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## Macintosh: Using Print Buffers With ImageWriters

Revised: 8/5/92  
Security: Everyone

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Article Created: 31 January 1986  
Article Last Reviewed: 4 August 1992  
Article Last Updated:

TOPIC -----

The article below is adapted from Dan Cochran's column "Answers from the Mac Team" in MacUser, February 1986, page 117.

DISCUSSION -----

A 32K print buffer has little or no effect when used with the Macintosh printing anything but text in Draft quality. For instance, if all MacWrite needed to do was send out a single byte of information for each character that it wanted to print, a serial buffer with 64K of memory would be able to receive and hold at least 20 pages of material and free up your Macintosh for other work while the printer was busy. If you're content with selecting Draft quality from the Print Dialog box, such a buffer device should work just fine. In Draft mode, the ImageWriter, acting like most serial printers, simply receives a sequence of single character codes (the ASCII set), one code for each character that is to be printed. For example, a typical MacWrite page of Geneva 12-point font will rarely exceed 3000 characters. The ImageWriter II optional buffer can handle the printing of up to 10 such pages in Draft Quality mode.

Because of the way the Macintosh sends information to the printer in the Standard and High Quality modes, a 32K buffer would not be large enough to hold even one page of information. To produce print quality better than Draft, the ImageWriter must receive much more information than simply a one-byte code per character.

Say you select High quality text from the Print dialog box and Tall Orientation from the Page Setup dialog box. This means that the ImageWriter will be printing 160 dots per inch horizontally and 144 dots per inch vertically. For an 8 inch by 10 inch printed page, the Macintosh

has to send enough information to the printer so that it can image  $(160*8)*(144*10)$  or 1,843,200 dots. Each dot to be printed takes a bit of information to tell the printer whether the dot is supposed to be black or white. The printer can receive this information in 8-bit words, which, divided into the 1,843,200 dot/bits of the page, results in 230,400 words of memory (approximately 225K) needed in a print buffer device for storing even one page of MacWrite information. A buffer that could handle a 20-page document would need 2 megabytes of memory.

Some third party buffers have enough memory to make them effective print buffers on the Macintosh.

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Tech Info Library Article Number:1697