Selecting Binary Communications Protocol and Host Switching

Adobe Developer Support

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Selecting Binary Communications Protocol and Host Switching

1 Introduction

This document discusses how the binary serial and parallel communications protocol is selected, and how host switching between emulation modes is selected. The binary protocol is described in a separate document. Host switching refers to using the binary protocol to achieve seamless switching between the PostScript™ interpreter and emulators.

2 Host Switching Versus Pure Emulation

Two paradigms for emulators exist on printers that support host switching between emulation modes. When host switching is not selected, a PostScript printer running an emulator is considered to be virtually another type of printer. Ideally, the user and the software on a host computer need not be aware that the printer is actually a PostScript printer. In contrast, when software switching is selected, the user and the software on the host are aware that the printer is a PostScript printer and can take advantage of the different languages the printer interprets.

These two paradigms are reflected in the way emulators are selected on printers that support host switching between emulation modes. On such printers there are two ways of selecting each emulation, as explained in the following section. In this document, emulation when host switching is not selected is called pure emulation.

3 softwareiomode and Communications Protocol

The setsoftwareiomode operator is used to select from among the PostScript interpreter with the standard protocol, pure emulations, and the PostScript interpreter with the binary protocol. (On some printers the softwareiomode can be selected with the front panel or switches.) When the PostScript interpreter with the binary protocol is selected, host switching can be used. Emulators are invoked in this mode by executing a statusdict operator or procedure from within a PostScript language program.
One `softwareiomode` setting is reserved for the standard PostScript interpreter, one setting is reserved for PostScript with the binary protocol, and one setting is reserved for each pure emulation. The `setsoftwareiomode` operator sets a value in non-volatile RAM.

Because the `softwareiomode` setting affects the communications protocol used on the serial and parallel channels, the communications channel is always closed and reopened between jobs when the `softwareiomode` is changed. Any data sent between the closing and the opening of the channel is lost. The following table shows which protocol is assumed for each `softwareiomode`.

**Table 1 softwareiomode and protocol**

<table>
<thead>
<tr>
<th><code>softwareiomode</code></th>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>PostScript, standard</td>
<td>standard</td>
</tr>
<tr>
<td>Pure emulation (1 setting per emulation)</td>
<td>transparent</td>
</tr>
<tr>
<td>PostScript, binary (host switching)</td>
<td>binary</td>
</tr>
</tbody>
</table>

With this scheme, the enabling and disabling of the binary protocol is controlled by setting the `softwareiomode`, not by directly setting the state of the channel.

4 Emulation Selection for Host Switching

When the `softwareiomode` is set to select the binary protocol, the host can switch between the PostScript language and emulations without causing the communications channels to close and reopen. In this mode the server dispatches each job as a PostScript language job.

Emulators are invoked by executing the `statusdict` procedure `emulate`. The `emulate` procedure takes a name parameter specifying which emulator to invoke and a file parameter specifying the input source for the emulator. It causes subsequent input from that source to be interpreted by the emulator selected until either a Ctrl-D or the sequence ESC-DEL-0 is encountered. The PostScript interpreter continues executing whatever was on the stack before executing `emulate`. If the emulation returned because ESC-DEL-0 was sent, then a Ctrl-D must be sent to terminate the job.

Before and after invoking the selected emulation, the `emulate` procedure clears the current page, initializes the graphics state, and clears the operand and dictionary stacks.
Normally the file parameter to *emulate* is the file returned by the *currentfile* operator. If the file is for a serial or parallel input channel without the binary protocol, then the *rangecheck* error is executed.

The name parameters acceptable on any particular printer is a subset of the following names, depending on which emulators are supported.

**Table 2  Emulators and name parameters**

<table>
<thead>
<tr>
<th>Emulator</th>
<th>Name parameter for emulator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proprinter XL</td>
<td>/proprinter</td>
</tr>
<tr>
<td>Diablo 630</td>
<td>/diablo</td>
</tr>
<tr>
<td>TI 855</td>
<td>/ti855</td>
</tr>
<tr>
<td>HP Plotter</td>
<td>/hpgl</td>
</tr>
<tr>
<td>HP LaserJet</td>
<td>/hpcl</td>
</tr>
</tbody>
</table>

If the name parameter provided is not one of those listed in Table 2, or if it corresponds to an emulator not supported, the *rangecheck* error is executed.
Appendix: Changes Since Earlier Versions

Changes since July 17, 1990 version

- Document was reformatted in the new document layout and minor editorial changes were made.
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