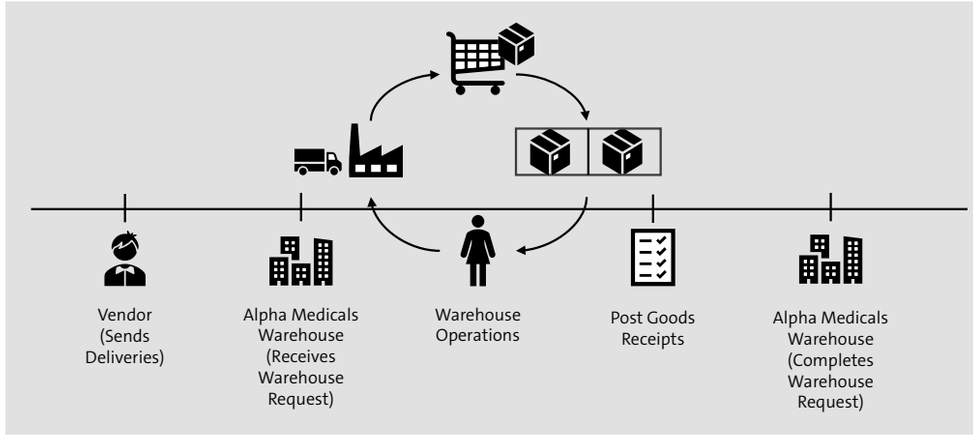

Figure 7.2 Business Flow for Inbound Processing

7.1.2 System Process

The following explains the basic system flow, including the documents and the data required to execute putaway of stock from the inbound door to the destination bin in embedded EWM and decentralized EWM. Briefly, each step in the inbound process is as follows:

1. The inbound process starts with the creation of an inbound delivery in SAP S/4HANA. The inbound delivery can be created from various business processes:
   - Purchase: A purchase order is created in SAP S/4HANA that requires putaway of goods from an embedded EWM–managed warehouse.
   - Customer returns: A customer returns order can be created in SAP S/4HANA that requires putaway of goods to an embedded EWM–managed plant for the goods returning from the customer location.
   - Production staging: A manufacturing order is created for receiving finished materials for production in the production staging area. These goods are put away to a destination bin based on the product putaway characteristics.

2. An inbound delivery is created in SAP S/4HANA for putaway to the embedded EWM warehouse. The inbound delivery can be created for any of the scenarios described in the previous step. The inbound delivery contains all the relevant data required for stock putaway: product, quantity, batch, and so on.
3. The inbound delivery is replicated to embedded EWM, and an inbound delivery is created in embedded EWM. This document serves as the requirements document in embedded EWM and is called the warehouse request. Further processing in embedded EWM such as staging, packing, and putaway is done based on the inbound delivery via creation of warehouse tasks.
4. After the warehouse worker finishes the stock putaway, and all associated warehouse tasks are confirmed, the embedded EWM system posts the goods receipt. The goods receipt is also updated in the inbound delivery in SAP S/4HANA.
5. The use of a TU is optional in embedded EWM. However, organizations can activate shipping and receiving functions in embedded EWM and make use of TU and vehicle activities to execute carrying of goods in the warehouse and unloading them. The stock is moved to a staging area after TU docks to the door and then is unloaded from a TU. Goods receipt can be posted after putaway is complete, which results in posting of goods receipt in the outbound delivery in SAP S/4HANA.

Storage control is used in a complex putaway process, in which a product must move through various process steps based on warehouse processes or the physical layout of the warehouse before it's moved to the destination storage bin. As you've read about in previous chapters, there are two types of storage control in embedded EWM: process-oriented storage control and layout-oriented storage control.

As discussed in Chapter 6, Section 6.5.4, process-oriented storage control is used for executing process steps based on warehouse processes. Some of the warehouse processes include quality inspection, value-added services (VAS), deconsolidation, and kitting. Layout-oriented storage control is used to execute warehouse processes based on the warehouse layout. For example, a product might need to be moved to the first floor in the warehouse to reach the final putaway bin via an elevator. In this case, the putaway storage process will have two process steps. The first step will move the product from the staging area to the elevator, and the second process step will move the product from the elevator to the door. The purpose of this storage control is to have stock visibility at all times in the warehouse. If a product must undergo both process-oriented and layout-oriented storage control, embedded EWM gives preference to process-oriented storage control.

Figure 7.3 shows complex movement in the inbound process using only process-oriented storage control.

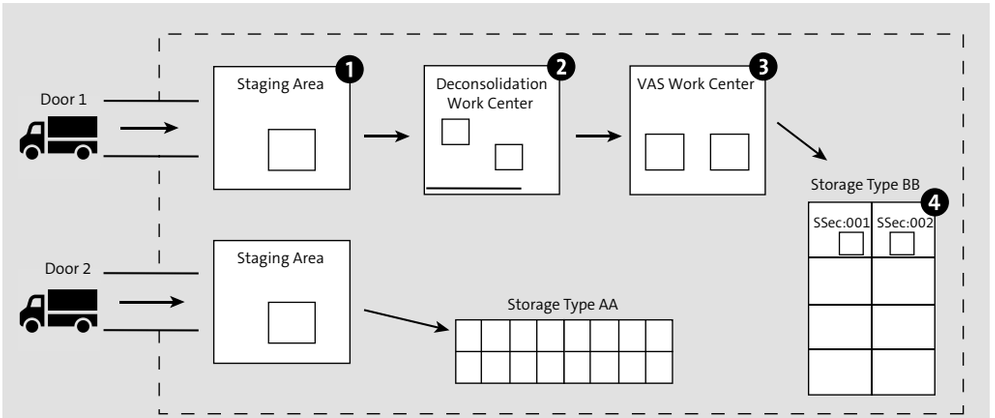

Figure 7.3 Storage Control in Inbound Processing

The primary steps involved in complex putaway are as follows, but note that they can include further steps (counting, quality inspection, etc.):

1. **Unloading**
   After the truck docks at the warehouse door, it's unloaded using an HU warehouse task.
2. **Deconsolidation**
   The pallets are taken to a deconsolidation work center where they're broken down to move individual products to their destination.
3. **Value additions**
   Based on relevance for VAS, embedded EWM creates an HU warehouse task to move the product to a VAS work center. VAS activities performed at the VAS work center include painting, oiling, packaging, and so on.
4. **Putaway**
   A final putaway HU warehouse task is now created or activated to move the product from the VAS work center to the destination storage bins. You can confirm the warehouse task from SAP GUI or by using an RF device.

7.2 Configuring Inbound Delivery Processing

In this section, we'll discuss system configurations required for inbound delivery processing in embedded EWM. We'll cover document and item type determination in embedded EWM for creation of the inbound delivery, as well as availability groups, which are used for stock type determination in embedded EWM.

7.2.1 Document Category and Document Types

Document categories denote the different documents that can be processed by the embedded EWM system. These are predefined in the system and can't be changed.

A document type is used to classify a document based on a specific business process. You can create your own document types in embedded EWM based on different types of inbound processes. Table 7.1 shows two of the document category and document type combinations possible in embedded EWM.

Document Category	Document Type	Document Type Description
PDI	INB	Inbound delivery
PDI	INBI	Inbound delivery, production

Table 7.1 Document Category and Document Types for Inbound Processing

Together, the document category and document type uniquely define the delivery document header in embedded EWM and uniquely define a business process. Define document types via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt • Define Document Type**. Click on **New Entries**, and enter the document type code, description, and control parameters. A document type is used to define several key settings, including settings specific to the purpose for which it's being set up. It contains settings for document types, profiles, packing, and process controlling. Some of the key settings defined here are as follows:

- Internal number range for a document type
- Retention period in the system before the document is archived
- Profiles assignments such as action profile, status profile, text profile, and so on
- Indicator for automatic packing during inbound delivery creation

- Setting document relevance for warehousing processes such as production, scrapping, and so on

7.2.2 Item Category and Item Types

Item categories are used to group items based on their use for packing, returns, and so on. Item category codes are predefined in SAP and can't be changed. Item types define the business characteristics of an item in a delivery document. Table 7.2 shows two of the document category and document type combinations possible in embedded EWM.

Item Category	Item Type	Item Type Description
DLV	IDLV	Standard item, inbound delivery
DLV	IDPP	Inbound delivery standard item goods receipt production

Table 7.2 Item Category and Item Types in Embedded EWM

You can create item types via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process • Inbound Delivery • Manual Settings • Define Item Types for Inbound Delivery Process**. Click on **New Entries**, and enter the item type code, description, and control parameters. Item types hold some key settings relevant to profiles and process management and control:

- Profile assignments such as status profile, incompletion profile, and process profile (note that action profiles aren't defined here, but at the document type level)
- Manual creation of line items in delivery
- Permission to allow invoice before goods issue
- Flag an item as relevant for document-related serialization, documentary batches, and so on

7.2.3 Mapping the Inbound Delivery

The deliveries created in SAP S/4HANA are distributed to embedded EWM and create deliveries in embedded EWM that are called *warehouse requests* and become the principle documents for carrying out embedded EWM-specific business processes

such as creation of putaway warehouse tasks. It's important to map the delivery document type from SAP S/4HANA with the corresponding document type of the warehouse request, as shown in Figure 7.4. This helps the system know which embedded EWM document type to create based on the document type in the SAP S/4HANA system.

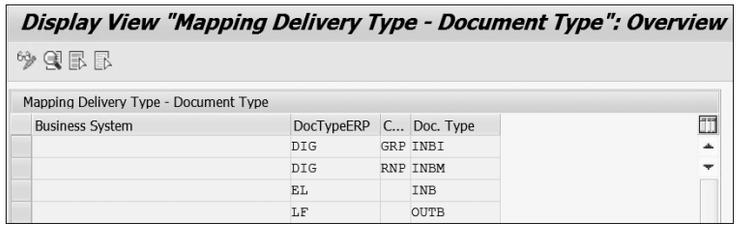

Figure 7.4 Mapping Delivery Type to Document Type

Document type mapping is done in embedded EWM from IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Interfaces • ERP Integration • Delivery Processing • Map Document Types from ERP system to EWM**. Click on **New Entries**, and enter the document type in embedded EWM for a combination of document types in SAP S/4HANA and the business system.

The **Business System** is the business system of the source SAP S/4HANA system. You can map multiple document types in SAP S/4HANA to multiple item types in embedded EWM based on the settings in the **Cde Init.Com** (code for initiator of a communication chain) field (shown in Figure 7.4). This field is used to segregate business processes based on discrete attributes such as splitting up goods receipt from production into two subprocesses for discrete manufacturing and repetitive manufacturing. This allows you to have more control over carrying out business processes in embedded EWM. Similarly, you can map multiple document types in SAP S/4HANA to one document type in embedded EWM.

Next, map item types for deliveries in SAP S/4HANA with the item types in warehouse requests in embedded EWM, as shown in Figure 7.5. To do so, navigate to IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Interfaces • ERP Integration • Delivery Processing • Map Item Types from ERP System to EWM**. Click on **New Entries**, and map the embedded EWM item type with a combination of the SAP S/4HANA business system, document type, and item type in SAP S/4HANA, and the embedded EWM item type.

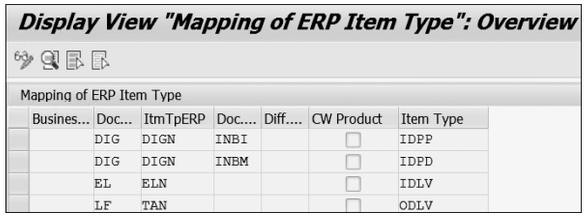

Figure 7.5 Mapping of Item Types in SAP S/4HANA with Item Types in Embedded EWM

You can map one document type in SAP S/4HANA to multiple item types in embedded EWM based on differentiation attributes. This allows you to have more control over carrying out business processes in embedded EWM. For this, you need to map the profile for the differentiation attribute used to the SAP S/4HANA document type via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Interfaces • ERP Integration • Delivery Processing • Define ERP Document Types for Differentiation Attributes**. Click on **New Entries**, and enter a combination of SAP S/4HANA business system, document type, and profile. Similarly, you can map multiple document types in SAP S/4HANA to one document type in embedded EWM.

7.2.4 Stock Type Determination in Inbound Delivery

SAP S/4HANA tracks stock based on plant, storage location, and stock category. The stock type in embedded EWM is traced using the concept of *availability groups*. An availability group is used to control which stock is available for a storage type.

You can set up availability groups in embedded EWM from IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process • Configure Availability Group for Putaway**. The following settings are made here:

- **Define availability group**
  In this step, define the availability group for use in your warehouse. In standard embedded EWM, you use two main availability groups: 001 for goods in putaway and 002 for goods available for sale (Figure 7.6). You can create more availability groups per your business requirements.

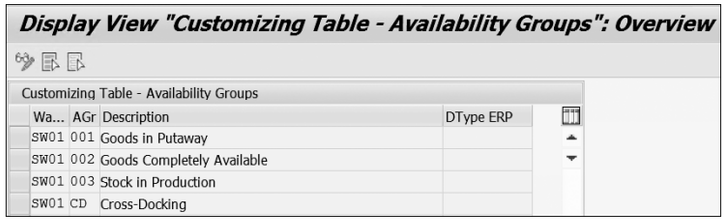

Figure 7.6 Defining Availability Groups

- **Define non-location-specific stock type**
  In this step, define the non-location-specific stock type for the warehouse. These are stock types that group stock based on their attributes and are independent of stock location in the warehouse. SAP has provided some non-location-specific stock types by default, as shown in Figure 7.7, but you can create more per your business requirements, for example, for quarantined stock.

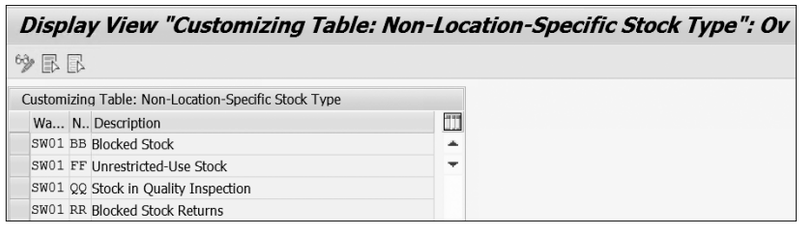

Figure 7.7 Defining Non-Location-Specific Stock Types

- **Configure stock type**
  In this activity, map the availability group and non-location-specific stock type with the stock type in embedded EWM for a specific warehouse, as shown in Figure 7.8.

The availability group described is also assigned to the plant and storage location of the embedded EWM warehouse in SAP S/4HANA, as shown in Figure 7.9. This is done via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Interfaces • ERP Integration • Goods Movement • Map Storage Locations from ERP System to EWM**. Click on **New Entries**; enter a combination of embedded EWM warehouse, embedded EWM stock type, availability group, location-independent stock type, and stock type role; and click on **Save**. In this way, the stock type in embedded EWM is tracked using a combination of plant and storage location

(using the availability group) and non-location-specific stock type (e.g., unrestricted stock, blocked stock, etc.).

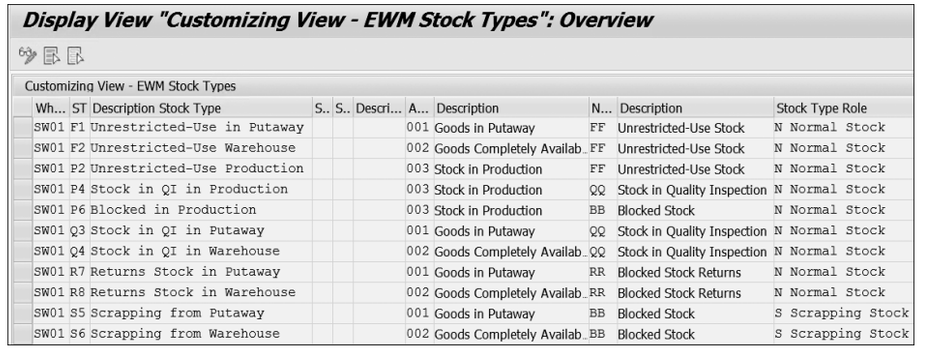

Figure 7.8 Mapping the Embedded EWM Stock Type

Based on the availability group, you can set up different stock types for the inbound and outbound processes. For example, in Figure 7.9, we mapped availability group 001 (linked to storage location ROD, which marks the location for stock received on the docks) to embedded EWM stock type F1, and availability group 002 (linked to storage location AFS for storing goods available for sale) to embedded EWM stock type F2.

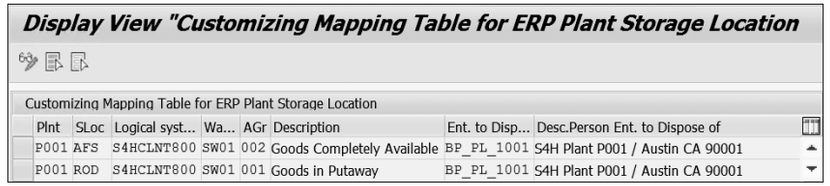

Figure 7.9 Mapping Storage Locations from SAP S/4HANA to Embedded EWM

When an inbound delivery is created in embedded EWM, the system checks the plant and storage location for the delivery in SAP S/4HANA and determines the availability group for that plant and storage location combination. Next, it determines the embedded EWM stock type by looking at the mapping of the availability group and non-location-specific stock type based on the stock category for the delivery in SAP S/4HANA and determines the embedded EWM stock type. This stock type is populated in the inbound delivery created in embedded EWM, as shown in Figure 7.10.

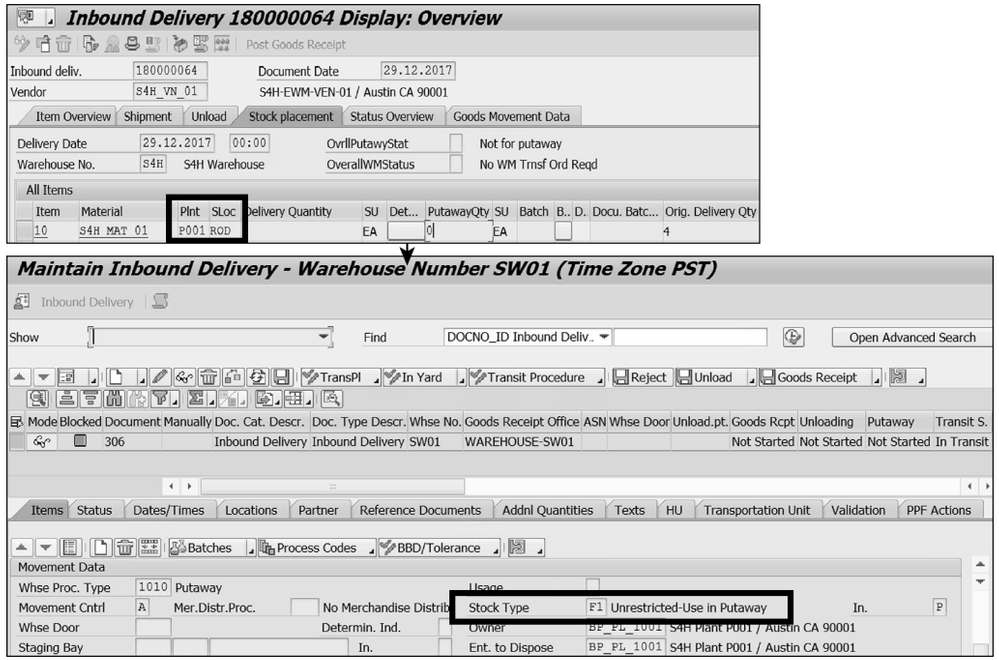

Figure 7.10 Stock Type in the Inbound Delivery from SAP S/4HANA to Embedded EWM

You can also assign an availability group to storage types in storage type settings, as shown in Figure 7.11.

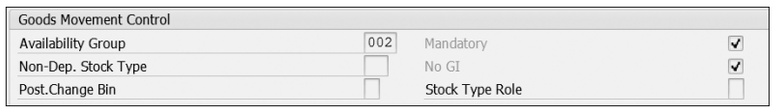

Figure 7.11 Assigning the Availability Group to the Storage Type

If the availability group of stock being put away into a storage bin for the storage type is different from the availability group set in the storage type, then the system does a posting change for the stock. For example, if stock in the delivery with stock type F1, as shown in Figure 7.11, is put away in a storage type with availability group 002, then based on the settings discussed previously—availability group 002 mapped to stock type F2—the system will perform a posting change on stock being put away and change it to type F2, which is unrestricted stock available for sale.

Note

We discussed in Chapter 6, Section 6.3.2, that an availability group is also set at the warehouse process type level. The system always gives preference to the availability group set at the storage type level; if it doesn't find one, it looks for an availability group set at the process type level. If no availability group is set at either of these levels, then the embedded EWM stock type remains unchanged.

7.2.5 Stock Type Enhancement

You can define the stock type description at the warehouse level, so that plant/storage location descriptions can be saved in a warehouse-dependent manner via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process • Configure Availability Group for Putaway • Configure Stock Type**.

Note

Prior to SAP S/4HANA 1809, the description of the stock types could only be defined in a warehouse-independent manner. Using this text description of the stock type, you can mention the plant and storage location when referring to a stock type, which helps users easily identify the plant and stock type combination linked to a stock type. You can, for example, describe stock type F1 for the SW01 sample warehouse as "Unrestricted stock in PL04/AFS."

This feature allows you to display a description for warehouse stock types and availability groups, which makes mapping plants, storage locations, stock types, and availability groups transparent.

7.3 Inbound Delivery

The inbound delivery document is created in embedded EWM after the inbound delivery or a returns delivery in SAP S/4HANA is successfully distributed to embedded EWM. The inbound delivery also can be created directly in embedded EWM while carrying out goods receipt from production. This document contains all the data required for carrying out goods receipt and putaway in embedded EWM. The TU or vehicle is registered in the yard based on the delivery it's carrying. The warehouse

tasks for unloading and putaway are created for warehouse requests. You can adjust the quantity in the inbound delivery in embedded EWM based on the goods receipt quantity, and the same is updated in the delivery in SAP S/4HANA. If the settings for the item type permit, you can also create new items in the delivery. The inbound delivery in embedded EWM has two levels: document header and document item.

The document header is defined by the document category and document type, and it contains important data such as the following:

- Goods receiving office
- ASN number
- Processing statuses
- Transportation details

The document item is defined by the item category and item type, and it holds item-specific data for items in the inbound delivery, such as the following:

- Warehouse process type
- Item-level status
- Product-specific data, such as product number, batch, and so on
- Line item quantity

Figure 7.12 shows an inbound delivery in embedded EWM with the document header and **Item** section highlighted.

Note

The following SAP Fiori apps are available to create and process inbound deliveries:

- **Create Inbound Deliveries**
  This app allows you to create inbound deliveries for purchase orders that are then used for stock putaway in the warehouse.
- **Change Inbound Deliveries**
  This app allows you to change inbound deliveries created for purchase orders that are then used for stock putaway in the warehouse.
- **Maintain Inbound Deliveries**
  This app allows you to change the inbound delivery warehouse request in embedded EWM/decentralized EWM warehouses.

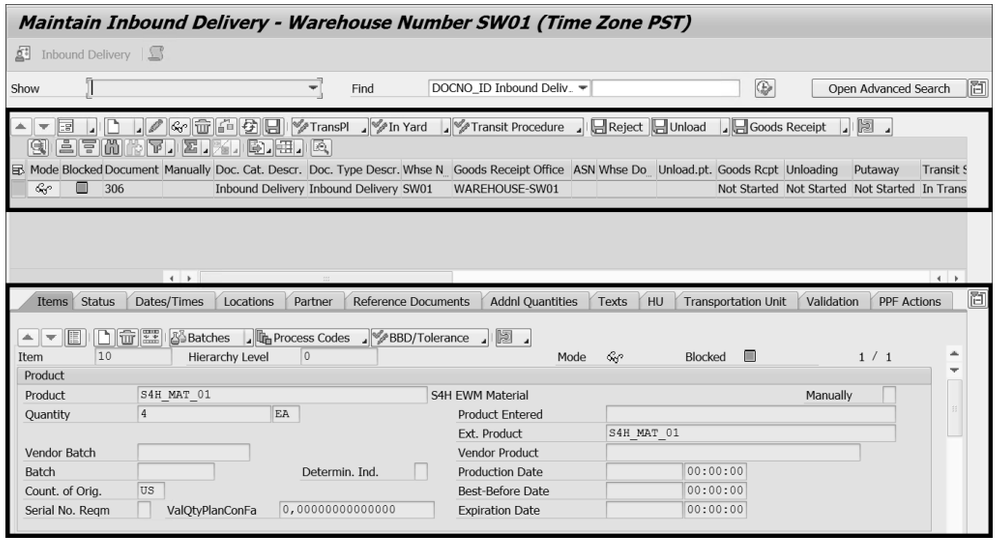

Figure 7.12 Inbound Delivery Header and Item Section in Display Mode

7.4 Check-In

The next step after creation of an inbound delivery in embedded EWM is physical receipt of goods in the warehouse. Goods arrive in the warehouse in vehicles or TUs. Use yard management in embedded EWM to manage vehicles coming into the yard (as discussed in detail in Chapter 18).

The *yard* is the space outside the warehouse used for managing incoming and outgoing vehicles. It's typically made up of checkpoints, parking, and doors. The first step in managing inbound vehicles is to acknowledge their entry past the entry checkpoint and into the warehouse premises. This is done by the shipping office, which validates the deliveries in the TU and relevant paperwork, such as the delivery note.

This process is called *check-in* in embedded EWM and is done via Transaction /SCWM/CICO, which also can be accessed from **SAP Easy Access** path **Logistics • SCM Extended Warehouse Management • Extended Warehouse Management • Shipping and Receiving • Yard Management • Arrival at/Departure from Checkpoint**, as shown in Figure 7.13. Enter the TU search criteria, and search for the TU. Select the **TU**, click on **Arrive at Checkpoint**, and then **Save** to set the TU as checked-in at the warehouse.

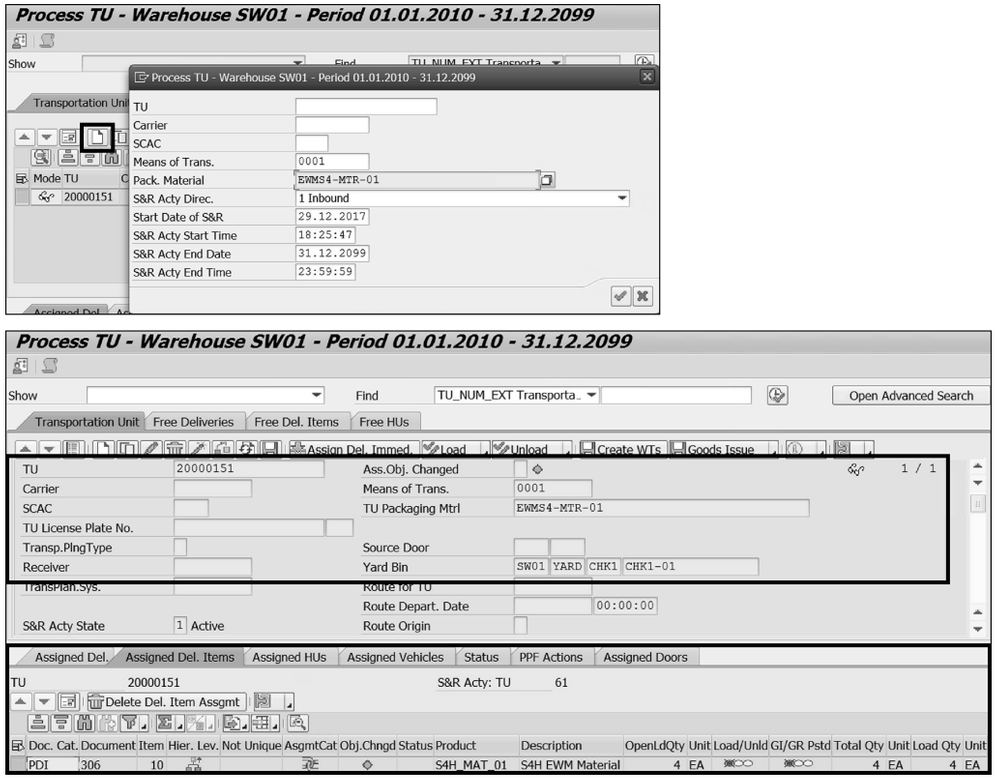

Figure 7.13 Transportation Unit Containing the Inbound Delivery

> **Note**
>
> Yard management is available as a component of shipping and receiving in advanced warehouse management in embedded EWM. Using yard management in the inbound process in embedded EWM is optional.

If a vendor has already sent an ASN, then the inbound delivery will already exist in the warehouse. If there is no ASN, then you can create the inbound delivery in embedded EWM directly by getting required information from the purchase order or manufacturing order. This delivery in embedded EWM creates the inbound delivery in SAP S/4HANA.

Assign the delivery to a TU using Transaction /SCWM/TU. Click on the **Assign. Del. Immed.** button, and select the delivery to be assigned. The TU can then be assigned to a vehicle using Transaction /SCWM/VEH by selecting the vehicle and clicking on the **TU Assignment** button on transaction screen. You can't assign a delivery directly to a vehicle. The vehicle information—license plate number, driver, carrier, and so on—is updated for the vehicle/TU. After the TU is checked-in, the status of the TU is updated to **Arrived at Checkpoint**.

If there is no empty warehouse door available, then the vehicle is moved to a parking lot, where it waits for one of the doors to become available. After a door becomes available, the TU is moved to a warehouse door, where the unloading process begins. Do this via Transaction /SCWM/YMOVE, which also can be accessed from **SAP Easy Access** path **Logistics • SCM Extended Warehouse Management • Extended Warehouse Management • Shipping and Receiving • Yard Management • Create Warehouse Task in Yard**. Click on the **Create + Save for TUs** button. This creates a warehouse task to move an HU with the name of the TU. The warehouse task has the source bin as the current location of the HU for the TU. The destination bin for the warehouse door can be determined using process-oriented storage control or can be entered manually. (We'll discuss yard management further in Chapter 18.)

> **Note**
>
> Advanced/extended warehouse management in embedded EWM in SAP S/4HANA offers the added advantage of inbound process optimization. In this way, you can group multiple deliveries in a single TU or vehicle and complete the inbound process for those deliveries together.

7.5 Unloading and Goods Receipt

Unloading and goods receipt begin after the inbound delivery has been verified at the checkpoint and the TU/vehicle is docked at the door. You can verify the inbound delivery using Transaction /SCWM/PRDI, which can also be accessed from **SAP Easy Access** path **Logistics • SCM Extended Warehouse Management • Extended Warehouse Management • Delivery Processing • Inbound Delivery • Maintain Inbound Delivery**.

You can review the TU to which the delivery is assigned by navigating to the **Transportation** tab in the **Delivery Item** section. The inbound deliveries can be viewed in

the warehouse monitor using Transaction /SCWM/MON, which can be accessed from **SAP Easy Access** path **Logistics • SCM Extended Warehouse Management • Extended Warehouse Management • Monitoring • Warehouse Management Monitor**. In the navigation tree, navigate to **Inbound • Documents • Inbound Delivery**; in the search criteria, provide details for the inbound delivery. You'll see results like those shown in Figure 7.14.

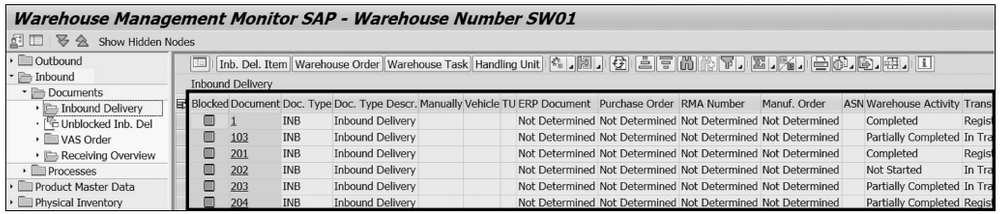

Figure 7.14 Inbound Delivery in the Warehouse Monitor

The goods are unloaded from the TU/vehicle and moved to a staging area for goods receipt. In the following sections, we'll cover the unloading and goods receipt processes in detail.

7.5.1 Unloading

Unloading is the process of moving goods from the TU/vehicle and bringing them to the staging area assigned to a door in the warehouse. The SAP transaction for unloading is Transaction /SCWM/UNLOAD, which can also be accessed from **SAP Easy Access** path **Logistics • SCM Extended Warehouse Management • Extended Warehouse Management • Delivery Processing • Inbound Delivery • Unload**. The delivery to be unloaded can be searched for and unloaded using the **Unload** button.

Embedded EWM supports two types of unloading: *simple unloading* and *complex unloading*. Simple unloading is used to update the unload status of the delivery in the TU manually without creating an unloading warehouse task. If goods receipt is performed directly in the staging area, then unloading isn't required or can be done using simple unloading. You can do simple unloading by selecting the **Unload** button, as shown in Figure 7.15. You can also perform unloading directly for the inbound delivery using Transaction /SCWM/PRDI or for the TU using Transaction /SCWM/TU. After unloading is complete, the unloading status of HUs and the status of delivery items are updated to **Unloading Complete**.

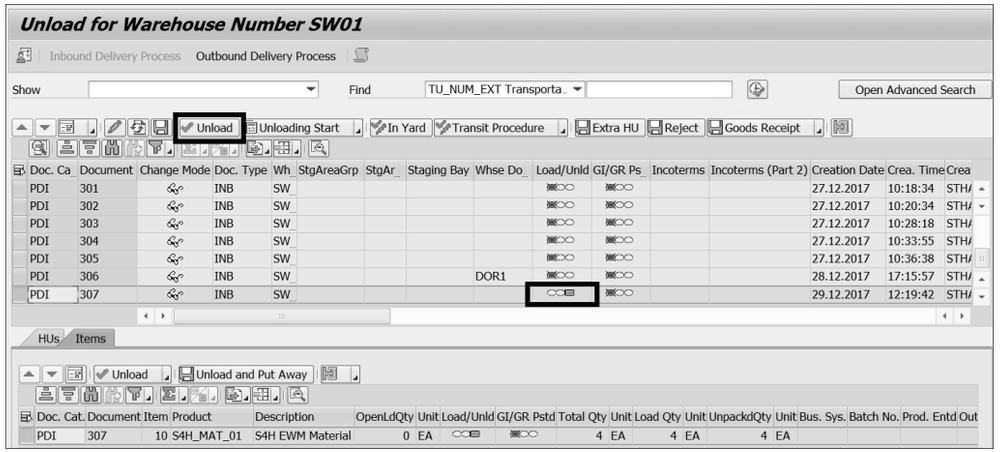

Figure 7.15 Simple Unloading of the Inbound Delivery

Complex unloading, on the other hand, requires creation and confirmation of warehouse tasks to complete the unloading process. Complex unloading is used when the receipt of delivery items is posted to TU or the door bin and can be done with or without process-oriented storage control. The destination bin for the unloading warehouse task is the staging bay for inbound deliveries. The unloading warehouse tasks can be confirmed either from SAP GUI or from the RF interface.

While executing unloading of inbound delivery without a storage process, the warehouse task created for the process type in the inbound delivery line item performs both unloading and putaway upon task confirmation. You can change the destination bin in the warehouse task manually and unload the HU to the staging bin of the delivery item. For unloading with process-oriented storage control, the unloading warehouse task is created from the goods receipt location to the staging area of the inbound delivery. The unloading warehouse tasks can be grouped together into warehouse orders by using the **Load/Unload** creation category in the warehouse order creation rule.

You can maintain a staging area and door determination for the inbound process via Transaction /SCWM/STADET_IN or via **SAP Easy Access** path **Logistics • SCM Extended Warehouse Management • Extended Warehouse Management • Settings • Shipping and Receiving • Staging Area and Door Determination (Inbound)**. Click on **New Entries**, and enter a combination of warehouse process type and staging area door determination group.

> **Note**
>
> The Unload Transportation Units app allows you to unload an inbound delivery from a TU onto the warehouse staging area using either simple or complex unloading.

7.5.2 Quantity Adjustment in Inbound Processing

After unloading is complete, a warehouse user will perform a visual inspection of the unloaded goods. If any discrepancy is noted, such as a difference in unloaded quantity versus the quantity in the inbound delivery, then the quantity in the inbound delivery is updated to reflect actual goods received in the warehouse. This is done using process codes, as shown in Figure 7.16.

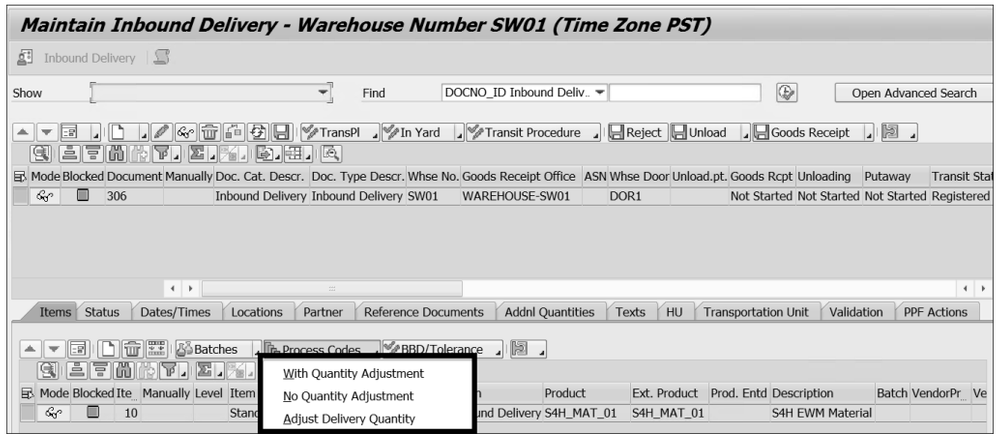

Figure 7.16 Using Process Codes for Quantity Difference

If the delivery quantity is changed manually, the system determines the default process code based on settings that can be viewed in the **Process Codes** tab in the inbound delivery at the item level in embedded EWM. If there is a difference between the quantity in the inbound delivery and the quantity for which warehouse tasks have been created, then you can select the **Adjust Delivery Quantity** option, as shown in Figure 7.16. This automatically updates the delivery quantity to the quantity specified in the warehouse tasks.

Some of the process codes available in embedded EWM to manage quantity adjustments for deliveries are as follows:

- **I001 Delivery Difference, Adjust Document**
  In this case, the delivery quantity is adjusted in embedded EWM, and the process code is saved in the delivery, but the transferred delivery quantity isn't adjusted in SAP S/4HANA.
- **I002 Delivery Difference, Adjust Document + Quantity**
  In this case, embedded EWM updates both the delivery quantity in embedded EWM and the transferred delivery quantity. This results in a delivery split, wherein the adjusted quantity remains in the original delivery and the remaining quantity is moved to a new delivery in embedded EWM.
- **I003 Delivery Difference, No Adjustment**
  No change is made to the delivery quantity. The process code is updated in the delivery for documentation purposes.
- **I004 Reject Inbound Delivery**
  This process code is used to set the quantity in the inbound delivery to 0. For example, if an inbound delivery is created for 10 pieces, you can reject the inbound delivery by setting a quantity of 10-, which will set the total quantity in the warehouse request to 0.

> **Note**
>
> Process codes should be applied before goods receipt is completed in embedded EWM.

7.5.3 Goods Receipt

After unloading is complete, you can post goods receipt for the inbound delivery in embedded EWM. You can perform complete and partial goods receipt in embedded EWM using inbound delivery or warehouse tasks, as follows:

- **Complete goods receipt using inbound delivery or warehouse tasks**
  Complete goods receipt using inbound delivery can be done from Transaction /SCWM/GR. You can search for and select the inbound delivery by entering search criteria such as TU, inbound delivery, door, SAP S/4HANA document, and so on. To execute goods receipt, click on the **GR** button, or enter Transaction /SCWM/PRDI, and click on the **Goods Receipt** button. If you need to perform goods receipt after putaway, you can wait for the system to set the goods receipt to **Complete** automatically after all putaway warehouse tasks are confirmed. This will also update the goods receipt status for the inbound delivery in SAP S/4HANA.

- **Partial goods receipt using warehouse tasks**
  If an inbound delivery has more than one putaway warehouse task, the status of the goods receipt in the inbound delivery remains set to **Partially Complete** until all tasks are confirmed. The system updates the goods receipt status in the inbound delivery in SAP S/4HANA using the Post Processing Framework (PPF).
- **Goods receipt reversal using returns delivery**
  Goods often need to be returned to the vendor or other warehouses after they've physically arrived in the warehouse and have been put away. To perform stock returns using deliveries, the following actions need to be performed:
  - The inbound delivery for which the putaway is completed and goods receipt status is set as **Complete** is searched for and selected using Transaction /SCWM/PRDI.
  - Follow the **Inbound Delivery • Follow-on Function • Return to Vendor** path in the menu of the selected inbound delivery. This takes you to the SAP S/4HANA core in the Transaction VL60 screen.
  - On the **Returns Delivery** screen, select **Quantity Differences • Return Quantities**, enter the quantity to be returned to the vendor from the warehouse, and save. This creates a return delivery in SAP S/4HANA and distributes it to embedded EWM, creating an outbound delivery order.
  - Stock to be returned to the vendor is then picked based on the outbound delivery order, issued out of the warehouse, and then sent to the original vendor as part of the return process.

Note

The following SAP Fiori apps are available to perform goods receipt in embedded EWM warehouse:

- **Display Workload**
  This app allows you to search for inbound deliveries for putaway based on various filtering criteria such as overdue purchase orders or a subset of timelines (e.g., a few days, hours, etc.).
- **Process Goods Receipt**
  This app allows you to display, edit, change, batch, scan, pack, and edit TUs, as well as perform goods receipt for inbound deliveries selected based on search criteria such as purchase order, vendors, and so on.

7.6 Putaway

After unloading is complete, the next step in processing the inbound delivery in embedded EWM is putaway. This means moving products from the staging area to final putaway storage bins in the warehouse. However, putaway in embedded EWM isn't always direct putaway into destination bins. Usually, a product moves through one or more intermediate steps, such as labeling, deconsolidation, or quality inspection, before it becomes ready for final putaway. In such cases, the product moves through several intermediate bins before it reaches the destination storage bin. This is called *complex putaway*, as opposed to *simple putaway*, in which products received in the staging area in the warehouse are directly moved to the final bin.

In the following sections, we'll cover various processes involved in putaway in the warehouse. We'll also discuss putaway strategies in embedded EWM that are used for determination of the final storage bin in the warehouse.

7.6.1 Deconsolidation

Deconsolidation is the process of breaking an HU into multiple HUs based on products that belong to different consolidation groups. Consolidation groups are used to group products based on similar attributes. Deconsolidation allows you to perform distributed putaway in embedded EWM. For example, when the goods receipt process is started in the inbound delivery, the system checks the destination activity area and consolidation groups of the products contained within the HU. If it finds that an HU has products that belong to different consolidation groups, it sets the original putaway task to **Inactive** and creates a new warehouse task to move the HU to the deconsolidation work center. In the outbound process, you create consolidation groups for products with the same shipping requirements, such as route, ship-to party, and so on.

During the putaway process, embedded EWM determines an HU as relevant for deconsolidation if it meets one of the following criteria:

- The activity areas for the products within an HU are different.
- The activity areas for the products within an HU are the same, but the consolidation groups are different.
- The activity areas and consolidation groups for the products within an HU are the same, but the maximum number of warehouse tasks for the HU has been exceeded.

The following configuration settings are required for setting up deconsolidation in embedded EWM:

- **Assign number range interval**
  Assign the number range interval created for consolidation groups to the warehouse via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process • Deconsolidation • Assign Number Range Interval to Consolidation Groups**, as shown in Figure 7.17. Click on **New Entries**, and add a combination of embedded EWM warehouse, number range type, and number range interval.

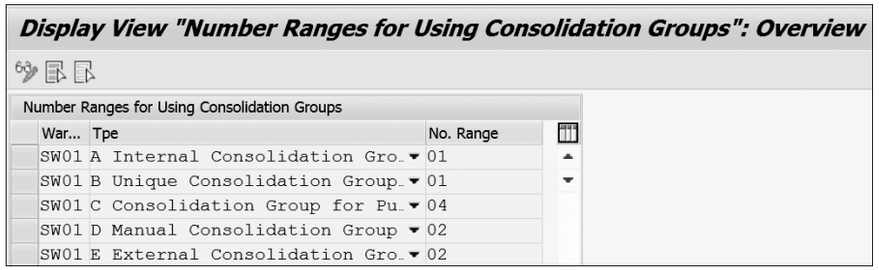

Figure 7.17 Assigning the Number Range Interval to the Consolidation Group

- **Define deconsolidation attributes**
  If you want to use deconsolidation in process-oriented storage control, you also need to define deconsolidation attributes for each activity area. The attributes are required in the process step for deconsolidation in embedded EWM. The value in the **MaxP** field is used to define the maximum number of warehouse tasks in the putaway HU. The value in the **MaxD** field is used to define the maximum number of warehouse tasks in the deconsolidation HU (Figure 7.18). If the actual number of warehouse tasks exceeds the maximum number of permitted warehouse tasks, then the HU is moved to the deconsolidation work center.

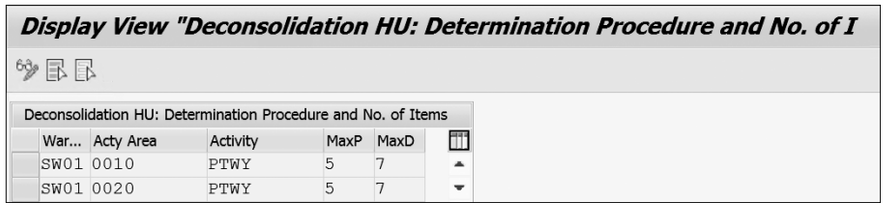

Figure 7.18 Assigning Attributes to the Activity Area

Example

You receive a deconsolidation HU with 10 putaway warehouse tasks. The system moves the HU to the deconsolidation work center because the maximum number of tasks allowed in a deconsolidation HU is only seven. Here, the system creates another putaway HU with five warehouse tasks. The HU is then closed, and a putaway warehouse task is created because the maximum number of putaway warehouse tasks in an HU can't be more than five, as shown in Figure 7.18. The system then creates another HU with the remaining products.

- **Define deconsolidation station**
  You also need to define the deconsolidation station where the HU will be deconsolidated. To do this, assign the deconsolidation work center or storage type, section, and bin details to the combination of warehouse, source storage bin, HU type group, and destination storage area. The source storage type can be a staging area or door at which the TU is docked. The system determines the warehouse process type to create warehouse tasks to move the HU to a deconsolidation work center based on settings maintained in process-oriented storage control.

  You can define the determination of the deconsolidation work center via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process • Deconsolidation • Specify Deconsolidation Station**, as shown in Figure 7.19. Click on **New Entries**, and provide either the deconsolidation work center or storage type, section, and bin for the deconsolidation work center.

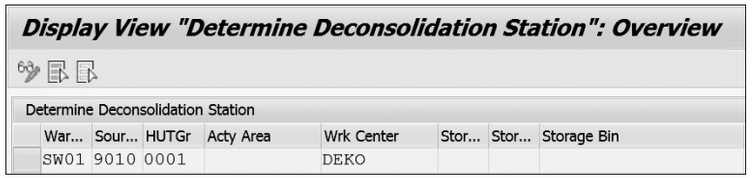

Figure 7.19 Determination of Deconsolidation Work Center

To view the HUs in a deconsolidation work center via Transaction /SCWM/DCONS, which can also be accessed via **SAP Easy Access** path **Logistics • SCM Extended Warehouse Management • Extended Warehouse Management • Execution • Deconsolidation in Goods Receipt**, provide the deconsolidation work center for your embedded EWM warehouse. Upon execution, the left-hand side of the screen, or the tree control,

shows the HUs available in the deconsolidation work center. The upper-right area shows various tabs that can be used to execute actions in packing.

7.6.2 Putaway in Embedded EWM

The goods receipt process ends after putaway of the product in the destination storage type. This is done by confirming the final putaway warehouse tasks. You can schedule the automatic creation of putaway warehouse tasks by setting up the PPF action `/SCWM/PDI_O1_WT_CREATE` for action profile `/SCWM/PDI_O1` after goods receipt has been processed. If required, you can also create the warehouse tasks manually. To do so, navigate to **SAP Easy Access** path **Logistics • SCM Extended Warehouse Management • Extended Warehouse Management • Work Scheduling • Create Warehouse Task for Warehouse Request • Putaway for Inbound Delivery**. The system combines the putaway tasks into warehouse orders that are assigned to resources in the warehouse.

You can review the status of warehouse task creation by viewing the value of the **Putaway Planning** status in the warehouse request. The system sets the **Putaway Planning** to **Partially Completed** if you've created warehouse tasks for some of the quantities in the inbound delivery. The system sets the **Putaway Planning** status to **Completed** if it's created warehouse tasks for the entire quantity in the warehouse request.

The putaway bin determination is done beginning with determination of storage type, section, and bin. We'll discuss how the system determines the destination storage bin for putaway in the following sections.

Storage Type Determination

In simple putaway, the system determines the source storage type based on the storage type and bin defined in the warehouse process type. For determination of the putaway storage bin, the system first starts by determining the storage type by obtaining information from the inbound delivery document, warehouse product master, packaging specification, and hazardous substance master data (if the product is hazardous) to determine the storage type search sequence. The following data is determined based on the information provided in the inbound delivery (also shown in Figure 7.20):

- Based on the product in the inbound delivery, the system determines the process type indicator and putaway control indicator.

- The system checks if the product is hazardous and determines the hazard rating from the hazardous substance master.
- The system also determines the packaging specifications of the product and assigned warehouse to determine the quantity classification.

The putaway control indicator is used to control putaway for products into similar storage types. The putaway indicator is created via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process • Strategies • Storage Type Search • Define Putaway Control Indicator**. Click on **New Entries**, and define a new putaway control indicator for the warehouse, which is then assigned to the warehouse product master in the **Storage Data** tab using Transaction /SCWM/MAT1.

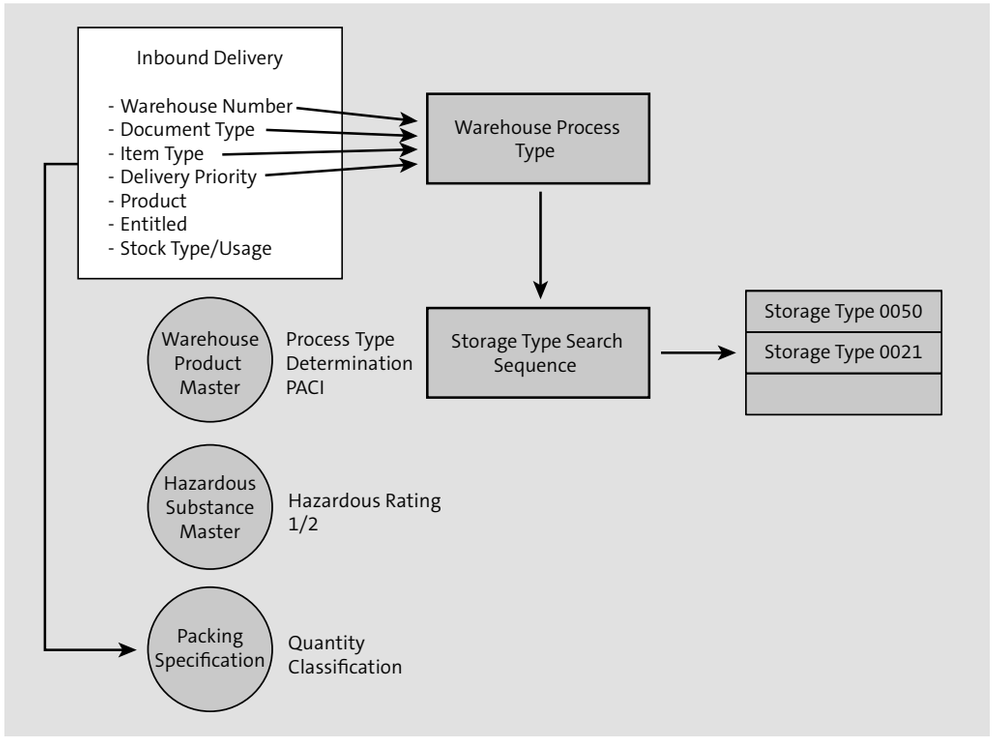

Figure 7.20 Storage Type Determination

To define a storage type search sequence, navigate to IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process •**

Strategies • Storage Type Search • Define Storage Type Search Sequence for Putaway. Click on **New Entries**, and define a new storage type search sequence for the embedded EWM warehouse.

The storage type search sequence is used to group together storage types in a sequence. To group together storage types, navigate to IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process • Strategies • Storage Type Search • Assign Storage Types to Storage Type Search Sequence**, as shown in Figure 7.21. Click on **New Entries**, and add a sequence of storage types to the search sequence.

Display View "Storage Type Search Sequence for Putaway": Overview

Storage Type Search Sequence for Putaway

WhN	Srch Seq.	Seq. No.	Typ	STG	EvlWhsItem	Description
SW01	PUTW	1	0030		0	Put Away
SW01	PUTW	2	0020		0	Put Away
SW01	PUTW	3	0010		0	Put Away

Figure 7.21 Storage Type Search Sequence

The system picks up the first storage type in the search sequence and begins with the determination of the storage section. To set the criteria for determination of the storage type search sequence for a product during putaway, navigate to IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process • Strategies • Storage Type Search • Specify Storage Type Search Sequence for Putaway**, as shown in Figure 7.22. Define the storage search sequence based on the product parameters and information picked from the inbound delivery, as discussed at the beginning of this section.

Display View "Search Sequence: Putaway": Overview

Search Sequence: Putaway

WhN	PACI	Proc./...	Qty Class.	Stock/...	Type	Use	Ent.toDisp	HazRat1	HazRat2	Srch Seq.	Putaway Rules
SW01	0020									0020	No Putaway Rule
SW01	0020	1010	P							PUTW	No Putaway Rule

Figure 7.22 Determination of the Storage Type Search Sequence

As shown in Figure 7.22, thousands of combinations are possible in the system for determining the right storage type search sequence for a combination of input criteria. We used optimization of the access sequence for optimizing the access strategy for storage type searches during putaway. The system first looks for a fully qualified entry, that is, an entry in the determination table with all values set. If the system doesn't find a fully qualified entry, then it looks at the access sequence maintained in the optimization table.

As shown in Figure 7.23, based on sequence number 0, the system first looks for an entry in the determination table for which both the putaway control indicator and the process type are specified and picks the storage type search sequence maintained for that entry.

Display View "Optimization of Access for Stor.Type Determ. at Putaway"

Optimization of Access for Stor.Type Determ. at Putaway

WhN	Seq. No.	Put.Strat.	ProcTyp	Qty ...	StkType...	Stock Cat.	Use	Party Disp	Risk Rat.1	Hzd Rat.2
SW01	0	☑	☑	☐	☐	☐	☐	☐	☐	☐
SW01	1	☑	☐	☐	☐	☐	☐	☐	☐	☐
SW01	2	☐	☑	☐	☐	☐	☐	☐	☐	☐

Figure 7.23 Optimization of the Access Sequence

Storage Section Determination

In the next step, the system begins the storage section determination if the storage type contains more than one storage section. The storage section indicator is used to group products that are to be stored in the same storage section during putaway. The section indicator also is assigned to the product master in the **Storage Section Ind.** field of the **Storage Data** tab. To define a storage section indicator, navigate to IMG path **SCM Extended Warehouse Management • Goods Receipt Process • Strategies • Storage Section Search • Create Storage Section Indicators**. Click on **New Entries**, and define the section indicators for your embedded EWM warehouse.

The system determines the storage section based on the storage type determined previously, the storage section indicator determined from the product master, and the hazardous rating determined from the hazardous substance master, as shown in Figure 7.24.

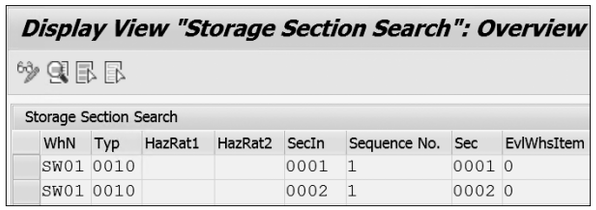

Figure 7.24 Defining the Storage Section Determination

The storage section search is only triggered based on the settings for storage section determination and the check set via IMG path **SCM Extended Warehouse Management • Goods Receipt Process • Strategies • Storage Section Search • Storage Section Check**, as shown in Figure 7.25. Click on **New Entries**, and set the section check control for the embedded EWM warehouse number and storage type.

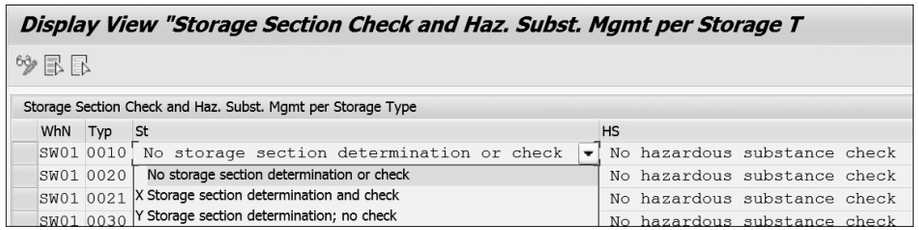

Figure 7.25 Storage Section Check

You can set the following three values for storage section check:

- **Storage section determination or check**
  If storage section determination is active, the system performs putaway of goods only in those storage sections defined in the storage section search sequence. If the storage section check is active, the system checks the storage section specified in the putaway warehouse task against the predefined search sequence.
- **Storage section determination; no check**
  The system performs putaway of goods only in those storage sections defined in the storage section search sequence. However, the system performs no check for predefined storage sections in the warehouse tasks, which means that putaway is allowed in a storage section specified in the warehouse task even if it isn't present in the storage section search sequence.
- **No storage section determination or check**
  The system performs no storage section determination or check.

Storage Bin Search

After storage section determination, the system looks for storage bins in the determined storage type and storage section. The storage bin is determined based on the settings for storage bin type, bin capacity, and putaway rules as defined in the storage type search strategy. The following data is determined based on the information provided in the product and storage type determination settings:

- **Storage bin type**
  This is determined based on storage type.
- **HU type**
  This is determined from packaging specifications of the product.
- **Maximum number of bins**
  This is determined from the product master in embedded EWM.

The system also looks for the maximum number of fixed bins, capacity check settings, and putaway rules defined at the storage type level to identify the right storage bin for putaway, as shown in Figure 7.26.

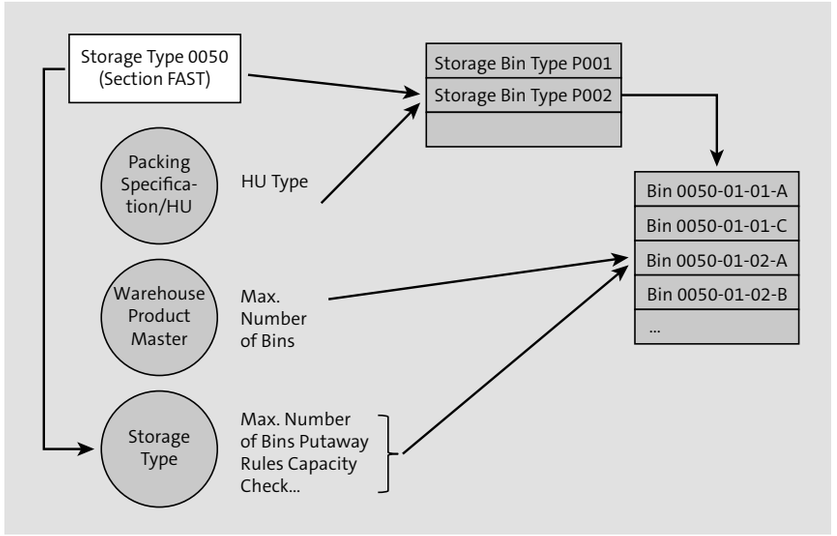

Figure 7.26 Storage Bin Type Determination

The storage bin type is used to group bins with the same physical attributes: dimension, capacity, and so on. Assign the storage bin types to storage types; the system only allows putaway into bins of a bin type assigned to that storage type. You can

assign bin types to storage types via IMG path **SCM Extended Warehouse Management • Goods Receipt Process • Strategies • Storage Bin Determination • Assign Storage Bin Types to Storage Types**, as shown in Figure 7.27. Click on **New Entries**; add a combination of embedded EWM warehouse, storage type, and storage bin type; and click on **Save.**

The system only performs a bin type check if you've activated the **HU Type** check at the storage type level. In this case, the system also checks the allowed HU types for a storage type and bin type in which putaway can be done for the warehouse product. Assign HU types to storage types via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process • Strategies • Storage Bin Determination • HU Types • Define HU Types for each Storage Type**. Click on **New Entries**, and define the allowed HU types in a storage type for your embedded EWM warehouse.

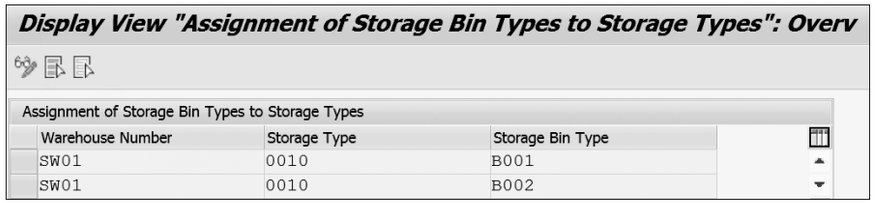

Figure 7.27 Assignment of Storage Bin Types to Storage Types

Assign HU types to bin types via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process • Strategies • Storage Bin Determination • HU Types • Define HU Types for each Storage Bin Types**. Click on **New Entries**, and define the allowed bin types for an HU type in a storage type for your embedded EWM warehouse.

If the system is unable to find a storage bin for a storage type and storage section, then it looks for the next storage section in the storage section search sequence. If it still can't find a storage bin, it looks for bins in the next storage type in the storage type search sequence.

After the right storage type, section, and bin are specified in the warehouse task, you can confirm the warehouse orders using RF or print the open warehouse orders for putaway and confirm them in the system after putaway is complete. You can confirm a warehouse order in the system using Transaction /SCWM/TO_CONF or by navigating to **SAP Easy Access** path **Logistics • SCM Extended Warehouse Management • Extended Warehouse Management • Execution • Confirm Path**.

To confirm warehouse orders in RF, navigate to RF menu **Inbound Processes • Putaway • Putaway by Warehouse Orders**. After you enter the warehouse order, the system displays the first warehouse task in the warehouse order. You can confirm the source bin, product/HU, quantity, and destination bin to confirm the warehouse task, which automatically confirms the warehouse order if there's only one task in the warehouse order.

Embedded EWM also allows you to correct warehouse tasks that have already been confirmed by using status profiles. After a putaway task is confirmed, embedded EWM sets the **Warehouse Activity (DWA)** status type to **Completed**. You can set up a delay in embedded EWM customization so that embedded EWM waits for a defined period before setting the status type **Completion Flag (DWM)** to **Completed** after task confirmation. This allows you to go back into the warehouse task and confirm the warehouse task with a revised quantity. When the system sets the DWM status to **Completed**, it also sets the **Completion (DCO)** status to **Completed** by scheduling a background job that marks the completion of goods receipt in embedded EWM; this is also sent back to SAP S/4HANA.

To define a delay in the completion of the inbound delivery, navigate to IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process • Inbound Delivery • Define Delay in Completing Inbound Deliveries**.

You can define the confirmation delay in seconds for a combination of warehouse, document type, and item type, as shown in Figure 7.28. If you want to process the completion of several items simultaneously, you can define a **Tolerance** in seconds. During this time, the system collects all the items for which embedded EWM has set the DWA status to **Completed** and sets the DWM status to **Completed**. The background job to set the DWM status to **Completed** is executed using report /SCWM/R_PRDI_SET_DWM, which is run by default every 120 seconds if the job can't set the status to **Completed** on the previous try. This may happen because of a document lock.

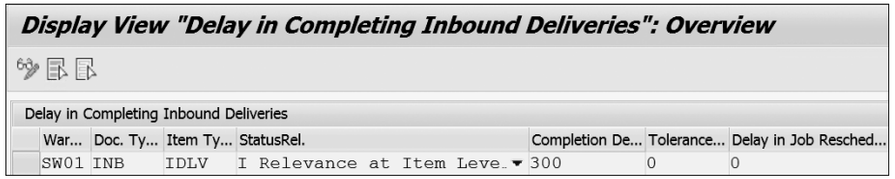

Figure 7.28 Setting for Delay in Inbound Delivery

You can also specify your own custom value to reschedule the execution of this job in the **Delay in Job Reschedule** field.

> **Note**
>
> You can only use confirmation correction with a document type and item profile mapped to a status profile for which the DWM status is **Active**.

Process Warehouse Tasks – Putaway App

The Process Warehouse Tasks - Putaway app from SAP Fiori enables you to perform stock putaway operations by confirming the putaway warehouse task. In the overview screen, as shown in Figure 7.29, you can display all information relevant to the putaway warehouse tasks, which enables you to choose a warehouse task to process. From the list, you can either confirm or cancel multiple putaway warehouse tasks at once, as well as print putaway lists for the open putaway warehouse tasks. You can also perform putaway warehouse task processing using exception codes for exception handling in the picking warehouse task.

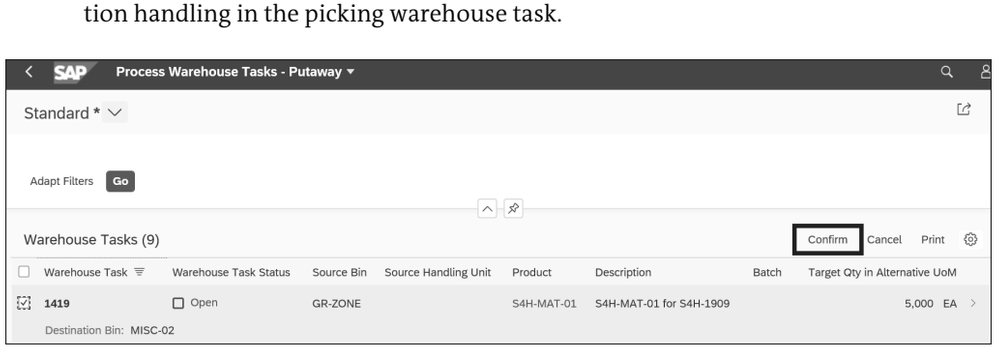

Figure 7.29 SAP Fiori App: Process Warehouse Tasks - Putaway

You can also display and check warehouse task source bins, confirm and cancel the warehouse task, and print the task list, as shown in Figure 7.30. In addition, you can perform filtering based on different filtering criteria as well as navigate to manage product master data for displaying additional information about the product for which the warehouse task is created.

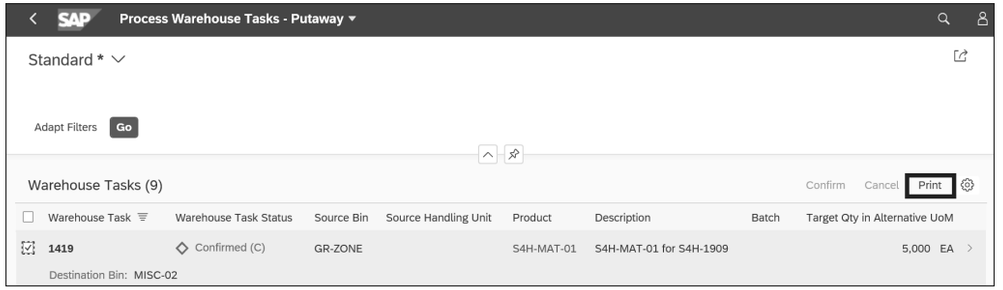

Figure 7.30 Printing the Warehouse Task List Using the Process Warehouse Tasks – Putaway App

7.6.3 Putaway Strategies

Putaway rules and strategies that help in determining the destination bin during putaway are predefined in embedded EWM. The putaway strategies available in embedded EWM are as follows:

- Manual entry
- Fixed storage bin
- General storage
- Addition to existing stock
- Empty storage bin
- Near fixed picking bin
- Pallet storage (by HU type)
- Bulk storage

We'll discuss each of these putaway strategies in detail in the following sections, including the business reason for using each putaway strategy and the settings required in the system to carry it out.

Manual Entry

In this strategy, the storage bin is manually entered in the warehouse task by the warehouse worker at the time of warehouse task creation or confirmation. This strategy is used if the putaway is performed manually by a warehouse worker by scanning the destination bin available. It's usually used in storage types with the staging area group role.

Make the following configurations in the settings for storage type via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Master Data • Define Storage Type**:

- Set **Storage Behavior** to **Standard Warehouse**.
- Set **Putaway Rules** to **Empty Bin** or **Addition to Existing Stock/Empty Bin**.
- Set the **WT Generic** field to **Only Storage Type**.

Fixed Storage Bin

This strategy is used for putaway into fixed storage bins. You can predefine the fixed bins for a product or, if you've defined the fixed storage bin strategy for a storage type, the system determines a suitable storage bin for the product and assigns it a fixed storage bin. This strategy is used if you want to put away products only in specific storage bins. It's mostly used for products that are prone to pilfering. The picking is usually done manually from this storage type.

Make the following configurations in the storage type settings via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Master Data • Define Storage Type**:

- Set **Storage Behavior** to **Standard Warehouse**.
- Set **Putaway Rules** to **Empty Bin** or **Addition to Existing Stock/Empty Bin**.
- Select the **Fixed Bins Allowed** indicator.
- Define the maximum number of fixed storage bins in the storage type in the **Max. Fixed Bins** field. Alternatively, define the maximum fixed bins for the product in the storage type in the **Max. No. Bin** field in the storage type data view of the product master.
- Set the **Addition to Existing Stock Permitted** value in the **Addn.Stock Forbidden** field.
- Set a method of **Capacity Check** so that the bin won't be overfilled with a product.

General Storage

As the name suggests, this putaway strategy is used to put away products in the general storage area. A general storage type usually has a single bin per storage section. You can store multiple products in a general storage area. This strategy is used if you want to put away products that are low in volume and can be combined with other products in the warehouse.

Make the following configurations in the storage type settings via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Master Data • Define Storage Type**:

- Set **Storage Behavior** to **Standard Warehouse**.
- Set **Putaway Rules** to **General Storage Area**.
- Set the **Mixed Storage** field to **Mixed Storage without Limitations**.

Addition to Existing Stock

This strategy is used if you want to put away stock in a storage bin that already holds similar products. A form of capacity check should be activated at the storage type level so that the bin capacity isn't exceeded. If the system doesn't find a bin with the required bin capacity, it moves the product to an available empty bin. This strategy violates the FIFO rule, so it should be used only when there is insufficient space in the warehouse.

Make the following configurations in the storage type settings via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Master Data • Define Storage Type**:

- Set **Storage Behavior** to **Standard Warehouse**.
- Set **Putaway Rules** to **General Storage Area**.
- Choose **Addition to Existing Stock Is Allowed** in the **Addn. Stock Forbidden** field, and set **Product Putaway Profile Decides** in the product master. If the latter is selected, then addition to existing stock should be allowed in product master setting.
- Activate a form of capacity check in the storage type settings.
- Set **Mixed Storage** to **One HU Allowed per Bin** so that one bin holds only a single type of product.

Empty Storage Bin

This putaway strategy is used to put away product in the next empty storage bin available in the storage type and is used in warehouses organized randomly in which products are stored in individual storage sections. Such a storage strategy is most suited for high-rack storage and shelf storage.

Make the following configurations in the storage type settings:

- Set **Storage Behavior** to **Standard Warehouse**.
- Set **Putaway Rules** to **Empty Bin**.
- If required, define relevant settings in **Srchrule Emptybin** to determine the sequence in which the system sorts empty bins.

Near Fixed Picking Bin

This strategy is used to stock products in a reserve storage area near fixed bins assigned for the warehouse product. You can configure the system to first check if a fixed bin is available in the fixed bin storage type (also called the reference storage type). If the system doesn't find a fixed bin, it looks in empty bins near the fixed bins. The stock is put away into the reserve storage bins until one of the fixed bins becomes empty, at which point the warehouse worker manually moves the stock to the fixed bins. Although both fixed bins and near fixed bins are in proximity, they're defined as separate storage types.

This strategy is used to put away stock in reserve storage bins in close proximity to fixed bins. It can only be used for products assigned to fixed bin storage.

Make the following configurations in the storage type settings:

- Set **Storage Behavior** to **Standard Warehouse**.
- Set **Putaway Rules** to **Empty Bin** or **Addition to Existing Stock/Empty Bin**.
- Set **Srchrule Emptybin** to **Near to Fixed Bin** so that the system will search for empty bins near the fixed bins.

As shown in Figure 7.31, you can assign a fixed bin storage type to a reserve storage type and define sorting rules for the near to picking bin putaway strategy via IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process • Strategies • Putaway Rules • Sorting Near To Picking Bin • Storage Type Control: Near to Picking Fixed Bin**. Click on **New Entries**, and define a reference storage type and its attributes for the fixed bin storage type.

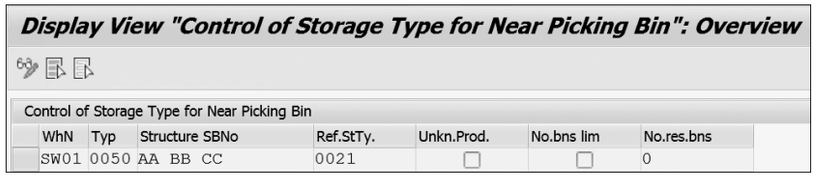

Figure 7.31 Settings for Near Fixed Picking Bin

You should also define the search scopethat the system uses to look for reserve bins based on the reference fixed bins. To do this, navigate to IMG path **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process • Strategies • Putaway Rules • Sorting Near To Picking Bin • Define Search Scope for Each Level**. Click on **New Entries**, and add a combination of storage type, level, and search width for your embedded EWM warehouse.

As a rule, the system always looks for empty bins in the same stack, begins its search from the bottom level, and moves to the top before moving to a neighboring stack. If the system is unable to determine an empty bin, then it moves to the next aisle. If the system is still unable to find a reserve bin based on the defined search scope, it moves to a different bin in the next storage type defined in the search sequence. In Figure 7.32, for bins in fixed storage type 0050 at level A, the system looks for reserve storage bins up to a maximum of two stacks in either direction for all the levels in the reserve storage type.

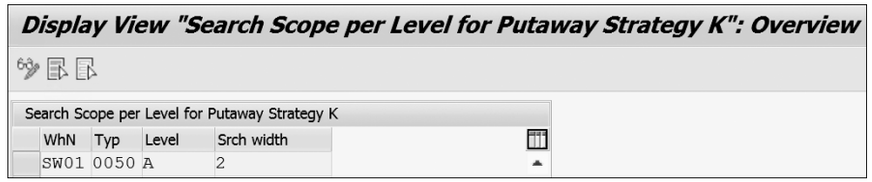

Figure 7.32 Defining the Search Scope for Each Level

Pallet Storage

This putaway strategy is used for storing pallets of different HU types in the warehouse. A storage type is assigned to different bin sections, and only HUs belonging to the same HU types can be stocked in the bin section. The storage bin sections are created upon first putaway in the storage type. These sections are automatically deleted when the last HU is removed from the storage bin. The system also determines the maximum number of HUs that can be stored in the storage bin. Pallet storage also provides easy access to product for conducting physical inventory and cycle counts.

This strategy is mostly used in high-rack storage for stacking HUs of different HU types. Dynamic creation of bin sections provides adaptability for change in warehousing and storage needs.

Make the following configurations in the storage type settings:

- Set **Storage Behavior** to **Pallet Storage**.
- Set **Putaway Rules** to **Empty Bin**.
- Activate **HU Type Check** at the storage type level.
- Set **Mixed Storage** to **Mixed Storage without Limitation**.

As shown in Figure 7.33, you can define how many storage bin sections can be created in the storage bin. These sections help control the number of HUs that can be contained in a storage bin. To define bin sections, navigate to IMG path **SCM Extended Warehouse Management • SCM Extended Warehouse Management • Management • Goods Receipt Process • Strategies • Putaway Rules • Storage Behavior: Pallets • Define Bin Sections**. Click on **New Entries**, and define the number of HUs that can be stored in the bin, section keys, and positioning for defining the naming convention of the bin section.

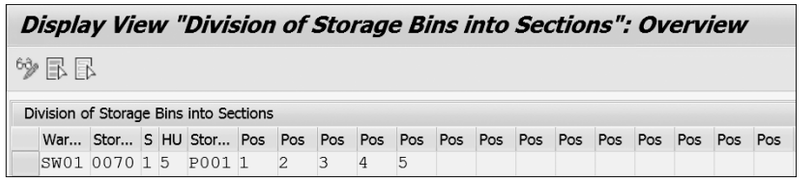

Figure 7.33 Defining Bin Sections

Section Key is used to describe the sections in a storage bin. You can specify the number of sections that need to be created for a bin in a storage type and the naming convention that can be used to create the storage bin section. The created storage bin section is added as a suffix to the storage bin name. For example, based on the settings defined earlier, the system creates five storage bin sections for a storage bin. If the bin name is 05-10-01, then the storage bins sections are created from 05-10-01/1 to 05-10-01/5.

The created section keys are also assigned to storage types, bin types, and HU types. To do so, navigate to IMG path **SCM Extended Warehouse Management • SCM Extended Warehouse Management • Goods Receipt Process • Strategies • Putaway Rules • Storage Behavior: Pallets • Perform Bin Sectioning for Bin Type and HU Type**. Click on **New Entries**; add a combination of embedded EWM warehouse, storage type, bin type, and HU type; and click on **Save**. As shown in Figure 7.34, the system creates five storage sections when HU type E1 is put into a storage bin for a storage type.

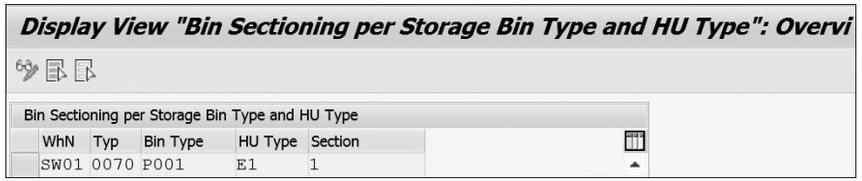

Figure 7.34 Perform Bin Sectioning for Bin Type and HU Type

Bulk Storage

Bulk storage is used to store products requiring a large amount of storage space. The advantages of bulk storage are as follows:

- Reduced need for physical bins
- Faster access to bins
- Clear structuring of the warehouse into blocks and rows

Bulk storage is mostly used to store containerized goods. It's an economical form of storage because it doesn't require setting up racks and other infrastructure. Putaway can be done directly on the warehouse floor. The pallets or containers are usually stackable and can be stored on top of one another. Putaway and retrieval is mostly done using a forklift.

Make the following configurations in the storage type settings:

- Set **Storage Behavior** to **Bulk Storage**.
- Set **Putaway Rules** to **Addition to Existing Stock/Empty Bin**.
- Set **Addn. Stock Forbidden** to **Addition to Existing Stock Permitted**.
- Do not activate **HU Type Check** and **Capacity Check**.

You can store different HU types in bulk storage. However, each bulk bin can have only a single HU type. Bulk storage is created by dividing the warehouse floor into rows. Each row is classified as a storage bin based on the storage bin type. The pallets can be stacked on top of one another, which should also take the warehouse height into account. To define the capacity of a bulk bin, define a bulk structure using a bulk storage indicator.

The bulk storage indicator is used to classify products according to their stacking requirements. The bulk structure is created via IMG path **SCM Extended Warehouse**

Management • Extended Warehouse Management • Goods Receipt Process • Strategies • Putaway Rules • Storage Behavior: Bulk Storage • Define Bulk Storage Indicators. Click on **New Entries**, and add a combination of bin type, HU type, and bulk storage indicator to define a bulk structure for a bulk storage type in a warehouse, as shown in Figure 7.35. The product of stack and stack height can be used to determine the number of HUs contained in a bulk bin.

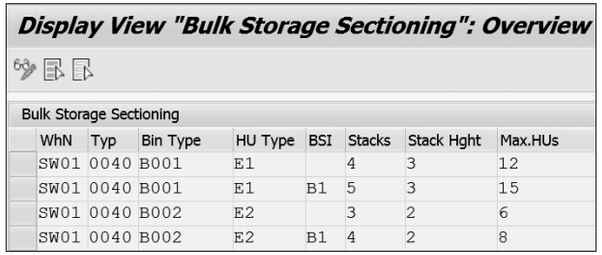

Figure 7.35 Defining the Bulk Structure

The number of HUs in a bulk bin and maximum number of allowed HUs can be seen in the **Bin Sectioning** tab of the bin master in Transaction /SCWM/LS03. Bulk storage directly violates the FIFO principle due to the stacking of products. You can control it via settings available at **SCM Extended Warehouse Management • Extended Warehouse Management • Goods Receipt Process • Strategies • Putaway Rules • Storage Behavior: Bulk Storage • Storage Type Control for Bulk Storage**, as shown in Figure 7.36.

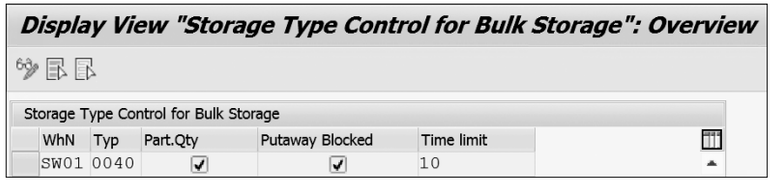

Figure 7.36 Control for Bulk Storage

The **Putaway Blocked** indicator is used to block putaway in bulk bins after the first stock removal has taken place. This prevents a product from being left in the bulk bin for a significantly long time due to continuous putaway. The **Time limit** field is used to specify the amount of time in days for which putaway is allowed in the bulk bin. Because the stock in the bulk bin takes the goods receipt date of the first goods receipt in the bin, it's a good idea to block putaway after a certain number of days so

that FIFO principles aren't violated. Bulk storage only allows full pallets in the warehouse. You can set the indicator for **Part.Qty** if you want to store partial pallets in bulk bins.

7.7 Summary

In this chapter, we covered the goods receipt process in embedded EWM. We discussed the concept of warehouse requests and the document- and item-level settings required to map deliveries from SAP S/4HANA in embedded EWM. We also discussed various processes that occur in the warehouse during inbound processing, such as unloading, storage process control, yard management, and so on. Finally, we discussed various putaway strategies and how the destination storage bin for putaway is determined in embedded EWM. In the next chapter, we will move on to outbound processing in embedded EWM.

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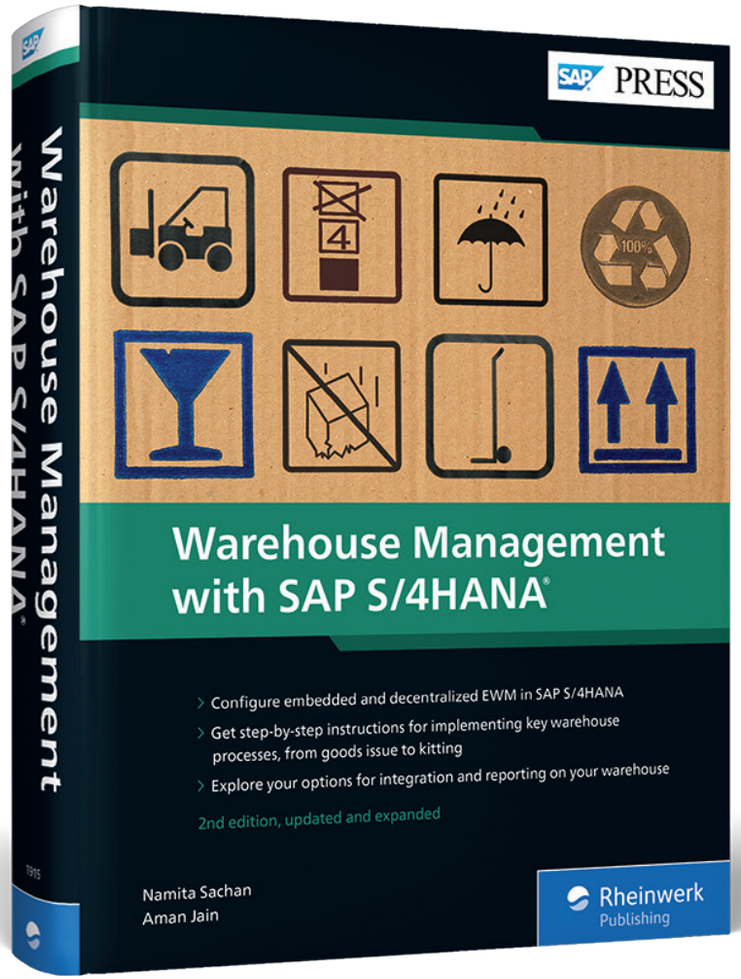

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