KEYPOINT INTELLIGENCE

PREPARED FOR:

SOLIMAR SYSTEMS

# WHITEPAPER

## OPTIMIZATION

THE BETTER WAY TO BOOST PRINT SHOP PERFORMANCE

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## The Need for Speed: Meeting Today's Production Demands

Print service providers (PSPs) must rethink and re-engineer their processes to be competitive today and remain so in the future. A confluence of customer and industry trends continues to add stress to existing print workflows, affecting the ability to produce work that meets customer specifications and service-level agreement (SLA) delivery requirements cost-effectively.

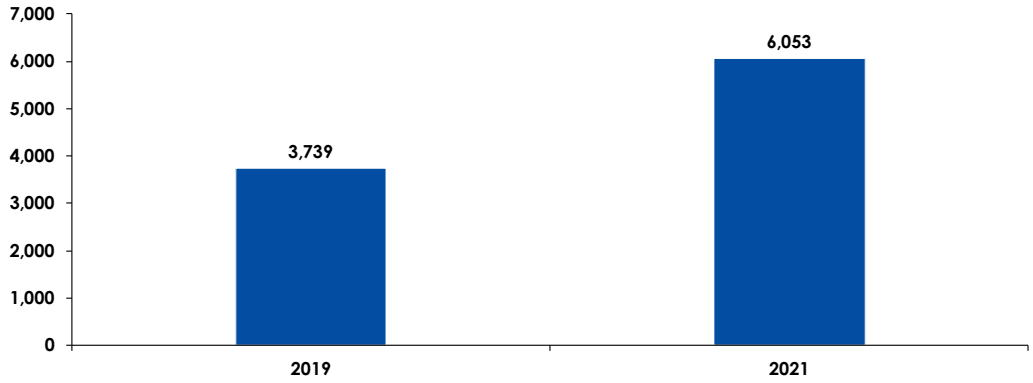
Customer expectations continue to stretch the capabilities of print production in several key areas. To increase the relevance and targeting of their communications, customers are leveraging digital printing to customize and, in some cases, personalize using variable data printing (VDP) solutions. At the same time, the democratization of design means a greater variation in the quality and number of file formats being created and received from customers. As a result, PSPs must normalize and optimize incoming files or risk problems downstream, where errors are more costly. Finally, the speed at which customers expect their jobs to be delivered continues to quicken. The era of taking days or weeks to produce a print job has been replaced by next-day or same-day production requirements.

In response to these changes, PSPs have also expanded their application mix. This often means adding more printing technologies where each additional equipment type introduces new workflow challenges, processes, administrative overhead, and, possibly, new software solutions. Research by Keypoint Intelligence[1] shows most PSPs now own a mix of offset lithography, digital toner and inkjet production printing, and wide-format inkjet printing technology.

The increased workflow demands to support the new and existing equipment makes it more difficult to onboard and manage jobs. Keypoint Intelligence data shows that the average number of jobs per month jumped from 3,739 in 2019 to 6,053 in 2021, representing a 62% increase during that period. PSPs must build optimization to simplify files and processing plus automation to counter these demands to make the workflow faster and touch-free.

[1] *Applications in Digital Print Survey*, Keypoint Intelligence (2018)

**Figure 1: Increase in Average Number of Print Jobs per Month**




N = 122 (2019), 106 (2021) respondents
Source: NA Software Investment Outlook 2019/2021

## Optimization Equals Opportunity

Optimization offers an opportunity to enhance your print automation further. Whereas automation uses technology and systems to remove manual touchpoints from print production processes, optimization uses technology and systems to reduce the complexity and volume moving through those processes.

***Optimization makes workflow simpler.***
***Automation makes workflow touch-free.***
***Both make workflow faster.***

### Controlling the Many Flavors of PDF

Few would question the benefits of exchange and interoperability that the PDF file format has provided to the printing industry. Even so, few would agree that PDFs are fool-proof or without limitations. There are different versions (now up to 2.0) and standardized subsets (e.g., PDF/VT, PDF/UA) of PDF, thus various features and compatibility levels. Equally important, many software solutions create PDF files, meaning no two solutions generate identical PDF files, even if adhering to the same version and specifications set forth by the International Standards Organization (ISO).

The variability of PDF files creates workflow challenges for print production that can result in slower processing and RIP times, incorrect rendering, or a failure to process at all. To improve operations, PSPs should normalize and optimize all incoming PDF files. Normalization ensures the file contains the proper elements for printing (color space, external references, metadata, etc.) while optimization removes or streamlines the bloat of extraneous, duplicated, and overly complicated components. Optimization techniques

often include removing bookmarks and thumbnails, deduplication and sub-setting of fonts, and downsampling of images.

External objects (XObjects) are components of PDF files that can be referenced as repeatable resources, providing further optimization opportunities using ReadyPDF. A simple example is reusing an image[2] 100 times throughout a PDF file by only referencing the one stored originally. Whether image or form, XObjects are used within the PDF files, ReadyPDF can consolidate the number used to minimize the file size and save transfer and processing times before printing. In one example, the image data size of a 5,714-page PDF file was reduced from 317.6MB to 52.5MB – an 83% decrease. Regardless of the techniques used, optimization creates a more agile file, often resulting in a smaller overall file size that is easier and faster to transfer and process.

**Table 1: Results of File Optimization using Solimar ReadyPDF**

| File Type | Mono or Color | PDF Creator | PDF Version | Page Count | Original File Size (MB) | Optimized File Size (MB) | File Size Reduction (%) |
|---|---|---|---|---|---|---|---|
| Direct Mail (letter) | Color | GMC Inspire Designer 8.1.41.0 | 1.6 | 400 | 10.4 | 2.7 | 74.0% |
| Posters | Color | iTextSharp 4.1.2 | 1.4 | 10 | 42.1 | 39.5 | 6.2% |
| 16-panel brochure | Color | Adobe InDesign CS6 merged with HP SmartStream Designer | 1.6 | 48 | 368.3 | 6.6 | 98.2% |
| Postcards | Color | GMC Inspire Designer 8.2.32.0 | 1.4 | 400 | 11.9 | 11.9 | 0.0% |
| Transaction | Mono | PDF Tools 3-Heights PDF Merge | 1.4 | 35 | 0.35 | 0.32 | 8.6% |
| Transaction | Mono | PDF Tools 3-Heights PDF Merge | 1.6 | 15150 | 76.5 | 65.8 | 14.0% |
| Transaction | Mono | PDF Tools 3-Heights PDF Merge | 1.6 | 15150 | 93.6 | 65.8 | 29.7% |
| Transaction | Color | GMC Inspire Designer 8.1.41.0 | 1.6 | 400 | 2.6 | 0.8 | 69.2% |
| Transaction | Mono | iText 7.1.11 | 1.7 | 21686 | 1,070 | 467.2 | 56.3% |

*Source: Solimar Systems; see Appendix for further job details*

**39.6%**

Average reduction in file size through optimizing with ReadyPDF

Based on internal testing of nine mixed job types by Solimar Systems, the optimized PDF file size resulted in an average reduction of 39.6%. Reduced file sizes increase workflow

[2] The term image is used as an oversimplification compared to the implementation in the PDF specification that is based on binary data, color space, compression, and other data

efficiency in several ways, including time to RIP files for printing and speed to transfer across local and cloud networks, along with minimizing e-presentment and archiving costs.

### Preflighting is Not File Optimization

If optimization makes things simpler, how does it differ from preflighting? The term preflight is borrowed from the preflight checks airline pilots perform to ensure the plane is in working order before taking off. The same is true for preflighting software in the printing industry, where these solutions run through a series of rule-driven checkpoints to alert users to concerns. In some instances, users can modify the rule to take corrective actions automatically. When an image with an RGB color space is found, for example, the preflighting rule can be set to convert to CMYK automatically. End-users can create and modify sets or individual rules for how PDF files are inspected.

Optimization also processes files based on a set of rules but focuses on correcting structural elements based on the intended use – print, e-presentment, or digital archiving. Instead of having hundreds of checks and resulting alerts for operators to act on, optimization software focuses on maintaining the integrity of the file while streamlining any non-essential elements. Without operator intervention or decision-making, the result is a lightweight file for further transfer, processing, RIPing, and archiving. ReadyPDF is a PDF optimization solution from Solimar Systems based on this functionality.

## Saving RIP Time

As part of Keypoint Intelligence's Production 2.0 testing protocol, three jobs were run on five production printers from three vendors. Differences in RIP times are recorded between the original and optimized files generated by ReadyPDF. (See full testing details in the Appendix.) RIP times can vary significantly based on the number of pages, richness and complexity of graphic elements, and presence of variable texts and objects.

Due to the increasing speeds, format sizes, and color channels of digital printers, more processing burden is placed on the RIP to maintain rated running speeds. According to one RIP OEM[3], data processing a B1 versus A3+ sheet size, where all other variables are the same, results in almost 39 times the amount of data per second. Optimizing files pre-RIP reduces the file size and complexity, effectively giving RIPs more total output capacity.

[3] Calculations based on data rate calculator from Global Graphics

**Figure 2: Solimar ReadyPDF Optimized Test Files**

**Transactional Bank Statement**
**3,098 pages**

**Commercial Invoice**
**5,000 pages**

**Catalog**
**624 pages**

**Table 2: Production Printers Used for bliQ Production 2.0 Testing**

| Manufacturer | Model |
|---|---|
| FujiXerox | Versant 3100i |
| Konica Minolta | AccurioPress C7100 |
| Konica Minolta | AccurioPress C14000 |
| Ricoh | Pro C9210 |
| Ricoh | Pro C7210SX |

**30 min**

Add an average of nearly 30 minutes of RIP time to an 8-hour production shift with ReadyPDF optimization.

In our testing, the amount of RIP time saved averaged 6% across all testing, with a maximum savings of 28% for one job and printer combination. For PSPs that operate on an 8-hour production shift, the 6% savings equates to nearly 30 minutes of extra RIP processing time per day.

## Minimizing Data Size and Traffic

The flow of data may not be a top-level concern, especially when the data is moving across your local area network (LAN) with Gigabit or better networking. Files can move freely and quickly. Unfortunately, data and files are not used exclusively within your print shop. Files may be shared with your customers for electronic proofing and archive retrieval. With the increasing use of cloud-based software solutions, those files also need to move to and from the cloud platform provider – and the larger the file size, the more it costs.

Whether the data stays on-premises or moves to the cloud, the amount of data scales directly with the number of print jobs produced. If you produce 1,000 jobs per month using the average file size of 184 MB from the jobs in Table 1, then your monthly data usage would be 18.4 GB. According to a simplified cost comparison calculator from cloud provider Backbaze's website[4], the estimated costs range from approximately $313 to $363

[4] Based on 18.4 GB monthly data usage and calculator at Backbaze

per year using Amazon Web Services, Google Cloud, or Microsoft Azure. Using the optimized file sizes produced by Solimar ReadyPDF, those storage costs would be reduced to between $120 and $138 per year.

## Improving Archiving and e-Presentment

Storing customer files for historical reference and future use is a common practice for PSPs that is part of their archiving processes. Every year the amount of storage needed and associated costs increase – especially when the number of jobs also continues to grow. Optimizing files before archiving means more files can be stored within the same finite amount of storage space. For a visual example, think about filling a container with rocks versus sand. You can get far more grains of sand into a container than larger rocks.

A similar challenge exists for presenting documents electronically to end-users. Unlike archiving, files must be compact so that end-users can download documents quickly regardless of their Internet connection or device. Without near-instant access, customers will abandon their efforts and have a negative experience.

Chris Beech, Manager of Composition Services at Gilmore Printing Services in Ottawa, Ontario, shares a slightly different use case for optimization related to e-presentment of financial statements. In this case, file sizes consistently ran near the 500-kilobyte limit imposed by the Canada Post's e-delivery platform. Anything above that file limit would incur extra costs per instance. Using ReadyPDF, Beech reduced the statement file sizes by 80%, taking a 500kb file to a mere 100kb. By optimizing the files, the company could minimize the risk of exceeding the data limit and lock in standard rates.

## Optimization Made Easy with Solimar ReadyPDF

Terms like leaner, faster, and cheaper all describe the benefits of PDF optimization. Getting those results should not be complicated or require touchpoints from an operator. ReadyPDF is the "easy button" for PDF optimization. In fact, the use cases and benefits presented so far relied on the default options built into ReadyPDF. Of course, users can further configure settings for specific purposes and use those as part of specific workflows.

Because no two print workflow configurations are the same, ReadyPDF offers flexibility to fit almost any workflow. ReadyPDF can be used as a standalone solution or an integral part of a mixed vendor, integrated workflow. The result is a solution that can plug into any existing workflow and deliver instant results to keep your print operations running smoothly.

opinion

## Opinion

Less is more – a lot more with file optimization. PSPs that had previously not implemented preflighting solutions due to the level of operator intervention needed should instead evaluate optimization software to streamline production printing workflows. Optimization creates agile and lightweight files while normalizing differences among file creators. Smaller and simpler files allow RIPs to keep up with the increasing data demands and technology improvements in production printers. PSPs can get better results from their printing equipment.

Optimized PDFs also cut down on the amount of network traffic and bandwidth usage. More work can flow through the same constraints at the same costs, which is increasingly important as software solutions and workflows move to the cloud.

Ultimately, file optimization is a critical companion to efficient and automated workflows that can continually save an organization time and costs, build resiliency in handling a higher number of print jobs, and improve the customer experience.

appendix

# Appendix

## Keypoint Intelligence bliQ Production 2.0 RIP Time Testing Data

| Print File | Equipment | Original RIP Time (sec) | Optimized RIP Time (sec) | RIP Time Savings |
|---|---|---|---|---|
|  **Commercial Invoice** | Konica Minolta AcurioPress C14000 | 101.18 | 94.9 | 6.2% |
| | Ricoh Pro C9210 | 228.25 | 165.37 | 27.5% |
| | Ricoh Pro C7210SX | 449.65 | 436.27 | 3.0% |
| | FujiXerox Versant 3100i | 182.05 | 187.6 | -3.0% |
| | Konica Minolta AccurioPress C7100 | 109.33 | 107.93 | 1.3% |
|  **Italian Catalog** | Konica Minolta AcurioPress C14000 | 56.28 | 54.11 | 3.9% |
| | Ricoh Pro C9210 | 107.19 | 103.61 | 3.3% |
| | Ricoh Pro C7210SX | 243.61 | 230.63 | 5.3% |
| | FujiXerox Versant 3100i | 189.919 | 184.4 | 2.9% |
| | Konica Minolta AccurioPress C7100 | 101.63 | 100.45 | 1.2% |
|  **SOLibank Statement** | Konica Minolta AcurioPress C14000 | 55.43 | 55.53 | -0.2% |
| | Ricoh Pro C9210 | 151.91 | 153.33 | -0.9% |
| | Ricoh Pro C7210SX | 471.02 | 421.88 | 10.4% |
| | FujiXerox Versant 3100i | 268.08 | 257 | 4.1% |
| | Konica Minolta AccurioPress C7100 | 63.34 | 59.97 | 5.3% |
| **Total** | | **2778.9** | **2612.9** | **6.0%** |

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Comments or Questions?