Vancouver Response Center
T. 604.451.2727
Toll free T. 1.800.451.2727
F. 604.451.2713
Toll free T. 1.800.767.2736

Customer support email:
callcentre@creo.com

www.creo.com

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Technical bulletin

Enhanced PDF2GO and CEPS JTP

Brisque PDF2Go and Prinergy CEPS JTP are used to convert CT/LW pages and jobs to PDF file format. They are the same module, the only difference is in the platform. The current module used with Brisque 3.0 and 4.0 and Prinergy 2.0.7 employs image masks to describe LW information after the file is tiled into a fixed tile size, while CT images are converted to PDF image objects and are compressed with ZIP or JPEG compression.

Some problems with speed, file size, and application have been overcome with the development of the new version of the PDF2Go/CEPS JTP. The benefits of the new version include:

- Smaller PDF files
- Faster previewing in Adobe Acrobat
- Faster final output

Brisque 4.1 and Prinergy 2.1 will have the improved version of PDF2Go and the CEPS JTP.

Note: Information about the algorithm we apply to convert CT/LW to PDF is confidential. It is to be used only inside Creo and should not be shared with customers. There will be release notes for customers in the future that will explain the benefits of the improved version of PDF2Go and the CEPS JTP.

Current PDF2Go/CEPS JTP Issues

LW data is continuous tone raster data at a device resolution, where the data is encoded with run length compression. If straightforward pixel-to-pixel conversion were employed, this would result in a huge single PDF image object that would take a long time to RIP or to view in Acrobat.

Currently each page is tiled and layers of image masks (bitmap images with an overprint attribute for transparency) are extracted for each layer. This method is best when the number of colors in a tile is small, each color has many pixels in a specific area, and pixels are scattered and not packed. A good example of this kind of data is a text page much like this page.

Using image masks is also appropriate when the data has a small number of colors in a tile and the same color covers the whole tile and squares can be identified. This is not the best solution, however.

All other forms of the LW data are too complex to describe in image masks, especially if the number of colors in one tile is high. This kind of data is typical of vignettes, ct-to-ct borders, and screen capture images which were converted by the Brisque to the LW file in the composite CT world.

New PDF2Go/CEPS JTP Solutions

Optimization Using Rectfills Instead of (or in addition to) Image Masks

Both on Adobe CPSI RIP as well as Harlequin RIP, a PDF "rectfill" object renders faster than a PDF image mask object by a factor of 50 or more.

In the new module, the LW data is analyzed to fit in the optimal representation. If data is defined best as rectangles, it is divided into rectangular regions and painted using multiple rectfills instead of one image mask.

The LW is converted to rectfills when:

- Converting to rectangles if the tile is 100% of the same color.
- Converting areas where there are small number of pixels for a given color (vs. a single image mask for small number of pixels).
- Converting area that can be encoded with relatively fewer rectfills such as vignettes.

This optimization generates files which are displayed faster on Acrobat Viewer and are RIPed faster on any RIP. Rendering time is the fastest time a file can be rendered on the Prinergy system due to engine speed.

Optimization for Special Cases

Copydot "like" colors are typically combinations of 0% and 100% of CMYK colors. This creates 16 LW colors. By pre-separating the data, the number of colors can be reduced to four, for example, CMYK. This method essentially recreates the original copydot page and substantially reduces the complexity of the PDF.

CT Optimization

The Brisque creates one large composite per page and generally only a portion of the CT is visible when merged with the LW. This results in increases in file size and in display time in Acrobat, and affects the performance of the RIP while rendering the files.

To reduce the amount of CT data from in the file, a preprocess analyzes the LW data and creates a list of bounding boxes for the transparent areas in the page then, while the CT is being encoded as PDF images, the CT is cropped according the bounding boxes only to the sections which are transparent in the page.

This method can prevent creating a huge amount of data, reduces file size, results in faster display in Acrobat, and makes interpretation and rendering in the RIP much faster.

Display

Display in Acrobat 5.0 with overprint on will show more accurate results and can be used as a soft proof. The DeviceN color space can be used on every object.

Test Results

Here are test results for the following three products:

- Shira CEPS Link (in its more efficient Postscript format)
- current CEPS JTP
- new PDF2Go/CEPS JTP

The benchmark was made with a 8 page job which was imposed on 24-up plate.

Two jobs were used: Creotivity3 and Creotivity5, The Creotivity5 test job has many vignettes in LW. Results for the C and K plates were recorded, the K plate having most of the LW content. The imaging time for a 24-up plate is 2:39 at full VLF head speed.

Note that CEPSLink files are DCS pages so this is a pre-separated workflow, that is, each separation of the 24-up job is interpreted and rendered separately, while the new CEPS JTP and the old CEPS JTPs are composite workflows so there is one interpretation for all separations of the job.

The results are in minutes.

	Shira CEPSLink		**Old CEPS JTP**		**New CEPS JTP**	
File name	Interpretation	Rendering	Interpretation	Rendering	Interpretation	Rendering
Creotivity 3 Cyan	1:31	2:39	3:47	4:03	1:39	2:39
Creotivity 3 Black	3:41	2:39		3:40		2:39
Creotivity 5 Cyan	0:39	2:39	3:41	3:15	1:21	2:39
Creotivity 5 Black	4:00	2:39		2:57		2:39

Benefits of the New CEPS JTP Compared to Shira's CEPS Link

- Interpretation time is faster. Rendering is based on engine speed so this is the top speed possible.
- It is a pure PDF workflow with the ability to preview in Acrobat and utilize the PDF form of the data. PDF/X-1 is an option.
- It is a Creo product.

About Creo

Creo is a world leader in solutions for the graphic arts industry. Core product lines include image capture systems; inkjet proofers; thermal imaging devices for films, plates and proofs; professional color and copydot scanning systems; and workflow management software. Creo is also an Original Equipment Manufacture supplier of on-press imaging technology, components for digital presses, and color servers for high-speed, print-on-demand digital printers.

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