How does printing work?

Definitions

Output device, device type and printer language

The SAP term for printers is output device. This is because SAP may not only print to printers but also to external Output Management Systems, archiving systems, etc. For simplification, in this article, the terms “printer” and “print” mean “output device” and “send data”.

An output device must be created for each printer on which you wish to print (IP address, host name, etc.) There is also a possibility, called frontend/local printing, which only works for computers with Windows OS, which allows the user to select a printer from his list of local printers. In that case you don’t need to declare these printers in SAP.

As the printers all have their own language, it is important to indicate the printer characteristics to SAP. These characteristics are defined in device types.

- **Language**: PCL, PostScript, ZPL, PDF, SWIN, etc. This is called the driver.
- **Encoding**: Latin 1 (Occidental characters), SJIS (Japanese characters), etc.

Each output device must be assigned to a device type. In fact, a device type corresponds to a printer model. Many device types are delivered in SAP systems and are generally sufficient for most of printers.

Example: your company owns 10 printers HP LaserJet Color 2700N and 5 printers Zebra 105SL. You will create 2 device types HPLC2700 (by copy of HPLJ4 for example) and Z105SL (by copy of LZEB2 for example), and you will create 10 output devices (with different IP addresses) with device type HPLC2700, and 5 output devices (with different IP addresses) with device type Z105SL.

SAP transactions

- SPAD: maintain output devices and device types
- SE73: maintain fonts and barcode types for SAPscripts and Smart Forms
- SP01: maintain and print spool and output requests

Print Steps

1. SAP program generates the spool request (also called print request). The spool will generally be in OTF (SAPscript and smart form internal format) or ABAP list format.
   - It is mandatory to choose a printer to be able to generate the spool request.
   - If immediate printing is not requested, the spool is not sent to the printer and remains in wait mode in the system. The spool may be sent to the printer at any time.
   - Otherwise, an output request is generated and the next steps are executed. Note: a spool may be printed several times, one output request is generated for each request.

2. The spool work process processes the output request.
   - One of the 2 drivers defined in the device type is called according to type of spool. The driver converts OTF or ABAP list format into printer language (PCL, PS, ZPL, etc.) or SAPWIN language for frontend printing or local printing (Windows).
   - This data is then converted again according to the page code assigned to the device type
   - This data is sent to the output device
     - If the output device has access method “frontend printing” (F or G) or “local printing” (L) (then the output device must be a Windows computer with RFC server and SAPIpd/SAPSprint programs installed), the data is sent to the RFC server. These steps are then executed:
       - The RFC server sends data to the SAPIpd or SAPSprint program
       - SAPIpd or SAPSprint converts data into Windows GDI (Graphics Device Interface) format (GDI is the Windows universal format for all printer drivers)
       - It sends GDI format to the Windows printer driver.
       - The Windows printer driver converts GDI into printer language (PS, PCL, etc.)
Links

- sap library - SAP Printing Guide
- SDN article from SAP - CCMS Printing 6.40 in Brief - overview of printing
- Note 379515 - Troubleshooting frontend printing (access method 'F')
- Note 5799 - How can you view prepared print data?: it explains how to see the data sent to the device