



Zebra Printers and SAP[®] Smart Forms[™]

Bar Code Label Design and Printing from
mySAP[™] Business Suite

Solution Guide



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About This Document

This section provides you with contact information, document structure and organization, and additional reference documents.

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How This Document Is Organized

The Solution Guide is set up as follows:

Section	Description
<i>Introduction on page 9</i>	This section describes who should use this guide.
<i>Getting Started on page 27</i>	This section describes how to set up mySAP Business Suite for use with Zebra Device Types. It also includes general guidelines for upgrading Smart Forms for Bar Coding.
<i>Output Devices and Print Queues on page 35</i>	This section provides information on using the Smart Forms Zebra Device Types with Output Devices and Print Queues.
<i>Test Printing on page 75</i>	This section covers test printing from Smart Form to an Output Device / Print Queue.
<i>Basic Smart Form Design on page 45</i>	This section explains how to design a basic Smart Form.
<i>Advanced Form Design on page 79</i>	This section provides information on more advanced programming techniques.
<i>Resources on page 93</i>	This section provides additional resources.

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Key: T: Telephone
F: Facsimile
E: E-mail

Document Conventions

The following conventions are used throughout this document to convey certain information.

Alternate Color (online only) Cross-references contain hot links to other sections in this guide. If you are viewing this guide online in **.pdf** format, you can click the cross-reference ([blue text](#)) to jump directly to its location.

Command Line Examples Command line examples appear in `Courier New` font. For example, type `ZTools` to get to the Post-Install scripts in the `bin` directory.

Files and Directories File names and directories appear in `Courier New` font. For example, the `Zebra<version number>.tar` file and the `/root` directory.

Icons Used



Important • Advises you of information that is essential to complete a task.



Note • Indicates neutral or positive information that emphasizes or supplements important points of the main text.



Example • Provides an example, often a scenario, to better clarify a section of text.

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Introduction

This section describes who should use this guide.

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Intended Audience for This Guide

This reference guide is intended to help systems engineers and systems integrators install, configure and use the Zebra Device provider on a typical SAP system. It is also intended to help SAP Smart Forms™ designers discover the special techniques for formatting output needed when designing labels with text, graphics and bar codes.

The SAP Smart Forms™ Zebra Device types feature:

- Support for printer resident or downloadable fonts including scalable fonts.
- Support for Unicode Fonts.
- Support for all printer resident bar codes including WYSIWYG previews for the most popular symbols.

Device Type Printer Wizard

In order to make the output device creation process easier, a new wizard has been introduced in transaction **SPAD**. With a few pieces of specified information, the wizard will recommend an appropriate device type for your Zebra printer. The wizard is available on 6.20 systems and higher with the following Support Packages:

- SAP_BASIS Release 6.20: SAPKB62063
- SAP_BASIS Release 6.40: SAPKB64021
- SAP_BASIS Release 7.00: SAPKB70014
- SAP_BASIS Release 7.10: SAPKB71004

Some features exist only in certain Netweaver Enhancement Packages.

- Device type uploading capability:
 - Netweaver 7.0 Enhancement Package 1 or higher
 - Netweaver 7.1 Enhancement Package 1 or higher

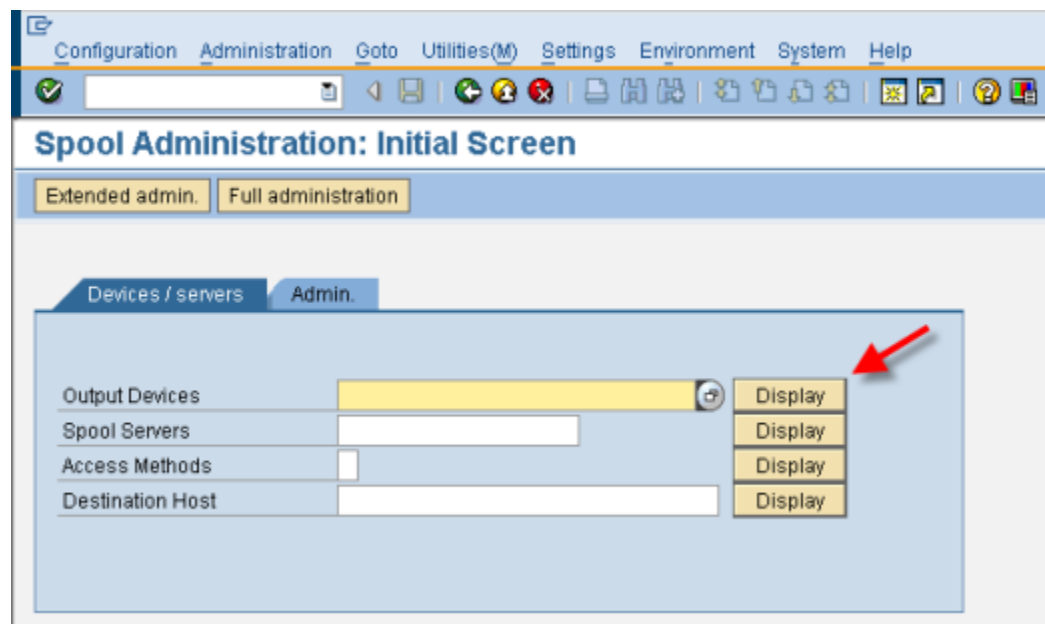
Creating a New Zebra Device in SPAD

1. Open the SPAD transaction.



2. Click Display in the Output Devices Row.

Figure 1 • Spool Administration: Initial Screen



The List of Output Devices opens (Figure 2).


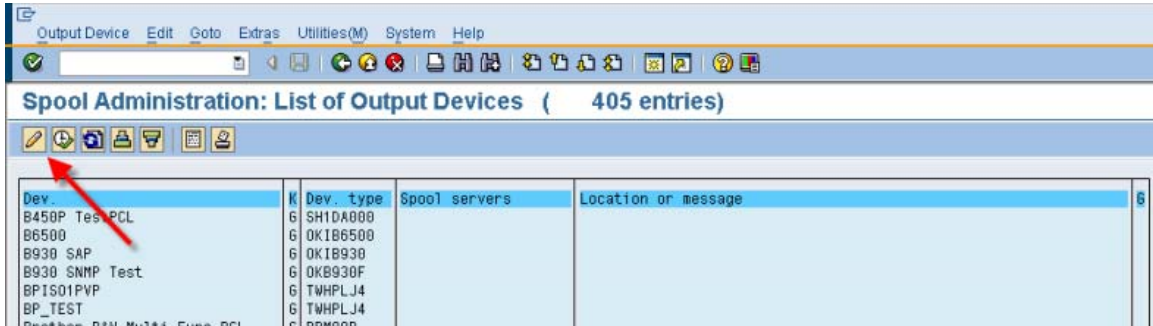
3. Click  (Change).

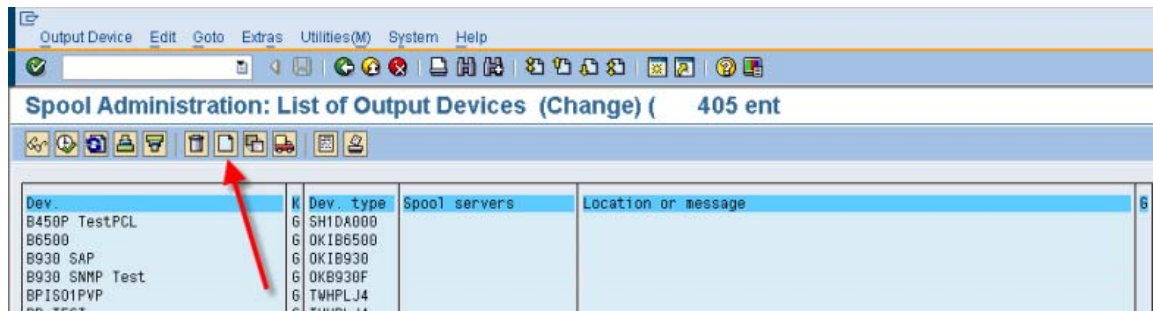
Figure 2 • List of Output Devices



The Change window opens (Figure 3).

4. Click  (Create).

Figure 3 • Change Window



The Spool Administration: Create Output Device window opens (Figure 4).


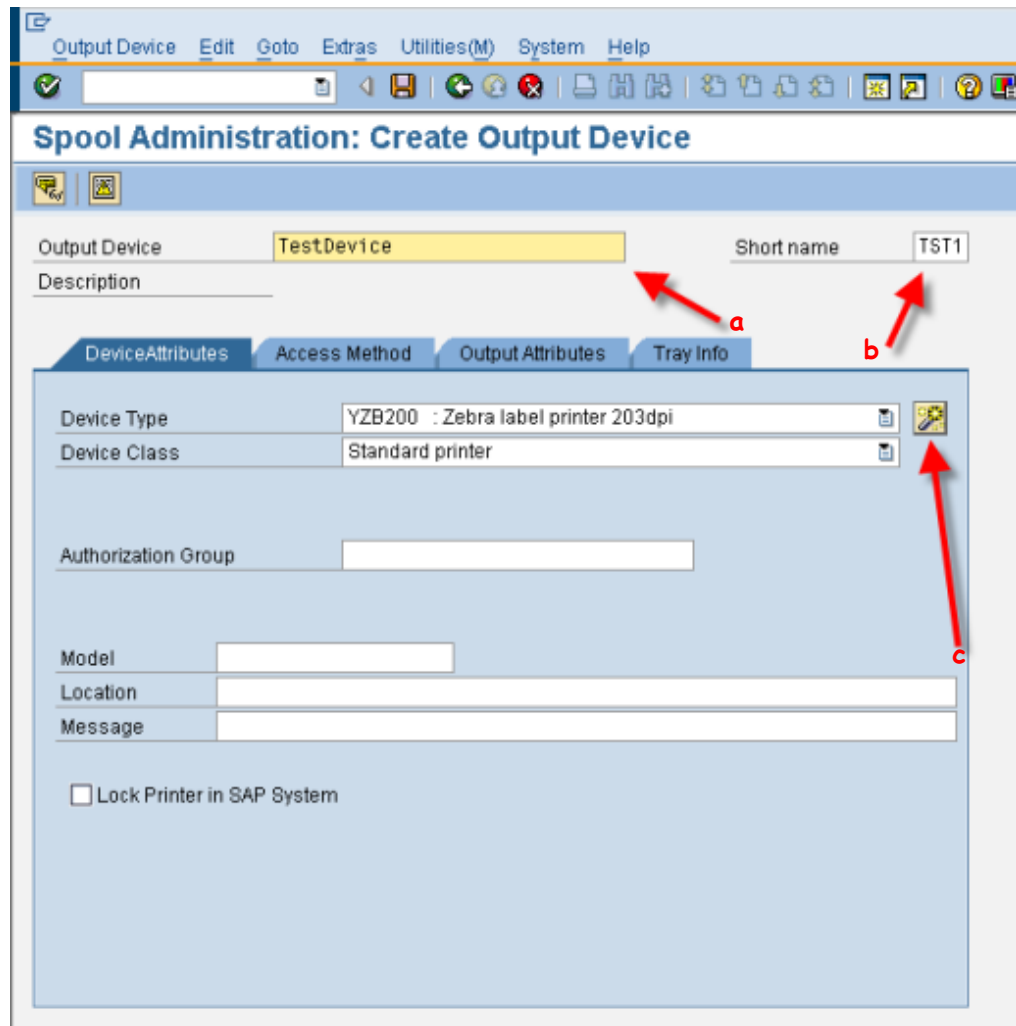
5. In the Spool Administration: Create Output Device window, do the following:
 - a. Enter an Output Device Name.
 - b. Enter a Short name.
 - c. Click  (Device Type Selection).

Figure 4 • Spool Administration: Create Output Device window



The Device Type Selection window opens (Figure 5).

6. In the Device Type Selection window (Figure 5), do the following:
 - a. Select Zebra from the Manufacturer's Name drop-down box.
 - b. Select the desired Language from the drop-down box.



Note • If you select Unicode, the appropriate Unicode device types will be listed.


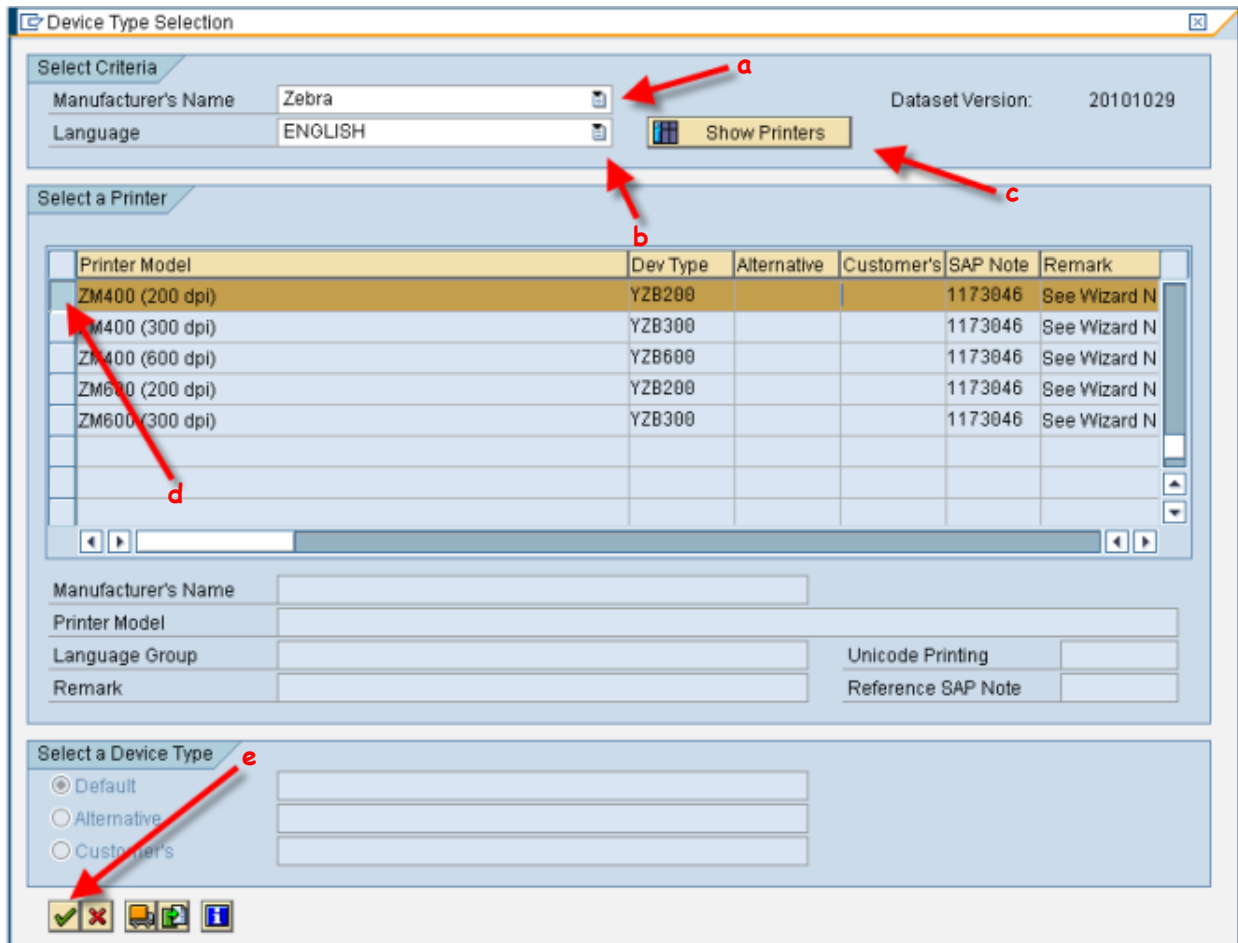
- c. Click  to see a list of the available Zebra Printer models.

Figure 5 • Device Type Selection Window



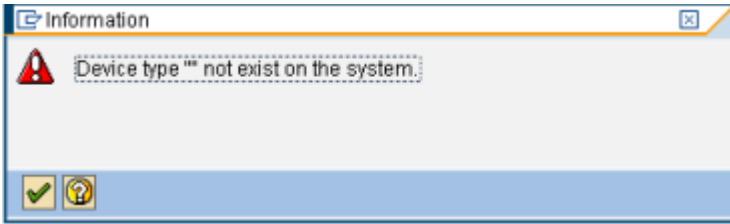
- d. To select the printer model, right-click over the box on the left-hand side. Press F2 or select Choose (Figure 6).

Figure 6 • Submenu Window

Help	F1
Choose	F2
Back	F3
Possible Entries	F4
Cancel	F12
Exit	Shift+F3

- e. Click  (OK).

7. Have you loaded the device types?

If...	Then...
Yes	Skip to step 15 .
No	<p>Figure 7 opens.</p> <div style="text-align: center;"> <p>Figure 7 • Information Window</p>  </div> <p>Continue with step 8.</p>



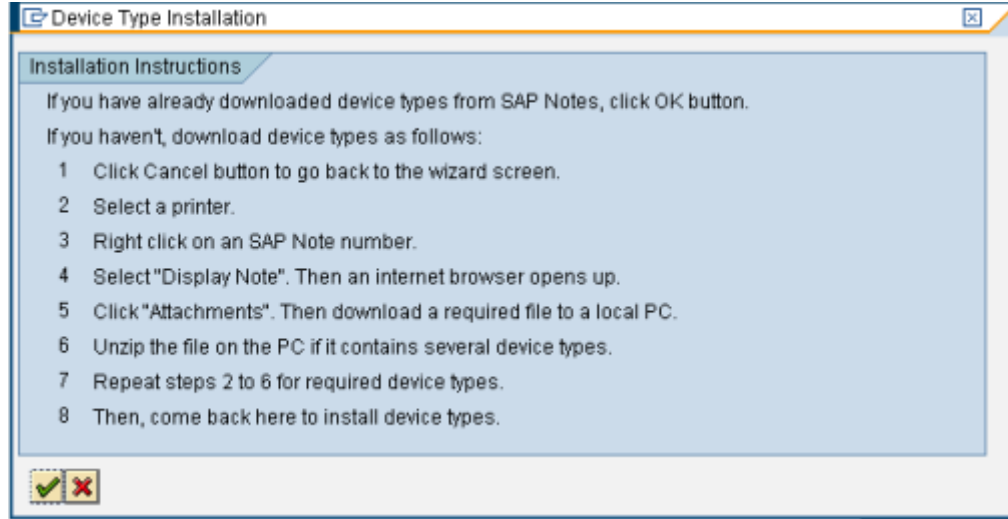
- 8. Click  (OK).
- 9. To install the device types, click  (Install Device Type).
 The Device Type Installation Instructions window opens (Figure 8).

Figure 8 • Device Type Installation Instructions Window




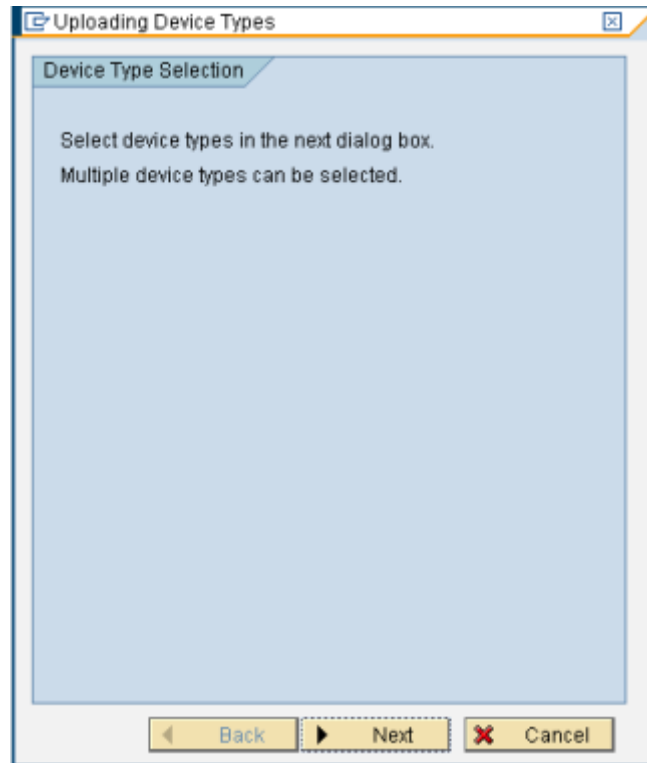

- Click  (OK).
The Uploading Device Types window opens (Figure 9).

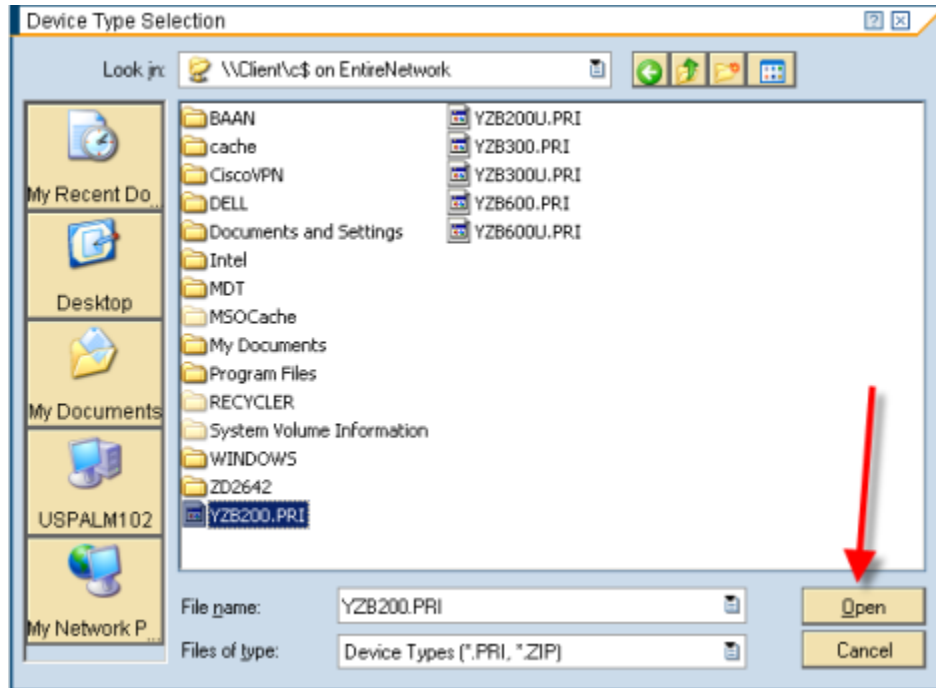
Figure 9 • Uploading Device Types



- Click  .
The Device Type Selection window opens (Figure 10).

12. Navigate to the location of the .pri device type files.
 - a. Select the appropriate device type.
 - b. Click Open.

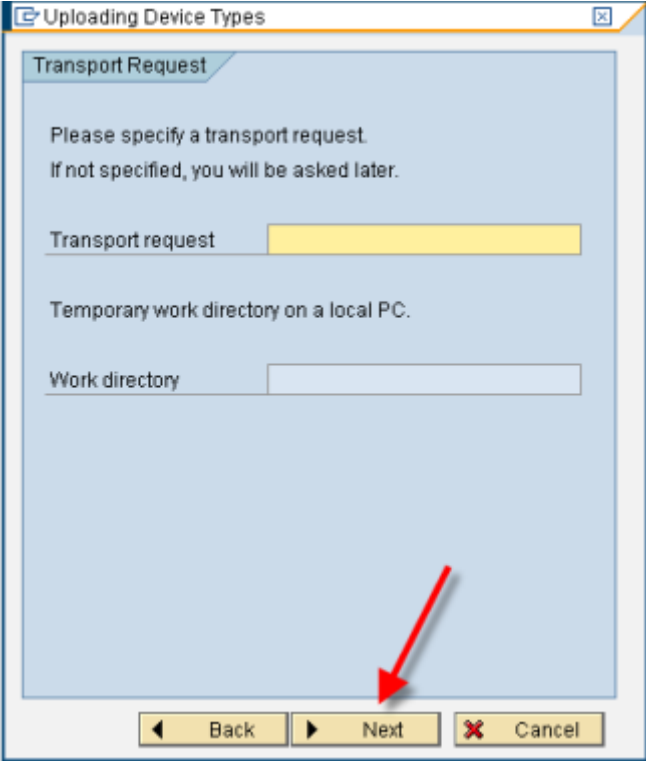
Figure 10 • Device Type Selection Window



The Uploading Device Types window opens (Figure 11).

13. Click  .

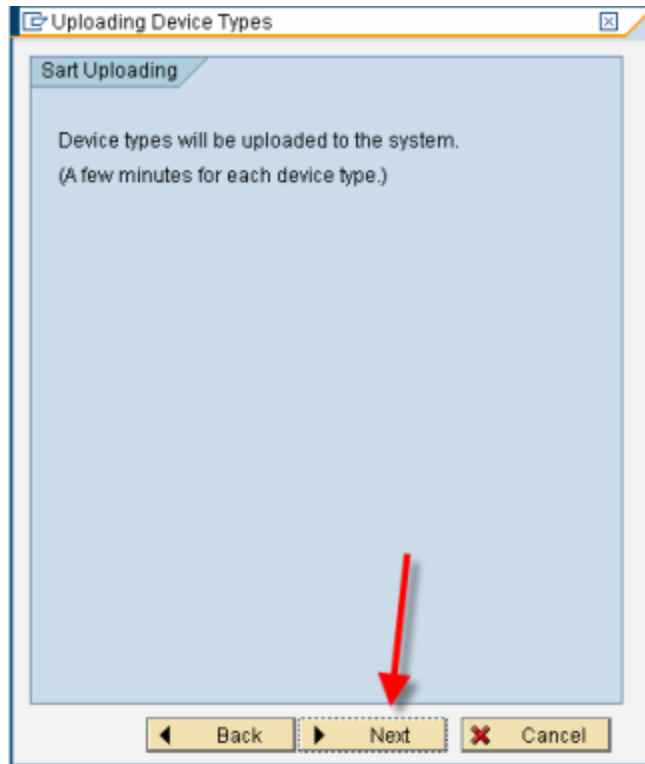
Figure 11 • Uploading Device Types Window



The Uploading Device Types window opens (Figure 12).

14. Click  .

Figure 12 • Uploading Device Types window



The Spool Administration: Create Output Device window opens ([Figure 13](#)).

Figure 13 • Spool Administration: Create Output Device Window

Output Device Short name

Description

DeviceAttributes Access Method Output Attributes Tray Info

Device Type

Device Class

Authorization Group

Model

Location

Message

Lock Printer in SAP System

15. In the Spool Administration: Create Output Device window (Figure 13), do the following:
 - a. Enter the Model number.
 - b. Enter the Location, as required.


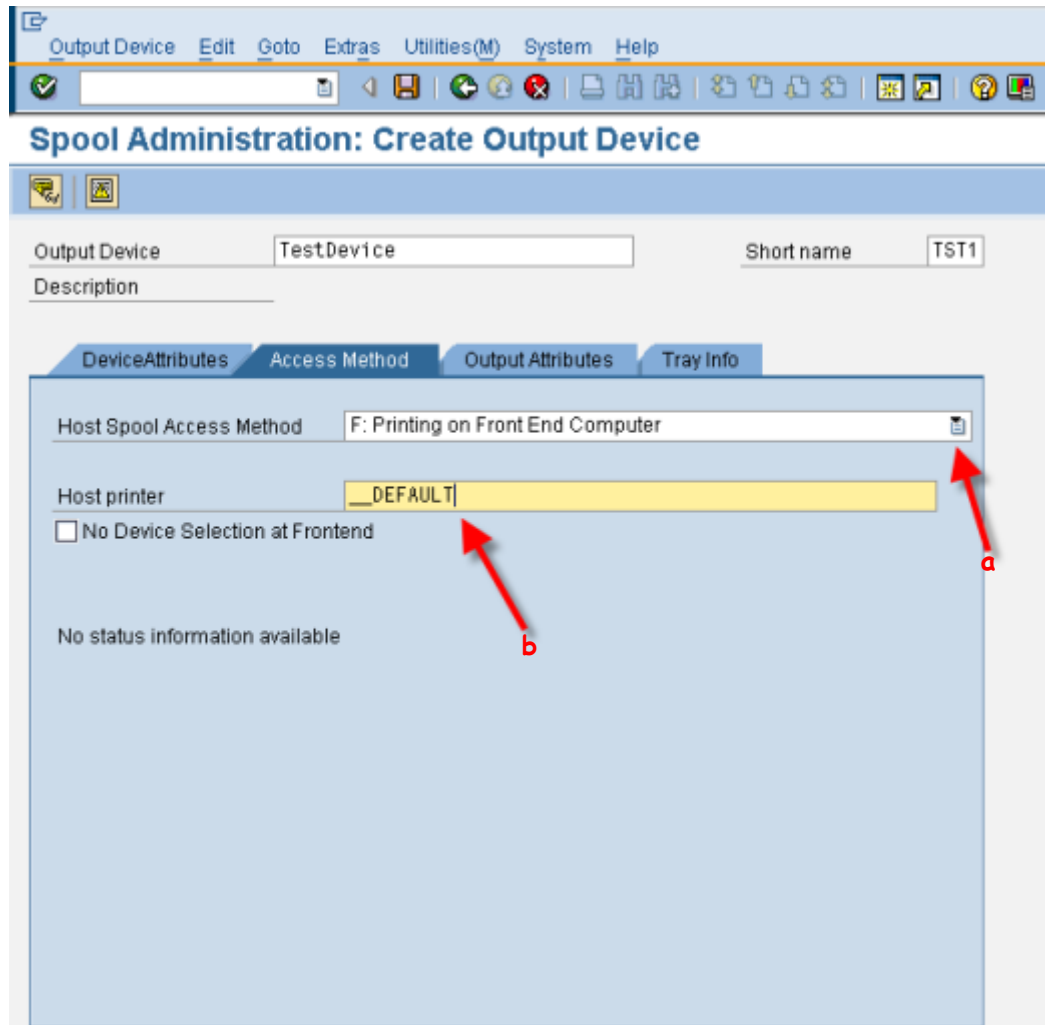
16. Click the **Access Method** Tab.
Figure 14 opens.
17. In the Spool Administration: Create Output Device window (Figure 14), do the following:
 - a. Change the Host Spool Access Method to F: Printing from Front End Computer.
 - b. Type in __DEFAULT as the Host Printer.
This will route the print jobs from your local machine to the default printer installed.
18. If desired, you can check the No Device Selection at Frontend.
No printer selection will be made at print time, so the job will be routed directly to the default printer.
19. Click  (Save).

Figure 14 • Spool Administration: Create Output Device Window



Updating Information Tables on Your System

The information the wizard shows is stored in database tables. Since new printers are being introduced on a regular basis, the tables need periodic updating.



Note • It is not necessary to update the tables if you do not create an output device, as the tables are used only by the wizard and there is no dependency.

The exact steps for installing the database updates are described in Chapter 3 of the `selectdevtype_wizard` document. A copy of this is available at the following URL:
https://websmp107.sap-ag.de/~sapidb/012006153200000457182009E/selectdevtype_wizard.pdf

The file name of a new dataset is `tspopi-yyyymmdd.xml` (zipped) where `yyyymmdd` is the date.



Important • When you use the wizard for the first time, it is necessary to update the information database tables.

The relationship between printer models and device types are stored in table **TSPOPIP**, and the list of printer manufacturers is stored in table **TSPOPIMAN**. The version of the current data on your system is displayed at the top right corner of the window.


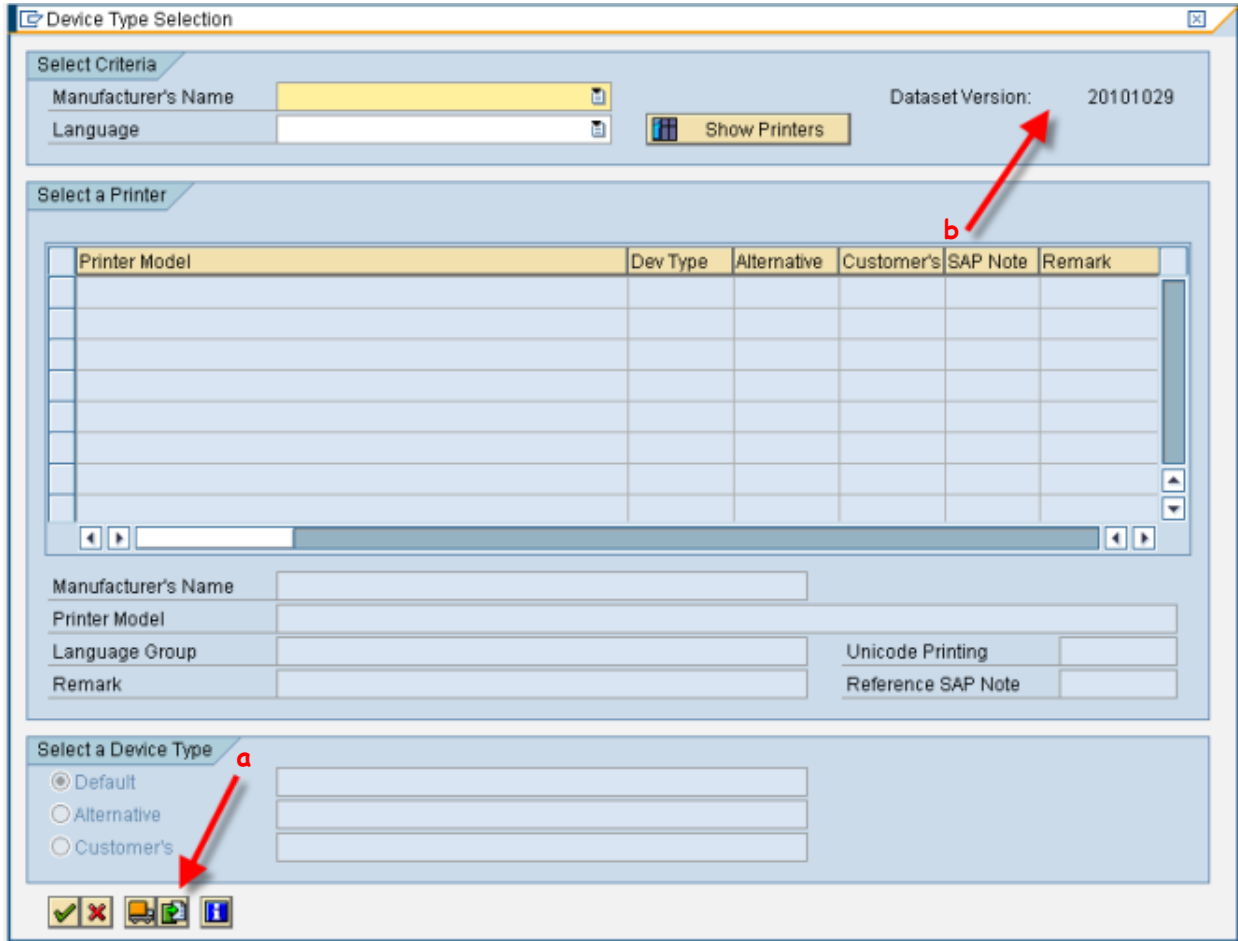
1. From the Device Type Selection window, do the following:
 - a. Click  (Update Printer Information).

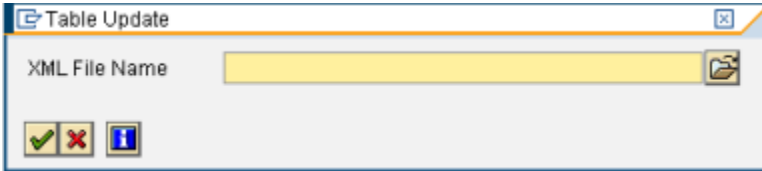
Figure 15 • Device Type Selection Window



- b. Note the Dataset Version.
The latest data is provided as an attachment to SAP Note 1036961, 'Device type selection in transaction SPAD'. The file name is tspopi-yyyymmdd.xml where yyyymmdd is the date of the file creation. (The xml file is zipped, so the actual attached file names are tspopiyyyymmdd.zip.)
The Table Update window opens (Figure 16).

- 2. Click  (File Open/Browse).

Figure 16 • Table Update Window



The Open window opens (Figure 17).

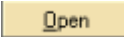
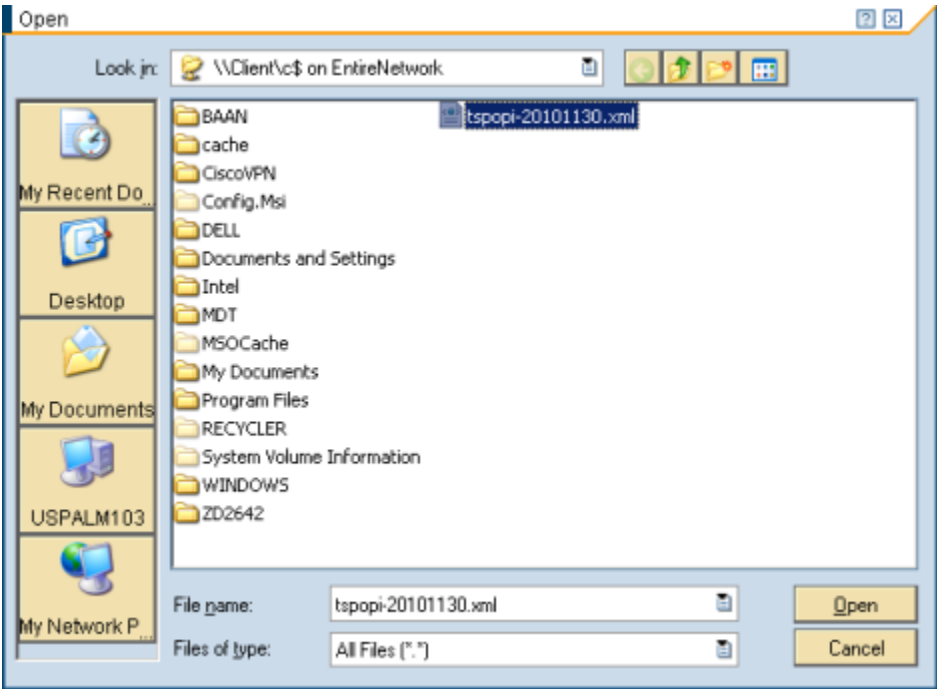
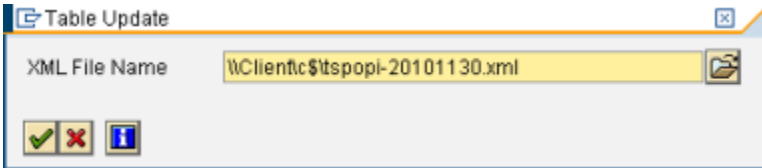
- 3. Select the appropriate .xml file and then click  .

Figure 17 • Open Window



The Table Update window opens (Figure 18).

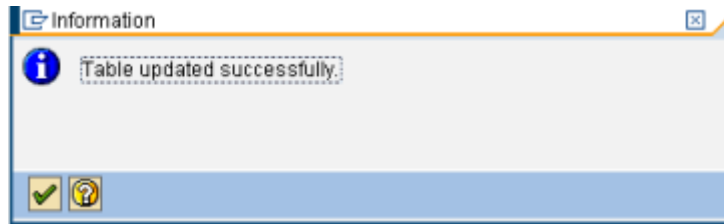
Figure 18 • Table Update Window



- 4. Click  (OK).

The information window opens to inform you that the table has updated successfully (Figure 19).

Figure 19 • Information Window



5. Click  (OK).

You can proceed with creating new Zebra Devices in SPAD.



Getting Started

This section describes how to set up mySAP Business Suite for use with Zebra Device Types. It also includes general guidelines for upgrading Smart Forms for Bar Coding.

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Installing Zebra Device Type for Smart Forms

Smart Forms Bar Code Rendering Library (BRL)

The Bar Code Rendering Library allows SAP to render (draw) bar codes for print preview and output purposes. SAP AG has licensed this BRL from Zebra, which allows Smart Forms to generate bar code output, as bitmap graphics, on PDF documents and PCL®, PostScript®, and Prescribe-compatible printers. SAPWin is also supported via SAPlpd although not recommended for mission-critical printing.

Smart Forms Industrial Bar Code Printer Support (ZPL II)

SAP AG has, for the first time, added true support for native bar code printers in mySAP Business Suite. This printer support, along with the BRL, allows SAP users to easily implement industrial mission-critical bar code label printing without the additional cost of middleware. Bar coding support is added in the form of the Zebra Programming language (ZPL II). Refer to www.zebra.com for more information on bar code label printers.

Smart Forms and Zebra Device Types

Before you can begin using Zebra printers with SAP Smart Forms, one of the following device types must be uploaded to mySAP Business Suite. Loading these device types is usually performed by a systems administrator. These device types will also ship with SAP NetWeaver 05. SAP Smart Forms support only the Zebra Programming Language (ZPL II).

- ❑ IBM® CodePage 850 - CG Triumvirate Bold Condensed Scaleable Font
 - Zlzeb6.priAll 600 dpi ZPL-II printers
 - Zlzeb3.priAll 300 dpi ZPL-II printers
 - Zlzeb2.priAll 203 dpi ZPL-II printers

The above device types are primarily designed to work with Zebra's preloaded Swiss Scaleable Font (EMEA Only). Containing 936 characters, this font includes support for Baltic, Central European, Cyrillic, Greek, Turkish, Arabic, Hebrew and Western.

- ❑ Unicode UTF-8 - Andale Monospaced Scaleable Fonts
 - Zlzebu6.priAll 600 dpi ZPL-II printers
 - Zlzebu3.priAll 300 dpi ZPL-II printers
 - Zlzebu2.priAll 203 dpi ZPL-II printers

To obtain the Zebra device types, visit the SAP Developer Network web site at www.sdn.sap.com. Refer to SAPnet notes 750002 and 750772.

Installation of mySAP Business Suite Zebra Device Types

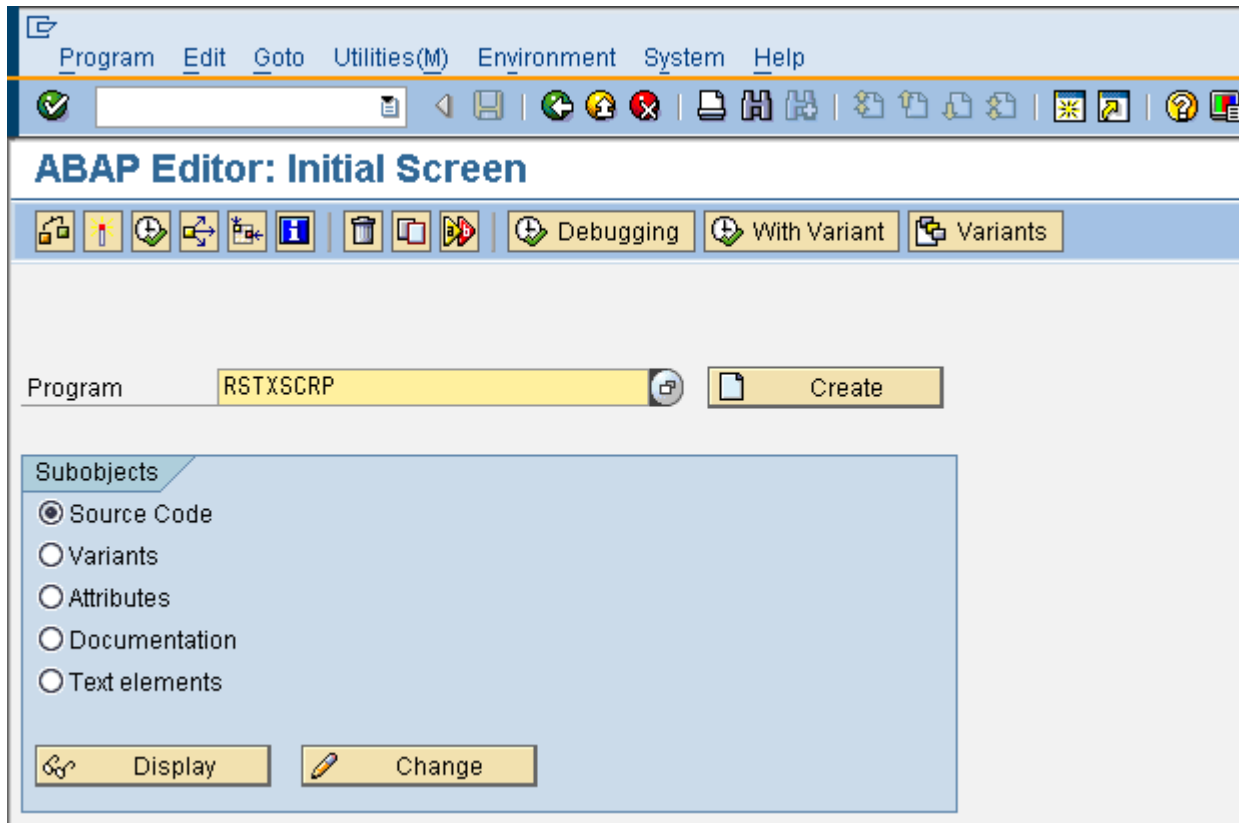
The next series of steps outline the import procedure of the device type definition file (for example, ZLBZEB2.PRI) to the mySAP Business Suite printing system.


1. Execute the Program Execution transaction SA38 by keying in /nSA38 at the command line:



2. Press Enter or click once on the Checkmark  adjacent to the command line text box. The ABAP: Execute Program window opens (Figure 20).

Figure 20 • ABAP: Execute Program Window



3. In the Program text box, type RSTXSCR, then click  (Execute) or press F8 to execute the device type definition import program.

The SAPscript Export to Dataset / SAPscript Import from Dataset window opens (Figure 21).

4. Select the Device type option.
5. For Object name, enter the device type name that you plan to use (for example, ZLZEB2).
6. For Mode (EXPORT/IMPORT), enter IMPORT.

7. Select From/on frontend (or File system: GUI on older releases).

Figure 21 • SAPscript Export to Dataset / SAPscript Import from Dataset Window

SAPscript Export to Dataset / SAPscript Import from Dataset

Object selection and session ctrl

Form

Style

Standard text

Text ID

Language

Device Type

Object name

Mode (EXPORT/IMPORT)

Ctrl parameters for file operation

From/on frontend

From/on application server

File Name


Binary file format

Display File Contents

Control of language versions

Language vector


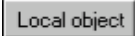

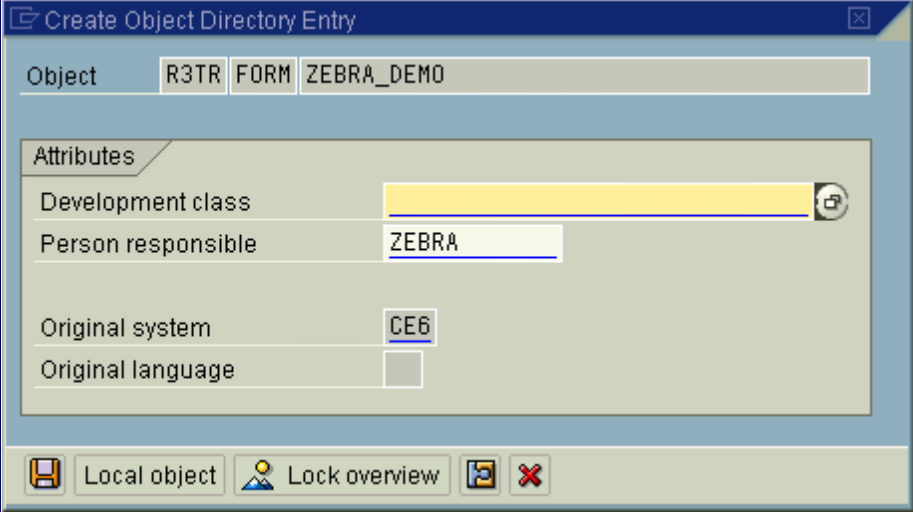
Only export original language

8. When all the required fields above are entered correctly, click  (Execute) or press F8 to start the import process. Ignore all other options.

Allocate a Development Class

The user must either allocate a development class to the device type or make it a local object. The development class is only required if the customer wishes to transport this device type to other mySAP Business Suite systems. This is done from the screen below (Figure 22).

1. Has the device you plan to use already been uploaded into the system?

If...	Then...
No	<p>Choose one of the following:</p> <ul style="list-style-type: none"> • Enter a Development class and click  (Save). • Skip the Development class and click . <p> Important • Local object device types cannot be transported to other mySAP Business Suite systems.</p> <p style="text-align: center;">Figure 22 • Create Object Directory Entry Window</p> 
Yes	Continue with <i>Select the Local Driver</i> on page 33.

Select the Local Driver

Figure 23 prompts for the device type definition file and its location.


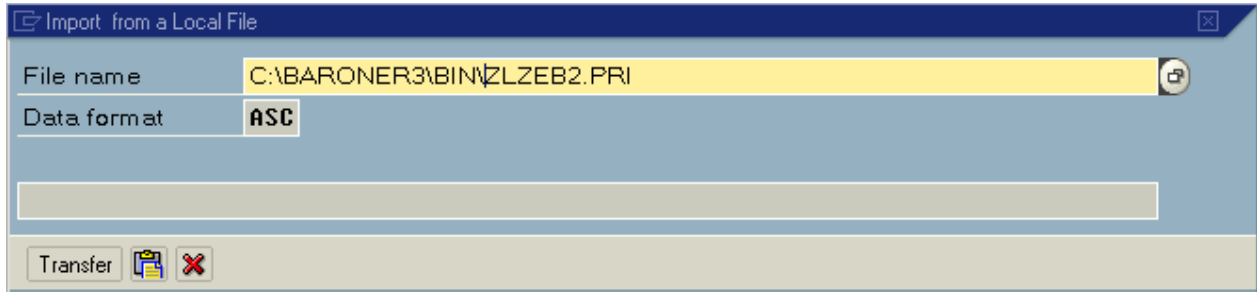
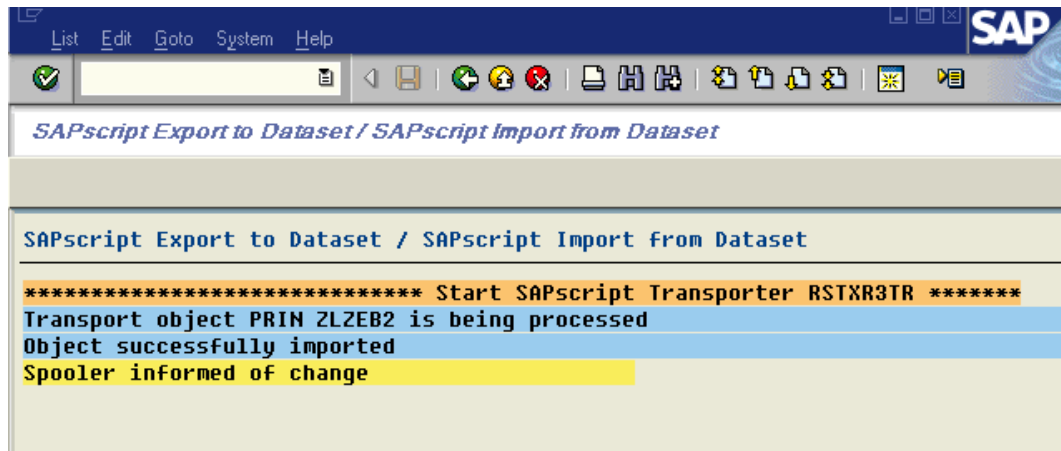
1. Browse  to locate the file, for example, ZLB_ZEB.PRI.
2. Click Transfer to start the upload process.

Figure 23 • Import from a Local File Window



When the process is complete, update messages will be displayed (Figure 24).

Figure 24 • Update Messages Window



Important • The above drivers are only for use with Smart Forms. These drivers do not support SAPscript or SAPscript generated and uploaded by Zebra’s Designer[®] for mySAP[™] Business Suite.



Notes •



Output Devices and Print Queues

This section provides information on using the Smart Forms Zebra Device Types with Output Devices and Print Queues.

Contents

Configuring Output Devices	36
Printing Terminology	41

Configuring Output Devices

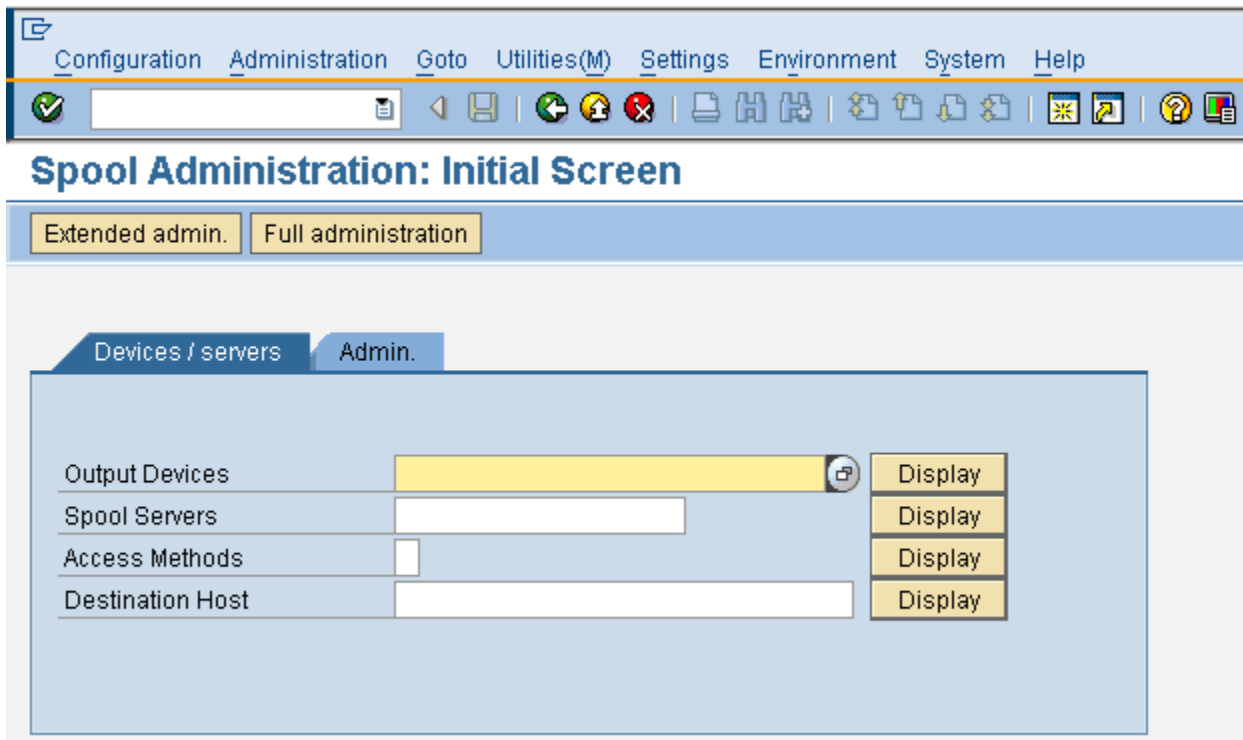
Before you can use a printer (device type) in SAP mySAP Business Suite, you must create and configure a print queue (output device).

1. Initiate the Spool Administration program, SPAD, by entering /nSPAD in the transaction command line. Press Enter or click on the checkbox adjacent to the command line text box entry.



2. At the Spool Administration Initial Screen window (Figure 25), select the Output Device option.

Figure 25 • Spool Administration Initial Screen Window




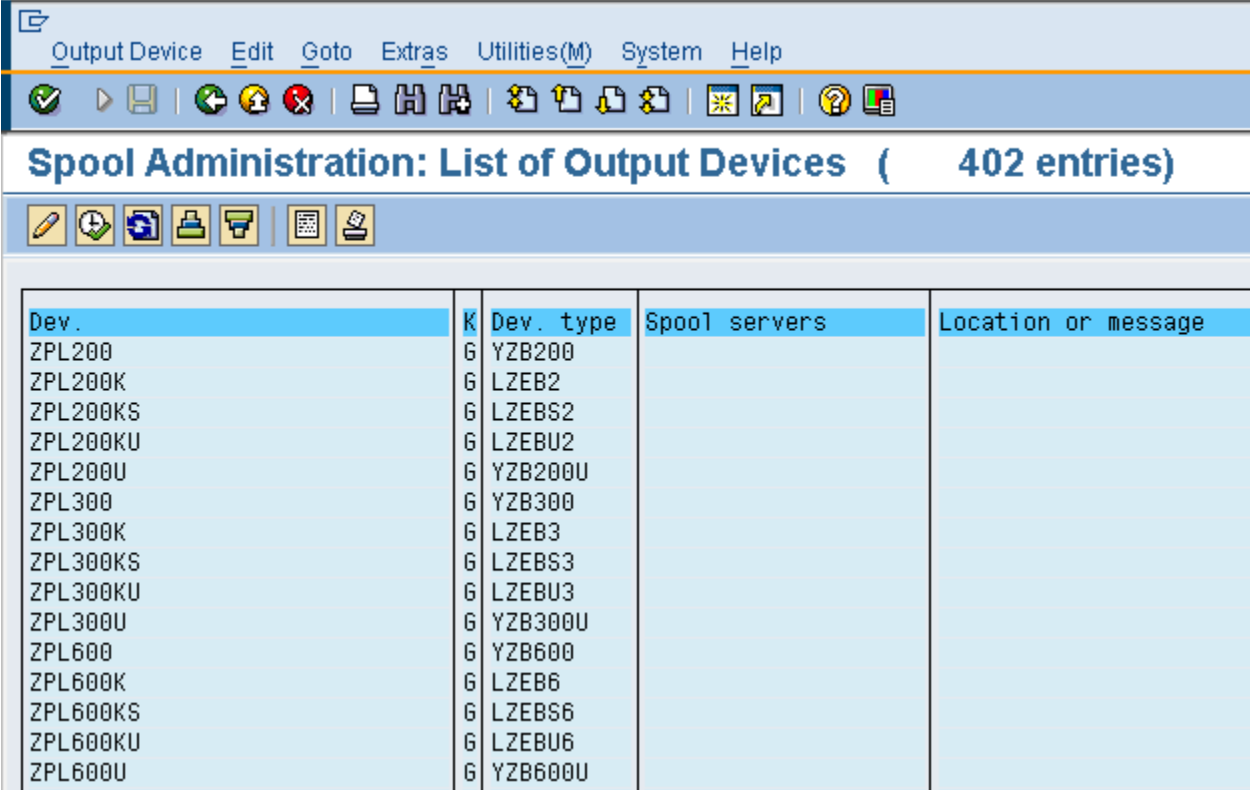
- At the Spool Administration: List of Output Devices window (Figure 26), click  (Change).

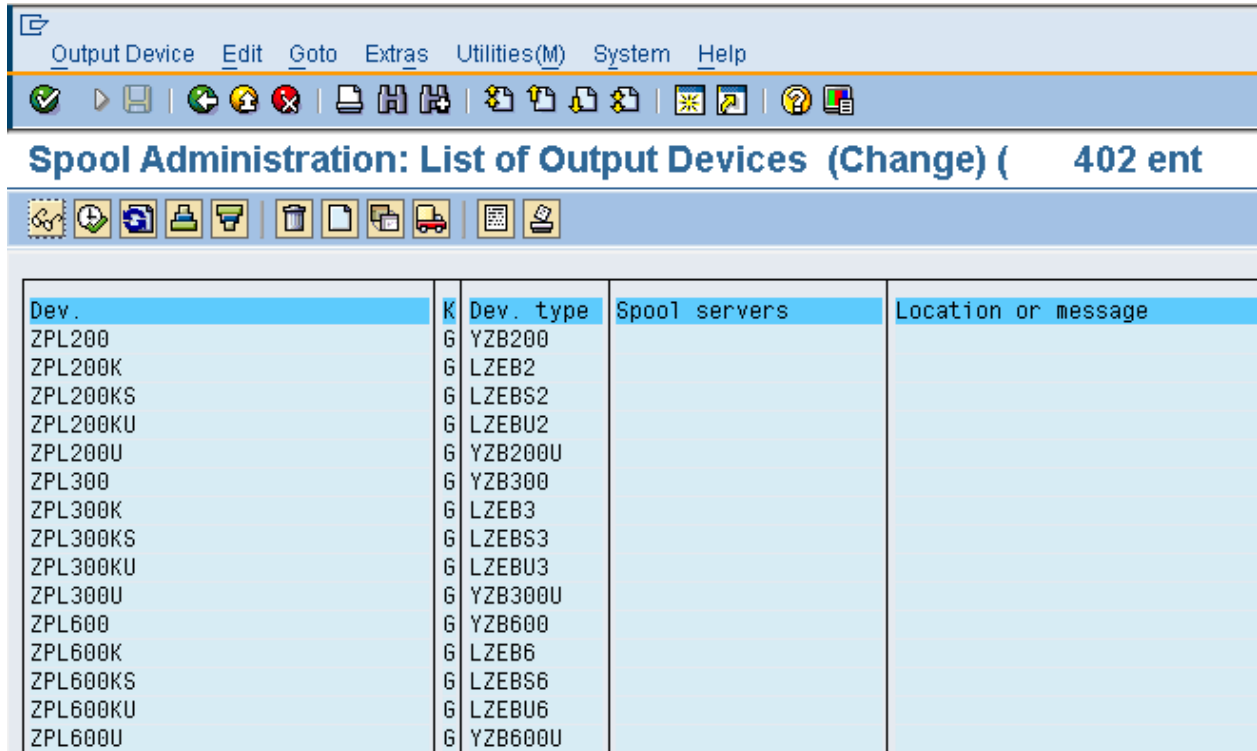
Figure 26 • Spool Administration: List of Output Devices Window



You should see Figure 27, exactly the same as the previous screen but with a new line of icons.

4. Click  (Create).

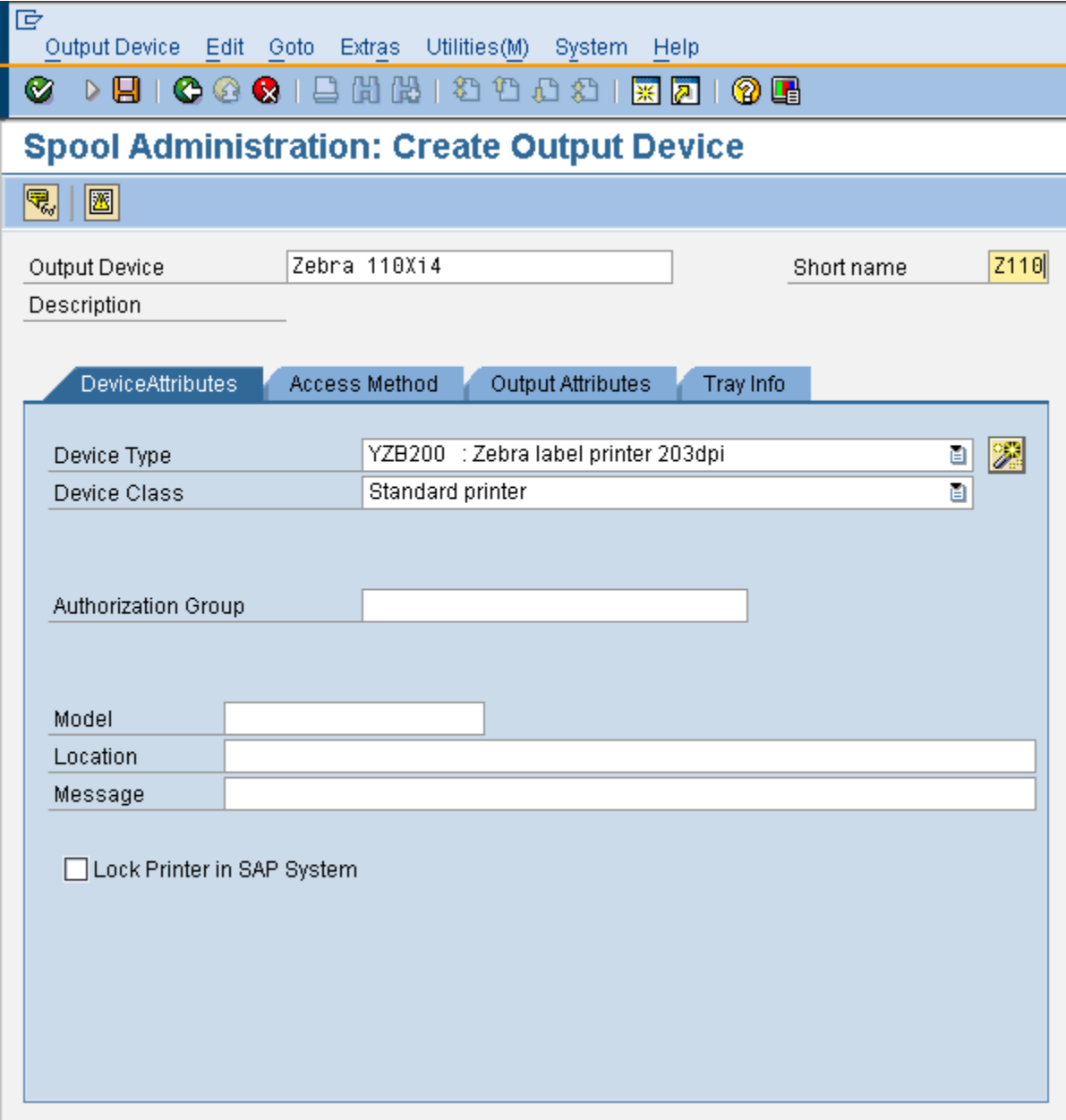
Figure 27 • Spool Administration: List of Output Devices (Change) Window



At the Spool Administration: Create Output Device (Figure 28), perform the following:

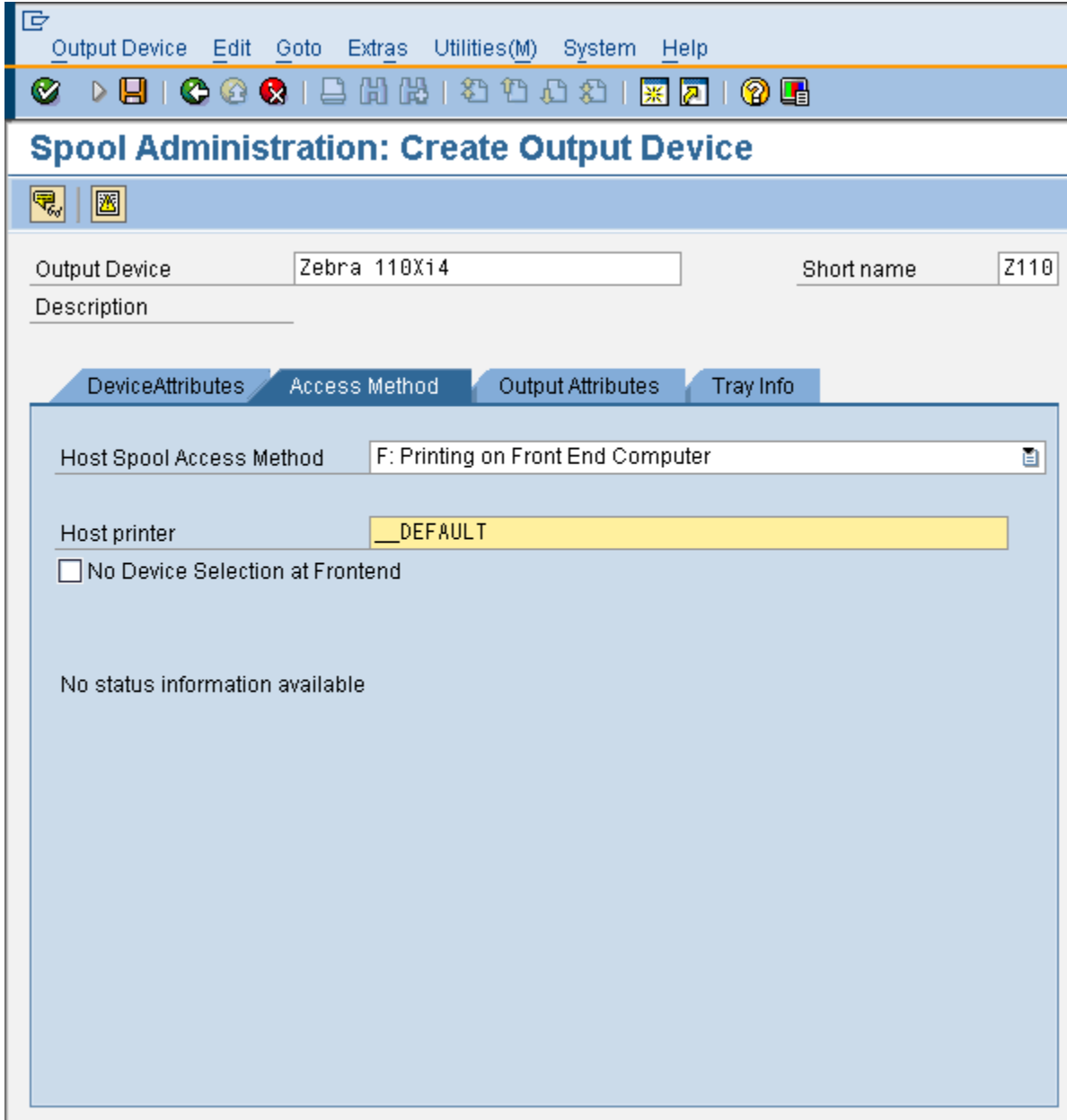
- 5. Allocate the Output Device name. You may also allocate a shortname.
- 6. Select the Device Type, for example, YZB200.
- 7. Enter Location and Message, if required.

Figure 28 • Spool Administration: Create Output Device Window




8. Click the **Access Method** Tab (Figure 29).

**Figure 29 • Spool Administration: Create Output Device Window
Access Method Tab**



Important • For testing and demonstration purposes only, it is recommend that you use Front End Printing. For volume or mission-critical industrial printing, refer to [Access Methods on page 41](#).

9. To complete the configuration of the output device, perform the following:
 - a. Ensure Host spool access method is set as option F.
 - b. Type in **__DEFAULT** for Host printer.
 - c. Click  (Save).

Printing Terminology

Below is a detailed explanation of mySAP Business Suite printing terminology:

Output Device

This is the name of the print queue. You must also type in a short name; this is four characters.

Device Type

This is the name of the printer (device type) and could be YZB200. This selection will be based on printer resolution and Codepage/language.

Spool Server

This is the name of the server that will do the spooling. Use Browse to pick a server that has a spool process associated with it (if it doesn't have a spool server associated with it, it will be highlighted in red).

Access Methods

This field must be filled before host printer, although it is listed after it! This is the most important, and complicated, field for setup of print queues (output devices). Summaries of the options are below:

Access Method	Access Method Description						
F	PC Front End Printing (requires SAPIpd running) Required if no HOSTNAME available, such as remote WAN printing to a standalone PC. It is recommended that this only be used for testing purposes.						
L	Local Unix lpd spooler (Print Queue)						
C	Local NT or AS/400 print manager						
U	Print Server (dedicated server such as UNIX or even a ZebraNet® 10/100) You can print direct to a print server such as a ZebraNet 10/100, but Zebra does not advise this if you will be printing from multiple clients simultaneously. When printing from multiple clients simultaneously, you must have a print queue setup.						
	See the example below: <table border="0" data-bbox="613 1528 1425 1629"> <tr> <td>Access method</td> <td>U</td> </tr> <tr> <td>Host Printer</td> <td>PORTLF1</td> </tr> <tr> <td>Destination Host</td> <td>Your Printers IP Address</td> </tr> </table>	Access method	U	Host Printer	PORTLF1	Destination Host	Your Printers IP Address
	Access method	U					
Host Printer	PORTLF1						
Destination Host	Your Printers IP Address						
Zebra has also seen graphics printing incorrectly when printing direct to the print server and this may be caused by flow control. Please use a print queue.							
U or S	PC with Windows® 95/98/NT4/2000 (requires SAPIpd running)						

Destination Host

(For example: the name of the target PC / print server)

This is not required for **F**-Front End Printing as the destination host is the client PC that the print request was made from (requires SAPIpd running).

For **U** or **S**, This must be the Host Name of the PC that will have SAPIpd running on it or the Host Name of a dedicated Print Server with print queue set up. The easiest way to determine the host name of a PC is to run SAPIpd and you will find it near the top of the start up window. SAPIpd can be started by selecting Start-> Programs-> SAP Frontend-> SAPIpd.

This parameter is not required for **L** or **C** as the local server is the destination host.

Host Printer

(For example: the name of the target print queue on a PC or print server)

When using **F**, **U** or **S** with SAPIpd, this could be “__DEFAULT” (underscore underscore DEFAULT) for the Default Windows printer or it could be the exact name of the printer not the share name, (that is, Generic / Text Only). This is the name listed in Windows->Start->Settings->Printers.

When using **L** or **C**, this is the long name of the printer; this is not the share name.

LPQ Format

This can be ignored.

Location

This is just an optional simple description/comment of where the printer is located.

Message

This is just an optional simple comment/message that you may wish to associate with the specific print queue.

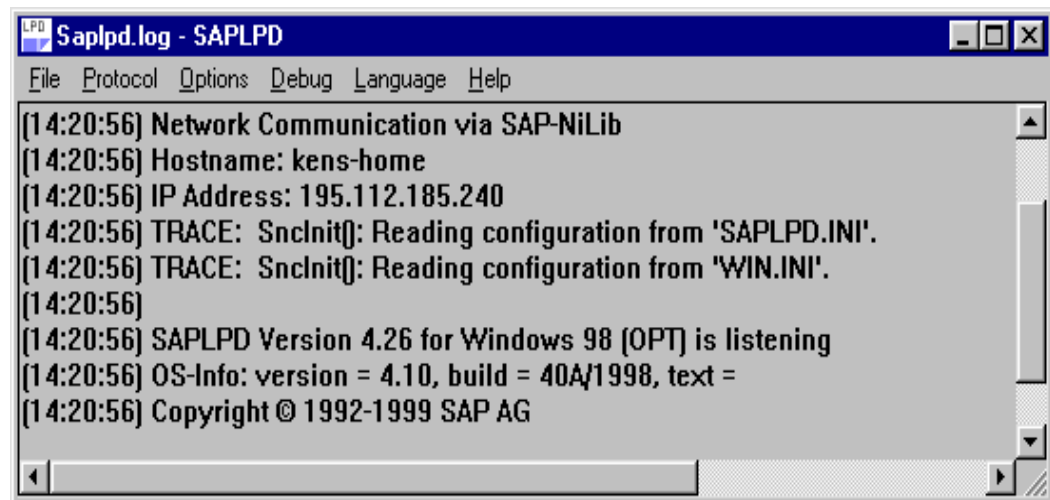
SAP LPD

If you have chosen to use access method F, you will have to run SAPIpd on the local PC.

SAPIpd is a proprietary print server that runs on a PC taking input from the mySAP Business Suite server and sending it to printers on the local PC. The printers on the local PC MUST use a generic text driver.

SAPIpd can be started by selecting Start-> Programs-> SAP Frontend-> SAPIpd. You should see [Figure 30](#).

Figure 30 • SAP LPD Window



SAPIpd needs to be run on any PC that requires a Windows printer driver to be used with mySAP Business Suite. This is the case if you are using Generic Text drivers or full-blown Windows drivers.



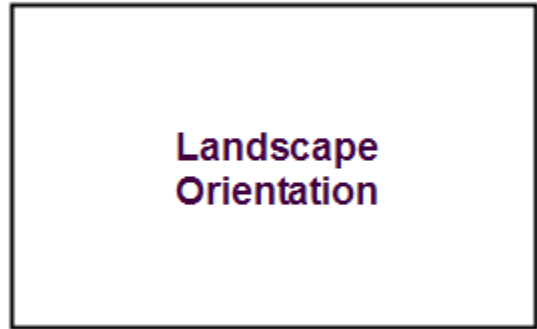
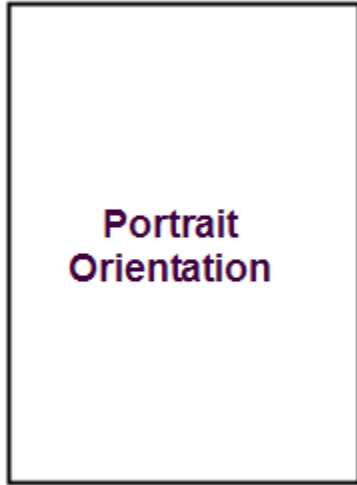
Important • Zebra does not recommend using SAPIpd for volume or mission-critical industrial printing.

Page Size

Page Size specifies the physical size and orientation of an output page. SAP supplies predefined page formats and formats for all standard SAP*script* forms. If needed, you can create custom sizes that accommodate your application.

Portrait vs. Landscape

Portrait and Landscape refer to the shape of the form. Portrait is defined as the form being taller than it is wide. Landscape is defined as the form being wider than it is tall. A box with equal lengths is essentially in portrait **and** landscape mode. (Common practice is to use Portrait for this instance.)





Basic Smart Form Design

This section explains how to design a basic Smart Form.

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Initial Setup

Before starting to design your form, use the old editor for full screen editor operations within Smart Forms. This can be achieved as outlined below.

Disable PC Editor

1. Start the Standard Text: Request transaction by entering /nSO10 in the command line text box (Figure 31) located just below the menu bar of the current active window of mySAP Business Suite system.

Figure 31 • Command Line Text Box

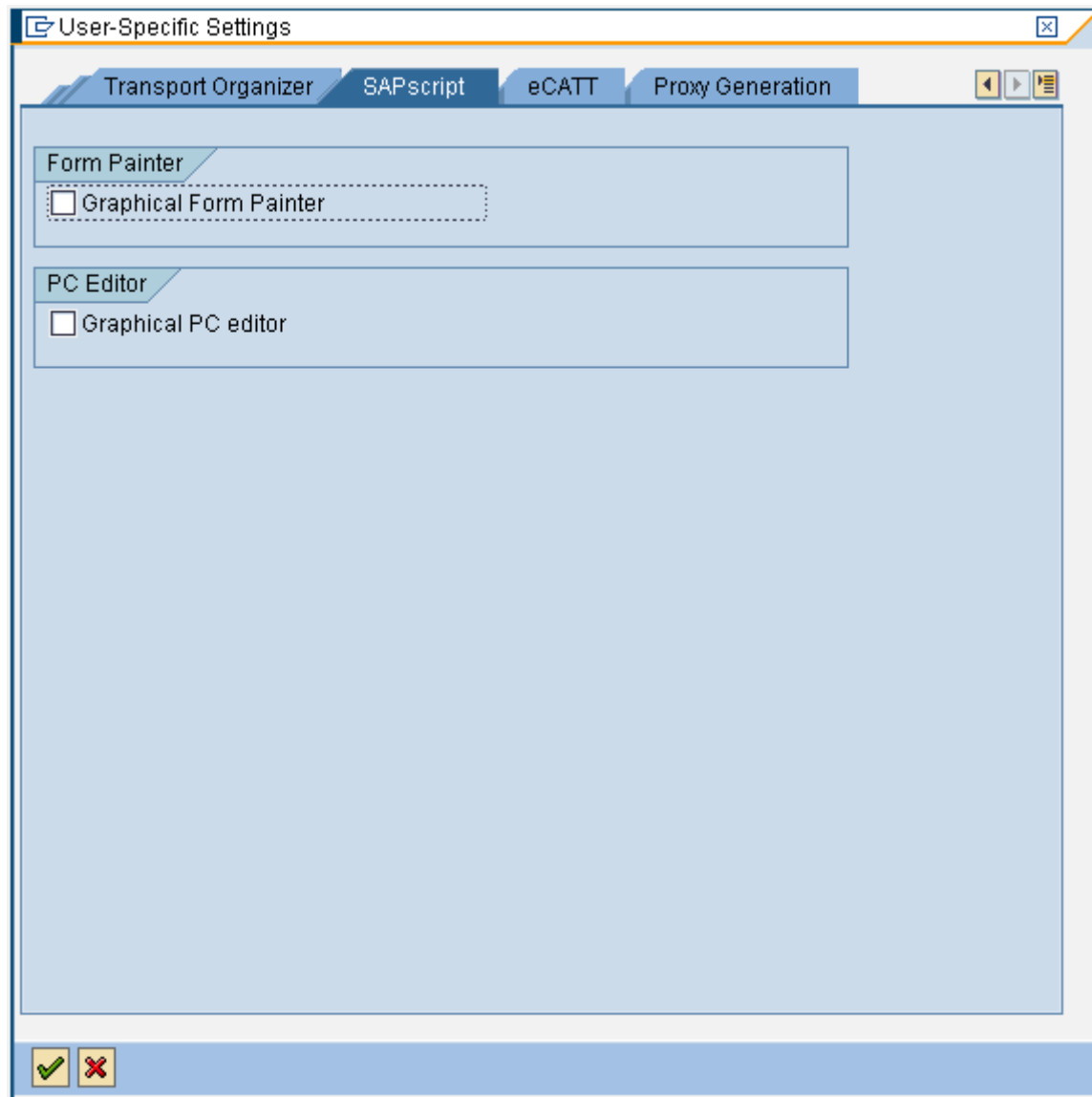


2. Press Enter or click on the Checkmark  adjacent to the command line text box entry.

3. From the main menu, select Setting > PC Editor.

Figure 32 opens.

Figure 32 • User-Specific Settings Window



4. Ensure that both of the checkboxes in Figure 32 are unchecked.

Smart Styles—Planning for Smart Forms

Before starting to lay out your form, you must determine which text and bar code objects you will require. You actually need to build a collection of all of the derivatives of text and bar codes you will use within the Smart Form. All of these objects need to be created and collected within a Smart Style.

Bar codes are more complex, as you need to create the specific bar code derivatives that you will need; this is done with transaction /nSE73.

Text is relatively simple and does not normally require any additional management other than within Smart Styles.



Important • Before proceeding, Zebra strongly recommends that you read the chapter entitled *Advanced Form Design* on page 79.

The following procedure will create a Smart Style that uses the Font “HELVE” 12 point and 24 point. You will also use a Code 39 bar code with a height of 20 mm and a narrow bar width 0.25 mm (2 dots on a 203-dpi/8-dpm printer).

Create the Bar Codes You Need

To create bar codes, perform the following:

1. Execute Transaction /nSE73.

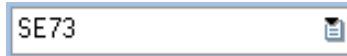


Figure 33 opens.


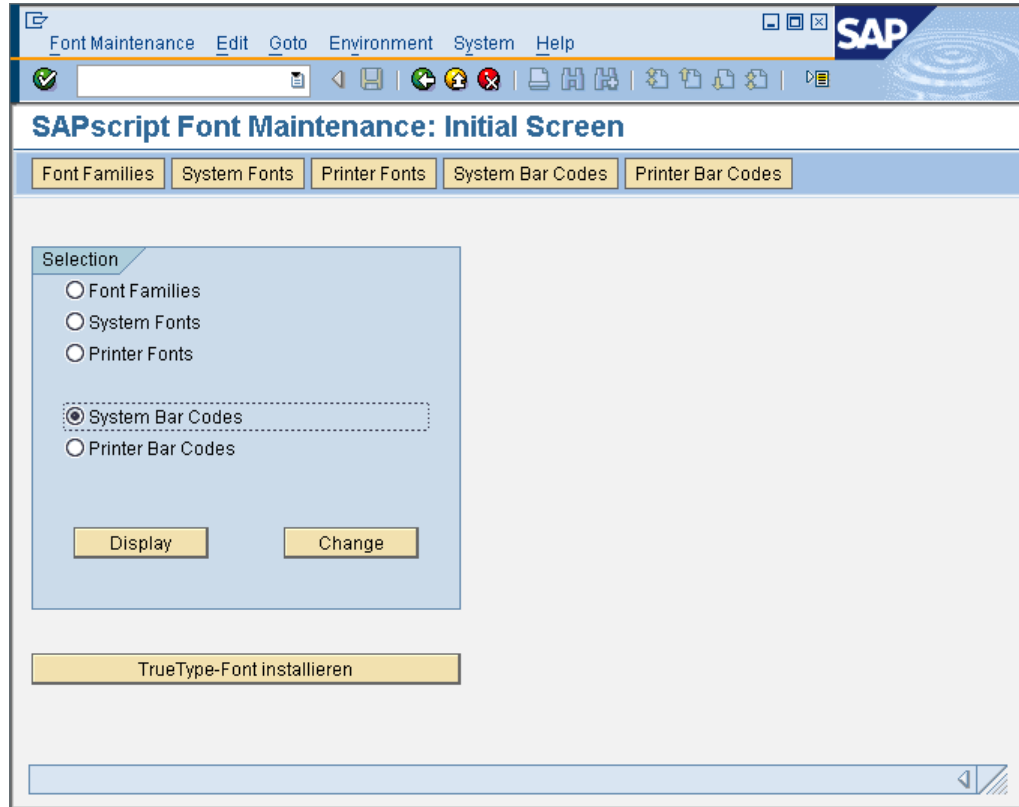
2. Select System Bar Codes and click  (Change).

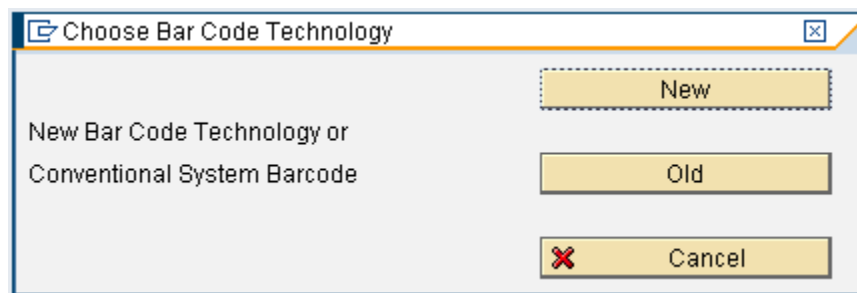
Figure 33 • SAPscript Font Maintenance: Initial Screen



3. Click  (Create).

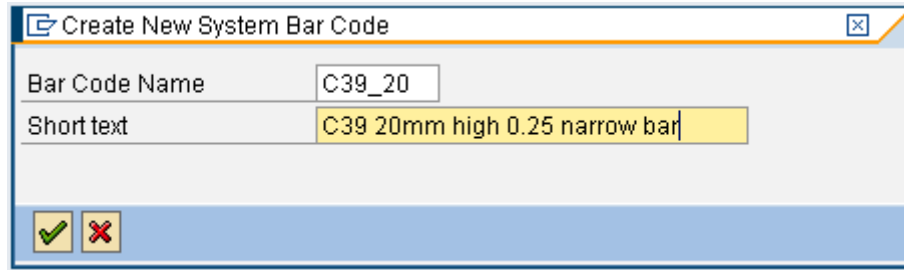
Figure 34 opens.

Figure 34 • Choose Bar Code Technology Window



4. Click New (may appear as “Neu”) to select New Bar Code Technology (Figure 34).
Figure 35 opens.

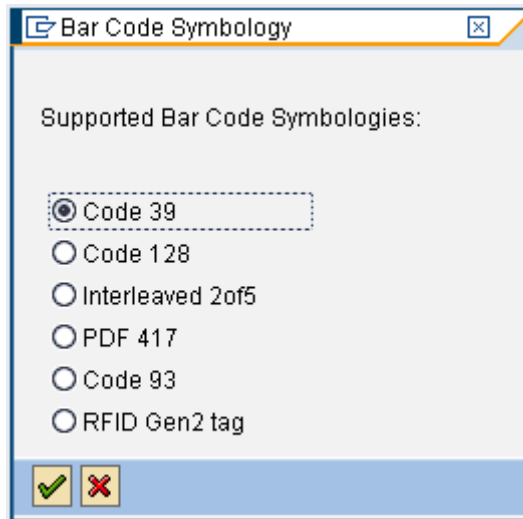
Figure 35 • Create New System Bar Code Window



5. Enter in the bar code name C39_20 and the Short text of C39 20mm high 0.25 narrow bar (Figure 35) and press Enter.

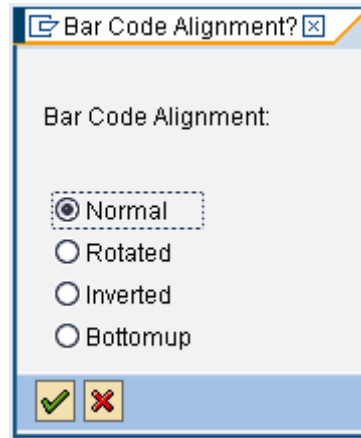
Figure 36 opens.

Figure 36 • Bar Code Symbology Window



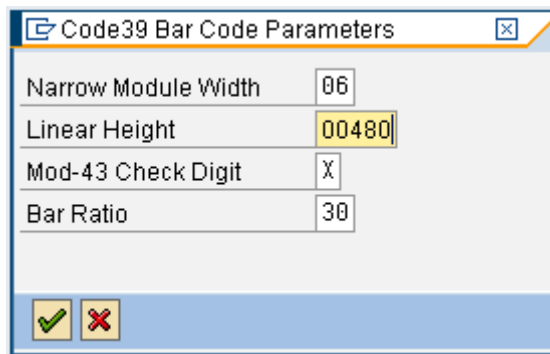
6. Select Code 39 as the Symbology (Figure 36) and press Enter. Figure 37 opens.

Figure 37 • Bar Code Alignment Window



7. Select Normal as the Rotation (Figure 37) and press Enter. Figure 38 opens.

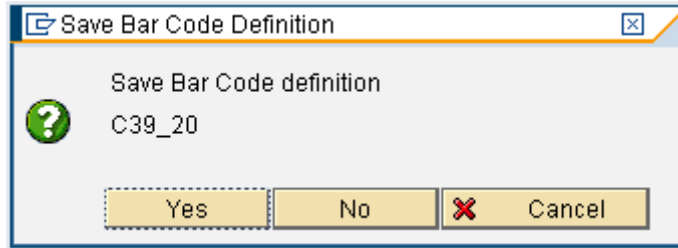
Figure 38 • Code39 Bar Code Parameters Window



8. On the Code 39 Bar Code Parameters window (Figure 38), enter 6 for the Narrow Module Width.
9. Enter 480 for the Linear Height.
10. Leave the check digit enabled.
11. Leave the ratio at 30.

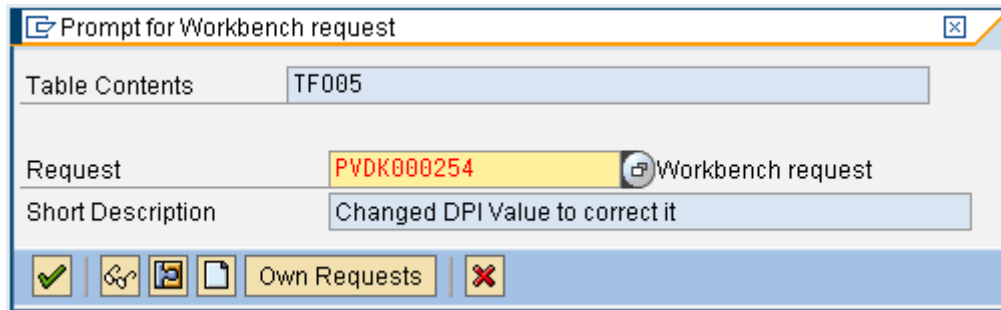
12. Press Enter.
Figure 39 opens.

Figure 39 • Save Bar Code Definition Window



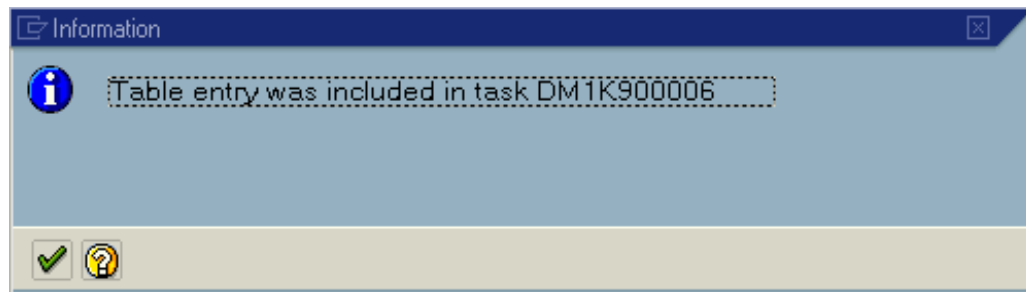
13. Click Yes to Save.
Figure 40 opens.

Figure 40 • Prompt for Workbench Request Window



14. Depending on your SAP version, you may be prompted for a Workbench request (Figure 40), then press Enter.
Figure 41 opens.

Figure 41 • Information Window



15. Press Enter.
You have successfully created the New Technology-based bar code.
Repeat step 1 through step 15 for all bar codes that you will need.

Create Smart Styles to Select Text and Bar Codes

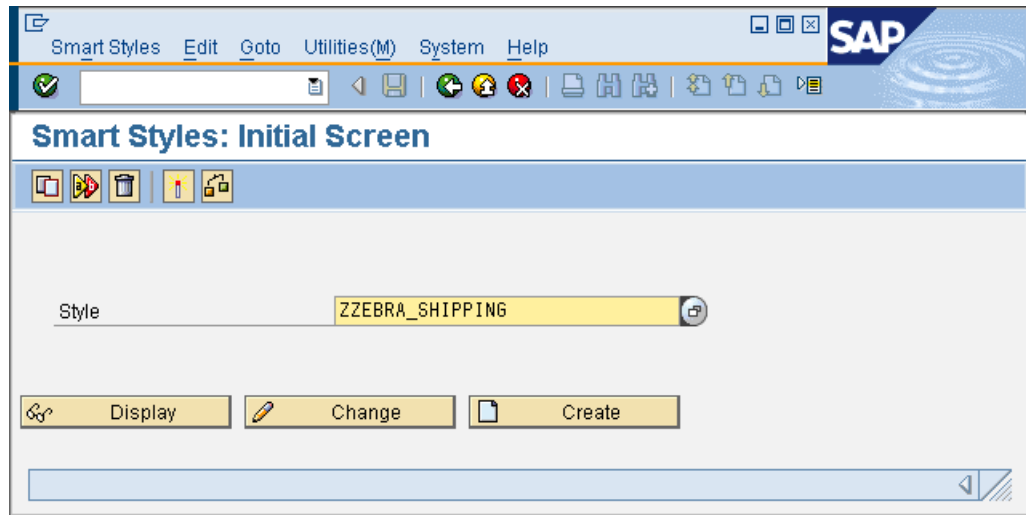
To create Smart Styles, perform the following:

1. Execute Transaction `/nSmartStyles`.

`/nSmartStyles`

2. Enter the Style Name `ZZEBRA_SHIPPING` and click  (Create) in [Figure 42](#).

Figure 42 • Smart Styles: Initial Screen



Add a Bar Code to the Smart Style

1. Select Character Formats from the tree, right-click, and then select Create Node (Figure 43).

Figure 43 • Change Mode Window

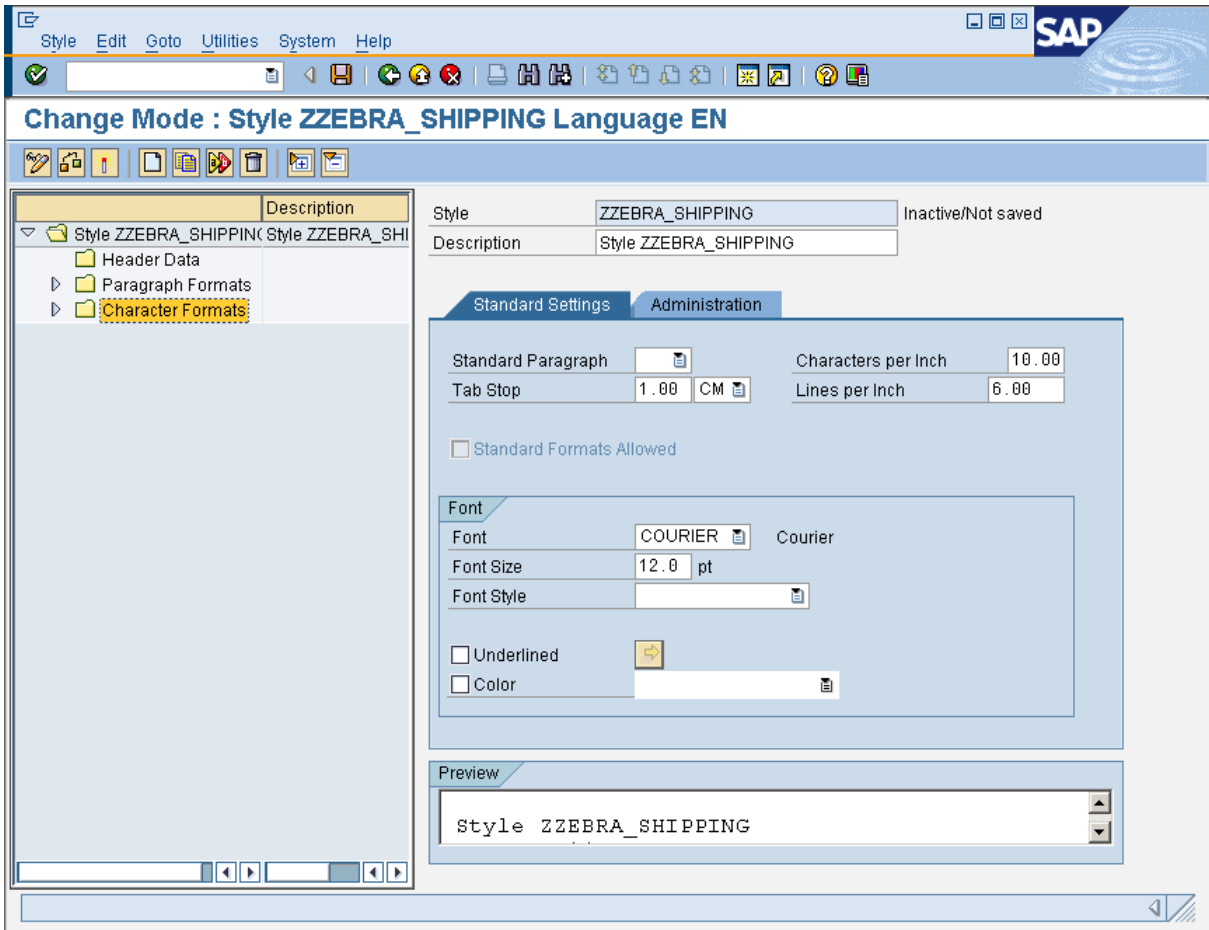
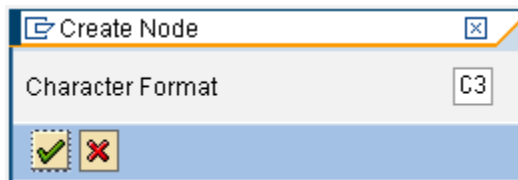


Figure 44 opens.

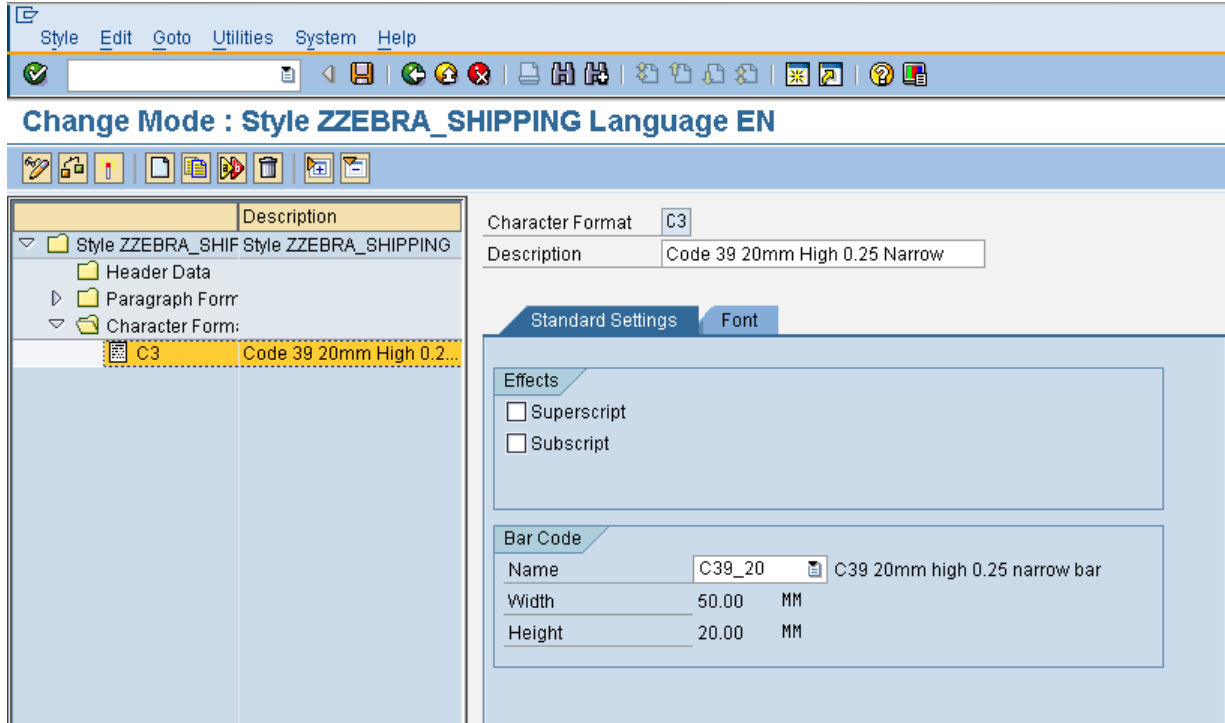
Figure 44 • Create Node Window



2. Enter C3 as the Character Format and press Enter.

Figure 45 opens.

Figure 45 • Change Mode Window



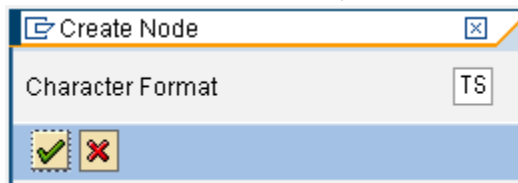
3. Enter the Description Code 39 20mm High 0.25 Narrow.
4. Select C39_20 as the Bar Code (created in /nSE73).

Repeat [step 1](#) through [step 4](#) for all bar codes that you wish to add to the Smart Style.

Add Text Styles to the Smart Style

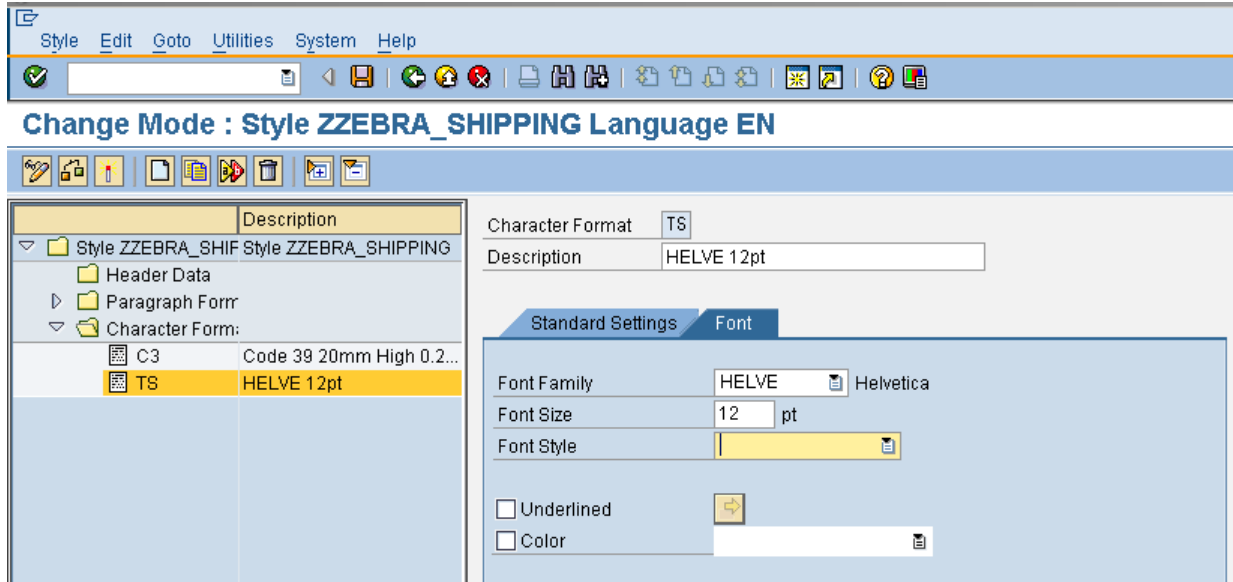
1. Select Character Formats from the tree, right-click, and then select Create Node.
[Figure 46](#) opens.

Figure 46 • Create Node Window



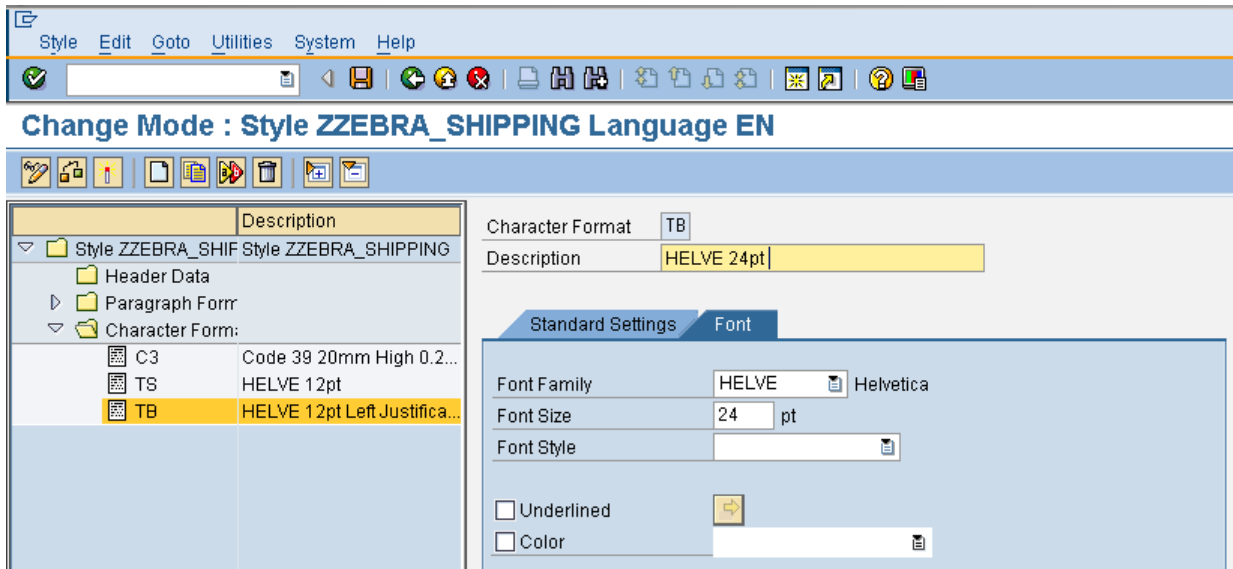
2. Enter TS (Text Small) as the Character format and press Enter.
[Figure 47](#) opens.

Figure 47 • Change Mode Window



3. Enter HELVE 12 pt in the Description field.
4. Click the Font Tab. Figure 48 opens.

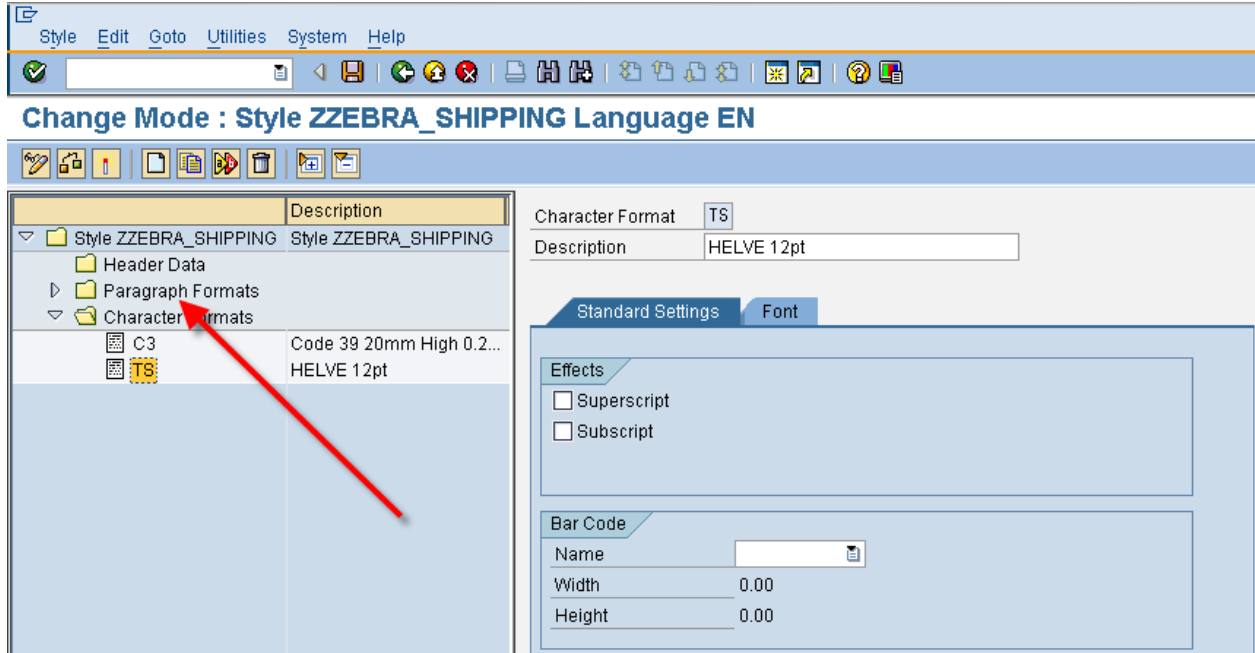
Figure 48 • Change Mode Window



5. Select HELVE as the Font family (CG triumvirate bold condensed for ZLZEBx).
6. Select 12 point as the point size.
7. Repeat step 1 through step 6 for 24 Point and call it TB (Text Big).

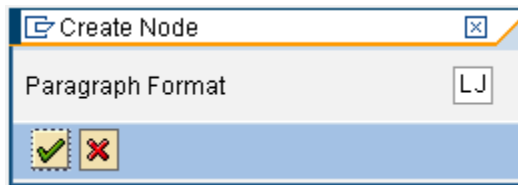
Create a Default Paragraph for the Header Data

Figure 49 • Change Mode Window



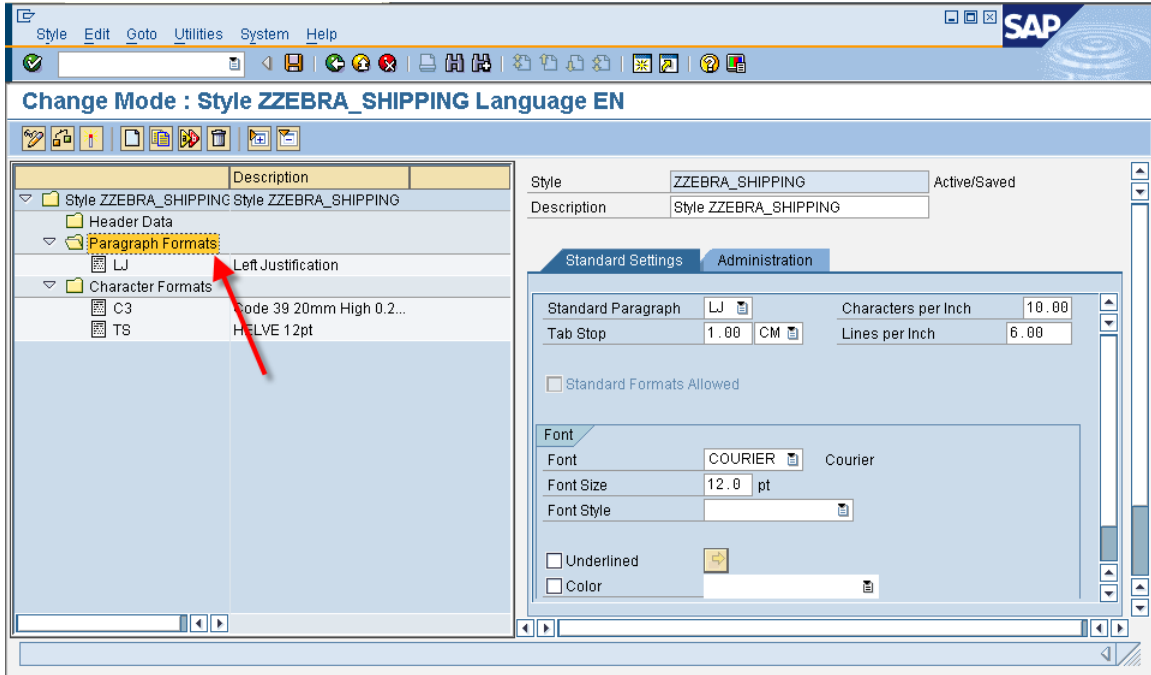
1. Select Paragraph Formats from the tree, right-click, and then select Create Node.
[Figure 50](#) opens.

Figure 50 • Create Node Window



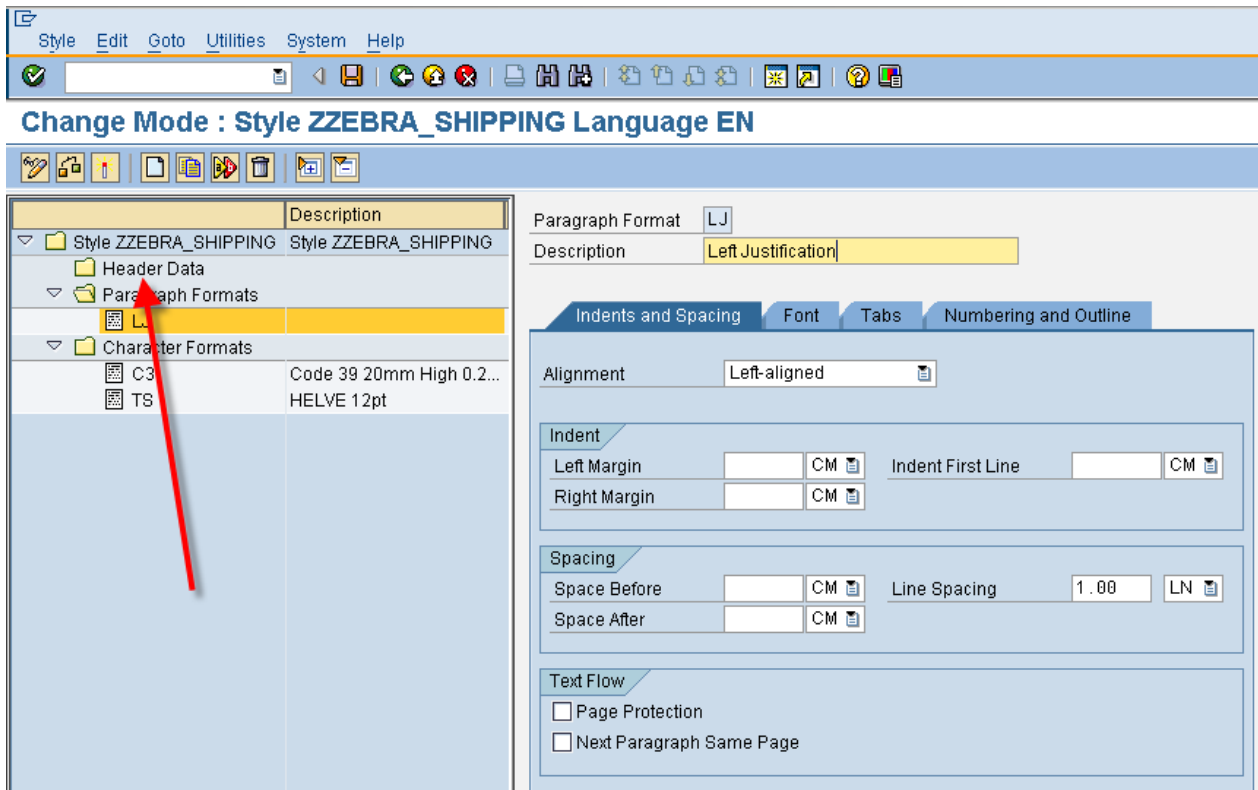
2. Enter LJ (Left Justification) as the Paragraph format and press Enter.
[Figure 51](#) opens.

Figure 51 • Change Mode Window



3. Enter LJ (Left Justification) as the Paragraph format and press Enter.
Figure 52 opens.

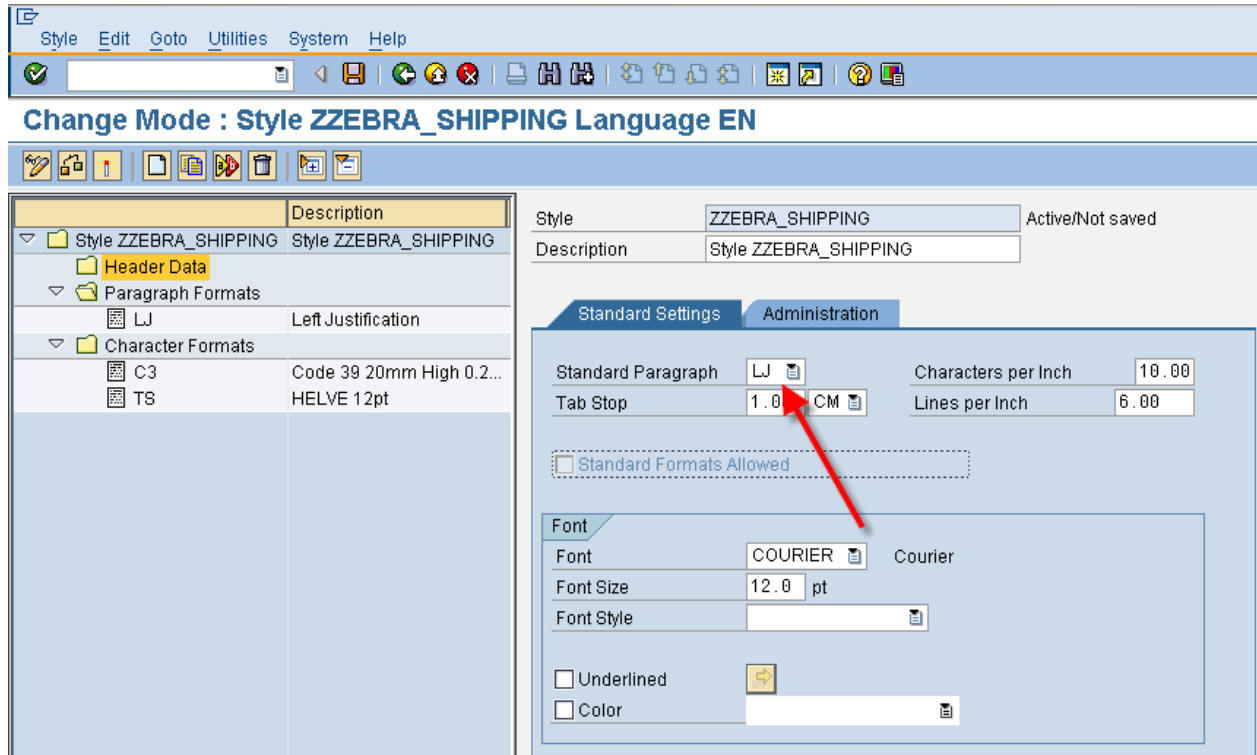
Figure 52 • Change Mode Window



4. Use the default setting—you do not need to change any other settings for the Paragraph Format. Double-click on Header data.

Figure 53 opens.

Figure 53 • Change Mode Window



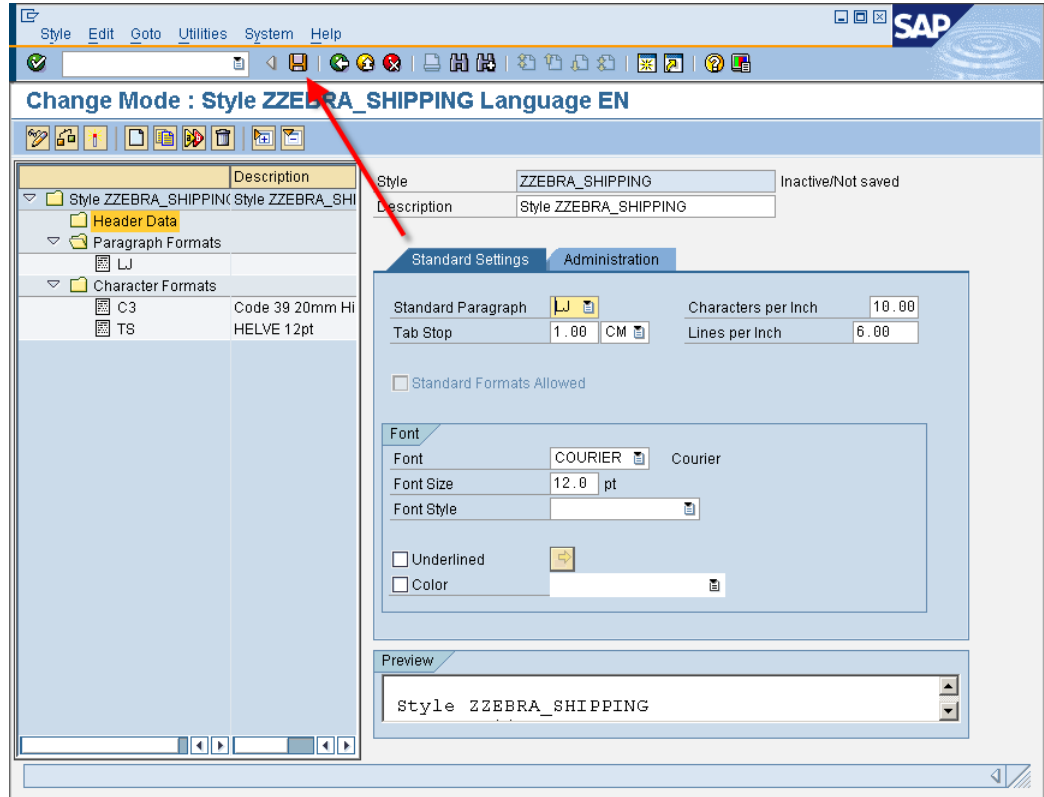
5. Select LJ for the Standard Paragraph.

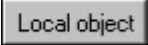
Save the Smart Style

1. Click  (Save).

Figure 54 opens.


Figure 54 • Change Mode Window

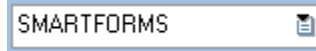


2. Click .
3. From the main menu, select Style > Activate.

You have successfully created and activated your Smart Styles.

Laying Out the Smart Form

1. Start the Smart Forms transaction by entering /nSMART FORMS in the command line text box located just below the menu bar of the current active window of mySAP Business Suite system.
2. Press Enter or click on the Checkmark  adjacent to the command line text box entry.




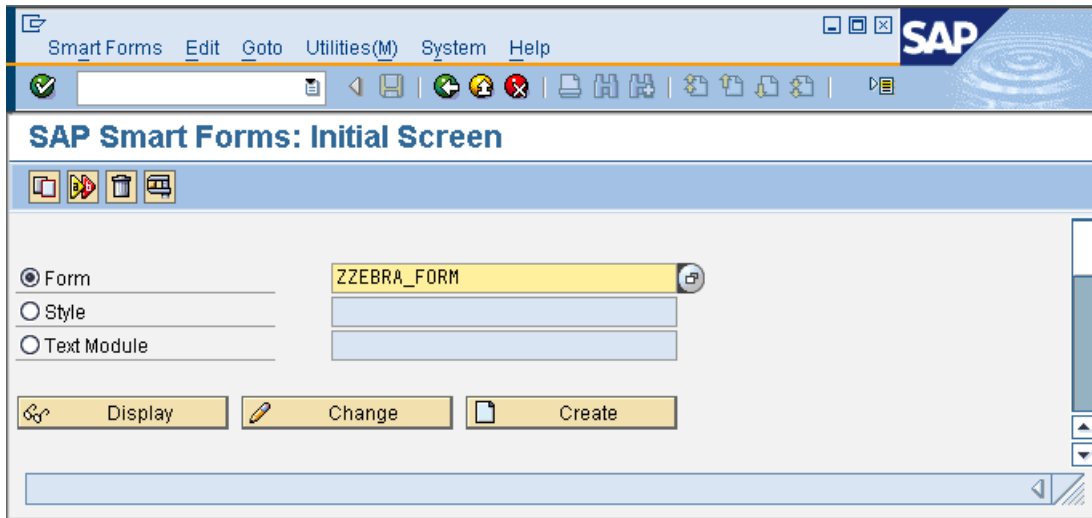
3. Enter the name ZZEBRA_FORM as the Form and click  (Create).
 Figure 55 opens.

Figure 55 • SAP Smart Forms: Initial Screen



Map to Smart Style

To map the Smart Style to this Form, perform the following steps:

1. Double-click on Form Attributes (Figure 56).

Figure 56 • SAP Form Builder: Change Form Window

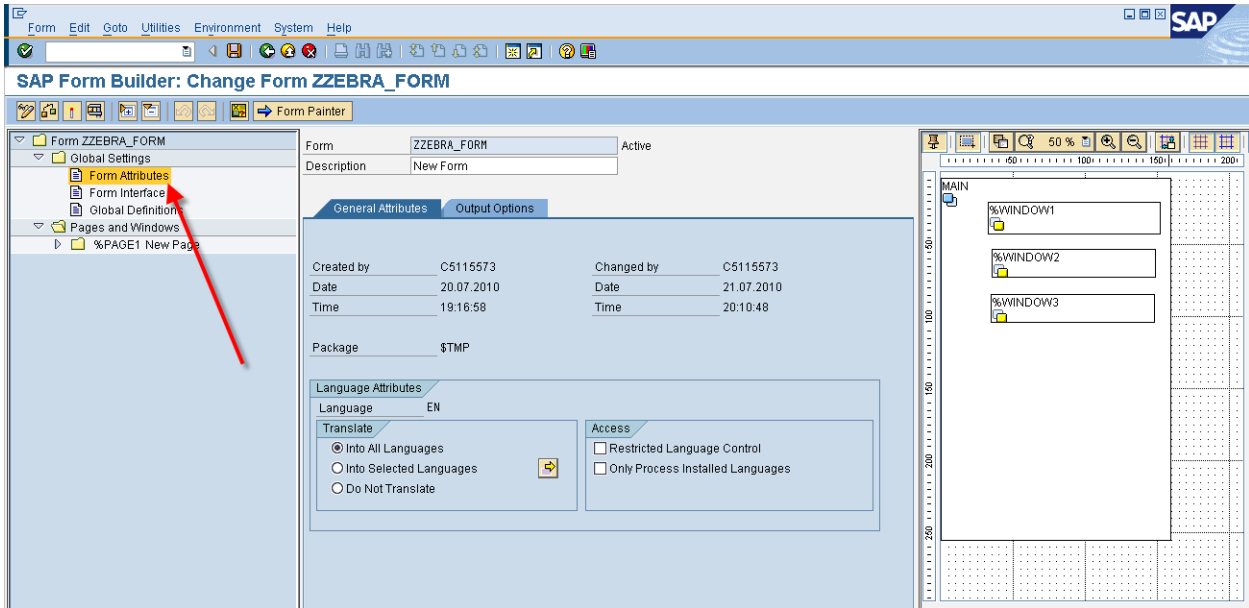
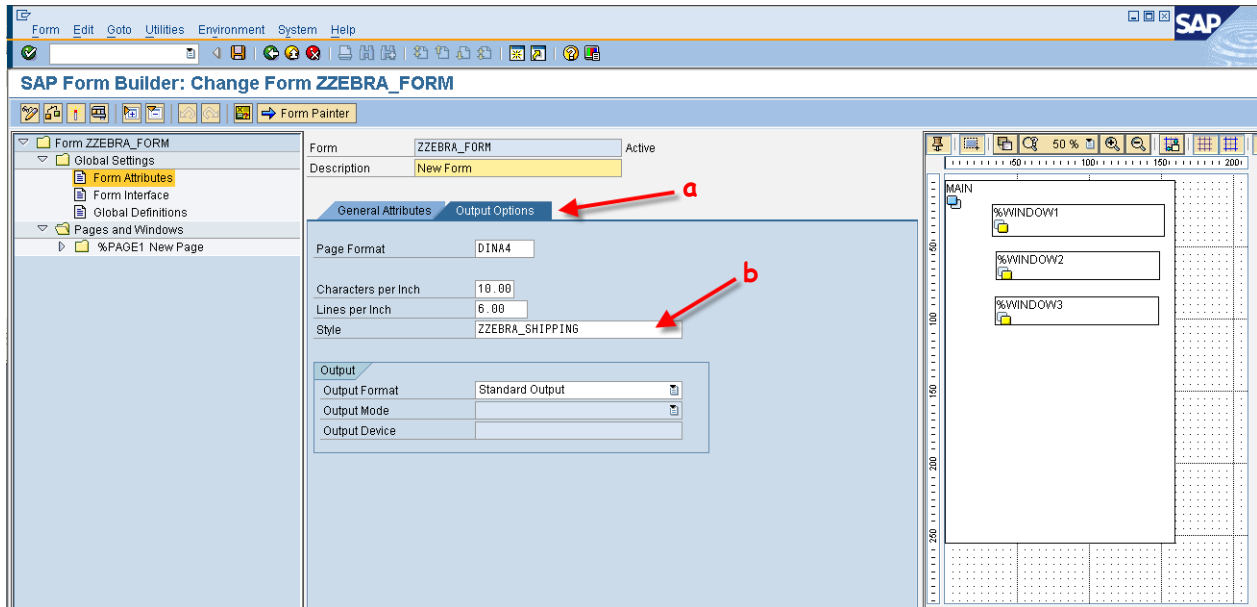


Figure 57 opens.

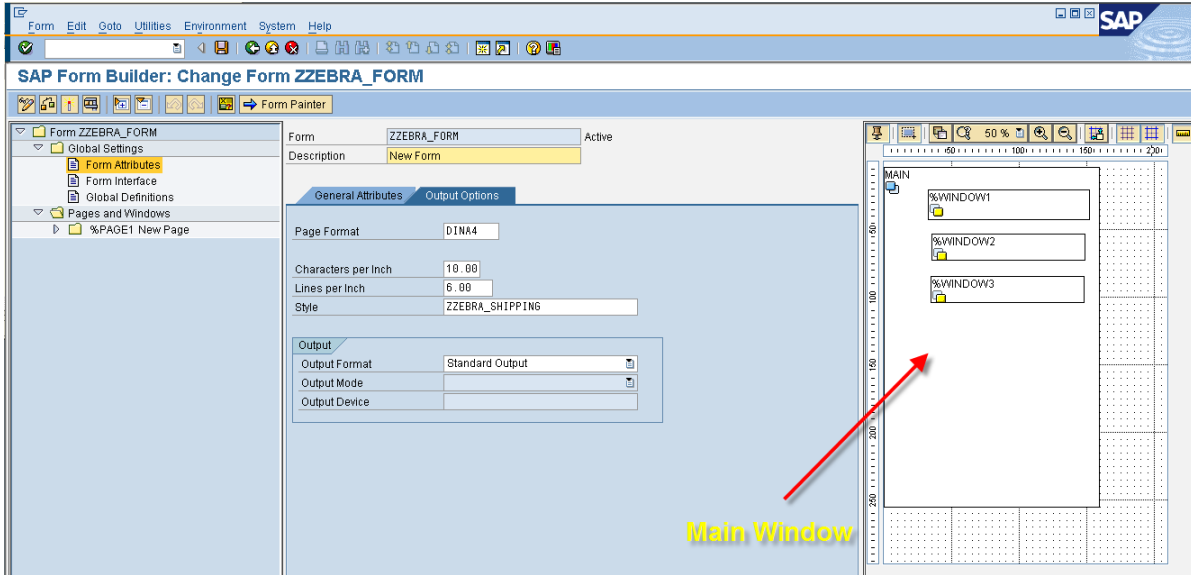
2. In the SAP Form Builder: Change Form window, do the following:
 - a. Click the Output Options Tab.
 - b. Enter ZZEBRA_SHIPPING as the Style name.

Figure 57 • SAP Form Builder: Change Form Window



3. Click on the Main window, and then click on the Output Options Tab (Figure 58), if not already active.

Figure 58 • SAP Form Builder: Change Form Window



4. Change the Left margin and Upper margin to 0 (Zero).
5. Change the Width and Height to that of the Label Size.

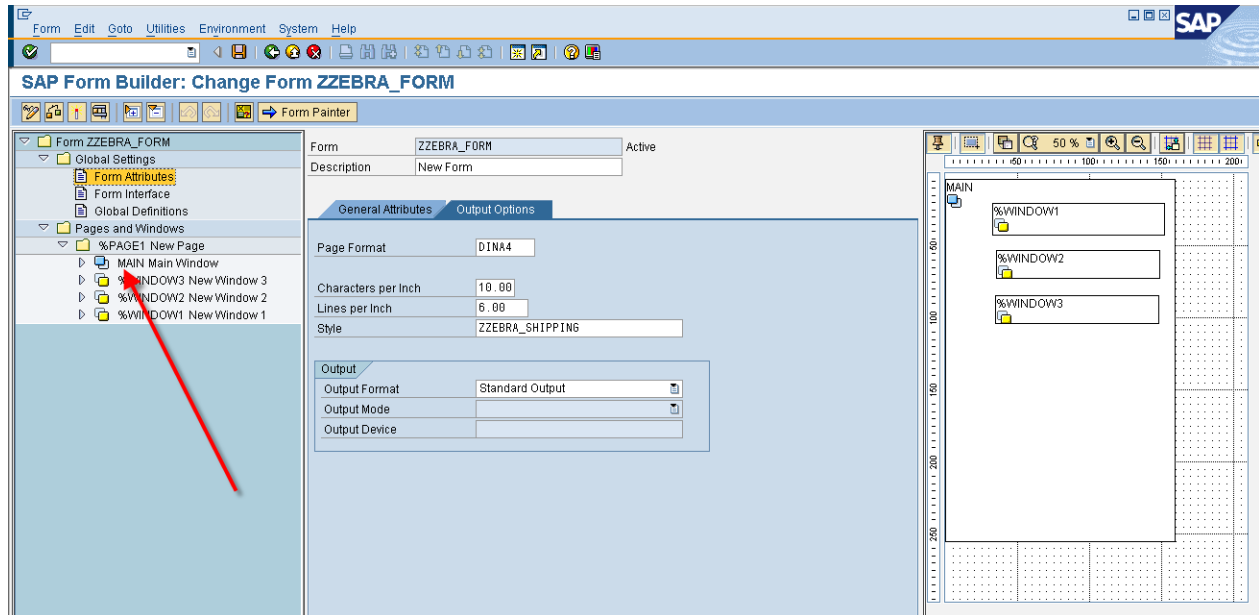


Note • It is safer (and will prevent SAP from automatically moving fields) to ensure that this is bigger than the actual label.

Add Text and Bar Code Fields

1. Right-click on MAIN Main window tree (Figure 59) to open the submenu.

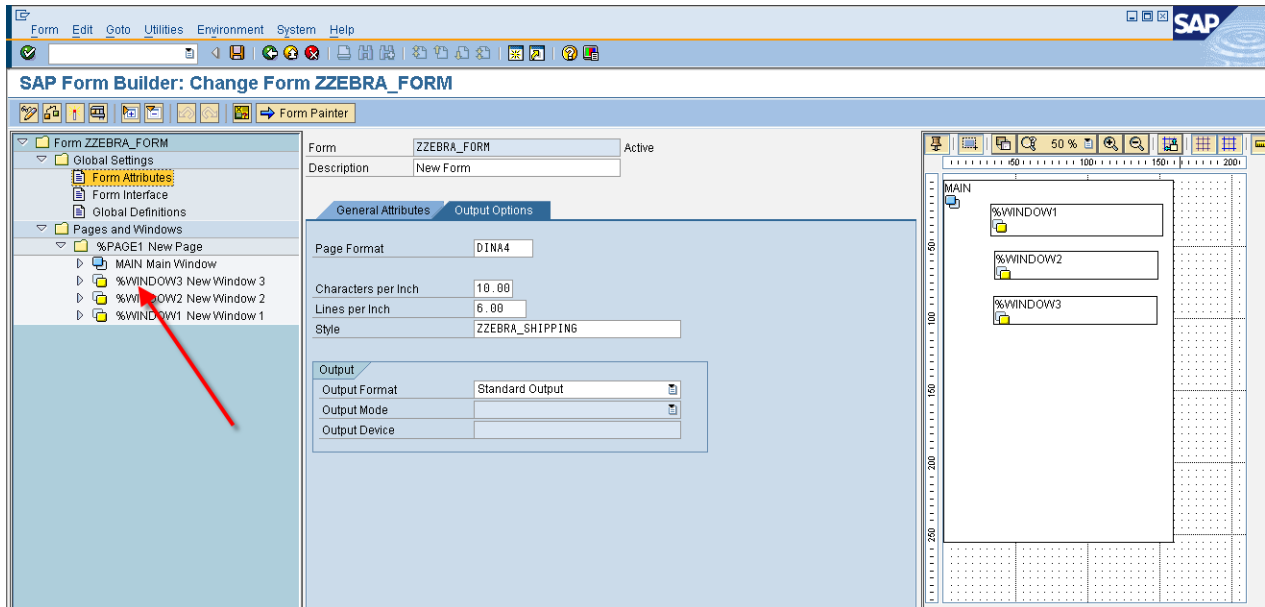
Figure 59 • SAP Form Builder: Change Form Window



2. From the submenu, select Create > Window. You will create a separate window for each field in the Main Window. The Main Window is the layout for the Label.

3. Right-click on %Window1 New Window tree.
Figure 60 opens.

Figure 60 • SAP Form Builder: Change Form Window



4. Select Create > Text.


5. In the SAP Form Builder: Change Form window, do the following:
 - a. Click the General Attributes Tab, if needed.
Figure 61 opens.
 - b. Select Editor .

Figure 61 • SAP Form Builder: Change Form Window

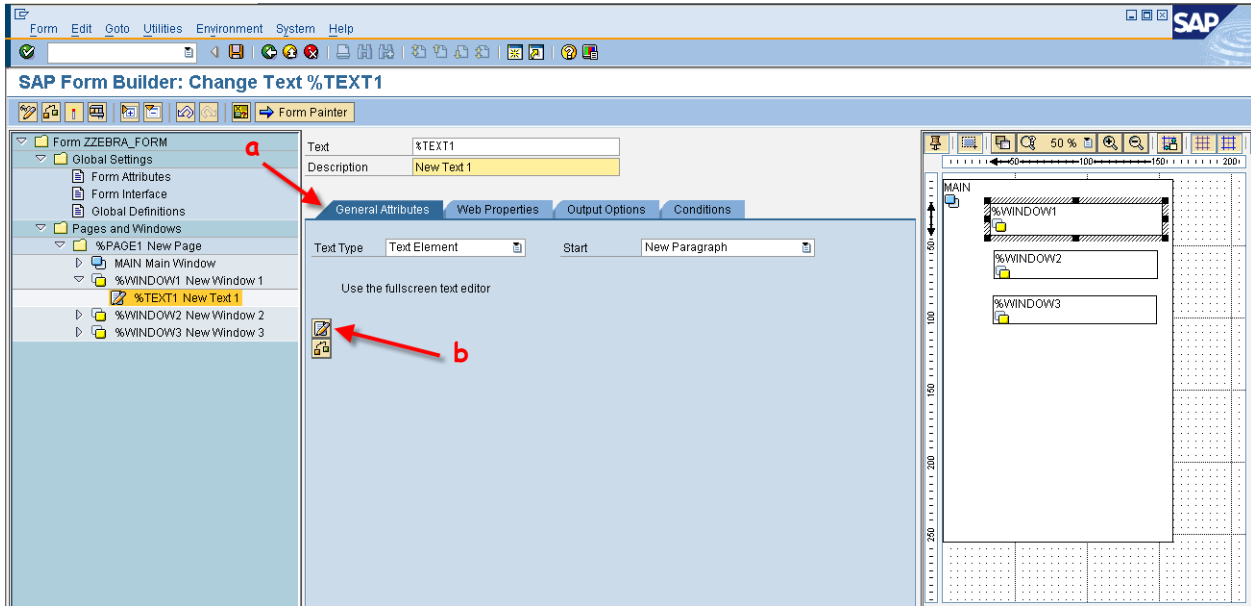
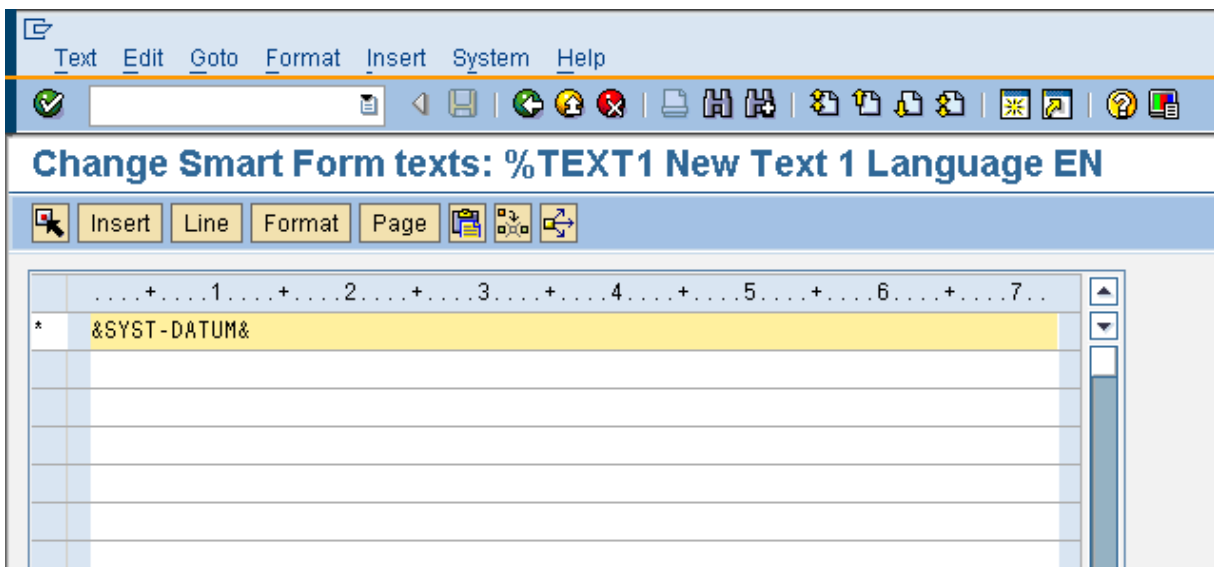


Figure 62 opens.

6. Enter &SYST-DATUM& in the Text Editor box to add the System Date.

Figure 62 • Change Smart Forms Text Editor Window



7. Click  (Back) to exit the Text Editor, and then click  (Save).

Repeat [step 1](#) through [step 7](#) for each field you need to add.

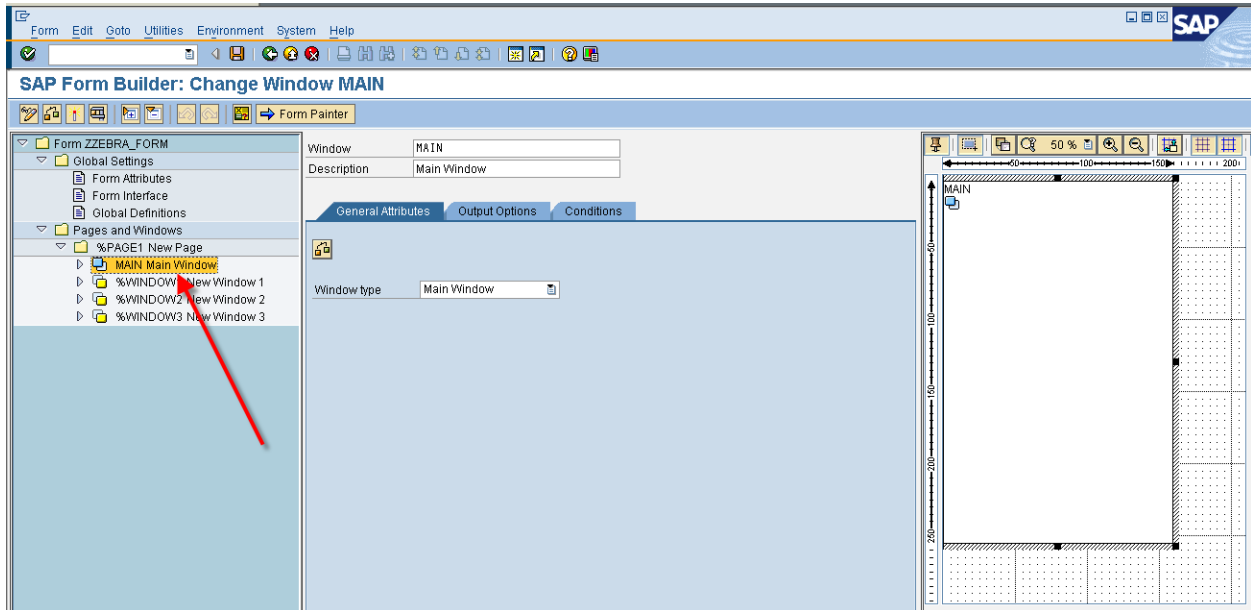


Important • Remember to create a separate Window with a separate Node for Each Field (otherwise, they will all align under each other).

Add Lines and Boxes

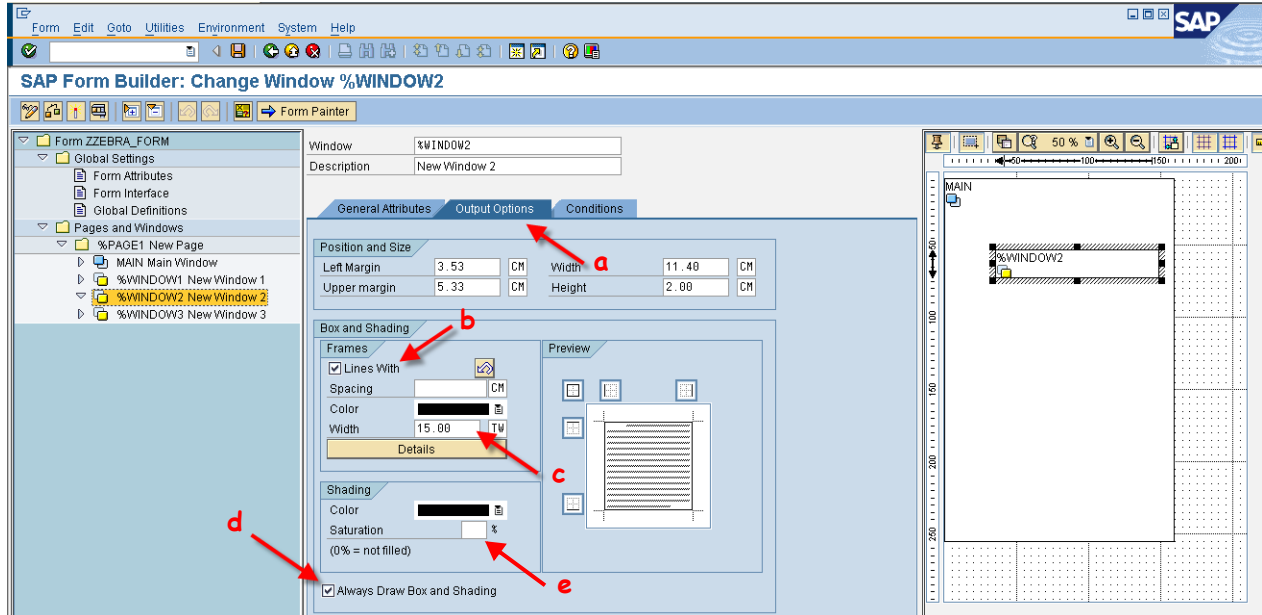
1. Right-click on the MAIN Main window tree to open the submenu ([Figure 63](#)).

Figure 63 • SAP Form Builder: Change Form Window



2. From the submenu, select Create > Window.
[Figure 64](#) opens.
3. From the SAP Form Builder: Change window, do the following:
 - a. Click the Output Options Tab.
 - b. Enable the Lines With checkbox.

Figure 64 • SAP Form Builder: Change Window



- c. In the Width field, enter the point size of the desired line width.
- d. Enable the Always Draw Box and Shading checkbox.
- e. In the Saturation field, enter 100 for a solid box (leave as blank or 0 for lines or boxes).



Note • You need to create a separate Window for each box you wish to draw. You can also draw boxes around any existing Window used for text, bar codes or graphics.

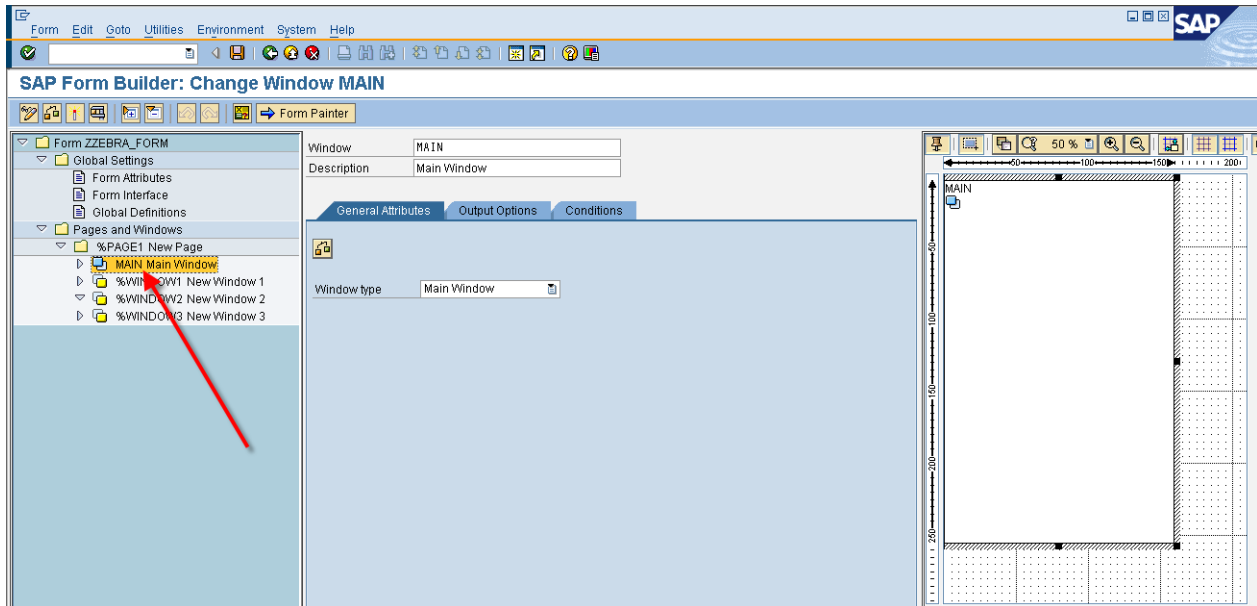
For Text Reversing, select the Output Options Tab of the Text Node and not the window.

See [Lines and Boxes on page 80](#) for more information.

Add Logos/Graphics

1. Right-click on MAIN Main window tree to open the submenu (Figure 65).

Figure 65 • SAP Form Builder: Change Window



2. From the submenu, select Create > Window.
You may want to move / position the window.
3. Right-click on the window you just created.
4. From the Create menu, select Graphic.
Figure 66 opens.

5. Click  (Browse).

Figure 66 • SAP Form Builder: Change Graphic Window

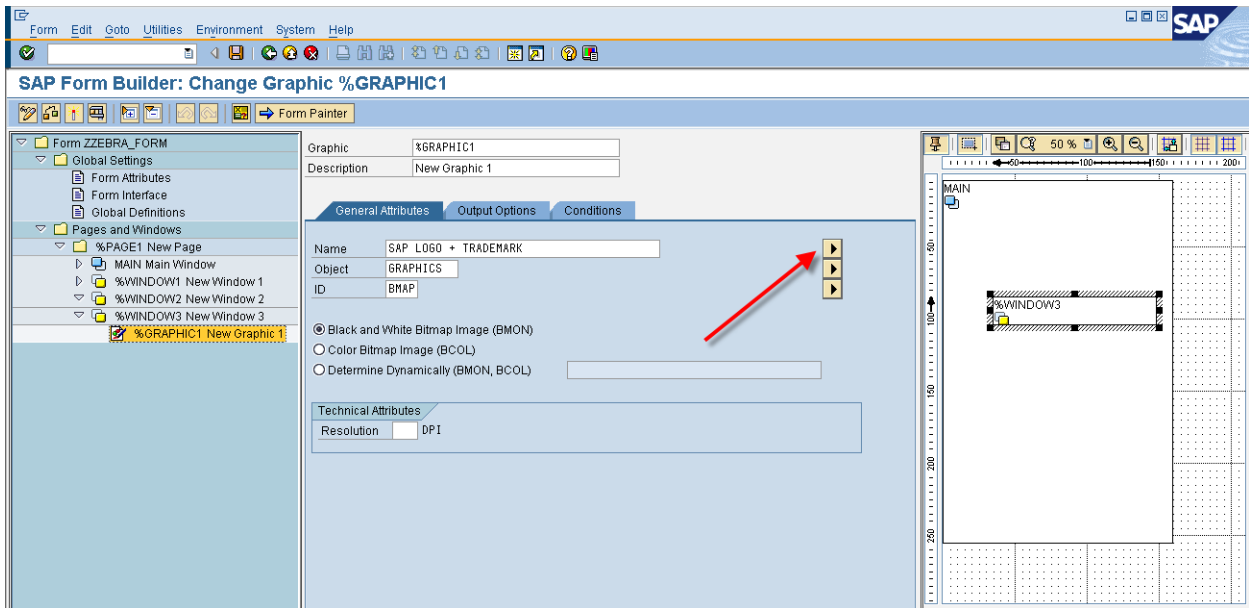


Figure 67 opens.


6. Click  (Execute) or press F8.

Figure 67 • Find Graphic Window

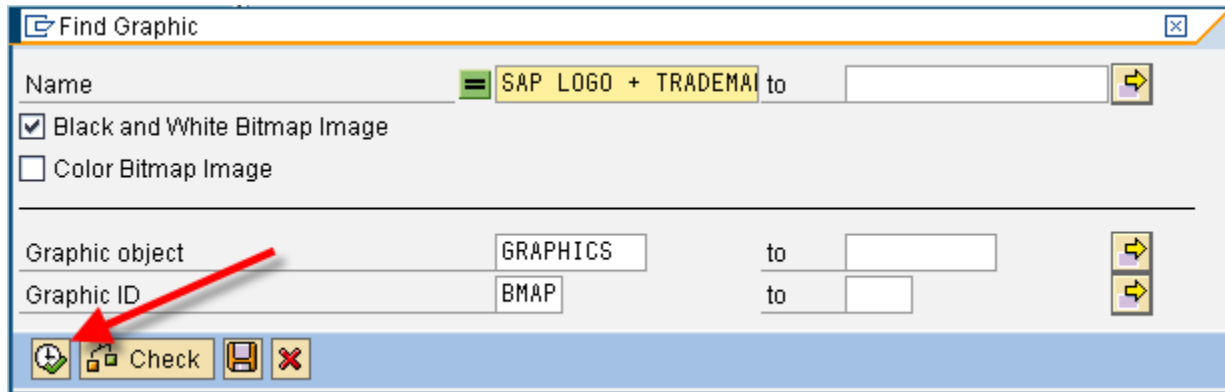


Figure 68 opens.

7. Double-click on the logo you require (for this example, use SAP LOGO + TRADEMARK).

Figure 68 • Find Graphic Window

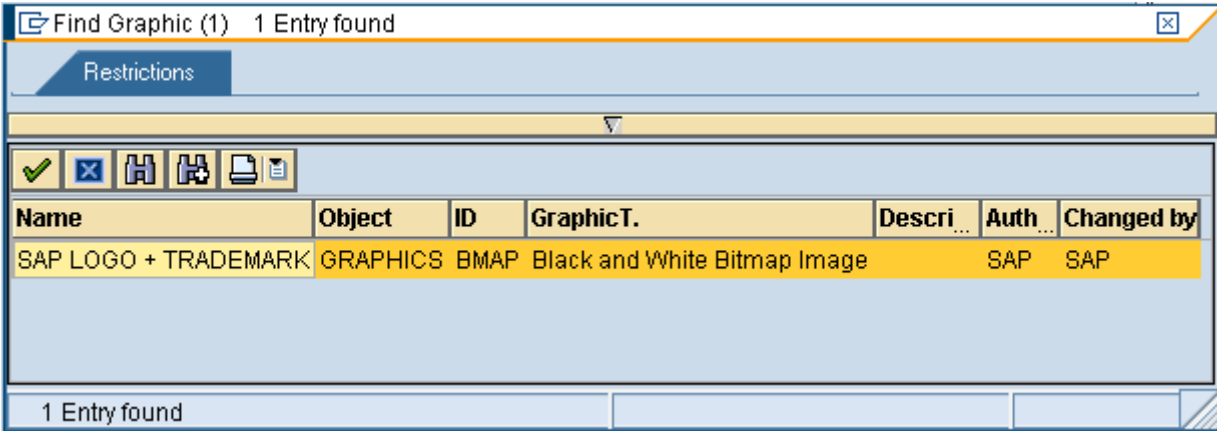
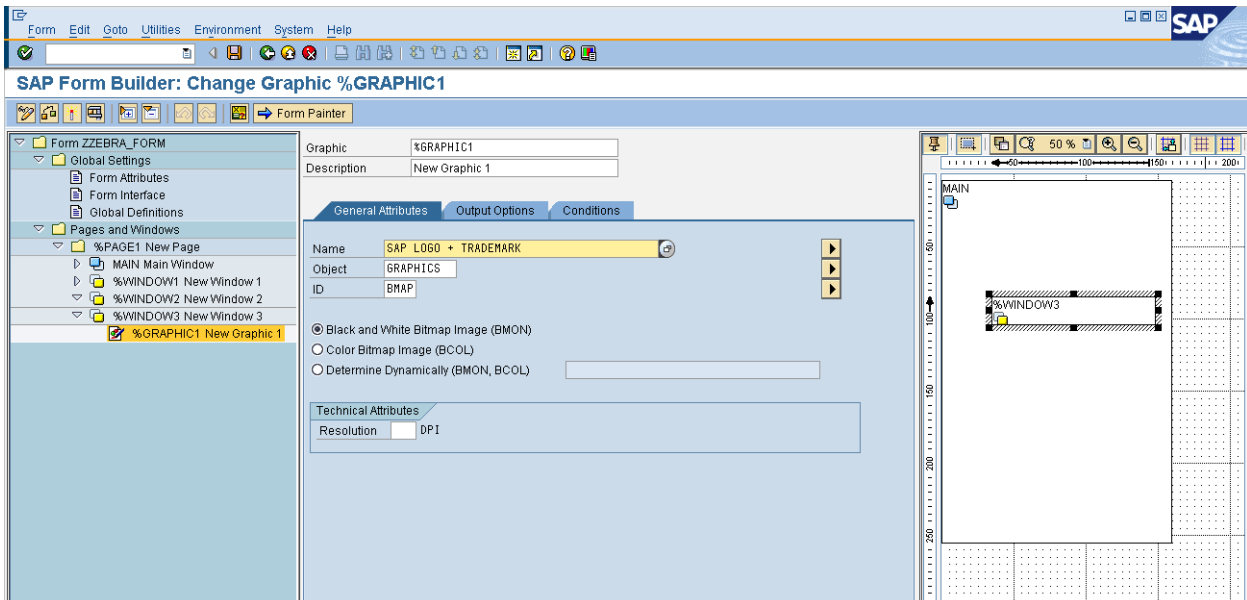


Figure 69 opens.

Figure 69 • SAP Form Builder: Change Graphic Window



Save and Activate the Smart Form


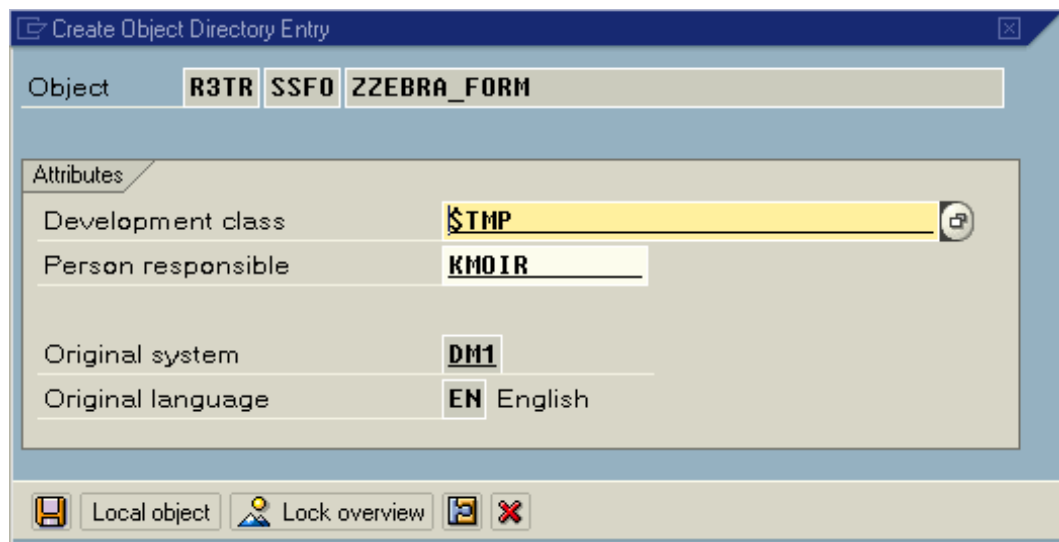
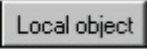
1. Click  (Save) (Figure 69).
 Figure 70 opens.

Figure 70 • Create Object Directory Entry Window



2. Click  (if prompted).
3. From the Main Menu, select Form > Activate.



Notes • _____



Test Printing

This section covers test printing from Smart Form to an Output Device / Print Queue.

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Test Printing from Smart Forms to an Output Device / Print Queue

To do a test print directly from Smart Forms, perform the following:

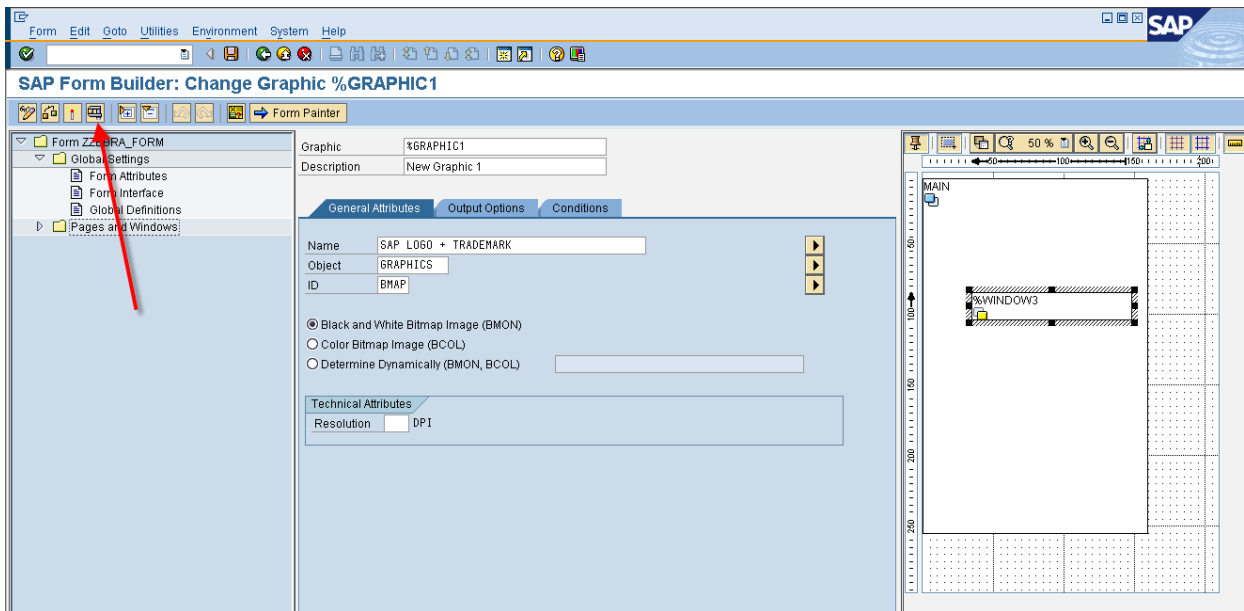


Important • Please ensure that the form you test print with has been designed for your device. Do not try and print a form that has been designed with “HELVE” on an ANDALE Unicode Device type (zlzebuX).

1. Open the form you wish to print (/nSmart Forms). Type in the Form Name and click  (Change).

Figure 71 opens.

Figure 71 • SAP Form Builder: Change Graphics Window




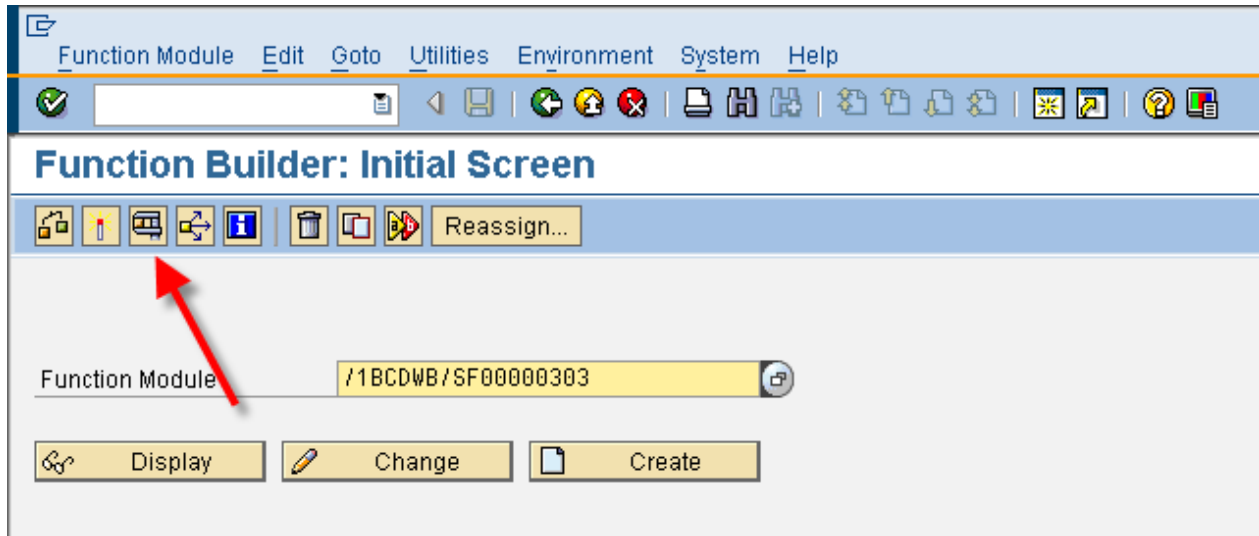
2. Click  (Test) or press F8.
Figure 72 opens.

Figure 72 • Function Builder: Initial Screen




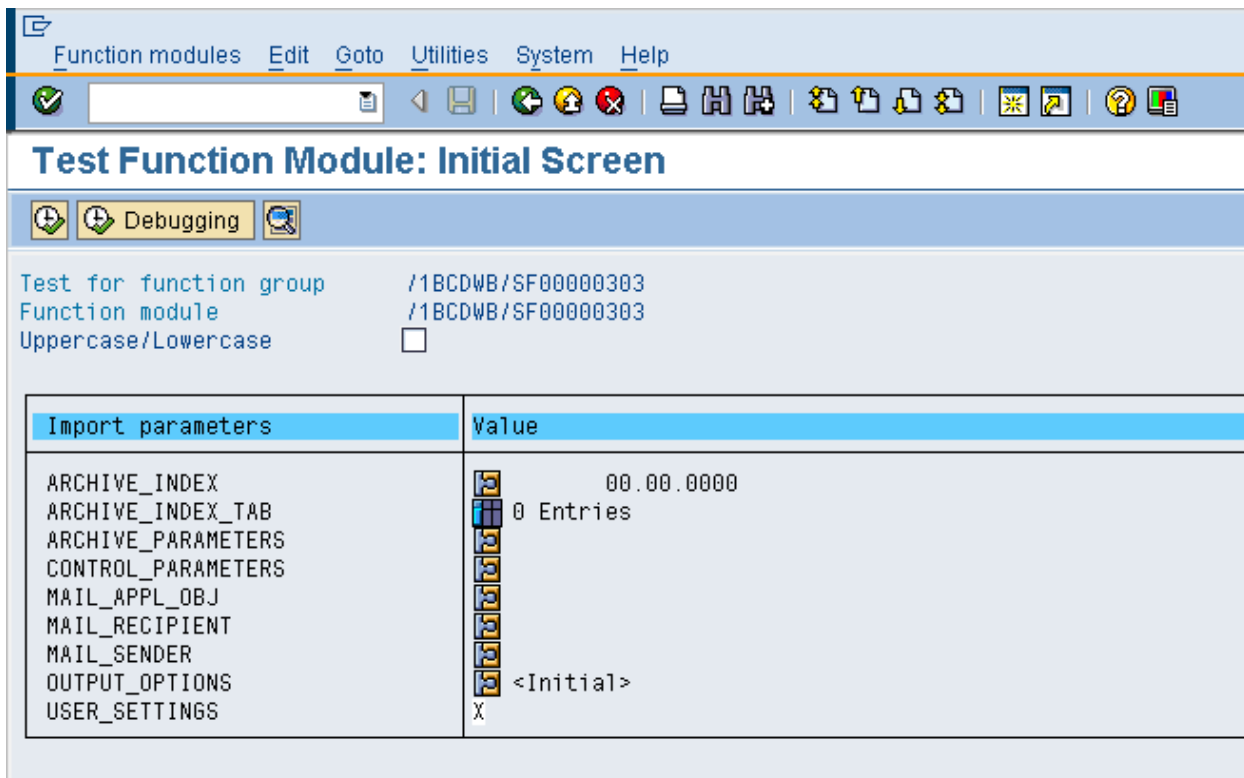
3. Click  (Test) or press F8.
Figure 73 opens.

Figure 73 • Test Function Module: Initial Screen




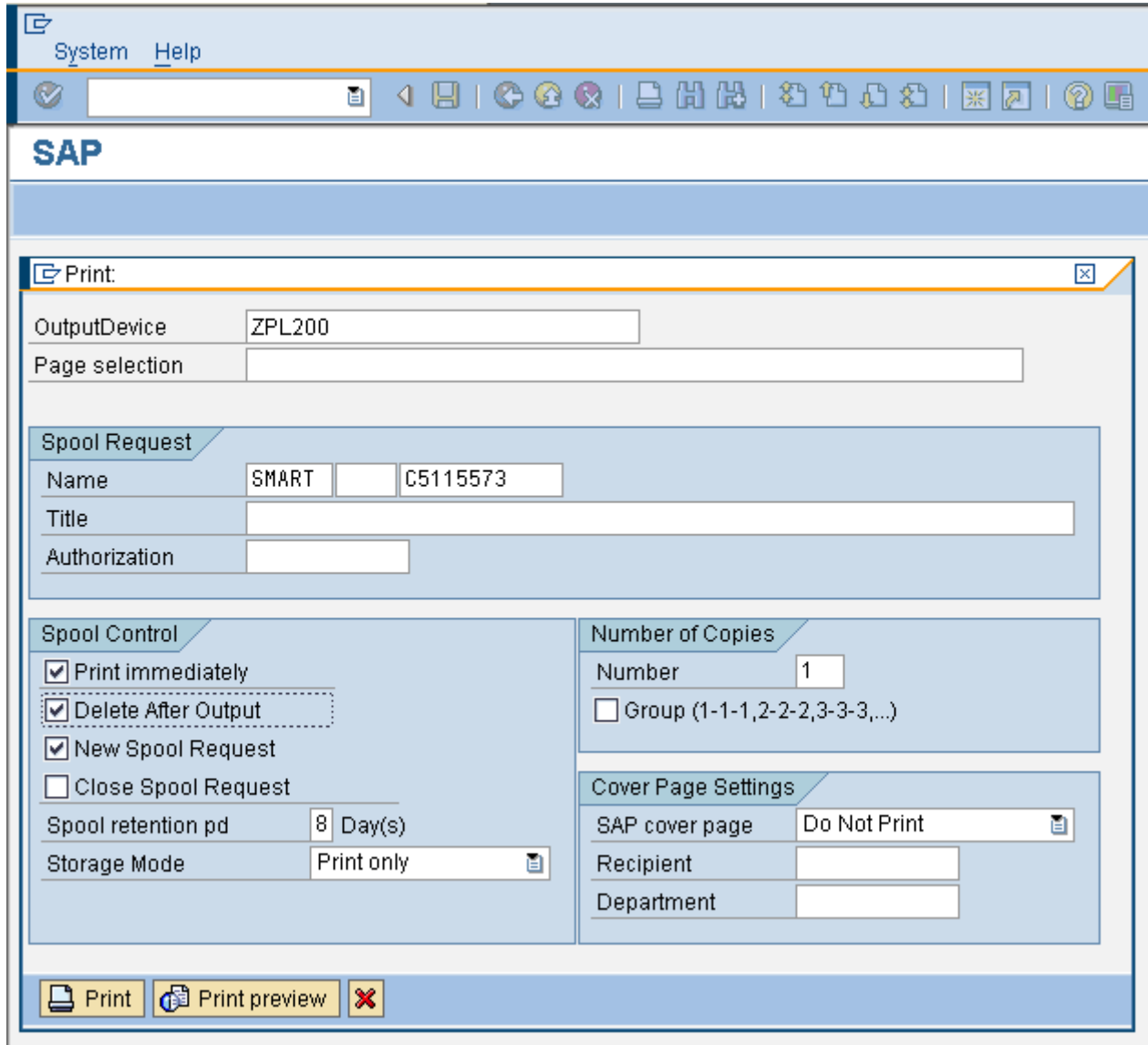

4. Click  (Execute) or press F8.
[Figure 74](#) opens.

Figure 74 • SAP Print Window



You must enter/edit the following fields:

- **Output device:** Enter the name of the print queue.
 - **Print immediately:** Ensure this is checked.
 - **Delete after print:** Ensure this is checked.
 - **New Spool request:** Ensure this is checked.
5. Click  **Print** . If the print was successful, the Zebra printer will print out your form.



Advanced Form Design

This section provides information on more advanced programming techniques.

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Smart Forms

Smart Forms was originally developed for Form and Report design, not labels. Smart Forms can be successfully used to design labels on high performance bar code label printers, but you need to be aware of the tips and tricks not documented within the original Smart Forms manuals.

Field Positioning—X, Y Coordinates

Labels normally use a field concept whereas Smart Forms use a Page Window style of design. Label fields normally have a fixed origin whereas text in forms is much more dynamically positioned.

Zebra recommends that you make a separate window for each field on the label. Each window should then have an associated node (text, bar code or logo). Multi-line text fields may all be tied to a single window. The reason for this is the location of each window specifies the fields (Nodes) X and Y co-ordinates.

All of these fields must be inside the main windows. please ensure that your main window is large enough! It is good practice not to associate any nodes with the main window.

Lines and Boxes

Lines and boxes are drawn, as with any Smart Form, via drawing a new window, selecting the Output Options Tab and then entering a point size for the box and shading options.

Reverse boxes, for text reversing, can be enabled by using the ^LRY command in the printer settings node S_LZPL_SETUP. See [Printer Settings on page 86](#) for more information.



Note • Ensure that you have the Always draw box and shading checkbox checked in the Output Options of your windows. The Grey Value must be 0 (hollow) or 100 (solid).

Text Objects

Smart Forms supports Zebra preloaded printer-resident scaleable fonts. It also supports TrueType font downloading and TrueType fonts stored in Zebra printer Flash memory. It is strongly recommended that you use printer-resident fonts for simplicity and maximum printer throughput.

Western European—IBM CodePage 850

You will normally design your forms/labels for Zebra printers using the SAP “HELVE” font. This font maps to Zebra’s printer-resident CG Triumvirate bold condensed (IBM Codepage 850) when using device type ZlbzebsX.pri (X=2,3 or 6).

International Printing (EMEA Only)—Unicode™

SAP “HELVE”, “HELVECYR” (Cyrillic) and “HELVE_I7” (Greek) can also be used for international printing using Zebra’s ZlbzebsX.pri (X=2,3 or 6) device type. This Unicode UTF-8 device type maps to Zebra’s printer-resident Swiss 721 font. This is preloaded on all printers shipped in EMEA. This font is available for download FOC for other countries if required. This will allow you to print local languages using Unicode (UTF-8) even on non-Unicode SAP systems.

Global International Printing including APAC—Unicode

SAP end users wishing to print Asian characters on Zebra printers must use the SAP font ANDALE_J (Japanese), ANDALE_K (Korean), ANDALE_S (Simplified Chinese) or ANDALE_T (Traditional Chinese) with the Zebra Device Type ZlbzebuX.pri (X=2,3 or 6) and the corresponding optional matching font card available from Zebra. Refer to the section on device types at the beginning of this document for more information. This will allow you to print local languages using Unicode (UTF-8) even on non-Unicode SAP systems.

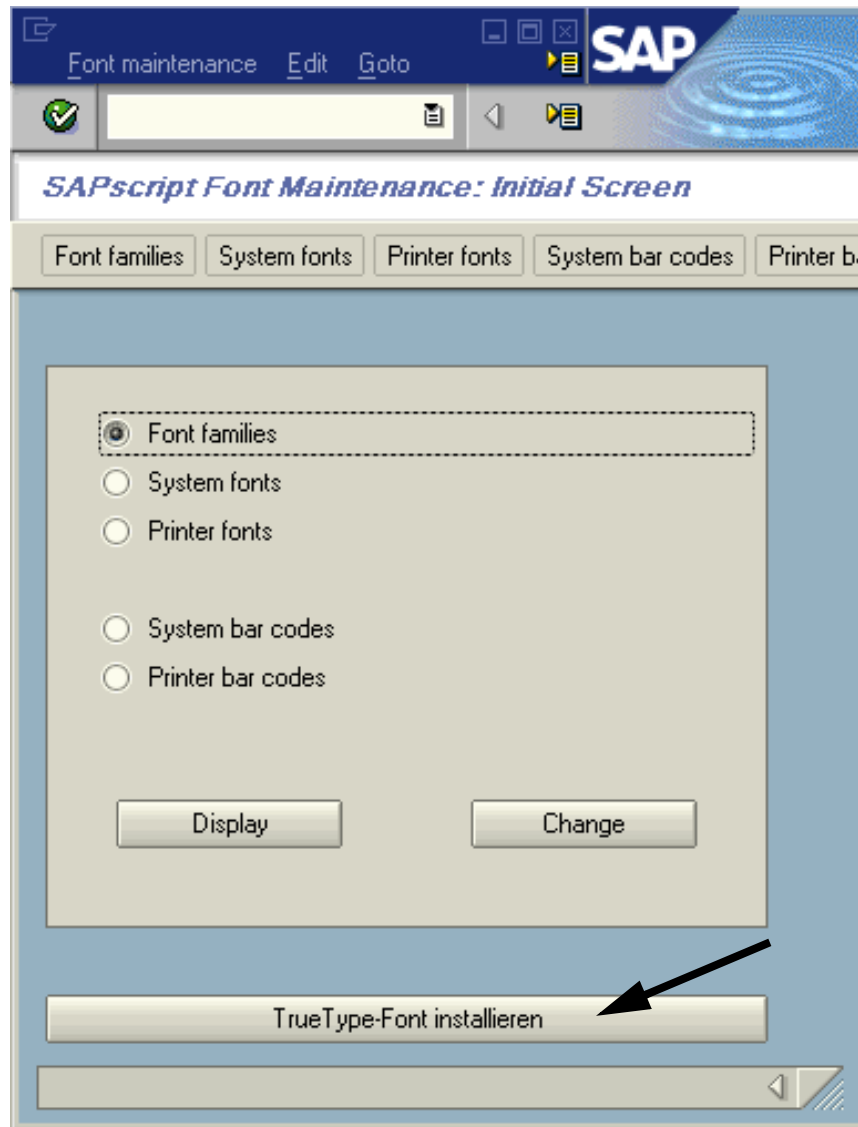
Text Reversing

Text reversing is supported via Solid Boxes. Refer to [Lines and Boxes on page 80](#) and also [Printer Settings on page 86](#) for detailed information.

TrueType Fonts

Smart Forms allows users to upload TrueType fonts and then use these fonts for the form/label design (See OSS Note 201307). TrueType fonts are uploaded using transaction SE73; see [Figure 75](#).

Figure 75 • SAPscript Font Maintenance: Initial Screen



For detailed information on how to upload a TrueType font, refer to OSS Note 130658.

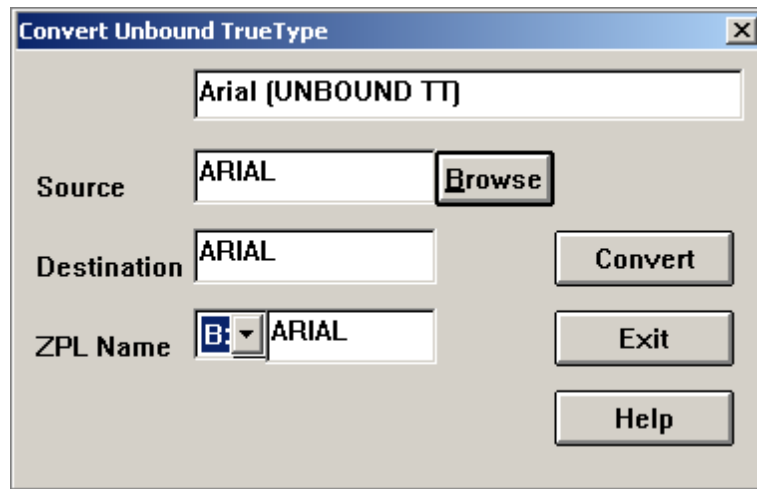
In the case of ZPL II printers, this font is automatically downloaded to the printer at the beginning of the print run as an IBM Codepage 850 scaleable font, and then deleted at the end of the print run. It is also possible to tell the printer device type that the TTF is permanently stored in printer Flash memory and therefore does not need downloading. If downloading performance or network traffic is an issue, Zebra strongly advises that you use a printer-resident scaleable font or store the TTF on the printer's Flash memory.

Download a TTF Font to Zebra Flash Memory

1. You should store the Font on **E:** or **B:** (Flash) not **R:** (RAM).
2. Download Zebra ZTools™ utility from <http://www.zebra.com>.
3. Install, Run and select Convert > Unbound TT.


Figure 76 opens.

Figure 76 • Convert Unbound TrueType Window



4. Please ensure that the name uses no more than 5 characters. (ZTools support 8 characters, but SAP has a 5-character limitation.)
This will create a file with the extension of ZSU. In the case of Arial, this would be Arial.ZSU. You then must download this to the printer.

Modify the Zebra SAP Device Type

1. Select Transaction SE73 (Printer Fonts) and click  (Change).
2. Scroll down and double-click on the target device type. (This must be one of the IBM Codepage 850 device types Zlzebx (x=2, 3 or 6).)
3. Double-click on the TrueType font (for example, ZArial).
4. Enter the name of the font that you downloaded to the printer (for example, ARIAL—do not specify the memory location).

Font Licensing (TTF) / Disclaimer

It is the responsibility of the end users to ensure that they comply with the font licensing requirements provided by the owners of such fonts. Any fonts stored in the Flash memory of Zebra printers may require licensing from the font vendor. This applies to fonts converted using ZTools, fonts downloaded via ^DY or fonts copied directly onto CompactFlash® memory cards.



Important • Windows Core Fonts require licensing from Agfa Monotype Corporation before they can be stored in the Flash memory of any Zebra printer as a permanent printer resident font. Arial Unicode MS requires licensing from Microsoft Corporation before it can be stored in the Flash memory of any Zebra printer as a permanent printer resident font.

Logos/Graphics

The Zebra printer driver:

- converts colored bitmap graphics to monochrome (black/white) graphics
- imports the monochrome graphics into Smart Forms
- justifies graphics (left, center, right)
- will not convert monochrome graphics

To improve or retain picture quality, Zebra recommends that you manually convert colored bitmaps to monochrome graphics using a graphics program to avoid any picture quality deterioration.

Resident Graphics in Smart Forms

During the import to Smart Forms, you have the option to flag a bitmap graphic as “resident”. Once flagged, the printer driver saves the graphic in the printer’s RAM (specifically, the “R:” device of the Zebra printer). At the end of the spool request, the driver deletes the graphic from the printer’s RAM to free up all available memory.



Note • Resident graphics can be a faster method of printing labels from Smart Forms. However, this speed is only realized when a single label containing the resident graphic is printed repeatedly within a given spool request.

Uploading Graphics into Smart Forms

Transaction SE78 can be used to upload logos. You can also run program **RSTXLDMC** from transaction /nSA38.

Printer Resident Bar Codes (Flash Memory)

The only way to support graphics stored in the printer’s Flash memory is to recall the object with a direct ZPL II command. This could be done very simply with the **S_LZPL_SETUP** command node (see [Printer Settings on page 86](#)) or alternatively by creating a custom Printer Bar Code or print control (see [Printer Bar Codes on page 89](#)).

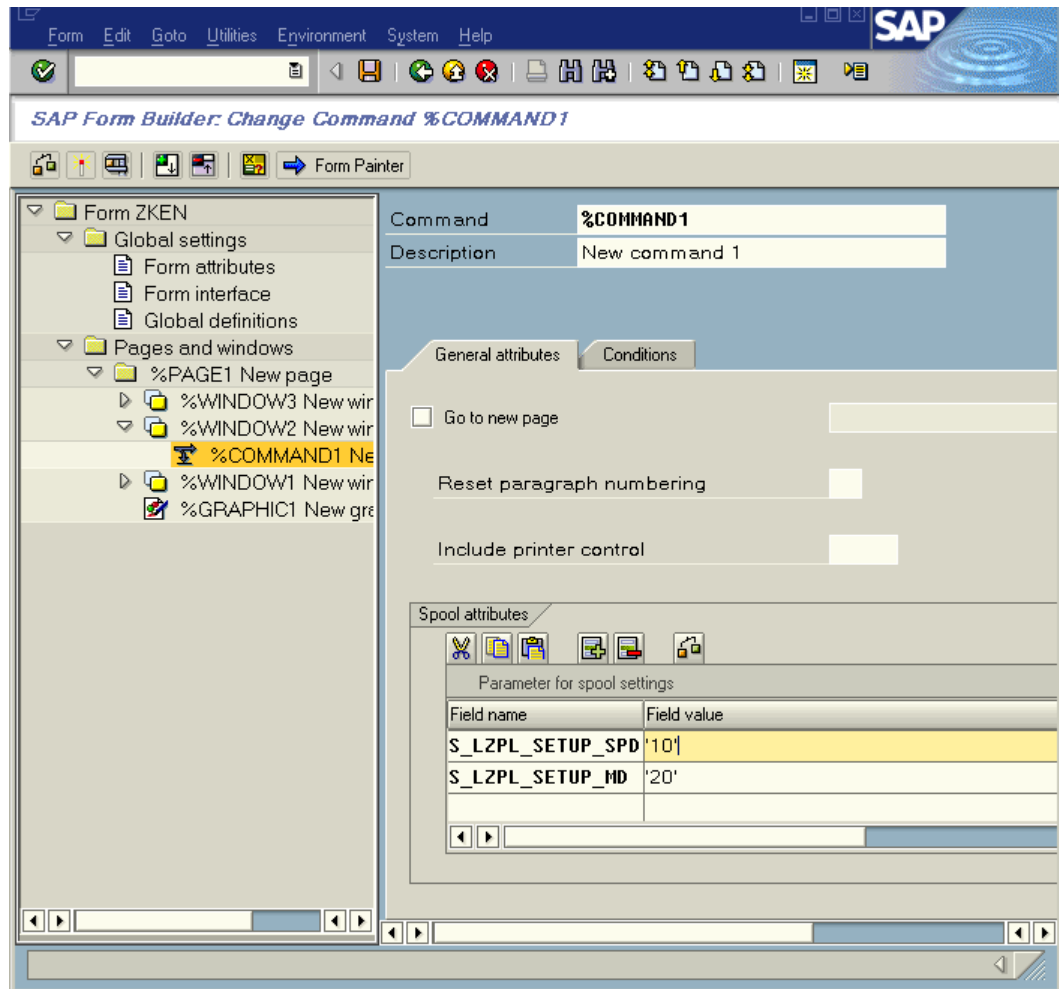
Printer Settings

Command Nodes allow you to set printer specific settings from within individual Smart Forms. Each Smart Form may have different settings associated with it. This means that you can have a Smart Form set the printer's darkness (burn temperature) and print speed (as well as many more settings).

1. Command Nodes are set by selecting a page Windows, right-click over the tree structure, and then select Create > Flow Logic > Command.

Figure 77 opens.

Figure 77 • SAP Form Builder: Change Command Window



Important • The 78 II commands must be entered in the command node using quotation marks.

Table 1 • Supported Command Nodes

Description	Command Node	Supported Values
Human Readable	S_LZPL_HR S_LZPL_HR1 S_LZPL_HR2 S_LZPL_HR2	System Bar Code Style Name
Print Speed (^PR)	S_LZPL_SETUP_SPD	Supports: 2,3,4,5,6,8,9,10,11,12
Media Tracking (^MN)	S_LZPL_SETUP_MTR	N = Continuous Y = Non-Continuous W = Web Sensing M = Black Mark Sensing
Media Type (^MT)	S_LZPL_SETUP_MT	D = Direct Thermal T = Thermal Transfer
Print Mode (^MM)	S_LZPL_SETUP_PM	T = Tear off R = Rewind P = Peel Off C = Cutter
Top Position (^LT)	S_LZPL_SETUP_TP	Range is: -120 to 120
Tear Off Position (~TA)	S_LZPL_SETUP_TO	Range is: -120 to 120
Media Darkness (^MD)	S_LZPL_SETUP_MD	Range is: -30 to 30
Generic commands	S_LZPL_SETUP	Any ZPL-II Command



Important • If the System Bar Code name used in the Smart Style is entered against S_LZPL_HRx (x=1 to 3), then the Human Readable will be enabled for that specific object (only human readable below the bar code is supported).

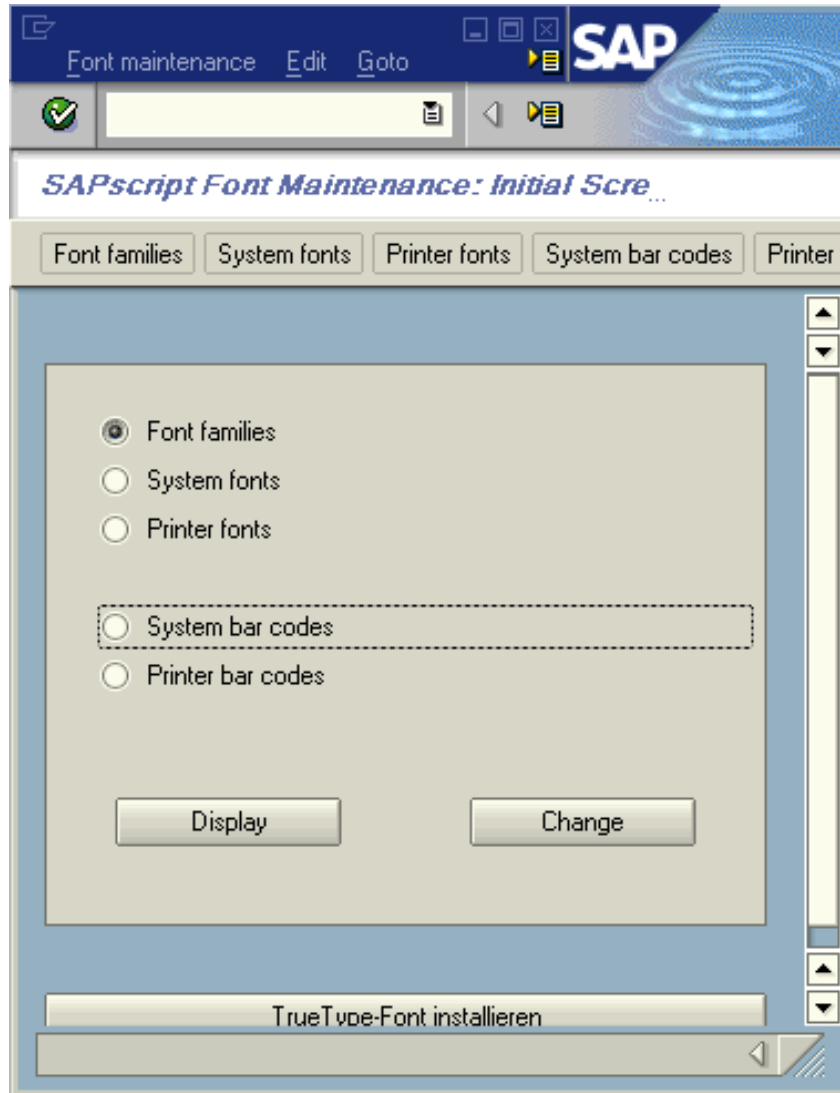
Other ZPL II commands can be added via Printer Bar Code Objects, that is, a circle, box with rounded corners, RF-ID field or a ZTools bar code! This is also useful for enabling box reversing to support reverse text via using the command ^LRY.

Bar Codes

Bar Codes are managed via transaction /nSE73.

Figure 78 opens.

Figure 78 • SAPscript Font Maintenance: Initial Screen

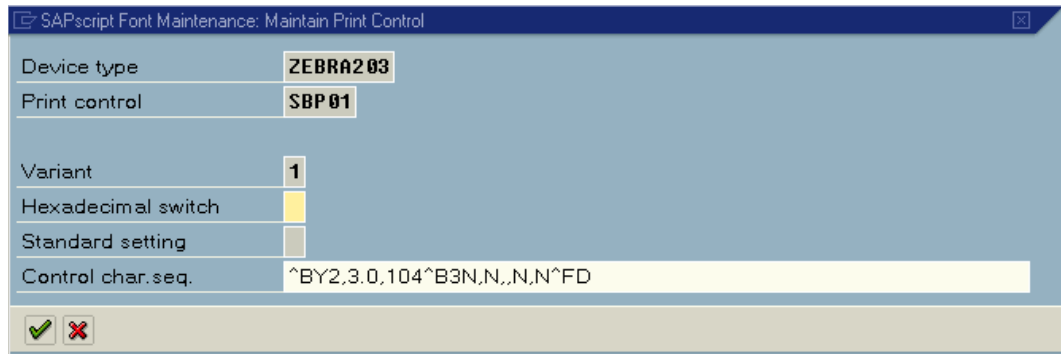


Individual bar code types need to be created for each flavor of bar code. A Smart Style then needs to be created to include bar code types for each Node. The first step is to create/configure printer bar codes or system bar codes.

Printer Bar Codes

Printer bar codes are bar codes that are specific to a specific printer. These bar codes actually have the commands and parameters hard coded for each separate bar code symbology and derivative. This is known as SAP’s old bar code technology. You will also need to create new printer bar codes if you wish to change any parameters such as ratio, narrow bar width, or height. You should try and avoid this old technology, if possible. (See [Figure 79.](#))

Figure 79 • SAPscript Font Maintenance: Maintain Print Control Window

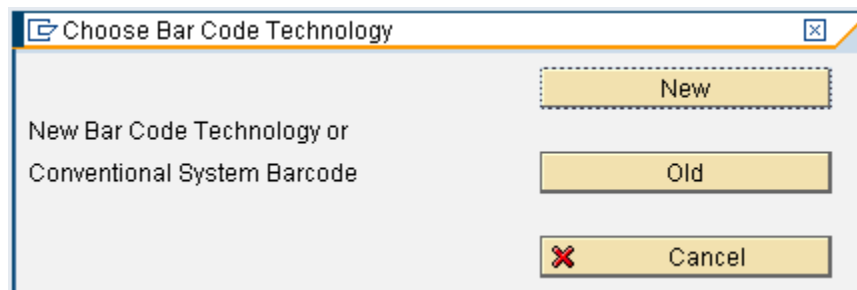


System Bar Codes

System bar codes can either use the old bar code technology and use a specific printer bar code based on the device type selected, or alternatively use the new bar code technology. (See [Figure 80.](#)) Zebra recommends that you use new technology, if possible, as this has the following advantages:

- Does not require the creation of printer bar codes for every single possible device type being used.
- Does not require knowledge of the printer’s command language.
- You can preview the bar code (SAP NetWeaver 04 onwards).
- This can also be rendered on non-Zebra printers (although as a graphic)

Figure 80 • Choose Bar Code Technology Window



You will have to create a separate system bar code for separate styles. This means that a separate system bar code, based on new technology, would have to be created for all derivatives of rotation, height, narrow bar width, ratio and check digits, etc. You would then include all of the bar codes you need for your form within a Smart Style (/nSmartstyles).

New Technology—System Bar Code

This new rendering technology was actually developed by Zebra Technologies Corporation and licensed to SAP AG. These new bar codes are rendered as graphics using Zebra’s Bar Code Rendering Library in the kernel of mySAP Business Suite. PCL, PostScript and Prescribe printers receive the graphic as a bitmap. Zebra printers receive the graphic as a ZPL II command, ensuring maximum performance and data validation.

Figure 81 • Create New System Bar Code Window

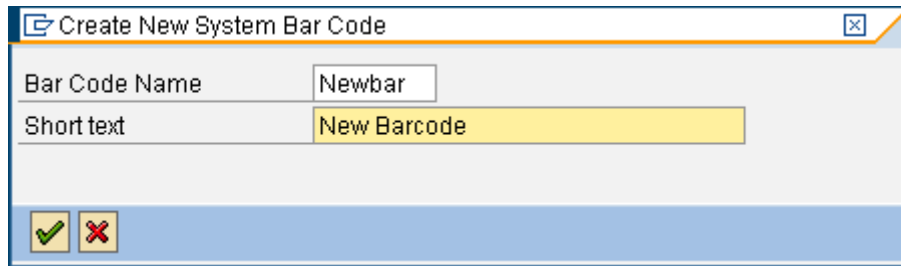


Figure 82 • Bar Code Symbology Window

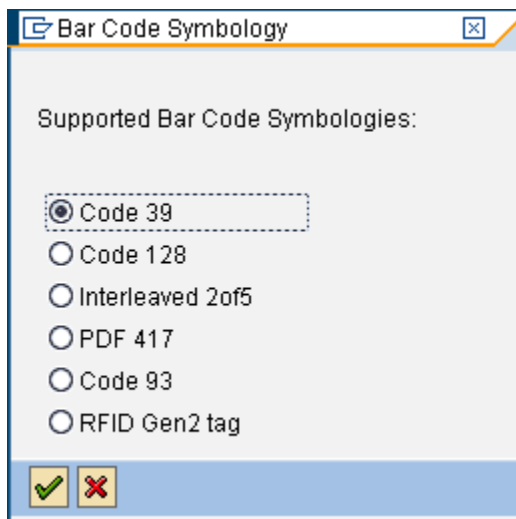


Figure 83 • Bar Code Alignment Window

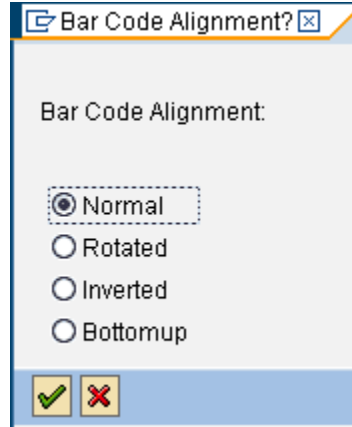
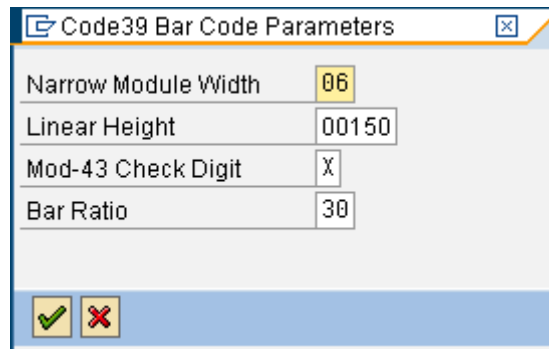


Figure 84 • Code39 Bar Code Parameters



Important • The bar code parameters of Linear Height and Module Width (Figure 84) are entered at a resolution of 600 dpi independent of the resolution of the target printer. This means that a bar code height of 120 would print 10 mm on a 203-, 300- or 600-dpi printer.

For more information on this New Technology, see OSS Note 430887.

Unsupported Bar Codes / New Symbolgies

You can create new or custom bar codes by creating a Printer Bar Code and create a System Bar Code using Old Technology that refers to the Printer Bar Code. This mechanism lets you create an object that has ZPL II associated with it. You could use this feature to create any object or ZP II command. Examples of this could be:

- Creating a MaxiCode bar code
- Drawing a circle or ellipse and having it come out as ZPL II (not a graphic)
- Boxes with rounded corners (via ZPL II)
- Reversed text (White on a black background)
- Recalling a graphic that is stored in Flash memory



Notes • _____



Resources

This section provides additional resources.

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Zebra Technologies Web Site

Visit the Zebra Technologies SAP Web site to keep up to date on bar code printing and RFID solutions for SAP End Users:

<http://www.zebra.com/sap>

SAP Developer Network

Additional Smart Forms information can be found by visiting the SAP Developer Network web site at:

<http://www.sdn.sap.com>

Refer to SAPnet notes 750002 and 750772.



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