

Supply Chain Planning Interfaces (LO-SCI)



Release 4.6C



Copyright

© Copyright 2001 SAP AG. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP AG. The information contained herein may be changed without prior notice.

Some software products marketed by SAP AG and its distributors contain proprietary software components of other software vendors.

Microsoft®, WINDOWS®, NT®, EXCEL®, Word®, PowerPoint® and SQL Server® are registered trademarks of Microsoft Corporation.

IBM®, DB2®, OS/2®, DB2/6000®, Parallel Sysplex®, MVS/ESA®, RS/6000®, AIX®, S/390®, AS/400®, OS/390®, and OS/400® are registered trademarks of IBM Corporation.

ORACLE® is a registered trademark of ORACLE Corporation.

INFORMIX®-OnLine for SAP and Informix® Dynamic Server™ are registered trademarks of Informix Software Incorporated.

UNIX®, X/Open®, OSF/1®, and Motif® are registered trademarks of the Open Group.






HTML, DHTML, XML, XHTML are trademarks or registered trademarks of W3C®, World Wide Web Consortium, Massachusetts Institute of Technology.

JAVA® is a registered trademark of Sun Microsystems, Inc.

JAVASCRIPT® is a registered trademark of Sun Microsystems, Inc., used under license for technology invented and implemented by Netscape.

SAP, SAP Logo, R/2, RIVA, R/3, ABAP, SAP ArchiveLink, SAP Business Workflow, WebFlow, SAP EarlyWatch, BAPI, SAPHIRE, Management Cockpit, mySAP.com Logo and mySAP.com are trademarks or registered trademarks of SAP AG in Germany and in several other countries all over the world. All other products mentioned are trademarks or registered trademarks of their respective companies.

Icons

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Syntax

Contents

Supply Chain Planning Interfaces (LO-SCI)	8
Interfaces for Supply Chain Planning	9
Supply Chain Planning Interfaces	10
Supply Chain Planning Interfaces (LO-SCI)	11
DP/DRP Interface	12
Demand Planning and Distribution Resource Planning Interface	13
Process Flow: Demand Planning	14
Process Flow: Deployment	16
Process Flow: Distribution Planning	18
ALE: Configuring, Monitoring, Error Handling	20
Retrieve and Transfer Master Data	22
Collect and Transfer Demand History	24
Transfer Stock/Requirements List	26
Process Stock Transport Requisitions and Orders	27
Process Planning Results Through SOP and MRP	28
Technical Communication	29
ALE: Concepts and Design	30
Transaction RFC	32
Synchronous RFC	33
Meta Objects	34
IDOCs	35
Master Data IDoc	36
Information Structure IDoc	37
Stock/Requirements List IDoc	41
Stock Transport Order IDoc	46
RFC Function Calls	50
RFC Create Requisitions	51
RFC:Delete Requisitions	53
RFC: Retrieve Quota Arrangement	55
Examples	58
Use External System for Demand Planning	59
Use External System for Distribution Planning	60
Use External System for Deployment	61
Production Optimization Interface (POI)	62
Production Optimization Interface (POI): Overview	64
Prerequisites	66
Application Scenarios	67
Optimizing Capacity by Sequencing in Repetitive Manufacturing	68
Optimizing Production Planning Considering Various Conditions	69
Communication	70
Communication: ALE	71
Communication: RFC and TRFC	72
IDoc Basic Structure	73

Data Exchange: Download.....	74
Master Data	75
Master Data Transfer.....	77
Transfer Mode	78
Procedure: Select Master Data	80
Transaction Data.....	83
Procedure: Select Transaction Data.....	84
Customizing Settings: Download.....	85
Procedure: Monitor Download	88
Monitoring the Download	89
POI IDocs	91
LOIBOM01	93
MATMAS03.....	98
LOICAL01	104
LOIWCS02.....	105
LOIRNH01	110
LOIROU01	111
CLFMAS01	117
LOINUM01.....	119
LOIPLO01	120
LOIPRO01	124
LOISTD01	135
LOIRSH01.....	138
LOITMXL01.....	140
LOIPGR01	142
LOIMSO01	145
LPIPCM01.....	146
Data Exchange: Upload	148
Data Upload	149
Start Upload.....	150
Monitoring the Upload.....	151
Procedure: Monitor Upload.....	152
Customizing Settings: Upload	154
Tables for Upload.....	156
Function Module CLOI_CHANGES_UPL_31.....	157
CLOI_IF_PAR.....	159
CLOI_RET_VAL	161
CLOI_PLORDI_IMP.....	162
CLOI_PLORDU_IMP	165
CLOI_PLORDD_IMP	167
CLOI_PLORD_OPRU_IMP	168
CLOI_ORDI_IMP	171
CLOI_ORDU_IMP	173
CLOI_ORD_OPRU_IMP.....	175
CLOI_MAP_EXP	179

CLOI_METHOD_LOG_EXP	180
CLOI_MESSAGE_LOG_EXP.....	182
CLOI_MSG_OBJ_LOG_EXP	183
CLOI_PLORD_EXP	184
CLOI_ORD_EXP	185
CLOI_PLORD_OPR_EXP.....	186
CLOIORD_OPR_EXP	187
CLOI_ORD_SEQ_EXP.....	188
Function Module CLOI_MESSSAGES_TEXT_GET	189
CLOI_LANGU	190
CLOI_MSG_IMP.....	191
CLOI_MSG_TEXT_EXP	192
Transportation Planning Interface.....	193
SAP-R/3 Transportation Planning Interface (SD-TRA-IN)	196
Logical Communication Processes Between SAP-R/3 and the Transportation Planning System.....	197
Application Transactions of the Interface	202
Configuration Options for Delivery Transfer.....	206
Technical Communication.....	213
E2EDT1x - Processes	220
E2KNVAM - Opening Times Profiles	224
E2STATS - EDI Status Record	226
E2TPACC - Action Code	229
E2TPALC - Permitted Service Agent.....	230
E2TPCOC - Goods Code.....	231
E2TPDIH - Delivery Dimensions at Header Level	232
E2TPDII - Delivery Dimensions at Item Level.....	234
E2TPDIS - Shipping Unit Dimensions.....	235
E2TPDLC - Shipment Costs at Delivery Level.....	237
E2TPDLH - Delivery Header.....	238
E2TPDLI - Delivery Item	242
E2TPEQT - Means of Transport	244
E2TPFRC - Shipment Costs at Shipment Header Level	245
E2TPLCT - Location Code	246
E2TPLOC - Location Master Record Address	247
E2TPNOT - Delivery Texts.....	251
E2TPSHA - Transport Activity.....	252
E2TPSHH - Shipment Header	254
E2TPSHI - Delivery in Shipment.....	257
E2TPSHR - Rail Data.....	258
E2TPSHT - Leg Data in Shipment.....	259
E2TPSHU - Shipping Unit.....	261
E2TPSLS - Shipment Points	262
E2TPSUC - Shipping Unit Contents	263
E2TPTIW - Time Frame	264
E2TPTRP - Existing Shipment.....	266
E2TPTRM- Location Identification	269
SAP System Settings and Modifications	274
Error Analysis	276
Modifications (Customer Functions)	280

IDoc Description	284
EDI_DC - IDoc Control Record	288
Special Fields in the Control Segment of the EDI_DC	290
EDI_DD - IDoc Data Record	292
TPSDLS01 - Planning / Changing / Deallocating Delivery	294
TPSLOC01 - Adding/Changing Location Master Data	295
TPSSHT01 - Create / Delete / Change Shipment - Set Shipment Status	296
SYSTAT01 - Status Information for Conversion / Possible Errors	298
Description of the IDoc Segments, Fields and Domain Values	299
SOP Interface	301
SOP with an External System	303
The External Planning Process	304
Update External Model	305
Planning with Planning Tables	306
Settings for External SOP Planning	307
Maintain Settings for External Planning	309
Planning Materials	310
Planning Product Groups	311
Planning Disaggregated Product Groups	312
EXTERNPLAN	314
Mass Processing	315
Technical Documentation	317
Function Modules	319
CBP_SOP_PLAN_REQUEST_RFC	320
CBP_GEN_INTERACTIVE_START_RFC	326
CBP_SOP_PLAN_STARTUP	328
CBP_SOP_PLAN_DISMISS_RFC	330
CBP_SOP_PLAN_SAVE_RFC	331
Data Structures	333
SCBP_SOPCTR	334
SCBP_PLCONF	338
SCBP_MBEST	339
SCBP_SOPTAB	340
SCBP_PLACT	343
SCBP_PLATT	344
SCBP_SOPFIX	346
SCBP_PROLIS	347
SCBP_PLPROT	348
IDOC CBPRCP01	349

Supply Chain Planning Interfaces (LO-SCI)

Interfaces for Supply Chain Planning

[Supply Chain Planning Interfaces \[Page 10\]](#)

[DP/DRP Interface \[Page 12\]](#)

[Production Optimization Interface \(POI\) \[Page 62\]](#)

[SOP Interface \[Page 301\]](#)

[SAP-R/3 Transportation Planning Interface \(SD-TRA-IN\) \[Page 196\]](#)

Supply Chain Planning Interfaces

[Supply Chain Planning Interfaces \(LO-SCI\) \[Page 11\]](#)

Supply Chain Planning Interfaces (LO-SCI)

Purpose

In the standard R/3 system, you can perform complex supply chain planning operations from forecasting through production to sales and distribution. SCPI complements R/3's supply chain planning solutions by allowing you to send data from R/3 via open interfaces to external systems for optimization. After optimization, the data is returned to R/3 and channeled to the appropriate applications for further processing.

SCPI comprises the following open interfaces:

- LO-DP/DRP (demand planning and distribution resource planning interfaces)
- PP-POI (production planning interface)
- PP-SOP (sales & operations planning interface)
- SD-TRA-IN (transportation planning interface)

ALE technology and synchronous RFCs are used to effect the transfer of data.

Selection Criteria:

Select this component if you want to optimize:

- Forecasting, distribution planning and deployment activities necessary for demand planning and distribution resource planning
- Master data and transaction data necessary for production planning
- Sales and operations planning activities
- Shipment data for transportation planning

DP/DRP Interface

DP/DRP Interface

[Demand Planning and Distribution Resource Planning Interface \[Page 13\]](#)

[Technical Communication \[Page 29\]](#)

[ALE: Concepts and Design \[Page 30\]](#)

[Transaction RFC \[Page 32\]](#)

[Synchronous RFC \[Page 33\]](#)

[Meta Objects \[Page 34\]](#)

[Examples \[Page 58\]](#)

[Use External System for Demand Planning \[Page 59\]](#)

[Use External System for Distribution Planning \[Page 60\]](#)

[Use External System for Deployment \[Page 61\]](#)

[Process Flow: Demand Planning \[Page 14\]](#)

[Process Flow: Distribution Planning \[Page 18\]](#)

[Process Flow: Deployment \[Page 16\]](#)

[ALE: Configuring, Monitoring, Error Handling \[Page 20\]](#)

[Retrieve and Transfer Master Data \[Page 22\]](#)

[Collect and Transfer Demand History \[Page 24\]](#)

[Transfer Stock/Requirements List \[Page 26\]](#)

[Process Stock Transport Requisitions and Orders \[Page 27\]](#)

[Process planning results through SOP and MRP \[Page 28\]](#)

[IDOCs \[Page 35\]](#)

[Master Data IDoc \[Page 36\]](#)

[Information Structure IDoc \[Page 37\]](#)

[Stock/Requirements List IDoc \[Page 41\]](#)

[Stock Transport Order IDoc \[Page 46\]](#)

[RFC Function Calls \[Page 50\]](#)

[RFC Create Requisitions \[Page 51\]](#)

[RFC:Delete Requisitions \[Page 53\]](#)

[RFC: Retrieve Quota Arrangement \[Page 55\]](#)

Demand Planning and Distribution Resource Planning Interface

Purpose

The DP/DRP interface (Demand Planning/Distribution Requirement Planning Interface) is an open interface used for exchanging data between the R/3 System and external optimization systems, making it possible to conduct demand and distribution resource planning in two separate systems.

Implementation Considerations

The responsibility of transferring information between R/3 and external systems is shared by SAP and its partners.

SAP delivers the technical tools necessary for a connection to an external system (IDocs, ALE, RFCs) as part of the standard 3.1 release. Along with the tools, the application contains various functions that represent key business processes and allow the corresponding processing to be carried out in R/3. These functions include transactions, standard IDocs, and Customizing.

SAP's partners are responsible for the processing procedures necessary to transfer data from R/3 to the optimization system and then back again. In other words, for proper technical communication to take place, partners must be capable of correctly interpreting data from R/3 and returning the optimized version in the correct format.

Partners wishing to work with SAP on these terms can complete the certification program which ensures their external systems can be successfully connected to R/3. In order to become certified, partners must prove they have the technical capability to cover the transfer and functionality of all IDoc connections. Test scenarios are provided in a separate document, and a list of the IDocs required for certification for each interface is included in the individual IDoc descriptions.

Features

The following data can be optimized via the DP/DRP interface:

- Master data (including material master and customer master)
- Demand history collected from Sales Information System (SIS)
- Transaction data from stock/requirements lists (including sales orders, production orders, purchasing orders, etc.)

The external system independently carries out the forecasting, distribution planning and/or deployment and then transfers the results back to R/3.

Process Flow: Demand Planning

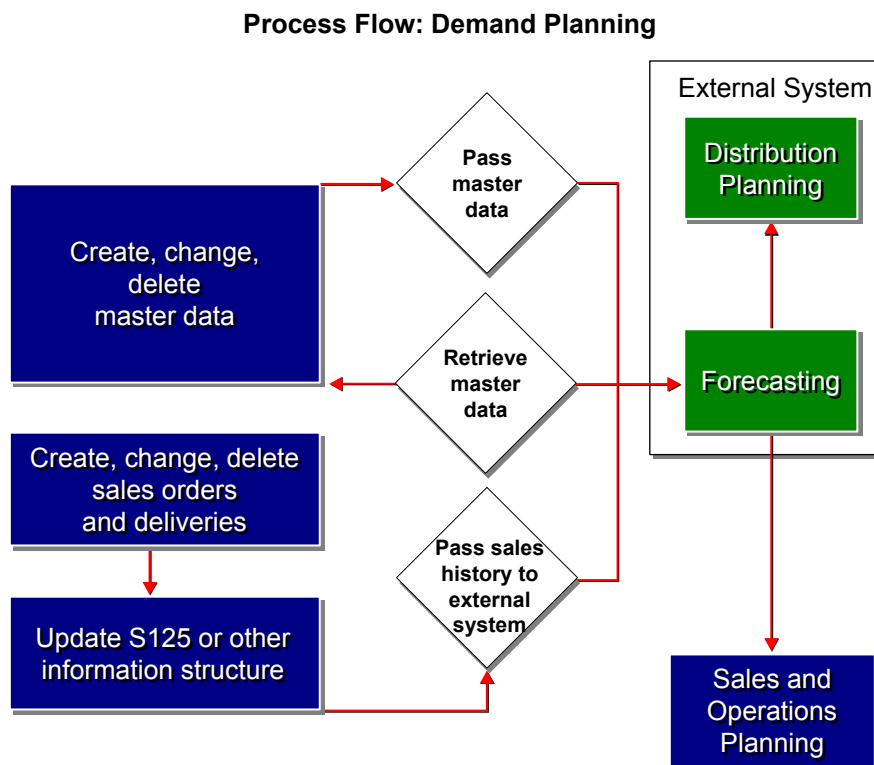
Process Flow: Demand Planning

Purpose

Although R/3 has its own forecasting functionality, the DRP interface provides the external system with a communication channel for forecasting demand at many different levels. The external system can then either send the forecast results back to R/3 or use them for further distribution planning.

Process Flow

The following diagram illustrates the business processes:



Demand history is collected through R/3's SIS (Sales Information System). R/3 has several options for configuring the collecting process so that the data records in the information structure reflect the exact data that the external system requires for demand planning.

Information structure S125 is designed for the DRP interface. It collects demand history from both sales documents and delivery documents and aggregates these quantities based on the six characteristic values defined within the structure. However, the external system should not be limited to S125. S125 is provided as a sample setup. Often customers will have to create their own information structures for collecting the specific data needed for their own forecasting purposes. However, processing the customer-specific information structure may

Process Flow: Demand Planning

pose technical difficulties for the external system if it can not provide configuration options at installation time.

The combination of the characteristic values in an information structure determines the lowest level where history resides. Based on the forecasting scenario and requirements, the external system is expected to map and aggregate the demand history. The mapping and aggregation should be designed as the customization options.

An update of the information structure takes place whenever there is a transaction for the sales orders and delivery documents. Program RBDMCCOP, which also has the net change feature, is used to transfer the demand data into the external system. Program RMCPMANU, which transfers all the demand history within a specified period, is used in conjunction with S125. These programs are usually run manually when forecasting is not implemented too frequently.

Result

Once the external system finished forecasting, it can send the results back into R/3 through ALE message type LIP076, which uses the results to fill in the sales quantity for SOP planning table S076 (message LIP076 uses IDoc SOPGEN01 and links to function module IDOC_INPUT_LIPGEN). If the external system has its own distribution-planning module and needs these results, the data remains in the external system for further processing.

Process Flow: Deployment

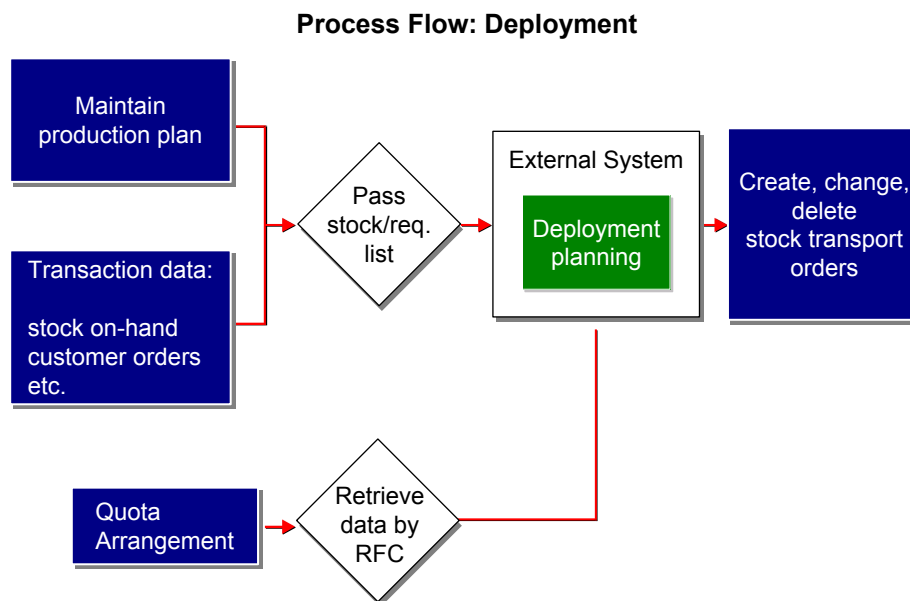
Process Flow: Deployment

Purpose

In the deployment situation illustrated here, production quantities are fixed (Produce-to-stock) and shipments between the manufacturing plants and the distribution centers are based on on-hand stocks, demands, sourcing, and transportation. The shipments are grouped into truck loads according to the destinations, dates, loads, etc.

Process Flow

The following diagram displays the business flow and data flow:



The process is similar to distribution planning. The stock/requirements lists in the manufacturing plant contain information on the current production situation. The external system obtains the detailed production plans and stock situations at the manufacturing plants from the stock/requirements lists and continues to update after each data exchange. The external system also collects demand information at the distribution centers by extracting the customer orders from the stock/requirements list.

It is the emphasis on transportation that distinguishes deployment from distribution planning. For deployment, the external system may need more information from material master, it may have to define plant transportation data on its own, or it may have to extract information (such as location master) defined in R/3 using part of 'Transportation Interface' delivered with release 3.1G.

Result

When loads have been built optimally, data is sent back to R/3 and stock transport orders must be created with the external IDs supplied by the external system. By using the external ID numbers, the external system can track and modify each load if necessary. The create/change/delete dialogs are all realized by using ALE message type RECSHP.

Process Flow: Distribution Planning

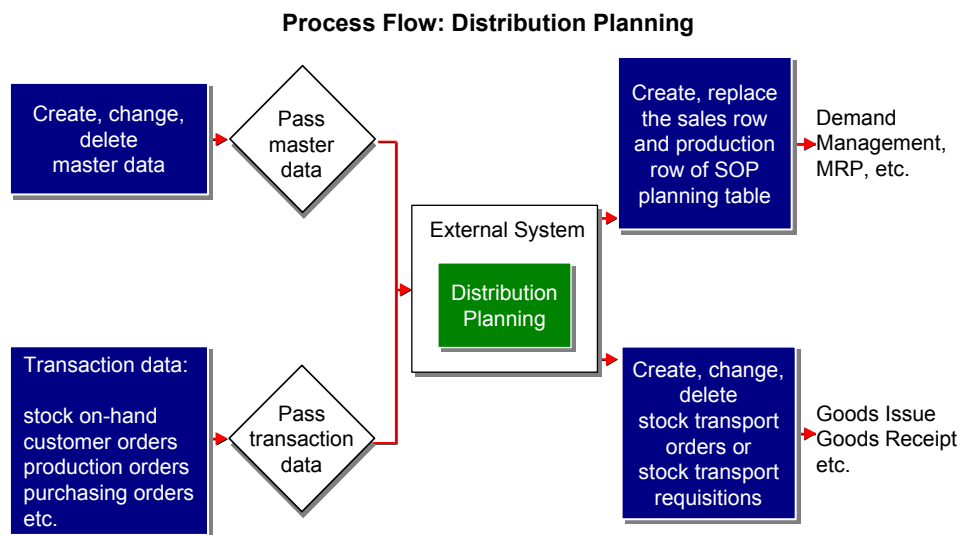
Process Flow: Distribution Planning

Purpose

Distribution planning covers the entire distribution network and proposes replenishment plans for individual stockkeeping units (SKUs) or stock storage locations. The proposed plan is based on stock situations, demand, scheduled arrivals and sourcing setup.

Process Flow

The following diagram illustrates a full DRP business process:



Demand consists of the sales orders placed at distribution centers or at other organization units. Information on scheduled arrivals, including purchasing and production orders, and stock in-transit is extracted from the stock/requirements list stored in R/3 through program RMCPAMRP using message type LOISTD and IDoc LOISTD01. This program also transfers detailed stock information at the plant/material level.

If the demand comes from forecasting, or a combination of sales orders and forecasting, the output from demand planning is used for distribution planning. This output can come directly from the external system or from R/3. Since forecasting results are stored in the information structures, they can be dispatched in the same fashion as the demand history using LIP message types and IDoc SOPGEN01.

Distribution planning usually requires sourcing information to propose a replenishment plan for each SKU. In R/3, Quota Arrangement defines the proportion of replenishments based on other vendors and plants for materials at plant level. This can be used for sourcing in the external system. The DRP interface provides the BAPI call 'BAPI_QUOTA_ARRANGEMENT_GETLIST' to retrieve the information for the Quota Arrangement.

Result

Once DRP planning has been completed in the external system, the results are passed to R/3 and used for creating or changing R/3 data objects. Since R/3 usually does not distinguish between manufacturing plants, distribution centers, or warehouses, and defines all of them as 'plants', planning results dealing with the movement of goods between these organization units should be converted into either stock transport requisitions or stock transport orders, depending on the integration design. Since planning results for production concern only production plants, they should be converted into production orders, or, in the case of repetitive manufacturing, planned orders in R/3. For the results to be processed using SOP and MRP modules, they must be returned to R/3 through SOP.

Requisitions usually give the proposed quantities between plants, and are closed once stock transport orders are created from them. In 3.1G, the DRP interface provides a BAPI call 'BAPI_REQUIREMENT_CREATE' to create and change requisitions. In addition, from Release 3.1H on, the interface provides a function module (REQUISITION_LIST_DELETE) for the external system to delete these requisitions.

For the stock transport orders, both goods issue at the supplying plant and goods receipt at the destination plant should be carried out before a stock transport order is sent out. The DRP interface uses ALE message RECSHP to create, change and delete stock transport orders. The message type uses IDoc ORDERS02 and links to the function module IDOC_INPUT_REC_SHIPMENTS. It is more appropriate to use stock transport orders when the external system provides firmed planning quantities.

Production plans are uploaded into R/3 planning table S076 through message type LIP076, and are converted to individual requirements for MRP through demand transfer. MRP then converts them to planned orders or purchase requisitions. R/3 4.0 will provide BAPI calls so that the external system can create independent requirements directly.

ALE: Configuring, Monitoring, Error Handling

Procedure

Basic Configuration for ALE

To enable communication between an external system and the R/3 DRP interface through ALE, you must make the following ALE settings in Customizing. (*Tools → Business Engineering → Customizing → Implement projects → SAP Ref. IMG*) →

- Set up the logical system for the external system. In the IMG, choose *Cross Application Components → Distribution (ALE) → Basic Configuration → Set up logical system → Maintain logical systems*
- Set up RFC destination. Same path as above, choose *Distribution (ALE) → Communication → Define RFC destination*.
- Define port number under transaction RFC. Same path as above, choose *Distribution (ALE) → Communication → Manual maintenance of partner profiles → Define port*
- Define customer distribution model. From the ALE menu, choose *Distribution customer model → Maintain distribution model*
- Maintain partner profile. Same path as above, choose *Distribution (ALE) → Communication → Manual maintenance of partner profiles → Maintain partner profile*

For more detailed information, refer to the implementation guide for ALE. (*Cross-Application Component → Distribution (ALE) → Basic Configuration*)

IDoc Monitoring

- To monitor the status and data record of the IDocs, choose *R/3 Logistics → Central Functions → SCP Interfaces → Environment → Monitoring → IDoc Overview*.
- To monitor whether a transaction RFC has been successfully implemented, choose *R/3 Logistics → Central Functions → SCP Interfaces → Environment → Monitoring → Transactional RFC*.

IDoc Error Handling

There are three types of errors which could occur in the inbound IDoc processing.

- Control records of the incoming IDocs don't match up with the partner profile. This type of error is usually triggered by incorrect or incomplete control data records in the inbound IDoc, or it could be caused by the fact that the partner profile in R/3 is not set up correctly.
- A syntax check error is usually triggered by incorrect data types in the data records of the inbound IDoc.
- An application posting error occasions a detailed error message, such as 'Purchasing group is not set up', etc. To correct such an error, normally the configuration of the R/3 System must be changed, or application data records in the inbound IDocs must be added or changed.

Retrieve and Transfer Master Data

Retrieve and Transfer Master Data

Prerequisites

ALE provides two ways of passing master data to the external system.

One way is to initiate the data transfer from R/3 using transactions or on-line reports (although these programs are typically run in background jobs). The second approach gives the external system authority to retrieve data by sending request IDocs to R/3. R/3 then processes the IDocs and returns the requested information in master data IDocs. The following table lists the information relevant to these approaches.

	Material Master	Customer Master	Vendor Master
Message Type	MATMAS	DEBMAS	CREMAS
IDoc Type	MATMAS01	DEBMAS01	CREMAS01
Program Name	RBDSEMAT	RBDSEDEB	RBDSECRE
Fetch Message Type	FETMAT	FETDEB	FETCRE
Inbound Process Code	MATF	DEBF	CREF
Inbound Function Module	IDOC_INPUT_REQUE ST		

The master data IDocs transferred through ALE contain almost all the fields defined for the master data. The external system must be capable of choosing the right fields from these IDocs. Also, when running background jobs with these programs, usually a range of master data number is entered, and the external system has no control over what data it should receive. However, to reduce data traffic, ALE provides filters in the distribution model definitions. ALE first creates the basic IDocs and then replicates them against the distribution models. If filters are defined for a particular logical system, only IDocs that can go through filters are created and dispatched to that logical system.

Procedures

To access the filter creation, in the IMG, choose *Cross Application Components* → *Distribution ALE* → *Maintain distribution model*.

A different program is required if change pointers are used for master data transfer:

- Activate the change pointers generally. Choose: *Tools* → *Business Engineer* → *Customizing* → *Implement projects* → *SAP Ref IMG* → *Cross Applications Components* → *Distribution ALE* → *Master Data Distribution* → *Activate Change Pointers generally*
- Activate change pointers for individual message types. Choose: *Tools* → *Business Engineer* → *Customizing* → *Implement projects* → *SAP Ref IMG* → *Cross Applications Components* → *Distribution ALE* → *Master Data Distribution* → *Activate Change pointers for message types*

Retrieve and Transfer Master Data

- Run program RBDMIDOC with correct message type on-line or in the background as a periodic job. In R/3, choose: *Tools* → *Business Framework* → *ALE* → *Administration* → *Periodic processing* → *Analyze change pointers*

Collect and Transfer Demand History

Collect and Transfer Demand History

Prerequisites

Demand history can be transferred to the external system through two programs:

- RMCPMANU

This program transfers demand history stored in the information structure S125. The user specifies the history's version, start date and finish date, and the program gives all the data entered within that period.

- RBDMCCOP

This program can be used for any information structure. Given a specific time period, the program compares the data records in the version '000' with a designated version (usually version 'CTR'), and only sends out those data entries which are different in the new version. After the data transfer, the designated version gets updated to version '000' so that the next execution of this program can follow the same logic. Only the initial data transfer sends over all the data within the specified period when the designated version has no data in that period.

The menu path for this program is: *Logistics* → *Central Functions* → *SCP Interfaces* → *DP/DRP Interface* → *Send info structure*



RBDMCCOP reduces data traffic significantly. But demand history data is usually aggregated according to the combination of characteristic values in the external system. If the original data records are not maintained in the external system at the lowest level, the new updates sent over by RBDMCCOP will not be aggregated and the external system will have the incorrect amount.

Configuration for SIS

Procedure

S125 is provided in the DRP interface as a standard information structure to collect demand history. After analyzing your business process, you need to check out whether the settings of S125 (characteristic values and update rules) satisfy your business needs. You probably need to set up your own information structure because of the special requirements, but you can use S125 as a reference for your setup. If in the integration design S125 is the only information structure the external system accepts, you need to populate data into S125 by copy management. Depending on the customer requirements, the following configuration steps may be or may not be needed.

- Set up information structure. Menu path: *IMG* → *Logistics General* → *Logistics Information System* → *Logistics Data Warehouse* → *Data Basis* → *Information Structures* → *Maintain Self-defined Information Structures*
- Enable the LIP message for the information structure. Menu Path: *IMG* → *Production* → *Sales & Operations Planning* → *Functions* → *Application Link Enabling (ALE)*

Collect and Transfer Demand History

Maintain update group, statistics groups, etc. Menu path: *IMG* → *Logistics General* → *Logistics Information system* → *Logistics Data Warehouse* → *Updating* → *Updating Control* → *Settings: Sales*



The R/3 System uses update groups to link together statistics groups and sales areas. The R/3 System comes with several pre-configured statistics groups. The statistics groups and sales area together determine the update group. It is the update group that determines the information structure to be updated. The S125 information structure comes pre-configured to use an existing update group (000001). It is necessary to maintain statistics groups for both materials and customers. If you are creating your own information structure, you should coordinate with other LIS configurations and probably use the existing update group 000001.

- Configure and generate the update rules. Formulas and requirements may be used. Menu path: *IMG* → *Logistics General* → *Logistics Information System* → *Logistics Data Warehouse* → *Updating* → *Updating Definition* → Specific Definition Using Update Rules
- Activate update rules. You can define the periodicity here. Menu path: *IMG* → *Logistics General* → *Logistics Information System* → *Logistics Data Warehouse* → *Updating* → *Updating Control* → *Activate Update*
- Use copy management if necessary. Menu path: *IMG* → *Logistics General* → *Logistics Information System* → *Logistics Data Warehouse* → *Data Basis* → *Tools* → *Copy Management*

Transfer Stock/Requirements List

Procedure

Stock/Requirement list contains important transaction data such as various stock quantities, customer orders, purchase orders, production orders, and much more. Running program RMCPAMRP, which sends over the entire stock/requirement list at the material-plant level, triggers the transaction. The external system recognizes the type of transaction data by reading the relevant IDoc fields, and then extracts the information it needs for the DRP planning.

A few options are offered for program RMCPAMRP:

- If the aggregation flag is on, the program aggregates the sales order quantities per customer per day and suppresses the sales order numbers. This option is particularly useful for demand situations when high volume orders are presented.
- The net change flag is designed to reduce data traffic along with the no-MRP flag. If MRP is not used in the R/3 implementation, turning on both net change flag and no-MRP flag will only dispatch the stock/requirement lists of the materials for which an MRP-related transactions (such as creation, deletion and change of the sales orders, planned orders, edc.) have happened since running RMCPAMRP from the last time. If MRP is used, only the net-change flag should be turned on for net-change functionality. Program RMCPAMRP will then dispatch the stock/requirement lists of the materials for which an MRP-related transactions have happened since the last MRP run. Of course, you can turn off both flags in order not to use the net-change feature of the program.
- Also, user exits are provided in program RMCPAMRP to further tailor the [master data IDoc \[Page 36\]](#) (LOISTD).

Process Stock Transport Requisitions and Orders

Procedure

To enable the ALE message type RECSHP and create the stock transport orders, you need to do the following for 3.0E-3.1G:

- Allocate function module IDOC_INPUT_REC_SHIPMENTS to message type RECSHP. Menu path: */nsale → Extension → Inbound → Allocate function modules to logical message*.
- Define settings for input module IDOC_INPUT_REC_SHIPMENTS. Menu path: */nsale → Extension → Inbound → Define settings for input modules..*
- Maintain process code RESH and link it to function module IDOC_INPUT_REC_SHIPMENTS. Menu path: */nsale → Extension → Inbound → Maintaining process code (inbound)*.

If the external system does not have purchasing organization and purchasing group information, from 3.0E to 3.1G, the function module reads the purchase organization from the assigned standard purchasing organization at the destination plant, and purchase group from the material master.

From 3.1H on, function module IDOC_INPUT_REC_SHIPMENTS provides user exits to look up for purchasing organization, purchasing group and company codes, etc.

In addition, the standard customization for stock transport orders and transport requisitions are required before creating them externally. The important settings can be accessed through menu path:

If transport orders and requisitions are created with the external IDs, the number ranges in R/3 need to be configured so that these IDs fall into the external number ranges. The menu path for number range configuration is *Enterprise IMG → Material management → Purchasing → Environmental data → Maintain number ranges*

Process Planning Results Through SOP and MRP

Procedure

In the DRP interface, the production plan from the external system is uploaded into R/3 SOP ('Sales and Operations Planning') through message type LIP076. Like LIP125, message type LIP076 is created dynamically from the information structure S076. Before any ALE configuration, you need to create this message type through transaction /nMC7E, or menu path: *IMG → Production → Sales & operations planning → Functions → Application Link Enabling (ALE)*

If quantities from the production plan enter the sales row of the planning table S076 and quantities from the firmed production plan (production orders, firmed planned orders, etc.) enter the production row of the planning table S076, mass processing job can be defined to transfer the sum of sales and production to the demand management and create independent requirements. To automate this process, you must:

- Set up new planning type and Macro to sum up sales and production rows. Menu path: *Logistic → Production → SOP → Tools → Plng.type/macro → Create*
- Define transfer profile. Menu path: *Logistics → Production → SOP → Settings → Mass Processing → Transfer profiles*
- Define activity. Menu path: *Logistics → Production → SOP → Settings → Mass Processing → Activities*
- Define mass processing job. Menu path: *Logistics → Production → SOP → Planning → Mass Processing → Create*

After running MRP, independent requirements will generate planned orders or purchasing requisitions. Since the external system takes account of the stock on-hand when planning production at the manufacturing plants, the MRP within R/3 should be run in 'Gross Requirement Planning' to avoid double-netting. To enable this, you should:

- For the material planned in the external system, in the MRP2 screen of the material master, define the 'MRP strategy' as '11', and flag the 'Mixed MRP' field as '2'.
- When defining the transfer profile for the mass processing job for the demand transfer, define the requirement type as 'BSF'.

Technical Communication

Both ALE technology and synchronous RFCs are used for transferring data between the external planning system and R/3. Depending on the scope of the integration, both ALE and synchronous RFC, or ALE alone, are used.

The transfer of master data to the external system is triggered through an on-line ALE transaction or a background job that uses the transaction programs. Change pointers, which link the changed document to ALE master data outbound transactions, are used to transfer data which has been changed since the last data transaction. Typically, change pointers are activated after the initial data transfer so that data traffic is reduced. An alternative approach is to retrieve master data through a request IDoc, which can be used in conjunction with the transaction programs to guarantee the accuracy of the master data in the external system.

Both demand history and transaction data in the stock/requirements list are transferred in the same fashion as master data. No change pointers are designed for them. However, there are several options available for sending out new demand history, or a stock/requirements list for materials that have new MRP transaction data.

To upload planning results for a manufacturing plant, the interface uses inbound ALE IDocs that pass data into R/3's Sales and Operational Planning (SOP). To post planning results or a deployment plan for distribution centers, the interface creates either stock transport orders by using ALE, or requisitions by using synchronous RFC. The interface also provides an RFC function module to delete unwanted requisitions.

Both ALE and Synchronous RFC use the SAP remote function call (RFC) interface. In the documents "SAP Remote Function Call (RFC) Interface" and "ALE Interface", you will find detailed information on the requirements a subsystem or an integrator must fulfill if it is to link up to R/3 and use the DRP interface.

See also:

[ALE: Concepts and Design \[Page 30\]](#)

[Transaction RFC \[Page 32\]](#)

[Synchronous RFC \[Page 33\]](#)

[Meta Objects \[Page 34\]](#)

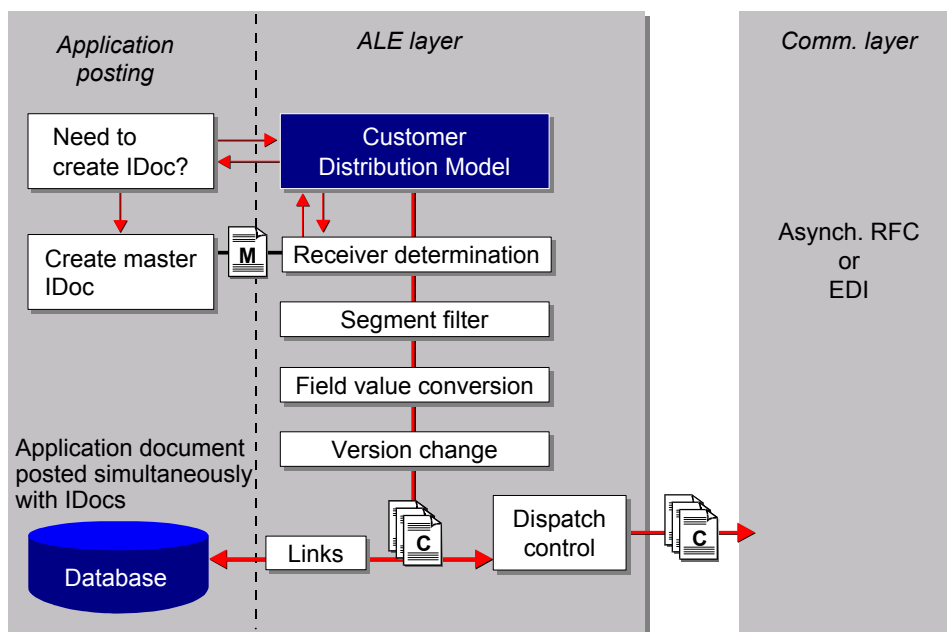
ALE: Concepts and Design

ALE: Concepts and Design

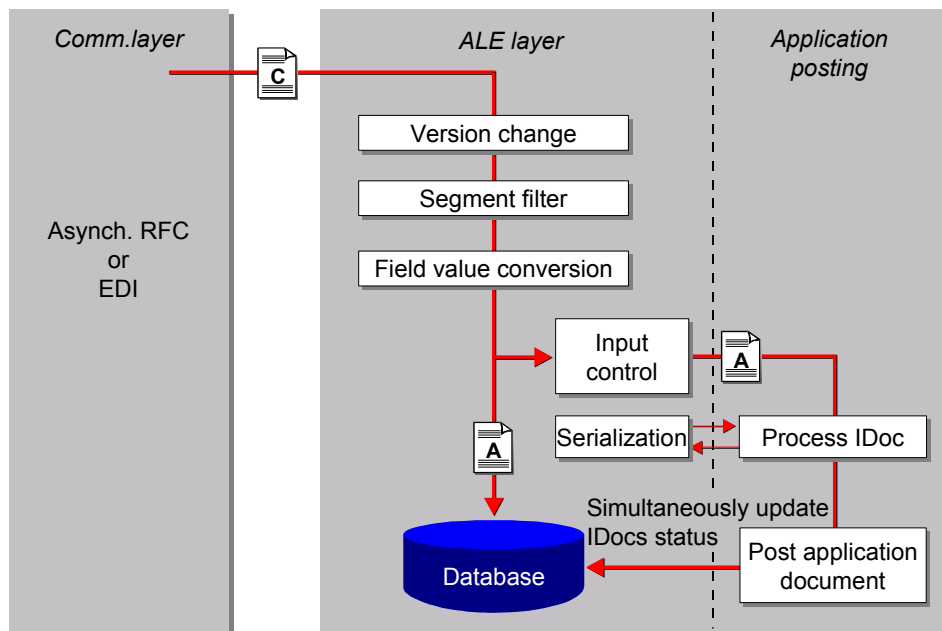
The ALE ('Application Link Enabling') concept available in R/3 Release 3.0 supports the construction and operation of distributed applications. It includes a business-controlled message exchange with consistent data on loosely-linked SAP applications. Application is not achieved using a central database but using synchronous and asynchronous communication.

The DRP interface takes advantages of ALE's design for exchanging high volume data efficiently and consistently between the external planning system and R/3. While ALE outbound is used to transfer master data and transaction data to the external system, ALE inbound is used for the external system to pass planning results into R/3 and create relevant data objects. The following diagrams illustrate both ALE outbound and inbound processing.

ALE Outbound Processing



ALE Inbound Processing



The basis for data exchange is the intermediate document (IDoc), which is a general data container that can contain any desired R/3 application data. Different application data can be packed into the same type of IDoc. IDocs differ from each other by having different message types.

IDocs usually have a hierarchical structure so that all the information of a data object (such as a production order or a sales order) can be contained in a single IDoc. An IDoc type consists of three record types: control, data, and status records. To extract data from R/3, the external system must be able to recognize the IDoc structure and read the data content from data records based on the message type and the IDoc type information stored in the control record. To transfer data back into R/3, the external system needs to populate the IDocs properly with the data it has generated. The details on the IDoc structure can be found in the SAP document 'The IDoc Interface for EDI', and the description of the IDoc's used for DRP interface can be found in section 'IDoc Description' of this document.

ALE typically uses TCP/IP to connect with the external system. This requires a series of setups that define the correct communication channel. Also, ALE uses distributed customer models to control data distribution and ensure the correct data flow. More specific configurations are available through 'Partner Profile', which also controls the type of data flow between R/3 system and the external system.

ALE also provides error-handling functionality, which can be configured so it links to workflow engine within R/3. IDoc data processed through ALE can be monitored and archived so that the data consistency and completeness is guaranteed. To thoroughly understand the ALE process and customization, please refer to the SAP document 'ALE-Application Link Enabling'.

Transaction RFC

Transaction RFC

Transaction RFC, RFC Client and RFC Server

IDocs are given a destination and sent from the R/3 System by calling the function module 'INBOUND_IDOC_PROCESS' and using transaction RFC. The destination determines the target computer and target program is defined in the ALE configuration.

To receive IDoc data from R/3, an external system must have a program called 'RFC client'. This program should carry the target program name and contain the name of the function module. The R/3 data contained in the IDoc is transferred in the form of the internal tables. When EDI_DC contains all the application data, EDI_DC has the administrative data for each IDoc.

Starting with Release 3.0C, it is possible to register this program through SAP gateway in RFC destination and thus opens the connection between the external system and the gateway. When registering to the gateway, the program may need to look up at file *saprfc.ini* and find the gateway address.

To send the IDoc into R/3, the external system needs to use a RFC program to log in R/3 and call up the function module 'INBOUND_IDOC_PROCESS'. This program, called RFC server, constructs IDoc data and places it in the internal table of structure EDI_DC. A check record must be generated for each IDoc and placed in the internal table of structure EDI_DC. Special attention needs to be paid to the Transaction Identification Management. Once again, *saprfc.ini* can be used to look up logon information.

Both RFC client and RFC server can be programmed in C or C++. RFC class library is available starting with Release 3.0F. You can also generate a C program body from the function module display /nSE37 and use it as the basic framework. For details on programming RFC client and RFC server, see the document 'ALE Interface' and 'RFC Tutorial'.

Synchronous RFC

Synchronous RFC: Calling Function Modules Externally

Programs called BAPI ("Business Application Programming Interface") or function modules such as 'REQUISITION_LIST_DELETE' are similar to the RFC server program. After logging into the R/3 system, the program populates the internal tables and importing parameters and calls the RFC-enabled function modules in R/3. If information is to be retrieved, the internal tables and exporting parameters will contain the data required by the external system after the function call.



BAPI and other RFC-enabled function modules accept fields of BCD type QUAN, DEC and NUMC, but the RFC library can only deal with fields of these types as of Release 3.1G. The RFC class library can only deal with these field types as of Release 4.0. You may need to hard-code some field-type conversion if you are using RFC class library previous to 4.0 and RFC library after 3.1G. The RFC server program for ALE has no such problems since none of the fields in the IDoc structure are not allowed to be defined with type QUAN, DEC or NUMC.

Meta Objects

Meta Objects

When using ALE and retrieving data from an IDoc, the external system needs to know the IDoc's structure so that it can identify the required fields correctly. IDoc structure remains unchanged within the same release, but between releases there can be small modifications, which means the integration programs may need different versions for different releases. One way to avoid this is to build up meta objects dynamically for the IDoc structure when the integration is installed. The external system then uses these meta objects to search for and to identify the relevant fields.

Since the IDoc structure includes a hierarchy of segments which also loop at the same levels, the meta objects should be carefully designed to facilitate field search and identification. SAP provides an IDoc class library in addition to the RFC class library in 4.0. The IDoc class library helps parse the data in the IDoc.

The IDoc structure can be looked up easily through the following menu path: *Tools* → *Administration* → *Administration* → *Process Technology* → *IDoc* → *IDoc Basis (/nwedi)* → *Documentation* → *IDoc Types*. There are two other ways to retrieve IDoc structures and use their outputs to build up IDoc meta objects more dynamically.

Use report 'RSEIDOC5'. This report writes the IDoc structure, segment and field names to the screen. To use this report, the external system can download the screen output and build up the meta objects.

Use remote function call 'EDI_FILL_SYIDOC01_FOR_RFC'. This function module takes the importing parameters 'IDoc Type' and 'Release Number' and populates the internal table EDI_DD, which contains the IDoc 'SYIDOC01', with the descriptions of the requested IDoc type. This function module enables on-line retrieval of IDoc structures.

See also: [IDocs \[Page 35\]](#)

IDOCs

Use

DRP interface uses the following IDocs to exchange data with external systems. Due to the large number of fields within individual IDocs, this document will not list detailed information. For documentation on individual IDoc fields and segments, follow the menu path: *Tools → Administration → Administration → Process technology → IDoc → IDoc basis → Documentation → IDoc types*

[Master Data IDoc \[Page 36\]](#)

[Information Structure IDoc \[Page 37\]](#)

[Stock/Requirements List IDoc \[Page 41\]](#)

[Stock Transport Order IDoc \[Page 46\]](#)

Master Data IDoc

Master Data IDoc

Definition

DRP interface uses existing master data IDocs to exchange master data with external systems. Due to the large number of fields within individual IDocs, this document will not list detailed information. For documentation on individual IDoc fields and segments, follow the menu path: *Tools → Administration → Administration → Process technology → IDoc → IDoc basis → Documentation → IDoc types*

Use

Use **IDoc ALEREQ01** for transferring material, customer and vendor data.

Structure

The structure and fields of master data request IDoc ALEREQ01 are the following:

E1ALER1 ALE request IDoc header segment

E1ALEQ1 ALE request IDoc content segment

E1ALER1

Fields	Format	Length	Description
MESTYP	CHAR	6	Logical message type

E1ALEQ1

Fields	Format	Length	Description
OBJVALUE	CHAR	40	Object value
SIGN	CHAR	1	Including/excluding indicator
OPTION	CHAR	2	Relational operator
LOW	CHAR	40	Lower limit for field contents
HIGH	CHAR	40	Upper limit for field contents

To request material master, enter 'MATMAS' in the message type field MESTYP.

For customer master enter 'DEBMAS', and for vendor master enter 'CREMAS'.

Information Structure IDoc

Definition

R/3 uses IDoc SOPGEN01 as the data carrier for all the information structures. For the DRP interface, since both demand history and production planning results use information structures, they share the same IDoc type. However, since information structures differ from each other by characteristics and key fields, R/3 generates the mapping between the generic IDoc structure and specific information structure automatically. The corresponding message type is also generated at the same time (see the configuration session).

Use

Use **IDoc type SOPGEN01** for transferring demand history and planning results.

Structure

The following gives the structure and fields of SOPGEN01:

- E1LIPM0 Gen.info struct.distr. - characteristics
- E1LIPV0 Gen. info struct. distribution - version data
- E1LIPP0 Gen.info struct.distr. - key figures (1)
- E1LIPP1 Gen.info struct.distr. - key figures (2)
- E1LIPP2 Gen.info struct.distr. - key figures (2)

E1LIPM0

Fields	Format	Length	Description
SSOUR	CHAR	4	Statistics origin
VONTG	CHAR	8	Planning start
BISTG	CHAR	8	Planning finish
PERIO	CHAR	14	Number of periods
M01	CHAR	30	Object 01
M02	CHAR	30	Object 02
M02	CHAR	30	Object 03

E1LIPV0

Fields	Format	Length	Description
VRSIO	CHAR	3	Version
VETXT	CHAR	40	Version description
CDAT	CHAR	8	Period to analyze - current date
STIME	CHAR	6	Time

Information Structure IDoc

AUTOR	CHAR	12	Author
UDAT	CHAR	8	Period to analyze - current date
UPNAM	CHAR	12	Last changed by
UTIME	CHAR	6	Time
AVRSI	CHAR	1	Active version
VWDAT	CHAR	10	Pointer to administrative data
STATU	CHAR	1	LIS version status

E1LIPP0

Fields	Format	Length	Description
SPMON	CHAR	6	Period to analyze: month
SPTAG	CHAR	8	Period to analyze: current date
SPWOC	CHAR	6	Period to analyze: week
SPBUP	CHAR	6	Period to analyze: posting period
KZ01	CHAR	22	Key figure 01
KZ02	CHAR	22	Key figure 02

S125: Outbound for Demand History

If the Demand Planning uses S125 to collect demand history, data in S125 can be transferred through IDoc SOPGEN01 with message type LIP125. S125 has the following structure:

Fields	Format	Length	Description
SSOUR	CHAR	4	Statistics origin
VRSIO	CHAR	3	Version
SPMON	NUMC	6	Period to analyze: month
SPTAG	DATS	8	Period to analyze: day time reference
SPWOC	NUMC	6	Period to analyze: week
SPBUP	NUMC	6	Period to analyze: posting period
MATNR	CHAR	18	Material number
WERKS	CHAR	4	Plant
VKORG	CHAR	4	Sales organization
VTWEG	CHAR	2	Distribution channel
SPART	CHAR	2	Division
MATKL	CHAR	9	Material group

Information Structure IDoc

PRODH	CHAR	18	Product hierarchy
KUNNR	CHAR	10	Sold to party
PERIV	CHAR	2	Fiscal year variant
VWDAT	NUMC	10	Pointer to administrative data
BASME	UNIT	3	Base unit of measure
AEMENGE	QUAN	8	Incoming orders quantity
LFIMG	QUAN	7	Actual quantity delivered (in sales units)

When mapped to SOPGEN01, the result is:

E1LIPM	S125
M01	MATNR
M02	WERKS
M03	VKORG
M04	VTWEG
M05	SPART
M06	MATKL
M07	PRODH
M08	KUNNR
E1LIPPO	S125
KZ01	AEMENGE
KZ02	LFIMG

S076: Inbound for Production Plan

Production plan should be packed into IDoc SOPGEN01 and processed by message type LIP076. The structure of S076 is:

Table Caption

Fields	Format	Length	Description
SSOUR	CHAR	4	Statistics origin
VRSIO	CHAR	3	Version
SPMON	NUMC	6	Period to analyze: month
SPTAG	DATS	8	Period to analyze: day time reference
SPWOC	NUMC	6	Period to analyze: week
SPBUP	NUMC	6	Period to analyze: posting period

Information Structure IDoc

PMNUX	CHAR	18	Product group/material in planning hierarchy
WENUX	CHAR	4	Plant of product group/material in planning hierarchy
VSNDATA	CHAR	4	Production version
PERIV	CHAR	2	Fiscal year variant
VWDAT	NUMC	10	Pointer to administrative data
BASME	UNIT	3	Base unit of measure
ABSAT	FLTP	8	Sales
PRODU	FLTP	8	Production
LAGRI	FLTP	8	Stock level
LAGRZ	FLTP	8	Target stock level
REICH	FLTP	8	Range of coverage (days' supply)
REICZ	FLTP	8	Target range of coverage (target days' supply)



The external system is expected to upload the entire production plan for one period in one IDoc at material-plant level. Production quantity can be written into sales field ABSAT or production field PRODU. In order to synchronize with MRP's consumption logic, special attention should be paid to the integration design. There may be a need to pass both planned quantities and firmed quantities into S076 so that the independent requirements generated from these planned quantities get consumed properly by planned orders or purchase requisitions after MRP run.

Stock/Requirements List IDoc

Definition

IDoc LOISTD01 is used to pass the stock/requirements list at the material-plant level. The external system needs to read through the IDoc and extract the information it needs. One IDoc includes all the information for one material-plant list.

Structure

E1MDSTL Master Material stock (MDSTA)

E1PLSEL Master Material planning segment (MDPS)

E1MDPSL Master Stock Demand List (MDPS)

E1MDSTL

Fields	Format	Length	Description
MATNR	CHAR	18	Material number
WERKS	CHAR	4	Plant
PLSCN	NUMC	3	Planning scenario in long-term planning
EINME	CHAR	15	Restricted-use stock
EISBE	CHAR	14	Safety stock
INSME	CHAR	15	Stock in quality inspection
KEINM	CHAR	15	Restricted-use consignment stock
KINSM	CHAR	15	Consignment stock in quality inspection
KLABS	CHAR	15	Unrestricted use consignment stock
KSPERM	CHAR	15	Blocked consignment stock
LABST	CHAR	15	Valuated stock with unrestricted use
RETME	CHAR	15	Stock returns
SPEME	CHAR	15	Blocked stock
TRAME	CHAR	15	Stock in transit
UMLMC	CHAR	15	Stock in transfer

E1PLSEL

Fields	Format	Length	Description
PLAAB	NUMC	2	Material requirements planning segment
PLANR	CHAR	20	Planning segment number
KDAUF	CHAR	10	Sales order number

Stock/Requirements List IDoc

KDPOS	NUMC	6	Item number in sales order
LGORT	CHAR	4	Storage location
PSPPEL	CHAR	24	Internal project item number

E1MDPSL

Fields	Format	Length	Description
AUFVR	CHAR	10	Source number for order
BAUGR	CHAR	18	Material number of higher-level assembly
BESKZ	CHAR	1	Procurement type
DAT00	DATS	8	Receipt/ Requirements date
DAT01	DATS	8	Delivery/order finish date
DAT02	DATS	8	Start/release date
DEL12	CHAR	12	MRP element number
DELKZ	CHAR	2	MRP element indicator
DELET	NUMC	4	Scheduling number planning element
DELNR	CHAR	10	MRP element number
DELPS	NUMC	6	MRP element item
EINVR	NUMC	4	Source schedule line number
KDAUF	CHAR	10	Sales order number
KDPOS	NUMC	6	Item number in sales order
LGORT	CHAR	4	Storage location
MNG01	CHAR	15	Quantity reserved or quantity required
MNG02	CHAR	15	Quantity in-transit
PLUMI	CHAR	1	Receipt/ issue indicator
POSVR	NUMC	6	Source item number
PSPPEL	CHAR	24	Character field length 24
SOBES	CHAR	1	Special procurement type
VERID	CHAR	4	Production version
VRFKZ	CHAR	1	Availability indicator
WEBAZ	CHAR	5	R/2 table
WRK02	CHAR	4	Production plant in planned order
KUNNR	CHAR	10	Customer number
AUART	CHAR	4	Sales document type

Stock/Requirements List IDoc

FIX01	CHAR	1	Indicator: fixing lot size in planned order
-------	------	---	---



- Fields with asterisks are only available in 3.1H. FIX01='X' when the planned order is firmed.
- The most important field is DELKZ, which determines what type of MRP element is being dealt with for internal processing. The external system should use this flag to distinguish between the different MRP elements and extract the ones it needs.

'AR' Dependent reservation

'BA' Purchase requisition

'BB' Provided material requirement

'BE' Schedule order item

'BP' Gross requirements planning

'BR' Process order

'CH' Batch requirements

'FE' Production order

'FH' End of planning time fence

'IM' Actual goods receipt quantity

'KB' Individual customer stock

'KD' Customer independent requirements

'LA' Shipping notification

'LB' Batch/warehouse stock

'LC' Batch/warehouse stock

'LE' Delivery schedule

'MB' Material issues

'MR' Reservation

'NE' Collective order

'PA' Planned order

'PB' Project stock

'PP' Planned independent requirements

'PR' Forecast requirements

'QM' Inspection lot for quality management

'S2' Simulated requirements from availability check

'SA' Simulation order

Stock/Requirements List IDoc

'SB' Dependent requirements
'SI' Simulation requirements
'SM' Simulation dependent requirements
'TB' Transfer requirements WMS
'U2' Release order for a stock transfer requisition
'U3' Transfer requirements for simulation order
'U4' Release order for stock transport scheduling agreement
'UB' Unplanned requirements
'UL' Reservation in another plant
'UR' Stock transfer reservation
'VA' RFQ
'VB' Quotation
'VC' Order
'VE' Scheduling agreement
'MS' Direct production
'VG' Contract
'VI' Delivery w/o charge
'VJ' Delivery
'VP' Planned independent requirements
'VW' External sales order
'WA' Goods issue
'WB' Plant stock
'WE' Goods receipt
'WH' End replenishment period
'VF' Scheduling agreement
'KK' Consignment stock for customer (availability check)
'VT' Returns (availability check)
'E1' Subcontracting purchasing
'RP' Returns item

- When goods are issued at the supplying plant for a stock transport order, the order is termed in-transit until the goods are received at the destination plant. The stock/requirements list at the supplying plant no longer includes this order, but it remains in the stock/requirements list of the destination plant with E1MDPSL-DELKZ = 'U1'. When IDoc LOISTD is created, the in-transit quantity is written into E1MDPSL-MNG02, and quantity listed in MNG01 is the original requested quantity.

Stock/Requirements List IDoc

- There are several date fields in the segment E1MDPSL. DAT01 records the stock available date, which takes the GR processing time into account. DAT02 contains the order finish date for a planned order and delivery date for a requisition. DAT03 contains the production start date for internally-produced material and release date for externally-procured material.
- When the aggregation feature of the program RMCPAMRP is selected, sales orders will aggregate per customer per day at material-plant level. Sales order numbers are suppressed.

Stock Transport Order IDoc

Stock Transport Order IDoc

Definition

The IDoc **ORDERS02** is used to create stock transport orders. Since its structure is fairly complicated, it is not listed here in detail. For detailed information, follow the menu path *Tools* → *Administration* → *Administration* → *Process technology* → *IDoc* → *IDoc basis* → *Documentation* → *IDoc type*.

Structure

This IDoc contains only one transport order. It must start with segment E1EDK01 followed by other header segments and item segments. Each item must start with segment E1EDP01 followed by other item segments. Except for starting segments E1EDK01 for the header and E1EDP01 for the items, the order of the other segments is irrelevant. If one segment type occurs more than once, only the last one is used.

Function module IDOC_INPUT_REC_SHIPMENTS can create a stock transport order, change the dates and quantities in an order, delete an entire order or individual items, and release individual items in an order. But it can not add an item to an existing order. Also, it does not distinguish between deletion and locking of the items. The following will list the important (not mandatory) fields required to build up an order IDoc for the function module to process successfully.

Segments

E1EDK01 Document header general data

Field name	Value	Description
ACTION	000	Insert
	001	Delete
	002	Change in document header
	003	Change in the item list
BSART	NB	Standard purchase order
	UB	Stock transport order
BELNR		Document number



BSART: When it equals 'UB', the plant field in segment 'E1EDK14' must be filled with QUALF = '004'. When it equals 'NB', the vendor number in segment 'E1EDKA1' must be filled.

BELNR: This field is filled when the order document is to be changed or deleted. An external number can be used as a reference number stored in E1EDKA1-IHREZ. However, if the document needs to be created in the same ID as the external number, this field can be filled with that number under the condition that the number lies within the external number range configured in R/3.

E1EDK14 Header organization data

Field name	Value	Description
QUALF	004	Plant in charge
	005	Delivering plant
	009	Purchasing group
	014	Purchasing organization
ORGID		Value determined by the qualifier



Each item in an order can have a separate ordering plant. The values in the header segment are used as the default value for every item. If an item has its own plant, it is used only for that item. If the plant is not given in the header segment, it must be given separately for every item.

E1EDK03 Document header Date segment

Field name	Value	Description
IDDAT	001	Delivery date
	010	Shipping date
	022	Purchase order date
DATUM		Value determined by IDDAT



Purchase order date is the date when the order is created. The delivery date indicates the date when the goods are delivered to the destination plant. These two dates are mandatory. Shipping date is the date when the goods are shipped out of the plant. Both delivery date and shipping date are used as defaults for items. The difference between them is used as the planned delivery time for the items. If a shipping date is not provided by the IDoc, the planned delivery time will be read from the customization.

E1EDKA1 IDOC: Header partner information

Field name	Value	Description
PARVW	AG LF	Sold-to party Vendor
IHREZ		Your reference
PARTN		Partner number



IHREZ: This field can be used to store the external order number. If E1EDK01-BELNR is filled while creating an order, information from IHREZ will be used as the

Stock Transport Order IDoc

requisition note number for the items. A relationship is thus established between the external order number and the internal order number.

PARTN: With order type 'NB', this segment must provide the vendor number in the field PARTN. The vendor number must exist in the system. With order type 'UB', you can use the plant number in the field PARTN.

E1EDP01 IDOC: Item general data

Field name	Value	Description
POSEX		Item number
ACTION	001 002 003 004 005	Item added Item changed Item canceled Item not changed Item locked
PSTYP	0 7	Normal (NB) Stock transfer order (UB)
MENGE		Quantity
MENEE		Unit of measure
PMENE		Price unit of measure
VPREI		Price (net)
PEINH		Price unit



POSEX: The external system should provide this number when multiple items are created in one order document. R/3 can create the item numbers if they are not provided, but this will make it difficult for the external system to trace the items.

ACTION: If the header segment indicates a creation of an order document, this field should be '001'.

PSTYP: If the field is empty, it will take the content from E1EDK01-BSART.

E1EDP03 Item date segment

Field name	Value	Description
IDDAT	001 010	Delivery date Shipping date
DATUM		Date determined by IDDAT



The date provided by this segment overwrites the default date set by the header segments. It only controls the item it refers to. If the header segments do not define the dates, you need to provide the dates using this segment type for every item.

E1EDP19 Item object identification

Field name	Value	Description
QUALF	002	Material number used by vendor
IDTNR		Material ID

E1EDPA1 Item partner information

Field name	Value	Description
PARVW	WE	Ship-to party
PARTN		Partner number

RFC Function Calls

RFC Function Calls

Use

The following RFC function calls are used for the data download and upload:

[RFC Create Requisitions \[Page 51\]](#)

[RFC:Delete Requisitions \[Page 53\]](#)

[RFC: Retrieve Quota Arrangement \[Page 55\]](#)

RFC Create Requisitions

CREATE REQUISITIONS: BAPI_REQUIREMENT_CREATE

FUNCTION BAPI_REQUIREMENT_CREATE.

```

*'' -----
*'' EXPORTING
*''     VALUE(OBJECT_ID) LIKE BAPI2009OB-PREQ_NO
*'' TABLES
*''     REQUIREMENT_ITEMS STRUCTURE BAPIEBAN
*''     REQUIREMENT_ACCOUNT_ASSIGNMENT STRUCTURE BAPIEBKN
*''     OPTIONAL
*''     RETURN STRUCTURE BAPIERRORS
*'' EXCEPTIONS
*''     NO_OBJECT_ID
*'' -----

```

Use

BAPI_REQUIREMENT_CREATE is used to create both requisition and reservations. In the DRP interface, we only use it to create requisitions without account assignment input. This BAPI call only creates one stock transport requisition at one time. However, since requisitions typically have no header data, many items can be created under one requisition even though these items are transported between different plants and have different dates. This approach can reduce the number of requisitions and therefore the number of RFC calls.

To use this BAPI, you only need to populate table REQUIREMENT_ITEMS. Exporting parameter OBJECT_ID is relevant only if the requisition number is created externally. Table RETURN includes error information. It includes material, number of error messages and message ID's. The real content of the errors will not be visible to the external system unless another RFC call is used to look up these error message ID's. This RFC call is not available yet.

Structure

The following fields must be filled in:

Mandatory Fields

REQUIREMENT_ITEMS:	
PREQ_NO:	Only mandatory when the requisition is created with the external ID number
PREQ_ITEM:	Item number, any increment, but should follow some counting rule so the change/ delete BAPI can also trace it.
DOC_TYPE:	Document type. 'NB', for example
MATERIAL:	Material name

RFC Create Requisitions

PLANT:	Destination plant
SUPPL_PLNT:	Delivery plant
QUANTITY:	Delivered quantity
DEL_DATCAT:	Delivery date category. '1': day, '2': month.
DELIV_DATE:	Delivery date, format: YYYYMMDD
ITEM_CAT	Item category. '7' for transport order
RES_REQ_ID:	'X' for requisition

RFC:Delete Requisitions

DELETE REQUISITIONS: REQUISITION_LIST_DELETE

FUNCTION REQUISITION_LIST_DELETE.

```

*'' -----
*''***Local interface:
*''   IMPORTING
*''       VALUE(DELIVERY_DATE) LIKE EBAN-LFDAT DEFAULT SPACE
*''       VALUE(CREATOR_NAME) LIKE EBAN-ERNAM DEFAULT SPACE
*''   TABLES
*''       REQUISITION_LIST STRUCTURE BAPIKEYLIS
*''       BAPIRETURN STRUCTURE BAPIRETURN
*''   EXCEPTIONS
*''       NOT_CARRIED_OUT
*'' -----

```

Use

REQUISITION_LIST_DELETE is used to delete a list of requisitions in R/3. Depending on the importing parameters, it finds the list of requisitions and deletes them. When an error occurs, the error message will be returned in BAPIRETURN and the function call becomes invalid (the database restores to the time before the function gets called).

The REQUISITION_LIST should pass the list of material and plant combination. The DELIVERY_DATE indicates the need-to-arrive date for the material in the purchasing requisition and the CREATOR_NAME for the name of the creator.

If both DELIVERY_DATE and CREATOR_NAME are empty but the REQUISITION_LIST contains material and plant information, the function module deletes all the requisitions with the same material in that plant. If the CREATOR_NAME has a value, the function module only deletes the ones with that CREATOR_NAME. And the same logic holds for DELIVERY_DATE. If both are not empty, the function module deletes the requisitions which satisfy all the importing parameters as well as the table parameters. This logic is designed to give the callers maximal amount of control.

Once again an error-handler may be required to use this function call more effectively. When errors occur, the function module may need to be recalled or errors need to be logged somewhere else. The content of error messages is contained in table BAPIRETURN.

Structure

Importing parameters:

DELIVERY_DATE: Date with form YYYYMMDD. Or empty.

RFC:Delete Requisitions

CREATOR_NAME: External system name. Or empty.

REQUISITION_LIST

MATERIAL: Material number

PLANT: Plant number

If any error occurs after the call, exception *NOT_CARRIED_OUT* will be raised and the error message will be returned in *BAPIRETURN*.

RFC: Retrieve Quota Arrangement

Retrieve Quota Arrangement: BAPI_QUOTA_ARRANGEMENT_GETLIST

FUNCTION BAPI_QUOTA_ARRANGEMENT_GETLIST.

```

** -----
** Local interface:
**
** TABLES
**
** MATERIALPLANT_LIST STRUCTURE BAPIKEYLIS
**
** QUOTALIST STRUCTURE BAPIQUOTA
**
** ROUNDING_PROFILE STRUCTURE BAPIRDPRFL
**
** BAPIRETURN STRUCTURE BAPIRETURN
** -----

```

Use

BAPI_QUOTA_ARRANGEMENT_GETLIST is used to retrieve a list of Quota Arrangement information stored in R/3. The BAPI call needs to populate table BAPIKEYLIS with the list of material-plants where these materials are procured. After the call, the information is transferred back through tables BAPIQUOTA and BAPIRDPRFL. Additional information and warnings are stored in BAPIRETURN.

In R/3, rounding value is usually used for batch procurement and stored in material master. But for the complicated batch sizes, rounding profile is defined in MRP customization and used in the quota management table. The BAPI call also retrieves the rounding profile so that the external caller can obtain maximal amount of information. If rounding profile is defined, the BAPI call exports the rounding profile and leaves the rounding value zero, otherwise it populates the rounding value in BAPIQUOTA. There are also situations when none of them are maintained. Information will be passed through BAPIRETURN.

Structure

BAPIKEYLIS

Fields	Format	Length	Description
MATERIAL	char	18	Material number
PLANT	char	4	Plant

BAPIQUOTA

Fields	Format	Length	Description
MATERIAL	char	18	Material number
PLANT	char	4	Plant
PERIOD_TIL	date	8	Quota arrangement period valid until

RFC: Retrieve Quota Arrangement

PERIOD_TIL	date	8	Quota arrangement period valid from
CREAT_DATE	date	8	Date on which record was created
CREATED_BY	char	12	Name of user who created object
MIN_SPLIT	quantity	8	Minimum quantity for splitting quota
QUOTA_ITEM	numc	3	Quota arrangement item
PROCURE_TY	char	1	Procurement type
SPECIAL_TY	char	1	Special procurement type
VENDOR_NUM	char	10	Vendor account number
PROC_PLANT	char	4	Plant from which material is procured
QUOTA	dec	2	Quota
BASE_QUAN	quantity	8	Base quantity of quota arrangement item
ALOC_QUAN	quantity	8	Allocated quantity of quota arrangement item
MAX_QUAN	quantity	8	Maximum quantity of quota arrangement item
PROD_VER	char	4	Production version
MAX_LOT	quantity	7	Maximum lot size per quota item
MIN_LOT	quantity	7	Minimum quantity of quota arrangement item
PROFILE_RD	char	4	Rounding profile
ROUNDVALUE	quantity	7	Order quantity increment in the rounding
ONCE_ONLY	char	1	Once only indicator
MAX_REL	quantity	7	Maximum release quantity per period
PERIOD_REL	quantity	1	Period to which release quantity relates
NUM_PE_REL	numc	2	No. of periods to which release quantity relates
PRIORITY_R	numc	2	Order quantity increment in the rounding

BAPIRDPRFL

Fields	Format	Length	Description
PLANT	char	4	Plant
RD_PROFILE	char	4	Rounding profile
RD_LEVEL	numc	6	Level in rounding profile
THRESHOLD	quantity	7	Threshold value for rounding profile
RD_VALUE	quantity	7	Rounding off method for rounding items
RD_RULE	char	2	Rounding off rule
INDICATOR 1	quantity	1	Indicator: check units of measure allowed for vendor
INDICATOR 2	quantity	1	Indicator: check units of measure allowed for customer

BAPIRETURN

RFC: Retrieve Quota Arrangement

Fields	Format	Length	Description
TYPE	char	1	
CODE	char	5	
MESSAGE	quar	220	
LOG_NO	quar	20	Application log number
LOG_MSG_NO	numc	6	Application log: message serial number

For this BAPI, TYPE = 'I' (Information) or 'W' (Warning). CODE = 'DP'. Possible messages are:

000 Quota arrangement has not been defined for material & at plant &.

001 Rounding profile from date & for material & between plant & and vendor &.

002 Rounding profile from date & for material & between plant & and plant &.

003 Rounding value from date & for material & between plant & and vendor &.

004 Rounding profile from date & for material & between plant & and plant &.

005 No rounding from date & for material & between plant & and vendor &.

006 No rounding from date & for material & between plant & and plant &.

Examples

Examples

The following examples illustrate how demand planning and distribution resource planning can be optimized in external systems:

[Use external system for demand planning \[Page 59\]](#)

[Use external system for distribution planning \[Page 60\]](#)

[Use external system for deployment \[Page 61\]](#)

Use External System for Demand Planning

Goal: Forecast demand at both material group and customer location levels

Demand planning is carried out at both material group and customer location level in the external system based on the historical data collected from R/3. The results are fed back into R/3. The following procedure is a typical example:

1. Collect demand history into information structure S125 by using Sale Information System.
2. Initiate data exchange between R/3 and the external system:
 - a) Select required master data (material master, customer master, etc.).
 - b) Select required demand history data (S125).
3. Aggregate demand history at material group level and customer level. Carry out the forecasting.
4. Initiate data exchange between external system and R/3:
 - a) Upload the forecasting results into the sales row of the SOP planning table.
 - b) Use the sales forecast to plan production.

Use External System for Distribution Planning

Use External System for Distribution Planning

Goal: Create a production and distribution plan in which demands are met in the distribution centers.

Planning is carried out through the entire supply chain network including manufacturing plants and distribution centers/warehouses. Demands are either collected from customer orders or forecast at the distribution centers. The following procedure is a typical example:

1. Initiate data exchange between R/3 and the external system:
 - a) Select required master data (material master, etc.).
 - b) Transfer the demand history from R/3 if a forecast is required and will be carried out in the external system. If the forecast will be performed in R/3, transfer the forecasting results from R/3.
 - c) Select required transaction data (current stock/requirements list which includes stock on-hand, customer orders, purchase orders, production orders, etc.).
 - d) Retrieve Quota Arrangement from the external system.
2. Create a plan in the external system that meets the demands placed at the distribution centers.
 - a) -Plan production at manufacturing plants.
 - b) -Plan goods movement between manufacturing plants and distribution centers.
3. Initiate data exchange between external system and R/3:
 - a) Delete all unconverted requisitions created by the external system.
 - b) Create stock transport requisitions based on the planned goods movements between the manufacturing plants and the distribution centers.
 - c) Populate the SOP planning tables with data from the new production plan created by the external system and with the firmed production plan which results from the MRP run within R/3.
4. Continue processing within R/3. The production plan eventually needs to be converted into production orders, or firmed planned orders for repetitive manufacturing. The following steps are required:
 - a) Aggregate proposed production plans and firmed plans in the SOP planning table and transfer them to demand management. Independent requirements are created.
 - b) Run MRP and create planned orders.
 - c) Convert planned orders into production orders, or create run schedule for repetitive manufacturing planned orders.

Use External System for Deployment

Goal: Dispatch finished products to various distribution centers optimally so that customer demands are met.

Production plans are fixed in multiple manufacturing plants based on capacity and material availability. Distribution centers are located in various sites to cover the customer demands. In order to meet customer demands and minimize transportation costs, it's important to plan what quantities must be shipped from the manufacturing plants to which distribution centers, and when the shipments will take place.

The following procedure could be a typical example :

1. Plan production in Sales and Operations Planning module in R/3.
2. Initiate data exchange between R/3 and the external system:
 - a) Select required master data (material master, etc.)
 - b) Select production plan (from planning tables in SOP)
 - c) Select required transaction data (current stock/requirement list, which includes stock on-hand at the distribution centers, customer orders, etc.)
3. Create a plan in the external system that meets the customer demands and keeps transportation costs at a minimum.
 - a) Set up the transportation network with transportation capacity
 - b) Plan goods movement between the manufacturing plants and the distribution centers
 - c) Combine planned shipments into truckloads
4. Initiate data exchange between the external system and R/3
 - a) Create new stock transport orders with external IDs
 - b) Change the existing stock transport orders

Production Optimization Interface (POI)

Production Optimization Interface (POI)

[Production Optimization Interface \(POI\): Overview \[Page 64\]](#)

[Application Scenarios \[Page 67\]](#)

[Optimizing Capacity by Sequencing in Repetitive Manufacturing \[Page 68\]](#)

[Optimizing Production Planning Considering Various Conditions \[Page 69\]](#)

[Prerequisites \[Page 66\]](#)

[Communication \[Page 70\]](#)

[Communication: ALE \[Page 71\]](#)

[Communication: RFC and TRFC \[Page 72\]](#)

[IDoc Basic Structure \[Page 73\]](#)

[Data Exchange: SAP R/3 ® External Optimization System \(Download\) \[Page 74\]](#)

[Master Data \[Page 75\]](#)

[Selection of Master Data \[Page 77\]](#)

[Transfer Mode \[Page 78\]](#)

[Selection Options: Master Data \[Page 80\]](#)

[Transaction Data \[Page 83\]](#)

[Selection of Transaction Data \[Page 84\]](#)

[Customizing Settings: Download \[Page 85\]](#)

[Procedure: Monitoring Download \[Page 88\]](#)

[Monitoring: Download \[Page 89\]](#)

[IDocs \[Page 91\]](#)

[LOIBOM01 \[Page 93\]](#)

[MATMAS03 \[Page 98\]](#)

[LOICAL01 \[Page 104\]](#)

[LOIWCS02 \[Page 105\]](#)

[LOIRNH01 \[Page 110\]](#)

[LOIROU01 \[Page 111\]](#)

[CLFMAS01 \[Page 117\]](#)

[LOINUM01 \[Page 119\]](#)

[LOIPLO01 \[Page 120\]](#)

[LOIPRO01 \[Page 124\]](#)

[LOISTD01 \[Page 135\]](#)

[LOIRSH01 \[Page 138\]](#)

[LOITMXL01 \[Page 140\]](#)

[LOIPGR01 \[Page 142\]](#)

[Data Exchange: External Optimization System ® SAP R/3 \(Upload\) \[Page 148\]](#)

[Data Upload \[Page 149\]](#)

[Starting the Upload \[Page 150\]](#)

[Monitoring: Upload \[Page 151\]](#)

[Procedure: Monitoring \(Upload\) \[Page 152\]](#)

[Customizing Settings: Upload \[Page 154\]](#)

[Tables for Upload \[Page 156\]](#)

[Function Module CLOI_CHANGES_UPL_31 \[Page 157\]](#)

[CLOI_IF_PAR \[Page 159\]](#)

[CLOI_RET_VAL \[Page 161\]](#)

[CLOI_PLORDI_IMP \[Page 162\]](#)

[CLOI_PLORDU_IMP \[Page 165\]](#)

[CLOI_PLORDD_IMP \[Page 167\]](#)

[CLOI_PLORD_OPRU_IMP \[Page 168\]](#)

[CLOI_ORDI_IMP \[Page 171\]](#)

[CLOI_ORDU_IMP \[Page 173\]](#)

[CLOI_ORD_OPRU_IMP \[Page 175\]](#)

[CLOI_MAP_EXP \[Page 179\]](#)

[CLOI_METHOD_LOG_EXP \[Page 180\]](#)

[CLOI_MESSAGE_LOG_EXP \[Page 182\]](#)

[CLOI_MSG_OBJ_LOG_EXP \[Page 183\]](#)

[CLOI_PLORD_EXP \[Page 184\]](#)

[CLOI_ORD_EXP \[Page 185\]](#)

[CLOI_PLORD_OPR_EXP \[Page 186\]](#)

[CLOIORD_OPR_EXP \[Page 187\]](#)

[CLOI_ORD_SEQ_EXP \[Page 188\]](#)

[Function Module CLOI_MESSAGES_TEXT_GET \[Page 189\]](#)

[CLOI_LANGU \[Page 190\]](#)

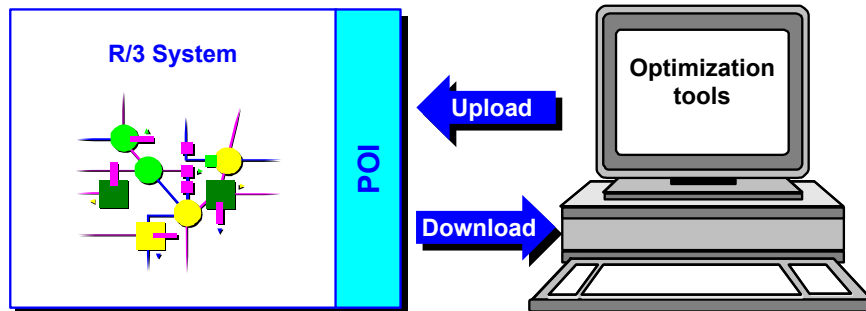
[CLOI_MSG_IMP \[Page 191\]](#)

[CLOI_MSG_TEXT_EXP \[Page 192\]](#)

Production Optimization Interface (POI): Overview**Production Optimization Interface (POI): Overview**

Optimization programs are implemented in production planning for expensive and complex productions.

POI (**P**roduction **O**ptimization **I**nterface) is an open interface that allows an SAP R/3 System user to access and use the functionality of these optimization programs.



The above graphic shows the data transfer from R/3 to an external optimization program. The optimized data is returned to the R/3 System.

POI belongs to the Production Planning module and can be used at the following levels: Master Production Scheduling (MPS), Material Requirements Planning (MRP), and Shop Floor Control (SFC).

The process includes three steps:

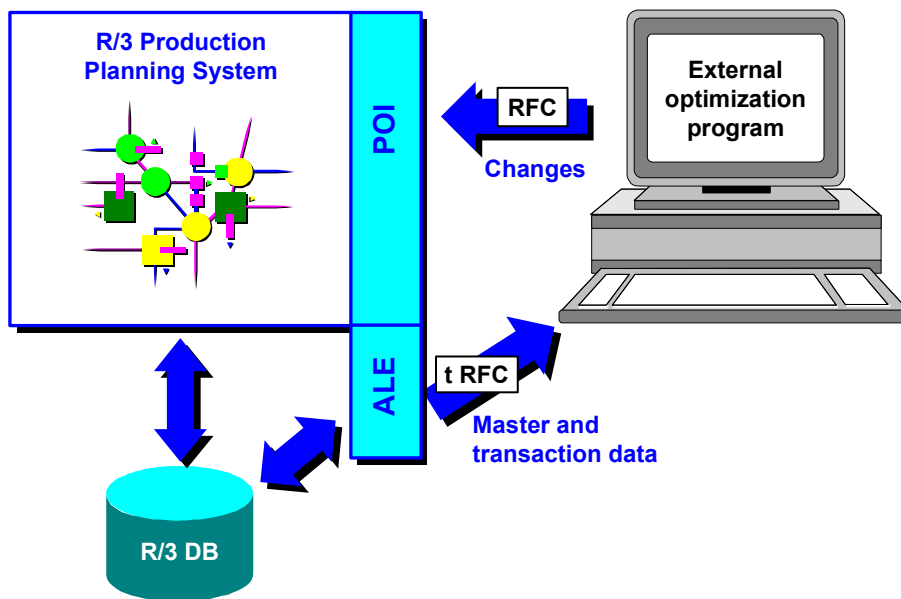
1. Data download: SAP R/3 → Optimization program (send data)
2. Optimization (external optimization program)
3. Data upload: Optimization program → SAP R/3 (receive data)

You can either send data manually or have it sent in the background.

You select the data to be transferred on two selection screens.

To exchange data using POI, various [requirements \[Page 66\]](#) must be fulfilled.

Production Optimization Interface (POI): Overview



The above graphic illustrates the data transfer process.

Asynchronous communication using ALE and IDocs occurs during the download.

Optimization takes place following the transfer of data to the external optimization system.

The optimization system can change, create and delete planned orders, run schedule headers, production and process orders and change operations. This data is transferred synchronously using RFC (upload).

You can use POI to optimize production planning taking into account various conditions or to optimize capacity in repetitive manufacturing. You will find a description in the section [Application Scenarios \[Page 67\]](#).

Prerequisites

Prerequisites

The following **prerequisites** must be met if you want to use the interface:

- Valid bill of material
- Valid routing
- Valid settlement profile (Customizing: *Production Orders* → *Master Data* → *Orders*)
- The production version, if used, must be valid for the time and lot size specified
- Material availability: the material must be available in sufficient quantity or the indicator for the material availability check cannot be set for the status *created* or *released* (Customizing *Production Orders* → *Operations* → *Availability Check* → *Check Control*).
- If the production order is to be costed, activity types and activity prices must be maintained in the work center or cost center

Application Scenarios

This section describes two possible application scenarios for the Production Optimization Interface (POI).

1. [Optimizing Capacity by Sequencing in Repetitive Manufacturing \[Page 68\]](#)
2. [Optimizing Production Planning Considering Various Conditions \[Page 69\]](#)

Optimizing Capacity by Sequencing in Repetitive Manufacturing

Optimizing Capacity by Sequencing in Repetitive Manufacturing

Goal: maximum capacity utilization of production lines

Repetitive manufacturing requires the maximum utilization of capacity on production lines. This goal can be reached, for example, by minimizing setup times. One typical procedure might be as follows:

1. Planning for repetitive manufacturing in the SAP R/3 System occurs using the planning table or material requirements planning.
2. Data exchange SAP R/3 → external system
 - Selection of all required master data (materials, bills of material, routings, work centers, etc.)
 - Selection of all required transaction data (planned orders, current stock/requirements list, run schedule headers, etc.)
3. Planning and optimization in the external system with the goal to minimize setup times:
 - Sequence of planned orders defined corresponding with setup transitions
 - Production line (and routing assigned to it) determined for each planned order by production version
4. Data exchange external system → SAP R/3
 - All order finish dates affected are changed in the R/3 System
 - A different routing is assigned to the planned order by production version in the R/3 System

Optimizing Production Planning Considering Various Conditions

Goal: orders or operations are to be dispatched so that existing conditions are met

Production planning often demands that existing conditions, such as material availability, capacity availability or order priorities, are taken into account.

One possible way you can optimize production planning is as follows:

1. Planning in the SAP R/3 system occurs, for example, using demand management, material requirements planning and/or master production scheduling.
2. Data exchange SAP R/3 → external system
 - Selection of all required master data (materials, bills of material, routings, work centers, etc.)
 - Selection of all required transaction data (planned orders, current stock/requirements list, run schedule headers, etc.)
3. Planning and optimization in the external system with the goal to take existing conditions into account:
 - Dates for planned and production orders are set
 - Production versions and routings for respective planned and production orders are determined
 - Planned and production orders can be created or deleted
 - Operation dates are reset
 - Work centers for operations are specified
4. Data exchange external system → SAP R/3
 - Order start date and/or production version (and routings) of affected planned and production orders are changed in the R/3 System
 - Planned and production orders can be created or deleted
 - Operation dates are reset

Communication

Communication

Communication occurs with the help of [ALE \[Page 71\]](#) and transactional RFC during download and only [RFC \[Page 72\]](#) during upload.

For additional information, refer to:

[Communication: ALE \[Page 71\]](#)

[Communication: RFC and TRFC \[Page 72\]](#)

Communication: ALE

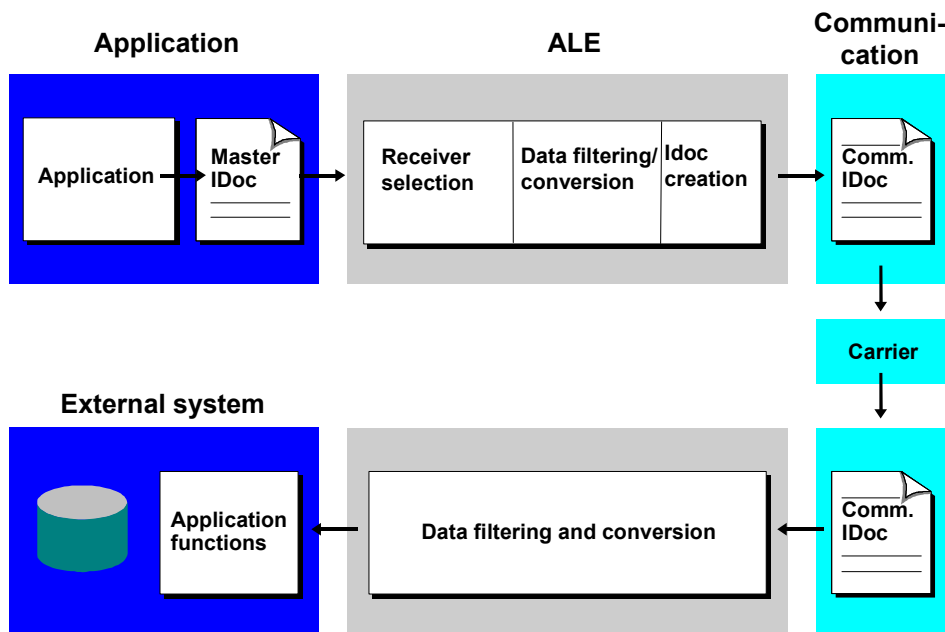
During the download, data is sent by ALE (Application Link Enabling). ALE supports the creation and operation of distributed applications, and enables the business-driven interchange of messages between computer systems in a distributed environment. Data consistency is maintained throughout the network. Application integration is not achieved through a central database, but through synchronous and asynchronous communication.

ALE consists of the following three layers:

- Application services
- Distribution services
- Communication services

Data is sent asynchronously from the SAP R/3 System to the optimization system with POI.

The data exchange between SAP systems and external systems takes place through data containers called [IDocs \(intermediate document type\)](#) [Page 73]. IDocs have a neutral data structure. The external system, however, must contain an 'inbound_IDoc_process' function which is necessary for inbound processing on the external side of the exchange.



The above graphic illustrates communication between the SAP R/3 System and an external system

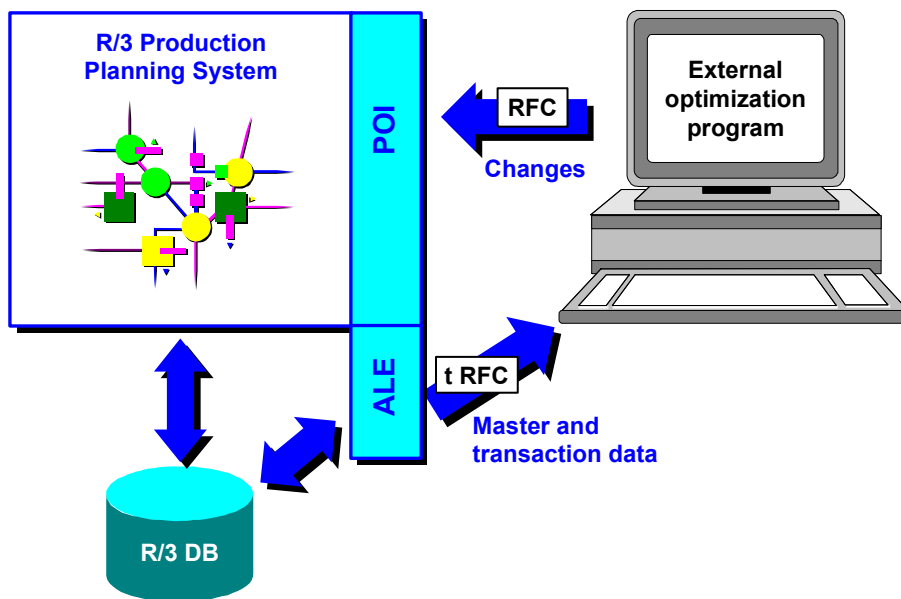
Communication: RFC and TRFC

Communication: RFC and TRFC

Communication between an optimization system and the SAP R/3 System is possible using Remote Function Call (RFC). An RFC is a communication technique developed by SAP in order to provide an easier transfer of data between different systems.

In transactional RFCs, the data is saved temporarily before being sent so that the application and communication are balanced out.

You will find a more detailed description of RFCs in the corresponding documentation in *CA Cross-Application Functions*.



The above graphic illustrates the data transfer between R/3 and the external system.

IDoc Basic Structure

An IDoc consists of a **header line**, several connected **data segments** and **status records**.

Function of IDoc Elements

Element	Function
Header	Defines the content, structure, sender, receiver and status of the IDoc
Data segment	Consists of a "leader" (consecutive segment number and a description of the type of segment) and a field string 1000 characters long (containing segment data)
Status records	Describe processing steps of the IDoc up to the present

For more detailed information about IDocs, refer to the *Consultant's Guide to ALE*. To view specific IDocs, follow the menu path *Tools → Business Framework → ALE → Development*. In the ALE Development screen, follow *IDoc → IDoc Basis → Documentation → IDoc types*

Data Exchange: Download

Data Exchange: Download

You can select the data to be sent to an optimization program on two selection screens. The data is separated into master data and transaction data. A special [IDoc \[Page 91\]](#) is created for each business object and is forwarded to the ALE layer to be sent.



Note the [requirements \[Page 66\]](#) for data exchange using the Production Optimization Interface (POI).

See also:

[Master Data \[Page 75\]](#)

[Transaction Data \[Page 83\]](#)

[Monitoring: Download \[Page 89\]](#)

[Customizing Settings: Download \[Page 85\]](#)

Master Data

Master data that can be sent to an optimization program includes:

- Materials
- Bills of material
- Routings
- Work centers
- Work center hierarchies
- Resource networks
- Factory calendars
- Object classifications
- Product group
- Transition matrix

The interface only supports the exchange of the entire data record. Currently it is not possible to send changes made since the last exchange of data between the R/3 System and an external system.

Once the master data has been selected, it can either be transferred manually or in a batch job.

[IDocs \[Page 91\]](#) are created for each business object. The IDocs are clearly structured so they can be read more easily by the external system.

By reducing the IDocs, it is possible to use and define additional message types (see the implementation guide for *ALE*).

IDocs for Master Data Download

Master data	Master IDoc type	Predefined message type
Materials	MATMAS03 [Page 98]	MATMAS
Bills of material	LOIBOM01 [Page 93]	LOIBOM
Routings	LOIROU01 [Page 111]	LOIROU
Work centers	LOIWCS02 [Page 105]	LOIWCS
Work center hierarchy	LOIRNH01 [Page 110]	LOIRNH

Master Data

Resource network	LOIRNH01 [Page 110]	LOIRNH
Factory calendar	LOICAL01 [Page 104]	LOICAL
Object classification	CLFMAS01 [Page 117]	CLFMAS
Number of transferred IDocs	LOINUM01 [Page 119]	LOINUM
Product group	LOIPGR01 [Page 142]	LOIPGR
Transition matrix	LOITMXL01 [Page 140]	LOITMX

See also:[Selection of Master Data \[Page 77\]](#)

Master Data Transfer

You can send either all the relevant data or limit the data transfer to changes that were made since the last complete data transfer.

For more information, see [Transfer Mode \[Page 78\]](#).

You must also define the optimization system that will receive the master data.

See also:

[Select Master Data for Transfer \[Page 80\]](#)

Transfer Mode

Transfer Mode

In order to recognize changes in the master data objects, POI uses SMD functions (shared master data tools) that already exist in the standard R/3 System. For further information on SMD tools, see the R/3 Library, *Cross Applications* → *BFA* → *BFA-ALE /Programming*.

Choose *Distribution using message types* → *Master Data Distribution* → *Processing outbound master data*

When downloading data in POI, you have the choice between two modi, 'complete' or 'changes'.

Transfer mode Complete:

If you select **Complete** mode, all the master data corresponding to the selection criteria specified in the master data selection screen is sent. Change pointers for message types for master data objects relevant to the download to the external optimization system are set to 'processed'. This ensures that if data is changed and transferred at a later date, only the data changed since the latest complete transfer will be downloaded.



Using reduced message types for POI instead of basic ones prevents problems if another application that is using change pointers together with a basic message type such as MATMAS updates, activates or deactivates the POI change pointers. Before you decide to use message types together with change pointers, make sure you won't run into such problems.

Transfer mode Changes:

If you select **change** mode when master data objects are entered at a later date, only data that has been changed since the latest complete download is sent. Changes in this case include new entries, changes to objects and deletions.

A complete data download takes place for master data objects that are not supported by the change mode.

In transfer mode change, as in the case of a complete master data download, all change pointers for message types that are sent to the external optimization system are set to 'processed'.

Change Pointers

Depending on the message types that were set in Customizing, change pointers are written when changes are made to a master data object. POI processes the change pointers, which in turn cause those master data objects that were changed in R/3 to be sent again to the external logical system.

When making Customizing settings for POI, you must also specify the reduced message types that will be sent to the external system. POI uses the settings, reads the message type change

pointers, and processes them. (See IMG for information on Customizing settings for activating the writing of change pointers.)

The following objects are supported when downloading master data changes:

- materials
- bills of material
- routings

Make sure obsolete and processed change pointers are deleted periodically. Otherwise, performance could slow down.

If the external system receives an IDoc of an object, all information pertaining to it must be replaced completely with the new information.

In order to download changes in POI, you must make the appropriate settings in Customizing.

To register and process data changes in POI, you must activate the writing of change pointers.

You must also activate the usage of change pointers in Customizing under *Data Transfer Parameters for POI* → *Define General Settings for Data Transfer Parameters*. If this setting has not been maintained, the change pointers are not read or updated, nor is it possible to download data changes.

See also *Procedure: Customize Settings, Step 3*.

Reduced message types and the download of data changes:

If you are using the data changes download together with reduced message types, keep in mind that a material master IDoc will only be downloaded again if the changed field in the material master is also contained in the reduced message type. If a field is changed in the material master and it is not contained in the reduced message type, the corresponding material IDoc will not be sent again. Changes in the material master are registered by individual fields.

No change pointers are written if changes are made to the material master long text (segments E1MTXHM and E1MTXLM) and the IDoc is not resent.

In the case of BOM and routing IDocs, however, data changes are registered for the entire object. Thus the change in a specific field of a BOM or routing will not be registered. Only the BOM or routing itself will be registered as having been changed. For this reason, it could happen that a BOM or routing IDoc is sent even though one of the fields that was changed is not contained in the reduced message type.

Further information regarding the download of data changes, consult the POI Implementation Guide (IMG) under *Logistics General* → *Supply Chain Planning Interfaces* → *Production Optimization Interface*.

Procedure: Select Master Data

Procedure: Select Master Data

1. Choose menu options *Logistics* → *Central functions* → *SCP Interfaces*. Choose *SCPInterfaces* → *POI* → *Send* → *Master Data*. You access the screen, *Select Master Data for Transfer*.
2. This screen is divided into sections covering the different types of master data that can be selected for transfer. Make your selections and entries.

Section 1: Select Master Data for Transfer

	Activities	Notes
Transfer Mode	1. Select the radio button that corresponds to the type of data transfer you want to make.	<p>If you choose Complete, all master data corresponding to your selections in this screen is sent.</p> <p>If you choose Changes, only data that has been changed since the last complete download is sent.</p> <p>See also: Transfer Mode [Page 78]</p>
Optimization System	<ol style="list-style-type: none"> 2. Enter the logical system. Before you can enter an optimization system, you must first create the corresponding logical system in Customizing. To do this, in the implementation guide, choose <i>ALE Settings for POI</i> in the SCPI IMG. Carry out the appropriate setting in the section <i>Basic Configuration</i>. 3. For more detailed information, refer to the implementation guide for ALE. 	<p>All parameters you chose for the last selection are automatically saved as a variant under the name <code><optimization system>_1</code>. You can use this name in a batch job. You can also save several variants and use them for a batch job.</p> <p>If you enter <code><optimization system></code> and press ENTER, the selection parameters that were last maintained are displayed. However, this way of simplifying selection is only possible if you did not enter any other selection criteria besides the optimization system when you released the data.</p>
Materials	<ol style="list-style-type: none"> 4. Enter the plant, materials and any other necessary data. 5. Flag selection indicators 	Plant is a mandatory field.

Section 2: Select Master Data for Transfer

Selection Parameters	Activities	Notes
----------------------	------------	-------

Procedure: Select Master Data

Entry type	<ol style="list-style-type: none"> 1. Select the type of entry for database reading period (for example, day, month, etc.). 2. Enter the start and end date. 3. Enter the upper and lower limits of the lot size range. 	These settings are valid for the selection of BOMs and routings. When you enter this information, all corresponding alternatives (in multi-level BOMs) and change statuses (in changes with engineering change management) are selected.
Lot size		
BOM	<ol style="list-style-type: none"> 4. Select one of the radio buttons: <ul style="list-style-type: none"> • No BOM selection • BOM for material above • BOM for... 5. Enter the plant to limit selection. 	<p>If you choose option 'BOMs for material selected above', the material you entered in section 1 is used.</p> <p>If you do not want to use the material selected in section 1, choose option 'BOM for' and enter the plant and material in the appropriate fields</p>
Routing	Same as for BOM	
Work Center	Same as for BOM	Segment E1KAREL in the work center IDoc transfers available capacity for specific time periods and work centers. Define the time period by entering a start and end date. If you don't enter a time period (default), this segment won't be filled and no capacity information will be transferred. Work centers belonging to a specific plan can be sent automatically. IDocs corresponding to work centers in the selected routings, in this case, work centers contained in segments E1PLPOL-ARBID and E1PORSL-ARBID are sent. If the segments are reduced, no data is transferred for these work centers. If warehouse resources are being used, those for field E1PLMZ-LGORT are sent. This also applies to warehouse resources for production versions of a material and its routing in which case the work centers are automatically transmitted.
Other options	Select	Limit the selection by entering:

Procedure: Select Master Data

Hierarchy	hierarchies	plant
Resource network	networks	plant
Factory calendar	calendar	year
Classification/characteristic	class (mandatory)	class type (mandatory)
Product group	product groups	plant
Transition matrix	Enter matrix ID PI for Process Industry or PP for non-process industry	plant

3. Choose the menu options *Program* → *Execute*.

You can also let the program run as a batch job. To do this, choose the menu options *Program* → *Exec. in background*.

The corresponding IDoc is created and forwarded to the message distribution level of ALE.

You will receive a message once the IDoc has been forwarded successfully.



You can define additional selection parameters for bills of material and routings in Customizing for POI.

Transaction Data

Transaction data that can be exchanged with the optimization system includes:

- planned orders
- production orders/process orders
- stock/requirements list
- run schedule headers
- warehouse stock
- production campaigns

After the transaction data is selected, the data is transferred manually or in a batch job.

[IDocs \[Page 91\]](#) are created for each business object.

IDocs for Transaction Data Download

Transaction data	Master IDoc Type	Predefined message type
Planned orders	LOIPLO01 [Page 120]	LOIPLO
Production orders/ process orders	LOIPRO01 [Page 124]	LOIPRO
Stock/requirements list	LOISTD01 [Page 135]	LOISTD
Run schedule headers	LOIRSH01 [Page 138]	LOIRSH
Warehouse stock	LOIMSO01 [Page 145]	LOIMSO
Production campaigns	LPIPCM01 [Page 146]	LPIPCM

See also:

[Select Transaction Data \[Page 84\]](#)

Procedure: Select Transaction Data

Procedure: Select Transaction Data

1. Choose the menu options *Logistics → Central functions → SCP Interfaces*
SCP Interfaces → POI → Send → Transaction Data. You access the screen, *Select Transaction Data for Transfer*.
2. Enter the optimization system in the appropriate field.



Before you can enter an optimization system, you must first create the corresponding logical system in Customizing. To do this, choose *ALE Settings for POI* in the SCPI Implementation Guide. Make the appropriate settings in the section *Basic Configuration*.

For more detailed information, refer to the Implementation Guide for ALE.

3. In the section *Selection parameters*, enter the entry type and the start and finish dates. These entries are valid for the selection of planned orders, production/ process orders, current stock/requirements lists, run schedule headers, and production campaigns.
To transfer data from master production scheduling, enter the planning scenario as well.
4. In the section *Global selection parameters*, enter the parameters you want to use for selecting planned orders, production/process orders, run schedule headers, current stock/requirements lists, warehouse stock, or production campaigns.
The selection occurs by material and/or routing.
5. In the appropriate sections, select the planned orders, production/process orders, run schedule headers and current stock/requirements lists for the data transfer. Choose the option *(object) for general selection*, if you want to use the criteria specified in the section *General selection parameters*. Choose the option *Planned orders for*, *Production orders for*, *(Process orders for)*, *Current stock/reqmts list for* or *Run sched. hdrs for*, if you do not want to use the parameters in the section *General selection parameters*.
6. If you choose global selection or enter your own selection in the section *Selection Parameters for Warehouse Stock*, the following field is mandatory: *Storage Location*. If you are using selection parameters, the field: *Plant* is mandatory. To include all storage locations, enter an asterisk (*) in the *Storage Location* field. Other parameter selection data is optional.
7. If you are using *Selection parameters for production campaign*, you must make an entry in one of these fields: *production campaign* or *plant*.

Customizing Settings: Download

Before you use the Production Optimization Interface, you must make several settings in Customizing.

You will find specific instructions in the implementation guide (IMG), *Logistics General* → *Supply Chain Planning Interfaces* → *Production Optimization Interface* →

- ALE Settings for POI.
- Data Transfer Parameters for POI
- Activate Change Pointers

ALE settings for POI

In ALE settings you define the logical system and communication.

Logical System: Activities:	Notes:
<ul style="list-style-type: none"> • Maintain logical system (Cross-Application Components → Distribution (ALE) → Basic configuration → Set up logical system → Maintain logical systems) • Assign logical system to client (for R/3 System only)(Cross-Application Components → Distribution (ALE) → Basic configuration → Set up logical system → Allocate logical system to the client) 	<p>The logical system is used on the selection screen for entering the target optimization systems. You can use as many logical systems as you like for a physical optimization system.</p> <p>Set up a logical system for R/3 if it doesn't already have one, and assign it to a client. The external logical optimization system is not assigned to a client</p>

Communication: Activities	Notes:
<ul style="list-style-type: none"> • Define RFC destination (Cross-Application Components → Distribution (ALE) → Communication → Define RFC destination → TCP/IP connections) 	<p>Standard settings for POI:</p> <p>ALE destination Connection type T Activation type: Register Program ID: <Name 1></p> <p>RFC destination R/3 → external system</p> <p>Connection type T Activation type: Register Program ID: <Name 1> The <Name 1> identifier is provided by the external optimization system.</p>

Customizing Settings: Download

<ul style="list-style-type: none"> Define port for RFC destination (Cross-Application Components → Distribution (ALE) → Communication → Manual maintenance of partner profiles → Define port → Transactional RFC) 	<p>Standard settings for POI:</p> <p>Port: <generated automatically> Description: <enter a description> Logical destination: <above defined RFC destination for ALE></p>
<ul style="list-style-type: none"> Reduce interim structures for IDocs: (Cross-Application Components → Distribution (ALE → Master data distribution → Create reduced message types for master data.) 	<p>For each logical system and each basic message type (for example, LOIBOM), a unique message type has to be defined by reducing the original one (for example, MYBOM). A list of the IDocs used with POI is included in the section IDocs [Page 91].</p> <p>You can also activate the writing of change pointers for reduced message types in this step.</p> <p>If you reduce a message type, only the obligatory fields are automatically selected. You must select those segments and fields you want to have transferred. Fields that have not been selected for transfer always contain the value “/”.</p>
<ul style="list-style-type: none"> Maintain partner profile (Cross-Application Components → Distribution (ALE) → Communication → Manual maintenance of partner profiles → Maintain partner profile) 	<p>Standard settings for POI:</p> <p>Partner number: <external logical system> Partner type: LS Classification Partner class: i.e. LOI Partner status: A Outbound parameters</p> <p>Each of the message types of the customer distribution model (see above) must be assigned to the partner profile. Enter the receiver port (see above), package size, output mode and IDoc type in the detail screen of the receiver port. You must also define whether the IDocs should be sent immediately, or if they should be collected first.</p>
<ul style="list-style-type: none"> Maintain customer distribution model directly (Cross-Application Components → Distribution (ALE) → Distribution customer model → Maintain customer distribution model directly) 	<p>First define a customer model for a logical R/3 system. The displayed list shows which logical system is the sender and all the possible receiving systems that have been defined. "Create message type" defines which logical system receives information from the logical R/3 system.</p> <p>When maintaining the customer distribution model, you usually add all (reduced) message types that should be sent from the R/3 system to the external system.</p>

Data Transfer Parameters for POI

You must make the following settings in Customizing to enable a data exchange between R/3 and an optimization system:

- Filter for task list usage
- Filter for task list status
- Filter for bill of material usage
- Filter for bill of material status
- Available capacity version
- Filter for production/process orders
- Filter for control keys
- Procedure to search for planned orders by work centers

Activate Change Pointers

Before you can download data, you must activate the writing of change pointers in Customizing:

- Activate change pointers in general
- Activate change pointers for message types (ONLY in exceptional situations in which you use message types that are not reduced). If you are using reduced message types, as recommended, you can activate them at the same time you reduce them.



Turn change pointers on or off in SCPI → POI → Data Transfer Parameters for POI
→ Define general settings for data transfer parameters

Procedure: Monitor Download

Procedure: Monitor Download

Choose the menu options *Logistics → Central Functions → SCP Interfaces*. You access the *SCPI* screen.

You have the following display options:

- You can select and display the IDocs transferred to the ALE layer according to various criteria.
- You can display the transactional RFCs that were not yet successfully executed.

To display IDocs transferred to the ALE layer:

1. Choose the menu options *SCPI → Environment → Monitoring → IDoc overview*.
2. You access the *IDoc Lists* screen.
3. Select the desired IDocs by:
 - Date and time created.
 - Logical message type, message code or message function.
 - Partner type, partner function or partner number of the sender or receiver.
4. Choose the menu options *Program → Execute*.
5. You get an overview of all transferred IDocs.

To display the IDocs that were **not** yet successfully transferred by transactional RFC:

1. Choose the menu options *SCPI → Environment → Monitoring → Transactional RFC*.
2. You access the *Transactional RFC* screen.
3. You have the following options:
 - Select IDocs by display period (Enter a display period.)
 - Select IDocs transferred by a certain user (Enter a user name.)
4. Choose the menu options *Program → Execute*.
5. You get an overview of all IDocs that were not yet transferred.

Monitoring the Download

Once data is forwarded to the optimization system, you can monitor how IDocs are created and transferred with the following functions:

- IDoc overview
You can select all IDocs transferred to the ALE layer according to various criteria and control the data sent.
- Transactional RFC
You can use this function to check whether the transactional RFC actually transferred data to the target system.
- Function Module CLOI_QUEUE_CHECK
With this function module you can monitor the entries to check if there were any problems during the transmission of the IDocs to the logical system. You can check the results in two tables: IDOC_QUEUE and TRFC_QUEUE and determine which of these two tables should be returned. You can define the maximum number of entries per table to avoid receiving very large quantities of data at once. You can also limit the choice of IDocs for a logical system by setting date and time restrictions.

If an IDoc in the IDoc queue has one of the following statuses, the entries are transmitted to the external system. If it has any other status, a transactional RFC is sent. It is not enough to check only the IDoc Queue because although an IDoc may have been created correctly, a problem could have occurred during transmission. Transmission problems are checked in table TRFC Queue

IDoc Queue

Status	Description	Possible reason for error
30	ale_ready_for_dispatching	Report RSEOUT00 for this IDoc has not yet been started Error/termination when calling up RSEOUT00
29	ale_service_error_out	ALE service error. Check partner agreement
20	edi_triggering_error	
26	edi_idoc_syntax_error_out	IDoc structure error
02	edi_file_error	Error occurred while writing file. This error occurs only when using a file port

TRFC Queue

Status	Description
RECORDED	The LUW was recorded and should be executed
EXECUTED	The LUW was executed. The entry will be deleted
CPICERR	Communication error or ABAP/4 error in LUW
SYSFAIL	Runtime error or error message during execution of LUW

Monitoring the Download

MAILED	CMC sent
READ	CMC transmitted to R/3 successfully
SEND	LUW being sent

For further information regarding the function module, see the function module interface and its online documentation.

For more detailed information, refer to the Implementation Guide.

(Cross-Application Components → Distribution (ALE) → Basic Configuration)

POI IDocs

This table provides an overview of the type of data that can be transferred from R/3 to external systems for optimization and the corresponding message types.

From R/3	To External Optimization System
Data	Message Type
Production/Process orders	LOIPRO
Planned orders	LOIPLO
Stock/requirements lists	LOISTD
Run schedule header	LOIRSH
Materials	MATMAS
Bills of material	LOIBOM
Work centers	LOIWCS
Resource network	LOIRNH
Work center hierarchy	LOIRNH
Routings	LOIROU
Calendar	LOICAL
Object classification	CLFMAS
Number of transferred IDocs	LOINUM
Transition matrix	LOITMX
Product group	LOIPGR
Warehouse stock	LOIMSO
Production campaigns	LPIPCM

In this document contains tables illustrating each of the POI IDocs and their segments. Each table represents an IDoc segment and contains a list of fields, a short description of each field, and the field lengths.



The data types listed here correspond to the data types each segment has in the R/3 System.

POI IDocs

In POI, data is transmitted in CHAR format. SAP offers conversion options (for example, to ISO codes) with adjustment possibilities for input fields in CHAR format. The following data types are among those that are converted:

- units of measurement (ISO code)
- currency code (ISO code)
- country code (ISO code)
- shipping instructions (ISO code)
- currency entry (mandatory conversion)
- dates and time specifications

Because of these conversion factors and depending on the data type, there are differences in the internal and external field lengths.



To convert units of measurement, in Customizing, follow *Global Settings → Check units of measurement*.

In this customizing step you can enter a corresponding ISO unit for every SAP one. If you don't enter an ISO unit, the SAP code is transferred in the IDoc. **Important:** Only the unit itself is converted, not the corresponding quantities, amounts, times, etc. There must be a 1:1 relationship between the ISO and SAP codes if you enter an ISO unit.

During the POI upload the ISO unit is automatically converted. Transferring SAP units can cause error messages in the POI upload log. If you do transfer unconverted SAP units, use the prefix SAP_CODE (upper case characters) in front of your unit. For example, use SAP_CODEKG for SAP unit KG.

For further information on conversion codes, see *Cross Applications → ALE → Consultant's Handbook* or *Programming* in the R/3 Library.

For specific information on the internal and external lengths of IDocs, follow the path *Tools → Business Framework → ALE → Development*. In the ALE development screen, follow *IDoc → IDoc basis → Documentation → IDoc types*

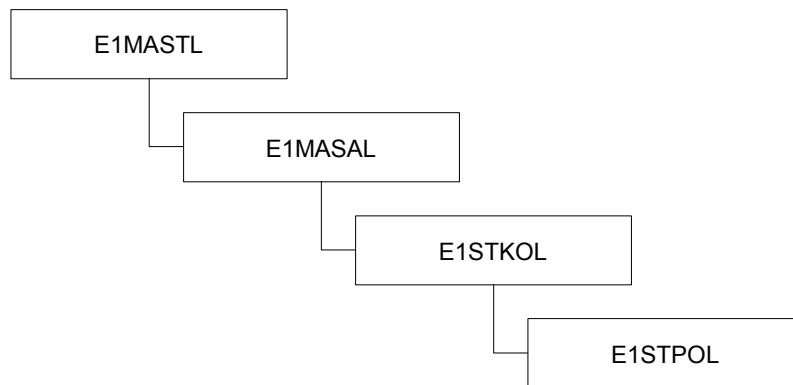


In the documentation as well as in the R/3 dictionary, all segments have the prefix E1 (for example, E1MAPL). As soon as the segments are transmitted via ALE, the prefix changes to E2. For instance, if you send segment E1MAPL in an IDoc to an external system, it will arrive labelled E2MAPL.

The different versions of a segment are identified by the number following the segment name (for example, E1CRHOL001). New versions are created whenever fields are added to a segment.

LOIBOM01

Structure of IDoc:



Field Content:

E1MASTL

Field	Description	Type	Length
MSGFN	Message function code	char	3
MATNR	Material number	char	18
WERKS	Key which uniquely identifies a plant	char	4
STLAN	Bill of material usage: specifies the enterprise area in which the bill of material can be used	char	1
STLNR	Key which uniquely identifies a bill of material	char	8
ZTEXT	Bill of material text	char	15

E1MASAL

Field	Description	Type	Length
MSGFN	Message function code	char	4
LOSVN	Lower limit of the lot size range	quan	14
LOSBS	Upper limit of the lot size range	quan	14
STLAL	Alternative bill of material	char	2

E1STKOL

LOIBOM01

Field	Description	Type	Length
MSGFN	Message function code	char	4
DATUV	Start of the validity period of an object (material, bill of material, routing)	dates	8
DATUB	Finish of the validity period of an object (material, bill of material, routing)	dates	8
STKTX	Text describing an alternative or variant	char	40
STLST	Key describing the current processing status of the bill of material (active, inactive)	numc	2
BMEIN	Unit of the bill of material base quantity	unit	3
BMENG	Base quantity: quantity to which all component quantities in a bill of material refer	quan	14

E1STPOL

Field	Description	Type	Length
MSGFN	Message function code	char	3
ALPGR	User-defined character string used to combine alternative items in a bill of material	char	2
ALPOS	Indicator for alternative item allows several components to be created for one item and then used as alternatives	char	1
ALPRF	Place value of the item within the alternative item group that specifies the ranking order for planned dispatching	numc	2
ALPST	Specification of how selection of an item is controlled for planned withdrawal within an alternative item group	char	1
AUSCH	Percent of component scrap resulting during production	dec	7
AVOAU	Scrap expected for the quantity of a component to be processed in an operation	dec	7
BEIKZ	Key identifying the item as a part to be provided	char	1
CLASS	Name which uniquely identifies a class in a class type	char	18
DATUB	Finish of the validity period of an object, such as material, bill of material or routing, in the SAP System	dates	8
DATUV	Start of the validity period of an object, such as material, bill of material or routing, in the SAP System	dates	8
ERSKZ	Key identifying the item as a spare part	char	1

EWAHR	Percentage for the probability that an object is used in production	dec	5
FMENG	Indicator specifying that the component quantity is constant	char	1
IDNRK	Number of the object, such as material or document, that you create, change or display. Generally, a data record is maintained in the system for the component	char	18
KLART	Unique identification of a class type	char	3
KZKUP	Indicator identifying the item as a co-product	char	1
KZNFP	Indicator identifying the item as a follow-up item. In discontinued parts, the dependent requirements no longer covered by the warehouse stock of a material are copied to this follow-up item.	char	1
LGORT	Number of the storage location where the material is stored. One or more storage locations can exist within a plant.	char	4
LIFNR	Account number of supplier or vendor	char	10
LIFZT	Specifies the delivery time for a material in days	dec	5
MEINS	Unit of the component quantity	unit	3
MENGE	Quantity of the component which refers to the base quantity of the product	quan	14
NETAU	Indicator specifying that the operation scrap of a component is calculated on the basis of the net required quantity (that is, required quantity without the assembly scrap) from the material master record of the assembly	char	1
NFEAG	User-defined character string used to combine discontinued items in a bill of material that belong together	char	2
NFGRP	User-defined character string used to combine follow-up items in a bill of material that belong together. The follow-up group determines which discontinued items are to be replaced with these follow-up items	char	2
NLFZT	Number of workdays indicating either the follow-up time or the lead time of a component (depending on its preceding character) in reference to the start date of the superior assembly	dec	5
OBJTY	Key assigning the bill of material item to a group of objects with the same attributes, such as material or document	char	1
PEINH	Number of units of measure to which the price refers	dec	7
POSNR	Number of the bill of material item	char	4
POSTP	Division of items in a bill of material according to predefined criteria, such as by object reference (material master record, document info record) or by inventory management	char	1

LOIBOM01

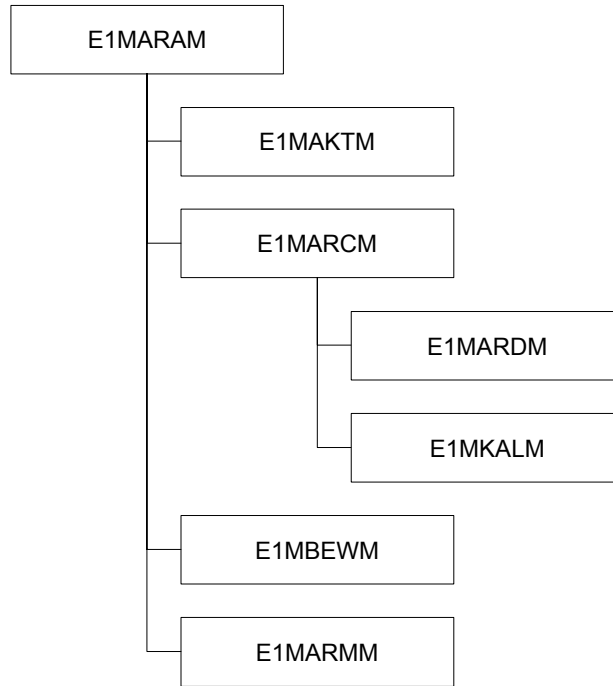
POTPR	Division of a class item depending on the object assignment to class type	char	1
POTX1	First of two text lines of up to 40 characters long describing the bill of material item	char	40
POTX2	Second of two text lines of up to 40 characters long describing the bill of material item	char	40
PREIS	Amount used for pricing of the non-stock item when costing the finished or intermediate product	curr	13
REKRI	Indicator that the system sets if a bill of material has a specific object with a subordinate item containing the same object	char	1
REKRS	Indicator controlling whether the system should carry out a check for recursiveness for the bill of material	char	1
RFORM	Key representing the algorithm used to calculate the variable-size item quantity (variable-size item)	char	2
ROANZ	Number of variable-size items required for assembly	quan	14
ROMEI	Unit for sizes	unit	3
ROMEN	Quantity of the variable-size item that the system calculates from sizes specified and the corresponding variable-size item	quan	14
ROMS1	A size of the variable-size item that can be used to calculate the variable-size item quantity as a variable in the respective variable-size item formula	quan	14
ROMS2	A size of the variable-size item that can be used to calculate the variable-size item quantity as a variable in the respective variable-size item formula	quan	14
ROMS3	A size of the variable-size item that can be used to calculate the variable-size item quantity as a variable in the respective variable-size item formula	quan	14
SANFE	Indicates that the BOM item is of significance to the production process	char	1
SANIN	Indicates that the BOM item is of significance to maintenance tasks	char	1
SANKA	Indicates that the BOM item is of significance to the preliminary calculation of costs incurred	char	1
SANKO	Indicates that the BOM item is of significance to the production and operational structure	char	1
SANVS	Indicates that the BOM item is of significance to the area responsible for shipping the product	char	1
SCHGT	Indicates that a BOM item is a loose material (bulk material) directly available at the work center, such as underlying mats or grease. Since the item is only used in small quantities and is of little value, it requires neither requirements planning nor order-related costing.	char	1

LOIBOM01

STKKZ	Indicator specifying that this BOM item is part of a technical object for which maintenance tasks are carried out	char	1
VERTI	Key specifying how the quantities influencing production are distributed among the lead time of a planned or production order. Determines the relationship between time and component usage.	char	4
WAERS	Key for the currency in which the amounts in the system are managed	char	3
WEBAZ	Number of workdays required for checking and storage after goods are received	char	5

MATMAS03

MATMAS03



The structure included here is only a small part of the MATMAS03 IDoc. For specific information on viewing IDoc structures, read the section on [IDocs \[Page 91\]](#).

Field Content

E1MARAM

Field	Description	Type	Length
MSGFN	Message function code	char	3
MATNR	Material number	char	18
BISMT	Number you use or previously used to manage the material, for example, in another system or in another index	char	18
BREIT	Width	quan	14
BRGEW	Gross weight per weight unit	quan	14
GEWEI	Weight unit	unit	3
HOEHE	Height	quan	14

MATMAS03

KZKFG	Configurable material	char	1
LAENG	Length	quan	14
MATKL	Key you can use to combine several materials or services that have the same attributes and assign them to a specific material group	char	9
MBRSH	Key specifying the branch of industry to which a material is assigned	char	1
MEABM	Unit in which the length, width and height of a material or packaging for a material is measured	unit	3
MEINS	Unit of measure in which the material stocks are managed. The system converts all quantities you enter in different units of measure (alternative units of measure) to the base unit of measure. In inventory management, the base unit of measure is the same as the stockkeeping unit.	unit	3
MTART	Key that assigns the material to a group of materials, such as raw materials, operating supplies, trading goods, etc.	char	4
NTGEW	Net weight of the material per weight unit. Weight refers to the unit specified in the field "Weight unit"	quan	14
SPART	Possibility of grouping materials, products and services. The system uses the division to determine the sales and business areas to which a material, product or service is assigned.	char	2
VOLEH	Unit for volume of the material. The volume can be, for example, the gross volume, net volume or the permitted packaging volume.	unit	3
VOLUM	Space area that the material occupies per volume unit. The volume refers to the unit specified in the field "Volume unit".	quan	14

E1MAKTM

Field	Description	Type	Length
MSGFN	Message function code	char	3
SPRAS	Language key indicates the language in which a text is entered, displayed and printed by the system	lang	1
MAKTX	Text describing the material in greater detail	char	40

E1MARCM

Field	Description	Type	Length
MSGFN	Message function code	char	3
WERKS	Key uniquely identifying a plant	char	4
AUSME	Unit in which the material is issued from the warehouse	unit	3

MATMAS03

AUSSS	Assembly scrap in percent	dec	5
BASMG	Quantity to which the material processing time refers if the in-house production time is lot-size dependent	quan	14
BEARZ	Processing time	dec	6
BESKZ	Indicator specifying how the material is procured (externally procured, produced in-house)	char	1
BSTFE	Lot size to be ordered or produced when a shortage occurs	quan	14
BSTMI	Minimum quantity for procurement (minimum lot size)	quan	14
BSTMA	Maximum quantity for procurement (maximum lot size)	quan	14
BSTRF	Rounding value for the purchase order quantity	quan	14
DISLS	Key specifying the lot size method used by the system to calculate the quantity to be procured or produced within materials planning	char	2
DISMM	Key specifying whether and how requirements are planned for a material	char	2
DISPO	Number of the MRP controller or MRP controller group	char	3
DZEIT	In-house processing time	dec	3
EISBE	Safety stock	quan	14
FEVOR	Group responsible for shop floor control of a materials	char	3
FFREI	Indicator specifying whether production orders are to be released automatically	char	1
FHORI	Key the system uses to determine the float times necessary for scheduling	char	3
FRTME	Production unit of measure	unit	3
FXHOR	The planning time fence specifies a period in which no changes can be made to the master production schedule	numc	3
KAUSF	Component scrap in percent	dec	5
KZKRI	Indicator for a critical (or important) part	char	1
KZKUP	Indicator specifying that the material can be a co-product	char	1
LGPRO	Issue storage location	char	4
MABST	Maximum quantity of the material in this plant	quan	14
MINBE	Reorder point	quan	14
MRPPP	Key uniquely identifying a PP planning calendar	char	3
MTVFP	Key specifying whether and how the system checks availability and generates requirements for materials planning	char	2
PLIFZ	Number of calendar days required for the external procurement of the activity or material	dec	3

RDPFR	Rounding profile used to adjust the order proposal quantity to deliverable units	char	4
RGEKZ	Backflush indicator	char	1
RUEZT	Setup and teardown times in days	dec	6
SAUFT	Indicator specifying that the material is allowed in repetitive manufacturing	char	1
SCHGT	Indicates that an item is a loose material available directly at the work center (bulk material)	char	1
SFEPR	Key uniquely identifying the repetitive manufacturing profile	char	4
SOBSL	Key you use to specify the predefined procurement type more precisely for the material by its material type	char	2
STRGR	The strategy group combines the possible planning strategies for a material	char	2
TRAME	The stock in transit is the quantity that was withdrawn from a plant during a stock transport order but not has not yet arrived in the receiving plant	quan	15
TRANZ	The interoperation time consists of move, queue, and wait times as well as the floats before and after production	dec	6
UEETO	Tolerance limit indicating the percentage of the quantity posted at goods receipt that can exceed the production order quantity	dec	4
UMLMC	The stock in transfer is the quantity that was already withdrawn from stock at the issuing plant but has not yet arrived at the receiving plant	quan	14
UNETO	Tolerance limit indicating the percentage of the quantity posted at goods receipt that can fall below the production order quantity	dec	4
WEBAZ	Number of workdays required for checking and storage after goods are received	dec	3

E1MARDM

Field	Description	Type	Length
MSGFN	Message function code	char	3
LGORT	Number of the storage location within a plant where the material is stored	char	4
DISKZ	Indicator specify that material requirements are planned for the storage location stock	char	1
LBSTF	Quantity to be ordered or produced if a shortage occurs in the storage location and storage location MRP is active	quan	14
LGPBE	Storage bin	char	10
LMINB	Reorder point for storage location MRP	quan	14

MATMAS03

LSOBS	Special procurement type for a material	char	2
-------	---	------	---

E1MKALM

Field	Description	Type	Length
MSGFN	Message function code	char	3
VERID	Production version	char	4
ADATU	Date from which the production version is valid	date	8
ALNAL	The group counter key together with the group uniquely identifies a task list	char	2
BDATU	Date to which the production version is valid	date	8
BSTMA	Upper limit of the lot size range	quantity	15
BSTMI	Lower limit of the lot size range	quantity	15
MDV01	Work center (production line entered for production version)	char	8
MDV02	Planning ID	char	8
PLNNR	Key for the group	char	8
PLNTY	Key distinguishing task lists by their functionality (for example, routing, reference operation set, rate routing, standard network, rough-cut planning profile, etc.)	char	1
SERKZ	Indicator specifying that a run schedule header can be created for this production version	char	1
STLAL	Bill of material alternative	char	2
STLAN	Specifies the enterprise area in which the bill of material can be used	char	1
TEXT1	Short description of the production version	char	40
VERTO	Key specifying how the production quantities are distributed in partial quantities among the duration of a planned or production order	char	4

E1MBEWM

Field	Description	Type	Length
MSGFN	Message function code	char	3
BWKEY	Organizational level where material valuations are carried out (for example, plant, company code, etc.)	char	4
BWTAR	Key uniquely identifying the individual valuated stocks of a material	char	10
BKLAS	Assignment of a material to a group of G/L accounts	char	4
PEINH	The price unit is the number of units of measure to which the price refers	dec	5

MATMAS03

STPRS	The standard price is the price at which a material is valued	curr	12
VERPR	Moving average price at which a material is valued. A material's price is adjusted to the fluctuations of the price for procurement.	curr	12
VPRSV	Indicator specifying whether the material is valued at the standard price, moving average price or periodic unit price	char	1
ZKDAT	Date from which the price of the material is valid	dates	8
ZKPRS	Price at which the material is valued from a specific time in the future	curr	12

E1MARM

Field	Description	Type	Length
MSGFN	Message function code	char	3
MEINH	Alternative unit of measure to the stockkeeping unit	UNIT	\$
BREIT	Width	quan	14
BRGEW	Gross weight per weight unit	quan	14
GEWEI	Weight unit	unit	3
HOEHE	Height	quan	14
LAENG	Length	quan	14
MEABM	Unit of length/width/height	unit	3
UMREN	Denominator for converting to base units of measure	dec	5
UMREZ	Numerator for converting to base units of measure	dec	5
VOLEH	Unit for volume of the material. The volume can be, for example, the gross volume, net volume or the permitted packaging volume.	unit	3
VOLUM	Space area that the material occupies per volume unit. The volume refers to the unit specified in the field "Volume unit".	quan	14

LOICAL01

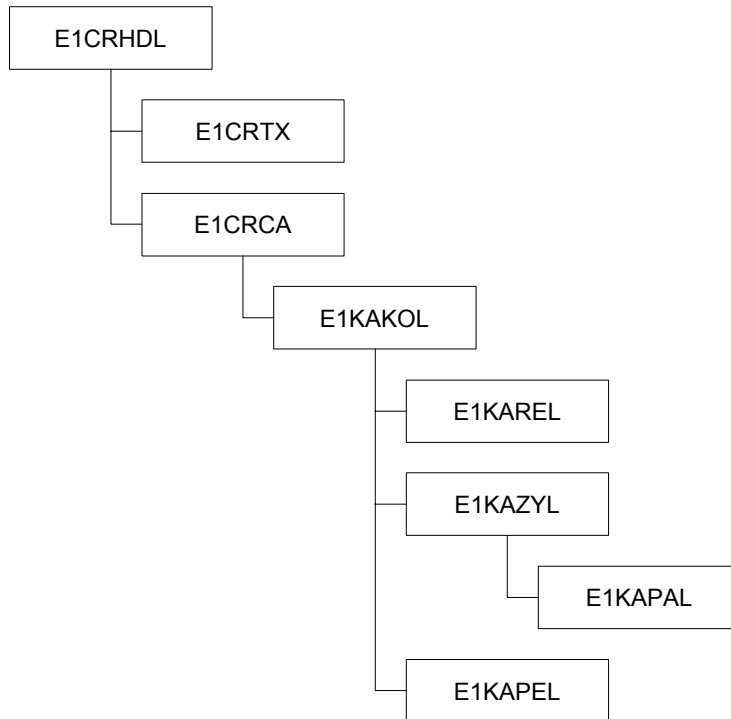
LOICAL01

E1TFACL

E1TFACL

Field	Description	Type	Length
MSGFN	Message function code	char	3
IDENT	Identification code for a factory calendar	char	2
JAHR	Storage year	numc	4
MON1-MON12	Field with 31 characters. Each character indicates whether a day is a work center or not.	char	31

LOIWCS02



E1CRHDL002

Field	Description	Type	Length
MSGFN	Message function code	char	3
OBJID	This internal number together with the object type identify the operating resources, such as work center or production resources/tools	numc	8
ARBPL	Key uniquely identifying the work center together with its plant	char	8
FORT1	Formula used to determine the setup duration of an operation in scheduling	char	6
FORT2	Formula used to determine the processing duration of an operation in scheduling	char	6
FORT3	Formula used to determine the teardown duration of an operation in scheduling	char	6

LOIWCS02

FORTN	Formula used to determine the duration of internal processing in scheduling (for example, in a network or in a maintenance order)	char	6
KAPID	Number uniquely identifying a capacity	numc	8
ORTGR	Key used to assign a physical location to a work center	char	4
PAR01-PAR06	Work center parameter (for formulas)	char	6
PARU1-PARU6	Unit of the parameter value	unit	3
PARV1-PARV6	Value assigned to the parameter as a constant (parameter value)	quan	10
PLANV	Key specifying the task list types in which the operating resources, such as work center or production resources/tools, can be used	char	3
STAND	Physical location of the work center	char	10
VERAN	Identifies the responsible person	char	15
VGM01-VGM06	Indicator you use to control whether the standard value can or must be entered	char	1
WERKS	Key uniquely identifying a plant	char	4
ZGR01-ZGR06	Performance efficiency rate key	char	3
RESGR 001	Matrix ID	char	8
LGORT_RES	Assigned storage location		
MIXMAT	Mixing of materials allowed		

E1CRTXL

Field	Description	Type	Length
MSGFN	Message function code	char	3
SPRAS	Language key indicates the language in which a text is entered, displayed and printed by the system	lang	1
KTEXT	Short description	char	40

E1CRCAL

Field	Description	Type	Length
MSGFN	Message function code	char	3
FORK1	Formula to calculate capacity requirements for setup	char	6
FORK2	Formula to calculate capacity requirements for processing	char	6
FORK3	Formula to calculate capacity requirements for teardown	char	6
FORKN	Formula to calculate capacity requirements for internal processing in the network or maintenance order	char	6
KAPID	Number uniquely identifying a capacity	numc	8

VERT1	Key specifying the distribution of capacity requirements in the operation segments setup, processing and teardown	char	8
VERTN	Key specifying the distribution of capacity requirements for internal processing in the network or maintenance order	char	8

E1KAKOL002

Field	Description	Type	Length
MSGFN	Message function code	char	3
KAPID	Number uniquely identifying a capacity	numc	8
AZNOR	Number of individual capacities of which a capacity group consists	int2	5
BEGZT	Start time (seconds)	int4	9
ENDZT	Finish time (seconds)	int4	9
KALID	Identification code for the factory calendar	char	2
KAPAR	Key describing the capacity category in greater detail	char	3
KPAVO	Indicator specifying that the available capacity of this capacity can be used by several operations	char	1
KAPEH	Capacity unit of measure	unit	3
KAPLPL	Indicator specifying that the capacity is not used in long-term planning	char	1
KAPTER	Indicator specifying that the available capacity and the capacity load are used in finite scheduling	char	1
MEINS	Unit of the capacity (hours)	unit	3
MOSID	Number identifying a group for shift sequences and shift definitions	numc	2
NAME	Name of the capacity	char	8
NGRAD	Relationship between the actual capacity of a machine and the theoretically available capacity in percent	numc	3
PAUSE	Break time in seconds	int4	9
PLANR	Number of the capacity planner group responsible for planning this capacity	char	3
POOLK	Indicator specifying that the capacity can be assigned to several work centers (pooled capacity)	char	1
UEBERLAST	Capacity overload indicates what percent the available capacity of this capacity can be exceeded	numc	3
VERSA	Number identifying the active version of the available capacity	numc	2
REFID 001	Capacity ID	numc	8

LOIWCS02

ANG_MIN	Minimum available capacity		
ANG_MAX	Maximum available capacity		
ANG_UNIT	Unit of measurement		

E1KAPEL

Field	Description	Type	Length
MSGFN	Message function code	char	3
MEINS	Unit of measure of the capacity	unit	3
NENNR	Denominator for converting to SI units	int4	9
MEINB	Base unit of measure of the capacity	unit	3
ZAEHL	Numerator for converting to SI units	int4	9

E1KAZYL

Field	Description	Type	Length
MSGFN	Message function code	char	3
DATUB	End of the validity period of an object	dates	8
VERSN	Version number of the available capacity	numc	2
ANZSH	Maximum number of shifts in a day within an interval	numc	1
ANZTG	Number of days after which the available capacity repeats (cycle length)	numc	2
DATUV	Start of the validity period of an object	dates	8
KKOPF	Indicator specifying that the available capacity in this interval corresponds to the standard available capacity	char	1
SPROG	Key specifying the sequence of shifts by one or more days	char	4

E1KAPAL001

Field	Description	Type	Length
MSGFN	Message function code	char	3
SCHNR	Shift number in a day	numc	1
TAGNR	Sequential number of the day within the available capacity cycle	numc	3
ANZHL	Number of individual capacities making up a capacity group	int2	5
BEGZT	Start time in seconds (internal)	int4	10
EINZT	Processing time in seconds (internal)	int4	10
ENDZT	Finish time in seconds (internal)	int4	10
FABTG	Indicator specifying that days in this interval of available capacity are workdays and the capacity is available	char	1

LOIWCS02

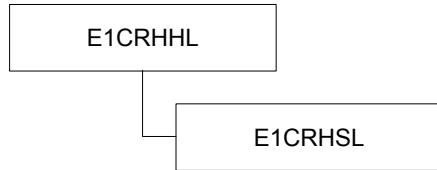
KAPAZ	Available capacity in the base unit of measure	int4	10
NGRAD	Relationship between the actual capacity of a machine and the theoretically available capacity in percent	numc	3
PAUSE	Break time in seconds (internal)	int4	10
TPROG	Key indicating a central shift definition in which the work start, work finish and break times are specified	char	4
ANG_MIN	Minimum available capacity		
ANG_MAX	Maximum available capacity		

E1KAREL

Field	Description	Type	Length
MSGFN	Message function code	char	3
VERSN	Available capacity version	numc	2
DATUV	Valid-from date	dates	8
DATUB	Valid-to date	dates	8
ANGEB	Available capacityr	fltp	16
KEINH	Unit capacity requirement	unit	3

LOIRNH01

LOIRNH01



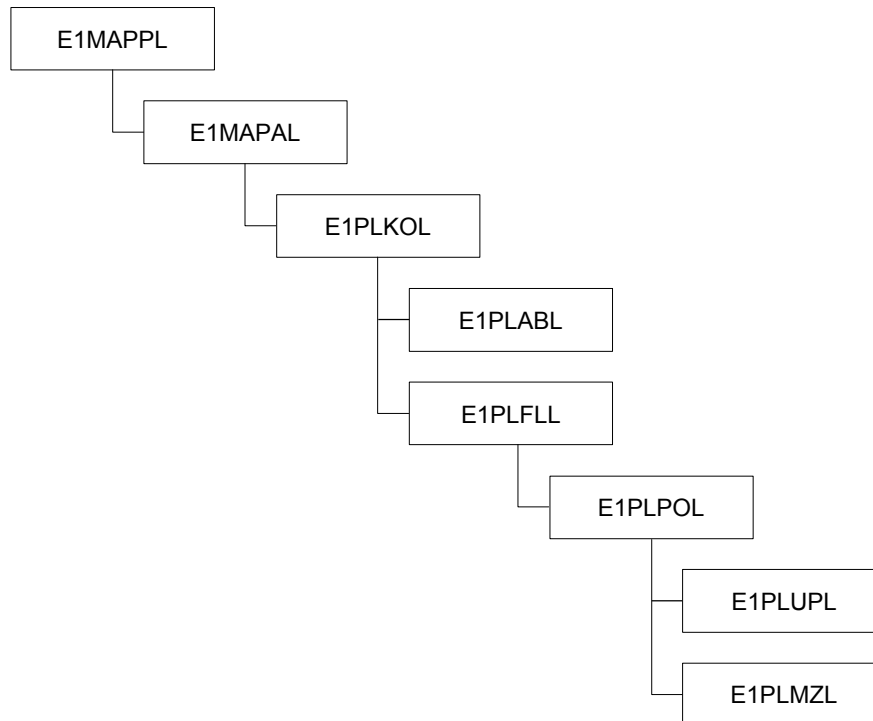
E1CRHHL

Field	Description	Type	Length
MSGFN	Message function code	char	3
OBJID	This internal number together with the object type identify the operating resources, such as work center or production resources/tools	numc	8
OBJTY	Internal key identifying a type of operating resource	char	2
NAME	Name of the work center hierarchy	char	10
NETWK	Network structure indicator	char	1
WERKS	Key uniquely identifying a plant	char	4

E1CRHSL

Field	Description	Type	Length
MSGFN	Message function code	char	3
OBJID_HO	OBJID of the work center or resource with a subordinate position in the hierarchy	numc	8
OBJID_UP	OBJID of the work center or resource with a superior position in the hierarchy	numc	8
OBJTY_HO	Object type of the work center or resource with a subordinate position in the hierarchy	char	2
OBJTY_UP	Object type of the work center or resource with a superior position in the hierarchy	char	2

LOIROU01



E1MAPLL

Field	Description	Type	Length
MSGFN	Message function code	char	3
MATNR	Material number	char	18
PLNNR	Key uniquely identifying a task list group	char	8
PLNTY	Key distinguishing task lists by their functionality (for example, routing, reference operation set, rate routing, etc.)	char	1
WERKS	Key uniquely identifying a plant	char	4

E1MAPAL

Field	Description	Type	Length
MSGFN	Message function code	char	3
PLNAL	This key together with the group uniquely identifies a task list	char	2
LOSBS	Upper limit of the lot size range	quan	14
LOSVN	Lower limit of the lot size range	quan	14

LOIROU01

E1PLKOL001

Field	Description	Type	Length
MSGFN	Message function code	char	3
DATUB	Finish of the validity period of the task list	dates	8
DATUV	Start of the validity period of the task list	dates	8
KTEXT	Short description of the task list	char	40
PLNME	Unit of measure of the material to be produced in the task list	unit	3
STATU	Status indicates the processing status of a task list, such as released	char	3
VERWE	Key specifying the area in which the task list can be used, such as production or plant maintenance	char	3
NETID	Resource object ID	numc	8

E1PLFLL

Field	Description	Type	Length
MSGFN	Message function code	char	3
PLNFL	Key identifying the sequence of operations within a task list	char	6
AUSCHL	Key controlling how a parallel sequence is structured within a task list. Used to control whether the floats are at the start or finish of sequences	char	1
DATUB	Start of the validity period for the sequence	dates	8
DATUV	Finish of the validity period for the sequence	dates	8
FLGAT	Key indicating a standard sequence, parallel sequence or alternative sequence	char	1
LOSBS	Upper limit of the lot size range valid for the alternative sequence	quan	14
LOSVN	Lower limit of the lot size range valid for the alternative sequence	quan	14
LTXA1	First line of text of the operation description	char	40
VORNR1	Number of the branch operation	char	4
VORNR2	Number of the return operation	char	4

E1PLPOL and E1PLUPL

Field	Description	Type	Length
VORNR	Key identifying an operation (only in E1PLPOL)	char	4
UVORN	Key identifying a sub-operation	char	4
ABLIPKZ	Indicator specifying that teardown and wait occur simultaneously	char	1

ANZZL	Number of capacities used to calculate the duration or work (only in networks, PM and PD)	int1	3
ARBEH	Time unit for work	unit	3
ARBEI	Work completed when carrying out the operation	quan	8
ARBID	Number uniquely identifying a work center	numc	8
AUFAK	Scrap allowed from an operation in percent	dec	7
BMSCH	Quantity of the material to be produced to which the operation standard values refer	quan	14
DATUB	Finish of the validity period of the operation or sub-operation	dates	8
DATUV	Start of the validity period of the operation or sub-operation	dates	8
DAUME	Time unit for the minimum duration of an operation (only for networks, PM, PD)	unit	3
DAUMI	Value of the minimum duration required to carry out an operation (only for networks, PM, PD)	quan	5
DAUNE	Time unit for the normal duration of an operation (only for networks, PM, PD)	unit	3
DAUNO	Value of the normal duration required to carry out an operation (only for networks, PM, PD)	quan	5
FLIES	Indicates continuous flow production	char	1
KALID	Key of the factory calendar	char	2
LAR01-LAR06	Activity type	char	6
MEINH	Unit of the material to be produced in the operation	unit	3
MINWE	Minimum quantity to be sent ahead when operations overlap	quan	13
PVZNR	Operation number of the superior operation for the phase	char	4
PEINH	Number of units of measure to which the price refers	dec	7
PREIS	Price for external processing	curr	13
PRZNT	Value indicating the percent of work to be used for the operation	int1	3
RASCH	Key defining how or by whom a machine or work center is to be set up	char	2
RFGRP	Classification combining setup group keys into a setup group category	char	10
RFSCH	Indicates operations with the same or similar setup conditions	char	10

LOIROU01

SPLIM	Number of partial lots in which a lot is divided or the number of individual capacities processing an operation in parallel	dec	5
SPMUS	Indicates that the operation is split	char	1
STEUS	Control key specifying how an operation or sub-operation is to be processed (whether costing or capacity planning takes place)	char	4
UEKAN	Indicator specifying that the operation is to be overlapped with the following operation if reduction of the execution time is possible	char	1
UEMUS	Indicator specifying that overlapping is required, which means the system always tries to overlap the operation with the following operation in scheduling	char	1
UMREN	Denominator for converting from header to operation unit of measure	dec	7
UMREZ	Numerator for converting from header to operation unit of measure	dec	7
USR04	User-defined field (length 10.3)	quan	15
USR05	User-defined field (length 10.3)	quan	15
USE04	User-defined field for maintaining the unit of quantity	unit	3
USE05	User-defined field for maintaining the unit of quantity	unit	3
VGE01-VGE06	Unit of the standard value	unit	3
VGW01-VGW06	Size of the standard value	quan	10
ZEILP	Unit of minimum wait time	unit	3
ZEITM	Unit of minimum move time	unit	3
ZEITN	Unit of normal move time	unit	3
ZEIWM	Unit of minimum queue time	unit	3
ZEIWN	Unit of normal queue time	unit	3
ZGR01-ZGR06	Performance efficiency rate key	char	3
ZLPRO	Minimum amount of time that must pass before the material can be processed further in the next operation or order	quan	10
ZTMIN	Least amount of time required to move the material from work center to work center between one operation and the following operation (minimum move time)	quan	10
ZTNOR	Standard time required to move the material from work center to work center between one operation and the following operation (normal move time)	quan	10

LOIROU01

ZWMIN	Minimum queue time before an order is processed at a work center	quan	10
ZWNOR	Normal (standard) queue time before an order is processed at a work center	quan	10

E1PLMZL

Field	Description	Type	Length
DATUB	Validity period finish	dates	8
DATUV	Validity period start	dates	8
STLAL	Identification of a bill of material within a BOM group (alternative bill of material)	char	2
STLNR	Number along with the BOM category which uniquely identifies a bill of material or BOM group	char	8
STLNY	Key specifying a bill of material by its object reference, such as material or equipment	char	1
IDNRK (STPO)	Number of the object, such as material or document, that is created, changed or displayed as a part of the bill of material	char	18
MEINS (STPO)	Unit of the component quantity	unit	3
MENGE (STPO)	Quantity of the component	quan	15
POSNR (STPO)	Item number	char	4

E1PLABL001

Field	Description	Type	Length
AOBAR	Key specifying the type of relationship	char	2
PLNNR_VOR	Number of the standard network (predecessor)	char	8
PLNAL_VOR	This key together with the group uniquely identifies a task list (predecessor)	char	2
VORNR_VOR	Number of the activity (predecessor)	char	4
PLNNR_NCH	Number of the standard network (successor)	char	8
PLNAL_NCH	This key together with the group uniquely identifies a task list (successor)	char	2
VORNR_NCH	Number of the activity (successor)	char	4
ARBID (CRHD)	Number indicating an object	numc	8
DATUB	Finish of the validity period of an object	dates	8
DATUV	Start of the validity period of an object	dates	8
DAUER	Time interval of the relationship	quan	6
KALID	Number of the factory calendar	char	2

LOIROU01

PROVG	Key specifying how the system determines the time interval of the relationship	char	1
PRZNT	Percentage used to calculate the time interval of the relationship	numc	3
ZEINH	Unit of time interval between two activities	unit	3
DAUERMAX	Maximum time interval for relationship	quan	5

CLFMAS01

E1OCLFM

E1KSSKM

E1AUSPM



The structure included here is only a small part of the CLFMA01 IDoc. For specific information on viewing IDoc structures, read the section on [IDocs \[Page 91\]](#).

E1OCLFM

Field	Description	Type	Length
KLART	Class type	char	3
MAFID	Indicates an object or a class	char	1
OBJEK	Field containing either an object or class number	char	50
OBTAB	Name of the database table of the object	char	10

E1KSSKM

Field	Description	Type	Length
CLASS	Name uniquely identifying a class in a class type	char	18
DATUV	Start of the validity period of an object (date)	date	8
STATU	Status of classification used to specify whether the search assignment for class is released or locked	char	1
STDCL	Indicates the class defined as the standard class This field has no meaning for the production optimization interface (POI).	char	1

E1AUSPM

Field	Description	Type	Length
ATAUT	Classification: author This field has no meaning for POI.	char	1
ATAW1	Unit of measurement	unit	3
ATAWE	Unit of measurement	unit	3

CLFMAS01

ATCOD	Code for the value definition	char	1
ATFLB	Internal floating point	fltp	22
ATFLV	Internal floating point	fltp	22
ATIMB	Characteristic number of the user-defined data type	numc	10
ATINC	Increment within the interval specification	fltp	22
ATNAM	Characteristic name	char	30
ATPRZ	Indicates that the tolerance limits are in percent (is currently not supported)	char	1
ATTLB	Specification of the upper tolerance limit (is currently not supported)	fltp	22
ATTLV	Specification of the lower tolerance limit (is currently not supported)	fltp	22
ATWRT	Characteristic value	char	30
DATUV	Start of the validity period of an object	dat	8

LOINUM01

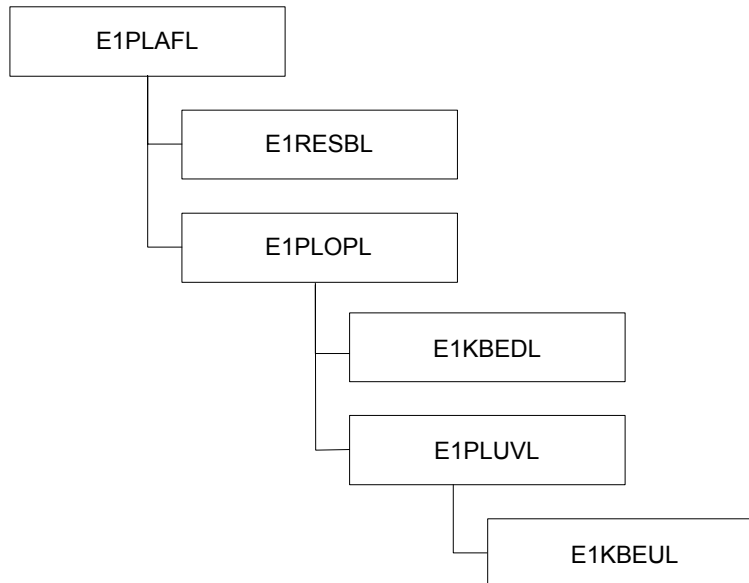
E1NUMBL

E1NUMBL

Field	Description	Type	Length
LOGSYS	The logical system is the system in which integrated applications run based on common data	char	10
NUMBER	Number of IDocs created within this selection	int4	9

LOIPLO01

LOIPLO01



E1PLAFL

Field	Description	Type	Length
ABMNG	Reduced quantity in the planned order	quan	14
AUFFX	Indicates whether the planned order is fixed	char	1
AUFNR	Run schedule header number	char	12
AVMNG	Planned quantity to result in scrap during production of the entire planned order quantity	quan	14
BESKZ	Procurement type	char	1
DISPO	Number of the MRP controller or MRP controller group responsible for requirements planning, for example	char	3
EKORG	Purchasing organization	char	4
GSBTR	Overall confirmation date of the planned order after the ATP check	dates	8
GLTRS	Scheduled finish	dates	8
GSMNG	Total planned order quantity	quan	14
GSTRS	Scheduled start	dates	8
GSUZS	Earliest scheduled start of execution (time)	times	6

KAPFX	Indicator specifying that the planned order capacity is dispatched	char	1
KDAUF	Sales order number	char	10
KDPOS	Item number in the sales order	char	6
LGORT	Number of the storage location within a plant where the material is stored	char	4
MATNR	Number of the material valid for the planned order	char	18
MDACC	Key for an action for which the planned order is carried out	char	4
MDACD	Action date for the planned order	date	8
MDACH	Key specifying the sequence of "actions in the planned order"	char	2
MDACT	Action time for the planned order	time	6
MDPBV	Confirmation of availability in the planned order	char	1
MEINS	Unit of measure in which a material's stocks are managed	unit	3
PAART	Controls the order type to which the planned order is assigned	char	4
PALTR	Date used to determine the valid bill of material or routing for the planned order	date	8
PEDTR	Basic finish date in the planned order	date	8
PERTR	Planned creation date in the planned order	date	8
PLNAL	This key together with the group uniquely identifies a task list	char	2
PLNNR	Key of the task list group	char	8
PLNTY	Task list type	char	1
PLNUM	Number of the planned order	char	10
PLWRK	Number of the planning plant	char	4
PSPEL	Internal project item number	numc	24
PSTTR	Basic start date in the planned order	date	8
PWWRK	Production plant in the planned order	char	4
SEQNR	Sequence number in the order	numc	14
SERNR	The serial number indicates the production series	char	8
SOBES	Special procurement type	char	1
SOBKZ	Indicates the type of special stock	char	1
STLFX	Indicates whether the corresponding bill of material is fixed, which means it is not exploded again during a new planning run	char	1
UMSKZ	Indicator specifying whether the planned order can be converted to a production order or purchase requisition	char	1

LOIPLO01

VERID	Key specifying the various production techniques that can be used to produce a material	char	4
VFMNG	Confirmed quantity of the planned order	quan	14
WEBAZ	Number of workdays required for checking and storage after goods are received	dec	5

E1PLOPL 01 and E1PLUVL 01

Field	Description	Type	Length
VORNR	Operation number	char	4
UVORN	Sub-operation number	char	4
ARBEH	Unit of work	unit	3
ARBEI	Work completed when carrying out the operation	quan	8
ARBID	Number of the work center	numc	8
DAUNE	Time unit for the normal duration of the operation	unit	3
DAUNO	Normal operation duration	quan	6
FSEDD	Earliest scheduled finish of execution (date)	dates	8
FSEDZ	Earliest scheduled finish of execution (time)	times	6
FSAVD	Earliest scheduled start of execution (date)	dates	8
FSAVZ	Earliest scheduled start of execution (time)	times	6
FSSAD	Earliest scheduled start of teardown (date)	dates	8
FSSAZ	Earliest scheduled start of teardown (time)	times	6
FSSBD	Earliest scheduled start of processing (date)	dates	8
FSSBZ	Earliest scheduled start of processing (time)	times	6
PLNFL	Sequence of operations within a task list	char	6
SSEDD	Latest scheduled finish of execution (date)	dates	8
SSEDZ	Latest scheduled finish of execution (time)	times	6
SSAVD	Latest scheduled start of execution (date)	dates	8
SSVAZ	Latest scheduled start of execution (time)	times	6
SSSAD	Latest scheduled start of teardown (date)	dates	8
SSSAZ	Latest scheduled start of teardown (time)	times	6
SSSBD	Latest scheduled start of processing (date)	dates	8
SSSBZ	Latest scheduled start of processing (time)	times	6
USR04	User-defined field for quantity (10, 3)	quan	15
USR05	User-defined field for quantity (10, 3)	quan	15
USE04	User-defined field for the unit of quantity fields	unit	3

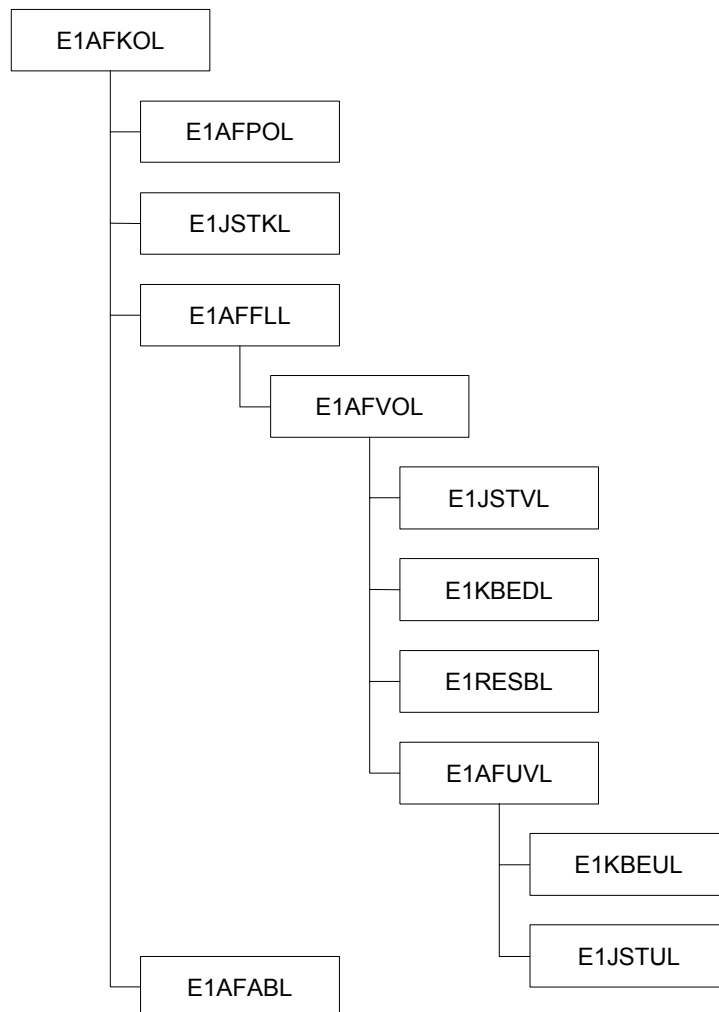
LOIPLO01

USE05	User-defined field for the unit of quantity fields	unit	3
VGE01-VGE06	Unit of measure for the standard value	unit	3
VGW01-VGW06	Standard value	quan	10
XDISP	Indicator specifying whether if an operation or capacity requirements have to be dispatched	char	1
ANZMA	Number of employees		



You can find a description of tables E1KBEDL and E1RESBL in the IDoc LOIPRO01.

LOIPRO01

LOIPRO01**E1AFKOL**

Field	Description	Type	Length
AUFNR	Order number	char	12
APRIO	Order priority	char	4
APROZ	Scrap quantity in percent	dec	7
AUART	Order type	char	4
AUFLD	Explosion date for the bill of material and routing	date	8

AUTYP	Order category	numc	2
BAUMNG	Quantity to which all component quantities in a bill of material refer	quan	14
BMEINS	Unit of measure in which the material's stocks are managed	unit	3
BMENGE	Quantity to which all component quantities in a bill of material refer	quan	14
CY_SEQNR	Number that can be assigned to the production orders or planned orders at header level and is valid for all operations in an order	numc	14
DISPO	Number of the MRP controller or MRP controller group	char	3
FEVOR	Production scheduler	char	3
FHORI	Key used to determine the required float times for scheduling	char	3
FLG_MLTPS	Indicator specifying that several co-products are created with the order	char	1
FREIZ	Release period in days	numc	3
FTRMI	Release date	dates	8
FTRMS	Scheduled release date	dates	8
GAMNG	Total quantity, including scrap, to be produced in this order	quan	14
GASMG	Total scrap quantity resulting during production of the total production order quantity	quan	14
GETRI	Date when the last operation was confirmed	dates	8
GEUZI	Confirmed order finish (time)	times	6
GLTRI	Actual finish date	dates	8
GLTRP	Time when the produced quantity is available	dates	8
GLTRS	Scheduled finish	dates	8
GLUZP	Latest finish of execution time for the order	times	6
GLUZS	Time when execution of the order is to finish	times	6
GMEIN	Common unit of measure for all order items	unit	3
GSTRI	Date when the order is started (actual start date)	dates	8
GSTRP	Earliest date when execution of the order can start (basic start date)	dates	8
GSTRS	Date when execution of the order is to start (scheduled start date)	dates	8
GSUZP	Earliest execution time	times	6

LOIPRO01

GSUZS	Time when execution of the order is to start (scheduled start time)	tims	6
IASMG	Scrap that was previously confirmed at order header level	quan	14
IMNG	Yield that was previously confirmed at order header level	quan	14
LODIV	The lot size divisor indicates the value that must be used to divide the production order lot size without a remainder	quan	14
MATNR	Material number for orders	char	18
PLAUF	Date when the planned order is carried out	dat	8
PLGRP	Key identifying the planner group responsible for maintaining the task list	char	3
PLNAL	This key together with the group uniquely identifies a task list	char	2
PLNME	Unit of measure of the material to be produced in the task list	unit	3
PLNNR	Key uniquely identifying a (task list) group	char	8
PLNTY	Key distinguishing task lists by their functionality	char	1
PLSVB	Upper limit of the lot size range in the task list	quan	14
PLSVN	Lower limit of the lot size range in the task list	quan	14
REDKZ	Key indicating the reduction level used in scheduling	char	1
RGEKZ	Indicator specifying that the material component is backflushed	char	1
RMNGA	Quantity that must be reworked due to faulty processing or lacking quality	quan	14
SBMEH	Quantity in which the material's stocks are managed (base unit of measure)	unit	3
SBMNG	Quantity to which all component quantities in a bill of material refer	quan	14
SICHZ	Number of workdays used as the float after production in this order	numc	3
SLSBS	Upper limit of the lot size range for the bill of material	quan	14
SLSVN	Lower limit of the lot size range for the bill of material	quan	14
STLAL	Identification of a bill of material within a BOM group	char	2
STLAN	Key specifying the enterprise area in which the bill of material can be used	char	1
STLNR	Number along with the BOM category which uniquely identifies a bill of material or BOM group	char	8
TERKZ	Scheduling type	char	1

LOIPRO01

VORKZ	Number of workdays used as the float before production in this order	numc	3
WERKS	Key uniquely identifying a plant	char	4

E1AFPOL

Field	Description	Type	Length
POSNR	Number of the order item	numc	4
AMEIN	Unit in which the material to be produced is managed in the order	unit	3
BMENG	Item quantity that the system confirms for shipping after checking the material availability	quan	14
DFREI	Indicator specifying that the order is released or partially released	char	1
KDAUF	Sales order number	char	10
KDEIN	Schedule line of the sales order	numc	4
KDPOS	Item number within a sales order	numc	6
LGORT	Number of the storage location within a plant where the material is stored	char	4
MATNR	Material number	unit	18
MEINS	Unit of measure in which the material stocks are produced	unit	3
PLNUM	Number of the planned order	char	10
PSAMG	Item scrap quantity	quan	14
PSMNG	Item quantity in the order	quan	14
SAFNR	Run schedule header nummer	char	12
SERNR	The serial number indicates the production series	char	8
UMREN	Denominator for converting to base units of measure	dec	7
UMREZ	Numerator for converting to base units of measure	dec	7
VERID	Key specifying the various production techniques that can be used to produce a material	char	4
WEBAZ	Number of workdays required for checking and storage after goods are received	dec	5
WEMNG	Quantity previously produced for the order item and updated as goods received	quan	14

E1AFFLL

Field	Description	Type	Length
-------	-------------	------	--------

LOIPRO01

APLZL	Field indicating the current sequence in the production order (standard or alternative sequence)	numc	8
AUSCHL	Controls the alignment of dates in a parallel sequence	char	1
FLGAT	Key indicating a standard sequence, parallel sequence or alternative sequence	char	1
LOSBS	Upper limit of the lot size range for the sequence	quan	14
LOSVN	Lower limit of the lot size range for the sequence	quan	14
LTXA1	First line of text in the operation description	char	40
PLNFL	Sequence of operations in a routing	char	6
VORNR1	Branch operation number	char	4
VORNR2	Return operation number	char	4

E1AFVOL002 and E1AFUVL002

Field	Description	Type	Length
VORNR	Operation number	char	4
UVORN	Sub-operation number	char	4
ABLIPKZ	Indicates that teardown and wait occur simultaneously	char	1
ABRUE	Teardown	fltp	22
ANZZL	Number of the capacity required for the calculation of duration or work	int1	3
ARBEH	Unit of work	unit	3
ARBEI	Work completed when carrying out the operation	quan	8
ARBID	Internal number used together with the object type to identify the operating resource	numc	8
ARUZE	Unit used to calculate teardown	unit	3
AUFAK	Planned scrap from the operation in percent	dec	7
BEARZ	Processing time	char	22
BEAZE	Unit for processing time	unit	3
BMSCH	Quantity of the material to be produced to which the standard values refer	quan	14
CY_SEQNRV	Number that can be assigned to an operation in a production order	numc	14
DAUNE	Time unit for normal duration of an operation	unit	3
DAUNO	Value for normal duration of an operation	quan	6
DAUME	Time unit for minimum duration of an operation	unit	3
DAUMI	Value for minimum duration of an operation	quan	6

FLIES	Indicates continuous flow production	char	1
FSAVD	Earliest scheduled start of execution (date)	dates	8
FSAVZ	Earliest scheduled start of execution (time)	times	6
FSEDD	Earliest scheduled finish of execution (date)	dates	8
FSEDZ	Earliest scheduled finish of execution (time)	times	6
FSELD	Earliest scheduled finish of wait (date)	dates	8
FSELZ	Earliest scheduled finish of wait (time)	times	6
FSEVD	Earliest finish of the operation (date)	dates	8
FSEVZ	Earliest finish of the operation (time)	times	6
FSSAD	Earliest scheduled start of teardown (date)	dates	8
FSSAZ	Earliest scheduled start of teardown (time)	times	6
FSSBD	Earliest scheduled start of processing (date)	dates	8
FSSBZ	Earliest scheduled start of processing (time)	times	6
FSSLD	Earliest scheduled start of wait (date)	dates	8
FSSLZ	Earliest scheduled start of wait (time)	times	6
KALID	Number of the factory calendar	char	2
LAR01-LAR06	Activity type	char	6
LIEGZ	Wait time used in scheduling	fltp	22
LIGZE	Unit of wait time	unit	3
LMNGA	Yield confirmed for this operation	quan	14
LTXA1	First line of text in the operation description	char	40
MEINH	Operation unit of measure	unit	3
MINWE	Minimum quantity that must be sent ahead when operations overlap	quan	14
MGVRG	Operation quantity	quan	14
PVZNR	Operation number of the superior operation for the phase	char	4
PEINH	Number of units of measure to which the price refers	dec	7
PREIS	Price for external processing	curr	13
PRZNT	Value indicating the percent of work to be used for the operation	int1	3
RASCH	Key defining who and how a work center or machine is to be set up	char	2
RFGRP	Classification combining setup group keys into setup group categories	char	10

LOIPRO01

RFSCH	Indicates operations with the same or similar setup conditions	char	10
RMNGA	Quantity that must be reworked due to faulty processing or lacking quality	quan	14
RSTZE	Unit for setup time	unit	3
RUEST	Setup time	fltp	
SPLIM	Number of partial lots in which a lot is divided or the number of individual capacities processing an operation in parallel	dec	5
SPMUS	Indicates that the operation must be split	char	1
SSAVD	Latest scheduled start of execution (date)	dates	8
SSAVZ	Latest scheduled start of execution (time)	times	6
SSEDD	Latest scheduled finish of execution (date)	dates	8
SSEDDZ	Latest scheduled finish of execution (time)	times	6
SSELD	Latest scheduled finish of wait (date)	dates	8
SSELZ	Latest scheduled finish of wait (time)	times	6
SSEVD	Latest finish of the operation (date)	dates	8
SSEVZ	Latest finish of the operation (time)	times	6
SSSAD	Latest scheduled start of teardown (date)	dates	8
SSSAZ	Latest scheduled start of teardown (time)	times	6
SSSBD	Latest scheduled start of processing (date)	dates	8
SSSBZ	Latest scheduled start of processing (time)	times	6
SSSLD	Latest scheduled start of wait (date)	dates	8
SSSLZ	Latest scheduled start of wait (time)	times	6
STEUS	Key specifying how an operation or sub-operation is to be processed	char	4
TRANZ	Move time used in scheduling	fltp	22
TRAZE	Unit for move time	unit	3
UEKAN	Indicator specifying that the operation can overlap with the next operation, if necessary, such as during reduction of the execution time	char	1
UEMUS	Indicator specifying that overlapping is required	char	1
USR04	User-defined field for quantity (length 10, 3)	quan	15
USR05	User-defined field for quantity (length 10, 3)	quan	15
USE04	User-defined field for the unit of quantity fields	unit	3
USE05	User-defined field for the unit of quantity fields	unit	3

LOIPRO01

VGEO1-VGE06	Unit of measure of the standard value	unit	3
VGW01-VGW06	Standard value	quan	10
VGWTS	Key defining a maximum of six standard values and a dimension	char	4
WARTZ	Queue time used in scheduling	fltp	22
WRTZE	Unit for queue time	unit	3
XDISP	Indicates whether an operation or capacity requirements are dispatched	char	1
XMNGA	Scrap confirmed for this operation	quan	14
ZEILP	Unit for minimum wait time	unit	3
ZEIMB	Unit for minimum processing time	unit	3
ZEIMU	Unit for minimum overlap time	unit	3
ZEITN	Unit for normal move time	unit	3
ZEIWM	Unit for minimum queue time	unit	3
ZEIWN	Unit for normal queue time	unit	3
ZLPRO	Minimum wait time	quan	10
ZMINB	Minimum processing time	quan	10
ZMINU	Minimum overlap time	quan	10
ZTMIN	Minimum move time	quan	10
ZWMIN	Minimum queue time	quan	10
ZWNOR	Normal queue time	quan	10
ISAVD	Start of operation (date)	date	8
IEAVD	End of operation (date)	date	8
ISDD	Start of execution (date)	date	8
ISDZ	Start of setup (time)	time	6
IEDD	End of execution (date)	date	8
IEDZ	End of setup (time)	time	8
ANZMA	Number of employees		

E1KBEDL and E1KBEUL

Field	Description	Type	Length
BEDID	Number of the capacity requirements record	numc	12
BEDZL	Internal counter	numc	8
CANUM	Counter of the capacity requirements record	numc	4

LOIPRO01

BEDKZ	Indicates that capacity requirements correspond to the available capacity	char	1
KABRREST	Remaining capacity requirements for the operation segment teardown	fltp	22
KABRSOLL	Target capacity requirements for the operation segment teardown	fltp	22
KAPAR	Capacity category	char	3
KAPID	Number of the capacity	numc	8
KBEAREST	Remaining capacity requirements for the operation segment processing	fltp	22
KBEASOLL	Target capacity requirements for the operation segment processing	fltp	22
KEINH	Unit for capacity requirements	unit	3
KRUEREST	Remaining capacity requirements for the operation segment setup	fltp	22
KRUESOLL	Target capacity requirements for the operation segment setup	fltp	22

E1RESBL002

Field	Description	Type	Length
AUSCH	Component scrap in percent	dec	7
AVOAU	Operation scrap	dec	7
BDART	Specifies how the system carries out material requirements planning	char	2
BDMNG	Requirements quantity	quan	14
BDTER	Date when the specified quantity of the material is required	date	8
BEIKZ	Key specifying the item as a part to be provided	char	1
CHARG	Batch number	char	10
DBSKZ	Indicates that the material is directly procured	char	1
ENMNG	Quantity already withdrawn	quan	14
FMENG	Indicator specifying that the quantity of an item is constant	char	1
KZKUP	Indicates that this item is a co-product	char	1
LGORT	Number of the storage location within a plant where the material is stored	char	4
MATNR	Material number	char	18
MEINS	Unit of measure in which the material stocks are managed	unit	3

LOIPRO01

NETAU	Indicator specifying that the operation scrap of a component is calculated on the basis of the net required quantity from the material master record of the assembly	char	1
SBTER	Latest requirements date	date	8
SCHGT	Indicates that this item is a loose material available directly at the work center (bulk material)	char	1
SOBKZ	Indicates the type of special stock	char	1
UPSKZ	Indicates that sub-items exist for this bill of material item	char	1
VERTI	Distribution key for requirements planning	char	4
VMENG	Confirmed for the availability check	quant	16
WERKS	Key uniquely identifying a plant	char	4
BWART	Movement type (inventory mgmt.)	char	3
SHKZG	Debit/credit indicator	char	1
POSNR	Position of BOM		

E1AFABL

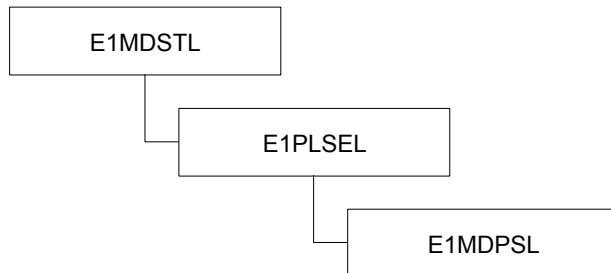
Field	Description	Type	Length
AOBAR	Type of relationship	char	2
AUFNR_VOR	Order number of predecessor	char	12
VORNR_VOR	Activity number of predecessor	char	4
AUFNR_NCH	Order number of successor	char	12
VORNR_NCH	Activity number of successor	char	4
ARBID (CRHD)	Number of the work center	numc	8
DAUER	Time interval of relationship	quant	7
DAUTM	Duration of the relationship in scheduling in seconds	int4	9
KALID	Number of the factory calendar	char	2
PROVG	Key specifying how the system determines the time interval for the relationship	char	1
PRZNT	Percentage to be used to calculate the time interval of the relationship	numc	3
ZEINH	Unit for the time interval of the relationship	unit	3
DAUERMAX	Maximum time interval	quant	5

E1JSTKL and E1JSTVL

Field	Description	Type	Length
STAT	Key indicating information about the current status of an object	char	5
STSMA	Key indicating a status profile	char	8

LOIPRO01

LOISTD01



E1MDSTL

Field	Description	Type	Length
MATNR	Material number	char	18
WERKS	Key uniquely identifying a plant	char	4
PLSCN	Long term planning scenario	numc	3
EINME	Restricted-use stock	quan	15
EISBE	Safety stock	quan	14
INSME	Inspection stock	quan	15
KEINM	Restricted-use consignment stock	quan	15
KINSM	Consignment stock in quality inspection	quan	15
KLABS	Unrestricted-use consignment stock	quan	15
KSPEM	Blocked consignment stock	quan	15
LABST	Valuated, unrestricted-use stock	quan	15
RETME	Blocked stock returns	quan	15
SPEME	Blocked stock	quan	15
TRAME	Stock in transit	quan	15
UMLMC	Stock in transfer (plant to plant)	quan	15

E1PLSEL

Field	Description	Type	Length
PLAAB	Materials planning segment	numc	2
PLANR	Number of the planning segment	char	20
KDAUF	Sales order number	char	10
KDPOS	Item number in the sales order	numc	6

LOISTD01

LGORT	Number of the storage location within a plant where the material is stored	char	4
PSPEL	Internal project item number	numc	24

E1MDPSL002

Field	Description	Type	Length
AUFVR	Order number for pegged requirements	char	10
BAUGR	Material number of the superior assembly	char	18
BESKZ	Procurement type	char	1
DAT00	Receipt/requirements date	dates	8
DAT01	Delivery/basic finish date	dates	8
DAT02	Start/release date	dates	8
DEL12	Number of the MRP element	char	12
DELET	Schedule line number of the MRP element	numc	4
DELKZ	MRP element indicator	char	2
DELNR	Number of the MRP element	char	10
DELPS	Item of the MRP element	numc	6
EINVR	Schedule line number of the pegged requirements	numc	4
KDAUF	Sales order number	char	10
KDPOS	Item number in the sales order	numc	6
LGORT	Number of the storage location within a plant where the material is stored	char	4
MNG01	Receipt quantity or requirements quantity	quan	15
MNG02	Variable scrap quantity	quan	15
PLUMI	Receipt/issue indicator	char	1
POSVR	Item number of the pegged requirements	numc	6
PSPEL	Internal project item number	numc	24
SOBES	Special procurement type	char	1
VERID	Production version	char	4
VRFKZ	Availability indicator	char	1
WEBAZ	Number of workdays required for checking and storage after goods are received	dec	5
WRK02	Production plant in the planned order	char	4
KUNNR	Customer number See note below	char	10

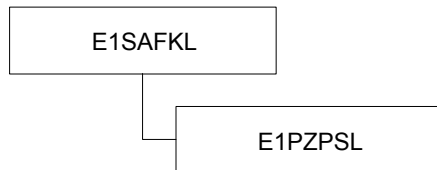
LOISTD01

AUART	Sales document type See note below	char	4
FIX01	Indicator for fixing lot size in planned operations	char	1
BAART	P.O./Order type	char	4



The fields KUNNR and AUART are usually filled only for make-to-order. For all other MRP elements, if the field DELKZ starts with V (i.e. VJ) then fields KUNNR and AUART are read from the data base, which slows down performance. You can deselect these fields if they are not needed when you reduce segment E1MDPSL.

LOIRSH01

LOIRSH01**E1SAFKL**

Field	Description	Type	Length
AUFNR	Run schedule header number	char	12
ALNAG	This key together with a (task list) group uniquely identifies a task list (rate-based planning)	char	2
APLAL	This key together with a (task list) group uniquely identifies a task list (detailed planning)	char	2
ALORT	Storage location where the material is stored during confirmation in repetitive manufacturing	char	4
ARBID	Internal number used together with the object type to identify the operating resource	numc	8
BSTMA	Upper limit of the lot size range	quan	14
BSTMI	Lower limit of the lot size range	quan	14
DISLS	Key specifying the lot size method that the system uses to calculate the quantity to be procured or produced in materials planning	char	2
DISPO	Number of the MRP controller or MRP controller group of the run schedule header	char	3
ENDAY	End of the validity period for the run schedule header	date	8
GAMNG	Total run schedule header quantity	quan	14
GASMG	Total scrap quantity of the order	quan	14
GMEIN	Unit of measure in which the material stocks are managed	unit	3
KTEXT	Description of the run schedule header	char	40
MATNR	Material number in the run schedule header	char	18
MDV01	Work center name or name of the line where the run schedule header is processed	char	8
MDV02	Work center name or name of the line where the run schedule header is processed	char	8

LOIRSH01

PERIO	Indicator specifying the period lengths into which the run schedule header is to be divided	char	1
PLNNG	Key of the (task list) group (rate-based planning)	char	8
PLNNR	Key of the (task list) group (detailed planning)	char	8
PLNTY	Key distinguishing task lists by their functionality (detailed planning)	char	1
PLTYG	Key distinguishing task lists by their functionality (rate-based planning)	char	1
RGEKZ	Indicates that backflush is permitted for run schedule headers	char	1
STDAY	Start of the validity period for the run schedule header	date	8
STLAL	Bill of material alternative	char	2
STLAN	Specifies the enterprise area in which the bill of material can be used	char	1
VERID	Production version	char	4
VERTO	Key specifying how the production quantities are distributed in partial quantities among the duration of a planned or production order. Specifies the relationship between time and output quantity	char	4
WERKS	Key uniquely identifying a plant	char	4

E1PZPSL

Field	Description	Type	Length
PLNFL	Sequence of operations with a task list	char	6
VORNE	Number uniquely identifying the reporting point	char	4
AUFAK	Planned scrap in percent	dec	7
LMVRG	Quantity confirmed at a reporting point	quan	15
MEINH	Operation unit of measure	unit	3
PLNME	Unit of measure of the material to be produced in the task list	unit	3
UMREN	Denominator for converting to base units of measure	dec	7
UMREZ	Numerator for converting to base units of measure	dec	7
XMVRG	Scrap confirmed at a reporting point	quan	15

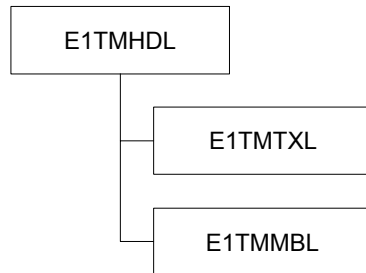
LOITMXL01

LOITMXL01

Transition matrix

As this matrix can be used for different applications, it can happen that not all fields will be used.

Structure



E1TMHDL

Field name	Type	External Length	Internal Length	Description
MSGFN	CHAR	3	3	Function
WERK	CHAR	4	4	Plant
MATRIX_ID	CHAR	8	8	Matrix ID

E1TMTXL

Field Name	Type	External Length	Internal Length	Description
MSGFN	CHAR	3	3	Function
SPRAS	LANG	1	1	Language key
MATRIXTXT	CHAR	40	40	Matrix short text
SPRAS_ISO	CHAR	8	8	Language code

E1TMMBL

Field Name	Type	External Length	Internal Length	Description
MSGFN	CHAR	3	3	Function
GROUP_FROM	CHAR	20	20	Predecessor ID
GROUP_TO	CHAR	20	20	Successor ID
SUBGR_FROM	CHAR	20	20	Predecessor ID

SUBGR_TO	CHAR	20	20	Successor ID
RUEST	QUAN	9	11	Setup time
RSTZE	UNIT	3	3	Unit of measure for setup time
RUEPROZ	DEC	5	7	% reduction of setup time
VGW01	QUAN	9	11	Standard value
VGE01	UNIT	3	3	Unit of measure for standard value
VGWPROZ	DEC	5	7	% reduction of standard value
RED_IND	NUMC	1	1	Indicator: type of setup time reduction
PLNTY	CHAR	1	1	Task list type
PLNNR	CHAR	8	8	Group key
PLNAL	CHAR	2	2	Group counter
ROUT_EXIST	CHAR	1	1	Indicator: routing/receipt exists
TRANSCOND	CHAR	2	2	Transition
TRANSPRIO	NUMC	1	1	Transition priority
APPL	NUMC	2	2	

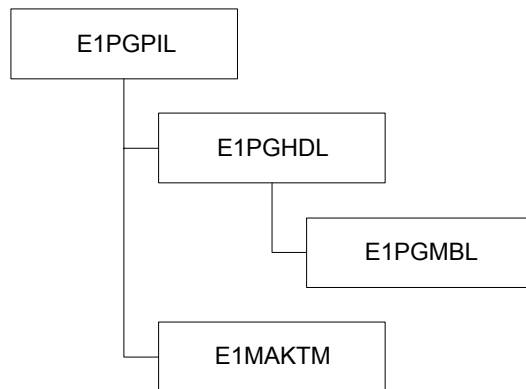
LOIPGR01

LOIPGR01

Product group

Each field listed below is described by its field name, type, external and internal length, and a short description.

Structure



E1PGPIL

Field Name	Type	External Length	Internal Length	Description
MSGFN	CHAR	3	3	Function
MATNR	CHAR	18	18	Material
MEINS	UNIT	3	3	Base unit of measure

E1PGHDL

Field Name	Type	External Length	Internal Length	Description
MSGFN	CHAR	3	3	Function
PGTYP	CHAR	1	1	Product group type
WERKS	CHAR	4	4	Plant
VSNDA	CHAR	4	4	Production version
DISPO	CHAR	3	3	MRP controller
PERKZ	CHAR	1	1	Period indicator
PERIV	CHAR	2	2	Fiscal year variant
FEVOR	CHAR	3	3	Production scheduler

LOIPGR01

FHORI	CHAR	3	3	Sched. margin key for floats
COPAM	CHAR	10	10	Local field name for CO/PA interface

E1PGMBL

Field Name	Type	External Length	Internal Length	Description
MSGFN	CHAR	3	3	Function
NRMIT	CHAR	18	18	Name of product group
WEMIT	CHAR	4	4	Plant
PRKOF	FLTP	24	16	Correction factor: aggregation
ANTEI	FLTP	24	16	Proportional factor (%) disaggregation
FIXKZ	CHAR	1	1	Indicator: fixed LIS branch info.
STATU	CHAR	1	1	LIS branch status
MEINS	UNIT	3	3	Base, unit of measure
MTART	CHAR	4	4	Material type
DISPO	CHAR	3	3	MRP controller
PERKZ	CHAR	1	1	Period indicator
PERIV	CHAR	2	2	Fiscal year variant
FEVOR	CHAR	3	3	Production scheduler
FHORI	CHAR	3	3	Sched. margin key for floats
COPAM	CHAR	10	10	Local field name for CO/PA interface
UMREF	FLTP	24	24	Conversion factor: quantities

E1MAKTM

Field Name	Type	External Length	Internal Length	Description
MSGFN	CHAR	3	3	Function
SPRAS	LANG	1	1	Language key
MAKTX	CHAR	40	40	Material description
SPRAS_ISO	CHAR	2	2	Language according to ISO 639

LOIPGR01

LOIMSO01

Definition

Transaction data IDoc used for transmitting warehouse stock information.

Use

Structure

IDoc LOIMSO01

Segment E1MSSLM Storage location stock material

Segment E1MSSLM Storage location stock material

Field	Description	Type	Int. length	Ext. length
MSGFN	Function	char	3	3
MATNR	Material	char	18	18
WERKS	Plant	char	4	4
LGORT	Storage location	char	4	4
LABST	Unrestricted stock	quan	13	15
EINME	Restricted stock	quan	13	15
INSME	Stock in quality inspection	quan	13	15
SPEME	Blocked stock	quan	13	15
RETME	Blocked stock returns	quan	13	15
UMLME	Stock in transfer	quan	13	15
KLABS	Unrestricted consignment stock	quan	13	15
KEINM	Restricted consignment stock	quan	13	15
KINSM	Consignment stock in quality inspection	quan	13	15
KSPEM	Blocked consignment stock	quan	13	15

LPIPCM01

LPIPCM01**Definition**

LPIPCM01 is a transaction data IDoc used for sending production campaign data.

Structure

IDOC LPIPCM01

Segment E1PCMHL Production campaign header

Segment E1PCMO1 Pegged production campaign: material

Segment E1PCMPL Production campaign item

Segment E1PCMHL Production campaign header

Field	Description	Type	Length	
			Int.	Ext
MSGFN		char	3	3
MANDT	Client	clnt	3	3
PCMNR	Production campaign number	char	12	12
ERNAM	Name of person who created object	char	12	12
ERDAT	Date record was created	dates	8	8
AENAM	Name of clerk who changed record	char	12	12
AEDAT	Last changed on	dates	8	8
PCART	Production campaign category Permitted values: 01 Single-product campaign 02 Multi-product campaign	numc	2	2
PCSTD	Start date of production campaign	dates	8	8
PCSTT	Start time of production campaign	times	6	6
PCEND	End date of production campaign	dates	8	8
PCENT	End time of production campaign	times	6	6
GPROZGR	Group name	char	15	15
GPROZNR	Business process number	char	12	12
PCTXT	Description of production campaign	char	40	40
TAKT	Work cycle time	des	3	4

Segment E1PCMO1 Pegged production campaign: material

MSGFN	Function	char	3	3
MANDT	Client	clnt	3	8
PCMNR	Production campaign number	char	12	12
ZAEHL	Internal counter	numc	8	8
ERNAM	Person who created object	char	12	12
ERDAT	Date record was created	date	8	8
AENAM	Name of clerk who changed record	char	12	12
AEDAT	Last changed on	date	8	8
MATNR	Material	char	18	18
WERKS	Plant	char	4	4
MENGE	Quantity	quan	13	15
GEMEIN	Base unit of measure	unit	3	3
VERID	Production version	Char	4	4

Segment E1PCMO1 Pegged production campaign: material

MSGFN	Function	char	3	3
MANDT	Client	clnt	3	8
PCMNR	Production campaign number	char	12	12
ZAEHL	Internal counter	numc	8	8
POSNR	Item number	char	4	4
PLNUM	Planned order number	char	10	10
AUFNR	Order number	char	12	12
AUFART	Order type	char	4	8
AUFTYP	Order category	numc	2	2
MATNR	Material	char	18	18
WERKS	Plant	char	4	4
CLOKZ	Indicator: campaign item for cleanout	char	1	1

Data Exchange: Upload

Data Exchange: Upload

After optimization, you can start a transaction in the SAP R/3 System to trigger a transfer of the changed data from the optimization system to the R/3 system (data upload). This is a synchronous data transfer called RFC (Remote Function Call) that ensures data consistency in the SAP R/3 System.

After the data has been uploaded, you can access the planning table or the stock/requirements list to display the results of optimization. In addition, you can check the received data log to make sure the data was successfully transferred..

The following data changes are transferred during an upload:

- Changes to planned, production, and process orders, for example,
 - Date
 - Quantity
 - Selected routing (with production version)
 - Selected bill of material (with production version)
- Changes to operation, for example,
 - Date
 - Standard values
 - Work centers/resources
- Creation/deletion of planned and production orders



The long-term planning data (planning scenario) cannot be changed by the upload. Only productive data can be changed.

Configurable materials are not supported by the upload of orders.

The planned orders changed using the interface are automatically fixed. Requirements planning in the SAP R/3 System can not change or delete these planned orders.

Note the [requirements \[Page 66\]](#) for exchanging data using the Production Optimization Interface (POI).

Data Upload

An R/3 transaction triggers the upload of data from the optimization system. The upload takes place in three parts.

Part 1: Access Function in Optimization System Through R/3 System

You define the RFC destination and the function that is carried out in the optimization system in the SAP R/3 System.

Start function `RFC<External function>`

Usually, the function `RFC<POI_Upload_Start>` is set in program `<POI_Upload>` (see Customizing Settings).

The interface is started.

Part 2: Access Function "CLOI_Changes_Upl_31" in R/3 System

This function is accessed through the external optimization system.

Changes are copied to tables (Suffix: `_imp`). You can control how the interface works using parameters.

After function module `CLOI_CHANGES_UPL_31` is carried out, the export parameters and export tables (Suffix in: `_exp`) are returned to the optimization system.

This function module may be used several times in succession without using the commit flag in structure `CLOIIFPAR`. If you do use the commit flag, the connection has to be closed and reopened to use the function module again.

Part 3: Exit Function

The exit function ends the connection to the external system. See `RFC_API` for more detailed information.



Each business object should only be changed once per RFC.

The upload transaction must be ended after a data base commit. However, you can restart the transaction.

See also:

[Function Module CLOI_CHANGES_UPL_31 \[Page 157\]](#)

[Function Module CLOI_MESSSAGES_TEXT_GET \[Page 189\]](#)

Start Upload**Start Upload**

1. Choose the menu options *Logistics → Central Functions → SCP Interfaces*
You access the *Supply Chain Planning Interfaces* screen.
2. Choose the menu options *POI → Received → Data changes*.
You access the *Start POI Data Upload* screen.
3. Enter the optimization system.
4. Choose the menu options *Program → Execute*.
The changed data is transferred to the SAP R/3 System.
You can display the changes on the planning table or stock/requirements list.

Monitoring the Upload

After the data from the optimization system has been transferred to the SAP R/3 System, you can display a brief log for each of the transactions executed when the data was received.



A received data log only exists if the transaction for data exchange from an external optimization system to the R/3 System was ended by a data base commit.

Procedure: Monitor Upload**Procedure: Monitor Upload**

1. Choose the menu options *Logistics → Central functions → SCP Interface*. You access the entry screen for *Supply Chain Planning Interfaces*.
2. Choose the menu options *Environment → Monitoring → Received data logs*. You access the screen *Monitor Receipt of Data Changes*.

To determine the selection criteria for viewing the upload log, click on one of the radio buttons described in the table below:

Selection criteria for upload log:

Last day with entries	Specific time period
<p>If you select this button, you will only be shown the upload log for the last day on which a POIU upload was carried out.</p> <p>Use this option if you are not sure when the last such upload occurred and if you are interested in only that one.</p>	<p>Here you can enter a start and end date for the period you are interested in checking. The default value in this case is:</p> <p>From: current date minus 10 days</p> <p>To: current date</p> <p>Note: The upload logs are saved only for a period of 10 days.</p>

Other monitoring options in this screen include:

Field	Description
Number of days the upload log should cover	<p>In this field you can enter the number of days you should like a log for.</p> <p>The minimum entry is 1 (current date) and the maximum is 10 (see Note above).</p>
Number of uploads per day	<p>In this field you can enter the number of uploads you would like to monitor for a given day.</p> <p>Example: Display last 8 uploads for current date</p>
Selection by success code	<p>Here you have the possibility of limiting the entries displayed in the log according to success code.</p> <p>Codes include:</p> <p>0 = no errors</p> <p>5 = warnings</p> <p>10 = errors</p>
User name	<p>If you want to display uploads done by specific users, enter user name here.</p>

Procedure: Monitor Upload

3. To see the upload log, choose *Continue*. In the next screen, you'll see a tree structure of the transactions carried out with the following specifications:

- Date
- User

Consecutive number for each day

4. Expand the structure for more detailed information. You'll see a list of all methods carried out for an object, such as "Create Planned Order", with the following information:

- Method result
- Overall result of the method taking into account all submethods that were automatically carried out
- Method, such as "Create", "Update", or "Delete"

These specifications are not translated. They always appear in English.

- Object number
- X for an object that has an externally assigned object number instead of an SAP number. (For example, an order created in the optimization system is assigned a number there.)

Customizing Settings: Upload

Customizing Settings: Upload

You must make several settings in Customizing before you can use the Production Optimization Interface. Specific instructions are in the implementation guide.

Data transfer for POI

Define target system for data upload.

Planning settings

Make the necessary settings for planned, production, and process orders. All the parameters should agree with those of the optimization system. The scheduling type is of particular significance.

- Scheduling type
The scheduling type specifies how the R/3 System carries out scheduling and which values are transferred to the optimization system.
- Production scheduler
- Task list selection
The method of task list selection should agree with the external optimization system if a selected task list is intended for production optimization.
- Scheduling level
The interface only works with capacity requirements at the detailed scheduling level.
 - Detailed planning parameters for planned orders
The scheduling indicator specifies that the lead time scheduling takes place in the SAP R/3 System within the established scheduling horizon. Only then can capacity requirements be exchanged between the R/3 System and the optimization system. All other parameters must agree with the optimization system.
- Production orders
The scheduling type is especially significant for the interface. It is used to specify whether start and finish dates are transferred.
- Process orders
The scheduling type is also important here.

The destination and function defined under the name of the specified target system are used to access an external function when the upload is started (from the external optimization system to the R/3 System).

Usually a target system **Optimizer** with the following settings is defined:

- RFC destination: **POI_Upload**
- Function accessed in the external system: **POI_UPLOAD_START**



If you use **Optimizer** as the target system, you **must** enter **POI_upload** as the destination in Customizing under *Cross-Application Components* → *Distribution (ALE)* → *Communication* → *Define RFC destination* in the section *TCP/IP connections*.

Tables for Upload

Tables for Upload

Definition

This section contains the tables with the technical information necessary for conducting the data upload.

[Function Module CLOI_CHANGES_UPL 31 \[Page 157\]](#)

[CLOI_IF_PAR \[Page 159\]](#)

[CLOI_RET_VAL \[Page 161\]](#)

[CLOI_PLORDI_IMP \[Page 162\]](#)

[CLOI_PLORDU_IMP \[Page 165\]](#)

[CLOI_PLORDD_IMP \[Page 167\]](#)

[CLOI_PLORD_OPRU_IMP \[Page 168\]](#)

[CLOI_ORDI_IMP \[Page 171\]](#)

[CLOI_ORDU_IMP \[Page 173\]](#)

[CLOI_ORD_OPRU_IMP \[Page 175\]](#)

[CLOI_MAP_EXP \[Page 179\]](#)

[CLOI_METHOD_LOG_EXP \[Page 180\]](#)

[CLOI_MESSAGE_LOG_EXP \[Page 182\]](#)

[CLOI_MSG_OBJ_LOG_EXP \[Page 183\]](#)

[CLOI_PLORD_EXP \[Page 184\]](#)

[CLOI_ORD_EXP \[Page 185\]](#)

[CLOI_PLORD_OPR_EXP \[Page 186\]](#)

[CLOIORD_OPR_EXP \[Page 187\]](#)

[CLOI_ORD_SEQ_EXP \[Page 188\]](#)

[Function Module CLOI_MESSSAGES_TEXT_GET \[Page 189\]](#)

[CLOI_LANGU \[Page 190\]](#)

[CLOI_MSG_IMP \[Page 191\]](#)

[CLOI_MSG_TEXT_EXP \[Page 192\]](#)

Function Module CLOI_CHANGES_UPL_31

CLOI_CHANGES_UPL_31	
Interface	Access by RFC
Function	CLOI_CHANGES_UPL_31
Short description	Carries out changes described in the imported tables

				Entry
Import parameter	CLOI_IF_PAR [Page 159]	corresponds to	CLOIIFPAR	
Export parameter	CLOI_RET_VAL [Page 161]	corresponds to	CLOIRETVAL	
Tables	CLOI_PLORDI_IMP [Page 162]	corresponds to	CLOIPLAFI	optional
	CLOI_PLORDU_IMP [Page 165]	corresponds to	CLOIPLAFU	optional
	CLOI_PLORDD_IMP [Page 167]	corresponds to	CLOIPLAFD	optional
	CLOI_ORDI_IMP [Page 171]	corresponds to	CLOIORDI	optional
	CLOI_ORDU_IMP [Page 173]	corresponds to	CLOIORDU	optional
	CLOI_PLORD_OPRU_IMP [Page 168]	corresponds to	CLOIPLOPRU	optional
	CLOI_ORD_OPRU_IMP [Page 175]	corresponds to	CLOIOPERU	optional
	CLOI_MAP_EXP [Page 179]	corresponds to	CLOIMAP	optional

Function Module CLOI_CHANGES_UPL_31

	CLOI METHOD LOG EXP [Page 180]	corresponds to	CLOIMETLOG	optional
	CLOI MESSAGE LOG EXP [Page 182]	corresponds to	CLOIMSGLOG	optional
	CLOI MSG OBJ LOG EXP [Page 183]	corresponds to	CLOIMOBLOG	optional
	CLOI PLORD EXP [Page 184]	corresponds to	CLOIPLAF	optional
	CLOI ORD EXP [Page 185]	corresponds to	CLOIORD	optional
	CLOI PLORD OPR EXP [Page 186]	corresponds to	CLOIPLOPR	optional
	CLOI ORD OPR EXP [Page 187]	corresponds to	CLOIOPER	optional
	CLOI ORD SEQ EXP [Page 188]	corresponds to	CLOIORDSEQ	optional

_IMP: import table signifying information to be transmitted to the SAP R/3 module

_EXP: export table signifying information to be transmitted to the optimization system



Enter all decimal values with a period.

CLOI_IF_PAR

Alle parameters for the control of the interface are defined in structure CLOI_IF_PAR.

Structure: CLOIIFPAR

Field	Type	Length	Description	Parameters
COMMITFLG	CHAR	1	Commit indicator for the POI System	C" Commit " " no reaction
R3_VERSION	CHAR	4	SAP R/3 Release	for example, 31 for version 3.1
MET_FILTER	CHAR	10	Here you specify what information in the METHOD_LOG table is transferred to the optimization system	"0" all messages "5" only methods with a warning, error or abort "10" only methods not carried out due to errors or abort
MSG_FILTER	CHAR	1	Here you specify which messages are transferred to the optimization system	" " all messages "W" only warnings, errors or aborts "E" only error and abort messages "A" only abort messages
METLOG_REQ	CHAR	1	Here you specify whether the entries in the METHOD_LOG table are transferred to the optimization system	"X" METHOD_LOG table is transferred " " METHOD_LOG table is not transferred, field MET_FILTER is ignored
MSGLOG_REQ	CHAR	1	Here you specify whether the entries in the MESSAGE_LOG table are transferred to the optimization system	"X" MESSAGE_LOG table is transferred " " MESSAGE_LOG table is not transferred, field MET_FILTER is ignored
MSGOBJ_REQ	CHAR	1	Here you specify whether the entries in the MSGOBJ_LOG table are transferred to the optimization system (objects contained in an information text)	"X" MSGOBJ_LOG table is transferred " " MSGOBJ_LOG table is not transferred

CLOI_IF_PAR

ORD_REQ	CHAR	1	Here you specify whether the order header information for the changed production / process orders is transferred to the optimization system	"X" is transferred " " is not transferred
ORDSEQ_REQ	CHAR	1	Here you specify whether the operation sequence information for the changed orders is transferred to the optimization system	"X" is transferred " " is not transferred
ORDOPR_REQ	CHAR	1	Here you specify whether the operation information for the changed orders is transferred to the optimization system	"X" is transferred " " is not transferred
PLORD_REQ	CHAR	1	Here you specify whether the planned order header information for the changed planned orders is transferred to the optimization system	"X" is transferred " " is not transferred
PLORDOPR_R	CHAR	1	Here you specify whether the planned order "operations" information for the changed planned orders is transferred to the optimization system	"X" is transferred " " is not transferred

CLOI_RET_VAL

The values transferred from the interface to the optimization program are specified in this table.

CLO_RET_VAL

Field	Type	Length	Description	Parameters
SUCC_CODE	char	10	This indicator shows whether the data upload was successful	>=10: An error occurred. Restart the interface 5: Warning 0: Data upload successful
COMMITROLL	char	1	This indicator shows the Commit-Rollback status of the interface	"C": Commit was executed "N": A "C" must be set during the next run " ": No database action occurred

CLOI_PLORDI_IMP**CLOI_PLORDI_IMP**

This table is used if planned orders are to be created in the R/3 System.

CLOI_PLORDI_IMP

Field	Type	Length	Description
EXTPLNUM	char	10	External planned order number (outside of the SAP System)
<FIELD>	char	10	Field name of a planned order
<VALUE>	char	50	Value of field <FIELD> for the planned order

The following fields are possible:

<FIELD>	Description	Required entry	Type	Length
PASCH	Planned order profile	Yes	char	4
PLWRK	Number of the plant where requirements planning, long term planning or the forecast is carried out	Yes	char	4
PWWRK	Number of the plant where the order quantity of the material produced in-house is manufactured		char	4
MATNR	Key for the material	Yes	char	18
BDMNG	Quantity of the material component	Yes	char	14
AVMNG	Scrap quantity forecasted to result from production		char	14
PSTTR	Earliest date when production starts according to the planned order	This field or field PEDTR	dates	8
PEDTR	Date when the planned order quantity is expected to be available or delivered according to the planned order	This field or field PSTTR	dates	8
GSTRS	Scheduled start date		dates	8
GSUZS	Scheduled start time		times	6
GLTRS	Scheduled finish date		dates	8
GLUZS	Scheduled finish time		times	6
VERID	Production version		char	4
KDAUF	Sales order key	Yes, if make-to-order production is entered in the field PASCH	char	10

CLOI_PLORDI_IMP

KDPOS	Item number within a sales order	Yes, if make-to-order production is entered in the field PASCH	numc	6
SEQNR	Sequence number		numc	14
SERNR	Serial number to which a fixed key date can be assigned. This specifies a date for the production series that is used to determine the valid bill of material or routing		char	8
PERTR	Date of planned order creation		date	8
UMSKZ	Initial value only. Set on empty for BOM production or repetitive manufacturing			
MDACC	Key for an action that can be carried out for a planned order. Possible actions include: - RSMA: reset material availability - BOME: explode bill of material - BEMA: explode bill of material and check material availability - MAAV: check material availability, explode bill of material, if necessary - NEMA: check material availability without exploding bill of material - SCHE: schedule planned order - Customer-defined actions		char	4



KDAUF together with field KDPOS requires make-to-order production as the planned order profile.

EXTPLNUM is the planned order number assigned by the external system. Planned order number PLNUM is specified by the R/3 System and copied after a commit in table MAP_EXP.

AVMNG: If you do not enter a value here, the assembly scrap from the material master or bill of material is used. The total quantity consists of the required quantity and scrap quantity.

MDACC: Actions are defined by customers. The action code is saved in the planned order together with the date and time.

A planned order is fixed once it has been created, which means that planned orders cannot be changed automatically in the R/3 System.

CLOI_PLORDI_IMP

You can use the interface to change or delete fixed planned orders.

Scheduling begins at time/date transferred in CSTRS/GSUZS or GLTRS/GLUZS. However, PSTTR or PEDTR are also transferred since they are mandatory fields. The required scheduling direction determines which fields are used.

In order to enable scheduling with times, the following scheduling types must be defined in Customizing, (*IMG → Production → Capacity Requirements Planning → Operations → Scheduling → Specify scheduling type*):

5 = Forward scheduling

6= Backward scheduling

CLOI_PLORDU_IMP

This table is used if planned orders are to be changed (updated) in the R/3 System.

CLOI_PLORDU_IMP

Field	Description	Type	Length
PLNUM	Planned order number (in SAP System)	char	10
<FIELD>	Field name of a planned order	char	10
<VALUE>	Value of the field	char	50

The following fields are possible:

<FIELD>	Description	Type	Length
PWWRK	Number of the plant where the order quantity of the material is produced in-house	char	4
BDMNG	Quantity of the material component	char	14
AVMNG	Scrap quantity forecast	dat	8
PSTTR	Earliest date when production starts according to the planned order	dat	8
PEDTR	Date when the planned order quantity is expected to be available or delivered according to the planned order	dat	8
GSTRS	Scheduled start date	dat	8
GSUZZ	Scheduled start time	tim	6
GLTRS	Scheduled finish date	dat	8
GLUZZ	Scheduled finish time	tim	6
VERID	Production version	char	4
SEQNR	Sequence number	num	14
SERNR	Serial number to which a fixed key date can be assigned. This specifies a date for the production series that is used to determine the valid bill of material or routing	char	8
UMSKZ	Initial value only. Set on empty for BOM production or repetitive manufacturing		

CLOI_PLORDU_IMP

MDACC	Key describing one of the actions listed below that can be carried out for a planned order - RSMNA: reset material availability - BOME: explode bill of material - BEMA: explode bill of material and check material availability - MAAV: check material availability, explode bill of material, if necessary - NEMA: check material availability without exploding bill of material - SCHE: schedule planned order - Customer-defined actions. See last note below.	char	4
-------	---	------	---



With scheduling-related changes:

- operations are deallocated (they lose the "dispatched" status and are therefore no longer fixed)
- order is scheduled

The scheduling type is specified in Customizing.

With changes to the production version: the routing and bill of material are exploded and the order is rescheduled (according to the Customizing settings).

If you enter a production version, the planned order is assigned to the corresponding run schedule header.

A planned order is fixed once it has been created, which means that planned orders cannot be changed automatically in the R/3 System.

You can use the interface to change or delete fixed planned orders.

You must enter the date and time in the predefined format.

The customer-defined action key and the action management can both be maintained in Customizing. Follow this path in the customizing menu. *Production → Material requirements planning → Procurement proposal → Planned orders → Action in planned order →*

Scheduling begins at time/date transferred in GSTRS/GSUZS or GLTRS/GLUZS. However, PSTTR or PEDTR are also transferred since they are mandatory fields. The required scheduling direction determines which fields are used.

In order to enable scheduling with times, the following scheduling types must be defined in Customizing, (*IMG → Production → Capacity Requirements Planning → Operations → Scheduling → Specify scheduling type*):

5 = Forward scheduling

6 = Backward scheduling

CLOI_PLORDD_IMP

This table is used if planned orders are to be deleted in the SAP R/3 System.

CLOIPLAFU

Field	Description	Type	Length
PLNUM	Planned order number	char	10



You can also use the interface to delete fixed planned orders.

CLOI_PLORD_OPRU_IMP

CLOI_PLORD_OPRU_IMP

This table is used if in planned orders are to be changed.

CLOIPLOPRU

Field	Description	Type	Length
PLNUM	Planned order number	char	10
EXTPLNUM	External planned order number	char	10
PLNFL	Sequence number	char	6
VORNR	Operation number	char	4
<FIELD>	Field name of a planned order	char	10
<VALUE>	Value of the field	char	50

The following fields are possible:

<FIELD>	Description	Type	Length
ARBPL	Key identifying the work center	char	8
WERKS	Key identifying a specific plant	char	4
ARBID	This internal number, together with the object type, identifies the operating resource, such as the work center or production resources/tools.	numc	8
VGW01	Standard value	char	10
VGE01	Unit of the standard value	char	3
VGW02	Standard value	char	10
VGE02	Unit of the standard value	char	3
VGW03	Standard value	char	10
VGE03	Unit of the standard value	char	3
VGW04	Standard value	char	10
VGE04	Unit of the standard value	char	3
VGW05	Standard value	char	10
VGE05	Unit of the standard value	char	3
VGW06	Standard value	char	10
VGE06	Unit of the standard value	char	3
USR04	User-defined field for quantity	char	15
USE04	User-defined field for the unit of the quantity field	char	3
USR05	User-defined field for quantity	char	15

CLOI_PLORD_OPRU_IMP

USE05	User-defined field for the unit of the quantity field	char	3
BMSCH	Base quantity	char	14
FSEDD	Earliest date when execution of the operation can finish	dates	8
FSEDZ	Earliest time when execution of the operation can finish	times	6
FSAVD	Earliest date when execution of the operation can start	dates	8
FSAVZ	Earliest time when execution of the operation can start	times	6
FSSBD	Earliest date when processing of the operation can start	dates	8
FSSBZ	Earliest time when processing of the operation can start	times	6
FSSAD	Earliest date when teardown of the operation can start	dates	8
FSSAZ	Earliest time when teardown of the operation can start	times	6
SSEDD	Latest date when execution of the operation can finish	dates	8
SSEDZ	Latest time when execution of the operation can finish	times	6
SSAVD	Latest date when execution of the operation can start	dates	8
SSAVZ	Latest time when execution of the operation can start	times	6
SSSAD	Latest date when teardown of the operation can start	dates	8
SSSAZ	Latest time when teardown of the operation can start	times	6
SSSBD	Latest date when processing of the operation can start	dates	8
SSSBZ	Latest time when processing of the operation can start	times	6
METHOD	Methods are functions that can be carried out for only one object. Example: scheduling orders Possible values: Dispatch: Dispatching operations (status "dispatched" is set after the data changes are made in the operation and the operation is rescheduled, if necessary) Deallocate: Deallocate operations (status "deallocated" is removed)	char	50



EXTPLNUM is only used for planned orders that were created by the optimization program. Since the external system does not recognize the SAP planned order number, the optimization system creates one of its own.

Always enter the date and time in the specified format.

You can enter the date and time for an operation in two ways:

- Specification of one date/time element. The R/3 System schedules the operation and calculates all date/time elements.
- Specification of all date/time elements.

CLOI_PLORD_OPRU_IMP

If you enter the date and time and choose **Dispatch** as the method, the R/3 System no longer changes the times when scheduling.

Scheduling-related changes in the planned order automatically trigger deallocation.

You can define the work center either using the field ARBID or the fields ARBPL and WERKS.

CLOI_ORDI_IMP

This table is used if production or process orders are to be created in the SAP R/3 System.

CLOIORDI

Field	Description	Type	Length
EXTAUFNR	External order number	char	10
<FIELD>	Field name of an order	char	10
<VALUE>	Value of field <FIELD> for the order	char	50

The following fields are possible:

<FIELD>	Description	Type	Length	Required entry
MATNR	Material key	char	18	Yes
WERKS	Plant key	char	4	Yes
AUART	Order type	char	4	Yes
BDMNG	Quantity of the material component necessary to produce the specified order quantity	char	14	Yes
GSTRP	Basic start date	dates	8	Yes or GLTRP corresponding to scheduling direction
GSUZP	Basic start date (time)	times	6	
GLTRP	Basic finish date	dates	8	Yes or GSTRP corresponding to scheduling direction
GLUZP	End time of order	times	6	
VERID	Key specifying the various production techniques that can be used to produce a material	char	4	
KDAUF	Sales order key	char	10	
PLNNR	Key for task list group	char	8	Use these fields if you want to create an order without a material. They cannot be used separately or with field MATNR
PLNAL	Group counter	char	2	
PLNTY	Task list type	char	1	
GMEIN	Unit of measurement for order	unit	3	
KDPOS	Number uniquely identifying an item within a sales order	numc	6	
CY_SEQNR	Sequence number for production order	numc	14 (int)	

CLOI_ORDI_IMP

ESTAT	User status. Must be used together with either Set User Status or Revoke User Status. User status must be transferred in internal format (E number from table TJ30)	char	5 (int)	
METHOD	Methods are functions that can be carried out for only one object. Example: scheduling orders Possible values: SetTechnicalComplete RevokeTechnicalCompletion Schedule Release SetUserStatus RevokeUserStatus	char	1	



After you create a production order, the system carries out scheduling.

You must enter the date and time in the specified format.

The scrap quantity is taken from the material master or bill of material.

In order to enable scheduling with times, the following scheduling types must be defined in Customizing, (*IMG* → *Production* → *Capacity Requirements Planning* → *Operations* → *Scheduling* → *Specify scheduling type*):

5 = Forward scheduling

6= Backward scheduling

CLOI_ORDU_IMP

This table is used if production or process orders are to be changed in the SAP R/3 System.

CLOIORDU

Field	Description	Type	Length
AUFNR	Order number	char	12
<FIELD>	Field name of an order	char	10
<VALUE>	Value of field <FIELD> for the order	char	50

The following fields are possible:

<FIELD>	Description	Type	Length
BDMNG	Quantity of the material component required to produce the specified order quantity	char	14
GSTRP	Start date of the order	date	8
GSUZP	Start time of the order	time	6
GLTRP	Finish date of the order	date	8
GLUZP	End time of order	Time	6
VERID	Key specifying the various production techniques that can be used to produce a material	char	4
CY_SEQNR	Sequence number for production order	numc	14 (int)
ESTAT	User status. Must be used together with either SetUserStatus or RevokeUserStatus. User status must be transferred in internal format (E number from table TJ30)	char	5 (int)
METHOD	Methods are functions that can be carried out for only one object. Example: scheduling orders Possible values: SetTechnicalComplete RevokeTechnicalCompletion Schedule Release SetUserStatus RevokeUserStatus	char	50



After scheduling-related changes are made, the system automatically deallocates the dispatched operations and reschedules the order.

CLOI_ORDU_IMP

After you change the production version, the system explodes the routing and bill of material and reschedules the order.

You must enter the date and the time in the specified format.

In order to enable scheduling with times, the following scheduling types must be defined in Customizing, (*IMG* → *Production* → *Capacity Requirements Planning* → *Operations* → *Scheduling* → *Specify scheduling type*):

5 = Forward scheduling

6= Backward scheduling

CLOI_ORD_OPRU_IMP

This table is used if steps in production or process orders are to be updated in the SAP R/3 System.

CLOIOPERU

Field	Description	Type	Length
AUFNR	Order number	char	12
EXTAUFNR	External order number	char	12
APLFL	Sequence number	char	6
VORNR	Number of the operation	char	4
<FIELD>	Field name of an order	char	10
<VALUE>	Value of field <FIELD> for the order	char	50

The following fields are possible:

Field	Description	Type	Length
ARBID	This internal number, together with the object type, identifies the operating resource, such as the work center or production resources/tools.	numc	8
VGW01	Standard value	char	10
VGE01	Unit of the standard value	char	3
VGW02	Standard value	char	10
VGE02	Unit of the standard value	char	3
VGW03	Standard value	char	10
VGE03	Unit of the standard value	char	3
VGW04	Standard value	char	10
VGE04	Unit of the standard value	char	3
VGW05	Standard value	char	10
VGE05	Unit of the standard value	char	3
VGW06	Standard value	char	10
VGE06	Unit of the standard value	char	3
USR04	User-defined field for quantity	char	15
USE04	User-defined field for the unit of the quantity field	char	3
USR05	User-defined field for quantity	char	15
USE05	User-defined field for the unit of the quantity field	char	3

CLOI_ORD_OPRU_IMP

SPMUS	<p>Indicates that the operation is split.</p> <p>If the indicator is set and you have entered a number of splits greater than "1", the operation is split.</p> <p>If the indicator is set and you have not entered a number of splits, the operation is not split.</p> <p>If the indicator is set and you have entered a number of splits greater than "1", the operation is split in reduction, if necessary.</p> <p>The operation is only split if it is scheduled according to the operation control key.</p>	char	1
SPLIM	Number of splits	char	5
ZMINB	Minimum processing time	char	10
ZEIMB	Unit for the minimum processing time	char	3
UEMUS	Indicator you use to specify that operations must overlap. The system always tries to overlap the operation with the next operation in scheduling.	char	1
UEKAN	Indicator you use to specify that the operation is to overlap with the next operation, if necessary. When the execution time of the operation is reduced, the system tries to overlap operations.	char	1
ZMINU	Minimum overlap time	char	10
ZEIMU	Unit for the minimum overlap time	char	3
MINWE	Minimum send ahead quantity	char	14
FLIES	Indicates continuous flow production. In continuous flow production, the operation is overlapped with the next operation in scheduling as soon as the minimum send-ahead quantity is reached.	char	1
BMSCH	Base quantity	char	14
FSEDD	Earliest date when execution of operation can finish	dates	8
FSEDZ	Earliest time when execution of operation can finish	times	6
FSAVD	Earliest date when execution of operation can start	dates	8
FSAVZ	Earliest time when execution of operation can start	times	6
FSSBD	Earliest date when processing of operation can start	dates	8
FSSBZ	Earliest time when processing of operation can start	times	6
FSSAD	Earliest date when teardown of operation can start	dates	8
FSSAZ	Earliest time when teardown of operation can start	times	6
SSEDD	Latest date when execution of operation can finish	dates	8
SSEDZ	Latest time when execution of operation can finish	times	6

CLOI_ORD_OPRU_IMP

SSAVD	Latest date when execution of operation can start	dates	8
SSAVZ	Latest time when execution of operation can start	tims	6
SSSAD	Latest date when teardown of operation can start	dates	8
SSSAZ	Latest time when teardown of operation can start	tims	6
SSSBD	Latest date when processing of operation can start	dates	8
SSSBZ	Latest time when processing of operation can start	tims	6
CY_SEQNRV	Sequence number for production order operations	nunc	14 (int)
ESTAT			
METHOD	<p>Methods are functions that can be carried out for only one object. Example: scheduling orders</p> <p>Possible values:</p> <p>Dispatch</p> <p>dispatching of an operation</p> <p>(status "dispatched" is set once the operation receives the data changes and is rescheduled, if necessary, then the operation is fixed)</p> <p>Deallocate</p> <p>deallocation of an operation (status "dispatched" is removed and the operation is no longer fixed)</p> <p>SetUserStatus</p> <p>RevokeUserStatus</p>	char	50



Field EXTAUFNR is only used for orders that were created during a transfer since the external optimization program does not recognize the order numbers assigned by the R/3 System.

Operations are deallocated when scheduling-related changes are made.

Always enter the date and time in the specified format.

You can enter the date and time for an operation in two ways:

- Specification of one date/time element. The R/3 System schedules the operation and calculates all date/time elements.
- Specification of all date/time elements.

If you enter the date and time and choose **Dispatch** as the method, the R/3 System no longer changes the times when scheduling.

Scheduling-related changes in the planned order automatically trigger deallocation.

You can define the work center either using the field ARBID or the fields ARBPL and WERKS.

CLOI_ORD_OPRU_IMP

CLOI_MAP_EXP

This table is used if planned, production, or process orders are created. The SAP number corresponding to the external planned, production, or process order number is transferred. This table is only filled after a commit.

CLOIMAP

Field	Description	Type	Length
EXTNUM	External order number either for planned orders or for production/process orders	char	12
INTNUM	Internal order number either for planned orders or for production/process orders	char	12
XPLAF	Order type = "X": planned order = " ": production or process order	char	1

CLOI_METHOD_LOG_EXP

CLOI_METHOD_LOG_EXP

This table is used if the log file for the external optimization system is sent back. The events in the SAP System are described in this log file.

CLOIMETLOG

Field	Description	Type	Length
INDX	Index for each entry	char	10
LOGLEVEL	Level for the log of executed methods	char	10
METHOD	Methods are functions that can be carried out for only one object. Example: scheduling orders	char	1
OBJTYP	Field specifying the object category for which the method is to be generated: orders planned orders order sequence operations in orders "operations in planned orders"	char	32
PLNUM	Planned order number	char	10
EXTPLNUM	Planned order number of the external system	char	10
PLNFL	Sequence of operations within a task list	char	6
AUFNR	Order number	char	12
EXTAUFNR	Order number of the external system	char	12
APLFL	Sequence number	char	6
VORNR	Operation number	char	4
OBJIDEXT	SAP external object key	char	90
SUCC_CODE	Field specifying whether the method was successfully executed	char	10
WORST_S_C	Worst success code	char	10
FIRST_MSGL	First entry in the message log for the method (in char)	char	10



This table provides an overview of the executed methods. The entries in the table may look different for various object types.

Examples of these methods are "UPDATE", "CREATE", "DELETE", "READ".

This table is only returned if the parameter CLOI_IF_PAR-METLOG_REQ was set to X. In addition, you can control the content using parameter CLOI_IF_PAR-MET_FILTER.

CLOI_METHOD_LOG_EXP

OBJIDEXT: if the object type is a planned order, "planned order operation", production order/process order or production/process order operation, you must also enter a unique identification in the fields PLNUM, EXTPLNUM, PLNFL, AUFNR, EXTAUFNR, APLFL and VORNR.

CLOI_MESSAGE_LOG_EXP**CLOI_MESSAGE_LOG_EXP**

This table is used for returned messages from table CLOI_METHOD_LOG_EXP and contains the messages that occurred during the execution of a method.

CLOIMSGLOG

Field	Description	Type	Length
INDX	Index for each entry	char	10
MSGID	Grouping term for each work area in which the number of the message is stored	char	2
MSGNO	Number of the message	char	3
MSGTY	This field describes the type of message: "I" information "W" warning "E" error "A" program termination (abort)	char	1
MSGV1	Message variable 01	char	50
MSGV2	Message variable 02	char	50
MSGV3	Message variable 03	char	50
MSGV4	Message variable 04	char	50
INDX_METH	Index of the method in the log	char	10
FIRST_OBJ	First entry in the MSGOBJ table for the message	char	10



This table is only returned if parameter CLOI_IF_PARAMETER-MESLOG_REQ is set to X. In addition, you can control the content using parameter CLOI_IF_PAR-MSG_FILTER.

CLOI_MSG_OBJ_LOG_EXP

This table is used for objects that are returned and belong to table CLOI_MESSAGE_LOG.

CLOIMOBLOG

Field	Description	Type	Length
INDX	Index for each entry	char	10
OBJTYP	Object type	char	32
PLNUM	Planned order number	char	10
EXTPLNUM	Planned order number of the external system	char	10
PLNFL	Sequence of operations within a task list	char	6
AUFNR	Order number	char	12
EXTAUFNR	Order number of the external system	char	12
APLFL	Sequence number	char	6
VORNR	Operation number	char	4
OBJIDEXT	SAP external object key	char	90
INDX_MSG	Index of the corresponding entry in table CLOI_MESSAGE_LOG_EXP	char	10



This table is not supported in Release 3.1G.

CLOI_PLORD_EXP**CLOI_PLORD_EXP**

This table is used for returned information from the planned order header.

CLOIPLAF

Field	Description	Type	Length
EXTPLNUM	External planned order number	char	10
.include E1PLAF	All fields of segment E1PLAF fo the IDoc LOIPLAF are included		



This table contains information about planned orders that are loaded in the R/3 System during the upload.

This table is only returned if parameter CLOI_IF_PAR-PLORD_REQ is set to X.

CLOI_ORD_EXP

This table is used for returned information for production and process orders.

CLOIORD

Field	Description	Type	Length
EXTAUFNR	External order number	char	12
.include E1AFKOL	All fields of segment E1AFKOL of IDoc LOIPRO are included		



This table contains information about production/process orders that are loaded in the R/3 System during the upload.

This table is only returned if parameter CLOI_IF_PAR-ORD_REQ is set to X.

CLOI_PLORD_OPR_EXP

CLOI_PLORD_OPR_EXP

This table is used for returned information from operations and planned orders.

CLOIPLOPR

Field	Description	Type	Length
PLNUM	Planned order number	char	10
EXTPLNUM	External planned order number	char	10
.include E1PLOPL	All fields of segment E1PLOPL of IDoc LOIPLO are included		



This table contains information about operations from planned orders that are loaded in the R/3 System during the upload.

This table is only returned if parameter CLOI_IF_PAR-PLORDOPR_REQ is set to X.

CLOIORD_OPR_EXP

This table is used for returned information from operations in production and process orders.

CLOIOPER

Field	Description	Type	Length
AUFNR	Order number	char	12
EXTAUFNR	External order number	char	12
APLFL	Sequence number	char	6
.include E1AFVOL	All fields of segment E1AFVOL of IDoc LOIPRO are included		



This table contains information about operations from production/process orders that are loaded in the R/3 System during the upload.

This table is only returned if parameter CLOI_IF_PAR-ORDOPR_REQ is set to X.

CLOI_ORD_SEQ_EXP

CLOI_ORD_SEQ_EXP

This table is used for returned information from production and process order sequences.

CLOIOPER

Field	Description	Type	Length
AUFNR	Order number	char	12
EXTAUFNR	External order number	char	12
.include E1AFFLL	All fields in the segment E1AFFLL of the IDoc LOIPRO are included		



This table contains information about production/process order sequences that are loaded in the R/3 System during the upload.

This table is only returned if parameter CLOI_IF_PAR-ORDSEQ_REQ is set to X.

Function Module CLOI_MESSAGES_TEXT_GET

CLOI_MESSAGES_TEXT_GET	
Interface	Access by RFC
Function	CLOI_CHANGES_UPL_31
Short description	Assigns the appropriate texts to message numbers

Import parameter:	CLOI_LANGU [Page 190]	corresponds with	SY_LANGU	
	CLOI_MSG_IMP [Page 191]	corresponds with	CLOIMSGLOG	optional
Export parameter:	CLOI_MSG_TEST_EXP [Page 192]	corresponds with	CLOIMSGTXT	optional

_IMP: import table signifying information to be transmitted to the SAP R/3 Module

_EXP: export table signifying information to be transmitted to the optimization system

CLOI_LANGU**CLOI_LANGU**

This parameter describes the language in which messages appear on screen. If no entries are made, the messages appear in the logon language.

CLOI_LANGU

Field	Description	Type	Length
CLOI_LANGU	Indicates the language in which the description is entered	char	1

CLOI_MSG_IMP

This table is used to assign the appropriate texts to message numbers after the language has been selected.

CLOIMSGLOG

Field	Description	Type	Length
INDX	Index for each entry	not used	
MSGID	Grouping term for each work area in which the number of the message is stored	char	2
MSGNO	Number of the system message	char	3
MSGTY	This field describes the type of message: "I" information "W" warning "E" error "A" program termination (abort)	char	1
MSGV1	Message variable 01	char	50
MSGV2	Message variable 02	char	50
MSGV3	Message variable 03	char	50
MSGV4	Message variable 04	char	50
INDX_METH	Index of the method in the log	not used	
FIRST_OBJ	First entry in the MSGOBJ table for the message	not used	

CLOI_MSG_TEXT_EXP**CLOI_MSG_TEXT_EXP**

This table is used to transfer messages with their assigned texts to the external optimization program.

CLOIMSGTXT

Field	Description	Type	Length
INDX	Index of the message text in the table	char	10
MSG_TEXT	Text entry for the message	char	72
INDX_MSG	Index of a message for a method	char	10

Transportation Planning Interface

The SAP R/3 system offers automated support for external optimizing transportation planning, since the huge number of different possible transportation processing procedures and optimization criteria require software that is exactly adapted to the customer's needs.

The use of specialized software components is becoming increasingly important as a way to optimize the efficient planning of transportation requirements. The SAP R/3 system offers automated support for external optimizing transportation planning, since the huge number of different possible transportation processing procedures and optimization criteria require software that is exactly adapted to the customer's needs.

To meet these special customer requirements for transportation planning, you can set the SD-TPS interface described below between the SAP R/3 system and one or more specialized, external transportation planning systems (TPS).

Process Flow Overview

During the standard business process in R/3 you create a shipment and are given a selection of deliveries, that are to be planned for the shipment. This process is mainly carried out manually.

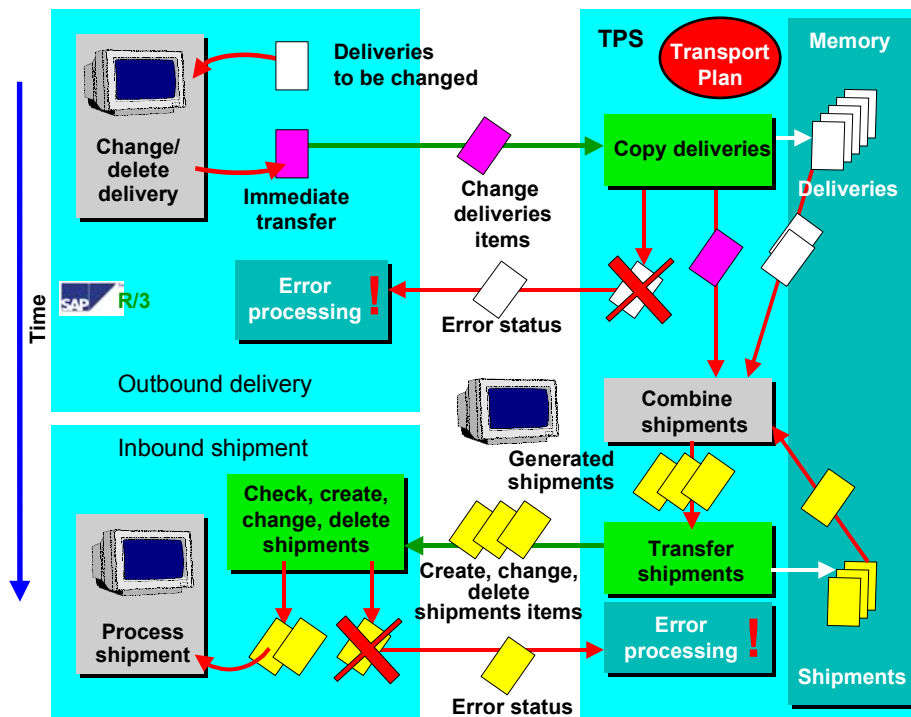
When an external system is used for transportation planning, a record of deliveries to be transported is selected in R/3 and is sent to the planning system. There, the deliveries are combined into shipments according to different optimization criteria. The shipments created are sent back via the interface to R/3 and are then used for generating shipment documents in the R/3 system. The master data (e.g. customer address, goods receiving hours) must be the same in both systems for the shipment documents to be posted correctly.

The creation and changing of shipments is carried out in the transportation planning system. All other processing stages for the shipment (printing papers, transportation start etc.) are carried out in the normal way in R/3.

Organizational Linking

The organizational linking of an external transportation planning system is carried out in R/3 by assignment to a transportation planning point. The planning system also has the function of an external transportation planning point. Only one planning system can be assigned to an external transportation planning point. It is, however, possible to assign several transportation planning points to a planning system, if different MRP controllers have to work with the same system.

Transportation Planning Interface



Functions

The SD-TPS interface supports the following functions:

SAP to transportation planning system:

- Transfer of location master data
- Transfer of deliveries to be planned
- Transfer of status values for planned shipments

Transportation planning system to SAP:

- Transfer of planned shipments
- The two systems also exchange error status data with reference to the correctness of the documents transferred.

Partner Concept

In order to provide our customers with a flexible and secure link to the transportation planning system, we will work together with selected partners. The responsibilities are distributed between SAP and its partners as follows:

SAP delivers the technical tools necessary for a connection to an external system (IDocs, ALE, RFC) as part of the standard release as of 3.1. On the application side, functions (transactions, standard IDocs, Customizing) are provided that represent relevant business processes and allow the corresponding processing to be carried out in the R/3 system.

Transportation Planning Interface

The partners are responsible for all processing procedures between data being transferred from and returned to the R/3 system. In other words, the correct interpretation of R/3 data, planning of shipments according to requirements, the data transfer back to the R/3 system in the correct format and the technical communication between the computer systems. One of their most important tasks is that of the first contact partner for customers if errors occur during communication of data.

A certification procedure is provided for the partner, to check whether the partner meets the requirements for successful connection of an external system to the SAP R/3 system using the technique described above. The functionality of the partner application software will not be checked.

Technical Information

The interface uses the transaction Remote Function Call (tRFC). This is a simplified procedure that makes program to program communication possible.

Unlike the synchronized Remote Function Call (sRFC) the tRFC saves data before it is transmitted. This unlinks application and communication.

SAP provides streamlined monitoring for the logical analysis of errors. Furthermore, a message is sent to the person or people responsible if an error occurs. Their inboxes are set to allow follow-up posting.

Certification Requirements

SAP will issue a certificate if a partner can prove correct transfer and functionality for all IDoc connections and the test scenarios provided. The list of IDocs required to obtain the certificate can be seen in the description of the IDocs.

SAP-R/3 Transportation Planning Interface (SD-TRA-IN)

The SAP R/3 system offers automated support for external optimizing transportation planning, since the huge number of different possible transportation processing procedures and optimization criteria require software that is exactly adapted to the customer's needs.

[Transportation Planning Interface \[Page 193\]](#)

[Logical Communication Processes Between SAP-R/3 and the Transportation Planning System \[Page 197\]](#)

[Application Transactions of the Interface \[Page 202\]](#)

[Configuration Options for Delivery Transfer \[Page 206\]](#)

[Technical Communication \[Page 213\]](#)

[IDoc Description \[Page 284\]](#)

[Description of the IDoc Segments, Fields and Domain Values \[Page 299\]](#)

[SAP System Settings and Modifications \[Page 274\]](#)

[Error Analysis \[Page 276\]](#)

[Modifications \(Customer Functions\) \[Page 280\]](#)

Logical Communication Processes Between SAP-R/3 and the Transportation Planning System

The communication processes between the R/3 system and the transportation planning system can be divided up into

- location master data,
- transaction data, i.e. planning requests (deliveries) and planned shipments,
- status transfer and error processing

Location Master Data

The location master data needs to be the same in both systems. Depending on the functionality of the external system, this can be ensured with an initial data compare with changes administered via IDoc TPSLOC01 or via a direct location data transfer during communication within IDoc TPSDLS01.

Location master data includes the following:

- customer master records with address and goods receiving hours of the unloading points
- vendor master records with address
- external service agent master records with address (service agents are used for vendor details)
- plant master records with address
- shipping point master records with address
- transportation planning point master records with address and details

The transfer of the master data with IDoc TPSLOC01 can be carried out at the following times:

- initial transfer of all necessary location master data after the external system has been activated using transaction VT60
- semi-automatic transfer of all changed location master data for customers, vendors and service agents using the ALE change indicator for IDoc category TPSLOC (note in change table, transfer by program)
- manual transfer of all changed location master data (plants, shipping points, transportation connection points) after modification.

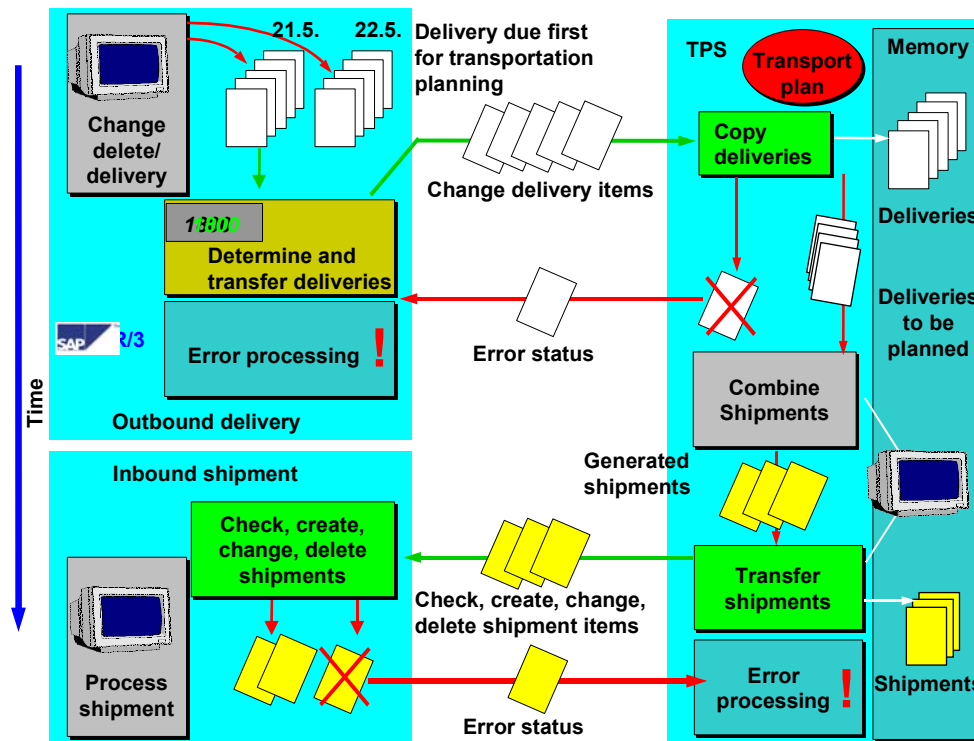
When data is being transferred from the SAP system to the transportation planning system, the address data records of the locations used are transferred in IDoc TPSDLS01, along with the deliveries to be planned. This is so that the correct data for dispatch and points of destination are available in planning systems that may not maintain it's own location master data records. The address data transfer with the deliveries to be planned is used for reference purposes with all external systems, especially when one-time customers (CPD) are involved.

Logical Communication Processes Between SAP-R/3 and the Transportation Planning System

Transaction Data

The transfer of transaction data is carried out in two directions. Planning requests, i.e. deliveries that have to be planned and assigned to shipments, are transferred to the planning system from R/3 and planned shipments are transferred back from the planning system to the R/3 system.

In the case of newly created deliveries that are to be assigned to shipments, the scenario can be described as follows:



Outgoing Delivery / Planning Requests

For the transfer of planning requests, i.e. the transfer of deliveries to be planned to a transportation planning, R/3 is provided with different procedures and points of communication of data:

The alternatives include:

- implicit transfer by message control after creating a delivery (if no special criteria are relevant, if, for example, all deliveries are to be sent to the transportation planning system)
- explicit transfer by calling a program via transaction VT61 with the option to select deliveries according to several criteria. The actual transfer is carried out via message control or as a direct transfer.
- automatic transfer by starting transfer program RV56LFTP at specified times (definition of selection variants, transfer in background processing). The actual transfer takes place via message control or as a direct transfer.

Logical Communication Processes Between SAP-R/3 and the Transportation Planning System

- implicit transfer by planning a delivery via transaction VT68 without deleting it in R/3. The actual transfer takes place via message control or as a direct transfer.

Mandatory:

- implicit retransfer via message control after a delivery has been changed
- implicit transfer via direct transfer when a delivery is deleted Selection of deliveries to be planned is carried out in R/3 either
- using a report with an option screen that is started via transaction VT61,
- or by calling report RV56LFTP with variants at regular intervals.

The report uses the delivery selection function in the same way as for shipment processing (transaction VT01). In addition, a transportation planning point must be specified that corresponds to the transportation planning system.

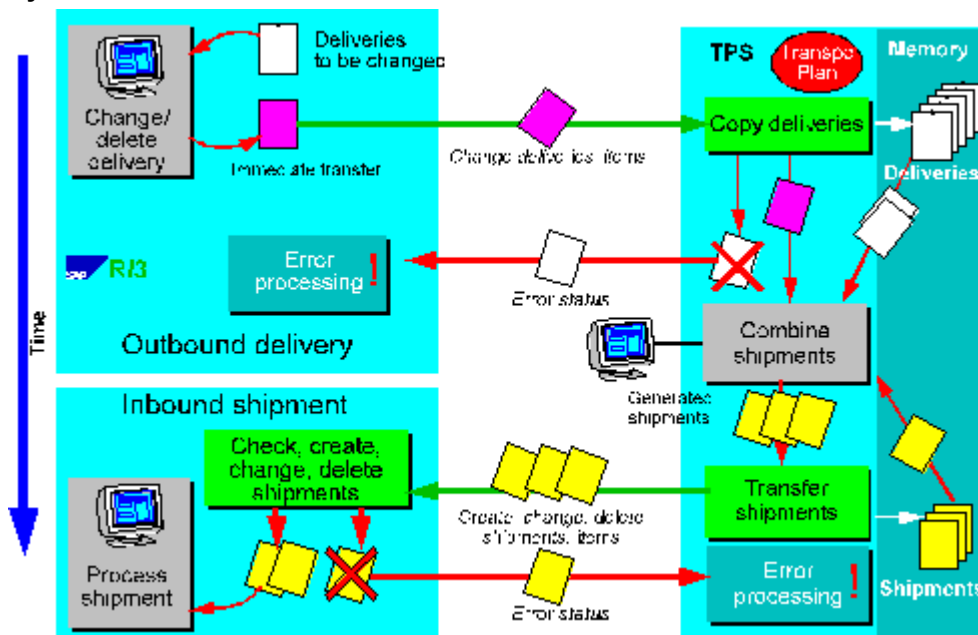
Transfer of deliveries is carried out as follows:

1. Determination of a transportation planning system (transportation planning point)
2. Selection of deliveries according to the criteria specified
3. Combining of deliveries and accompanying items.
4. Determination of the transportation-relevant items (optional).
5. Determination of dispatch location and point of destination of the delivery and possibility of additional shipments, e.g. main leg for sea transportation (optional).
6. Cumulation of delivery items with the goods classes of the materials being delivered and a specified goods type directory (optional)
7. Customer functions for user-specific changes or enhancements of the combined delivery data and the IDoc
8. Creation of the IDoc (one IDoc per delivery document with the option to combine several IDocs into packets)
9. Transmission of the IDocs to a planning system

Deliveries that are changed in R/3 (transaction VL02) after they have already been reported to the transportation planning system are automatically retransferred after the changes are posted (provided they are relevant to transportation). This functionality is activated by the link to message control. When a change is made, the whole document is retransferred (not only the changed data is transferred).

The scenario for transportation-relevant deliveries that have been changed after data was transferred to the transportation planning system, can be described as follows:

Logical Communication Processes Between SAP-R/3 and the Transportation Planning System



If a delivery is deleted in R/3, this deletion command is transferred automatically to all transportation planning systems that had previously been planning the relevant delivery for assignment to shipments. Deletion of the delivery document in R/3 is carried out, although, in certain circumstances, some references to this delivery can remain open in the externally planned R/3 shipment documents. Shipment documents with these open references cannot be changed in R/3 until the change command is received from the transportation planning system for the document in which the delivery no longer exists.

Incoming Shipment

The incoming shipment IDocs TPSSHT01 are interpreted, checked and then serve as the basis for the creation, changing or deletion of R/3 shipment documents that are then posted in the database.

The functional process flow can be described as follows:

- Importing the IDocs via the ALE layer
- Interpretation of the IDocs, resulting in the creation, changing or deletion of shipment documents. The individual stages for creating/changing each shipment document are determined by the shipment header, the shipment items, the dates and the shipping units.
- Posting the created/changed documents.

Shipment documents created by a transportation planning system can only be changed within very narrow limits in the R/3 system. Changing transportation-relevant data can be limited or completely forbidden in the Customizing settings. Data that should not be changed includes all data that would make it necessary to change documents in the transportation planning system (legs, delivery assignment, external service agents, means of transport, document numbers).

Logical Communication Processes Between SAP-R/3 and the Transportation Planning System**Outgoing Shipment**

For an externally planned shipment document, a freeze or release message can be sent to the transportation planning system depending on the allowed shipment status specified in Customizing. IDoc TPSSHT01 is used for this. After the freeze message is transmitted for a shipment document in R/3, the corresponding shipment in the planning system can no longer be changed. Similarly, a release message from the R/3 system means that the shipment document can be changed again in the planning system.

Status Transfer and Error Processing

Automatic processing of logical errors, i.e. errors that occur as a result of the message content, is carried out in the R/3 system using the workflow options provided by the ALE layer. The receiving system can react to a logical error by sending back an error message using IDoc SYSTAT01. The IDoc is constructed so that the error source can be localized precisely.

Workflow can be set in R/3, so that the employee responsible is informed when this error message is received as a reply to the transfer of delivery data to a transportation planning system.

You have the option to make the relevant settings in Customizing for the R/3 transportation planning point so that an error message can be created and sent as an answer to the transportation planning system upon receipt of incorrect incoming shipment documents.

Application Transactions of the Interface

Application Transactions of the Interface

The following sections describe the application transactions and programs with which the user can access the functionality of the transportation planning interface for transfer of data from the SAP R/3 system to a transportation planning system.

Transfer of Location Data

The following sections describe the functions for transfer of location data.

Initial Transfer

The initial transfer of location data should take place when the interface is activated. All necessary master data should be copied into the database of the transportation planning system. During this process, the SAP system always represents the reference.

You can start master data transfer via menu path *Logistics → Central Functions → SCP Interfaces → TPS Interface → Send master data*.

The transfer program runs in two stages: the first program (RV56LMTP) serves to define the planning system (Transportation planning point) and the location master data to be transferred. This program then starts the actual transfer program (RV56LMSL), the selection screen of which allows you to specify exactly which location master data you want to transfer.

In the selection screen of the first program RV56LMTP, only transportation planning points that are linked to an external planning system are accepted. You can also use check-boxes to select which location master data types will appear on the selection screen of the second program RV56LMSL.

Automatic Transfer of Changed Master Records

The master data of customers, vendors and also of forwarding agents are connected to the ALE-change indicator. The function is available after activating the change indicator for message type 'TPSLOC' in Customizing. If a data field relevant to the interface is changed in a master record that has already had details transferred, then a change indicator is created automatically.

The change indicators must then be evaluated. This involves transferring the changed master data documents. The evaluation of the change indicators is carried out via *Logistics → Central Functions → SCP Interfaces → TPS Interface → Send master data*. Here, you enter message type 'TPSLOC'.

Regular, automatic evaluations of the change indicators can be carried out as a job via program **RBDMIDOC**.

Manual Transfer of Changed Master Records

The master data records for plants, shipping points and transportation planning points cannot be connected to the ALE change indicator for technical reasons. If these master data records are changed or if new ones are added, then you need to carry out a manual transfer using the functionality described in the section on 'Initial Transfer'.

If the changed or new master data can be restricted (by entry date, for example) then automatic transfer can be carried out as a job with program **RV56LMSL**. The selection criteria can then be entered as selection variants.

Setting the Partner Profile

In the partner profile for the IDoc for location master data, combined shipping must be set in order to carry out shipping as efficiently as possible. This involves creating IDocs and then transmitting them using report RSEOUT00 (transaction BD88).

Transfer of Planning Requests

Explicit Transfer by Application Transaction

Using explicit transfer you can transfer a large number of deliveries chosen from the selection requirements and which are also available in manual shipment processing (transaction VT01) to a transportation planning system. Specifying the transportation planning point (planning system) and the processing type (outbound and inbound shipment) is obligatory.



At the moment it is not possible to select outbound deliveries and inbound shipping notifications together with a selection run.

You can start the transfer of planning requests by calling up transaction **VT61** or via menu path *Logistics → Central Functions → SCP Interfaces → TPS Interface → Send deliveries*.



Deliveries that have already been transferred to a planning system once, can only then be retransferred to the same system if the delivery has been changed and message control has been activated. If you do not want this block then it can be switched off for direct transfer via a customer function. You can read more about this in the chapter *SAP System settings and modifications* as well as the online help for the customer function.

Regular Transfer per Job

Deliveries can be transferred regularly and automatically to one or more planning systems according to certain selection criteria. This is appropriate, for example, if all shipments should be planned overnight.

To do this, program **RV56LFTP** should be included as a job. Parameters must include transportation planning point, processing type, the deleted indicator for displaying the selection screen as well as selection variants for program **RV56LFSL**.

Fully Automatic Transfer

Fully automatic transfer of planning requests for generating deliveries is a special case. It should only be applied if a company wishes to plan all its deliveries with an external planning system in transportation but where only one planning system, i.e. only one transportation planning point, is available. In this case the function can be activated via a special configuration of message control (more information in '*Procedure for Transferring Planning Requests - Automatic Transfer*'). Depending on the message control configuration the message transfer will either take place immediately after posting the delivery or in later collective processing.

Deallocating Planning Requests

If deliveries should be taken out of the planning system because planning should be either carried out manually, using another system or not at all, the following options can be used.

Application Transactions of the Interface

Explicit Deallocation

Explicit deallocation means taking a delivery out of a planning system without deleting the delivery in R/3. You can deallocate deliveries by calling up transaction **VT68** or by using menu path *Logistics → Central Functions → SCP Interfaces → TPS Interface → Plan deliveries*

Once you have entered the delivery document number for the delivery to be deallocated, you will receive a lists of the all the planning systems, to which the delivery has been transferred. You can select the system and start the process using *Execute*.

Automatic Deallocation by Deleting a Delivery

If a delivery is deleted in R/3, this is then automatically deallocated from all the planning systems that it has already been transferred to. This procedure does not need any previous configuration.

Receipt of Planned Shipments

The receipt of planned shipments in R/3 takes place automatically via the ALE layer mechanisms. Some functions are available within inbound processing and further document processing which affect the transportation planning interface. In addition you need to take into account other attributes that can be partially influenced using Customizing settings.

Deleting Shipments or Shipping Units within a Shipment

Deleting shipping elements that have been created in a shipment or deleting a whole shipment is not possible in the transportation planning system if a shipping unit is not empty, i.e. if something has been packed into the shipping unit.



If materials have been packed manually into a shipping unit in an externally planned shipment document, they must first be unpacked before the planning system can delete the shipping unit or the shipment.

Automatically Setting 'Planned' Status

'Planned' status is automatically set on receipt of an externally planned shipment document. This happens regardless of whether a planned date has been transferred to the incoming document or not.



If the planning date is transferred from an external planning system, this is copied over to the planning date in the shipment document. If a planning date is not transferred, the planning date in the R/3 document is set at the date of receipt of the external document.

Locking Document Status for External Planning Systems

Document status can be set to two values for external planning systems:

- Document changeable in planning system
- Document not changeable in planning system

You can set the status of document changeability in the R/3 shipment document depending on the shipment overall status. In R/3 Customizing you can set from which

Application Transactions of the Interface

shipment status (e.g. loading begun) changing the shipment in the planning system is no longer appropriate or permitted.

If the given status is reached or overstepped from manually setting in R/3 transportation activities, a message will be sent automatically to the transportation planning system for fixing the corresponding shipment document, whereby the shipment document must be set to "do not change" in the planning system.

If the given status is overstepped in R/3 transportation activities by resetting the shipment overall status, a message is sent to the planning system, which makes it possible to re-release the processing of the shipment document.

Changeability of Externally Planned Shipments

The limit to which externally planned shipments can be changed in R/3 can be restricted, using settings in Customizing for the planning system. The following settings are possible:

- No planning relevant change permitted
- No planning relevant change permitted, apart from service agent data
- No restrictions on changes.

Configuration Options for Delivery Transfer

Configuration Options for Delivery Transfer

When configuring the transportation planning interface in **R/3-Customizing** you have the option of specifying technical or functional parameters, which determine how message is sent to the planning system and which modifications should be carried out in message before transfer.

R/3-Customizing

SAP uses this word to describe the necessary table settings for adjusting the R/3 system to the needs of the user. For example:

- Key values are determined with their attributes (e.g. shipment types)
- Number ranges are maintained (e.g. shipment number)
- organizational units are created and maintained (e.g. transportation planning points)
- Procedures for sending documents are configured (e.g. message control)
- Procedures for modifying documents are created (e.g. route restrictions)
- other customer specific system settings can be executed

The descriptions for Customizing settings are available in detail in the Implementation Guidelines in Online help. Particular specifications for setting the transportation planning interface can be found in IMG under *Tools → Customizing → Implementation projects → SAP Reference IMG → Logistics General → SCP Interfaces → Transportation Planning Interface*

Planning Restrictions for Routes

In some planning situations the whole transportation process is not determined by one transportation planning system for individual deliveries. In order to optimize the planning of domestic transportation (roads) for companies sending deliveries both at home and abroad, a planning system might be used where shipment documents can also be manually generated using R/3 transactions for transportation activities for overseas shipments (sea routes). In this case, the transportation planning system has to be notified that the destination location for planning is not definite for deliveries abroad, but that automatized planning should take place for another location (e.g. departure harbor or border location). Similar situations arise for orders that are shipped from the shipping location outside the planning area of the transportation planning system for which an automatic subsequent leg planning should be carried out.

Planning restrictions are linked to the combination of transportation planning system (transportation planning point) and routes. Thus for every planning system and delivery route joined together, you can determine separately how a substitution for the departure or destination location can be carried out in planning requests.

To determine a substitute departure or destination location for planning, location substitution procedures are used. A substitution procedure is composed of a sequence of conditions, that are checked one after the other until a valid substitution for the departure or destination location has been found. Once a substitution location has been found, the time specifications for the location are also reset as far as is possible.

The following conditions can be used in a substitution location procedure.

Configuration Options for Delivery Transfer



All the search strategies only refer to documents, currently in use for the document being processed. Locations that are used as departure and destination locations for the delivery in existing shipment, are those where the delivery is loaded or unloaded but not the absolute beginning or end of a shipment.

Condition	Time substitute	Location substituted with..
001	A, P	Departure location of earliest main leg shipment
002	A, P	Departure location of earliest preliminary leg shipment
003	A, P	Departure location of earliest subsequent leg shipment
004	F	Departure points in delivery route
050	A, P	Earliest departure location of any shipment
101	A, P	Destination location of latest main leg shipment
102	A, P	Destination location of latest preliminary leg shipment
103	A, P	Destination location of latest subsequent leg shipment
104	F	Destination points in delivery route
150	A, P	Latest destination location in any shipment Transports
200	F	Definite entered transportation connection points
999		User-specific substitution

If a substitution location is found, the system also tries to determine the connection scheduling for the departure or arrival time of the delivery to the substitution location (time substitute). This is done, applying the following procedures:

Time substitute	Function
A	Substitute with current transportation time (this takes priority due to precision, may only be maintained however in exceptional cases).
P	Substitute with planned times from shipment document.
F	Calculates new times based on delivery / GI date and the preliminary, main and subsequent leg times of the route specified in Customizing.

User-specific location substitution takes place using a customer function. You can read more about this in the *SAP System Settings and Modifications* chapter, as well as in the Online help for customer functions.



Location and Time Substitution with reference to Existing Shipments

Configuration Options for Delivery Transfer

Automatic connection scheduling to existing R/3 shipments can only take place properly if the important data have been maintained in R/3 shipment documents. The following data are absolutely necessary in the shipment document:

- Departure and destination location
- Planned departure and arrival time in shipment header
- Delivery assignment

If a connection to a stop-off shipment is planned, the following data must also be maintained:

- Shipment stages
- Delivery assignment to legs
- Departure and arrival times at shipment stage

If possible, you should also ensure that all address data for the locations to be visited is maintained.



Example: Location substitution for Subsequent Leg Planning

The 'Straße Deutschland' ('Roads Germany') planning system is used for planning the subsequent legs in the delivery route 'North America-Hamburg', which means that the departure location for the delivery is in North America (i.e. outside the planning area) and must be substituted by a suitable starting location for the planning system. The determination procedure will identify the following condition sequence, which is processed sequentially until a substitution location has been found:

1. End of the last main leg: if one or more main legs exist for the corresponding delivery, the destination location of the last main leg is used as the starting location for the planning. The shipment end date becomes the shipment departure date.
2. End of delivery route: if in existence, the end point of the delivery is used as the starting point of the planning. The departure time is determined using the delivery date and the specified subsequent leg time.
3. Predefined points: points defined in Customizing are used and a departure time is not determined.
4. No substitution takes place.



The following shows the four most relevant substitution procedures with their condition steps.

Automatic Preliminary Leg Planning: Connections to Departure Location of an Existing Main Leg Shipment:

Step	Condition	Location substituted by:
001	001	Departure location of earliest main leg shipment

Configuration Options for Delivery Transfer

002	004	Departure points in delivery route
		no substitution of destination location

Automatic Subsequent Leg Planning: Connection to destination location in existing main leg shipment:

Step	Condition	Location substituted by.
001	101	Destination location of latest main leg shipment
002	104	Destination points of delivery route
		no substitution of departure location

Automatic Main Leg Planning: Connection to destination location in existing preliminary leg shipment:

Step	Condition	Location substituted by:
001	102	Destination location of latest preliminary leg shipment
002	004	Departure points of delivery route
		no substitution of departure location

Automatic Main Leg Planning: Connection to departure location in existing subsequent leg shipment:

Step	Condition	Location substituted by.
001	003	Departure location of earliest subsequent leg shipment
002	104	Destination points in delivery route
		No substitution of departure location

Material Cumulation

To plan shipments it is absolutely necessary to know the materials / delivery items to be transported in all details.



In certain circumstances it is not always relevant whether two delivery items, one each for 500 liters of red and 500 liters of green paint, for example, are to be transported. Often it is enough to know that 1000 liters of paint have to be planned as shipment goods. The circumstances are similar in batch handling, where different batches from one material are divided between several delivery items.

Delivery items can be combined according to different criteria, in order to achieve a better overview or to reduce the data volume that is to be transferred. This combination (cumulation) can take place separately for each combination of transportation planning position and route. However it can also be carried out altogether for a transportation planning point.

Configuration Options for Delivery Transfer



Cumulation of delivery items takes place in a transportation planning interface always related to deliveries, i.e. a cross delivery cumulation is not provided for.

When creating planning requests there are two options for creating planning requests for the cumulation of items in the current delivery:

- Reduction of shipment relevant items:

Activating this function affects the

- combination of batch items in a header item per material
- combination of product selection of a material in a header item
- deletion of BOM items irrelevant to the shipment.



Text and value items as well as automatically generated packing items are not transferred in general.

- Cumulation according to freight code:

A freight code set can be assigned to the combination of transportation planning point and route and the freight code can be defined together with the material freight group from the material master. The items from a delivery are combined according to freight codes and the type of material will only be represented by the freight type code in the message. The quantity is only available in weight and volume specifications and no longer as number of pieces, etc.

If both cumulation procedures are activated, the cumulation will first be carried out according to shipment relevant items and then according to freight type.

The option exists to implement a user specific cumulation via a customer function. This customer function is carried out according to both the reduction of shipment relevant items and freight class. You can read more about customer functions in *SAP System Settings and Modifications* as well as in the online help documentation.

Procedure for Transferring Planning Requests

Standard Transfer Procedure with Message Control

Using message control should be regarded as the standard transfer procedure. Other procedures should only be used in exceptional cases. Transfer with message control contains the following characteristics:

- Initial transfer using transaction VT61 generates entries in message control, which are used for creating planning requests for the time planned in the message type and which are then transferred.
- The transfer of planning requests based on changed deliveries takes place automatically.
- You can use the control mechanisms in message control.

The following settings allow you to set the standard transfer procedure for a planning system:

Configuration Options for Delivery Transfer

- Create an message type for your planning system based on template 'TPS0'. Don't forget to maintain the processing program as well.
- Set the required dispatch time.
- Enter your new message type in the message procedure for the shipping message and set the requirement to '40' (delivery to external TPS).
- Enter your message type in the transportation planning point assigned to the planning system.



If several planning systems are connected to your R/3 system, then you need your a different message type for each planning system.

Direct Shipping without Message Control

Direct shipping should be used particularly if using message control will lead to a considerable loss in performance, i.e. if a large number of deliveries have to be shipped. Planning requests are structured in message control by reading individual documents in R/3 in comparison to direct shipping, where a mass transaction takes place.



Because of the missing connection to message control, the change controls are also deactivated for delivery documents. Deliveries are therefore not automatically retransferred once they have been changed. For a retransfer you must use transaction VT61, ensuring that the customer function for avoiding the transfer lock has been activated. You can read more about the customer function in the *SAP System Settings and Modifications* chapter as well as in the online help documentation.

In order to activate direct shipping you must not:

- Enter any message type in the transportation planning point.

Automatic Transfer

Automatic transfer only works with a transportation planning system where all the deliveries are always shipped directly.

Automatic message control has the following characteristics:

- Posting a new delivery generates entries in message control, which are used for creating planning requests for the time planned in the message type and which are then transferred.
- The transfer of planning requests based on changed deliveries takes place automatically.
- You can use the control mechanisms in message control.

The following settings allow you to set the standard transfer procedure for a planning system:

- Create an message type for your planning system based on template 'TPS0'. Don't forget to maintain the processing program as well.
- Set the required dispatch time.

Configuration Options for Delivery Transfer

- Enter your new message type in the message procedure for the shipping message and leave the requirement field blank.
- Enter your message type in the transportation planning point assigned to the planning system.



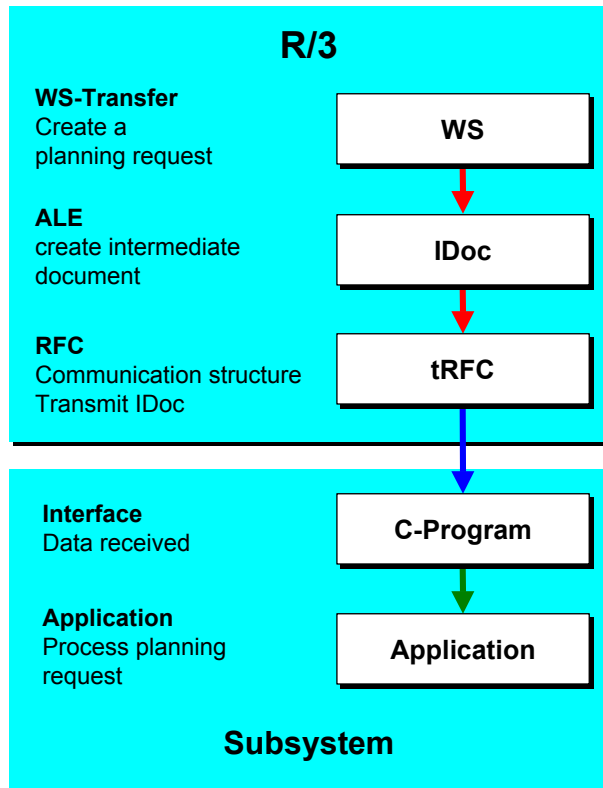
As well as the automatic planning system you can use addition systems with standard transfer procedures.

Technical Communication

The following chapter deals with the technical aspects of communication and data flow between SAP-R/3 and a non-SAP system (subsystem).

Transmitting Planning Requests

The following overview shows the procedure for transmitting message from R/3 to a subsystem.



Creating a Planning Requirement in Transportation

The planning requirement for planning deliveries can be created with the functions described in section *Outbound Delivery*. The procedure can be carried out either as an online transaction, or as a background job, using message control.

Saving the Data in the ALE Layer

Within the same process (LUW, Logical Unit of Work) the data is formatted in the form of repository (data dictionary) structures by the ALE level function module. These structures are called IDocs (Intermediate Document). The IDocs created are saved in the database.

You can find exact information on the structure and definition of an IDoc under [IDoc Description \[Page 284\]](#) and [Description of the IDoc Segments, Fields and Domain Values \[Page 299\]](#).

Technical Communication

Communication Structure and Transmission of the IDocs

Transmission of the IDoc is carried out asynchronously to the creation of the IDoc, that is, after the IDoc is created, transmission is carried out by ALE. An IDoc can be transmitted directly, or combined first and then sent as part of a package of several IDocs.

During IDoc transmission the ALE uses transactional Remote Function Call (tRFC). A remote shell is started in the subsystem and a C program is called to which the function to be called is transferred within the program. The underlying technique that allows transmission to be carried out correctly according to the log, is described above as an RFC layer. From the program side, a library of C development programs are provided.

For further information on the creation of the C-Program and further system settings, see the following sections and the documentation in the RFC libraries.

Subsystem Tasks

The C program for receiving the data must be provided on the subsystem. There is also a sample program. This is supported by the RFC library that you receive from SAP as a certification partner (RFC SDK, Remote Function Call Software Development Kit).

The program must save the data after receiving it before the receipt confirmation is sent back to the R/3 system. Then, data processing can start in the subsystem. SAP recommends this intermediate saving procedure, which allows communication of processing logic to be carried separately on the subsystem.

Also, the subsystem provides status administration for the data that is received. This prevents duplicated processing. You should also note that the subsystem must be able to recognize if an IDoc has already been transmitted once by the R/3 system. This is made possible by the unique transaction ID for each communication procedure (see also technical documentation for the RFC).

As well as the transaction ID, the IDoc number can also be used to recognize that an IDoc has already been transferred. The IDoc number is only unique within a given client of an SAP system. If communication is carried out with several clients and/or several SAP systems, then the IDoc can not be identified using only the IDoc number.

Error Processing in Communication

During transmission, the following problems usually occur:

Posting termination in the application (e.g. when creating a planning requirement)

In this case, the error is not critical for communication, because no IDoc can be created without a planning requirement. Both postings are carried out in the same LUW and are therefore posted synchronously.

Error in the ALE layer

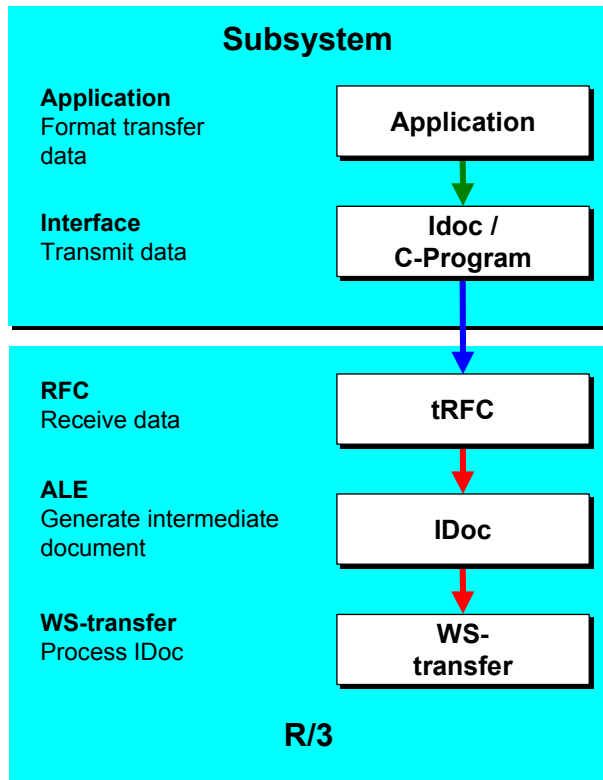
1. The data that was formatted in the LUW (this creates the IDoc) and which was sent to ALE is syntactically incorrect. The IDoc is copied and saved by the ALE but cannot be transmitted. For more information about this error, see section *SAP System Settings and Modifications*.
2. The partner profile for outbound processing is not defined for the receiver and the message type of the IDoc in ALE. The IDoc is saved but cannot be transmitted. For more information about this error, see section *SAP System Settings and Modifications*.

No connection

If an IDoc is created but the connection can not be made, then a report running in the background ensures that communication occurs from time to time. If the connection is restored, then the IDocs are transmitted automatically.

Receiving Planned Shipping Documents

The following overview displays the receipt of shipping documents that have been generated from planning requests by the subsystem.



Formatting and Transmitting Shipment Data

The primary task of the subsystem is to optimize planning of shipments from the planning requests that have been transmitted from the R/3 system. Fully planned shipments must be transmitted back to the R/3 system using the communication path provided (transactional RFC). The subsystem carries out the following tasks within the framework of communication with the SAP R/3 system:

Intermediate Storage of Data and Formatting for IDoc

The subsystem shipment data must be saved in an IDoc-specific data structure. For information on the definition and structure of the different IDocs, see sections [IDoc Description \[Page 284\]](#) and [Description of the IDoc Segments, Fields and Domain Values \[Page 299\]](#).

Technical Communication

Calling a Central Function Module in R/3 using the Transfer Program

You need the RFC library for programming support for the transfer program too. The central function module belongs to the ALE layer.

Several IDocs can be transferred in one communication procedure - that is, when an R/3 function module is called once.

Updating After IDoc Transmission

During transmission, the subsystem must provide status administration for the transmitted data. If the IDoc is transmitted unsuccessfully, then it must be transmitted again later.

On the SAP side, duplicated transfer of IDocs must be avoided. This is where the transaction ID is used. This is defined by SAP for each communication procedure. The data that are transferred by the subsystem must always be transmitted with this transaction ID (see also technical documentation on the RFC). The same transaction ID must be entered for subsequent retransmissions.

The IDoc number is not used by the SAP system to check duplicated transfer.

Receipt and Posting of Data

ALE receives the IDoc and writes it into the database. After this intermediate saving procedure, a confirmation of receipt is sent back to the subsystem. The IDoc is then forwarded to the application (asynchronously with regards to receipt) where processing is carried out.

The application in R/3, that carries out the creation, changing and deletion of a shipment document, sends a status back to ALE for each IDoc. This IDoc status is the basis for processing any possible errors.

Error Processing

The following errors may occur:

Connection can not be made at present.

The subsystem should use status administration to ensure that subsequent posting can be carried out.

Error in the ALE layer

An IDoc was created, but processing has not commenced

This error occurs (as in transmission from R/3), if the IDoc received is syntactically incorrect or if the partner profile for inbound processing is missing for the sender and the message type of this IDoc. For more information on this error see section *SAP System Settings and Modifications*.

Error in the Application (e.g. when posting the transfer request)

This is a question of a logical error in the application. A message is issued to a planning position with the IDoc status mentioned above. Several users can be assigned to a planning position. Each user receives the error message in their own SAP-OFFICE-Inbox. As soon as a user enters and processes the error message, it disappears from the other inboxes.

Technical Programming for the Subsystem Connection

This section provides you with an overview of the technical details involved in the connection of a subsystem to the R/3 system. Detailed documentation of the Remote Function Call exists in RFC SDK and in the R/3 system online documentation. This section is intended to give you an

overview of the programming techniques. It is not comprehensive. Please see the other documentation as well if you want to carry out connection yourself.

Transmission from SAP to a Subsystem

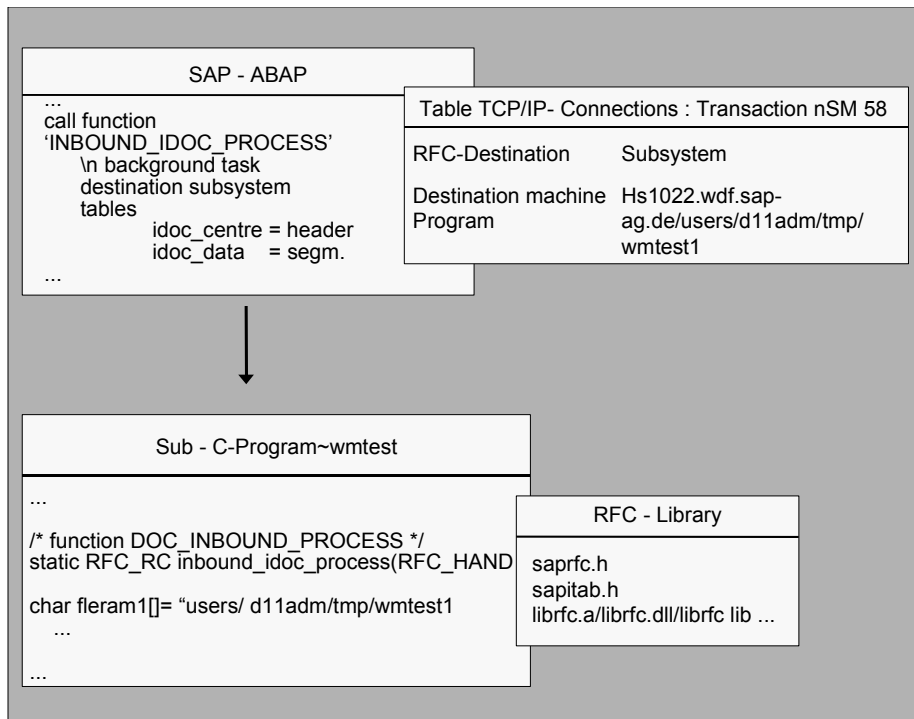
IDocs are transmitted from the SAP system by calling function module 'INBOUND_IDOC_PROCESS' with a destination. The destination uses a table in the R/3 system to determine destination machine and the target program.

A **C program** with target program name must exist in the subsystem. The program contains a function with the name of the function module call.

In the R/3 system, the application data are transferred in the internal table of structure EDI_DD. In addition, a control record from structure EDI_DC is also transferred for each IDoc, containing the administration data for each IDoc. In the example, these data are transferred in the form internal tables.

For further information, please see the documentation mentioned above.

You can create a C program from function module display SE37 from the R/3 system. You can use this as the basis from your receiving/transmitting program. In order to interpret the user data in the IDoc, you also need the data structures of the IDocs at C Program level. If an R/3 system is available, you can **generate an.h - IDoc header file** directly from repository transaction SE11.



Notes on TCP / IP settings

1. The TCP/IP requirements (especially the IP addresses in both host files) must be set so that the SAP system can find the destination system.

Technical Communication

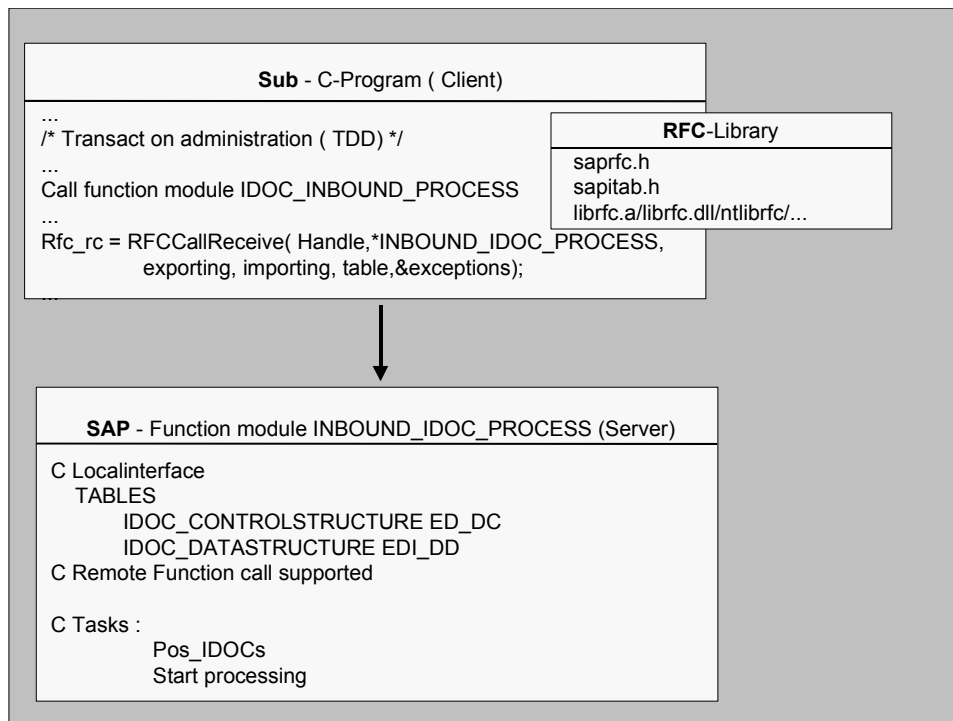
2. In the SAP system, IDocs are transmitted from posting as standard. For this the TCP/IP link must also be created for the posting system.
3. The SAP gateway must be allowed to start the C program (RFC server) via Remote Shell. For this reason the user that runs under the Gateway (e.g. d11adm where d11 = system name) must also be recognized by the target system.
4. In UNIX, the name of the gateway and dispatcher must be entered in the /etc/services, e.g. sapgw00 and sapdp00.

Please see also the RFC documentation mentioned above for more information on the settings

Transmitting from a Subsystem to SAP

Logging on to the SAP R/3 system including the server name of the SAP target system, SAP logon, user, password etc. must be defined in the C program. Logging on itself is supported by the RFC function RfcOpen (...). You can find details on this in the comprehensive RFC documentation.

The user data needs to be processed into IDoc format and placed in an internal table for structure EDI_DD. A control record must also be created for each IDoc and placed in an internal table for structure EDI_DC. The form of data transfer is also described in detail in the documentation.



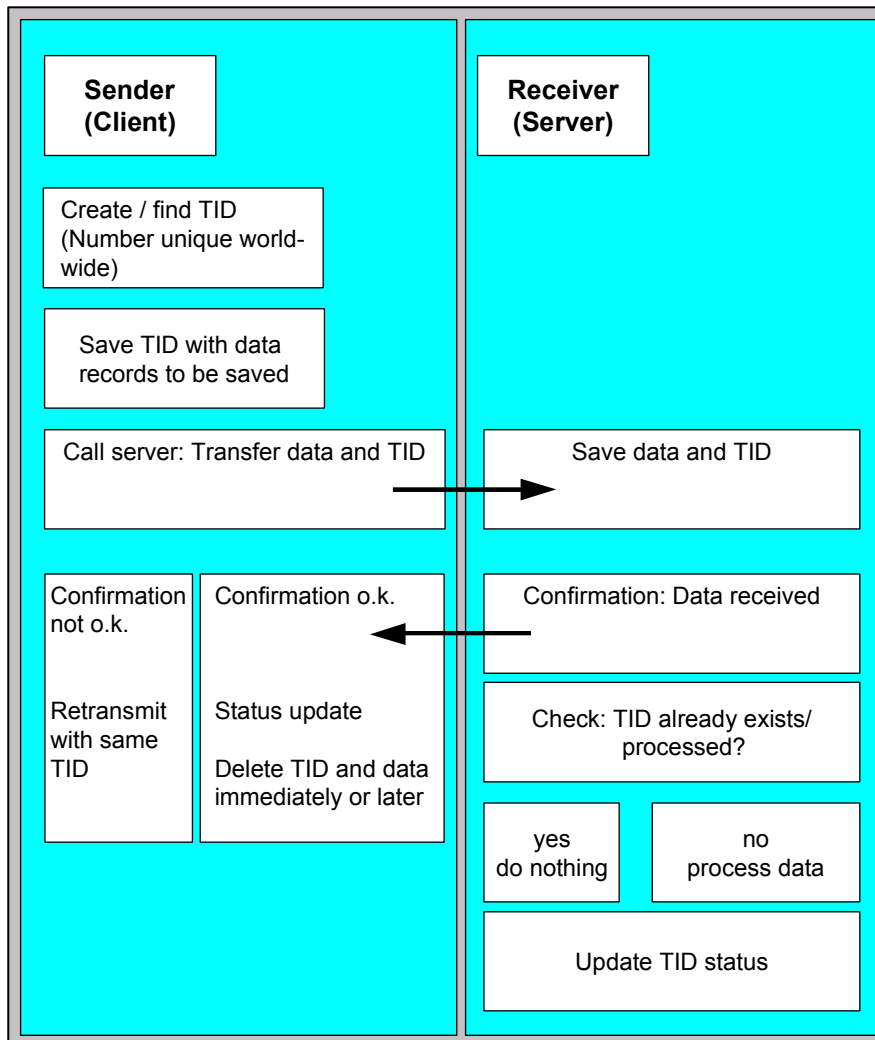
Transactions ID Administration

To guarantee the security of the data to be transferred, a unique ID must be used for a communication procedure. This ID allows the receiving system to recognize whether this data has already been received and processed.

Technical Communication

For example, communication could be terminated suddenly during the transmission of data for mobile entry of goods receipts. The user would have to transmit the data again in order to ensure that posting is carried out by SAP. If some of the data was successfully received and processed on the first attempt, however, the system must be able to recognize this. It is not allowed to process the data again.

This example would cause the following process flow between the transmitting system and the receiving system.



E2EDT1x - Processes**E2EDT1x - Processes**

Segments E2EDT10, E2EDT13 and E2EDT17 describe processes at different document levels. The structures of the segments are the same. They are only different in the location and the categories of the processes that they represent.

Segment E2EDT10 represents processes at shipment header level, i.e., those that refer to the whole shipment. E2EDT13 contains processes at delivery header level, i.e. processes that refer to the whole delivery. E2EDT17 represents processes in the shipment at stage level, i.e. processes that refer to a specific stage or point during the shipment.

The three segment types are all structured as follows:

Field name	Adjust.	Format	SAP domains	Oblig. field	Significance
QUALF	8	CHAR 03		X	Process category
VSTZW	8	CHAR 04	VSTZW		Process
VSTZW_B EZ		CHAR 20	BEZEI2 0		Significance of process
NTANF		DATS 08	DATUM		Planned start date
NTANZ		TIMS 06	UZEIT		Planned start time
NTEND		DATS 08	DATUM		Planned end date
NTENZ		TIMS 06	UZEIT		Planned end time
TZONE_B EG	8	CHAR 06	TZNZONE		Time zone of location of process start
ISDD		DATS 08	DATUM		Actual start date
ISDZ		TIMS 06	UZEIT		Actual start time
IEDD		DATS 08	DATUM		Actual end date
IEDZ		TIMS 06	UZEIT		Actual end time
TZONE_E ND	8	CHAR 06	TZNZONE		Time zone of location of process end
VORNR		CHAR 04	VORNR		Number of process
VSTGA	5	CHAR 04	VSTGA		Code for reason of deviation
VSTGA_B EZ		CHAR 20	BEZEI2 0		Description of reason of deviation

Special Fields and Domain Values in Segments E2EDT1x

In the following fields from segments E2EDT1x, you must take note of special functions and/or allowed value areas.

Field E2EDT1x-QUALF: Process category

The field can adopt the following values in the segments described, which involves entering data in the specified field from the table. Values in brackets are allowed for transfer to the IDoc, but are not evaluated during standard inbound processing:

Value	Significance	E2EDT10	E2EDT13	E2EDT17
001	Transportation planning time	NTENx	NTENx	
003	Loading time/execution	NTANx, NTENx	NTENx	(NTANx,NTENx)
005	Transportation processing	NTANx, NTENx		
006	Goods issue time		NTENx	
007	Delivery time		NTENx	
008	Arrival time		NTENx	(NTENx)
009	Departure time		NTENx	(NTANx)
010	Picking time		NTENx	
011	Time of stay			NTANx, NTENx
012	Unloading time			(NTANx,NTENx)
013	Time of customs clearance			(NTANx,NTENx)
014	Load transfer point			(NTANx,NTENx)
018	Optimum arrival time			(NTENx)
019	Optimum departure time			(NTANx)

Important Process Categories:

The following process categories are extremely important and should be taken into consideration.

E2EDT1x - Processes**Segment E2EDT13 (Process at Delivery Header Level) in IDoc TSPDLS01**

The time framework for planning the shipment is given in departure time (009) and arrival time (008). These must be used for planning. The final planned data is entered here.



For direct shipment of the delivery (i.e. during a shipment from the shipping point to the customer, the departure time corresponds with the loading time and the arrival time corresponds with the unloading time). If, however, only a preliminary leg shipment is planned (e.g. from the shipping point to the port of departure) then the delivery time is no longer relevant for actual planning.

Segment E2EDT10 (Process at Shipment Level) in IDoc TPSSHT01

The time framework for carrying out the shipment is given in transportation processing (005) in the planned start and end dates.

Loading (003) is optional and contains planned start and end dates.

Time of transportation planning (001) is optional. It contains planned end dates. If it is not specified, then the posting time is determined automatically in the R/3 shipment document as the transportation planning time.

Segment E2EDT17 (Process at Shipment Stage Level) in IDoc TSPSHT01

Field QUALF: Only the date with qualifier '011' (Time of stay) is taken into account. All other dates are ignored.

The planned and actual dates (both start and end) for a location are converted into the planned and actual dates for the legs. This means that the end date for a location becomes the start date for the leg that starts at this location. Similarly, the start date of the next location becomes the end date of the leg that finishes at this location.

This can be summarized as follows:

IDoc	R/3-System Shipment document
1st location, E2EDT17-NTEND	1st leg, VTTS-DPTBG
1st location, E2EDT17-NTENZ	1st leg, VTTS-UPTBG
1st location, E2EDT17-IEDD	1st leg, VTTS-DATBG
1st location, E2EDT17-IEDZ	1st leg, VTTS-UATBG
2nd location, E2EDT17-NTANF	1st leg, VTTS-DPTEN
2nd location, E2EDT17-NTANZ	1st leg, VTTS-UPTEN
2nd location, E2EDT17-ISDD	1st leg, VTTS-DATEN
2nd location, E2EDT17-ISDZ	1st leg, VTTS-UATEN

etc. for further locations.

The start dates of the first location and the end dates of the last location are ignored. All other fields are also ignored.

Field E2EDT1x-TZONE_xxx: Time zone

Time zone code. Value area according to R/3 table field TTZZ-TZONE.

E2KNVAM - Opening Times Profiles**E2KNVAM - Opening Times Profiles**

Opening times profile for the goods receiving times during the week for a customer unloading point.

Field name	Adj.	Format	SAP domains	Oblig. field	Significance
MSGFN		CHAR 03	MSGFN		Message function (blank)
ABLAD	A	CHAR 25	ABLAD		Unloading point
KNKAL	8	CHAR 02	KNKAL		Factory calendar
WANID	8	CHAR 03	WANID	X	Profile number of goods receiving profile
WAMOAB 1		TIMS 06	WAMOAB 1		Opening begin Monday morning
WAMOB11		TIMS 06	WAMOB11		Opening end Monday morning
WAMOAB 2		TIMS 06	WAMOAB 2		Opening begin Monday afternoon
WAMOB12		TIMS 06	WAMOB12		Opening end Monday afternoon
WADIAB1		TIMS 06	WADIAB1		Opening begin Tuesday morning
WADIB11		TIMS 06	WADIB11		Opening end Tuesday morning
WADIAB2		TIMS 06	WADIAB2		Opening begin Tuesday afternoon
WADIB12		TIMS 06	WADIB12		Opening end Tuesday afternoon
WAMIAB1		TIMS 06	WAMIAB1		Opening begin Wednesday morning
WAMIB11		TIMS 06	WAMIB11		Opening end Wednesday morning
WAMIAB2		TIMS 06	WAMIAB2		Opening begin Wednesday afternoon
WAMIB12		TIMS 06	WAMIB12		Opening end Wednesday afternoon
WADOAB 1		TIMS 06	WADOAB 1		Opening begin Thursday morning

E2KNVAM - Opening Times Profiles

WADOBI1		TIMS 06	WADOBI1		Opening end Thursday morning
WADOAB 2		TIMS 06	WADOAB 2		Opening begin Thursday afternoon
WADOBI2		TIMS 06	WADOBI2		Opening end Thursday afternoon
WAFRAB1		TIMS 06	WAFRAB 1		Opening begin Friday morning
WAFRBI1		TIMS 06	WAFRBI1		Opening end Friday morning
WAFRAB2		TIMS 06	WAFRAB 2		Opening begin Friday afternoon
WAFRBI2		TIMS 06	WAFRBI2		Opening end Friday afternoon
WASAAB1		TIMS 06	WASAAB 1		Opening begin Saturday morning
WASABI1		TIMS 06	WASABI1		Opening end Saturday morning
WASAAB2		TIMS 06	WASAAB 2		Opening begin Saturday afternoon
WASABI2		TIMS 06	WASABI2		Opening end Saturday afternoon
WASOAB 1		TIMS 06	WASOAB 1		Opening begin Sunday morning
WASOBI1		TIMS 06	WASOBI1		Opening end Sunday morning
WASOAB 2		TIMS 06	WASOAB 2		Opening begin Sunday afternoon
WASOBI2		TIMS 06	WASOBI2		Opening end Sunday afternoon
DEFAB		CHAR 01	DEFAB		Indicator for standard unloading point

E2STATS - EDI Status Record**E2STATS - EDI Status Record**

Status and error information are transferred in segment E2STATS.

Field name	Adj.	Format	SAP Domain	Oblig. Field	Significance
TABNAM		CHAR 10			Name of table structure (blank)
MANDT		CHAR 03	MANDT		Client
DOCNUM		CHAR 16		X	IDoc number of incorrect document
LOGDAT		DATS 08		X	Date
LOGTIM		TIMS 06		X	Time
STATUS	1	CHAR 02		X	Status of incorrect IDoc
UNAME		CHAR 12			User name
REPID		CHAR 08			Program name
ROUTID		CHAR 30			Subroutine name
STACOD	3	CHAR 08		X	Status Code
STATXT	3, 6	CHAR 70		X	Status Code Text
SEGNUM		CHAR 06			Segment number
SEGFLD		CHAR 10			Field name
STAPA1		CHAR 20			Parameter 1
STAPA2		CHAR 20			Parameter 2
STAPA3		CHAR 20			Parameter 3
STAPA4		CHAR 20			Parameter 4

E2STATS - EDI Status Record

REFINT		CHAR 14			Reference to file
REFGRP		CHAR 14			Reference to group
REFMES		CHAR 14			Reference to message
ARCKEY		CHAR 70			Document ID in external system
STATYP	1	CHAR 01			System message category

Special Fields and Domain Values In Segment E2STATS

Please take into account these particular functions and/or permitted value areas in the following fields in segment E2STATS.

Field E2STATS-STATUS: Status of incorrect IDoc

Status values for IDoc used within the communication.

Val.	Significance
16	IDoc was successfully processed (if necessary with warning)
17	IDoc could not be processed

Field E2STATS-STACOD: Status Code

Status or error message code, as available in the R/3 system. Generally the code is always 'SAPV6xxx', whereby digits 'xxx' are predefined as follows:

Area	Significance
000-499	Messages from the transportation planning system to R/3
500-999	Messages from the R/3 system to transportation planning system

You can compare the messages manually between the systems so that if there is a message in the destination system only defined by a status code, its corresponding long text will appear.

Field E2STATS-ARCKEY: Document ID in external system

An identification predefined by the subsystem is created in the ARCKEY field. If you cannot process a document sent by the subsystem to the R/3 system the contents of the ARCKEY field from the incorrect IDoc will be sent back in the ARCKEY field in the error message. This will allow you to recreate the reference to the process that generated the document.

E2STATS - EDI Status Record**Field E2STATS-STATYP: System message category**

Category of system message.

Val.	Significance
S	Status message after successful transaction
I	Information message (note)
W	Warning
E	Error message
A	Termination message (serious error)

E2TPACC - Action Code

Actions codes which specify which action should be carried out with the corresponding document. The segment is used in IDocs TPSLOC01, TPSDLS01 and TPSSHT01.

Field name	Adj.	Format	SAP Domains	Oblig. Field	Significance
ACTCD	1	CHAR 01		X	Action code

Special Fields and Domain Values in Segment E2TPACC

Please take into account these particular functions and/or permitted value areas in the following fields in Segment E2TPACC.

Field E2TPACC-ACTCD: Action Code

The field can accept the following fields in the IDocs:

Val.	Significance	TPSLOC01	TPSDLS01	TPSSHT01 TPS-R/3	TPSSHT01 R/3-TPS
C	Create document	X	X	X	
M	Change document	X	X	X	
D	Delete document		X	X	
F	Fix shipment document status (no changes permitted)				X
U	Set shipment document status to "released" (changes permitted)				X

E2TPALC - Permitted Service Agent**E2TPALC - Permitted Service Agent**

In this segment, which can appear several times, you can enter alternative service agents for carrying out the delivery.

Field name	Adj.	Format	SAP Domain s	Oblig. Field	Significance
CARRID	A	CHAR 10	LIFNR	X	Permitted forwarding agent

E2TPCOC - Goods Code

Goods code for material in a delivery item. A delivery item can have several codes.

Field name	Adj.	Format	SAP Domains	Oblig. Field	Significance
CODTYP	8	CHAR 03		X	Code category
CODNUM	(9)	CHAR 35		X	Code number
CODTXT		CHAR 50			Code description

Special Fields and Domain Values in Segment E2TPCOC

Please take into account these particular functions and/or permitted value areas in the following fields in segment E2TPCOC.

Field E2TPCOC-CODTYP: Code Category

The code category specifies which code type the code number is related to:

Val.	Significance
001	Commodity code
002	Freight code
003	Material freight group

E2TPDIH - Delivery Dimensions at Header Level**E2TPDIH - Delivery Dimensions at Header Level**

Segment E2TPDIH contains the dimensions of the whole delivery.

Field name	Adj.	Format	SAP Domains	Oblig. Field	Significance
GRSWGT		QUAN 18	MENG15		Gross weight
NETWGT		QUAN 18	MENG15		Net weight
WUNIT	8, 9	CHAR 03	MEINS		ISO weight unit
GRSVOL		QUAN 18	MENG15		Gross volume
NETVOL		QUAN 18	MENG15		Net volume
VUNIT	8, 9	CHAR 03	MEINS		ISO volume unit
ITMNUM		NUMC 05	ANZPK		No. of packing unit

Special Fields and Domain Values in Segment E2TPDIH

Please note that all weight and volume units are transferred in ISO standard notes.

Field E2TPDIH-WUNIT: Weight Unit

Possible weight units in ISO:

Val.	Significance
CGM	Centigram
DTN	Centner, decitonne
GRM	Gram
GRT	Gross register ton
DTH	Hectokilogram
KGM	Kilogram
KTN	Kilotons
TNE	Tons
MGM	Milligram
NTT	Net register tons
LBR	Pound
SHT	Shipping tons
STN	Short ton (GB)

E2TPDIH - Delivery Dimensions at Header Level

Field E2TPDIH-VUNIT: Volume Unit

Possible ISO volume units:

Val.	Significance
CLT	Centilitre
CMQ	Cubic centimetre
DMQ	Cubic decimetre
FTQ	Cubic foot
INQ	Cubic inch
MTQ	Cubic metre
MMQ	Cubic millimetre
YDQ	Cubic yard
DLT	Decilitre
BLD	Dry barrel
GLD	Dry gallon
PTD	Dry pint
QTD	Dry quart
OZI	Fluid ounce (28,413 cm ³)
OZA	Fluid ounce (29,5735 cm ³)
GLI	Gallon
HLT	Hectolitre
GLL	Liquid gallon
PTL	Liquid pint
QTL	Liquid quart
LTR	Litre
MAL	Megalitre
PTI	Pint
QTI	Quart

E2TPDII - Delivery Dimensions at Item Level**E2TPDII - Delivery Dimensions at Item Level**

Segment E2TPDII contains the dimensions of each delivery item.

Field name	Adj.	Format	SAP Domains	Oblig. Field	Significance
GRSWGT		QUAN 18	MENG15		Gross weight
NETWGT		QUAN 18	MENG15		Net weight
WUNIT	8, 9	CHAR 03	MEINS		ISO weight unit
GRSVOL		QUAN 18	MENG15		Gross volume
NETVOL		QUAN 18	MENG15		Net volume
VUNIT	8, 9	CHAR 03	MEINS		ISO volume unit
ITMNUM		NUMC 05	ANZPK		Qty of packing units

Special Fields and Domain Values in Segment E2TPDIH

Please note that all weight and volume units are transferred to ISO standards. The domain values are analogous to the values for segment E2TPDIH.

E2TPDIS - Shipping Unit Dimensions

Segment E2TPDI contains the dimensions for each delivery item.

Field name	Adj.	Format	SAP Domains	Oblig. Field	Significance
TARWGT		QUAN 18	MENG15		Tare weight
GRSWGT		QUAN 18	MENG15		Gross weight
NETWGT		QUAN 18	MENG15		Net weight
WUNIT	8, 9	CHAR 03	MEINS		ISO weight unit
TARVOL		QUAN 18	MENG15		Tare volume
GRSVOL		QUAN 18	MENG15		Gross volume
NETVOL		QUAN 18	MENG15		Net volume
VUNIT	8, 9	CHAR 03	MEINS		ISO volume unit
LENGTH		QUAN 15	MENG13		Length
WIDTH		QUAN 15	MENG13		Width
HEIGHT		QUAN 15	MENG13		Height
DUNIT	8, 9	CHAR 03	MEINS		ISO length unit
ITMNUM		NUMC 05	ANZPK		Qty of packing units

Special Fields and Domain Values in Segment E2TPDIS

Please note that all weight and volume units are transferred to ISO standards. The domain values are analogous to the values for segment E2TPDIH.

Field E2TPDIH-DUNIT: Length unit

Possible ISO length units:

Val.	Significance
CMT	Centimetre
DMT	Decimetre
FOT	Foot
INH	Inch
KMT	Kilometer
KNT	Knots
MTR	Metre

E2TPDIS - Shipping Unit Dimensions

E2TPDLC - Shipment Costs at Delivery Level

Shipment costs item for a delivery within a shipment.

Field name	Adj.	Format	SAP Domains	Oblig. Field	Significance
CSTTYP	8	CHAR 04		X	Cost type
AMOUNT		QUAN 18		X	Amount
CURRC	8, 9	CHAR 03		X	Currency (ISO norm)

Special Fields and Domain Values in Segment E2TPDLC

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPDLC.

Field E2TPDLC-CSTTYP: Cost type

Cost types have not yet been determined but are defined when shipment costs are entered.

Field E2TPDLC-CURRC: Currency (ISO norm)

Currency key set to ISO norms with the value area of R/3 table field TCURC-ICOCD.

E2TPDLH - Delivery Header**E2TPDLH - Delivery Header**

Organizational and status information at delivery header level.

Field name	Adj.	Format	SAP Domains	Oblig. Field	Significance
DELID		CHAR 10	VBELN	X	Delivery ID / Delivery number
SHPPPT	5, 8	CHAR 04	TPLST	X	Transportation planning point (TPS)
SHPPRJ		CHAR 12		X	Shipment in same vehicle
SCHDN M		CHAR 06		X	Planning process number
SALORG	B	CHAR 04	VKORG		Org. unit for defining plan number
DSTCHN	B	CHAR 02	VTWEG		Org. unit for defining plan number
DIVISN	B	CHAR 02	SPART		Org. unit for defining plan number
CPONU M		CHAR 20	BSTNK		Customer order number
SHPCN D	8	CHAR 02	VSBED		Shipping condition
SHPTYP	8	CHAR 02	VSART	X	Shipping type
SHPPRI	1	CHAR 02	LPRIO		Shipping priority
DIREC	7	CHAR 02		X	Direction of delivery
FTERM	9	CHAR 03	INCO1	X	Incoterms
FTLOC		CHAR 28	INCO2		Incoterms - location
ROUTE	8	CHAR 06	ROUTE	X	Route
ROUTXT		CHAR 40	TEXT40		Route text
PREFCA	A	CHAR 10	LIFNR		Preferred forwarding agent

E2TPDLH - Delivery Header

CNSFLG	4	CHAR 01			Consolidation status
LODSEQ	4	NUMC 01			Load sequence
ALSTAT	4	CHAR 01		X	Availability status
REVENU		CHAR 18			Payment on picking up
REVCUR	8, 9	CHAR 03			Revenue currency
RRCODE	4	CHAR 20			Rail code (US requirement)

Special Fields and Domain Values in Segment E2TPDLH

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPDLH.

Field E2TPDLH-SHPPRJ: Shipment in Same Vehicle

This field groups together all the deliveries (IDocs) within a planning run, which have to be planned for the same vehicle in transportation planning.

This field is normally not processed and can be completed from customer functions.

Default value: blank.

Field E2TPDLH-SCHDNM: Planning Process Number

This field groups together all the deliveries (IDocs) that have to be planned within the same planning run, e.g. for separate planning of a 'north' and 'south' tour.

This field is normally not processed and can be completed from customer functions.

Default value: '1'.

Field E2TPDLH-DIREC: Direction of Delivery

The value for field DIREC is determined using delivery document category.

The field can accept the following values:

Val.	Significance
IB	Inbound - incoming delivery: returns, shipping notification
OB	Outbound - outgoing delivery: normal delivery document

Field E2TPDLH-FTERM: INCOterm

This field can accept the following values according to international standards:

E2TPDLH - Delivery Header

Val.	Significance
CFR	Cost and freight
CIF	Cost, insurance and freight
CIP	Insured freight-free
CPT	Freight-free
DAF	Border delivered
DDP	Delivered cleared by customs
DDU	Delivered not cleared by customs
DEQ	Delivered from quay (cleared)
DES	Delivered from ship
EXW	From plant
FAS	Free along side
FCA	Free freight
FH	Free house
FOB	Free on board
UN	Not free

Field E2TPDLH-CNSFLG: Consolidation Status

The consolidation status determines, whether deliveries may be transported with other deliveries.

This field is normally not processed and can be completed from customer functions.

Default value: blank.

Val.	Significance
0	Consolidate deliveries
1	Do not consolidate deliveries
2	Consolidate deliveries to the same destination only

Field E2TPDLH-LODSEQ: Load Sequence

The load sequence determines when a delivery has to be loaded onto the means of transport. It does not set an absolute sequence but indicates priorities.

This field is normally not processed and can be completed from customer functions.

Default value: blank.

E2TPDLH - Delivery Header

Val.	Significance
1	Load absolutely first
2	Load delivery first
3	Load regular
4	Load delivery last
5	Load absolutely last

Field E2TPDLH-ALSTAT: Allocation Status

The allocation status displays whether the delivery has already been checked as available and whether the stock has been reserved.

Due to dynamic availability checks in the R/3 system, this field is entered as a default value.

Default value: '0'.

Val.	Significance
0	Delivery available/reserved/allocated
1	Delivery not allocated

Field E2TPDLH-REVCUR: Payment Currency

The value fields for the currency of payment correspond to the ISO currency code and also match the ISO currency codes proposed by the R/3 system.

E2TPDLI - Delivery Item**E2TPDLI - Delivery Item**

Delivery item with quantity specifications and material ID.

Field name	Adj.	Format	SAP Domains	Oblig. Field	Significance
DELITM		CHAR 06	POSNR	X	Delivery item number
MATNR	B	CHAR 35	MATNR	X	Material number
MATTXT		CHAR 80	ARKTX		Material description
HAZMAT	B	CHAR 18	STOFF		Dangerous goods number
MILMAT	1	CHAR 01	ITARK		Flag for military goods
QUANT		QUAN 15	LFIMG	X	Delivery quantity
QNUNIT	8, 9	CHAR 03	VRKME	X	Unit of quantity
LDGRP	8	CHAR 04	LADGR		Loading group
TRGRP	8	CHAR 04	TRAGR		Transport group
STRCND	8	CHAR 02	RAUBE		Storage condition
TMPCOND	8	CHAR 02	TEMPB		Temperature condition

Special Fields and Domain Values in Segment E2TPDLI

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPDLI.

Field E2TPDLI-HAZMAT: Dangerous Goods Number

Free defined number or classification for dangerous goods.

Field E2TPDLI-MILMAT: Flag for Military Goods

Indicates that the delivered material is a military good.

Val.	Significance
0	Non-military material
1	Military material

Field E2TPDLI-QNUNIT: Unit of Quantity

Possible units of quantity according to ISO norms.

Val.	Significance
------	--------------

E2TPDLI - Delivery Item

DZN	Dozen
DZP	Dozen packs
DPR	Dozen pairs
DPC	Dozen pieces
DRL	Dozen rolls
GGR	Great gross
GRO	Gross
KAR	Carton
NMB	Number
NAR	Number of articles
NMP	Number of packs
NPR	Number of pairs
NPL	Number of parcels
NPT	Number of parts
NRL	Number of rolls
CMK	Square centimetre
DMK	Square decimetre
FTK	Square foot
INK	Square inch
MTK	Square metre
YDK	Square yard
PCE	Piece

Field E2TPDLI-LDGRP: Loading Group

Classification for the loading device (e.g. fork lift). Value area according to R/3 table TLGR.

Field E2TPDLI-TRAGR: Transport Group

Classification for the transport equipment (e.g. pallets). Value area according to R/3 table TTGR.

Field E2TPDLI-STRCND: Storage Condition

Classification for storage conditions (e.g. store dry). Value area according to R/3 table T142.

Field E2TPDLI-TMPCND: Temperature Condition

Classification for storage conditions in terms of temperature (e.g. 2-8° C)

Value area according to R/3 table T143.

E2TPEQT - Means of Transport**E2TPEQT - Means of Transport**

Segment E2TPEQT contains specifications for the means of transport used in the shipment (vehicle and packing material).

Field name	Adj.	Format	SAP Domains	Oblig. Field	Significance
EQUID		CHAR 20	VENUM	X	Means of transport ID
EQUITYP	2	CHAR 35	VHILM	X	Shipping material type
EQU TXT		CHAR 40	VEBEZ		Shipping material text
DRVID1		CHAR 35	NAME		Driver 1
DRVID2		CHAR 35	NAME		Driver 2

Special Fields and Domain Values in Segment E2TPEQT

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPEQT.

Field E2TPEQT-VENUM: Means of Transport Identification

A unique ID for the means of transport within a shipment document, which can be the sequential numbering of the means of transport, for example. If the means of transport is changed, the ID serves as a reference. The same ID numbers may be entered in different shipment documents.

Field E2TPEQT-EQUITYP: Shipping Material Type

The material number for the shipping material type (e.g. 20 ft container). The material numbers of the available shipping materials have to be synchronized manually between the R/3 system and the transportation planning system.

E2TPFRC - Shipment Costs at Shipment Header Level

Shipment cost item related to a whole shipment.

Field name	Adj.	Format	SAP Domains	Oblig. Field	Significance
CSTTYP	8	CHAR 04		X	Cost type
AMOUNT		QUAN 18		X	Amount
CURRC	8, 9	CHAR 03		X	Currency (ISO norm)

Special Fields and Domain Values in Segment E2TPFRC

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPFRC.

Field E2TPFRC-CSTTYP: Cost Type

Cost types are not defined now but defined when the shipment costs are entered.

Field E2TPFRC-CURRC: Currency (ISO Norm)

Currency key according to ISO norms with value area from R/3 table field TCURC-ICOCD.

E2TPLCT - Location Code**E2TPLCT - Location Code**

Location code for a location master record. A location master code can contain several codes.

Field name	Adj.	Format	SAP Domains	Oblig. Field	Significance
LOCCTP	8	CHAR 06		X	Code category
LOCCOD		CHAR 35		X	Code number

Special Fields and Domain Values in Segment E2TPLCT

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPLCT.

Field E2TPLCT-LOCCTP: Code Category

The code category specifies which code type the code number refers to:

Val.	Significance
SCAC	Standard carrier code
SPLC	Standard location code
ILN	International location number

E2TPLOC - Location Master Record Address

The address and other status data for a location master record are transferred in segment E2TPLOC.

Field name	Adj.	Format	SAP Domains	Oblig. Field	Significance
LOCID		CHAR 10			Location ID
LOCCLS	1	CHAR 02			Location category
LOCNAM		CHAR 40			Location description
LOCTPR	8	CHAR 03	WANID		Opening time profile
FACCAL	8	CHAR 02	KNKAL		Factory calendar
TITLE		CHAR 15	TEXT15		Title
NAME1		CHAR 35	NAME	X	Name 1
NAME2		CHAR 35	NAME		Name 2
NAME3		CHAR 35	NAME		Name 3
NAME4		CHAR 35	NAME		Name 4
ZIPCOD		CHAR 10	PSTLZ	X	Postal code
CITY1		CHAR 35	TEXT35	X	City 1
CITY2		CHAR 35	TEXT35		City 2
ZIPPO		CHAR 10	PSTLZ		Postal code for PO box
POBOX		CHAR 10	PFACH		P.O. box
STRT1		CHAR 35	TEXT35	X	Street 1

E2TPLOC - Location Master Record Address

STRT2		CHAR 35	TEXT35		Street 2
HSNUM		CHAR 06	CHAR6		House number (if not in street)
FLOOR		CHAR 06	STOCK		Floor
CNTRY	2	CHAR 03	LAND1	X	Country
CNYTXT		CHAR 15	LANDX		Country description
STATE	2	CHAR 03	REGIO		State
STATXT		CHAR 20	TEXT20		State description
COUNTY	B	CHAR 03	COUNC		County
CNTCT1		CHAR 35	NAME		Contact person 1
CNTCT2		CHAR 35	NAME		Contact person 2
PHONE		CHAR 30	TEXT30		Telephone number
PHNSPD		CHAR 10			Speed dial code
FAX		CHAR 31	TEXT31		Fax number
PZONE	8	CHAR 10	ZONE		Transport zone
TZONE	8	CHAR 06	TZNZO NE		Time zone
LATITD		NUMC 12			Latitude coordinates
LONGTD		NUMC 12			Longitude coordinates
COORDS	8	CHAR 04			Coordinate system
APPREQ	7	CHAR 01			Flag: appointment required

E2TPLOC - Location Master Record Address

Special Fields and Domain Values in Segment E2TPLOC

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPLOC.

Field E2TPLOC-LOCCLS: Location Category

Category of location described by address.

Val.	Significance
PL	Plant
CU	Customer
SU	Vendor
OC	One-time customer
NO	Transportation connection points, distribution center
SP	Shipping point
CA	Service agent
AD	Address

Field E2TPLOC-WANID: Opening Time Profile

Profile of goods acceptance times for customer's unloading point. Value area according to R/3 table field TVWA-WANID.

Field E2TPLOC-KNKAL: Factory Calendar

Factory calendar profile. Value area according to R/3 table field TFACD-IDENT.

Field E2TPLOC-PZONE: Country Specific Transportation Zone

Code for country specific transportation zone. Value area according to R/3 table field TZONE-ZONE1.

Field E2TPLOC-TZONE: Time Zone

Time zone code. Value area according to R/3 table field TTZZ-TZONE.

Field E2TPLOC-COORDS: Coordinate System

Code for coordinate system in fields LATITD and LONGTD.

Val.	Significance
GK	Gauss-Krüger
UTM	UTM-Gitter
GEO	Longitude and latitude

E2TPLOC - Location Master Record Address



In processing the inbound shipment (IDoc TPSSHT01) this segment is ignored.

E2TPNOT - Delivery Texts

Shipping specific texts for the delivery. Texts are grouped according to categories. Texts with more than one line are stored in sequential segments.

Field name	Abgl.	Format	SAP Domains	Oblig. Field	Significance
NOTTYP	8	CHAR 04		X	Text category
NOTTXT		CHAR 200		X	Text

Special Fields and Domain Values in Segment E2TPNOT

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPNOT.

Field E2TPNOT-NOTTYP: Text Category

The text category specifies the type of text in the segment. Possible text categories come from the value area of the R/3 table field TTXID-TDID for text object TTXID-TDOBJECT = 'VBBK' (SD header texts).

E2TPSHA - Transport Activity**E2TPSHA - Transport Activity**

Activity within a shipment document, assigned to a transportation connection point.

Field name	Abgl.	Format	SAP Domains	Oblig Field	Significance
ASQNUM		NUMC 06		X	Activity number
ACTVTY	8	CHAR 02		X	Activity category
DELID		CHAR 10	VBELN	X	Relevant delivery
SRVAGT	A	CHAR 10	LIFNR		Relevant service agent

Special Fields and Domain Values in Segment E2TPSHA

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPSHA.

Field E2TPSHA-ASQNUM: Activity Number

Sequential numbering of activities in a transportation connection point. Different transportation connection points may contain the same activity numbers. Activity numbers can be understood as a sequence specification.

Field E2TPSHA-ACTVTY: Activity Category

The activity category specifies which activities are to be carried out. While processing an inward shipment the activity for a defined delivery (field DELID) is carried out by a defined service agent (field SRVAGT).

Val.	Significance	Description
LD / UL	Load / unload delivery	<p>A delivery with number DELID is loaded at the relevant location and remains loaded until it is unloaded at another location (ACTVTY = 'UL'). This means that this delivery is assigned to all legs in the shipment document that are situated between the two locations (function 'deliveries to stage' at stage overview in shipment document, table VTSP).</p> <p>As soon as the service agent has been determined for one of these two activities and if this deviates from the normal service agent for the leg, a new stage is generated in the shipment document of the 'load transfer' category. The deliveries that are un/loaded by the service agent are assigned to this stage</p>

E2TPSHA - Transport Activity

LT	Load Transfer	Here a new stage from the 'load transfer' category (regardless of how the service agent field has been completed) and the specified delivery is assigned to it. (If 4 deliveries should be transferred, the 'load transfer' activity must take place for each delivery).
CU	Clear delivery for customs	The shipment stage from the 'border' category is generated in the same way as the 'load transfer' activity.

E2TPSHH - Shipment Header**E2TPSHH - Shipment Header**

Organizational and status information at shipment header level.

Field name	Abgl.	Format	SAP Domains	Oblig. Field	Significance
SHPID		CHAR 10	TKNUM	X	Shipment number
SHPTYP	5	CHAR 04	SHTYP	X	Shipment type
CARRID	A	CHAR 10	LIFNR		Service agent
SHPPPT	5, 8	CHAR 04	TPLST	X	Transportation Planning Point (TPS)
DISTNC		QUAN 15	MENG13		Total distance
DSUNIT	8, 9	CHAR 03	MEINS		Unit of distance to ISO norms
DRVTIM		QUAN 05	DIFZT		Traveling time only
TOTTIM		QUAN 05	DIFZT		Complete shipment time
TMUNIT	8, 9	CHAR 03	MEIZT		Unit of time to ISO norms
SRVID1		CHAR 20	EXTI1		External identification 1
SRVID2		CHAR 20	EXTI2		External identification 2

Special Fields and Domain Values in Segment E2TPSHH

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPSHH.

Field E2TPSHH-SHPID: Shipment Number

Number of shipment document. The shipment number is subject to important marginal conditions, which must be guaranteed by the transportation planning system.

The shipment number

- may only contain numerical digits,
- must be unique for the shipment document,
- must come from the external number range, assigned to the transportation planning point in R/3 Customizing (transaction OVTP). The number range can be set to your requirements in the R/3 system client set-up, so that the given corresponding document numbers are also guaranteed in the transportation planning system.

Field E2TPSHH-SHPTYP: Shipment Type

Shipment type is defined in R/3 Customizing (transaction OVTK) and describes the following aspects of the shipment:

- Shipment mode (e.g. partial load, full load),

E2TPSHH - Shipment Header

- Means of transport (e.g. lorry, rail),
- Direction (inward, outward shipment),
- Leg indicator (direct, preliminary, main, subsequent).

The shipment types that have to be made available to the transportation planning system, must be created in R/3 Customizing with the corresponding parameters, in order to guarantee the smooth running of the interface.

Field E2TPSHH-SHPPPT: Transportation Planning Point

The transportation planning point corresponds to the transportation planning system and must be adopted directly from field E2TPDLH-SHPPPT of IDoc TPSDLS0. As it is not possible to plan across planning points in a shipment, only one transportation planning point can appear in a shipment for consolidated deliveries.



If a planning system is linked to several planning points, it is important that you ensure that the deliveries for the different transportation planning points are processed separately. They may not be combined in planning.

Field E2TPSHH-DSUNIT: Unit of Distance to ISO Norms

Possible units of distance according to ISO norms:

Val.	Significance
NMI	Nautical miles
KMT	Kilometre
KNT	Knots
MTR	Metre

Field E2TPSHH-TMUNIT: Unit of Time to ISO Norms

Possible units of time according to ISO norms:

Val.	Significance
DAY	Day
HUR	Hours
MIN	Minutes
MON	Months
SEC	Seconds
WEE	Weeks
ANN	Years

E2TPSHH - Shipment Header

E2TPSHI - Delivery in Shipment

Delivery assigned to a shipment document.

Field name	Abgl.	Format	SAP Domains	Oblig. Field	Significance
SHPITM		NUMC 04	TPNUM	X	Loading sequence in delivery
DELID		CHAR 10	VBELN	X	Delivery number

Special Fields and Domain Values in Segment E2TPSHI

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPSHI.

Field E2TPSHI-SHPITM: Loading Sequence in Delivery

Sequential numbering of deliveries in shipment, also represents the shipping sequence.

E2TPSHR - Rail Data**E2TPSHR - Rail Data**

Special data related to rail.

Field name	Abgl.	Format	SAP Domains	Oblig. Field	Significance
RRDESC		CHAR 100		X	Railway route description

Special Fields and Domain Values in Segment E2TPSHR

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPSHR.

Field E2TPSHR-RRDESC: Railway Route Description

The code that describes the railway route (special US requirement).

E2TPSHT - Leg Data in Shipment

Data over leg stages and their related duration within a shipment. Each data must be stored with a reference to a shipment point and represents distance and duration from the referenced point to the following point. The last point in the transportation point list does not therefore contain any leg data.

Field name	Abgl.	Format	SAP Domains	Oblig. Field	Significance
DISTNC		QUAN 15	MENG13		Distance of following leg
DSUNIT	8, 9	CHAR 03	MEINS		Unit of distance to ISO norm
DRVTIM		QUAN 05	DIFZT		Traveling time only in following leg
TOTTIM		QUAN 05	DIFZT		Complete time of following leg
TMUNIT	8, 9	CHAR 03	MEIZT		Unit of time to ISO norm

Special Fields and Domain Values in Segment E2TPSHT

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPSHT.

Field E2TPSHT-DSUNIT: Unit of Distance to ISO Norm

Possible units of distance to ISO norms:

Val.	Significance
NMI	Nautical miles
KMT	Kilometre
KNT	Knots
MTR	Metre

Field E2TPSHT-TMUNIT: Unit of Time to ISO Norm

Possible units of time according to ISO norms:

Val.	Significance
DAY	Days

E2TPSHT - Leg Data in Shipment

HUR	Hours
MIN	Minutes
MON	Months
SEC	Seconds
WEE	Weeks
ANN	Years

E2TPSHU - Shipping Unit

Shipping unit for packing delivery items.

Field name	Abgl.	Format	SAP Domains	Oblig. Field	Significance
SHUNUM		CHAR 10	VENUM	X	Shipping unit number
SHPUID	2	CHAR 35	VHILM	X	Shipping material type
SHPUTX		CHAR 80	MAKTX	X	Shipping material text

Special Fields and Domain Values in Segment E2TPSHU

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPSHU.

Field E2TPSHU-SHUNUM: Shipping Unit Number

Number of shipping unit. The number serves as a unique identification of the shipping unit.

Field E2TPSHU-SHPUID: Shipping Material Type

The material number for the shipping material type (e.g. 20 ft container). The material numbers for the available shipping materials have to be synchronized manually between the R/3 system and the transportation planning system.

E2TPSLS - Shipment Points

E2TPSLS - Shipment Points

Location or transportation points visited within a shipment and which take place in the activities or which have processes that need to be completed.

Field name	Adj.	Format	SAP Domain s	Oblig. Field	Significance
LSQNUM		NUMC 06		X	Location number (sequence)
CARRID	A	CHAR 10	LIFNR		Relevant service agent

Special Fields and Domain Values in Segment E2TPSLS

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPSLS.

Field E2TPSLS-LSQNUM: Location Number

Sequential numbering of locations visited or transportation points in the shipment run. The location number must be formed as a sequence specification and should be specified from 1 in ascending order with no gaps.

Field E2TPSLS-CARRID: Relevant Service Agent

Service agent who carries out the shipment in the following leg stage.



The following example is feasible for processing in inward shipments (IDoc TPSSHT01):

IDoc	R/3 System Shipment Document
1. Location with service agent A	1. Leg from 1st location to 2nd location with service agent A
2. Location with service agent B	2. Leg from 2nd location to 3rd location with service agent B
3. Location with service agent C	Service agent C is ignored

E2TPSUC - Shipping Unit Contents

Describes the content item of a shipping unit. One shipping unit can have several content items in total, which are characterized as complete delivery item, partial delivery item or as other shipping units. The specifications for the contents can contain as many hierarchy levels as you like. One content item is represented in each segment E2TPSUC.

Field name	Abgl.	Format	SAP Domains	Oblig. Field	Significance
SHUITM		CHAR 06	VEPOS		Content item number
CONTYP	1	CHAR 01	VELIN	X	Content type
DELITM		CHAR 06	POSNR		Item number of delivery item
SUBSHU		CHAR 10	UNVEL		Comprised shipping element number
DELQUN		QUAN 15	VEMN G		Quantity of packed delivery items
DELUNT	8, 9	CHAR 03	VEMEH		Quantity unit in ISO norms

Special Fields and Domain Values in Segment E2TPSUC

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPSUC.

Field E2TPSUC-CONTYP: Content Type

This value specifies what type of content item the shipping unit is. Different data fields from segment E2TPSUC are completed according to the type of content.

Val.	Significance	Completed Segment Fields
1	Delivery item	DELITM, DELQUN, DELUNT
3	Shipping unit	SUBSHU

E2TPTIW - Time Frame**E2TPTIW - Time Frame**

Description of opening and closing time frames other than for weekdays or a certain date.

Field name	Abgl.	Format	SAP Domains	Oblig. Field	Significance
WINMOD	1	CHAR 01		X	Time frame mode
WINDOW	1	CHAR 01			Weekday
WINDAT		DATS 08			Date
WINTM1		TIMS 06		X	Beginning time of time frame
WINTM2		TIMS 06		X	End time of time frame
ETZONE	8	CHAR 06	TZNZONE		Time zone
WINPRF	8	CHAR 03	WANID		Opening time profile

Special Fields and Domain Values in Segment E2TPTIW

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPTIW.

Field E2TPTIW-WINMOD: Time Frame Mode

This mode value specifies whether the frame defines an opening or closing time.

Val.	Significance
O	Opening time
C	Closing time

Field E2TPTIW-WINDOW: Weekday

If this field is completed, then the time frame is valid regularly for a certain weekday.

Val.	Significance
1	Monday
2	Tuesday
3	Wednesday

E2TPTIW - Time Frame

4	Thursday
5	Friday
6	Saturday
7	Sunday

Field E2TPTIW-ETZONE: Time Zone

Time zone code. Value area according to R/3 table field TTZZ-TZONE.

E2TPTRP - Existing Shipment**E2TPTRP - Existing Shipment**

In segment E2TPTRP shipment documents that have already been created in the R/3 system and which contain the current delivery are transferred. In certain circumstances this can lead to improved connection planning to existing shipments in the transportation planning system. In addition planning requests are documented, i.e. if the current delivery was sent to another planning system but not included in the shipment document. Existing shipment documents are recognized through the assigned shipment number whereas this would still be blank for a planning request.

Field name	Abgl.	Format	SAP Domains	Oblig. Field	Significance
SHPPPT	5, 8	CHAR 04	TPLST	X	Transportation planning point
SHPID		CHAR 10	TKNUM		Existing shipment number
SHPTYP	5	CHAR 04	SHTYP		Existing shipment type
LEGIND	1	CHAR 01	LAUFG		Existing shipment leg indicator
LOCCL1	1	CHAR 02		X	Location category for point of departure
LOCID1	A	CHAR 10		X	Location ID for point of departure
SUBID1	A	CHAR 35			Additional ID for point of departure
ADRNR1		CHAR 10	ADRNR		Address number for point of departure
LOCCL2	1	CHAR 02		X	Location category for destination
LOCID2	A	CHAR 10		X	Location ID for destination
SUBID2	A	CHAR 35			Additional ID for destination
ADRNR2		CHAR 10	ADRNR		Address number for destination
DATBEG		DATS 08	DPTBG	X	Departure date
TIMBEG		TIMS 06	UPTBG	X	Departure time

E2PTRP - Existing Shipment

TZONBG	8	CHAR 06	TZNZO NE		Point of departure time zone
DATEND		DATS 08	DPTEN S	X	Arrival date
TIMEND		TIMS 06	UPTEN S	X	Arrival time
TZONEN	8	CHAR 06	TZNZO NE		Destination time zone

Special Fields and Domain Values in Segment E2PTRP

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2PTRP.

Field E2PTRP-LEGIND: Leg Indicator

This ID specifies the type of the planned shipment.

Val.	Significance
1	Preliminary leg shipment
2	Main leg shipment
3	Subsequent leg shipment
4	Direct leg shipment
5	Return leg shipment

Field E2PTRP-LOCCLx: Location Category

Departure and destination location categories

Val.	Significance
PL	Plant
CU	Customer
SU	Vendor
OC	One-time customer
NO	Transportation connection points, distribution center
SP	Shipping point
CA	Service agent
AD	Address

Field E2PTRP-TZONxx: Time Zone

Time zone code. Value area according to R/3 table field TTZZ-TZONE.

E2PTRP - Existing Shipment

E2TPTRM- Location Identification

Segment E2TPTRM contains the identification numbers of a location which can be used as a key to an address database. The segment may occur within IDoc TPSDLS01 twice or up to four times. With the minimum number of 2, the departure and destination location identification are transferred and in the next two segments the sold-to party and payer ID can be defined.

Field name	Adj.	Format	SAP Domains	Oblig. Field	Significance
TLCCAT	1	CHAR 01		X	Location status
TRMTYP	1	CHAR 02		X	Location category
SHPPNT	A	CHAR 04	VSTEL		Shipping point
LODPNT	A	CHAR 02	LSTEL		Loading point
LDPTXT		CHAR 20	BEZEI2 0		Loading point text
PLANT	A	CHAR 04	WERKS		Plant
STRLOC	A	CHAR 04	LGORT		Storage location
STLTXT		CHAR 16	LGOBE		Storage location text
SHPPTY	A	CHAR 10	KUNNR		Ship-to party, customer number
ULDPNT	A	CHAR 25	ABLAD		Unloading point
SUPPLR	A	CHAR 10	LIFNR		Vendor
SLDPNT	A	CHAR 25	BELAD		Loading point
NODEID	A	CHAR 10	KNOTN		Transportation connection point
NODTYP		CHAR 10			Transportation connection point characteristic
BORDE R		CHAR 01			Border location ID
TSPNT		CHAR 01			Load transfer point ID

E2TPTRM- Location Identification

ADNR		CHAR 10	ADNR		Address number
------	--	------------	------	--	----------------

Special Fields and Domain Values in Segment E2TPTRM

Please take into account certain particular functions and/or permitted value areas in the following fields from segment E2TPTRM.

Field E2TPTRM-TLCCAT: Location Status

This ID specifies the status of the current segment for planning specifications.

Val.	Significance
S	Departure location that corresponds to the delivery's shipping location
D	Destination that corresponds to the delivery's destination
1	Departure location that does not correspond to the delivery's shipping location
2	Destination that does not correspond to the delivery's destination
B	Sold-to party
P	Payer

IDs '1' and '2' occur if a transportation planning system is not used for all the planning of a delivery but, for example, only for the preliminary and subsequent leg planning. For instance segment E2TPTRM with location status 'S' and one with location status '2' would appear for the preliminary leg between the shipping point to the departure harbor.

Field E2TPTRM-TRMTYP: Location Category

Category of current location. Different fields within the segment are filled with data according to category.

Val.	Significance	Completed Fields
PL	Plant	PLANT, STRLOC, STLTXT, ADNR
CU	Customer	SHPPTY, ULDPNT
SU	Vendor	SUPPLR, SLDPNT
OC	One-time customer	SHPPTY, ADNR
NO	Transportation connection point, distribution point	NODEID, NODTYP, BORDER, TSPNT, ADNR
SP	Shipping point	SHPPNT, LODPNT, LDPTXT, ADNR
CA	Service agent	SUPPLR, SLDPNT
AD	Address	ADNR

E2TPTRM- Location Identification

Field E2TPTRM-NODTYP: Transportation Connection Point Characteristic

The field lists the different characteristics of a transportation connection point. Each characteristic is coded with a single letter. Up to 10 characteristics can be shown in field E2TPTRM-NODTYP as a character string.

Val.	Significance
C	Distribution center
A	Airport
R	Railway station
E	Express railway station
H	Harbor
S	Road

Example: E2TPTRM-NODTYP = 'CRS' means a distribution center with railway and road connections.

Field E2TPTRM-BORDER: Border Location Identification

This ID specifies whether the transportation connection point is a border location.

Val.	Significance
0	non-border location
1	border location

Field E2TPTRM-TSPNT: Load Transfer Point Identification

This ID specifies whether the transportation connection point is a load transfer point.

Val.	Significance
0	non-load transfer point
1	load transfer point



Please note the following when processing inward shipment (IDoc TPSSHT01):

Fields NODEID, SHPPNT, LODPNT, SHPPTY, ULDPNT, SUPPLR, SLDPNT, PLANT and STRLOC are included in the location definition of the departure or destination location of a leg in the shipment document.

This takes place according to the following rule:

E2TPTRM- Location Identification

IDoc	R/3 System Shipment Document
1st location	1st leg departure location
2nd location	1st leg destination + 2nd leg starting point
3rd location	2nd leg destination + 3rd leg starting point

The fields are completed as follows:

IDoc	R/3 System Shipment Document	
	Leg: departure location	Leg: destination
E2TPTRM-NODEID	VTTS-KNOTA	VTTS-KNOTZ
E2TPTRM-SHPPNT	VTTS-VSTEL	VTTS-VSTEZ
E2TPTRM-LODPNT	VTTS-LSTEL	VTTS-LSTEZ
E2TPTRM-SHPPTY	VTTS-KUNNA	VTTS-KUNNZ
E2TPTRM-ULDPNT/SLDPNT	VTTS-BELAD	VTTS-ABLAD
E2TPTRM-SUPPLR	VTTS-LIFNA	VTTS-LIFNZ
E2TPTRM-PLANT	VTTS-WERKA	VTTS-WERKZ
E2TPTRM-STRLOC	VTTS-LGORTA	VTTS-LGORTZ



Only one field can be completed in fields NODEID, SHPPNT, SHPPTY, SUPPLR and PLANT.

Field LODPNT is optional and should only be completed if field SHPPNT has been completed.

Field STRLOC is optional and should only be completed if field PLANT has been completed.

Field ULDPNT is optional and should only be completed if field SHPPTY has been completed.

Field SLDPNT is optional and should only be completed if field SUPPLR has been completed.

All other fields in this segment are ignored.

An error occurs if the location definition does not adhere to the rules described above.

SAP System Settings and Modifications

This chapter provides an overview of the necessary settings within the SAP R/3 system as well as information on additional adjustments made available in the R/3 customer functions.

Overview of Information Sources

You can also use the following information sources:

- **Implementation Guidelines/SAP Reference IMG (Online)**

Tools → Customizing → Implementation projects → SAP Reference IMG → Sales and distribution → Transportation → Interfaces → External transportation planning systems

The overview shows you which settings you must carry out in the R/3 system in order to activate and configure the transportation planning interface. The following individual points will give you more detailed help.

- **Master Menu (Online)**

Logistics → Sales and distribution → Transportation → External systems → Transportation planning → ALE monitoring

The ALE functions allow you to monitor received and sent IDocs.

- For more in-depth knowledge the following written documentation is available:
 - RFC manual
Exact technical description of programming interface.
 - ALE consultancy manual
General information on ALE and its functions
 - Workflow manual
General information on the Workflow concept (see error processing)

Standard Error Processing with ALE

Transferring IDocs using Remote Function Call takes place on the TCP/IP basis. An error occurring will break the link between the transmitter and recipient. The transmitter can use the return codes of the RFC functions used to control whether the function was successfully called up in the recipient system or not. If there are any **TCP/IP errors** the link must be unconnected and the IDoc must be re-transmitted.

Errors in the ALE service layer, occurring during transmitting or receiving the IDoc are indicated as **technical errors**. The R/3 system generates a work item for every incorrect IDoc when technical or logical errors occur (see below). A work item is part of workflow processing and functions as an error message that is sent to all the users in the system who are assigned to a certain **position**. The error message contains an error text. If one of the users fetches the message from the inbox, analyses the error and posts the document the error message will disappear from all inboxes.

On receipt the IDoc is saved in the database before any processing begins, thus unlinking the communication from processing. If an error occurs during processing, e.g. updating with not-permitted or incorrect transaction type, i.e. a **logical application error**, SAP creates a work item with the appropriate error text.

Activating Standard Error Processing

If a logical error occurs when processing an IDoc a message is sent to one or several users. The following text describes how the error processing is set up.

Technically the system triggers a standard task specific to the message category. The standard task has to be assigned to a position that has either a user or holder.

You can create one or more positions which are enclosed in a central organizational unit.

The following options then occur:

- You can enter an organizational unit in the partner definition but no further specifications in the partner profile per message category. All the messages will then go to the users assigned to that organizational unit who have a position where the standard task appeared.
- You enter a defined point instead of the organizational unit in the partner definition.
- You override the entry in the partner definition with entries in the partner profile for a message category.

Normally you would use the first alternative. However if you have two subsystems which serve two different transportation planning points, where the administrators for the errors are two different people, you could use the second alternative to send the same error via the two different partner numbers.

Display in Inbox

The display in the inbox can be individually adjusted. The following describes a setting that allows you to display the messages by IDoc category:

Call up transaction **SIN1**. Click on **Configuration** under settings and create a new configuration. Select the Start Configuration button which will ensure that this configuration is always automatically used. Save.

Select *Settings* → *Group* and double click on the required field in the right-hand column for sorting in the overview display. Appropriate fields are 1. „Task“ und 2. „Creation date“

Select *Settings* → *Select columns* and double click on the fields that you want to see in the detail screen. Appropriate fields are 1. „Read“, 2. „Process“, 3. „Description“, 4. „Author“, 5. „Entry date“, 6. „Entry time“, and 7. „Status“.

Error Analysis

Error Analysis

Technical errors on the ALE Service Layer

The following errors can occur in the ALE service layer:

- Syntax error in IDoc
- Missing partner profile
- IDoc is not transferred to the RFC on transmission
- IDoc is not transferred to the application on receipt

Outbound

IDoc Syntax Error: IDoc Status '07'

On transmitting or receiving IDocs the syntax of the individual IDoc is checked. The syntax is determined when the IDoc is defined, including:

- the individual segments of the IDoc category
- the relationship between the individual segments
- how many segments can be transmitted in one IDoc or how often an individual segment may occur in one IDoc

An IDoc syntax check can be activated in the partner profile for an IDoc category and a certain partner and we recommend that you do so, particularly for any IDocs that you have created yourself. Otherwise this error normally only occurs in the test run. The incorrect IDocs cannot be repaired so they have to be transmitted again once the IDoc structure has been corrected in the SAP system.

Missing or Incorrect Partner Profile: IDoc Status '29'

To **transmit** an IDoc from SAP to the subsystem you must define the partner profile's outbound processing for the IDoc category (message type) and all relevant partners. You will find a more exact description of partner profiles in the online documentation for the Implementation Guidelines (IMG). If the partner (subsystem) for the IDoc to be transmitted can not be determined, you must follow this procedure:

- maintain the partner profile
- all the IDocs for transmission have to be set for retransmission. As this error triggered a work item for the standard task 'ALE/EDI: error processing (outbound)' and sent it to the relevant user's inbox, the incorrect IDoc also has to be set for subsequent transmission from the inbox. On subsequent transmission the incorrect IDoc is flagged with status '31' and copied to a new one which is enhanced with data from the partner profile and transferred to the aRFC.

Errors in partner profiles normally occur in the test run.

IDoc is not transferred to aRFC on transmission : IDoc Status '30'

Although the partner profile has been maintained the IDoc is not transferred to the aRFC, i.e. the IDoc is structured but not sent. The relevant subsystem does not have any open entries in the

RFC transaction evaluation (SM58). Although the IDoc is ready for transmission it has to be explicitly controlled.

This takes place via report RSEOUT00, which can be planned as a periodic job or started directly using the transportation menu *Logistics → Sales and distribution → Transportation → External systems → Transportation planning → ALE monitoring → Period.worken → IDoc, ALE outbound → Send*.

Here the outbound mode for the relevant IDoc should be checked in the partner profile. In outbound mode '2' the created IDoc is transmitted directly, in '4' the IDocs are collected together and sent in defined package sizes. We recommend that the IDocs are not directly transmitted for mode '4'.

Status '30' in the IDoc can normally only occur if outbound mode is set to '4'.

Inbound Processing

IDoc Syntax Error: IDoc Status '60'

As in outbound processing an IDoc syntax check can be activated in the partner profile for an IDoc category and a certain partner and we recommend that you do so, particularly for any IDocs that you have created yourself. Otherwise this error normally only occurs in the test run. The incorrect IDocs cannot be repaired so they have to be transmitted again once the IDoc structure has been corrected in the SAP system.

Missing or Incorrect Partner Profile: IDoc Status '63'

On **receipt** of an IDoc in SAP the partner profile inbound processing for IDoc category (message type) and the transmitting partner must be defined. You can read a more detailed description of partner profiles in the online documentation for implementation guidelines (IMG). If the partner profile and therefore the inbound method for the recipient IDoc cannot be found, then the application cannot be activated and the IDoc remains in the system with open status. In this situation follow this process:

- maintain the partner profile
- all the open IDocs for transmission have to be set for retransmission. As this error triggered a work item for the standard task 'ALE/EDI: error processing (outbound)' and sent it to the relevant user's inbox, the incorrect IDoc also has to be set for subsequent transmission from the inbox.

Errors in partner profiles normally occur in the test run.

IDoc is not transferred to application on receipt: IDoc Status '64'

Although the partner profile has been maintained, the received IDoc is not processed and flagged as incorrect, i.e. the application is not controlled for processing this IDoc. Although the IDoc is ready for transmission to the application, you must set the application for processing the IDoc explicitly.

This takes place using report RBDAPP01, planned as a periodical job or can be started directly using the transportation menu *Logistics → Sales/distribution → Transportation → External systems → Transportation planning → ALE monitoring → Period.work → IDoc, ALE outbound → Send*.

As in transmission you check the processing type in the partner profile. In processing '1' the IDocs are transferred immediately after receipt to the application for processing. In processing '3' and partly in '2' we recommend that processing is not controlled directly but explicitly.

Error Analysis

Status '64' in IDoc normally only occurs in conjunction with processing '3' and '2'.

Logical Errors in the Application

The errors described below, which occur in the application, are related to an inbound IDoc in SAP. For message the IDoc to be transferred is structured in the application, so that any missing or incorrect Customizing settings will be noticed directly in SAP processing, e.g. while creating planning requests.

During inbound processing of an IDoc in the SAP system the following errors could occur in the application:

- Missing or incorrect Customizing settings in the SAP system
- Missing or incorrect data in the IDoc
- Error due to blocked objects

The incorrect IDoc is flagged with status '51'.

Missing or Incorrect Customizing Settings in the SAP System

The received IDoc cannot be processed because certain IDoc data have not been maintained in the system. For example a shipment category is transferred from a shipment registered in the subsystem that has not been defined in the SAP system. You must implement the Customizing settings accordingly for these errors; posting the incorrect IDoc can be controlled afterwards. Posting can either take place from the inbox of the person responsible or via report RBDMANIN, which can be planned as a periodic job or started via the transportation menu *Logistics* → *Sales/distribution* → *Transportation* → *External systems* → *Transportation planning* → *ALE monitoring* → *Period.work* → *IDoc, ALE outbound* → *Resend*.

Missing or Incorrect Data in the IDoc

If the data in the received IDoc are incomplete, you must decide whether the incorrect IDoc should be transmitted again or whether it is possible or appropriate to carry out corrections in the SAP system. You can also correct the IDoc directly. It is possible to do this using the IDoc Editor but this should only be used for exceptional cases.

Similarly to errors in Customizing settings the incorrect IDoc can also be posted from the inbox of the user responsible or via report RBDMANIN.

Errors through Locked Objects

There are often problems in SAP processing with blocking individual objects. More than one access to an SAP object will cause processing to terminate, with an error note for the blocked object. This error is treated like all other errors in IDoc processing. The user does not have to do anything to solve it as repeated processing at a later point will solve the problem automatically. This means that using background processing (periodic job) from report RBDMANIN can be used for posting the IDoc. The parameter 'error status' in this report uses the error message ID to delimit posting for certain errors; in this case only for each error message related to a blocking error.

Important Error Notes in Inbox

For each error described a work item is created and put in the inbox of the user responsible. Work items are used for certain important error notes that are either transmitted directly from the subsystem or structured in IDoc processing in the application. Work items are not to be used for re-starting IDoc processing from the inbox but to inform the user of a conflict or to forward an

Error Analysis

important message from the subsystem to the SAP system. The message is transferred to SAP by IDoc SYSTAT01.

Unlike errors, the work item for notes is not processed from the inbox but completed.

Modifications (Customer Functions)

Modifications (Customer Functions)

This chapter provides an overview on the customer functions and change options in processing that affect the interface.

Inbound Processing (Receipt of IDocs from Subsystem)

The following modifications are possible:

- You are using standard IDoc TPSSHT01, but you want to process the IDoc according to your own requirements.
- You are using standard IDoc TPSSHT01 but want to influence the standard IDoc processing, i.e. error processing should be modified or IDoc contents should be interpreted according to the customer's requirements.
- You are using a modified IDoc with your own segments and want to implement a certain processing for the data in these segments.
- You are using a modified IDoc with your own segments and want to process the IDoc according to your own requirements.
- You are using your own IDoc with a new message type and have to process the IDoc according to your own requirements.

The following describes individual modification options.

Once an IDoc has been received and saved, a framework function module in the SAP application is triggered which takes over the processing of the IDoc. This provides the first option where you can generate your own processing function module. In order to call this up you will have to enter it in an ALE Customizing table (transaction WE42 : *Process codes inbound* → *Inbound with ALE service* → *Processing by function module*). You can then specify the defined process code in the inbound partner profile. Framework function modules on offer are assigned according to the following message categories:

Inbound Framework Function Module

Message type	Function module	Significance
SHIPPL	IDOC_INPUT_SHIPPL	Shipment document

The framework function module filters out the user data per IDoc and calls up your own processing function module in the application for every IDoc in a loop. All the data are then saved together in the database.

Before and after processing each IDoc and after saving all shipment data a customer function is implemented.

You can use the customer function before processing the IDoc to manipulate data in the IDoc before it is transferred to the application functions. The customer function after IDoc processing allows you to process your own segments.

Customer functions for the transportation planning interface can be found in function group XV56 in the R/3 system with the description 'EXIT_SAPLV56I_0xx'. You can use transaction SMOD to access enhancements. The names begin with 'V56I'. The documentation for each function module describes how to use the available customer functions. Activating customer functions

Modifications (Customer Functions)

takes place in transaction CMOD. Please use the R/3 system online documentation for instructions on using SMOD and

Customer Functions Inbound Shipment

EXIT_SAPLV56I_010	Modification of IDoc segments
EXIT_SAPLV56I_011	Modification of shipment tables
EXIT_SAPLV56I_012	Save your own new shipment tables

When creating your own function module, you must make sure that you do not set Commit Work, because the function module branches back the ALE service level after processing. This is where application errors are copied, IDoc status set and possibly rollbacks are listed. After Commit Work, a rollback can no longer be carried out if an error occurs. This could lead to partially posted IDocs and therefore to inconsistencies during error processing.

You have to take into account the fact that further I/Os, that occur in the customer functions can reduce performance.

You define your own IDoc segments in IDoc maintenance (WE30). Please see the corresponding documentation for the ALE group.

You define your own IDoc in the same way as for maintaining your own segments. This IDoc must be assigned to a new message type. You must find a partner profile for this message type. The tables for entry to transaction WE42 must be maintained.

You have the following modification options for the individual modification scenarios:

- For IDoc processing, you create your own processing function module, that can be copied from the standard function module and then adjusted as required.
- You activate the customer functions in the standard function module. If you want to influence error processing, you must enhance the customer function after IDoc processing by generating using *own error status* and then activate. If you want to influence IDoc processing, then you need to activate and use customer function *own update*.
- You define your own IDoc segments in the standard IDoc and use the customer function for *own update*, in order to process the data from your own segments.
- You define your own IDoc segments in the standard IDoc and create your own processing function module as in scenario 1.
- You define your own IDoc and create your own processing function module. When creating the function module, you can use the standard help function modules.

Outbound Processing (Transmitting IDocs to a Subsystem)

The following modification scenarios:

- You use standard IDoc TPSDLS01, but want to change standard processing, i.e. the structure or content of this IDoc.
- You use a modified IDoc with your own segments and want to set your own processing to construct the data from this segment.

Modifications (Customer Functions)

- You use a modified IDoc with your own segments and want to process the IDoc structure according to your own requirements.
- You use your own IDoc with a new message type and have to process the IDoc according to your own requirements.

The following section describes the individual modification options.

The formatting for the transmission of IDocs is carried out in the application. The IDoc is constructed, the partner determined and the configurations are made for the ALE layer. The construction of the IDoc is carried out in the application function modules.

This is where you have your first opportunity to carry out modifications by creating your **own function modules**. To ensure that this is called by the application, you have to link it to the required application menu.

The following function modules from function group V561 are used in the transportation planning interface for constructing and transmitting standard IDocs:

Function modules outbound processing

IDOC_OUTPUT_TPSDLS	Individual planning requests (when transmitting using message control)
IDOC_OUTPUT_TPSDLS_MASS	Mass transmission of planning requests
IDOC_OUTPUT_SHIPPL	Transfer status
IDOC_OUTPUT_STATUS_TPS	Error status
IDOC_OUTPUT_TPSLOC	Location master data

For the outbound function modules for transmission of planning requests, the following **customer functions** are available, for adding your own IDoc segments and/or changing the standard IDoc construction. The following list displays all available customer functions for outbound processing of planning requests. The function groups and transactions displayed for inbound processing are also valid for customer functions in outbound processing.

Customer Functions for Outbound Planning Requests

EXIT_SAPLV56I_001	Modification of the delivery header segment in the IDoc
EXIT_SAPLV56I_002	Modification of the delivery item segments in the IDoc
EXIT_SAPLV56I_003	Modification of the packing data segments in the IDoc
EXIT_SAPLV56I_004	Modification of the whole IDoc before transmission
EXIT_SAPLV56I_005	Modification of material cumulation
EXIT_SAPLV56I_006	User-specific location substitution
EXIT_SAPLV56L_007	Deactivating the conversion block for deliveries

As mentioned in inbound processing, you define your own IDoc segments in IDoc maintenance. A customer-specific IDoc can also be defined for outbound processing. Apart from IDoc definition, you only need to maintain the partner profile for outbound processing here.

Modifications (Customer Functions)

You have the following modification options for the individual modification scenarios:

- For IDoc processing, you create your own processing function module, that can be copied from the standard function module of the corresponding message type and then adjusted as required.
- You activate the customer functions in the standard function module in order to influence the standard IDoc structure.
- You define your own IDoc segments in the standard IDoc and use the customer exit to fill your own segment with data.
- You define your own IDoc segments in the standard IDoc and create your own function module that can be copied from the standard function module of the corresponding message type and then adjusted as required.

IDoc Description

IDoc Description

General Construction of the IDoc

An IDoc is comprised of a number of data records in two tables:

- Control record table EDI_DC
- Data record table EDI_DD

A control record entry EDI_DC exists for each IDoc. This contains important data, such as the ID of the transmitting and receiving systems, and other IDs. A data record entry EDI_DD exists for each data record. This is made up of a header section which is 55 bytes long and a user data section which can hold up to 1000 bytes. The reference between data record and control record is created with an IDoc number. For each control record with document number DOCNUM, data records with the same document number DOCNUM must exist. There is, therefore, a 1:N relationship between control types and data types. The data records must be entered into table EDI_DD in exactly the same sequence as required by the hierarchical structure of the corresponding IDoc categories. For further information on the hierarchy, see section *Overview of IDoc Structure*.



Not all fields in EDI_DC or EDI_DD are mandatory. Make sure that you do not initialize fields that need to be filled.

If you are transmitting an IDoc from the external system to SAP, then you have to define a logical system as communication partner in the R/3 system (SALE -> Distribution model -> Logical systems) and a partner profile for inbound processing that agrees with this partner number. The partner number of the destination system (here SAP) is not actually mandatory, but we recommend that you specify it, so that communication procedures can be carried out correctly. The logical system of the SAP system is maintained per client in table T000 (SM31).

The partner profiles can be used to provide a non-standard function module for processing IDocs in the table for inbound processing methods in the ALE service level.

When creating IDocs in the R/3 system using transaction WE30, three structures are created and numbered automatically for each IDoc segment. For example: Delivery header has E1TPDLH, E2TPDLH and E3TPDLH. E1 TPDH is release-independent, E2TPDLH is release-dependent and E3 TPDH is used for documentation. When segment names are transferred, you must specify the E2 segment names in order to be working independently of SAP release.

Data Transfer Format

Data is transferred via the interface using only CHAR format. Conversion is carried out in the SAP system with the necessary adjustments for the entry fields in CHAR formats. The following table gives the required entries for the important data categories.

Field	Length	possible entry value
NUMC	e.g. 18	'000000000012345678' positive, numerical char format right-aligned with preceding zeros
CHAR	e.g. 18	'Bordeaux_____' char format left-aligned with subsequent spaces

IDoc Description

QUAN	e.g. 18	'2456.12_____' or '2456.12-_____' Fixed decimal point left-aligned with point as decimal symbol, possibly with subsequent +/- sign or spaces
DATUM	8	Format YYYYMMDD e.g.: 19961231 for 31.12.1996
UZEIT	6	Format HHMMSS e.g.: 174809 for 17h48m09s

See also:

[EDI_DC - IDoc Control Record \[Page 288\]](#)

[Special Fields in the Control Segment of the EDI_DC \[Page 290\]](#)

[EDI_DD - IDoc Data Record \[Page 292\]](#)

Overview of Transferred Message

The messages listed below are transferred from the SAP R/3 system to the transportation planning system. The names used are those specified for the basic IDoc categories and logical message types:

Action	IDoc name	Message type
Plan/change/deallocate delivery	TPSDLS01	TPSDLS
Add/change location master data (customer, vendor)	TPSLOC01	TPSLOC
Set transportation planning status	TPSST01	SHIPPL
Status information on transfer/possible errors	SYSTAT01	STATUS

The messages listed below are transferred from the transportation planning system to the SAP R/3 system:

Action	IDoc name	Message types
Create/change/delete shipment	TPSST01	SHIPPL
Status information on transfer/possible errors	SYSTAT01	STATUS



When transferring documents between the R/3 system and a transportation planning system, you must follow these basis guidelines regardless of the direction of transfer:

- **Delivery and shipment documents must all be fully transferred when added to or changed.**

If, for example, a delivery is changed in the R/3 system after it has been transferred to the subsystem, the whole document is fully transferred with the all data, not just the changes. Changed shipments must also be fully retransferred from the planning system.

- **If documents are deleted, they must be transferred with at least the entire header information.**

IDoc Description

The item segment can be ignored for documents to be deleted.

- **If fields in the IDoc have the initial values, then they are also initial in the underlying document.**

- **Transferring a document using messages**

Normally, you are not allowed to combine document in a single IDoc. In other words, each IDoc is only allowed to contain a single header segment. IDoc TPSLOC01 is an exception to this rule because it can transfer several master data records.

- **Taking the serialization of message into account**

This is done to ensure that older IDoc versions for a document are not posted again after a more recent document has been processed.

- **Deliveries may not be split in planning**

The R/3 system does not currently support delivery split in the shipment. For this reason, the planning system can only plan complete deliveries into a shipment. If this is not possible, then the delivery must be changed in the R/3 system.

- **Client-dependence of the planning data must be taken into account**

Take special care during communication to a transportation planning system with several R/3 clients and/or R/3 systems. The data from the different clients must not get mixed up (see also the section *EDI_DC IDoc Control Record*)

- **Transfer of all data in CHAR format**

All data are transferred to the IDocs in character format. There are, for example, no 8 byte sliding decimals.

- **Transfer of all units of measure according to ISO standard**

All units of measure, country codes and currency codes are transferred in the IDoc according to the ISO guidelines (e.g. KGM instead of KG for the kilogram unit).

- **Shipment number from number range**

Shipment document numbers that are issued by a transportation planning system must fall within a number range that can be set within the R/3 system.

Overview of IDoc Structure

The following sections describe the structures of the different IDocs. The indentations in the *Segment* column indicate the hierarchical structure of the IDoc, i.e. a segment with an indentation to the right is lower in the hierarchy than the previous segment further to the left. Subordinate mandatory segments are only mandatory if the segment superior in the hierarchy is also available.

[TPSDLS01 - Planning / Changing / Deallocating Delivery \[Page 294\]](#)

[TPSLOC01 - Adding/Changing Location Master Data \[Page 295\]](#)

[TPSSHT01 - Create / Delete / Change Shipment - Set Shipment Status \[Page 296\]](#)

[SYSTAT01 - Status Information for Conversion / Possible Errors \[Page 298\]](#)

EDI_DC - IDoc Control Record**EDI_DC - IDoc Control Record**

The control record IDoc EDI_DC contains important information on the transmitting and receiving partners. It can occur exactly one time per IDoc.

Only some of the fields need to be filled for IDocs that are transmitted from the transportation planning system to the R/3 system. These are identified as mandatory fields in the following field list.

If an IDoc is transmitted from the R/3 system to the planning system, then nearly all fields are filled, although the only relevant fields are those that are marked as TPS-relevant.

Field name	Format	TPS-relevant	Oblig. Field	Significance
TABNAM	CHAR 10			Name of table structure
MANDT	CHAR 03			Client
DOCNUM	NUMC 16	X	X	Number of intermediate document
DOCREL	CHAR 04			SAP-Release of intermediate document
STATUS	CHAR 02			Status of intermediate document
DOCTYP	CHAR 08			IDoc category
DIRECT	CHAR 01			Direction
RCVPOR	CHAR 10			Receiver port (SAP system, EDI subsystem)
RCVPRT	CHAR 02	X	X	Partner type of receiver
RCVPRN	CHAR 10	X	X	Partner number of receiver
RCVSAD	CHAR 21			EDI: SADR field total
RCVLAD	CHAR 70			Logical address of receiver
STD	CHAR 01			EDI standard
STDVRS	CHAR 06			Version of EDI standard
STDMES	CHAR 06			EDI message type
MESCOD	CHAR 03			Logical message variant
MESFCT	CHAR 03			Logical address of receiver
OUTMOD	CHAR 01			Issue mode
TEST	CHAR 01			Test indicator
SNDPOR	CHAR 10			Transmission port (SAP system, EDI subsystem)
SNDPRT	CHAR 02	X	X	Partner type of transmitter
SNDPRN	CHAR 10	X	X	Partner number of transmitter

EDI_DC - IDoc Control Record

SNDSAD	CHAR 21			EDI: SADR fields in total
SNDLAD	CHAR 70			Logical address of transmitter
REFINT	CHAR 14			Reference to transfer file
REFGRP	CHAR 14			Reference to message group
REFMES	CHAR 14			Reference to message
ARCKEY	CHAR 70		X	Document ID in the external system
CREDAT	DATS 08		X	Creation date of intermediate document
CRETIM	TIMS 06		X	Creation time of intermediate document
MESTYP	CHAR 06	X	X	Logical message category
IDOCTYP	CHAR 08	X	X	Name of basic IDoc category
CIMTYP	CHAR 08			Name of extension type
RCVPFC	CHAR 02			Partner function of receiver
SNDPFC	CHAR 02			Partner function of transmitter
SERIAL	CHAR 20	X	X	EDI/ALE: Serialization field
EXPRSS	CHAR 01			Override in inbound processing

Special Fields in the Control Segment of the EDI_DC

Special Fields in the Control Segment of the EDI_DC

Special functions must be taken into account for the following fields.

Field EDI_DC-DOCNUM: Document number

In the central description, the field indicates the unique number in the SAP R/3 system of the document that is transmitted. A unique number must also be entered in the subsystem so that a reference can be created to the accompanying data records. When the IDoc being transmitted from the subsystem is imported by the R/3 system, the content of DOCNUM is replaced with an internal number, determined by the R/3 system. The reference to the old DOCNUM is saved.

Field EDI_DC-RCVPRT: Partner type of receiver

The field indicates the type of partner system and is generally set to 'LS' (logical system) for communication with non-R/3 systems.

Field EDI_DC-RCVPRN: Partner number of receiver

Number or name of the receiving system.

Field EDI_DC-SNDPRT: Partner type of transmitter

The field indicates the type of partner system and is generally set to 'LS' (logical system) for communication with non-R/3 systems.

Field EDI_DC-SNDPRN: Partner number of transmitter

Number or name of transmitting system.



The combination of fields SNDPRT and SNDPRN is extremely important for the subsystem when data in the incoming IDocs is being processed.

These two fields are used to separate documents from different R/3 systems or R/3 clients. A transportation planning system could, for example, receive two deliveries from two R/3 systems with the same delivery number. These deliveries must not get mixed up during planning. SNDPRT and SNDPRN therefore, function as an additional part of the key for all identification fields.

Field EDI_DC-ARCKEY: Document identification in the external system

In field ARCKEY, the subsystem can save additional information for unique identification of a transmitted document. If a document transmitted from the subsystem cannot be processed by the R/3 system, then an error message with the contents of ARCKEY is sent back in order to create a reference to the document creating transaction.

Field EDI_DC-MESTYP: Logical message category

The field contains the logical name of a message. It is not bound by any EDI standard. Logical messages are assigned by SAP to the individual IDoc types.

Field EDI_DC-IDOCTYP: Name of basic IDoc type

The IDoc type is defined by the applications. They determine the sequence of the SAP segments. The IDoc types issued with the SAP standard are identified via field IDOCTYP just as IDoc types newly created by the customer are.

Special Fields in the Control Segment of the EDI_DC

Field EDI_DC-SERIAL: EDI/ALE: Serialization field

The serialization field contains a unique number, the can be used in serialization, i.e. setting the correct transmission sequence of IDocs in the receiving system. Generally, this is a time stamp, that explodes the sequence sufficiently or which provides a sequence of consecutive numbers based on the unique identification of the creation sequence and/or the transmission sequence in the transmission system. The serialization field should only contain numbers.

EDI_DD - IDoc Data Record**EDI_DD - IDoc Data Record**

The IDoc data record EDI_DD contains a 55 byte header section with reference information and hierarchy information as well as a user data section of up to 1000 bytes. The size of the user data section is determined by the length of the IDoc segment transferred there.

When the R/3 system is receiving or transmitting data, the sequence of the individual data records transferred is determined directly from table EDI_DD. When data is being transmitted, the data records are also numbered sequentially.

Field name	Format	Oblig. field	Significance
TABNAM	CHAR 10		Name of table structure
MANDT	CHAR 03		Client
DOCNUM	NUMC 16	X	Number of intermediate document
SEGNUM	NUMC 06		Sequential number
SEGNAM	CHAR 10	X	IDoc segment name
PSGNUM	NUMC 06		Number of hierarchically superior segment
HLEVEL	CHAR 02		Hierarchy level of segment
DTINT2	CHAR 02		SAP-internal field, do not fill
SDATA	LCHR 1000	X	User data in the form of an IDoc segments



If, for example, you are transmitting two IDocs with shipment documents from a subsystem to an R/3 system, each with a shipment header, an action code and an assigned delivery - therefore each containing three segments, then you must use one EDI_DC record and three EDI_DD records per IDoc. When you call function module 'INBOUND_IDOC_PROCESS' via RFC, a total of two EDI_DC records and six EDI_DD records are transferred. The three segments of an IDoc are grouped using the unique number of the IDoc or intermediate document.

The DOCNUM is also used to identify the corresponding EDI_DC record. The R/3 client has the logical system description 'LS S11MAND002', the subsystem is defined using 'LS TRANSPLAN1'.

EDI_DD

IDoc number	Segment name	User data	Significance
9000000000123456	E2TPSHH	0010000101AD01ED...	Shipment header
9000000000123456	E2TPACC	C	Actions code
9000000000123456	E2TPSHI	0001008400035465	Delivery
9000000000123457	E2TPSHH	0010000102AD01ED...	Shipment header
9000000000123457	E2TPACC	C	Actions code

EDI_DD - IDoc Data Record

9000000000123457	E2TPSHI	0001008400035467	Delivery
------------------	---------	------------------	----------

EDI_DC

IDoc number	Receiving partner	Transmitting partner	Mess. type	IDoc type
9000000000123456	LS S11MAND002	LS TRANSPLAN1	SHIPPL	TPSSHT01
9000000000123457	LS S11MAND002	LS TRANSPLAN1	SHIPPL	TPSSHT01

TPSDLS01 - Planning / Changing / Deallocating Delivery

TPSDLS01 - Planning / Changing / Deallocating Delivery

IDoc TPSDLS01 is used for transferring deliveries that are yet to be scheduled for shipments into a transportation planning system. The IDoc contains the delivery information essential for the creating a shipment, as well as further address, material and transportation information.

Segment	Segment name	Obligatory segment	Number
Delivery header	E2TPDLH	X	1
Actions code	E2TPACC	X	1
Allowed service agents	E2TPALC		n
Location identification	E2TPTRM	X	2-4
Address	E2TPLOC		1
Location code	E2TPLCT		n
Time frame	E2TPTIW		n
Process	E2EDT13	X	n
Header delivery dimensions	E2TPDIH	X	1
Delivery item	E2TPDLI	X	n
Delivery item dimensions	E2TPDII	X	1
Goods code	E2TPCOC		n
Shipping unit	E2TPSHU		n
Shipping unit dimensions	E2TPDIS		1
Shipping unit contents	E2TPSUC		n
Texts	E2TPNOT		1
Existing shipments	E2TPTRP		n

TPSLOC01 - Adding/Changing Location Master Data

IDoc TPSLOC01 is used for the initial transfer of location master data and for sending the change message to the transportation planning system.

Segment	Segment name	Obligatory segment	Number
Location identification	E2TPTRM	X	1
Action code	E2TPACC	X	1
Address	E2TPLOC		1
Location code	E2TPLCT		n
Opening times profile	E2KNVAM		1
Time frame	E2TPTIW		n
Texts	E2TPNOT		n

In general, every location master record is transferred with segments E2TPTRM, E2TPACC and E2TPLOC. Opening times profiles are prepared for customer unloading points. For customer master records, the address is linked to the customer. If a customer has several unloading points, then an IDoc TPSLOC01 is transferred for every unloading point. Only the first one, however, has the full customer address. All others are transmitted without segment E2TPLOC.

TPSSHT01 - Create / Delete / Change Shipment - Set Shipment Status

TPSSHT01 - Create / Delete / Change Shipment - Set Shipment Status

IDoc TPSSHT01 is used for data transfer in both directions between the R/3 system and the transportation planning system. The structure of the IDoc represents a shipment document, although it will be in a form that differs in part from that used in the R/3 system.

During TPS -> R/3 communication, IDoc TPSSHT01 is used to transfer planned, changed or deleted shipment documents. The individual segments occur as shown in the following table.

During R/3 -> TPS communication, IDoc TPSSHT01 is only transmitted with the shipment header and the action code. It is only used to confirm the status of an externally planned shipment in the TPS (changeable / non-changeable).

Segment	Segment name	Obligatory segment	Number
Shipment header	E2TPSHH	X	1
Actions code	E2TPACC	X	1
Shipment costs	E2TPFRC		n
Process	E2EDT10		n
Means of transport	E2TPEQT		n
Means of transport dimensions	E2TPDIS		1
Transportation points	E2TPSLS		n
Location identification	E2TPTRM	X	1
Address	E2TPLOC		1
Process	E2EDT17		n
Leg data	E2TPSHT		1
Action	E2TPSHA		n
Deliveries	E2TPSHI		n
Delivery costs	E2TPDLC		n
Railway data	E2TPSHR		n

This IDoc contains a segment E2TPSLS and sub-segments for the description of the geographic processing of a shipment (load transfer point). A sequence of locations with the corresponding actions at that location is described in this part of the IDoc.

In the SAP R/3 system this is carried out using a sequence of legs (links from one location to another) as well as with load transfer points and border crossing points in the shipment document. Generally, legs and border crossing points/load transfer points are represented as stages of a shipment (table VTTS). Deliveries can also be assigned to a stage (table VTSP).

For this reason, conversion is necessary when processing the incoming IDoc. The rules for conversion are explained for each segment. See [Description of the IDoc Segments, Fields and Domain Values \[Page 299\]](#).

TPSSHT01 - Create / Delete / Change Shipment - Set Shipment Status

SYSTAT01 - Status Information for Conversion / Possible Errors**SYSTAT01 - Status Information for Conversion / Possible Errors**

IDoc SYSTAT01 is used for transferring positive confirmations and error messages concerning the contents of IDocs TPSDLS01 and TPSSHT01.

Segment	Segment name	Obligatory segment	Number
EDI status record	E2STATS	X	n

Description of the IDoc Segments, Fields and Domain Values

The following section describes the individual segments of IDocs TPSLOC01, TPSDLS01, TPSSHT01 and SYSTAT01. The fields contained in the segments are all listed with name, data category with length, corresponding R/3 domains, obligatory field indicators and their meaning. In the connection to the field list, segment fields that have special properties, fixed value areas or non-R/3 functionality are described in greater detail.

Adjustment and Setting of Domain Values

During communication between the R/3 system and the transportation planning system, adjustment and setting of many fixed values is necessary in order to guarantee correct and efficient planning and processing. To this end, the following adjustment procedures are used to determine how and in which system adjustments need to be made.

Adjust. procedure	Significance
1	SAP sets the standard that must be implemented in the planning system
2	Manual master data adjustment between the systems, R/3 is master system
3	Different value areas are used in both the R/3 system and in the planning system. Duplicated or common values can be adjusted
4	SAP adopts the value area of the planning system for it's development partner into the R/3 system
5	The R/3 system is adjusted in Customizing to the planning system value area
6	Translation / adjustment of technical expressions between the two systems
7	Value area is fixed and was determined by agreement between SAP and development partners
8	SAP defines a basic value area which must be included in the planning system. It can be enhanced and must then also be enhanced in R/3 Customizing, if necessary
9	The value area is specified with international standards (e.g. ANSI, ISO,...)
A	Electronic master data adjustment per data transfer, R/3 is the master system
B	Master data value that can be set as customer-specific and can only be adjusted in special circumstances

The various adjustment procedures are listed in the table with the segment descriptions in the *Adjustment* column. If no specification is made here, then you only need to take the specifications on data formats into account.

[E2EDT1x - Processes \[Page 220\]](#)

[E2KNVAM - Opening Times Profiles \[Page 224\]](#)

[E2STATS - EDI Status Record \[Page 226\]](#)

Description of the IDoc Segments, Fields and Domain Values

[E2TPACC - Action Code \[Page 229\]](#)
[E2TPALC - Permitted Service Agent \[Page 230\]](#)
[E2TPCOC - Goods Code \[Page 231\]](#)
[E2TPDIH - Delivery Dimensions at Header Level \[Page 232\]](#)
[E2TPDII - Delivery Dimensions at Item Level \[Page 234\]](#)
[E2TPDIS - Shipping Unit Dimensions \[Page 235\]](#)
[E2TPDLC - Shipment Costs at Delivery Level \[Page 237\]](#)
[E2TPDLH - Delivery Header \[Page 238\]](#)
[E2TPDLI - Delivery Item \[Page 242\]](#)
[E2TPEQT - Means of Transport \[Page 244\]](#)
[E2TPFRC - Shipment Costs at Shipment Header Level \[Page 245\]](#)
[E2TPLCT - Location Code \[Page 246\]](#)
[E2TPLOC - Location Master Record Address \[Page 247\]](#)
[E2TPNOT - Delivery Texts \[Page 251\]](#)
[E2TPSHA - Transport Activity \[Page 252\]](#)
[E2TPSHH - Shipment Header \[Page 254\]](#)
[E2TPSHI - Delivery in Shipment \[Page 257\]](#)
[E2TPSHR - Rail Data \[Page 258\]](#)
[E2TPSHT - Leg Data in Shipment \[Page 259\]](#)
[E2TPSHU - Shipping Unit \[Page 261\]](#)
[E2TPSLS - Shipment Points \[Page 262\]](#)
[E2TPSUC - Shipping Unit Contents \[Page 263\]](#)
[E2TPTIW - Time Frame \[Page 264\]](#)
[E2TPTRP - Existing Shipment \[Page 266\]](#)
[E2TPTRM - Location Identification \[Page 269\]](#)

SOP Interface

[Overview \[Ext.\]](#)

[SOP with an External System \[Page 303\]](#)

[The External Planning Process \[Page 304\]](#)

[Define Master Data Selection \[Ext.\]](#)

[Initialize External Model \[Ext.\]](#)

[Update External Model \[Page 305\]](#)

[Planning with Planning Tables \[Page 306\]](#)

[Settings for External SOP Planning \[Page 307\]](#)

[Maintain Settings for External Planning \[Page 309\]](#)

[Planning Materials \[Page 310\]](#)

[Planning Product Groups \[Page 311\]](#)

[Planning Disaggregated Product Groups \[Page 312\]](#)

[EXTERNPLAN \[Page 314\]](#)

[Mass Processing \[Page 315\]](#)

[Technical Documentation \[Page 317\]](#)

[Function Modules \[Page 319\]](#)

[CBP_SOP_PLAN_REQUEST RFC \[Page 320\]](#)

[CBP_GEN_INTERACTIVE_START RFC \[Page 326\]](#)

[CBP_SOP_PLAN_STARTUP \[Page 328\]](#)

[CBP_SOP_PLAN_DISMISS RFC \[Page 330\]](#)

[CBP_SOP_PLAN_SAVE RFC \[Page 331\]](#)

[Data Structures \[Page 333\]](#)

[SCBP_SOPCTR \[Page 334\]](#)

[SCBP_PLCONF \[Page 338\]](#)

[SCBP_MBEST \[Page 339\]](#)

[SCBP_SOPTAB \[Page 340\]](#)

[SCBP_PLACT \[Page 343\]](#)

[SCBP_PLATT \[Page 344\]](#)

[SCBP_SOPFIX \[Page 346\]](#)

[SCBP_PROLIS \[Page 347\]](#)

[SCBP_PLPROT \[Page 348\]](#)

[SCBP_MALLOC \[Ext.\]](#)

[IDOC CBPRCP01 \[Page 349\]](#)

SOP Interface

SOP with an External System

Features

1. Two functions are possible with the SOP interface:
 - external [planning with planning tables \[Page 306\]](#)
 - mass processing with [EXTERNPLAN \[Page 314\]](#)
2. The following planning options are available:
 - full routings
 - rough routings with capacity groups
 - full BOMs
 - rough BOMs
 - rough-cut planning profiles
3. The following data from standard SOP can be transferred to an external planning system:
 - sales figures
 - production figures
 - target stock levels
 - target day's supply
4. Planning can be carried out using multiple versions of a plan. Several planners can have simultaneous access to a particular version of a plan, whereby individual decisions will affect the results of all the others working on that particular version. Plans are kept in separate work spaces until they are saved.



If the external system is not capable of processing the target stock levels and target day's supply, the stock policies must be calculated in standard SOP. The same applies to aggregation and disaggregation of product groups. Should that be the case, only single level planning can be carried out in the external system.

For detailed information on standard SOP activities, see PP Sales & Operations Planning.

The External Planning Process

The External Planning Process

Prerequisites

Before you can begin the external planning process, you must first complete the Customizing activities described in the SCPI implementation guide, under Production Optimization Interface, External Planning SOP.

Process Flow

The external Sales and Operations planning process consists of sending data from R/3 to an external planning engine, retrieving it, and integrating the results in R/3.

The process consists of the following steps:

1. Download master data from R/3:
[define master data selection \[Ext.\]](#)
2. Send data to external system by initializing model:
[initialize external model \[Ext.\]](#)
3. Plan product group or materials with [planning tables \[Page 306\]](#) or create mass processing job with [EXTERNPLAN \[Page 314\]](#)
4. Return data to R/3 by updating the model: [update external model \[Page 305\]](#)

Update External Model

Prerequisites

The change pointers need to be activated in Customizing before the change mode is enabled.



The rough-cut planning profile does not support change pointers and therefore the program will send everything in the selection range even in the change mode. In addition, special attention needs to be paid to the use of change mode and BOM explosion.

In the Implementation Guide, choose menu options *Logistics General* → *Supply Chain Planning Interfaces (SCPI)* → *Production Optimization Interface (POI)* → *Activate change pointer*

Procedure

To update the model, choose the menu options:

Logistics → *Central functions* → *SCP Interfaces*

SCP Interfaces → *SOP Interface* → *External model* → *Update*



Only planning versions that have not been previously initialized will be initialized by a remote function call (RFC.)

Planning with Planning Tables

Use

The following SOP functions are supported by external planning:

- planning a [product group \[Page 311\]](#)
- planning individual [materials \[Page 310\]](#)
- planning a [disaggregated product group \[Page 312\]](#)

In order to use the SOP external planning function, you must [maintain settings for external planning. \[Page 309\]](#)

Settings for External SOP Planning

Use

To use the SOP external planning functions, you must maintain the settings in the settings for External SOP Planning window. This window pops up each time you begin planning externally, and is divided into four planning sections:

- control
- features
- strategy
- target

Structure

Planning Control

The following flags can be set under planning control in the Settings for External Planning screen:

The external planning action controls the planning process in the external system.

Single planning: Set flag for single planning, otherwise all the materials and product groups could be affected.

Plan initialization flag: If you set this flag, the entire plan is erased before new values are entered and the plan is created again from scratch. You should only set this flag in case an error has already occurred in the plan and you want to correct it.

Planning Features

In this section of the window, Use Material Availability, you must select one of the following options to indicate if the current material availability status should be transferred from R/3 to the external planning system:

- None, if no data should be transferred
- Rough-cut, if only data used for rough-cut planning should be transferred
- All, if all data should be transferred (for use with BOMs)
- Set opening stock levels flag if the current opening stock levels for the planned material product group should be transferred from R/3 to the external planning system.

Planning Strategy:

This section of the window is activated only when planning a disaggregated product group. Select one of the following to indicate planning strategy.

- aggregated product group
- disaggregated product group

Settings for External SOP Planning

Use the same strategy throughout the entire version of your plan, otherwise materials or product groups may be planned twice. Be careful not to plan production and demand figures for multiple levels of the same product group in a planning version by accident.

Planning Target:

Keep in mind that four lines (sales, production, target stock levels, and target day's supply) from the standard SOP rough-cut planning profile are always transferred to the external system, but not all four must be used for external planning.

If your planning target is	the external system processes
production figures	sales and production figures
synchronous to sales	only sales figures
target stock level	sales figures and target stock levels
target day's supply	sales figures and target day's supply
stock level - zero	sales figures and opening stock levels



If you select stock level - zero, also set 'Use opening stock levels' flag

Maintain Settings for External Planning

Procedure

1. Choose the menu path Logistics → Production → SOP → Planning → For material → Change or Create → Edit → Create prod. plan → Plan externally
2. Maintain the settings.

Planning Materials

Planning Materials

Procedure

1. Choose the menu options *Logistics* → *Production* → *SOP*
2. Choose the menu options Planning → For material → Change or Create
3. When you access the planning table, enter material and plant in the appropriate fields.
4. Select active or inactive version.
5. When you access the planning table, enter changes to rough-cut plan.
6. Then follow the path Edit → Create prod. plan → Plan externally...

You access the window [Settings for External SOP Planning \[Page 307\]](#). Maintain the settings.

7. Click on plan.

A pop-up with planning results appears. The new production figures are in the last column. To get a better overview of the results, you can sort the columns in ascending or descending order.

8. Select one of the following options: change, accept or reject:
 - If you select change, enter changes in the last column. You can then click on replan or cancel. Cancelling brings you back to the planning results before the manual change.
 - If you reject the new production plan, the original plan is restored in both R/3 and the external planning system.
 - If you accept it, the new plan is saved in both systems.



- Saving automatically causes you to exit the planning table.
- In the external system, the entire plan is visible in interactive planning. In R/3, to see the entire plan you have to view the planning tables individually.
- When you maintain settings in the Settings for External SOP Planning window, keep in mind that if you set the flag for single planning, only the materials or product group(s) in the planning table you are currently using will be planned. If you do not set the flag for single planning, all materials in the entire version could be affected by the planning process.
- Materials can only be planned on a disaggregated level.

Planning Product Groups

Procedure

1. Choose the menu options *Logistics* → *Production* → *SOP*
2. Choose the menu options Planning → For material → Change or Create
3. When you access the planning table, enter material and plant in the appropriate fields.
4. Select active or inactive version.
5. When you access the planning table, enter changes to rough-cut plan.
6. Then follow the path Edit → Create prod. plan → Plan externally...
 You access the window [Settings for External SOP Planning \[Page 307\]](#). Maintain settings.
7. Click on plan.
 A pop-up with planning results appears. The new production figures are in the last column. To get a better overview of the results, you can sort the columns in ascending or descending order.
8. Select one of the following options: change, accept or reject:
 - If you select change, enter changes in the last column. You can then click on replan or cancel. Cancelling brings you back to the planning results before the manual change.
 - If you reject the new production plan, the original plan is restored in both R/3 and the external planning system.
 - If you accept it, the new plan is saved in both systems.



- Saving automatically causes you to exit the planning table.
- In the external system, the entire plan is visible in interactive planning. In R/3, to see the entire plan you have to view the planning tables individually.
- When you maintain settings in the 'Settings for External SOP Planning' window, keep in mind that if you set the flag for single planning, only the materials or product group(s) in the planning table you are currently using will be planned. If you do not set the flag for single planning, all materials in the entire version could be affected by the planning process.
- When planning product groups, it is only possible to plan on the aggregated level.

Planning Disaggregated Product Groups

Procedure

1. Choose the menu options *Logistics* → *Production* → *SOP*
2. Choose Disaggregation → Break down product group plan
3. When you access the planning table, enter product group and plant number.
4. Select active or inactive version.
5. Change Plan: Initial screen appears. Enter data. (standard SOP activity)
6. Click continue.

The screen Change rough-cut plan appears.

7. Enter changes in rough-cut plan.
8. Follow the path *Edit* → *Create prod. plan* → *Plan externally...*

The window [Settings for External SOP Planning \[Page 307\]](#) appears. Maintain settings as required.

9. Click on plan.

A pop up with planning results appears. The new production figures are in the last column. To get a better overview of the results, you can sort the columns in ascending or descending order.

10. Select one of the following options: change, accept or reject.
 - If you select change, enter changes in the last column. You can then click on replan or cancel. Cancelling brings you back to the planning results before the manual change.
 - If you reject the new production plan, the original plan is restored in both R/3 and the external planning system.
 - If you accept it, the new plan is saved in both systems.



- Saving automatically causes you to exit the planning table.
- In the external system, the entire plan is visible in interactive planning. In R/3, to see the entire plan you have to view the planning tables individually.
- When you maintain settings in the Settings for External SOP Planning window, keep in mind that if you set the flag for single planning, only the materials or product group(s) in the planning table you are currently using will be planned. If you do not set the flag for single planning, all materials in the entire version could be affected by the planning process.
- When you maintain settings in the Settings for External SOP Planning window, decide whether you want to plan on an aggregated or disaggregated level. Once

Planning Disaggregated Product Groups

you have made your choice, maintain consistency within each planning version.
Otherwise, your demands will be planned twice.

EXTERNPLAN

EXTERNPLAN

Use

EXTERNPLAN is a mass processing planning function of the Production Optimization Interface, and it enables you to automatically conduct Sales and Operations planning with the help of an external planning engine.

Integration

The EXTERNPLAN mass processing function is fully integrated with, and can only be used together with standard SOP.

Features

EXTERNPLAN makes it possible to plan materials and product groups in an external system, whereby the external planning action can be defined as one of the steps of the mass processing job. The planning process is managed through a planning profile, and the results are integrated into standard SOP. A problem category list and a planning log help the user keep track of the external planning process.

Process

In standard SOP, a planning job has several steps and covers several planning objects. Standard SOP plans all steps for material 1 first, then proceeds to plan all steps for material 2, and so on until the job has been completed.

EXTERNPLAN enables all objects to be planned simultaneously as follows:

Planning job A has three steps: Forecast, EXTERNPLAN and macro, and three planning objects: materials 1, 2 and 3.

With the new feature, SOP plans material 1 until it reaches the EXTERNPLAN step. It then advances to material 2 and plans until it reaches EXTERNPLAN, and so on, so that all planning objects are planned simultaneously. If no errors occur, planning resumes at the next step for the first material, then continues at the next step for the 2nd material, etc.

If an error occurs:

1. The job ceases for that particular material, which receives Status E (error)
2. The job continues for the other planning objects as far as possible
3. The user corrects the error
4. The batch job is started again **without** resetting the status button in the menu bar. If the status button is reset, the entire planning process starts from the beginning.
5. Planning resumes where it left off.

For more information on standard SOP activities, see PP Sales & Operations Planning.

Mass Processing

Procedure

To create an external mass processing job, you proceed as you would in standard SOP with the exception that you must first define the planning activity [EXTERNPLAN \[Page 315\]](#) in the Background Planning Activities window.

1. Choose the menu options: *Logistics* → *Production* → *SOP* →
 - a) Choose: *Settings* → *Mass processing* → *Activities*
 - b) Click the new entries button.
2. Enter the following information:
 - a) key
 - b) action sequence: 1
 - c) planning type:
 - SOPDIS for disaggregated plan
 - SOPKAPA for individual product group
 - SOPKAPAM for individual material
 - d) action: EXTERNPLAN



When you make an entry in the action field, you must make an entry in the corresponding activity profile field. If you enter EXTERNPLAN for action, you must enter a key for the EXTERNPLAN profile. Maintain the profile for external planning, either in Customizing (External Planning SOP in SCPI) or by choosing the menu options: *Settings* → *Mass processing* → *Profile for external planning*

Click new entries button in the Profile for External Planning window. Enter the name of the planning profile and a short description. Maintain the planning parameters, flags and and targets on the screen.

- Save new entry.

3. Continue planning in standard SOP:
 - a) Choose the menu options: *Logistics* → *Production* → *SOP* →
 - b) Choose: *Planning* → *Mass processing* → *Create*
 - c) Enter the job name and number. Click on execute button.
 - d) Enter info structure S076 and the version number. Click on execute.
 - e) Select the planning type.
 - f) Select variant and click on the green arrow. If you want to create a new variant, click on the X. You access the screen: 'Variants: Change screen assignment. '
 - g) Click on continue. Enter name of variant in the next screen. Click on Create button.

Mass Processing

- h) In the screen for maintaining variants, enter planning activity CBP in the section called Control Parameters for Planning in the Background.
 - i) Click continue.
 - j) Enter description in the description field and save.
- 4. Schedule the mass processing job in standard SOP.
- 5. View planning log. Choose the menu options: *Logistics → Production → SOP*
 - a) Choose: *Planning → Mass processing → External planning protocol*
- 6. View problem categories list. Choose the menu options: *Logistics → Central Functions → SCP Interfaces → SOP Interface → Planning protocol*

For more information on standard SOP activities, see PP Sales & Operations Planning.

Technical Documentation

CBP-API for SOP: External Planning Functions

Requirements

The following activities must be completed before the RFCs can be started for the external SOP planning transaction:

- Model customizing including:
 - activation of external system support (CBCS)
 - maintenance of problem categories known by the external system (CBCAT)
 - maintenance of planning actions (CBCACT)
 - maintenance of planning steps for planning actions (CBCSTEPS)
 - maintenance of parameters for planning action steps (CBCPAR)
 - maintenance of RFC destinations (CBCMTG)
 - maintenance of defaults for download and planning (CBCMLGSOP)
 - maintenance of startup parameters (CBCONFSOP)
 - assignment of model to information structure (CBCMSV)
 - maintenance of authorization groups (CBCBRG)
- Model initialization (CBP6) including:
 - download of the master data model and
 - issue of CBP_SOP_MODEL_INITIALIZE_RFC for every planning version in the model

Send RFCs to the external system

After the customizing and model initialization has taken place, a series of Remote Function Calls (RFCs) are issued to the external planning system. The sequence of calls is defined as follows:

call function CBP_SOP_PLAN_REQUEST_RFC.

do.

IF interactive planning is required:

call function CBP_GEN_INTERACTIVE_START_RFC'

call function CBP_SOP_PLAN_REQUEST_RFC.

ELSEIF manual result adjustment.

call function CBP_SOP_PLAN_DISMISS_RFC.

call function CBP_SOP_PLAN_REQUEST_RFC.

ELSE.

exit.

ENDIF.

Technical Documentation

enddo.

IF plan is accepted.

 call function CBP_SOP_PLAN_SAVE_RFC.

ELSE.

 call function CBP_SOP_PLAN_DISMISS_RFC.

ENDIF.

Function Modules

Integration

The following function modules are called in the external planning:

[CBP_SOP_PLAN_REQUEST RFC \[Page 320\]](#)

[CBP_GEN_INTERACTIVE_START RFC \[Page 326\]](#)

[CBP_SOP_PLAN_STARTUP \[Page 328\]](#)

[CBP_SOP_PLAN_DISMISS RFC \[Page 330\]](#)

[CBP_SOP_PLAN_SAVE RFC \[Page 331\]](#)

CBP_SOP_PLAN_REQUEST_RFC

CBP_SOP_PLAN_REQUEST_RFC

Definition

Synchronous RFC to external planning system

Function module: CBP_SOP_PLAN_REQUEST_RFC

Function group: CBP_SOP - SOP/FP Constraint Based Planning Modules

Use

This function call requests the external planning system to plan a set of demands into a capacity and material feasible production plan.

The function module takes the sales and production figures, the target stock levels and the target day's supplies for materials and product groups from SOP, takes into account the opening stock levels and material availability, and executes the planning steps defined in the planning strategy according to certain parameters.

The result of the planning run includes a set of production figures, a problem identification list and plan attributes for the current run.

The external planning system should perform the following procedure:

- manage the copying of a saved plan to a separate work space
- return the corresponding port number(s)/planning handle information
- insert / change orders in the system according to the new sales and production figures
- setup the target stock level and the target day's supply in accordance with the selected planning strategy
- convert the material availability numbers into material constraints
- update the opening stock levels in the system according to the new figures
- perform necessary locking of materials and / or time periods
- execute planning steps defined in the planning activity
- extract and return new production figures from plan

extract and return problem list / planning attributes list / planning protocol



If the I_SOPCTR-SPLFLG flag is set, only those materials that are contained in table IO_SOPTAB are affected by planning. If the I_SOPCTR-SPLFLG flag is not set, all materials will be affected.

The planning actions defined in table I_PLACT are executed as one planning step. Table I_MBEST contains only materials or product groups, that are also contained in table IO_SOPTAB. If there is no record for one of the materials in table I_MBEST, the opening stock level is zero.

Table I_MALLOCC typically contains the lowest level materials in the BOM or rough-cut planning profile. If a lowest level material is not contained in table I_MALLOCC, it is defined as infinitely available.

CBP_SOP_PLAN_REQUEST_RFC

If the I_SOPCTR-REQONLYFLG flag, table I_PLACT, table I_MBEST, table I_MALLOCC and table I_PARDEF are empty. This calling mode requires the return of only those production figures current for the periods that are specified in TABLE IO_SOPTAB, which contains a record for each requested period. Additionally, TABLE O_PROLIS and tables O_PLATT and O_PLPROT must be filled.

Fields I_SOPCTR-BEGIN and I_SOPCTR-PENDE define the date range for planning, in other words, the date on which production figures are returned.

Structure

Parameters	Reference field/structure
Import parameters: I_SOPCTR	SCBP_SOPCTR
Export parameters: O_SOPCTR	SCBP_SOPCTR
Table parameters:	-
IO_SOPTAB	SCBP_SOPTAB
I_MBEST	SCBP_MBEST
I_MALLOCC	SCBP_MALLOCC
I_SOPFIX	SCBP_SOPFIX
I_PLACT	SCBP_PLACT
I_PARDEF	SCBP_PARDEF
O_PROLIS	SCBP_PROLIS
O_PLATT	SCBP_PLATT
O_PLPROT	SCBP_PLPROT

Exceptions: PARTNER_FAILURE

Import parameters:

I_SOPCTR: Additional control fields for communication

Description

This structure sends the following data to the external system:

- model name in the field MODEL
- planning version in the field VERSION
- plan initialization flag in the field PLINIFLG
- single planning flag in the field SPLFLG
- port number in the field PLHNDL
- language key in the field LANGU
- planning target flag in the field PLTARFLG
- planning start in the field BEGIN,
- planning end in the field PENDE

CBP_SOP_PLAN_REQUEST_RFC

- request only flag in the field REQONLYFLG

Export parameters:**O_SOPCTR: Additional control fields for communication****Description**

This structure receives the following data from the external system:

- the port number of the stored production plan in field PLHNDL_PUB
- the port number of the production plan in field PLHNDL

Table parameters:**IO_SOPTAB: A set of demands and constraints****Description**

This table sends SOP planning table information to the external planning system and returns the updated production figures. It sends:

- a list of materials and product groups for certain plants in the columns:
PMNUX
WENUX
- for each material/plant combination or product group/plant combination a number of periods in the following columns:
PERID
PERKZ
PERIV
ERTAG
LETAG
ATAGE
- and the figures from the planning table for each of these periods in the columns:
ABSAT
PRODU
LAGRZ
REICZ

The periods sent to the external planning system can be mixed. For example, planning can start with daily periods, and continue through weekly or monthly periods. The periods can also be defined differently for every material/plant combination or product group/plant combination.

The external planning system returns field PRODU for each of the records that was sent to the external planning system in this table. In other words, the external planning system has to send back exactly the same periods that were requested.

I_MBEST: Initial stock quantities

Description

This table sends initial stock quantities for materials and product groups to the external planning system:

- a list of materials and product groups for certain plants in the columns
PMNUX
WENUX
- the initial stock quantity for each of these materials and product groups in the field
MBEST

The table contains records for end item materials and product groups, but not for materials on lower levels of the BOMs or rough-cut planning profiles. If the opening stock level is zero, there is no record for the material or product group in the table.

I_MALLOC: Material availability quantities

Description

This table sends availability quantities for material and product groups to the external planning system:

- a list of materials and product groups for certain plants in the columns
PMNUX
WENUX
- for each material/plant combination or product group/plant combination a number of periods in the following columns:
PERID
PERKZ
PERIV
ERTAG
LETAG
ATAGE
- and the availability quantities for each of these periods in the field MALLOC

The periods sent to the external planning system can be mixed. For example, planning can start with daily periods, and continue through weekly or monthly periods. The periods can also be defined differently for every material/plant combination or product group/plant combination.

Material/plant or product group/plant combinations that have infinite availability are not contained in this table.

I_SOPFIX: Currently not used

Description

This table is currently not used but must be received anyway.

CBP_SOP_PLAN_REQUEST_RFC**I_PLACT: Planning actions for external planning system****Description**

This table contains the planning actions to be executed in the external planning system. The steps are numbered, and each step is coded with a character string that has to be interpreted by the external planning system.

I_PARDEF: Parameters that control the steps of the CBP run**Description**

This table is sent to the external planning system and contains the parameters necessary for the execution of planning action steps described by their:

- number
- name
- value

The parameters are interpreted by the external planning system.

O_PROLIS: Problems that remain unresolved in the planning run**Description**

This table is sent back by the external planning system and contains the planning problems that were not resolved by the planning process, grouped by category. The table contains a record for every single planning problem.

- The problem category is contained in the column PROBCAT.
- Each problem has an individual problem number contained in the column PLRNCNT.
- If the problem refers to a certain R/3 object, the key of the object may be contained in one of the following columns:

ARBPL

WERKS

MATNR

DATU

PERID

PERKZ

PERIV

O_PLATT: Attributes of the plan resulting from planning**Description**

The external planning system reports planning attributes back to the R/3 system by populating this table which can be filled with different reports, each consisting of different planning attributes:

- column PLREPNAME contains the name of the report
- column PLATTNAME contains the name of the planning attribute
- column PLATTDES contains a short text description of the planning attribute

CBP_SOP_PLAN_REQUEST_RFC

- column PLATTVAL contains the value of the planning attribute
- column OUTLEN contains the output length of the planning attribute

It is also necessary to describe problems in the planning problem list by a certain number of attributes. The relevant columns are described below:

- column PROBCAT contains the problem category of the corresponding planning problem
- column PLRLNCNT contains the planning problem number
- column PLATTNAME contains the name of the planning attribute
- column PLATTDES contains a short text description of the planning attribute
- column PLATTVAL contains the value of the planning attribute
- column OUTLEN contains the output length of the planning attribute

O_PLPROT: A log of the planning activities carried out

Description

This table is sent by the external planning system. The external planning system's planning log is divided into separate lines which are numbered and entered as single records by the external planning system into the table.

- The line number is in column LINCNT.
- The line content is in column LINCONT.

Exceptions: PARTNER_FAILURE: Any failure of the external planning system

CBP_GEN_INTERACTIVE_START_RFC

CBP_GEN_INTERACTIVE_START_RFC

Definition

Function module: CBP_GEN_INTERACTIVE_START_RFC

Synchronous RFC to external planning system

Use

This RFC is used to start interactive planning in the external system. The call destination must be maintained in Customizing so that a local program on the presentation server receives the call and launches the planning window. If you are working with Rhythm Factory Planner(®), you must maintain destination NONE in Customizing and define the CBP_INTERACTIVE_PLANNING_ENGINE in the Customizing transaction FILE.

Structure

Parameters

Import parameters:	Reference field/structure	Default value
I_MODEL	TCBP_MTV-MODEL	
I_APPL	TCBP_MTV-APPL	
I_VERSION	TCBP_MTV-VERSION	
I_CTR	SCBP_CTR	

Exceptions:

UNKNOWN_MODEL

SYSTEM_FAILURE

COMMUNICATION_FAILURE

PARTNER_FAILURE

Import parameters:

I_MODEL: Name of a model

Description

This table sends the model name to the external planning system.

I_APPL: Application

Description

This table sends the application identifier to the external system.

The value is

- M for MRP external planning
- S for SOP external planning.

I_VERSION: Version of a model

Description

This table sends the planning version to the external system.

I_CTR: Control block

Description

This table sends the language key to the external system in the field SPRAS.

Exceptions: UNKNOWN_MODEL: The model is unknown

CBP_SOP_PLAN_STARTUP

CBP_SOP_PLAN_STARTUP

Definition

Function module: CBP_SOP_PLAN_STARTUP_RFC

Synchronous RFC to external planning system

Use

This function triggers the external planning system to initialize the plan for one model and a planning version. The configuration flags must be set on plan initialization. The port (planning handle) of the plan server is returned. The external system should carry out the following steps:

- set up empty plan for planning model and version using the previous master data download for the version
- set configuration flags for the plan
- generate and return planning handle(s), if required

Structure

CBP_SOP_PLAN_STARTUP

Parameters	Reference field/structure
Import parameter I_SOPCTR	SCBP_SOPCTR
Export parameter O_SOPCTR	SCBP_SOPCTR
Table parameter I_PLCONF	SCBP_PLCONF

Import parameter: I_SOPCTR: Specifies model and version**Description**

This structure sends the following data to the external planning system:

- model name in the field MODEL
- planning version in the field VERSION

Export parameter O_SOPCTR: Returns the port numbers of the production plans**Description**

This structure receives the following data from the external planning system:

- port number of the production plan in field PLHNDL

Table parameter I_PLCONF: Contains plan configuration flags

Description

This table is sent to the external planning system and contains the planning configuration flags to be set by the external planning system.

CBP_SOP_PLAN_DISMISS_RFC

CBP_SOP_PLAN_DISMISS_RFC

Definition

Function module: CBP_SOP_PLAN_DISMISS_RFC

Synchronous RFC to external planning system

Use

This RFC is used if the current plan has been rejected by the external planning system.

The external planning system will then copy the saved plan over the current plan.

Structure

CBP_SOP_PLAN_DISMISS_RFC

Parameters	Reference field/structure	Default value
Import parameter: I_SOPCTR	SCBP_SOPCTR	

Exceptions:

SYSTEM_FAILURE

COMMUNICATION_FAILURE

Import parameters:

I_SOPCTR: Additional control fields for CBP SOP communication

Description

This structure sends the following data to the external system:

- model name in the field MODEL
- planning version in the field VERSION
- port number of the stored production plan in the field PLHNDL_PUB
- port number of the production plan in the field PLHNDL

Exceptions:

SYSTEM_FAILURE: Not documented

COMMUNICATION_FAILURE: Not documented

CBP_SOP_PLAN_SAVE_RFC

Definition

Function module: CBP_SOP_PLAN_SAVE_RFC

Synchronous RFC to external planning system

Use

Once the current plan of the external planning system has been saved, the production figures are returned to the R/3 database and are saved. The external planning system should execute the following steps:

- IF netchange flag is set, the system:
 - extracts production figures from current plan
 - extracts production figures from saved plan
 - compares production figures from saved and current plan
 - extracts the changed production figures
 - returns changed production figures
- ELSE
 - extracts the production figures from the current plan
 - returns current production figures
- ENDIF
 - saves current plan to saved plan



If the single planning flag I_SOPCTR-SPLFLG was set on the pending request CBP_SOP_PLAN_REQUEST_RFC, then only those records in table O_SOPTAB are returned from the external planning system that were previously contained in the request. The records contain the changed production figures. If the single planning flag was not set, additional records are returned from the external planning system.

If the net-change flag I_SOPCTR-NTCHNGFLG was set, then only the records with changed production figures are returned in table O_SOPTAB. If the net-change flag was not set, all records with all production figures are returned.

The periods for all records in table O_SOPTAB are the same as the one used to request the plan from the external planning system.

Structure

CBP_SOP_PLAN_SAVE_RFC

Parameters	Reference field/structure
------------	---------------------------

CBP_SOP_PLAN_SAVE_RFC

Import parameters: I_SOPCTR	SCBP_SOPCTR
Table parameters: O_SOPTAB	O_SOPTAB

Import parameters:**I_SOPCTR: Additional control fields for communication****Description**

This structure sends the following data to the external system:

- model name in field MODEL
- planning version in field VERSION
- port number of the stored production plan in field PLHNDL_PUB
- port number of the production plan in field PLHNDL
- net change flag in field NTCHNGFLG
- planning start in field BEGIN
- planning end in field PENDE

Table parameters:**O_SOPTAB: All affected production figures****Description**

This table receives the following production figures from the external planning system:

- a list of materials and product groups for certain plants in columns:
PMNEX
WENEX
- a number of periods for each material/plant combination or product group/plant combination in the following columns:
PERID
PERKZ
PERIV
ERTAG
LETAG
ATAGE
- the production figure for the planning table for each of these periods in the field PRODU

Data Structures

Integration

The following data structures are necessary for external planning:

[SCBP_SOPCTR \[Page 334\]](#)

[SCBP_PLCONF \[Page 338\]](#)

[SCBP_MBEST \[Page 339\]](#)

[SCBP_SOPTAB \[Page 340\]](#)

[SCBP_PLACT \[Page 343\]](#)

[SCBP_PLATT \[Page 344\]](#)

[SCBP_SOPFIX \[Page 346\]](#)

[SCBP_PROLIS \[Page 347\]](#)

[SCBP_PLPROT \[Page 348\]](#)

[SCBP_MALLOC \[Ext.\]](#)

[IDOC CBPRCP01 \[Page 349\]](#)

SCBP_SOPCTR

SCBP_SOPCTR**Definition**

SCBP_SOPCTR: SOP Control Block

Use

This structure contains control parameter fields that are relevant to the communication process with the external planning system. These fields influence the planning process in the external planning system.

Structure**SCBP_SOPCTR**

Field name	Type	Length	Short text
MODEL	CHAR	10	Model name, unique model identifier
VERSION	CHAR	3	Version
PLINIFLG	CHAR	1	Plan initialization flag
SPLFLG	CHAR	1	Single planning flag
PLHNDL_PUB	NUMC	5	Port number of stored production plan
PLHNDL	NUMC	5	Port number
LANGU	LANG	1	Language key
NTCHNGFLG	CHAR	1	Net change flag
PLTARFLG	CHAR	1	Planning target flag for external SOP planning
BEGIN	DATS	8	Planning start
PENDE	DATS	8	Planning finish
REQONLYFLG	CHAR	1	Request only flag for SOP SCPI

Input check (foreign key, fixed values)

PLINIFLG checked against fixed values from domain X FELD

Fixed values:

No,

X Yes

SPLFLG checked against fixed values from domain X FELD

Fixed values:

No,

X Yes

NTCHNGFLG checked against fixed values from domain X FELD

Fixed values:

No,

X Yes

PLTARFLG checked against fixed values from domain CBP_PLTARFLG

Fixed values:

- production figures
- synchronous to sales
- target stock level
- target day's supply
- stock level = zero

REQONLYFLG checked against fixed values from domain XFELD

Fixed values:

No,

X Yes

Data element documentation:

MODEL: The model name is its unique identifier. Different model types can contain the same model names. A model consists of the set of master data that is downloaded to the external system, along with the definition of the RFC destinations. In SOP a model is assigned to information structure S076 (standard SOP). At the moment it is not possible for a model to be used by the SOP and the MRP external planning functionality concurrently, but two separate models must be.

VERSION: The planning version describes an independent set of demand or production figures for one model in SOP as well as an independent plan for them. For MRP, the planning version has no special meaning and always has the fixed value MRP.

PLINIFLG: You can refresh the external plan before planning new objects by setting this flag in either the profile for external planning window or in the settings for external planning window. If this flag is set, the external system is instructed to erase all the demand and production figures in the current planning version before it incorporates the new demands and starts the planning run. This flag should typically only be set if there is something wrong with the plan in the external planning system.

SPLFLG: If you set the single planning flag:

- changes will be made only to the selected materials or product groups
- only figures in the planning table may be affected
- only the changed figures in the planning table will be saved
- objects not being currently planned can be planned by other users

If you do not set the flag:

- changes can affect all materials or product groups whether or not they are included in the current selection

SCBP_SOPCTR

- figures that are not in the planning table may be affected
- all changed figures will be saved whether or not they are included in the planning table
- the entire planning version is locked and no other user can access any of the planning objects. In other words, when the single planning flag is set, the external planning system is instructed to lock every material or product group not currently requested, before starting the planning process.

PLHNDL_PUB: (data element: CBP_PORT_PUB) This number identifies the stored production plan. It can be created by the external planning system as a planning handle to define an individual plan. It is stored by R/3 and can be passed back and forth for identification purposes in the external planning system.

PLHNDL: (data element: CBP_PORT) This number identifies a production plan in the temporary work space. It can be created by the external planning system as a planning handle to define an individual plan. It is stored by R/3 and can be passed back and forth for identification purposes in the external planning system.

LANGU: (data element: SPRAS) The language key designates the language which you will use to:

- display texts
- enter texts
- print documents

NTCHNGFLG: If this flag is set, the external system will return only those production figures that have been changed since the plan was last saved. If the flag is not set, the external system returns all the production figures.

PLTARFLG: Indicate the planning target for the external system by setting the flag for one of the following options:

- production figures
- synchronous to sales
- target stock level
- target day's supply
- stock level - zero

For planning target:	the external system evaluates
production figures	sales and production
synchronous to sales	sales
target stock level	sales and target stock
target day's supply	sales and target day's supply
stock level - zero	sales and opening stock levels

BEGIN: (data element: PLBEG) The date on which planning begins.

ENDE: (data element: PLEND)

SCBP_SOPCTR

REQONLYFLG: (data element: CBP_REQONLYFLG) If this flag is set, input values of the RFC are ignored, and only the current production values of the plan are returned by the external planning system.

SCBP_PLCONF

SCBP_PLCONF

Definition

Planning Configuration Table

Use

This table contains the configuration flags that determine the behaviour of an external planning system. A configuration consists of a large number of start-up flags and their values. The planning configuration flags are transferred to the external planning system when an individual planning version initialized.

Structure

SCBP_PLCONF

Field name	Type	Length	Short text
CFLGNAM	CHAR	55	Configuration flag name
CFLGVAL	CHAR	40	Configuration flag value

CFLGNAM: (data element: CBP_CFLGNAM) The technical name of a configuration flag. A configuration consists of a large number of start-up flags and their values. The start-up flags determine how the external planning engine works.

CFLGVAL: (data element: CBP_CFLGVAL) Value assigned to a configuration flag. The value is expressed as a character string. Conversions are done outside of the R/3 system.

SCBP_MBEST

Definition

Opening Stock Levels Table

Use

This table contains a set of opening stock levels for different materials or product groups to be considered for planning in the external planning system.

Structure

SCBP_MBEST

Field name	Type	Length	Short text
WENUX	CHAR	4	Plant of product group/material in planning hierarchy
PMNUX	CHAR	18	Product group/material in planning hierarchy
VSNDA	CHAR	4	Production version
MBEST	CHAR	22	Stock quantity (PP)

MBEST: The stock quantity refers to the amount of opening stock of a specific material, measured in a base unit of measure such as meters or kilograms. The opening stock levels table contains the opening stock levels for the different materials or product groups to be considered by the external planning engine. If the stock level is zero, there won't be a record for the material or product group in the table. The table only contains records for end item materials or product groups. It does not include materials on the lower levels of BOMs.

For data element documentation on the other fields, see [SCBP_SOPTAB \[Page 340\]](#)

SCBP_SOPTAB

SCBP_SOPTAB**Definition**

SOP Key FiguresTable

Use

This table contains a set of demands and constraints in the form of sales figures, desired production quantities, target stock levels and target day's supplies issued by SOP to be fulfilled by a capacity and material feasible production plan in the external planning system. This table returns the updated production figures to the SOP planning table.

Structure**SCBP_SOPTAB**

Field name	Type	Length	Short text
WENUX	CHAR	4	Plant of product group/material in planning hierarchy
PMNUX	CHAR	18	Product group/material in planning hierarchy
VSNDA	CHAR	4	Production version
PERID	CHAR	8	Period: day, week, month, posting period as rep. internally
PERKZ	CHAR	1	Period indicator
PERIV	CHAR	2	Fiscal year variant
ERTAG	DATS	8	First day of the period to which the values refer
LETAG	DATS	8	Last day of the period to which the values refer
ATAGE	INT2	5	Workdays
ABSAT	CHAR	22	Sales
PRODU	CHAR	22	Production
LAGRI	CHAR	22	Stock level
LAGRZ	CHAR	22	Target stock level
REICH	CHAR	22	Range of coverage (days' supply)
REICZ	CHAR	22	Target range of coverage (target days' supply)

Input check (foreign key, fixed values)

PERKZ check against fixed values in domain PERKZ

Fixed value:

- Initial value
- M Monthly
- P Period according to fiscal year variant

- T Daily
- W Weekly

Data element documentation:

WENUX

PMNUX: Number that uniquely identifies the plant of this product group/material.

VSND: Number that uniquely identifies a product group or material.

PERID:

PERKZ: Indicator specifying the periods in which the material's consumption values and forecast values are managed.

PERIV: The fiscal year variant is used to define the fiscal year. You can define the following information using a fiscal year variant:

- the number of posting periods in a fiscal year
- the number of special periods you require
- how the system determines the posting periods when posting

In the definition, you allocate your posting periods to the calendar year.

Allocation control requires the same number of posting periods in the company code and in the assigned controlling area. In other words, the number of posting periods in the fiscal year variants must be the same in the company code and in the controlling area. The period limits for both fiscal year variants must also coincide. You must define which fiscal year variant is to be used for each company code. To do this, you must define the appropriate fiscal year variant (to contain no more than 16 periods).



The company codes delivered with the standard system are allocated to the fiscal year variant that corresponds to the calendar year and which also uses four special periods.

You maintain fiscal year variants as well as the allocation of fiscal year variant to the company code in Financial Accounting Customizing.

Maintain fiscal year variants Proceed.

Allocation of fiscal year variant to the company code Proceed.

ERTAG:

LETAG: This field contains the last day of a certain period in the format YYYYMMDD.

ATAGE:

ABSAT: This field refers to the quantity of sales demand in the SOP Key Figures Table for a given period. The quantity of sales demand is measured in a base unit of measure such as meters or kilograms. The external planning system can interpret the sales demand as a customer order that can be filled from previous make-to-stock orders up until the current period.

PRODU:

LAGRI:

SCBP_SOPTAB

LAGRZ: Enter target stock levels in this line, and use it in conjunction with the production plan creation strategy: target stock level. If you select this strategy, the system calculates the production quantities needed to achieve the target stock levels.

REICH:

REICZ:

SCBP_PLACT

Definition

This structure contains the definition of planning actions.

Use

Contains the planning actions to be executed within a planning run in the external planning system. The steps are numbered and each step is coded with a character string that must be interpreted by the external planning system.

Structure

SCBP_PLACT

Field name	Type	Length	Short text
PLACTCNT	NUMC	4	Counter for planning action sequence
PLACTCOD	CHAR	255	Steps performed by the external system

PLACTCNT: (data element: CBP_PLACTCNT) This counter defines the sequence of the planning steps. The external planning engine can use this field to determine the sequence of execution.

PLACTCOD: (data element: CBP_PLACTCOD) This field contains the coding for the planning activity. Each code corresponds to a step in the planning process and represents a command to the external planning engine.

SCBP_PLATT

SCBP_PLATT

Definition

Plan Attributes Report Table

Use

This table contains the planning attributes of a certain plan. Examples include:

- cumulative overload: 845%
- maximum overload: 415%

Each of these planning attributes can be linked to a planning problem in the planning problem list.

Structure

SCBP_PLATT

Field name	Type	Length	Short text
PLREPNAME	CHAR	40	SCPI planning report name
PROBCAT	NUMC	3	SCPI problem category
PLRLNCNT	NUMC	10	Line counter for planning attribute report
PLATTNAM	CHAR	20	Plan attribute name
PLATTDES	CHAR	80	Plan attribute description
PLATTVAL	CHAR	25	Plan attribute description
OUTLEN	INT1	3	Output length of attribute

Data element documentation:

PLREPNAME: (data element: CBP_PLREPNAME) This field identifies the report to which an attribute belongs.

PROBCAT: (data element: CBP_PROBCAT) This line contains the problem category. A plan executed by the external planning engine includes a list of problems that occurred during production. For example, problems can be divided into categories, as follows:

Category	Description
001	Capacity shortage
002	Order lateness
003	Order shortage
004	Material shortage
005	Manufactured parts lateness

006	Unplanned orders
-----	------------------



Customers are only allowed to create categories with a key between 000 -499

PLRLNCNT: (data element: CBP_PLRLNCNT) This attribute identifies a line in an attribute table.

PLATTNAM: (data element: CBP_PLATTNAM) The attribute name identifies a column in an attribute table.

PLATTDES: (data element: CBP_PLATTDES) Description of a plan attribute.

PLATTVAL: (data element: CBP_PLATTVAL) Value of a planning attribute.

OUTLEN: (data element: CBP_OUTLEN) This field determines the number of characters reserved for this attribute if it is displayed on the screen.

SCBP_SOPFIX

SCBP_SOPFIX

Definition

Fixed Buckets Table

Structure

SCBP_SOPFIX

Field name	Type	Length	Short text
WENUX	CHAR	4	Plant of product group/material in planning hierarchy
PMNUX	CHAR	18	Product group/material in planning hierarchy
VSND A	CHAR	4	Production version
PERID	CHAR	8	Period: day, week, month, posting period as rep. internally
PERKZ	CHAR	1	Period indicator
PERIV	CHAR	2	Fiscal year variant
ERTAG	DATS	8	First day of the period to which the values refer
LETAG	DATS	8	Last day of the period to which the values refer
ATAGE	INT2	5	Workdays

Data element documentation, see [SCBP_SOPTAB \[Page 340\]](#)

SCBP_PROLIS

Definition

Problem list for external planning

Use

This table contain planning problems that remain unresolved by the external planning process grouped by category.

Structure

SCBP_PROLIS

Field name	Type	Length	Short text
PROBCAT	NUMC	3	SCPI problem category
PLRLNCNT	NUMC	10	Line counter for planning attribute report
ARBPL	CHAR	8	Work center
WERKS	CHAR	4	Plant
MATNR	CHAR	18	Material
DATU	DATS	8	Date
PERID	CHAR	8	Period: day, week, month, posting period as rep. internally
PERKZ	CHAR	1	Period indicator
PERIV	CHAR	2	Fiscal year variant
ERTAG	DATS	8	First day of the period to which the values refer
LETAG	DATS	8	Last day of the period to which the values refer
ATAGE	INT2	5	Workdays

Data element documentation, see [SCBP_SOPTAB \[Page 340\]](#)

and [SCBP_PLATT \[Page 344\]](#)

SCBP_PLPROT

SCBP_PLPROT

Definition

Planning Actions Protocol

Use

The table contains a log of the planning activities carried out by the external planning system. The planning log is divided into separate numbered lines, each containing a single record.

Structure

SCBP_PLPROT

Field name	Type	Length	Short text
LINCNT	NUMC	4	Line counter for planning actions protocol
LINCONT	CHAR	255	Line contents of planning actions protocol

LINCNT: (data element: CBP_LINCNT) Line number in the planning protocol log.

LINCONT: (data element: CBP_LINCONT) Contents of a line in the planning log.

IDOC CBPRCP01

Definition

IDoc CBPRCP01 is a basic IDoc type used to transfer rough-cut planning profiles to external systems. It is sent as one of the standard Production Optimization Interface (POI) IDocs used for the master data download in the Sales & Operations download screen. This IDoc replaces the BOM and routing IDocs, though they can still be used in Sales & Operations Planning.

Structure

E1PLOBC	Header information of rough-cut planning profile
E1PLKOC	Task list alternative header
E1PLPOC	Task list - operation/activity (header)
E1PLUPC	Task list - operation/activity, key fields
E1PLMZC	Allocation of BOM items to operations

E1PLOBC

Field	Description	Type	Internal/external length
PMNUX	Product group/material in planning hierarchy	char	18/18
PLNNR	Group key	char	8/8
WENUX	Plant of product group/material in planning hierarchy	char	4/4
PLOBJ	Planning object	char	18/18

E1PLKOC

Field	Description	Type	Internal/external length
PLNAL	Key and task list group counter, unique identifier of a task list (rough-cut planning profile), can be used to identify different lot sizes	char	2/2
LOSBS	To lot size Upper limit of lot size range	quan	13/15
LOSVN	From lot size Lower limit of lot size range	quan	13/15
KTEXT	General description of object	char	20/20
PLNME	Task list unit of measure	unit	3/3
STATU	Key to processing status of task list	char	3/3

IDOC CBPRCP01

VERWE	Use by user or system	char	3/3
DELKZ	MRP element indicator	char	2/2
LOEKZ	Asset class marked for deletion permitted values: 'X' yes "no	char	1/1

E1PLPOC

Field	Description	Type	Internal/external length
VORNR	Operation number	char	4/4
DAUNE	Unit for normal duration	unit	3/3
DAUNO	Normal duration of activity	quan	5/7

E1PLUPC

Field	Description	Type	Internal/external length
UVORN	Number identifying a sub-operation	char	4/4
WERKS	Plant	quar	4/4
ARBPL	Work center resource	quar	8/8
ARBID	8-digit object ID	numc	8/8
ARBEH	Unit for work	unit	3/3
ARBEI	Work involved in activity	chan	7/9
BMSCH	Base quantity	chan	13/15
LTXAI	First line of operation description	char	4/4

E1PLMZC

Field	Description	Type	Internal/external length
GP_MATNR	Material resource	char	18/18
GP_WERKS	Plant	quar	4/4
IMEIN	Component unit of measure	unit	3/3

IDOC CBPRCP01

IMENG	Quantity	quan	13/15
GP_FREET	Line text: SOP This text appears in the planning table if the radio button 'Freely defined text' is selected in the Line Attributes dialog box	char	6/6
GP_UVORN	Sub-operation	char	4/4
LOEKZ	Asset class marked for deletion	char	1/1