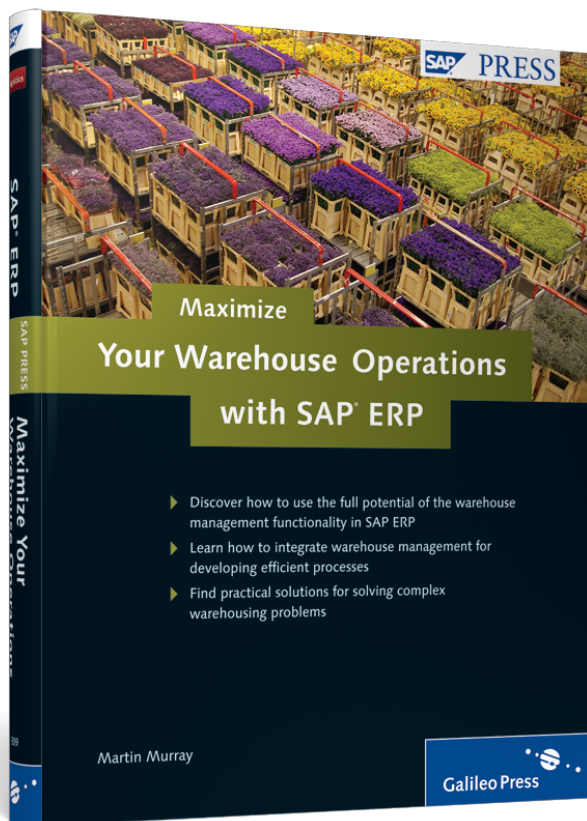


Martin Murray

Maximize Your Warehouse Operations with SAP® ERP



Galileo Press 

Bonn • Boston

Contents at a Glance

1	Introduction	21
2	Effective Inbound Execution	41
3	Enhancing Your Managed Putaway and Quality Inspection Processes	71
4	Improving Internal Warehouse Operations	97
5	Effective Picking Operations and Storage Unit Management	125
6	Efficient Shipment Completion	149
7	Maximizing Returns Processing	177
8	Efficient Physical Inventory	195
9	Successful Cross-Docking	213
10	Working with Hazardous Materials	231
11	Using Radio Frequency Identification Effectively	247
12	Effective Use of Warehouse Data and Reporting	261
13	Conclusion	279
A	Glossary of Terms	285
B	Bibliography	291
C	The Author	293

Contents

Acknowledgments	15
Preface	17

1 Introduction 21

1.1 The Importance of Warehouse Operations	21
1.1.1 Transport Consolidation	22
1.1.2 Product Mixing	22
1.1.3 Process Improvements	24
1.2 Understanding Warehouse Management in SAP ERP	24
1.2.1 Company Code	25
1.2.2 Plant	27
1.2.3 Storage Location	29
1.2.4 Warehouse	30
1.2.5 Storage Type	32
1.2.6 Storage Section	33
1.2.7 Storage Bin	34
1.3 Understanding the Physical Warehouse	35
1.3.1 Receiving, Shipping, and Storage	35
1.3.2 Inventory Accuracy	36
1.3.3 Value-Added Processes	36
1.3.4 Warehouse Safety	36
1.3.5 Delivery Process	36
1.3.6 Inspection and Quality Process	37
1.4 Defining the Warehouse Layout	37
1.4.1 Design Principles for Warehouse Layout	37
1.4.2 Warehouse Layout Objectives	39
1.5 How This Book Is Organized	40
1.6 Summary	40

2 Effective Inbound Execution 41

2.1 Inbound Delivery Process	41
2.1.1 Create a Purchase Order or Scheduling Agreement	42

2.1.2	Determine the Goods Receiving Point	42
2.1.3	Create a Manual Inbound Delivery for a Purchase Order	43
2.1.4	Create an Inbound Delivery for a Purchase Order Using EDI	45
2.1.5	Repacking the Inbound Delivery	51
2.1.6	Automatic Putaway for Inbound Deliveries	51
2.2	Packing Items for Inbound Deliveries	57
2.2.1	Using Handling Units	57
2.2.2	Creating a Handling Unit	58
2.2.3	Packing Materials in a Handling Unit	59
2.2.4	Nesting Handling Units	60
2.2.5	Unpacking a Handling Unit	62
2.3	Inbound Delivery Monitor	63
2.3.1	Basic Functionality of the Inbound Delivery Monitor	63
2.3.2	List Inbound Deliveries	65
2.4	Business Examples – Efficient Inbound Deliveries	66
2.4.1	Purchasing Process	67
2.4.2	Inbound Deliveries	67
2.4.3	Automatic Putaway	68
2.4.4	Use of Handling Units	68
2.5	Summary	69

3 Enhancing Your Managed Putaway and Quality Inspection Processes 71

3.1	Managing the Putaway Process	71
3.1.1	Putaway Strategies	72
3.1.2	Fixed Bin Storage Strategy	72
3.1.3	Open Storage Strategy	74
3.1.4	Next Empty Storage Bin Strategy	75
3.1.5	Addition to Existing Stock Strategy	77
3.1.6	Using the Storage Type Search	81
3.1.7	Storage Section Search	85
3.2	Quality Inspection in the Warehouse	87
3.2.1	Interface Warehouse Management to Quality Management	87
3.2.2	Inspection Lots	89

3.2.3	Usage Decision	90
3.2.4	Finding Inspection Lots in the Warehouse	91
3.3	Business Example – Effective Putaway Strategies	93
3.3.1	Fixed Bin Storage	93
3.3.2	Open Storage	94
3.3.3	Next Empty Storage Bin	94
3.3.4	Addition to Existing Stock	95
3.4	Summary	95

4 Improving Internal Warehouse Operations 97

4.1	Materials Movement Concepts	98
4.1.1	Integration Between Inventory Management and Warehouse Management in SAP ERP	98
4.1.2	Interim Storage Types	99
4.1.3	Interim Storage Bins	100
4.1.4	Stock Comparison	105
4.2	Goods Movements in the Warehouse	107
4.2.1	Transfer Requirement	107
4.2.2	Transfer Order	111
4.3	Posting Changes in the Warehouse	117
4.3.1	Reviewing Posting Changes	118
4.3.2	Automatic Processing of Posting Change Notices	119
4.4	Business Examples – Efficient Internal Movements	120
4.4.1	Materials Movement Concepts	120
4.4.2	Goods Movements	122
4.4.3	Posting Changes	123
4.5	Summary	123

5 Effective Picking Operations and Storage Unit Management 125

5.1	Defining Picking Operations	126
5.1.1	First In, First Out (FIFO)	126
5.1.2	Picking Using Stringent FIFO	128
5.1.3	Last In, First Out (LIFO)	129
5.1.4	Partial Quantity Picking	130

5.1.5	Picking According to Quantity	132
5.1.6	Picking by Shelf Life Expiration Date	134
5.1.7	Fixed Bin Picking Strategy	136
5.2	Business Example – Effective Picking Strategies	137
5.2.1	FIFO	138
5.2.2	Partial Quantity Picking	138
5.2.3	Picking According to Quantity	139
5.2.4	Picking by Shelf Life Expiration Date	139
5.3	Using Storage Unit Management	140
5.3.1	Activate Storage Unit Management	140
5.3.2	Activate Storage Unit Management for a Storage Type	141
5.3.3	Storage Unit Type	142
5.3.4	Storage Unit Record	143
5.4	Business Examples – Benefits of Storage Unit Management	146
5.5	Summary	147

6 Efficient Shipment Completion 149

6.1	Defining Your Shipment Completion Process	149
6.1.1	Creating an Outbound Delivery	149
6.1.2	Review an Outbound Delivery	152
6.1.3	Outbound Delivery Monitor	155
6.1.4	Grouping Outbound Deliveries	158
6.2	Adding Value to Shipment Completion	160
6.2.1	Creation of Transfer Orders for Outbound Deliveries	160
6.2.2	Wave Picking	161
6.3	Auditing, Reporting, and Clean-Up Activities	168
6.3.1	Incompletion Log	169
6.3.2	Shipping Output	170
6.3.3	Creating a Transfer Order for a Cancelled Delivery	171
6.4	Business Example – Efficient Shipment Procedures	172
6.4.1	Outbound Delivery Monitor	173
6.4.2	Wave Picking	173
6.4.3	Wave Pick Monitor	175
6.5	Summary	175

7	Maximizing Returns Processing	177
7.1	Introduction to Returns Processing	177
7.1.1	Notification of a Return	178
7.1.2	Receipt of Return at the Warehouse	179
7.1.3	Placing Returns in the Warehouse	180
7.2	Successful Returns Processing	180
7.2.1	Return Order	181
7.2.2	Return Delivery	182
7.2.3	Outbound Delivery Monitor	183
7.2.4	Post Goods Issue	185
7.2.5	Return Materials in the Warehouse	185
7.2.6	Transfer Requirement for Returned Materials	186
7.2.7	Transfer Order for Returned Material	187
7.2.8	Review of Warehouse Inventory	189
7.2.9	Transfer Materials from Returns to Own Stock	189
7.3	Business Example – Benefits of Returns Processing	191
7.4	Summary	194
8	Efficient Physical Inventory	195
8.1	Cycle Counting	195
8.1.1	Benefits of Cycle Counting	196
8.1.2	ABC Method of Cycle Counting	196
8.1.3	Configuration for ABC Cycle Counting	196
8.1.4	Cycle Counting Documents	201
8.1.5	Printing the Count Document	202
8.1.6	Enter the Cycle Count	203
8.1.7	Recounts and Clearing Differences	203
8.1.8	Understanding the Error	205
8.2	Continuous Inventory	205
8.2.1	Configuration for Continuous Inventory	205
8.2.2	Creating a Continuous Inventory Count Document	206
8.2.3	Entering a Count for Continuous Inventory	208
8.3	Business Example – Benefits of Physical Inventory	209
8.3.1	Cycle Counting	209

8.3.2	Continuous Inventory	210
8.4	Summary	211

9 Successful Cross-Docking 213

9.1	Defining the Cross-Docking Process	214
9.1.1	Types of Cross Docking	214
9.1.2	Materials Suitable for Successful Cross-Docking	215
9.1.3	Planned Cross Docking	215
9.1.4	Cross-Docking Configuration	216
9.1.5	Cross-Docking Decisions	217
9.1.6	Cross-Docking Monitor	217
9.2	Cross-Docking Movements	220
9.2.1	One-Step Cross-Docking	221
9.2.2	Two-Step Cross-Docking	223
9.3	Business Example – Effective Cross-Docking	227
9.3.1	One-Step Cross-Docking	227
9.3.2	Two-Step Cross-Docking	228
9.4	Summary	230

10 Working with Hazardous Materials 231

10.1	Introduction to Hazardous Materials	232
10.1.1	Configuration for Hazardous Materials	232
10.2	Hazardous Materials in the Warehouse	235
10.2.1	Activating the Functionality for Hazardous Materials	235
10.2.2	Hazardous Material Record	239
10.2.3	Assigning the Hazardous Material to a Material Master Record	240
10.2.4	List of Hazardous Materials	241
10.2.5	Fire Department Inventory List	241
10.2.6	Check Goods Storage	242
10.2.7	Hazardous Substance List	243
10.3	Business Example – Successful Handling of Hazardous Materials	244
10.3.1	Hazardous Material Records	244

10.3.2 Hazardous Material Reporting	245
10.4 Summary	246

11 Using Radio Frequency Identification Effectively 247

11.1 Introduction to RF and RFID	247
11.1.1 RF Devices	248
11.1.2 Bar Code Functionality	248
11.1.3 RFID	250
11.1.4 Differences Between RF and RFID	251
11.2 How You Can Use RF in Your Warehouse	251
11.2.1 GUI Devices	252
11.2.2 Character-Based Devices	252
11.2.3 SAPConsole	252
11.2.4 RF Monitor	253
11.3 How You Can Use RFID in Your Warehouse	254
11.3.1 Supported Functions in SAP All	255
11.3.2 Outbound Processing (Slap and Ship)	256
11.3.3 Flexible Delivery Processing	256
11.3.4 Returnable Transport Items (RTI) Processing	256
11.4 Business Example – Successful RFID Processes	257
11.5 Summary	259

12 Effective Use of Warehouse Data and Reporting 261

12.1 Warehouse Activity Monitor	261
12.1.1 Configuration for the Warehouse Activity Monitor	262
12.1.2 Using the Warehouse Activity Monitor	266
12.2 Key Warehouse Reports	270
12.2.1 List of Empty Storage Bins	270
12.2.2 Bin Status Report	271
12.2.3 Capacity Load Utilization	273
12.2.4 Inventory Status	274
12.3 Business Examples – Using Warehouse Reports Effectively	276
12.4 Summary	277

13 Conclusion 279

- 13.1 Lessons Learned from This Book 279
- 13.2 Applying What You've Learned 282

Appendices 283

- A Glossary of Terms 285
 - B Bibliography 291
 - C The Author 293
- Index..... 295

Vendors fulfill purchase orders by sending deliveries. Using the inbound delivery process allows your company to manage incoming deliveries to make the most of your warehouse resources.

2 Effective Inbound Execution

The receiving of materials into a facility should be an efficient process that is accurate, streamlined, and rapid. When performed correctly, the receiving process should produce an effective use of your warehouse space and resources.

The goods receipt process is the movement of materials into the warehouse from an external source, which could be a vendor, or from the production facility. A receipt process checks the accuracy of both the materials and the quantity. You can check the materials for quality and quarantine if needed. If the quality is satisfactory, the process moves the materials into the warehouse and increases the stock levels of the materials received.

The goods receipt is an important point in the movement of materials. Accepting the items triggers the ownership and financial liability. The receipt of the materials is also the starting point of the tracking of those materials in the facility.

Several processes can trigger inbound deliveries. In the first section of this chapter, we'll review these with respect to the inbound delivery functionality.

2.1 Inbound Delivery Process

The inbound delivery should describe exactly what materials can be received on what date and at what time. The advantages of the inbound delivery function when receiving materials into the warehouse are that you can complete several processes in advance of the materials arriving because the supplier has sent the necessary information to the plant ahead of time using an *advanced shipping notice*, commonly known as an ASN. First, let's look at the elements that make up the inbound delivery process.

Inbound delivery details date and time the items are expected

The inbound delivery process starts when the items are staged at the vendor for pickup by the shipper. The items are made ready for shipment by placing them on a pallet or shipping container at the vendor's shipping area. The items are loaded on to the shipper's vehicle and transported to the ship-to location. The process is completed when the items are received at the ship-to party and a goods receipt transaction is processed. We'll highlight the elements of the inbound delivery process below.

2.1.1 Create a Purchase Order or Scheduling Agreement

Purchase from vendor can be part of a scheduling agreement

When you require items for production or resale, you purchase them from a vendor. If you have a scheduling agreement in place with a vendor, deliveries will occur at regular intervals. If no scheduling agreement exists, you can create a purchase order using Transaction ME21N. You can access the transaction via the menu path SAP • LOGISTICS • MATERIALS MANAGEMENT • PURCHASING • PURCHASE ORDER • CREATE • VENDOR/SUPPLYING PLANT KNOWN. Figure 2.1 shows an example of a purchase order for five drill presses that have been ordered from Dremel Industries to be delivered on October 22, 2009.

The screenshot shows the SAP 'Create Purchase Order' (ME21N) interface. The title bar reads 'Create Purchase Order'. The menu bar includes 'Purchase Order', 'Edit', 'Goto', 'Environment', 'System', and 'Help'. Below the menu is a toolbar with various icons. A secondary toolbar contains 'Document Overview On', 'Hold', 'Print Preview', and 'Messages'. The main form area shows the following details:

- Standard PO: [dropdown]
- Vendor: Dremel Industries
- Doc. date: 09/09/2009
- Delivery/Invoice: [dropdown]
- Conditions: [dropdown]
- Texts: [dropdown]
- Address: [dropdown]
- Org. Data: [dropdown]
- Partners: [dropdown]
- Purch. Org.: 1000
- Purch. Group: 010
- Company Code: 1000

Below these fields is a table with the following data:

S.	Itm	Material	Short Text	Qty	U...	Deliv. date
	10	F0101	Dremel 220-01 Drill Press	5	EA	D 10/22/2009

Figure 2.1 Example of a Purchase Order

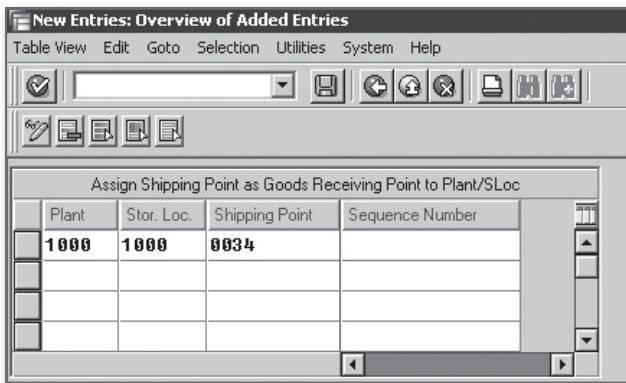
2.1.2 Determine the Goods Receiving Point

The goods receiving point determines where items arrive

You determine the goods receiving point based on a configuration that has been entered in the IMG. For an inbound delivery, you assign the goods receiving point based on the receiving plant and storage location that

was entered into the purchase order. You can find the configuration using the menu path IMG • LOGISTICS EXECUTION • SHIPPING • BASIC SHIPPING FUNCTIONS • SHIPPING POINT AND GOODS RECEIVING POINT DETERMINATION • ASSIGN GOODS RECEIVING POINTS FOR INBOUND DELIVERIES.

Figure 2.2 shows the configuration that allows you to determine a goods receiving point based on the receiving plant and storage location. For Plant 1000 and Storage Location 1000, Shipping Point 0034 is assigned as the goods receiving point.



The screenshot shows a SAP configuration window titled "New Entries: Overview of Added Entries". The window has a menu bar with "Table View", "Edit", "Goto", "Selection", "Utilities", "System", and "Help". Below the menu bar is a toolbar with various icons. The main area contains a table with the following data:

Assign Shipping Point as Goods Receiving Point to Plant/SLoc				
	Plant	Stor. Loc.	Shipping Point	Sequence Number
	1000	1000	0034	

Figure 2.2 Configuration for Goods Receiving Point

2.1.3 Create a Manual Inbound Delivery for a Purchase Order

The inbound delivery can be created either manually or automatically if your vendor sends an advanced shipping notice via electronic data interchange (EDI). In this section, we'll look at the manual creation of an inbound delivery for a purchase order.

Inbound delivery can be manually created

You can create a manual inbound delivery using Transaction VL31N or by going to SAP • LOGISTICS • LOGISTICS EXECUTION • INBOUND PROCESS • GOODS RECEIPT FOR INBOUND DELIVERY • INBOUND DELIVERY • CREATE • SINGLE DOCUMENTS.

Figure 2.3 shows the manual creation of an inbound delivery for purchase order 4500000079.

Figure 2.3 Manually Creating an Inbound Delivery

After you've entered the purchase order number and vendor number, the inbound delivery transaction will show the line item transposed from the purchase order 450000079. Then, you just need to check the item quantity, delivery date, and time for accuracy. If the vendor has identified any specific changes, you can make these to the line item before creating the inbound delivery. Figure 2.4 shows the line item detail for the inbound delivery.

Item	Material	Delivery quantity	SU	Description	B.	ITCa
10	F0101	5	EA	Dremel 220-01 Drill Press	ELN	

Figure 2.4 Item Detail for the Inbound Delivery

After the item details have been approved, you can save the transaction, and an inbound delivery is created.

2.1.4 Create an Inbound Delivery for a Purchase Order Using EDI

An inbound delivery can be created automatically for a purchase order via EDI. The SAP system must be configured to allow the generation of an inbound delivery for an incoming shipping notification. In addition, the purchase order must be annotated with the correct confirmation information for an inbound delivery to be created.

An inbound delivery can be created via the shipping notice

Inbound EDI Process

The inbound process receives an EDI document, in this case a shipping notification from a vendor. The EDI-specific headers and trailers are removed from the EDI document and it is converted into an IDoc format suitable for SAP applications. The IDoc is stored as a text file, and an inbound program reads the IDoc file and creates an IDoc so it can be processed. A posting program processes the IDoc and creates an application document, in this case a shipping notification, which is then used to create an inbound delivery.

A shipping notice can be called an advance ship notice

Definition of an IDoc

An IDoc is a document that facilitates data exchange between SAP R/3 and non-R/3 systems. An IDoc acts as intermediate storage of information, which can be sent bi-directionally.

An IDoc is made up of three distinct parts

An IDoc is made up of the three parts:

► Control record

This section contains control information regarding the IDoc. It contains the name of the sender, the name of the receiver, the message type, and the IDoc type. There is always a single control record, and it is always the first record in the set.

► Data record

This part consists of a header that contains the identity of the IDoc. It contains a sequential segment number, a segment type description, and a field containing the actual data of the segment. There can be more than one data record.

► Status record

This shows the information regarding the already processed stages and remaining processing stages of the IDoc. Several status records can be attached to an IDoc. At every processing stage, a status code, date, and time stamp are assigned.

Configuration for Inbound Delivery via EDI

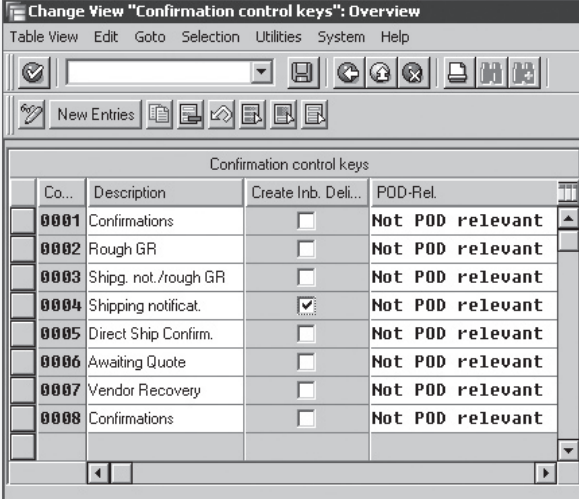
Configuration is needed to create inbound deliveries via EDI

You can only create the inbound delivery for a purchase order if several configuration steps have been completed. A confirmation has to have been received from the vendor, and certain configuration steps should be entered.

First, the shipping notices received from vendors should be configured to allow you to create an inbound delivery. When a vendor sends a shipping notice or a confirmation, the details confirm the delivery dates and quantities of the materials entered in the scheduling agreement release or purchase order sent to the vendor.

To ensure that an inbound delivery can be created from the vendor's confirmation, you must ensure that the confirmation control key is set by going to IMG • MATERIALS MANAGEMENT • PURCHASING • CONFIRMATIONS • SET UP CONFIRMATION CONTROL.

Figure 2.5 shows the configuration of the shipping notification, confirmation control key 0004, to allow an inbound delivery to be created.

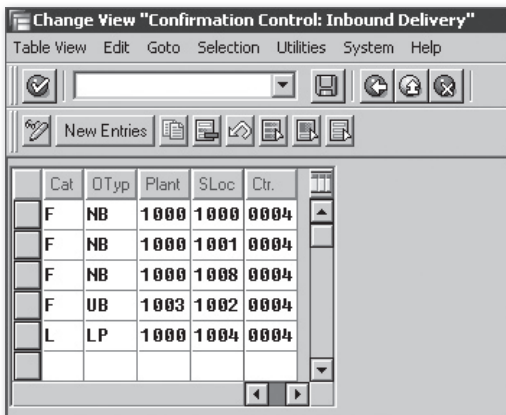


Co...	Description	Create Inb. Deli...	POD-Rel.
0001	Confirmations	<input type="checkbox"/>	Not POD relevant
0002	Rough GR	<input type="checkbox"/>	Not POD relevant
0003	Shipp. not./rough GR	<input type="checkbox"/>	Not POD relevant
0004	Shipping notificat.	<input checked="" type="checkbox"/>	Not POD relevant
0005	Direct Ship Confirm.	<input type="checkbox"/>	Not POD relevant
0006	Awaiting Quote	<input type="checkbox"/>	Not POD relevant
0007	Vendor Recovery	<input type="checkbox"/>	Not POD relevant
0008	Confirmations	<input type="checkbox"/>	Not POD relevant

Figure 2.5 Configuring the Confirmation Control Key

Although the configuration shown in Figure 2.5 will allow you to create inbound deliveries for a purchase order, if you want the shipment to go to a specific plant and storage location, you must take an additional configuration step. Follow the configuration menu path IMG • LOGISTICS EXECUTION • SHIPPING • DELIVERIES • DEFINE ORDER CONFIRMATIONS FOR INBOUND DELIVERIES.

Figure 2.6 shows the configuration that will ensure that an inbound delivery is created for confirmations such as shipping notifications. The configuration is specific for category, order type, plant, and storage location. In Figure 2.6 the first line shows that for order type NB, which refers to a purchase order, plant 1000 and storage location 1000, an inbound delivery will automatically be created for confirmation 0004, which is a shipping notification.



	Cat	DTyp	Plant	SLoc	Ctr.
	F	NB	1000	1000	0004
	F	NB	1000	1001	0004
	F	NB	1000	1008	0004
	F	UB	1003	1002	0004
	L	LP	1000	1004	0004

Figure 2.6 Inbound Delivery Configuration for Plant and Storage Location

On the fourth line in Figure 2.6 the configuration is shown for order type UB, a stock transport order, and LP, a scheduling agreement. In this case a shipping notification can be received via EDI for plant 1003 and storage location 1002.

To create an inbound delivery for a transmitted confirmation from a vendor, you must first update the purchase order with the correct confirmation key. When creating a purchase order, the purchaser can add the confirmation key to the purchase order line item, as shown in Figure 2.7. The confirmation control key (Conf.Ctrl) field shows that the confirmation expected is a shipping notification, and the current status is pending, because the purchase order has not yet been created.

Figure 2.7 Purchase Order with Confirmation Details

Partner profiles must be maintained for vendors using EDI

To receive a confirmation from a vendor via EDI, you have to maintain the partner profiles of the IDoc interface for those vendors. You must fill in several fields in the partner profile. You can find the configuration using Transaction WE20 or the menu path IMG • LOGISTICS • MATERIALS MANAGEMENT • PURCHASING • MESSAGES • EDI • SET UP PARTNER PROFILE. Figure 2.8 shows the configuration for the partner profile.

With inbound parameters, you specify the conditions for inbound EDI processing. Via the process code entered, you specify how the data is to be processed further in the application. You can also specify who should carry out the necessary reprocessing in the event of an error.

The inbound options allow you to enter a message type that normally relates to the United Nations (UN) EDIFACT standard. In this case the shipping notification is an inbound message from the vendor and is identified by the DESADV message type.

The screenshot shows the 'Partner profiles: Inbound parameters' configuration window. The title bar includes 'Inbound parameters', 'Edit', 'Goto', 'System', and 'Help'. Below the title bar is a toolbar with various icons. The main area contains the following fields and options:

- Partner No.: 11 (Dremel Industries)
- Partner Type: LI
- Partner Role: UN
- Message type: DESADV
- Message code: (empty)
- Message function: (empty) with a 'Test' checkbox.
- Inbound options: Post processing: permitted agent, Telephony
- Process code: DELURY01
- Cancel Processing After Syntax Error
- Processing by Function Module:
 - Trigger by background program
 - Trigger Immediately

Figure 2.8 Configuration for Partner Profile

You can enter a process code that the IDoc interface uses to find the business process that controls the conversion of the IDoc into an SAP document.

Process codes convert IDocs to SAP documents

Creating a Manual IDoc

You can test the IDoc by using the test tool in SAP to manually generate an IDoc and send the IDoc for inbound processing. You can access the test tool via Transaction code WE19.

Figure 2.9 shows the initial screen for creating a manual IDoc using the test tool. To create a manual IDoc, you enter the message type for a shipping notification, which in this case is DESADV. This may not be the message type used at your company, so check with your EDI team.

The next screen (shown in Figure 2.10) in Transaction WE19 shows the fields that can be manually entered for IDocs.

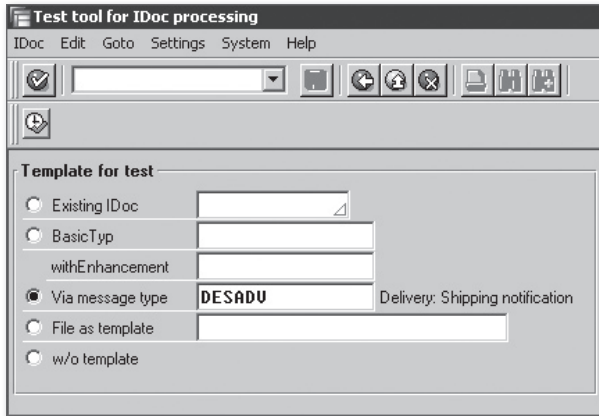


Figure 2.9 Test Tool for IDoc Processing

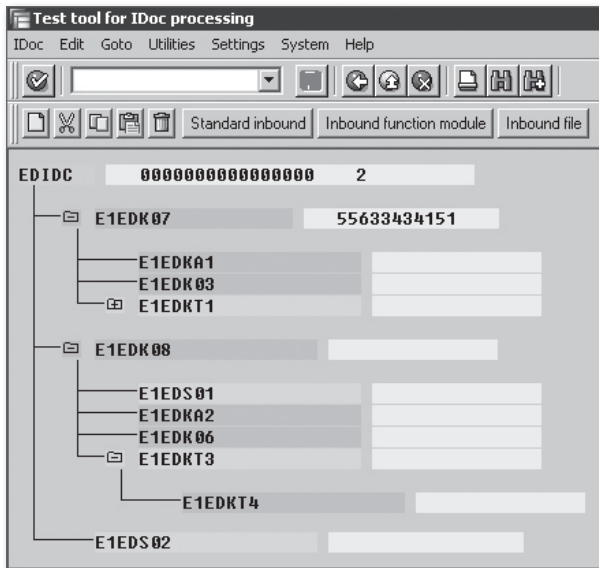


Figure 2.10 Manual Entry of Fields for IDocs

Figure 2.10 shows the fields that you can add manually to create the IDoc. Once the document is saved, the IDoc is treated like it was sent by an external system. The IDoc can then be converted to an inbound delivery document.

2.1.5 Repacking the Inbound Delivery

When an inbound delivery arrives at the warehouse, the items can arrive in a variety of configurations. Sometimes items arrive shrink-wrapped on pallets and can be moved directly into the warehouse without anyone having to break down the pallet or repack the items. This can save considerable time and warehouse resources. As part of the purchasing contract with a vendor, it may be possible for your purchasing department to negotiate that the vendor prepares the items to be automatically placed in storage. If the items on the inbound delivery are not prepared for the warehouse, they may need to be repacked on pallets or in storage containers so they can be safely stored in the warehouse. If items are not packed correctly, damage to the items or spoilage may occur.

Repacking inbound deliveries may be necessary for efficient storage

Example

When items are received that need to be placed in cold storage, the packaging from the vendor may only be suitable for short-term storage. In this case the items need to be repacked in containers certified for the cold storage area.

Some vendors send items to a third-party shipper who combines the items on a single pallet before they arrive at your warehouse. When the inbound delivery arrives, it needs to be broken down so the items can be either repacked in a container suitable for the warehouse or combined on a pallet with the same material from other deliveries. A more detailed examination of the packing process for inbound deliveries can be found in the Section 2.2.

Items on an inbound delivery may arrive combined on one pallet

Repacking is important when you receive returns from customers. When items are returned, they need to be separated from other items in the delivery and packed in an appropriate container so that it can be clearly identified as a return. We'll examine the returns process in greater detail in Chapter 7.

2.1.6 Automatic Putaway for Inbound Deliveries

The putaway process for an inbound delivery includes the search for an appropriate storage bin in the warehouse based on the configuration of the storage type search strategy.

Automatic putaway can save time finding suitable locations

Each item line of the inbound delivery has a putaway status that allows the warehouse supervisor to monitor the progress of the putaway. The status is set depending on what putaway process has been completed.

There are four putaway statuses for line items on an inbound delivery, as shown in Figure 2.11:

- ▶ Not relevant
- ▶ Not yet processed
- ▶ Partially processed
- ▶ Completely processed

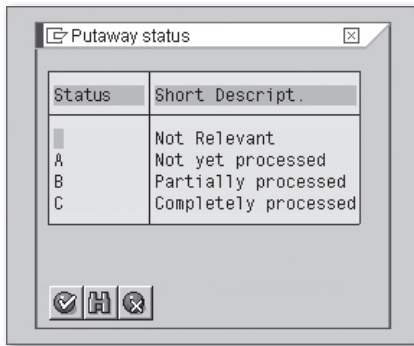


Figure 2.11 Putaway Statuses for an Inbound Delivery

When an inbound delivery is set up for automatic putaway, the SAP system creates the transfer orders that need to be completed. The automatic putaway is determined by an output type called WMTA, which must be assigned to the inbound delivery.

You can set up the WMTA output type in your system by following several configuration steps. First, create the output type WMTA by following the menu path IMG • LOGISTICS EXECUTION • SHIPPING • BASIC SHIPPING FUNCTIONS • OUTPUT CONTROL • OUTPUT DETERMINATION • MAINTAIN OUTPUT DETERMINATION FOR INBOUND DELIVERIES • DEFINE OUTPUT TYPES FOR INBOUND DELIVERY.

This transaction allows you to enter the new output type, WMTA. On the initial screen click on the New Entries button, shown in Figure 2.12.

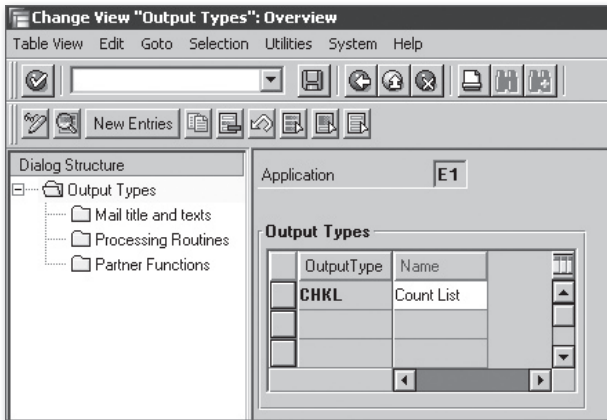


Figure 2.12 Initial Screen to Create a New Output Type

The new entry is for the output type WMTA. The data required for this output type should be assigned to access sequence 0001. You add this new data on the General data tab, as shown in Figure 2.13.

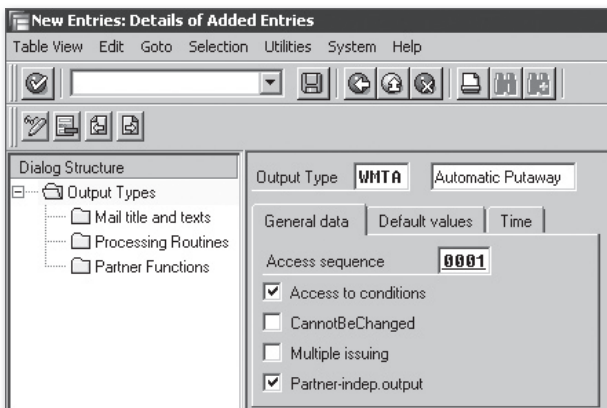


Figure 2.13 General Data for Output Type WMTA

The output type requires that two fields are selected: one to allow access to the conditions and the other to define partner-independent output. After you enter this data, the next step is to access the processing routines.

Figure 2.14 shows the configuration for the processing routine for output type WMTA. Select Special function in the Transm. Medium field and assign program RLAUTA20.

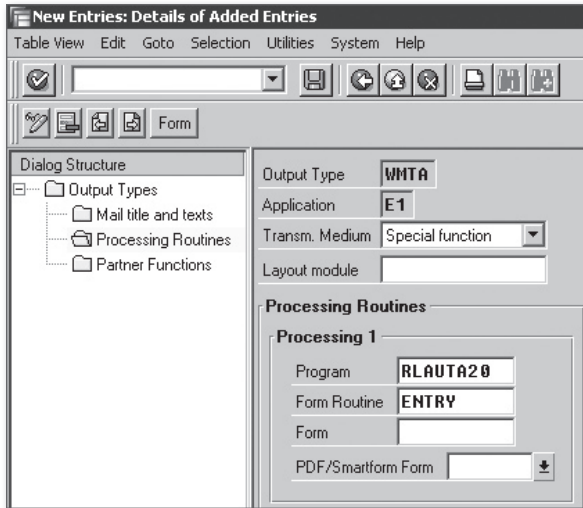


Figure 2.14 Processing Routines for Output Type WMTA

After you've entered all of the configuration for WMTA, save the output type.

The next step of the configuration is to add the output type to a procedure. To maintain the output determination procedures, follow the navigation menu IMG • LOGISTICS EXECUTION • SHIPPING • BASIC SHIPPING FUNCTIONS • OUTPUT CONTROL • OUTPUT DETERMINATION • MAINTAIN OUTPUT DETERMINATION FOR INBOUND DELIVERIES • DEFINE OUTPUT TYPES FOR INBOUND DELIVERY.

The standard SAP output determination procedure is E00001. If you want to create a new procedure, use the data standards in place at your company. In this case we've created a new procedure called Z00001, shown in Figure 2.15.

The usage field determines for which area the condition is used, in this case B for output conditions. The application field further breaks down the condition. In this instance, E1 refers to the inbound delivery, so the procedure (Z00001) we're adding is for inbound delivery output.

The next step is to enter the control data for the new procedure. Select your new procedure and click on the Control Data tab in the dialog structure. Figure 2.16 shows the one entry for the procedure that is the output type WMTA.

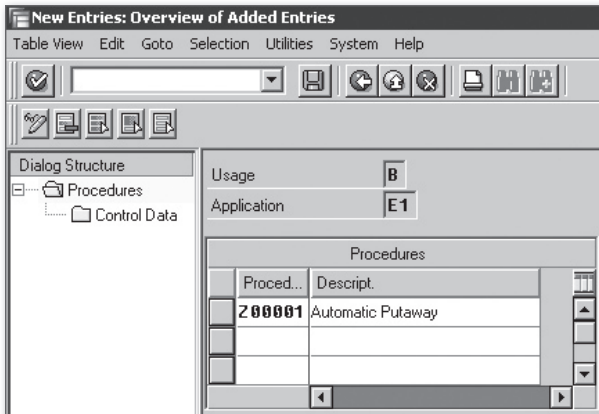


Figure 2.15 Creation of a New Output Determination Procedure

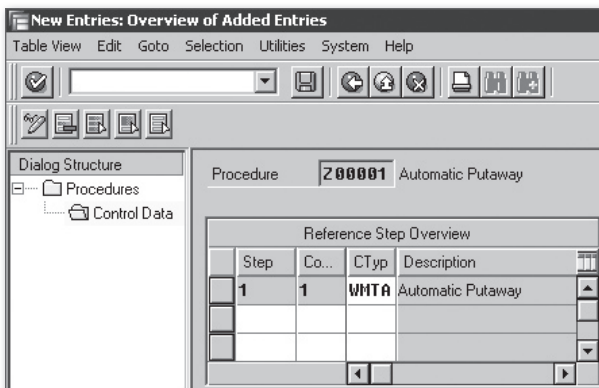


Figure 2.16 Add Control Data for Output Determination Procedure

After entering the output type into the procedure, save it and then assigned it to the delivery type. To complete this task, you can either use Transaction VNE7 or follow the menu path IMG • LOGISTICS EXECUTION • SHIPPING • BASIC SHIPPING FUNCTIONS • OUTPUT CONTROL • OUTPUT DETERMINATION • MAINTAIN OUTPUT DETERMINATION FOR INBOUND DELIVERIES • ASSIGN OUTPUT DETERMINATION PROCEDURES.

Figure 2.17 shows final configuration step, where the inbound delivery type, EL, is linked to the new output determination procedure, Z00001, and the output type WMTA. This pulls in the Z00001 procedure for each inbound delivery.

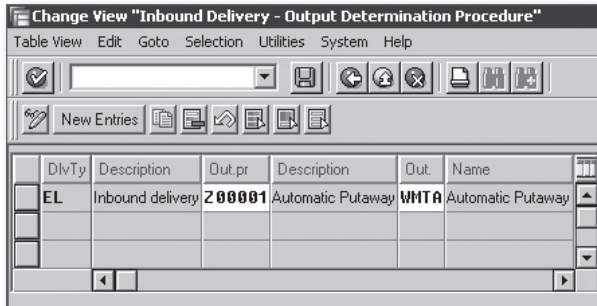


Figure 2.17 Assignment of Output Determination Procedure

After you complete the configuration, you must create the condition records for the inbound delivery. You can use Transaction MN24 to enter the condition records or go to SAP • LOGISTICS • MATERIALS MANAGEMENT • PURCHASING • MASTER DATA • MESSAGES • INBOUND DELIVERY • CREATE.

Figure 2.18 shows the condition record for the inbound delivery. The delivery type entered is EL, which represents the inbound delivery. The other information required for the condition record is the message transmission medium, which should be entered as a special function represented by the number 8. You use this because no output is being created; in this case the system automatically creates transfer orders for the items on the inbound delivery.

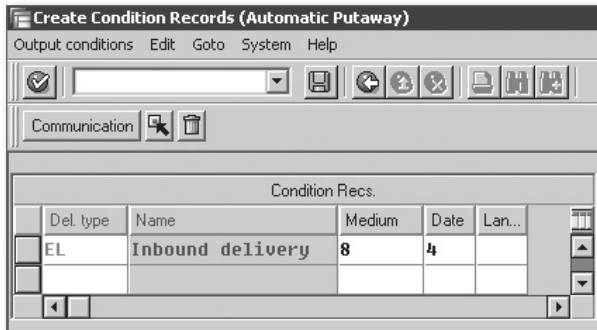


Figure 2.18 Condition Record for Inbound Delivery

The other field you need to fill in on the inbound delivery condition record, shown in Figure 2.18, is the date or dispatch time field. For the inbound delivery the output should be created immediately, represented by the number 4.

Index

3PL, 229

A

ABC indicator, 198
ABC method, 196
Accounts, 25
Active capacity, 78
Addition to existing stock, 72, 77, 95
Advanced shipping notice (ASN), 41, 45, 67
Advance shipping notices, 279
Aggregate state, 240
Alert monitor, 219, 281
Annual physical inventory, 205
Assign control, 112
Automated storage and retrieval system (ASRS), 76
Automatic processing, 119
Automatic putaway, 68
Automatic transfer order, 81, 112
Automatic transfer requirement, 108, 109

B

Balance Sheet, 25
Bar code, 215, 248, 251
Bar code readers, 248
Batch job, 199
Billing documents, 155, 157, 168
Bin capacity, 77
Bin status report, 92, 271
Blocked stock, 180
Bottleneck, 223
Business practices, 191

C

Cancelled delivery, 171
Candidate document, 217
Capacity calculation, 78
Capacity check, 79, 80

Capacity check method, 78
Capacity information, 80
Capacity load utilization, 273
Cases, 247
Check digit, 249
Chemical, 178
Collective processing, 168
Company, 25
Company code, 25, 26, 27, 28
Components, 214
Configuration, 196, 215, 232, 262
Confirmation control key, 46
Confirmation status, 154
Consignment stock, 85
Continuous inventory, 205
Control record, 45
Cost of disposal, 177
Credit checks, 154
Critical duration, 266
Critical time period, 265
Cross-docking, 213, 281
alert monitor, 219
decision, 217
monitor, 218, 261, 281
storage type, 224
Customer, 30, 177, 213
Customer dissatisfaction, 191
Customer number, 178
Customer returns, 177
Customer satisfaction, 213, 214, 230
Customer service representative, 178
Cycle count document, 201
Cycle counting, 195, 281

D

Data record, 45
Deliveries, 19, 213, 262, 265, 279
Delivery documents, 153, 158
Delivery monitor, 159
Delivery time, 164
DESADV, 49
Destination storage bin, 189

Destination storage type, 222, 269
 Deviation, 204
 Device controllers, 255
 Direct flow of goods, 38
 Direct freight, 214
 Display variants, 63
 Distribution, 231
 Distribution channel, 181
 Division, 181
 Document date, 165
 Dynamic coordinates, 103

E

EAN, 249
 EAN-13, 250
 Electronic data interchange (EDI), 43, 45, 279
 Empty storage bin, 96, 271
 Enterprise resource planning (ERP), 24
 Environment, 231
 Environmental Protection Agency, 231
 Existing stock strategy, 77
 Expiration date, 134
 Expiry date, 180
 External warehouse, 213

F

FIFO, 138, 147, 126
 implemented, 130
 stringent, 128, 130
 Finance, 205
 Finished goods, 197
 Fire containment, 232
 Fire department inventory list, 242
 Fixed bin, 187
 Fixed bin coordinates, 104
 Fixed bin picking, 136, 147
 Fixed bin storage, 72, 93
 Fixed storage bin, 137, 168
 Flash point, 240
 Flexible delivery processing, 255
 Floor space, 218

Forklift, 227
 Full truckloads (TL), 22

G

Global Returnable Asset Identifiers (GRAI), 256
 Goods issue, 149, 158, 222, 253
 Goods issue area, 99
 Goods movement, 107, 108, 122, 153, 154
 Goods receipt, 41, 253
 Goods receipt area, 99, 221
 Goods receiving point, 42
 Graphical user interface (GUI), 251

H

Handheld, 251
 Handling, 231
 Handling unit, 57, 61, 68
 Handling units, 279
 Hazardous materials, 36, 231
 HAZMAT, 36, 241
 Horizontal storage carousel, 76

I

IDoc, 50, 279
 Inbound delivery, 42, 43, 44, 46, 47, 54, 61, 66, 75, 217, 221, 279
 automatic putaway, 51
 repacking, 51
 monitor, 63, 65, 279
 process, 41
 Inbound materials, 214
 Incomplete deliveries, 169
 Inspection, 230
 Inspection lot, 89, 90
 Intercompany billing, 153, 155
 Interim storage, 185
 areas, 262
 bin, 100, 102
 type, 99, 100, 129, 185, 266
 Internal warehouse operations, 97
 International Article Numbering Association, 249

Inventory accuracy, 36, 195
 Inventory differences area, 99
 Inventory management, 98, 105, 221
 Inventory status report, 274

L

Labor costs, 213
 Last in, first out (LIFO), 129
 Less-than-truckload (LTL), 22
 LIFO picking strategy, 130
 Light sensors, 255
 Line item creation, 115
 List printing, 167
 LL00, 167
 Loading, 253
 Loading dock, 213
 LTL, 214

M

Maintenance, repair, and operations (MRO), 95
 Manual transfer order, 114
 Manual transfer requirements, 110
 Manufacturing, 214
 Material, 30, 177
 Material master, 240
 Material master data, 79, 82
 Material master record, 73, 86
 Material number, 181
 Material picking, 253
 Material putaway, 253
 Materials handling, 38
 Materials management, 25, 29, 30, 98
 Materials movement, 98
 Materials movement concepts, 120
 Material type, 197
 Maximize height, 38
 Maximum weight, 81
 Middleware, 250
 Minimize aisles, 38
 Movement type, 113, 161, 190, 263, 269
 MRP, 209

N

Negative stock, 128, 262, 265
 Nesting, 57
 New output type, 53
 Next empty storage bin, 72, 75, 94

O

Occupational Safety and Health Administration (OSHA), 36, 231
 One-step cross-docking, 221
 Open storage, 72
 Open storage strategy, 74, 75, 94, 96
 Opportunistic cross-docking, 215
 Order reason, 181
 Organizational structure, 25, 26, 28
 Outbound delivery, 149, 151, 152, 156, 158, 160, 172, 182, 213, 217, 261
 Outbound delivery monitor, 165, 173, 183, 261
 Outbound processing, 255
 Output determination procedure, 55

P

Packaging, 178
 Packing, 149, 253
 Packing hierarchy, 62
 Packing items, 57
 Packing status, 154
 Pallets, 247
 Pareto principle, 196
 Partial quantity picking, 131, 138
 Partner profiles, 48
 Payment terms, 181
 Perishable materials, 215
 Pharmaceutical, 178
 Physical inventory, 201, 253, 279
 Physical warehouse, 35
 Pick confirmation, 153
 Picking, 156, 213, 261
 location, 151
 operations, 125, 126
 output, 158
 Pick lists, 166

- Planned count date, 201
- Planned cross-docking, 215
- Planning, 145
- Planning document, 217
- Planning tool, 218
- Plant, 27, 29, 197, 279
- Plant and storage location, 98
- Post goods receipt, 185
- Posting change, 117, 123
 - area*, 99
 - notice*, 118
 - notices*, 262
- Predefined coordinates, 101
- Printing, 168
- Procurement, 214
- Product code, 249
- Production, 205
 - disruptions*, 195, 281
 - orders*, 214
 - planning*, 31
 - plant*, 213
- Product mixing, 22
- Project stock, 85
- Promotional items, 215
- Proof of delivery, 154
- Purchase order, 42, 45, 48, 177
- Putaway, 213
- Putaway strategies, 68, 71, 72, 93

Q

- Quality control, 191
- Quality department, 177
- Quality inspection, 87, 92, 180
- Quality inspection stock, 180
- Quality management, 87
 - control indicator*, 87
- Quality testing, 37
- Quantity, 139
- Quantity strategy, 134

R

- Racks, 74
- Radio frequency identification (RFID), 215, 247, 281
 - reader*, 247

- Radio frequency (RF), 247
 - devices*, 247
- Raw materials, 23
- Reason code, 190
- Receiving, 279
- Recount, 203
- Refurbishing, 177
- Repair, 179
- Repairing, 177
- Repair order, 179
- Repair questionnaire, 179
- Replacement, 180
- Restocked, 178
- Retail, 230
- Retail materials, 215
- Returnable transport items, 255
- Return delivery, 182
- Return material authorization, 178
- Return order, 178, 180
- Returns process, 177, 192
- Return stock, 185
- Revenue stream, 191
- Reverse logistics, 177
- RF handheld devices, 220
- RLAUTA10, 112
- RLAUTA11, 119
- RMA, 178
- RMCBIN00, 199
- Route, 151

S

- Safety, 246
- Sales, 205
- Sales and distribution, 31
- Sales department, 179
- Sales order, 149, 178, 181
- Sales organization, 181
- Sample, 195
- SAP Auto-ID Infrastructure, 254
- SAPConsole, 252
- Savants, 250
- Scheduling agreement, 42
- Scrapped, 177
- Serial number, 179, 253
- Service department, 179
- Service notification, 179

- Service order, 179
 - Servicing, 177
 - Shelf life, 134, 180
 - data*, 136
 - expiration date*, 139
 - Shelf module, 76
 - Shipment, 149, 217
 - Shipment completion, 149, 160
 - Shipping area, 213
 - Shipping notice, 45
 - Shipping notification, 46, 221
 - Shipping output, 170
 - Shipping point, 182
 - Single-story facility, 37
 - Slap and ship, 255
 - Sold-to party, 181
 - Special packaging, 178
 - Special stock, 84, 85
 - Staging, 230
 - Status record, 46
 - Stock, 29
 - category*, 84, 185
 - comparison*, 106
 - comparison report*, 107
 - overview*, 253
 - placement information*, 82
 - strategies*, 96
 - Storage, 231
 - Storage bin, 21, 34, 80, 189, 202, 270, 279
 - capacity*, 77
 - number*, 34
 - Storage class, 234, 238
 - Storage location, 29, 30, 42
 - Storage location control, 99
 - Storage materials, 57
 - Storage plan, 38
 - Storage section, 21, 33
 - Storage section search, 239
 - Storage type, 21, 32, 33, 34, 77, 125, 127, 131, 142, 196, 200, 216, 236, 237, 263, 279
 - configuration*, 116
 - search*, 81, 82, 83, 235
 - Storage unit, 125, 140, 144
 - management*, 140, 141, 146, 280
 - record*, 143
 - type*, 142
 - Stringent, 128
 - Stringent FIFO, 128, 129
 - Subassemblies, 214
 - Subsequent functions, 157
- T**
-
- Tags, 247
 - Third-party logistics, 229
 - Timeslot, 162, 165
 - Timeslot group, 163, 165
 - Transaction
 - LB01*, 110
 - LB11*, 186, 187
 - LI04*, 202, 208
 - LI11N*, 203
 - LI20*, 204
 - LL01*, 266
 - LRF1*, 253
 - LS01N*, 34, 80, 101
 - LS23*, 89
 - LS24*, 185, 189
 - LT0A*, 145
 - LT0G*, 171
 - LT01*, 113
 - LT04*, 186
 - LT07*, 143
 - LT12*, 187
 - LT21*, 187
 - LT44*, 165
 - LU04*, 118
 - LX01*, 270
 - LX03*, 91, 271
 - LX04*, 273
 - LX06*, 241
 - LX07*, 243
 - LX08*, 243
 - LX16*, 208
 - LX20*, 103
 - LX23*, 105, 106
 - LX24*, 241
 - LX25*, 274
 - LX26*, 201
 - LXDCA*, 219

LXDCK, 218
 ME21N, 42
 MIBC, 197
 MM02, 240
 MM03, 199
 OBY6, 26
 OMCO, 197
 OMLR, 108
 OMM2, 236
 OMM8, 128
 OMNK, 205
 OX02, 26
 OX09, 29
 OX10, 27
 OX18, 28
 QA11, 90
 QS51, 90
 SE38, 209
 VL01N, 150, 182
 VL02N, 151
 VL03N, 152
 VL06I, 63
 VL06O, 155, 183
 VL06P, 165
 VL31N, 43
 VL32N, 58, 60, 62, 63
 VL35, 164
 VL37, 165
 VL71, 170
 VL72, 170
 VM01, 239
 VNE7, 55
 V_UC, 169
 WE19, 49
 WE20, 48
 Transfer from delivery, 172
 Transfer order, 75, 77, 111, 124, 143,
 145, 157, 160, 168, 220, 253, 262
 confirmation, 115
 Transfer posting, 190
 Transfer requirement, 107, 186, 217,
 262
 Transportation, 149
 Two-step cross-docking, 221

U

Uniform Code Council (UCC), 249
 Universal Product Code (UPC), 248
 Unpacking, 62
 Unrestricted material, 213
 Unrestricted stock, 180, 189
 Usage decision, 90, 91

V

Value-added warehouse operations,
 22
 Variant, 266
 Vendor, 213
 Vertical lift module (VLM), 76
 Vertical storage carousel, 76, 77

W

Wal-Mart, 214
 Warehouse, 31, 177, 195, 201, 213,
 231, 261
 Warehouse Activity Monitor, 20, 261,
 282
 Warehouse capacity, 39
 Warehouse layout, 37
 Warehouse management, 21, 261
 activities, 153
 status, 154
 Warehouse management system
 (WMS), 21, 95, 121
 Warehouse movements, 39
 Warehouse number, 34
 Warehouse operations, 137, 213
 Warehouse productivity, 39
 Warehouse space, 213
 Warranty agreement, 179
 Water pollution class, 237
 Wave pick, 161, 167, 168, 173
 monitor, 165, 168, 170, 175, 261
 WPC, 237