

New Technical Notes

Macintosh

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Developer Support

NW 20 - PAP Status Buffer Networking

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This Technical Note shows the format of the ATP data part of Printer Access Protocol (PAP) `OpenConnReply` and `Status` AppleTalk response packets. A PAP client returns this information in its implementation of the `PAPStatus` and `PAPOpen` calls. The status buffer format is shown for both LaserWriter and ImageWriter (with the ImageWriter II/LQ LocalTalk Option card installed) printers.

Changes since November 1990: Much of this information originally appeared in Apple II AppleTalk Technical Note #9.

Topics

- The format of `OpenConnReply` and `Status` PAP status buffers from the LaserWriter printer and from the ImageWriter II/LQ LocalTalk Option card
- Macintosh PAP client implementation information

`OpenConnReply` and `Status` AppleTalk response packets contain up to 260 bytes of data in the ATP data part of the packet. Implementations of `PAPStatus` and `PAPOpen` calls typically return this information into an application supplied “status buffer.” In a `Status` packet, the first 4 bytes of the status buffer are unused. The first 4 bytes of an `OpenConnReply` packet’s status buffer contain the ATP responding socket number, the flow quantum from the printer or print server, and a result code. So, in either packet format, the actual “status data” starts at offset \$04 in the status buffer.

The LaserWriter printer returns its status data in the form of a Pascal string. That string is usually something *almost* suitable to display on the screen (for example, “status: idle” or “job: Fred; document: My LaserWriter is on fire; status: busy; source: AppleTalk”). The status text displayed in the LaserWriter Driver dialog boxes is a result of the information contained in the `statusString`; it is not the `statusString` returned by `PAPStatus` or `PAPOpen`. Figures 1 and 2 show the format of the ATP data part of the `Status` and `OpenConnReply` packets returned by a LaserWriter.

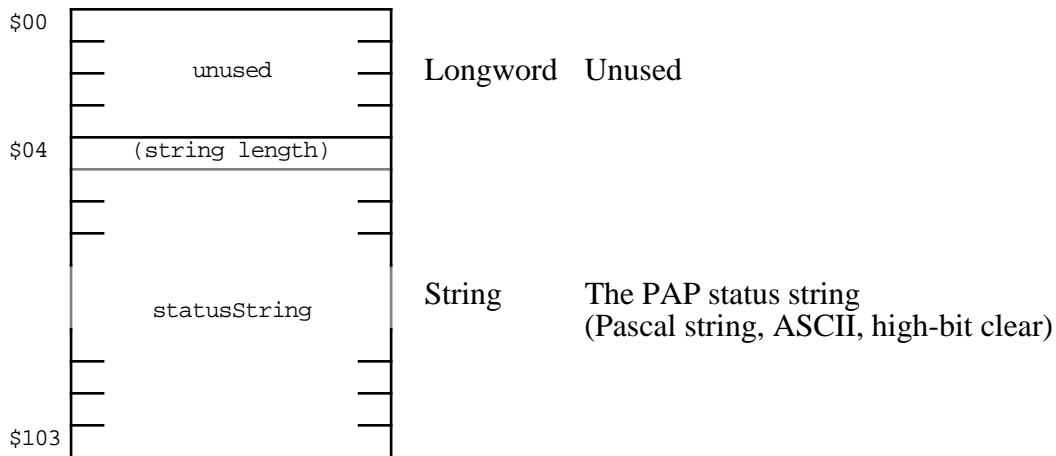


Figure 1—The Status Packet From a LaserWriter

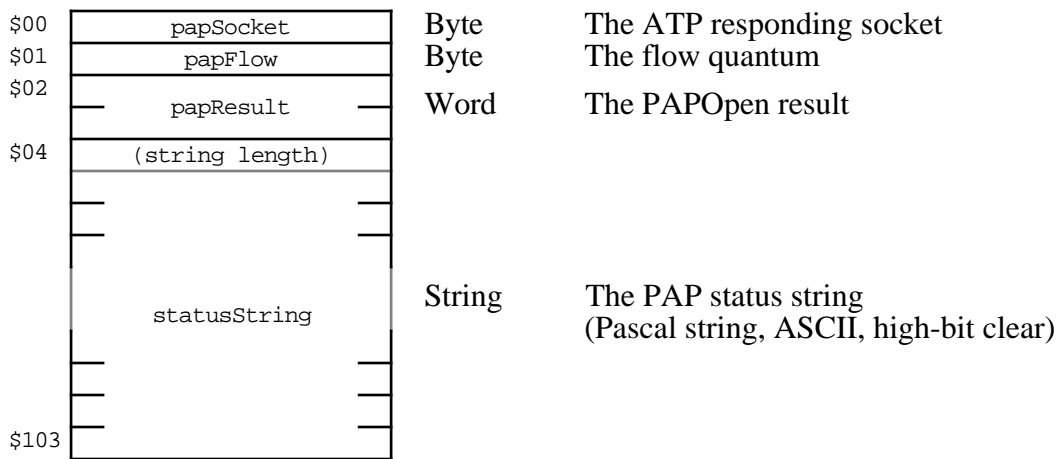


Figure 2—The OpenConnReply Packet From a LaserWriter

The ImageWriter II/LQ LocalTalk Option card does not return a status string. Instead, it returns a `statusBits` word where each bit within that word has a specific meaning. An application can interpret the `statusBits` word and generate an appropriate message to display. Figures 3, 4, and 5 show the format of the ATP data part of the `Status` and `OpenConnReply` packets returned by the ImageWriter II/LQ LocalTalk Option card and the individual bit definitions of the `statusBits` word.

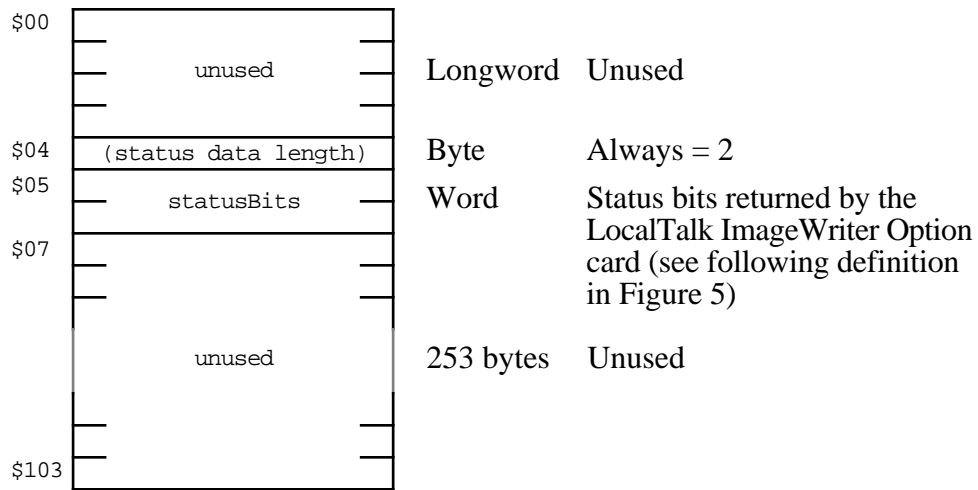


Figure 3—The status Packet From an ImageWriter II/LQ LocalTalk Option Card

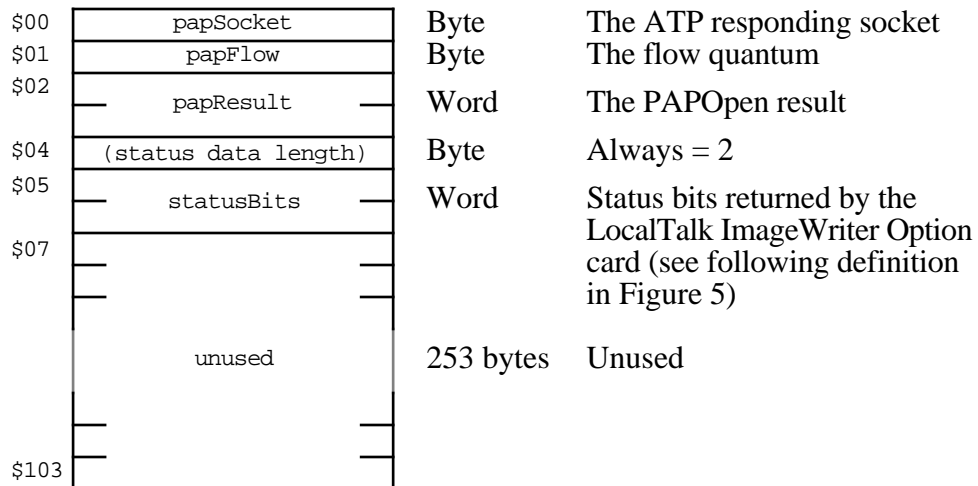


Figure 4—The OpenConnReply Packet From an ImageWriter II/LQ LocalTalk Option Card

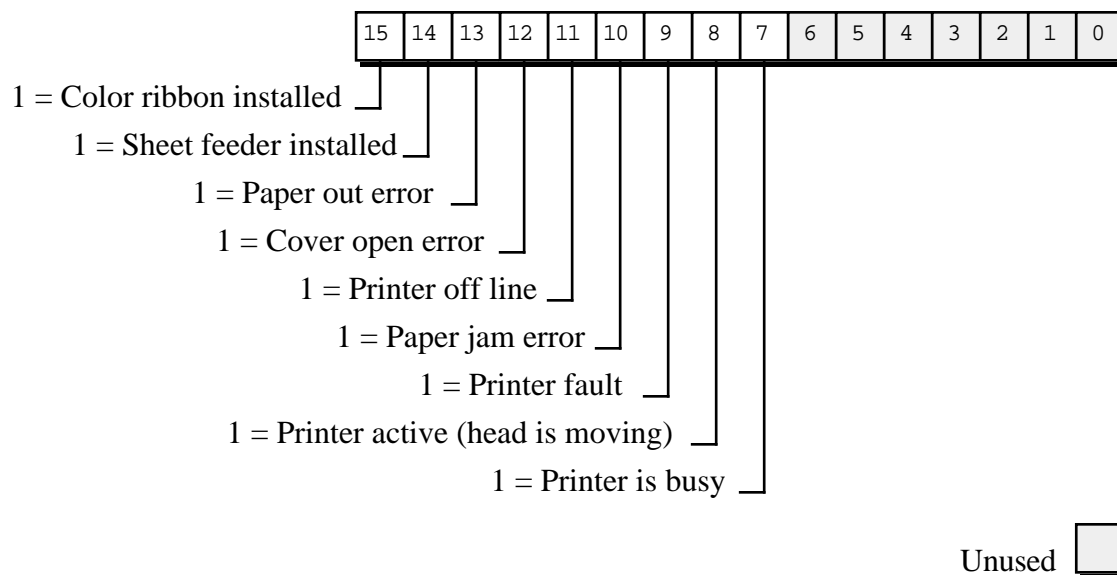


Figure 5—The `statusBits` Word From an ImageWriter II/LQ LocalTalk Option Card

There are two additional things to note when interpreting the `statusBits` word returned by an ImageWriter II/LQ LocalTalk Option card:

- If a sheet feeder is installed (bit 14 = 1), running out of paper results in a “Paper jam error” (bit 10 = 1) instead of a “Paper out error” (bit 13).
- The ImageWriter II/LQ LocalTalk Option card has been known to randomly return all 1s in the high byte (bits 8–15) of the `statusBits` word. When this happens, the `statusBits` word is invalid and an application should repeat the `PAPStatus` call to get valid information.

The Information in This Note and PAP Client Implementations

This Technical Note does not show how to make PAP calls—it only shows the format of the ATP data parts of `OpenConnReply` and `Status` AppleTalk response packets as returned by LaserWriter and ImageWriter printers. This device-specific data is important to some developers, and that’s why we’re publishing it.

It’s important that you realize the PAP client driver embedded in Apple’s current LaserWriter and ImageWriter printer drivers is unsupported by Apple. That PAP driver is unsupported because Apple engineering has always reserved the right to change its implementation as well as its calling interface, and because it will not be present in the QuickDraw GX printer drivers. To run under QuickDraw GX, applications using the PAP client driver embedded in Apple’s printer drivers must be revised to use another PAP client driver.

Apple supplies a PAP client driver that can be linked with your program. You can license that driver from Apple’s Software Licensing department (AppleLink: SW.LICENSE). As an alternative to using our PAP client driver, you can write your own PAP client. This can be a time-consuming operation (depending on how versed you are with asynchronous AppleTalk programming), but it is also very unlikely to break under future systems. Several developers

have done it, and it is fairly straightforward. See the Printer Access Protocol (PAP) chapter of *Inside AppleTalk* for details.

Further Reference:

- *Inside AppleTalk*, Second Edition, Chapter 10, “Printer Access Protocol”
- *PostScript Language Reference Manual*, Appendix D, “Apple LaserWriter”
- *ImageWriter LQ Reference*, Appendix G, “Interface Specifications, Printer Status Register”
- “Print Hints: Looking Ahead to QuickDraw GX” by Pete (“Luke”) Alexander, *develop* Issue 13