

+ Remote Printing: Required Processes and Programs

The SAP System passes output to printers and other devices only by way of a host system spooler. It does not drive devices itself. To pass output to host spool systems, the SAP spool system must have either of the following:

- a spool work process

This is an SAP work process which passes print requests to host spoolers for output. You can set up one or more for your SAP System, but with a maximum of one per instance (server).

- an instance of the spool formatting program

This is a free-standing program which provides the same functionality as the spool work process.

This program is not offered under Windows NT.

The spool work process offers better performance than the formatting program in processing output requests and is much easier to manage (no separate start-up and shut-down procedures). The spool work process will also completely replace the spool formatting program in a future update of the system. You should use only the spool work process in your SAP System.

The spool system also needs an instance of the SAP spool transfer program if both of the following are true:

- a printer is not "locally" attached with respect to a spool work process or formatting program
A printer is "locally attached" if it is accessible to the host spooler in the system in which the spool work process or formatting program is running.
- the host spool system that is responsible for the printer does not use a Berkeley (BSD) protocol print command interface. A spool work process or formatting program can pass print commands only to Berkeley-standard printer daemons.

This section explains how to set up and operate spool work processes, formatting programs, and transfer programs.

Processes and Programs in Overview

Recommendations: Setting Up Spool Programs and Processes

Setting Up a Spool Work Process

Starting the Formatting Program

Starting the Transfer Program

Displaying Program Status

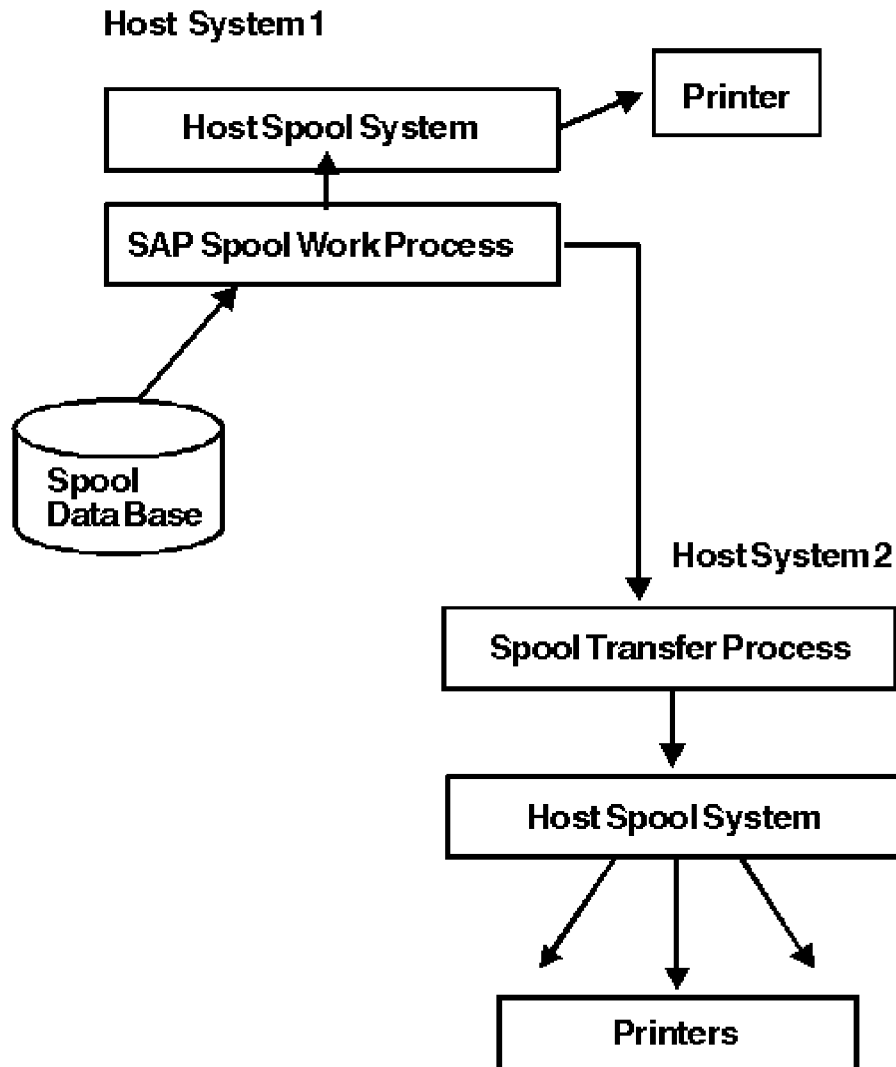
Stopping Printer Programs

Displaying Log Files of Formatting Programs

Print Files

Processes and Programs in Overview

The figure below shows how output requests are passed from the SAP spool system to a printer.



Spool System Output Programs

In the figure,

A **spool work process** or **formatting program** is responsible for formatting data so that it can be output. It performs the following tasks:

- reading data to be output from the database
- if required, converting from the character set used by the SAP System to the character set of by the output device
- embedding device-specific escape sequences in the output byte stream, as defined in the device-type format for the output device

- embedding device-specific printer escape sequences, as indicated by SAP print control formatting commands.

A spool work process or formatting program can communicate with the host spooler and/or with one or more SAP transfer program. A single spool work process can therefore be responsible for printing on all printers in your system, if you so desire.

- In UNIX hosts, a work process or formatting program uses a print command to pass an output request directly to the host spool system that is responsible for the output device.

This direct communication is possible when the host spooler and the work process or formatting program are running in the same host. The print command that the spool system uses is defined in the SAP system profile.

A work process or formatting program can also pass an output request over the network directly to a remote host spool system if the remote spooler is compatible with the Berkeley (BSD) lpd (line printer daemon). However, this procedure is not recommended. You should instead use the SAPLPD transfer program when the work process or formatting program and host spooler are running in different systems.

- A work process or formatting program sends data to the host spooler by way of an SAP transfer program when the host spool system is running in another system than the work process or formatting program.

An SAP **transfer program** passes output requests for remote printers from an SAP spool work process or formatting program to the spool system in the remote host system. A transfer program:

- must run on host systems that have "remote" printers attached to them.
A printer is "remote" when
 - there is no spool work process or formatting program running in the host to which it is attached and;
 - the printer is not accessible to the spool system in the host in which the spool work process or formatting program is running..
- is required only once on a system that has remote printers. The transfer program accepts output from all SAP Systems that use a remote printer and passes all such output to the host spool system.
- does not require access to the database system or to SAP libraries and can therefore run in any host system, whether or not it is licensed for database software.
- need not run in the same host system as a spool work process or formatting program. The formatting program can pass data for locally-attached printers directly to the host spool system.
- is provided to you in variants for UNIX, IBM OS/2, and Microsoft Windows and Windows NT systems.

Host system spoolers print all SAP output.

Output may be passed to a printer or other output device or may be used as input for further processing.

Recommendations: Setting Up Spool Programs and Processes

SAP recommends the following strategy for setting up spool work processes and transfer programs in your system:

- Set up a spool work process in the database server of each SAP System that you are running. Try to address all printers in your system with this spool process, if possible.

Use this spool work process to reach any local printers attached to the database server and to pass output requests to printers attached to IBM OS/2 and Microsoft Windows systems.

If possible, use the remote-printing facilities of the host system to make printers at other hosts local with respect to this spool work process. That is, use remote-printing to let the host spooler of the database server print on the remote printers.

- If you cannot reach remote printers from your database server with the host's remote printing facilities, then set up a spool work process in the SAP application server that is running in the remote host. Only one spool work process may be set up per SAP instance (set of application servers that share the same instance profile).

If no SAP application server is running on the remote host, then you can run the SAP transfer program on the host. The spool work process in the database server can reach the remote printers by way of the transfer program.

Should you need to reduce the workload on the database server or on another host in your network, you can flexibly rearrange the transfer of output requests. To relieve the database server, for example, you could run spool work processes in other hosts that have SAP application servers.

Spool Work Process: Additional Notes

Do not try to set up communications directly between a work process and a remote host spooler except as shown in the table below. This communications link is possible with Berkeley (BSD) line printer daemons. However, the procedure is complex and difficult to manage.

Note that a spool work process can process output requests only from a single SAP System. If more than one SAP System is to use a printer, each must have its own spool work process (or formatting program)

The table below shows the recommended arrangements of spool work processes and SAP transfer programs or host spoolers. For the most up to date information, please see the online hypertext document *R/3 Printer Installation* (DRUCKERINST, language D).

Remote Printing Partners for the Spool Work Process

Host for Printers	Recommended Partner/Connection
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Any UNIX system	Three possibilities: <ol style="list-style-type: none">1) Make the remote printer appear local to the spool work process with host remote printing facilities.2) Run a spool work process in the SAP application server on the UNIX system.3) Run the SAP transfer program on the UNIX system.
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OpenVMS

Three possibilities:

- 1) Make the remote printer appear local to the spool work process with host remote printing facilities: UCX, Pathworks, or LAT.
- 2) Run a spool work process on the host to which the printer is attached.
- 3) Run the SAP transfer program on the system to which the printer is attached. (Non-OpenVMS hosts only. The transfer program is not available on OpenVMS).

Systems with Novell Netware

Novell lpd. NFS option of Netware 3.11 or later required.

Siemens-Nixdorf SINIX

Two possibilities:

- 1) Use Siemens-Nixdorf Spool 4.x to manage access to printers network-wide.
- 2) Run a spool work process or transfer process in the SINIX system.

MS-Windows 3.1, Windows for Workgroups 3.11

SAPLPD (SAP transfer program). Novell-LAN-Workplace or MS-LAN-Manager required or any network software that supports Windows sockets. Variants of SAPLPD are:
LPDNOV: Novell-LAN-Workplace
LPDMS: Microsoft LAN-Manager
LPDSO: Networks that support Windows sockets.

Windows NT

Three possibilities:

- 1) Define a shared printer as a local printer in the Windows NT Print Manager. Define the printer as a local printer in the SAP System.
- 2) For Windows shared printers: Define printers in SAP with device type SAPWIN. Use the SAP LPDNT program to pass output to the shared printers.
- 3) For Windows remote printers (not shared): Run the SAP LPDNT program on the local Windows NT host of each remote printer that you wish to use.

IBM OS/2 1.3

SAPLPD (SAP transfer program). Essex TCP/2 required.

IBM OS/2 2.0

OS/2 lpd (provided with IBM or Essex TCP/2

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