

# How to using Expert Routine in Transformation



## Applies to:

SAP BI, SAP BW, ECC, ABAP, Business Intelligence. For more information, visit the [EDW homepage](#).

## Summary

This article demonstrates how to create expert routine and load the data. This gives you a very basic idea of creating an expert routine.

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**Created on:** 18 August 2010

## Author Bio



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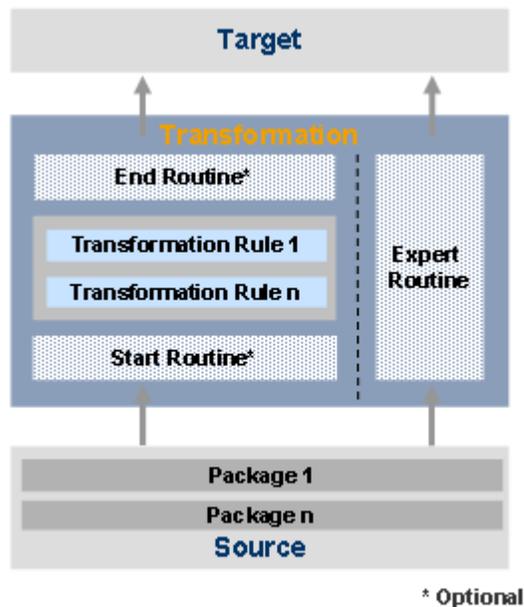
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## Introduction

You use routines to define complex transformation rules.

Routines are local ABAP classes that consist of a predefined definition area and an implementation area. The TYPES for the inbound and outbound parameters and the signature of the routine (ABAP method) are stored in the definition area. The actual routine is created in the implementation area. ABAP object statements are available in the coding of the routine. Upon generation, the coding is embedded in the local class of the transformation program as the method.

The following graphic shows the position of these routines in the data flow:



## Start Routine

The start routine is run for each data package at the start of the transformation. The start routine has a table in the format of the source structure as input and output parameters. It is used to perform preliminary calculations and store these in a global data structure or in a table. This structure or table can be accessed from other routines. You can modify or delete data in the data package.

### ***Routine for Key Figures or Characteristics***

This routine is available as a rule type; you can define the routine as a transformation rule for a key figure or a characteristic. The input and output values depend on the selected field in the transformation rule.

## End Routine

An end routine is a routine with a table in the target structure format as input and output parameters. You can use an end routine to postprocess data after transformation on a package-by-package basis. For example, you can delete records that are not to be updated, or perform data checks.

## Expert Routine

This type of routine is only intended for use in special cases. You can use the expert routine if there are not sufficient functions to perform a transformation. The expert routine should be used as an interim solution until the necessary functions are available in the standard routine.

You can use this to program the transformation yourself without using the available rule types. You must implement the message transfer to the monitor yourself.

If you have already created transformation rules, the system deletes them once you have created an expert routine.

### Definition

An Expert routine is a routine with contains both the source and target structure. we can use Expert routine if there are not sufficient functions to perform transformation.

### Approach to Scenario

For Expert Routine every things needs to be written using coding. In simple an expert routine performs all the actions of Start Routine, Mappings, Field and End Routines.

In Expert Routine we will read from source\_package which contains all the data and update into result\_package which should be the output.

### Source data

| D11 <span style="float: right;">fx</span> |               |             |            |            |
|---|---------------|-------------|------------|------------|
|   | A             | B           | C          | D          |
| 1   | <b>Emp No</b> | <b>Name</b> | <b>Sex</b> | <b>Age</b> |
| 2   | E0001         | Ragav       | M          | 27         |
| 3   | E0002         | Ravi        | M          | 32         |
| 4   | E0003         | Shyam       | M          | 26         |
| 5   | E0004         | Ram         | M          | 24         |
| 6   | E0005         | Shiva       | M          | 22         |
| 7   |               |             |            |            |
| 8   |               |             |            |            |
| 9   |               |             |            |            |

### Infoobjects

ER\_ENUM - Employee Number

ER\_ENAME - Employee Name

ER\_ESEX - Employee Sex

ER\_EAGE - Employee Age

## Cube Design

| InfoCube                | Techn. name / value | Fu... | O. |
|-------------------------|---------------------|-------|----|
| Test for expert routine | ER_CUBE             |       |    |
| Object Information      |                     |       |    |
| Version                 | In Process          |       |    |
| Save                    | Saved               |       |    |
| Revised Version         | Active Version      |       |    |
| Object Status           | Active, executable  |       |    |
| Settings                |                     |       |    |
| Dimensions              |                     |       |    |
| Data Package            | ER_CUBEP            |       |    |
| Time                    | ER_CUBET            |       |    |
| Unit                    | ER_CUBEU            |       |    |
| Dimension 1             | ER_CUBE1            |       |    |
| Emp Number              | ER_ENUM             |       |    |
| Employee Name           | ER_ENAME            |       |    |
| Gender                  | ER_ESEX             |       |    |
| Navigation Attributes   |                     |       |    |
| Key Figures             |                     |       |    |
| Salary                  | ER_ESAL             |       |    |

Create DataSource

DataSource: ER\_DS

Source system: FLAT\_FILE

Data Type DataSource: Transaction Data

OK Cancel

DataSource **ER\_DS** Expert Routine

Source System **FLAT\_FILE** Flat File

Version **new** Not Saved

Active Version Does Not Exist

**General Info.** Extraction Proposal Fields Preview

Delta Process Full Upload (Delta from InfoPackage Selection Only)

Direct Access NO DTP Allowed for Direct Access

Real Time Real-Time Data Acquisition Is Not Supported

Adapter Load Text-Type File from Local Workstation **Properties**

File Name C:\Users\li044912\Desktop\Routine\Other BI test\Expert\_ro

Header Rows to be Ignored 1

Character Set Settings Default Setting

System Codepage 1100 SAP internal, like ISO 8859-1 (00697/00819)

Data Format Separated with Separator (for Example, CSV)

Data Separator ,  Hex

Escape Sign "  Hex

Convers. Lang. User Master Record

Number format User Master Record

DataSource **ER\_DS** Expert Routine

Source System **FLAT\_FILE** Flat File

Version **Active** Compare with...

Active Version Executable Edited Version

**General Info.** Extraction Proposal Fields Preview

No. of Data Records 10000 Read Preview Data

Emp Number Employee Name Gender Employee Age

|       |       |   |        |
|-------|-------|---|--------|
| E0001 | Ragav | M | 27,000 |
| E0002 | Ravi  | M | 32,000 |
| E0003 | Shyam | M | 26,000 |
| E0004 | Ram   | M | 24,000 |
| E0005 | Shiva | M | 22,000 |

## Monitor - Administrator Workbench

The screenshot shows the SAP Monitor Administrator Workbench interface. The left pane displays a tree view with the following structure: Monitor > successful (1) > PSA > 2010.12.16 > FLAT\_FILE ( Flat File ). The selected item shows a status of 12:07:30 ( 5 From 5 Records ). The right pane has tabs for Header, Status, and Details. The Status tab is active, showing 'Total' with a green status icon and 'Technical' with the text 'All IDocs processed success...'. Below this, there are several icons for actions like copy, paste, and refresh. At the bottom, a message box states 'Request successfully loaded to PSA: start further'.

## PSA Maintenance

The screenshot shows the SAP PSA Maintenance table. The table has the following columns: Status, DataPacket, Data Rec., Emp Number, Employee N, Gender, and Employee A. The data rows are as follows:

| Status | DataPacket | Data Rec. | Emp Number | Employee N | Gender | Employee A |
|--------|------------|-----------|------------|------------|--------|------------|
| 1      | 1          | 1         | E0001      | Ragav      | M      | 27,000     |
| 1      | 1          | 2         | E0002      | Ravi       | M      | 32,000     |
| 1      | 1          | 3         | E0003      | Shyam      | M      | 26,000     |
| 1      | 1          | 4         | E0004      | Ram        | M      | 24,000     |
| 1      | 1          | 5         | E0005      | Shiva      | M      | 22,000     |

## Transformation

Creating Transformation by Expert Routine

The screenshot shows a SAP menu structure. The 'Test for expert routine' option is highlighted in the tree view. A context menu is open over this option, showing the following items: Create Transformation..., Create Data Transfer Process..., Maintain Aggregates, Maintain BI Accelerator Index, Create Data Archiving Process, and Additional Functions.

The screenshot shows the 'Create Transformation' dialog box. It has two main sections: 'Target of the Transformation' and 'Source of the Transformation'. In the 'Target' section, 'Object Type' is 'InfoCube' and 'Name' is 'ER\_CUBE'. In the 'Source' section, 'Object Type' is 'DataSource', 'DataSource' is 'ER\_DS', and 'Source System' is 'FLAT\_FILE'. There are checkmark and cross icons at the bottom left.

The screenshot shows the SAP Transformation Editor interface. The 'Expert Routine' menu is open, displaying options such as 'Delete Expert Routine', 'Start Routine Create', 'End Routine Create', and 'Return to Active Version'. Below the menu, two tables are visible:

| Expert Routine (ER_DS) |     |               |               |
|------------------------|-----|---------------|---------------|
| Pos                    | Key | Field         | Descript.     |
| 1                      |     | /BIC/ER_ENUM  | Emp Number    |
| 2                      |     | /BIC/ER_ENAME | Employee Name |
| 3                      |     | /BIC/ER_ESEX  | Gender        |
| 4                      |     | /BIC/ER_EAGE  | Employee Age  |

| Rule Group: Standard Group |           |     |     |            |       |               |                          |
|----------------------------|-----------|-----|-----|------------|-------|---------------|--------------------------|
| Rule                       | Rule Name | Pos | Key | InfoObject | Icor  | Descript.     | Inte                     |
| =                          | ER_ENUM   | 1   | Key | ER_ENUM    | Green | Emp Number    | <input type="checkbox"/> |
| =                          | ER_ENAME  | 2   | Key | ER_ENAME   | Green | Employee Name | <input type="checkbox"/> |
| =                          | ER_ESEX   | 3   | Key | ER_ESEX    | Green | Gender        | <input type="checkbox"/> |
| =                          | ER_EAGE   | 4   |     | ER_EAGE    | Green | Employee Age  | <input type="checkbox"/> |

Blue arrows indicate the mapping from the 'Expert Routine (ER\_DS)' table to the 'Rule Group: Standard Group' table.

The 'Delete Transformation' dialog box is shown, asking for confirmation to delete the transformation RSDS ER\_DS (FLAT\_FILE -> CUBE ER\_CUBE) and replace it with an expert routine. The dialog includes 'Yes', 'No', and 'Cancel' buttons.

Do you want to delete transformation RSDS ER\_DS  
 FLAT\_FILE -> CUBE ER\_CUBE  
 (0KKCP1MLZUTXSWS0XV9CQYY3E209B0JZ)? and replace  
 it with an expert routine?

Yes No Cancel

Routine Edit Goto Utilities System Help

Transformation Create

Pattern Pretty Printer Routines Info.

```

+-----+
+ CLASS routine IMPLEMENTATION
+-----+
+
+-----+
+ CLASS lcl_transform IMPLEMENTATION.
+-----+
+
+ Method expert_routine
+-----+
+ Calculation of result package via expert routine
+-----+
+ -> package of source segments
+ <- result package
+-----+
+ METHOD expert_routine.
+=== Segments ===
+
+ FIELD-SYMBOLS:
+ <SOURCE_FIELDS> TYPE _ty_s_SC_1.
+
+ DATA:
+ RESULT_FIELDS TYPE _ty_s_TG_1.
+
+$$$ begin of routine - insert your code only below this line +--+
+ ... "insert your code here
+
+$$$ end of routine - insert your code only before this line +--+
+ ENDMETHOD. "expert_routine
+-----+
+ Method inverse_expert_routine
+-----+

```

Li 111, Co 1 Ln 111 - Ln 142 of 169 lines

## Expert Routine Code

### Transformation Create

```

METHOD expert_routine.
+=== Segments ===

FIELD-SYMBOLS:
  <SOURCE_FIELDS>   TYPE _ty_s_SC_1.

DATA:
  RESULT_FIELDS     TYPE _ty_s_TG_1.

*$$$ begin of routine - insert your code only below this line      *-*
... "insert your code here

Data : wa_SOURCE_PACKAGE type _ty_s_SC_1.
data : wa_RESULT_PACKAGE type _ty_s_TG_1.

loop at SOURCE_PACKAGE into wa_SOURCE_PACKAGE .

  move wa_SOURCE_PACKAGE-/BIC/ER_ENUM to wa_RESULT_PACKAGE-/BIC/ER_ENUM.
  move wa_SOURCE_PACKAGE-/BIC/ER_ENAME to wa_RESULT_PACKAGE-/BIC/ER_ENAME.
  move wa_SOURCE_PACKAGE-/BIC/ER_ESEX to wa_RESULT_PACKAGE-/BIC/ER_ESEX.
  move wa_SOURCE_PACKAGE-/BIC/ER_EAGE to wa_RESULT_PACKAGE-/BIC/ER_EAGE.
  append wa_RESULT_PACKAGE to RESULT_PACKAGE.

endloop.
  
```

Transformation Create

Transformation: RSDS\_ER\_DS\_FLAT\_FILE -> CUBE\_ER\_CUBE

Source: Expert Routine (ER\_DS)

Target: Test for expert routine (ER\_CUBE)

Version: New (Not saved)

Active Version: Do(es) Not Exist (Edited Version)

| Expert Routine (ER_DS) |     |               |               |
|------------------------|-----|---------------|---------------|
| Pos                    | Key | Field         | Descript.     |
| 1                      |     | /BIC/ER_ENUM  | Emp Number    |
| 2                      |     | /BIC/ER_ENAME | Employee Name |
| 3                      |     | /BIC/ER_ESEX  | Gender        |
| 4                      |     | /BIC/ER_EAGE  | Employee Age  |

Expertenroutine

| Test for expert routine (ER_CUBE) |     |            |     |               |                          |
|-----------------------------------|-----|------------|-----|---------------|--------------------------|
| Pos                               | Key | InfoObject | Ico | Descript.     | Inte                     |
| 1                                 |     | ER_ENUM    |     | Emp Number    | <input type="checkbox"/> |
| 2                                 |     | ER_ENAME   |     | Employee Name | <input type="checkbox"/> |
| 3                                 |     | ER_ESEX    |     | Gender        | <input type="checkbox"/> |
| 4                                 |     | ER_EAGE    |     | Employee Age  | <input type="checkbox"/> |

DTP data load

**Creation of Data Transfer Process**

Data Transfer Proc. **ER\_DS / FLAT\_FILE -> ER\_CUBE**

DTP Type **Standard (Can Be Scheduled)**

**Target of DTP**

Object Type **InfoCube**

Name **ER\_CUBE** Test for expert routine

**Source of DTP**

Object Type **DataSource**

DataSource **ER\_DS**

Source System **FLAT\_FILE**

Data Transfer Process **ER\_DS / FLAT\_FILE -> ER\_CUBE**

ID **DTP\_4K66N0Y6HYP0CUPW3WJEBE2B6**

Version  Active  Saved

Delta Status  Active, No Request Yet

**Extraction** | **Update** | **Execute**

Technical Request Status **Request status is set to 'green' if warnings occur**

Overall Status of Request **Set Overall Status Automatically**

Check the DTP monitor

**DTP Request 778.015**

Debugging Job Overview Error Stack

Request ID: 778.015  
 Start Time: 2010.12.16 12:34:50  
 Finish Time: 2010.12.16 12:35:11

Header Details

Overall Status:   
 Technical Status:   
 Runtime: 23s  
 Source: ER\_DS FLAT\_FILE (Expert Ro)  
 Transformation: RSDS ER\_DS FLAT\_FILE -> CUBE ER\_CUBE ( 0KKCP1MLZUTXSW0XV9C...  
 Target: ER\_CUBE (Test for expert routine)  
 Selections: REQUID = 778011  
 Data Transfer Proc.: DTP\_4K66NOY6HYP0CUFW3WJE2B6 (ER\_DS / FLAT\_FILE -> ER\_CUB...  
 User: I044912  
 Extraction Mode: Delta   Deltainit  
 Package Size: Dependent on Source Package Size  
 Error Handling: Valid Records Update, No Reporting (Request Red)  
 Processing Mode: Parallel Extraction and Processing  
 Inserted Data Records: 5   
 Request ID: DTPR\_4K66NVCMASS9VMNCYYHMP0ZSI

**"ER\_CUBE", List output**

Table with 5 columns: ER\_ENAME, ER\_ENUM, Gender, Request ID, ER\_EAGE

| ER_ENAME | ER_ENUM | Gender | Request ID                     | ER_EAGE |
|----------|---------|--------|--------------------------------|---------|
| Ragav    | E0001   | M      | DTPR_4K66NVCMASS9VMNCYYHMP0ZSI | 27,000  |
| Ravi     | E0002   | M      | DTPR_4K66NVCMASS9VMNCYYHMP0ZSI | 32,000  |
| Shyam    | E0003   | M      | DTPR_4K66NVCMASS9VMNCYYHMP0ZSI | 26,000  |
| Ram      | E0004   | M      | DTPR_4K66NVCMASS9VMNCYYHMP0ZSI | 24,000  |
| Shiva    | E0005   | M      | DTPR_4K66NVCMASS9VMNCYYHMP0ZSI | 22,000  |

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