

Decentralized Warehouse Management (LE-IDW)



HELP.LEIDW

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Decentralized Warehouse Management (LE-IDW)

Purpose

This component describes the SAP Warehouse Management System (WMS) as a decentralized stand-alone system that is operated separately from a centrally operated ERP (Enterprise Resource Planning) system.

To achieve a high level of efficiency in the supply chain, all system components involved must:

- interact smoothly
- be flexible enough to adapt to changes
- perform their tasks cost-effectively and quickly

The warehouse, which is used not only for the storage of goods but also particularly for the distribution of goods, represents the link between internal and external logistics. Since warehouse processes constitute an essential integral part of the supply chain, the SAP WMS is integrated with the entire logistics process. In addition, in order to achieve the flexibility required, the SAP WMS is able to carry out these warehouse processes independently.

Implementation Considerations

Especially in warehouses characterized by high throughput, the Warehouse Management System must always ensure quick response times. If the Warehouse Management System runs on the same machine as the ERP system, update problems may arise. An additional requirement is that the WMS must be available 24 hours a day - regardless of whether other systems are available or not. This 24-hour availability must be combined with low downtime risk to ensure that it is possible for the WMS to perform all logistics processes which are often closely integrated.

Not only the SAP R/3 WM System but also third-party systems must be able to interact smoothly with the SAP system.

For a complete description on how to configure your system for using the decentralized WMS, refer to the documentation of the Implementation Guide (IMG) under *Logistics Execution* → *Decentralized WMS integration*.

Integration

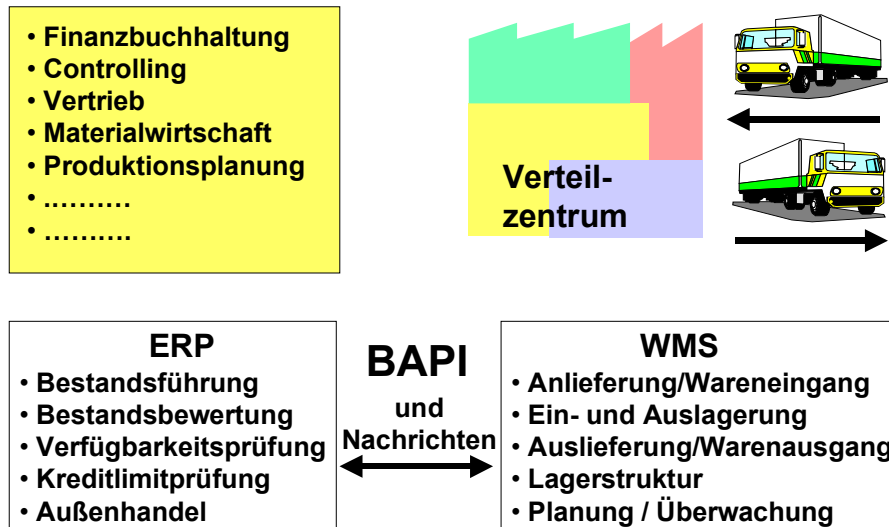
You can interface the Warehouse Management System as a stand-alone component with the SAP system or integrate the SAP Warehouse Management System with any ERP system you prefer. In both cases, the ERP system and the Warehouse Management System can run on separate machines.

A warehouse that is managed with decentralized WM under the SAP R/3 system always communicates with exactly **one** ERP system.

In the decentralized WMS, there is no integration with a Transportation Management System (TMS).

Features

Das Warehouse-Management-System als eigenständige Komponente



In the first step, the Warehouse Management System has been implemented for the "distribution center" scenario. This scenario describes a warehouse that is primarily used for the distribution of goods and is not linked to a production plant. All business processes, including quantity-based inventory management, are carried out in the ERP system whereas the decentralized WMS is responsible for the necessary processes for goods receipt, warehousing, and distribution.

As a result, this new functionality is split up into two areas:

- [SAP System as ERP System \[Page 9\]](#)
- [SAP System as Warehouse Management System \(WMS\) \[Page 11\]](#)

Application Area

You can use the warehouse as a stand-alone component if you plan to implement distribution center control on a separate decentralized machine that is not linked to the business application. You can use the SAP system to operate only one or both of these systems.

Deliveries are always created in the central ERP system.

Delivery as Communication Document

Definition

Inbound Delivery

As a key object in the goods receipt process, the inbound delivery supports all activities such as packing, putaway, and goods receipt. The inbound delivery stores information on the planning of the delivery, and it also monitors the status and records the data that is accumulated during processing. The creation of the inbound delivery automatically initiates activities such as goods putaway or scheduling, and also the recording of data that is generated during inbound delivery processing.

Outbound Delivery

As a key object in the goods receipt process, the outbound delivery supports all shipping activities such as picking, packing, and goods issue. The outbound delivery stores information on the shipping planning, and it also monitors the status and records the data that is accumulated during shipping processing. The creation of the outbound delivery automatically initiates the shipping activities, such as picking or delivery scheduling, and also data that is generated during shipment processing is recorded.

Use

If the decentralized scenario is used, inventory postings are not directly processed in Inventory Management (IM). Instead, whenever a goods movement is created in Inventory Management (IM), the system generates inbound or outbound deliveries and passes them on to the decentralized WMS.

In the WMS, the goods are put away or picked based on the existing delivery. As a result of the goods movement posting in the WMS delivery, the system sends the completion verification to the ERP system and then uses the delivery to post the actual goods receipt or goods issue in inventory management.

Deliveries with a purchase order or a sales order as a source document are handled in the same way.

Changes to deliveries can only be carried out in the decentralized system to a limited extent as soon as the delivery has been passed on to the decentralized system and the distribution status is **B**. The “incomplete” function in the system can be used to prevent the delivery from being passed on immediately, so that the delivery can be changed in the central system until it is complete. You can change the following fields in a delivery that has been distributed:

- Quantities
- Weight
- Packaging
- Batch split item

A distributed delivery is deleted when the confirmation is executed with quantity 0.

Structure

[Structure of the Inbound Delivery \[Ext.\]](#)

Delivery as Communication Document

[Structure of the Outbound Delivery \[Ext.\]](#)

SAP System as ERP System

Use

You are using an SAP system as an Enterprise Resource Planning (ERP) system. Here you define for each plant and storage location whether you wish to manage your warehouse in an independent, decentralized Warehouse Management system (WMS).

The central ERP system transfers all the information required in the decentralized WMS for the goods movements via a BAPI (Business Application Program Interface). This includes master data such as:

- Customer master data
- Vendor master data
- Material master data



Note that the following information cannot be sent from the central ERP system to the decentralized WMS:

- Prices in the delivery
- Export and import data
- Configuration data
- Hazardous material data
- Change messages

Integration

If you have decentralized Warehouse Management, all your business transactions, including inventory management of quantities, are executed in the ERP system, while all the processes required for the physical and logical goods movements run in the decentralized WMS.

In order to create a basis in the decentralized WMS to be able to process deliveries from the central system and also confirm them, the master data of the ERP system is confirmed to the decentralized WMS via the distribution model.

Features

The following tasks are performed in the SAP ERP system:

- Inventory management and valuation
- Purchasing
- Sales
- Shipping
- Availability check (ATP)
- Credit limit check
- Foreign trade controls

SAP System as ERP System

This ensures that the decentralized WMS concentrates solely on the execution of goods movements in the warehouse.

After the goods movements have been executed in the warehouse, the decentralized WMS confirms the delivery to the SAP ERP system. The corresponding process is then completed and, in most cases, results in a stock posting in the SAP ERP system.

SAP System as a Decentralized Warehouse Management System (WMS)

Use

You can install an SAP system as an independent, decentralized Warehouse Management system (WMS) in order to receive requests for [goods movements \[Page 15\]](#) from any arbitrary Enterprise Resource Planning (ERP) system) In addition, the decentralized WMS is able to receive master data such as customer, vendor, and material data from the leading ERP system.

Integration

The leading ERP system communicates planned goods movements to the decentralized WMS through inbound and outbound deliveries, respectively. The decentralized warehouse executes the physical inbound or outbound deliveries using transfer orders. With the transfer order confirmation, the decentralized WMS posts a goods receipt or goods issue. At the same time, the decentralized WMS confirms the underlying delivery to the leading ERP system and thus initiates changes in the inventory management of the ERP system. This way, the physical goods movement takes place before the respective stock posting.

Features

The decentralized Warehouse Management System performs all the pending warehouse management tasks. These include:

- Storage bin management
- Inventory management at storage bin level
- Storage bin search
- Picking
- Packing
- Creating the required shipping documents

Many of the functions known to you from the SAP system for goods receipt processing, warehousing, and shipping are at your disposal.

Setting Up the Decentralized Warehouse Management System

Setting Up the Decentralized Warehouse Management System

Use

To be able to use the decentralized Warehouse Management system (WMS), you must execute the following settings in the Customizing section for *Warehouse Management*:

Procedure

1. You activate decentralized WMS as follows, if both systems are SAP R/3 system:

Activities in the Central ERP System

Customizing Activity	Path	What You Should Know
Define warehouse number	<i>Enterprise structure</i> → <i>Definition</i> → <i>Logistics</i> <i>Execution</i> → Define, Copy, Delete, Check Warehouse Number [Ext.]	Do not copy a complete warehouse number. In the ERP system, you only require the warehouse number definition.
Assign warehouse number to the combination of plant / storage location	<i>Enterprise structure</i> → <i>Assignment</i> → <i>Logistics</i> <i>Execution</i> → Assign Warehouse Number to Plant / Storage Location [Ext.]	

Activities in the Decentralized WMS

Customizing Activity	Path	What You Should Know
Define warehouse number	<i>Enterprise structure</i> → <i>Definition</i> → <i>Logistics</i> <i>Execution</i> → Define, Copy, Delete, Check Warehouse Number [Ext.]	Copy a complete warehouse number. In the decentralized WMS, the entire range of functions for WMS must be available.
Assign warehouse number to the combination of plant / storage location	<i>Enterprise structure</i> → <i>Assignment</i> → <i>Logistics</i> <i>Execution</i> → Assign Warehouse Number to Plant / Storage Location [Ext.]	

2. You set up the central SAP ERP system for the link to the decentralized WMS as follows:

Customizing Activity	Path	What You Should Know
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Setting Up the Decentralized Warehouse Management System

Activate decentralized WMS	<i>Decentralized WMS Integration → Central Processing → Application → Activate Decentralized WMS [Ext.]</i>	
Activate and define interface to inventory management	<i>Integration Decentralized WMS → Central Processing → Application → Activate Interface to Inventory Management [Ext.]</i>	You define the standard values for deliveries in case not all the required data is available from the underlying document. You do this at the following levels: <ul style="list-style-type: none"> • Warehouse number • Reference movement type • Delivery type
Exclude stocks in decentralized WMS	<i>Integration Decentralized WMS → Central Processing → Application → Exclude Stock in Decentralized WMS [Ext.]</i>	You exclude stock types that perhaps will not be processed by external, decentralized warehouse management systems. If you implement an SAP System as a decentralized system, this system will process all stock types, with the exception of project stock.
Define output types	<i>Basis Components → Application Link Enabling (ALE) → Modelling and Implementing Business Processes → Master Data Distribution → Scope of Data for Distribution → Output (Message) Reduction → Create Reduced Output (Message) Type [Ext.]</i>	You define a reduced output type for the material master, customer master, and vendor master.
Define logical systems for the ERP system and the decentralized WMS	<i>Basis → Application Link Enabling (ALE) → Sending and Receiving Systems → Logical Systems [Ext.] / Assign Logical System to a Client [Ext.]</i>	
Generate distribution model	<i>Decentralized WMS Integration → Central Processing → Distribution → Generate Distribution Model [Ext.]</i>	For each warehouse number you define a distribution model. You can also use filters that serve to transmit only certain views of the material master or vendor master.

Setting Up the Decentralized Warehouse Management System

Generate partner profile	<i>Basis Components</i> → <i>Application Link Enabling (ALE)</i> → <i>Modelling and Implementing Business Processes</i> → <i>Partner Profiles and Time of Processing</i> → Generate Partner Profiles [Ext.]	In the central system, you generate the required partner profiles for all output types and methods within the model view that has already been created.
Transmit the distribution model to the decentralized WMS		You transmit the distribution model (model view) via the menu option <i>Edit</i> . If both the ERP and the decentralized WMS are SAP Systems, you should transmit the distribution model via the ERP system.

3. You set up the decentralized SAP Warehouse Management System as follows:

In the Implementation Guide (IMG) for IDecentralized WMS Integration, select the path *Local Operations (Decentralized Processing)* → *Application*

Customizing Activity	Path	What You Should Know
Define the number range for warehouse documents	Define number range for the warehouse document [Ext.]	
Activate Reference to ERP system	Activate Reference to ERP System [Ext.]	
Define conversion for delivery types	Define Conversion of Delivery Types [Ext.]	
Define requirement types for decentralized WMS	Define Requirement Categories for Decentralized WMS [Ext.]	

Goods Movement in the Decentralized Warehouse Management System

Use

You are implementing the decentralized Warehouse Management System (WMS) as an independent system that is responsible for your warehouse management and thus also for all your goods movements, irrespective of the use of a central Enterprise Resource Planning system (ERP).

Integration

If you have decentralized Warehouse Management, all your business transactions, including inventory management of quantities, are executed in the ERP system, while all the processes required for the physical and logical goods movements run in the decentralized WMS.

The leading ERP system communicates planned goods movements to the decentralized Warehouse Management system (WMS) through [deliveries \[Page 7\]](#).



Note that you cannot execute postings for project special stock (special stock type Q) in the decentralized WMS.

Prerequisites

The master data of the ERP system has been transferred to the decentralized WMS via the distribution model in the Customizing section of both systems. In this way you have the basis in the decentralized WMS to be able to process subsequent deliveries from the central ERP system and confirm them. (see also [Setting up the Decentralized Warehouse Management System \[Page 12\]](#)).

Features

With the decentralized WMS, you can execute goods movements. These include:

- [Goods receipts \[Page 17\]](#)

Goods receipts are inbound movements of stock that has been received as the result of a purchase order, production order, or for other reasons. All goods receipts cause an increase in the total stock in inventory management and warehouse management. The decentralized WMS has a type of distribution function in that it transfers the received goods from the goods receipt area to suitable storage bins in the warehouse.

- [Goods issues \[Page 20\]](#)

In the case of goods issues, the total stock in inventory management and in decentralized warehouse management is reduced by the goods issue posting. The task of the decentralized WMS is to determine the required goods for picking in the individual storage bins in the warehouse and to transfer them to the goods issue area.



If you are implementing the decentralized WMS, you can no longer cancel a goods receipt or goods issue that has been posted already.

Goods Movement in the Decentralized Warehouse Management System

If you are implementing the decentralized WMS, you cannot process serial numbers for goods receipt or goods issue postings.

- [Stock transfers \[Page 26\]](#)

If you have stock transfers of materials between two storage locations (plants), the goods are picked from the issuing storage location (plant) and put away in the destination storage location.

- [Posting changes \[Page 27\]](#)

Posting changes usually refer to a change in the data of a particular material. In this case, the goods remain at the same storage location, and there is no physical transfer of the goods, for example, a change in the batch number or release of blocked stock.



If you are implementing the decentralized WMS, stock postings of [structured articles \[Ext.\]](#) are only possible if BOM explosion is not planned in the respective plant.

If you are implementing the decentralized WMS, stock postings with attached [empties \[Ext.\]](#) are not possible in the central system.

Goods Receipt in a Decentralized Warehouse

Purpose

The variant for the SAP System as an enterprise resource planning (ERP) system and as a Warehouse Management (WM) system describes the link-up of an external warehouse management system to an SAP System. The stand-alone system that executes all warehouse management functions is an SAP System.

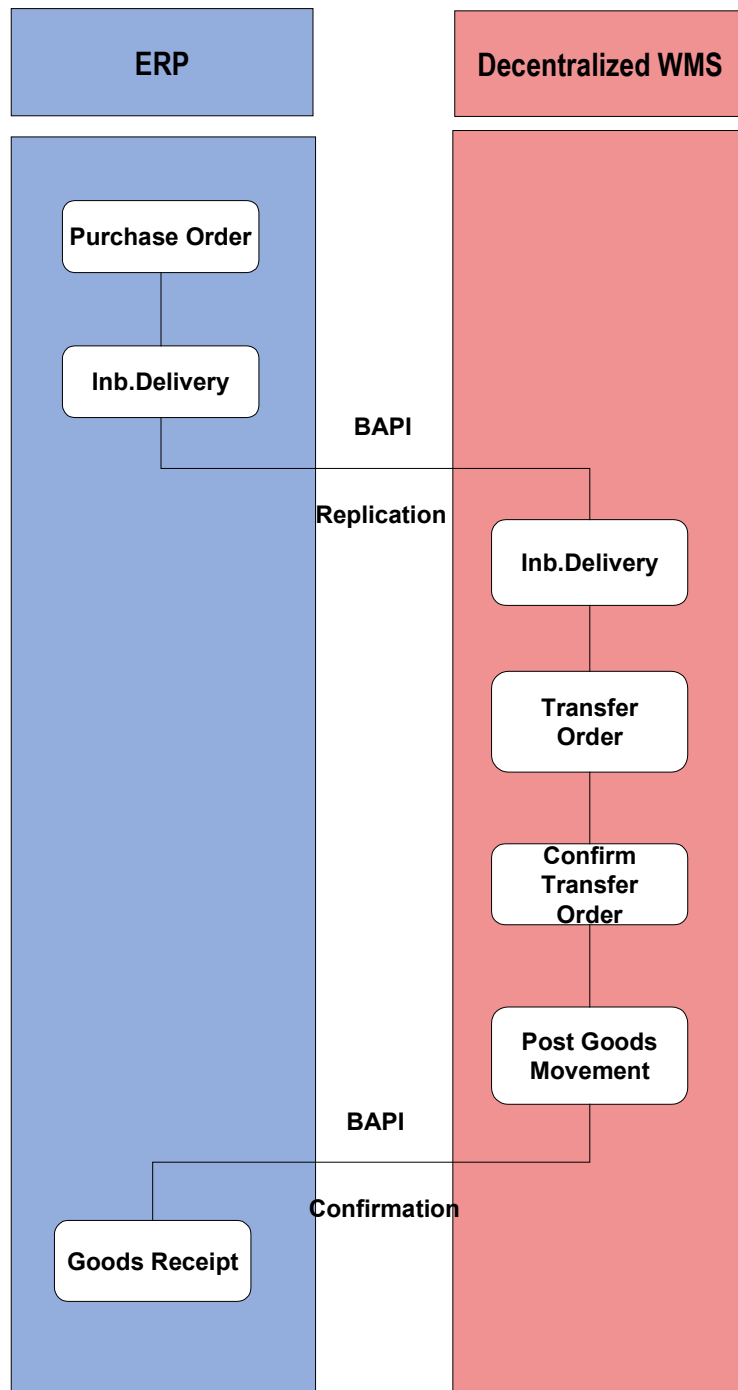
While processes in accounting, purchasing, inventory management or sales run in the central ERP system, the actual physical processing of the putaway takes place in the decentralized Warehouse Management system (WMS).i

Prerequisites

Due to the separation of the functions involved, you must first split the master and movement data (for more information, refer to the section [Setting up the Decentralized Warehouse Management System \[Page 12\]](#)). Information on the evaluation of materials is not relevant in the decentralized WMS. The basic data of a material must be identical in both systems. The warehouse management-specific material data is only of relevance in the decentralized WMS. The distribution of material master data between the central ERP and the decentralized WMS takes place via an output type that does not contain fields not relevant for WMS (output type MATMAS_WMS). The movement data must be available in both systems.

Goods Receipt in a Decentralized Warehouse

Process Flow

**Goods Receipt Based on Purchase Orders:**

1. You use the ERP system to create purchase orders and send them to the vendors.

Goods Receipt in a Decentralized Warehouse

2. To give notification of the delivery that is due, the vendor returns a shipping notification that is recorded in the ERP system as an inbound delivery.
3. The inbound delivery is distributed to the WMS using the BAPI *InboundDelivery.SaveReplica*, and there it represents the request to the warehouse to put away or pick goods.
4. When the vendor delivers the goods, a transfer order is generated in the WMS, which is then used to put the goods away.
5. After the transfer order is confirmed, goods receipt is posted for the inbound delivery. This clears the interim storage bin.
6. On the basis of this activity, the confirmation to the ERP system via the BAPI *InboundDelivery.ConfirmDecentral* is initiated.
7. The goods receipt posting for the inbound delivery is automatically posted in the ERP system (in inventory management) when the verification is recorded.



An inbound delivery based on a purchase order can be created in different ways, depending on the confirmation control key in purchasing. If the vendor usually sends a shipping notification, the inbound delivery is created when the shipping notification is recorded in the system. In all other cases, you have the option of creating inbound deliveries automatically using collective processing.

Goods Issue in a Decentralized Warehouse

Purpose

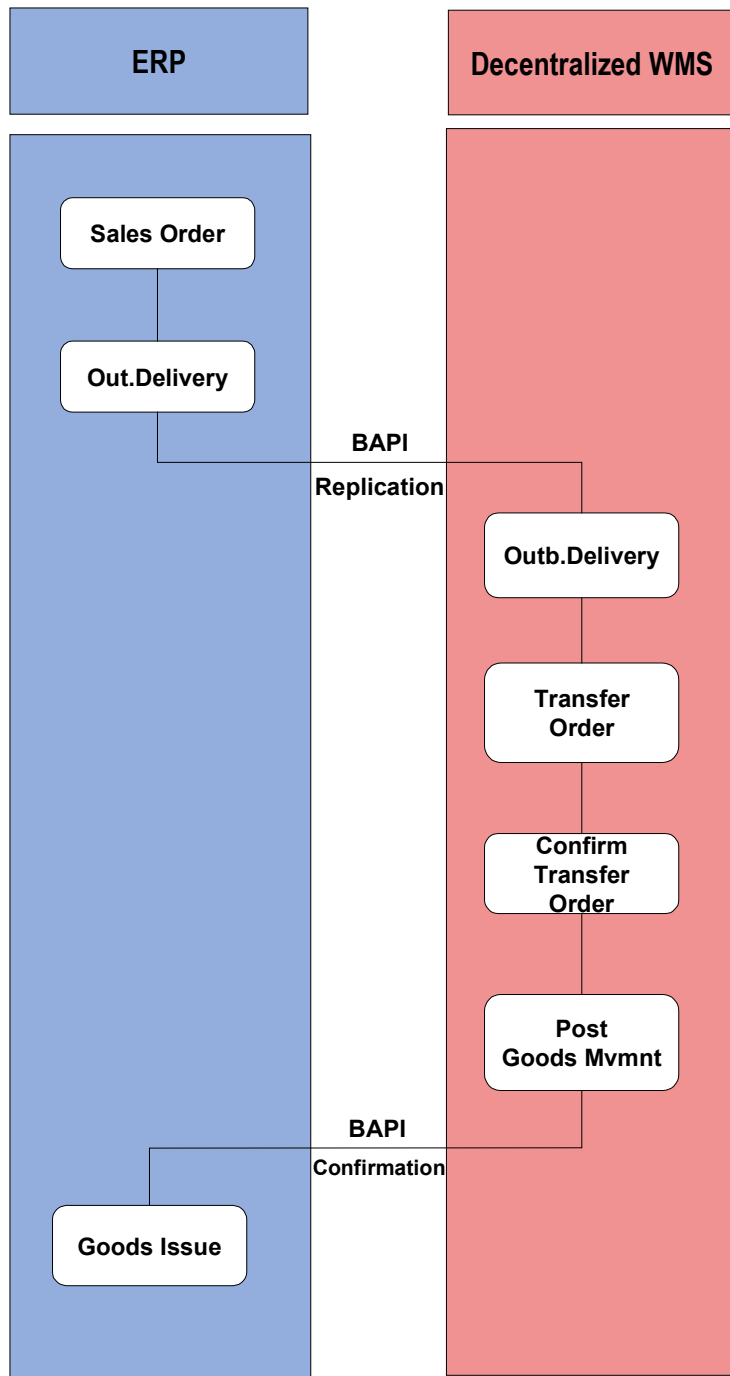
The variant for the SAP System as an enterprise resource planning (ERP) system and as a Warehouse Management (WM) system describes the link-up of an external warehouse management system to an SAP System. The stand-alone system that executes all warehouse management functions is an SAP System.

While processes in accounting, purchasing, inventory management or sales run in the central ERP system, the actual physical processing of the putaway takes place in the decentralized Warehouse Management system (WMS).

Prerequisites

Due to the separation of the functions involved, you must first split the master and movement data (for more information, refer to the section [Setting up the Decentralized Warehouse Management System \[Page 12\]](#)). Information on the evaluation of materials is not relevant in the decentralized WMS. The basic data of a material must be identical in both systems. The warehouse management-specific material data is only of relevance in the decentralized WMS. The distribution of material master data between the central ERP and the decentralized WMS takes place via an output type that only contains fields relevant for WMS (output type MATMAS_WMS). The movement data must be available in both systems.

Process Flow



Process for goods issues based on deliveries:

1. In the ERP system, create a sales order.

Goods Issue in a Decentralized Warehouse

2. In the ERP system, the system creates a delivery from the sales order.
3. The delivery is distributed to the WMS using the BAPI *OutboundDelivery.SaveReplica* and there it represents a request to the warehouse to pick goods.
4. In the decentralized system, a transfer order is created for the outbound delivery.
5. Execute the picking in the warehouse.
6. Confirm the transfer order and, if required, print the delivery documents.
7. After the transfer order is confirmed, the goods issue is posted for the outbound delivery. This clears the interim storage bin.
8. This activity initiates the confirmation to the ERP system through the BAPI *OutboundDelivery.ConfirmDecentral*. Among other things, the pick quantities are passed on to the delivery in the ERP system. Note that no quantity checks with respect to over- or underdelivery take place in the decentralized WMS.
9. The goods issue posting for the outbound delivery is automatically posted in the ERP system (in inventory management) when the verification is recorded.

Subsequent Outbound Delivery Split in a Decentralized WMS

Use

With the subsequent outbound delivery split, you have a new function at your disposal with which you can split a delivery into several new deliveries in only one step. As soon as you have entered the required split criteria, the system performs the reduction of the delivery quantity in the original delivery and the distribution of the split items or quantities into the new deliveries.

You can execute this delivery split also in a decentrally managed Warehouse Management system and afterwards have the changes to the delivery posted in the ERP system using the BAPI "OutboundDelivery.SplitDecentral". This BAPI is called up before the outbound delivery is verified from the WM system.

Prerequisites

You need to maintain the split profile in Customizing for the subsequent outbound delivery split in the ERP system under the activity [Subsequent Delivery Split \[Ext.\]](#), but not necessarily in the same way as for the WM system.

If you already have a decentralized WM system implemented, you must perform the following activities once again in the Implementation Guide (IMG) in order to be able to use the subsequent delivery split function:

- [Generate your distribution model \[Ext.\]](#)
- [Generate your partner profile \[Ext.\]](#)
- [Distribute the model view \[Ext.\]](#)

If you wish to implement the subsequent outbound delivery split in a decentralized WMS, you must configure the following settings in the Customizing application:

- [Allow the subsequent delivery split in the decentralized system \[Ext.\]](#)
- [Activate the serialization for the business object LIKP for the inbox in the central ERP system \[Ext.\]](#)
- [Activate the serialization for the business object LIKP in the outbox for all decentralized Warehouse Management systems \[Ext.\]](#) (partner type: LS, partner role: empty)
- For each delivery type, set the determination rule "Interval for Warehouse Number / Delivery Type" for the number range intervals for the decentralized WM systems.
- Assign the number range intervals of a warehouse number for all delivery types (leave delivery type blank) or set an individual interval for each warehouse number for each delivery type.

Features

With the function for subsequent outbound delivery split, it is possible to split existing deliveries into several other deliveries. Here, too, new outbound deliveries can occur in a decentralized system that will need to be created in the central ERP system also when processing is complete. The newly assigned delivery numbers must not yet be assigned in the central system. You must ensure, with the help of appropriate settings for the number range intervals in IMG, that all the

Subsequent Outbound Delivery Split in a Decentralized WMS

delivery numbers that communicate in all the decentralized systems with an ERP system are unique numbers. You can decide per delivery type that the new delivery numbers are taken from a separate number range interval. Here you can set the number range intervals per warehouse number and per delivery type (see above). Or you can use the number range intervals that you have set in the ERP system in the decentralized systems if you maintain the upper and lower limits as **not** overlapping.

To verify the split outbound deliveries or the original outbound deliveries (from which new deliveries have been created using the split procedure), the system searches for a reference delivery that is used in the central system for reposting the split. The system also blocks this reference delivery when posting the goods issue of a split delivery to keep data consistent. You can prevent this block from being set if it causes limitations in parallel processing of the deliveries (for example, when confirming transfer orders). You must then ensure, from an organizational point of view, that deliveries are not posted for goods issue in parallel or changed in any other way the same time.

When you post the goods issue for an outbound delivery, the system checks whether the delivery is involved in a split process. This is the case whenever the original delivery is the delivery that was created already in the ERP system or whenever a “split delivery” was created first in the WM system by the split. Here it is not important whether you did the split from the original delivery or from a delivery that itself was already split. If a split delivery has been posted for goods issue, the new delivery is created using the BAPI “OutboundDelivery SplitDecentral” from the original delivery (or “reference delivery”, see below). If the original delivery has been posted for goods issue, already now the system creates in the ERP system through the BAPI “OutboundDelivery SplitDecentral” – for all further calls -- one of the new deliveries that were split in the WM system. Once the original delivery is posted for goods issue in the ERP system, this delivery will adopt its role and serve as the *reference delivery* for all further delivery splits so that further outbound deliveries are split from it. This reference delivery contains all the items that the original delivery contains, even if the delivery in the decentralized system only contains some of them. After verification of the reference delivery has taken place, the quantity of all items that do not contain this delivery in the decentralized system is set to 0.



Handling units cannot be split when they are verified in the ERP system, which means that the split items/quantities must not be packed in the ERP system.

By allowing the subsequent outbound delivery split in the ERP system, possible packing proposals or other handling units in the ERP system are deleted after replication of the delivery to be distributed in order to be able to carry out the subsequent delivery split all the same. In the decentralized WM system, however, these still exist, and are then created according to the latest status after the deliveries have been verified from the WM system.

Serialization of output (IDocs) for outbound deliveries that are transmitted from a WM system to the ERP system make sure that the outbound delivery split is executed before the goods issue posting. For this purpose, the delivery numbers must be represented by a four-digit channel number. It can happen that the system does not process a delivery output because another output in the same channel is not yet processed fully, although the deliveries in the output are not connected (by a delivery split) and can be processed independently of one another. You can call up an overview of the serialized outputs in the inbox via the SAP menu path: *Tools* → *ALE* → *ALE administration* → *Services* → *Serialization* → *Serialization using Business Objects* → *Display Serialized IDocs..*

Subsequent Outbound Delivery Split in a Decentralized WMS

A split profile is transmitted in the BAPI "OutboundDelivery SplitDecentral" for the subsequent outbound delivery split. It is the same with which the outbound delivery was split in the WM system. During the [subsequent outbound delivery profile \[Ext.\]](#) in the decentralized WM system, the following Customizing settings are **ignored**:

- Item numbers re-assigned in new delivery
- Delete ordinary items with quantity 0 (in the decentralized systems, no items can be deleted generally)
- Delete items from delivery groups if quantity 0
- Check number of partial deliveries during delivery split
- Splitting delivery groups not allowed

In addition to these settings, the following are also switched off in the BAPI "OutboundDelivery Split Decentral":

- Check for full delivery during delivery split
- Control during split of correlated bills of material
- Automatic copy of text item with quantity 0
- No 1->1 split

Stock Transfers in a Decentralized Warehouse

Stock Transfers in a Decentralized Warehouse

Purpose

A stock transfer usually involves two storage locations (plants): the issuing storage location for picking and the receiving storage location for putaway. If the stock transfer is recorded in the ERP system as a two-step procedure and if one of the storage locations involved is a WMS-relevant storage location, the system creates a delivery for this posting and sends it to the WMS. Both storage locations involved are copied into the delivery to allow the actual posting to be executed after the verification is received from the WMS.

One-step stock transfers using a WMS-relevant storage location are only possible if a storage location that is **not** WM-relevant is involved in the posting change.

Process Flow

1. Enter a goods movement in the ERP system.
2. The system automatically creates an inbound or an outbound delivery from this goods movement.
3. The system transfers the inbound delivery using the BAPI *InboundDelivery.SaveReplica* (the outbound delivery using the BAPI *OutboundDelivery.SaveReplica*) from the ERP system to the WM system, and there it represents a request to the warehouse to pick or put away goods.
4. In the decentralized system, a transfer order is created for the inbound or outbound delivery, respectively.
5. Execute the physical outbound/inbound delivery of the goods.
6. Confirm the transfer order.
7. After the transfer order is confirmed, goods receipt is posted for the inbound delivery (or goods issue for the outbound delivery). This clears the interim storage bin.
8. This activity initiates the confirmation to the ERP system through the BAPI *InboundDelivery.ConfirmDecentral* for the inbound delivery and through the BAPI *OutboundDelivery.ConfirmDecentral* for the outbound delivery.
9. The goods receipt or goods issue posting in the ERP system takes place automatically when the confirmation is recorded in the system.
10. When the goods receipt or goods issue is posted in the ERP system, the stock transfer is simultaneously posted in inventory management.

Posting Changes in a Decentralized Warehouse

Purpose

A posting change generally refers to a bookkeeping change - a change in information - about a particular material. For most posting changes, such as changing a batch number or releasing blocked stock, the goods themselves remain in the same physical location.

You process posting changes in Inventory Management (IM) and Warehouse Management (WM) to change the status of a material in the warehouse.

You cannot carry out certain posting changes, for example, if the vendor data is not known. For example, you can convert materials from consignment stock to unrestricted-use stock, but not from own stock to consignment stock.

Process Flow

1. You can also initiate transfer postings in the central system, in which case the stock change will be compared with the stock in the decentralized system and adjusted, if necessary.
2. If you use inventory management to make posting changes in the central system, the system first generates a delivery.
3. This delivery is technically a request for the decentralized system to make a transfer posting for the stock involved. The central system does not create material documents or make any changes in stock at this point.
4. The delivery is transmitted to the decentralized system and, as of this point, can only be changed there. You can make settings in the decentralized system so that the system automatically creates a transfer order that corresponds to this delivery that does not require confirmation. You can also set the system to make the appropriate transfer posting in the WM stock automatically at the end of the process.
5. The transfer posting in the decentralized system simultaneously verifies the appropriate quantities to the central system.
6. When the central system receives this verification, it automatically makes the stock change and creates a material document. You can display the material document in the delivery's document flow.

Stock Determination in the Decentralized Warehouse Management System

Stock Determination in the Decentralized Warehouse Management System

Use

In the decentralized WMS, the stock determination feature enables you to determine goods stocks of different stock categories during transfer order creation. In this way, you can search in your warehouse both for company stock as well as for consignment stock.

You can implement stock determination in decentralized WMS for the following stock types:

- Company's own stock
- Vendor consignment stock (K)

Prerequisites

To be able to work with the stock determination function, execute the following settings:

- In the Customizing section for Materials Management in the ERP system, select the path *Inventory Management and Physical Inventory* → *Stock determination* → [Define Strategy for Stock Determination \[Ext.\]](#), and define a cross-application strategy for stock determination according to which the system should look for (and pick) stocks. You determine each strategy at the plant level using a stock determination group and a stock determination rule. Refer also to the section [Creating Stock Determination Strategies \[Ext.\]](#).
- You assign a stock determination group to the respective material in the material master record.
- In the Customizing section, choose the path *Materials Management*, then *Inventory Management and Physical Inventory* → *Stock determination* → *Assign Stock Determination Rule in Applications* → [Warehouse Management \[Ext.\]](#), and assign the stock determination rule to the application Warehouse Management in decentralized WMS.



To be able to use the stock determination function in decentralized WMS, set the option **1 WM dominant** for the indicator *Other settings* → *WM processing* in the stock determination strategy.

Features

If you are using the stock determination function in decentralized WMS, the WMS combines the pick sequence determined by the stock determination strategy with your own pick strategies as follows: The system searches for stock of the required material using the storage type search and the pick strategy defined for the respective storage type, and it includes company-owned stock as well as consignment stock in this search.



If you wish to have the FIFO principle used for picking in a particular storage type, and the oldest quant in the storage type is consignment stock, the system will pick this consignment stock.

Stock Determination in the Decentralized Warehouse Management System

Usage in Areas Near to Production

Usage in Areas Near to Production

Use

You can support material staging for production through the decentralized Warehouse Management System (WMS), irrespective of the WM-PP interface, which is not available in this independent scenario from the Enterprise Resource Planning System (ERP system).

Integration

The leading ERP system communicates planned goods movements to the decentralized WMS through deliveries. Accordingly, the ERP system creates deliveries for [production orders \[Ext.\]](#) which the decentralized WMS processes and afterwards confirms back to the central ERP system.

Prerequisites

The master data of the ERP system has been transmitted to the WMS using the distribution model. In this way you have the basis in the decentralized WMS to be able to process subsequent deliveries from the central system and confirm them. (see also [Setting up the Decentralized Warehouse Management System \[Page 12\]](#)).

Features

If the decentralized warehouse is responsible for production supply, two types of material staging are supported.

- [Material staging through change in storage location \[Page 34\]](#)
- [Material staging in the decentralized storage location \[Page 32\]](#)

In the decentralized WMS, you can also process [goods receipts for production orders \[Page 37\]](#).

Material Staging for Production Supply

Use

You can support material staging tasks for production supply using the decentralized Warehouse Management system (WMS). You request the required material in production and thus initiate the material staging from the decentralized warehouse. The decentralized warehouse is then responsible for staging the required materials and supplying them to production.

Integration

Using the [production order \[Ext.\]](#), the central Enterprise Resource Planning (ERP) system creates an [outbound delivery \[Ext.\]](#). On the basis of this outbound delivery, the system can pick the material required for production from the warehouse and stage it for production supply by creating one or [several transfer orders \[Ext.\]](#) for each outbound delivery.

Prerequisites

The master data of the ERP system has been transferred to the decentralized WMS using the distribution model. (see also [Setting up the Decentralized Warehouse Management System \[Page 12\]](#)).

At the warehouse number level in the Customizing application, you have stored delivery-relevant data for the warehouse number standard values for production as consignee and customer under the path *Logistics Execution* → *Decentralized WMS Integration* → *Central Processing* → *Application* → [Define Interface to Inventory Management \[Ext.\]](#) You require this data, which cannot be entered by Inventory Management, to create the outbound deliveries.

Features

The decentralized Warehouse Management system supports two types of staging for production supply:

- [Material staging through change in storage location \[Page 34\]](#)
You support material staging for production from your decentralized warehouse for a production storage location that is not managed by this decentralized warehouse.
- [Material staging in the decentralized storage location \[Page 32\]](#)
You support material staging for a production storage location that is managed by the decentralized warehouse.



The WM-PP interface, which you can use in the integrated SAP system for production supply, is not supported for decentralized warehouse management.

Material Staging in the Decentralized Storage Location

Material Staging in the Decentralized Storage Location

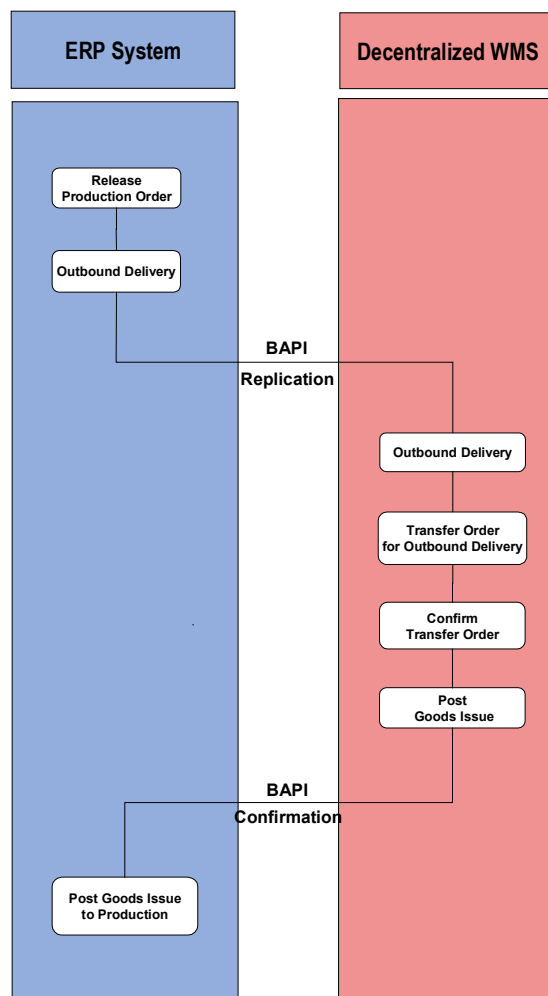
Purpose

You support material staging for production supply through your warehouse that is run decentrally. The communication between the central Enterprise Resource Planning System (ERP System) and the decentralized Warehouse Management System (WMS) is based on outbound deliveries that are created on the basis of production orders.

Prerequisites

The storage location of the components for production orders is relevant for the decentralized Warehouse Management system.

Process Flow



1. In the **central ERP System**, you enter a production order and release it.

Material Staging in the Decentralized Storage Location

2. You post a goods issue for the production order or for the reservation.
3. On the basis of this production order, the system creates an outbound delivery that is then distributed to the decentralized Warehouse Management System.
4. The **decentralized Warehouse Management System** creates a transfer order for the distributed outbound delivery.
5. Using this transfer order, you can pick the required parts. In this way, the transfer order serves as a basis for the actual material staging.
6. By confirming the transfer order, you inform the system that the material staging activity is completed and that the required parts are at the interface to the production storage location.
7. With the confirmation, you post the goods issue for the outbound delivery. In this way, the system automatically transmits the confirmation of the outbound delivery with the actual staged quantities to the ERP system.
8. Together with the confirmation, Inventory Management (IM) posts the goods issue for production supply for the used materials in the **central ERP system**.



If the production order that is the basis for the outbound delivery is linked to a reservation, this reservation number is automatically copied to the header of the outbound delivery and also sent to the decentralized WMS.

The system only deletes the reservation when the goods issue for production supply is posted.

As soon as the outbound delivery has been sent to the decentralized WMS, the system can no longer consider subsequent changes to the reservation.

Material Staging Through Change in Storage Location

Purpose

You use this process if you do not manage your production storage location via the decentralized warehouse, but nonetheless wish to support material staging for production supply through your decentrally managed warehouse. The communication between the central Enterprise Resource Planning System (ERP System) and the decentralized Warehouse Management System (WMS) is based on outbound deliveries that are created through stock transfers between storage locations.

Prerequisites

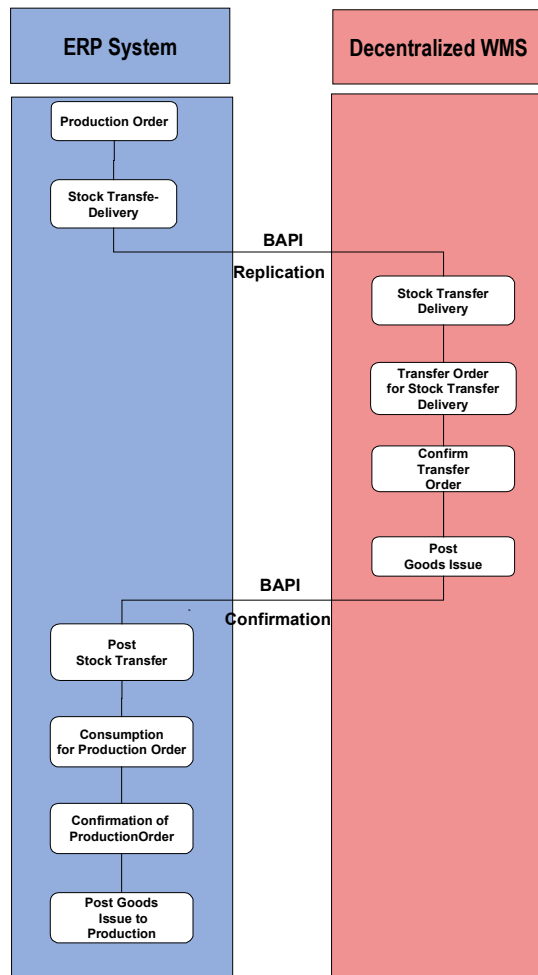
You have defined the production storage location and the storage location of your decentrally managed warehouse in the Customizing application of the company structure.

The master data of the ERP system is transferred to the decentralized WMS using the distribution model. (see also [Setting up the Decentralized Warehouse Management System \[Page 12\]](#)).

At the warehouse number level in the Customizing application, you have stored delivery-relevant data for the warehouse number standard values for production under the path *Logistics Execution* → *Decentralized WMS Integration* → *Central Processing* → *Application* → [Define Interface to Inventory Management \[Ext.\]](#) You require this data, which cannot be entered by Inventory Management, to create the outbound deliveries.

Material Staging Through Change in Storage Location

Process flow



1. In the **central ERP System**, you enter a production order and release it.
2. In accordance with the stock situation in production, you execute a stock transfer of the required materials. Based upon this stock transfer, the system creates a delivery for a stock transfer.
3. The delivery for the stock transfer is passed on to the decentralized Warehouse Management System.
4. The decentralized WMS creates a transfer order for the delivery for the stock transfer.
5. Using this transfer order, you can pick the required parts. In this way, the transfer order serves as a basis for the actual material staging.
6. By confirming the transfer order, you inform the system that the material staging activity is completed and that the required parts are at the interface to the production storage location.
7. With the confirmation of the transfer order, the decentralized WMS automatically reports the delivery for the stock transfer, with the materials that have been actually staged, to the ERP system.

Material Staging Through Change in Storage Location

8. In the **central ERP System**, this confirmation leads to a storage-location posting change from the decentralized location to the production storage location.

Goods Receipt for Production Order

Purpose

If you have goods receipt for a production order, this is a physical goods receipt or receipt of materials into the warehouse from company production. If you are managing your warehouse independently of the central Enterprise Resource Planning system (ERP system) using the decentralized Warehouse Management system (WMS), the central ERP system first creates an inbound delivery when the goods receipt posting for production orders takes place. This inbound delivery is then the basis for the putaway process in the decentralized WMS.

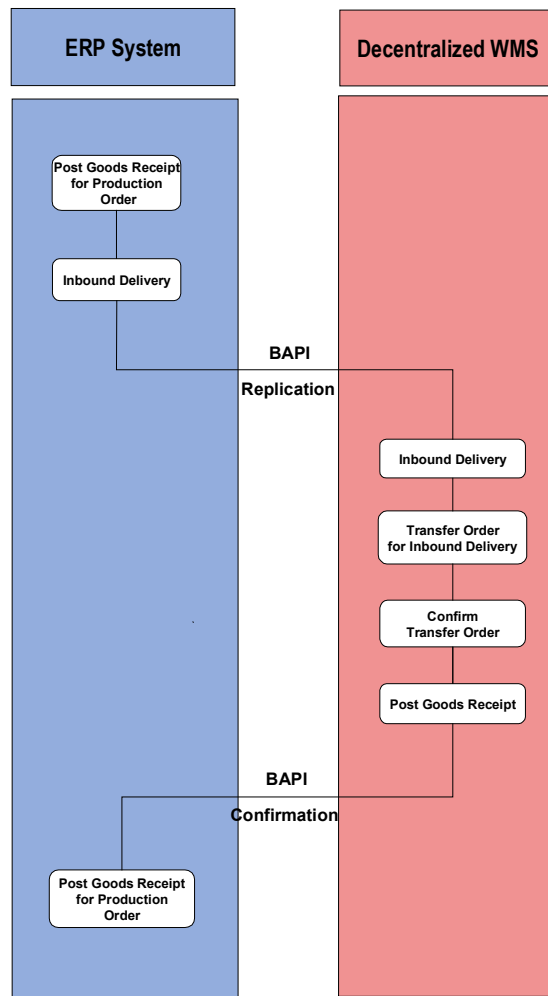
Prerequisites

The master data of the ERP system has been transferred to the decentralized WMS using the distribution model. (see also [Setting up the Decentralized Warehouse Management System \[Page 12\]](#)).

At the warehouse number level in the Customizing application, you have stored vendor standard data for the creation of deliveries under the path *Logistics Execution* → *Decentralized WMS Integration* → *Central Processing* → *Application* → [Define Interface to Inventory Management \[Ext.\]](#) There you control, using the delivery type, whether an inbound or an outbound delivery is to be generated.

Goods Receipt for Production Order

Process Flow



1. When you post a goods receipt for a production order in the central ERP system, the system does not immediately process the goods stock for Inventory Management (IM), but first creates an inbound delivery for the production order.
2. The ERP system passes on the inbound delivery to the decentralized WMS.
3. On the basis of the distributed inbound delivery, the decentralized WMS automatically creates a transfer order for putaway of goods from in-house production. Here the system determines the future storage bin of the goods using a pre-defined putaway strategy.
4. The transfer order is used as a basis for the physical movement of goods from the goods receipt zone to one or several storage bins in the warehouse.
5. You confirm the completion of the goods movement by confirming the transfer order. Here you can correct the transfer order if there have been any quantity differences.
6. With the confirmation, you post the goods issue for the outbound delivery. This way the system automatically sends the confirmation of the inbound delivery to the ERP system.

Goods Receipt for Production Order

7. On the basis of the confirmed inbound delivery, the **central ERP system** posts the goods receipt for the production order.

Link to Quality Management Through Handling Units

Link to Quality Management Through Handling Units

Purpose

In the goods receipt process, you can also implement the decentralized Warehouse Management system (WMS) in connection with the SAP application component *Quality Management* (QM). In this case, both the central as well as the decentralized systems are SAP systems. You use Quality Management in the central Enterprise Resource Planning (ERP) system; here the ERP system transfers the [inspection lot number \[Ext.\]](#) to the decentralized Warehouse Management system so that stock changes to the material based upon QM usage decisions can be followed up in the warehouse.

Prerequisites

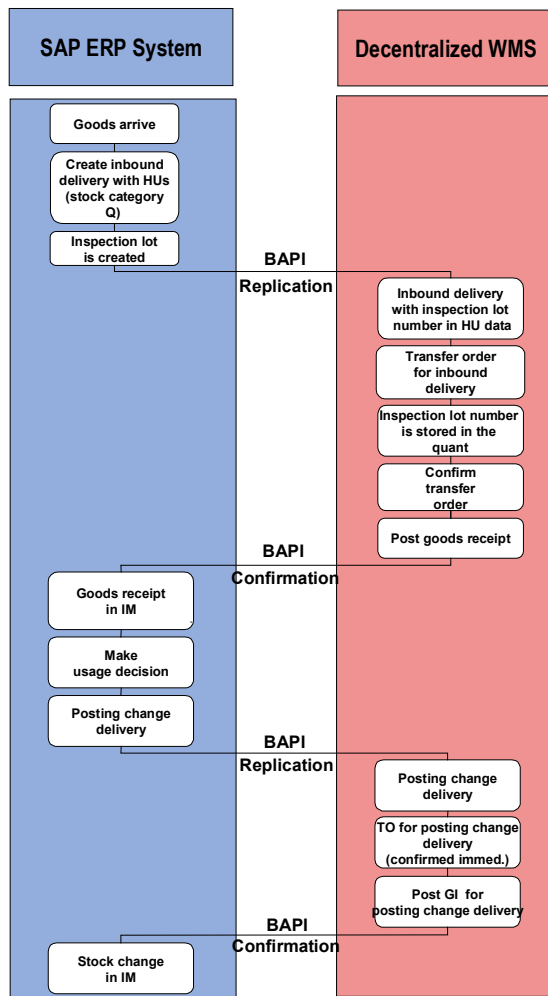
You can activate the Quality Management component in connection with the decentralized Warehouse Management system only if you create [handling units \[Ext.\]](#) (HUs) for the incoming inbound deliveries.

In the material master, you have selected the option **Inspection for HU** for the *indicator Inspec. Type GR*.

To simplify QM processing between the two independent SAP systems, set automatic processing for [posting changes \[Ext.\]](#) in the Customizing section of the decentralized WMS.

- For this purpose, set the [output determination \[Ext.\]](#) of the delivery so that output type **WMTA** is initiated when the delivery is created.
- Set the Customizing in WMS so that the posting change transfer orders are automatically confirmed by the system. In the Customizing section for *Warehouse Management*, select the path *Confirmation control* → *Movement type* under *Activities* → [Confirmation \[Ext.\]](#), and set the indicator for immediate confirmation.
- To ensure an immediate goods issue posting, choose the Customizing section for Warehouse Management, select the path *Interfaces* → *Shipping* → [Define Shipping Control \[Ext.\]](#), then the section *Define Shipping Control at Movement Type Level*, and set the option **Copy WM quantity as delivery quantity and post GR/GI**. This value is automatically copied during transfer order creation and has the effect that the system automatically executes the GI posting for the delivery.

Process Flow



1. In the central ERP system, you create inbound deliveries for incoming goods and post the individual items for these inbound deliveries in handling units.
2. The system creates an inspection lot on the basis of the inspection data in the QM view of the material master. The stock category for the inbound delivery is **Q**.
3. The ERP system passes on the inbound delivery to the decentralized WMS. If there are handling units in the inbound delivery for which an inspection lot has been created, the inspection lot number is copied into the decentralized WMS and stored there in the quant information.
4. On the basis of the transferred inbound delivery, the **decentralized WMS** automatically creates a transfer order for putaway of goods as quality inspection stock.
5. With the confirmation of the transfer order, you confirm the completion of the putaway as quality inspection stock.
6. The confirmation of the transfer order initiates the goods receipt posting in the decentralized system and the updating of the delivery.

Link to Quality Management Through Handling Units

7. The system confirms the updated inbound delivery to the central ERP system.
8. On the basis of the confirmed inbound delivery, the **central ERP system** posts the goods receipt for the inbound delivery.
9. Make the usage decision for the inspection lot in the central ERP system. On the basis of the usage decision, the central ERP system creates a posting change delivery and passes this on to the decentralized WMS. The central system does not create material documents or make any changes in stock at this point.



You may only make the usage decision after the goods receipt has been posted.

10. This posting change delivery is technically a request for the **decentralized WMS** to execute a posting change for the stock concerned. The decentralized system creates a transfer order (which is confirmed immediately) for the posting change delivery, provided the Customizing settings are correct, and with this transfer order the system finds the stock that belongs to the inspection lot and automatically carries out the posting change for it.



As soon as the posting change delivery has been passed on to the decentralized WMS, you can change it there.

11. The decentralized system posts a goods issue for the posting change delivery and thus confirms the posting change delivery and the respective quantities to the central ERP system.
12. The **central ERP system** automatically executes the stock posting change according to the stock category of the respective goods when it receives the confirmation, and it then creates a material document that you can look at in the document flow for the posting change delivery.