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LaserWriter Select 300: Printing Process (2/93)

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TOPIC -----

This article describes the printing process used by the LaserWriter Select 300.

DISCUSSION -----

While other Apple laser printers image document pages directly into the printer's internal memory, the LaserWriter Select 300 performs most of its printing process in the host computer's printer driver.

The LaserWriter Select 300 print process begins when a page is converted into two files: the object file and the index file. The object file contains descriptions of all the objects on the page, and the index file contains information on where each of the objects belong on the page.

The printer driver then allocates memory inside the Macintosh to hold a portion, or band, of the page that is being printed. This memory is called a band buffer. (The size of the band buffer depends on how much memory is available; it can be as small as 4KB for a portrait page, or 9KB for a landscape page.) The objects are then imaged into the band buffer one scan line at a time until the buffer is full.

Any objects that extend beyond the number of scan lines that the band buffer can hold are clipped. When the buffer is full, the driver compresses the data in the buffer with an Apple proprietary compression scheme and sends the band to the printer. This compression scheme processes data with no loss of information and is tuned for high-resolution images.

The printer places the compressed data into its internal buffer and then waits for the next band. When all the bands for a page have been sent to the LaserWriter Select 300, the driver instructs the LaserWriter Select 300

to begin printing the page. The printer then begins decompressing the data and imaging the scan lines to the print engine.

Because much of the printer intelligence is located in custom ASICs and the LaserWriter Select 300 driver, the LaserWriter Select 300 logic board is much simpler and smaller than that of the LaserWriter Select 310. The LaserWriter Select 300 also needs less on-board RAM (only 512KB) due to the data compression techniques employed by the driver.

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