Shipping

Outstanding Features:

- Flexible processing of deliveries enables you to mold the shipping process to your needs.
- Picking, packing, loading and transportation support provides a complete set of shipping solutions.
- Delivery deadline monitoring helps keep you on schedule.
- Flexible output streamlines the flow of information to ensure a streamlined flow of goods.
- Close integration with the R/3 System's Materials Management and Financial Accounting modules eliminates duplication of effort and keeps up-to-date information at everybody's fingertips.

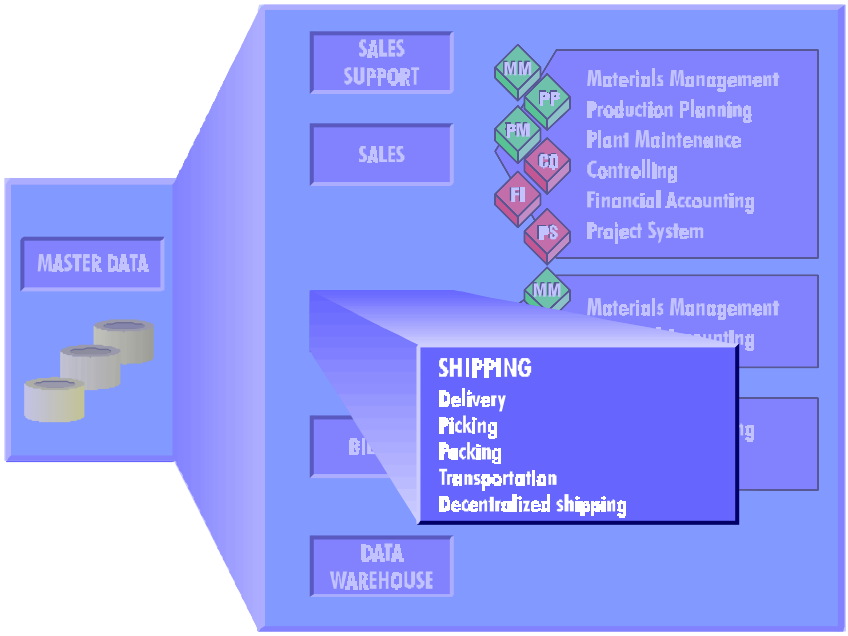


Fig. 6-1: Shipping in R/3 SD

Shipping is an essential part of the supply chain. The main task of the shipping department is to ensure customer service and to support distribution resource planning (DRP). Shipping costs are a major part of the costs in logistics. So by using the flexible shipping processing SAP offers, you can increase your overall cost effectiveness and become more competitive.

In SD's shipping processing, all decisions concerning the normal delivery process can be made in advance by

- keeping track of general agreements with customers
- keeping track of specific requirements of materials
- specifying conditions for each order

This allows you to streamline your shipping process so that it takes place almost automatically. Intervention is only necessary in special circumstances when a decision needs to be made.

Shipping activities include:

- initiating the shipping process by creating deliveries
- planning and monitoring the work load for each step in the shipping process
- monitoring product availability and handling backorders
- picking
- packing
- providing current, accurate information for transportation planning
- printing and transmitting shipping documents
- supporting foreign trade requirements
- updating information when the goods leave your premises
- monitoring the delivery until goods receipt by the customer

Deliveries

Within SD, the delivery is the object that supports the shipping process by providing planning information, tracking the status of shipping activities, and capturing data generated during the shipping process. This ensures high-quality customer service and cost-effective processing. The delivery includes all data necessary to start and complete the shipping process.

Depending on agreements with your customers and the way you choose to do your sales business, sales orders may be split into several deliveries to meet customers' requirements. This may be due to different ship-to addresses, different delivery schedules, or other factors. You may also combine several sales orders into one delivery to ensure cost effectiveness.

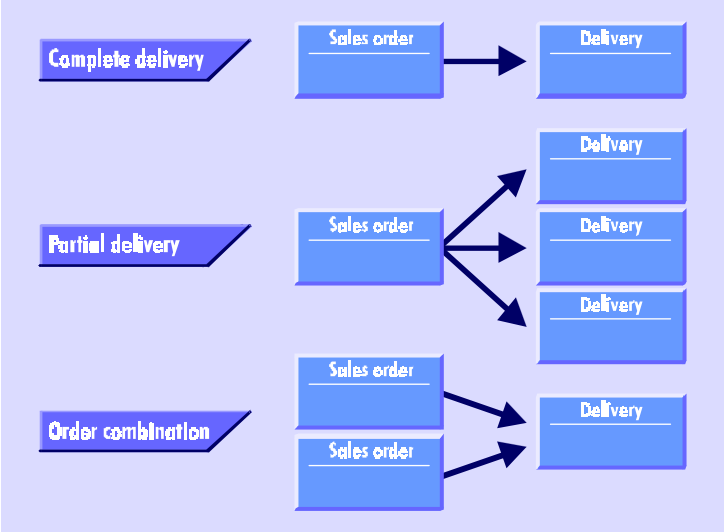


Fig. 6-2: Options for Creating Deliveries

Because the transfer of goods within your organization (for example, from a manufacturing plant to distribution centers) requires the same shipping activities as deliveries to customers, you can use the SD shipping functions to support the shipping process at the supplying plant by creating deliveries for stock transfers.

Decentralized Shipping

All shipping functions are also available to you if you use R/3 Shipping in combination with an external system, as with an R/2 system, for example. Data is automatically transferred between the external system, where the sales and billing data is processed, and the separate R/3 Shipping module. This allows you to use modern shipping functions and at the same time make the most of existing investments.

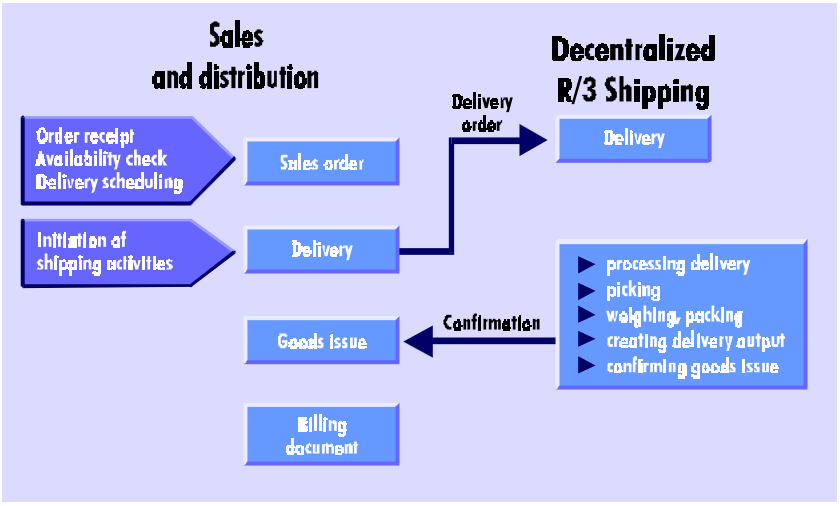
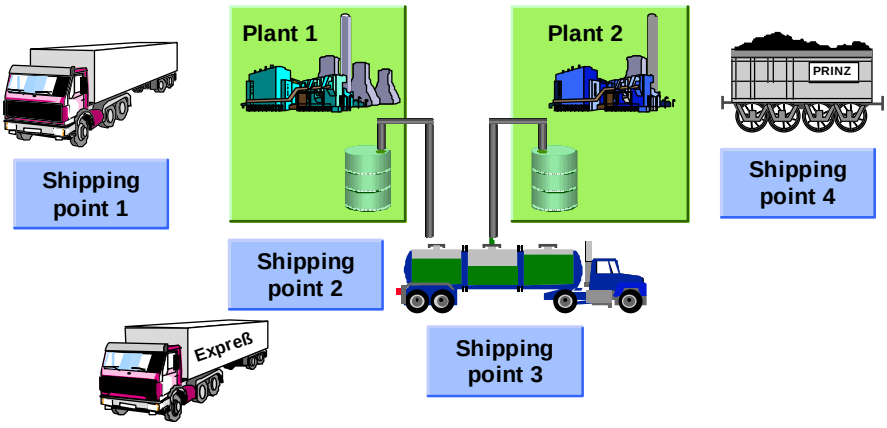


Fig. 6-3: Decentralized Shipping

Shipping Point

Using the shipping point as an organizational element, SD enables you to assign the shipping activities to the right group of people at the right location. Each shipping point is characterized by a specific type of equipment (crane, forklift, and so on) and access to various modes of transport (such as rail or truck). Shipping points can be assigned to more than one plant to allow flexibility.

The shipping point is automatically determined at order entry based on the shipping conditions agreed upon with the customer, the loading group of the material, and the delivering plant.



Shipping conditions	:	as soon as possible	at lowest cost	at lowest cost
Loading group	:	bulky	bulky	liquid
Plant	:	1	1	2
Shipping point	:	2	1	3

Fig. 6-4: Shipping Point

Delivery Scheduling

Timing is crucial to customers. Whether you can promise a particular delivery date may affect their decision to place an order with you or with a competitor. In order to best serve the needs of your customers, all SD shipping activities are scheduled by backward scheduling to ensure that you meet the delivery dates promised.

Delivery scheduling is automatically carried out at order entry and whenever you change the timeframe of the order. Of course, planned shipping activities are closely interlinked with material availability. In case the backward scheduling determines that deadlines cannot be met either because the process takes longer than the given timeframe or because the product is not available when necessary, SD automatically switches to forward scheduling and proposes a schedule. These processes work together to provide you the best-possible scheduling with the least difficulty.

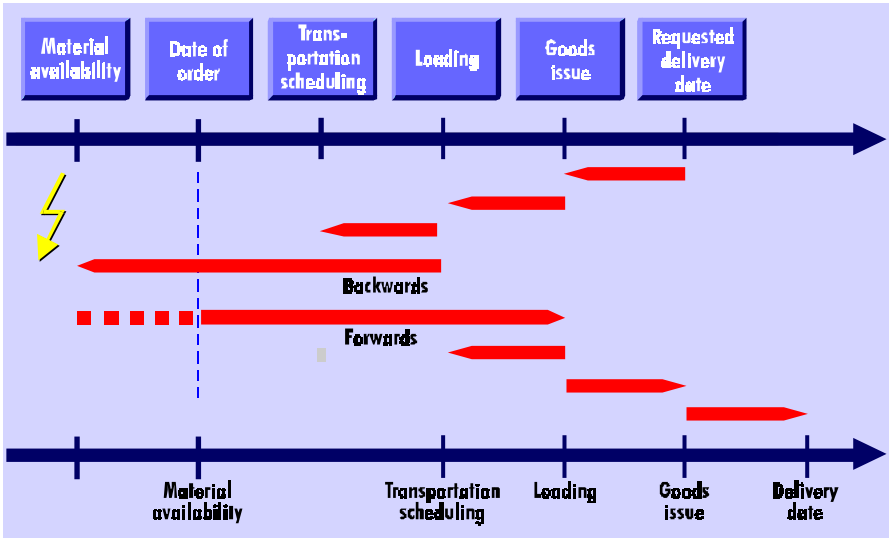


Fig. 6-5: Backward and Forward Scheduling

Creating and Processing Deliveries

The creation of a delivery initiates the shipping activities. Because all information necessary for the shipping process is already in place (transferred from the sales order or master records), the creation of a delivery usually does not require manual input.

During delivery creation the system carries out the following activities:

- checks the order and the products to determine whether a delivery is possible (delivery block, incompleteness, and so on)
- determines the products and the quantities due for shipping and carries out an availability check
  Because the stock situation has possibly changed since the availability was checked in the sales order, an availability check can be carried out again in the delivery.
- determines weights and volumes
- calculates the workload
- gives a packing proposal
- takes into account agreements with the customer concerning partial deliveries
  Customers may accept a certain number of partial deliveries per order or may insist that you deliver an entire order at one time. SD shipping functions give you the flexibility to adjust to your customer's preferences and to your stock situations.

- updates route information
  A route groups deliveries according to routing and means of transport, which is important for delivery processing and transportation planning.
- adds information relevant for export
- checks delivery scheduling and adjusts the dates
- assigns a picking location
- determines batches (if the material is managed in batches)
- initiates a QM inspection lot, if necessary
- updates information in the sales order and changes the order status

You can initiate deliveries in different ways, allowing for great flexibility in order to speed goods to your customers or distribution centers.

Delivery Due List

The delivery due list is the work list for the shipping department. It gives the start date of the shipping process and provides information on accumulated weight and volume and on the estimated processing time. Processing the delivery due list initiates the shipping process based on criteria defined by the shipping department. The delivery due list can be scheduled for automatic processing in background. It can also be processed interactively to support an administrator's decisions.

Because the delivery due list reflects the shipping work load over time, it shows today's workload as well as backorders or activities due in the future. It allows you, for example, to ship backorders automatically as soon as the product is available, or to initiate shipping for tomorrow's orders to maximize shipping department effectiveness.

A log keeps track of

- the number of deliveries created
- the labor required in the shipping department
- the number of errors that occurred (lacking availability, violated partial delivery agreements, and so on)
- total processed weight and volume

Manual Delivery Creation

To allow for maximum flexibility, orders can be exempt from automatic delivery creation. In special situations you may want to create a delivery for a sales order manually because of necessary decisions and adjustments. The ability to create a delivery manually ensures a quick and flexible reaction in the case of an unusual situation. Manual creation allows you to initiate deliveries and react to system information when the automatic process would have rejected the creation because a decision had to be made first.

It is also possible to create a delivery without reference to a sales order. This function is necessary if you use a decentralized R/3 Shipping module where sales processing is carried out in an external system.

Changing Deliveries

Of course, at any point in time during the shipping process it may be necessary to change the delivery. You may need to add new information or change it so that the delivery always reflects the reality in the warehouse. Only then can it support realistic planning and give decision support.

In SD shipping, clearly structured overviews provide various views on the delivery to give you the relevant information at a glance, to make data entry easy and to reduce errors during data entry. Detail screens help you zoom in on specific aspects.

It may also be necessary to change the scope of the delivery, for example, to provide a last minute customer service by adding another order to a particular delivery, or to delete an item that has been postponed. You might also add items that were not ordered, such as free brochures or packing material.

Monitoring

Overviews of deliveries in process enable you to monitor and control the shipping process and to recognize and resolve bottlenecks efficiently.

The deliveries line up for the next necessary activities in the shipping department. Again, if all runs smoothly and there is no need for manual intervention, SD provides features to trigger the next step in delivery processing automatically. This allows you to distribute the workload according to the needs of your organization, while ensuring efficiency.

Tools are at your disposal to identify and find an individual delivery or several deliveries that meet specific criteria. This might be necessary, for example, when a customer calls and requests last minute changes, or a product is reported to be damaged in the warehouse. This capability enables you to react quickly and efficiently to unplanned events.

To monitor delivery processing beyond goods issue or during internal processing, you can specify deadlines with planned start and planned end dates in the delivery. These can be compared to the actual start and end information and, in case of deviation, a reason code can be given.

Picking

Picking is the physical process of locating goods in the warehouse and having the correct quantity and quality moved from their storage location to a particular place in the picking zone to be further prepared for shipping. Efficient picking is mandatory for cost-effectiveness and for providing good customer service.

With SD shipping you can support picking in just the way you need to ensure an efficient warehouse organization.

Each delivery item informs you

- whether picking is necessary
- when picking should start to meet the picking deadline in the delivery
- what storage location to take the goods from
  The storage location can be determined automatically at delivery creation by predefined rules (for example, based on material storage conditions).
- where to find the goods in the storage location
- whether picking this item is supported by the R/3 Warehouse Management system using transfer orders

For each delivery, picking may involve various people and warehouse technical equipment. In SD shipping, the people involved are provided picking lists or picking labels that are tailored to maximum effectiveness, for example, in regard to the sequence of movements in the warehouse. Two-step collective picking is also supported to maximize picking efficiency.

Whichever way picking is done in your organization, you can set up the system to initiate picking activities automatically at delivery creation or periodically at specified times. You can also or you can use workload overviews to initiate a picking wave whenever the person responsible for a picking area decides to do so.

Picking Status and Confirmation

To schedule and monitor the picking process, each delivery item carries a picking status to indicate for what quantities the picking process has been initiated.

Depending on your organization, you may want to control the picking process by requiring a picking confirmation. In this case, the end of the picking activities for a delivery item, a delivery or a picking request will have to be confirmed. SD provides you with multiple ways to do this for the convenience of your personnel. If you do not require such a tight control, feedback is only necessary on an exceptional basis or in case additional information is generated by the picking process.

Feedback from Picking

Depending on your business, picking may provide information relevant for the delivery, in cases where such information is not determined in advance. This might include data such as

- from what batches a material was picked
- what serial numbers were picked
- from what valuation types the stock was taken

Occasionally it may be impossible to pick the required quantity. In this case, the picking quantity in the delivery item has to be adjusted. A new picking request may be started for the missing quantity or the delivery quantity has to be reduced (with the appropriate effect on the order the delivery was based on).

Fig. 6-6: Picking Process

Integration with WM

If you use the R/3 Warehouse Management module, all communication necessary to initiate activities in the WM module is fully supported and integrated. You can use all of its features and receive the current status of warehouse activities in the delivery.

Picking Subsystem

In case you use a dedicated subsystem for the picking process, SD provides a certifiable interface to download all information necessary for picking and to upload the picking feedback.

Packing

Depending on your business requirements, it may be useful or even mandatory to keep track of how a delivery was packed. SD's packing functionality gives you the following benefits. It allows you to

- use packing information to update stock-keeping of packing materials
- use packing information to update the customer's or carrier's returnable packaging account
- provide packing information as a customer service
- keep track of what was in which container, in case the customer claims an incomplete delivery
- make sure weight/volume restrictions are met
- make sure the products are packed in suitable packaging.

In order to tailor the system to your needs, you can define under what circumstances packing can be done or has to be done.

Shipping Material

You maintain material master data for each shipping material. This includes information such as shipping material type and group, package weight and volume limits, stacking limits, excess weight and volume tolerance, and filling level.

Shipping Units

In SD, packaging information is contained in so-called shipping units. A shipping unit is a combination of materials, shipping materials or shipping units that are packed and shipped together. You can create shipping units according to your packing and shipping needs. A shipping unit can be one small package, a pallet of boxes or even a truckload of pallets. Labels can be printed to facilitate handling in your warehouse or at the customer's warehouse.

Generating Packing Information

Depending on the way you do your business, packing information can be captured in different ways:

- In the automotive industry, for example, the way the product has to be packed is predefined by the customer in the delivery plan. During delivery creation this packing rule is used to create the packing plan or proposal for the delivery. Manual entries are only necessary when a deviation from the plan is desired.
- You may choose to enter packing information in a delivery manually. You can define a packing proposal for your warehouse, including suitable packing materials and certain restrictions.
- You may capture the data on how the goods were packed after packing has been completed, selecting the details you need in the system.
- In a highly automated warehouse, packing information may be captured using bar-code scanners. SD provides a certifiable interface by which this information can be uploaded to the delivery.

Whatever method you use, SD packing functionality supports you in planning, carrying out, and keeping track of the packing process, which can be done automatically to reduce costs and effort. SD also helps you organize packing processes in your warehouse in the most efficient way.

Shipping Papers and Communication

In SD, you can print all the papers you need for your shipping process, such as the delivery note, shipping notification, picking list, and freight list. You choose when you want to print them by setting the timing of the output in advance. You can print as soon as the transaction is posted in the system, at a specific point of time, or periodically every two hours, for example. Of

course you can also choose to use other output media, such as telex, fax or electronic mail.

To communicate with your internal and external partners, EDI is available to you to send and to receive output.

For more information on communication in R/3 see Chapter 12.

Goods Issue

When the goods leave your premises, the business transaction is completed from the shipping point of view. In the SD system this is represented by posting goods issue for a delivery. This important step toward meeting your customer's demands also has a major impact within the SAP system:

- Reduced inventory is reflected in financial accounting and G/L by evaluating and updating the appropriate balance sheet accounts.
- Material requirements for the delivery are reduced.
- Delivery status is updated.
- In case you choose to initiate billing after goods issue has taken place, the delivery is now due for billing.

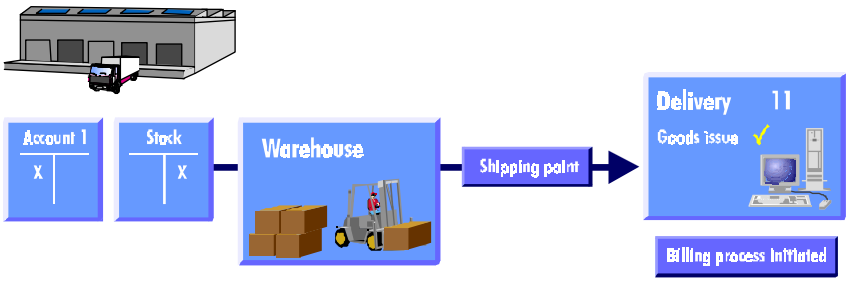


Fig. 6-7: Goods Issue

There are different methods you can use to post goods issue, which give you greater flexibility and support for your specific business needs:

- Post it for a specific individual delivery (using bar-codes is possible).
- Select from a list of deliveries lined up for goods issue.
- Choose to post goods issue for all lined up deliveries using background processing without manual activity.