

WHITEPAPER



➤ Datamax Printers and SAP



YES, YOU CAN USE DATAMAX PRINTERS IN AN SAP ENVIRONMENT

SAP does not "certify" thermal label printers. However, SAP does certify the software solutions that enable SAP and thermal label printers to work together. Label generation software companies that provide interface points into SAP and also support Datamax thermal label printers combine to offer integrated SAP label printing solutions.

TWO SAP INTERFACE METHODS FROM SEAGULL SCIENTIFIC

The Datamax Edition of Seagull Scientific's BarTender includes integrated functionality supporting interface to the SAP IDOC data structure. Additionally, BarTender v7.10 also includes the new Printer Template File feature for exporting label formats in SAP ITF format for the SAP Upload Method.

INTRODUCTION

Datamax Corporation, a worldwide organization specializing in the manufacture of thermal and thermal transfer label, tag, and ticket printers, understands the need for its dealers and end users to be able to operate Datamax printers in the SAP™ (Systems, Applications, and Products in Data Processing) application environment. Not unlike many enterprise resource planning (ERP) systems, SAP is an enterprise-scale, customizable, complex application platform produced by SAP AG of Frankfurt, Germany designed to integrate and automate all of the individual processes of a company's operations with a focus on the supply chain function.

Because SAP was designed with mainstream information technology (IT) in mind, many of the peculiarities of industry specific applications were not included in the inherent design. For this reason, many third party companies have developed a wide variety of after market products intended to enhance the value of SAP by extended its capabilities. Such products include interfaces to:

- > Wireless data collection devices
- > Cashier and teller systems
- > Computer aided design (CAD) systems
- > Computer telephony
- > Export printing
- > HTTP content
- > Medical systems

Using proprietary language based thermal bar code label printers to print system output labels was one of the issues needing to be addressed by SAP for the automatic identification and data collection (AIDC) industry.

SAP client sites have three methods by which they can print labels using SAP system data and a Datamax thermal printer:

1. **Write a custom program.** An SAP client may have a programmer use ABAP (SAP's programming language) to create a custom printing application to utilize the Datamax printer. There are at least three negative aspects associated with this option:
 - a. ABAP printing requires a programmer be versed in SAP's ABAP and also be a printer language (DPL) specialist.
 - b. Modification of label formats may be difficult, if not impossible.
 - c. ABAP programming is appropriate for ASCII-only printer languages. Accommodation of non-ASCII command structures become very complicated.
2. **Use PC-based label printing software.** This method is probably the least disruptive to the Datamax printer operator as well as the SAP administrator. This method also provides for the greatest amount of flexibility regarding label layout and future modifications. Variable label data contained in an SAP IDOC is imported by BarTender's IDOC interface (explained later in this document), and BarTender controls the rest of the printing process.
3. **Upload Method (UM).** This method is a derivative of number 2 above. In this scenario, after the label is designed, the label is saved to disk as an ITF file with the intention of uploading the file into SAPscript (SAP's form printing tool). The Datamax SAP device type LB_DMXX involved here is comparable to Windows' "generic, text only", because SAP does not have the ability to provide the full range of the DPL command library to the printer. This means that the DPL data used must be ASCII-only, i.e. plain ASCII text including NEWLINES/CRs, but no binary, non-printing characters (like ESCAPE).

The upload method is not a certified solution. As is explained later in this document, SAP has a defined certification process for third party software-based connectivity and middleware products. However, the upload method is not a product, it is a process. For this reason the upload method cannot be certified, but specific thermal printers can be recognized by SAP as having gone through the SAP upload method validation test. Such printers are typically identified in SAPnote 135894. SAPnote 135894 currently lists the Datamax I-Class as having been recognized under this process, and references SAPnote 490295 for a detailed explanation as to how DPL files can be uploaded into SAPscript as properly formatted SAP ITF files.

SAP CERTIFICATION

SAP does not "certify" thermal label printers. However, SAP does certify the software solutions that enable SAP and thermal label printers to work together. As part of SAP's strategy for building and maintaining a strong network of development partners and third party alliances, SAP has defined the SAP Partner Value Net. The SAP Partner Value Net provides partners with intensive back-office support in the form of marketing, sales, and technical services, as well as training. SAP also supports the sales and promotion of partner solutions.

As is stated on SAP's website, Partner Value Net classifies partners into eight categories:

1. Software Partners

The Software Partner Program aims to deliver complete, technically verified, turnkey software solutions to joint customers while reducing time and cost of implementation. The goal is to minimize disruption of existing applications and safeguard existing software investments.

2. Service Partners

Global Services Partners have multinational and multi-industry SAP consulting capabilities. They constitute the market's largest consultancies, with worldwide representation.

3. Technology Partners

Global Technology Partners provide SAP and its customers with a wide range of products to support mySAP.com technology. They are leading global vendors of hardware, database, storage system, network, and mobile computing technology.

4. Support Partners

Global Support Partners represent a select group of leading-edge companies that focus their business on supporting SAP solutions. SAP and the partner team up to develop and implement joint support strategies. The partner becomes a worldwide solution provider for mySAP.com, and delivers all the service and support required to implement and operate mySAP.com solutions.

5. Hosting Partners

Global Hosting Partners provide SAP solutions via hosted services platforms to offer the lowest cost of ownership. All of these companies have proven capabilities to provide leading-edge global outsourcing services, and operate with market coverage of at least two regions, either Europe/Americas or Europe/Asia Pacific.

6. Channel Partners

7. Content Partners

8. Education Partners

It is important to point out that while SAP might partner with a hardware company, as in the Technology Partners category, SAP does NOT certify hardware. This means that thermal bar code label printers are NOT certified by SAP for operability with SAP applications. However, SAP does certify software interfaces to SAP under their Software Partner Program. Under these guidelines, Datamax and Seagull Scientific have established procedures for printing from SAP using one of two methods: IDOC or UM. Datamax selected Seagull Scientific's BarTender as the primary SAP interface application platform because it has already received SAP certification for its IDOC interface.

In summary, Seagull Scientific's BarTender for SAP is a mySAP.com certified solution under SAP's Additional Printing Interface (IS-ADP) definition. Additionally, Datamax has contracted with SAP, and SAP has developed and released a Datamax printer Device Type (**LB_DMXX**) for use when printing directly from SAP (**SAPnote 490295**).

USING THERMAL PRINTERS with SAP (SAPnote 135894)

R/3-note	135894
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Number	0135894
Title	Label printing on thermal (transfer) printers

Symptom

How can special label printers (mostly thermal or thermal transfer printers) be used by means of SAPscript to print labels (for example, shipping labels, bar code labels) from within R/3 applications?

Additional key words

SAPscript, thermal printer, thermal transfer printer, bar code, label

Cause and prerequisites

Information on actual solutions is required.

Solution

Introduction:

SAPscript does not presently have printer drivers for special label printers (see Note 8928). Most label printers found on the market have their own proprietary control languages which are not supported by the printer drivers available in the standard SAP System. However, under certain preconditions, such label printers can be accessed via SAPscript. The method used for this should first be generally explained in the following and then later with actual examples.

General procedure:

Application programs which use SAPscript usually use SAPscript (the layout set definition) to control the layout of the printout and to replace the variables in the form with the latest field values from the print program. Since there is currently no printer drivers for label printers, the layout for such labels cannot be controlled via SAPscript, however the variable replacement can be. To learn how you reach a complete label print by means of an external label design program and by means of an SAPscript on these special printers, observe the following:

1. Label design with PC program

By means of an external PC program (Windows design program), you can create the label for the required printer. The complete layout of the label, as well as all provided fields that should be filled later by R/3, is defined by this program.

2. Download the print file

The design program must permit the download of the print file that is normally sent to the printer. This file contains the print commands used to print the label on the special printer. Only the latest variable values still need to be replaced later.

3. Upload the print file into an SAPscript layout set

The print file that was just created is uploaded into an SAPscript layout set. For this, the upload function available for the SAPscript editor is used. The file is uploaded, for example, in the standard text editor (Transaction SO10) and afterwards, the upload function is transferred by means of the normal text copy functions into the MAIN window of the SAPscript layout set that is to be used. The format of the file that is to be uploaded must be "ASCII". This means that only printable characters as well as CARRIAGE RETURN may be contained at the end of a line (LINEFEED) as well as possibly at the bottom of a page (FORMFEED). In addition, the file may not contain more than 80 characters per line, since otherwise, possibly unwanted line breaks could occur when uploading.

Important note: If the print file contains additional, binary control characters (for example, ESCAPE, 0x1B), the method described here cannot be used!

3. Upload the print file into an SAPscript layout set

The print file that was just created is uploaded into an SAPscript layout set. For this, the upload function available for the SAPscript editor is used. The file is uploaded, for example, in the standard text editor (Transaction SO10) and afterwards, the upload function is transferred by means of the normal text copy functions into the MAIN window of the SAPscript layout set that is to be used. The format of the file that is to be uploaded must be "ASCII". This means that only printable characters as well as CARRIAGE RETURN may be contained at the end of a line (LINEFEED) as well as possibly at the bottom of a page (FORMFEED). In addition, the file may not contain more than 80 characters per line, since otherwise, possibly unwanted line breaks could occur when uploading.

Important note: If the print file contains additional, binary control characters (for example, ESCAPE, 0x1B), the method described here cannot be used!

4. Insert SAPscript variables into the print file

In the SAPscript layout set, variables of the print program (so-called program icons) must now be entered on the characters where variable data should appear in the label. These variables are supplied with the latest field values from the application program during the runtime.

5. Adjust the layout set

For most label printers, the SAPscript layout set must be additionally adjusted. The MAIN window, for example, must be increased to the whole page size and all further windows must be deleted. In addition, the MAIN window should only contain one text element in most cases, and that is namely the text with print commands that was just uploaded. To reduce line breaks to a minimum, the font in the layout set header can be set to COURIER 6 point.

6. Create/Upload a suitable R/3 device type

Generally, a special device type (a variant of the device type ASCII PRI) must be used for the correct printout of the layout set on a label printer. In the examples explained below, SAP supplies these device types on the ftp servers sapservX and also delivers them in the standard SAP System. The device type ASCII PRI can normally be used for the basic test of procedure with other label printers.

7. Definition of an output device

As the last step, an output device (printer) must be set up in the R/3 with Transaction SPAD. The special device type or ASCII PRI is assigned to this output device (printer). The application program must now use this output device to print the labels. The label printer connects itself to the R/3 via one of the standard available connection types in SAP R/3 (local print on the application server/removed print via lpd server/removed print via Windows PC and SAP lpd/frontend print).

The following notes describe, in detail, the procedure for the printer model named in each case. It is presumed that the procedure can be carried out in an identical manner for other, similar label printers from the producer. This only depends on the support of the required printer through the PC design program:

Datamax I-4604

Note 490295

THE IDOC INTERFACE

Currently there are three different ways to connect to external data from BarTender allowing the user flexibility in different means of extracting data.

- Text File
- ODBC (Open Database Connectivity)
- SAP/R3 using the IDOC

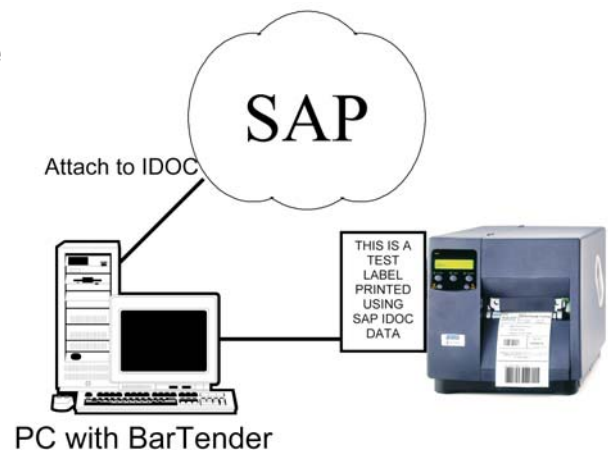
An IDOC (Intermediate Document) is a message, in the form of a pure ASCII file, sent from an SAP-connected application to one or more other applications. As SAP is running, IDOCs are constantly being created and deleted, in real time, as they are required by the system. They contain data pertinent to the transaction that they represent. Most of an IDOC message consists of fields of data grouped into segments. The segments themselves have a hierarchical relation to each other inasmuch as some segments are parents to one or more other segments. Each segment has several data fields. The first line in an IDOC is a "control record" which contains the IDOC type and the release number. The rest of the file contains the data organized by segments. Each line has a segment name, some data to help the organization of the data, and the data itself. The data itself is of a fixed width format, so there are no special characters separating the different fields. While IDOCs may be complex in physical structure, any application capable of monitoring the presence of a specific IDOC may be capable of reading the IDOC and acting upon the data contained within.

From BarTender's perspective, an IDOC is a hierarchical database that needs to be reshaped into a flat file for use in populating a label's variable data fields.

There are many different IDOCs, and while a label printer operator at an end user site may not have any knowledge of them, the SAP administrator at the end user company will most likely understand them. For this reason, it is very important that the SAP administrator is consulted when Datamax dealers and solution providers are working through the process of specifying an SAP IDOC solution for a given customer. The SAP administrator, or someone with comparable knowledge, will need to be able to specify the name and network location of every IDOC required in constructing a given label printing solution.

For example:

1. An SAP client wishes to print shipping labels on a Datamax printer using data from their SAP system.
2. The Datamax solution provider meets with the client to assist them in the definition of the label format.
3. The client's SAP administrator provides the names and network locations of the IDOC(s) which contain the data needed to populate the variable data fields in the BarTender label format.
4. The Datamax solution provider assists the client in understanding how the BarTender IDOC interface is used to map the IDOC data fields to the label format data fields.
5. When complete, the BarTender operator can print the label on the Datamax printer manually, or Seagull's "Commander" can be installed and configured to monitor for the presence of the IDOC and automatically print the label whenever the IDOC occurs.
6. See the following diagram for a graphical representation of the printing process.



THE UPLOAD METHOD (SAPnote 490295)

SAP note number 490295

Number	490295
Version	9 vom 13.08.2003
Status	Released for Customer
Set by	XXXXXXX am 13.08.2003
Language	EN
Short text	Printing labels with Datamax DPL printers
Responsible Component	XXXXXXXXXXXXX BC-CCM-PRN Print and Output Management

Symptom

How to print labels from SAPscript with Datamax DPL printers

Additional key words

Datamax, SAPscript, label, BarTender, printing, drivers, ITF, Seagull Scientific, DPL

Cause and prerequisites

Detailed information on Datamax label printers as per note 135894 is requested.

Solution

The procedure for label design and printing using a special label printer that is described in general in note 135894 is outlined here for Datamax DPL printers (testing was carried out with model I-4604). According to the information supplied by the Datamax manufacturer, the procedure is identical for all printer models with the printer control language DPL.

1. Label Printing Software Prerequisites

Seagull Scientific's BarTender version 7.1 or later, and a Seagull Scientific Datamax DPL printer driver version 6.6.1 or later. More information about BarTender and Seagull Printer Drivers can be found at www.seagullscientific.com

2. Procedure Summary

This procedure involves the use of BarTender's "SAPscript-ITF Printer Code Template" feature to create a file that is similar to the kind of file created when you "print-to-file". But the file is not a pure printer code file: it has named data fields added where SAPscript-ITF will insert variable data. The procedure also involves adjusting the SAPscript form and setting up the Datamax printer. After the template file is uploaded in SAP and SAPscript-ITF inserts data for the named fields, SAP will send the file to the printer.

3. Configuring the printer driver on the PC

The standard DPL control characters cannot be uploaded correctly in SAP. To ensure that substitute control characters are used, open the Properties dialog of the Seagull printer driver. Click the Status tab and open the Printer Options dialog. Be sure the checkbox "Standard Control Codes" is NOT checked.

4. Designing the label on the PC

Open BarTender version 7.1 or later to design the label layout. This program runs on Windows 95/98/NT/2000/ME/XP.

Select File->Print and choose your Datamax DPL printer on the Print dialog. Close the dialog and add text, bar codes, boxes, and lines to the label as needed. Consult BarTender's help for details.

5. Defining SAP form fields on the PC

For each bar code and text object on the label do the following:

- a. Double-click the object to open its properties dialog.
- b. Use the dialog's tabs to configure the object as needed. For example, if it is a text object use the Font tab to select the font. Click the Help button on each tab for details.
- c. On the Data Source tab, click the More Options button.
- d. On the More Data Source Options dialog, open the General tab. Set the "Source" for the Template Field Name. For example, set it to "Screen Data" if the screen data for the object should be used as the field name. Or set it to "Custom" and fill in the Name box with a field name such as VBAK-KUNNR. Click the Help button on the dialog for details.
- e. Be sure the "Add Field Delimiters" box is checked and BarTender will automatically add the "&" delimiter to both ends of the field name when the template is exported.

6. Fonts for text fields

For text fields, you must only use only printer-internal fonts belonging to the Datamax printer, not TrueType fonts from Windows or Windows TrueType fonts that have been downloaded to the printer prior to the creation of the printer code template. This is because TrueType fonts are created in binary form, which SAPscript does not support. For font downloading instructions, consult the printer driver's help. If you want to use TrueType text on the screen, but not on the label, you must enable the "Substitute Best Matching Printer Font" checkbox on the Font tab of the text field's properties dialog in BarTender.

7. Bitmap images:

Bitmap images are binary data, which cannot be imported to SAPscript. If there are bitmap images on the label, you must export two separate printer code templates files. One for the variable data and the other containing formatting information and bitmap images. (See step 8 below.) Only the file for variable data will be uploaded in SAPscript-ITF. The other file must be sent to the printer using the printer driver's "Send to Printer" feature. For instructions, open the Status tab on the Seagull driver's properties dialog, then click the Logging Options button and then the Help button on the Logging Options dialog.

8. Exporting the label to a SAPscript-ITF Printer Code Template file

In BarTender, select "File->Export Printer Code Template->SAPscript-ITF". On the Export dialog, indicate whether to export a single template or two separate templates for the variable data and the formatting, then set the name and path for the template file(s). If needed, click the More Options button and configure the Printer Code Template Options dialog. Use the Help button on both dialogs for detailed information. When finished, click the Export button.

9. Uploading the print file to SAPscript

Using the standard text editor (transaction SO10), upload the print file to SAPscript. In this case, however, SO10 is only used as a "clipboard" for the file until you insert the file in a form window.

Create a new standard text with a name of your choice. In the Editor, load the file "XXXXXXXXX.ITF" just created, using the function "Text->Upload". Select the "ASCII" format and save the label file as standard text.

10. Adjusting the SAPscript form

To print the label, implement the following changes in the SAPscript form (transaction SE71):

- > The first page of the form should refer to itself as a follow-up page because the label file in the MAIN window can be quite large.
- > The MAIN window should only contain one text element that includes the label file just created. The name of this text element depends on the SAP application program used. You can enter the label file in this text element by copying the entire text from S010 into the form window.
- > The following changes are not essential, as the printer control language Datamax DPL ignores all unknown commands and has no problems with blank characters or lines. You should make these changes to the form purely for the sake of a better overview.
- > You should delete all windows except MAIN, or at least ensure that they no longer contain any output data (comment out texts if necessary).

If you need to define additional text elements in MAIN that are called from the print program, you must first comment out their contents.

11. Setting up an output device for label printing

You must connect the Datamax printer via one of the output channels provided in SAP for printer output:

- > local printer on the application server
(access methods L, C)
- > remote printing via lpd host
(access method U)
- > remote printing via PC and SAPIpd
(access method U or S)
- > local printing on Windows front-end PC
(access method F)

The simplest procedure is to connect the printer to a Windows PC, install the Seagull Scientific Datamax DPL printer driver of your choice on the PC and start the output program SAPIpd. You can then define the printer in the spool administration (transaction SPAD) with the access method "S" or "U". Choose the device type LB_DMX. If your release version does not yet include this device type, download device type ZLB_DMX from the attachment to this note and import it.

Note is not release-specific

Other components

BC-SRV-SCR

SAPscript

Note attributes

Transaction codes FILE

HIER

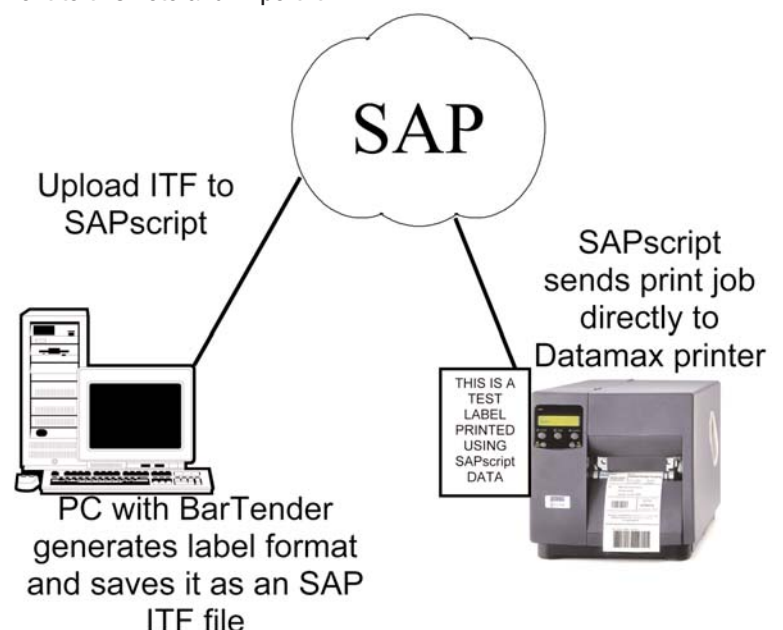
Transaction codes SE71

S010

Transaction codes SPAD

References to related notes

Number	Short text
135894	Label printing on thermal (transfer) printers



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