

Study of DP-DS820/DP-DS820 (A) System Realization

(4 printers)

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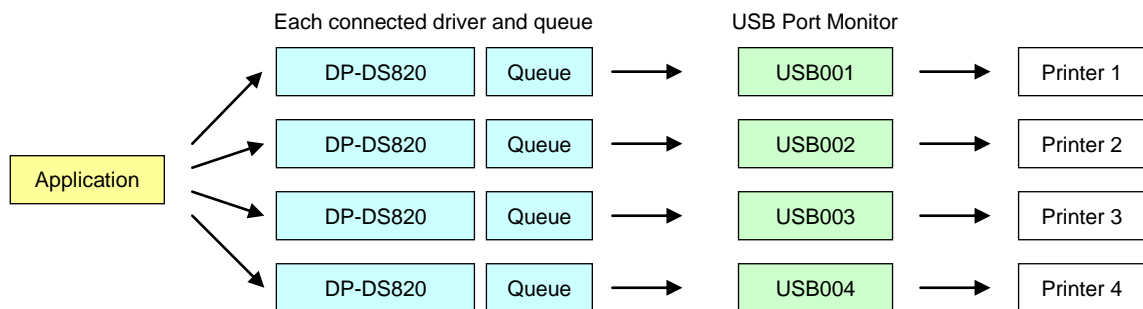


You cannot resale/use the DP-DS820 without destination number (A) in the U.S.

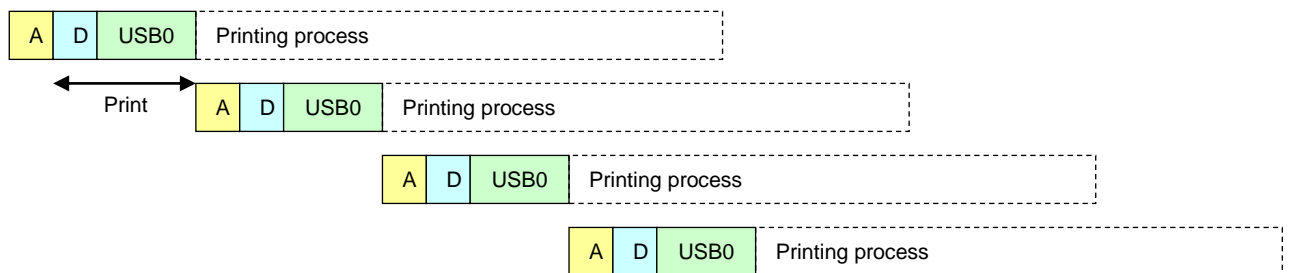
1. About the Data Flow on Windows

In the printer driver settings, there is a Spool On/Off setting. The data flow when using this setting is shown below.

1-1. Operation with Spool Off



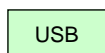
When the application outputs data to each driver, the current driver can't release the print job until the data is output to the USB port. Therefore, the application waits until data output to the current driver's USB port is complete before it can output data to the next driver.



Application section: data resizing, status processing (API), sheet no. control, color management, color adjust, etc



Driver processing: color management, color adjust, printer command processing, etc.

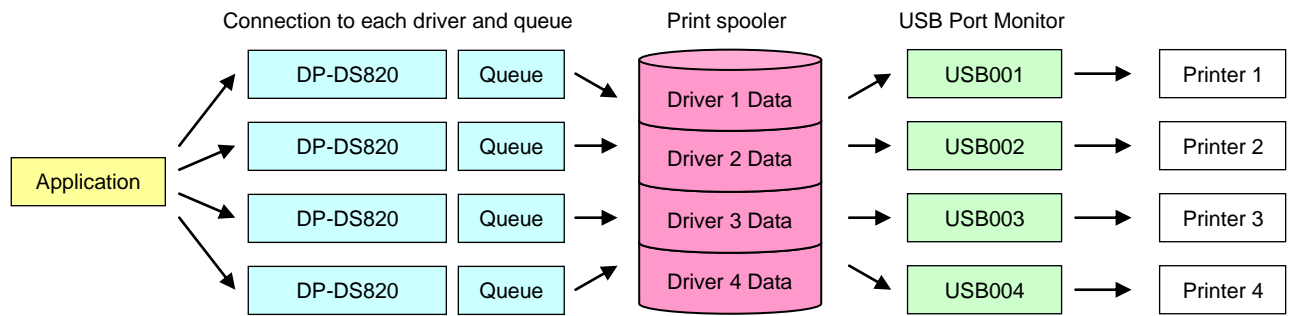


USB data transferring, data send/receive management

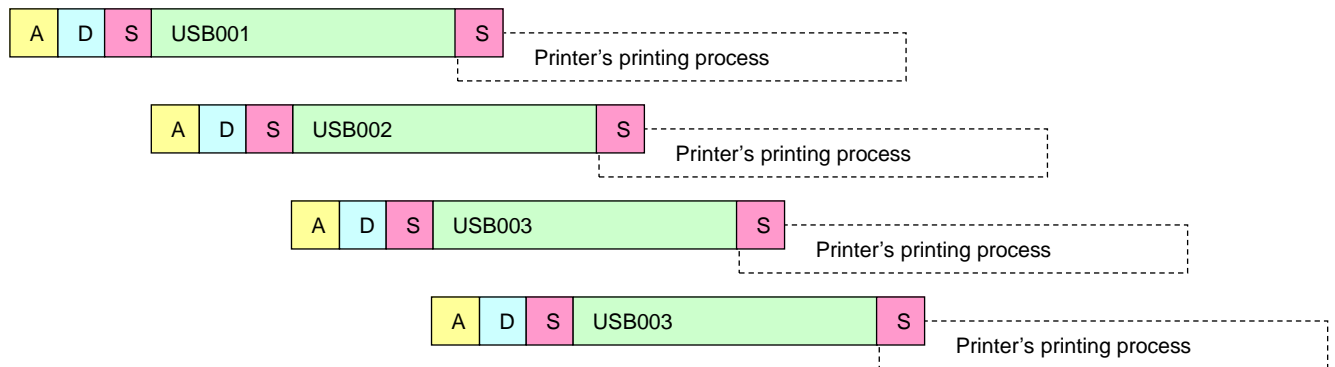
[About status check]

With Spool OFF, the application cannot perform other processes while sending data. Therefore, it cannot check printer status of other printers while it is sending data.

1-2. Operation with Spool On



When the application outputs the data to each driver, each driver outputs the data to the print spooler and releases the print job. The application can output data to the next driver without waiting for the data to be output to each USB port. When the print spooler takes in the data, USB Port Monitor control is performed for each port, and the data output to each port begins. If there are multiple data in the print spooler, data output to each USB port can be performed concurrently.



- A** Application section: data resizing, status processing (API), sheet no. control, color management, color adjust, etc
- D** Driver processing: color management, color adjust, printer command processing, etc.
- S** File writing to and deletion from the print spooler
- USB** USB data transferring, data send/receive management

[About status check]

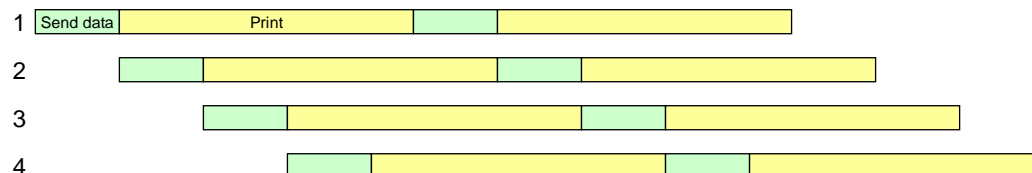
With Spool ON, once the data has been output to the spooler, the application is freed from the print processing and can perform other processes. Therefore, even while data is being sent, it is possible to check the status of other printers.

2. Relation between printer buffer operation (single/double) and Spool ON/OFF

The relationship between printer buffer operation (single/double) and Spool ON/OFF is shown below.

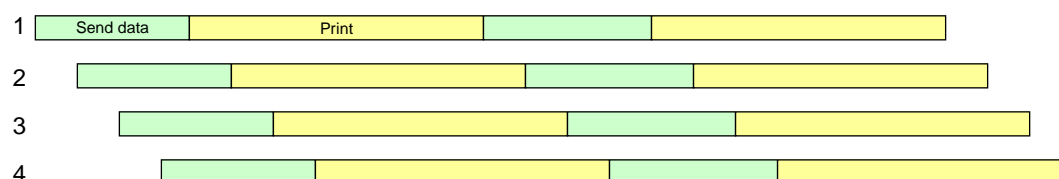
(1) Single buffer, Spool OFF

Because the spooler is OFF, it sends data to 1 printer at a time, and waits for the printing to be completed before sending the next data.



(2) Single buffer, Spool ON

By setting spool ON, send data processes overlap, but due to spool processing, the total processing time is longer.

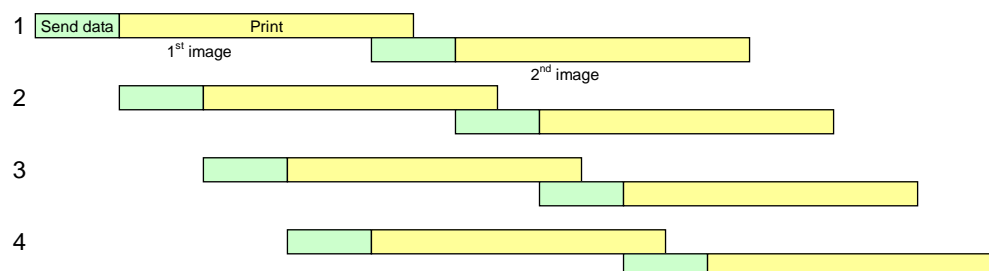


[Remarks]

- Theoretically, with Spool ON, the throughput time should be shorter, but with current hardware and operating systems, in sending data concurrently, the transmission time is longer, so we can surmise that it takes more time than with Spool OFF.
- With future improvements in hardware and operating systems, high speed transmission will be possible even when sending data concurrently, so Spool ON will likely be faster.

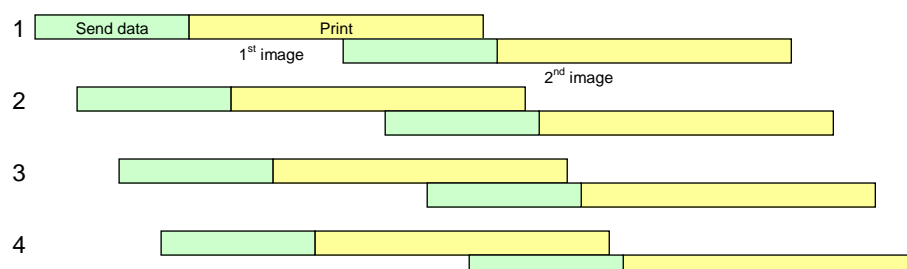
(3) Double buffer, Spool OFF

Using a double buffer, while the first image is being printed, data for the second can be sent, so processing time is that much shorter.



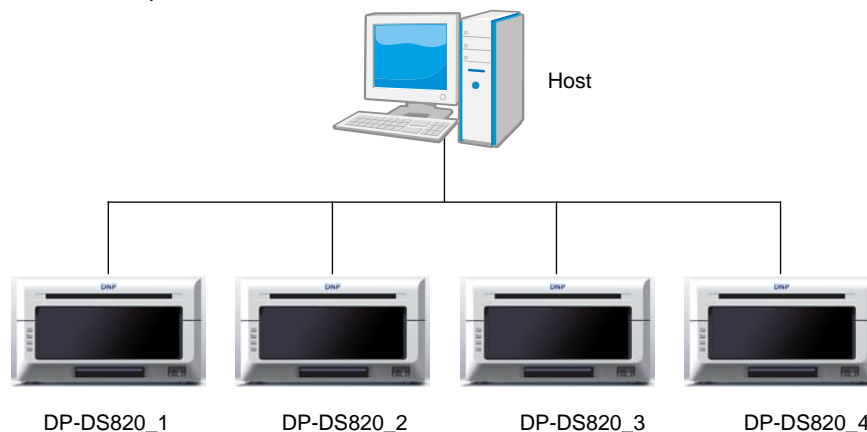
(4) Double buffer, Spool ON

With spool ON, data transmission can overlap, and with the double buffer process allowing data transmission during printing, the total processing time is the shortest possible.



3. System Composition

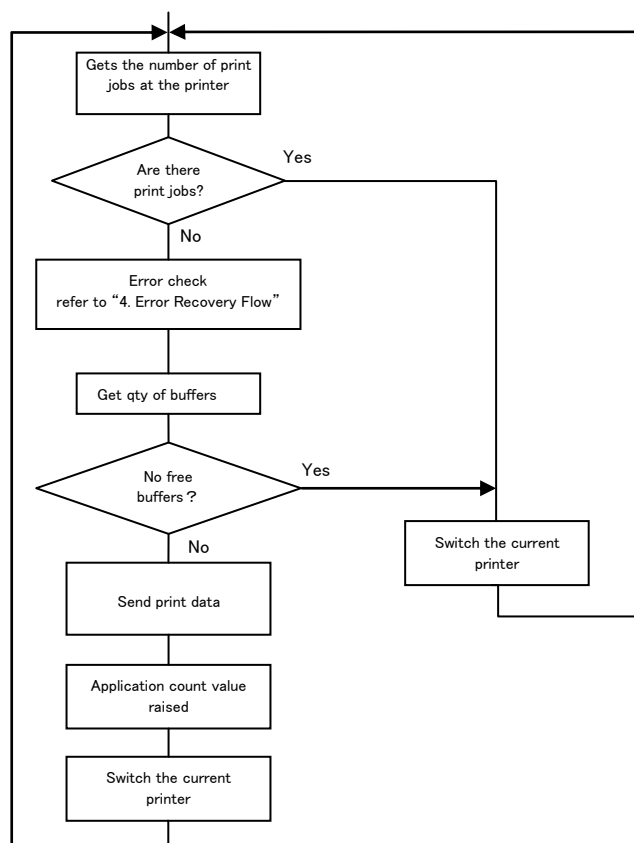
- Connected printers : 4 Unit
- Printer operating mode : Double buffer operation
- Spool setting : Spool ON



[Sample Flow]

In the overall process, when a print request is received, it looks for a printer that can receive data, and then it sends the data. Details of the process are listed below.

- ① When a print request is received, it checks to see if there is a print job at the current printer (WindowsAPI EnumJobs). If there is a job, it switches the current printer to a different printer.
- ② It performs an error check. If there is an error, it performs the error recovery process. (for details, refer to “2. Error Recovery Flow”)
- ③ If there is print job and no error, it gets the number of free buffers at the printer (status API GetFreeBuffer).
- ④ If there are no free buffers, it switches from the current printer and looks for a printer it can send to.
- ⑤ If there are 1 or more free buffers, it sends the print data to the printer.
- ⑥ After the print data is sent, the application’s print count value is raised and the current printer is changed.



4. Error Recovery Flow

When an error occurs, it's necessary to find the image that was being printed at that time to find out the right image(s) to be recovered, based on the printer's counter (GetCounterL in the Status API).

- (1) Checks for print jobs.
- (2) If there are no print jobs, gets the status of the printer and checks for any errors.
- (3) If there is any error found, gets counter value of the printer.
- (4) Compares the value of the printer's counter and the counter of the application side.
- (5) If the difference of the two counter values is 2, recovers the two previous images. (In a multi-printer system, sends the image to be reprinted to another printer that is ready. If it is a single printer, sends the image to be reprinted after the printer error is solved.) In the case when the difference is 1, recovers the previous image.

[Note]

- In the case where a print job is stacked or is not released for a long time, it's possible there is a communication error, and it may be necessary to go into the error recovery process.
- If there is no print job and communication is suspended for some reason, a failure code will be returned approx. 1 minute after sending the DP-DS820 printer status API to get the printer status. (During this time, the application is idling, waiting for the status to be returned) So, when confirming the status, it's recommended to check the time from the start of the status check to the end. If the time in between is too long, it's necessary to go into the error recovery process.

