

would appear to print correctly, but might not achieve the maximum possible quality on the device in question for the reasons set out above.

[0045] Instead of relying on fall-back features in the PDL which typically do not take into account capabilities or requirements of particular printers, a component is added to the printer driver that is programmed to read the new form of the PDL, ignoring the fall-back structures that would normally be used by the RIP on the printer controller board. The component converts the incoming data, encoded in the later version of the spool file format, into a representation in an earlier version of the spool file format that retains the same visual appearance. This conversion, unlike a generic conversion by the print subsystem, is done with knowledge of the capabilities and requirements of the print device with respect to resolution(s), color channels etc. In addition, knowledge about other capabilities and requirements of the embedded RIP, e.g. for data about the object types that have been converted, can also be passed through in a device-specific manner, by using private extensions to the PDL.

[0046] Thus, a manufacturer might release a printing device with a RIP on an embedded controller card within it that could accept files using version 1 of a spool file format. The printer driver for the printing device does nothing to the spool file format other than to pass it on to the port monitor that sends it to the device.

[0047] At some later point, version 2 of that spool file format is released as illustrated schematically in step 402 of FIG. 4. Rather than, or as an alternative to, providing an update for the embedded RIP, an updated printer driver that includes the new component that provides compatibility with version 2 can be presented as illustrated schematically in step 404 of FIG. 4. Users of the device would continue to print to it, using either version 1 or version 2 of the spool file format (depending on the version of the operating system and print subsystem that they are using). The combination of printer driver (including the new component) and the printing device itself will handle both versions.

[0048] It will be understood that each block of the flowchart illustrations, and combinations of blocks in the flowchart illustrations, can be implemented by computer program instructions. These program instructions may be provided to a processor to produce a machine, such that the instructions, which execute on the processor, create means for implementing the actions specified in the flowchart block or blocks. The computer program instructions may be executed by a processor to cause a series of operational steps to be performed by the processor to produce a computer implemented process such that the instructions, which execute on the processor to provide steps for implementing the actions specified in the flowchart block or blocks. The computer program instructions may also cause at least some of the operational steps shown in the blocks of the flowchart to be performed in parallel. Moreover, some of the steps may also be performed across more than one processor, such as might arise in a multi-processor computer system. In addition, one or more blocks or combinations of blocks in the flowchart illustration may also be performed concurrently with other blocks or combinations of blocks, or even in a different sequence than illustrated without departing from the scope or spirit of the invention.

[0049] Accordingly, blocks of the flowchart illustrations support combinations of means for performing the specified actions, combinations of steps for performing the specified actions and program instruction means for performing the specified actions. It will also be understood that each block of the flowchart illustration, and combinations of blocks in the

flowchart illustration, can be implemented by special purpose hardware-based systems which perform the specified actions or steps, or combinations of special purpose hardware and computer instructions.

[0050] The computer program instructions, or portions of the computer program instructions, can be stored on any suitable computer-readable medium including, but not limited to, RAM, ROM, EEPROM, flash memory or other memory technology, CD-ROM, digital versatile disks (DVD) or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to store the desired information and which can be accessed by a computing device.

[0051] An image (for example, a page or other object) can be printed on a medium such as, for example, paper, foil, plastic, fabric, metal, wood, ceramic, and the like. The image can be printed by any printing method including, but not limited to, ink jet printing, laser printing, flexographic printing, lithographic printing, gravure printing, screen printing, pad printing, and the like. The image can include, but is not limited to, pictures, text, graphics, and any combination thereof.

[0052] The above specification, examples and data provide a description of the manufacture and use of the composition of the invention. Since many embodiments of the invention can be made without departing from the spirit and scope of the invention, the invention also resides in the claims hereinafter appended.

What is claimed as new and desired to be protected by Letters Patent of the United States is:

1. A method of providing backward compatibility for a newer version of a page description language to a system comprising a computer and a printer coupled to the computer, wherein the printer is configured and arranged for operation with an earlier version of the page description language and has not been updated for the newer version of the page description language, the method comprising:

providing an updated printer driver with a component that incorporates information about the printer to convert a file in the newer version of the page description language into a file in the earlier version of the page description language while substantially retaining a same visual appearance of the file when printed and compared to the file printed by a printer configured and arranged to print the file using the newer version of the page description language; and

storing the updated printer driver on the computer.

2. The method of claim 1, wherein the information about the printer comprises information about capabilities or requirements, or both capabilities and requirements, of the printer.

3. The method of claim 1, wherein, prior to providing the updated printer driver, an original printer driver simply passed the file from the computer to the printer without substantial processing

4. The method of claim 1, wherein the newer version of the page description language comprises at least one fall-back structure to provide backward compatibility.

5. The method of claim 4, wherein the updated printer driver is configured and arranged to ignore the at least one fall-back structure.

6. The method of claim 1, further comprising printing a document from a file in the newer version of the page description language and using the updated printer driver.