CCMS Printing
6.40 in Brief

Product Management
System Management Infrastructure
SAP AG
Information Flow

ABAP-System

- Document
- Spool Request
- Spool Data
- Output Request
- SAP Spool System

User action

- Create document
- Print
- Output

Operating System Spool

Hello World

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Print Architecture

Print Document

Triggering of the print process

Spool Server

Dispatcher

D-WP

S-WP

Host Spool System

Spool Request

Output Request

Spool Database

LAN/ WAN

Target Host

Host Spool System

A = local
B = remote

1B ...
41 42
43 ...
1B ...

1B ...
41 42
43 ...
1B ...

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Access Methods: Local Printing

SAP Spool Server

Dispatcher

S  S  ...  D

Host Spool System

Print Server

physically local

physically remote

C  or  L
Access Methods: Remote Printing

SAP Spool Server

Dispatcher

S S ... D

UNIX

Host Spool System

WinPC

saplpd

TCP/IP Print Server

Host Spool System

Print Server

Print Server

Print Server

Network Printer
Access Methods: Frontend Printing (SAP GUI for Windows)

- **SAP Spool Server**
  - Dispatcher
  - S
  - S
  - ... D

- **Frontend PC**
  - Windows
  - SAP GUI
  - saplpd

- **Host Spool System**

- **Print Server**

**Access Methods**:
- Work Process

**Print Manager**

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Access Methods: Frontend Printing (SAP GUI for HTML)

Global File System

SAP Spooler

ITS

SAP Application Server

Microsoft Windows

Frontend PC

SAP GUI for HTML

PDF Viewer

Opens
Access Methods: E-Mail Printing

ABAP System

SAP Spool System

SAPconnect

M

Frontend PC

E-Mail Client
# Access Methods: Overview

<table>
<thead>
<tr>
<th>Access method</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Local printing from a Microsoft Windows NT or Microsoft Windows 2000 system or from AS/400 and OS/390</td>
</tr>
<tr>
<td>L</td>
<td>Local printing from a UNIX system</td>
</tr>
<tr>
<td>S</td>
<td>Printing using a remote Microsoft Windows PC with the SAPIpdp transfer program. The spool work process of the SAP System and SAPIpdp are on different hosts.</td>
</tr>
<tr>
<td>U</td>
<td>Printing using a remote UNIX server or Microsoft Windows PC (with or without use of SAPIpdp), where the spool work process of the SAP System and the host spool system (operating system spooler) are on different hosts.</td>
</tr>
<tr>
<td>F</td>
<td>Printing on a frontend printer. Output requests are printed locally at the user’s PC.</td>
</tr>
<tr>
<td>E</td>
<td>Printing using an external output management system. The printer is connected to an external output management system.</td>
</tr>
<tr>
<td>P</td>
<td>Printing using a device pool</td>
</tr>
<tr>
<td>I</td>
<td>Archiver - the device is an archiving device for SAP Archivelink.</td>
</tr>
<tr>
<td>M</td>
<td>Printing using e-mail</td>
</tr>
</tbody>
</table>

- The access method is specified during the definition of output devices in the SAP System.
- The access method tells the system how to transfer spool work process data for this output device to the host spool system.
Device Definition (1)

For every output device a print definition has to be created. The definition is created in transaction SPAD and contains all important data for addressing the device.

The following fields are mandatory when creating an output device definition:

1. Device attributes

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Device</td>
<td>Name of the printer in the SAP System.</td>
</tr>
<tr>
<td>Short name</td>
<td>The system accesses the printer using this name. It can be generated automatically.</td>
</tr>
<tr>
<td>Device Type</td>
<td>Device type that is defined in the SAP System for the printer model here, such as HPLJ4 for the HP Laser Jet 4000. The generic device type SWIN is available for printing under Microsoft Windows, with which you can use every device supported by Microsoft Windows, even if the device type is not defined in the SAP System.</td>
</tr>
<tr>
<td>Spool Server</td>
<td>Name of the SAP spool server (application server with the spool work process) that is to prepare the output for this device here.</td>
</tr>
</tbody>
</table>
## Device Definition (2)

### 2. Host Spool Access Method

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Host Spool Access Method</strong></td>
<td>Type of connection to the printer here.</td>
</tr>
<tr>
<td><strong>Host Printer</strong></td>
<td>Name of the output device as it is specified in the host system (operating system). If you enter __DEFAULT in this field, the default printer of your Microsoft Windows PC is addressed.</td>
</tr>
<tr>
<td><strong>Host</strong></td>
<td>This field appears only for local printing. The input is generated automatically and depends on the spool server.</td>
</tr>
<tr>
<td><strong>Destination host</strong></td>
<td>In case of remote printing (over a network), the name of the host that receives the data to be output. This is the host on which the (SAP)lpd is running.</td>
</tr>
</tbody>
</table>
The following example shows the definition of a printer that is to be used as an output device for remote PC printing. The printer is addressed using the generic device type SWIN. The data stream is transferred using SAPlpd.

**Device Attributes tab page:**

<table>
<thead>
<tr>
<th>Output Device</th>
<th>Printer2</th>
<th>Short Name</th>
<th>PRI2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device Attributes</td>
<td>HostSpoolAccMethod</td>
<td>Output Attributes</td>
<td>Tray Info</td>
</tr>
<tr>
<td>Device Type</td>
<td>SWIN:Rel. 4.x/SAPlpd 4.09+ ONLY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spool Server</td>
<td>WS1234_ABC_11</td>
<td>WS1234</td>
<td></td>
</tr>
<tr>
<td>Device Class</td>
<td>Standard Printer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Host Spool Attributes Record</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authorization Group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td>Kalahari 333</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Print Room 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Message</td>
<td>Name of the spool host. The spool service runs on this host. Its name is automatically determined.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Name of the spool server, consisting of: server name + system name + instance number
As the host spool system and the spool server are on different hosts, the name of the destination host (PC) on which SAPlpd is running is specified on this tab page.

**Host Spool Access Method** tab page:

<table>
<thead>
<tr>
<th>Output Device</th>
<th>Printer2</th>
<th>Short Name</th>
<th>PRI2</th>
</tr>
</thead>
</table>

**Host Spool Access Method**: S: Print using SAP protocol

Name of the printer in the operating system: `\\p12345\Printer2`

**Destination Host**: p12345

The SAPlpd transfer program runs on this PC.
Generic Device Type SWIN

- SWIN is a generic, device-independent device type for Microsoft Windows printers.

- When creating a device definition for a Microsoft Windows printer in the SAP System, you can use the generic Microsoft Windows device type SWIN instead of the printer-specific device type (such as HPLJ4).

- You can use SWIN as a device type for all printers for which a driver is installed in the Microsoft Windows system.

- With SWIN, you can also use Microsoft Windows printer support to access an output device even if the device type is not supported by the SAP System, that is, no print controls, formats, or format actions have been specified for the device type.

Assume that the SAP System does not contain a definition for your laser printer Kalahari 1202. However, you have installed this printer under Microsoft Windows and can print to it with no problems. In this case, you do not need to specify Kalahari 1202 as the specific device type in the SAP device definition. It is sufficient to enter SWIN as the device type to be able to use the Kalahari 1202 from your SAP System.
SAPljpd is a transfer program for print output using an MS Windows operating system and is required in the following cases:

- **Remote Printing with Microsoft Windows**
  As the MS Windows spooler and the SAP spool server are on different hosts, the SAP spool system requires an external process to transfer the output requests. This process is provided by the SAPljpd transfer program.

- **Local Printing with Microsoft Windows (device type SWIN)**
  In the case of local Microsoft Windows printing, the SAP spool server and the MS Windows spooler are on the same host. The SAPljpd transfer process is only required if you have defined the output devices with device type SWIN.
Device Definition – Example for Printing on OMS

Name of the output device in the external OMS

LOMS that is to be assigned to the device
Logical Spool Servers

**ABAP System**

<table>
<thead>
<tr>
<th>Output Device</th>
<th>Logical Spool Server</th>
<th>Real Spool Server</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gulp</td>
<td>Log_Test</td>
<td>twdfmx03_DEV_00</td>
</tr>
<tr>
<td>Test 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prod 1</td>
<td>Log_Prod A</td>
<td>twdfmx03_DEV_01</td>
</tr>
<tr>
<td>Prod 2</td>
<td>Log_Prod B</td>
<td></td>
</tr>
</tbody>
</table>

T: Test print
P: Production print
Creating Logical Spool Servers

Classify your printers and spool servers, and keep them separate!

- High volume print
- Production print
- Test print

**Server Class Context Menu**
- Unclassified (for example, cost-center lists)
- High volume print (for example, documents, cover letters)
- Desktop print (for example, SAPoffice documents)
- Test server or test print

**Server Class**
- Test server or test print

**Logical Flag**
- Logical server

**Mapping**
- twdfmx03_DEV_00
Alternative Server - Spool Server Switchover

ABAP System

Output Device

- Test 1
- Test 2

Logical Spool Server

- Log_Test

Real Spool Server

- twdfmx03_DEV_00
- twdfmx03_DEV_01

Server name: Log_Test
Logical Spool Server for Test Printing

Attributes

- Server class: Test server or test print
- Logical server: On
- Alt. server: twdfmx03_DEV_00, twdfmx03_DEV_01
Load Balancing

ABAP System

Output Device

Test 1
Test 2

Logical Spool Server

Log_Test

Real Spool Server

twdfmx03_DEV_00

twdfmx03_DEV_01

Attributes

Server class: Test server or task
Logical server
Allow load balancing
Mapping: twdfmx03_DEV_00
Alt. server: twdfmx03_DEV_01

Load balancing
Process of Dynamic Server Selection

Output Request

Device Definition

Spool Server HOST1_BIN_53

Load Balancing Allowed?

Is Host1_BIN_53 a logical server?

Is Host1_BIN_53 Running?

Find a spool server among the defined alternative servers

Find a spool server among the defined logical servers

Use

Spool Server HOST1_BIN_53

Spool Server XXX_BIN_53

Spool Work Process

Spool Work Process

Spool Work Process

Spool Work Process

Spool Work Process

Spool Work Process
Maintaining the Spool Database

Delete old spool requests:
- In dialog using transaction SPAD
- Schedule regularly in the background: RSPO1041

Check consistency of the spool database:
- In dialog using transaction SPAD
- Schedule daily in the background: RSPO1043
An external converter converts MS Office documents to printer formats that can be printed out of SAP.

The SAP External Document Converter (XDC) interface connects the external converter to the SAP System.

The documents to be converted can be Word.doc, Excel.xls and PowerPoint.ppt, or other, non-MS types like TIF or PDF (Input format).

Output formats are TIF or the two printer specific formats PCL and PS.

The document plus the attachment have to be printed together.
Functionality – the Options

1:1
SmartForm
Office
*.doc
*.ppt
*.xls
1:n
1:n
Office
*.doc
*.ppt
*.xls
SmartForm
Office
SmartForm
Office
SmartForm
Office
n:1
SmartForm only
Office only
Office
*.doc
*.ppt
*.xls
Office
*.doc
*.ppt
*.xls
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The solution for printing Office documents out of SAP will support R/3 systems 4.6C or higher.

- MS Windows NT 4.0 or higher required
- MS Office 2000 or higher required
Availability of the Solution in Applications

- Enterprise Buyer
- PLM Lifecycle Data & Change Management
- Public Services
- …
Synchronous Conversion

RFC:
CONVERT_DOCUMENT
Output Format: POST

Conversion Server
(Microsoft Windows NT/2000)

SAP application program calls function module
RSPO_CONVERT_PCDOC

BC-XDC Interface

Word Document

PostScript File

RFC Server
Asynchronous Conversion – Single Document (1)

**SAP-application** creates spool request with Word-document and calls **RSPO_CONVERT_AND_PRINT_PCDocs**

**RFC:**
- **SUBMIT_REQUEST**
  - Spool request: 815
  - Output format: POST

**Conversion Server** (Windows NT/2000)

**BC-XDC Interface**

**Word-Document**

**RFC-Server**

**815 COMP**
Asynchronous Conversion – Single Document (2)

SAP-Spooler

RFC: RETURN_RESULT
Spool request: 815
Output format: POST

Conversion Server
(Windows NT/2000)

RFC-Client

BC-XDC Interface

815 BIN

PostScript-file for spool request 815

Replaces DOC-data by print data in spool request 815 and creates print request.
Composite Spool Requests

Parent Spool Request 7005

Child Spool Request 7000
OTF Data

Child Spool Request 7001
*.doc

Child Spool Request 7002
*.ppt
Asynchronous Conversion – Composite Spool Request (1)

SAP application program creates composite spool request with SAP Smart Form and Microsoft Word document and calls RSPO_CONVERT_AND_PRINT_PCDocs

RFC:
SUBMIT_REQUEST
Spool Request: 930
Output Format: PCL5

Conversion Server
(Microsoft Windows NT/2000)

RFC Server

BC-XDC Interface

Word Document

930 COMP

928 OTF

929 DOC

Word Document
Asynchronous Conversion – Composite Spool Request (2)

Conversion Server
(Microsoft Windows NT/2000)

RFC-Server

SAP Spooler

RFC: RETURN_RESULT
Spool Request: 930
Output Format: PCL5

BC-XDC Interface

PostScript file for spool request 929

Deletes request 929 from composite request 930, inserts new request 931 with printer data and creates output request

SAP Spooler

930
COMP

928
OTF

931
BIN

930
COMP
Printing of PDF Forms

1. Application
   - PDF Form

2. Form, application, and printer definition data (XDC) as XML

3. 2 Parts are returned: PDF + print file (PS, PCL, ZPL)

4. Output Controller (SP01)
   - Global Directory

PS, PCL, ZPL
As of SAP Web Application Server 6.40, you can create a form in the new PDF-based form solution, which is integrated into the ABAP Workbench (SE80) and the SAP NetWeaver Developer Studio, and print the form out of the SAP system.

Technical background: Forms to be printed are sent to the Adobe Document Services in XML format. These services return “parts” for the forms. A part always consists of a PDF file and a print file (PostScript, PCL, or ZPL), which are placed in the Global Directory.

Only the parts are displayed in the Output Controller (transaction SP01). For a part, you can either display and print the PDF file or output the print file with the usual SAP print functions.

Report RSPO0202 provides a technical view for administrators. The report also displays the associated PDF and print files and can be used for troubleshooting.
**New Barcode Printing**

<table>
<thead>
<tr>
<th>Traditional Bar Code Printing</th>
<th>New Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be used for Smart Forms and SAPscript</td>
<td>Can only be used for Smart Forms</td>
</tr>
<tr>
<td>Bar codes are generated in the printer.</td>
<td>Bar codes are generated in the SAP system and sent to the printer as graphics. The print file is larger due to the graphic created.</td>
</tr>
<tr>
<td>Special hardware is required</td>
<td>No special hardware is required</td>
</tr>
<tr>
<td>To format or control bar codes, print controls must be changed in the printer commands.</td>
<td>Bar codes can be simply changed using the font maintenance transaction (SE73).</td>
</tr>
<tr>
<td>For all SAP releases</td>
<td>By default, bar codes can be created with the new procedure as of SAP Web Application Server 6.40. With the appropriate Support Package and Patch Level, the new bar code printing works as of SAP R/3 4.6C.</td>
</tr>
<tr>
<td>Supports most bar code symbologies</td>
<td>Supports only the most important bar code symbologies (see also SAP Note 645158)</td>
</tr>
<tr>
<td>Bar codes are only simulated for pdf conversion.</td>
<td>Bar codes are correctly reproduced after PDF conversion.</td>
</tr>
</tbody>
</table>
Further Information

SAP Service Marketplace
For more information, use the quicklink /output.

Contact
Mail to Product Management: ccms@sap.com
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