Proposal for a “resample-method” Job Template attribute

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File: ftp://ftp.pwg.org/pwg/pwg/ipp/new_COLOR/resample-method-proposal.doc

resample-method (type2 keyword) <Job attribute>
resample-method-default (type2 keyword) <Printer attribute>
resample-method-supported (1setOf type2 keyword) <Printer attribute>

The “resample-method” Job Template Job attribute specifies the transformation that the Printer MUST apply when converting an image (i.e. bit map) from one resolution to another resolution (higher or lower) for printing. The choice of resample-method does not affect the resolution of text or synthetic/vector graphic objects within the job to be printed. It is only applied to images (i.e. bit maps) embedded within the job’s PDL data..

The choice of image data resampling algorithm can have a profound impact on image quality and printer performance. The simplest/fastest algorithms might simply duplicate or delete adjacent pixels. The duplicated/deleted pixels would cause the resulting resampled image to have a “coarse” or “grainy” appearance. More complex algorithms could improve the quality of the resulting digital image but at greater computational cost, therefore impacting printer performance.

The standard keyword values are:

'**nearest-neighbor**' A method used to resample image data (pixels) from one resolution to another that is accomplished by duplicating/deleting an input pixel closest to the desired output pixel location. This would be the fastest form of resampling but would give the lowest image quality.

The algorithm to determine the “closest pixel” is implementation dependent.

'**bi-linear**' A method used to resample image data (pixels) from one resolution to another that is accomplished by using the weighted sum of the four nearest pixel values in the source image to compute the replacement pixel in the output (resampled) image. This method would give higher image quality than nearest-neighbor but would take more time to compute.

The algorithm to determine the “weighted sum” is implementation dependent.

'**filtered**' A method used to resample image data (pixels) from one resolution to another that is accomplished by passing pixels in the neighborhood of the input pixel through a filter to determine the location of the output (resampled) pixel. This method would give higher image quality than nearest-neighbor but would take more time to compute.

The algorithm to determine the “filter” is implementation dependent.

'**automatic**' A method used to resample image data (pixels) from one resolution to another that is accomplished by using input image characteristics to choose a resample algorithm from the list of available printer algorithms. The algorithms available might include nearest-neighbor, bi-linear, filtered, bi-cubic, or some

other weighted interpolation method. This method would be designed to give the highest image quality but would take the most time to compute since the Printer would be examining multiple options.

The method selected is implementation dependent.

'**special**' Implementation dependent method or methods that may be specific to a vendor or class of printers.