

Shipping (LE-SHP)



HELP.LESHP

Release 4.6C



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Icons

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Shipping (LE-SHP)

Implementation Options

Shipping is an important part of the logistics chain in which guaranteed customer service and distribution planning support play major roles.

In shipping processing, all delivery procedure decisions can be made at the start of the process by

- Taking into account general business agreements with your customer
- Recording special material requests
- Defining shipping conditions in the sales order

The result is an efficient and largely automatic shipping process in which manual changes are only necessary under certain circumstances.

Integration

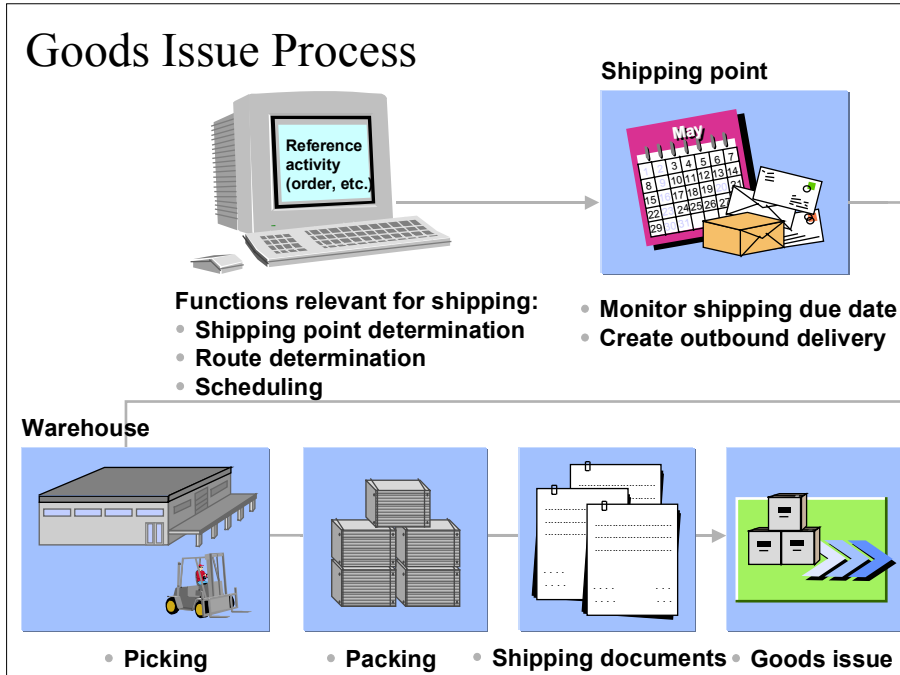
The *Shipping* component is integrated under the *Logistics Execution* component. Shipping is a subsequent activity of the *Sales* component.

Range of Functions

The shipping module supports the following functions, which include but are not limited to:

- Deadline monitoring for reference documents due for shipment (sales orders and purchase orders, for instance)
- Creating and processing outbound deliveries
- Planning and monitoring of worklists for shipping activities
- Monitoring material availability and processing outstanding orders
- Monitoring the warehouse's capacity situation
- Picking (with optional link to the Warehouse Management system)
- Packing deliveries
- Information support for transportation planning
- Support of foreign trade requirements
- Printing and transmitting shipping documents
- Processing goods issue
- Controlling using overviews of
 - Deliveries currently in process
 - Activities that still are to be carried out
 - Possible bottlenecks

A list of deliveries posted as goods issue in the shipping department could be used to form a worklist for the billing department.



Delivery Processing

Delivery Processing

Implementation Options

In its role as central object of the goods issue process, the outbound delivery supports all shipping activities including picking, packing, transportation and goods issue. During the outbound delivery process, shipping-planning information is recorded, status of shipping activities is monitored and data accumulated during shipping processing is documented. When the outbound delivery is created, the shipping activities, such as picking or delivery scheduling, are initiated, and data that is generated during shipping processing is included in the delivery.

Range of Functions

An outbound delivery can be created as follows:

- With reference to a sales order
- With reference to a stock transport order
- With reference to a subcontract order
- [With reference to a project \[Ext.\]](#)
- Without any reference

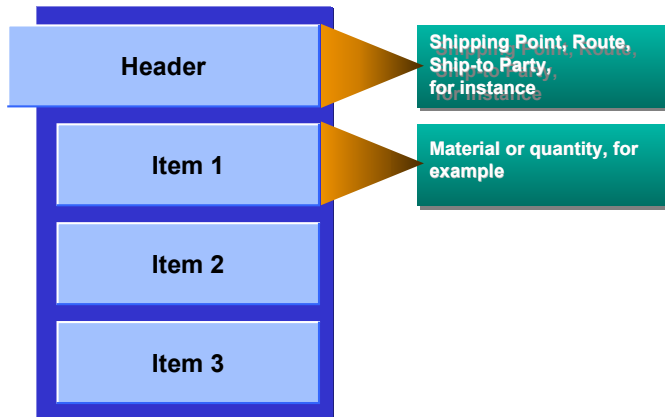
Depending on your requirements, you can create outbound deliveries automatically using worklists, or manually. You can make agreements with your customers for [complete and partial deliveries \[Page 35\]](#) and for [order combinations \[Page 41\]](#). Outbound deliveries can be combined to form a single [group of deliveries \[Page 57\]](#).

Overviews allow you to [monitor \[Page 233\]](#) created outbound deliveries and outstanding sales activities.

Outbound deliveries can only be created under certain [conditions \[Page 22\]](#).

Outbound Delivery Structure

The outbound delivery is made up of a document header and any number of items. The following figure shows the structure of the outbound delivery.



Document Header

The general data relevant for the outbound delivery is stored in the document header. This data is valid for the entire document. The general data may include:

- Shipping point
- Data about delivery scheduling and transportation scheduling (for example, the goods issue date or the date of delivery to the ship-to party)
- Weights and volumes of the entire outbound delivery
- Sold-to party and the ship-to party numbers
- Route

Document Items

In the items, you find data that applies to one particular item. This data may include:

- Material number
- Delivery quantity
- [Retail price \[Ext.\]](#)
- Plant and storage location specifications
- Picking date
- Weights and volumes of the individual items
- Tolerances for under- or overdelivery

Outbound Delivery Structure

Delivery Data and Screens

The user interface for processing deliveries gives you the following advantages:

- Intuitive navigation among various processing screens results in a user-friendly interface
- Fewer screen changes necessary during processing
- Easily comprehensible data presentation
- Clear presentation of processing screens even when the screen is small

Since the new interface works with flexible tables, you can tailor screen appearance to your needs even during processing. You can change the width and sequence of the columns as you see fit simply by dragging them with the mouse. You can also save various display variants.

Tab pages are an important element of the interface. They represent a file of index cards and make the interface easier to use. Each tab page has a title that is always visible. By simply clicking on the tab page title, you can move a tab page to the front of the stack and begin editing it.

This tab page method of organization allows related data to be displayed in one place despite limited screen space.

Shipping data generally appears on the following three screens on which multiple tab pages can be found:

- Overview screen
- Header screen
- Item screen

You can switch quickly from one screen to another by using icons.

Tab pages are arranged according to delivery process, which makes it easier to figure out which of the three overview screens you should switch to in order to find the data you are looking for.

The stage that the processing of a delivery item has reached is displayed on the *Status Overview* tab page on the *Overview* screen.

Origin of Data in the Delivery

Origin of Data in the Delivery

Implementation Options

When a delivery is created, data is copied from the master records or preceding documents. By using the delivery type, you must indicate whether the delivery is to be created with or without reference to a sales document.

Process Flow

Creating Without Reference

When you create a delivery without referring to a preceding document, the system copies the following data into the document from the appropriate master records:

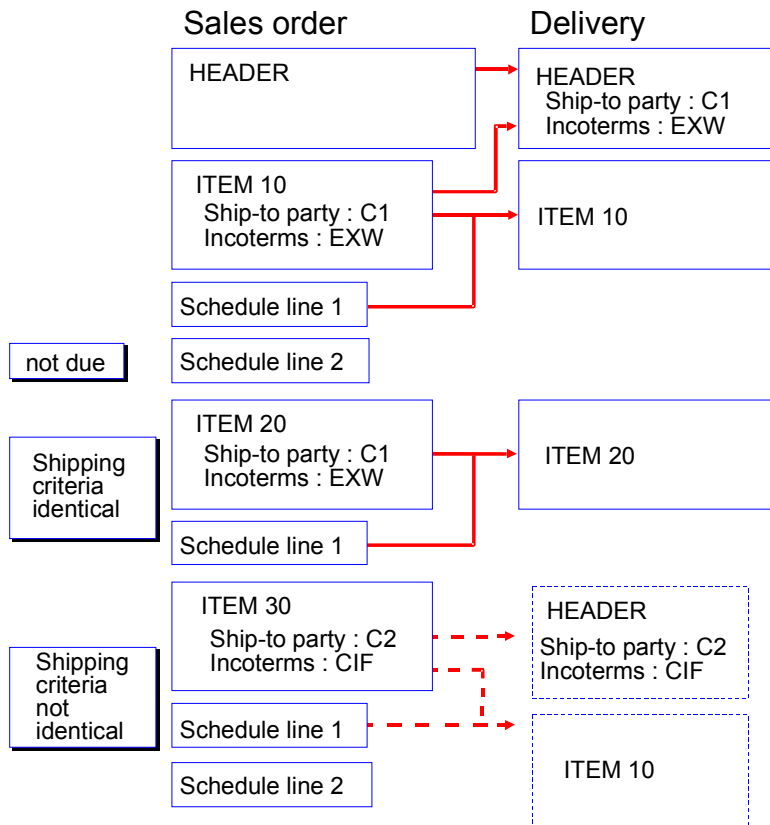
- Data from the customer master record of the ship-to party
- Data from the material master records of the delivery items

If necessary, you can also change or add to data proposed from the master records.

Creating with Reference

In this case, you create the delivery for a particular order or an outline agreement. Data is copied from the preceding document into the delivery. The following figure illustrates how the system copies data from the order into the delivery.

Origin of Data in the Delivery



Order items that are due for delivery and have identical shipping criteria are entered in one delivery. Shipping criteria may include the ship-to party, the shipping point, the Incoterms, or the route. If several schedule lines exist for one item, the system only includes the schedule lines that are available and due for delivery in the delivery document.

Delivery Types

Delivery Types

You can use the various delivery types to deal with the different kinds of business transactions necessary for delivery processing. In the standard version of the SAP System, delivery types include:

Name	Delivery type
Outbound delivery	LF
Outbound delivery without reference	LO
Returns delivery	LR
Replenishment delivery	NL
Outbound deliveries from projects	LP
Outbound delivery for subcontractor	LB
Inbound delivery	EL
WMS outbound delivery	WOD
WMS inbound delivery	WID
Replenishment WMS	WNL
Customer returns WMS	WRD
Delivery for stock transfer	UL
R/2-R/3 Link	LD

When you enter an outbound delivery with reference to a sales order, for example, the system automatically proposes the delivery document type on the basis of the underlying order.

Control Elements

Specific functions can be defined for each delivery document type. This is done using control elements that are specified in tables. The document types can be tailored to meet the needs of your company. New document types can also be defined if you find that your business needs a wider selection than those specified in the standard version of the SAP System. Your system administrator is responsible for maintaining control elements.

You can distinguish between delivery document types according to the following criteria:

- Which **number range** does the document number come from for internal and external number assignment?
- Which **partner functions** are allowed and which must be entered?
- Does an order have to be based on a preceding document?
- Which requirements must items fulfill to be included in the delivery?
- Should the **route** be redetermined? Should a check then be carried out to determine whether the new route is permissible?

Delivery Types

- According to which rule should the **storage location** be determined for an item if a storage location is not specified?
- Which **output types** are allowed for the business transaction and according to which procedure are they proposed?

Item Categories in Deliveries

Item Categories in Deliveries

Item categories are defined so that you have more control over individual materials in the deliveries. The item category is copied from an order item. A standard item in a standard order then becomes a standard item in the delivery. If a delivery is entered without reference to an order, the system proposes the item category depending on the delivery type and the item category group of the material.

In the standard version of the SAP R/3 System, item categories include:

Standard Item Categories

Name	Item category
Standard item in a delivery without reference to an order	DLN
Consignment fill-up	KBN
Free of charge item (part of a delivery that is free of charge)	KLN
Service free of charge (part of a delivery that is free of charge)	KLX
Make-to-order production (from standard order)	TAK
Standard item (from standard order)	TAN
Free of charge item (from standard order)	TANN
Text item (from standard order)	TATX

Control Elements

The item categories can also be adapted using control elements to meet the special requirements of your installation. In addition, new item categories can be defined in Customizing if the categories defined in the standard version of the SAP R/3 System do not sufficiently fulfill your shipping requirements.

You can distinguish between item categories using the following criteria:

- Does a **material number** have to be defined for an item? For example, you do not have to specify a material number for a text item.
- Is a **delivery quantity of 0** allowed?
- Should a check be carried out to determine whether the delivery quantity exceeds the **minimum delivery quantity** for the material in question?
- Should a check be carried out to determine whether an item has **been overdelivered** and whether this overdelivery is allowed?
- Is the item relevant for **picking**?
- Should a **storage location** be specified for the item?
- Should the **storage location be determined** automatically?

Creating Outbound Deliveries

Creating Outbound Deliveries

Implementation Options

As soon as the **material availability date** or the **transportation scheduling date** for a schedule line is reached, the schedule line becomes due for shipping. When you create an outbound delivery, you initiate shipping activities such as picking and transportation scheduling.

A delivery is processed through one **shipping point**. Which shipping point carries out the processing for a delivery can be determined automatically during order processing or you can specify it manually in the order.

Prerequisites

Certain [prerequisites \[Page 22\]](#) must be met before an order can be delivered.

Process Flow

The system carries out the following activities when an outbound delivery is created:

- Checks the order and materials to make sure the outbound delivery is possible (for example, it checks for delivery blocks or incompleteness)
- Determines the delivery quantity of an item and checks the availability of the material
- Calculates the weight and volume of the delivery
- Calculates work expenditure
- Packs the outbound delivery according to the reference order
- Checks the delivery situation of the order and any partial delivery agreements
- Redetermines the route
- Adds information relevant for export
- Checks delivery scheduling and changes deadlines (if necessary)
- Assigns a picking location
- Carries out batch determination (if material is to be handled in batches)
- Creates an inspection lot if the material must pass a quality check
- Updates sales order data and changes order status

You can make changes in a delivery after it is created if the delivery situation changes in any way. In addition, you can confirm picked quantities using the change function, or use the display function to access shipping information in a delivery.

Order items or schedule lines that have identical shipping criteria are combined in one delivery. If data varies between items, for example, if a different ship-to party is defined for each item, two deliveries must be created for the order. Order items from different orders can be grouped together in one delivery provided that they have identical shipping criteria and that the sold-to party agrees.

For additional information about working with deliveries, see:

[Prerequisites for Processing Deliveries in Sales Orders \[Page 22\]](#)

[Updating Delivery Status in Sales Orders \[Page 24\]](#)

[Shipping Point Determination \[Page 25\]](#)

[Route Determination \[Page 27\]](#)

[Transportation and Delivery Scheduling \[Page 29\]](#)

[Partial Delivery and Complete Delivery \[Page 35\]](#)

[Correlating Delivery Groups \[Page 38\]](#)

[Order Combination \[Page 41\]](#)

[Additional Shipping Deadlines \[Page 43\]](#)

Prerequisites for Processing Deliveries in Sales Orders

Prerequisites for Processing Deliveries in Sales Orders


The entire order, the order items, and the schedule lines for an item must fulfill certain prerequisites before a delivery can be created.

Header level

At header level, the following prerequisites are among those that must be fulfilled:

- There cannot be a delivery block at header level.

A delivery block can be set automatically, if, for example, your customer has exceeded his or her credit limit. You can also enter a delivery block manually in the sales document.



A delivery block on the header level only works when it has been assigned to the appropriate delivery type in Customizing.
- The sales document must contain at least one item due for delivery before a delivery can be created for this document.

The sales document must contain at least one item due for delivery before a delivery can be created for this document.


Item Level and Schedule Line Level

At item and schedule line level, the following prerequisites must be fulfilled:

- The schedule line must be due for shipping on the specified selection date.

A schedule line becomes due for shipping as soon as the material availability date or the transportation scheduling date is reached.
- The schedule line cannot be blocked for delivery.

You can set a delivery block for a schedule line manually in the sales document. You do this, for example, if a free of charge delivery has to be checked before the schedule line can be delivered.



Contrary to the delivery block on the header level, the delivery block on the schedule line level always works even if you have not made any assignments in Customizing.
- The delivery quantity must be greater than one.
- The items in the order must be fully processed.

If they are incomplete, you must first edit the incompleteness log in the order. For more information on the incompleteness log, refer to the section [Working with the Incompletion Log \[Ext.\]](#)
- The product status of the material must permit delivery.

New products, for example, have not yet been released for delivery. They cannot be included in the delivery because of their product status.

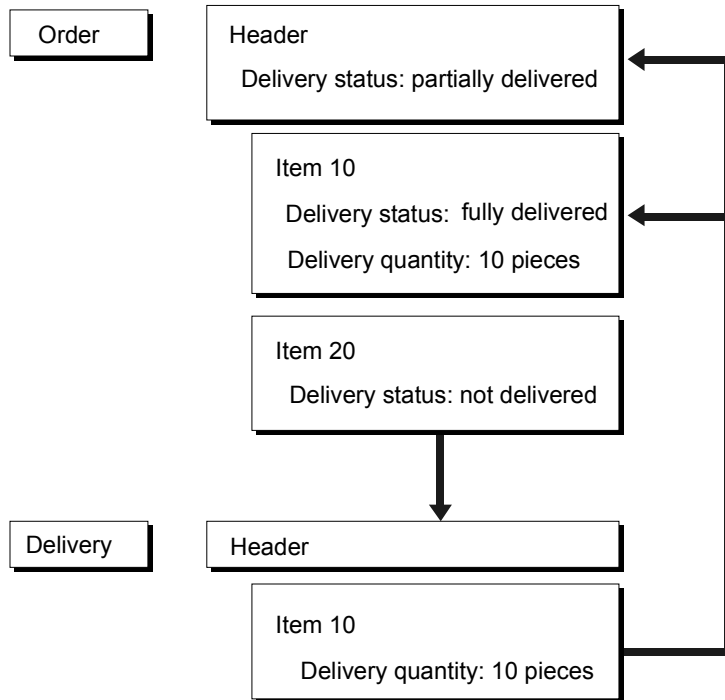
Prerequisites for Processing Deliveries in Sales Orders

- Sufficient quantity of the material must be available.

Updating Delivery Status in Sales Orders

Updating Delivery Status in Sales Orders

The order is updated when the delivery is created. The delivery status is updated at header and item level. This is illustrated in the following figure.



Delivery Status in the Order

You will find the delivery status of the individual items and of the entire order on the status screen at item and at header level respectively.

The delivery status of the entire order results from the delivery status of the items. Until all items in the order have been fully delivered, the order has the status "Partially delivered". The entire document acquires the status of fully delivered once all the items have been fully delivered.

Shipping Point Determination

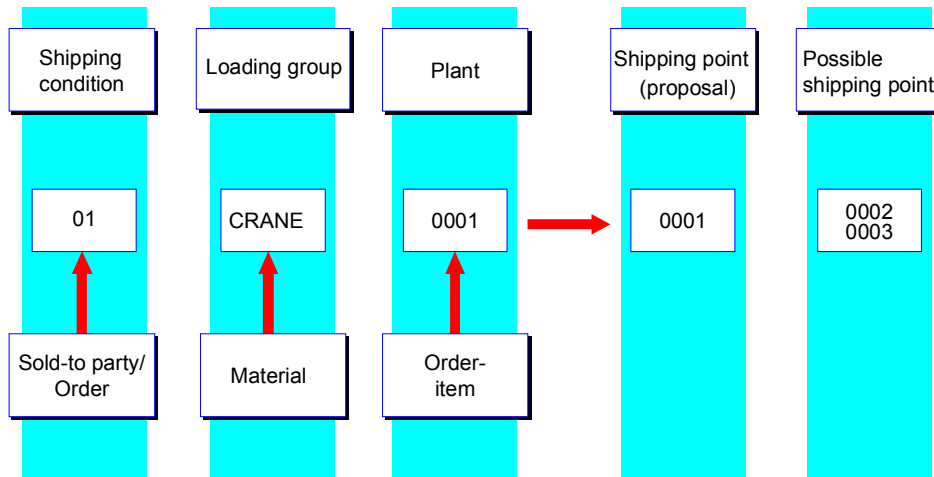
Shipping points are independent organizational entities within which processing and monitoring of the deliveries as well as goods issue is carried out. A delivery is processed by one shipping point only.

Criteria for Proposing a Shipping Point

A shipping point can be determined for each order item. How the shipping point is determined depends on three factors:

- The shipping conditions from the customer master record (*Shipping* screen)
 - For example, it might have been agreed with the customer that the goods are to be delivered as soon as possible.
- The loading group from the material master record (Sales/Plant Data screen)
 - You could, for example, specify a loading group that defines that the goods must always be loaded with a crane or a forklift.
- The delivering plant
 - This plant is determined per order item either from the customer master record or from the material master record. However, you can also enter it manually for each order item. For more information on determining the delivering plant, refer to the section [Data From Master Records \[Ext.\]](#)

The following figure shows how the shipping point is determined using the data listed above.



On the basis of shipping condition 01, the loading group CRANE and the plant 0001, the system determines shipping point 0001 for the item. Instead of this shipping point, you can also select shipping points 0002 and 0003 if, for example, you know that shipping point 0001 is out of operation or does not have the capacity to deal with the item at the time when delivery is to take place.

Shipping Point Determination

Changing a Shipping Point

You are still able to change the shipping point proposed by the system in the sales order within specified limits. If you enter a shipping point that is not valid, you will receive the following error message from the system: "Shipping point is not available for this activity."

If the shipping point cannot be determined because, for example, the delivering plant could not be found in the sales order, an entry is made in the incompleteness log in the standard version of the SAP R/3 System. This ensures that the shipping point is entered before the sales order can be processed for delivery.

You can obtain an overview of the shipping points for all order items by choosing *Overview* → *Shipping* in the sales order. You will find the shipping points in the ShPt column.

If you enter a delivery for the sales order, you must always specify the shipping point from which the sales order is to be delivered. The shipping point cannot be changed in the delivery.

Delivery by a Shipping Point

You can only carry out delivery processing for the items in a sales order for which a shipping point has been defined. If different shipping points have been assigned to the various items in a sales order, the deliveries have to be processed for each shipping point.

If you create a delivery for a sales order that contains several shipping points, the system reacts as follows:

- If you create an individual delivery, you receive a note in the log that the items with different shipping points have not been included in the delivery.

You can view the log by choosing *Edit* → *Log*.

- If you process a delivery via the delivery due list, no note is entered in the log. When you process the delivery due list, the system only informs you of errors that occur during processing.



If the customer requests complete delivery of the sales order, it does not make sense to define different shipping points for the order items since this would lead to the sales order being split into several deliveries.

Route Determination

The route determines the means of transport and the legs involved. It influences transportation scheduling. For example, the system can determine from the route that goods are to be sent by rail to Boston. Therefore, during transportation scheduling, it takes into account how far in advance loading space in the freight car must be reserved.

Criteria for Route Proposal in the Sales Order

A route can be determined for every order item. Determining the route in the sales order depends on the following factors:

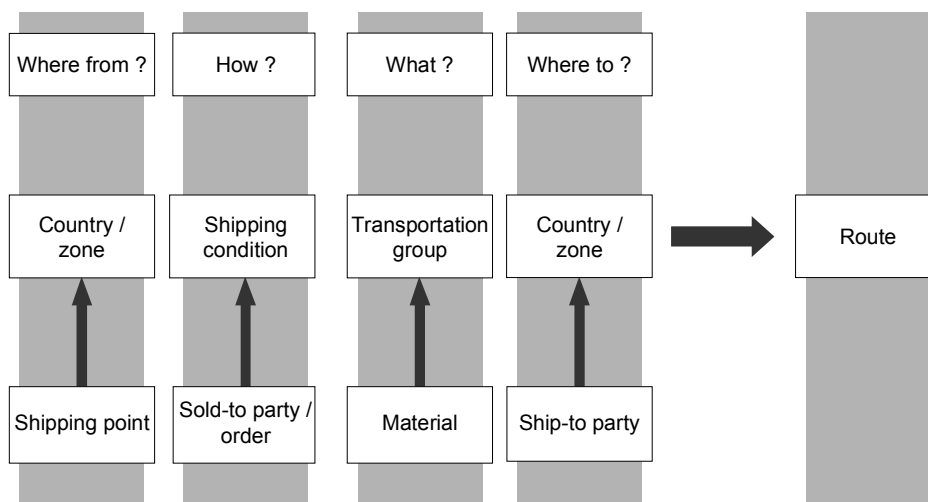
- Country and departure zone of the shipping point
- Shipping condition from the sales order
 - For example, it might have been agreed with the customer that the goods are to be delivered as soon as possible.
- Transportation group from the material master record (Sales/Plant Data screen)
 - You can use the transportation group to group together goods with the same characteristics (for example, bulky goods or goods that must be transported in refrigerated trucks).
- Country and transportation zone of the ship-to party (Control screen in the customer master record)



If the ship-to party is changed in the sales order, the route is determined again for each item.

Using the delivery type, you can control in Customizing whether the transportation scheduling is to be executed once again after a route change has taken place.

The following figure shows how the route is determined in the sales order according to the data listed above.



Route Determination

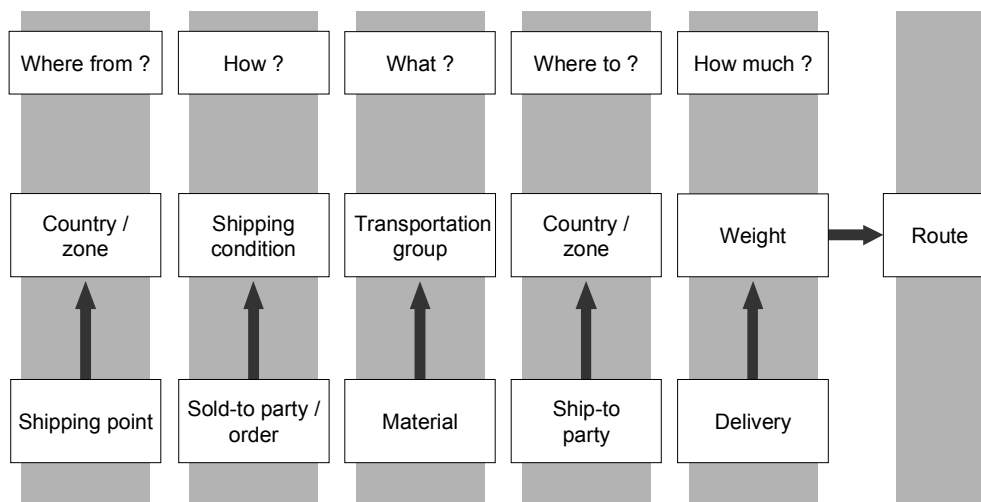
Criteria for the Proposal of the Route in the Delivery

The shipping document type determines whether the route is determined again in the delivery. Since you only learn the exact weight of the delivery at the time of creating the delivery, it makes sense to determine the route again. For example, an overdelivery of goods could mean that the delivery is now too heavy to be delivered by air freight and must be conveyed by rail. It could also be that several partial deliveries are created for one sales order so that the total weight of the each delivery is now lower than the total weight that is recorded in the sales order. Thus, a smaller truck than originally planned can be used for the delivery.

For this reason, a weight group is used as an additional factor in determining the route. The weight group is determined on the basis of the total weight of the delivery. You can manually overwrite the route that is determined by the system in the delivery.

Unlike the sales order where a route can be defined for each order item, the route applies to all items in the delivery.

The following figure shows all factors that the system takes into account when it determines the route in the delivery.



Consistency Check

Once a new route has been determined in the delivery, the system can check whether the route determined in the order item and the route found for the delivery are consistent. In the Customizing application, you can define a consistency check for each shipping document type.

Transportation and Delivery Scheduling

During order entry, each schedule line for an item can contain a requested delivery deadline. The goods should arrive at the customer on this date. At the order processing stage, the system can automatically schedule when the essential shipping activities such as picking, loading and transporting must be started so that the requested delivery date can be kept.

The terms used in scheduling are defined below. You must distinguish between

- times (time duration) needed to carry out certain activities
- dates that are calculated on the basis of these times

Times

- Values based on past experience of the shipping department are entered in the system in the form of transit times, loading times, pick/pack times, and transportation lead times:
- The **transit time** is the time in days that is required to deliver goods from your premises to the customer location. It is defined for a route.
- The **loading time** is the time in days that is required for loading a delivery item. It is determined from the shipping point, the route, and the loading group of the material.
- The **pick/pack time** is the time in days that is required for allocating goods to a delivery as well as the time in days that is required for picking and packing. It is calculated using the shipping point, the route, and the weight group of the order item.
- The **transportation lead-time** is the time in days that is needed to organize the shipping of the goods. This might include booking a ship and reserving a truck from a forwarding agent. It is defined for a route.



If you have not maintained **any** working times in the shipping point, the unit for the time specification is the day (workday = 24 hours) with two decimal places

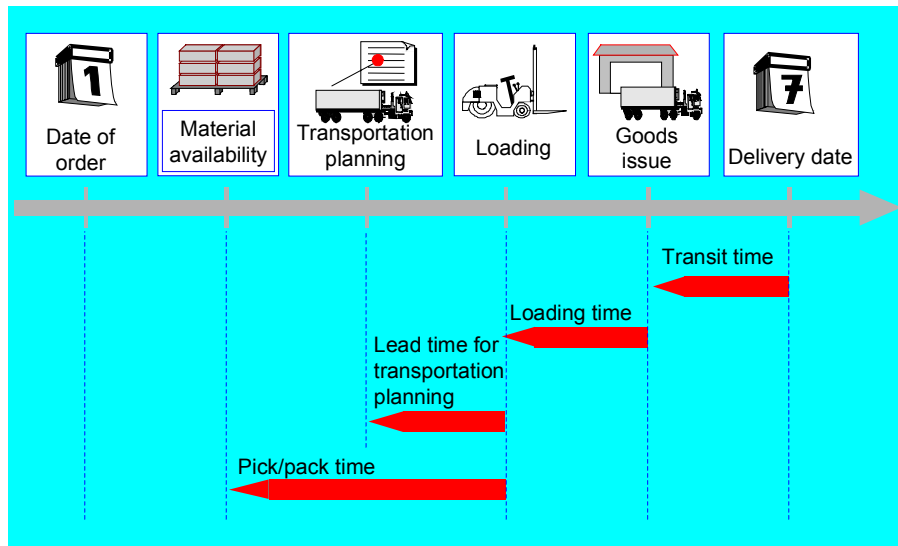
If you have maintained the working times in the shipping point, the unit for the time specification is hours, minutes, and seconds.

You can also enter the factory calendar of the forwarding agent for the route when you define the transit time. This factory calendar can be different from your company's calendar. For example, the forwarding agent might operate a 6-day-week.

You may only enter the transit time in days with two decimal places, even if you have maintained the working times in the shipping point.

The following figure shows the different times that are taken into account during delivery scheduling.

Transportation and Delivery Scheduling



Deadlines

The following deadlines are of importance for delivery processing:

- You must start picking and packing activities on the **material availability deadline**. This deadline must be selected early enough in advance so that the goods are ready by the given loading deadline.
- The **transportation scheduling deadline** is the date on which you must start to organize the transportation of the goods. This deadline must be selected early enough to ensure that the means of transport is available by the loading deadline.
- The **loading deadline** is the date on which the goods must be available for loading and on which all vehicles that are required to ship these goods must be ready for loading. After the time required for loading the goods (loading time) has expired, goods issue can be carried out.
- The **goods issue deadline** is the date on which the goods leave the company in order to arrive punctually at the customer location.
- The **delivery deadline** is the date on which the goods are to arrive at the customer location. The difference between the goods issue deadline and the delivery deadline is calculated from the transit time required for the route between the delivering plant and the customer.

The delivery deadline can be the customer's requested delivery deadline or the confirmed delivery date (that is, the earliest date on which you can deliver goods to the customer).

Data in the Sales Order

You will find the appropriate data in the sales order on the *Item - Schedule Line - Shipping details* screen. You call up this screen as follows:

1. On one of the overview screens in the order, select the item whose shipping data you want to look at. Then choose *Item → Schedule Lines → Quantities/dates*.
2. Place the cursor on the appropriate schedule line and choose *Edit → Detail Shipping*.

Data in the Delivery

You will find important shipping data at header level in the delivery. For this purpose, choose *Header* → *Shipment-relev.info* from a header or overview screen.

The material availability date can be different for each item. For example, this could be due to large quantities or complicated packaging. You will find this date at item level. Select the item for which you want to display the material availability deadline from the initial overview screen and then choose *Item* → *Item details*. You will find the material availability deadline in the *Picking* section in the *Mat.avail.date* field.

In the sales order, the system can determine exactly at which time goods must become available, be loaded, and sent so that they arrive at the ship-to party location on the requested delivery deadline. The two different types of scheduling that are carried out are delivery scheduling and transportation scheduling.

Delivery Scheduling - Transportation Scheduling

All activities that must be carried out before the goods can be delivered to the customer are taken into account during delivery scheduling. This includes loading, picking, and packing. Delivery scheduling determines the material availability deadline and the loading deadline.

All deadlines that are used for preparing and carrying out the transportation of goods are taken into account during transportation scheduling. This includes the transit time and the transportation lead time that you need for ordering a foreign forwarding agent or for arranging a truck from the your company's truck fleet. The goods issue deadline and the transportation scheduling deadline are determined by transportation scheduling.

Scheduling Criteria

For each sales document type, you can define whether a delivery scheduling and/or a transportation scheduling will be carried out.

It is possible to specify by shipping point whether the system proposes loading time and pick/pack time for delivery scheduling. To determine these times, use the following criteria:

- Shipping point
 - Processing may be carried out more quickly in one shipping point than another.
- Shipping point, route, and weight and/or loading group
 - Since the route is required for determining the mode of transport, a delay in processing or quicker processing can be taken into account here. Weight can be important for determining pick/pack time, the loading group from the material master record for determining the loading time.
- Shipping point, weight and/or loading group
 - If the route is not to be taken into account when the pick/pack time or loading time is determined, the shipping point and the weight become the only criteria used for determining the pick/pack time. The shipping point and the loading group become the criteria used for determining the loading time.

The transportation lead time and the transit time for transportation scheduling are determined using the route.

Transportation and Delivery Scheduling



Backward scheduling is always carried out for both delivery scheduling and transportation scheduling. If backward scheduling determines a material-availability deadline or transportation-scheduling deadline that lies in the past, the system automatically carries out forward scheduling to determine a delivery deadline that can be confirmed.

Backward Scheduling

The system first carries out backward scheduling from the requested delivery deadline:

Requested delivery deadline

./. minus transit time

Goods issue deadline

Goods issue deadline

./. minus loading time

Loading deadline

Based on the loading deadline, the system determines two further dates, the transportation planning deadline and the material availability deadline.

Loading deadline

./. minus transportation lead time

Transportation scheduling deadline

Loading deadline

./. minus pick/pack time

Material availability deadline

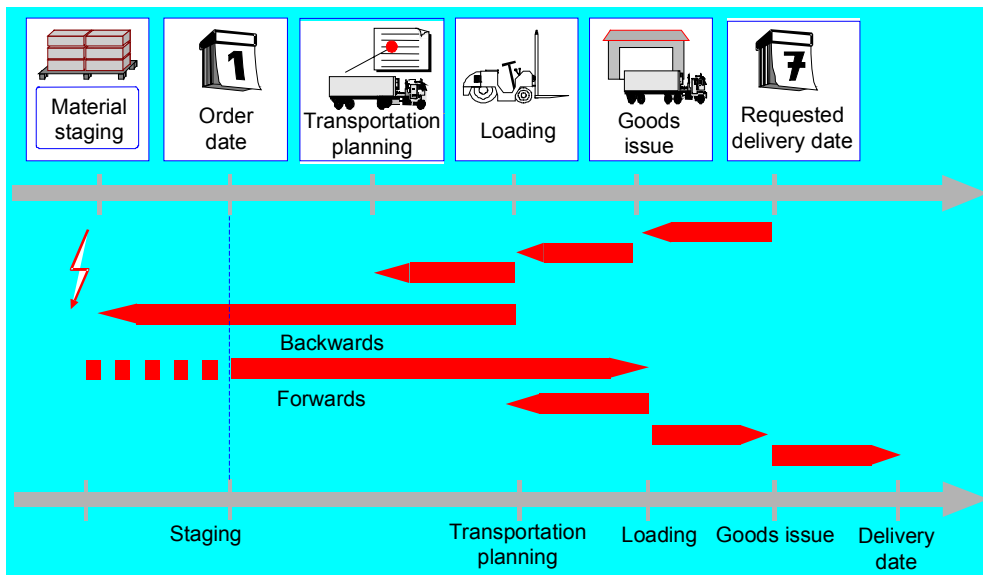
The earlier of these last two dates (material availability deadline and transportation scheduling deadline) determines when a schedule line becomes due for shipping.

Forward Scheduling

If backward scheduling determines a date in the past as the date on which a schedule line becomes due for shipping or if the material will not be available on the date calculated, the system automatically carries out forward scheduling to determine the earliest possible shipping deadline.

For example, starting from the current date, the system calculates the loading deadline, the goods issue deadline, and then the confirmed delivery date. It does this by adding together the shipping times mentioned above.

Transportation and Delivery Scheduling



Rounding Rules for Data

If you have not maintained any working times, the system always rounds dates for scheduling up or down according to normal business practice. In addition to this, different buffer times can be determined for each shipping point and added to the loading time and the pick/pack time. This enables you to take into account possible delays in the shipping activities in advance.

Depending on the rounding rule you are using, the system may determine that loading scheduled according to the pick/pack time to be carried out in the afternoon will not be started until the following day. Thus, should picking and packing be held up, the truck is not kept waiting.

You can define the rounding period per shipping point in Customizing.

If you have maintained the working times, the scheduling is calculated exactly.

Backward Delivery Scheduling Only

Backward Delivery Scheduling Only

Use

When you change a sales document, such as adding schedule lines or rescheduling, the system carries out delivery scheduling for all the schedule lines, new and old. Because the material availability date lies in the past for backlog schedule lines, the system performs forward scheduling. This may have the undesired affect of the system rescheduling lines that may have already been confirmed.

You can specify for each sales document type that the system is to schedule deliveries *only* backwards. With no forward scheduling, you can better recognize backlogs in production and the customer receives goods on time.

To deactivate forward scheduling, set the *Backward* indicator in Customizing for delivery scheduling. Choose *Basic Functions* → *Delivery Scheduling and Transportation Scheduling* → *Define scheduling by sales document type*.

Note that when the availability check has been activated for the schedule line category in Customizing, and availability is poor, the system ignores the *Backward* indicator and carries out forward scheduling anyway.

This function is available for scheduling agreements and sales orders.

Features

Normally when you create a delivery for a backlog schedule line, the system resets the material availability date in the delivery to the current date, and copies this date to the delivery.

You can set the system to copy material availability dates *unchanged* to deliveries for sales document types for which you have set the backward delivery scheduling function. Just turn off rescheduling for the relevant delivery type in Customizing by choosing *Logistics Execution* → *Shipping* → *Deliveries* → *Define delivery types*. Unmark the *Rescheduling* field in the *Document content* section of the screen.

In this way, you can avoid having two requirements with different dates when you make partial deliveries. Also, when you plan requirements again, the system will not propose rescheduling for production orders already in process.

When rescheduling has been turned off for a delivery type, the system does not redetermine routes.

Partial Delivery and Complete Delivery

A customer may specify that he or she will only accept complete delivery of an order. However, the customer may also agree to accept several partial deliveries for an order or an order item.

You enter the appropriate indicator in the customer master record or in the customer material information record to control this. The indicator is copied into the order. You can change the indicator there. You can also enter the indicator manually in an order. You can also enter the indicator manually in an order. When you process an order or create a delivery, the system checks this indicator to determine whether complete delivery is required or whether partial delivery is permitted.

Complete Delivery Indicator

If a customer requires his or her orders to be delivered completely, you must enter the appropriate indicator.

Entering the Indicator

There are two places where you can enter this indicator:

- Customer master record

This indicator belongs to the shipping data for a customer within a sales area. You enter an **X** in the Complete Delivery field on the shipping screen of the customer master record. The indicator is copied into the order header.
- Order header

You can also enter the indicator **X** in the Delivery field on the business data screen of the order header.

How the System Reacts

If you try to partially deliver an order to which you have assigned a complete delivery indicator, the system will inform you that the customer requires complete delivery of the order. All items must be delivered at the same time. The items cannot have different delivery deadlines.

If the system cannot include all the items with the total order quantity in the delivery, you receive a message that the customer requires full delivery.



If you enter the complete delivery indicator **X**, you must set the partial delivery indicator to **C** (no partial deliveries allowed).

Partial Delivery Indicator

If a customer allows partial deliveries for his orders, the delivery can be executed in different ways. You enter the respective indicator, depending on the partial delivery agreement that you have made with the customer.

Partial delivery agreements are taken into account during the availability check in the order. These indicators are once again checked when the delivery is created. The delivery must observe the partial delivery agreements in the order.

Partial Delivery and Complete Delivery

Possible Indicators

The following partial delivery indicators are defined in the standard version of the SAP R/3 System:

Standard Partial Delivery Indicators

Indicator	Importance
"Blank"	Up to maximum number of partial deliveries permitted are allowed
A	One delivery attempt carried out on requested date
B	One delivery attempt carried out on any date
C	No partial deliveries allowed
D	Any number of subsequent deliveries allowed

Entering the Indicator

You can enter the indicator in various places, such as the:

- Customer master record

This indicator belongs to the shipping data for a customer within a sales area. You enter the indicator on the shipping screen in the *Part.delivery/item* field. The indicator is copied into the order items.
- Customer-material information record

You enter the indicator on the item details screen of an information record in the *Part.delivery/item* field. The indicator is copied into the order items when the system reads the information record. It does this when the order is created.
- Order item

You enter the indicator for an order item on the shipping details screen in the *Part.delivery/item* field.

Maximum Number of Partial Deliveries

The check carried out for the delivery indicators is influenced by the number of partial deliveries permitted for a customer. You enter this number on the same screens in the customer master record and in the order item as you enter the partial delivery indicator, in the *Max. part. deliveries* field.

If, for example, you specify a maximum number of 3 deliveries, an order item must be fully delivered after three deliveries have been created. If the entire order quantity for the item is not fulfilled once you enter the third delivery, you receive a warning message.

Only if the order item has been assigned the partial delivery indicator **D** or " " does the entry for maximum number of partial deliveries influence the creation of the delivery.

How the System Reacts

The system responds differently depending on which partial delivery indicator is set in an order item. The different reactions are illustrated by the following example. You create a delivery for an order item of 10 pieces. Only 5 pieces are available.

- Indicator "blank"

Partial Delivery and Complete Delivery

You can enter as many partial deliveries as you wish for an order item until the maximum number permitted is reached. If the last delivery does not result in the entire outstanding order quantity being reached, you receive a warning message.

In this situation, you can create a partial delivery of 5 pieces for the example. The order item is then regarded as partially delivered. Once the material becomes available again, you would create another partial delivery. This process would continue until the item is fully delivered or the maximum number of deliveries has been reached.

- **Indicator A**

If the delivery quantity on this date is not the same as the outstanding order quantity, you receive a warning message. If the delivery quantity is greater than zero, the system marks the order as complete. This indicator is used, for example, when the customer wants you to ship as much as possible on a particular date. If the delivery quantity falls short of the order quantity, the customer wants the order to be marked as complete (that is, wants no backorders).

- **Indicator B**

This delivery should fully satisfy the order quantity. If the delivery quantity does not correspond to the outstanding order quantity, you receive a warning message.

Any delivery quantity, even zero, completes processing of the order. This indicator can be used, for example, for customers who want no backorders to be generated, even when a delivery quantity is zero.



In Customizing for Sales, you can define for each delivery type whether or not zero delivery quantities are allowed.

If only part of the order quantity can be delivered, a delivery is created and the order item is then regarded as completed.

You can create a delivery for 5 pieces for the order item in the example. The order item is then regarded as completed.

- **Indicator C**

Complete delivery is required for an order item.

You receive a warning message if you try to create a partial delivery of 5 pieces for the order item in the example.

- **Indicator D**

You can enter any number of subsequent deliveries for an order item until the maximum number of partial deliveries permitted is reached. You can over deliver the original order quantity in the process. An order item can only be assigned the completed status manually. After you assign this status, no further deliveries can be created.

You can create a partial delivery of 5 pieces for the order item in the example and then go on to create any number of subsequent deliveries as long as you do not manually mark the item as completed.

Correlating Delivery Groups

Correlating Delivery Groups

Items in delivery groups can be combined in the sales order to synchronize their delivery. You will receive a warning message when creating a delivery for a sales order if all items belonging to such a group cannot be delivered. If you then create deliveries using a delivery due list, all orders whose delivery groups cannot be completely delivered will be ignored in this process. In this case, the log supplies all appropriate information. If the delivery quantity is changed or if such an item is deleted in a delivery item belonging to a delivery group, you will receive a warning message. For further information on delivery groups, refer to [Combining Sales Document Items for Delivery \[Ext.\]](#).

In addition, the system will carry out a quantity correlation for groups of items when they are classified together by one of the following requirements:

- the items belong to a common delivery group
- the items have a bill of material structure

If the order structure arose from a bill of material explosion, the relations in quantity of the items is based on component quantity. If this is not the case, it is based on the relation of the order quantities. The system does not correlate items classified as having fixed quantities.

When creating deliveries, the system automatically carries out a quantity correlation. If you change a higher level item's quantity, the quantities in the dependent items will be adjusted on all levels if necessary. When you change a dependent item's quantity, the system generates a warning message. When you delete a higher level item, all subordinate items are deleted as well. When you delete a dependent item, the system generates a warning message. If the dependent item contains a quantity to correlate and is the main item of a batch split, you receive a note. You must decide manually for which batches the quantity change is to take place.

Free Goods in the Outbound Delivery

Use

In many sectors of industry it is common to provide products free of charge, or not to charge the customer for some of the goods sold when certain goods are purchased.

[Free goods processing \[Ext.\]](#) is supported in the sales order for direct sales. When you enter the sales order, the free goods items are automatically created in accordance with the existing agreement (see also [Maintain Free Goods \[Ext.\]](#)) and automatically copied into the outbound delivery as delivery-relevant. In the outbound delivery, the system no longer determines free goods on its own.

For further information on transfer of requirements, see [Requirements in Sales and Distribution Processing \[Ext.\]](#).



The free goods function is currently not supported for deliveries without reference to a sales order.

Features

In the free-goods record, you can store the following conditions for delivery of free goods using the field *Delivery control*:

- independently of the main item
Free goods are processed fully independently.
- only if the main item has been partially delivered
The free goods are delivered only if at least part of the required sales material will, or has already been, delivered.
- Only if the main item is partially delivered and the free goods are contained in the same delivery.
Free goods are only delivered if at least part of the material sold is delivered or has already been delivered and if the material sold is in the current delivery. This is because part of the delivery might only be due later on. In this case, the free goods should only be granted when the sales material is delivered, rather than appearing in the delivery without the material it applies to. Otherwise, the customer may not understand the connection between the material ordered and the free goods material.
- only if the main item has been partially delivered
The free goods are delivered only if at least part of the required sales material will, or has already been, delivered.
- as a proportionate quantity of the delivered quantity in relation to the required quantity in the main item
The free goods are supplied as a proportionate quantity in relation to the delivered quantity of the order item.

If the main item has been delivered completely, the entire available quantity of free goods is delivered as well.

Free Goods in the Outbound Delivery

Order Combination

Implementation Options

You can group together entire orders, order items of different orders or partial deliveries of individual order items in one delivery but only if this has been agreed with the customer.

Prerequisites

Order combination can only be carried out if the orders concerned have the appropriate indicator in the order header.

The orders or the order items and schedule lines must have identical shipping criteria. This includes the following data:

- Shipping point
- Ship-to party
- Incoterms
- Sales organization

If you try to combine items that have different goods issue dates, you receive a warning message. You can ignore this warning message. The earliest goods issue date of all the items is selected automatically as goods issue date of the entire delivery.

Entering the Indicator

You can enter the indicator that makes order combination possible in two places:

- In the customer master record, you can give a customer general allowance for order combination. The indicator depends on the sales organization, the distribution channel and the division as it is entered for a particular sales area.

You can specify that all orders for one particular customer can be combined by entering an **X** in the *Order combination* field on the *Shipping* screen of the customer master record. The indicator is copied from the customer master record into the order header.

- You can specify manually that individual orders can be combined and then revoke the combination allowance later, if necessary. You can specify that orders can be combined by entering an **x** in the *Order combination* field of the *Shipping* tab page on the *Order Header* screen. If you want to block order combination, deselect this indicator (the checkbox should appear blank).

Process Flow

During delivery creation, you must distinguish between the following two situations:

- Creating an individual delivery

You can manually add additional orders or order items to this delivery if the customer allows combination and order items fulfill the criteria for order combination.

- Processing a delivery due list

The system automatically combines the order items in one delivery if the customer allows this and if the order items fulfill the criteria for order combination.

Order Combination

See also:

Information about creating outbound deliveries can be found in

[Creating Outbound Deliveries \[Page 44\]](#)

[Documents Due for Delivery \[Page 62\]](#)

Additional Shipping Deadlines

To monitor delivery processing beyond goods issue or during internal processing, you can specify deadlines with planned start and planned end dates in a delivery or shipment. Confirming a deadline is possible using actual start and end dates.

Deadline - Detailed Data

In the deadline detail screen, you can store additional data, such as:

- reason for deviation
When differences between the actual deadline and the planned deadline exist, you can record the reason for deviation.
- points
You can store a location for each deadline.

Creating Outbound Deliveries

Creating Outbound Deliveries

Use

You can create a single outbound delivery for exactly one order, if you know the order number. Only the order items from this order that are due for shipment will be included in the delivery. You can make changes to the shipping data, if necessary.

Procedure

To create an individual outbound delivery, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Outbound Delivery* → *Create* → *Single Document* → *With Reference to Sales Order*.

The initial screen for creating outbound deliveries appears.

2. Enter the appropriate shipping point.
3. Specify the selection date.

You can only deliver schedule lines whose material availability date or transportation scheduling date is the same as or falls before the selection date.

The current date is proposed by the system as the selection date.

4. If you only want to deliver some of the order items, specify the appropriate item numbers in the *From item* and *To item* fields.
5. Select *Enter*.

The outbound delivery is put together according to your specifications. Then, the outbound delivery overview screen appears. Data is copied into the outbound delivery from the order to which it refers. The system enters the delivery quantity in the delivery according to availability. On the header screens and item screens, you can enter additional specifications (for example, how the goods are to be transported). You can also change the specifications from the order.

A note is entered in the error log if inconsistencies occur in a schedule line.

6. Save the delivery by choosing *Delivery* → *Save*.

When the system has saved the document, it informs you of the number of the outbound delivery.

After creating a delivery, you can branch directly to one of the subsequent functions such as creating a transfer order in the Warehouse Management System, printing or allocating the outbound delivery to a group. To do so, select *Subsequent functions* and one of the functions listed.

Error logs

If errors occur while a delivery is being created, the system notes them in a log. The system issues a message if any errors have occurred. For example, an entry is made in the log if an item is rejected because of lack of availability.

To find out the cause of the error, you can branch to the log from any of the overview screens in the delivery by choosing *Edit* → *Error log*. From there, you can make changes directly to the shipping document.

Direct Interface to Order Processing

You can branch directly from sales order processing to delivery creation:

1. On the sales screen, choose *Sales document* → *Deliver*.

The initial screen for creating deliveries appears.

2. You can now follow the procedure described above for creating outbound deliveries.

Creating Outbound Deliveries Without Preceding Document

Creating Outbound Deliveries Without Preceding Document

Use

You can create outbound deliveries without referring to an order. This function is designed for activities such as the [R/2-R/3 Link \[Page 278\]](#) or for when order processing is carried out on another system. When you create a delivery without reference to an order, you must enter the ship-to party and the materials manually. Data is copied into the document from the appropriate master records. The system does not check whether the data is complete. Therefore, you can create a delivery without specifying a delivering plant or a storage location, for example.

Procedure

To create an outbound delivery without referring to an order, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Outbound Delivery* → *Create* → *Single Document* → *Without Order Reference*.

The initial screen for creating outbound deliveries appears.

2. Enter the shipping point and choose *Delivery w/o ref.* for the delivery type. Then enter the sales organization, distribution channel and division in the *Sales area data* section of the screen.
3. Choose *Enter*.
The outbound delivery overview screen appears.
4. Enter the ship-to party and all outbound delivery items and their delivery quantities. Enter further header and item data, if necessary.
5. Save the outbound delivery by choosing *Outbound delivery* → *Save*.

As soon as the outbound delivery is saved, you receive a message that contains the outbound delivery number.

Changing Outbound Deliveries

As well as changing header and item data, you can also make structural changes to outbound deliveries. For example, you can delete individual items from the outbound delivery or add new items to it.

There are several methods that you can use to change outbound deliveries in the outbound process for outbound deliveries:

- By choosing *Outbound Delivery* → *Change* → *Single Document*, you can access the delivery overview screen directly using the document number.
- By choosing *Delivery* → *Lists and logs* → [Outbound delivery monitor \[Page 233\]](#), you can create a list of deliveries. You can then select the delivery that you want to change from this list.

Changing outbound deliveries directly

To change a delivery, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Outbound Delivery* → *Change* → *Single Document*.
The *Change Outbound Delivery* screen appears.
2. Enter the number of the delivery you want to change or select the delivery using a matchcode.
From the *Goto* menu on this screen, you can call up a specific view of the delivery and make changes there.
3. Select *Enter*.
The overview screen that you chose appears.
4. Make your changes in the outbound delivery.
5. Save the changes by choosing *Outbound delivery* → *Save*.
You receive a message informing you that the delivery has been saved.

Changing Outbound Deliveries Using a List

If you want to use a deliveries list to access a delivery that you want to change, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Outbound Delivery* → *Lists and Logs* → [Outbound delivery monitor \[Page 233\]](#).
The *Outbound Delivery Monitor* initial screen appears.
2. Choose *List outbound deliveries*.
3. Enter your selection criteria and also decide whether you want to display all deliveries or only the open ones.
If you want to display a list of open deliveries, make an entry other than c in the *Total gds mvt stat.* field in the *StatusOutb. Deliveries* section of the screen.
3. Choose *Execute*.
The system displays a list of outbound deliveries that meet your selection criteria.

Changing Outbound Deliveries

4. Select the delivery you wish to change from the list by selecting the appropriate line and choosing *Subsequent functions* → *Change outbound deliveries*.

The overview screen of the delivery you selected appears.

5. Enter your changes.
6. Save the changes by choosing *Outbound delivery* → *Save*.

You receive a message informing you that the delivery has been saved.

Displaying Outbound Deliveries

Use

You can use the display mode to look for specific information in an outbound delivery. For example, you may want to check the materials or quantities in the outbound delivery or to what extent the delivery has been processed. You **cannot** make changes to the outbound delivery in display mode.

Procedure

If you want to display an outbound delivery, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Outbound Delivery* → *Display*.

The *Display Outbound Delivery* screen appears.

2. Enter the number of the outbound delivery that you want to display or select it using a matchcode.

On this screen, you can use the menu options under *Goto* to call up a specific view of the outbound delivery.

3. Choose *Enter*.

The overview screen that you chose appears.

There are various functions that you can use on this screen to obtain further details. For example, by selecting an item and then choosing *Goto* → *Item* followed by the detail screen of your choice, you can obtain further information about that particular item.

Deleting Outbound Deliveries

Deleting Outbound Deliveries

You can delete the following:

- Entire outbound deliveries
- Individual outbound delivery items

Deleting entire deliveries

To delete an entire delivery, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Outbound Delivery* → *Change* → *Single Document*.
The *Change Outbound Delivery* screen appears.
2. Enter the number of the outbound delivery you want to delete or select it using a matchcode.
3. Choose *Enter*.
The outbound delivery screen appears.
4. Choose *Outbound delivery* → *Delete*.
The *Delete Delivery Processing* dialog box appears. The system asks you to confirm that you really want to delete the delivery.
5. Choose *Yes* and press *Enter*.
You receive a message informing you that the delivery has been deleted.

Deleting outbound delivery items

If you want to delete individual items from outbound deliveries, proceed as follows:

1. Select the item or items in the outbound delivery that you want to delete on one of the overview screens.
2. Choose *Delete item(s)*.
A dialog box appears in which you must confirm that you want to delete the items.
3. Choose *Yes*.
The items selected are deleted and no longer appear on the overview screen.
4. Save the delivery by choosing *Outbound delivery* → *Save*.

Adding to Outbound Deliveries

Use

When creating and changing outbound deliveries, you can add the following objects to them:

- Order-independent items
- Entire orders
- Individual order items from other orders

You can use this function, if, for example, the sales department was not sure whether a material was to be delivered with packaging material or in a returnable packaging container.



Prerequisites for adding to an outbound delivery are that goods issue has not yet been posted for the outbound delivery and that the business transaction has not yet been invoiced.

Procedure

Creating order-independent items

You can only enter an item that is not dependent on an order in an outbound delivery if the delivery permits the item category for that item. The item category is determined on the basis of the delivery type and item category group in the material master record. Thus, items for which an order has to be created first cannot be added to an outbound delivery. Your system configuration dictates which materials can be included in an outbound delivery. In the standard version of the SAP System, only materials with the item category VERP can be added to a delivery.

In order to add items such as packaging materials, which are not dependent on an order, to a delivery, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Outbound Delivery* → *Change* → *Single Document*.
The *Change Outbound Delivery* screen appears.
2. Enter the number of the outbound delivery to which you want to add an item.
3. Select *Enter*.
The overview screen appears.
4. Enter the material number and the delivery quantity on a blank item line.
5. Once you have added all additional items, save the outbound delivery by choosing *Outbound delivery* → *Save*.

Adding order items

If you want to add order items to an outbound delivery, proceed as follows:

1. Choose *Outbound delivery* → *Deliver order* on one of the overview screens of the delivery.
The *Deliver Sales Order* dialog box appears.
2. Enter the date, order, and item.

Adding to Outbound Deliveries

3. Select *Enter*.

The order items that are due for delivery are included in the delivery if their shipping criteria match the shipping criteria of the delivery.

4. Save the delivery by choosing *Delivery* → *Save*.

Subsequent Outbound Delivery Split

Use

Deliveries created in the system usually have a planning nature, at least initially. In other words, deliveries are the basis for warehouse or transportation planning activities. During delivery processing, it may become necessary to divide up a delivery because of workload planning for picking or the loading capacity limitations of a means of transport, for example.

Until now, this was accomplished by making manual changes to the delivery and then, in a separate step, combining the remaining item quantities to create a new delivery.

The subsequent outbound-delivery split function simplifies this process by accomplishing the same thing in one step. An existing delivery can be split anytime you discover that the delivery contains too many items or is too large to be processed in subsequent functions (picking, goods issue, transportation planning).

Prerequisites

In order to use the subsequent delivery function, you must first make the necessary settings in the Implementation Guide (IMG) under *Logistics Execution* → *Shipping* → *Deliveries* in the [Subsequent delivery split \[Ext.\]](#) activity. Pay particular attention to the conditions specified in the "Requirements" section of the documentation in the above link.

For example, a delivery split is only allowed if the delivery has a certain status. The delivery split cannot take place if the shipment is completed, or if any goods movements, billing documents or picking quantities yet to be confirmed (at least for the item's split quantity) exist.

Range of Functions

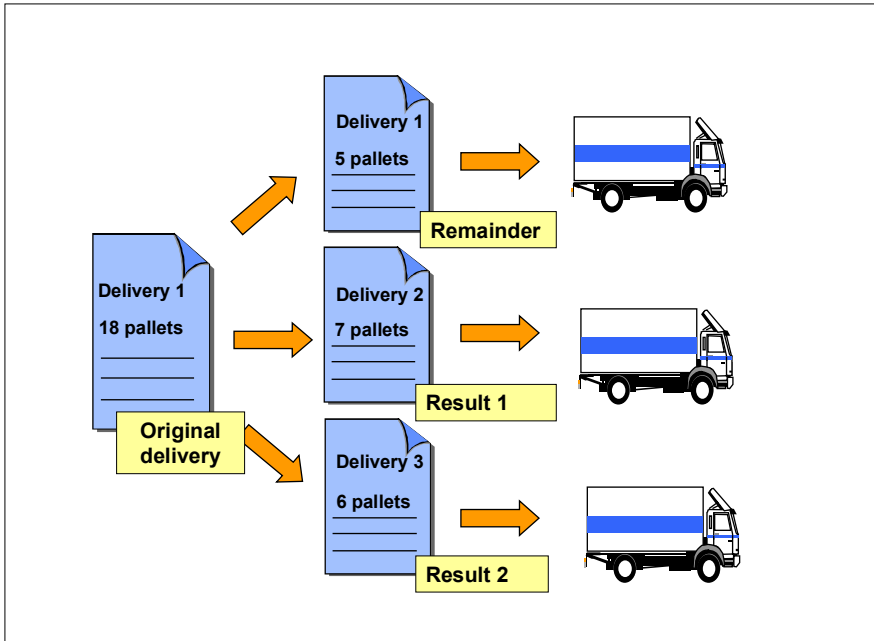
You can use the subsequent outbound-delivery split to divide existing deliveries into several other deliveries. This function is especially useful, for example, if a smaller means of transport than you expected is all that is available at loading time.

You can split handling units, delivery items that have not been packed yet, or even partial quantities of delivery items that have not been packed yet. There is always an option of running a simulation of the split beforehand.

During the subsequent outbound-delivery split, the system checks the status (no goods movements or billing documents, for example), confirms characteristics (delivery groups and correlation), copies data (texts), calculates attributes (volume and weight) and carries out determinations (outputs).

The split result controls which delivery items are grouped together in the same delivery. All remaining items make up the split remainder.

Subsequent Outbound Delivery Split



Carrying out a Subsequent Delivery Split

Use

Just before you begin loading a delivery, for example, you notice that the means of transport is smaller than the one that was scheduled to take on this delivery. So, you decide to split a planned delivery into several smaller deliveries. Your colleagues who are working at the loading ramp specify the delivery items (or handling units) that will actually be loaded onto the means of transport. The shipping documents, goods movement postings and billing documents should be created based on the quantity that was actually loaded. The rest of the delivery items will be included in another shipment at a later time.

Procedure

Selecting outbound deliveries that are to be split

1. From [shipping \[Ext.\]](#), choose *Outbound Delivery → Change → Subsequent Split (Outbound Delivery)*.
2. Enter a split profile in the *Split paramtrs* section.

The split profile combines all the settings that you made in the Implementation Guide (IMG) and applies them to the current split process. You can predefine a split profile with user parameter `LEDSP_PMODE`.
3. Use the other sections on this screen to further limit the delivery selection. For example, if you know which outbound delivery you want to select, you can enter its delivery number in the *Document data* section.
4. Choose `Execute` to start the delivery selection.

If there are no outbound deliveries that meet the selection criteria that you specified, a message to that effect will appear.

Carrying out the subsequent outbound-delivery split

1. Define the delivery items or quantities that are to be split in one of the following ways:
 - Double-click a delivery item to split the entire item quantity from the original delivery

If you want to split the entire quantity of a delivery item from the original delivery, choose that item by double-clicking it.

The system assigns this item a number, which appears in the list as a current split result number.
 - Enter a split result number to split the entire item quantity from the original delivery

Enter a four-digit number of your choice in the *Result* field.

You can use the result number to control the combination of outbound deliveries that are involved in the split. If you assign the same result number to the delivery items in one outbound delivery, these items will remain together and appear in the same split result after the split. If delivery items have different result numbers, the split distributes them among several outbound deliveries.

Carrying out a Subsequent Delivery Split

If you selected more than one outbound delivery, please note that result numbers are only ever valid for one outbound delivery. In other words, the same result numbers can be assigned in splits of different outbound deliveries. Entire outbound deliveries cannot be combined by assigning the same result number. Combination by assigning the same result number is only valid for items, as described above.

- Enter a quantity to split a partial quantity

If you only want to split a partial quantity of a delivery item, enter that quantity in the *Split quantity* field. The quantity that appears in the *Unpacked quantity* field is the maximum quantity that you can enter in the *Split quantity* field.

- Splitting items into different, new deliveries

If you assign different split result numbers for each delivery item in a delivery, you effectively split up these delivery items and distribute each one to its own separate, new outbound delivery. You can use the *Split → Highlight* function to highlight the corresponding rows in different colors.



You can also combine entries of partial quantities and result numbers. For example, if you enter both a split result number and a partial quantity in each row, the partial quantities of different delivery items will be split among different outbound deliveries. If you want to split one item into more than two partial quantities, you must simulate the split more than once.

2. Simulate the split

Choose *Split → Simulate* to get a preview of the effects of the delivery split. The system assigns temporary delivery numbers for the new outbound deliveries that are to be created.

If you are not satisfied with the results of the simulation, you can undo the simulation for separate items by marking those items and choosing *Split → Reset simulation*.

3. Choose *Split → Save split* to carry out a split based on the simulation.

A message informing you of the number of outbound deliveries that were saved and changed appears. The new outbound deliveries (with new delivery numbers) and changed outbound deliveries are still displayed.



The procedure described above is also valid for splitting outbound deliveries by handling unit, although you should be aware that only the handling units that are not packed in other handling units are displayed.

Grouping Outbound Deliveries

Use

You can combine outbound deliveries into groups. An outbound delivery can belong to several groups. You can create grouped outbound deliveries manually. When you process a delivery due list, the system combines all the outbound deliveries that it creates into one group.

Group number

All grouped deliveries are identified by a group number. You can use this number to access the group and to find the individual outbound deliveries that belong to that group.

Maintaining the group

To create, change, or display a group of deliveries manually, start at [shipping \[Ext.\]](#) in the initial menu.

You then select *Group of outb. deliveries* to branch to the screen where you maintain a group. Since groups can be formed in various areas of sales and distribution processing, different group types are defined. For general maintenance, the group type is entered manually on a separate screen, and for maintenance of a specific group you can choose the appropriate group type using the menu.

Procedure

Creating a group

To create a grouped delivery, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Outbound delivery* → *Group of outb. deliveries* → *Create*.
The *Create Group* screen appears.
2. Enter the group type.
3. Choose *Enter*.
The *Create Group: Documents by Group* screen appears.
4. Enter the document numbers of those deliveries that you wish to group together, and maintain the header data.
5. Save your group.

Change/display group

To change or display, select the following menu options from [shipping \[Ext.\]](#):

- *Delivery* → *Group of outb. deliveries* → *Change* if you wish to change a group of deliveries
- *Delivery* → *Group of outb. deliveries* → *Display* if you wish to change a group of deliveries

Grouping Outbound Deliveries

Collective Processing of Documents due for Delivery

Use

Operations (sales orders or purchase orders, for instance) are analyzed and delivered (transferred) for delivery creation according to their planned delivery-creation dates. The analysis gives you an overview of the work required. You can still make manual changes to the planned outbound delivery situation by using the selected delivery list (also called the shipping due date index or shipping due list). This may be used for the following operations:

- Manual selection of documents to be delivered from a larger delivery list
- Manual assignment of actual quantities to be delivered to delivery planning
- In the introductory phase of setting automated outbound delivery creation

Collective delivery of multiple documents in one step may be especially helpful in the following situations:

- If outbound delivery creation occurs regularly in the background. You can create rules for worklist creation in a user role for this delivery and work on the worklist regularly.
- If the length of time needed between creating the transaction and actual outbound delivery (picking, shipment completion) is longer than the time it takes for picking and scheduling.
- If multiple orders are to be combined into one delivery for a certain ship-to party.

Integration

Delivery of documents via collective processing is integrated into the following logistics chains:

- Sales order → Outbound delivery → Picking → Shipment → Billing
- Purchase order → Outbound delivery → Picking → Shipment → Billing/internal settlement

Prerequisites

Operations that are planned for outbound deliveries (deliveries with a delivery list) are taken into consideration. This is currently the case for sales orders and purchase orders (stock transport orders and purchase order returns items). Taking sales orders as an example, the following criteria must be met:

- Quantity must be confirmed by the availability check of the material in the order
- Corresponding conditions for writing the delivery list must also be met

Range of Functions

As you process the delivery list, you can select documents due for delivery according to certain [criteria \[Page 66\]](#) and either

- Deliver them immediately in the background, or
- Display them

You can preconfigure the display and processing formats by using user-specific and [role-specific delivery scenarios \[Page 65\]](#).

Collective Processing of Documents due for Delivery

You can manually process the operations you display. For instance, you can:

- Deliver the selected operations
- Select manually, using your own judgement
- Sort and filter
- Total the weights and volumes
- Display existing (open) deliveries for sales orders
- Go from the fast display to the document display and change the quantity to be delivered, if necessary
- Review the deliveries that have been created (view the delivery creation log)
- Go to document processing (sales order, purchase order, delivery)
- Delete deliveries

There are two different ways to process documents:

- Index processing
- Item processing

Index processing

In index processing, documents that have at least one of the items due for delivery matching the criteria are selected and these documents and all of their items (regardless of if they meet the item criteria) are then delivered. This is the most efficient way to deliver planned deliveries to the customer on time.

You can use this processing form by making a list category setting (*Index list*) in the user role.



If you would like a summary of all documents due for delivery, yet want to delivery only those items that meet the item criteria, use the *Selected items* (= X) setting in the function code profile for delivery creation.

Item processing

In item processing (list category = item list or schedule line list), only those items that meet the selection criteria are processed. Item processing is meant to be used for manual processing of the delivery list. You must check the consistency of all the items. Pay special attention to delivery groups, bills of material and material substitutions.

Functions during delivery:

- The system combines orders when several operations are delivered simultaneously.
- The system makes several attempts to deliver documents that are blocked by other users.
- Additionally, the same determinations and checks take place as those during [delivery \[Page 44\]](#) of a sales order in the foreground (storage location determination, route determination, availability check, for example).

Activities

Choose the [selection criteria \[Page 66\]](#) for the delivery scenario you would like to use.

Collective Processing of Documents due for Delivery

If you want the list to be displayed or created certain way, change your user role specifications.

Delivering Documents Due for Delivery

Delivering Documents Due for Delivery

Use

As an alternative to [Delivery of Individual Sales Orders \[Page 44\]](#) in the foreground, you can deliver several documents at the same time.

Prerequisites

You can tailor the user roles and the delivery scenarios in the standard system to your needs in order to better adapt processing of documents due for delivery to your business processes. In order to make these adjustments, carry out the following steps in Customizing under *Logistics Execution* → *Shipping* → *Worklists*:

- Configure list profiles
- Assignment of list profiles to delivery scenarios

Procedure

To process a delivery list in the foreground, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Outbound Delivery* → *Create* → *Collective Processing of Documents Due for Delivery* → *Delivery scenario of your choice*.

The [Selection criteria \[Page 66\]](#) entry screen appears, where you can select criteria according to which the delivery list is to be limited.

2. Specify the **shipping point** for which you want to create the delivery. The system will propose a default value if you use user parameter VST.
3. Set a range for the **delivery creation date**.

Normally, the default value for this field is defined for determination of the delivery creation date and can be specified in the user role.

The delivery creation date of a document due for delivery is a result of scheduling. It defines when a document must be created in order to keep the entire delivery on schedule, ensuring that the goods arrive at the customer's place of business on time. Time is also allotted for picking and transportation activities.

4. Fill in the selection criteria that will be most helpful for you. Depending on which user role the delivery scenario is carried out with, different [selection criteria \[Page 66\]](#) (taken from the complete list) may be active. You can define which criteria appear in the user role and can be overridden (to some extent) on the *User role* tab page.



The following selection criteria are important for performance in the following order:

- Shipping point
- Delivery creation date
- Delivery priority
- Route

Delivering Documents Due for Delivery

- Forwarding agent
 - Goods issue date
 - Ship-to party
 - Document number
5. Make sure that there is an entry for displaying the delivery list in the user role specifications in the function code profile.
 6. To start the search, choose *Program* → *Execute*.

The delivery list either appears or the system issues a message that no documents due for delivery meet the given selection criteria.
 7. Select the lines that you want to deliver and then choose *Create delivery in background*.

After you create deliveries, the *Log for delivery creation* function appears in the status bar of the delivery list. Use this function to check the deliveries that were created and the messages added to the log. The delivery items that were generated and their delivered items are displayed in item or schedule line processing mode. You can check the results of the delivery right in the delivery list.

Scheduling Background Processing

Use

You can schedule delivery creation for whenever you like using automatic background processing.

Procedure

To plan background processing for delivery creation, proceed as follows:

1. Either apply a user role for background processing or make a copy of a [user role \[Page 65\]](#) for shipment due processing for yourself. During the test phase, use a function code profile for shipment due list display within this user role.
2. [Test the shipment due processing \[Page 62\]](#) with this user role until you only need to execute the *Create delivery in background* function after the shipment due list is first displayed in order to ship part of the delivery list. (Vary the rules for line selection or for quantity definition during item processing, for instance.)
3. Change the function code profile in the user role from *Display* to *Deliver*.
4. From [shipping \[Ext.\]](#), choose *Outbound Delivery → Create → Collective Processing of Documents Due for Delivery → Delivery scenario of your choice*.
5. Choose the user role that you want to use for background scheduling in the *User role* field on the *User role* tab page.
6. Enter additional selection parameters on the selection screen.
7. Save the selection screen as a variant.
8. From [shipping \[Ext.\]](#), choose *Outbound delivery → Create → Collective Processing of Documents Due for Delivery → Plan Background Processing* and execute the delivery scenario for background planning.
9. Choose the selection variant you want and then select *Schedule job*.
10. Follow the basis dialog for scheduling a background job.

Establishing User Roles

Use

You can set up a user role for each user that can be used for user-specific scenarios. Each user can then process documents due for delivery using his own settings by choosing *User-specific delivery scenario* under *Collective processing of documents due for shipping*.

Procedure

Establishing new user roles

Execute the **Configure list profile** activity under *Logistics Execution* → *Shipping* → *Worklists* in the Implementation Guide.

Establishing roles for the user-specific delivery scenario

1. Choose *System* → *User profile* → *Own data*.
2. On the *Parameters* tab page, enter the user role (list profile) that was configured for this user for the LE_VL10_PROFIL parameter.

Result

The next time this user calls up the *User-specific delivery scenario* (from [shipping \[Ext.\]](#), choose *Outbound delivery* → *Create* → *Collective Processing of Documents Due for Delivery*), the corresponding preconfigured selection screen will appear.

Selection Criteria

Selection Criteria

The following selection criteria are available in collective processing to limit searches for documents due for delivery:

General data

General selection criteria, valid for all documents, include:

- Shipping point
- Delivery creation date
- Delivery priority
- Shipping conditions
- Route
- Ship-to party
- Unloading point
- Delivery type
- Sales organization
- Distribution channel
- Division
- Goods issue date

You can also use goods issue time and route schedule as selection criteria, provided these fall within the scope of your user role.

Sales orders

The following criteria are also available for sales orders:

- Sales document number
- Sold-to party
- Forwarding agent
- Sales office
- Sales group
- Department
- Delivery block (predefined with delivery blocks that block a sales order for processing with a delivery list)
- Complete delivery

Partners

You can search for sales orders according to partner criteria. You can specify another partner role for general partner roles such as sold-to party, ship-to party and forwarding agent. Then, you can enter any number of partner number limitations for this secondary role. This partner role

must belong to the set of Sales and Distribution partner types (creditor, debtor, employee or contact person).

Purchase orders

The following criteria are also available for purchase orders:

- Purchasing document number
- Supplying plant

User role specifications that influence selection criteria availability:

- Data selection
 - Sales orders

If this indicator is set, sales orders that are due for delivery are selected. The *Sales orders* and *Partners* tab pages also appear, on which you can specify selection criteria that only affect the selection of sales orders due for delivery.
 - Purchase orders

If this indicator is set, purchase orders that are due for delivery are selected. The *Purchase orders* tab page also appears, on which you can specify selection criteria that only affect the selection of purchase orders due for delivery.
 - Deliveries

If this indicator is set, existing deliveries for sales orders are selected. If you also set the *Only open deliveries* indicator, only those deliveries for which goods issue has not yet been posted are selected.
- Selection according to schedule line criteria

You can select according to scheduling by entering the corresponding value (F4 help) for the *SelectSched* indicator. However, you can only effectively check in item and schedule line processing (list type = 2) to make sure the outcome you wanted was achieved.

You can select according to the following criteria:

 - Goods issue time
 - Route schedule
 - Delivery creation date in selection range (no earlier scheduling)

Deliveries from Projects

Deliveries from Projects

Use

It is possible to generate deliveries from the project system, without having to use the sales functions. With this function, you can select the project components to be delivered and initiate the creation of deliveries.

Features

For more information on how to create deliveries from projects, refer to [Delivery from Projects \[Ext.\]](#).

Change-Documents in the Delivery

Use

When changed deliveries are saved to the database, the system automatically creates change-documents. In this document, the system records changes to header or item data, partner roles, status, and to management data.

Integration

You can call up this function from the delivery in change or display mode, similar to the display of the document flow. You can also call up the function on the initial screen for shipping.

Features

You can display a list of the change-documents in an overview screen or in a detailed view organized by items. You can change the scope of display and the sort criteria on the list screen at any time. Item number, name of processor, and date, however, can no longer be changed on the list screen. To change this data, you must return to the initial screen.

You can sort the overview list by time of change or by items. On the detailed view, the changes are already sorted by items and - within the items - by time of change. This sort sequence can no longer be changed. You can also call up a statistics overview in which you can choose particular objects or change types for display. For example, you can display only the item deletions or only the additions to the document header.

You can also display change-documents pertaining to the delivery that have already been deleted.

Incompleteness in the Delivery

Incompleteness in the Delivery

Use

When you are creating and processing deliveries, it is often necessary to check the completeness of the delivery. A delivery is considered to be incomplete if fields relevant for the delivery have not been filled, or if certain settings defined in Customizing have not been taken into account. The delivery incompleteness log ensures that this completion check is executed **automatically**.

In the delivery, you can check the following levels for completeness:

- Header data of the delivery
- Item data of the delivery
- Partner data
- Texts

You can either display a list of all incomplete deliveries or go directly from delivery processing to the incompleteness log. See also [Processing Incompletion Log \[Page 71\]](#)

Integration

The incompleteness log controls whether the next subsequent functions are allowed in the case of an incomplete delivery:

Inbound delivery	Outbound delivery
Putaway	Picking
Packing	Packing
Goods receipt	Goods issue
	Billing document

Also, it is possible to set the system so that incomplete deliveries cannot be saved to the database. If, in such a case, the delivery is created in a collective processing run, the reasons for the incompleteness are printed in the collective processing log and the delivery is not created by the system.



For example, you can detect the following situations through the incompleteness log:

- Batches for an item were not assigned completely
- Too many items were picked or put away
- Required description texts are missing

Editing the Incompletion Log

1. For an outbound delivery, start at [shipping \[Ext.\]](#) and choose *Outbound Delivery → Lists and Logs → Incomplete Outbound Deliveries*.
For an inbound delivery, start at [inbound delivery \[Ext.\]](#) and choose *Inbound Delivery → Lists → Incomplete Inbound Deliveries*.

The system displays the selection screen for incomplete sales documents. The respective selection criteria for the overview of all incomplete deliveries already appear as defaults. By specifying further selection criteria, you can limit the delivery display even more.

2. Choose *Program → Execute*.
3. Position your cursor on the delivery document you want to process and choose *Edit → Change document*.

The *Change: Overview* screen appears.

4. Choose *Edit → Incompletion*.

A screen with the incompletion list for the selected delivery appears. This screen lists the data that the system still requires to complete the document.

5. Select the lines that you want to edit and choose *Edit data*.

Now you can process all the selected items, one after the other, from the list of incomplete data. The program automatically goes to the field that is still incomplete.

6. Enter the missing data and choose *Next incompl. data field*.

This takes you to one of the following screens:

- If you selected additional items from the incompletion log, the next screen that has data missing appears.
 - If you did not select any other incomplete items in the incompletion log, the system takes you to the original screen from which you accessed the incompletion data. You have finished processing incomplete data.
7. As soon as you have entered all missing data, choose *Save*.



If you have changed the settings in Customizing for the incompletion log, you can have the system redetermine the incompletion data by choosing *Edit → Redetermine incompletion*.

Picking

Picking

Implementation Options

The picking process involves taking goods from a storage location and staging the right quantity in a picking area where the goods will be prepared for shipping.

Range of Functions

Regardless of how your company executes the picking process, you can make settings in the system so that picking is carried out

- Automatically during [Outbound Delivery Creation \[Page 20\]](#)
- Routinely at certain times
- Manually according to overviews of the day's workload that an employee has requested

A [Picking Status \[Page 103\]](#) is recorded in each delivery item for the purpose of scheduling and monitoring the picking process. This status indicates where the item is in the picking procedure (picking has started for item A, for instance).

In the system standard settings, it is a prerequisite for goods issue to be posted before the item relevant for picking can be picked completely. Therefore, delivery quantity and picking quantity (picked quantity) in the outbound delivery must be equal.

The Warehouse Management System (WMS) module is fully integrated in Logistics Execution (LE). For example, you can create a WM transfer order directly from the outbound delivery. The current status of the warehouse management process can also be monitored from the delivery, for instance.

You can transfer all data relevant for picking and verification of picking data to a subsystem by using the [Delivery Interface \[Page 218\]](#).

By using message control, data can be transferred to a subsystem that is being used for picking (**see also:** [Delivery Interface \[Page 218\]](#)).

Depending on the picking procedure being used, you can either determine delivery-relevant data before picking or wait until after picking is completed to record it. Delivery-relevant data may be made up of the following:

- Which batches a material is picked from
- Which serial numbers are picked
- Which valuation types the stock is taken from

Picking with Warehouse Management

Use

Picking with Warehouse Management allows you to use the transfer order as the picking order.

This is possible in the following scenarios:

- [Lean-WM \[Page 76\]](#)
 - Implementation of the basic functions of the Warehouse Management module (WM) in simply-structured warehouses without stock management at storage bin level
- Implementation of all functions in the Warehouse Management module (WM)

The use of the WM transfer order as a picking order offers you the following advantages:

1. Determining of target data for transfer orders
2. Splitting transfer orders according to target data
3. Printing transfer orders or transmitting them in IDoc format
4. Determining actual data for picking with option of executing incentive wage calculations using the Human Resources (HR) module
5. Confirming transfer orders

In addition, picking using Warehouse Management allows the use of [wave picks \[Page 86\]](#) as well as the use of dock doors and material staging areas in deliveries and transfer orders.



Future developments will only relate to picking with implementation of Warehouse Management. Picking without Warehouse Management will be maintained, but no longer developed.

Display Outbound Deliveries for Picking

Display Outbound Deliveries for Picking

Use

In the picking overview, the system only includes outbound deliveries that not been picked or have only been partially picked. You can limit the selection by picking date, for example.

Procedure

To select outbound deliveries due for picking, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Picking* → *Create transfer order* → *Via Outb. Delivery Monitor*.

The *Outbound Deliveries for Picking* screen appears.

2. In the *Organization data* section, enter the shipping point, and in the *Output proposal* section, enter the relevant shipping documents. You can also specify intervals for certain data.

If, in the same overview, you want to display deliveries due for fixed bin picking as well as check deliveries to be passed on to the WM System for picking in the same overview, select the *Both picking types* indicator in the *Picking data* section. Otherwise, you must enter an indicator for the picking type according to which selections are to be made.

3. Choose *Program* → *Execute*.

The *Day's Workload for Picking* screen appears. In this list, the system displays the deliveries for picking, sorted by shipping point and picking date.



For more information on [working with the delivery monitor \[Page 233\]](#), see [List Functions \[Page 241\]](#), and [Executing Subsequent Processing \[Page 245\]](#).

Creating transfer orders

In the *Day's Workload for Picking* list, you can create transfer orders for the selected deliveries with WM picking. These transfer orders are used in Warehouse Management to process the various goods movements (putaway, stock transfer, picking). For more information on transfer orders, see [Warehouse Management \[Ext.\]](#).

To create transfer orders from this list, proceed as follows:

1. On the *Day's Workload for Picking* screen, select the deliveries for which you want to create transfer orders.
2. Choose either *TO in backgr.* or *TO in foregr.*

If you choose *Transfer order backgrnd*, the system creates transfer orders in the background for the deliveries selected.

If you choose *Transfer order foregrnd*, the system creates transfer orders for the selected deliveries in dialog mode.

In the overview screen, a message appears to inform you of how many transfer orders were created successfully. If the system was not able to create transfer orders, you receive a corresponding message with the reason.

Display Outbound Deliveries for Picking

Using a Transfer Order as a Pick Order in Lean WM

Using a Transfer Order as a Pick Order in Lean WM

Purpose

In [Lean-WM \[Ext.\]](#), you create transfer orders (TO) for deliveries to pick stock from fixed bins in the warehouse that are not managed by the WM system.

Transfer orders created with Lean WM instead of normal WM have the following characteristics:

- Confirmation of transfer orders is not required.
- Stock differences are reported to IM for processing. Handling differences is not possible in WM.
- You can transmit Lean WM transfer order data to external systems.
- Recording performance data, such as assignment to a picker, return confirmation of actual times or determining planned times is possible for this type of TO.
- If a transfer order has been created, subsequent changes to the delivery can be made in the *Pick Quantity* field. This is not possible in standard WM.

Prerequisites

You have set up Lean WM in your SAP System. For more information, refer to [Setting up Lean WM \[Ext.\]](#). See *Logistics Execution → Shipping → Picking → Lean WM* in Customizing for a description of the different activities.

Process Flow

Generally, the processes used in Lean WM are similar to those in normal WM. There are deliveries and transfer orders are created for the deliveries. However, with Lean WM, it is much easier to create the transfer order.

1. Create a delivery as the prerequisite for the transfer order.
2. Create a transfer order for the delivery.
3. Post the goods issue.

Specifying Picking Location

Implementation Options

Picking is always carried out from a particular storage location. This means that if a delivery item is relevant for picking, a storage location must be entered in the delivery.

- The goods are issued from the stock at the picking location that is specified in the delivery.
- If picking is carried out using the WM System, the storage location in the delivery determines which storage location in the Warehouse Management System is responsible for picking.

The item category of the delivery item determines whether the item is relevant for picking and whether a storage location must be specified. For example, text items are not relevant for picking and you do not need to specify a storage location. Control over item categories can be set in Customizing.

Process Flow

Since the information necessary for specifying a picking location is not available when the order is entered, the person responsible for processing sales orders cannot usually make a decision about the picking location. This decision is left until the delivery is created at the shipping point.

There are two ways in which the picking location can be specified:

1. It can be determined automatically when the delivery is created and then entered into the delivery item.

For further information on this, refer to [Determining the Picking Storage Location Automatically \[Page 78\]](#)

2. You can specify it manually in the delivery item.

For further information on this, refer to [Specifying the Picking Storage Location Manually \[Page 79\]](#).

Determining the Picking Location Automatically

Determining the Picking Location Automatically

Automatic specification of the picking location depends on the following criteria:

- Shipping point
- Plant
- Storage conditions

The picking location is inserted both in the delivery item and on the picking overview screen:

- In the delivery item, you will find the storage location on the *Picking* item details screen. The storage location appears in the *Warehouse* section of the screen. To call up this screen, select the item you want to display on the delivery overview screen. Then choose *Goto* → *Item* → *Picking*.
- On the picking overview screen, you will find the storage location for the items in the *SLoc* column. To call up this screen, choose the *Picking* tab page on the overview screen.

You can change the storage location that the system determines as long as picking has not yet been started.

Storage conditions

The storage conditions that apply to storage of a material are stored in the material master record. You will find the specification on the tab page *Plant data / Warehouse 1* for a material in the field *Storage condition*.

The storage condition is displayed in the delivery on the item details screen for picking. To call up this screen, select the item you want to display on the delivery overview screen. Then choose *Goto* → *Item* → *Picking*. The storage condition is in the *Stor. cond.* field in the *Material* section.

Prerequisites for determining the storage location automatically

The picking location determined by the system depends on the delivery type and item category of the delivery item:

- Each delivery type has its own rules regarding the automatic determination of a storage location.
- The system only determines a storage location for a delivery item if this is defined for the item category assigned to this item.

Controls for delivery types and item categories can be set in Customizing.

Specifying the Picking Location Manually

In the delivery, you can either specify the storage location for each individual item or you can enter it on an overview screen for several items:

- You specify the storage location for an item on the *Picking* item details screen. To call up this screen, select the item you want to display on the delivery overview screen. Then choose *Goto → Item → Picking*.

You can enter the storage location in the *Warehouse* section.

- To specify the storage location for several items at once, enter it on the picking overview screen. To call up this screen, choose the *Picking* tab on the overview screen during delivery processing.

Specify the storage location for **each** item in the *SLoc* column.

You can change the location that is specified in this field as long as picking has not yet been started.

Individual Picking List

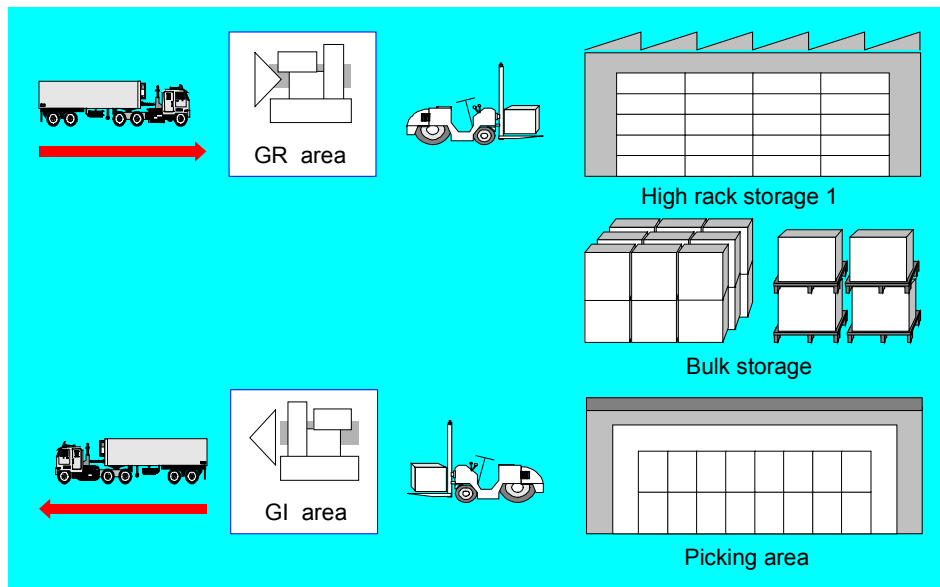
Individual Picking List

The Warehouse Management System supports the management of complex warehouse structures with storage areas (high rack or block storage areas, for instance) within one or more plants. It can also carry out all stock movements such as goods receipts, goods issues, and stock transfers. It uses putaway and picking strategies to manage these structures.

For further information about the WM System, refer to [Warehouse Management \[Ext.\]](#). You will only find information on the interfaces to shipping processing in this section.

Example of a Complex Warehouse Structure

The following figure illustrates the type of complex warehouse structure that can be reproduced in the Warehouse Management System (WMS). It is made up of several warehouses (high rack, block and picking locations) and various warehouse areas (goods receipt and goods issue areas).



Warehouse Number, Storage Type and Storage Bin

The most important elements in the Warehouse Management System are the warehouse number, storage type and storage bin:

- Warehouse number
 - The warehouse number identifies a complex warehouse management system that is made up of various organizational and technical units (storage types).
- Storage type
 - The storage type is a subdivision of a complex physical warehouse. It is defined by its physical, technical, or organizational features. Storage types include but are not limited to goods receipt area, high-rack area and picking location.
- Storage bin

Individual Picking List

The storage bin is the smallest physical unit in a warehouse. It defines the exact location in which a material is stored in the warehouse.

Random Picking Using Transfer Orders

Random Picking Using Transfer Orders

Implementation Options

You use this picking technique when the picking is carried out from a randomly organized warehouse using transfer orders.

This technique has the following characteristics:

- The document used to remove the material from the warehouse is a transfer order (TO), which is created in the WMS.
- When material is transferred from the warehouse, it can be transferred from reserve storage as well as a picking area.
- The source storage bins for the material are determined by the stock removal strategy defined for the corresponding storage type.

You can use this picking technique if you require verification of the picked materials. Unlike the situation with fixed bin picking, the printed transfer order serves as a pick list for picking the materials required. The confirmation of the physical goods removal depends upon the confirmation of the transfer order. If you confirm the transfer order, the picked quantity is deducted from the storage bin and posted to the stock quantity in the interim storage type.

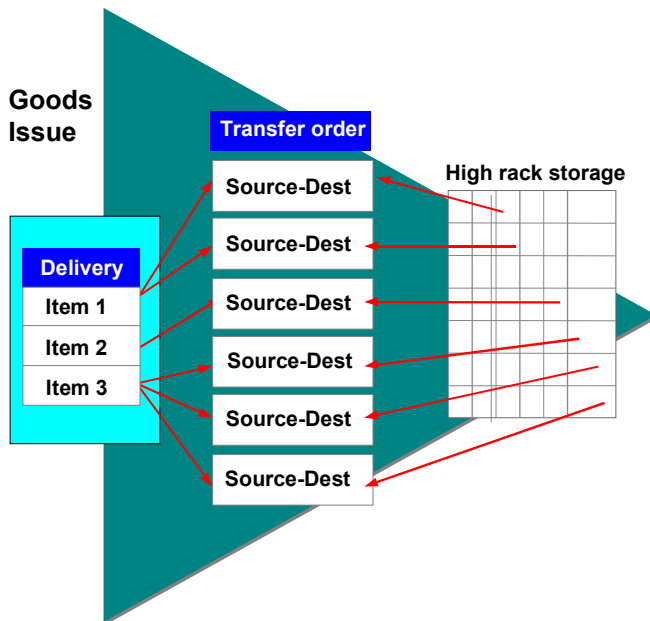
The stock pick can take place from various storage types (for example, from the main storage area for replenishment stock **and** from the fixed-bin storage area). The WMS selects the storage types and individual storage bins from which to pick the stock in accordance with the pick strategies defined for these.

Procedure

The delivery is a request to WM to make goods available. You create a TO based on the delivery. The transfer order is then used as a pick list.

The figure below shows the relationship between the delivery document, the WM transfer order, and the storage bins in the high rack storage area from which the material is removed. During TO generation, the system creates a transfer order with different material numbers in which two TO items are needed for the material from item 1 of the delivery, one TO item is needed for the material from the second delivery item, and three TO items are needed for the material from the third delivery item.

Random Picking Using Transfer Orders



When can you use this picking technique?

You use this picking technique when you need a return verification of the materials picked. In contrast to fixed bin picking, the printed transfer order serves as the picking list for the removal of material from storage. The verification of the physical stock removal is based on the confirmation of the transfer order. When you confirm the transfer order, the system subtracts the quantity picked from the storage bin and posts it to the stock quantity in the interim storage area. The stock removal can take place from several different storage types in the warehouse (for example, reserve storage **and** fixed bin storage). WM selects the storage types and individual storage bins from which the stock is to be picked based on the stock removal strategies you define for this purpose.



Posting a Goods Issue for a Delivery

See also:

Posting Changes in WM

Pick-and-Pack During Picking

Pick-and-Pack During Picking

Use

You can generate pick HUs into which materials are packed during picking. The pick HU is assigned to a transfer order in WM. All the pick HUs are then copied into the delivery and further packing is normally no longer necessary in the delivery.

If you are using [Handling Unit Management \[Ext.\]](#), you will normally use [handling units \[Ext.\]](#) during picking from storage locations managed for handling units. Here, the complete HU can be picked or the stock can be repacked onto a pick HU. If you still wish to use pick HUs for picking, even though you do not have storage locations with HU management, you can set this function in the Implementation Guide (IMG).

As of Release 4.0, you have the possibility to determine a packing proposal in the transfer order using a customer exit, and you can then confirm the handling units that were created to the delivery. If you wish to continue to use this functionality, you need to make the appropriate changes in the Implementation Guide (IMG).

Prerequisites

If you wish to determine a packing proposal in the transfer order using a customer exit, you must configure the following setting in Customizing for *Handling Unit Management*:

- Create an entry for the warehouse number being used, enter *** for the source destination type and the destination storage type, and set the indicator **User-Exit**. You do not need to make any specifications for the movement type, the packaging material, and automatic creation of a pick HU. Use the workstep [Control for Automatic Pick-HU Creation \[Ext.\]](#).

If you wish to use the pick-and-pack functions for a storage location without HU management, you must configure the following setting in Customizing for *Warehouse Management*.

- Set the indicator **pick/pack** for the respective warehouse number in which you wish to work with pick HUs. Use the workstep *Interfaces* → *Shipping* → [Define Shipping Control \[Ext.\]](#) → *Shipping Control per Warehouse Number*.

If you are working with Handling Unit Management, you do not need to set the indicator for pick/pack. If you wish to automatically create pick HUs during TO creation, you must configure the following setting in Customizing for *Handling Unit Management*:

Create an entry for any combination of warehouse number, source storage type, destination storage type, and movement type, enter a packaging material, and set the indicator for **Automatic Creation of a Pick HU**. Use the workstep [Control for Automatic Pick-HU Creation \[Ext.\]](#).

Features

In the Implementation Guide (IMG), you can set for the creation of pick HUs which [packaging material \[Ext.\]](#) the system should propose for picking. You can set the following packing proposals for any combination of warehouse number, source storage type, destination storage type, and movement type:

- Automatic creation of pick HUs for creation of a transfer order
 - The system automatically creates a pick HU with the specified packaging material during creation of a transfer order and assigns the pick HU to this transfer order.

Pick-and-Pack During Picking

- Automatic determination of packaging materials during creation of a transfer order

The system does not create any pick HUs, but uses the specified packaging material as information and copies this, for example to an IDoc, for the creation of a transfer order. If this IDoc is sent to another system, the receiving system can create a pick HU using this proposal. This ensures for the verification that the picked materials can also be packed into this handling unit.

- Manual creation of pick HUs and assignment to a transfer order

The system does not create any pick HUs, nor does it determine a packaging material. You can create the pick HUs manually and assign these then to a transfer order.



You wish to define that in a certain storage type (for example, fixed bin warehouse) Europallets will always be used for picking. In Customizing, you then set automatic creation of pick HUs and the use of the packaging material Europallet for this storage type. In another storage type, for example, the packaging changes frequently, and you decide there that the pick HU is to be created manually.

TO Item Split for Pick HUs

If you determine during picking of the TO items that the pick HU is too small for the entire item quantity, you can split the TO item and execute picking for the newly created pick HU.

Wave Picks

Wave Picks

Use

Using wave picks, you can perform detailed planning for picking by creating work packages for picking. Wave picks consist of a group deliveries that are to be processed at roughly the same time. You can create wave picks either manually or automatically according to time criteria. Capacity restrictions can be taken into consideration when waves are formed according to time criteria. If the deliveries that are to be picked are already assigned to shipments, you can refer to these shipments when the wave picks are formed.

Integration

Wave picks are groups of deliveries that are identified by a number.

You can execute the following [Subsequent Functions for Wave Picks \[Page 100\]](#) with reference to the wave pick for all deliveries in that wave:

- Planning replenishment for fixed storage bins
- Creating and printing transfer orders
- Confirming transfer orders
- 2-step picking
- Creating and monitoring shipments
- Printing delivery notes / freight lists
- Posting goods issue
- Creating and printing billing documents

You can track the processing status of the wave picks with the wave pick monitor.

Wave picks do not influence the workload that is displayed in the [Rough Workload Forecast \[Page 276\]](#).

Prerequisites

[Lean WM \[Page 76\]](#) is the minimum implementation requirement in order to work with wave picks and most of the following functions. Of course, you can also work with wave picks if you have implemented the full WM system.

You create the wave picks using exact time parameters. For this reason, exact scheduling (down to the minute) is necessary. However, you can work with wave picks without using such precise specifications if you have implemented the [route schedule \[Page 268\]](#) and are using the goods issue time as the comparison time.

For tips on Customizing, refer to the IMG section on wave picks.

See also

[Wave Picks with Capacity Restrictions \[Page 88\]](#)

[Subsequent Functions for Wave Picks \[Page 100\]](#)

Activities

To create wave picks according to time criteria, you must first divide up the workday into smaller units using time slots. You can group these time slots together using the timeslot group.

The system carries out the following steps as it creates wave picks according to delivery time: Before the individual deliveries are assigned to wave picks, the deliveries due are sorted by:

1. Date
2. Time
3. Delivery priority (field in the customer master)

Afterwards, the system assigns each delivery whose comparison time is in a time slot of a timeslot group to a wave pick that belongs to that time slot. In the case of wave picks with capacity restriction, this is done until the capacity limit is reached.



As a comparison time, the system selects the goods issue time set in Customizing for the respective warehouse/distribution center.

If the following deliveries exist:

- Delivery A (goods issue time 8:00)
- Delivery B (goods issue time 8:00)
- Delivery C (goods issue time 9:00)
- Delivery D (goods issue time 9:30)

The selected timeslot group covers 2 time slots:

- Time slot 1 (8:00 through 8:59), wave pick profile 1
- Time slot 2 (9:00 through 9:59), wave pick profile 2

The system creates the following wave picks:

- Wave pick 1 (8:00 through 8:59): deliveries A, B
- Wave pick 2 (9:00 through 9:59): deliveries C, D

Wave Picks with Capacity Restrictions

Wave Picks with Capacity Restrictions

Use

Capacity restrictions can only be taken into consideration if wave picks are set up according to time criteria (*Create wave pick according to delivery time* and *Create wave picks according to shipment and compare times*). When an individual capacity limit is reached, the capacity limit of a wave pick is reached. If you run this function in the background, the system only assigns as many deliveries to a wave as the capacity limit allows. In the foreground, deliveries that exceed one of these limits are highlighted in red.

Range of Functions

You can define the following capacity restrictions in Customizing:

- Maximum number of delivery items relevant for picking in a wave pick
- Maximum number of picking transactions in a wave pick



Article A:	150	Packing units
Article B:	1	Pallet
Article C:	5	Pieces
Article D:	250	Packing units
Number of picking transactions:	406	

In order to use these capacity restrictions, execute the following activities in the Implementation Guide (IMG):

- [Maintain Unit-of-Measure Load Category \[Ext.\]](#)
- [Assign Units of Measure to Unit-of-Measure Load Category \[Ext.\]](#)
- Maximum number of packaging materials in a wave pick



Euro pallet:	10
Large container on wheels:	250
Small container on wheels:	15
Amount of packaging material:	275

In order to use these capacity restrictions, execute the following activities in the Implementation Guide (IMG):

- [Define packaging material types \[Ext.\]](#)
- [Additional Data for Packaging Material and Time Slot \[Ext.\]](#)
- Maximum weight of the wave pick's delivery items relevant for picking
- Maximum volume of the wave pick's delivery items relevant for picking

Wave Picks with Capacity Restrictions

- Maximum processing time for a wave pick in hours (planned workload)

In order to use these capacity restrictions, execute the IMG activities for [workload calculation \[Ext.\]](#).

Wave Pick Monitor

Use

With the wave pick monitor, you can monitor and control the processing of wave picks.

- Using the display of the **processing status** of the wave picks, you can monitor the wave picks' processing activities.
- You can trigger **subsequent functions for wave picks**, which allow you to monitor and control the wave picks' processing activities from your monitor.

Prerequisites

To be able to work with the wave pick monitor, you need -- as a minimum -- the implementation of Lean WM. You can also use the wave pick monitor if you are implementing the entire WM system function.

To use the wave pick monitor, no settings in Customizing are required.

Range of Functions

Representation of the Processing Status

The system determines a wave pick's processing status on the basis of a number of status fields in the delivery header of the deliveries in the wave pick. These status fields refer to documents that are relevant for the wave pick (transfer order, packing, transportation planning, goods issue, and billing). There is no updating of status fields directly for the wave pick in the database.

The processing status is displayed in a two-level list: the upper level shows the wave pick, and the lower level shows the respective deliveries in the wave pick. You can display the second level by expanding the list.

You can display the following status fields:

- Total status of WM activities
- Total packing status
- Transportation planning status
- Goods movement status
- Billing status

The status fields for the delivery are read from the database and aggregated (accumulated) at the level of the wave pick for all the deliveries belonging to the wave in question. The following rules apply, also in the order given:

1. An empty status value for the delivery does not affect the aggregated value.
2. If all the deliveries have the same status value, this status value is adopted as the accumulated value.
3. If at least one delivery has the status value *B* or *C*, the aggregated value is *B*.
4. If at least one delivery has the status value *A*, the aggregated value is *A*.

At both levels, the status fields and their specific description texts are displayed. In addition, the status fields of the wave picks are also displayed as icons.

Further aggregated information is displayed for the wave pick, such as the number of deliveries altogether, and -- for each of the five first status fields -- the absolute and relative number of deliveries for which the respective status is at *not processed* or *partially processed*.

In addition, the system displays the processor, document date, beginning time, and end time for the wave pick. The ship-to party for the delivery is displayed.

You can limit the list to the fields that are important for your purposes and store this selection in a display variant.

Subsequent Functions for Wave Picks

You can call up the [Subsequent Functions for Wave Picks \[Page 100\]](#) directly from the monitor by choosing *Subsequent processing*.

- Planning replenishment for fixed storage bins
- Creating and printing transfer orders
- Confirming transfer orders
- 2-step picking
- Creation of shipments
- Printing delivery notes / freight lists
- Posting goods issue
- Creating and printing billing documents

The numbers of the selected wave picks are used in these subsequent functions as selection criteria.

Branching to Overviews of Transfer Orders

The function *Analysis of Groups* creates a list with which you can analyze the processing level of several wave picks in a warehouse.

The list output of the function *Picking progress* enables you to generate an overview of the picking status for individual transfer orders of a particular wave pick. You can create a separate selection variant for this.

Functions for Delivery

You can display individual deliveries of a wave pick on the screen.

Creating Wave Picks - Delivery Time

Procedure

To create wave picks automatically according to time criteria, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Picking* → *Wave Picks* → *Create* → *According to delivery time*.
The *Create/Change Wave Picks* screen appears.
2. Enter the number of the warehouse for which you want to create wave picks.
3. Make the following entries in the *Time frame* section of the screen:
 - *Reference date*
All deliveries whose compare times correspond to this date are incorporated into wave creation for that day.
 - *Timeslot group*
You can combine various time slots by entering a timeslot group. You get a maximum of one wave pick per time slot.
 - *Time slot*
In addition to the timeslot group, specify a time slot if you only want to construct a wave pick for that particular time slot of the timeslot group.
 - *Surplus deliveries as of*
Deliveries that have not yet been assigned to a wave pick can be included when the waves are created. Enter the date as of which these deliveries should be incorporated.
4. Choose a processing type:
 - *Display waves before saving* (default)
Choose this processing type if you want the waves to appear onscreen, if you want to edit them before saving or if you only want to run a simulation (in the foreground).
 - *Save waves directly*
Choose this processing type if you want to save the waves immediately without displaying them first (background processing).
The system saves the waves without displaying them onscreen.
5. In the *Filter* section of the screen, there are various selection criteria that you can use to choose specific deliveries that you want to combine into wave picks.
6. Choose *Program* → *Execute*.
7. Depending on the processing type you chose, the result is as follows:
 - Display waves before saving

Creating Wave Picks - Delivery Time

The system displays one or more wave proposals onscreen. You can process these waves further before you save them. For more information, refer to point 8. If you just wanted to run a simulation, choose *Cancel*.



Information structure S159 is the basis for creation of wave picks. Updating this information structure is controlled in Customizing for wave picks (see *Control update of workload data* in the Implementation Guide). If you have problems creating wave picks, you should check the updating by choosing *Wave Picks → Logs → Update*.

- Save waves directly

The system displays the numbers of the wave picks that have been saved in the database.

8. Using the [ABAP list viewer \[Ext.\]](#), the system displays one or more wave proposals onscreen. The following indicators appear as standard:

- Green traffic light and check mark as save indicator

Waves without capacity restrictions or waves with capacity restrictions that have not been exceeded.

If you expand the wave, the corresponding deliveries will appear.

All deliveries in this wave (except for surplus deliveries) have a green traffic light. The green check mark means they are flagged to be saved.

- Red traffic light with no check mark as save indicator

Waves with capacity restrictions that have been exceeded.

If you expand the wave, the corresponding deliveries will appear.

- Green traffic light and check mark as save indicator

Deliveries that are not considered critical as far as capacity is concerned

- Red traffic light with no check mark as save indicator

Deliveries that are in the critical range for wave capacity



Surplus deliveries are generally assigned to the first wave, which appears fully expanded on the screen. Surplus deliveries are marked with a stop sign.

9. In response to a capacity crisis, you could process the waves that are displayed as follows:

- Exclude waves before saving

Get rid of the wave's check mark (saving indicator).

- Delete deliveries from waves

Expand the wave and delete the save check marks from the chosen deliveries. The system only saves those deliveries that are marked to be saved. This means that deliveries that have no check mark will not be saved, even if they are within a wave that is marked for saving.

- Move deliveries among waves

Creating Wave Picks - Delivery Time

To move a delivery from a source wave to a target wave, proceed as follows:

1. Click on the number of the delivery in the source wave that you want to move. The delivery is highlighted in yellow.
2. Now click on the target wave. The delivery is moved from the source wave to the target wave, where it is marked with a plus sign.

10. Save the wave picks

11. The numbers of the wave picks that have been created appear on the screen.




The system creates a log of the activities performed. To view the log, choose *Wave Picks* → *Log* → *Wave Pick*.

Creating Wave Picks - Shipment

Procedure

To create wave picks for one or more shipments, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Picking* → *Wave Picks* → *Create* → *According to shipment*.
The *Create Pick. Waves acc. to Shpmnts* screen appears.
2. Enter the warehouse number and one or more shipments.
3. Choose a processing type:
 - *Display waves before saving* (default)
Choose this processing type if you want the waves to appear onscreen, if you want to edit them before saving or if you only want to run a simulation (in the foreground). For more information, refer to point 5.
 - *Save waves directly*
Choose this processing type if you want to save the waves immediately without displaying them first (background processing).
The system saves the waves without displaying them onscreen.
4. The system creates exactly one wave pick for each shipment you selected.

All deliveries in one shipment belong to exactly one wave pick. For this reason, you are not allowed to distribute deliveries from the same shipment among different wave picks.
5. Save the wave picks.
6. The numbers of the wave picks that have been created appear on the screen.

Create Wave Picks - Shipment and Compare Time

Create Wave Picks - Shipment and Compare Time

Procedure

To create wave picks automatically according to time criteria with reference to shipments, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Picking* → *Wave Picks* → *Create* → *Acc. to Shipment and Compare Times*.

The *Create Pick. Waves acc. to Shipments/Shpmnt Compare Times* screen appears.
2. Enter the number of the warehouse for which you want to create wave picks.
3. Enter one or more shipment numbers in the *Shipment* section of the screen. Only deliveries from these shipments will be included in the waves that are created. You can choose a *Compare time* that falls between start and end loading. If you choose *Start loading*, the selected shipments will be assigned to the time slots of the timeslot group according to their planned loading start time, for example.
4. Make the following entries in the *Time frame* section of the screen:
 - *Reference date*

All deliveries whose compare times correspond to this date are incorporated into wave creation for that day.
 - *Timeslot group*

You can combine various time slots by entering a timeslot group. You get a maximum of one wave pick per time slot.
 - *Time slot*

If you only want to construct a wave pick for one particular time slot of the timeslot group, you will need to explicitly specify a time slot in addition to the timeslot group you have already entered.
5. Choose a processing type:
 - *Display waves before saving* (default)

Choose this processing type if you want the waves to appear onscreen, if you want to edit them before saving or if you only want to run a simulation (in the foreground).
 - *Save waves directly*

Choose this processing type if you want to save the waves immediately without displaying them first (background processing).

The system saves the waves without displaying them onscreen.
8. Choose *Program* → *Execute*.
9. The result is the same as that of *Create Wave Pick Acc. to Delivery Time*.

Create Wave Picks - Shipment and Compare Time

All deliveries in one shipment belong to exactly one wave pick. For this reason, you are not allowed to distribute deliveries from the same shipment among different wave picks.

Creating Wave Picks - Outbound Delivery Monitor

Creating Wave Picks - Outbound Delivery Monitor

Procedure

To create a wave pick for manually-selected deliveries, proceed as follows:

5. From [shipping \[Ext.\]](#), choose *Picking* → *Wave Picks* → *Create* → *Via Outb. Delivery Monitor*.

The *Outbound Deliveries for Picking* screen appears.

6. Enter your selection criteria.

7. Choose *Program* → *Execute*.

You reach the *Day's Workload for Picking* screen.

4. Select the deliveries that you want to group together in one wave pick and choose *Subsequent functions* → *Group* → *Wave Pick*.

You reach the *Create Wave Pick* screen.

5. Enter a *Description* for the wave pick and a *Warehouse number* for the warehouse in which the wave will be processed. Then press **ENTER**.

6. The system displays the number of the wave pick that has been saved in the database.

Processing Wave Picks

1. To process wave picks, start at [shipping \[Ext.\]](#) and then choose *Picking* → *Wave Picks*.
2. Then, choose the respective menu path from the following table.

Function	Menu path	What you should know
Changing/deleting wave picks	<i>Wave Picks</i> → <i>Change</i>	<p>The <i>Create/Change Wave Picks</i> screen appears.</p> <p>Enter your selection criteria. You can enter the numbers of the wave picks directly in the <i>Group</i> field.</p> <p>The wave picks appear. Waves and deliveries that were saved in spite of capacity problems are marked in yellow.</p> <p>Now you can move deliveries from one wave to another, if necessary. Waves or deliveries will be deleted if you deselect them and then save.</p>
Displaying wave picks	<i>Wave Picks</i> → <i>Monitor</i>	<p>The <i>Wave Pick Monitor</i> screen appears.</p> <p>Enter your selection criteria. You can enter the numbers of the wave picks directly in the <i>Group</i> field.</p> <p>The resulting list gives you an overview of the processing status of the wave picks.</p>

Subsequent Functions for Wave Picks

Subsequent Functions for Wave Picks

- To execute functions subsequent to wave picks, start at [shipping \[Ext.\]](#) and then choose *Picking → Wave Picks → Monitor*.
The *Wave Pick Monitor* screen appears.
- Enter the warehouse number and other selection criteria and choose *Program → Execute*.
The *Wave Pick Monitor: List* screen appears.
- Select the group of your choice and choose *Subsequent functions* → followed by one of the following menu paths:

Function	Menu path	What you should know
Planning replenishment for fixed storage bins for wave picks	→ <i>Planning replen.</i>	You reach the <i>Replinishm. Planning for Fixed Bins</i> screen. Continue as described under Planning Replenishment for Fixed Storage Bins [Ext.] and enter the number of the wave pick in the <i>Group</i> field. Implementation of the complete WM system is necessary to use the planning replenishment for fixed storage bins function. In other words, implementation of Lean WM [Page 76] is not sufficient.
Creating transfer orders for wave picks	→ <i>Transfer order</i>	The <i>Create TOs by Mult. Processing: Initial Screen</i> appears. Continue as described under Creating Transfer Orders for a Group [Ext.] and enter the number of the wave pick in the <i>Group</i> field.
Release transfer orders for wave picks for printing	→ <i>Release/Print</i>	The <i>Execute Multiple Processing</i> screen appears. Continue as described under Group Release [Ext.] and enter the number of the wave pick in the <i>Group</i> field.
Reprinting transfer orders for wave picks	→ <i>Pick list (reprint)</i>	The <i>Collective Picking List</i> screen appears. Continue as described under Printing Transfer Orders and Labels [Ext.] and enter the number of the wave pick in the <i>Group</i> field.
Confirming transfer orders for wave picks	→ <i>Confirm</i>	The <i>Transfer Orders for each Group</i> screen appears. Continue as described under Confirming Transfer Orders for a Group [Ext.] and enter the number of the wave pick in the <i>Group</i> field.

Subsequent Functions for Wave Picks

<p>Executing 2-step picking for wave picks</p>	<p>→ 2-step picking → Start picking</p>	<p>The <i>Create Removal TO for 2-Step Picking: Initial Screen</i> appears. Continue as described under Executing 2-step Picking [Ext.] and enter the number of the wave pick in the <i>Group</i> field. Implementation of the complete WM system is necessary to use the 2-step picking function. In other words, implementation of Lean WM [Page 76] is not sufficient.</p>
<p>Creating shipments for wave picks using collective processing</p>	<p>→ <i>Shipment</i> → <i>Shipment coll. proc. run</i></p>	<p>The <i>Create Shipments in Collective Proc.</i> screen appears. Continue as described under Creating Shipments Using Collective Processing [Ext.] and enter the number of the wave pick in the <i>Group</i> field.</p>
<p>Choose shipments for wave picks</p>	<p>→ <i>Shipment</i> → <i>Shipment list : planning</i></p>	<p>The <i>Shipment List: Planning</i> screen appears. Use the wave pick number in the <i>Grouped deliveries</i> field.</p>
<p>Creating delivery notes for wave picks</p>	<p>→ <i>Output/papers</i> → <i>Delivery note</i> Choose <i>Program</i> → <i>Execute</i> Choose <i>Edit</i> → <i>Print output</i></p>	<p>The <i>General Delivery List - Outbound Deliveries</i> screen appears. Enter the wave pick number in the <i>Document data</i> section in the <i>Group number</i> field. Enter the output type in the <i>Output proposal</i> section. A list of individual deliveries in the wave pick appears. The delivery notes are generated.</p>
<p>Creating freight papers for wave picks</p>	<p>→ <i>Output/papers</i> → <i>Freight papers</i></p>	<p>The <i>Output from Grouped Deliveries</i> screen appears. Continue as described under Printing Freight Lists [Page 178] and enter the number of the wave pick in the <i>Group number</i> field.</p>
<p>Posting goods issue for wave picks</p>	<p>→ <i>Goods issue</i> → <i>GI collective processing</i></p>	<p>The <i>Outbound Deliveries for Goods Issue</i> screen appears. Continue as described under Posting Goods Issue with Collective Processing [Page 185] and enter the number of the wave pick in the <i>Group number</i> field.</p>
<p>Creating billing documents for wave picks</p>	<p>→ <i>Create billing document</i></p>	<p>The <i>Billing for Wave Picks</i> screen appears. Enter your selection criteria. If you want to print the billing documents as you create them, use the corresponding billing type. Enter the wave pick number in the <i>Group number</i> field.</p>

Subsequent Functions for Wave Picks

Picking Status

You can determine to what extent picking has been carried out for a delivery from the picking status. The picking status is stored in each item in the delivery.

In the standard version of the SAP R/3 System, the following indicators are defined for the picking status:

Standard Picking Status Indicators

Indicator	Importance
"Blank"	The item is not relevant for picking
A	Picking has not been started
B	The item has been partially picked
C	The item has been completely picked



A delivery item is regarded as partially picked if the picked quantity is smaller than the delivery quantity.

Picking Status in the Delivery Item

You will find the picking status on the first item details screen *All data*. To call up this screen, select the item whose status you want to display on a delivery overview screen. Then choose *Item → Item details*. You will find the status indicator in the *Picking Status* field.

You can also find the picking status on the status screen of a delivery item. To call up this screen, select the item whose status you want to check on a delivery overview screen. Then choose *Item → Status*. You will find the status indicator in the *Picking Status* field.

If picking is carried out for a delivery item in the Warehouse Management System WM, the processing status of the item in the WM System is also shown on both screens.

Picking Status in the Overview

The picking status of each delivery item is shown on the picking overview screen. To call up this overview screen, choose *Overview → Picking* on a delivery screen. The picking status of the delivery items is displayed in the *P W* column on the far right of the screen.

Picking Status and Goods Issue

You can only post goods issue for a delivery once all items relevant for picking have been completely picked.

Therefore, the delivery cannot leave the shipping point if the picked quantity confirmed by the warehouse is smaller than the delivery quantity. Before you can post goods issue, you must decide whether to reduce the delivery quantity or whether to carry out picking again to determine if the entire quantity can be delivered. In the second case, you cannot create any partial deliveries.

Picking Status and Decentralized Warehouse Management

If you are implementing [Decentralized Warehouse Management \[Ext.\]](#), the individual delivery items in the central system are not relevant for picking. The delivery, as described in [Posting](#)

Picking Status

[Goods Issue \[Page 183\]](#), is reported to the central system. Picking takes place in the decentralized system and is reported back (confirmed) to the central system as soon as picking is complete. The goods issue is then posted in the central system.



If the item category is relevant for picking, the item is set to "not relevant for picking" during the process of transmission to the decentralized system. The reason for this is because picking takes place in the decentralized system.

Packing

Implementation Options

Packing is part of delivery- and shipment processing. When you process a delivery, you can select delivery items for packing and assign them to [handling units \[Ext.\] \(HUs\)](#).

Range of Functions

As an example, you could pack delivery items in boxes, pack the boxes on pallets for delivery to the customer, and load the pallets onto a truck.

The *Packing* component and related packing information enables you to:

- Update the stock situation of packing materials
- Monitor returnable packaging stocks at the customer's or forwarding agent's place of business
- Help you find you what was in a particular container (for example, if a customer maintains that they have received an incomplete delivery)
- Make sure that the weight and volume limits have been adhered to
- Ensure that products have been packed correctly

Packing for Inbound and Outbound Deliveries

Packing for Inbound and Outbound Deliveries

Use

Packing delivery items is carried out right in the delivery itself. From the overview screen, choose *Edit* → *Pack* in order to access the packing screen.

Features

The following functions are available during packing:

- [Packing delivery items \[Page 110\]](#) in handling units (HUs) and allocating individual items to several handling units.
In addition to the standard packing of delivery items in handling units, you have the option of automatically packing a specific quantity into several different handling units.
- Multi-level packing
You can pack handling units in one another. In this case, packing is multi-level. The number of possible packing levels is 999999.
- [Unpacking \[Page 133\]](#) items that were already packed
Items that have already been packed can be unpacked again. This is also the case for handling units that were packed in multiple levels.
- Responses to exceeding weight or volume
If the weight or volume limit is reached when packing items in handling units, then only the maximum packable [partial quantity \[Page 129\]](#) is packed. If you have selected another handling unit that has space for packing, the remaining quantities are packed into that handling unit.
- [Deleting \[Page 135\]](#) handling units
Handling units can be deleted in the delivery. First, the handling unit that is to be deleted is unpacked and then it is removed from any higher-level handling units (if applicable) before it is actually deleted.
- [Emptying \[Page 134\]](#) handling units
Handling units can be emptied out. Unlike unpacking, where only selected items are removed from the HU, here the handling unit in question is emptied completely.
- Handling unit [single entry \[Page 132\]](#)
You can enter HUs and HU contents manually by using the single entry function.
- [Changing packing quantities \[Page 127\]](#)
Changing the packing quantities is possible in various overviews. However, the packing quantities can no longer be changed after goods issue has been posted. In Customizing for packing, you can specify further conditions under which packing is not to be possible.
- Creating delivery items from handling units
Delivery items can be created from handling units. In this way, it is possible to keep inventory for packaging materials and also to include packaging material in the invoice. To accomplish this, the system must generate delivery items for packaging materials,

Packing for Inbound and Outbound Deliveries

which must be set for the delivery type in Customizing, and the packaging material type must suggest delivery item generation as a default.

- Displaying the [Allowed packaging materials \[Page 143\]](#)

You can display a list of all allowed packaging materials for an item to be packed, as long as the material group *Packaging material* is maintained in the packaging data in the material master for the material concerned.
- Checking for allowed packaging materials

A check is carried out to make sure that the packaging material is intended for packing a certain material. Customizing for packing is used to control which packaging materials are allowed for packing.
- [Packing proposals in sales orders \[Page 115\]](#) and scheduling agreements

It is possible to enter packing proposals in sales orders and scheduling agreements. These specifications automatically lead to a packing proposal in the delivery if a special data transfer routine is maintained in Customizing for copying control between the sales documents and the delivery. The packing proposal can be changed in the delivery. It is also possible to pack the delivery according to the packing proposal in the preceding document by using the *Use proposal* function in delivery processing.

Packing and decentralized Warehouse Management

If you are working with [decentralized Warehouse Management \[Ext.\]](#), packing takes place in several steps.

- a) The packing proposal that was determined in the central system is reported to the decentralized system.
- b) The packing proposal can be copied or changed in the decentralized system, depending on the actual packing process.
- c) With confirmation of the delivery to the central system, the original packing proposal is deleted and is replaced by the actual packing from the decentralized system.

Automatic packing and batch split

For a batch split in the delivery, you can set the item category in Customizing to indicate whether the entire batch quantity or only an individual batch item is to be packed.

If you enter " " in the *Pack batch main item* field and no split items are available, then no items are proposed for packing. If the delivery item contains an HU-managed storage location, this delivery item must be packed at the split level. In this case, the indicator (pack batch main item) is overridden.



If a packing proposal has been defined in the order for materials that are handled in batches, and if automatic batch determination is not carried out when a delivery is created, then this delivery is **not** automatically packed.

You must then pack this delivery manually (see also [Automatic packing in the delivery \[Page 114\]](#)).

Packing for Inbound and Outbound Deliveries



Example for packing with batch split, taking the *Batch main item* indicator into consideration:

Item	Material	Delivery qty.	Accum.batch qty	Batch main item	Result
10	Mat1	10 pcs			Nothing packed
10	Mat1	10 pcs		X	10 pcs
10	Mat1	0 pcs	10	X	10 pcs
900001	Mat1	4 pcs		X	Batch 1 not packed
900002	Mat1	6 pcs		X	Batch 2 not packed
10	Mat1	0 pcs	10		Not packed
900001	Mat1	4 pcs			Batch 1 = 4 pcs
900002	Mat1	6 pcs			Batch 2 = 6 pcs

- Creating packing data from [subsystems \[Page 117\]](#)

It is possible to copy packaging data from subsystems to the delivery.

- Cross-delivery [packing in shipment processing \[Page 122\]](#)

In shipment processing you can pack in the following ways:

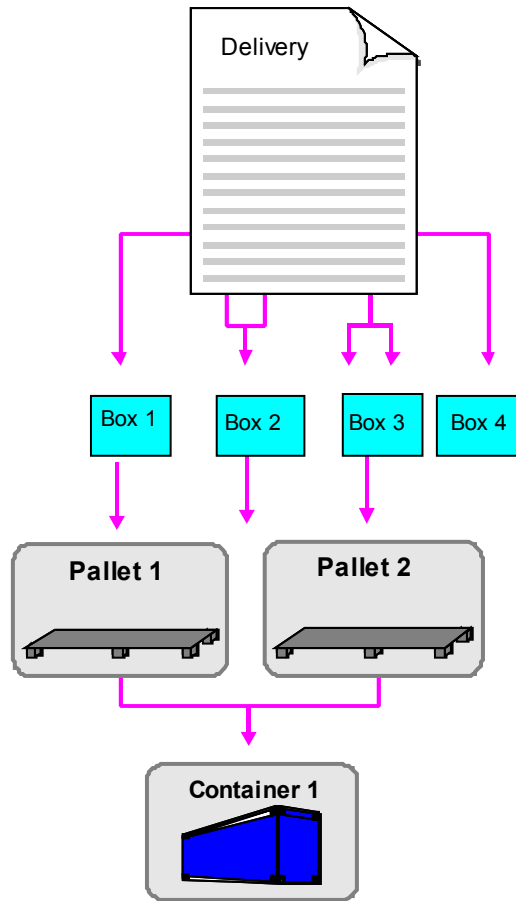
- Delivery items that have not been packed in the delivery and which are not required to be packed in the delivery can be packed.
- Highest-level handling units in the delivery can be packed in shipment handling-units.

Since the packing depends on the shipment, different packing methods can be used in a follow-up shipment with the same deliveries. If a delivery HU is packed in a shipment HU, the entire contents of the handling unit in the delivery can no longer be changed. No storage units are created for shipment HUs.



The following diagram shows how handling units are packed in the delivery.

Packing for Inbound and Outbound Deliveries



Packing Delivery Items

Packing Delivery Items

To pack delivery items into handling units (HUs), proceed as follows:

1. Choose *Edit* → *Pack* in the quantities overview of the delivery.
2. Create the handling units that you will need on the *All existing HUs (available for packing)* screen. You can also access handling units that were created previously ([Non-Assigned Handling Units \[Ext.\]](#)). For more information about creating handling units, see [Working with Handling Units \[Page 125\]](#).
3. In the *Material to be packed (or All HUs that can be packed)* section of the screen, select the items that you want to pack. Also select the handling units into which the materials are to be packed in the *All existing HUs* section of the screen. Then, select *Pack*. (See also: [Packing If Full \[Page 130\]](#), [New HU per x HUs \[Page 131\]](#) and [Packing per Partial Quantity \[Page 129\]](#).)

The system sends you either a success message or notifies you of problems, if the weight or volume limit was reached and not all the items could be packed, for instance.

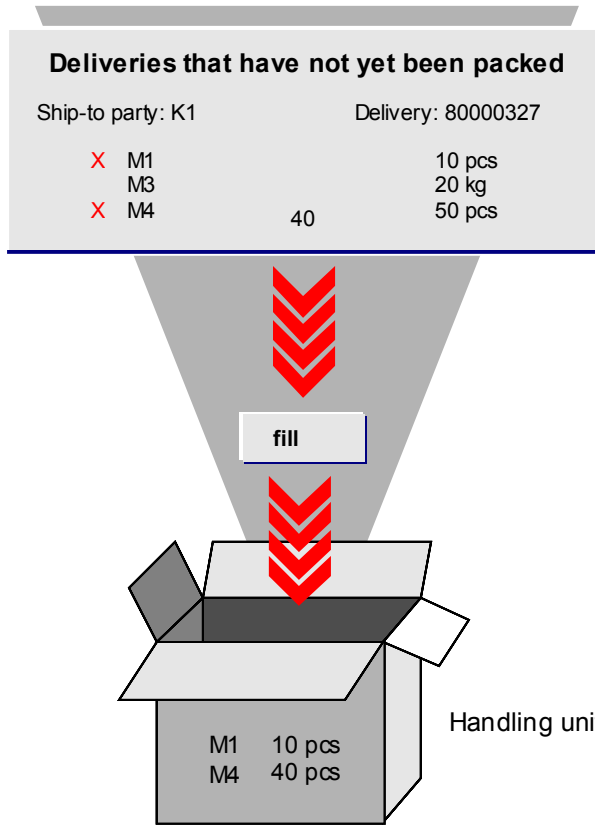


If you have selected several handling units for packing, then the selected handling unit that is highest in the list is packed first. If not all items to be packed fit in this handling unit, the packing operation is automatically continued with the following selected handling units.

If only a partial quantity of a delivery item is to be packed, you must specify this in the *Partial qty* field for the corresponding item in the *Material to be packed (or All HUs that can be packed)* section of the screen.

The weight of the packaging is not added to the total weight of the delivery.

The following illustration shows one delivery item and the partial quantity of another delivery item being packed into a handling unit.



Generation of Delivery Items for Packaging Materials

Generation of Delivery Items for Packaging Materials

Purpose

You can automatically generate separate delivery items with defined quantities for packaging materials. This is especially important if you:

- Manage packaging materials in Inventory Management
- Pick packaging materials in the warehouse
- Charge customers for packaging materials
- Make packaging materials available to customers as returnable packaging, which you also manage

Prerequisites

For this automatic generation to take place, you must make the following settings in the Implementation Guide (IMG):

- In the *Logistics Execution* → *Shipping* → *Delivery* section, use the [Define Item Category Determination in Deliveries \[Ext.\]](#) activity to set up an item category assignment for the delivery type, an item category group for the packaging material, and make usage-indicator settings for **PACK**.
- In the *Logistics Execution* → *Shipping* → *Packing* section, use the [Define Packaging Material Types \[Ext.\]](#) activity to set the plant determination rule for packaging material types.

If the system recognizes the plant and the item category in the handling unit, it generates a delivery item for the packaging material automatically.

Process Flow

1. Maintain the corresponding [item category group \[Ext.\]](#) for the packaging material in the material master record.
2. The system determines an item category according to the item category determination settings. For example, the system determines item category **HUPM** for item category group **VERP** in a sales order delivery.
3. Depending on the Customizing settings of the item category that was determined, the delivery item is relevant for picking, billing or stock and is transferred into the corresponding document (goods issue document or billing document, for example).



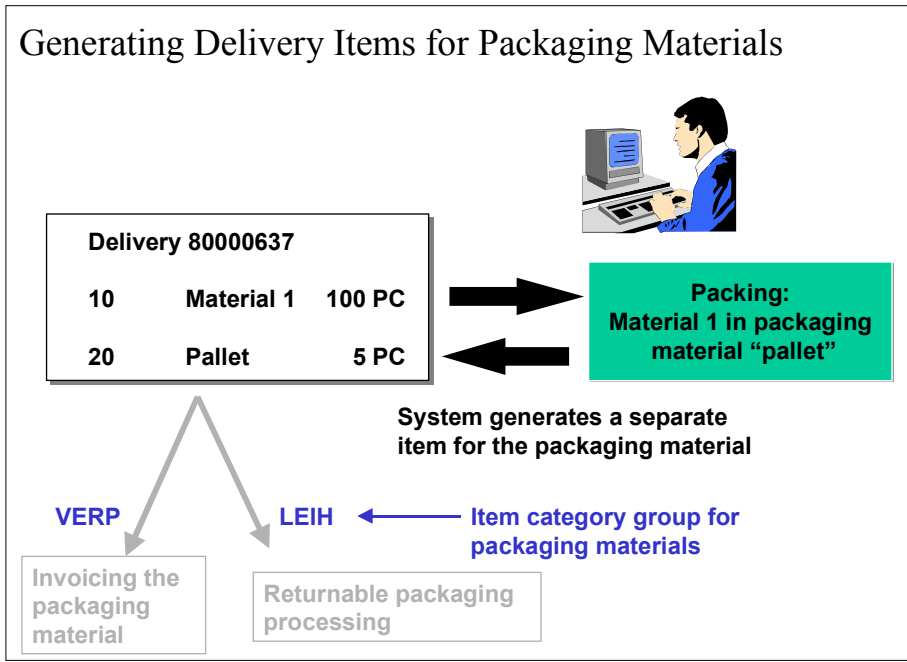
Processing of Returnable Packaging

The system processes returnable packaging (item category **TAL**) by automatically recording a posting change (into the customer's special stock, for instance) as it posts goods issue. These items are not transferred to billing documents.

Subsequent processing of the returnable packaging occurs via sales order type **Ret. Packaging Pickup (AT)** and completes the process with a **Returns delivery (LR)** delivery type.

Generation of Delivery Items for Packaging Materials

If the customer is to keep the packaging materials, you can bill them to the customer by using the *Ret. Packaging Issue (RPI)* sales order type.



Automatic Packing in the Delivery

Automatic Packing in the Delivery

Automatic Packing Through Order Proposal

Use

You can define a packing proposal in the order. You can define, for example, how the individual delivery items for the delivery are to be packed. This information is then copied into the delivery, where it can be changed during delivery processing, if desired.

Prerequisites

So that packing proposals can be copied automatically from an order into a delivery as that delivery is created, you must enter a copy condition for handling units in Customizing as follows:

1. Choose the Customizing activity [Specify Copy Control for Deliveries \[Ext.\]](#) under *Logistics Execution* → *Shipping* → *Copying Control*.
2. Position the cursor on the delivery type `LF` and the sales document type `OR`.
3. Choose the details view and make your changes. For example, you could enter `001-SchedAgrmnt` → `Dlv` in the *Data transfer HU* field. Save your changes.

Procedure

To ensure that the system copies the packing proposal into the delivery, proceed as follows:

1. Create a [sales order \[Ext.\]](#) and enter the individual order items.
2. Choose *Extras* → *Packing proposal* in order to enter the packing information into the order.
3. Use the [Choice of allowed pack.mat. \[Page 143\]](#) function to create an appropriate packaging material and [pack \[Page 127\]](#) the material.
4. Save the sales order.
5. Create an [outbound delivery \[Page 44\]](#) with reference to this sales order.



If you have not maintained any settings in the Customizing application, you can always **manually** copy a packing proposal defined in the order into the outbound delivery.

To do so, choose *Extras* → *Use proposal* in the [packing dialog \[Ext.\]](#).

Result

If you have made the settings as described above under prerequisites, the packing proposal is **automatically** copied from a standard order **during creation of a delivery**. The delivery then creates a handling unit from this packing proposal if the delivery items can be packed.

Packing Automatically when Creating Deliveries

Packing Automatically when Creating Deliveries

Use

For each delivery type, you can define whether the [automatic packing \[Page 144\]](#) function is to be called up during delivery creation. With this option, all the material items of the delivery are automatically packed during delivery creation via the [Create handling units automatically in the background \[Page 146\]](#) function.

Prerequisites

If you want the automatic packing proposal to be called up during delivery creation, change the parameter settings for the delivery type in Customizing as follows:

1. In the *Logistics Execution* → *Shipping* → *Deliveries* section of Customizing, select the [Define delivery types \[Ext.\]](#) activity.
2. Position the cursor on one of the delivery types, such as delivery type `LF-Delivery`.
3. Choose *Details* and select the *Autom. packing* field.

Procedure

If you have completed the settings as described above, the system will automatically create handling units and pack all material items (for which it can determine packing proposals) when [Creating deliveries \[Page 44\]](#).

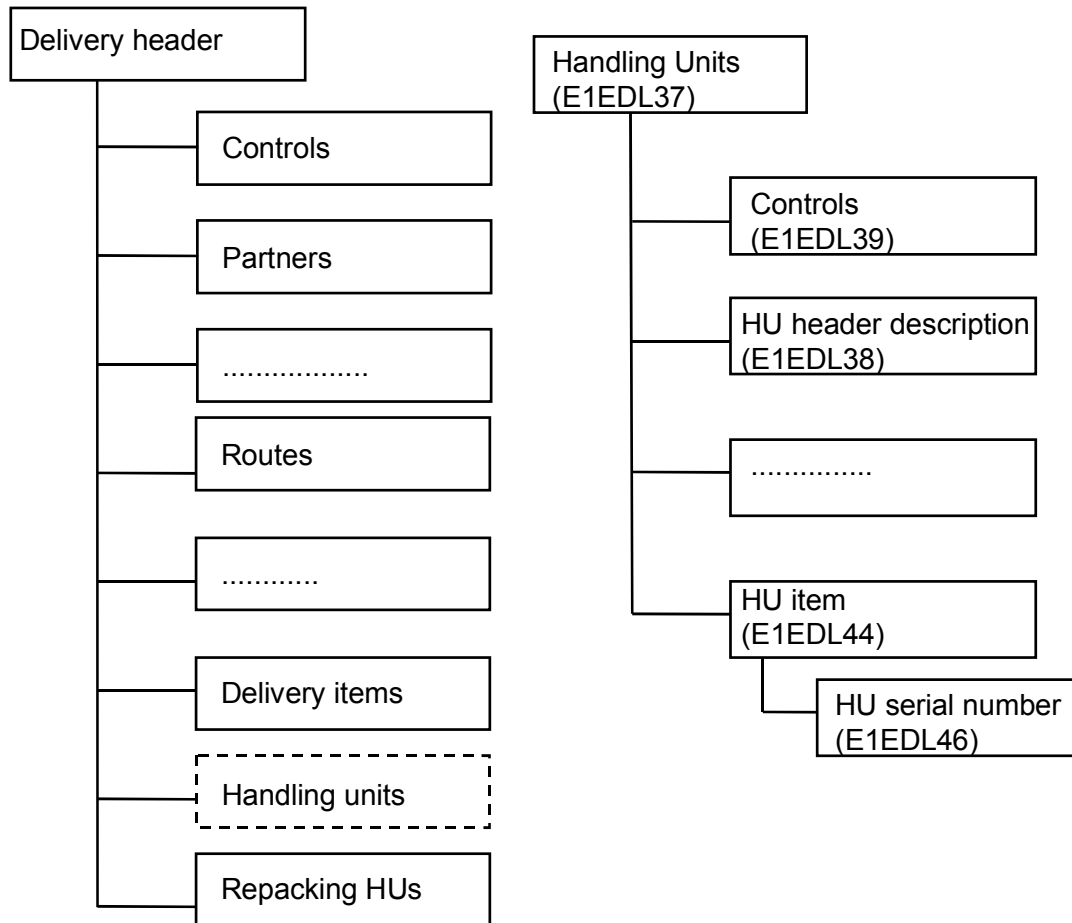
Pack Using External Systems

Use

The [delivery interface \[Page 218\]](#) makes it possible to pack deliveries by using external systems.

Integration

The following diagram illustrates the implementation of packing-specific segments in the delivery interface:



Features

Outgoing messages contain the complete structure; that is, all the fields in the individual segments are supplied with data.

In the case of incoming messages, only the handling unit segment and the repacking handling unit segments are relevant for handling units (HUs). In the handling unit segment, only a few fields pertaining to handling unit creation are relevant.

The more important segments and fields include the following:

Pack Using External Systems

E1EDL37	Handling unit header	
Segment field		Table field
EXIDV	External handling unit identifier	VEKP-EXIDV
EXIDA	Type of external HU identification	VEKP-EXIDA
TARAG	Tare weight of the handling unit	VEKP-TARAG
GWEIT	Unit of weight (tare)	VEKP-GEWEI
BRGEW	Total weight	VEKP-BRGEW
NTGEW	Net weight	VEKP-NTGEW
MAGEW	Allowed weight of the handling unit	VEKP-MAGEW
GWEIM	Unit of weight	VEKP-GEWEI_MAX
BTVOL	Total volume of the handling unit	VEKP-BTVOL
NTVOL	Loading volume of the handling unit	VEKP-NTVOL
MAVOL	Allowed loading volume	VEKP-MAVOL
VOLEM	Unit of volume	VEKP-VOLEH_MAX
TAVOL	Tare volume of the handling unit	VEKP-TAVOL
VOLET	Unit of volume (tare)	VEKP-VOLEH
VEGR1	Handling unit group 1	VEKP-VEGR1
VEGR2	Handling unit group 2	VEKP-VEGR2
VEGR3	Handling unit group 3	VEKP-VEGR3
VEGR4	Handling unit group 4	VEKP-VEGR4
VEGR5	Handling unit group 5	VEKP-VEGR5
VHILM	Packaging materials	VEKP-VHILM
LAENG	Length	VEKP-LAENG
BREIT	Width	VEKP-BREIT
HOEHE	Height	VEKP-HOEHE
MEABM	Unit for length/width/height	VEKP-MEABM
INHALT	Description of the handling unit	VEKP-INHALT
EXIDV2	Second external identification	VEKP-EXIDV2
E1EDL44	Handling unit item	

Pack Using External Systems

Segment field		Table field
VBELN	Sales document number	VEPO-VBELN
VELIN	Handling unit contents	VEPO-VELIN
POSNR	Item number of the sales document	VEPO-POSNR
EXIDV	External identification	VEKP-EXIDV
VEMNG	Delivery item quantity	VEPO-VEMNG
VEMEH	Base unit of measure for the packed quantity	VEPO-VEMEH
E1EDL54	Repacking handling units	
SOURCEHU	External HU identification of the source HU	HUM_REPACK-SOURCEHU
DESTHU	External HU identification of the destination HU	HUM_REPACK-DESTHU
PACKHU	Handling unit that is to be packed	HUM_REPACK-PACKHU
PACK_QTY	Base quantity that is packed in the HU item	HUM_REPACK-PACK_QTY
BASE_UOM	Base unit of measure	HUM_REPACK-BASE_UOM
DELIV_NUMB	Delivery	HUM_REPACK-DELIV_NUMB
DELIV_ITEM	Delivery item	HUM_REPACK-DELIV_ITEM

You have the following options in this segment:

1. Packing verification (only for creating handling units)

When you verify handling units, you must always transfer the (external) identification and the packaging material.

E1EDL37-EXIDV

E1EDL37-VHILM

If a handling unit is to be created, no contents data (items) needs to be transmitted. If you pack a delivery item, the item number and the packed quantity must be transmitted. If there is a batch split, use its own (external) item number.

E1EDL44-POSNR

E1EDL44-VEMNG

If a handling unit is to be verified to a handling unit (multi-level packing), the (external) identification of the lower-level handling unit must be specified.

E1EDL44-EXIDV

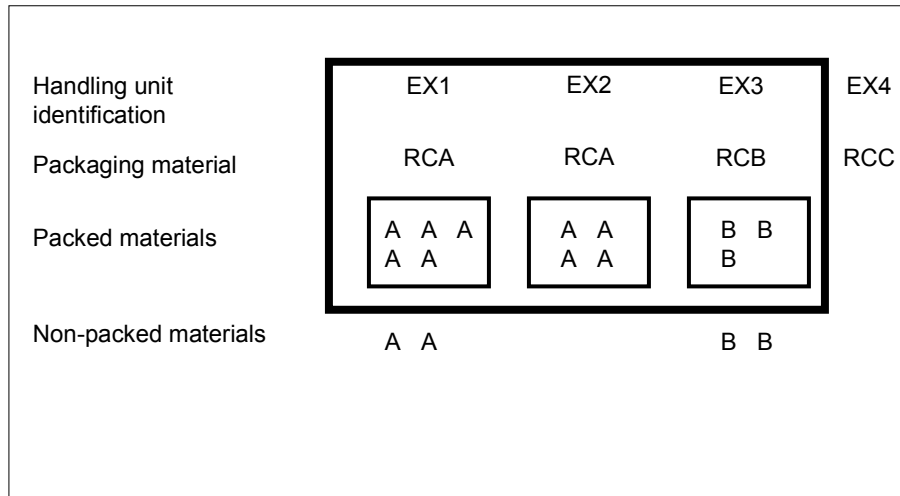
2. Repacking handling units in the delivery

Pack Using External Systems

Fill in all segment fields of segment E1EDL54.

Example

Figure 1 (below) illustrates a packing hierarchy with several handling units. It represents a container with three pallets, each of which have a certain number of various materials packed on them. Consult the list following this illustration to learn how to send these packing hierarchies via the delivery interface with the packing segments.



	POSNR	KDMTA	LFIMG	VRKME
E1EDL24	1	A	11	PC
E1EDL24	2	B	5	PC
	EXIDV	VHILM		
E1EDL37	EX1	RCA		
	POSNR	VEMNG	EXIDV	VEMEH
E1EDL44	1	5		PC
	EXIDV	VHILM		
E1EDL37	EX2	RCA		
	POSNR	VEMNG	EXIDV	VEMEH
E1EDL44	1	4		PC
	EXIDV	VHILM		
E1EDL37	EX3	RCB		
	POSNR	VEMNG	EXIDV	VEMEH

Pack Using External Systems

E1EDL44	2	3		PC
	EXIDV	VHILM		
E1EDL37	EX4	RCC		
	POSNR	VEMNG	EXIDV	VEMEH
E1EDL44			EX1	
E1EDL37	EX4	RCC		
	POSNR	VEMNG	EXIDV	VEMEH
E1EDL44			EX2	
E1EDL37	EX4	RCC		
	POSNR	VEMNG	EXIDV	VEMEH
E1EDL44			EX3	

Packing Deliveries in Shipments

Packing Deliveries in Shipments

To pack several deliveries for a shipment at once, proceed as follows:

1. Create a shipment document or change an existing shipment document. To do so, start at the initial [shipment \[Ext.\]](#) menu.

The initial screen for processing shipments appears. You can create or edit shipments here.

2. Select *Shipment → Create* or *Shipment → Change*.

The *Change Shipment* screen appears.

3. In the shipment document, choose *Goto → Means of transport and packaging matl.*

If the items in these deliveries have not been fully packed, the deliveries of the shipment will be displayed in the *Materials to be packed* section of the screen with the individual items.

If packing has already taken place in the delivery, the individual handling units are displayed and you can pack these further if necessary.

4. Pack the desired delivery items or handling units. To pack in shipment documents, proceed exactly as with [packing delivery items \[Page 110\]](#).

For more information, see [Delivery item generation in the shipment \[Ext.\]](#).

Overviews That Are Relevant for Packing

There are different overviews available during packing in which the necessary information is presented. You can use the following overviews to edit handling units:

- Tab overview

This overview displays all functions that are relevant for packing for each sub-view. Automatic packing in the background is available in this overview. You can select this overview in any of the following sub-views:

- Pack material
You can use this overview to pack materials into handling units, delete handling units, or empty handling units. You can go directly to an existing handling unit and edit it by entering its ID and then selecting the detailed view for that handling unit.
- Pack HUs
You can use this overview to pack handling units in other handling units (10 crates onto one pallet, for example), empty and delete handling units, and assign handling units for processing. You can also access a detailed display of the handling units.
- Packing proposal
You can use this overview to pack materials and handling units by using previously-defined packing instructions or manually-defined packing proposals.
- Single entry
You can use this overview to pack one material per activity with a specific quantity or you can pack one handling unit into another handling unit. This overview is intended primarily for batch activities.



Since all function modules for the packing function are available to you, you should avoid using batch input.

- Total content
You can use this overview to display a total overview of all the handling units with the corresponding hierarchy levels. All functions except generation of new items can be executed from this overview. You can also access a detailed display of the handling units.
- General header data
You can use this overview to display the delivery header data, deadlines, and the routes within document processing. When you pack without object reference, this tab contains general header data that is used as default values for creating handling units. For example, you could use this screen to define whether you want to plan handling units, generate handling units that already exist (whose contents was not yet posted to goods receipt) or generate handling units that exist and are already in the warehouse (whose contents was posted to goods receipt).

In the *Pack material* sub-view, all materials that are to be packed appear in the lower half of the screen and all handling units that can be packed into appear in the upper half of the screen. If you would like to go to the hierarchy layout, choose *Goto* → *General overview*.

- Hierarchy layout

Overviews That Are Relevant for Packing

The general overview clearly displays all materials, packaging materials and handling units that were already assembled. You can use this overview to pack, unpack and repack intuitively, for example. All changes to the contents of individual handling units appear immediately. If you want to go to the tab layout, either select *Goto → All data → Pack material* or *Goto → All data → Pack HUs*. The respective partial overview appears. In addition, you can display all available detailed views by selecting *Goto → Detailed HU data → (Detailed view of your choice)*.

Working with Handling Units

Creating Empty Handling Units

Creating Empty Handling Units

To be able to pack materials, you must first create an empty handling unit. In a second step, you can then assign materials to this handling unit; the materials are then packed.

1. In the [packing dialog \[Ext.\]](#), select the *Pack material* or *Pack HUs* tab.
2. In the *All existing HUs (available for packing)* section, enter an allowed packaging material into the *Pack. matl* field (see also [Displaying allowed packaging materials \[Page 143\]](#)).

If you work with external identification numbers, enter these in the *Handling unit* field.

If you only enter one packaging material, the handling unit number is assigned internally according to the settings in Customizing.



During packing within delivery processing, you can also enter a customer's packaging material (in the outbound delivery) or a vendor's packaging material (in the inbound delivery) in the *CustPackMat.* field as an alternative to the packaging material.

Pack

Use

If you want to pack a particular quantity of a material or a handling unit into another handling unit, use the *Pack* function.

Features

Using the *Pack* function, you have different options for packing materials or handling units that already exist. In the *Pack materials* overview, you can pack a particular quantity of a material into a handling unit; in the *Pack HUs* overview, you can pack handling units into other handling units. You can use the following packing functions for packing:

- Packing (see below)
- Changing packing quantities in handling units (see below)
- Packing handling units (see below)
- [Packing per partial quantity \[Page 129\]](#)
- [Packing if full \[Page 130\]](#)
- [New HU per x HUs \[Page 131\]](#)

Depending on which function you use for packing, the *Partial qty* and *Total quantity* input fields have certain effects on the quantity to be packed.

Activities

To pack materials using the *Pack* function, proceed as follows:

1. In the [packing dialog \[Ext.\]](#), select the item that you want to pack in the *Material to be packed* (or *Material that is packed*) section of the screen and enter the quantity to be packed in the *Partial qty* field.
2. Select the handling unit into which you want to pack the material and choose *Edit* → *Pack* → *Pack*.

The system sends you either a success message or notifies you of problems, such as the weight or volume limit was reached and not everything could be packed.

Changing packing quantities in handling units

1. In the [packing dialog \[Ext.\]](#), select the handling unit in question and choose *Goto* → *Detailed HU data* → *Contents*. The header data of the selected handling unit is also displayed.
2. Change the quantity accordingly in the *Packed quantity* field of the handling unit concerned.



The packing quantities can no longer be changed in the delivery once goods issue is posted.

Pack

Packing handling units

If you want to reflect packing levels, such as a material that is packed in a box, which is in turn packed into a create or onto a pallet, then you must pack these handling units in one another.

1. In the [packing dialog \[Ext.\]](#), select the *Pack HUs* tab.
2. In the *All HUs that can be packed* section, select those handling units that you would like to pack and in the *All existing HUs (available for packing)* section, select the handling unit that you would like to pack and choose *Edit → Pack → Pack*.

The system sends you either a success message or notifies you of problems, such as the weight or volume limit was reached and not everything could be packed.



If you have selected several handling units for packing, then the handling unit that is highest in the list is packed first. If not all items to be packed fit in this handling unit, the packing operation is automatically continued with the following selected handling units.

If you want to pack a specific constant number of handling units into a higher-level handling unit, then choose the [New HU per x HUs \[Page 131\]](#) function.

When packing handling units, a maximum of 999999 packing levels is possible. For information on reflecting packing levels in handling units, see [Editing detailed data for handling units \[Page 140\]](#).

Packing per Partial Quantity

If you are packing a delivery item completely, but want to distribute the quantity in equal amounts over several handling units, proceed as follows:

1. In the [packing dialog \[Ext.\]](#), select the *Pack material* tab.
2. In the *All existing HUs (available for packing)* section of the screen, create a handling unit with the desired properties, or use a handling unit that has already been created (for further information about creating handling units, see [Creating Empty Handling Units \[Page 126\]](#)).
3. In the *Material to be packed or already packed* section of the screen, enter the total quantity you want to pack for the item to be packed in the *Total quantity* field. In the *Partial quantity* field, enter the quantity that is to be packed into one handling unit, and select this item.
4. In the *All existing HUs (available for packing)* part of the screen, select the desired handling unit and then choose *per part. qty* (or use the following menu path: *Edit* → *Pack* → *New HU for partial qty of material*).

The system will then continue to create new handling units, using the partial quantity you have defined as the content of these HUs, until the total quantity of the selected item is packed. This simplifies entry, if, for example, you want to pack 100 pieces of a material in 50 boxes with 2 pieces each.

Packing If Full

Packing If Full

If you want to pack items completely, but do not know in advance how many handling units you require, proceed as follows:

5. In the [packing dialog \[Ext.\]](#), select the *Pack material* or *Pack HUs* tab.
6. In the *All existing HUs (available for packing)* section of the screen, create a handling unit with the desired properties (weight and volume restrictions), or use a handling unit that has already been created (for further information about creating handling units, see [Creating Empty Handling Units \[Page 126\]](#)).
7. In the *Material to be packed (or All HUs that can be packed)* section of the screen, select the items that you want to pack and enter the total quantity to be packed for the material in question in the *Total quantity* field.
8. In the *All existing HUs (available for packing)* part of the screen, select the desired handling units and then choose *if full* (or use the following menu path: *Edit* → *Pack* → *New HU if full*).

The system will then continue to create new handling units, adhering to the weight and volume limits, until the total quantity of the selected items is packed.

New HU per x HUs

If you want to pack a specific constant number of handling units into a higher-level handling unit, proceed as follows:

1. In the [packing dialog \[Ext.\]](#), select the *Pack HUs* tab.
2. Choose the *New HU per x HUs* function (or use the menu path *Edit → Pack → New HU per number of HUs*).
3. In the dialog screen in the *HU to be created* section, enter either a packaging material or a customer packaging material for the higher-level handling unit. This higher-level handling unit is automatically created when this function is executed.
4. In the *PackMat.of HUs to be packed* section, enter the packaging material of the handling unit to be packed and the number of handling units that are to be packed into/onto new HUs.
5. The system creates a new higher-level handling unit according to the amount entered until there are no more unpacked handling units of the packaging material that you entered.

When packing handling units, a maximum of 999999 packing levels is possible. For information on reflecting packing levels in handling units, see [Overviews That Are Relevant for Packing \[Page 123\]](#).

Single Entry

Single Entry

Use

You can use a special single-entry screen to manually create new handling units or manually pack individual items in existing handling units.



This screen is also useful for using batch input to complete packing data.

Procedure

1. Select the **Single entry** tab in the [packing dialog \[Ext.\]](#).
2. In the *Handling unit* section of the screen, enter the data of the handling unit into which materials or other handling units are to be packed. If this handling unit already exists in the system, simply enter its external handling-unit ID.
3. Enter the objects that are to be packed in the *Handling unit contents* section of the screen. If a delivery item is to be packed, you can enter either the delivery item or the material that is to be packed. If handling units are to be packed, you must enter their external IDs.

Unpacking

If you want to unpack materials or handling units from a handling unit, proceed as follows:

1. In the [packing dialog \[Ext.\]](#), select the *Ttl content* tab.

All handling units and the materials packed in them appear in this overview, along with their respective hierarchical levels.

2. Select the items you want to unpack and choose *Edit* → *Unpack*.

The selected items are unpacked from the respective handling units and reappear as items to be packed.



You have used the packing function to pack the same partial quantity of a material in four boxes, which, in turn, were packed onto a pallet. If you want to take a handling unit (box) off the pallet, select that box and choose *Unpack*. The box is taken off the pallet, but the contents of the box remain the same. For more information about emptying handling units, see [Emptying Handling Units \[Page 134\]](#).

Emptying Handling Units

Emptying Handling Units

In contrast to unpacking, you can also empty handling units (HUs). To do so, proceed as follows:

1. In the [packing dialog \[Ext.\]](#), select the *Pack material* or *Pack HUs* tab.
2. Select the handling unit that you want to empty completely, and choose *HU → Empty*.

The handling unit is emptied. The items that were emptied out of the handling unit reappear in the overview of items that are to be packed.



You have used the packing function to pack the same partial quantity of a material in four boxes, which, in turn, were packed onto a pallet. If you select one of the handling unit boxes and choose *Empty*, the contents are removed from the box (the box is emptied). The box is still packed on the pallet HU, however. For more information about unpacking handling units, see [Unpacking \[Page 133\]](#).

Deleting Handling Units

If you want to delete a handling unit completely, proceed as follows:

1. In the [packing dialog \[Ext.\]](#), select the *Pack material* or *Pack HUs* tab.
2. Select the handling unit to be deleted and choose *HU → Delete*.



During deletion, the handling unit concerned is completely emptied and removed from all higher-level handling units.

Deleting Assignments

Deleting Assignments

Just as you can assign handling units to a delivery, it may be necessary to remove or delete this assignment. This can be appropriate, for example, if you find that a certain handling unit is to be delivered with a later delivery than the one that it was originally planned for delivery with. In such a case, you only need to remove the link to the delivery, not delete the entire handling unit. That way, all the information about the handling unit itself is retained.

1. In the [packing dialog \[Ext.\]](#) for the delivery, select the *Pack material* or *Pack HUs* tab page.
2. Select the handling unit whose assignment you want to delete, and choose *HU → Delete assignment*.

This function is only available during delivery processing.

Finding Handling Units

Depending on the tab you have selected, only a certain number of handling units are displayed in the packing dialog. You can use the *Find* function to display certain handling units directly by entering the external identification number.

1. In the [packing dialog \[Ext.\]](#), select the *Pack material* or *Pack HUs* tab.
2. Select *HU → Find* and enter the desired handling-unit identification.

The handling unit is found and appears in the first line, already selected for further activities.

Assigning New Numbers for Handling Units

Assigning New Numbers for Handling Units

Use

If, for example, you are going to deliver handling units worldwide, unique number assignment for identification of the handling units is necessary, and it is also a good idea to assign SSCC18 numbers ([see also EAN128 \[Ext.\]](#)).

Prerequisites

In the Customizing settings for the packaging material type, you must maintain the *Handling unit type* field.

1. In Customizing, choose *Logistics General* → *Handling Unit Management* → *External Identification* → *Define Number Assignment for Each Packaging Material Type*.
2. Maintain the *HU type for EAN128* field for the relevant packaging material type.

Procedure

1. In the [packing dialog \[Ext.\]](#), select the *Pack material* tab.
2. Select the handling unit for which you want to assign an SSCC18.
3. Choose *Extras* → *SSCC number assignment*.

Result

A new SSCC18 number is generated and automatically assigned to the handling unit.

Entering and Selecting Serial Numbers

Use

You can use serial numbers to clearly distinguish individual objects from one another. Serial numbers allow you to follow up easily on individual goods-movements objects such as the sale of certain goods to a customer. For each packed item, you can select serial numbers in the [packing dialog \[Ext.\]](#), provided the master data of the respective materials is maintained accordingly. A dialog box for serial-number maintenance appears, where you can make the required entries.

For more information about serial numbers, see [Serial Numbers in Handling Units \[Ext.\]](#).

Prerequisites

The serial number profile that allows serialization in handling units must be entered in the appropriate material master record.

For more information, see [Entering a Serial Number Profile in the Material Master Record \[Ext.\]](#) and [Creating Master Records for Serial Numbers \[Ext.\]](#).

Procedure

To select serial numbers that already exist in the system, proceed as follows:

1. [Pack \[Page 127\]](#) the material item to which you want to assign a serial number into a handling unit.
2. Go to the *Ttl content* tab page and select the material to which you want to assign a serial number and choose *Extras* → *Serial numbers*.
A dialog box appears.
3. Choose *Select serial numbers*.
The *Serial Number Selection* screen appears.
4. Enter the desired selection criteria and choose *Program* → *Execute*.
The *Serial Number List* screen appears, where the selected serial numbers are listed.
5. Select the serial numbers you want to copy, and then select *Choose*.

Result

The serial numbers you have selected are copied into the dialog box and assigned to the handling unit items.

Editing Detailed Data for Handling Units

Editing Detailed Data for Handling Units

You can use the detailed data to change individual information items in the handling-unit header and item data. To access the detailed data of a handling unit, select the handling unit concerned and choose the following menu paths:

- *Goto* → *Detailed HU data* → *Detailed view / volume*
- *Goto* → *Detailed HU data* → *General details*
- *Goto* → *Detailed HU data* → *Auxiliary packaging material details*
- *Goto* → *Detailed HU data* → *Additional data*
- *Goto* → *Detailed HU data* → *Means of transport data*
- *Extras* → *Messages*
- *Goto* → *Detailed HU data* → *Contents*
- *Goto* → *Detailed HU data* → *History*

If the handling unit is in the warehouse, the function bar will include a link to the storage unit.

In addition to detailed HU data, an overview of all handling units appears in a hierarchical display. You can place the cursor on a handling unit in this hierarchical display and the detailed view of that handling unit appears.

You can maintain the following details:

- **Weight/Volume/Dimensions**

In this overview, weight, volume, and dimensions data appears (examples include tare weight, tare volume, allowed weight and allowed volume). Here you can change the tare weight and tare volume determined from the material master for the handling unit. Furthermore, you can adjust the loading weight and loading volume, and also maintain the respective tolerance values.



You would use this overview if the handling unit was weighed and measured before loading, for example. You can then maintain the data that differs from the planned data.

- **General data**

In the upper section of this overview, you see the general data about the packaging materials (packaging material type and packaging material category).

You can also change the plant and the storage location of the packaging material here.



This makes sense, for example, if a handling unit is to be assigned to a delivery later (or if the handling unit was created in the delivery) and the plant and storage location are known for the item generation in the delivery. In this case, a delivery item can be generated for the packaging material. It is then possible to execute inventory management and billing for the packaging material.

In the lower section of this overview, you see the general data about the handling unit.

Editing Detailed Data for Handling Units

The handling unit's movement status appears here. You can use the *StatusDetail* function to display detailed information about the system status of the handling unit. If you use the *Status profile* function, you can change the user status, provided the packaging material type has a user status profile assigned to it.

In the *HU storage number* field, the system displays the warehouse in which the handling unit is located. This entry refers to the material contained in the handling unit, rather than the plant and the storage location of the packaging material. The system also shows whether the handling unit is in an HU-managed storage location and whether a corresponding storage unit exists. Handling units that are not at an HU-managed storage location and were put away using the *Pre-packed HU* function will have a storage status.

In addition, the system displays the current assignments of handling units to objects.

In the *Contents* field, you can maintain an arbitrary text for this handling unit.

- **Packaging material data**

You can maintain any auxiliary packaging materials used for each handling unit. These auxiliary packaging materials can be entered separately for each handling unit. For the most part, you can depict the actual packaging of a handling unit by using auxiliary packaging materials since auxiliary packaging materials include interim layers, lids, and protective plastic covering, which are part of the handling unit's packaging.

- **Additional data**

In this overview, you can maintain additional data for arbitrary handling-unit groups in the *Additional customer data* section.

In the second section of this overview, you will find information about packing instructions that may have been used for packing.

In the lower section of the overview, the sales data appears (shipping point, sales organization, distribution channel, and item category). Here you can also maintain customers' packaging materials, if they exist.

- **Means-of-transport data**

This overview displays data relevant for the means of transport in transportation processing, provided the packaging material is a transportation material. You can maintain data such as the driver, passenger, travel time, distance, specific load data, and the country for the means of transport in this overview.

- **Messages (Outputs)**

This includes data concerning the printing and sending of outputs relevant to packing. It is possible, for example, to print a specific output for the handling-unit header (output 0001) that you can use to generate labels for the physical handling units.

- **Contents**

In this overview, data about the contents of the selected handling unit appears.

There is also information here on the packed quantity and on the packing levels, which are represented by numbers. For example, the entry 2 in the *Hierarchy* field means that the item concerned has been packed in two levels (the item is packed in packaging, which in turn has been packed again).

To access the item data of an individual handling unit, select the handling unit concerned and choose *Goto* → *Detailed HU data* → *Contents*.

Editing Detailed Data for Handling Units

Display Allowed Packaging Materials

To display the allowed packaging materials, proceed as follows:

1. Select a material item in the *Materials to be packed/Packed materials* section of the *Processing Handling Units for Outbound Delivery* screen.
2. Select *Choice of allowed pack. mat.*

The allowed packaging materials appear in a dialog box. Select a packaging material from this dialog box in order to copy it into the screen.



In order for this feature to work properly, you must first maintain the *Matl grp pack. mats* field for the item that is to be packed. You can do this in the packaging material data in the material master record. You must also maintain the allowed packaging materials for each packaging material group in the Implementation Guide (IMG) for Handling Unit Management (or Logistics Execution). See also [Defining Allowed Packaging Materials \[Ext.\]](#).

If you want to display a packaging material's material master data that is relevant for packing, select the corresponding handling unit and select *Environment* → *Packaging materials*. On the view selection screen, choose *Sales: General/Plant Data* and enter the organizational levels. The data relevant for packing appears in the material master record for the packaging material in the *Packaging material data* section of the screen.

Automatic Packing

Automatic Packing

Use

Automatic packing allows you to use packing proposals to create handling units automatically in the background.

The proposal includes both the packaging material and the content per handling unit.



For a delivery with 3 items, the packing proposal might propose that the first item is distributed in equal amounts onto two pallets and the second and third items are packed together in a container.

Integration

The packing proposal is automatically carried out during the following functions:

- [Generating handling units automatically in the background \[Page 146\]](#)
- [Packing automatically when creating deliveries \[Page 116\]](#)

The automatic packing function also supports the effects of packing instruction determination, packing proposals generated by packing instructions, and customer-specific generation of packing proposals using Business Add-Ins (without using packing instructions). The automatic packing function also supports multi-level packing.



Filling the User Exit

1. In the first packing phase, delivery items are packed during automatic packing with the [New HU if full \[Page 130\]](#) function in an [allowed packaging material \[Page 143\]](#) (such as a crate).
2. In the second packing phase, each crate is packed onto a suitable packaging material (such as a pallet).

The automatic packing function also supports automatic packing using packing instructions.



The system automatically determines the packing instructions for the materials to be packed and then the material is packed according to the packing instructions that were found.

The packing instruction that was found may also be multi-level, which is why packing instruction determination is only carried out once during automatic packing.

Automatic packing also supports the PACKMODI enhancement.

Prerequisites

Either the user exits are filled in with data or you have set the packing instruction determination for the material that is to be packed.

Features

During automatic packing, the system determines packing proposals for the material to be packed, which it uses to create handling units.

The packaging proposal is defined either through several user exits or through packing instructions and the respective determination records.

Packing using user exits

You can process customer functions by using the *Project management* transaction in the SAP enhancements. In this case, you need the **PACKMODI** SAP enhancement.

Packing with packing instructions

To create packing proposals using the packing instructions, maintain the following data:

- Create a [packing instruction \[Page 163\]](#).
- In the Customizing section for packing instructions, configure the data required for [packing-instruction determination \[Page 169\]](#).
- Define a [packing-instruction determination record \[Page 170\]](#) for the material to be packed and, if necessary, further characteristics (ship-to party, shipping point).

Generating Handling Units Automatically in the Background

Generating Handling Units Automatically in the Background

Procedure

- If you want to pack **all** delivery items that have not yet been packed, select *Extras* → *Automatic packing* in the [packing dialog \[Ext.\] \[Ext.\]](#).

When you use this function, you do not need to select items individually. All material items and handling units that have not yet been packed are made available in the [automatic packing function \[Page 144\]](#).

- If you only want to pack **certain** items, select *Extras* → *Sel. item autom.pack.* in the [packing dialog \[Ext.\]](#).

If you use this function, you must select the items and handling units to be packed. Then only the unpacked items that were **selected** are made available in the [automatic packing function \[Page 144\]](#).

During automatic creation of handling units in the background, the program automatically searches in both cases for the respective packing proposals for the items to be packed.

Result

The handling units that were created then appear on the screen. If not all the items are packed or if errors have occurred during creation of handling units from the packing proposals found, the system displays an error log in a special mode.

Packing Proposal

Use

In the packing transaction, you can create HU proposals based on packing instructions by entering specific standard values such as the material to be packed, the plant where packing is carried out, the ship-to party and the quantity to be packed. The system starts packing instruction determination based on the values entered and packs the materials as described in the packing instruction it determines. For more information, see [Create a Handling Unit Proposal Based on a Packing Instruction \[Page 149\]](#).

Alternatively, you can create an HU proposal manually in the packing transaction. For more information, see [Create a Handling Unit Proposal Manually \[Page 151\]](#).

You create actual handling units by saving the handling unit proposals. You can modify the proposals as required before saving them.

There are several ways in which you can access the packing transaction. The transaction is integrated in delivery, goods receipt, shipping, repetitive manufacturing and discrete production.

Features

In the packing transaction, you can:

- Create HU proposals (automatically from packing instructions or manually by entering items). You create an HU proposal manually if you do not want to pack according to packing instructions. You build a hierarchy of load carrier, auxiliary packing materials, if required, and the materials to be packed. For more information, see [Hierarchical Display in the Packing Transaction \[Page 148\]](#).
- Select alternative packing instructions on which to base HU proposals
- Delete HU proposals (that is, unpack materials)
- Unpack nested HU proposals
- Repack unpacked materials and unpacked HU proposals
- Check HU proposals. To do this, the system simulates handling unit creation. The system cannot create handling units from HU proposals with the status "Faulty".
- Display handling units that the system is going to create from the proposals
- Recalculate weights and volumes of a handling unit. This is important if the measurements in the proposal have been modified manually in the packing transaction and now have to be reset to the values from the packing instruction or material master
- Create handling units

Hierarchical Display in the Packing Transaction

Hierarchical Display in the Packing Transaction

The packing transaction reproduces nested [HU proposals \[Page 156\]](#) in the form of a hierarchy.

The *Lvl 1* field in the table specifies the number of HUs on the highest packing level that are being created from the HU proposal. The system marks with an asterisk the items that are assigned to this HU proposal, that is, are either used on the highest packing level (packaging materials) or are packed on the highest level (packed goods or sub-HU).

If the item is a load carrier, the field *Lvl 2* specifies the number of subordinate HUs on the second packing level, per main HU. For all other item categories, the system uses an asterisk to show which items are packed in or on the load carrier of this subordinate HU.

All further packing levels are displayed in the same way.



Level 1	Level 2	Material
1		Euro-pallet
*		Intermediate layer
*		Pallet cover
*	10	Box
	*	Lid
	*	Finished product

This example of a nested handling unit shows an HU with load carrier “Euro-pallet” on the highest packing level. The intermediate layer, the pallet cover and the ten boxes are directly assigned to this HU.

Ten sub-HUs (the boxes) are shown on the second packing level, to which in turn lids and finished products are assigned.

Create an HU Proposal Based on a Packing Instruction

Use


You can use packing instructions to create [HU proposals \[Page 156\]](#) for the quantity to be packed. The system uses a determination record to determine a packing instruction (see [Packing Instruction Determination \[Page 169\]](#)).


Prerequisites

- You have created a packing instruction.
- You have made the settings required for packing instruction determination in Customizing for Packing Instructions.
- You have defined a determination record for the material to be packed and, if necessary, further characteristics such as ship-to party.
- You have accessed the packing transaction in the various applications and made the settings required for the creation of HU proposals.

Procedure

The materials to be packed are displayed in the packing transaction for packing with packing instructions.

1. Choose *Expand packing instruction*.
2. The system starts packing instruction determination.
 You can also start packing instruction determination manually, by choosing *Packing instr. selectn.* The system displays the possible packing instructions.
3. Select a packing instruction, and choose *Continue*.
4. The system carries out the following activities on determining a packing instruction:

The system explodes the quantity to be packed according to the packing instructions. The resulting HUs are then displayed in hierarchical form. For more information, see [Hierarchical Display in the Packing Transaction \[Page 148\]](#).
5. The system displays both the packed and the unpacked quantity. Some materials may not have been packed if, for example, the packing status for the packing instruction does not allow all the materials to be packed, since the packing instruction would then be violated.
 As a rule, the system only creates HU proposals with packing status "Packing instruction respected" or "Tolerated variance from packing instruction". By choosing *Packing instruction selection*, you can set the desired status, thus defining, for example, that HU proposals should be created even if they have packing status "Packing instruction violated".
6. The system calculates the quantity of items per main HU proposal (*Quantity/HU*) and the total quantity per (possibly nested) HU proposal (*Total quantity*).
7. The system displays the packing instruction that it determined and used to create the HU proposal.

Create an HU Proposal Based on a Packing Instruction

8. The system assigns a packing status, according to the packing status check profile specified in the packing instruction. If the HU proposal does not comply with the packing instruction, you can display the reason for this by clicking on the traffic light.
9. The system simultaneously recalculates the weights and volumes (unless you have set the "Manual maintenance" indicator in the packing instruction).
10. Make any changes necessary to your HU proposal. See also [Changing the HU Proposal \[Page 153\]](#).

Result

You can now save your HU proposal, thus creating an HU. If an HU proposal is faulty (red light), no handling units can be created from it.

Create an HU Proposal Manually

Prerequisites

- When creating a handling unit proposal manually, you must enter the complete HU data. Enter the items in order of load carrier, packaging materials and then packed goods, so that the system can automatically build the hierarchy.
- The system can determine the item category from the *Packaging material type* in the material master, under *Sales: General/Plant Data*: If this field is empty, or not ready for input, the item is a packed goods item. If the item is packaging material, this field is filled. In this case, the system checks in Customizing for Shipping, under *Packing → Define Packaging Material Types*, whether the *Packaging material category* of the corresponding packaging material type is load carrier or auxiliary packaging material. (If there is no material with the specified name, the system assigns item category I).
- You have accessed the packing transaction in the various areas and, if necessary, made the settings required for the manual creation of HU proposals.

Procedure

Manual quick entry allows you to easily create an HU proposal in the packing transaction, if no appropriate packing instruction exists or you do not want to pack automatically.

1. Enter the quantity for the load carrier in the first row of the table under *Quantity/HU*, and the corresponding material number under *Material*. Proceed in the same way for all other items, observing the order of entry described above.
2. Choose *Continue*.
The system builds the hierarchy and fills in the fields in the table, such as the *Item category*. The system takes the measurements from the material master record. The materials to be packed are put in a separate row.
3. Modify the HU proposal if necessary.
4. Save.

This example describes how the system builds the hierarchy in case of manual quick entry.

Enter the following data:

Quantity/HU	Material
3	Pallet
1	Pallet cover
10	Box
5	Packed goods

The system creates the following HU from these entries:

Level 1	Level 2	Quantity/HU	Material	Item category
3		3	Pallet	A

Create an HU Proposal Manually

*		1	Pallet cover	B
*	10	10	Box	A
	*	5	Packed goods	C

Changing the HU Proposal

Use

Before creating an actual handling unit by saving your HU proposal, you can modify it to suit your requirements.

Prerequisites

You have created an HU proposal, either automatically or manually.

Features

You have the following options for modifying an existing HU proposal:

- Delete all HU proposals
You can delete all HU proposals by choosing *Delete all HU proposals*. All the materials are then unpacked again.
- Delete one HU proposal
Alternatively, you can delete a specific HU proposal (or subordinate HU proposal) by selecting it and choosing *Delete selected HU proposal*.
- Unpack an HU proposal
Select a load carrier and choose *Unpack HU proposal*. The selected HUs are unpacked from the main HU. You can only unpack complete HUs, no individual materials.
- Recalculate weights and volumes of a handling unit
You may wish to do this if you modify the entries for weight and volume, and then want to undo the modifications. The system uses the data from the packing instruction or from the material master to recalculate the weights and volumes. To carry out recalculation, choose *Recalculate weights* or *Recalculate volumes*.
- Moving HU proposals in the hierarchy
You can move HU proposals up or down levels in the HU hierarchy by selecting a load carrier and choosing *Level up* or *Level down*. The corresponding HUs are then moved up or down a hierarchy level.

You can also:

- Change the quantity/HU for a material or an auxiliary packaging material
- Change the number of sub-HUs in a main HU (quantity on level 1, quantity on level 2, and so on)



You cannot change the quantity of the load carrier. Each HU must have one load carrier only.


Changing the quantity of a material/auxiliary packaging material has the following effects:

- if you reduce the quantity, the system displays the difference between the quantity to be packed and the packed quantity as unpacked material.

Changing the HU Proposal

- if you increase the quantity, the system checks the packed quantity against the quantity to be packed, and tells you what quantity can actually be packed.
- if the HU proposals were made according to a packing instruction, quantity modifications affect the packing status (according to the settings made for the check profile in Customizing).
- You can replace the load carrier, auxiliary packaging materials and materials by overwriting the material number and changing the item category if necessary.
- You can enter a different packing instruction.
These modifications affect the packing status (according to the check profile settings).
- You can change the loading weight/volume and the packaging weight/volume manually.
These values are then copied to the handling units when you save.

Activities

1. To select an HU proposal, place your cursor in an HU proposal row and choose *Select HU proposals*.
2. The system selects this HU proposal and all corresponding subordinate HU proposals.
 If you place the cursor in the row for a sub-HU, the system only selects this sub-HU (and any corresponding sub-HUs).
3. You can now delete the selected HU proposal if required.

Packing Status Check Profile

Definition

The packing status check profile determines the packing status of a [handling unit proposal \[Page 156\]](#) and also of the subsequent [handling unit \[Ext.\]](#).

Use

In the check profile, you assign a packing status to each of the possible ways in which an HU proposal can vary from the packing instruction. For example, an HU proposal that falls short of the target quantity is assigned status "Packing instruction violated" (red light), if you have defined in the check profile that this variance causes an error.

A check profile can be assigned to each packing instruction. When you create an HU proposal with this packing instruction, the system assigns the proposal a packing status, according to the settings in the check profile.

The packing status of an HU proposal is calculated from the individual packing statuses of its sub-HU proposals, the sub-HU with the lowest packing status determining the status of the proposal as a whole.

An HU proposal that fully respects the packing instruction is assigned status "Packing instruction respected" (green light). If you create an HU from an HU proposal, it also inherits the status of the HU proposal.



For example, a partial HU has the status "Tolerated variance from packing instruction" (yellow light) because it falls short of the target quantity (if you specify in the check profile that this variance can be tolerated).

An HU proposal has the status "Packing instruction violated" (red light) if, for example, it contains a material other than the one specified in the packing instruction (again, the corresponding setting must be made in the check profile). The system cannot create handling units from HU proposals with the status "Packing instruction violated".

Structure

The packing status check profile is made up of the possible ways in which an HU proposal can vary from the packing instruction. You assign a packing status to each of these variances.

Handling Unit Proposal

Handling Unit Proposal

Definition

Handling unit (HU) proposals are preliminary handling units that form the basis for creation of actual handling units, and serve as information for packing personnel. You create HU proposals in the packing transaction, either manually by entering all the required data, or automatically, based on a packing instruction. You can change a proposal as many times as required and check it before you create the handling unit. When you save the HU proposal, the appropriate amount of handling units are created.

When you create an HU proposal from a packing instruction, the system checks the packing status check profile and assigns a packing status to the proposal accordingly. This packing status is later inherited by the handling unit. However, if an HU proposal has the status "Packing instruction violated", you cannot convert it into a handling unit.

Structure

The HU proposal has the same structure as the [handling unit \[Ext.\]](#), except that it can also contain texts or documents. For more information, see [Texts in the Packing Instruction \[Page 165\]](#).

Check an HU Proposal

Prerequisites

You have created HU proposals in repetitive or discrete manufacturing and want to create handling units from these proposals, or simply check to make sure that you can create [handling units \[Ext.\]](#) from these proposals.

Procedure

1. Select the HU proposal that you want to check.



If you want to check the complete content of the table control, select none of the HU proposals.

2. Choose *Check HU proposal*.

The system checks to see if there are any HU proposals from which no handling units can be created (packing status "Packing instruction violated").

If this is the case, the system terminates the transaction.

If handling units can be created from all the proposals, the system confirms this.

Simulate Handling Unit Creation

Simulate Handling Unit Creation

Prerequisites

You have created HU proposals in repetitive or discrete manufacturing and want to create handling units from these proposals, or simply check to make sure that it is possible to create handling units from these proposals.

Procedure

1. Select the HU proposals, from which you want to create handling units, and select *Handling units* → *Simulate HU creation*.



If you want to simulate the complete content of the table, do not select any of the HU proposals.

Unless one of the handling units is faulty, the system displays the standard packing transaction with the simulated handling units. A number is displayed for each handling unit. The system also shows which materials and packaging materials belong directly to a handling unit.

If one of the handling units is faulty, the system terminates the transaction.



The numbers displayed here are not the same as the numbers that the system assigns later when the handling units are actually created.

2. Choose *Back* to get back to the packing transaction for packing with packing instructions.

Packing with Packing Instructions

Use

Customers often specify precisely the quantity in which their goods should be packed in a specific combination of packaging materials to enable their goods receipt process to run smoothly. These requirements for specific packing procedures often cause considerable costs for the vendor of the goods concerned.

Packing instructions enable the vendor to automate the packing process. Depending on specific characteristics, the system creates proposals for handling units based on the previously defined packing instructions. Based on this proposal, the vendor can pack the materials according to customer requirements, and then create the HU in the system, by confirming the proposal.

The vendor can even pack goods ready for shipping and in keeping with customer requirements, as a part of the production process.

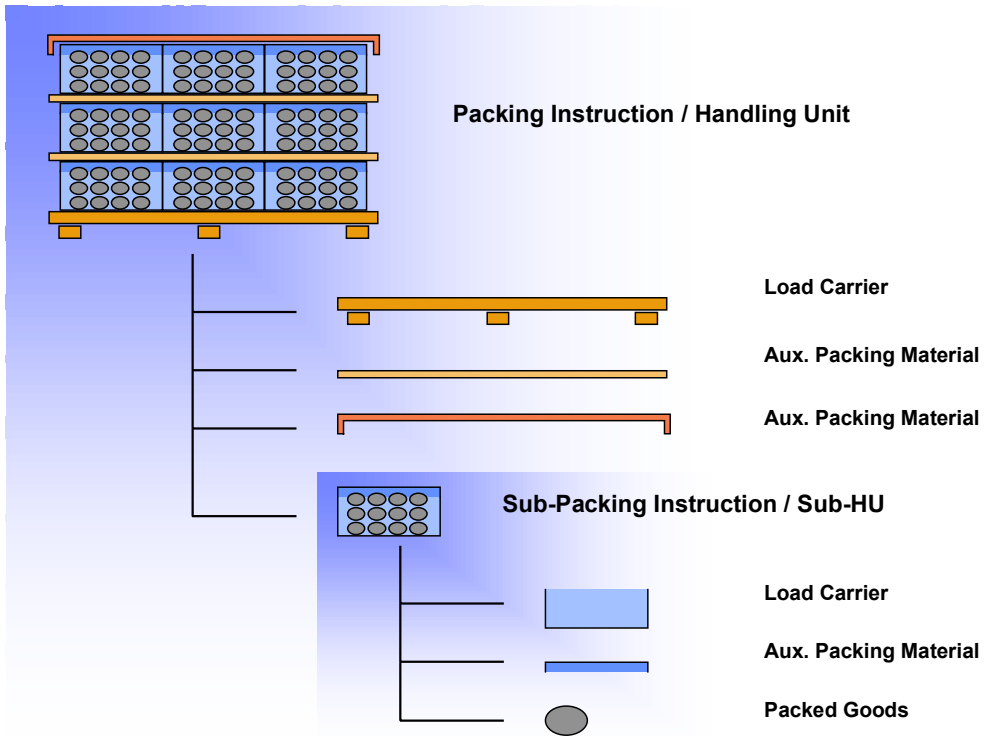
Integration

Packing with packing instructions can be used in both repetitive and discrete manufacturing and anywhere in the system that has packing functions (such as the delivery, the shipping notification, and so on).

Features

- With packing instructions, you can carry out preliminary packing, or actually pack materials ready for shipping, from production.
- Packing instructions can also be used to pack a material in shipping.
- The system can create HU proposals from packing instructions that are defined in the outline agreement and specify the amount of materials that are to be packed in a specific way in specific packaging materials.
- The system determines packing instructions based on various characteristics, such as material, ship-to party, and so on.
- You can create a handling unit in the system on the basis of this HU proposal.

Packing with Packing Instructions



Packing Instruction

Use

A packing instruction serves as a template for the creation of a handling unit. In a packing instruction, you define the materials and packaging materials to be packed in a handling unit.

This enables you to reproduce specific customer packaging requirements in the system. You can also automate the packing process by creating a proposal for a handling unit, based on a packing instruction.

Features

- **Materials**
The packing instruction specifies which materials in which quantities are to be packed in one handling unit.
- **Dimensions, weight and volume**
The dimensions, weight and volume of the handling unit are entered in the packing instruction. You can copy these entries to the HU proposal.



The system copies the dimensions from the material master record and uses these values to calculate the weight and volume for the HU in the packing instruction. You now have the option of changing the calculated values. If you change the weight and volume data, the system copies them to the HU proposal as fixed values, without checking them. If you do not change the values, the system calculates the weight and volume entries for the HU proposal dynamically.

- **Documents and short texts**
The packing instruction can be linked to documents in the Document Management System (DMS), enabling you to provide packing personnel with a detailed description of the packing procedure. Shorter descriptions can be entered as text items in the packing instruction.
- **Items not relevant for HU**
Any item that you want to appear in the HU proposal but not in the final HU can be flagged as "Not relevant for HU". You use this flag, for example, when a material is only relevant for packing information and not for the HU itself, but its consumption must be mapped in the system.
- **User-defined fields**
On the *Administrative data* tab page in the packing instruction, there are 5 user-defined fields, which also appear in the HU proposal and later in the HU. These fields are also included in the print program for the HU label, so that a certain value in a certain field triggers a certain action, for example, an asterisk on the printed label.
- **Multi-level packing instructions**
There are two types of packing instructions: single-level, which describe only one packing level, and multi-level, which describe several packing levels ("nested" handling units). Multi-level packing instructions, therefore, contain subordinate packing instructions. If you want to create handling units with labels (identified HUs) for each packing level, you require one subordinate packing instruction per packing level.

Packing Instruction

- **Status management**

You assign a packing status check profile to a packing instruction. In this check profile, you assign packing statuses to the possible ways in which an HU proposal can vary from the packing instruction. For each individual way that an HU proposal can vary from a packing instruction, you can define whether handling unit creation is permitted with this variance (variance from the target quantity, for example).

Create a Packing Instruction


Use

This procedure describes how to create both single and multi-level packing instructions. Multi-level packing instructions can be created in one procedure. You create the subordinate packing instructions directly from the main packing instruction by entering the name and item type of the subordinate packing instruction and branching straight to the initial screen for creation.

It is therefore not necessary to create a subordinate packing instruction beforehand.

Procedure

1. Select *Logistics* → *Production* → *Master data* → *Packing instructions*.
The system displays the screen *Master Data for Packing With Packing Instructions*.
2. Select *Packing instructions* → *Create packing instruction*.
You branch to the *Components* tab page on the *Create Packing Instruction* screen.
3. Enter the name of the packing instruction you want to create and choose *Enter*.
The *Create Packing Instruction: Components* screen appears.
4. Enter the items for your packing instruction.
5. An item can be a packaging material, an item of packed goods, a subordinate packing instruction, or a text item. You can enter all the components of the HU in this way. Please note that:
 - The items should be entered in the following order: load carrier, auxiliary packing material, packed goods/subordinate packing instruction. The first item is always the load carrier. Text items do not affect the hierarchy and can be entered anywhere below the load carrier.
 - For each item you must enter a material number and a target quantity and, if appropriate, a subordinate packing instruction. The system determines the item category automatically. For more information, see [Create an HU Proposal Based on a Packing Instruction \[Page 149\]](#).
 - If required, enter a minimum quantity and a rounding quantity.
An appropriate indicator is assigned to the load carrier.

 For a subordinate packing instruction, enter the item category and the name of the packing instruction and choose *Enter*. The system asks if you want to create this packing instruction.

By choosing *Yes*, you branch to the initial screen for creating packing instructions, in which you can create your subordinate packing instruction in the same way.

After saving your data you branch back to the main packing instruction.
6. Now enter the *Administrative data*, *Measurements*, *Short texts* and *Uses*.
 - Enter an inspection profile on the *Administrative data* tab page. In the check profile, you specify whether a handling unit can be created under specific circumstances or not. The

Create a Packing Instruction

system checks the [check profile \[Page 155\]](#) when creating the HU proposal.

- If necessary, the measurements specified in the packing instruction can be changed for this particular HU in the *Measurements* tab page.
- On the tab page *Uses*, the system displays the packing instructions (main packing instructions), in which the packing instruction in question is used as a subordinate packing instruction. This is the case if you are creating the packing instruction from a higher-level packing instruction, as subordinate to it.

7. Save.



Packing instructions can only be saved if they have no errors that prevent handling unit creation. The system checks that a handling unit can actually be created from the packing instruction. For example, if the maximum loading weight is exceeded, a handling unit cannot be created.

Texts in the Packing Instruction

Use

The packing instruction serves not only as a template for creating handling units, but also as information for packing personnel. For this reason, you can include textual (and graphical) elements in the packing instruction.

Integration

You include texts in the packing instruction in the *Change or Create Packing Instruction* transaction, either by entering them at item level or by linking to them at header level. Text items are relevant for the packing instruction and the handling unit proposal, but are not copied to the actual handling unit.

Features

- Link to documents in the Document Management System (DMS)

This function allows you to enter a verbal and/or graphical description of a packing instruction. For example, a detailed description of the complete packing procedure for the packing instruction as a whole.

- Text items in the packing instruction

Text items can be used to:

- describe item-specific packing procedures for packing personnel. For example, instructions such as "Use separating layer" or "Always pack material in pairs".

- give information on packing materials which, for some reason, have no material master in the system.

Text items can be maintained in several languages, the system displaying only those text items maintained in the user's logon language. If text items exist, but have not been maintained in the logon language, the user receives a warning for each such item when accessing the packing instruction.

Activities

You create a document that is relevant for the whole packing instruction in the DMS and include it in your packing instruction by setting a link at header level. All functions of the DMS are available to you. The document can contain text, scanned documents, graphics or video sequences. For more information, see the documentation on *CA - Document Management*.

You create text items in the packing instruction table of items (components tab page), simply by entering the appropriate item category and automatically branching to the SAP editor.

Texts in the Packing Instruction



Enter a Text Item in a Packing Instruction

Use

Allows you to enter texts at item level in a packing instruction. The system copies these texts to the HU proposal for the information of packing personnel. However, text items are not copied to the actual handling unit.

Procedure

You can enter text items either when creating or when changing a packing instruction. In the *Components* tab page in the *Create Packing Instruction* or *Change Packing Instruction* screen, proceed as follows:

1. Select the item row above which you want to insert your text item and choose *Text*.
or
In a new row, enter item category 'T' (text item).
2. The system displays the SAP Editor.
3. Enter your text (for more information, see [BC - Word-Processing in the SAPscript Editor \[Ext.\]](#).)
4. Choose *Back*.
5. The first 40 figures of the first line of text are displayed in the table as *Short text*.
 If you leave the first line blank in the SAP Editor, no short text is displayed in the table.
 Change the text at any time by simply double-clicking anywhere on the appropriate row.
6. If required, create different language versions of the text by placing the cursor on the appropriate row and choosing *Text item: maintain language*.

Result

You have created text items in the packing instruction.

Any text items maintained in different languages are displayed in the packing instruction and HU proposal only if the logon language corresponds. For example, if you have logged on in English and enter an additional language version for Spanish, the system only displays this version when a user logs on in Spanish.

Link a Document to a Packing Instruction

Link a Document to a Packing Instruction

Use

You link a document to a packing instruction at header level. This enables you to include textual or graphical items that are relevant for the packing instruction as a whole, such as detailed packing descriptions.

Prerequisites

- You have created a document in the Document Management System (DMS). For more information, see the documentation for *CA - Document Management*.
- You have assigned to this document a document type that is defined in Customizing for the DMS as a document that can be linked to the packing instruction. The document type PAC is shipped as standard for this purpose.

Procedure

1. Starting from the *Change or Create Packing Instruction* screen, choose the *Documents* tab page.
2. The system displays a table, in which any documents already linked to the packing instruction are listed.
3. Place the cursor on an empty row of the table, and use the possible entries pushbutton to find your document in the DMS.
4. The system displays your document in the table on the *Documents* tab page.
5. Save.

Result

The document is linked to the packing instruction, and can be displayed or printed using the pushbuttons below the table.

Packing Instruction Determination

Use

This function enables the system to find a packing instruction by specific characteristics. The condition technique is applied for this.

You define a packing instruction that refers to specific characteristics, such as material and ship-to party. If you now want to pack this specific material for this specific ship-to party, the system can find the pre-defined packing instruction and use it to create one or more HU proposals that exactly fit the requirements of the customer. Packing instruction determination thus automates the packing process.

Integration

The system starts packing instruction determination when you enter a quantity of a material to be packed and choose *Pack automatically*.

Prerequisites

- You have created a packing instruction for packing with packing instructions.
- You have made the settings for packing instruction determination in Customizing.
- Customizing for packing instruction determination is preset in the standard system. However, you can extend the settings in the customer name range. You need the following for packing instruction determination:
 - condition table
 - access sequence
 - determination type
 - determination procedure.
- You have also defined determination records. See also the section [Creating Determination Records for Packing Instructions \[Page 170\]](#).

Features

For more detailed information on the condition technique, see the sections under [CA - Message Control \[Ext.\]](#). Packing instruction determination is based on the same principle.

Creating Determination Records

Creating Determination Records

Prerequisites

You have fulfilled the prerequisites for the condition technique. For more information, see [Packing Instruction Determination \[Page 169\]](#).

Procedure

1. Choose *Logistics* → *Central Functions* → *Handling Unit Management* → *Master data* → *Packing instruction (PI)* → *Create*.

The system displays the screen *Packing Instruction - Create DetermRecords: Init Scrn*.

2. Enter the appropriate determination type, and choose *Enter*.
3. Select one of the proposed key combinations, for which you want to create a condition record. You can set the key combinations individually in Customizing.
4. Choose *Continue*.

The *Create PackInstr: Fast Entry* screen appears.

5. Depending on the key combination you select, you make the mandatory entries and assign them to a packing instruction and if necessary also one or more alternative packing instructions.

For example, if you selected the key combination *Customer/material*, the mandatory entries are the customer and the material.



You can display the details of the packing instruction you select by choosing *Packing instruction*.

6. Save your condition record.

Pack at a Packing Station

Use

For the most part, the general packing dialog is used by packing specialists that are not involved in the physical packing process. The packing station dialog is another way of creating and processing both handling units linked to deliveries and handling units without document reference.

This dialog was created mainly for the user that physically packs materials at a packing station in the warehouse. It supports both keyboard entries and scanned entries (assuming the necessary information is available in barcode format). You can also use a scale that is connected to the system to transmit the exact weight to the SAP System.

Prerequisites

If you want to implement packing at the packing station, you must make the following settings in the Implementation Guide (IMG) in the appropriate section (either Logistics Execution or Handling Unit Management).

Use the [Set Profile for Packing Station \[Ext.\]](#) IMG activity to set a packing station profile for each computer so that you can configure the packing process differently for individual packing stations..

Features

The packing station allows you to reflect material packing in the system. This function offers you the following options:

- Creating and changing handling units with reference to a delivery (inbound and outbound delivery)
 - You can record in the system what quantities of which delivery items are packed in a handling unit.
- Creating handling units without object reference
 - This options lets you pack materials (in handling units) that you want to return to the warehouse (put away), for example.
- Printing labels for individual handling units
 - When a handling unit is completely packed, you can immediately print a label that includes its handling unit number, for example.
- Updating the handling unit's weight
 - If existing handling units are weighed, the packing station uses a connection to an external scale to offer you an easy way of updating a handling unit's total weight.

Packing Deliveries at a Packing Station

Packing Deliveries at a Packing Station

Use

The packing station dialog is suitable for recording which delivery items in which handling units were actually delivered to the ship-to party (or to you by the vendor) in the system. The delivery specialist's packing proposals can also be updated and new handling units can be assembled for deliveries.

Procedure

You can call up the packing station dialog from the SAP menu as follows:

- For **outbound deliveries**, start at [shipping \[Ext.\]](#) and select *Pack → Packing Station*.
- For **inbound deliveries**, start at [inbound delivery \[Ext.\]](#) and select *Pack → Packing station*.
- For **Handling Unit Management**, start at the [packing dialog \[Ext.\]](#) and select *Processing Handling Units → Packing Station*.

Unless there is a packing station profile maintained for your terminal ID, the initial screen for the packing station appears.

1. Select a packing station profile that you could use to pack deliveries, if that is what you plan to pack.
2. Enter the delivery that you want to pack.

You are now in the packing station dialog.

3. You can make the following entries in the *Handling unit* field, which is located in the top section of the screen (*HU into which items will be packed*):

- If you want to create a new handling unit, enter a packaging material.
- Enter an existing handling unit into which you want to pack materials.

Select the *Pack material* tab in the lower section of the screen (*To be packed*). The delivery items that are available to be packed appear.

4. Enter the material number of the delivery item that you want to pack in the *Material/Handling unit* field.



You can also enter the EAN number in this field instead of the material number. This is especially useful if a scanner is connected to the computer (at the packing station), since it enables you to scan handling units during the packing process.

5. After confirming the material, enter the quantity that is to be packed in the *Qty* field. If you want to unpack, enter a negative quantity in this field.

After you confirm the quantity, the system packs the corresponding delivery item into the handling unit you selected.

You can refer to the hierarchical overview on the left-hand side of the screen at any time to see how many delivery items are packed into which handling units.

Packing Deliveries at a Packing Station**Packing handling units**

If you want to pack one handling unit into another handling unit, create a new “higher-level” handling unit (by entering a packaging material) and enter the identification of the handling unit that is to be packed in the *Material/Handling unit* field.



If you enter the identification of the handling unit that you just packed in this field once again, the system unpacks that handling unit.

Working with Freight Lists Use

Working with Freight Lists Use

A freight list groups together deliveries that are to be loaded together. In addition, you can specify the loading sequence for the individual deliveries.

A printed freight list contains data relevant to the delivery: the loading point and carrier in the document header and the individual deliveries for a loading point at item level, for example. Furthermore, it contains the total weight and volume of each delivery.


For more information on working with freight lists, see the [Editing Freight Lists \[Page 175\]](#) section and the [Printing Freight Lists \[Page 178\]](#) section.

Editing Freight Lists

1. To edit a freight list, choose *Load* → *Loading group* from [shipping \[Ext.\]](#).
2. Then choose the respective menu path from the following table:

Function	Menu path	What you should know
Display freight lists	→ <i>Display</i>	<p>The <i>Display Group</i> screen appears. Group type M (freight list) is automatically proposed.</p> <ol style="list-style-type: none"> 1. Enter the required group number and press ENTER. <p>The <i>Display Group: Documents by Group</i> screen appears.</p> <ol style="list-style-type: none"> 2. You can view the data in the freight list.
Change freight lists	→ <i>Change</i>	<p>The <i>Change Group</i> screen appears. Group type M (freight list) is automatically proposed.</p> <ol style="list-style-type: none"> 1. Enter the required group number and press ENTER. <p>The <i>Change Group: Documents by Group</i> screen appears.</p> <ol style="list-style-type: none"> 2. You can now make the required changes in the freight list. 3. Save the freight list.

Editing Freight Lists

Create freight lists	→ <i>Create</i> → <i>Via</i> <i>outbound delivery</i> <i>monitor</i>	<p>The <i>Outbound Deliveries for Loading</i> screen appears.</p> <ol style="list-style-type: none"> 1. Enter your selection criteria. Also enter the appropriate shipping forms in the <i>Output proposal</i> section of the screen. 2. Choose <i>Program</i> → <i>Execute</i>. The <i>Outbound Deliveries to be Loaded</i> screen appears. As its name suggests, this screen displays the outbound deliveries that are to be loaded. 3. Select the deliveries that you want to group together in one freight list and choose <i>Subsequent functions</i> → <i>Group</i> → <i>Create</i>. A dialog box appears in which you define the group type and assign a description. Group type M (freight list) is automatically proposed. 4. Enter a description for the group, and choose <i>Enter</i>. The group is created and you receive the message <i>Group <group number> saved</i>. <p style="text-align: center;"></p> <p>In the overview of deliveries to be loaded, only those deliveries are selected for which goods issue has not yet been posted.</p>
Delete freight lists	→ <i>Delete loading</i> <i>group</i>	<p>The <i>Delete Groups and Logs</i> screen appears.</p> <p>If you only wish to execute a test run, select the respective check box and press <i>Enter</i>.</p> <p>You receive a log listing the changes that have been made.</p>

Editing Freight Lists

<p>Sort freight lists</p>	<p>→ <i>Change</i></p>	<p>The <i>Change Group</i> screen appears. Group type M (freight list) is automatically proposed.</p> <ol style="list-style-type: none"> 1. Enter the required group number and press <i>Enter</i>. The <i>Change Group: Documents by Group</i> screen appears. 2. Specify the sort sequence by entering the required sort number in the <i>Sort</i> field for each delivery. 3. Save the document. <p>When the freight list is printed, the deliveries are printed in the specified sequence so that the loading personnel can observe this sequence when loading the deliveries.</p>
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Printing Freight Lists

Printing Freight Lists

Use

Output type LL00 (freight list) is automatically proposed in the document header of the output list in the standard version of the SAP System. There are several ways of printing this output:

- Request using the display or change functions
- Request using the output menu option
- Request using the worklist



The freight list is either issued automatically or on request, depending on the timing stipulated. Output can only be requested explicitly if time 3 is specified in the time data of the appropriate document.

Procedure

Request using display or change

In order to request explicitly that the freight list be printed using this function, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Loading* → *Loading group* → *Change* or → *Display*.

The *Change Group* or *Display Group* screen appears. Group type M is automatically proposed.

2. Enter the required group number, and choose *Group* → *Output* → *Printer*.

The *Issue Output* dialog box appears. The print parameters from the document header are displayed and may be changed if necessary.

In the standard version of the SAP System, the print parameters for the freight list are either proposed using a condition record or, if no appropriate condition record exists, using the respective shipping point in the document header.

3. Make changes to this data, if necessary, and then choose *Execute*.

The message *Output issued successfully* appears.

Request using the output menu option

In order to request explicitly that the freight list be printed using this function, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Communication / Printing* → *Loading output*.

The *Output from Grouped Deliveries* screen appears.

2. Enter output type LL00, transmission medium 1 (*Print output*) as well as the group number. If the freight list that you would like to print out has already been printed out, enter 2 (*Reprocess*) in the *Processing mode* field.

3. Choose *Program* → *Execute*.

The *Output from Grouped Deliveries* screen appears, where freight lists to be printed are listed. Only those freight lists are listed which correspond to your selection criteria.

Printing Freight Lists

4. Select the freight lists that you want to print.

If you wish to change the print parameters (output device, output number, and so on) proposed from the shipping point for the selected freight lists, select *Goto* → *Parameters*. The dialog box *Output Parameters* appears, in which you can make your changes.

If you would like to view a freight list before printing it out, select *Goto* → *Print preview*. You see the print preview screen for the selected freight list.

5. Choose *Edit* → *Process*.

The selected freight lists are printed out.

Request using the worklist

Freight lists may be printed from various overviews using the worklist of the deliveries to be processed:

- Picking overview
- Loading overview
- Transportation planning overview
- Goods issue overview

Printing from the overview of deliveries to be loaded is described below. If you want to print from the other overviews, proceed in the same way.

In order to request explicitly that the freight list be printed using this function, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Loading* → *Loading Group* → *Create* → *Via Outbound Delivery Monitor*.

The *Outbound Deliveries for Loading* screen appears.

2. Enter your selection criteria. In the *Group* field, you can also specify freight lists. Output type LL00 is entered automatically in the *Output proposal* section of the screen.

3. Choose *Program* → *Execute*.

The *Outbound Deliveries for Loading* screen appears.

If you did not specify freight lists on the selection screen, you can create freight lists from the list of deliveries to be loaded at this point, as described above.

3. Choose *Subsequent functions* → *Group output*.

A dialog box appears where you can enter the number of the freight list that you want to print.

4. Enter the appropriate freight list number, and press ENTER.

The *Screen Output Overview* screen appears, where you can control the printing of delivery notes by maintaining timing data and communication data as described above.

5. Select the freight lists that you want to print, and then select *Output* → *Send*.

You receive the message *Output initiated*.

Printing Freight Lists

Using the same procedures as described above, you can also request explicitly that output be issued by other output media, such as telex or Telefax. A prerequisite is that the appropriate output medium must be set up for the output to be issued.

Goods Issue

Implementation Options

As soon as the goods leave the company, the shipping business activity is finished. This is illustrated using goods issue for outbound deliveries.

You have the following options for posting goods issue:

- [Goods Issue Posting \[Page 183\]](#) for individual outbound deliveries
- [Goods Issue in Collective Processing \[Page 185\]](#) to post goods issue for multiple outbound deliveries
- [Goods Issue in Collective Processing \[Page 185\]](#) for posting goods issue for multiple outbound deliveries in the background without manual intervention
- Posting [Goods Issue for an Entire Shipment \[Ext.\]](#)

Range of Functions

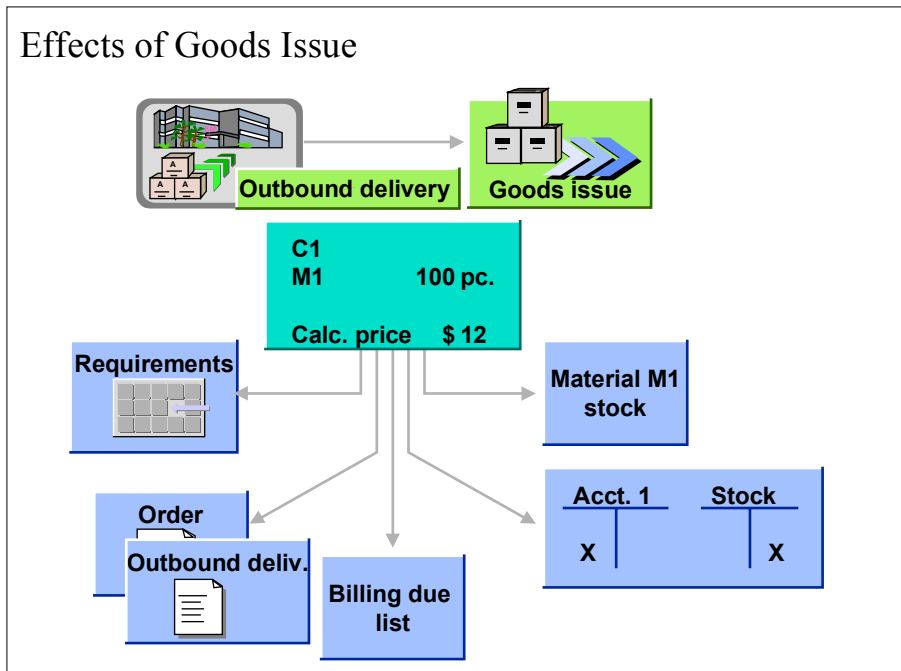
The outbound delivery forms the basis of goods issue posting. The data required for goods issue posting is copied from the outbound delivery into the goods issue document, which cannot be changed manually. Any changes must be made in the outbound delivery itself. In this way, you can be sure that the goods issue document is an accurate reflection of the outbound delivery.

When you post goods issue for an outbound delivery, the following functions are carried out on the basis of the goods issue document:

- Warehouse stock of the material is reduced by the delivery quantity
- Value changes are posted to the balance sheet account in inventory accounting
- Requirements are reduced by the delivery quantity
- The serial number status is updated
- Goods issue posting is automatically recorded in the document flow
- Stock determination is executed for the vendor's consignment stock
- A worklist for the proof of delivery is generated
- A worklist for the proof of delivery is generated

After goods issue is posted for an outbound delivery, the scope for changing the delivery document becomes very limited. This prevents there being any discrepancies between the goods issue document and the outbound delivery.

Goods Issue



Goods Issue Posting

Implementation Options

When processing individual outbound deliveries, you can also post goods issue for them directly.

Prerequisites

In order to post goods issue, all necessary shipping activities must be completed. These activities include:

- Entering all necessary data in the outbound delivery. For example, the storage location, batch, or valuation type must be specified in the delivery.
- Picking of all individual outbound delivery items must be complete for all items for which you have set the *Relevant for picking* indicator in the Implementation Guide (*Logistics Execution* → *Shipping* → *Picking* section, [Define relevant item categories \[Ext.\]](#) activity). You can post goods issue for picked quantities only.
- All transfer orders must be confirmed for individual outbound delivery items if those items were picked using the Warehouse Management System (WMS) or Lean WM and if you have indicated them as having a confirmation requirement in the following sections of the Implementation Guide:
 - Warehouse Management System (WMS)
The [Define storage type \[Ext.\]](#) activity in the *Logistics Execution* → *Warehouse management* → *Master data* section.
 - Lean WM
The [Define storage type \[Ext.\]](#) activity in the *Logistics Execution* → *Shipping* → *Picking* → *Lean WM* section.

Process Flow

If you want to post goods issue for an outbound delivery, proceed as follows:

When creating or changing an outbound delivery, select *Edit* → *Post goods issue* on one of the overview screens.



Before posting goods issue, you can specify the actual goods issue date without having to change the planned date by entering the actual goods issue date on one of the overview screens.

If you have not made an explicit entry for the goods issue date, the system uses the current date.

You can find more information about posting goods issue for more than one outbound delivery in the [Posting Goods Issue with Collective Processing \[Page 185\]](#) section.

Goods Issue Posting

Goods Issue Using the Decentralized Warehouse Management System

If you implement the [Decentralized Warehouse Management System \[Ext.\]](#), you cannot post goods issue using one integrated step. Goods issue in the decentralized WMS is controlled by using the following process flow:

1. The delivery is reported to the decentralized system.
2. Picking takes place in the decentralized system.
3. Goods issue is also posted in the decentralized system. This main objective of this process is to keep goods issue areas well organized.
4. Then, the decentralized system reports the delivery to the central system (ERP system).
5. Finally, stock is reduced in the central system.



There is no credit check that takes place in the GI posting process.

Result

As soon as the delivery is saved and goods issue is posted, you receive a message that contains the delivery number. The goods issue document number is not shown.

Goods Issue in Collective Processing

Use

You can use the collective processing function to post goods issue for multiple outbound deliveries at the same time.

First, select all the outbound deliveries ready for goods issue posting. You can limit the selection by goods issue date, for example. You can choose the inbound deliveries for which you want to post goods issue from the list that appears.

Prerequisites

Only deliveries that have been fully picked and fulfill the [Prerequisites for Goods Issue Posting \[Page 183\]](#) are included in the goods issue overview.

Procedure

To select outbound deliveries for which goods issue is to be posted, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Post Goods Issue → Collective Processing Via Outb. Delivery Monitor*.

The *Outbound Deliveries for Goods Issue* screen appears.

2. Enter your selection criteria. You can also specify intervals for certain data.
3. Choose *Execute*.

The *Outbound Deliveries for Goods Issue* appears containing the deliveries to be posted for goods issue for each goods issue date, along with other relevant information.

To post goods issue for the outbound deliveries included in the overview, proceed as follows:

1. Select the deliveries for which you want to post goods issue on the screen *Outbound Deliveries for Goods Issue*.
2. Choose *Subsequent functions → Post goods issue*.

Goods issue is posted for the deliveries selected and you receive the message: *<n> goods issue posted <n> goods issue not posted*. You can tell from this message whether goods issue could not be posted for some of the deliveries.

In addition, there is a separate overview for each delivery that indicates whether goods issue has been posted successfully or not.

3. Select *Goto → Back* to return to the goods issue overview.

Goods Issue from Consignment Stock

Goods Issue from Consignment Stock

Use

In addition to the standard stock determination function, you have the option of using consignment stocks for delivery.

Prerequisites

The prerequisite for this function is that the following parameters be defined in Customizing:

- Stock determination rule
- Stock determination group

You can maintain the stock determination rule in the *Define item categories for deliveries* Customizing activity.

In the material master, the respective material must be assigned to a stock determination group.

Range of Functions

Stock determination takes place during posting of goods issue.



If you are using the Warehouse Management System (WMS) or picking using WMS, stock determination takes place already when you create the transfer order and not later at the time when the goods issue is posted.

You can also define the stock withdrawal sequence by making the appropriate settings in Customizing. For example, you can first use your own stock, and then fall back on vendor consignment stock.

Status Overview in the Preceding Documents

Implementation Options

You can obtain an overview of the goods issue status of an outbound delivery in the delivery itself and via the document flow.

In the standard version of the SAP System, the following indicators are defined for the goods issue status:

Standard goods issue status

Indicator	Significance
Blank	The item is not relevant for goods issue
A	Goods issue processing has not yet been started for the item
C	Goods issue has been carried out for the item

Goods issue **cannot** be only partially carried out. A delivery item, therefore, cannot have a status of partial completion of goods issue.

Delivery header

The goods issue status of the entire delivery is displayed in the delivery header. You can access the goods issue status for the entire delivery by selecting *Goto → Header → Processing* on any delivery overview screen. The goods issue status for the entire delivery can be found in the *Goods issue (Total goods movement status)* field.

Delivery items

The goods issue status is also displayed for each item. You can access the goods issue status for specific items by selecting an item and choosing *Goto → Item → Processing* on any delivery overview screen. The status overview for the delivery item appears. You will find the goods movement status in the *Goods issue (Goods movement status)* field.

Process flow

You can display the goods issue status overview of an outbound delivery from the document flow:

1. Select *Environment → Document flow* on the one of the overview screens in the sales order or the delivery.

The system displays the numbers of all the preceding and subsequent documents for this document.
2. Position the cursor on the delivery number and select *Goto → Status overview*.

The status overview for the delivery appears in a dialog box. You find the processing status for goods issue in the *Goods movement stat.* field.

When you call up the document flow for an order, the system displays the processing status for a delivery item. When you call up the document flow for a delivery, the system displays the processing status for the entire delivery.
3. Select *Continue / Enter*.

Status Overview in the Preceding Documents

The document flow screen reappears.

Displaying Goods Issue Documents

Use

The goods issue document is not a sales & distribution document. It belongs to Materials Management (MM) and to Financial Accounting (FI). You can, however, display the goods issue document during sales processing. This gives you an up-to-date idea of stock quantities and values.

Procedure

If you want to access a goods issue document for a delivery from sales processing, proceed as follows:

1. Select *Environment* → *Document flow* on an overview screen of the relevant delivery.
The system displays all the document numbers that have been created for this business transaction. Among other things, it displays the number of the delivery's goods issue document. In addition, the system displays the processing status of the business transaction.
2. Place the cursor on the number of the goods issue document and select *Environment* → *Display document*.
The Materials Management document appears. The plant, storage location and batch data as well as the material movement type for the delivery item are shown on this overview screen.
3. To display the accounting document, select *Environment* → *Accounting docs*.
The financial accounting document appears. The data on the overview screen includes the value that is posted and the posting key with which the posting to the relevant balance sheet accounts is executed.
4. Choose *Goto* → *Back* until you reach the display of the document flow for the delivery.

Parcel Tracking for Express Delivery Companies

Parcel Tracking for Express Delivery Companies

Use

You can use this function to track the path of individual deliveries or parcels that were sent via express delivery company. You can also exchange the necessary data with the express delivery company and ship-to parties and print the labels needed for parcel tracking.

Integration

The data determination procedure occurs in the background of the delivery.

As the system saves data, it checks whether express-delivery-company processing is activated. The data fields defined for the express delivery company are determined in the order specified. If a value cannot be determined, the system makes an entry in the incompleteness log.

Parcel tracking for the express delivery company is available for both inbound and outbound deliveries.

Prerequisites

The following prerequisites must be met in order to implement parcel tracking for express delivery companies:

- The express delivery company is entered in the system as a service agent.
- The express delivery company has been created in the system and is active (see also: [Creating an Express Delivery Company in the System \[Page 192\]](#))
- An express-delivery-company indicator is assigned to the service agent.
- At least one shipping point is assigned to the express delivery company.
- [Label printing is set up \[Page 199\]](#)
- IDoc interface between partners and service agents is established.

Range of Functions

Parcel tracking for express delivery companies with express-delivery-company processing offers you the following options:

- You can define any number of fields for each express delivery company. These fields are then automatically filled in when a delivery is created and then made available to the IDocs.
- Express-delivery-company processing makes available additional information that the express delivery company may need. This function allows you to use XML-enabled Remote Function Call (RFC) interfaces.
- The necessary information can be printed right on the package label. This allows the parcels to pass through the express delivery company's automatic sorting machines, for example. Settlement is also made easier, thanks to this function.
- The parcel-tracking status in the SAP System is set automatically via the parcel-tracking interface. This way, the sender can display all tracking data in the document flow, the delivery or in a separate transaction in the SAP System. A workflow connection makes it easier to implement customer-specific processes.

Parcel Tracking for Express Delivery Companies

- The ordering party can also track the progress of his or her order. The ordering party can either make an inquiry via Internet or receive the necessary data via the delivery IDoc. If the ordering party also has an SAP System, he or she can access the same function from an incoming delivery point-of-view.
- XML-enabled Remote Frequency Call (RFC) interfaces are available for master data maintenance.
- Express-delivery-company data can be processed directly from the delivery.

Creating Express Delivery Companies in the System

Creating Express Delivery Companies in the System

Use

Express delivery companies allow:

- Goods to be delivered quickly
- Customers to track the progress of their parcel at any time

You must create express delivery companies in the system so that you can establish communication with express delivery companies, print special labels for express shipping purposes, and track parcels you send to your customers.

Prerequisites

The SAP Business Connector or a Remote Frequency Call (RFC) server solution must be active so that service-agent data can be automatically read in.

Procedure

To create an express delivery company, proceed as follows:

1. Choose *Logistics* → *Logistics Execution* → *Master Data* → *Partners* → *Service agent* → *Maintain Express Delivery Company*.

The *Express Delivery Company (XSI) Cockpit* appears. Use this cockpit to carry out all functions related to parcel tracking and express delivery companies.

2. Choose *Express delivery company* → *Create express delivery company* and enter an ID for the express delivery company.
3. To upload data from an external system, select *Express delivery company* → *Non-SAP system*.
4. On the *Data provider* tab, choose *Load list of exp. dlv. companies*.
5. From the list that appears, select the express delivery company that you want to create in the system.

The system copies the name and key (ID) for the express delivery company in the external system and also copies the Internet address (target URL) for the SAP Business Connector.

6. Choose *Express delivery company* → *Load all master data*.

The system gets all existing master data from this express delivery company and copies it into your SAP System.



This process may take a few minutes.

7. Activate the express delivery company on the *Exp. dlv. cmpny control* tab and save the entries.

Creating Express Delivery Companies in the System

Assigning service agents

1. From the *Express Delivery Company (XSI) Cockpit*, choose *Goto* → *Assign svc. agnt to express delivery co.*
2. Make a new entry for the service agent for each export ID (for domestic and foreign countries).
3. Save your entries.

The service agent is assigned to an express delivery company.

Assigning shipping points

1. From the *Express Delivery Company (XSI) Cockpit*, choose *Goto* → *Express delivery company and meta data.*
2. On the right-hand side of the screen, select the express delivery company of your choice and then choose *Shipping point: active* on the left-hand side of the screen.
3. Make a new entry on the *Shipping point: active* screen for each shipping point that is to be valid for this express delivery company.



If you want to make an express delivery company active for all shipping points, choose *Activate all shipping points* on the *Exp. dlv. cmpny control* tab page.

Editing meta data

1. Choose *Express delivery company's info (i)* on the *Meta-data* tab in the *Express Delivery Company (XSI) Cockpit*.

The system displays the express delivery company's Web site, which describes which meta data you still need to edit.

2. Follow the instructions on this Web site and edit all the meta data that is not active by choosing *Edit meta data*.

Example

Establishing number ranges

If a tracking number is not active in the meta data and the information provided indicates that you are to create a number-range object, proceed as follows:

1. From the *Express Delivery Company (XSI) Cockpit*, choose *Goto* → *Express delivery company and meta data.*

A list of all meta data appears.
2. Choose the line that contains the tracking number data field and then choose *Details*.
3. Enter a number range object (such as **TRACK** for a non-rolling interval or **TRACKN** for a rolling interval) and a number range interval in the *Number range* section of the *Details* screen.

You will find all meta data that needs number ranges on the *Number range* tab in the *Express Delivery Company (XSI) Cockpit*. This tab also contains a function you can use to request number ranges from the express delivery company.

Creating Express Delivery Companies in the System

Determining service code

A service code is a code specific to the express delivery company that must be printed on the label so that the express delivery company can deliver the parcel by the requested time. An example of a service code would be “tomorrow before 8:00” or “day after tomorrow before 10:00”. You can derive the service code from the following criteria:

- Special processing
- Delivery priority
- Shipping conditions
- Route

To specify which of the above criteria the service code is to be derived from, proceed as follows:

1. From the *Express Delivery Company (XSI) Cockpit*, choose *Goto* → *Express delivery company and meta data*.
A list of all meta data appears.
2. Choose the line with the *Service code* data field and then choose *Details*.
3. Enter one of the following function modules in the *Function module* field in the *Determine data* section of the *Details* screen:
 - XSI_GET_SERVICE_CD_SDABW to derive service codes from special processing
 - XSI_GET_SERVICE_CD_LPRIO to derive service codes from delivery priority
 - XSI_GET_SERVICE_CD_VSBED to derive service codes from shipping conditions
 - XSI_GET_SERVICE_CD_ROUTE to derive service codes from routes

Master Data

The following master data tables are available for small parcel carriers:

- Service codes
- URLs
- Weight codes
- Product codes
- Routing information
- Parcel tracking status

You can make all necessary settings and establish communications with small parcel carriers by using the small parcel carrier cockpit. XML-enabled Remote Function Call (RFC) interfaces are defined for some master data.

Shipper account number

The shipper account number is the sender's account number with the small parcel carrier. You can store this number in the SAP System in one of the following ways:

- Define an external account number in the small parcel carrier cockpit. This number is automatically included as identification every time an RFC is carried out.
- Define an external account number with the vendor for each company code. If a delivery is made up of orders from various company codes, the number cannot be uniquely defined.



Enter the predefined function module XSI_GET_SHIPPER_ACCOUNT in the *Shipper account number* field so that the system determines an external account number.

- If the shipper account number is always the same, use the XSI_GET_SHIPPER_ACCOUNT_DEF function module.
- If the shipper account number is different for one shipping point, maintain the standard value for the *Shipper account number* data field in *Shipping point: meta data*.
- You can change the shipper account number manually in the delivery, provided you have flagged the field as able to be changed manually.



The qualifier for external communication must have SHIPACCT as its value.

Service codes

The service code specifies when the goods are to arrive at the customer's place of business (same day or next day, for example).

You need to make a setting for the *Service code* data field so that the system knows how to find the service code. There are predefined function modules available in the system that determine the service code according to the following parameters (see also: [Creating Small Parcel Carriers \[Page 192\]](#)):

Master Data

- Special processing indicator
- Delivery priority
- Shipping conditions
- Route



The qualifier for external communication must have XSISRVC as its value.

Product codes

The product code is similar to the service code. Some small parcel carriers differentiate between service and product codes. There are no predefined function modules for product code determination.



The qualifier for external communication must have PRDCD as its value.

Routing information

You can record routing information regardless of postal code, postal code area or location. You can upload routing information from the small parcel carrier via an XML-enabled Remote Function Call (RFC) interface from the small parcel carrier cockpit.



The qualifier for external communication must have ROUTECODE as its value. The XSI_GET_CARRIER_ROUTING function module finds the corresponding information.

Parcel tracking number

The parcel tracking number uniquely identifies a parcel or delivery and its shipper account number.

The following two procedures are normally used to create parcel tracking numbers:

- Unique number originating from number range assignment by the small parcel carrier There is a number range interface available for this purpose.
- Unique number resulting from incorporation with the shipper account number

Some small parcel carriers also store other information such as product code or service code in the parcel tracking number.

The last digit is normally a check digit. Some of the major small parcel carriers program some check digit procedures into function module XSI_CHECK_DIGIT_nn. Since most procedures follow the same formula (digit weighting +/- value of modulo n), it is relatively simple to copy an existing routine and make the appropriate changes if you do not find another procedure that meets your needs.

You can also specify sequence numbers by way of an internal number range.

You can use variable substitution to create parcel tracking numbers when you are dealing with compound parcel tracking numbers (UPS tracking numbers, FedEx Astra codes or German Post Identcode, for example).

You still have the option of copying the tracking number (or any other data field) from an external server such as FedEx OnSite Server, for example.



The qualifier for external communication must have TRACKN as its value.

Internet sites (URLs)

You can store the following URLs in the system for each small parcel carrier:

- URL for the small parcel carrier's documentation (editing meta data, for example)
- Target URL for the SAP Business Connector
- Sample URL for the small parcel carrier's parcel tracking page

Other data fields

You can define as many data fields as you like.



You must enter a qualifier for external communication in the definition of the data field so that the field appears in IDocs and the transaction data interface.

Editing Express Delivery Company Data in the Delivery

Use

Normally, all data necessary for parcel tracking is automatically determined when you create or save a delivery. If certain important pieces of data are missing, the system makes an entry in the incompleteness log. You can change this data in the delivery manually, if necessary.

Procedure

To edit express delivery company data in the delivery, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Outbound Delivery* → *Change* → *Single Document*. Display the desired delivery and then choose *Goto* → *Header* → *Tracking*.

All express delivery company data fields appear. All incomplete or incorrect fields are marked with a red traffic light and the section containing the incomplete data is opened automatically.

3. Put the cursor on the field that you would like to change and choose *Change*.
4. Save your entries.

Setting up Labels for Express Delivery Companies

Use

Express delivery companies normally work with automatic sorting machines. Labels should meet the specifications of each express delivery company so that parcels can go through these machines without having to be re-labeled.

Prerequisites

There are two output types that are predefined for label printing.

- KEP2, for printing all labels in a delivery
- KEP6 for printing one label for each handling unit

There are no label forms defined.

Procedure

There are no specific forms for express delivery companies available in the SAP System. You have to upload these forms according to a certain procedure (see also: [Printing Labels \[Ext.\]](#)).

To set up labels for express delivery companies, proceed as follows:

1. Enter the names of the forms in the express delivery company cockpit for each express delivery company.
2. Add access sequence 0013 to the output determination procedure you are using.



If you need various forms, you must

- either write your own print program (copy SDPACKD2 or SDPACKD3 and adapt FINDFORM)
- or define new output types

Access Delivery Tracking Status

Access Delivery Tracking Status

Use

You can access information directly from the express delivery company about the current location and status of parcels or deliveries en route to customers via the Internet.

Procedure

1. For outbound deliveries, start at [shipping \[Ext.\]](#) and choose *Tracking*; for inbound deliveries, start at [inbound delivery \[Ext.\]](#) and choose *Tracking*.
2. Enter the document number on the selection screen and choose *Display*. You can select according to the following documents:

- Sales document
- Purchasing document
- Delivery
- Shipment number
- Handling unit
- Tracking number

A hierarchical list appears that includes all documents that meet the selection criteria you specified together with their delivery tracking status.

3. From this overview screen, you can:
 - Get delivery tracking data from the express delivery company (→ *Refresh tracking data*)
In the express delivery company cockpit, you can make a setting to update this status automatically each time you call up this screen.
 - Display the express delivery company's delivery tracking page on the Internet (→ *Internet delivery tracking*)
 - Display the name of the recipient, point of destination, and the recipient's signature (optional) by using the context menu
 - Go to and display the corresponding document
 - Set the tracking status
In the express delivery company cockpit, you can indicate whether the status can be set manually.

Proof of Delivery

Implementation Options

Proof of delivery (POD) is an instrument involved in business processes in which an invoice is issued only after the customer has confirmed the delivery's arrival. In addition to the proof of delivery itself, you can also record the POD date, POD time, the actual quantity that arrived and the reason for possible differences in quantities. This is especially important for deliveries in which the delivery quantity varies because of the nature of the goods or for which the exact delivery quantity is unknown from the start.

You are now in a position to issue an accurate invoice based on the customer's confirmation of goods received. It is no longer necessary to create credit memos after the fact. The reasons for deviation that occur most often in "real world" scenarios such as stock shrinkage, theft, certain characteristics of goods (volatility, for example) and transportation damage are recorded and analyzed in the system. This analysis is especially valuable when you are negotiating with forwarding agents, vendors or customers, since all deviations can be reflected.

Prerequisites

Proof of delivery is exclusively an instrument for confirmation of external customers' deliveries.

Proof of delivery uses IDoc DELVRY03, although if deviations occur, the delivery proof segment (E1EDL53) in delivery item E1EDL24 and the segments in delivery header E1EDL20 must be filled in. In this segment, the ship-to party enters the deviation reason, the deviation quantity and the delivery unit or stockkeeping unit and the corresponding unit of measure. You can carry out a proof of delivery more than once for the entire delivery (if differences were entered incorrectly during the first verification, for example). However, if all items of a delivery were recorded in the first verification with no deviations from the shipping notification, POD confirmation occurs automatically. In this case, it is not possible for the ship-to party to make multiple verifications. If there are no deviations, you must fill in segments E1EDL20 and E1EDL24.

For batch split items, proof of delivery occurs only for the sub-items, because the given batch is needed for informational purposes. The main batch item is confirmed with no deviations.

You should make the following settings in the Implementation Guide under *Logistics Execution* → *Shipping* → *Deliveries* → [Proof of delivery \[Ext.\]](#):

- [Define for each delivery item category whether it is relevant for the POD process \[Ext.\]](#).
SAP recommends that you flag all item categories that belong to a delivery type as being POD relevant.
If you want to copy the POD relevance from a preceding document (such as an SD scheduling agreement) into inbound deliveries, select `Copy POD relevance from preceding document (V)` for the item category. In this case, as the preceding document is being processed, the system already knows whether verification for an item should occur or is expected.
- [Define reasons for deviation \[Ext.\]](#).
Define how the quantity is to be calculated (add or subtract the difference quantity, depending on whether you are dealing with an overdelivery or an underdelivery).

Set the *Relevant for POD* indicator on the *Shipping* tab page of the customer with whom you would like to carry out POD-processing in the *Sales area* data of that customer's file.

Proof of Delivery

You can also enter a time frame in which you expect to receive verification from the ship-to party. Once the time frame has passed, outbound deliveries can be confirmed using the *Automatic Confirmation* function.

Process Flow

Automatic Verification and Confirmation

The ship-to party transfers the proof of delivery to the SAP System via IDoc from another SAP System, an external system or via Internet. In this way, the quantities are verified for the delivery. Multiple verification is only possible if the outbound delivery has not yet been completely confirmed.

The current proof of delivery situation is reflected by the POD status: *POD-relevant*, *Deviations reported* or *Confirmed*. You can check the POD status at any time within delivery processing by using the status overview. The system does not make an entry in the document flow.

In most cases, there are no quantity deviations, meaning that the proof of delivery process does not create any additional work for you. This process enables automatic verification and confirmation via IDoc or Internet.

Manual Verification Processing

Manual processing of the verification is always necessary when deviations are reported by the ship-to party. In such a case, it is necessary to edit the POD confirmation.

When you process a POD manually, you can enter and analyze reported differences and deviation reasons in the SAP System. In this way, you can control the checks made and dictate when the POD is ready to be released for further processing. To process proof of delivery manually, proceed as described under [Confirming Proof of Delivery Manually \[Page 203\]](#).

Manually Confirming Proof of Delivery (POD)

1. From [shipping \[Ext.\]](#), choose *Proof of Delivery* → *Worklist Outbound Deliveries for POD*.

The selection screen is divided into three sections:

- Predefine date and time
Enter the POD confirmation date and time here. The system automatically enters the current date and time as a default.
Result: This data is carried over into the selected list as deliveries not yet processed.
- Selection conditions for deliveries
You can select according to criteria such as shipping point, route, actual goods movement date, POD date or delivery number.
- You can specify which POD status you want to have displayed in the *Deliveries worklist* section:
 - Not yet edited (POD status A)
 - Verified (not confirmed) POD status B
 - Verified (confirmed) POD status C
 - Display all (POD status A,B,C)

2. A worklist according to your selection criteria is displayed, which you can edit using the following options:

- Select and sort deliveries
- Change POD date and time (POD date)
- Display document flow and details for a delivery
- Choose, edit and save display variants for this list
- Edit individual deliveries (see **Change Single Document**)
- Display individual deliveries (Display Individual Documents)
- Create billing document (following completed POD)
- Display differences for a delivery (= worklist for subsequent processing)
- POD fast confirmation for one or more deliveries from the list with processing log

Change single documents

1. On the *POD - Worklist* screen, choose *Goto* → *Process delivery*.

The delivery appears with its corresponding difference quantities and reasons for deviation.

POD status may have the following attributes:

- A: The delivery item is relevant for the POD process because of Customizing
- B: Differences were reported

Manually Confirming Proof of Delivery (POD)

- C: Proof of delivery was confirmed

2. Enter the difference quantities in either delivery units or stockkeeping units.
3. Enter a reason for deviation.

You can predefine up to 10 reasons with various quantities per delivery item in the *Quantity Distribution per Item* screen, which you can access by choosing *Detail...* in the item line.



The POD quantity is calculated from the delivery quantity and the difference quantity using a calculation indicator (+ or -) that is stored in Customizing for each reason. The data you enter can be saved at any time.

4. Confirm the verified differences and deviation reasons by choosing *Confirm proof of delivery*. If you carry out the confirmation process from the list, the POD time frame is not taken into account and all the outbound deliveries in the display that you have selected are confirmed.



You can confirm the POD either immediately or later on. POD can be confirmed in each individual document (as explained above) or for multiple deliveries directly from the worklist. Only after confirmation has been completed can you initiate subsequent processing caused by differences that occurred or creation of a billing document with an adjusted POD quantity. You may not create billing documents using the billing due list until the POD confirmation has been completed.

If you want to cancel a confirmation, choose *Cancel proof of delivery*. Then, you can change the difference quantities and reasons and re-confirm, if necessary. You can only cancel the POD confirmation if billing documents have not yet been created and if no subsequent processing steps for value or quantity correction have been taken. Therefore, you have the option of changing or adding to quantities or deviation reasons after confirmation is officially completed.

Subsequent Processing of Proof of Delivery (POD)

Use

After proof of delivery has been confirmed, the system creates a worklist for manual subsequent processing for necessary quantity and value corrections (cost of sales, for example). You can select from this list according to various criteria (reason for variance, POD date, material, to name a few). You can also use this worklist as a tool for statistical analyses.

Procedure

1. From [shipping \[Ext.\]](#), choose *Proof of delivery* → *Worklist POD subsequent processing*.

The *Proof of delivery: items with difference quantities* screen appears.

The selection screen for the POD subsequent processing worklist is divided into two sections:

- Choose worklist

You can select your worklist according to variance reason, POD date or POD verification date, for example.

- You can use the *Selection conditions for further processing* to define indicators for subsequent processing (quantities or values).

The system flags an item with differences for subsequent processing (manual value and quantity corrections) by using two indicators. Both may have the following attributes:

- '0': No subsequent processing necessary (items with differences, POD status B)
- '1': Subsequent processing necessary (items with differences, POD status C)
- '2': Subsequent processing completed (manual quantity or value corrections have been made)



Within the list, these three attributes are illustrated with the following icons:

- '0': Inactive icon
- '1': Red icon
- '2': Green icon

2. After entering your selection criteria, choose *Execute*.

A list of all items with varying quantities or values appears. You can sort within this list of items according to reasons (for statistical analyses), as an example.

3. Based on this worklist, you can carry out any necessary corrections manually.

Once you are finished making manual corrections, confirm these steps in the worklist by clicking on the corresponding icon. The colors of the icons in the list will change. After the icons have changed color, the deliveries in question can be archived.

There are no corrections made automatically based on the POD confirmation.

Subsequent Processing of Proof of Delivery (POD)

If no manual corrections are to be made or the subsequent processing is completed suddenly, you can set the status of the entire worklist to complete by using the corresponding button in the button bar. The delivery can now be archived.

Processing Returns After Goods Issue Posting

Implementation Options

Processing returns after successful goods issue posting involves a cancellation of the goods issue posting process. This method allows you to reverse goods issue by creating a returns delivery and then posting goods receipt for it.

For more information about reversing goods issue, refer to the [Reversal of Goods Issue \[Page 208\]](#) section.

Process Flow

After billing the outbound delivery, proceed as follows:

1. Enter a returns order (order type RE) for the customer and the material involved.

You can create this returns order with reference to the original sales order. In this way, the document flow assigns the original order to the returns order. The original order quantities for the individual goods are proposed automatically. You can change the proposed quantities if necessary.
2. Create a returns delivery for the returns order. The system proposes the delivery type. The delivery quantities in the returns delivery must correspond to the goods issue quantities in the goods issue document that was posted incorrectly.
3. Post "goods issue" for the returns delivery. The system automatically recognizes the returns delivery as goods receipt and clears the original goods issue posting by carrying out the reverse posting. To post this goods receipt, proceed as if it were actually a [Goods Issue Posting \[Page 183\]](#).
4. Invoice the business transaction with a returns credit memo. The system automatically proposes the billing type. The original billing document for the goods issue document that was incorrectly posted is cleared by this credit memo.

Goods Issue Reversal

Goods Issue Reversal

Use

Goods issue reversal means that you cancel the goods issue posting for a delivery. This function enables you to remove the posting without having to create a returns delivery and then having to post a goods receipt for it (see also [Processing Returns After Goods Issue Posting \[Page 207\]](#)). This function can be especially useful if you have accidentally posted goods issue, for example, and you would like to reverse it. Goods issue reversal usually occurs shortly after goods issue posting.

Integration

The cancellation document is integrated in the document flow of the delivery.

Prerequisites

Goods issue reversal is only possible for movement types for which a reversal movement type is defined in Customizing. Therefore, if you have defined your own movement types for goods issue, you must also define the respective reversal movement types and assign them to the movement types for goods issue.

Range of Functions

When you reverse goods issue for a delivery, the system creates a cancellation document that adopts the quantities and the valuation from the original goods issue document, and also executes the respective value and quantity posting to stock.

Like the goods issue posting, the goods issue [reversal \[Page 209\]](#) is only possible for the entire delivery. You cannot reverse goods issue for only part of a delivery.

After the reversal, the goods movement/goods issue status of the delivery is reset to *Not yet started*. In this way, the delivery can be processed further as required. The system also resets the delivery requirements.

If the delivery has already been billed partially or fully, the goods issue reversal is only possible after the billing document has been cancelled.



Once you implement a [decentralized Warehouse Management System \[Ext.\]](#), you can no longer reverse goods issue that has already been posted.

Reversal of Goods Issue

Prerequisites

For goods issue reversal, you can only select deliveries that have not yet been billed fully or partially, or whose billing has been cancelled.

Procedure

1. From [shipping \[Ext.\]](#), choose *Post Goods Issue → Cancellation/reversal*.
The *Reverse goods movement* screen appears.
2. Enter your selection criteria, for example, route, goods issue date, shipping point, and so on, and choose *Execute*.

A list of all deliveries that correspond to your selection criteria appears.



From the list of deliveries to be reversed, you can branch directly to a list entry in the delivery by double clicking on the entry.

3. Select the deliveries for which you wish to reverse goods issue and choose *Cancel/reverse*.
A dialog box appears.
4. In the dialog box, confirm that you want to reverse goods issue.

Result

The system reverses goods issue for all selected deliveries. It also generates a log of all the reversals executed and any errors that may have occurred.

Printing and Communication in Shipping

Shipping Output

Use

From [shipping \[Ext.\]](#), you can request different shipping outputs by selecting *Communication / Print*.

You can request the following output:

- [Outbound delivery output \[Page 212\]](#)
(includes delivery note LD00, packing list PL00 or shipping notification LAVA, for example),
- [Loading output \[Page 214\]](#)
(freight list LD00, for example) and
- [Handling unit output \[Page 216\]](#)

The procedures are similar, although the selection screens vary slightly.

Editing Outbound Delivery Output

Editing Outbound Delivery Output

To call up delivery output, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Communication / Printing → Outbound Delivery Output*.
2. Enter the output type, the transmission medium, and, if required, further selection parameters.
3. Choose *Program → Execute*.

The *Output from Deliveries* screen appears, which contains a list of all outputs that meet your selection criteria.

4. Select the outputs that you want to edit.

Editing options

- Changing the print parameters (collective change)

To change the **print parameters**, choose *Edit → Printer default*.

If you selected the transmission medium *Print*, all the selected outputs get their print parameters from the Printer Default screen.

- Displaying the output on the screen

To generate a **screen display** of the output, choose *Goto → Print preview*.

If you have generated outputs using SAPscript print formatting (delivery notes and packing list, for instance), you can generate an onscreen display of the output before you edit it.

- Changing details

To change **details** of an output, choose *Goto → Communication*.

You can change the following details for transmission mediums *Print* and *Telefax*.

Transmission medium	Parameters
Printing	Spool parameters
Telefax	Telefax number Country

For all other transmission media, the system displays only the parameters for editing, which cannot be changed.

5. Choose *Edit → Process*.

The selected outputs are generated and edited.

If you would like to have a **log** generated after editing the output, choose *Goto → Log*.



If you would like to have a worklist displayed for all outputs that were not processed successfully, select *Processing mode 3* on the *Output from Deliveries* initial screen.

Editing Outbound Delivery Output

The system displays all types of output with errors, and you can then edit them once again.

Editing Loading Output

Editing Loading Output

To call up loading output, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Communication / Printing → Loading Output*.
2. Enter the output type, the transmission medium, and, if required, further selection parameters.
3. Choose *Program → Execute*.
The *Output from Grouped Deliveries* screen appears, which contains a list of all outputs that meet your selection criteria.
4. Select the outputs that you want to edit.

Editing options

- Changing the print parameters (collective change)

To change the **print parameters**, choose *Edit → Printer default*.

If you selected the transmission medium *Print*, all the selected outputs get their print parameters from the Printer Default screen.

- Displaying the output on the screen

To generate a **screen display** of the output, choose *Goto → Print preview*.

If you have generated outputs using SAPscript print formatting (delivery notes and packing list, for instance), you can generate an onscreen display of the output before you edit it.

- Changing details

To change **details** of an output, choose *Goto → Communication*.

You can change the following details for transmission mediums *Print* and *Telefax*.

Transmission medium	Parameters
Printing	Spool parameters
Telefax	Telefax number Country

For all other transmission media, the system displays only the parameters for editing, which cannot be changed.

5. Choose *Edit → Process*.

The selected outputs are generated and edited.

If you would like to have a **log** generated after editing the output, choose *Goto → Log*.



If you would like to have a worklist displayed for all outputs that were not processed successfully, select *Processing mode 3* on the *Output from Grouped Deliveries*

Editing Loading Output

initial screen. The system displays all types of output with errors, and you can then edit them once again.

Processing Handling-Unit Output

Processing Handling-Unit Output

To call up output from a handling unit, proceed as follows:

1. From [shipping \[Ext.\]](#), choose *Communication / Print → Handling Unit Output*.
2. Enter the output type, the transmission medium, and, if required, further selection parameters.
3. Choose *Program → Execute*.

The *Output from Handling Units* screen appears. This lists the output that matches your selection criteria.

4. Select the outputs that you want to edit.

Editing options

- Changing the print parameters (collective change)

To change the **print parameters**, choose *Edit → Printer default*.

If you selected the transmission medium *Print*, all the selected outputs get their print parameters from the *Printer Default* screen.

- Displaying the output on the screen

To generate a **screen display** of the output, choose *Goto → Print preview*.

For all output types that are generated by print editing using SAPScript (for example, delivery note and packing list), you can generate a screen display of the output.

- Changing details

To change **details** of an output, choose *Goto → Communication*.

You can change the following details for transmission mediums *Print* and *Telefax*:

Transmission medium	Parameters
Printing	Spool parameters
Telefax	Telefax number Country

For all other transmission media, the system displays only the parameters for editing, which cannot be changed.

5. Choose *Edit → Process*.

The selected outputs are generated and edited.

If you would like to have a **log** generated after editing the output, choose *Goto → Log*.



If you wish to have a worklist displayed for all outputs that were not processed successfully, select *Processing mode: 3* on the *Output from deliveries* initial screen. The system displays all types of output with errors, and you can then edit them once again.

Delivery Interface

Delivery Interface

Use

The delivery interface groups all ALE and EDI outputs with reference to the delivery. Here, the EDI output is used mostly for external communication, and ALE output for internal communication. In the standard system, the following outputs are defined:

- Sending a shipping notification (DESADV, outbound EDI)
- Informing the forwarding agent (CARNOT, outbound EDI)
- Shipping order to warehousing contractor (SHPORD, outbound EDI)
- Shipping confirmation from service agent (SHPCON, inbound EDI)
- Warehouse order to internal warehouse (WHSORD, outbound ALE)
- Warehouse verification from internal warehouse (WHSCON, inbound ALE)
- Proof of delivery (STPPOD, outbound, EDI)
- Proof of delivery (STPPOD, inbound, EDI)

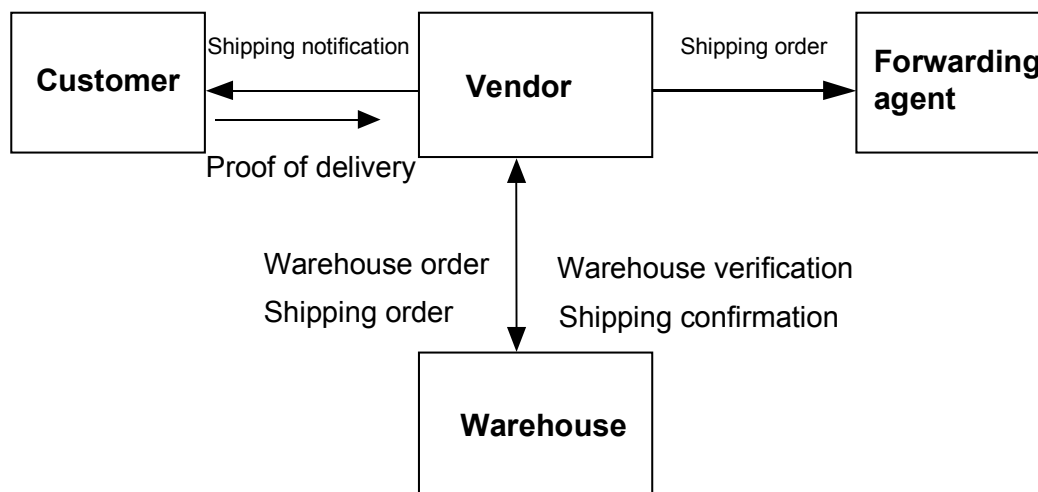
Integration

The shipping notification is the advance announcement of the delivery at the customer. When the forwarding agent makes this announcement (shipping order), the delivery data is transmitted so that the agent can organize the pickup and delivery of the goods on behalf of the customer.

The shipping order and the shipping confirmation serve to communicate with a warehousing contractor / service agent. The latter supervises the warehouse and is responsible for the delivery. The contractor also either takes care of the delivery himself/herself or commissions a service agent.

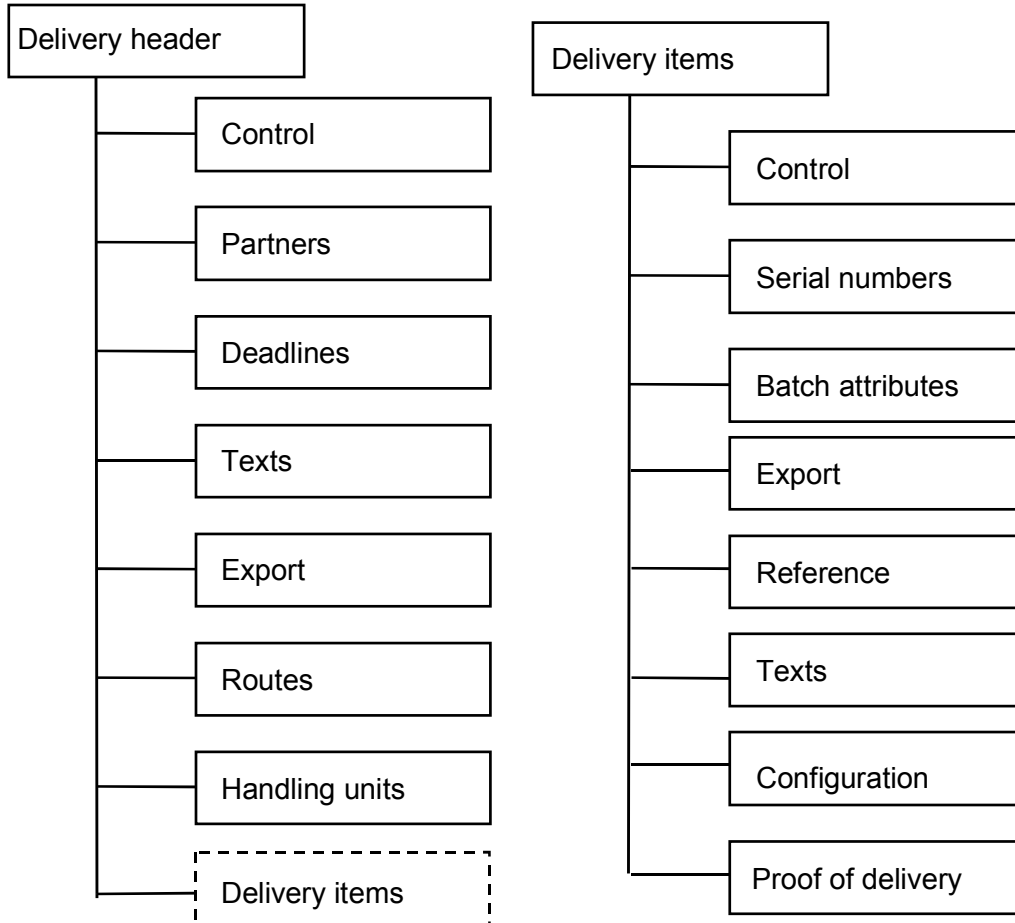
The warehouse order and the warehouse verification both serve to connect a company's own external system (external software) with Warehouse Management.

The following overview shows the output flow:





All outputs are based on the basis IDoc type DELVRY03.



Range of Functions

Output that is outbound contains the complete structure, that is, all the fields in the individual segments are supplied with data.

In the case of inbound output, only certain fields in the segments for delivery header, delivery item, and handling units are used. Here you have control segments at your disposal in order to initiate the required behavior when you are processing the output.

The more significant segments and fields are listed below:

E1EDL20 Delivery header		
Segment field		Table field
VBELN	Sales document number	LIKP-VBELN

Delivery Interface

BTGEW	Total weight	LIKP-BTGEW
NTGEW	Net weight	LIKP-NTGEW
GEWEI	Weight unit	LIKP-GEWEI
VOLUM	Total volume of delivery	LIKP-VOLUM
VOLEH	Volume unit	LIKP-VOLEH
E1EDL18 Delivery header control		
Segment field		Table field
QUALF	Qualifier control	
	Post goods issue	PGI
	Delete delivery	DEL
	Picking with flow records	PIC
	Adopt gross weight	GWT
	Adopt net weight	NWT
	Adopt volume	VOL
PARAM	Control parameters	
E1EDT13 Deadlines delivery header		
Segment field		Table field
QUALF	Qualifier deadline	
	Goods issue	6
ISDD	Actual start date	VBDDL-ISDD
	Picking	10
NTANF	Planned start date	VBDDL-NTANF
NTANZ	Planned start time	VBDDL-NTANZ
E1EDL24	Delivery item	

Delivery Interface

Segment field		Table field
POSNR	Item number of sales document	LIPS-POSNR
MATNR	Material number	LIPS-MATNR
CHARG	Batch number	LIPS-CHARG
LFIMG	Quantity actually delivered	LIPS-LFIMG
NTGEW	Net weight	LIPS-NTGEW
BRGEW	Total weight	LIPS-BRGEW
GEWEI	Weight unit	LIPS-GEWEI
VOLUM	Total volume of the handling unit	LIPS-VOLUM
VOLEH	Volume unit	LIPS-VOLEH
E1EDL19	Control of delivery item	
Segment field		Table field
QUALF	Qualifier control	
	Adjust quantity	QUA
	Adopt gross weight	GWT
	Adopt net weight	NWT
	Adopt volume	VOL
	Batch split item	BAS
PARAM	Control parameters	
E1EDL37	Handling unit header	
Segment field		Table field
EXIDV	External handling-unit identifier	VEKP-EXIDV/-VENUM
TARAG	Tare weight of the handling unit	VEKP-TARAG
GWEIT	Weight unit Tara	VEKP-GEWEI
BRGEW	Total weight	VEKP-BRGEW
NTGEW	Net weight	VEKP-NTGEW

Delivery Interface

MAGEW	Allowed weight for the handling unit	VEKP-MAGEW
GWEIM	Weight unit	VEKP-GEWEI_MAX
BTVOL	Total volume of the handling unit	VEKP-BTVOL
NTVOL	Load volume of the handling unit	VEKP-NTVOL
MAVOL	Allowed load volume	VEKP-MAVOL
VOLEM	Volume unit	VEKP-VOLEH_MAX
TAVOL	Tare volume of the handling unit	VEKP-TAVOL
VOLET	Volume unit Tara	VEKP-VOLEH
VEGR1	Handling unit group 1	VEKP-VEGR1
VEGR2	Handling unit group 2	VEKP-VEGR2
VEGR3	Handling unit group 3	VEKP-VEGR3
VEGR4	Handling unit group 4	VEKP-VEGR4
VEGR5	Handling unit group 5	VEKP-VEGR5
VHILM	Packaging material	VEKP-VHILM
LAENG	Length	VEKP-LAENG
BREIT	Width	VEKP-BREIT
HOEHE	Height	VEKP-HOEHE
MEABM	Unit for length/width/height	VEKP-MEABM
INHALT	Description of the handling unit	VEKP-INHALT
EXIDV2	2. 2 nd external identification	VEKP-EXIDV2
E1EDL44	Handling unit item	
Segment field		Table field
VBELN	Sales document number	VEPO-VBELN
POSNR	Item number of sales document	VEPO-POSNR
EXIDV	External identification	
VEMNG	Delivery item quantity	VEPO-VEMNG
E1EDL53	Proof of delivery	
GRUND	Reason for deviation for the POD	TVPOD-GRUND

Delivery Interface

PODMG	Quantity (in sales units) actually received for each delivery item	TVPOD-PODMG
LFIMG_DIFF	Deviation from the quantity actually delivered (in sales units)	TVPOD-LFIMG_DIFF
VRKME	Sales unit	TVPOD-VRKME
LGMNG_DIFF	Deviation from actual delivery quantity (in stockkeeping units)	TVPOD-LGMNG_DIFF
MEINS	Base unit of measure	TVPOD-MEINS
E1EDL54	Repacking handling units	
SOURCEHU	External HU identification of the source HU	HUM_REPACK-SOURCEHU
DESTHU	External HU identification of the destination HU	HUM_REPACK-DESTHU
PACKHU	Handling unit is to be packed	HUM_REPACK-PACKHU
PACK_QTY	Base quantity that is packed in the HU item	HUM_REPACK-PACK_QTY
BASE_UOM	Base unit of measure	HUM_REPACK-BASE_UOM
DELIV_NUMB	Delivery	HUM_REPACK-DELIV_NUMB
DELIV_ITEM	Delivery item	HUM_REPACK-DELIV_ITEM

Below you find a description of the options for inbound output with the required fields:

1. Picking verification without flow records.

This type of verification is used if the delivery items in the central system are set in Customizing as non-picking-relevant. The picked quantities are reported by the subsystem to the central system. There, the delivery quantity is adjusted, if allowed. In the IDoc, the following fields must have data:

E1EDL20-VBELN

E1EDL24-POSNR

E1EDL24-MATNR

E1EDL24-LFIMG

E1EDL19-QUALF = 'QUA'

2. Picking verification with flow records

If, in the central system, the items are set as relevant for picking, the picked quantities can be reported to the central system. However, only the complete, picked quantity of an item can be taken. Multiple reporting with an accumulated figure for the reported

Delivery Interface

quantities is not allowed. So that the picking flow records can be updated, the following IDoc field must also be transmitted, in addition to the fields described under step 1.

E1EDL18-QUALF = 'PIC'

3. Verification of batch split items from the subsystem

If batch split items occur in the central system, the original item must not be reported. Instead, the new items are transferred as follows:

E1EDL24-POSNR = Item number of batch split item

E1EDL24-MATNR

E1EDL24-CHARG

E1EDL24-LFIMG

E1EDL24-HIPOS = Item number of main item

E1EDL19-QUALF = 'BAS'



If there is no batch splitting, the batch for the main item can be verified.

E1EDL24-POSNR = Item number of batch split item

E1EDL24-MATNR

E1EDL24-CHARG

E1EDL24-LFIMG

2. Weight and volume verification

It is possible to report back (verify) the gross weight, net weight, and the volume for the entire delivery or for individual items. Using the qualifier in the segments E1EDL18 and E1EDL19, you can control which fields are to be updated in the delivery.

E1EDL20-VBELN

E1EDL20-BTGEW

E1EDL20-NTGEW

E1EDL20-GEWEI

E1EDL20-VOLUM

E1EDL20-VOLEH

E1EDL18-QUALF = 'GWT'

E1EDL18-QUALF = 'NWT'

E1EDL18-QUALF = 'VOL'

E1EDL24-POSNR

E1EDL24-MATNR

E1EDL24-NTGEW

E1EDL24-BRGEW

E1EDL24-GEWEI

E1EDL24-VOLUM

E1EDL24-VOLEH

E1EDL19-QUALF = 'GWT'

E1EDL19-QUALF = 'NWT'

E1EDL19-QUALF = 'VOL'

3. Post delivery goods issue

For the goods issue posting, the following additional field must exist.

E1EDL18-QUALF = 'PGI'

4. Delete delivery

You can delete a delivery in the subsystem if the following fields are transmitted:

E1EDL20-VBELN

E1EDL18-QUALF = 'DEL'

5. Packing verification (only for creating handling units)

When you report back (verify) handling units, the (external) identification and the packaging material must always be transmitted.

E1EDL37-EXIDV

E1EDL37-VHILM

If a non-assigned handling unit is to be created, no contents data (items) must be transmitted. If a delivery is packed, the item number and the packed quantity must be transmitted (use the quantity unit of the delivery item). If you have a batch split, use the actual (external) item number.

E1EDL44-POSNR

E1EDL44-VEMNG

If a handling unit in another handling unit is to be verified (multi-step packing), you must specify the (external) identification of the lower-level handling unit.

E1EDL44-EXIDV

3. Repacking handling units

Enter data in all the segment fields in segment E1EDL54.

Material Label (Material Tag)

Material Label (Material Tag)

Use

The material label (tag) serves as an identification tag for a handling unit. It describes the type and contents of the handling unit, and provides all the information in a clear manner and in the form of a bar code. This information:

- Uniquely identifies the handling unit
- Describes the contents of the handling unit
- Describes the packaging of the handling unit
- Makes the connection between the delivery and the shipment



In the automobile industry, the material label has a central, logistics meaning. The component supplier sends a shipping notification to the manufacturer through EDI. During this procedure, information on the handling units is transmitted as well. When handling units are marked with a material label, the manufacturer can check the respective materials in goods receipt and thus make this process more efficient with the help of scanners. The material label serves for identification purposes until the handling unit is unpacked in the warehouse or used up in the production department.


The contents and appearance of the material label for the automobile industry in Western Europe is defined by the Odette code (Organization for Data Exchange by Tele-Transmission in Europe) in the norm **Odette Transport Label**. The German Automobile Industry Association has, for the most part, adopted this norm in its guidelines manual **4902 Material Tags**. In North America, the Automotive Industry Action Group has also set a standard with the **Shipping / Part Identification Label**.

The Odette and AIAG labels, though different in appearance, serve the same purpose.

In both cases you have a shipping label with information on the packed material.

Therefore, we refer to these labels as material labels. Please note that other branches of industry have adopted these standards from the automobile industry. Below you see an example of an Odette Transport Label:

Material Label (Material Tag)

RECEIVER CAR IND. CORP. ENGLAND	DOCK/GATE 352 R7648		
ADVICE NOTE No (N) 103004618	SUPPLIER ADDR SUPPLIER SO -- ONLY, D-69190 Walldorf		
	NET WT (KG) 100	GROSS WT (KG) 116	No OF BOXES 10-
PART No (P) F4 BRACKET			
QUANTITY (Q) 400 pce	DESCRIPTION PLASTIC BRACKET		
	SUPPLIER PART No TEIL A		
SUPPLIER (V) SO -- ONLY	PROD DATE 980131		
	INDEX 98		
SERIAL (S/M/G) 30011300	BATCH No (H) CH001		

Prerequisites

For label printing, set your parameters as follows:

- Assign the output determination procedure AUTOMOTIVE to the packaging material types.
The output determination procedure AUTOMOTIVE contains the output type MALB.
- So that automatic determination can take place, maintain the condition records for output control within the master data in Sales and Distribution.
Use processing time 3 (explicit request).

Afterwards, label printing takes place using the transaction "Output for Handling Units" (VL74). You can use this transaction to select all the handling units for deliveries or shipments. If you wish to reprint a single label, you can do so by selecting individual handling units with this transaction.

Features

The material label is printed through output control. The condition technique in the output control provides great flexibility with the determination of the:

- Printout (what)
- Layout (how)
- Printer (where)

The material label is represented in the system by the output type MALB (material label) within the application for handling units (V6). The output type is linked in the standard system to the access sequence 0002 that references a condition table with the key Ship-to party and *Packaging material*.

The material label is printed with the help of a new layout module that meets the standards required for the form and scalability of script and bar code. The standard version includes examples for a Printronix IGP printer.

Material Label (Material Tag)



A printout is thus only possible if the printer understands the description language IGP. Alternatively, a converter box can perform the conversion from IGP into another description language, such as PCL5. For information on print control, for example, for ZPL, refer to the section [Adapting Label Layout \[Page 229\]](#).

Three examples for control of an IGP printer are supplied for the following norms:

- Odette (ODETTE_1_4)
- AIAG (AIAG_B3_93)
- VDA (VDA_4902_4)

If you wish to adapt or expand these examples, or use them as a reference for other labels, you can do so by following the guidelines in the section [Adapting Label Layout \[Page 229\]](#).

You can assign the layout module to the output type and the transmission medium, or directly to the condition record. The assignment in the condition record has a higher priority.



A component supplier has mostly American customers.

Therefore, the supplier maintains layout module AIAG_B3_93 for output type MALB and transmission medium 1 (print).

For the small number of European customers, the supplier maintains layout module ODETTE_1_4 in the condition records.

Of course, this is only possible if the condition table has the ship-to-party in the key (as set in the standard version with access sequence 0002).

Printer Determination via the Shipping Point

You can also store a printer within the condition record. Since the printer and thus also the location are defined and determined through organizational units, the printer can also be determined directly via the shipping point. For this case there is a print parameter for each output type. In the standard version, print parameter 5 is assigned to output type MALB.

If the type and size of the labels are uniform (for example, DIN A5, self-adhesive label) and only the layout varies, maintain under *Sales and Distribution* → *Master Data* → *Others* → *Print parameter(s)* for output type MALB **one** label printer **for each** shipping point.

If the layout varies and therefore different printers are required, you need to execute the following activities:

1. Define an expanded condition table
(for example, shipping point, ship-to party, and packaging material)
2. Assign the expanded condition table via a new access sequence to the output type MALB.
3. Maintain the printer within the new condition records.

Adapting Label Layout

Implementation Options

Direct control of the IGP printer takes place in separate layout modules. If you wish to adapt an existing label layout or define a new one, you need to define a new label layout for the new label.

Prerequisites

To adapt or define the label layout, you need to define a new layout module. For this you need to be familiar with the ABAP Development Workbench and the control language of the printer used.

Process Flow

The interface of the layout module is defined by the respective print program. The program **RVADWAHN** is assigned as processing program for the material label with the output type **MALB** and the transmission medium **1**.

The following processes are defined in the program RDVWAHN.

1. The system reads and aggregates the dependent data for a handling unit.
2. The actual printout takes place.

Here certain print parameters are set by the system and the layout module is called up for controlling the printer. The printer, device type, and the label data are transmitted to the layout module. Examples for these layout modules include:

- (ODETTE_1_4)
- (AIAG_B3_93)
- (VDA_4902_4)

Creating a New Layout Module

1. Copy one of the above layout modules into a new function group.

You must not change the interface of the layout module, that is, the parameters **LABEL_PRINTER**, **PRINTER_TYPE** and **LABEL_DATA** must be kept.

2. Make the necessary changes in the source text of the layout module.

The control commands to be used are listed in the printer manual.

The control sequence should, as a rule, be mixed with the data of the label, as they are transmitted in the parameter **LABEL_DATA**.

The data is transmitted to the printer using the ABAP statement **WRITE**. For example, with **WRITE: / '~AF17;*' NO-GAP, LABEL_DATA-MATNR NO-GAP, '**** in IGP, the material number is assigned to the printer variable **AF17**.

You can specify the device type or the printer to distinguish between the control languages. This is important if you are using printers with different description languages (for example, IGP and ZPL), but printing the same label (for example, Odette Transport Label). In this case, define a common function module as layout module (for example, **ZZ_ODETTE**) and make a distinction within the function module (it is best if the different

Adapting Label Layout

controls are separated by different routines, for example ZZ_ODETTE_ZPL and FORM ZZ_ODETTE_IGP).

The label data that are provided by the parameter LABEL_DATA are of key importance. The reference is stored in the repository through the structure VWAHN. The following fields are available:

Label Data of the Structure VWAHN

EXIDV	Identification of the package
EXIDE	Supplement to identification
VHILM	Packaging material
VHMKU	Packaging material at customer
NTGEW	Net weight
BRGEW	Gross weight
GEWEI	Weight unit
SMGKN	SMG ID
VEMNG	Maximum quantity
VEMEH	Unit of measure
MATNR	Material number
KDMAT	Material number customer
CHARG	Batch
AESKD	Change-status customer
ARKTX	Material text
KUNNR	Customer number
KUADR	Address of customer
KULAN	Country of customer
ABLAD	Unloading point
VBRST	Point of consumption
EIKTO	Identification at customer
VSTEL	Shipping point
VSADR	Address of shipping point
VBELN	Delivery number
LIFEX	External delivery number
TKNUM	Shipment number
ANZPK	Number of uppermost packages in the delivery
WADAT	Date of goods issue

Adapting Label Layout

The fields are only filled if the data is unique. If the data entered is not unique or clear, the respective field receives the value * (asterisk).



Initial situation

- Only material A is packed in crate 1.
- Only material B is packed in crate 2.
- Both crates on pallet 3.

Result

- Field MATNR is **filled** for the situation with crates 1 and 2 because these are unique.
- The field MATNR has the value * for the situation with pallet 3 because here the material is not unique.

If crate 2 were empty, pallet 3 would have the value A for the field MATNR, that is, in the case of initial values, the values are unique.

The shipping point serves as sender, and the customer as receiver. The addresses of the shipping point and the customer are represented by address numbers in the central address management file (Table ADRC). A function module is available for editing the address. This is also used in the layout modules supplied.

Planning, Monitoring and Analysis in Shipping

Use

There are various information and analysis functions available in shipping processing. To monitor and optimize the processes and operations in shipping, you can analyze them using the following questions:

- Which deliveries are pending for goods issue?
- Which deliveries are being processed?
- For which materials have the most deliveries been created?
- Which inquiries, quotations, and orders are the basis for a particular delivery?
- Which deliveries result from which orders?
- Which deliveries include certain order items?
- For which deliveries do you need to initiate activities in the warehouse?

To determine this and other information, and to execute subsequent activities, you can use the [delivery monitor \[Page 233\]](#).

For example, you can create the following lists with the delivery monitor:

- Lists of deliveries with certain partners
- Lists of deliveries with certain materials
- Lists of deliveries according to specific sales parameters
- Lists of deliveries according to specific shipping parameters

You can specify which fields of the deliveries are to appear in the list and which selection criteria you use, without having to change the settings in Customizing. You can also call up the document flow for individual deliveries.

For further information, see the [Reports and Analyses \(SD\) \[Ext.\]](#) section.

Working with the Delivery Monitor

Use

The delivery monitor is used to display and process completed deliveries and deliveries that are still open. Both inbound and outbound deliveries can be processed using the delivery monitor. Since several functions are performed in the same way for both delivery types, this description will use the general term “delivery”, which covers both types of delivery (inbound and outbound).

Prerequisites

Customizing

No Customizing is required for the display variants because these can be maintained on a user-specific basis.

To allow selection using the material, you must, however, activate the material index (in Customizing choose *Sales and Distribution* → *Sales* → *Lists* → *Set updating of item index*). The material index is already activated in the standard system.

To achieve good performance in the selection of partners, we recommend that you update the partner index (in Customizing choose *Sales and Distribution* → *Sales* → *Lists* → *Set updating of partner index*). Selection of partners is possible even without index updating, but it then requires a longer runtime.

Authorizations

To be able to work with the delivery monitor, you must have display authorization for the shipping points you want to work with. To process the subsequent functions, you need separate authorizations that are checked every time you call up each function.

Range of Functions

The delivery monitor is set up as a central transaction for collective processing of deliveries and for obtaining information on general shipping processing. The user can call up deliveries with different statuses in one single list and from there initiate further processing, as required. The following collective processes are available:

- Selection of deliveries that are due for picking or putaway and creation of transfer orders
- Selection of deliveries for which picked quantities or putaway stocks need to be confirmed
- Grouping together of deliveries for which transportation needs to be organized
- Selection of outbound deliveries that are due for loading
- Collective processing of deliveries that are due for goods issue or goods receipt

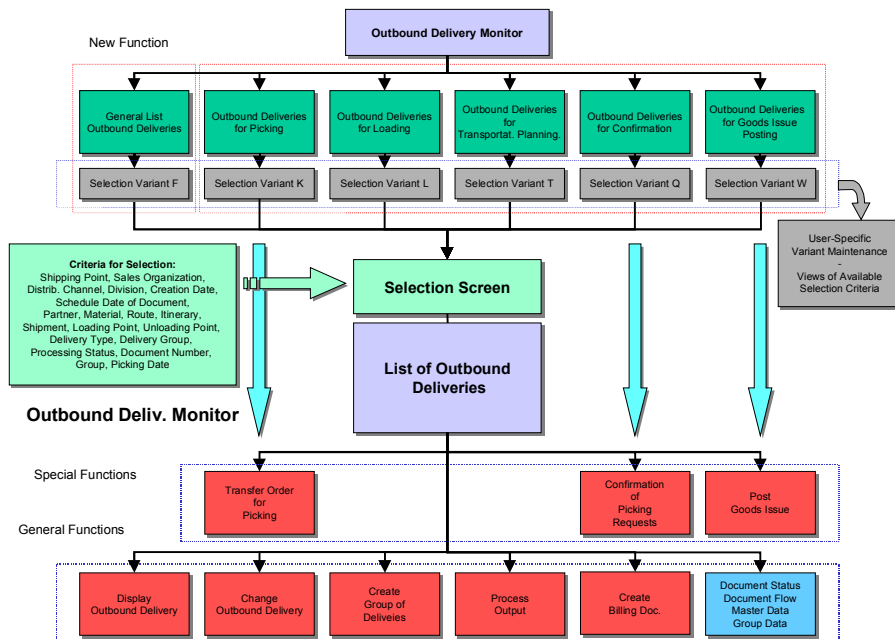
You can create lists of deliveries for collective processing using a number of selection criteria. However, depending on the processing type selected, many of the selection criteria may be preset. With the current functionality, for example, you can also call up selections using additional partners and other sales-specific criteria (delivery type, sales organization, division, and so on). You can store selection criteria that you use often in a selection variant, which can simplify routine work with the delivery monitor.

Working with the Delivery Monitor

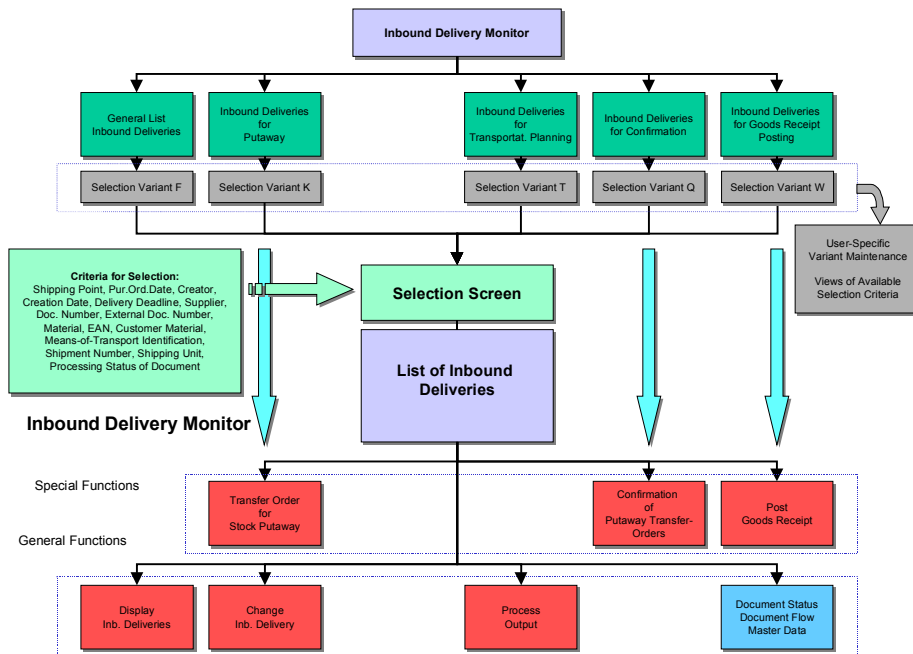
In addition to collective processing, you have the option of creating a “general” selection of deliveries where you can generate a type of worklist based on delivery- and sales-specific criteria. You can then store these selection criteria in a selection variant.

On the initial screen of the delivery monitor, you can switch between the inbound and the outbound delivery views, or you can activate both views at the same time. The functions of the outbound delivery monitor and the inbound delivery monitor are displayed in the overview below:

Functions of the Outbound Delivery Monitor



Functions of the Inbound Delivery Monitor



Defining Selection Criteria

Defining Selection Criteria

The following includes information about the delivery monitor that can help you optimize your entries for worklist creation and reduce the amount of time the selection takes.

Initial screen

The first time you call up the delivery monitor, individual selection types appear instead of the SAP standard variants. However, as you work with it, the delivery monitor notes the name of the variant you last entered. You can also enter and maintain a selection variant for individual selection types on the initial screen of the delivery monitor. Use *Display variants* to display or maintain variants. To maintain a variants for selection types on the initial screen, enter the name of the variant you want to maintain and choose the icon in the *Maint.* column. The standard report variant maintenance function appears.

You can also switch back and fourth between the outbound (*Only outbound deliveries*) and inbound (*Only inbound deliveries*) views or activate both views simultaneously (*All deliveries*).

Depending on what you want the worklist to convey, you can select according to the following selection types:


Outbound delivery	Inbound delivery
For picking	For putaway
For confirmation	For confirmation
For loading	
For goods issue	For goods receipt
For transportation planning	For transportation planning
List outbound deliveries	List inbound deliveries

Selection Screen




Depending on the selection type, search criteria from the following areas may appear:

Selection	Remark
Organization data	
Document editing	
Time data	


Defining Selection Criteria

<p>Picking data</p>	<p>You can enter selection criteria relevant for picking of outbound deliveries in this selection area.</p> <p>If <i>Only picking without WM</i> is activated, only deliveries picked without Warehouse Management are selected.</p> <p>If <i>Only WM picking</i> is activated, only deliveries that need Warehouse Management for picking (complete or Lean WM) are selected.</p> <p>You can decide whether the warehouse number check should be run on header or item level in the delivery.</p> <ul style="list-style-type: none"> • If you choose <i>Check at header level</i>, the system only finds deliveries that have warehouse numbers in the header that meet the selection criteria. <p style="text-align: center;"></p> <p style="text-align: center;">For example, you can search for deliveries that are meant to be processed in a Warehouse Management System (WMS) and therefore refer to a warehouse number in the header.</p> <ul style="list-style-type: none"> • If you choose <i>Check at item level</i>, all deliveries that include at least one item that meets the warehouse number criteria are selected. <p>If you choose <i>Exclude existing groups in WM</i>, the system selects only those deliveries that are not yet assigned to a group in WM.</p>
<p>Document data</p>	
<p>Material data</p>	
<p>Partner data</p>	
<p>More partners</p>	

Defining Selection Criteria

Display options	<p>You can use this selection field to influence how the deliveries are displayed. Depending on the weight and volume units of the selected deliveries, the system determines a weight and volume unit that can be used uniformly for all deliveries in the list.</p> <p>You can define which units the deliveries should appear in by using the <i>Display in weight unit</i> and <i>Display in volume unit</i> options.</p> <p>If you choose <i>Display delivery items</i>, the list appears in the item view. If this field is not selected, the header view appears. You can switch between these two views in the list regardless of whether or not this field is selected on the selection screen.</p> <p style="text-align: center;"></p> <p style="text-align: center;">If you select this option, the selection takes more time. The system does require the item data for some subsequent functions and may read it automatically anyway.</p> <p>By choosing <i>Display forwarding agent</i>, you can also read data about the forwarding agent associated with the delivery.</p> <p style="text-align: center;"></p> <p style="text-align: center;">If you select this option, the selection takes more time.</p>
Data for shipment	
Status: inbound/outbound deliveries	<p>You can enter selection criteria for the delivery's processing status here. If you call up the delivery monitor in one of the views from which you want to select deliveries that are still in process, some of the status fields may have defaults that cannot be changed. You can enter other selection criteria (using the following letters) for the fields that are ready for input.</p> <ul style="list-style-type: none"> • <i>A</i> stands for <i>not processed</i> • <i>B</i> stands for <i>partially processed</i> • <i>C</i> stands for <i>completely processed</i> <p>This selection option allows you more flexibility than before for selecting deliveries in specific stages of processing.</p> <p style="text-align: center;"></p> <p style="text-align: center;">To select open deliveries, choose <i>Total goods movement status</i> \neq C, since completed deliveries have a goods movement status of C.</p>

Defining Selection Criteria

<p>Background processing control</p>	<p>If you call up the delivery monitor using selection type <i>Outbound deliveries for picking</i>, you have the option of creating WM transfer orders for the selected deliveries in the background. You can set the parameters <i>Adopt pick quantity</i> and <i>Select items</i> for background processing on the selection screen.</p> <p>In the <i>Outbound deliveries for conformation</i> selection type, you can confirm pick orders in the background. You can set the <i>Adopt pick quantity</i> parameter on the selection screen.</p>
<p>Output proposal</p>	<p>You can enter the output type that the system is to use during output processing in the list of deliveries. You can change it again later at any point as you process the list by choosing <i>Settings</i> → <i>Output selection</i>.</p> <div style="text-align: center;">  </div> <p>If you enter the delivery note as a default value here, you can issue the delivery note directly for the selected deliveries by selecting <i>Subsequent functions</i> → <i>Outbound deliv. output</i>.</p>

Notes on selecting the worklist

During the selection criteria check at item level, it follows that a delivery is only selected if at least one of the items meets the selection criteria. If the list is then displayed in item view, only those items that meet the criteria are displayed. The selection criteria entered in a search for deliveries that are in process does not influence the length of time this selection takes, for the most part.

In the *List outbound deliveries* and *List inbound deliveries* selection types, the system runs checks of the selection criteria entered and, in some cases, time-consuming search algorithms. You can reduce the search time if you follow these guidelines:

- When selecting outbound deliveries with the *List outbound deliveries* selection type, specify one or more of the following search criteria:
- Ship-to party
- Sold-to party
- Partners that have a delivery index
- Material
- Goods movement status ≠ C (open deliveries)
- Document number
- When selecting inbound deliveries using the *List inbound deliveries* selection type, specify the following:
- Vendor
- External delivery note number
- Document number

Defining Selection Criteria

Calling up List Functions


You can call up the delivery monitor with a view of **outbound deliveries** by starting at [shipping \[Ext.\]](#) and choosing *Outbound Delivery → Lists and Logs → Outbound Delivery Monitor*.

You can call up the delivery monitor with a view of **inbound deliveries** by starting at [inbound delivery \[Ext.\]](#) and choosing *Inbound Delivery → Lists → Inbound Delivery Monitor*.

You can find general information about List Viewer functions under [ABAP List Viewer \[Ext.\]](#). The following table lists functions that are more specialized than and contribute to the general List Viewer functions:

Function	Menu path	What you should know
Header and item views	<i>List → Header view</i> or <i>List → Item view</i>	There are two types of lists for each processing option: a header view with delivery header information and an item view that contains delivery item information. You can switch back and fourth between these views. The system may need to read the items from the database each time you switch views, which may take a little time.
Display variants	<i>Settings → Display variant → Administration</i> <i>Settings → Color grouping</i>	Display variants are maintained separately for header view, item view and for each processing option. Administration of display variants completely corresponds to the list viewer standard and is independent of Customizing. You can also configure user-specific display variants. You can designate one of the display variants as the default variant for the initial screen. In the item view, you can make a setting that gives every other document a different background color, which increases the clarity of this screen. In other words, all items of one document would have the same background color and those in the following document would have a contrasting background. The color grouping is not a part of display variants, but it can be especially helpful if a list is sorted according to document and item numbers.

Calling up List Functions


Displaying units of measure		<p>The data in this list is automatically converted to the same unit of measure, which allows the tool to carry out its total function accurately. If you would like to choose which unit of measure the list appears in, you can enter a unit of measure on the selection screen. See also: Defining Further Selection Criteria [Page 236].</p>
Selecting documents for further processing		<p>Further processing is only triggered if you select at least one delivery or item or if you place the cursor on a document line.</p> <p>By using dialog-oriented subsequent functions (<i>Display outbound deliveries</i>, <i>Change outbound deliveries</i>, or the functions under <i>Environment</i>), you can cancel processing the selected documents after one document or skip an individual document if necessary. See also: Executing Subsequent Processing [Page 245].</p>
Selecting previously processed documents	<i>Edit → Deselect all</i>	<p>Documents that were processed previously are marked with a gray background. After the document is successfully or unsuccessfully processed in a subsequent function, the background changes to green or red, respectively.</p> <p>You can cancel colored backgrounds and selection check marks with this function.</p>
Refreshing the list		<p>You can refresh the worklist at any time. The new data that is obtained is in accordance with the original selection criteria. Processed documents may disappear from the list as a result of this function.</p> <p style="text-align: center;"></p> <p>When you refresh the list, all selections or markings in the list are deselected.</p>

Calling up List Functions

<p>Double-click</p>		<p>Depending on cursor placement, a double-click can trigger different activities.</p> <ul style="list-style-type: none"> • Double-click on a delivery number: The transaction for changing the delivery appears. • Double-click on the number, name or location of the ship-to party, sold-to party, forwarding agent or vendor: A dialog box with the partner's address appears. • Double-click on a material number: The material master is displayed. • Double-click on a pick order: Pick order is displayed (only for WM pick orders). • Double-clicking on all other fields has the same result as choosing the document number.
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Functions in the Environment Menu

The following is a short summary of the functions in the *Environment* menu:

Function	What you should know
Display originals	The <i>Display originals</i> function displays the archived originals of the selected delivery documents (the IDoc linked to the delivery document, for example).
Display document status	The document status shows the current status of the selected deliveries or items. The item status appears in an item list; otherwise the header status is displayed.
Document flow	The document flow displays the header or item document flow, depending on the kind of list you were in when you chose this command.
Material master	The <i>Material master</i> function displays the material master for the materials in each delivery you selected. This function is only available in item lists. It is not active in the header view.
Customer master data	<p>The <i>Customer master data</i> function (valid only for outbound deliveries) takes you to the change mode of the customer master for the customers in the documents you have selected.</p> <p style="text-align: center;"></p> <p><i>Vendor master data</i> is the corresponding function for inbound deliveries.</p>

Calling up List Functions

Assigned groups	You can use the <i>Assigned groups</i> function (only for outbound deliveries) to display the groups of deliveries that correspond to the outbound deliveries that are selected. You can display the group by double-clicking on the line that contains the group number. When you return to the original list of outbound deliveries, the selected deliveries that belong to a group now appear highlighted in color.
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Lists for different types of selections

Generally, the lists for various selection types have a similar structure. There are two exceptions, however:

- For the (outbound or inbound deliveries) *For confirmatn* selection type, pick orders or putaway orders are also included. The *Subsequent functions* → *Confirm picking or putaway* function is only active in this selection type for that reason. Since more than one delivery item can be in one order, and vice versa (there can be more than one order per delivery item) the structure of the list varies. In the header view, you can see only one entry per delivery document number and order. In the item view, there is a delivery item, order and entry per delivery document number. Only delivery items for picking or putaway orders that must be confirmed are selected.
- There is a two-level list in the *For picking* processing type. On the first level, you find the labor required per shipping point and picking date and the details lists for each workload. If you double-click on the daily workload line (marked in violet), a **single list** appears. You can select the deliveries or delivery items by going to the single list and then returning to the overview list.

Carrying out Subsequent Processing


Use

Some subsequent processing functions call up other transactions in the batch input procedure. By choosing *Settings* → *Subsequent functions*, you can define whether subsequent processing should be carried out in the foreground, background, or foreground only when errors occur.

All functions except for confirmation are available in all selection types, which allows the individual scenarios for processing deliveries to run smoothly.

Depending on the selection type, you may also be able to call up the most important subsequent functions using the F6, F7 and F8 function keys.

Procedure

Function	Menu path	Note
Creating a group	<p><i>Subsequent functions</i> → <i>Group</i> → <i>Create</i></p> <p><i>Subsequent functions</i> → <i>Group</i> → <i>Create with WM reference</i></p>	<p>The selected deliveries are combined into a group, either with or without WM reference</p> <p>Specify the group type (the system presents a default which is dependent on the selection type). Then, you can enter a descriptive text. If you create a group in WM, you must also enter the warehouse number. The group is created when you press ENTER.</p> <p>If the grouping was successful, the processed deliveries appear green; if errors occurred, they appear red.</p> <p style="text-align: center;"></p> <p>If group output processing is available for the group type you chose, the system requires an exclusive lock for the deliveries involved. This way, it can make sure that none of the deliveries are currently being processed (otherwise, picking lists cannot refresh the delivery properly). This may be the explanation if a message appears stating that the deliveries in question cannot be locked.</p>

Carrying out Subsequent Processing

Creating a wave pick	<i>Subsequent functions</i> → <i>Group</i> → <i>Wave pick</i>	A wave pick is created for the selected deliveries. After choosing this function, you can enter a descriptive text. The wave pick is created when you press ENTER . If the wave pick cannot be created, the system either issues an error message or goes to the transaction for displaying collective processing logs.
Creating transfer orders	<i>Subsequent functions</i> → <i>Create transfer order</i>	<p>This function is available for both inbound and outbound deliveries.</p> <p>If you have set subsequent processing to <i>Background</i> or <i>Foreground for error</i>, you can enter the initial screen parameters of the transaction for creating a transfer order:</p> <ul style="list-style-type: none"> • If you choose <i>Select items</i>, all items of the transfer order that you are creating are flagged for further processing. • By choosing <i>Adopt pick quantity</i> (outbound deliveries), you control whether you want the pick quantity to be copied into the delivery and whether goods issue should be posted immediately after picking. • Similarly, the <i>Adopt putaway quantity</i> function (inbound deliveries) controls whether the putaway quantity is to be copied into the delivery quantity and whether goods receipt should be posted immediately. <p>If the transfer order creation was successful, the processed deliveries appear green; if errors occurred, they appear red. Deliveries that are not relevant for processing in WM appear dark gray.</p> <p>The system needs the delivery item information in order to create transfer orders. If necessary, the delivery items must first be read and added to the system information (by switching to the item view of the list).</p>

Carrying out Subsequent Processing

Confirmation	<p><i>Subsequent functions</i> → <i>Confirm picking</i></p> <p><i>Subsequent functions</i> → <i>Confirm putaway</i></p>	<p>This function is only available on the <i>Outbound Deliveries for Confirmation</i> and <i>Inbound Deliveries for Confirmation</i> screens, since the picking or putaway entries that can be confirmed are only included here. As with creation of a transfer order, the color of the confirmation indicates its status. If you have set processing of subsequent functions to background mode, you can specify whether the picking or putaway quantity should be copied into the delivery quantity or whether you want to post goods issue/goods receipt immediately following confirmation.</p>
Post goods issue (outbound deliveries only)	<p><i>Subsequent functions</i> → <i>Post goods issue</i></p>	<p>You can set the actual goods movement date.</p> <p>If the goods issue posting was successful, the processed deliveries appear green; if errors occurred, they appear red. The delivery also appears in green if goods issue was already posted for the delivery in question (because the same delivery was accidentally selected twice, for example).</p>
Post goods receipt (inbound deliveries only)	<p><i>Subsequent functions</i> → <i>Post goods receipt</i></p>	<p>The procedure is similar to posting goods issue. You can set the actual goods receipt date.</p>
Create billing document (outbound deliveries only)	<p><i>Subsequent functions</i> → <i>Create billing document</i></p>	<p>Individual billing documents are created for the selected deliveries, one after another. The documents are not combined like they are in collective processing for billing documents.</p>

Carrying out Subsequent Processing

Output processing	<i>Subsequent functions</i> → <i>Delivery output</i> <i>Subsequent functions</i> → <i>Picking output</i> <i>Subsequent functions</i> → <i>Group output</i> <i>Settings</i> → <i>Color grouping</i>	You can define a default for the output that is to be processed on the initial screen. Unless specified otherwise, the given output type is processed when you carry out the subsequent functions of delivery output, picking output or group output for the selected deliveries. You can define the processing mode (first, repeat, or error processing) before group or delivery outputs are carried out. To change your output selection, choose <i>Settings</i> → <i>Output selection</i> . You can choose the outputs you want to process for each output category. The outputs you select are copied into the list when you choose <i>Back</i> or <i>Exit</i> .
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Background processing

You can use some of the delivery monitor components for collective background processing of large quantities of documents. To do so, enter a selection variant for the report and then schedule it for background processing.

You can also initiate background processing directly from the report's selection screen. Enter your selection criteria and parameters and choose *Program* → *Output in background*. You can then set the spool parameters and schedule background processing in the dialog box that appears.

Background processing triggers subsequent processing for all documents selected, but it does not issue lists. When processing is complete, a list of documents and their processing status (successful or with errors) appears in the spool.

- Report WS_MONITOR_OUTB_DEL_GDSI is for goods issue posting for all documents that were selected. The actual goods issue date can be set using the appropriate field on the selection screen. You can also schedule this report as a job using *Shipping* → *Goods issue* → *Collective batch processing* (See also: [Posting Goods issue with Collective Processing \[Page 185\]](#)).
- Report WS_MONITOR_OUTB_DEL_PICK is for creating WM transfer orders. You can specify the parameters for creating transfer orders (*Select items* and *Adopt pick quantity*) on the *Control background processing* section of the selection screen.
- Report WS_MONITOR_OUTB_DEL_CONF is for confirming picking orders. You can set the *Adopt pick quantity* parameter in the selection screen (see previous point).
- Report WS_MONITOR_OUTB_DEL_FREE is for processing individual outputs and picking outputs (such as delivery notes or picking lists). All output types specified on the selection screen that appears under *Output selection* are then processed for the selected deliveries. For technical reasons, this type of background processing only results in a message informing you which documents were processed, but does not include whether they were processed successfully.

Special Functions in Shipping

Working with Batches in Deliveries

Batches are parts of a material that are separated from other parts of the same material and put in stock. The different parts are subject to variation (such as with paint or medicine).

You can specify a batch in the sales order item detail screen for a material requiring batch management (the indicator can be found in the material master record in the *Storage* and *Purchasing* screens.) When a delivery for a sales order is created, the batch is copied to the delivery. If no batch was entered in the sales order, you can enter it in the *Picking Overview* screen in the delivery.

For additional information on working with batches in deliveries, see:

[Executing Batch Splits in Deliveries \[Page 252\]](#)

[Transferring Batch Data from Deliveries into Warehouse Management \[Page 253\]](#)

For more detailed information on batches in general, see *LO Batch Management*.

Executing Batch Splits in Deliveries

Executing Batch Splits in Deliveries

Batch split describes the situation when you want to specify quantities from more than one batch for a particular delivery item. The batch split function in the delivery includes a batch selection screen and an availability check. In addition, batch processing is linked to the SAP Classification System, enabling you to select batches according to classes and characteristics. For more information about the Classification System, see the [CA Classification System \[Ext.\]](#) documentation.

Master data

In Materials Management (MM), you can specify basic data for each batch, such as Available from and Expiry dates, and data about the origin of the batch. For more information about creating master data for batches, see the [batch handling \[Ext.\]](#) documentation.

Splitting Batches in a Delivery

To carry out batch split in a delivery, proceed as follows:

1. In the delivery, mark the item for which you want to split batches and choose *Goto* → *Item* → *Batch split*.

You see the following overview screen for batch split items.

2. Choose a batch by using [batch determination \[Ext.\]](#).

The system proposes the corresponding quantity, which can be assigned to a delivery item.

3. Select the batches that you want for the delivery item and press *Copy*.
4. Either copy the quantities the system suggested or enter the appropriate quantities for each batch.

The open quantity is decreased by the assigned quantity.

5. Choose *Back* to return to the delivery overview screen.



For delivery items with a batch split, the picked- or putaway quantities are determined individually for each split item. If you want to maintain or check this quantity for split items, go to the batch structure view of the main item in question by selecting the '+' button.

Transferring Batch Data from Deliveries into Warehouse Management

If you specify batch numbers in a delivery, the system automatically copies this data into MM-WM so that the correct batch can be picked. If you do not specify batch numbers for a batch-relevant material, MM-WM automatically determines batches based on the date of goods receipt. The oldest batch is selected first. If discrepancies occur between the picked quantities and the delivery quantities, the procedure is exactly the same as for deliveries without batches.

For further information on processing data from MM-WM, see the MM-WM *Warehouse Management Guide* as well as the [Individual Picking List \[Page 80\]](#) section.

Working with Material Determination in Deliveries

Working with Material Determination in Deliveries

Material determination can be carried out in deliveries for **newly entered** items. This functions in the same way as material determination in sales documents and enables manually entered materials to be replaced automatically by other materials already specified in the system.



Material determination cannot be carried out for delivery items that have been copied from sales documents.

Dependence on Sales Document Type

Material determination in deliveries is dependent upon the document type of the underlying sales document. If material determination is activated for the respective sales document type in Customizing for Sales, it is also carried out for new items in deliveries that have been generated from sales documents.

For deliveries not created with reference to an order, material determination is activated in Customizing for Sales using sales document type DL (delivery w/o order).

Use

You can, for example, use material determination in deliveries in the following situations:

- Substituting materials during an advertising campaign
- Substituting your own material numbers with customer-specific material numbers
- Substituting your own material numbers for International Article Numbers
- Substituting discontinued materials with newer materials

Maintaining Master Data

You control material determination by creating specific types of condition records. In the condition records you define which materials may be substituted by other materials and at what point in time this should occur.

For more information on material determination, refer to the section [Material Determination \[Ext.\]](#).

Product Selection

In several industry sectors (especially in retail), the same product is often sold in different packaging, for example in standard and promotional packaging. When creating a sales order using product selection, you can either manually choose from several alternatives for packaging a product or have the system automatically propose an alternative depending on product availability or the priority of the individual alternatives.



You must first provide the necessary information for product selection in the system in the form of condition records.

If a delivery is created from a sales order with products relevant to product selection, the system carries out product selection again. Because of changes in availability, products or quantities that

Working with Material Determination in Deliveries

differ from those in the sales order may be proposed. This only applies, however, for automatic product selection.

For more detailed information on product selection, refer to the section [Working with Product Selection \[Ext.\]](#)

Working with Material Listing and Exclusion in Deliveries

Working with Material Listing and Exclusion in Deliveries

With material listing and exclusion you can control for new items in a delivery which materials may be supplied to a customer. For example, if you create a listing of products for an individual customer, the customer may only order products on the list. You can also specify material exclusion for a particular customer. The customer may not order excluded materials from you.



Material listing and exclusion cannot be carried out for delivery items that have been copied from sales documents.

Dependence on Sales Document Type

Material listing and exclusion in deliveries are dependent upon the document type of the underlying sales documents. If material listing and exclusion are activated in Customizing for the respective sales document type, they will also be carried out for newly entered items in deliveries that have been created from sales documents.

For deliveries not created with reference to an order, material listing and exclusion are activated in Customizing using the sales document type DL (delivery w/o order).

Partner Functions in Material Listing

In sales documents, material listing refers to two partner functions: the **sold-to party** and the **payer**. For more information about partner functions, see the R/3 SD online guide on Basic Functions and Master Data. As the payer partner function is not defined for deliveries in the standard version of the SAP R/3 System, you can only check here for the sold-to party whether a material listing exists. For further information on the partner roles, refer to the section [Customers and Business Partners \[Ext.\]](#).

Maintaining Master Data

You can control material listing and material exclusion by creating specific types of condition records. You determine in condition records which materials can be ordered by a certain customer and which materials are barred to this customer.

For additional information on material listing and exclusion, see the section [Material Listing and Exclusion \[Ext.\]](#).

Working with Replenishment Deliveries

Implementation Options

Stock transfer involves the withdrawal of goods from the storage location at which they are currently stocked, and the placement into storage of these same goods at another location. Stock transfer may occur within one plant or between two different plants. Stock transfer may be necessary, for example, if the stock at the picking location has been exhausted and needs to be replenished from the inventory stock warehouse.

By making the appropriate setting in Customizing for Purchasing, you can process a stock transfer between two plants as a **replenishment delivery** in shipping. This is triggered by a stock transfer order in the purchasing department of the receiving plant.

Process Flow

The following steps are necessary to carry out stock transfer with a stock transfer order involving shipping processing:

1. [Creating stock transfer orders \[Page 259\]](#)

The stock transfer order serves as a planning tool for goods movement. The process of stock transfer is initiated by a stock transfer order in the plant requiring the goods (receiving plant). If the stock transfer transaction involves shipping processing, the stock transfer order initiates the creation of an appropriate delivery in the supplying plant.

2. [Creating Replenishment Deliveries \[Page 260\]](#)

In the delivery due list for the supplying plant, a replenishment delivery is created with reference to the stock transfer order. It is processed like an ordinary delivery.

3. Goods issue in supplying plant

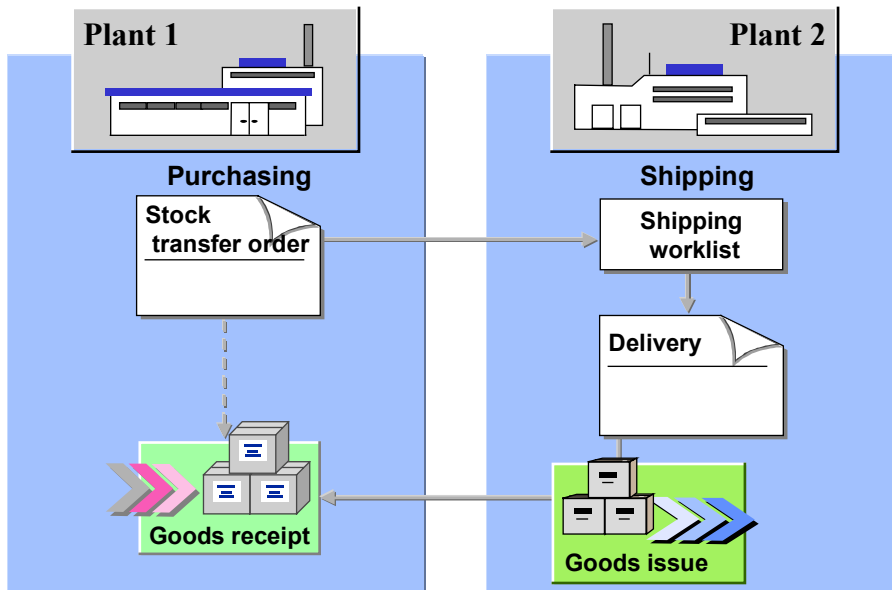
Goods issue posting for replenishment deliveries triggers goods issue in the supplying plant as well as the respective goods posting to the **stock in transit** of the receiving plant. The stock in transit is valued but is not considered unrestricted-use stock.

4. Goods receipt in the receiving plant

When the goods arrive at the receiving plant, the goods receipt posting triggers the posting of the goods from the stock in transit to the unrestricted-use stock for this plant. At the same time the open purchase order quantity is reduced.

The following figure illustrates the stock transfer process involving shipping processing.

Working with Replenishment Deliveries



Creating Stock Transport Orders

To create a stock transport order, proceed as follows:

1. From [purchasing \[Ext.\]](#), choose *Purchase order* → *Create* → *Stock transport*.
The *Create Purchase Order: Initial screen* appears.
2. Enter the supplying plant in the *Supplying plant* field, and register all other necessary data. Purchase order type UB is automatically proposed for the stock transport order in the standard version of the SAP R/3 System.
3. Choose *Enter*.
The *Create Purchase Order: Item Overview* screen appears.
4. Enter the individual purchase order items. Specify the receiving plant for each item in the *Plant* field.
If you already entered the receiving plant in the *Plant* field in step 3 on the *Create Purchase Order: Item Overview* screen, it will be proposed for all items in the *Item Overview*.
5. Save the stock transport order.

Advantages of the Stock Transport Order

Stock transfer with stock transport order has the following advantages over stock transfer without stock transport order:

- The outward movement of goods can be planned in the receiving plant.
- Stock transport order is tied in with MRP. Purchase requisitions created in MRP can be converted into stock transport orders.
- The whole procedure can be monitored using the **PO history**.

Creating and Processing Replenishment Deliveries

Creating and Processing Replenishment Deliveries

In the shipping department of the supplying plant, you can create replenishment deliveries from stock transfer orders using the delivery due list and process them in the same way as normal deliveries.

1. From [shipping \[Ext.\]](#), choose *Outbound Delivery → Create → Collective Processing of Documents Due for Delivery → Purchase Orders (or Purchase Order Items)*.
2. Define and construct the worklist by using the selection options.

The system then lists the documents that meet your selection criteria. (see also: [Collective processing of documents due for delivery \[Page 59\]](#))

From this list, you can then create the appropriate deliveries and process them as usual. Goods issue posting for the deliveries concludes processing in the supplying plant.

Purchase Order History

A purchase order (PO) history record is automatically created in **Purchasing** for the replenishment deliveries and the goods issue posting. This record can be displayed for each item in the stock transfer order from which the delivery was created. Select the required item in the stock transfer order of the item overview, and then choose *Item → Statistics → PO history*.

Document flow

In the document flow of the delivery created from the stock transfer order, the resulting transfer to the stock in transit is recorded in the material document after goods issue posting.

Working with Serial Numbers in Deliveries

You use serial numbers to uniquely identify each individual example of a material or product. Using serial numbers, you can track each individual material during goods movement. For example, you can track the serial numbers of individual materials when you ship them to a customer. In addition, you can use serial numbers as the basis for routine maintenance and plant maintenance, providing that equipment master records exist for the individual products. In plant maintenance, the assignment of serial numbers to individual objects is referred to as **serialization**. The individual examples of a material or product are called **objects**.



Company X manufactures slide projectors of three different model types: A, B and C. A, B and C. Each model has its own material master record. The company assigns individual serial numbers to each projector. Each serial number uniquely identifies a projector and refers to the model type.

Assigning Serial Numbers

Object	Material number	Serial number
Slide Projector 1	SP-A	36-04-01
Slide Projector 2	SP-A	36-04-02
Slide Projector 3	SP-A	36-04-03
Slide Projector 4	SP-B	36-05-01
Slide Projector 5	SP-B	36-05-02
Slide Projector 6	SP-B	36-05-03
Slide Projector 7	SP-C	36-06-03

For additional information on working with serial numbers in deliveries, see the QM documentation as well as:

[Maintaining Master Data for Serial Numbers in Shipping Processing \[Page 262\]](#)

[Assigning Serial Numbers in Deliveries \[Page 264\]](#)

[Deleting Serial Numbers from Deliveries \[Page 265\]](#)

[Creating Equipment in Deliveries \[Page 266\]](#)

Maintaining Master Data for Serial Numbers in Shipping

Maintaining Master Data for Serial Numbers in Shipping

Whether or not serial numbers can be used during sales order processing is determined by a **serial number profile**. You can create a master record for each individual serial number.

Serial Number Profiles

The serial number profile defines under which conditions and in which transactions serial numbers can be entered. You define serial number profiles in Customizing.

Profile Data

Serial number profiles include the following control data:

- Business transactions during which serialization
 - must take place
 - can take place
 - may not take place
- Information about whether, during a business transaction, you can
 - enter new serial numbers
 - select from serial numbers already created and stored in the system
- Business transactions where, during serialization:
 - you must create an equipment master record
 - you do not need to create an equipment master record
- Profile number

In one serial number profile, you can define different business transactions with different parameters for serialization.

Maintaining Serial Numbers in the Material Master Record

You can specify a serial number profile by plant in the material master record in the *Basic data* field group in the *Sales/Plant data* screen.



You can only assign serial numbers to individual items of a particular material when the serial number profile is maintained in the material master record.

Serial Number Master Records

The master record for an individual item of a material contains, among other data, the following information:

- Company-specific location
 - Specifies, for example, which plant the item is stored in.
- External location

Maintaining Master Data for Serial Numbers in Shipping

Specifies the customer who bought the item from you.

- Last operation: identifies, for example, the number of the delivery by which the item reached the customer.

To create a serial number record as part of the Sales master data, proceed as follows:

1. From [SD master data \[Ext.\]](#), choose *Products* → *Serial numbers* → *Create*.

You see the screen *Create Mat.Ser.No. Initial Screen*.

2. Enter the material number, the serial number, and, if required, reference data. Then press ENTER.

You see the screen *Create Mat.Ser.No.: SerialNo Details*, where you can maintain the master data.

Assigning Serial Numbers in Deliveries

Assigning Serial Numbers in Deliveries

Providing that you have maintained the master data for the corresponding materials, you can enter serial numbers for each item in the delivery. The system displays a dialog box where you can enter the necessary serial numbers.



You can only enter serial numbers for delivery items that are assigned to specific plants. If you specify in Customizing that serial numbers are mandatory in the delivery, you must enter serial numbers for the relevant items before you can post goods issue for the items.

Assigning Serial Numbers

In the dialog box that the system displays during delivery processing, you can either select from serial numbers for which you have already created master records or you can manually enter new numbers. In addition, the system can automatically generate new numbers for you.

To call up the dialog box, mark the delivery item for which you want to enter serial numbers and choose *Item* → *Serial numbers*. After maintaining the serial numbers, you return to the delivery by pressing *Back*.

Selecting Serial Numbers

To select serial numbers that already exist in the system, proceed as follows:

1. Press *Select serial numbers* in the dialog box.

You see the *Serial Number Selection* screen.

2. Enter the desired selection criteria and choose *Program* → *Execute*.

The system displays a list of the selected serial numbers.

3. Mark the serial numbers that you want to assign to the delivery item and choose *Edit* → *Choose*.

The selected serial numbers are copied into the dialog box.

Creating Serial Numbers Automatically

To create serial numbers automatically, press *Create serial numbers automatically* in the dialog box. The system creates a serial number for each individual object in the delivery item and copies the serial numbers into the dialog box. When you save the delivery, the system automatically creates master records for each serial number.

Entering Serial Numbers Manually

You can manually enter new numbers in the *Serial number* field in the dialog box. After you save the delivery, the system automatically creates master records for each serial number.

Deleting Serial Numbers from Deliveries

To delete a serial number from the dialog box, mark the corresponding number and choose *Delete serial number*. The system deletes the serial number from the dialog box.



After you delete a serial number from the delivery, the corresponding master record remains in the system. After you save the delivery, it is possible to reassign the number you deleted.

Creating Equipment in Deliveries

Creating Equipment in Deliveries

Materials for which you carry out plant maintenance require equipment master records so that maintenance can be administered.

Settings in Customizing

Depending on the settings in the corresponding serial number profile, it may be necessary to create equipment master records in the delivery. You have the following setting options at your disposal in Customizing:

- Equipment is mandatory
- Equipment is not mandatory

Equipment is Mandatory

If you specify in a serial number profile that equipment is mandatory, the system, during delivery processing, automatically sets the equipment indicator in the serial number dialog box. When you save the delivery, the system automatically creates corresponding equipment master records for each object where equipment is indicated as mandatory.

Equipment not Mandatory

If equipment is not mandatory for a particular material, the system does not automatically create equipment master records.

It is still possible, however, to set the equipment indicator in the serial number dialog box during delivery processing. To do this, mark the corresponding serial numbers and press *Create equipment*. The system sets the indicator for the serial numbers you selected. When you save the delivery, the system automatically creates equipment master records for the selected serial numbers.



If you set the equipment indicator manually, you can also delete the indicator. To do this, mark the corresponding serial numbers and select *Delete equipment*. If the indicator was set because equipment is mandatory, it cannot be deleted.

Working with Inspection Lots in Deliveries

Quality checks can be carried out for delivery items. You can set the quality check function in the material master using QM inspection data.

Furthermore, you can specify additional data for deliveries to a customer using a customer- or material-dependent control. This could include, for instance, whether or not agreement from the quality assurance department is required before delivery. To do this, create customer-specific information records in the QM Module. Proceed as follows:

In the screen [Quality Planning in Sales and Distribution \[Ext.\]](#) choose *Control QM in SD*
→ *Create*.

You see the *Create QM Control Data in SD* screen where you can create information records.



If a delivery item is divided into several partial items using batch split, the partial items generate partial lots for materials requiring inspection. For every partial lot, an individual sample calculation is run, the results of the inspection are recorded and a decision is made on how they will be used.

For additional information on inspection lots in deliveries, see the QM documentation.

Working with Route Schedules

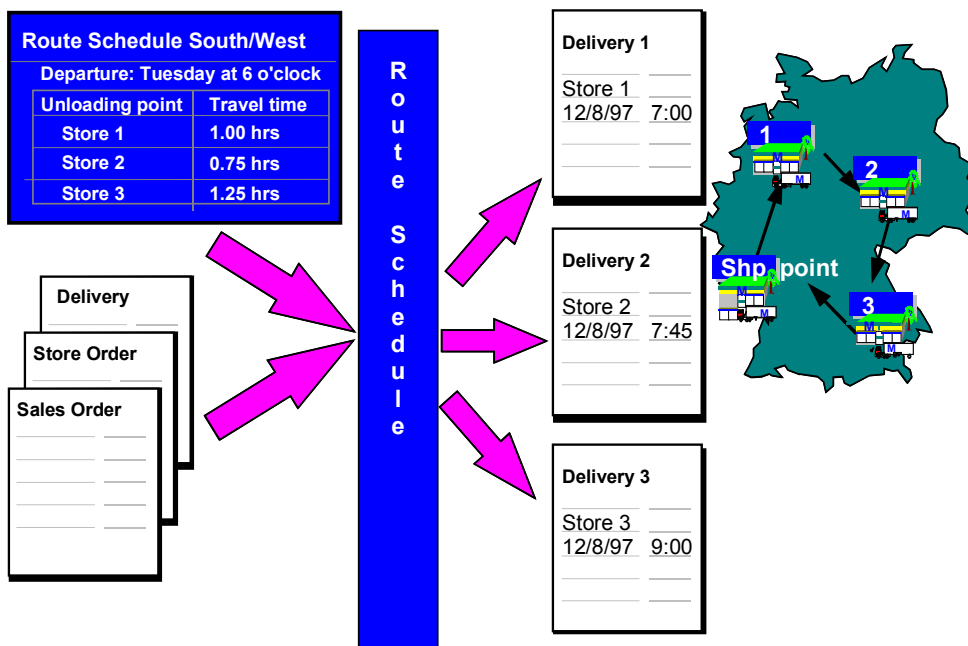
Working with Route Schedules

Use

Using a route schedule, you can control periodic customer deliveries of a particular shipping point to different ship-to parties (for example, customers or stores) in a certain sequence on a certain defined route. The planning is based on calendar weeks. The period unit is a day. Also, route schedules have a goods issue time.

The route schedule function supports the following processes:

- Periodic deliveries from a shipping point to stores or customers are planned in advance on the basis of calendar weeks and weekdays, also without reference to particular deliveries.
- You adapt the schedules in the specific cases to the planning. For example, you can plan a GI date for a Monday at 8 o'clock, without knowing the exact date or the delivery.
- On the basis of this planning, deliveries that are to leave the warehouse at the same time are combined into groups. In Shipping you can thus distribute the workload by processing these groups.



Features

You can display all deliveries for a particular route schedule on a particular day, for a particular shipping point, and so on. In this way, for example, you can choose picking lists on the basis of route schedules.

Working with Route Schedules

You can create route schedules for the following documents:

- Sales orders
- Stock transfer orders
- Deliveries that are based on sales orders, store orders, stock allocations, stock transfer orders, and deliveries without reference.

The route schedule is displayed in the header data of the delivery. For each delivery within the route, the system prints the expected date and the expected time of the delivery (on the basis of the local time at the original shipping point) on the delivery note; the goods issue date is used for the goods issue posting and the stock valuation.

In Customizing, you define for each shipping point, delivery type, stock transfer order, and order type whether or not route schedules are to be used.

You create the route schedules in the master data for shipping. Here you define the route schedule determination and the validity period for the route schedule and the itinerary.

As soon as the legs have been defined, you can branch to another screen to determine the actual itinerary, as well as the time (days/hours/minutes) required to get from one unloading point to the next. In this screen there is a field beside each leg. Here you can enter the number of the itinerary for the individual legs of the route. If, for example, you enter legs A and B, but assign itinerary number 2 and 1 to these, B is the first unloading point on this route. If you press *Enter*, the legs are displayed in the correct sequence.

At the same time it is possible to control the route schedule determination for each delivery type, stock transfer order, and order type. It is activated in the same manner as the repeated route determination. If the route schedule determination for a delivery is active, the system automatically attempts, during creation or change of a delivery, to determine a route schedule and records this in the delivery. Simultaneously, the scheduling is adjusted. All the deadlines, for example, the transportation planning time, the picking time, the loading time, the goods issue time, and the delivery time can change.

Deliveries with the same route schedule and the same date can be selected for the same picking run and the same goods issue. The same procedure can be used for printing delivery notes and freight lists, for the grouping of deliveries into shipments, and for confirmation of picking orders.

Deliveries that leave the warehouse at the same time, but are assigned to different routes and can therefore have different route schedules, can be combined together and processed through the creation of [wave picks \[Page 86\]](#). The only condition is that all deliveries have the same goods issue time.

Route Schedule Determination

If exactly one route schedule is defined for a particular combination of [requirements \[Page 271\]](#), then the system will use this.

For each combination of requirements for the route schedule determination, you can define several route schedules.

- In the case of a delivery without a preceding document, the system determines the route schedule with the earliest delivery time at the ship-to party.
- In the case of deliveries based on preceding documents (for example, stock transfer orders), the system searches for the route schedule that is nearest to the planned date/time of the delivery. The system uses the following search algorithm:

Working with Route Schedules

- If a route schedule exists for the specified time, this is assigned to the delivery.
- If there is no route schedule for the time specified, the system searches for the previous route schedule up to the GI time.
- If there is no route schedule from the GI time to the planned time, the system searches for the next route schedule in the future and assigns this to the delivery.

Requirements for Route Schedules

The route schedules are determined by the following conditions:

- Shipping point
 - Where are the goods coming from?
- Ship-to party and unloading point
 - Where are the goods going to?
- Shipping condition
 - How are the goods being shipped?
- Transportation group
 - Which goods are shipped?
 - For example, which type of goods?
- Calendar week / year
 - When are the goods to be shipped?

If you do not explicitly enter the week and the year, the entry applies for each calendar week. If you enter a week and a year, the route schedule only applies for this week.



You can only use route schedules if you have maintained the working times and therefore at least one of the following times in minutes:

- Transportation planning time
- Pick/pack time
- Loading time
- Transit time

A route schedule can leave the warehouse exactly once in a week. If a route schedule runs several times, either on several days or several times a day, it must be copied to another route schedule.

Special schedules and public holiday weeks are possible.

Processing a Route Schedule

Processing a Route Schedule

Implementation Options

Wholesale trade customers and stores can receive goods at regular intervals. These delivery rhythms have an influence on the workload in the warehouse. To help delivery planning, the route schedule serves as a tool for planning regular, repetitive customer deliveries on a particular route. At the time of planning, potential deliveries that have not yet been created are grouped in the route schedule. When the deliveries are created, the system can automatically determine a route schedule and assign it to the delivery. All deliveries with the same route schedule and the same date can be processed together in the shipping point. All these deliveries leave the shipping point together at a particular time. They are distributed along the same geographical route.



- Deliveries for route schedule MO10H leave the shipping on Mondays at 10:00 in the direction of Philadelphia.
- Deliveries for route schedule MO10M leave the shipping point on Mondays at 10:00 in the direction of Boston.
- Deliveries for route schedule MO10S leave the shipping point on Mondays at 10:00 in the direction of New York.

You can print picking lists for all deliveries that belong to route schedules MO10H - MO10S together.

Prerequisites

- If you want to define route schedules, you must perform the following tasks:
 - Activate the route determination
 - Activate the delivery scheduling
 - Activate the route schedule for your shipping point and make the following settings:

Transaction	Activity
Delivery	Route schedule determination for delivery type
Sales order	Route schedule determination for sales document type
Stock transfer order	Route schedule determination for delivery type Set delivering plant and order type

- Maintenance of the itinerary should be uniform for all the route schedules used. To ensure exact planning, maintain the itinerary for all the route schedules. If rough planning is sufficient in this case, you do not need to maintain the itinerary for a route schedule.
- If you do not define any goods accepted times in the customer master for the unloading points of the ship-to party, the system assumes that the goods acceptance is possible at any time. The system determines the delivery time from the departure time in the route schedule plus the required traveling time to the ship-to party, as set in the itinerary

Processing a Route Schedule

(specific move time). This delivery time must be within the goods acceptance time of the unloading point of the ship-to party. If not, the respective route schedule is not determined during delivery creation.

- For more information on route schedules, refer to the Implementation Guide (IMG) under Route Schedules.

Process Flow

1. Select the shipping point you are working for and enter the number of the route schedule.
2. Enter the data that defines the route schedule more exactly:
 - Description of the route schedule
 - Route
 - Departure day (weekday)
 - Departure time
3. You define the route schedule determination. When you create the delivery, the system can determine a route schedule on the basis of the following data:
 - Shipping point
 - Ship-to party
 - Unloading point (if available)
 - Shipping condition
 - Transportation group
 - (Optional) year/periodYou enter this data (with the exception of the shipping point already entered in step 1).
4. You decide whether or not you wish to define the itinerary for this route schedule.
5. (Optional) You enter the itinerary and, if required, also the travelling time.

See also:

[Creating a Route Schedule \[Page 274\]](#).

Creating a Route Schedule

Creating a Route Schedule

1. Choose *Logistics* → *Logistics Execution* → *Master data* → *Transportation* → *Routes* → *Route schedule* → *Create*.
2. In the screen *Create Route Schedule: Initial Screen*, enter the shipping point and the number of the route schedule.



If you wish to use data from an existing route schedule as a reference, enter the respective shipping point and the number of that route schedule. If you also wish to copy the itinerary, check the *Copy itinerary* box.

Press ENTER.

The *Create Route Schedule* screen appears (here the system displays the number you just entered for the route schedule and the shipping point).

3. Enter the following data:
 - Description of the route schedule
 - The respective route
 - Departure day (weekday)
 - Departure time
4. In the *Determine route schedule* section, enter the following data:
 - Ship-to party
 - Unloading point (if available)
 - Shipping conditions
 - Transportation group
 - (Optional) Year/period
5. If you wish to define for this route schedule the itinerary according to which the individual ship-to parties are to be delivered to, choose *Extras* → *Itinerary*.

The *Create Itinerary* screen appears.

6. Enter the itinerary and, if necessary, the travelling time.



When you determine the travelling time from one ship-to party to the next, you should include the wait time of the vehicle at the previous ship-to party.



If the same route is planned for several route schedules, define for **each** of these route schedules the **same** itinerary that should correspond to the stages and legs of the route.

Choose *Goto* → *Back*.

Creating a Route Schedule

You return to the *Create Route Schedule* screen.

7. In this screen, the *Itinerary maintained* field is now selected. If you wish to add other ship-to parties, you must also maintain the *Itinerary* for them.
8. Check your data and save your entries.

Rough Workload Estimate

Rough Workload Estimate

Use

These standard analyses enable the person in charge of a distribution center or warehouse to calculate the rough workload for the next few days. The analyses can be used, for example, for planning how many staff workers are required, for creating wave picks, or for statistical evaluations.

Using these analyses it is possible to display an overview of the workload either per day or per warehouse.

The workload data update is based on SAP documents:

- Purchase order and corresponding shipping notification
- Stock transport order
- Rough goods receipt (only in retail systems)
- Sales order
- Delivery
- Returns to vendor, customer returns and store returns (only in retail systems)

The system updates the quantity, weight, volume, and the number of document items or stock allocations from these documents. Alternatively, processing times can be determined by using Customizing tables.

Integration

The rough workload forecast is a [standard analysis \[Ext.\]](#) in the Logistics Information System (LIS).

All functions of the [LO Logistics Information System \[Ext.\]](#) are available for analysis of the workload data, for example:

- Early warning system
- Dual classification
- Classification
- Hit lists and ABC analysis
- Arbitrary aggregation and disaggregation options

You can also use the [planning function \[Ext.\]](#) to incorporate planned data into analyses, rather than analyzing only actual data.

Prerequisites

Implementation of Lean WM (as a minimum) is necessary to perform rough workload estimation. Rough workload estimation is naturally also possible using the complete WM function.

For information on Customizing, refer to the IMG for Warehouse Management, *Rough Workload Estimate* section.

Range of Functions

The following five analyses are provided for the rough workload estimate:

1. Total overview
2. Goods receipt / putaway
3. Picking / goods issue
4. Customer/stores returns (stores returns only in retail systems)
5. Returns to vendor

With analysis 1, you can determine the entire workload for the distribution center / warehouse for all warehouse processes.

With analyses 2 through 5, you can determine workload for specific warehouse processes.

R/2-R/3 Link

Implementation Options

All the shipping functions are at your disposal if you are implementing your own R/3 Shipping Module in combination with an external system. Data is automatically transferred between the R/2 system in which sales processing and billing take place and the R/3 Decentralized Shipping module. In this way, you can make use of both existing systems and new shipping functions.

It may also be helpful to use the R/2-R/3 link outside of the Sales and Distribution processing environment in the following situations:

- A sales company is working in cooperation with a supplying company. However, each has its own computing system.
- Various software products are to be combined on various hardware platforms.

Range of Functions

In the central R/2 Sales and Distribution system, you create sales orders and then create deliveries with reference to those orders. At this point, an availability check and delivery scheduling is carried out. When printing is initiated, the delivery data is transferred using CPI-C (interface to enable communication between different programs) to the R/3 Shipping System.

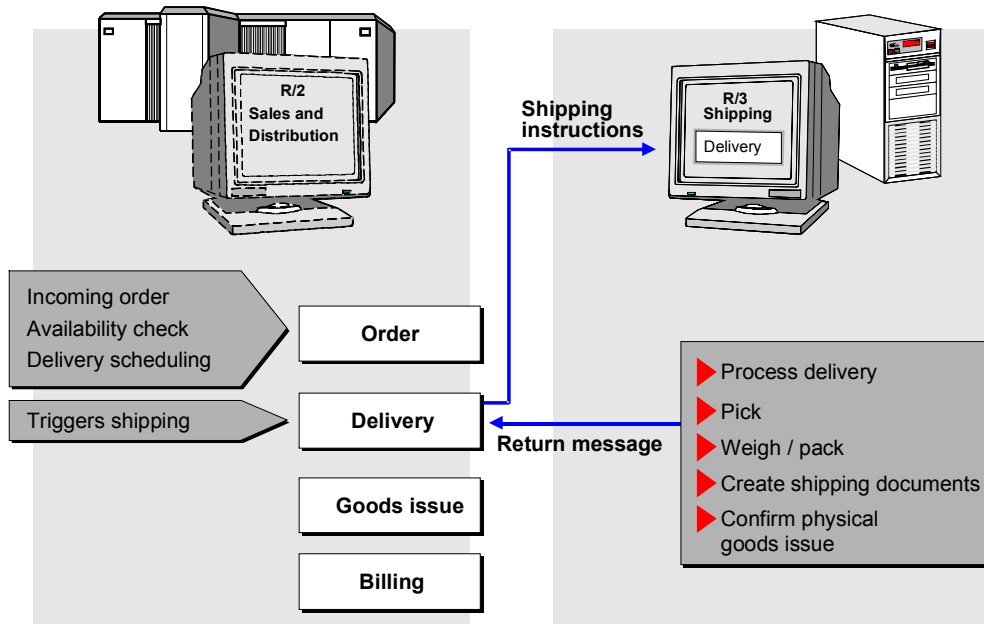
The R/3 Shipping System creates deliveries without an order reference using the delivery data it receives in the form of [communication documents \[Page 280\]](#). After the deliveries have been processed, the transfer of delivery data back to the central R/2 sales and distribution system is initiated by a pro forma goods issue posting.

In the central R/2 Sales and Distribution system, the goods issue posting and billing are now executed for the deliveries it has received.



The goods issue posting in the R/3 Shipping System serves to initiate the transfer of delivery data back to the central sales and distribution system. The actual goods issue posting that passes the data on to Materials Management is carried out by the central R/2 Sales and Distribution system once the delivery data becomes available there.

The following figure illustrates the procedure in the R/2-R/3 link from the point of view of the central R/2 Sales and Distribution system and the decentralized R/3 Shipping system.



Communication Terms

Communication Terms

For the communication process between central and decentralized systems in the R/2-R/3 link, various communication elements are required to make data transfer and the checking of transfer transactions possible.

Communication Document

A central element of the communication process is the communication document. A communication document is created for each data transfer transaction between the systems.

A communication document is a data chain transferred in one transaction. It consists of communication records with the same number. The first and the last record of the communication document are marked. Thus, a communication document can be seen as a logical unit as such.

Communication Record

A communication record is a data extract in R/3 format consisting of the data to be transferred.

Record Type

Since different data has to be transferred, depending on the transaction and the direction of the communication process, communication records are assigned to specific record types.

Record Identification

A communication record is identified by a record type and a record number. Communication records with the same record number form a communication document, regardless of the record type.

Data Structure

The structure of a communication record is stored in R/3 format in the Data Dictionary and is dependent on the record type. A specific table, where the respective communication records are stored, is defined for each record type.

R/3 Format

Communication records are always transferred in R/3 format, regardless of the direction of the communication process. Thus, the recipient is always responsible for the conversion. Therefore, it does not make any difference for the R/2-R/3 link which system is operating as the partner system (R/2 host, non-SAP host).

Communication Records Status

To enable a communication chain to be created, the communication records are given a record status that determines their position within the communication document during the technical transfer process.

The following table lists possible statuses:

Communication Records Status

Status	for...	Importance
F	First	First record of communication document
D	Last	Last record of a communication document

blank		Other record of communication document
S	Single	Communication document consists of 1 record

Communication Number

When the system recognizes during a transaction that a communication document must be created, it determines a communication number based on the recipient.

The communication number is the technical definition of the recipient (target system, application, client, receiving program etc.). The communication number is used to determine the key for the queue file.

Queue

In a queue, communication records to be transferred are stored in an intermediate file before the transfer takes place.

The communication documents can be sent automatically or manually from the intermediate file to the partner system.

Send Program

At the time of data transfer a send program is called up that

- creates the communication document
- writes the communication document to the intermediate file

During an automatic transfer, the program carries out the following functions:

- It establishes a connection to the receiving program in the target system.
- It transfers the communication documents using CPI-C.

Receiving Program

In the receiving system the communication document is processed by the receiving program. The receiving program has the following functions:

- It writes the individual communication records to the tables defined for the specific record types.
- It creates a status record that you can use to check the communication process.
- It tests the data contents in the communication records.
- It carries out the postings in the receiving system.

Processing communication documents

Processing communication documents

Usually communication between the central R/2 Sales and Distribution system and the R/3 Shipping System takes place automatically. If no errors occur during the communication, you simply need to process the deliveries created from the communication documents.

However, if errors occur, you may need to re-process the communication documents manually. For more information, see:

[Evaluate Communication Documents \[Page 283\]](#)

[Evaluate Communication Documents \[Page 285\]](#)

[Process Decentralized Deliveries \[Page 287\]](#)

Evaluate Communication Documents

You can monitor the communication documents received by the R/3 Shipping System by displaying them and their respective statuses in a global and a selective overview.

To evaluate communication documents, you can display:

- How many documents have been received
- Which documents have been received
- Where errors occurred during the transfer of the documents
- When a document reached the R/3 Shipping System and when it was processed there
- Which status each document has (completed, open, incorrect)
- Which data a document contains



Only the communication type “delivery” is relevant for the R/2-R/3 link so that the following explanations apply solely to this communication type.

Overview of Communication Documents

To display the communication documents in a global or selective overview, proceed as follows:

1. In the SAP menu, select *Logistics* → *Logistics Execution* → *Internal Whse Processes* → *R/2-R/3 Link*.

2. Choose *Communication* → *Evaluate Commun.Doc*.

You see the *Evaluation of Communication Documents* screen.

3. Enter the criteria by which you want the communication documents to be selected and then choose *Program* → *Execute*.

The *Communication Documents: Global Overview* screen appears: The number of communication documents and their processing statuses are summed up and sorted according to communication type.

4. Position the cursor on the *Delivery* line on the entries for which you want to obtain a selective overview, and then choose *Goto* → *Overview commun.doc*.

The *Communication Documents: Selective Overview* screen appears: You reach the screen where the communication documents selected are listed complete with the appropriate record number, record type, time and date of reaching the system, time and date they were processed, error status, and so on.

Update Overview

You can update the overview list on the global overview screen at any time so that your list always gives an accurate picture of the current situation. To do this, choose *List* → *Refresh*.

Displaying Communication Documents Individually

You can display communication documents in two ways:

Evaluate Communication Documents

- From the selective overview
- On request

The individual display gives you header data (such as the number of the delivery created), item data, and texts for the documents selected.

Display from the Selective Overview

To display a communication document from the selective overview screen, position the cursor on the document and then select *Goto* → *Display commun.doc*.

The communication document selected is displayed and can be printed out.

Display on Request

To display a communication document on request, proceed as follows:

1. In the SAP menu, select *Logistics* → *Logistics Execution* → *Internal Whse Processes* → *R/2-R/3 Link*.
2. Choose *Communication* → *Shipping* → *Display commun.doc*.
You see the *Display Communication Document* screen.
3. Enter the record number of the communication document you want to display in the *Communications Document* field and then choose *Program* → *Execute*.

The communication document selected is displayed and can be printed out.

Reposting Communication Documents

If the system does not automatically create decentralized deliveries from the communication documents it receives (communication document has the status "Open" in the global overview) or if communication documents received contain inconsistencies (communication document has the status "Incorrect" in the global overview), you can repost these communication documents after you have processed them manually.



You will find notes on errors in specific communication documents in the selective overview.

You can use various processing modes for reposting communication documents:

- **A** - foreground
You branch to the delivery document and process it manually.
- **E** - only in the foreground when errors occur
You only branch to manual processing when an error occurs. If no error occurs, reposting is carried out automatically without branching to the document.
- **N** - in the background even if errors occur
Reposting is carried out automatically without branching to the document regardless of whether errors occur or not. You cannot carry out manual processing.

You can repost communication documents in two ways:

- From the selective overview
- On request

Reposting from the Selective Overview

To repost a communication document from the *Communication Documents: Selective Overview* screen, proceed as follows:

1. Position the cursor on the document and then choose *Edit* → *Repost comm.doc*.
The *Generate Decentral Deliveries from Communication Documents* screen appears.
2. Enter the indicator for the processing mode you want to use. The number of the communication record is proposed automatically.
3. Choose *Program* → *Execute*.
Depending on the processing mode you selected, reposting either occurs automatically or can be influenced manually.
In the case of manual processing, you see the Create Delivery screen. The system provides default values for each field.
4. Select **ENTER**.
You see the screen where you can create or edit the delivery.
When you create the delivery, a pop-up window appears where you can check and, if necessary, change the address data for the ship-to party that has been copied.

Reposting Communication Documents

The dialog box does not appear if you have made the appropriate settings in Customizing regarding the processing of one-time customers. If this is the case, a customer master record for the ship-to party must already exist in the decentralized R/3 System.

Reposting on Request

To repost a communication document on request, proceed as follows:

1. In the SAP menu, select *Logistics* → *Logistics Execution* → *Internal Whse Processes* → *R/2-R/3 Link*.
You see the screen *R/2-R/3 Link*.
2. Choose *Communication* → *Shipping* → *Repost commun.doc*.
You see the screen where you create decentralized deliveries from communication records.
3. Enter the number of the communication record you want to process and select the processing mode that you want to use.
4. Follow steps 3 and 4 for the reposting of documents from the selective overview.

Restrictions in Delivery Processing

You must observe the following restrictions regarding the reposting of decentralized deliveries:

- You cannot delete delivery items received from the central sales and distribution system.
- You can only change the plant, storage locations, and batches if they were not proposed from the central sales and distribution system.
- You can only check batches if they are created manually in the R/3 System.

Processing Decentral Deliveries with the R/2-R/3 Link

After decentral deliveries have been created either automatically or manually from the communication documents that were received in the R/3 Shipping system, it is necessary to process these deliveries.

This is initiated by posting goods issue in the decentralized R/3 Shipping System. Confirmation occurs automatically using output control, if the sending of output in batch has been scheduled. Otherwise the deliveries need to be confirmed manually.

The goods issue posting confirms for each delivery the completion of all shipping activities in the R/3 Shipping System. You will find the status *Completed* in the document flow for the decentralized delivery if confirmation has been carried out successfully.

Processing Decentralized Deliveries

Decentralized deliveries are edited in the same way as deliveries in a central R/3 System.

You can choose between the following processing types:

- Individual processing
- Processing using delivery due list
- Processing by making selections from deliveries in process



The deliveries can be grouped and processed together in the decentralized R/3 System. However, the group data cannot be transferred to the central sales and distribution system.

Confirming Decentralized Deliveries Manually

To confirm a decentralized delivery manually, proceed as follows:

1. In the SAP menu, select *Logistics* → *Logistics Execution* → *Internal Whse Processes* → *R/2-R/3 Link*.

You see the screen *R/2-R/3 Link*.

2. Choose *Communication* → *Shipping* → *Confirm comm.doc*.

You reach the *Selection Program for Issuing Output* screen.

3. Enter the number of the decentralized delivery that you want to report in the Key field. You can also enter a number interval. You must include the leading zeros when you enter the delivery numbers.

Do not change the entries in the remaining fields.

4. Choose *Program* → *Execute*.

You receive the message *<n> outputs were processed in total*.

The decentralized delivery is confirmed in the sales and distribution system.

Material Master Transfer

Material Master Transfer

Material master records from a central R/2 system can be transmitted to decentralized R/3 systems and created there automatically in order to enable the R/2-R/3 link. Changes in the material master in the central system can also be transferred automatically to the decentralized R/3 System. The material data transfer is initiated, when a material is created or changed in the central system.

You create or change material master records in the central system. The respective material data is passed on to the decentralized R/3 System using communication documents. The data is then changed or created accordingly in the decentralized system.

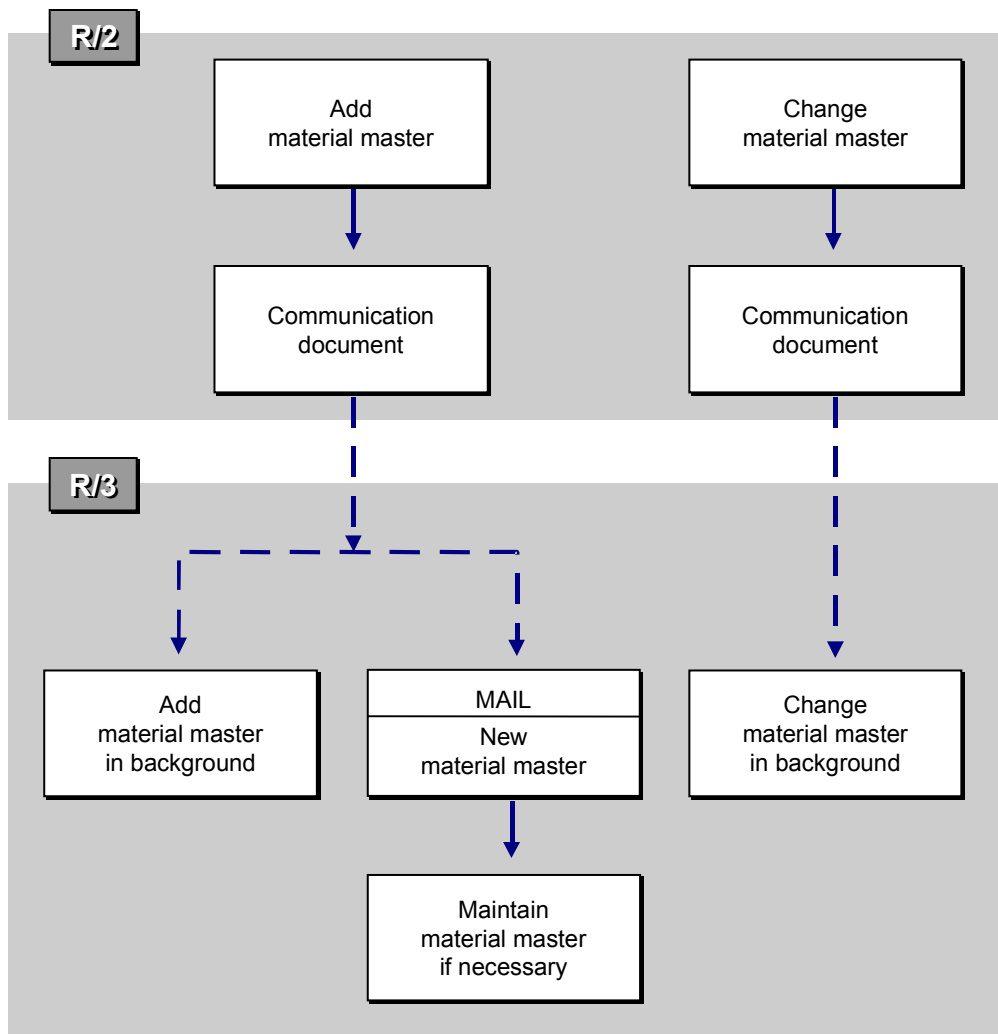
For information on processing communication documents for material master data, see the section [Processing Communication Documents \[Page 282\]](#).



Please note that only communication types **Material LgO** and **Material SD** are relevant here.

The following figure shows the general procedure for transferring material masters.

Material Master Transfer



Creating a Material Master Record

When a material master record is created in the central system, the following procedure is used to transfer the material master data to a decentralized system:

1. The user creates a material master record in the central system (using transaction TJ10 in the R/2 System, for example).
2. If plant data is maintained during creation of the master record, the system checks whether transfer of material master data to a decentralized system has been defined for the plant and whether all required views (for example, *Sales/Plant Data* or *Sales Text*) are maintained. If this is the case, the central system creates a communication document containing all relevant material data and sends this document to the decentralized R/3 System.
3. Once the required data has arrived, the following actions are carried out in the decentralized R/3 System:

The system creates a new material master record in the background, which includes the following views:

Material Master Transfer

- *Sales 1*
- *Sales 2*
- *Sales/Plant Data*
- *Sales Text*
- *Storage*

If Customizing is set accordingly, the person responsible for maintaining the R/3 material master receives a mail informing him that a new material master record has been created.

4. After receiving the mail, the person responsible for the material master can maintain the material master record decentrally, if necessary. However, the extent to which he or she can carry out changes is very limited.



The transfer of material data relevant for the storage location has to be initiated manually in the central R/2 System. All other material data is sent automatically to the decentralized R/3 System. For the data relevant for the storage location, communication records of the type *Material Stl* and for the other material data communication records of the type *Material SD* are created.

Changing Material Master Records

You always change general material data in the central system. If changes to the material master are carried out in the central system, and these need to be taken into account in the decentralized R/3 System, the changed data is transferred. This is carried out as follows:

1. A user changes material data in the central system.
2. The central system recognizes that this data needs to be transferred to the decentralized R/3 System and creates a communication document that contains the changed data. The document is sent to the decentralized R/3 System.
3. The relevant material data is changed in the decentralized R/3 System.



When the material master records are changed, the sending of material data relevant for the storage location also has to be initiated manually in the central R/2 System.

Material Master Maintenance

Since, with few exceptions, material data is maintained in both systems, there has to be a way to ensure that the data remains consistent in both systems. Material data that has been transferred from a central R/2 system cannot, therefore, be changed decentrally.

However, this does not apply to data that exists independently in the decentralized R/3 System. For example, the transportation group and loading group do not exist in R/2 but are automatically created in the decentralized R/3 System. This data can be changed decentrally because a change does not affect the data consistency of the two systems.

[Changing Materials Decentrally \[Page 292\]](#)

[Maintaining Materials Centrally in the Decentralized System \[Page 293\]](#)

Changing Materials Decentrally

Changing Materials Decentrally

To change a material decentrally in the R/3 System, proceed as follows:

1. In the SAP menu, select *Logistics* → *Logistics Execution* → *Internal Whse Processes* → *R/2-R/3 Link* → *Material Master Maintenance* → *Change Decentrally*.

The *Change Material: Initial Screen* screen appears.

2. Maintain the material in the usual way.

In the various sales views you can make limited changes only. For reasons mentioned above, the majority of fields are not ready for input.



To ensure data consistency, only the maintenance transaction described above can be used to change materials decentrally.

Maintaining Materials Centrally in the Decentralized System

When centrally maintained material data is urgently needed in the decentralized R/3 System, and the automatic data transfer between the two systems is temporarily not possible, it may be necessary to maintain the relevant views manually in the decentralized system. To do this, the following transactions are available to you in the R/3 System.

For **central maintenance** only the sales-related views that are necessary for parallel data maintenance in both systems are available to you. On these screens, all relevant fields are ready for input. The *Item category group*, *Transportation group* and *Loading group* fields are not mandatory, since they can subsequently be maintained decentrally.

Creating Materials Centrally

To create a material centrally in the decentralized R/3 System, proceed as follows:

1. In the SAP menu, select *Logistics* → *Logistics Execution* → *Internal Whse Processes* → *R/2-R/3 Link* → *Material Master Maintenance* → *Create Centrally*.

The *Create Material: Initial Screen* screen appears.

2. Create the material in the usual way.

Changing Materials Centrally

To change a material centrally in the decentralized R/3 System, proceed as follows:

1. In the SAP menu, select *Logistics* → *Logistics Execution* → *Internal Whse Processes* → *R/2-R/3 Link* → *Material Master Maintenance* → *Change Centrally*.

The *Change Material: Initial Screen* screen appears.

2. Change the material in the usual way.



To guarantee data consistency in both systems it is very important to make sure that, when maintaining centrally, the manually maintained material data in the decentralized R/3 System corresponds exactly to the material data in the central system.

Maintenance Authorizations

To prevent material data that has been transferred to the decentralized R/3 System from being changed by unauthorized persons, the maintenance of the various views of the material master record has to be limited through the allocation of authorizations (object *M_MATE_STA*) by the system administrator.

Error Detection and Analysis

Error Detection and Analysis

There are three ways in which you can deal with errors that occur during data transfer:

- Send a mail to the employee responsible for data transfer errors
- Analyze the system log
- Evaluating Communication Documents

To carry out these functions in the system, proceed as follows:

1. In the SAP menu, select *Logistics* → *Logistics Execution* → *Internal Whse Processes* → *R/2-R/3 Link*.

You see the screen *R/2-R/3 Link*.

2. Choose
 - *Error analysis* → *Incoming mail* if you want to determine whether mails have been entered regarding a data transfer error.
 - *Error analysis* → *System log* if you want to analyze the system log.
 - *Error analysis* → *Evaluate commun.doc.* if you want to display and analyze the communication documents received.

Displaying Incoming Mail

Depending on the settings made in Customizing, you receive a mail if a data transfer error occurs. On the basis of the information in this mail, you can carry out an error analysis.

You can call up the mail from your mail inbox.

Displaying System Logs

The system log is a list of errors and occurrences in the SAP System. For example, it contains entries on program and transaction terminations or data base errors on which you can call up more detailed information. This gives you information on how the problem can be solved.

Evaluating Communication Documents

For information on evaluating communication documents using the menu option *Error analysis*, refer to the section [Processing Communication Documents \[Page 282\]](#).