



GMG ColorServer User Manual

Imprint

© 2017 - 2023 GMG GmbH & Co. KG

GMG GmbH & Co. KG
Moempelgarder Weg 10
72072 Tuebingen
Germany
Ricoh Production Printing Solutions LLC
6300 Diagonal Highway
Boulder, CO 80301

This documentation and described products are subject to change without notice. GMG GmbH & Co. KG makes no guaranty as to the accuracy of any and all information and procedures described in this documentation. To the maximum extent permitted by applicable law, in no event shall GMG GmbH & Co. KG or the author be liable for any special, incidental, direct, indirect, or consequential damages whatsoever (including, without limitation, injuries, damages for data loss, loss of business profits, business interruption, loss of business information, or any other pecuniary loss) arising out of the use of or inability to use the software or this documentation or the provision of or failure to provide Support Services, even if GMG GmbH & Co. KG has been advised of the possibility of such damages.

Reprinting and copying, as well as other duplication including excerpts of this document, are prohibited without the written permission of GMG GmbH & Co. KG. This also applies to electronic copies.

GMG, the GMG Logo, and GMG product names and logos are either registered trademarks or trademarks owned by GMG GmbH & Co. KG.

All brand names and trademarks are the property of the respective owner and are expressly recognized as such. If brand names, trademarks, or other material are used without the permission of the respective owners, we request appropriate notification. We will immediately stop use of said items.

PANTONE® colors displayed in the software application or in the user documentation may not match PANTONE identified standards. Consult current PANTONE color publications for accurate color.

PANTONE®, PANTONE® Goe™ and other Pantone, Inc. trademarks are the property of Pantone, Inc., © Pantone, Inc., 2007. Pantone, Inc. is the copyright owner of color data and/or software which are licensed to GMG GmbH & Co. KG to distribute for use only in combination with GMG ProductionSuite, GMG ColorServer, GMG InkOptimizer, GMG OpenColor, GMG ColorProof, GMG DotProof® and GMG FlexoProof. PANTONE color data and/or software shall not be copied onto another medium or hard disk unless as part of the licensed products.

Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and/or other countries.

X-Rite is a registered trademark of X-Rite, Incorporated. HP, Hewlett-Packard, and Designjet are registered trademarks of Hewlett-Packard Company. Epson, Epson Stylus, and Epson Stylus Pro are registered trademarks of Seiko Epson Corporation. UltraChrome is a trademark of Epson America, Inc. Nexus is a trademark of Esko. Adobe and Photoshop are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries. Canon is a registered trademark of Canon Inc.

Last update of this documentation: 12/21/2023

This documentation refers to the GMG software version No. 5.5.

1. Solutions	6
1.1 GMG ColorServer Conventional	6
Main features	6
1.2 GMG ColorServer Digital and GMG SmartProfiler Spectral	6
Main features	6
1.3 GMG ColorServer Multicolor	7
Main features	7
2. First Steps	9
2.1 Welcome to GMG ColorServer ..	9
Main features	9
Benefits	9
Solutions	9
2.2 File Processing	9
2.3 Program Overview	10
Static tabs	11
2.4 System Requirements	11
Optimize the performance	12
2.5 Installation on Virtual Hardware	12
2.6 Licensing	12
2.6.1 License Types	12
Dongle licenses	12
Soft licenses	13
Online licenses	13
2.6.2 License Management	14
Open the Application Service ..	14
Create a new online license sys- tem	14
Show all licenses	16
Receive new licenses auto- matically	16
Add new licenses manually	16
Create a device file	16
Switch from dongle licensing to online licensing	17
Switch from online licensing to dongle licensing	19
Create a log file for error ana- lysis	20
2.7 Product Components	21
2.7.1 Installation	22
How to install GMG Col- orServer	22
Always stay safely up to date..	23
2.7.2 Initial Configuration	25
GMG ColorServer Configurator	25
GMG Hotfolder Service Con- figurator	26
2.7.3 Ports and URLs	26
2.8 General System Settings	27
Settings	27
2.9 Client Access Mode	28
Basic access mode	28
Advanced access mode	29
Change the global default mode ..	29
Password-protect the advanced cli- ent access mode	31
Change the access mode for a spe- cific client only	33
2.10 First Things to Do	34
3. Transparencies and Flattening	36
3.1 Introduction to Transparencies and Flattening	36
3.2 What does Transparency Mean?	36
3.3 Why are Transparencies Used? ..	37
3.4 Then What's the Matter with Transparencies?	37
3.5 When and Why Should I Flatten Transparencies?	37
Flattening—Yes or No?	37
Advantages of flattening	38
How much time needs GMG Col- orServer for Flattening? Do I need a faster computer?	38
3.6 Which Flattening Settings do I Need?	38
Special cases to be considered ..	38
3.7 Tips for Designers or PDF Pro- viders	38
3.8 Introduction to PDF	39
PDF Objects	40

Stacking order	40	How can I process spot colors?	66
PDF Layers	40	4.5.1 Creating a New Spot Color Set .	66
Overprint attribute	41	4.6 Lab Filter for Spot Colors	68
3.9 Flattening—Step by Step	41	Filter spot colors by Lab value	68
3.10 Color Management and Transparency	42	4.7 Channel Mapping Rules	70
What caused this effect?	44	How channel mapping rules work	70
3.11 Overprinting Objects	44	The benefits of wildcards	70
3.12 Color Management and Overprinting	45	Create channel mapping rules	71
Color space conversion of overprinting objects	46	Apply channel mapping rules in a conversion	74
Resulting colors	47	Change the rule priority via Drag & Drop	75
Color space conversion of the same objects after flattening	48	Sort rules alphabetically by column	77
Resulting colors	48	4.7.1 Channel Mapping at Job Level ..	77
What caused the different behavior?	48	4.8 Resource Management	81
3.13 Flattening and TAC	49	4.9 Synchronization with GMG OpenColor	82
What caused this effect?	50	4.9.1 Automatic Synchronization with GMG OpenColor	82
3.14 About Flattening and Normalizing	52	Activate the automatic synchronization	82
Dependencies between flattening and normalizing	52	4.9.2 Synchronization Status	82
3.15 Improved Handling of Overprinting Effects for PDF Processing without Flattening	52	4.9.3 Which Resources Will Be Synchronized?	83
How does it work?	52	From which GMG OpenColor project?	83
4. Resources	54	4.9.4 Synchronization Problems	84
4.1 Resources	54	Resolve the problem and reactivate the automatic synchronization	84
4.2 Normalizing Colors	55		
4.2.1 ICC Based Normalization	56		
4.2.2 MX Based Normalization	56		
4.3 Color Conversion	57		
4.3.1 Creating a Conversion	58		
Converting Spot Colors to CMYK	60		
4.4 PDF Processing	60		
4.4.1 PDF Processing	61		
4.4.2 General PDF Processing Settings	64		
4.4.3 Image Resampling	65		
4.4.4 3D Sharpness	65		
4.5 Spot Colors	66		
5. Hotfolders	86		
5.1 Hotfolders	86		
Hotfolder Types	86		
Hotfolder Locations	86		
Hotfolder Workflows	86		
5.2 Creating a Hotfolder Location ..	86		
How to create a Hotfolder Location	87		
Folder structure	87		
5.3 Creating a Hotfolder	87		
How to create a hotfolder	88		
Duplicating a Hotfolder	88		
Importing / Exporting Hotfolders ..	88		

5.4	Input Folders	88
5.5	Hotfolder Workflows	89
	Workflow Options	89
5.5.1	Color Processing	89
5.5.2	Output	89
5.5.3	Cleanup / Backup	90
	How to set up backup and cleanup routines	90
5.5.4	Report	91
5.6	Job Ticket Hotfolder	91
	Job Ticket XSLT	91
	XPath	91
	Example: How to use XPath to address the Normalization setting of a Job Ticket Hotfolder	91
5.7	Job Tracking	92
	Search / Filter	92
5.8	The Job Editor	92
	Edit single jobs with the job editor 93	
6.	Manual Job	97
6.1	Creating a Manual Job	97
	Output folder for manual jobs	97
7.	SmartProfiler	98
7.1	About GMG SmartProfiler	98
	GMG SmartProfiler technologies .	98
7.2	Profiling Your Printer and Medium Combination	98
7.2.1	Printer & Media	98
7.2.2	Hotfolder	99
7.2.3	Printing and Measuring Test Charts	100
	Test charts	100
	Have measurement data optimized automatically	102
7.2.4	Color Management	102
7.2.5	Finalize & Publish	104
7.2.6	Republish	104
7.2.7	Optimize the Profile Quality ...	105
7.3	Recalibrating a Printer	105
7.3.1	Quality criteria	105
7.3.2	Calibration results	105
7.3.3	Accepting the results	106
7.3.4	Optimizing the results	106
7.4	Customizing Default Settings ...	106
7.5	Template Creation From Existing Documents	107
8.	Paper Adaptation Tool	109
8.1	Paper Adaptation Tool	109
9.	Troubleshooting	110
9.1	Troubleshooting	110

1. Solutions

1.1 GMG ColorServer Conventional

GMG ColorServer Conventional automates the optimization of PDF and image data for conventional printing processes. It helps you achieve the highest color quality for CMYK process colors and spot colors.

Main features

- ◀ Automated data **normalization** to one output intent.
- ◀ Automated color space **conversion**.
- ◀ RGB-to-CMYK, CMYK-to-RGB separation.
- ◀ CMYK-to-CMYK, RGB-to-RGB conversion or reseparation.
- ◀ Highest quality conversion of **spot colors** to the target color space (CMYK) based on spectral measurements and the patented prediction engine of GMG OpenColor.
- ◀ Automated **ink saving** with GMG InkOptimizer.

The features bundled in this solution are not included in the standard GMG ColorServer version, but require purchase of GMG ColorServer Conventional.

Color Management

The color management in GMG ColorServer allows you to perform an automated **normalizing** of different input color spaces (as defined by the embedded ICC profile of a PDF object) to the same output color space. Additionally, you can apply a color space **conversion/reseparation** (RGB-to-RGB or CMYK-to-CMYK) and optimize CMYK separations for the target printing process with a GMG InkOptimizer profile. All steps are **optional** and can be **combined** with each other.

The intelligent color management algorithms in GMG ColorServer make sure PDF objects are processed only with matching color profiles: If you are using an RGB-to-CMYK separation profile in a conversion, the profile will be applied only to RGB data. (If, however, you defined a normalization with a CMYK Output ICC Profile, you cannot select an RGB-to-CMYK separation profile for the conversion, because the RGB data will already be normalized to CMYK.)

1.2 GMG ColorServer Digital and GMG SmartProfiler Spectral

GMG ColorServer Digital automates the optimization of PDF and image data for digital printing processes. It helps you standardize your inkjet or toner-based digital presses and gives you the flexibility to switch jobs from one press to another.

As part of GMG ColorServer Digital, GMG introduces an entirely new version of GMG SmartProfiler, based on spectral measurements instead of Lab. Don't worry, profiling will be just as easy as before. In the background, GMG OpenColor will serve as a profiling client and will automatically provide the appropriate test charts. You will only need a measuring device able to create spectral measurement data.

Main features

- ◀ **Fast and easy stabilization and calibration** of your digital presses.
- ◀ **Ink and click savings** while achieving the highest possible color quality.
- ◀ **Reliable color consistency throughout the production chain**, no matter which press is used.

GMG SmartProfiler Spectral and other features bundled in this edition are not included in the standard GMG ColorServer version, but require purchase of GMG ColorServer Digital.

Learn more

To use GMG SmartProfiler Spectral, simply go to the **Resources** tabbed page, **SmartProfiler**. Then expand the **New** button and click **SmartProfiler Spectral**.

1. Solutions

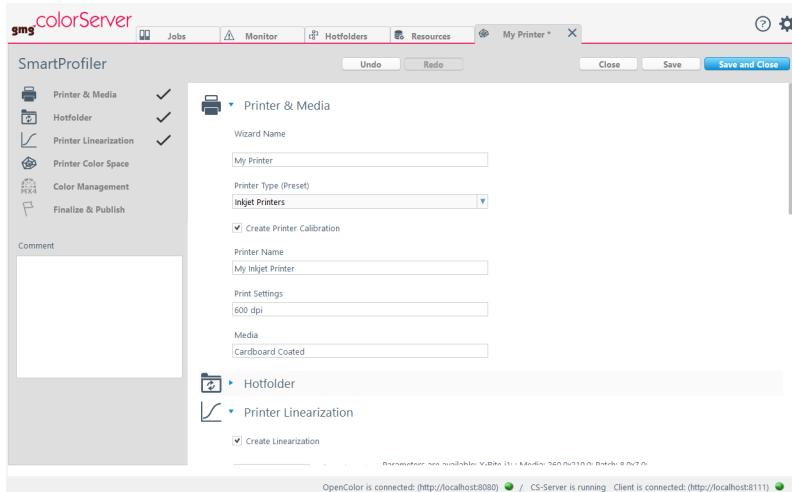


Fig. 1 GMG SmartProfiler will guide you through the profiling process.

Please follow the link to read more about GMG SmartProfiler: "About GMG SmartProfiler" on page 98

1.3 GMG ColorServer Multicolor

GMG ColorServer Multicolor features a fully automated multicolor conversion into your in-house standard. CMYK, RGB, spot color, and/or multicolor data can be separated into your individual multicolor ink configuration with up to 7 output inks, plus white (if required).

A reliable prediction of the overprinting behavior and color interplay between CMYK and spot colors is one of the big challenges in multicolor printing processes. As standard separation profiles would not do any good in this complex situation, GMG ColorServer Multicolor uses GMG OpenColor as a profiler. The award winning GMG OpenColor is the first profiling software to accurately predict the overprinting behavior and color interplay with only a minimum of measurement data and test charts required. This is possible by combining spectral measurements with a patented prediction engine that applies mathematical models of printing processes to predict what will happen on the press. The centralized data management and the simple user interface make it easy for beginner and expert alike to create high-quality profiles—ready for immediate use in GMG ColorServer.

With GMG ColorServer Multicolor, you will achieve the highest possible print quality and standardization between digital and conventional presses in no time.

Main features

- ◀ **Automated conversion** of PDF and images to your multicolor printing condition.
- ◀ **Reliable color consistency throughout the production chain**, no matter which press is used. Full flexibility to switch jobs in hybrid environments.
- ◀ **Best spot color reproduction** confirmed by several associations such as FOGRA and the Ryerson University.
- ◀ **Predictable spot color overprints** based on spectral measurements and the patented prediction engine of GMG OpenColor.
- ◀ Fast and easy stabilization and **calibration of your digital presses** with GMG SmartProfiler.
- ◀ **Improved customer relationships** through professional color communication.

The features bundled in this solution are not included in the standard GMG ColorServer version, but require purchase of GMG ColorServer Multicolor.

See how it works



Fig. 2 This packaging sample shows the initial design with CMYK and three spot colors. With GMG ColorServer Multicolor, you can easily convert it to your custom ink configuration, for example CMYK + OGV.

Follow these easy steps to set up a hotfolder for multicolor conversion in GMG ColorServer. This feature requires an "OpenColor Multicolor Conversion" license, included in GMG ColorServer Multicolor.

1. Define the document color space in GMG OpenColor or use the preinstalled ISO Coated v2 project.
2. Define the press condition on the basis of spectral measurements in GMG OpenColor. GMG OpenColor provides multicolor test charts for you. You can also measure print control bars.
3. Calculate a spot color library and a CMYK-to-MultiColor and/or MultiColor-to-MultiColor conversion profile in GMG OpenColor.
4. Import the spot color library and the profiles into GMG ColorServer and create a **Conversion** template from it. The template defines how a specific input color will be separated.
5. Use the **Conversion** template in a hotfolder.
6. You are ready to go! Just place PDF and image data with the appropriate document color space into the input folder. The converted files will be sent to the output folder and are ready for printing.

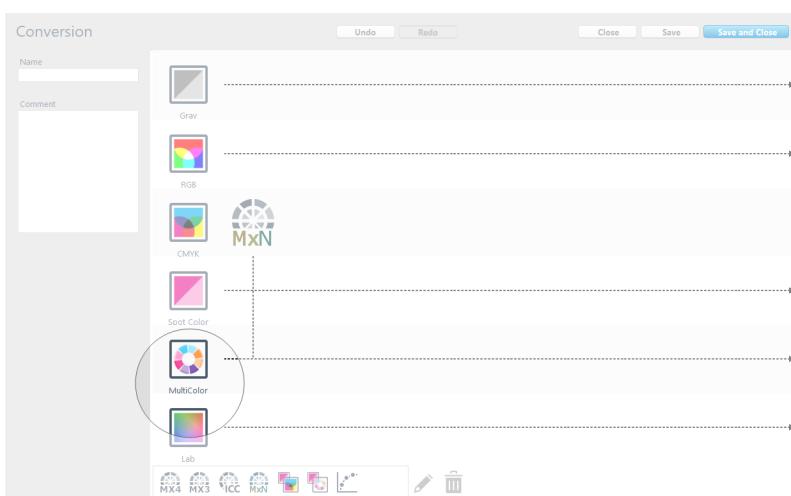


Fig. 3 Screenshot of a **Conversion** template. In this example, CMYK and spot color objects will be converted to a 6c Multicolor output space.

2. First Steps

2.1 Welcome to GMG ColorServer

GMG ColorServer is a versatile program for a broad range of color management tasks. More than a standard color server, the software comes with high-end DeviceLink technology to get the most out of your PDFs and images, delivering press-ready files in reproducible high-end quality.

Main features

- ▶ Custom spot color and profile creation with GMG OpenColor
- ▶ Intelligent, industry-standard PDF processing (integration and full support of the latest Adobe PDF Library)
- ▶ **Central data storage** for multiple clients
- ▶ Sophisticated **load balancing**
- ▶ **Interface** to third party workflow systems such as Dalim TWIST or Enfocus Switch
- ▶ Automated job **processing of job tickets** (XML/JDF)

Benefits

- ▶ Reliable color consistency throughout the production chain
- ▶ Press-ready flattened and color managed PDFs
- ▶ Smooth gradients, high detail in the shadows, bright and colorful images
- ▶ Preservation of the black channel and pure colors
- ▶ Consistent color appearance across different substrates
- ▶ Simple configuration of typical tasks in day-to-day production
- ▶ High performance through parallel job processing and automated workflows

Solutions

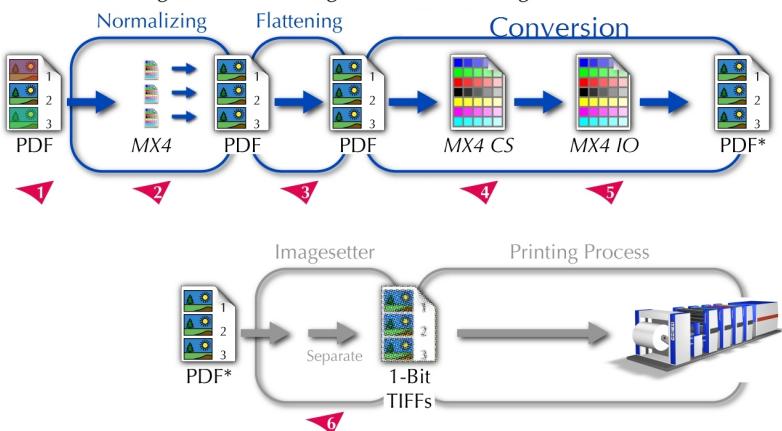
GMG ColorServer comes in three solution bundles. Everything you need for the task is right at your hands. You will not need any additional licenses or options. This includes GMG InkOptimizer for conventional printing, EcoSave for digital printing, and GMG OpenColor, the award winning profiler that accurately predicts the overprinting behavior and color interplay with only a minimum of measurement data and test charts required.

- ▶ "GMG ColorServer Conventional" on page 6
- ▶ "GMG ColorServer Digital and GMG SmartProfiler Spectral" on page 6
- ▶ "GMG ColorServer Multicolor" on page 7

2.2 File Processing

The following provides you with an overview on how files are processed and which processing steps can be performed by the software.

PDF Processing with Flattening and Normalizing



All color management steps described in the following can be fully integrated and automated by a unique hotfolder technology. Note that all steps are **optional** and can be **combined** with each other.

A PDF file may contain several images that are still in their original color spaces (1), that is, have not yet been converted to the target color space. Each object can be tagged with an **embedded ICC** profile describing its current color space. The **output intent** of the PDF describes the target color space.

For printing, RGB objects need to be separated to CMYK. Some objects might also be in different CMYK color spaces not matching the PDF output intent. These objects need to be normalized to the **same** CMYK color space. These color space conversions are performed in the **Normalizing** step (2).

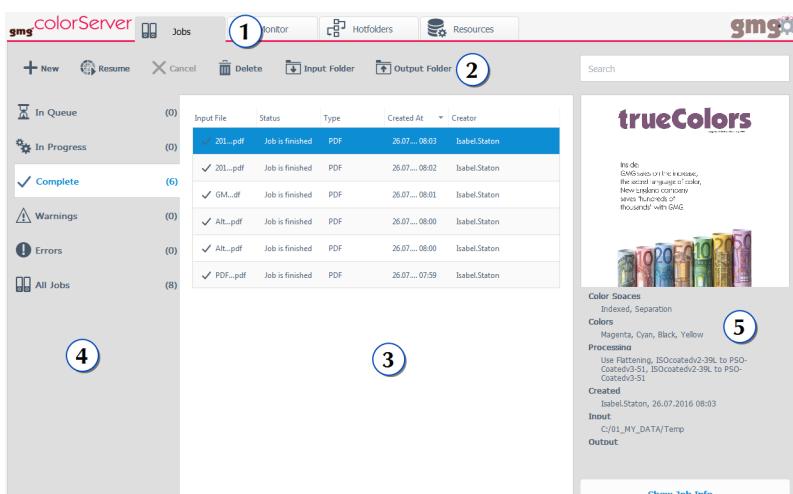
In the **Flattening** step (3), all **transparent** and **overprinting** objects are resolved, resulting in an optimized PDF without any transparent and overprinting objects.

The main color management is performed in the **Conversion** step (4, 5). You can choose between different conversion methods. A PDF output intent can be updated to reflect the color space changes. You also have additional options for optimizing the PDF such as a compression or resampling of images.

See also:

- "Normalizing Colors" on page 55
- "PDF Processing" on page 61
- "Color Conversion" on page 57

2.3 Program Overview



GMG ColorServer Client. 1 Navigation panel with variable number of tabs. 2 Action bar. 3 Content section. 4 Sidebar. 5 Property pane.

2. First Steps

- ◀ At startup, the GMG ColorServer Client shows a horizontal navigation panel (1) with four tabs (**Jobs**, **Monitor** **Hotfolders** and **Resources**). These tabs are **static tabs** and cannot be closed or deleted, their position is fixed at all time. The screenshot shows the **Jobs** tab content. You can view the content of each tab by clicking on the respective tab.
- ◀ The action bar (2) provides quick access to often-needed actions such as creating a new job, hotfolder, or resource. For each action you start, a new **dynamic tab** is opened on the navigation panel. Dynamic tabs can be closed by clicking the close icon on the selected tab.
- ◀ The content section (3) displays a list that gives you a quick overview on your files and folders and in case of jobs also progress. Use the respective actions in the action bar to modify the content or create new content.
- ◀ The sidebar (4) buttons help to **filter** your lists according to status or type.
- ◀ The property pane (5) provides more information on the item that is currently selected in the list. At the upper right of the pane is a **search** box, which allows you to search for content (full text search).

Static tabs

Tab	Description	See also
Jobs	Shows all manual jobs in progress, finished jobs and jobs with warnings and errors. You can easily see how many jobs are being processed at any time. The action bar provides quick access to creating a manual job or resuming a canceled job. (You can also use drag-and-drop to create a job.)	
Monitor	Shows the status of your hotfolders and hotfolder jobs and allows you to stop and start single or multiple hotfolders.	
Hotfolders	Hotfolders are managed in one view, so you can easily configure Image- or PDF hotfolders and also hotfolders from different shared locations.	
Resources	Central storage location for templates, profiles and other color related resources.	

2.4 System Requirements

Our recommendations and minimum system requirements are meant to provide general guidelines for running GMG ColorServer. We recommend systems that meet or exceed the following requirements.

Note The ideal computer configuration depends on the individual configuration and number of components.

Operating system:

- **Windows:** GMG ColorServer supports all versions of Windows Pro, Enterprise, and Server officially supported and distributed by Microsoft Corporation.
- **macOS:** In addition to Windows, the **Client** application can also be used with all versions of macOS officially supported and distributed by Apple Inc.

Note Please note that the macOS **Light Mode** must be enabled. The **Dark Mode** is not supported by the **Client** application.

GMG ColorServer supports all versions of Windows Pro, Enterprise, and Server officially supported and distributed by Microsoft Corporation. In addition to Windows, the **Client** application can also be used with all versions of macOS officially supported and distributed by Apple Inc.

Processor: Intel® Core™ i7

Memory: 8 GB RAM, 512 GB SSD hard disk drive

Hardware components:

- ◀ Required for the GMG GamutViewer feature: Video card with enabled Direct 3D acceleration and OpenGL 3.2 or higher, updated driver (**not** Windows default driver)
- ◀ Minimum resolution 1280 x 1024 pixels
- ◀ USB port: 1 for dongle, 1 per measuring device

Measuring devices: GMG ColorServer does not support any measuring device taken out of production by the device manufacturer.

Optimize the performance

- Use an SSD hard disk.
- Use a high CPU performance. The PDF processing speed depends mainly on CPU performance.
- RAM is important for PDF jobs. A standard PDF with a single A3 page requires about 2 GB RAM and 20 GB temporary hard disk space. A typical packaging job with spot colors and flattening can require between 4 to 16 GB RAM and 150 GB temporary hard disk space. The system itself, i.e. the server and hotfolder service, requires only about 1.5 GB.

2.5 Installation on Virtual Hardware

You can run GMG ColorServer on a virtual machine such as Hyper-V.

As Hyper-V does not support USB devices, you will need to switch from dongle licensing to online licensing (see "License Types" on page 12). To connect a measuring device for use with GMG SmartProfiler, you will need to run a client on a computer with USB support.

To use a digital license on a virtual machine, you will need to run the virtual machine on a **static** host. Switching hosts would likely change physical hardware attributes and thus deactivate the digital license. It is recommended to take a snapshot of the virtual machine after software installation and license activation so that you can go back to a running system in case of a problem.

We recommend to use a dynamic memory allocation in Hyper-V, i.e. the RAM allocated to the virtual machine depends on the workload.

Please follow the link for more information on performance optimization: [Optimize the performance](#)

2.6 Licensing

2.6.1 License Types

Dongle licenses

With dongle licensing, licenses are stored on an external license device ("dongle") that you can connect to your computer via USB. A dongle is similar to a key: when plugged in, the licenses stored on it are recognized and you get access to the licensed application.

If the dongle gets lost or damaged, you can no longer use the application. In such case, please contact us so that we can send you a replacement. Once you receive your new dongle, you can use the application again.

Dongle licenses are available for GMG ColorProof, GMG OpenColor, and GMG ColorServer.

Tip We recommend you to switch your existing dongle licenses to advanced online licenses. With these, you can prevent production downtime due to a lost or defective dongle and also use your GMG applications in virtual environments. The switch is free of charge for you (see "Switch from dongle licensing to online licensing" on page 17).

2. First Steps

Soft licenses

Soft licenses are computer-based licenses for which you do not need a dongle. Instead, the license file is stored locally on your system and is bound to its individual hardware. If you make changes to the hardware or want to run the application on a different computer, you must manually deactivate your existing license file and request a new one via e-mail.

Soft licenses are **only available for GMG ColorPlugin**.

Online licenses

Online licenses are system-based licenses for which you do not need a dongle. Instead, the licenses are tied to characteristics of your physical system or virtual environment and kept up to date via the GMG license server. For this purpose, the system must be actively connected to the internet at least once every 60 days.

Online licenses are very fail-safe and only need to be adjusted by us if you want to use them on a completely different system. Moreover, they offer additional advantages over dongle licenses.

The benefits of online licenses...

- **Flexibility:** online licenses can be used on a local machine or in a virtual environment.
- **Reliability:** online licenses are stable and cannot break or get lost, as a license dongle can do.
- **Convenience:** online licenses are user-friendly; you do not need to carry and plug in a hardware dongle.
- **Speed:** online licenses are instantly available; you do not need to wait for dongle deliveries.
- **Supportability:** with online licensing, we can assist you more quickly and easily if you have any problems or questions about your licenses.

Online licenses are available for GMG ColorProof, GMG OpenColor, and GMG ColorServer.

If you are currently using these applications with **dongle licenses**, you can switch the licenses to online licenses yourself via the Application Service in just a few steps (see "Switch from dongle licensing to online licensing" on page 17). The switch is free of charge, and your serial number remains the same.

If you have not yet purchased **any** licenses for your target computer, you can create a new online licensing system via the Application Service. This will automatically give you a serial number for your system, which you can then use to order new licenses (see "Create a new online license system" on page 14).

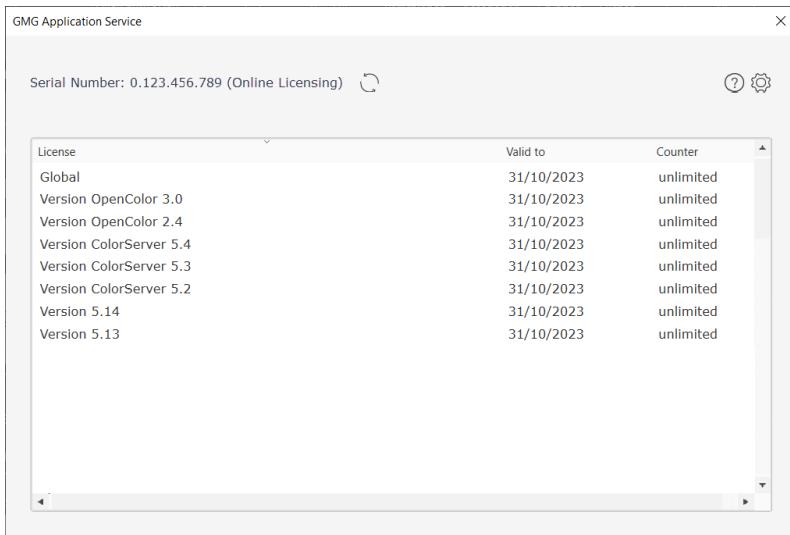
Can I use online licensing offline?

Systems with online licensing must be **connected to the internet at least every 60 days** for the online licensing to remain active. If you use a **proxy server or firewall**, please ensure that they allow access to ***.gmgcolor.com**.

If your system is **offline** for more than **30 days** in a row, the Application Service will automatically remind you to reconnect to the Internet. If your system is still offline after **50 days**, you will receive daily reminders to reconnect to the Internet until the 60-day period expires. If your system is offline for **more than 60 days** in a row, it will be **automatically deactivated**, and you can no longer use the software.

You know that your system will soon be disconnected from the Internet for more than 60 days? Then you can switch your online license system back to a dongle license system using a fallback dongle. Please contact us or your GMG dealer in advance (see "Switch from online licensing to dongle licensing" on page 19).

2.6.2 License Management



GMG licenses are managed via the Application Service. Here you can create a new online license system, view your licenses, check their expiration date, update expired licenses, and add new ones. When there is an internet connection, the service automatically transfers new licenses to your system. If you have any questions or problems related to your licenses, you can also use it to create a log file for our support team.

Open the Application Service

By default, the service runs as background process **appservice.exe** as soon as you start an installed GMG application. It regularly checks the current license status for your system. You can open it in all GMG applications via the menu option **Update License....**

Create a new online license system

If you **do not have any licenses** for your target computer, you can create a new, empty license system via the Application Service. During the creation, you will receive a serial number for your system automatically, which you can then use to purchase licenses from your GMG dealer (see "License Types" on page 12).

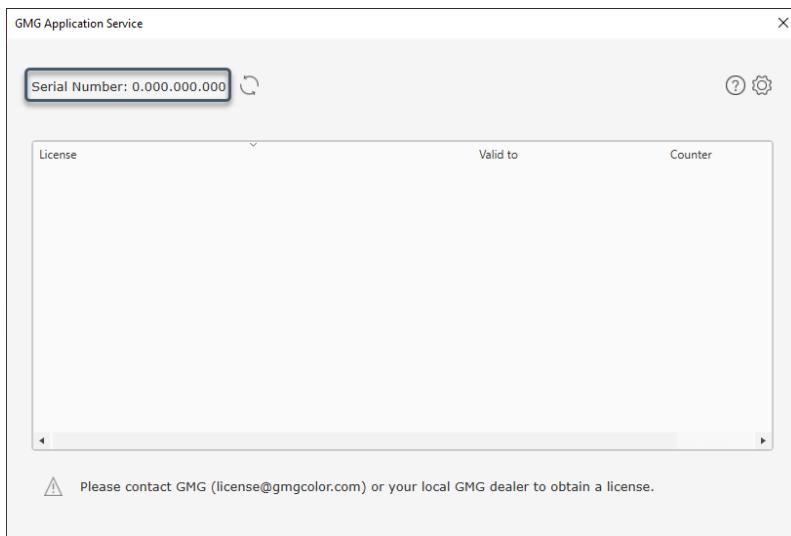
Tip You already have a dongle with licenses for your computer?

Instead of creating a **new** license system for online licensing, you can also **switch** your current dongle licensing to online licensing with just a few clicks. Switching has the advantage that the existing serial number is kept, whereas creating a new online license system would result in a new serial number (see "Switch from dongle licensing to online licensing" on page 17).

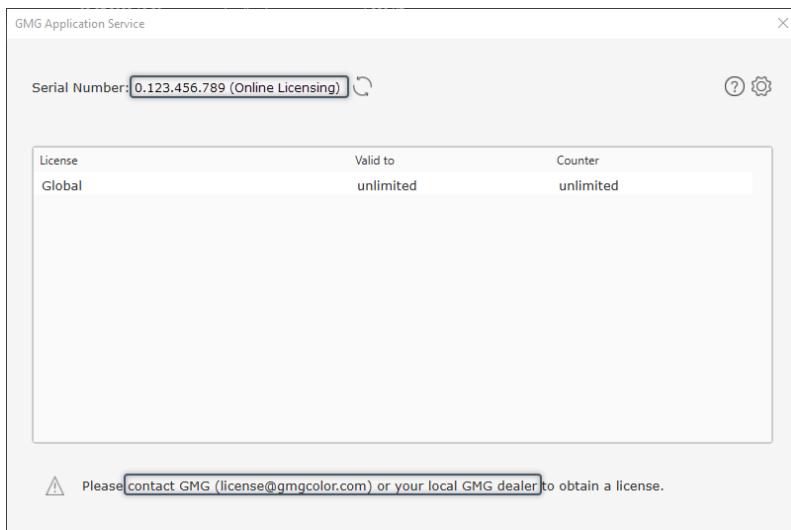
2. First Steps

How to create a new online license system...

1. Please make sure that your system has an active internet connection and that no license dongle is connected.
If a dongle is connected, you **cannot** create a **new** license system, but you can only switch existing licenses (see "Switch from dongle licensing to online licensing" on page 17).
2. In GMG ColorServer Configurator, open the Application Service via **License > License > Update License**.
3. The Application Service opens and shows an empty license overview with the placeholder serial number **0.000.000.000**.



4. Please wait a few seconds until the serial number changes and the status **Online Licensing** is displayed next to it.
Your new online system has then been successfully created and tied to the serial number displayed.



5. With this serial number, you can now order and receive new licenses.
I have accidentally created a new online license system. How do I return to my dongle?

If you have created a **new, empty** license system accidentally, just plug in your dongle and choose **Options > Switch to Dongle Licensing...** to switch it back to dongle licensing (see "Switch from online licensing to dongle licensing" on page 19).

Show all licenses

It does not matter which application you use to open the Application Service: you can always see a complete list of all GMG licenses on the system here. In GMG ColorServer Configurator, you can open it via **License > License > Update License**. Please note that dongle licenses can only be displayed if a dongle is connected (see "License Types" on page 12).

In this license overview, you can also check the validity period of your temporary licenses. If the column **Valid to** shows the status **Expired** instead of a date, your temporary license has expired. Please contact one of our sales channel partners in time to purchase a new license and continue using the software as usual. They will clarify all the necessary details with you and ensure that you receive your new license as quickly as possible.

Receive new licenses automatically

The Application Service checks the current license status every hour. If there is an active internet connection, the service automatically transfers any changes from the GMG Cloud to your system. This also includes new licenses that we have activated for you.

If you have a valid **Software Update Contract (SUC)** or a valid **Subscription**, we will activate licenses for new versions without further request. If you have neither, you must order the new licenses first to have them activated and delivered via the cloud.

In the license overview under **Options > Show version info**, you can see when the status was last checked. If you want to update the status before the next auto-check, click **Refresh**.

Add new licenses manually

If your system is not connected to the internet, you can also add new licenses manually. Please mention this when ordering a license or signing a Software Update Contract (SUC) or Subscription. You will then receive your new license by e-mail as a **.lic** file. Save the file to an external storage medium and then connect it to the target system.

How to add new licenses manually...

1. In GMG ColorServer Configurator, open the Application Service via **License > License > Update License**.
2. In the Application Service, choose **Options > Import license file....**
3. Select the **.lic** file you received by email.
4. Confirm with **OK**.

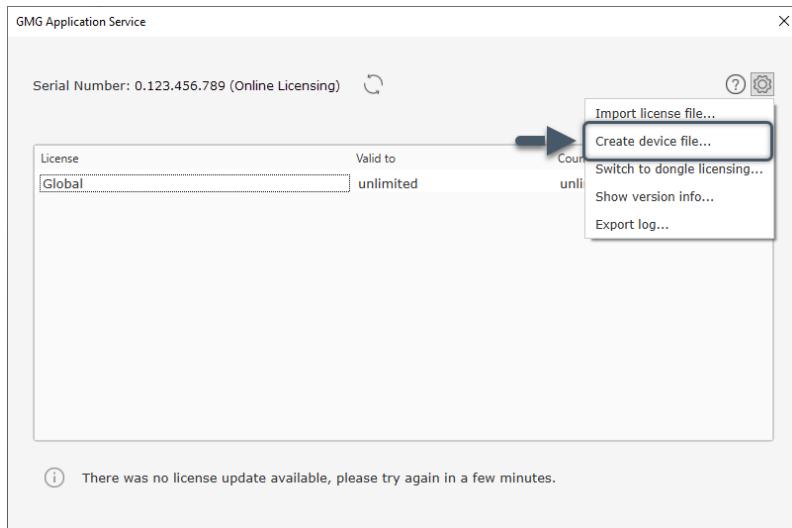
Create a device file

Online licenses are tied to the system for which they were created (see "License Types" on page 12). They are very stable and hard to break, even when it comes to hardware changes. Nevertheless, in case of extensive system modifications, there is a very rare possibility that the altered system might be identified as an entirely **new** online system. Consequently, existing online licenses may not be applied correctly. In this case, you must have us adjust them to the modified system. To do so, create a **device file** with the Application Service. Then send us this file along with your request and your serial number. The file contains all relevant information we need to adjust your licenses accordingly. This service is free of charge.

2. First Steps

How to create a device file...

1. In GMG ColorServer Configurator, open the Application Service via **License > License > Update License**.
2. In the Application Service, choose **Options > Create device file...**



A dialog opens.

3. Follow the instructions on the screen.

Switch from dongle licensing to online licensing

If you want to run your system without a dongle, you can have your dongle licenses changed to online licenses via the Application Service (see "License Types" on page 12).

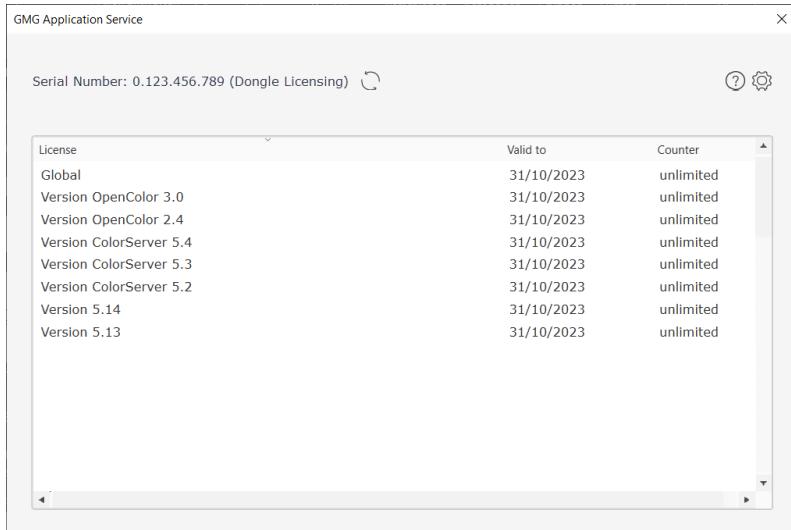
It usually takes about two minutes to switch all your licenses, and your system needs to be connected to the internet during the switch. Your **serial number remains the same**, and the **switch to online licensing does not affect your SUC**.

How to switch to online licensing...

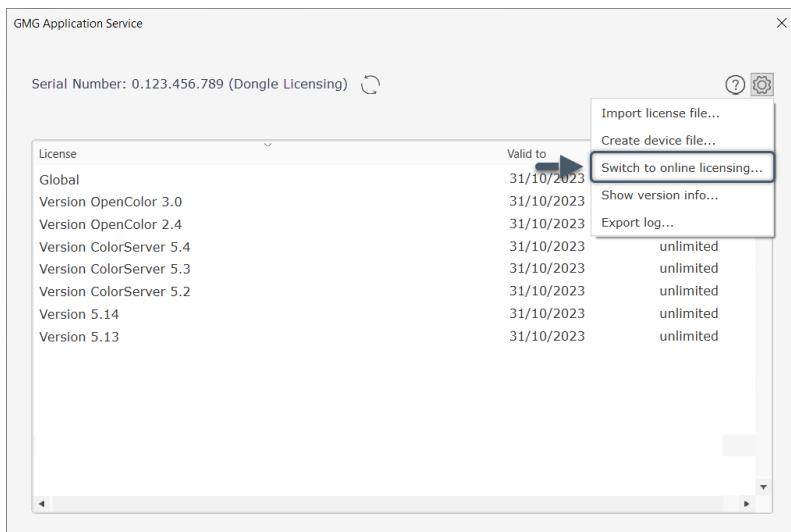
Note When you switch to online licensing, the connected **dongle** will be **deactivated** and can only be used for **two more weeks** as a fallback license system. The dongle can then no longer receive license updates via the cloud, as the serial number is used by the online licensing after the switch. If you want to return to dongle licensing after these two weeks, you will need a new dongle.

Note Please note that systems with online licensing must be connected to the **internet** at least every **60 days** for the licensing to remain active (see "Can I use online licensing offline?" on page 13). If you use a **proxy server or firewall**, please ensure that they allow access to ***.gmicolor.com**.

1. Please plug in your dongle and make sure that your system has an active internet connection.
2. In GMG ColorServer Configurator, open the Application Service via **License > License > Update License**.
3. The Application Service UI opens and shows the license overview and your dongle serial number.



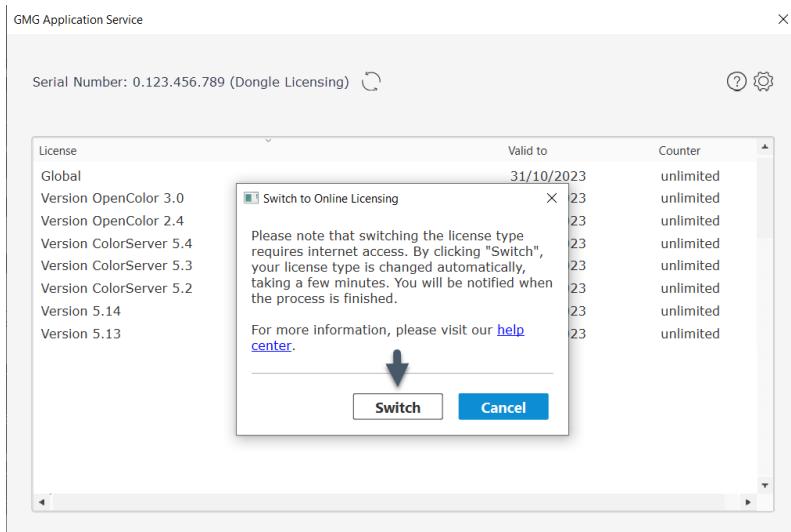
4. In the Application Service, choose **Options > Switch to online licensing...**



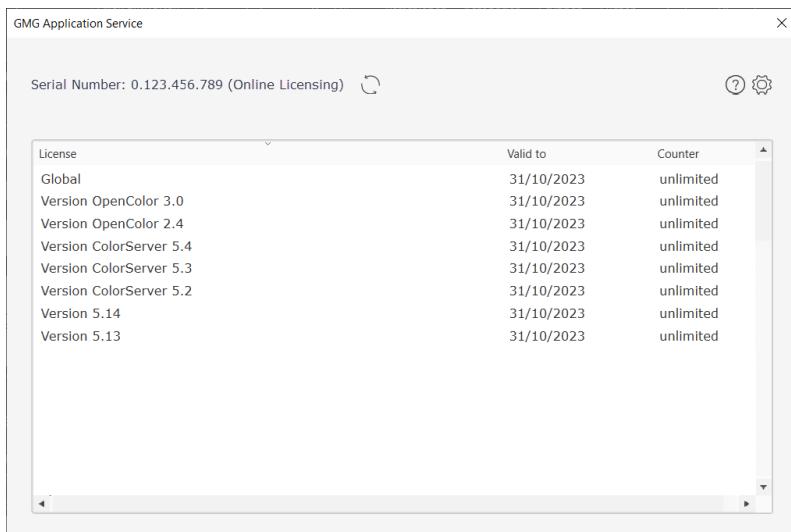
A dialog opens.

2. First Steps

5. Click on **Switch** to switch from dongle licensing to online licensing.
Your dongle will be deactivated and can only be used for **two more weeks**; the dialog closes.



6. Wait about 2 minutes until the switch is complete. You will then be notified automatically.
After the switch, **Online Licensing** is shown next to your serial number; the serial number remains the same.



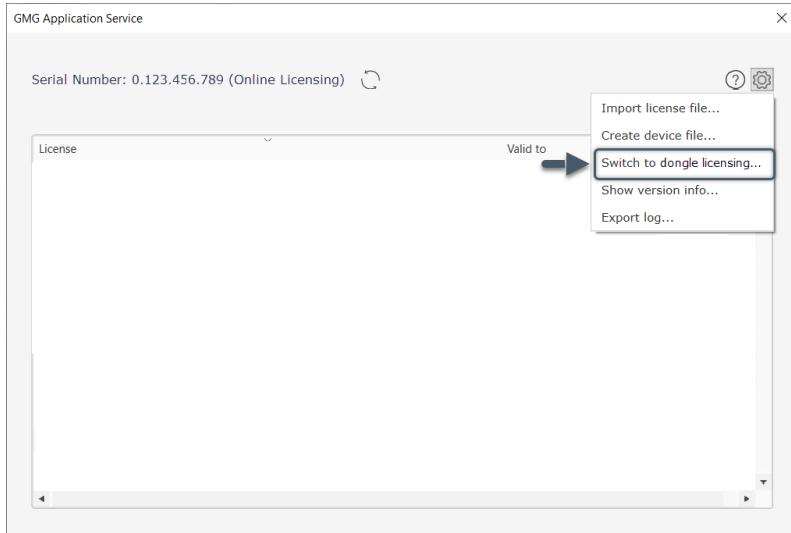
Switch from online licensing to dongle licensing

Have you accidentally switched your dongle licensing to online licensing and would like to undo this? Or do you want to use a fallback dongle because your online license system will be offline for more than 60 days? You can then switch your system to dongle licensing. However, this only works if the **license overview** is **empty**. This ensures that active licenses are retained when your system recognizes and applies the serial number of the dongle during the switch.

If your license overview is **not empty**, please contact us. We will take all necessary backup steps for you and then automatically reset your license overview via the online connection.

How to switch to dongle licensing...

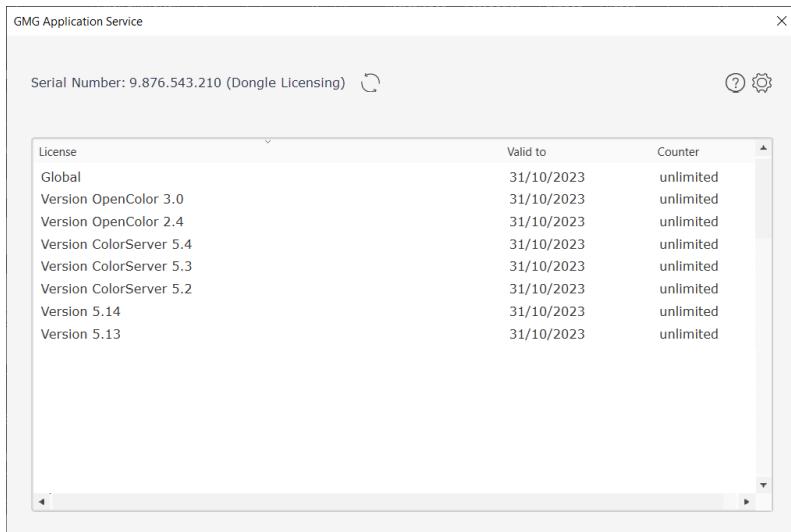
1. Please plug in your dongle and make sure that your system has an active internet connection.
2. In GMG ColorServer Configurator, open the Application Service via **License > License > Update License**.
3. In the Application Service, choose **Options > Switch to dongle licensing...**



A dialog opens.

4. Click on **Switch** to switch from online licensing to dongle licensing.
5. Wait until the switch is complete. This usually takes a few seconds, and you will be notified automatically.

After the switch, the Application Service will show **Dongle Licensing** next to your serial number, which will have changed.



Create a log file for error analysis

If you have any problems or questions regarding your licenses, you can create a log file with the Application Service. Then send this file along with your request to our support team. It contains all the relevant information and helps us to resolve your issue quickly and efficiently.

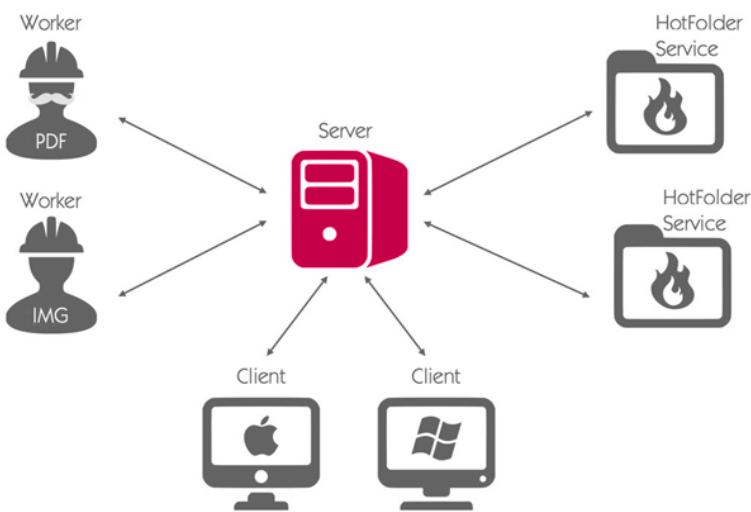
2. First Steps

How to create a log file with the Application Service...

1. In GMG ColorServer Configurator, open the Application Service via **License > License > Update License**.
2. In the Application Service, choose **Options > Export log...**
A file dialog opens.
3. Enter a name for the log file.
4. Select a storage location for the log file.
5. Confirm with **OK**.
The log file is then saved as a packed **.zip** file at the selected location.

Note Information on license management via the Application Service does **not** apply to GMG ColorPlugin and GMG ColorPlugin licenses.

2.7 Product Components



GMG ColorServer has a **client-server architecture**, so the server can operate on any computer in your network. All components can be installed locally, on one computer, or distributed over the network. GMG ColorServer comes with **one installer for all components**. You can select the single components during the installation procedure.

The following table provides you with information on the different components, followed by typical installation scenarios.

Component	Description	See also
Server	The server is the centerpiece of GMG ColorServer and centrally stores all profiles, templates, and status information. It can be run 'headless' in a datacenter with multiple users administering the server over clients. Including an automatic load balancing, the server distributes the incoming files to processing queues.	
Client	Clients can be used by multiple users to access the server and submit jobs, manage resources and hotfolders or monitor the job status right from the desktop. Clients can be installed on a Windows or Mac computer.	
Hotfolder Service	The advantage of a hotfolder service over a standard shared folder is its capability to communicate with the server. A service thus enables a high-performance load balancing and resource availability across shared locations. With help of these distributed hotfolders there is no need to map network drives on the GMG ColorServer machine, these network drives can be directly accessed by the Hotfolder Service.	
Worker	All processing can be offloaded to "workers" which can be installed locally or on a separate computer to run as additional worker instances.	

Component	Description	See also
Paper Adaptation Tool	This tool helps to adapt a print standard or custom profile to your specific print substrate, bridging the gap between printing according to a print standard and printing visually consistent colors. The conversion keeps all colors as close as possible to the selected color space, only adapting the media white point.	"Paper Adaptation Tool" on page 109
ProfileEditor / SpotColorEditor	Profiling and spot color tools to create your own profiles and spot color databases or edit the supplied ones.	GMG-ProfileEditor_CS_Readme_en.pdf

Typical Installation Scenarios

Company Size	Typical Installation
Small	All components are installed on one computer and used just locally.
Midsize	All components are installed on one computer and additional clients are installed on separate computers for multi-user access and collaboration.
Large	All components are distributed over several computers, allowing for a networked, but centrally controllable cross-platform color management. Additionally, more workers as usual may be licensed to achieve a maximum performance.

2.7.1 Installation

Note Due to the architectural changes, a direct upgrade of former versions to GMG ColorServer 5 is technically not possible. If you, however, have GMG ColorServer 4.9 and later, you can use our **Migration Tool** for easily migrating your existing resources to the new version.

The application can be installed either to the default installation path of the operating system or to a custom folder. (If you install the client and the server application on the same computer, both applications must be installed in the same folder.)

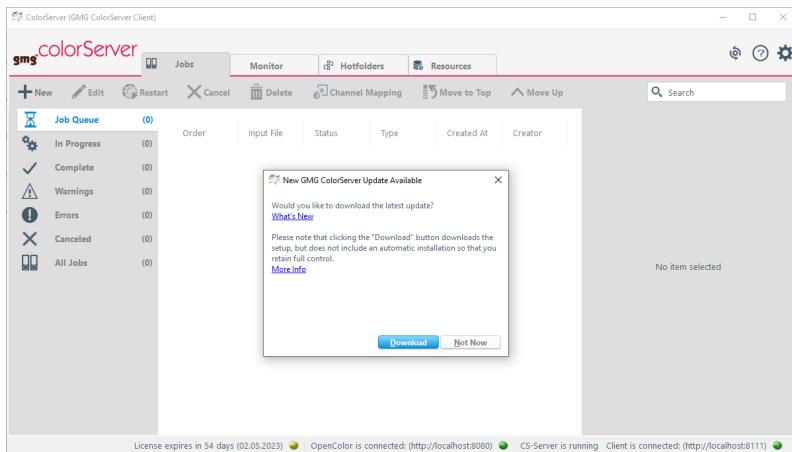
You can also select a custom location for the server **data**, i. e. resources such as color profiles and jobs.

How to install GMG ColorServer

1. You can install the program directly from the purchased DVD.
2. If you downloaded the program from the GMG website, copy the **ZIP** file to a local drive.
3. Extract all compressed files.
4. Double-click the installer file with the file name extension "**exe**" to start the installation.
5. Follow the instructions of the installer.
6. If you want to install the application to a custom folder, add a check mark to the **Use custom destination folder** option.
7. Deselect all features you do not want to install.
8. The installer informs you when the installation is complete. Click the **Finish** button to close the installer.

2. First Steps

Automatic Update Notifications



GMG ColorServer checks daily for new service updates and patches. If there is a new version available, you will be automatically notified with a popup. You can then download the update and install it manually after all active tasks are complete. If you do not want to be automatically informed about new updates, you can disable the notification feature in the Client settings.

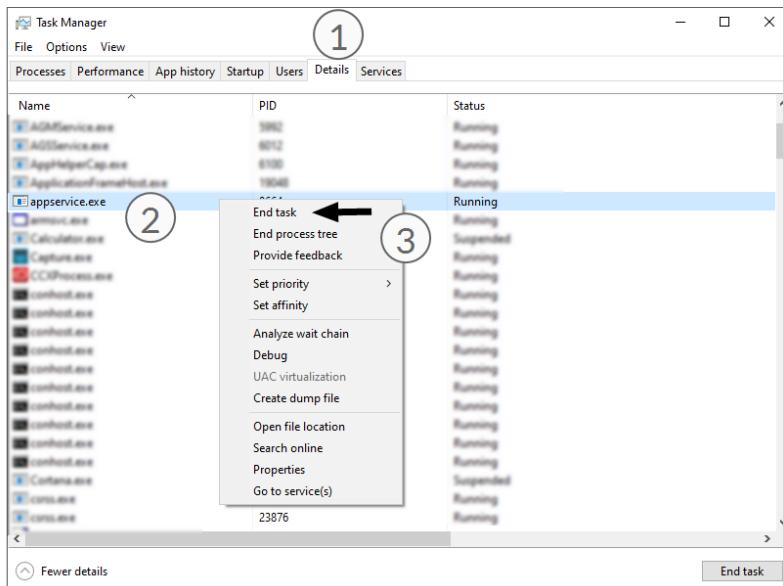
Always stay safely up to date.

Download and install an update

If a new patch or service update is available, you will see a popup with further information and a download button. If you press the download button, the setup file will be saved to your default webbrowser's download directory. This triggers the **download only**. The new version **will not be installed automatically** to ensure a save and smooth update process, especially for systems with multiple clients. If your GMG ColorServer is used by multiple clients, please inform all users about the scheduled update and make sure that all active tasks are complete. Then stop your system and install the update manually.

How to install a new update...

1. In the update notification, click the button **Download**. Alternatively, you can download the setup in our download center under [https://g-mgcolor.com/support/download/product/\[product name\]/](https://g-mgcolor.com/support/download/product/[product name]/).
2. Close all GMG applications.
3. Launch **GMG Service Controller** and check the **Service Monitor** icon in your Windows task bar.
4. If you see the icon with a **green** circle, right-click the icon and select **Stop**. While the server is shutting down, it turns into the icon with an **orange** circle. Please wait until it turns into the icon with a **red** circle before you proceed with the next step.
5. Right-click the **red** circle icon and choose **Quit** to end **GMG Service Controller**.
6. Launch the Windows Task Manager.
7. Open the tab **Details**.
8. Under **Name**, right-click the entry **appservice.exe** and choose **End task**.



9. Go to your download folder and double-click the setup file to start the installation.
10. Follow the instructions on the screen.

Postpone an update

If you receive an update notification but want to download the new version later, you can postpone the download by clicking the button **Not Now**. The notification window will then close and reappear after 24 hours to remind you of the update.

You can postpone the download as often as you like by clicking the **Not Now** button. If you do not want to be reminded of this update anymore, tick the **Do not show again** checkbox additionally. You will then only receive a notification again when another update is available for GMG ColorServer.

Disable automatic update notifications

We don't recommend you to turn off the automatic update notification, since you will only benefit from all new features and stability improvements with an up-to-date system. However, if you still want to forgo any update information, you can do so as follows.

2. First Steps

How to disable automatic update notifications...

1. From the main menu, choose **Options > Settings....**
A dialog opens.
2. Remove the check mark under **Updates > Check for Updates**.
3. Click the button **OK** to apply the changes.

Check for updates manually

If you want to search for new updates before the next auto-check or if you have disabled automatic update notifications, you can search for new versions manually.

How to manually check for new updates...

1. From the main menu, choose **Options > Settings....**
A dialog opens.
2. Under **Updates > Check for Updates**, click the button **Search for Update**.
3. If a new update is available, this will be shown via popup. From there, you can proceed the same way as you would for automatic update notifications.

2.7.2 Initial Configuration

Tip A configuration is only necessary when you are using the product components across several computers. For local use, the default configuration can be maintained.

Per default, the installed components are configured for local use (localhost). To adjust the configuration to fit your requirements, you can use the following configurators from the Windows **Start Menu (All Programs > GMG > ColorServer 5)**:

- ◀ GMG ColorServer Configurator
- ◀ GMG Hotfolder Service Configurator

GMG ColorServer Configurator

Server Configuration Tab

Settings	Description
Queue Port	The job queue default port is 5555 and should only be changed if necessary.
Web Service Address	Per default (*), the server is listening to all components (IP addresses and computer names). If you want to use https, you need to enter the computer name instead.
Web Service Port	The default TCP port for the http/https communication. Typical values: 80, 443, 8080, 8111.
Allowed Origins	Filter to allow only connections from certain http clients. When using the asterisks (*), any client is allowed.
Use HTTPS	Enables connection encryption with TLS (Transport Layer Security). Requires a server certificate with a private key that is bound to the computer name. Certificate-key pairs are created by GMG and exported as a PFX file to be imported at the customer's server computer.
Server Data Folder	Repository folder which stores the application and user data.
Logs	Log files are cleaned up periodically, to ensure that the system works as effectively as possible. When the number of log entries in the active log file has reached the Maximum Number of Server Log Messages , the log file will be saved as an archive, and a new log file will be started. Increase or decrease the Maximum Number of Server Log Messages , depending on the throughput of your system. The higher the number of files processed by your system, the higher the number of log entries. Archived log files will be deleted periodically, after the defined number of days.
Backup and Restore	Full backup and restore possibility of hotfolders and the environment. To avoid data loss, we recommend a regular backup with the scheduler, especially if you have a larger number of workflows and/or each time before performing a software update.

Settings	Description
OpenColor	GMG ColorServer version 5.1 introduced the usage of spot color libraries calculated by GMG OpenColor via a direct connection between both applications. The connection, including the synchronization of projects, is established as soon as a valid URL has been entered and if the connected GMG OpenColor instance has allowance to share the application via the web service. Version 5.2 added an automatic synchronization between Separation Rules in GMG OpenColor and the corresponding Spot Colors in GMG ColorServer. If the option Auto Sync with OpenColor is selected, all spot color libraries derived from a GMG OpenColor project will be updated when changes to the project are saved in GMG OpenColor. Please follow the link for more information: "Automatic Synchronization with GMG OpenColor" on page 82

Worker Configuration Tab

Settings	Description
Address	Fill in the values you have used when configuring the server.
Web Service port	
Queue Port	
Temp folder	Every worker generates temporary data. As the data volume can, at times, grow to several hundreds GB, depending on the work load, the folder should be carefully chosen.

Service Monitor Tab

Settings	Description
Image / PDF Worker	With a multi-core processor, multiple processes can be run in parallel, thus speeding up the performance. You can either leave the Automatic default, or define the number of parallel processes.

License Tab

Settings	Description
Update License	Licensing dialog for requesting and updating licenses.

GMG Hotfolder Service Configurator**Hotfolder Service Configuration**

Settings	Description
Hotfolder Locations	To set up hotfolders, you need at least one Hotfolder Location to place all input and output folders. All hotfolders are monitored and shown in each client (> Monitor tab).
Printers	Setup your desired printer by entering the referring Windows printer spooler data. You can select the printer in the Hotfolder Output settings in your client to print your files directly.

2.7.3 Ports and URLs

GMG ColorServer is designed to connect easily without any special firewall configurations being necessary. However, in some situations, for example in a corporate environment with strict security policies, a firewall might be set up to block all unknown connections. In this case, you will need to configure the firewall to allow the connection.

Which ports are used by GMG ColorServer?

Installed component	Process	Port	Direction	Type	Can be changed here
Client	Client.exe	8111	Outbound	Web Service	Client > Settings > Network > Server Port
		8080	Outbound	OpenColor	ColorServer Configurator > Server Configuration > OpenColor > URL

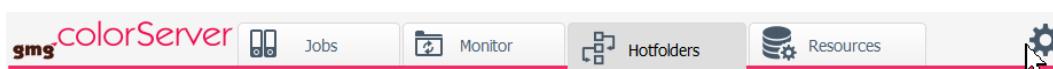
2. First Steps

Hotfolder Service	HotfolderService.exe	8111	Outbound	Web Service	Hotfolder Service Configurator > Settings > Server Port
	HotfolderServiceConfiguration.exe	8111	Outbound	Web Service	Hotfolder Service Configurator > Settings > Server Port
	FileWorker.exe	5555	Outbound	Queue	Hotfolder Service Configurator > Settings > Queue Port
		8111	Outbound	Web Service	Hotfolder Service Configurator > Settings > Server Port
	PrintingWorker.exe	5555	Outbound	Queue	ColorServer Configurator > Server Configuration > Queue > Queue Port
		8111	Outbound	Web Service	Hotfolder Service Configurator > Settings > Server Port
Worker	PdfWorker.exe	5555	Outbound	Queue	ColorServer Configurator > Worker Configuration > Queue Port
		8111	Outbound	Web Service	ColorServer Configurator > Worker Configuration > Web Service Port
	ImageWorker.exe	5555	Outbound	Queue	ColorServer Configurator > Worker Configuration > Queue Port
		8111	Outbound	Web Service	ColorServer Configurator > Worker Configuration > Web Service Port
	ServiceController.exe	8111	Outbound	Web Service	ColorServer Configurator > Worker Configuration > Web Service Port
Server	Server.exe	5555	Inbound	Queue	ColorServer Configurator > Server Configuration > Queue > Queue Port
		8111	Inbound	Web Service	ColorServer Configurator > Worker Configuration > Web Service Port
		8080	Outbound	OpenColor	ColorServer Configurator > Server Configuration > OpenColor > URL
	ServiceController.exe	8111	Outbound	Web Service	ColorServer Configurator > Worker Configuration > Web Service Port
Application Service	AppService.exe	443	Outbound	License Update	Enable the port or, alternatively, put the following endpoint URL on your firewall's whitelist: *.gmcgcolor.com

2.8 General System Settings

After starting the client for the first time, it is recommended to configure defaults and basic settings.

→ Click the cogwheel icon in the right upper corner of the main window (> **Settings**)

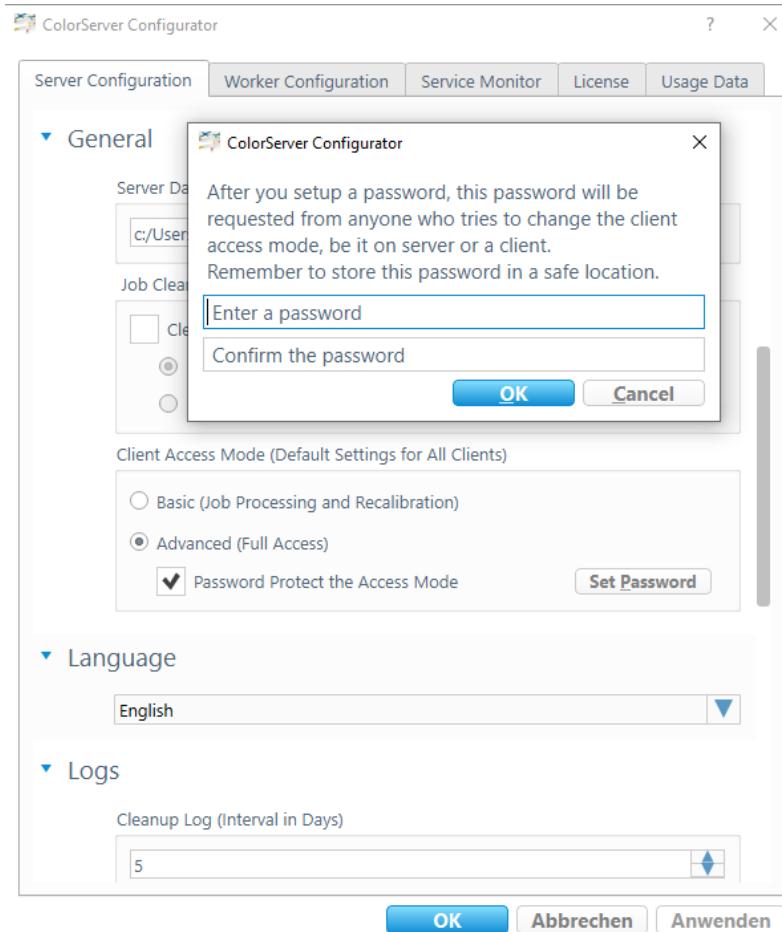


Settings

Option	Description
Output Folder	Local output folder for all manual jobs (not hotfolder jobs).
Language	You can change the language of the software here. The user interface will be updated after program restart.

Option	Description
Network	Server address and port of the computer the server is installed on. If the server is installed on the same computer as the client, keep the localhost as the default.
Filter Jobs by Client	Per default, the filter is set to only show the manual jobs of a specific client in the job list (> Jobs). When setting it to All Clients , the jobs of all clients are shown.
Usage Tracking	To make our products even better, we collect anonymous usage information from the application. We do not collect any personal information or data from processed documents. If you do not wish to share this information with us, you can easily opt in and out at any time with the Allow Anonymous Usage Data option.

2.9 Client Access Mode



As an administrator, you can assign global and distinct access rights for connected clients to safeguard your color management resources and hotfolders from undesired alterations. Choosing between two client access modes, you can either grant **basic** access to allow color conversion via preset hotfolders and updating existing GMG SmartProfiler resources only, or you can grant **advanced** access for complete asset and configuration control on top. The client access mode setting can also be password-protected to prevent it from being switched by unauthorized users.

Basic access mode

Clients running in basic mode can only perform color conversions via predefined hotfolders and update **existing** GMG SmartProfiler resources. All other functions and resources are visible but read-only, so client users can inspect relevant process parameters but they cannot change them.

2. First Steps

Advanced access mode

Clients running in advanced mode have full access to GMG ColorServer: they can not only perform color conversions and update GMG SmartProfiler resources as clients with basic access, but they also have complete asset and configuration control on top.

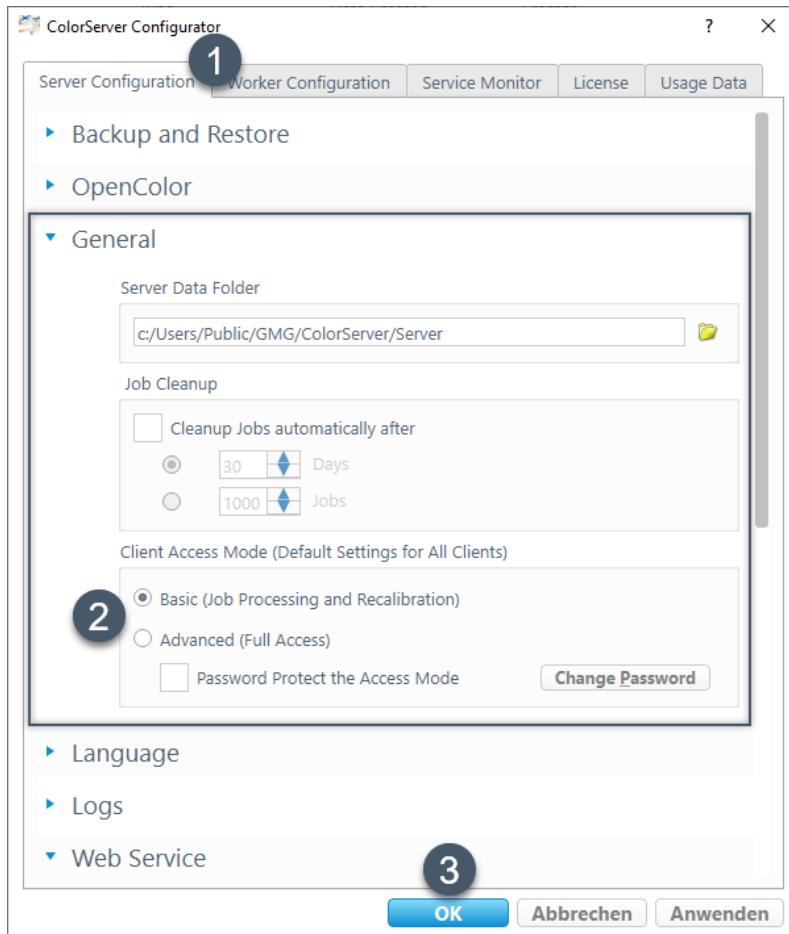
The advanced access mode is the global default after installing GMG ColorServer. You can change the global default if required (see "Change the global default mode" on page 29).

Change the global default mode

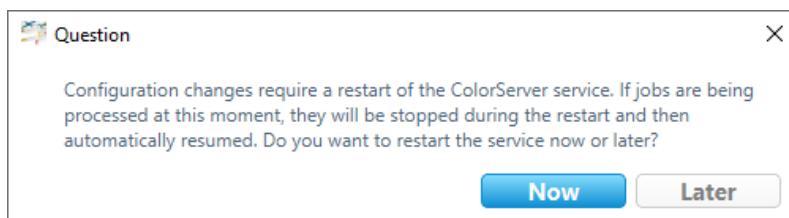
By default, the advanced client access mode is globally set for all clients. In environments with multiple clients and less-trained operators, you may consider making the basic access mode the default to ensure a secure and controlled color management setup. If you want to change the global default, you can do so via GMG ColorServer Configurator. Please note that the GMG ColorServer service needs to be restarted for the change to take effect.

How to change the default access mode...

1. In GMG ColorServer Configurator, open the **Server Configuration** tab.
2. Under **General > Client Access Mode (Default Settings for All Clients)**, select the access mode that you want to make the global default.



3. Click **OK** to confirm your choice.
The change will only take effect after restarting GMG ColorServer; thus a dialog will show, asking if you want to restart GMG ColorServer now or later.
4. Select **Now** if you want to restart GMG ColorServer now automatically, or select **Later** if you want to restart GMG ColorServer later manually.



Tip If you prefer to use the basic access mode in your environment, we recommend to protect the advanced access mode with a password (see "Password-protect the advanced client access mode" on page 31).

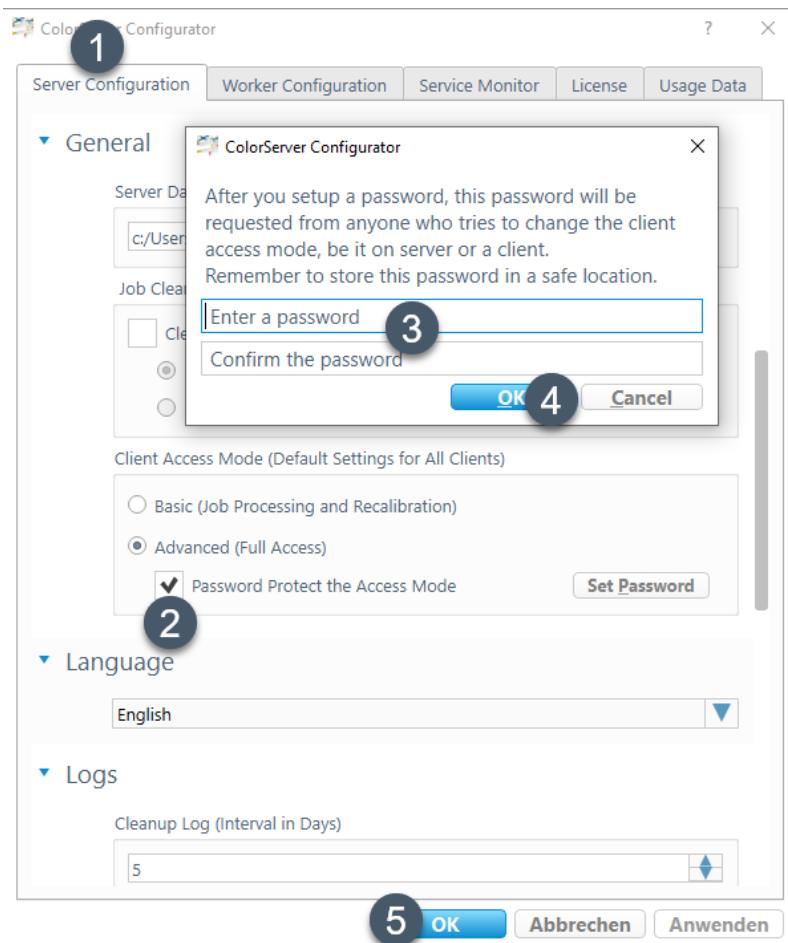
2. First Steps

Password-protect the advanced client access mode

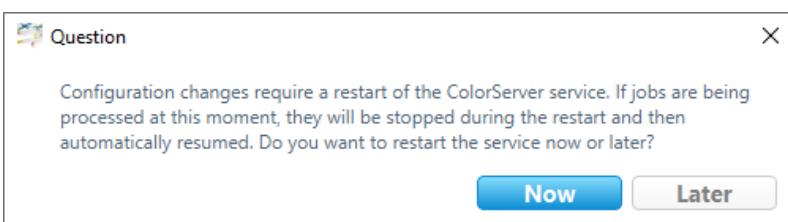
If you prefer to use the basic access mode in your environment, either globally or individually for specific clients, we recommend to protect the advanced access mode with a password. This way, you ensure that the advanced mode cannot be enabled on the client side without proper authorization. Only client users who are aware of the password can then enable the advanced mode in the client settings.

How to password-protect the advanced client access mode...

1. In GMG ColorServer Configurator, open the **Server Configuration** tab.
2. Under **General > Client Access Mode (Default Settings for All Clients)**, select **Password Protect the Access Mode**.
3. When enabling the password protection for the first time, a dialog will open, asking you to assign a password.
Enter your desired password in the two fields provided.



4. Click **OK** to confirm your password entries.
The password dialog closes.
5. Click **OK** to confirm the settings for global password protection.
The change will only take effect after restarting GMG ColorServer; thus a dialog will show, asking if you want to restart GMG ColorServer now or later.
6. Select **Now** if you want to restart GMG ColorServer now automatically, or select **Later** if you want to restart GMG ColorServer later manually.



2. First Steps

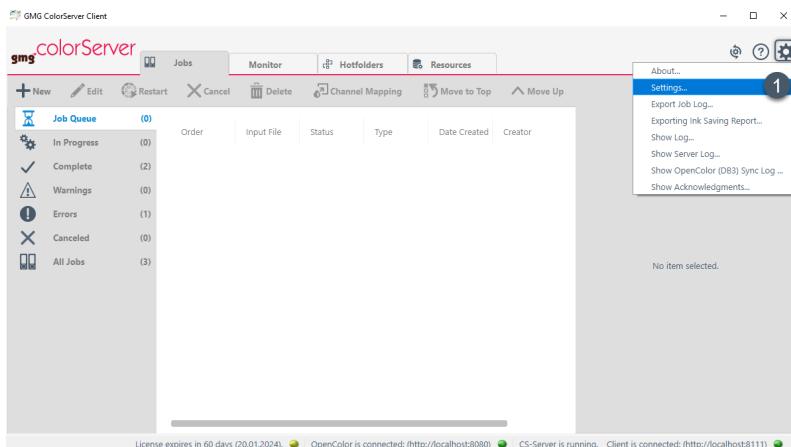
Note Please note down your password and keep it in a safe place. GMG ColorServer does not provide an automatic password recovery function. If you forget your password, it can only be reset with the help of our GMG Support team.

Change the access mode for a specific client only

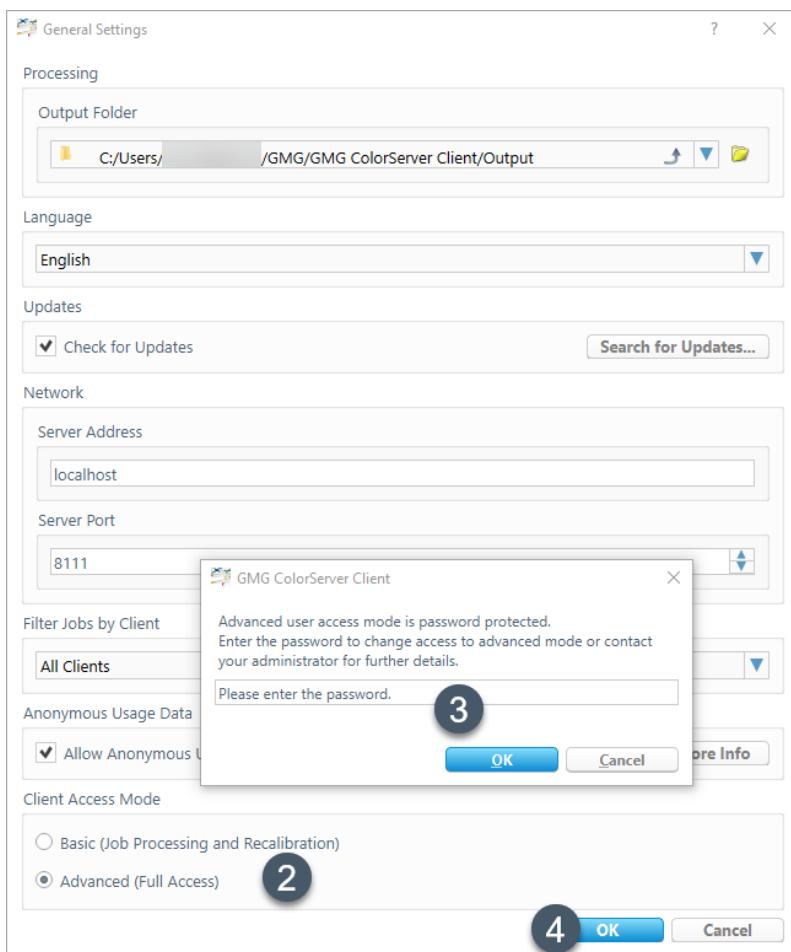
If you want to change the access mode for a specific client only, you can do so in the client's settings dialog. The change will take effect immediately and without affecting the global default access mode.

How to change the access mode for a specific client...

1. In the client, select **Options > Settings...** to open the **General Settings** dialog.



2. Under **Client Access Mode**, select the access mode according to your needs.



3. If the selected access mode is protected by a password, a password prompt will show. If so, please enter the password and confirm your entry by clicking **OK**.
4. Click **OK** to switch the access mode for this client.

2.10 First Things to Do

If you get lost in one of the steps or just want more information, click on the corresponding **See also** link.

2. First Steps

Step	What to do	How to do it	See also
1	Configure your system	The first thing after installation and licensing is to configure the product components. First, you need to configure the server, than the workers (in case you are using them on another system). Following that, each client has to be connected to the server (Settings > Network). If all components are used locally on one system, the system is automatically configured and you can skip the configuration.	"Initial Configuration" on page 25
2	Set up a hotfolder location	Following the configuration of the system components, you need to set up hotfolder locations (shared locations which can be accessed by all clients).	"Creating a Hotfolder Location" on page 86
3	Set up resources	In this step, you fill the system with color management items which are shown on the Resources tabbed page. Most of these are presets which can be linked to multiple hotfolders.	"Resources" on page 54
4	Set up hotfolders	Now that the system is basically set up, you can define hotfolders which can be considered as containers for the resources with some additional settings.	"Hotfolders" on page 86

Please follow the link to get started with GMG SmartProfiler:

[Optimize Your Colors with GMG](#)

3. Transparencies and Flattening

3.1 Introduction to Transparencies and Flattening

This short tutorial provides you with the basics for getting started with transparencies and flattening in GMG ColorServer. If you would like to take a deeper look into certain aspects of this issue, just follow the literature recommendations at the end of some chapters. The tutorial describes when and why flattening should be used to optimize PDFs, including some typical examples of use.

3.2 What does Transparency Mean?

In the graphic art industry, **transparency effects** are increasingly used. Transparent objects are objects that are not fully (100%) opaque. In other words, you can see underlying objects through transparent objects.

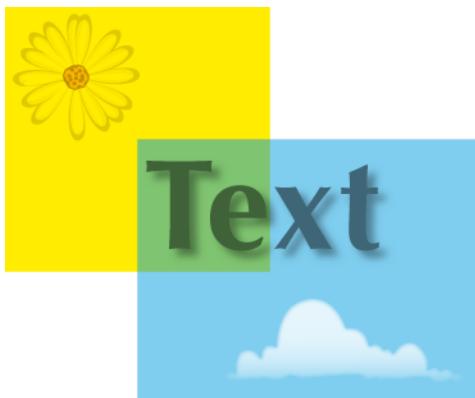


Fig. 4 Transparency effects.

The above illustration shows some typical examples of transparency effects applied to vector and text objects:

- ◀ A blue transparent rectangle (50% **opacity**) overlapping with a yellow square.
- ◀ Transparent text with **soft drop shadow** on top of both objects.
- ◀ A white daisy with a **Multiply** blending mode on top of the yellow square. The white daisy appears yellow because the white color is blended with the yellow color from the underlying square.
- ◀ A cloud with **feathered edges** on top of the blue rectangle.

Transparency effects are applicable to all kind of objects, for example, **images** (pixel based objects), **vector** and **text** elements, **patterns** and **gradients**. They can also be applied to a **group** of objects or **layers**.

The complexity of the interaction of transparency effects increases with the number of **overlapping** objects. The higher the complexity, the more time consuming it can be to process the PDF, for example, by a printer, imagesetter, or flattener. Problems are unlikely if transparency effects are only applied to isolated objects not overlapping with other objects.

When saving or exporting a document with transparent objects, the transparencies will either be **preserved** or **flattened**.

If you save a document with transparent objects by using the **Save As** command in your graphics software, for example, as an Adobe Illustrator PDF, transparencies will generally be **preserved** (except if the PDF is saved as PDF 1.3, as this format does not support transparencies).

If you convert a document to PDF by selecting the **Print** command when using a **PDF printer** or using **Adobe Distiller**, transparencies will generally be **flattened**.

In GMG ColorServer, when processing a PDF, you are free to decide whether you would like transparent objects to be preserved or flattened. The information in this chapter is intended to help you making the right choice for your needs.

3. Transparencies and Flattening

3.3 Why are Transparencies Used?

Transparencies may be used by a designer for several reasons:

- ◀ **Esthetic** benefit: Enables the designer to create awesome optical effects that would otherwise not be possible.
- ◀ **Flexibility**: Only a few parameters are required to define a transparency effect. Transparency effects can be changed easily without "redrawing" the whole illustration.
- ◀ **Minimized file size**: The resulting file size will be much lower as in the case when creating the same optical effect without transparencies.

3.4 Then What's the Matter with Transparencies?

"If transparencies are such a great feature, why should I worry about it?"

Whenever a PDF is sent to a printer or imagesetter, it needs to be translated into the ink channels of the printer. Thus, the PDF is rasterized by a so called Raster Image Processor (RIP).

Some RIPs, however, are not able to handle transparencies. In this case, to maintain transparencies and have them printed properly, they need to be **flattened** first.

If color management is applied **after** flattening, as the last step before printing, you have much more control on the final colors. If color accuracy is your highest priority, activating the **Flattening** option in GMG ColorServer is the best choice.

On the other hand, changes to the layout or to transparency effects are not possible anymore after flattening. You would need to go back to the original PDF to apply any changes. Obviously, this could result in double work.

In an ideal workflow, the illustration is kept in its **native** format (and color space) as long as **changes** to the content might be **required**. The **final** version is then saved as **PDF**. The PDF is then **color managed** and **optimized** under **standardized** conditions, for example, in GMG ColorServer. The finalized output file can then be **proofed**, for example, by using GMG ColorProof. After approval by the customer, the PDF is sent to the print service provider together with the proof.

See also:

- "Color Management and Transparency" on page 42
- "Color Management and Overprinting" on page 45

3.5 When and Why Should I Flatten Transparencies?

If you process a file in GMG ColorServer using the flattening function, all layers, all transparencies, and all overprint attributes are resolved. All hidden layers and objects are removed. You accurately maintain the visual appearance of transparent objects so the output PDF looks the same as the original PDF. To achieve this effect, the flattener breaks up all transparent objects into smaller non-transparent objects that are visually equivalent to the original transparent objects.

Flattening—Yes or No?

Please note that the following information is to be considered as a recommendation. To avoid possible problems, it is always best to discuss and define the required PDF processing with your print service provider. Be sure to inform your print service provider about whether the PDF has been flattened (using which settings) or not.

In general, you should **not** flatten the PDF in the following case.

- ◀ If you are sure the PDF does **not** contain any transparencies or overprinting elements. In this case, flattening in GMG ColorServer would not hurt, but would lead to an unnecessary longer processing time.
Example: You are the PDF creator and you did not use any transparency effects. Or the PDF has already been flattened in another program.

In general, it is recommended to **flatten** the PDF in the following case.

- The PDF contains **transparencies** or **overprinting** elements. The PDF is intended to be **printed**. It will **not** be edited anymore before printing.

Advantages of flattening

- Greater control **prior to** printing. You have more control on the final print result when handing your print service provider an already flattened PDF. You can check and proof the PDF before sending it to the imagesetter. Possible problems can be spotted at an earlier stage, avoiding extra costs.
- Flattening is a prerequisite for **color accuracy** in areas where transparency effects are used in the original design.

How much time needs GMG ColorServer for Flattening? Do I need a faster computer?

Flattening is a complex calculation process. Processing PDFs with **flattening** is more **time consuming** than processing PDFs without flattening.

The processing time does not correlate with the file size, the page size, or the image resolution of a document, but it depends on the **number** and **complexity** of transparent objects in a document. If your input files contain a higher number of complex transparent or overprinting objects, you will benefit from a higher computer performance.

3.6 Which Flattening Settings do I Need?

The GMG ColorServer default settings for flattening can be applied to a wide range of applications involving high-resolution printing. However, you should always ask your print service provider to define the flattening settings to avoid incompatibilities with the imagesetter or print quality problems. The print service provider will specify the flattening settings according to the resolution of the final output device and to the workflow used in their company. Good communication between you and your service provider will help you achieve the expected results.

For print service providers or advanced users, flattening settings are discussed in detail under "PDF Processing" on page 61.

Special cases to be considered

The following cases are related to the procedure of flattening and should be considered when defining the flattening settings.

Object type	Considerations	Possible drawbacks
Text objects	You might want to convert all text objects to outlines to avoid type problems in the RIP such as font mismatches.	File size is increased; "last minute" text changes are not possible, possible resolution/quality problems.
Spot colors	Spot colors do generally not present any problems as long as they are not on top of other objects and either transparent or overprinting. If they are, flattening and color management gets a bit tricky. If spot colors are converted to CMYK, they are blended with the underlying objects. If not, spot colors are preserved.	Blending spot colors with process colors might not produce the desired print result, which is a general known technical issue. Therefore, the PDF layout and all converted spot color objects should be checked carefully before printing.
Single channel layers	You might want to keep layers that would result in only one (easily replaceable) plate. Example: Black text with drop-shadows (K channel) on a background image.	If single channel layers are not flattened (but all other layers are), the stacking order might be changed, possibly changing the visual appearance of the document.
Objects with attributes such as trapping or overprinting	Sometimes, such attributes may have been defined by accident and you might want to ignore them in the RIP. As flattening will convert these attributes into fixed object properties, they cannot be removed anymore after flattening.	After flattening, these attributes are fixed properties and cannot be ignored or deselected anymore.

3.7 Tips for Designers or PDF Providers

"Flattening solves all problems, so with GMG ColorServer, I do not need to worry about transparencies at all, right?"

3. Transparencies and Flattening

Yes and No. In theory, you could flatten all incoming PDFs in GMG ColorServer, regardless of whether the PDF has any transparencies in the first place and regardless of any other PDF parameters such as color space models, kinds of objects, and so on. In practice, this could entail some disadvantages you should be aware of, as explained in the following.

- ◀ The **processing time** in GMG ColorServer increases with the number of transparent objects and the level of complexity involved. Especially if you have a high throughput of PDFs, processing time might be an issue.
- ◀ Depending on the settings, flattening can add to the **file size** of the PDF, especially if the input PDF contains plenty of transparent and stacked objects. In rare cases, this can cause processing errors in PDF processing programs. In such a case, you can reduce the **Raster/Vector Balance** level to reduce the complexity of the flattened file.
- ◀ Even though the visual appearance is generally not altered by the flattening process, **visible changes** or **artifacts** cannot be 100% excluded. The risk is directly proportional to the number of transparent objects and complexity levels involved.

Therefore, it might be wise to consider the following recommendations.

- ◀ Use transparencies **only if required** to achieve the desired visual effect.
- ◀ Do **not** use transparency effects that look fairly good on screen, but might be difficult if not impossible to **print** (e.g. feathering the edges of a small type with fine serifs).
- ◀ Generally, it is better **not** to place transparent objects against a **white** background. For example, instead of setting the **Opacity** of an object to 50%, you could achieve the same visual effect by directly changing the color tone of the object.
- ◀ Move transparent objects **as far** to the background (the stacking order) as possible. The more objects are behind a transparent object, the more complex (and time consuming) the flattening process will be. If you could place a transparent object to the background, consider to replace the transparent object with an opaque object.
- ◀ Placing opaque text frames and spot colors on the **top** of the stacking order will help keep them from being involved in transparency flattening. Spot color objects should also generally not have an **Overprint** attribute. Spot color inks are generally used to exactly match a particular color value, thus it is not desired to change or to color manage spot colors. It can be difficult to predict the color resulting from blending overprinting spot colors. Color management of overprinting spot colors is also subject to technological limitations and could produce undesired results.
- ◀ **Minimize** the **complexity** of the PDF structure. For example, apply identical transparent effects to a **group** of objects rather than to each object separately. Strip the native document from **hidden** layers and objects. Instead of using a clipping mask, **crop** a placed image or object. This also helps to reduce the file size.
- ◀ Be careful when using **multiple** color spaces, especially mixed RGB and CMYK objects, inside a document. Resolving overlapping RGB and CMYK objects might lead to undesired color effects.
- ◀ Use the **flattener preview** in your image editor or graphics software (if available) to look for transparencies in the document. Proof documents on-screen with an overprint and separations preview to ensure the output turns out as intended. Use printed proofs for a final approval of documents.
- ◀ To avoid possible problems during flattening, it is also recommended to deselect the option **Preserve Illustrator Editing Capabilities** when saving Adobe Illustrator PDF files from Adobe Illustrator.

3.8 Introduction to PDF

Nowadays, practically everybody knows what a PDF is. But not many people know how a PDF does look like "inside". Generally, you do not need to worry about these things. But when it comes to flattening, a basic understanding of the PDF technology might come in handy. The following information provides you with all basic aspects relevant for flattening and transparency issues.

PDF Objects

A plain pixel based image (TIFF) is a very simple kind of a file: It has fixed dimensions, some parameters such as the resolution, and some meta tags such as the color space or an embedded ICC profile. A PDF can be the same—a container with a single TIFF image inside and that's it. But in most cases, a PDF document is much more complex and consists of several objects that can be grouped or organized in layers. Each object can be in a different color space or can have additional object **attributes** such as **overprint**.

PDF objects can be divided into different classes:

- ◀ **Images:** Pixel based (contone) objects, such as **TIFF** or **JPEG** images. **Rasterized** objects, which might originally have been vector graphics, text, gradients, or patterns, are also regarded as images. Images have a certain resolution and can be compressed (for example, ZIP or JPEG compression). To optimize PDFs, you can change the image **resolution** and **compression** in GMG ColorServer.
- ◀ **Vector** objects (also called lineworks or line art)
- ◀ **Text** objects (also called type)
- ◀ **Gradients:** Object filled with color. The color tone varies continuously with the position, producing smooth color transitions with no visible steps. The gradient is defined by at least two color tones and vectors describing the gradient focus and the direction.
- ◀ **Patterns:** Object filled with repeating graphic elements, for example, created from swatches in Adobe Illustrator

All these object types can be transparent, that is, have an opacity value < 100%.

Multiple objects can be grouped inside a PDF and transparency effects can be applied to whole groups.

Of course, some PDF formats also support additional stuff such as linked files, movies or audio files. But as these objects have little or no relevance in printing and are for this reason not supported in GMG ColorServer, they will not be discussed here.

Stacking order

Objects can be placed not only next to each other, but also on top or below other objects. The stacking order defines which objects are printed on top and which objects are underlying. The order is essential for the visual impression and for the printed color.

The stacking order is not only relevant for objects; layers (which can contain multiple objects) are also organized in a stacking order.

Note The option **Preserve Single Channel Layers** can change the stacking order of objects and thus the visual impression. In special cases, background objects can be moved to the front.

Additional information:

- ◀ "Single Channel Layers" on page 63

PDF Layers

Inside a PDF, there can be any number of overlaying objects. Furthermore, objects can be organized in multiple layers inside a PDF. Layers add an additional level of complexity to a PDF structure, similar to a group of objects.

When you flatten a PDF with transparencies, all objects need to be extracted from the individual layers to be disassembled and then again reassembled to create the visual effect of the original object(s) without using any transparencies.

Note Flattening in GMG ColorServer **always** eliminates the layer information.

3. Transparencies and Flattening

Overprint attribute

In many graphics programs, you can apply an **overprint** attribute to an object. The **overprint** attribute is generally maintained when saving the document as a PDF. An object with the attribute **overprint** is printed on top of background objects. (An opaque object without this attribute knocks out the area underneath and is thus printed directly on the medium. Overprint is generally used for small dark elements such as text. It avoids visible white gaps that can occur if plates are not exactly aligned in the printing machine.)

Additional information:

- ▶ "Overprinting Objects" on page 44

3.9 Flattening—Step by Step

Consider a simple case—two overlapping objects, the top one transparent, for example, with an opacity of 50%.

When the transparency is flattened, the Flattener proceeds as follows.

- ▶ The two shapes are divided.
- ▶ A **new** object is created in the **overlapping region** of the top and bottom object. The **Fill** color is defined by the blended color tones of the original objects.
- ▶ The overlapping region is **subtracted** from the top object. The color tone of the remaining object (i. e. the non-overlapping region) is changed to match the transparent color (i. e. it is blended with paper white). (The saturation of the color is reduced and the brightness is increased.)
- ▶ The **opacity** of all objects is set to **100%**.

Note If the **Raster/Vector Balance (Flattening Settings)** is set to 100%, the objects remain vector based after flattening. They will **not** be rasterized.

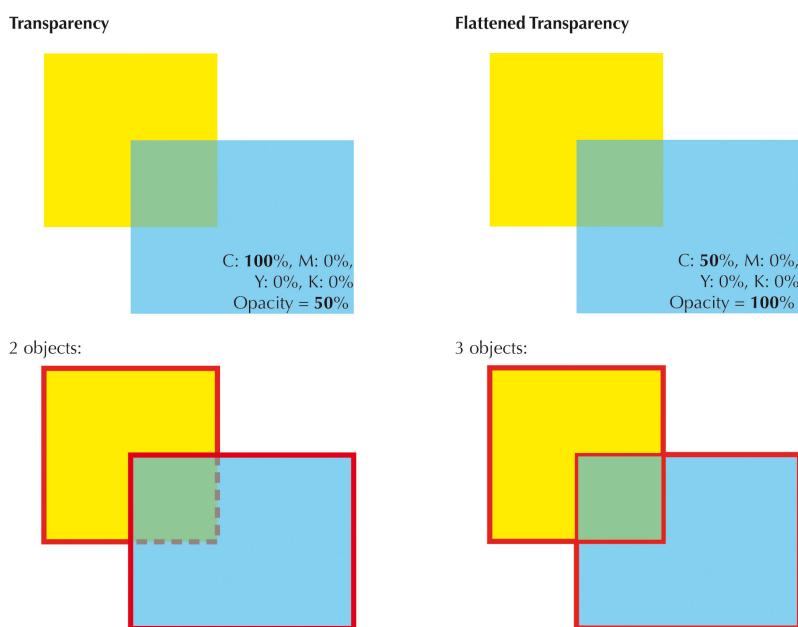


Fig. 5 Flattening of two transparent objects.

On the top left side, you see the original transparent objects: A 50% **transparent** rectangle (100% Cyan) with an underlying opaque rectangle (100 % Yellow).

The top right side shows the same objects after flattening. As you can see, the visual impression has **not** changed, but the **document structure** and the **object properties** have been modified to achieve the same visual appearance with **opaque** objects instead of transparent objects.

The non-overlapping region of the blue rectangle is blended with the white background, resulting in an opaque color tone of 50% Cyan.

By blending the overlapping region of the two original objects, a **new** object has been created, as indicated by the red border in the bottom illustration. The blue rectangle was blended with the underlying yellow rectangle, resulting in a green color tone of 50 % Yellow, 50% Cyan.

This is a simplified example intended to give you a basic understanding of flattening. Generally, transparent objects are much more complex. Depending on the complexity of the transparency effect and the number of overlapping objects, flattening sometimes has to almost atomize the original objects into many new objects. This may cause a significant increase in the file size of the document.



Fig. 6 Flattener preview available in Adobe programs.

The **Flattener Preview** highlights transparent objects with a red color. You see that the rectangular object is transparent on the left side, but flattened on the right side. You can use this feature to manually check a PDF for transparent objects. Please see the official documentation from Adobe for further information on the **Flattener Preview**.

The sample file **Flattening_Basics.pdf** used in this chapter can be found in the **Documentation\Sample Files** subfolder of the main GMG ColorServer program folder (default path: *<installation path>\Documentation\Sample Files*).

See also:

- "Overprinting Objects" on page 44

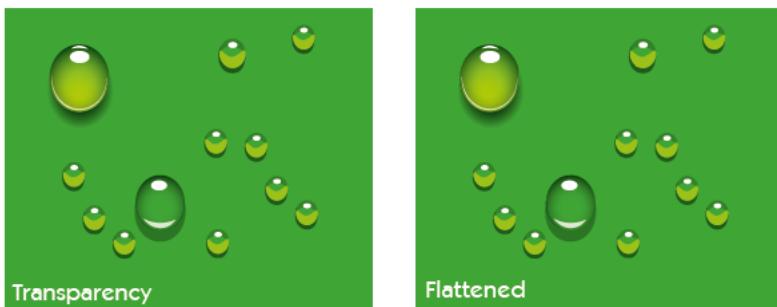
3.10 Color Management and Transparency

Here we describe a practical example that shows why it is generally recommended to **flatten** transparencies first **before** applying a **color conversion**. We will have a look at a soft proof simulation in Adobe Acrobat. We will compare the color management results on the same PDF objects, **before** and **after** flattening.

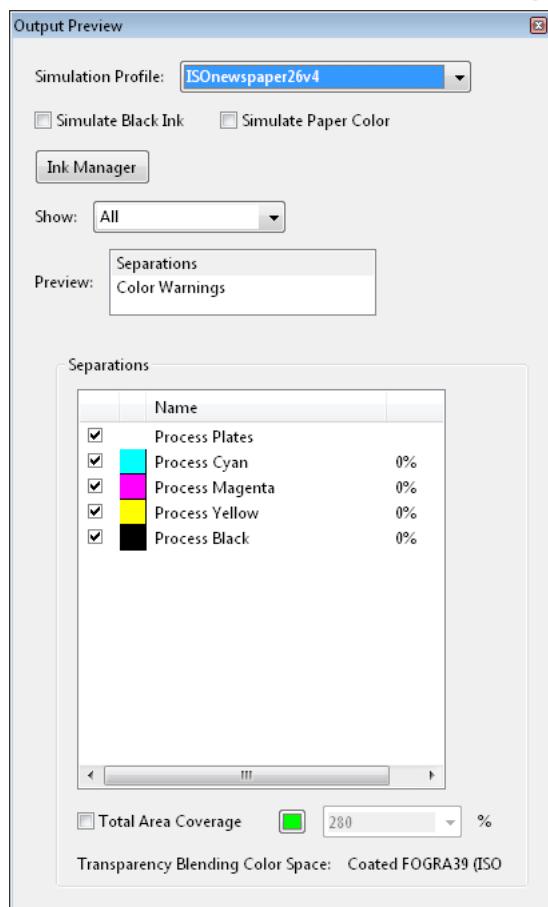
This documentation refers to Adobe products of the Adobe Creative Suite CS3, including Adobe Acrobat 8 Professional. Described features might be unavailable or different in other versions of Adobe programs. For more information, please refer to the corresponding documentation from Adobe.

3. Transparencies and Flattening

1. Start **Adobe Acrobat** (version 7 or higher).
2. Browse to the **Documentation\Sample Files** subfolder of the main GMG ColorServer program folder (default path: <installation path>\Documentation\Sample Files\).
3. Open the sample file **Transparency+Flattening.pdf** in Adobe Acrobat.
The green box on the left hand side still contains **transparent** objects, the green box on the right has already been **flattened**.

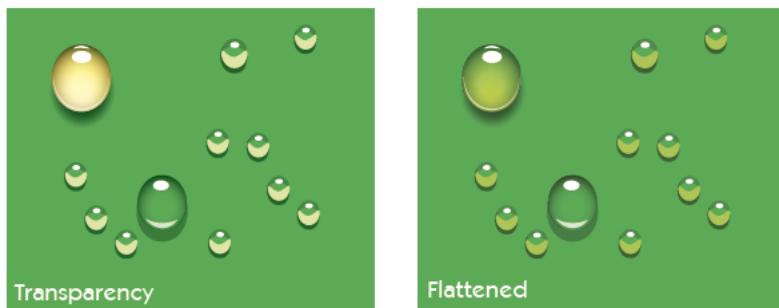


4. On the **Advanced** menu, point to **Print Production**, and then click **Output Preview**.
5. In the **Simulation Profile** box, select **ISOnewspaper26v4**.



6. Compare the color of the water drops.

The transparent drops appear rather yellowish, while the flattened drops maintained the original green color.



You could also select another ICC profile as simulation profile. You will notice that the transparent drops always show a strong yellow color shift.

What caused this effect?

The water drops use a transparency effect: A **Color Dodge** blend mode. **Color Dodge** brightens the color of the underlying object to reflect the color of the top object.

If an object with transparencies is not flattened **before** color management is performed, the specified transparency effect will be applied to the color-managed colors, which may lead to undesired color shifts. Minor color changes applied during the color management step might have major effects, depending on the blend mode used.

If an object with transparencies is flattened first before any color conversion takes place, the output is much more likely to maintain the colors intended by the creator of the original document.

What we now have simulated in the soft proof is also true when processing files in GMG ColorServer. If the PDF is **flattened** before the **MX Color Processing** is applied, the color result is much more reproducible and fail-proof.

3.11 Overprinting Objects

Overprinting objects can result in similar problems as transparencies and are therefore also discussed in this document.

An overprinting object is printed on top of the underlying object. The top and bottom objects will be **blended**, resulting in a mixed color tone. Overprint is generally used for small dark elements such as text. It avoids visible white gaps that can occur if plates are not exactly aligned in the printing machine. Even if overprinting objects are opaque (that is, no transparencies are involved), a different interpretation of overprinting objects by different devices could cause visible problems in the print output.

A non-overprinting object is printed directly onto the medium (**knocks out** underlying objects). The underlying object will only be printed where it is **not** overlapping with the top object.

Consider a simple case—two overlapping objects, the top one 100% opaque, but overprinting.

When the transparency is flattened, the following is done by the Flattener, as shown in the illustration.

- ◀ The two shapes are divided.
- ◀ A **new** object is created in the **overlapping region** of the top and bottom object. The **Fill** color is defined by the blended color tones of the original objects.
- ◀ The overlapping region is **subtracted** from the top object. If the overprint fill is not transparent (as in the example explained here), the **Fill** color is **not** blended or changed.
- ◀ The **Overprint** attribute is **removed** from the top object.

Note If the **Raster/Vector Balance (Flattening Settings)** is set to 100%, the objects remain vector based after flattening. They will **not** be rasterized.

3. Transparencies and Flattening

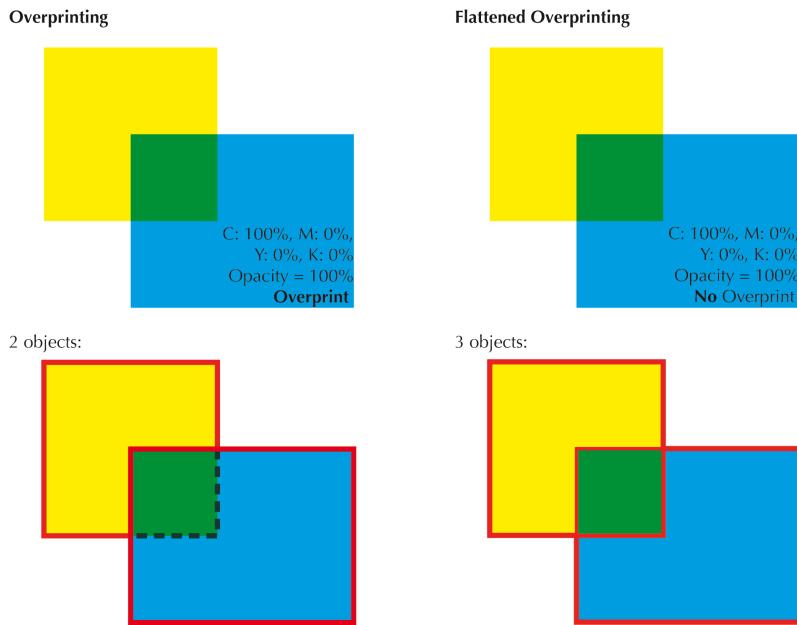


Fig. 7 Flattening of two overprinting objects.

On the top left side, you see the original overprinting objects: A rectangle (100% Cyan, **overprint**) with an underlying opaque rectangle (100 % Yellow).

The top right side shows the same objects after flattening. As you can see, the visual impression has **not** changed, but the **document structure** and the **object properties** have been modified to achieve the same visual appearance **without** overprinting.

By blending the overlapping region of the two original objects, a **new** object has been created, as indicated by the red border in the bottom illustration. The blue rectangle was blended with the underlying yellow rectangle, resulting in a green color tone of 100 % Yellow, 100% Cyan.

See also:

- "Color Management and Overprinting" on page 45
- "Flattening—Step by Step" on page 41

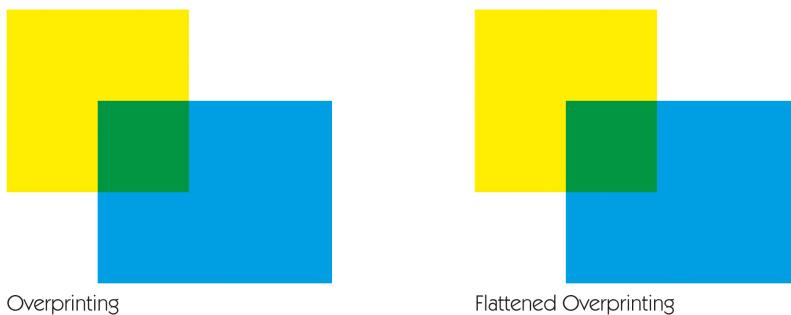
3.12 Color Management and Overprinting

Here we describe a practical example that shows why it is generally recommended to **flatten** overprinting objects first **before** applying a **color conversion**. We will have a look at a color conversion in Adobe Acrobat. We will compare the color management results on the same PDF objects, **before** and **after** flattening.

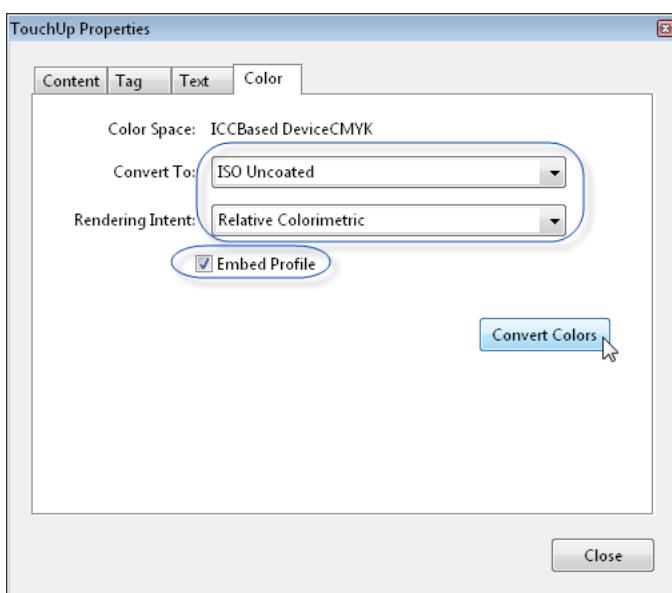
This documentation refers to Adobe products of the Adobe Creative Suite CS3, including Adobe Acrobat 8 Professional. Described features might be unavailable or different in other versions of Adobe programs. For more information, please refer to the corresponding documentation from Adobe.

Color space conversion of overprinting objects

1. Start **Adobe Acrobat** (version 7 or higher).
2. Browse to the **Documentation\Sample Files** subfolder of the main GMG ColorServer program folder (default path: <installation path>\Documentation\Sample Files\).
3. Open the sample file **Overprinting.pdf** in Adobe Acrobat.
4. Make sure the **Overprint** preview is active (**Advanced > Print Production > Overprint Preview**). The top object on the left hand side still has the **Overprint** attribute, the objects on the right have already been **flattened**.



5. On the **Tools** menu, point to **Advanced Editing**, and then click the **TouchUp Object Tool**.
6. Right-click the left top (blue) rectangle at the left hand side (labeled with **Overprinting**). From the context menu, select **Properties**. The **TouchUp Properties** dialog box is displayed.
7. Click the **Color** tab.
8. From the **Convert To** list, select **ISO Uncoated**.
9. From the **Rendering Intent** list, select **Relative Colorimetric**.
10. Select the **Embed Profile** option.
11. Click the **Convert Colors** button.



The overlapping area does not appear green anymore.

3. Transparencies and Flattening



Resulting colors

1. On the **Advanced** menu, point to **Print Production**, and then click **Output Preview**.
2. In the **Simulation Profile** box, select **ISO Uncoated**.
3. Move the mouse pointer over the blue object to update the color values in the **Separations** preview.

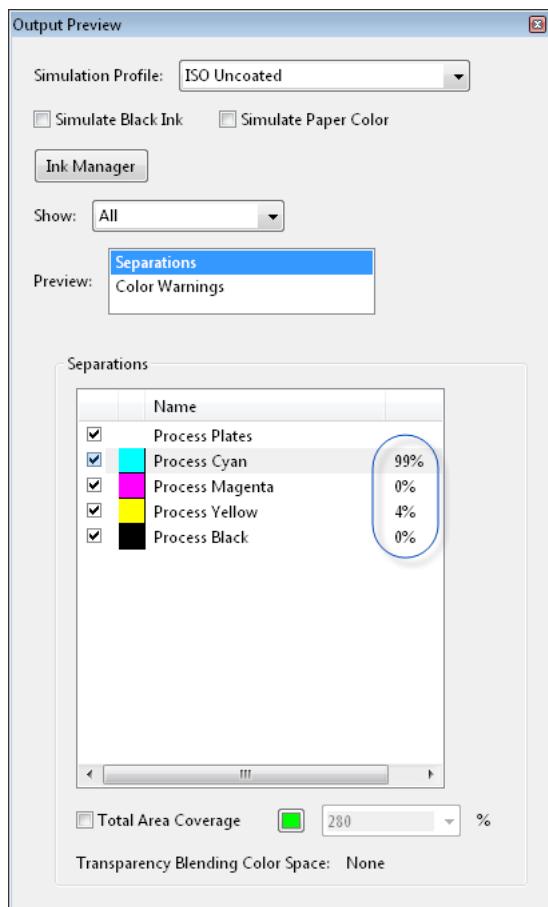


Fig. 8 New color values after color space conversion.

In the step described above, the original color space of the object (DeviceCMYK) has been converted to ISO Uncoated (based on ICC profiles) in Adobe Acrobat. Accordingly, the color of the blue overprinting object has changed from CMYK 100/0/0/0 to 99/0/4/0. The fill color of the blue object now contains **4% Yellow**.

Color space conversion of the same objects after flattening

1. Now, right-click the left top (blue) rectangle at the right-hand side (labeled with **Flattened Overprinting**). From the context menu, select **Properties**.
The **TouchUp Properties** dialog box is displayed.
2. Repeat steps 4–10 of the Color space conversion of overprinting objects to convert the color space of the object to ISO Uncoated.

The overlapping area remains green.



1. On the **Advanced** menu, point to **Print Production**, and then click **Output Preview**.
2. In the **Simulation Profile** box, select **ISO Uncoated**.
3. Move the mouse pointer over the blue object to update the color values in the **Separations** preview.

Resulting colors

After the color space conversion, the color has changed from CMYK 100/0/0/0 to 99/0/4/0. The fill color of the blue object now contains 4% Yellow. The color result of the blue object is exactly the same as it was when the overprinting object was converted, but the green color in the "overlapping" region has **not** changed.

What caused the different behavior?

If the blue overprinting object is **color managed** before flattening, 4% Yellow is added to the fill color according to the color profile, which is technically correct. Objects with an **Overprint** attribute do **not** knock out underlying objects unless the underlying objects contain the **same** color **channel** (or plate). As Yellow has been added to the overprinting object, the Yellow channel is now used by both the overprinting and the underlying object. Therefore, the underlying object is **knocked out** (even though the blue object still has the **Overprint** attribute). As a result, the green square in the overlapping region disappears, which dramatically changes the visual appearance of the two objects. Even if the PDF would now be flattened after the color management, the Flattener would preserve the **current** visual appearance, that is, without the green area.

If the PDF is **flattened** before the color management, the Flattener will create a new object from the green overlapping area: A green square in the overlapping area of the blue and yellow objects. After flattening, the Green color does **not** result from an overprint effect of blended yellow and blue anymore. The green object is now a **separate** object, which can be color managed individually.

As you can see, even **minor** changes in the original color of overprinting objects can have **major** effects on the resulting color tones and even on the object layout, and can thus lead to unpredictable results and undesired effects.

In flattening the overprinting objects first, you have much **more control** on the colors. If the PDF is flattened **before** the **MX Color Processing** is applied, the color result is much more reproducible and fail-proof.

3. Transparencies and Flattening

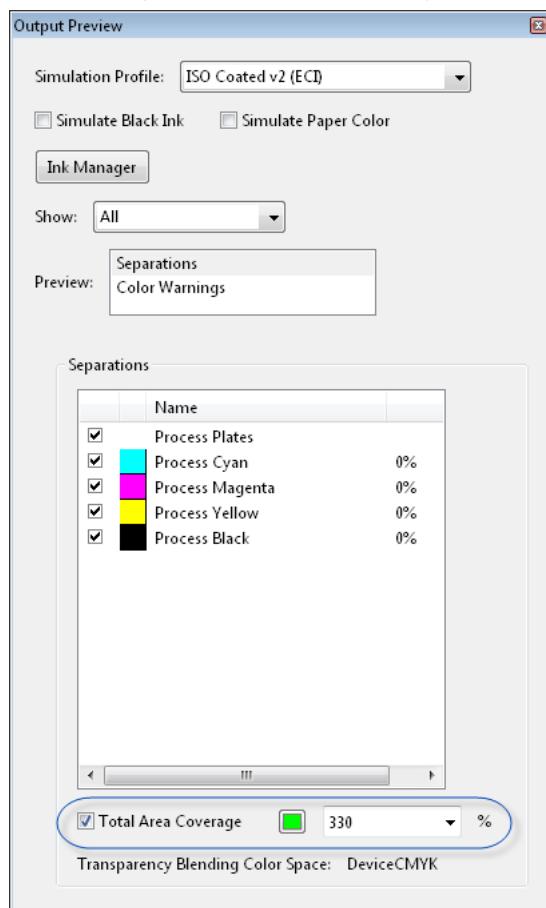
3.13 Flattening and TAC

In most cases, the TAC of PDF objects will not be changed during flattening. However, there might be certain circumstances where the flattener adds color to the channels after normalizing and thus increases the TAC. Therefore, it is recommended to always apply a CMYK-to-CMYK **reseparation** in the **MX Color Processing** step, except in cases where you are using an InkOptimizer profile, which already includes a TAC limitation.

Here we describe a practical example that shows why.

This documentation refers to Adobe products of the Adobe Creative Suite CS3, including Adobe Acrobat 8 Professional. Described features might be unavailable or different in other versions of Adobe programs. For more information, please refer to the corresponding documentation from Adobe.

1. Start **Adobe Acrobat** (version 7 or higher).
2. Browse to the **Documentation\Sample Files** subfolder of the main GMG ColorServer program folder (default path: *<installation path>\Documentation\Sample Files*).
3. Open the sample file **Flattening_TAC.pdf** in Adobe Acrobat.
4. On the **Advanced** menu, point to **Print Production**, and then click **Output Preview**.
5. In the **Simulation Profile** box, select **ISO Coated v2 (ECI)**.
6. Select the option **Total Area Coverage** and enter **330%**.



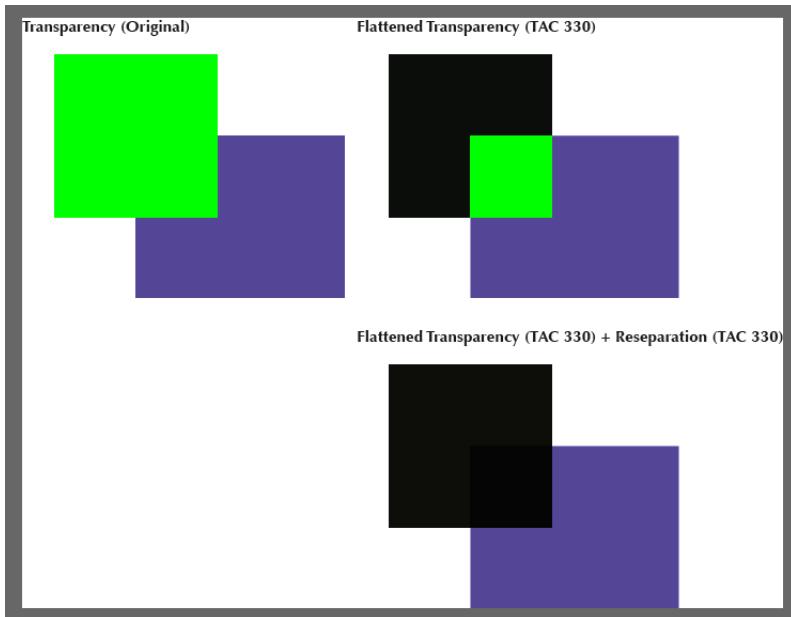


Fig. 9 Screenshot from Adobe Acrobat Output Preview.

The objects on the left side are **transparent** objects that have not been processed by GMG ColorServer, the objects on the right side have been processed by GMG ColorServer.

The **top right** objects have been **normalized** with an MX resepARATION profile (Isocoated v2 (39L), **TAC 330**) and **flattened**.

The **bottom right** objects have been normalized with the same profile and also flattened, but then **reseP-Ated** again with the same profile (**MX Color Processing**).

Areas where the total ink coverage exceeds the entered limit of 330% are depicted in **green**. As you can see, the TAC of the original square object exceeds the limit. After normalizing and flattening in GMG ColorServer, both objects are within the TAC limit, but the **overlapping** area is not. After a following resepARATION with exactly the same profile, **all** areas are within the limit.

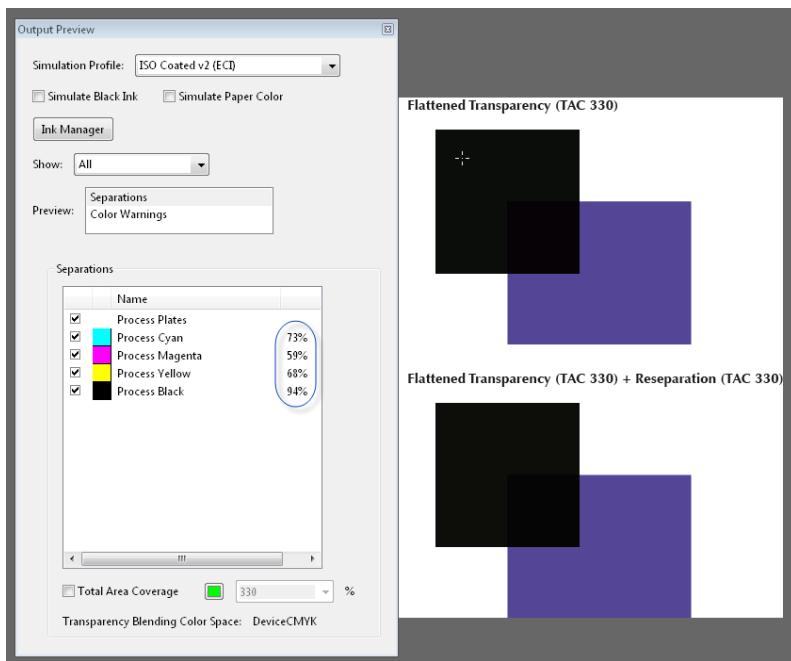
In Adobe Acrobat, you can move the mouse pointer over the objects in the **Output Preview** to show the ink coverage percentages of the color channels.

What caused this effect?

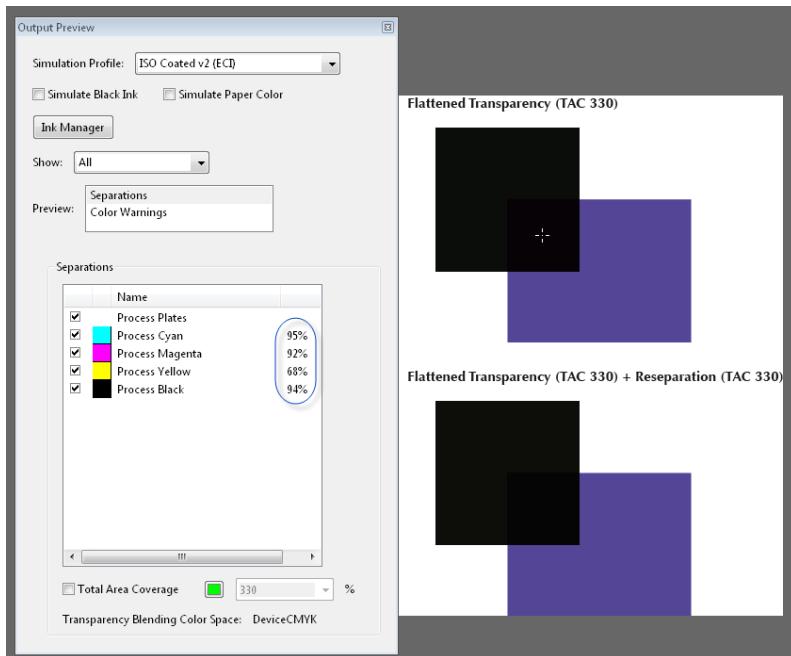
The dark blue rectangle (C 100%, M 100%; 80% transparency) is on top of another very dark object (C 85%, M 75%, Y 80%, K 90%). The top object uses the blending mode **Multiply**.

During the **Normalizing** step, all original objects have been resepARATED with the MX resepARATION profile **CS_res_Iso39_TAC330_KeepK_V1.mx4**. The resulting TAC of both **individual** objects is limited to **330** as defined in the profile. Chromatic colors have been replaced by K, as shown in the following screenshot. (Note that using a resepARATION profile during the Normalizing step generally does not make much sense; this is done in this tutorial only for demonstration purposes.)

3. Transparencies and Flattening



Following the **Normalizing** step, the **flattener** now multiplies the two fill colors of the two separate objects in the **overlapping** region. As a result, Cyan and Magenta is **added** to the overlapping region, as shown in the following screenshot.



Due to the color addition during the **Flattening** step, the overlapping region now **exceeds** the TAC limit. If the same reseparation profile is applied again in the following **ColorServer (MX Color Processing)** step, the TAC of the overlapping region is reduced, providing the desired TAC result in the output file. Therefore, it is recommended to **always** apply a CMYK-to-CMYK reseparation in the **MX Color Processing** step. You can find factory-default reseparation profiles for all widely used print standards in the **Resep-
aration Profiles** subfolder (default path: <installation path>\reference profiles\ColorServer Pro-
files\Resepartion Profiles\).

See also:

- "About Flattening and Normalizing" on page 52
- "Normalizing Colors" on page 55
- "Color Conversion" on page 57

3.14 About Flattening and Normalizing

Dependencies between flattening and normalizing

To ensure reproducible results, there are some technical dependencies between flattening and normalizing.

If **Flattening** is used, all images, vector and text objects in the PDF will be normalized to the **same CMYK** color space. Therefore, normalizing must be activated for the **RGB** color space. This is necessary because a PDF can have overlapping objects in different color spaces, for example, an RGB object on top of a CMYK object. These color space mismatches need to be resolved during flattening, as the new object created from the overlapping region can only be in a single color space.

Spot color channels can be preserved and color managed separately from the process colors. If flattening is used, spots can also be converted to **CMYK**. This limitation helps to avoid undesired effects, because the visual impression of stacked objects might be changed dramatically when overprinting spot colors are converted to CMYK.

3.15 Improved Handling of Overprinting Effects for PDF Processing without Flattening

In GMG ColorServer version 5.1.1, an improved handling of overprinting effects was introduced for PDF processing without flattening.

How does it work?

If the **Flattening** option is switched off during PDF processing, the flattening will be done in the RIP.

Let us explain the improved behavior on the following element.

The element consists of two squares colored with solids of the process color Cyan and set to overprint. A color conversion **without** flattening was applied in GMG ColorServer version 5.1 (or lower) and 5.1.1. The results are shown in the following image.



Fig. 10 Comparison of the old and new behavior when processing overprinting objects without and with flattening in version 5.1.1.

The new PDF processing algorithms ensure that overprint effects will be respected and the final design will be intact in version 5.1.1.

However, slight color shifts might be visible or measurable. If color accuracy is your highest priority, flattening is still the way to go.

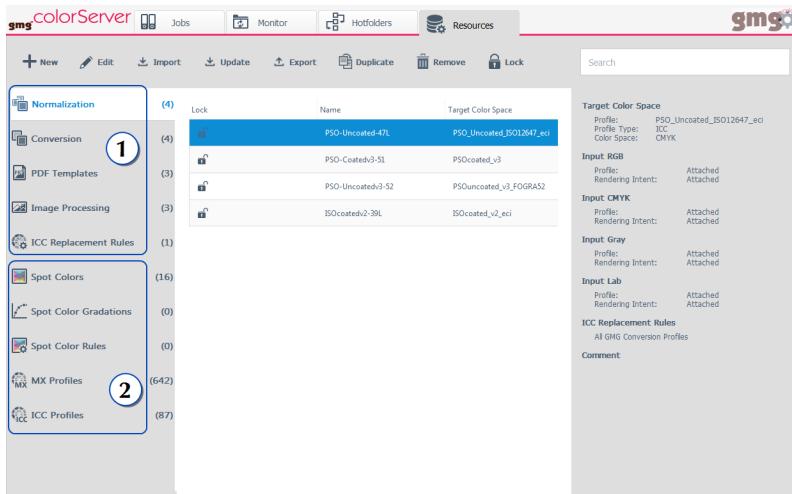
3. Transparencies and Flattening

With the **Flattening** option **deactivated** as shown in the middle, the overprinting area will show slight color shifts in the overprinting areas. If flattening is done before the color conversion (**Flattening** option activated) as shown on the right side, you will get correct results.

Note Please note that, however, reliable color accuracy in areas with overprints and transparencies can be achieved only **with** flattening.

4. Resources

4.1 Resources



In GMG ColorServer, application data management (and job handling) is done on the client(s) side and automatically uploaded to the server. This way, multiple workstations can access and control the same hotfolders, jobs, and resources. Resources can be color and processing **presets** (1), but also profiles and spot color libraries (2).

Each client has access to the centralized stored resources, e.g. one client (for example, on a Macintosh computer) can upload profiles to the server which can be also used by another client (for example, on a Windows computer).

Note The same resource can be used in multiple jobs and hotfolders. Changing a resource leads to changes in all linked jobs and hotfolders.

Resources **linked** to a selected hotfolder or GMG SmartProfiler resource are listed on the **info pane** on the right side of the main window (3). You can click a link to directly navigate to the linked resource and edit it.

Resource Types

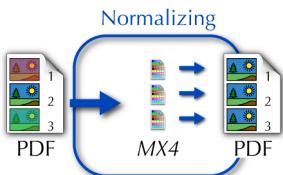
Resource	Description
SmartProfiler	GMG SmartProfiler helps you to create printer calibrations and color profiles for digital and large format printers. This optional feature extends GMG ColorServer with profiling functionality. The SmartProfiler resource holds all settings to profile and recalibrate a specific printer–media combination . After running through the profiling process, GMG ColorServer creates a hotfolder. All documents dropped into this hotfolder will automatically be optimized for the printer–media combination.
Normalization	PDFs can contain objects in multiple color spaces: mixed RGB, CMYK, grayscale, Lab, and spot colors. With a Normalization , all objects can be normalized to the same target color space using either ICC or GMG DeviceLink MX profiles. This ensures a stream-lined workflow, without delaying the PDF processing due to a "forgotten" object in the "wrong" color space.
Conversion	The color conversion is the core of GMG ColorServer to convert the normalized color space into the final target color space. The conversion presets enable automatic color space conversions from one color standard to another. The visualization helps to understand how the conversion is working. (Please see topic "Color Conversion" on page 57 for further information on which profiles can be applied here.)
PDF Processing	The Processing presets contain all information on the file handling parameters. For PDFs, the processing may include parameters to automatically reject or preserve files with transparent or overprinting objects, or flatten the PDF by using the integrated Adobe Transparency Flattener. You can furthermore optimize your PDFs, e.g. by reducing the file size via image compression, resampling or sharpening.
Image Processing	Similar to the PDF Processing preset, the Image Processing preset contains all information on the file handling parameters with regard to images, not PDFs. This resource type is useful if single images need to be converted in GMG ColorServer.

4. Resources

Resource	Description
ICC Replacement Rules	To use GMG DeviceLink MX profiles for a normalization (instead of ICC profiles), ICC replacement rules can be defined. The rules contain predefined typical ICC profile combinations, so that you can easily select a matching MX DeviceLink profile. You can also create your own rules or modify the predefined rules. They can be linked directly within a Normalization preset.
Spot Colors	Spot colors can be left unchanged or converted to CYMK . Usually, you convert a spot color to CYMK if you do four color process printing (instead of spot color printing). To do so, you can import and export spot color databases (*.db3).
Spot Color Gradations	Gradations (*.sgf) can be imported or newly created to be applied as correction curves for spot colors in Conversion presets.
Channel mapping rules	These rules serve to either keep, replace or remove spot colors in the file you want to process.
MX / ICC Profiles	GMG ColorServer comes with generic profiles for all common print standard and depending on license also InkOptimizer profiles.

Tip All resources are stored on the server in: %SystemDrive%/Users/Public/GMG/ Col- orServer/Server/ApplicationResources. The path can be changed via the **GMG Server Configurator**.

4.2 Normalizing Colors



A PDF can contain elements and images in **multiple** color spaces. Before the conversion to the target color space, colors can be normalized to the **same** color space.

- ▶ Normalizing is applied to images that are not already in the target color space. Normalizing can mean a separation from **RGB to CMYK** or a **CMYK to CMYK** conversion from the current CMYK color space to the input color space for the following conversion step.
- ▶ Normalizing can be based on **DeviceLink MX** profiles or on standard **ICC** profiles.
- ▶ Normalizing settings can be defined separately for images and vector objects.

Note If normalizing is not used for an input color space, for example for RGB, or for the whole PDF, objects in the "wrong" color space will not be color managed. For example, if you have defined a hotfolder with a CMYK-to-CMYK conversion profile and without normalizing, all RGB objects will not be processed.

Note If flattening is used, RGB objects overlapping with CMYK objects will be resolved. Therefore, RGB objects need to be normalized and images and vector objects need to use the same normalization settings.

ICC versus MX Normalization

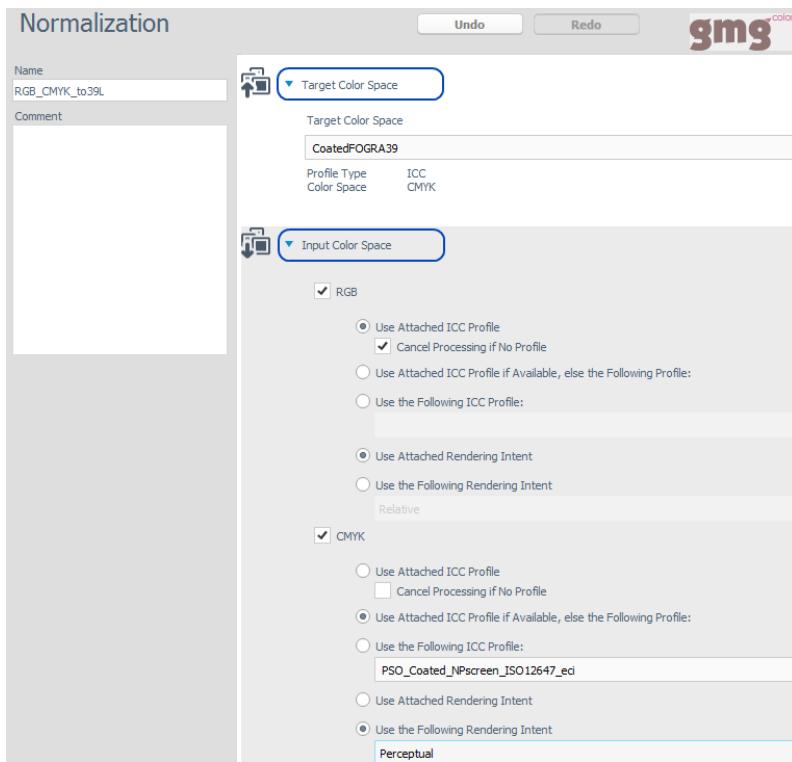
You can either use **ICC based** color management or define **rules** for replacing ICC with MX profiles (**ICC Replacement Rules**). To ensure a fail-safe conversion, you can automatically apply different MX profiles according to the embedded ICC profile of the PDF object / output ICC defined in the hotfolder.

A **DeviceLink** profile such as an MX4 profile has been specifically designed for a color transformation from a defined input color space to a defined output color space. As the profile is created for one specific combination of an input and output device, the color transformation generally provides a very high quality. Information on the black channel is maintained during the transformation.

In contrast, standard **ICC profiles** use a device-independent intermediate color space, usually Lab, to link two device-dependent color spaces. In other words, standard ICC profiles are device independent. Two ICC profiles must be combined with each other to convert one color space to another. Information on the black channel is lost due to the use of the intermediate Lab space.

4.2.1 ICC Based Normalization

→ **Resources:** Set up **Normalization** presets by choosing the **Input Color Spaces** and the **Target Color Space**



You can either load a **custom** ICC profile into GMG ColorServer or use the ICC profile that is **attached** to the PDF object. The normalizing settings can be defined individually for each input color space.

In our example, we defined ICC profiles for **CMYK** and **RGB**, with RGB objects using the attached ICC profiles and rendering intents and CMYK objects using the attached ICC profiles and a fallback profile in case no profile has been attached. If an RGB object in this example has no profile attached, the processing will be canceled.

The **Target Color Space** defines the **output** color space of the normalization that should match the **input** color space for a subsequent **Conversion**.

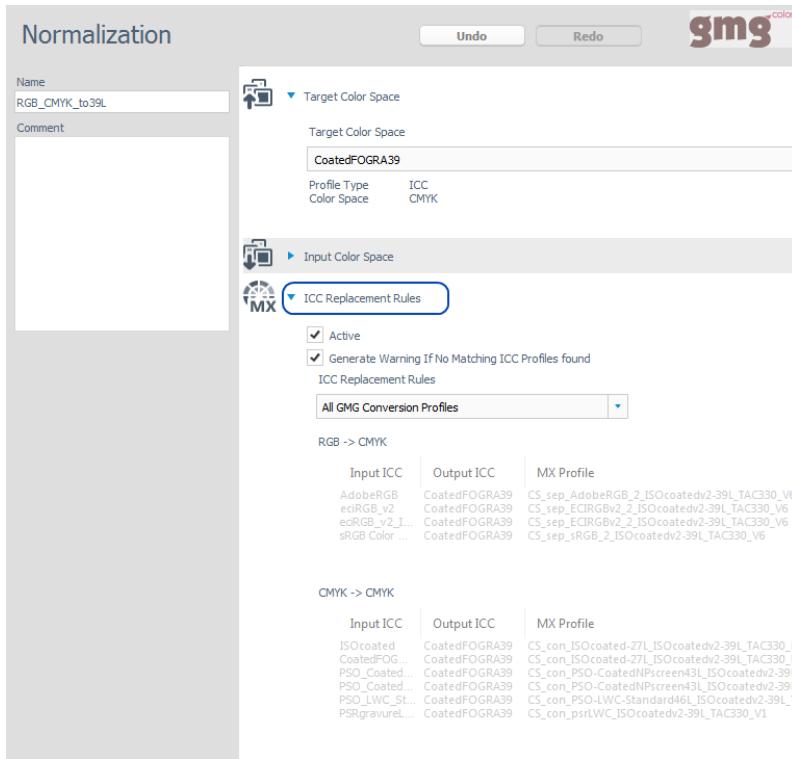
In our example, all objects are normalized to ISO Coated v2 (39L).

Tip Applying the normalization in a job or hotfolder, you can use different normalizations for image and vector objects.

4.2.2 MX Based Normalization

→ **Resources:** Set up **MX based Normalization** presets by using **ICC Replacement Rules**

4. Resources

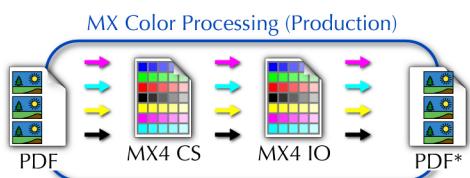


Instead of using ICC profiles, GMG MX profiles can be used. For doing this, activate the option **ICC Replacement Rules**. ICC replacement rules consist of fixed combinations of ICC profile pairs (input and output profiles) and DeviceLink MX profiles, which can be defined as "rules". The software provides you with a default set of rules for all typical ICC profile combinations, but you can also create your own rules or modify the predefined rules. If a replacement rule is updated, changes are applied to **all** hotfolders and jobs using the normalization including the rules.

Creating an ICC Replacement Rule

1. **Resources > ICC Replacement Rules:** Click **New**.
2. Click the plus icon to add a new rule.
3. Select **input** and **output** ICC profile from the dropdown lists.
(To add other ICC profiles to these lists, you need to first add them via **Resources > ICC Profiles**.)
4. Select a **corresponding MX profile** from the dropdown list.
(To add other MX profiles to this list, you need to first add them via **Resources > MX Profiles**.)
5. Click **Save** and select the rules in a normalization.

4.3 Color Conversion



GMG ColorServer comes with color profiles and spot color databases (db3) to match all major print standards world-wide. To suit different requirements, the following profile types have been designed. All profiles are available in the **Resources** section and can be selected for normalizing and converting your files.

Depending on license, you can apply ColorServer and / or InkOptimizer profiles. You can also **combine** ColorServer and InkOptimizer conversions in one preset.

Conversion Options

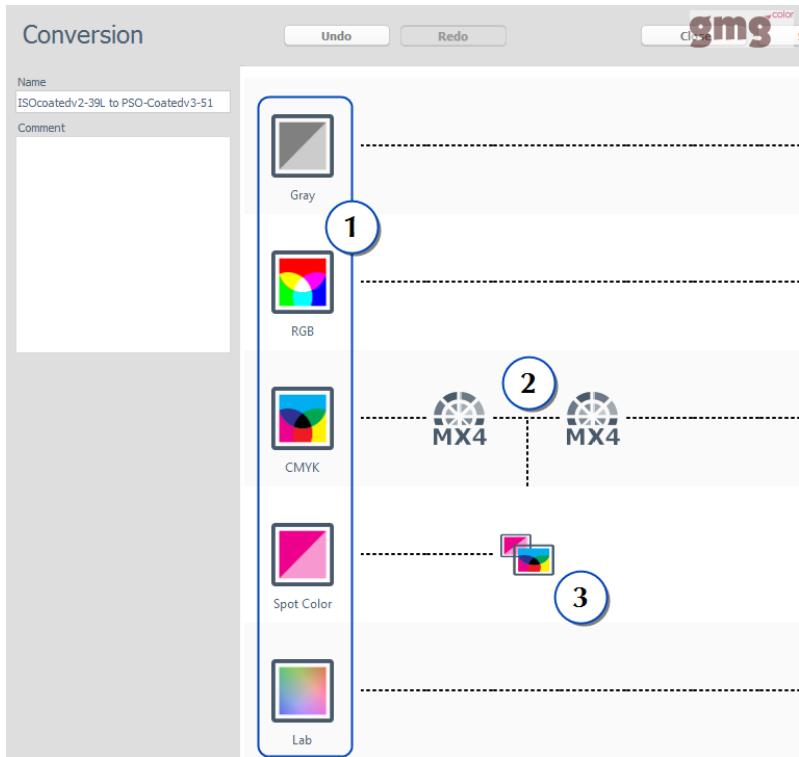
Product Variant	Description
ColorServer (CS)	<p>GMG ColorServer performs fully automatic color space conversions from one color standard to another.</p> <ul style="list-style-type: none"> ▶ CMYK-to-CMYK: For color conversions of CMYK objects from one standard to another, including a gamut mapping, for example, from ISO coated to ISO uncoated. ▶ CMYK-to-CMYK Reseparation: For harmonizing GCR/UCR for different output processes under the respective printing conditions (without using an InkOptimizer profile). ▶ RGB-to-CMYK Separation: For normalizing different RGB objects into a common CMYK color space. ▶ RGB-to-RGB Conversion: For color conversions of RGB objects from one standard RGB color space to another, for example, from Adobe RGB (1998) to eciRGB v2. ▶ CMYK-to-RGB Conversion: For color conversions of CMYK objects into RGB.
InkOptimizer (IO)	<p>With GMG InkOptimizer, you can optimize the color composition of printing data for a specific printing condition, for example, ISO Coated v2 (39L) and for a specific Total Area Coverage (TAC). UCR/GCR settings defined within a InkOptimizer profile are applied. CMY color components are replaced by black while exactly retaining the color impression.</p> <p>We recommend using an InkOptimizer profile for web and sheetfed offset, and gravure printing applications for the following reasons.</p> <ul style="list-style-type: none"> ▶ Up to 20% ink savings (depending on the printing process and the medium) ▶ Improved and stabilized gray balance ▶ If documents from different sources are combined on the press, InkOptimizer makes it easier to harmonize the colors. Tweaking a single color channel will have only minor effects on the gray balance. ▶ Improved drying times and run performance, allowing for a higher printing speed, especially for newspaper printing or for printing on media with a lower ink uptake

Tip You can use GMG ProfileEditor or GMG OpenColor to create your own color profiles.

4.3.1 Creating a Conversion

- **Resources:** Set up **Conversion** presets by choosing the conversion chain from input to target color space.

4. Resources

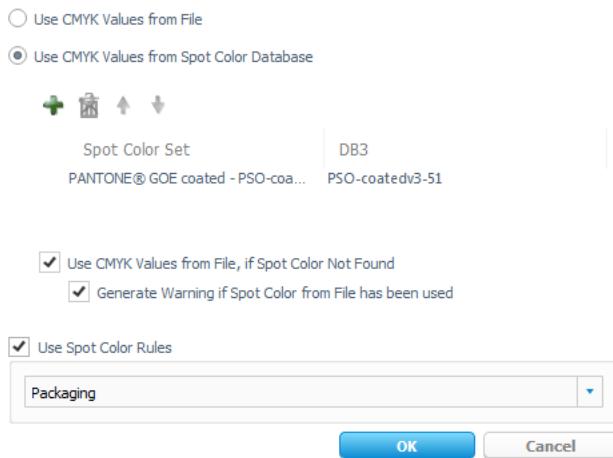


The input color spaces are visualized on the left (1). You can set up a processing chain just by drag-and-drop of the profiles visualized as MX4, MX3, ICC, MXN, spot color, and gradation in the lower part of the content area (2):



- ◀ MX4 profiles: Main profile type for converting from A to B. Select a ColorServer (CS) and/or InkOptimizer (IO) profile from the **Profile** list.
- ◀ ICC profiles: Alternatively, you can use ICC profiles for the conversion.
- ◀ MXN profiles: You can use MXN profiles for GMG OpenColor projects.
- ◀ Spot colors: You can leave spot colors unprocessed or have them converted to CMYK as described below.
- ◀ Gradation: If you want to print spot color gradations, you can link a gradation file into the conversion. This option is ideal if all spot colors show a similar dot gain behavior.

Converting Spot Colors to CMYK



Two different methods are available for converting spot colors to CMYK:

- ◀ **Use CMYK Values from Spot Color Database**
- ◀ **Use CMYK values from File**

Spot color databases (PANTONE® GOE coated, DIC Color Guide®, HKS, etc.) are included in the program and are organized into spot color sets in db3 format. They hold all information required for converting spot colors to CMYK according to a certain print standard. For example, the spot color set PANTONE® GOE coated - PSOcoatedv3-51 (from our example) includes all spot colors of the PANTONE® GOE coated set for PSOcoatedv3-51. Spot color objects are matched with spot colors from the selected spot color sets (matching by name). Each spot color is thus converted to CMYK utilizing the spot color profile of the matching spot.

Tip You can set up your own spot color sets and spot color profiles in the separate program GMG SpotColor Editor.

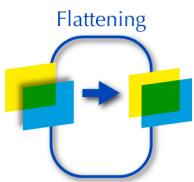
4.4 PDF Processing

GMG ColorServer provides many settings for **optimizing** PDFs and reducing the file size by **compressing** or **resampling** images in the document. You can define an input resolution range to identify all images that should be resampled.

Available options	Description	See also
Flattening	Flattening settings	"Flattening Settings" on page 61
General	Method used for image compression in the output PDF and general color management settings for specific PDF elements.	"General PDF Processing Settings" on page 64
Image Resampling	Changes image resolutions in the range defined by Minimum and Maximum to the specified Output Resolution by using the specified interpolation method.	"Image Resampling" on page 65
3D Sharpness for Images	Easy-to-use and highly efficient sharpening tool. It works resolution dependent and in multiple steps for producing high-quality sharpening effects. You can define the sharpening level separately for RGB and CMYK/Gray images.	"3D Sharpness" on page 65
Output Intent	Add an output intent to the output PDF.	
Validation	The application can generate warning or error messages when selected criteria are met.	

4. Resources

4.4.1 PDF Processing



Input PDFs are scanned for **transparent** objects and/or objects with an **overprint** attribute. If any object with such an attribute is detected, the PDF is processed as defined in the **Flattening** settings of a **PDF Processing** preset.

What happens when a PDF is flattened?

When a PDF is flattened, the Adobe Flattener integrated in GMG ColorServer performs the following tasks.

- ◀ **Layers** are flattened. The output PDF will not contain any layers. (Exception: **Preserve Single Channel Layers** is selected.) Note that if an input PDF contains no transparent objects and/or objects with an overprint attribute, no flattening will be performed (thus the layers will remain as before).
- ◀ **Transparent** objects are flattened as defined. The output PDF will not contain any transparencies.
- ◀ Objects with an **overprint** attribute are flattened as defined. The output PDF will not contain any overprinting objects. (Exception: **Preserve Overprint** is selected. If **Preserve Overprint > Black Only** is selected, black objects with the overprint attribute are not flattened. Overprinting spot colors always keep the overprint attribute.)
- ◀ Transparent objects are split up into smaller objects that can be blended with underlying objects. New objects are created in the overlapping region of transparent objects. The fill color is defined by the blended color tones of the original objects.
- ◀ Some (or all) vector and text elements might be rasterized according to the defined flattening.

Tip Even though the PDF looks (and prints) the same, it might not be editable anymore. It might not be possible anymore to change a certain object after flattening, because this object might now be split up into several objects. Therefore, it is recommended to only flatten ready-for-printing PDFs.

Flattening Settings

The default settings are recommended for final press output and for high-quality proofs.

Generally, line art and text is printed at a higher resolution than images or filled objects. It is recommended to preserve overprint black for vector/text elements, because it avoids the risk of a chromatic composition of black vector and text elements during the color management step.

Options	Description
Raster/Vector Balance	Specifies the amount of vector information in the PDF that will be preserved during flattening. Higher settings preserve more vector objects, while lower settings rasterize more vector objects. Intermediate settings preserve simple areas in vector form and rasterize only complex ones. If set to 0, all objects will be rasterized, that is, the output PDF will contain only image data, no vector and text objects. If set to 100, the Flattener will try to preserve all vector/text elements. (Some objects, however, might need to be rasterized despite the balance being set to full vector.) In the process of rasterizing, vector/text objects are rasterized according to the resolution defined under Line Art and Text Resolution . Other transparent objects are rasterized according to the resolution defined under Gradient and Mesh Resolution . Transparent objects overlapping with images are rasterized according to the resolution of the underlying image (that is, the resolution settings are ignored for such objects), which helps to avoid stitching problems and edges at the border between the two objects. You can reduce the Raster/Vector Balance to reduce the complexity of the flattened file. If the input PDF contains complex transparent artwork, lowering the Raster/Vector Balance can reduce the file size of the output file. Reducing the Raster/Vector Balance usually reduces processing times. For digital printing a value of 90% is recommended to get a good performance.

Options	Description
Line Art and Text Resolution	According to the Raster/Vector Balance , vector/text objects are rasterized to the specified resolution. GMG ColorServer supports a maximum of 2400 dpi for both line art and gradient mesh. The resolution affects the precision of intersections when flattened. Line Art and Text Resolution should generally be set to 600–1200 dpi to provide high-quality rasterization, especially on serif or small point sized type.
Gradient and Mesh Resolution	Same as Line Art And Text Resolution , but for gradient and mesh objects. If you use GMG ColorServer also for image resampling, it might be safest to use the same resolution for rasterization of gradient and mesh objects and for resampling the images. This helps to avoid stitching problems and edges at the border between two objects.
Compression Settings for Flattener-Generated Images	Determines how images affected by flattening are encoded. Depending on the complexity of a PDF, flattening can significantly increase your file size. To keep the file size down and tie up valuable processing resources, you can compress your files into a ZIP or JPEG format. The compression is only applied to objects generated by way of rasterizing, not to images already existent in the input file.
	JPEG is a lossy compression method resulting in a tradeoff between storage size and image quality. As JPEG compression eliminates data from an image, it can generally achieve a smaller file size than ZIP compression. The quality level is automatically selected by the flattener.
Transparency Blend Space	This setting defines which output color space will be used if two transparent elements with different color space need to be merged. If you select Default , the output color space from the Normalization template will be used.
Convert All Text to Outlines	Converts all type objects (point type, area type, and path type) to outlines (i. e. vector objects) and discards all type glyph information (whether the type interacts with transparency or not). This option is not available if the Raster/Vector Balance is set to 0 (because all objects are rasterized, including text). Convert All Text to Outlines ensures that the width of text stays consistent during flattening. It can eliminate flattening artifacts that might be apparent on-screen and when printing to lower resolution output devices such as desktop printers. For example, with this option deselected, some type may be converted to outlines, while other type remains unaffected. On low resolution output devices, the outlined type may appear heavier than the unaffected type. Note that Convert All Text to Outlines will cause small fonts to appear slightly thicker on the screen or when printed on lower resolution printers. It does not affect the quality of the type printed on high-resolution printers or imagesetters. Convert All Text to Outlines can also help to avoid RIP problems with True Type Fonts in the imagesetter.
Convert All Strokes to Outlines	Converts all strokes to simple filled paths (whether the strokes interact with transparency or not). This option is not available if the Raster/Vector Balance is set to 0 (because all objects are rasterized, including strokes). Convert All Strokes to Outlines ensures that the width of strokes stays consistent during flattening. It can eliminate flattening artifacts that might be apparent on-screen and when printing to lower resolution output devices such as desktop printers. Note that enabling this option causes thin strokes to appear slightly thicker and may degrade flattening performance.
Clip Complex Regions	Ensures that the boundaries between vector artwork and rasterized artwork fall along object paths. This option is not available if the Raster/Vector Balance is either set to 0 or 100, because complex regions will only be created during flattening if some part of an object is rasterized and another is not. Clip Complex Regions reduces stitching artifacts that might result when part of an object is rasterized while another part of the object remains in vector form by creating clipping paths around these parts of a transparent design. However, selecting this option may result in paths that are too complex for the printer or imagesetter to handle.
Allow Shading Output	If you enable this setting, shadings are not converted to images, but remain shadings in the output.
Preserve Overprint > All Colors	All objects with the overprint attribute are not flattened. The overprint attribute is not resolved. For most print business applications, using this option is not recommended, as there might be different interpretations of the overprint attribute by different imagesetters. This option is not available if the Raster/Vector Balance is set to 0 (because all objects are rasterized, including overprinting objects).
Preserve Overprint > Black Only	Objects containing only K channel information are not flattened. The overprint attribute is not resolved. For most print business applications, using this option is recommended for vector/text, because it avoids the risk of a chromatic composition of black elements during the color management step, which could in turn lead to registration problems. Even if the Raster/Vector Balance is set to 0, black vector/text objects with the overprint attribute are not flattened or rasterized.
Preserve Single Channel Layers	A single channel layer is a PDF layer producing only a single plate in an imagesetter. For example, a single channel layer contains only 100% black or grayscale objects, or spot color objects. PDFs with single channel layers might be used for multi-language support: If all other contents are the same across all languages, the language can be changed by replacing only one plate (with the text) during the printing process. If the option is selected, single channel layers are not normalized, not flattened, not color managed, not sharpened, and not resampled. In other words, single channel layers are not processed at all. Please follow the link for more detailed information: "Single Channel Layers" on page 63

4. Resources

Options	Description
Cancel Job when Flattening exceeds...	Enable this option if you want complex PDF jobs automatically to be canceled if they exceed the set time limit during flattening. The default time limit is set to 30 minutes. However, we do not recommend that you set the time limit to less than 20 minutes, as this is a normal processing time for larger jobs with flattening.
Restart Flattening by Rasterizing All Objects (Generate Warning)	This option is only available if you have the Cancel Job when Flattening exceeds... checkbox ticked. If you activate it, you will receive a warning message if a flattening job was canceled after it exceeded the set time limit. Additionally, the job will automatically be restarted and processed with 100% raster balance instead of flattening.

Validation

- ▶ You can generate a warning if any overprinting or transparent objects are detected in the input PDF. The warning message will tell you whether transparencies have been flattened or not, as defined in the **Flattening** settings.
- ▶ You can generate a warning if single channel layers are detected in the input PDF. The warning message will tell you whether the single channel layers have been preserved or merged, according to the **Preserve Single Channel Layers** option.

Single Channel Layers

If the option **Preserve Single Channel Layers** is selected, the program scans input PDFs for single channel layers. A PDF layer is recognized as single channel layer if the following requirements are fulfilled:

- ▶ All objects in the layer use only **one** color channel, for example, **CMYK** objects using only Cyan (C50, M0, Y0, K0), **100% K**, **grayscale** objects, **spot color** objects (all objects using the same spot color). Even if just one pixel is using another color channel (and be it only at 1%), the layer will not be recognized as a single channel layer anymore. (If you need to use, for example, two spot colors or two process colors, group the two colors in two separate layers.)
- ▶ Layers with **RGB** or **Lab** objects will never be recognized as single channel layers.

Flattening with Preserve Single Channel Layers

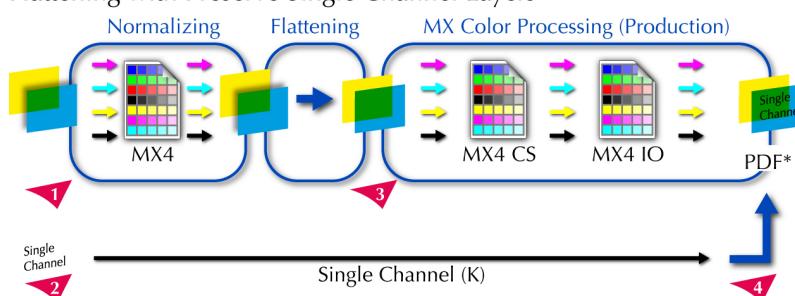


Fig. 11 Flattening with option **Preserve Single Channel Layers** selected.

In the illustrated example, the input PDF contains transparent CMYK objects (1) and a separate layer with black text. As this layer contains only K objects, it will consequently be recognized as a single channel layer (2).

The single channel layer will be excluded from all following processing steps.

The CMYK objects will be flattened (3) and then color managed with the selected ColorServer (CS) and InkOptimizer (IO) profiles.

The single channel layer will not be color managed.

The output PDF (4) will contain the flattened and processed CMYK objects and the unprocessed single channel layer.

4.4.2 General PDF Processing Settings

Note To keep objects using only the K channel pure, using the options **Process Grayscale Images (MX Conversion Only)** or **Process Black Vector/Text Elements (MX Conversion Only)** is generally **not** recommended. Please take into consideration that **Normalizing** or **Flattening** processing might already have lead to a chromatic composition of K objects. As a result, these options would not apply anymore to those objects. You can select the option **Preserve Overprint > Black Only** for vector/text elements in the **Flattening** settings to make sure black overprinting vector/text elements will remain unchanged (see "Preserve Overprint > Black Only" on page 62).

Option	Short description	See also
Image Compression Method	The image compression options specify if and how image objects in a PDF should be compressed.	"Image Compression Method" on page 64
Process RGB-Gray as CMYK Black Channel	In RGB documents, gray objects will be made out of equal percentages of color on each of the RGB channels. In most cases, it is desirable to print gray vector and text objects by using only black ink. If you activate this option, RGB Gray objects will be separated to CMYK objects with a pure K channel, that is, without using CMY. The resulting K value will be linear to the input RGB value.	"Separation of RGB Gray Vector and Text Objects" on page 65
Normalize CMYK Black Vector/Text	If this option is deselected, black vector and text elements will be ignored during the Normalizing step.	"Normalizing Colors" on page 55
Process Black Vector/Text Elements (MX Conversion Only)	If this option is deselected, black vector and text elements will be ignored during the MX Color Processing step. Only pure K elements (including grayscale objects), without any other color value, are ignored. If an element that was pure K in the input PDF is not pure K anymore after the normalization step, it will not be affected by this option. ICC based color management is not affected by this option.	"Color Conversion" on page 57
Process Grayscale Images (MX Conversion Only)	If this option is deselected, grayscale image elements will be ignored during the MX Color Processing step. Only pure K elements (including grayscale objects), without any other color value, are ignored. If an element that was pure K in the input PDF is not pure K anymore after the normalization step, it will not be affected by this option. ICC based color management is not affected by this option.	"Color Conversion" on page 57
Calculate Ink Savings	If this option is selected, GMG ColorServer will automatically create ink saving calculations for all files processed by this template.	Ink Saving Report

Image Compression Method

The image compression options specify if and how image objects in a PDF should be compressed.

Tip As **Flate** is a lossless compression method, it does not affect the image quality. As compression can dramatically decrease the **file size** (depending on the image objects and structures), using a compression is generally recommended.

Option	Description
None	Images are not compressed in the output PDF, resulting in a higher file size.
Keep Existing	Preserves the image compression settings from the input PDF.
Flate	Lossless compression method. Works well on images with large areas of single colors or repeating patterns, and for black-and-white images containing repeating patterns.
JPEG (High Quality)	Lossy compression method, which means that it removes image data and may reduce image quality; however, it attempts to reduce file size with a minimum loss of information. Because JPEG compression eliminates data from an image, it can generally achieve a smaller file size than Flate compression.

4. Resources

Separation of RGB Gray Vector and Text Objects

In RGB documents, gray objects will be made out of equal percentages of color on each of the RGB channels. In most cases, it is desirable to print gray vector and text objects by using **only** black ink.

If you activate the option **Process RGB-Gray as CMYK Black Channel**, RGB Gray objects will be separated to CMYK objects with a pure K channel, that is, without using CMY. The resulting K value will be linear to the input RGB value.

This separation step is a pre-processing step, **before** the **Normalizing** and the **MX Processing** steps are applied. Resulting CMYK objects will not be tagged with an ICC profile, that is, it will be assumed that they are in the color space defined by the PDF output intent. The **Normalizing** rules as defined for vector and text objects in the hotfolder settings are fully applied, as for all other CMYK objects.

Note Do **not** use this option if you want to use an **RGB-to-CMYK** profile in the **MX Processing** step. In this case, if the option **Process RGB-Gray as CMYK Black Channel** is **not** used, all RGB objects will be separated directly to the output color space by the RGB-to-CMYK profile. If the option is used and all RGB objects are separated to CMYK **before** processing, they will be **ignored** during the **MX Processing** step.

What does RGB Gray mean?

RGB Gray means that the **same** percentage is used on each channel.

Examples:

- ▶ [RGB = 0, 0, 0] converted to [CMYK = 0%, 0%, 0%, 100%]
- ▶ [RGB = 1, 1, 1] converted to [CMYK = 0%, 0%, 0%, 99%]
- ▶ [RGB = 128, 128, 128] converted to [CMYK = 0%, 0%, 0%, 50%]

The following color is **not** considered as RGB Gray, because not all channels have equal values:

- ▶ [RGB = 38, 37, 38] maintained as [RGB = 38, 37, 38]

4.4.3 Image Resampling

These options specify if and how image objects in a PDF should be resampled. You select an **Interpolation** method to determine how pixels are added or deleted.

When you downsample (by defining an **Output Resolution** that is lower than the input resolution), the number of pixels in the image is decreased. When you upsample, new pixels are added. Images with resolutions not within the specified range of input resolution will not be resampled.

You may want to experiment with these options to find an appropriate balance between file size and image quality. The resolution should be 1.5 to 2 times the line screen ruling at which the file will be printed.

Option	Description
Nearest Neighbor	The Nearest Neighbor algorithm selects the value of the nearest point and does not consider the values of other neighboring points. A fast but less precise method that replicates the pixels in an image. This method is for use with images containing edges that are not anti-aliased, to preserve hard edges and produce a smaller file. However, this method can produce jagged effects, which become apparent when you distort or scale an image or perform multiple manipulations on an image.
Bilinear	Bilinear is a method that adds pixels by averaging the color values of surrounding pixels. It generally produces medium quality results.
Bicubic	Bicubic uses a weighted average instead of a simple average to determine pixel color. This method is slowest but generally produces the smoothest tonal gradations.

Tip Please keep in mind that resampling may affect the image quality. Generally, **sharpening** resampled images can help refocus the image details.

4.4.4 3D Sharpness

- Activate the sharpening for RGB / CMYK output color space and enter an **Intensity**.

Note Please note that sharpening always affects the visual impression of images and can also have an impact on the colors, especially on the edges of objects. A sharpening level that is too high can cause unwanted side effects, especially if objects show fine structures, such as can be seen in fabrics. For proofing and validation prints, use of sharpening is **not** recommended.

Sometimes printed images result in an unsharp impression for various reasons, for example, because the gamut mapping led to a loss of contrast or because the used printer or press is not able to produce a very sharp print. You can sharpen images to compensate for those effects.

The sharpening works resolution dependent and in multiple steps for producing high-quality sharpening effects. You can set the **Intensity** from 0.1 to 20 for different output color spaces (RGB and CMYK). For RGB, it is applied only to RGB-to-RGB conversions.

4.5 Spot Colors

Name	Output	Number of Sets	Number of Colors
GRACoL2006coatedcommercialsheet1	CMYK	24	26285
ISO Coated v2 (F93) - PANTONE® Solid Coated V4 to ...	Multicolor	1	2165
ISOcoated27L	CMYK	22	21505
ISOCoatedv2-39L	CMYK	24	26285
ISOcoatedcoated31L	CMYK	24	26285
ISOcofuncote932L	CMYK	24	26285
ISOuncoted939L	CMYK	24	26285
ISOuncotedyellowish30L	CMYK	24	26285
ISOWebcoated28L	CMYK	24	26285
PSO-CoatedPiscreen43L	CMYK	24	26285
PSO-coatedv9-51	CMYK	24	26285
PSO-LWCimproved45L	CMYK	24	26285
PSO-LWCstandard46L	CMYK	24	26285
PSO-Uncoted47L	CMYK	24	26285
PSO-UncotedNPiscreen44L	CMYK	24	26285

Spot colors can be left unchanged or converted to CMYK. Usually, you convert a spot color to CMYK if you do traditional four color process printing (instead of spot color printing).

With **channel mapping rules**, you can define rules how special spot colors should be handled before they are processed. You can also define spot colors that should be excepted or replaced from any processing.

How can I process spot colors?

- You can use a **gradation** correction (*.sfg) for spot colors. For most spot color applications, it is only required to print the spot color as full-tone (100%) color. If you, however, want to print spot color gradations, you can do so by easily linking a spot color gradation into the conversion. This option is ideal if all spot colors show a similar dot gain behavior.
- You can **convert spot colors to CMYK using spot color sets**, i.e. spot colors are converted directly to the output CMYK as defined in the spot color database. (Make sure the gamut used in the spot color database matches the output color space, which is generally described by the printer's gamut).
- You can **convert spot colors to CMYK using the alternative CMYK values** stored in the original PDF.

See also:

- "Creating a Conversion" on page 58

4.5.1 Creating a New Spot Color Set

This chapter outlines the creation of a new spot color set. For each spot color in the set, you need to create a spot color profile in GMG SpotColor Editor.

4. Resources

How to create a spot color set

1. Start the separate application GMG SpotColor Editor from the **Start** menu of your Windows operating system.
2. Load an existing db3 spot color database into GMG SpotColor Editor (**File > Open External Database**).
3. On the **Edit** menu, click **Add New Spot Color Set**.
4. Click the set name (default name: Set_1) in the tree view of the database until the insertion point appears and **rename** the spot color set. It might be useful to mention the supported medium in the name.
5. If you want to use the advantages of a printer calibration for this spot color set, select the option **Calibrated Spot Color Set**.

The new spot color set is empty and you can now add any number of spot colors you like.

How to create a spot color

1. Select the spot color set you want to add spot colors with the mouse. On the context menu, click **Add New Spot Color**.
2. Repeat step 1 until the spot color set is complete.

How to create a spot color profile

A spot color profile needs to be calculated for **each** spot color in the set.

Note As the spot colors converted to CMYK by using spot color sets are merged together with the original process color channels **before** the **MX Color Processing** step, the spot color sets need to convert spot colors to the **input** color space of the **MX Color Processing** step.

Note The separation mode **Inkjet Mode** should be used for **all** spot color sets for use with GMG ColorServer.

1. For **each** spot color in the set, enter the characterization data (provided by the spot color manufacturer or measured from a print sample) as **Target Values** for all required fulcrums. A single fulcrum at 100 is sufficient for most use cases.
2. Delete all unused fulcrums.
3. To each spot color, link the **gamut** file corresponding to the **input** color space for the **MX Color Processing** step, for example, Fogra39L_IsoCoated_V2_eci.csc.
4. From the **Separation** mode list, select **Inkjet Mode**.
5. Calculate the **output** values (**Calculate with Target Values**).
6. **Save** the (db3) database file.

How to optimize the profile by an iteration cycle

Optional step: For **each** spot color in the set, you could optimize the profile in an **iterative** process (cycle) to achieve an even higher profile quality. However, the profile quality achieved by calculation alone in GMG SpotColor Editor is generally sufficient for most applications. To save costs, GMG GmbH & Co. KG recommends **not** optimizing spot color profiles for use with GMG ColorServer. We want to mention this procedure only as an advanced option.

If you decide to optimize the profile, you will need to process the test chart with **exactly** the same settings you will use later for production. It is recommended to set up a **hotfolder** with all required **MX Color Processing** settings and with the new spot color set first.

Note The appearance of a spot color is defined by the spot color profile from the set, the **MX4** profile used in the **MX Color Processing** step, and the **printer calibration** file (if used). Please calibrate the printer and check the quality of the MX4 profile and of the printer calibration **before** optimizing a spot color profile.

1. In GMG ColorServer, create a job with the spot color test chart GMG_SpotColor_<measuring device>.tif from the **Testcharts** subfolder with the new spot color (or last version of the spot color). (Use the **MX Color Processing** settings and profiles you want to use together with the spot color set.)
2. Print the **processed** PDF on the target printer or press.
3. In GMG SpotColor Editor, measure the test chart with an external measuring device: On the **Measure** menu, click **All Current Values**. (You can also measure individual patches by pressing the M key.)
4. If **Delta E** values are too high, recalculate the profile: On the **Measure** menu, click **Calculate with Target and Current Values**.
The measured values will be compared to the target values. Output values will be adjusted accordingly.
The target values will be computed with the gamut file to produce the output values of the profile.
5. **Save** the (db3) database file.
6. Repeat steps 1 to 5 until the deviation (Delta E) between **Target Values** and **Current Values** meets your requirements.

4.6 Lab Filter for Spot Colors

The screenshot shows the GMG colorServer software interface. The main window is titled "Spot Colors Database" and displays a list of PANTONE spot colors. The sidebar on the left shows the selected spot color set: "PANTONE® Solid coated V4 - ISOcoated27L (2161)". The right-hand panel contains a "Lab Filter" dialog with fields for "Current Lab" and "Target Lab" and a "Delta E" limit of 0.00. The table below shows the current and target Lab values for various PANTONE colors.

Spot Colors	Cyan	Magenta	Yellow	Current	In Gamut
PANTONE 100 C	2.60	0.00	73.62	-	-
PANTONE 101 C	2.20	0.00	82.02	-	-
PANTONE 102 C	0.00	0.00	100.00	-	-
PANTONE 103 C	5.47	13.39	100.00	-	-
PANTONE 104 C	7.92	14.29	100.00	23.81	63.55 -0.30 70.66
PANTONE 105 C	10.73	16.36	95.20	50.24	51.58 -0.75 45.49
PANTONE 106 C	0.00	0.52	80.81	0.00	90.66 -4.13 74.70
PANTONE 107 C	0.00	2.52	90.77	0.00	89.83 -2.48 84.13
PANTONE 108 C	0.00	4.55	100.00	0.00	88.45 0.61 94.50
PANTONE 109 C	0.00	7.11	100.00	0.00	86.28 5.99 98.55
PANTONE 110 C	0.00	22.21	100.00	0.00	72.59 9.31 88.88

When looking for details on available spot colors — such as Lab values, separation details, or out-of-gamut information — you can access them from the spot color set details under **Resources > SpotColors**. The spot color interface is not only comprehensive, but also helps you preventing unwanted duplicates with the included Lab filter: search by a spot color's current Lab or target Lab and find the closest match for your printing process easily.

Filter spot colors by Lab value

The Lab filter is available for every spot color resource. You can use it to either filter colors by current Lab or target Lab, and you can define a Delta E limit for the search results.

4. Resources

How to filter spot colors by Lab...

1. Open the **Resources** tab.
2. From the **Resources** menu, select the **SpotColors**.

The screenshot shows the colorServer software interface. At the top, there's a navigation bar with tabs like Edit, Import, Update, Export, Duplicate, Remove, Lock, and Resources. The Resources tab is currently active. On the left, a sidebar lists various modules: SmartProfiler, Normalization, Conversion, PDF Processing, Image Processing, ICC Replacement..., Spot Colors (which is highlighted with a red circle), Spot Color Grav..., Channel Mapping..., MX Profiles (805), ICC Profiles (97), and OpenColor Projects... (2). The main area is a table titled 'Spot Colors' with columns: Name, Output, Number of Sets, and Number of Colors. One row is selected, showing 'ISOCoated27L' with CMYK output, 22 sets, and 21505 colors. A context menu is open over this row, with the first item 'PANTONE® Solid coated V4 - ISOCoated27L' highlighted. To the right of the table, there's a 'Creator' section listing various color profiles, a 'Separation' section with Cyan, Magenta, Yellow, and Black options, and a 'TAC Reduction' section with Off and Comment options. At the bottom, there's a status bar with license information and connection details.

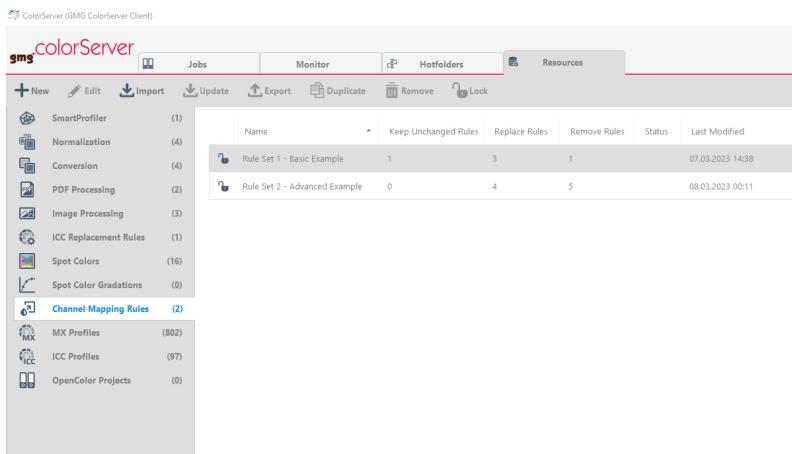
3. Double-click on the spot color set in which you want to search for the spot color.
4. Click on **Lab Filter** to open the Lab filter.

The screenshot shows the colorServer software interface with the 'ISOCoated27L' spot color set selected. A 'Lab Filter' dialog box is overlaid on the main window. The dialog has several input fields: 'Current Lab' (radio button) and 'Target Lab' (radio button, selected), with L*, a*, and b* values all set to 0. Below these are 'Show values below' and a 'Delta E' input field set to 0. There are 'Reset' and 'Apply' buttons at the bottom. The background table lists various PANTONE colors with their L*, a*, and b* values. The 'Target Lab' radio button is highlighted with a red circle. The 'Delta E' input field is also highlighted with a red circle. The 'Apply' button is highlighted with a red circle.

5. Select if you want to search by **Current Lab** or **Target Lab**.
6. Enter the values for **L***, **a***, and **b***.
7. Under **Show values below**, enter the Delta E limit for your filter search.
All colors with a Delta E higher than the entered value will not be shown in your filter results.
8. Click on **Apply** to apply the search filter.

Note Please don't forget to reset the filter by clicking on **Reset** (8) after inspecting all search results.

4.7 Channel Mapping Rules



PDF files may sometimes contain a spot color that is not included in your library. To prevent errors, you need to define how this color channel should be handled before color management. Instead of defining this for each channel repeatedly by hand, you can automate the task by creating channel mapping rules and applying them to your conversion. By using wildcards in your rules, you can cover multiple spot colors that share a similar name with a common rule. This makes channel mapping more efficient and less error-prone, while keeping the rule list short and concise. You can also sort the rules and specify their processing order by dragging and dropping them.

How channel mapping rules work

Channel mapping rules are resource templates that can be applied in a conversion. They include definitions on how particular spot color channels from an input PDF should be handled before the color management takes place. You can create different rule sets for different conversion needs.

For each rule, you must specify the input channel name of the relevant spot color and select the action to be performed for that color. You can keep a color unchanged, remove it from the PDF, or map it to an alias spot color from your library.

If you apply your channel mapping rules in a conversion, the input PDFs will be automatically scanned for objects that match the input channel names from these rules. The matching objects are then handled according to the specified action.

The different channel mapping actions in detail...

- Keep Unchanged:** Objects with this input channel name are not normalized, not flattened, not color managed, not sharpened, and not resampled.
- Remove:** Objects with this input channel name are removed from the PDF.
- Map to:** Objects with this input channel name are mapped to an alias spot color from your library, which you must also specify in the corresponding field. The spot color will then be processed as defined in the conversion.

The benefits of wildcards

Sometimes, you may not know the exact name of an input channel, or you may have multiple input channels with similar names that you want to map to the right alias with just one rule automatically. In such cases, you can use wildcards in your rules to minimize the risk of errors, reduce manual effort, and keep your list of rules short and concise.

Wildcards are symbols or characters that can represent any combination of characters in a text string. They are especially useful for finding and replacing channel names from your input document if the wording varies. The most common placeholders for this purpose are the asterisk (*) and the question mark (?), but you can also use some other wildcards for your channel mapping rules.

4. Resources

Available wildcards and their function...

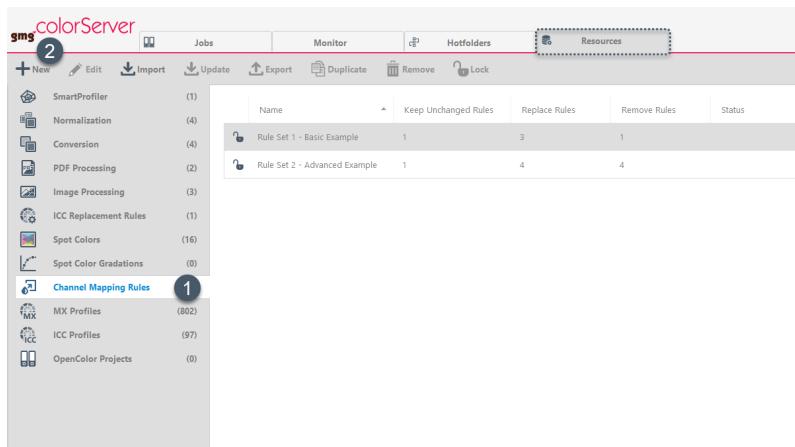
Wildcard	Description	Example
a	Any alphabet character represents itself. Thus, a matches the letter a, b matches the letter b, and so on.	blue finds blue.
*	Matches any number of characters, even zero. You can use the asterisk (*) anywhere in a character string.	bI* finds blue and black , but not darkblue and jetblack .
?	Matches a single alphabetic character in a specific position.	p?ntone finds pantone and pentone .
[]	Matches characters given within the brackets.	p[ae]ntone finds pantone and pentone , but not pontone .
-	Matches a range of characters given within brackets, specified in ascending order (a-c, not c-a).	p[a-c]ntone finds pantone , pbtone , and pctone .
!	Excludes following characters or a following range of characters, all given within brackets.	p[!ae]ntone finds pintone , but not pantone and pentone .
%	Only used in Alias Spot Color strings of Map to rules, especially for mapping multiple spot colors with a single rule. When combined with a wildcard's position number from the Input Channel field, it will be replaced with the matching text from the input channel before conversion. If you have multiple wildcards in the Input Channel field, you can use multiple % / number combinations in the Alias Spot Color field, for example %1, %2, and %3.	P * C maps to PANTONE %1 C . Thus P 100 C will be replaced with PANTONE 100 C , P 200 C will be replaced with PANTONE 200 C , and so on.

Create channel mapping rules

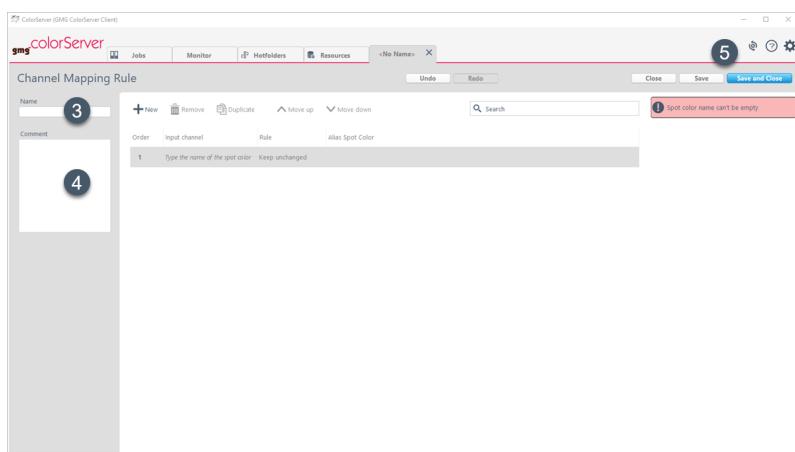
Before you can add single channel mapping rules, you need to create at least one rule set. This set is what you can later choose for your conversion template, and it will contain all the individual rules that you want to apply together in one conversion.

How to create a channel mapping rule set...

- From the tab **Resources**, choose **Channel Mapping Rules**.



- Click on the button **+ New** to create a new set.
The **Channel Mapping Rules** tab opens.
- Under **Name**, enter a name for your rule set.



- Optional: under **Comment**, enter a comment for your rule set.
- Click on **Save** to save your set.

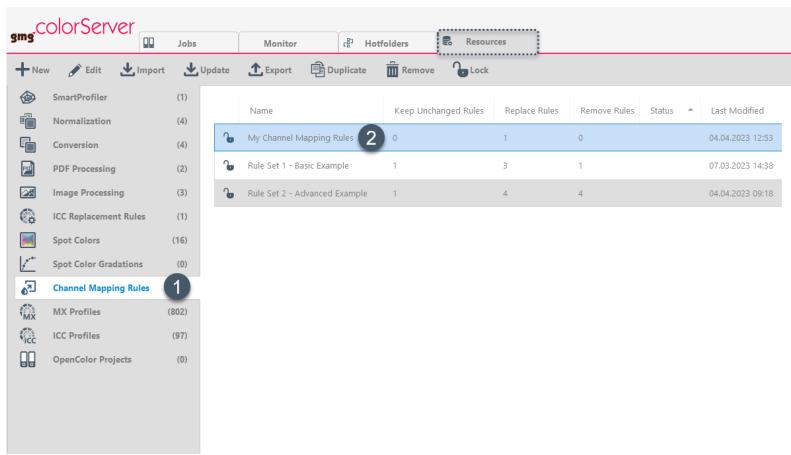
Now you can add one or even more channel mapping rules to your set.

How to add a channel mapping rule...

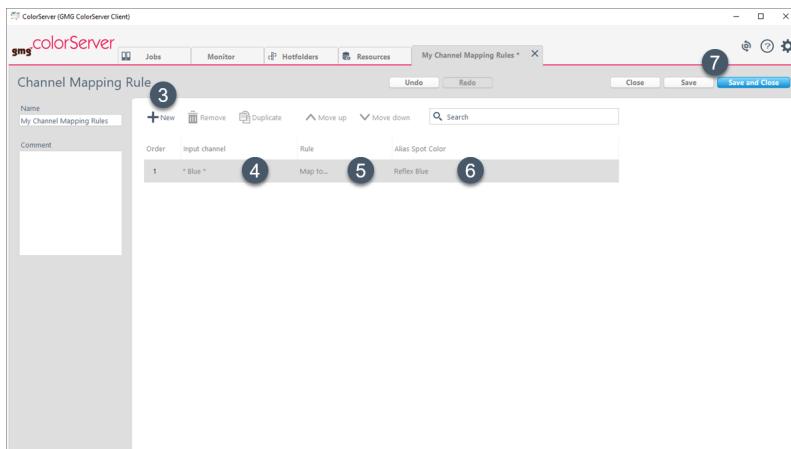
Suppose that several channel names from your input PDFs contain the word **Blue**, like **Production Blue** and **Flexo Blue**, and you want all of them to be mapped to **Reflex Blue**. Instead of creating multiple rules to cover all the similar input channel names, you can map them all to **Reflex Blue** with one single rule by using the asterisk (*) wildcard. The following example shows how to add this rule to your rule set.

4. Resources

1. From the tab **Resources**, choose **Channel Mapping Rules**.



2. Double-click on the set to which you want to add your channel mapping rule. The **Channel Mapping Rule** tab opens.
3. Click on **+ New** to add a new rule.
If this is a new set, the first rule will be created automatically, and you can skip this step.



4. Under **Input Channel**, enter the spot color name from your input PDF. You can use wildcards here to map multiple channels with one rule.
For our example, we want to scan the input PDFs for all channels containing the word "Blue", so we enter *** Blue ***.
5. Under **Rule**, choose the action to be performed for the specified **Input Channel**.
For our example, we want to replace all input channels with names containing the word "Blue" with "Reflex Blue", so we choose **Map to...**.
6. Under **Spot Color Alias**, enter the spot color name that should replace the specified **Input Channel** name.
For our example, we enter **Reflex Blue**.
7. Click on **Save** to save your channel mapping rule.
If you don't want to add another rule, you can click on **Save and Close** instead.

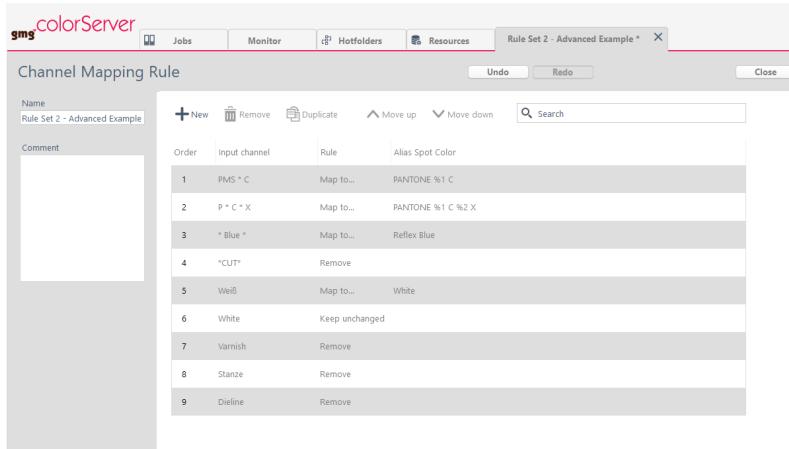


Fig. 12 This example screenshot shows typical channel mapping rules for a packaging application.

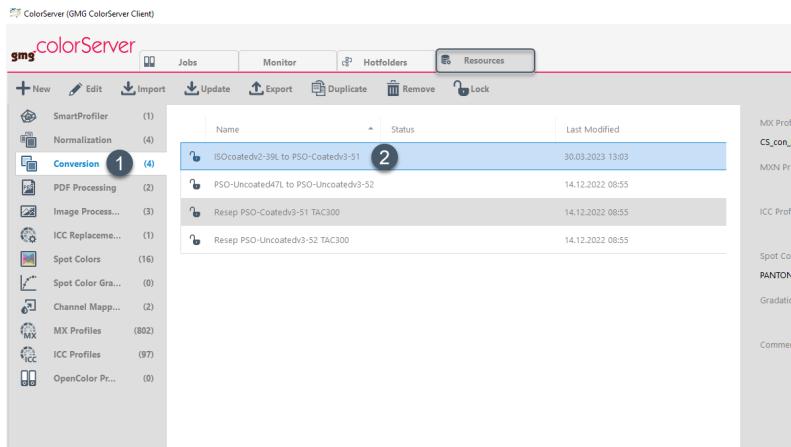
Apply channel mapping rules in a conversion

After creating your channel mapping rules, you need to add them to your **Conversion** template for them to take effect.

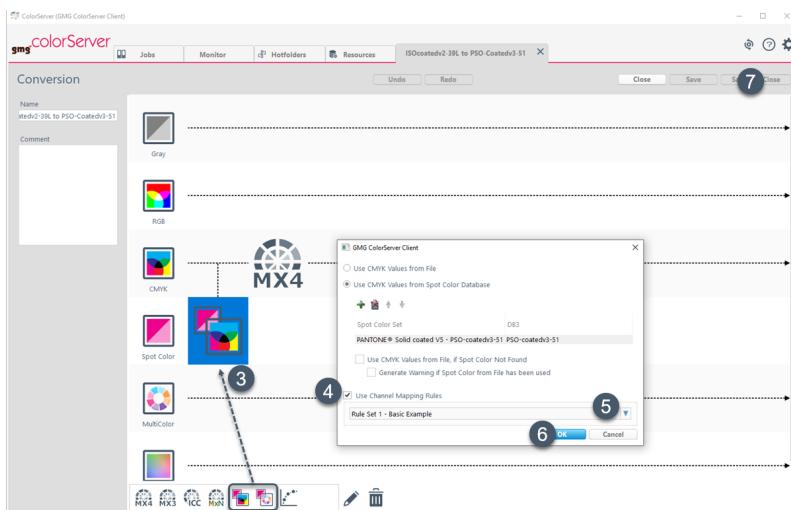
4. Resources

How to add channel mapping rules to a conversion template...

- From the **Resources** tab, select **Conversions**.



- Double-click on the conversion to which you want to apply the channel mapping rules.
The **Conversion** tab opens.
- Double-click on the spot color icon in your process chain.
The spot color dialog opens.



- Activate the checkbox **Use Channel Mapping Rules**.
- Select your channel mapping rule set from the dropdown menu.
- Click **OK** to confirm your choice.
The spot color dialog closes.
- At the top right of the window, click **Save and Close** to save your changes to the conversion.

Change the rule priority via Drag & Drop

The rules are applied one after the other. You can check the sequence in the **Order** column. For changing the sequence, just click on a rule's **Order** field and drag it to the desired position. Alternatively, you can select the rule and use the buttons **Move up** and **Move down** from the ribbon.

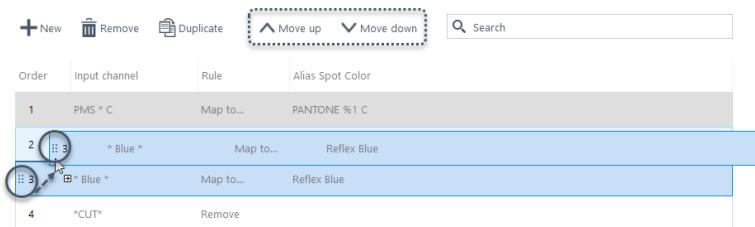


Fig. 13 The image shows how to change the sequence order of channel mapping rule.

Note Please ensure to arrange your channel mapping rules logically and prevent conflicts between them, especially when using the same color name in multiple rules. An incorrect sequence of rules can cause issues with color mapping, leading to a Job error.

Examples of a correct and incorrect rule order...

Suppose that your input PDFs use two different names for white channels, sometimes named German **Weiß** and sometimes named English **White**. Although **White** is not a spot color name from your library, you need to preserve white objects for the printing process, which will use a **White** channel. To achieve this, you create two rules containing a definition for **White**:

- A **Map to...** rule to replace all channels named **Weiß** with the alias name **White**
- A **Keep unchanged** rule to keep all channels named **White** unchanged

The following screenshot shows the correct order for these two rules, with the **Map to...** rule placed **before** the **Keep unchanged** rule:

Order	Input channel	Rule	Alias Spot Color
1	PMS * C	Map to...	PANTONE %1 C
2	P * C * X	Map to...	PANTONE %1 C %2 X
3	Weiß	Map to...	White
4	White	Keep unchanged	
5	* Blue *	Map to...	Reflex Blue

In this order, both input channels **Weiß** and **White** are consistently named **White** for the printing process **before** the **Keep unchanged** rule defines to keep all channels named **White** unchanged. Since **White** is not a spot color name from your library, this order prevents them from remaining unrecognized, leading to an error.

The following screenshot shows the incorrect order for these two rules, with the **Map to...** rule placed **after** the **Keep unchanged** rule:

Order	Input channel	Rule	Alias Spot Color
1	PMS * C	Map to...	PANTONE %1 C
2	P * C * X	Map to...	PANTONE %1 C %2 X
3	White	Keep unchanged	
4	Weiß	Map to...	White
5	* Blue *	Map to...	Reflex Blue

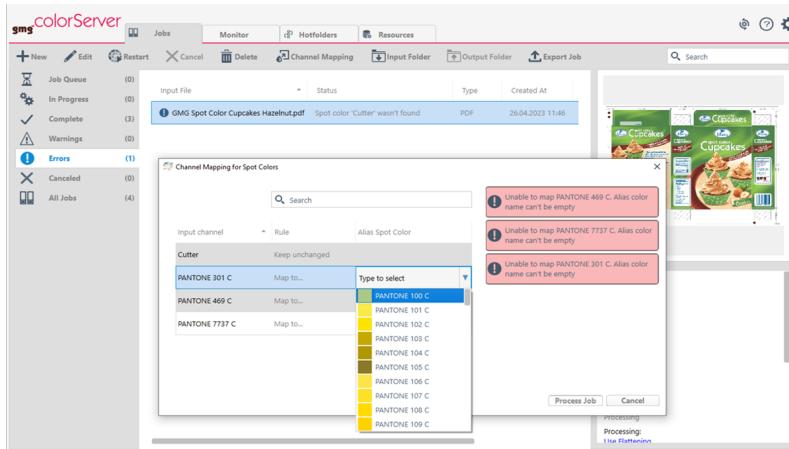
In this reverse order, both input channels **Weiß** and **White** are consistently named **White** for the printing process **after** the **Keep unchanged** rule has already been applied. **White** is not a spot color name from your library and the rules are applied sequentially. Since there is no subsequent **Keep unchanged** rule to keep those newly named **White** channels unchanged as well, they will remain unrecognized. This sequence will lead to an error.

4. Resources

Sort rules alphabetically by column

By default, channel mapping rules are sorted by their **Order** number. Sometimes, sorting the rules by another column can be useful, for example, to detect conflicting rules or prevent errors. To sort the rules alphabetically by another column, just click on the title of that column.

4.7.1 Channel Mapping at Job Level



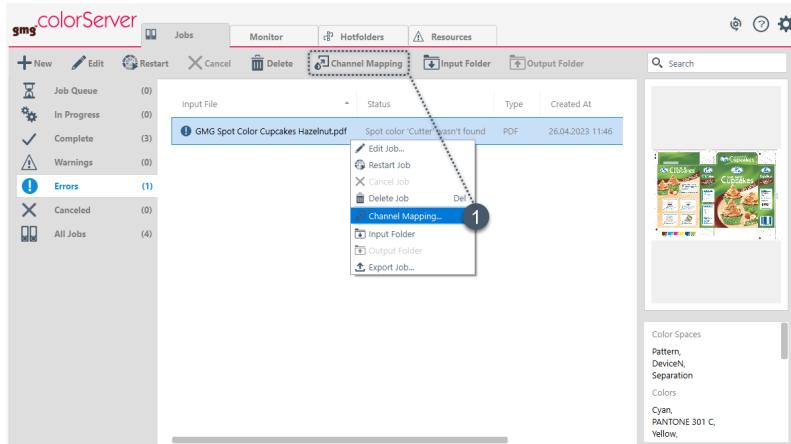
The job processing may sometimes fail because a spot color from your input PDF could not be found. The job will then be listed under **Jobs > Errors** with the status **Spot color [name] wasn't found**. You have two options to fix such a channel mapping error:

- **Persistent channel mapping rules for a conversion:** You can add a channel mapping rule to your resources and then restart the job (see "Channel Mapping Rules" on page 70).
- **Temporary channel mapping for specific jobs:** You can use the channel mapping feature in the job list to map the spot color for a specific job without altering your resources.

How to map spot color channels for a specific job...

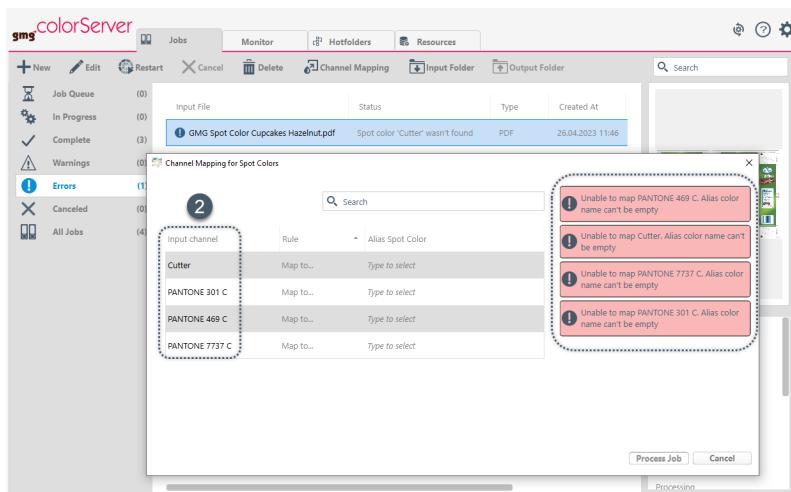
4. Resources

- Under **Jobs > Errors**, right-click on the relevant job and choose **Channel Mapping...**. Alternatively you can select the job and click the **Channel Mapping** button from the ribbon.

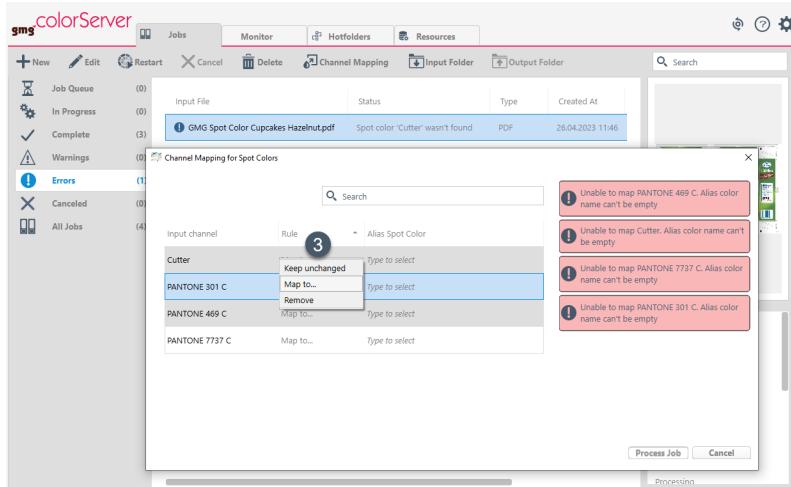


The job-based **Channel Mapping** dialog will open.

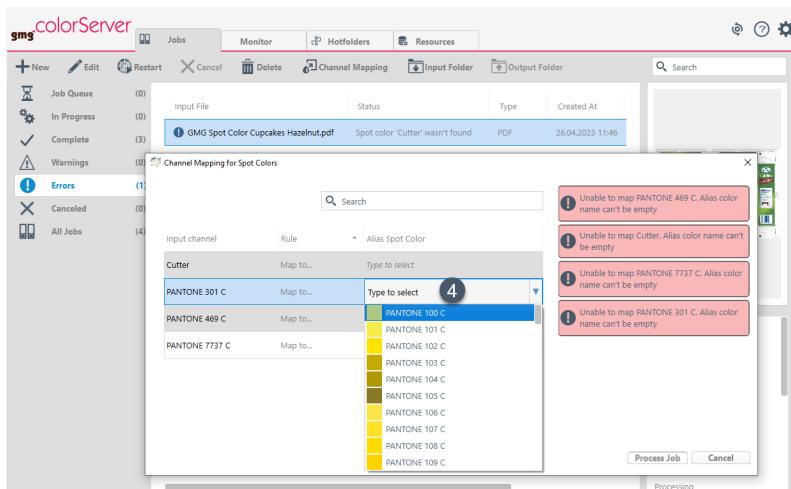
- Under **Input Channel**, you can see the names of all unrecognized input channels. On the right, there is also a warning message shown for each unrecognized channel.



3. Click into an input channel's **Rule** column and select the desired action from the dropdown menu.
- **Remove** will remove objects with this input channel name from the PDF.
 - **Keep unchanged** will keep objects with this input channel name unchanged.
 - **Map to...** allows you to map objects with this input channel name to an alias spot color from your library. The spot color will then be processed as defined in the conversion.

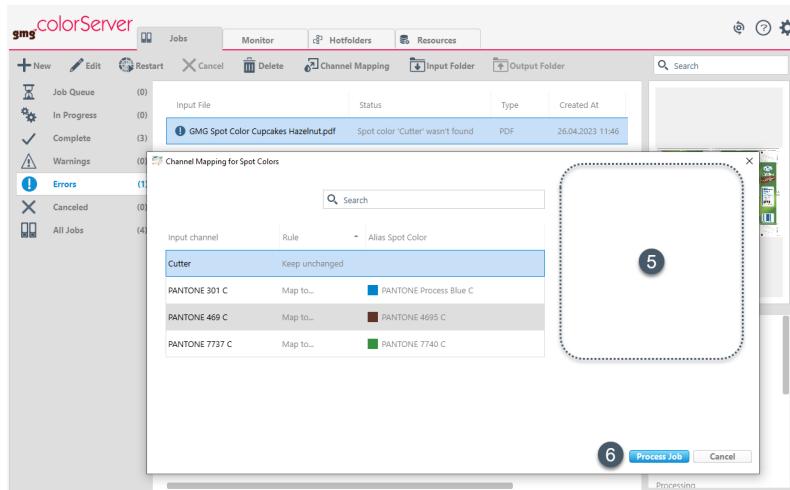


4. If you selected **Map to...** previously, click into the channel's **Alias Spot Color** column and select the desired alias spot color from the dropdown menu. You can type to filter the list and find the desired spot color quickly.



4. Resources

5. Repeat steps 3 and 4 for all unrecognized channels, until all warning messages disappear.



6. Click on **Process job** to restart the job with your changes applied.

4.8 Resource Management

All hotfolders and resources are centrally stored and managed on the server. If you are using multiple clients, all clients will be able to access the common server.

You can use the **Export** and **Update** features if you want to edit a resource, for example, in GMG SpotColor Editor, and play the modified file back to the server.

If you have multiple servers on different working sites, you can use the **Export** and **Import** features to share new resources.

Within a resource **type**, **names** are **unique**, i. e. you can have MX and ICC profiles with the same name, but not two MX profiles.

Available options	Description
Export/Import	<p>Export the selected resource to a file. Import the selected file. Import always creates a new resource from the selected file. Use this feature if you want to create a duplicate of the resource on another server.</p> <p>If the resource name is already existing on the target server, the resource will be renamed automatically. (If you import the exported item back to the same server, you will get a duplicate of the resource. The imported duplicate will not have any links to other resources, as the exported original item does. Use the Update function if you want to overwrite the original item instead of creating a duplicate.)</p> <p>When exporting a hotfolder or GMG SmartProfiler file, the application will create a ZIP archive with all linked resources. After the import, the hotfolder or GMG SmartProfiler file can be used immediately, even on a fresh system. (It is recommended to not include pre-installed default resources in the ZIP archive, as the export will take much longer and the resources will be on the target server anyway if you performed a standard installation.) All file names are derived from the same name (of the selected resource), but you can rename it during the export process.</p>
Export/Update	<p>Export the selected resource to a file. Overwrite the content of the selected resource with the selected file. The name and links of the selected resource (for example, if the resource is used by a hotfolder) are kept unchanged. Use this feature if you want to edit a resource and play the modified file back to the server, for example, if you want to add or change spot colors in a spot color library.</p> <p>During the update process, the application checks only the resource type, but not the name. Please make sure that you select the correct file when updating a resource. For example, if you selected spot color library A and updated it with the file exported from library B, the content of spot color library A would be changed to B. This would most likely mess up your spot color management in the linked hotfolders. As the spot color library would still show up with the name "A", such a problem will be difficult to troubleshoot.</p>

4.9 Synchronization with GMG OpenColor

4.9.1 Automatic Synchronization with GMG OpenColor

This feature automatically synchronizes **Separation Rules** in GMG OpenColor and the corresponding **Spot Colors** in GMG ColorServer. You will always have the latest spot color separation data from the related GMG OpenColor project and see at a glance that all spot colors are in sync. Easily check the source project in GMG OpenColor and the date and time of the last update. You will be notified in case the synchronization fails and see which spot color libraries are out of sync. The automatic synchronization requires GMG OpenColor version 2.4 or higher.

Activate the automatic synchronization

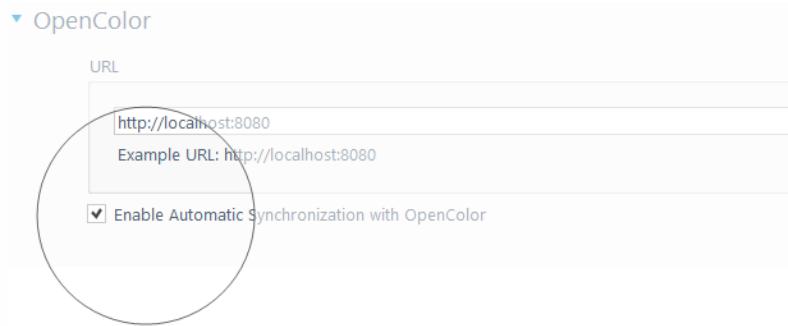


Fig. 14 **ColorServer Configurator** with selected **Auto Sync with OpenColor** option.

If the option **Auto Sync with OpenColor** is selected, all **spot color libraries** derived from a GMG OpenColor project will be updated when changes to the project are saved in GMG OpenColor. A couple of seconds later, GMG ColorServer will start to upload the updated resource to the server. You might notice that the **In Sync** icon shown on the **Resources** tabbed page disappears for a very brief moment during this update.

Resources will be synchronized if the source GMG OpenColor instance is connected to the GMG ColorServer server. The automatic synchronization will be done even if the spot color library was imported manually into GMG ColorServer. GMG ColorServer matches the spot color library with the corresponding **Separation Rules** via IDs. Names are irrelevant.

The option **Auto Sync with OpenColor** does **not** affect the connection to GMG OpenColor itself or the synchronization of GMG OpenColor projects. The connection, including the synchronization of projects, is established as soon as a valid URL has been entered and if the connected GMG OpenColor instance has allowance to share the application via the web service.

4.9.2 Synchronization Status

If the option **Auto Sync with OpenColor** has been selected and as long as the synchronization is working fine, the **In Sync** status will be shown by an icon in the upper right corner of the main window.

4. Resources

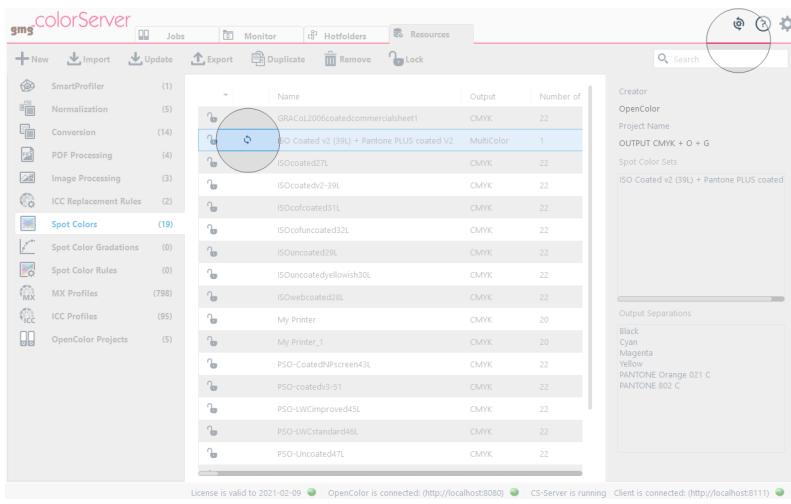


Fig. 15 **In Sync** status. In the **Spot Colors** list, one spot color library, marked by the **In Sync** icon, was derived from a GMG OpenColor project. The **Sync** icon in the upper right corner also shows that everything is alright with the automatic synchronization.

4.9.3 Which Resources Will Be Synchronized?

You can click the **Sync** icon to show only the resources that will be synchronized automatically.

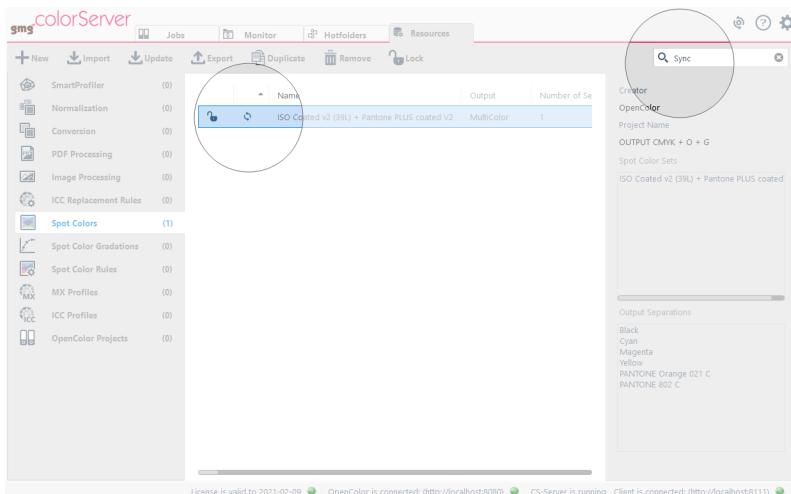
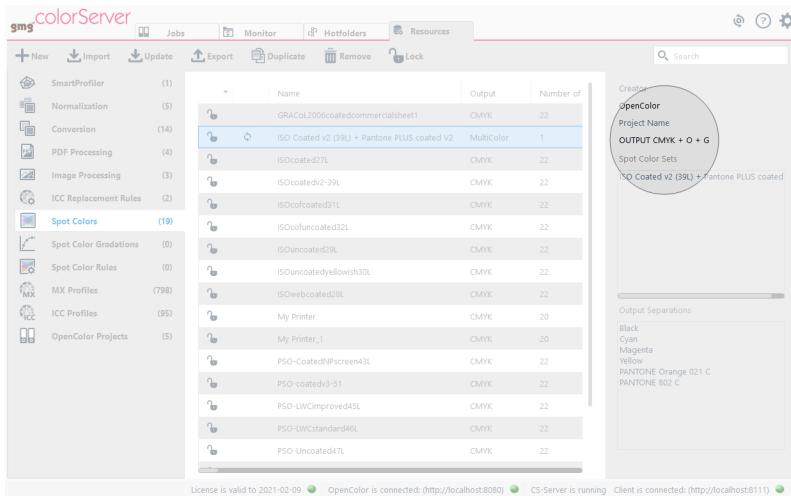


Fig. 16 When the **Sync** icon is clicked, GMG ColorServer will show the **Spot Color** list, and only the items that will be automatically synchronized. You could also manually enter **Sync** into the search bar to filter the list. Clear the search bar to show all items.

From which GMG OpenColor project?

The info bar on the right side shows details on the spot color library, including the source GMG OpenColor project. This information is helpful if you want to change the source, for example, if you want to add a new spot color.



4.9.4 Synchronization Problems

When the automatic synchronization fails for any reason, for example, a network connection problem, GMG ColorServer will put the synchronization on hold until the problem will be resolved.

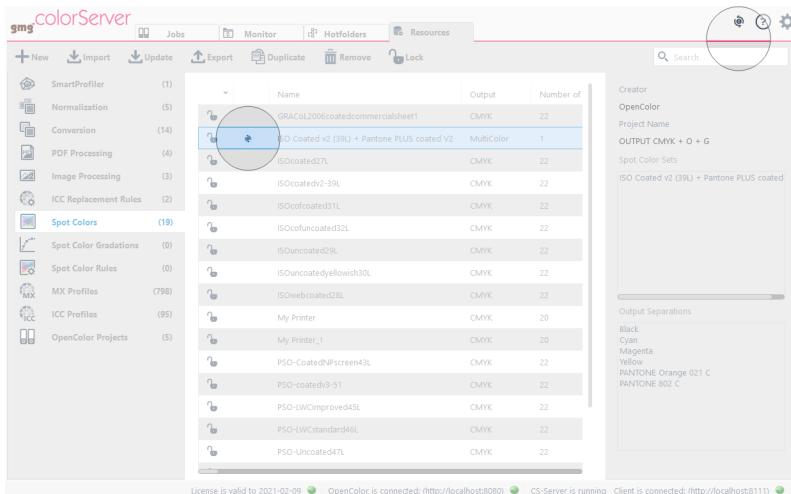


Fig. 17 **Sync Error**, i.e. the automatic synchronization failed. You can click the **Sync Error** icon on the upper right corner of the main window to show the **DB3 Synchronization Log** window.

Resolve the problem and reactivate the automatic synchronization

After resolving the network problem, you will need to manually synchronize one of the items in **Sync Error** to reactivate the automatic synchronization.

4. Resources

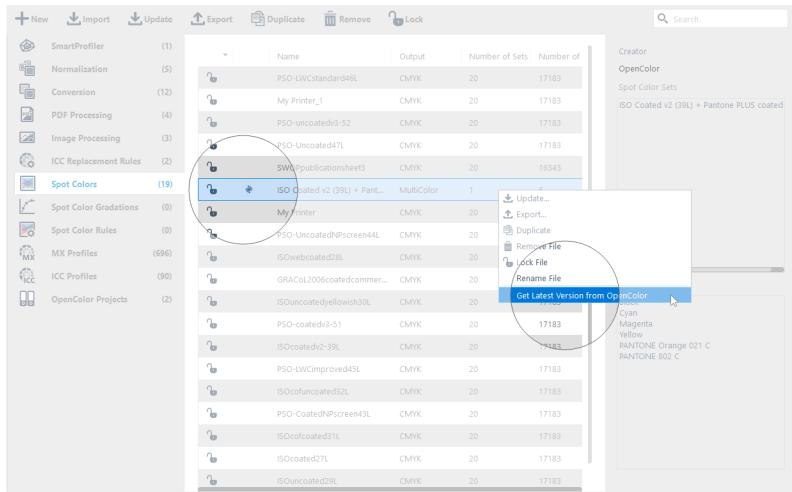


Fig. 18 Click **Get Latest Version from OpenColor** from the context menu to update the resource and to reactivate the automatic synchronization.

5. Hotfolders

5.1 Hotfolders

Hotfolders are generally used **whenever a larger number of files** need to be converted according to the same rules and output settings. Setting up hotfolders also leads to a higher degree of consistency and reproducibility. You can assign any number of input folders to a single hotfolder.

All processing parameters such as color management and output parameters are defined in the hotfolder.

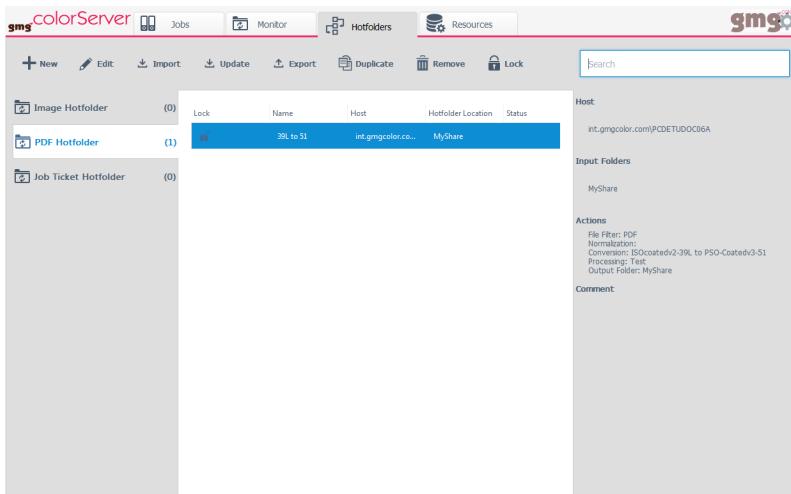


Fig. 19 Screenshot of the PDF Hotfolder list.

Hotfolder Types

Hotfolder type	Description	Supported file formats	See also
Image Hotfolder	Color-converts images and/or converts the image file format (e.g. from TIFF to JPEG).	TIFF, JPEG	
PDF Hotfolder	Processes PDFs. PDF processing demands extended functionalities due to the fact that PDFs can contain a mix of images and vector-based objects in multiple color spaces. Usually, each PDF object is tagged with an ICC profile that describes the color space of the object. GMG ColorServer automatically identifies these profiles and uses them as a starting point for the subsequent color management.	TIFF, JPEG, PDF	
Job Ticket Hotfolder	As an alternative to directly integrating GMG ColorServer into your workflow system, you can also set up hotfolders for processing job tickets.	XML/JDF	"Job Ticket Hotfolder" on page 91

Hotfolder Locations

GMG ColorServer uses shared hotfolder locations as physical folders in the network which allows for a file processing across the network. The shared locations can be created with the **Hotfolder Service Configurator** right from the Windows Start Menu.

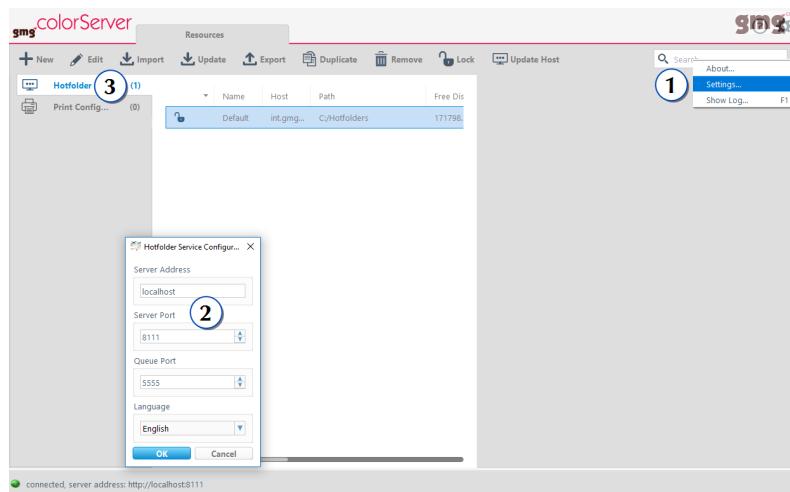
Hotfolder Workflows

Each hotfolder can be defined with multiple workflows. Workflows contain **steps that comprise a work process**, e.g. a color processing of a certain file format to a certain output folder structure.

5.2 Creating a Hotfolder Location

→ On the Windows Start Menu, click **Hotfolder Service Configuration**.

5. Hotfolders



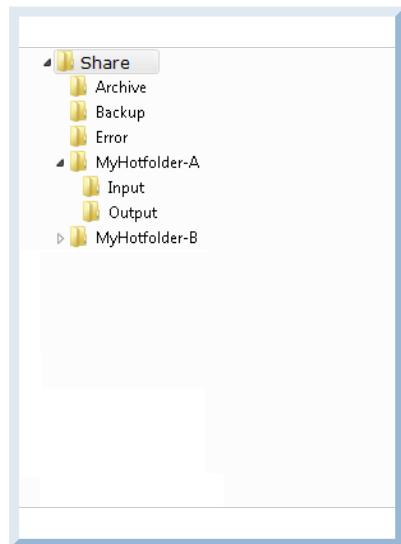
How to create a Hotfolder Location

1. Start the **Hotfolder Service Configuration**.
2. If you haven't configured the server connection yet, click on the cogwheel to define the connection **Settings** (1).
3. Define the server address, the server and queue port (2). Click **OK** to confirm your changes.
4. To set up a new hotfolder location, click **New** on the toolbar.
5. Enter a name for the shared location.
6. **Location:** Click the browse button and select a folder you want to use as a shared parent folder for the hotfolders (which are set up as subfolders with suffixes).
7. Click **Save and Close**.

The hotfolder location will be shown in the hotfolder location list (3).

Folder structure

All hotfolders are subfolders of a **Hotfolder Location**. Each hotfolder has its own input and output folders as subfolders. **Backup** and **Error** folders can be set up for each hotfolder but also as common folders used for all hotfolders.



5.3 Creating a Hotfolder

A hotfolder requires at least one Hotfolder Location in the network to set up an input and output structure.

How to create a hotfolder

1. On the **Hotfolder** tab, on the sidebar, select the **hotfolder type** (Image, PDF, Job Ticket).
2. On the action bar, click **New**.
3. Enter a name for the hotfolder.
4. **Host:** Select the computer that is hosting the physical folders for the single files (which is used for the shared hotfolder location).
A hotfolder can have different shared locations for input and output folders, but it cannot have different hosts.
5. Optional: Define the **Job Priority** of the hotfolder.
(The higher the priority number, the earlier the jobs from this hotfolder are processed.)
6. **Input Folders:** Click the + icon to set up the input structure.
7. **Workflow / Job Settings** (for Job Ticket Hotfolders): Define the job processing and color management parameters.
8. Click **Save and Close**.

Duplicating a Hotfolder

You can easily create an identical copy of an existing hotfolder, and then change the parameters which must be unique for each hotfolder, such as the name of the hotfolder and the input path. Duplicating a hotfolder can be useful if you need hotfolders with slightly different settings. You just open the duplicated hotfolder and modify the settings, for example, the color processing template.

Importing / Exporting Hotfolders

You can export hotfolders and all linked files into a ZIP archive and import the ZIP archive again. All files linked to the hotfolder will be imported to your computer. All folders defined in the hotfolder will be created. You will be informed by a warning message if any conflicts with files or folders already existing on your computer should occur. You can resolve any conflicts by either keeping the original file/folder or replacing it with the imported file/folder from the ZIP archive.

5.4 Input Folders

Files that are copied into the specified input folder are automatically processed by the hotfolder the input folder is assigned to. Each file recognized by a hotfolder automatically generates a separate **job**.

The **Input Folders** settings define how an input document is recognized as a job by the system. Please check the settings if files do not show up in the job list.

<i>Folder Settings</i>	<i>Description</i>
Hotfolder Location	Shared folder location with subfolders created by adding suffixes. older of the input folder. You need to choose an existing or create a new input file folder. PDFs in this input folder will be filtered by the File Filter defined in the Workflow settings. Not only the input folder itself, but also subfolders of the input folder will be scanned for input files. You can define the level, how deep in the folder hierarchy will be looked for input files.
Use Same Folder Structure in Output	With this option, you can ensure that input and output folder have the same subfolder structure in terms of folder depths.
Wait for Notifications from Operating System	If the application waits that the operating system notifies the application of a new input file, it will use less computer resources. Select this method as long as you have no problems with the file detection.
Detect Changed Files in Input Folders	Select this method only if some of the input folders are on a separate computer as the server and if you observe problems with the file detection in these folders. The application will then actively poll for new files in the defined Polling Interval , using more computer resources.

5. Hotfolders

Folder Settings	Description
Timeout for Stability Check	Before starting to process an input file, the application checks whether the file is already complete. This is done by monitoring the file size (and optionally the Creation Time / Modification Time stamps). The application checks the file size (and optionally the time stamps) in regular intervals as defined by the Timeout for Stability Check . For example, if the Timeout for Stability Check is set to 5 s, the application checks the file size 5 seconds after the file has been detected. If the file size is larger, the application waits and checks the file size again after 5 seconds. When the file size has the same value as before, the application starts to process the file. If input files are moved to the input folder via a slow network connection, you might want to increase the Timeout for Stability Check value to avoid that the application starts processing incomplete files, resulting in canceled jobs.
Use Creation Time for File and Modification Detection	This option is recommended for processing files on a UNIX file systems from Apple and SUN (UNIX or Mac OS operating system). If this option is selected, input files are regarded as new and will be processed when the name, creation date, or modification date is changed.
Use Modification Time for File and Modification Detection	Similar to the option Ignore File Creation Time . If this option is not selected, files that were changed intentionally by the user will be ignored and need to be renamed before processing.
Create Job if File has been modified	If an input file is modified after been copied to the input folder, this option automatically creates another job including the modifications.

5.5 Hotfolder Workflows

All color management and processing parameters are bundled into Hotfolder Workflows.

Workflow Options

Option	Description
File Filter / Name Filter	One input folder can be used for multiple different procedures defined by different filters.
Color Processing	Main color management with color space normalization, conversion and PDF processing steps such as flattening.
Output	Output folder for all processed files which can be further differentiated via cleanup / backup settings.
Cleanup / Backup	The options provided in GMG ColorServer to delete or backup files after processing allow for a smooth workflow without interruptions caused by a limited capacity of hard disk.
Report	Each workflow can generate an XHTML report in three different variants.

5.5.1 Color Processing

→ Select the **Normalization**, **Conversion** and **PDF Processing** presets you set up in the **Resources**

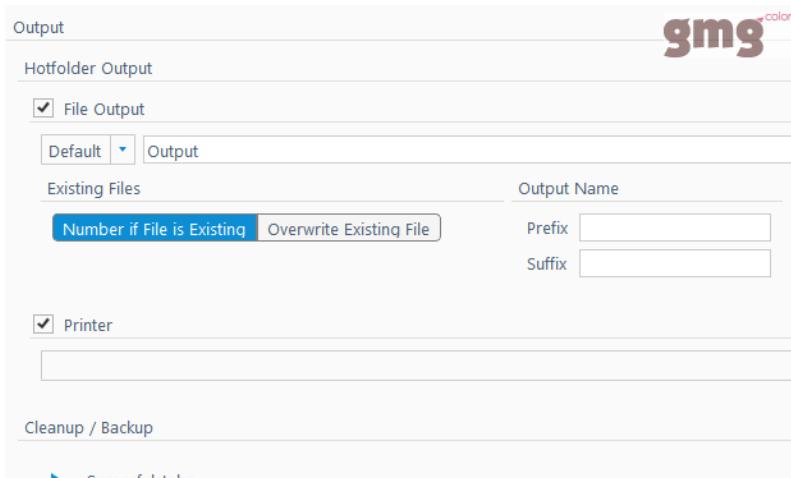
The color management in hotfolders is very simple and can be pieced together with different presets. This allows for high flexibility and quick changes simply by exchanging the presets. You can use a different color processing for images and vector objects.

See also:

- "Normalizing Colors" on page 55
- "Color Conversion" on page 57
- "PDF Processing" on page 61

5.5.2 Output

You can decide if you want to save your processed files in an output folder, to print them or to do both.



Output Settings	Description
File Output	Activate this option if you want to save your processed files (input and output files) in an output folder. Select the desired share and fill in a folder name. The folder will be created automatically.
Existing Files	Decide how to handle same-named files. You can number existing files to differentiate or overwrite them with the new ones.
Printer	Activate this option and choose a printer if you want to print your processed PDFs directly via the Windows printer spooler.
▶ Activate and set up an Output Folder for all processed files (input and output files)	
▶ Activate Printer and all processed PDFs are automatically printed on your chosen printer via the Windows printer spooler.	

Note Printers needed to be setup with the **GMG Hotfolder Service Configurator**.

Tip Processed PDFs files can be further differentiated via the **Cleanup / Backup** settings.

5.5.3 Cleanup / Backup

The options provided in GMG ColorServer to delete or backup files after processing allow for a smooth workflow without interruptions caused by a limited capacity of hard disk.

How to set up backup and cleanup routines

1. Switch to the **Output** section of a Hotfolder Workflow.
2. Under **Successful Jobs**, select the option **Move Input Files** as a cleanup method.
3. Select the desired **Target Folder** for the backup or create a new one, for example, *C:\Data\All PDF to Isocoated v2 (39L) TAC300\Backup*. All input files processed by this hotfolder will be moved from their respective input folders to the backup folder when finished.
4. Select the option **Number if File is Existing**. This option prevents already existing files from being overwritten by new files with the same name via adding an incremented number to the name of each file.
5. Optional: Select the option **Delete Job** to remove the job from the job list.
6. Repeat the procedure for **Jobs with Warnings** and **Errors** so that PDFs that generate a warning or unprocessed PDFs are stored separately from the output folder.

Tip You can use backup folders also for setting up more complex workflows. If a backup folder is selected as an input folder of another hotfolder, you can automatically convert a **single source** PDF into multiple output files.

5. Hotfolders

5.5.4 Report

For later reference, you can automatically create a report for **each** job. Report files contain all hotfolder settings, used profiles, error and warning messages, and so on. This way, you can easily document all processing steps.

The report is saved under the file name defined on the **Reports** tab into the specified **Target Folder**. By using the default **Keep** (file name of the input file), the report file name is identical to the input file name, so that it will be easy to match the reports with the processed files.

The default report format is XHTML (*.html) with layout elements. The status of the job is highlighted either by green (OK), yellow (job got a warning), or red (job ran into an error).

Tip This file format has the advantage that it can be used very flexibly. For example, you can open a report in Microsoft Excel and use all features offered by a standard spreadsheet program such as filtering, calculations, graphs, and so on.

5.6 Job Ticket Hotfolder

GMG ColorServer is able to process XML based job tickets from 3rd party workflow systems via job ticket hotfolders. Thus XML job tickets can be automatically transformed into equivalent ColorServer jobs.

Drop the PDF or image files you want to process in to the defined Job Ticket Hotfolder along with the XML job tickets created by your workflow system. The referenced input files are processed according to the defined parameters of the job tickets. The job ticket can contain specific parameters to define the processing, for example the **Normalization**.

Job Ticket XSLT

You can use XSLT to transform XML based job tickets from 3rd party systems into a format that can be processed into another XML document. You can rearrange, add and remove XML elements and attributes to or from the output file.

Job Settings > Job Ticket XSLT: Click on the folder icon to choose an XSLT file.

You can also use XSLT to transform report files created by the system into custom reports.

Job Settings > Reporting > Reporting XSLT: Click on the folder icon to choose an XSLT file.

XPath

You can define various settings of your job ticket hotfolder via **XPath**. Similar to a file path on a computer system pointing to the target file in the folder structure of a computer, the **XPath** location path points to the target element node in the node structure of an XML document:

The **XPath** location path is composed by the nodes in the XML tree; each node separated by "/". A "/" by itself selects the root node of the document. The next root node follows, and so forth, until the target element node is defined.

If you activate an **XPath** option, the job is processed according the **XPath** expression. Alternatively you can select a fixed value which is then independent from the job ticket.

Example: How to use XPath to address the Normalization setting of a Job Ticket Hotfolder

1. Enter the following XML code in your Job Ticket XML:

```
<ColorProcessing>
<Normalization>ISOcoatedv2-39L</Normalization>
</ColorProcessing>
```

2. **Color Processing > Normalization:** Activate the **XPath** option.

3. Enter "/JobTicket/ColorProcessing/Normalization".

Note The Input folder needs to be located on the computer that hosts the ColorServer Client.

See also:

- "Input Folders" on page 88
- "Creating a Hotfolder" on page 87
- "Hotfolder Workflows" on page 89
- "Cleanup / Backup" on page 90

5.7 Job Tracking

Tip You can filter the job list so that it shows only your own, manually created, jobs or all also the jobs from other clients, including the jobs generated via hotfolders.

- ◀ On the **Jobs** tab you can track all manual jobs and optionally all jobs in the network (**Settings > Filter Jobs by Client**).
- ◀ On the **Monitor** tab, you can track the hotfolder processing and stop / resume hotfolders.

File	Created At
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (8) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (9) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (10) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (11) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (12) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (13) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (14) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (15) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (16) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (17) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (18) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (19) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (20) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (21) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (22) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (23) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (24) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (25) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (26) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (27) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (28) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (29) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (30) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (31) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (32) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (33) - Copy.pdf	18.11.2016 14:37
C:\Hotfolders\PDF Input\Aitora\visual_1v2a_pttcom_x3 - Copy (34) - Copy.pdf	18.11.2016 14:37

Search / Filter

- ◀ At the upper right of the pane is a search box, which allows you to search for content (full text search).
- ◀ Use the list filters to filter for the creator or file conversion
- ◀ Type in your user name to just show your jobs

5.8 The Job Editor

5. Hotfolders

The job editor allows you to view and change the settings for a particular job only. This is helpful if you want to reprint a completed job with slightly different parameters, or if you need to fix an error straight away from the job list. In the job editor, you can compare input and output data, view the processing log, and adjust the parameters for normalization, conversion, and PDF processing. Modifications made in the job editor apply only to the selected job and do not affect your permanent resources or other jobs.

Edit single jobs with the job editor

If you want to modify the settings for a particular job without altering your resources, you can do so using the job editor. You can open it from any list under **Jobs**, except the **In Progress** list.

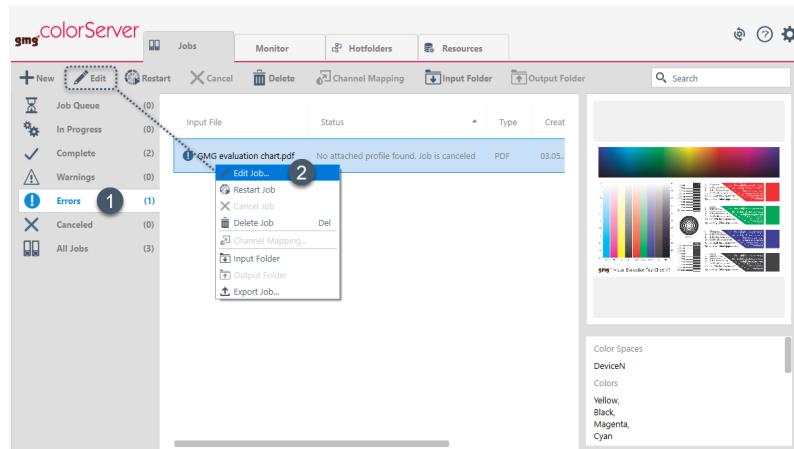
How to modify the settings for a particular job...

5. Hotfolders

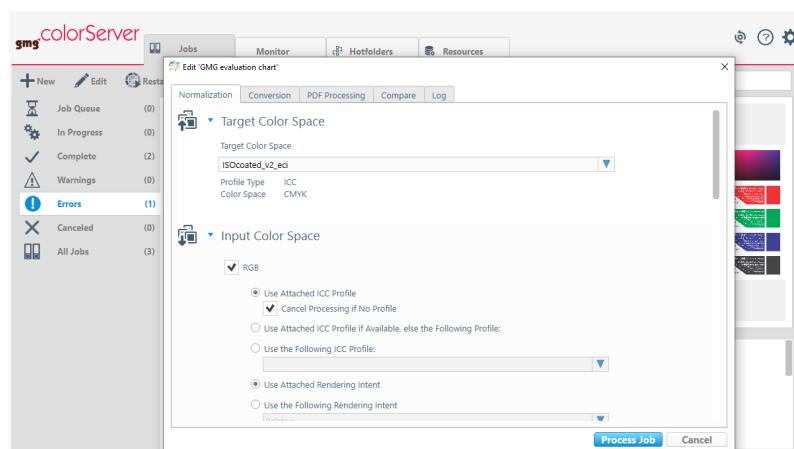
- From the **Jobs** tab, select the list entry that contains the job to edit.

For our example, we want to edit the settings of failed job, so we select **Errors**.

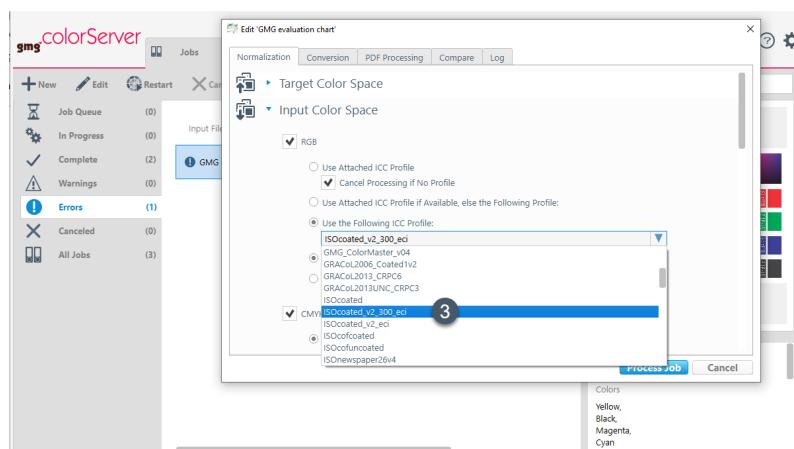
- Right-click on the job whose settings you want to adjust and choose **Edit....** Alternatively you can select the job and click the **Edit** button from the ribbon.



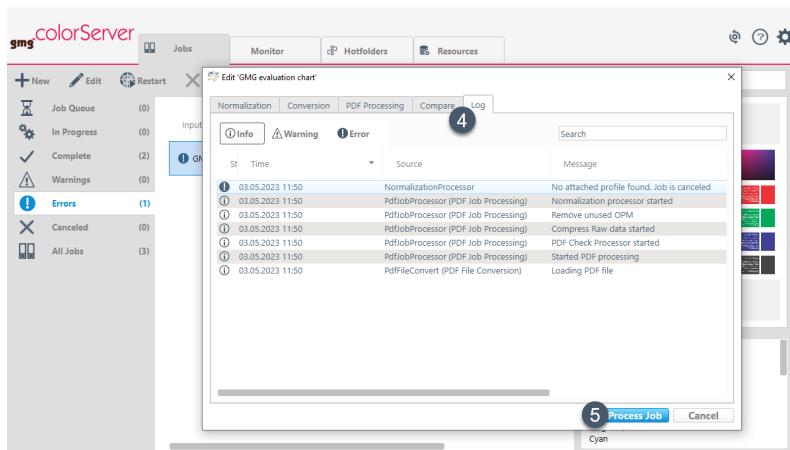
The **Job Editor** will open, showing several tabs.



- Adjust the job settings for **Normalization**, **Conversion**, and **PDF processing** according to your needs. The job from our example failed because there was no profile attached, so we open the **Normalization** tab and define the profile that should be used under **Input Color Space > Use the Following ICC profile**.



4. You can also compare the input information with the output information under **Compare** or view the job's processing history under **Log**.



5. Once you have made all your changes, click on **Process Job** to restart the job with the new settings applied.
Modifications made in the job editor apply only to the selected job, your **resource templates** will **not** be changed. If you want to apply certain changes to your jobs in general, please open the client's **Resources** tab and adjust the relevant resource template itself.

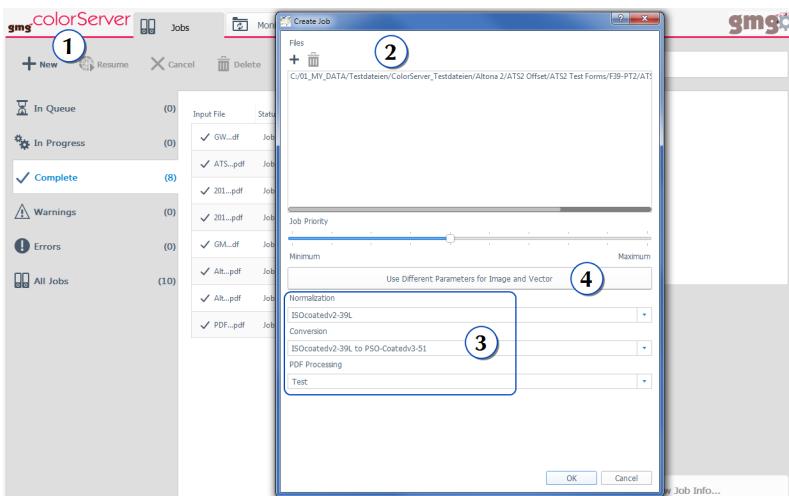
6. Manual Job

6. Manual Job

6.1 Creating a Manual Job

As an alternative to hotfolders, you can also create manual jobs. This is convenient if you want to process only a few documents with slightly different settings than defined in the hotfolder.

- On the **Jobs** tab, click **New** (1) (or use **drag-and-drop**)



Use the plus icon to add multiple files (2). Due to the resource management in GMG ColorServer with configured color and processing templates (3), manual jobs can easily be set up with a few clicks. You can use different settings for image and vector elements (4).

Output folder for manual jobs

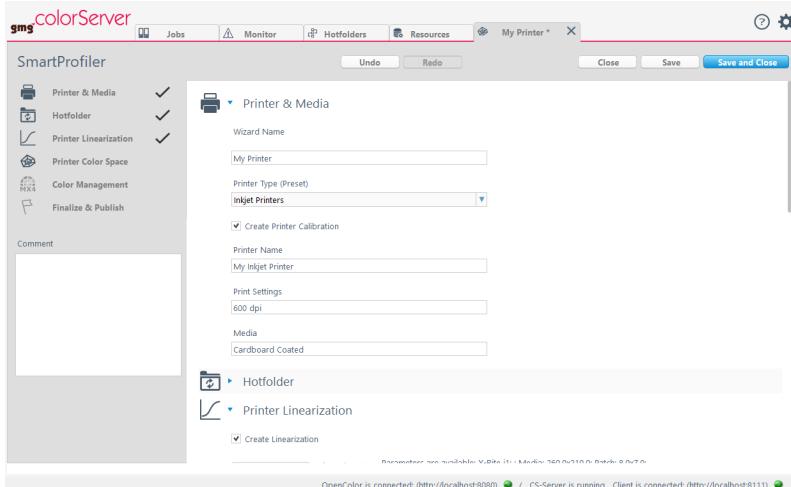
All processed files of manual jobs are stored to a single output folder which can be defined in the general **Settings** (> **Processing**).

7. SmartProfiler

7.1 About GMG SmartProfiler

GMG SmartProfiler helps you to create printer calibrations and color profiles for digital and large format printers. This optional feature extends GMG ColorServer with profiling functionality. Thanks to the step-by-step structure, any user can calibrate, recalibrate, and profile digital and large format printing systems without expertise in color management.

Generally, you start with creating a new **printer–medium combination**, which will be saved as a **SmartProfiler** resource on the server. This resource holds all information required to calculate a profile such as measurement data and printer-medium definition you provide. From this **SmartProfiler** resource, the system automatically publishes a **hotfolder** and corresponding color profiles within GMG ColorServer. You can then drop input documents into the hotfolder and GMG ColorServer will automatically optimize them for the profiled printer–medium combination.



Please follow the link to get started with GMG SmartProfiler:

[Optimize Your Colors with GMG](#)

GMG SmartProfiler technologies

Depending on the GMG ColorServer version you are using, you will have access to one of the following GMG SmartProfiler types, based on different technologies:

- ◀ **SmartProfiler Spectral:** Based on spectral measurements instead of Lab. In the background, GMG OpenColor will serve as a profiling client and will automatically provide the appropriate test charts. Included in the GMG ColorServer Digital and GMG ColorServer Multicolor solutions.
- ◀ **SmartProfiler Lab:** Based on MX4 technology. Available as an option for the standard GMG ColorServer version. Will also be available in the GMG ColorServer Digital and GMG ColorServer Multicolor solutions for calibration and recalibration of already existing hotfolders during the transition phase from SmartProfiler Lab to Spectral.

7.2 Profiling Your Printer and Medium Combination

7.2.1 Printer & Media

In this part of the form, you define the basic settings for your printer–medium combination such as the **Printer Name** and whether you want to recalibrate the printer later or not.

Note A printer calibration file is valid only for the printer–medium combination it has been created for. You will need a different printer calibration file for each printer–medium combination you want to use.

7. SmartProfiler

How to set up Printer and Media

1. Enter a **Name**.
This name will be used as a name for the hotfolder and all linked resources such as color profiles.
2. Select a **Printer Type** preset in the drop-down list which matches the used printer.
3. Add a check mark to the **Create Printer Calibration** check box if you want to create an initial calibration for your printer-medium combination. You can then easily recalibrate your printer on a regular basis later.
4. Optionally fill in **Printer Name**, **Print Settings**, and **Media**.
You can use this information in the **Resources** view to filter your printer-medium combinations.

A check mark will be added to each part of the form you completed and the next part will be enabled.

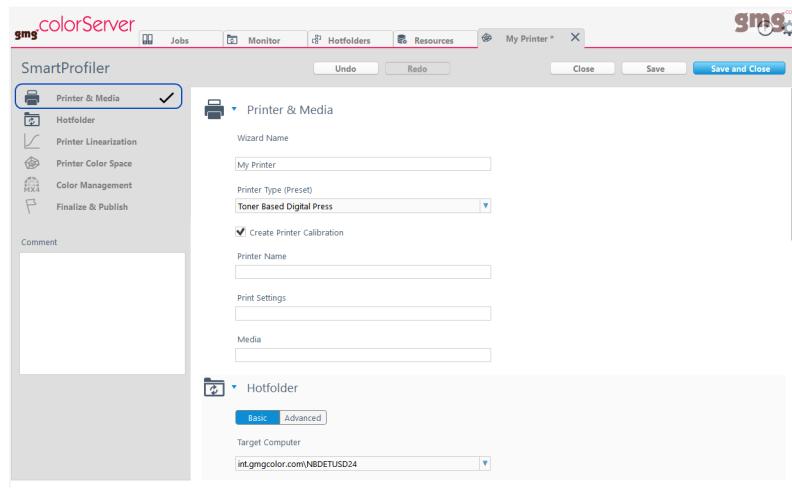


Fig. 20 First part—Printer & Media—completed.

The **Hotfolder** part is now enabled. **Printer Name**, **Print Settings**, and **Media** are no mandatory fields, so they can be left empty.

7.2.2 Hotfolder

In GMG ColorServer, hotfolders are used for automatic processing and for the connection to the frontend RIP. During the **Publishing** step, GMG SmartProfiler will create a ready-to-use hotfolder for your printer-medium combination.

In the **Hotfolder** step, you define the basic hotfolder settings such as the target computer, input and output folders.

Tip You can switch to the **Advanced** view to define advanced hotfolder settings.

How to set up the hotfolder settings

1. Select the **Target Computer** which hosts the ColorServer installation you want to work with.
2. Select the **Hotfolder Location** for your specific printer-medium combination.
3. Define the **Output Type** for your files that will be processed in GMG ColorServer.
Add a check mark to the **Folder** check box and enter the desired location path for your processed files.
Add a check mark to the **Printer** check box and select the desired printer in the drop-down list if you want to print your processed files automatically.

A check mark will be added to each part of the form you completed and the next part will be enabled.

See also:

- "Output" on page 89

7.2.3 Printing and Measuring Test Charts

For creating printer profiles, you will need to provide characterization data, that means, you will need to **print** color patches on the printer using the media type and print mode you want to profile. Then, you need to **measure** these color patches with a spectrophotometer. An array of color patches is called a **test chart**.

The **Print & Measure** button indicates that GMG SmartProfiler requires you to print and measure.



You can click the **Print & Measure** button to start a new or continue an interrupted earlier measurement session. You can also click the **Import** button if you have previously exported a measurement file. You can click the **Export** button to export a completed measurement for later use. In many cases, you can click the **GamutViewer** button to view a completed measurement in GMG GamutViewer.

When clicking the **Print & Measure** button, the application will switch from the GMG SmartProfiler **form** to the **Measurement** view. Stay in the **Measurement** view until you have finished the measurement and then click the back button to switch back to the form and continue the profiling process. If you leave the **Measurement** view before you are finished, the last measurement session will be automatically saved and you can continue later.

Test charts

GMG SmartProfiler automatically creates test charts specifically for the used measuring device, the selected printer type and according to what the measurement data is needed for, i. e. printer linearization, printer color space characterization, and so on. Therefore, test charts have different layouts and sizes.

How to print a test chart...

Test charts can be printed in GMG SmartProfiler from the **Measurement** view under **Printer Color Space > Print & Measure**.

1. Under **Measuring Device**, select the measuring device that you want to use. The test chart preview in the center changes to show the layout and color patches for your individual test chart. Depending on the test chart size and the media width of your press, the test chart might have several pages.
2. Under **Patch Size**, you can adjust the patch size to your needs.
3. Under **Media Size**, you can adjust the media size to your needs.

Note Please make sure that the final test chart layout will fit on your medium. Adjust the patch and / or media size, if necessary.

4. If you want to use transparent or metallic substrates, please activate the **Add White Undercoat Layer** checkbox. With this option activated, a white undercoat layer is added to your test chart automatically.
5. Now you can choose how to proceed with the test chart PDF after its creation:
 1. If you want to send the PDF directly to your hotfolder's output folder and have it printed automatically, click the **Printer** button.
 2. If you want to save the PDF to a different location and print it manually later, click the **PDF** button.

Tip If the press has been standing for a few minutes, we recommend you to print multiple copies of the test chart to warm the press back up again.

6. Please allow the test chart to dry properly after printing, as an ongoing drying process might affect the color results.

7. SmartProfiler

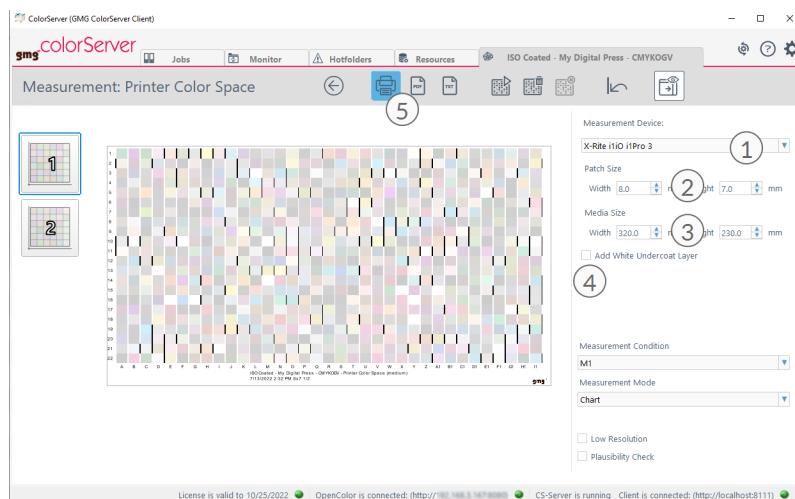


Fig. 21 Print & Measure dialog, before printing.

How to measure a test chart

Note If the **Refresh Settings** button (4) is shown instead of the measuring device settings, the **connection** to the measuring device has been lost. Click the **Refresh Settings** button to reconnect.

1. Insert the printed and dry test chart into the measuring device and click the **Measure** button (1) to start the measurement.
The test chart preview will be updated according to the progress of the measurement session.
2. You can move the mouse pointer over the test chart preview to show a **Patch Info** with the printed CMYK values and the measured Lab and LCH values.
3. In case of multiple test chart pages, you will see all pages on the left (2). Select the next page and start the measurement until all pages have been measured.
4. After you have successfully measured **all** test chart pages and copies, click the back button (3) to accept the measurement results and to switch back to the form view.

—OR—

You can also click the back button (3) to interrupt the measurement session anytime. Click the **Save** or **Save and Close** button in the form view to save your current progress. You will be able to continue seamlessly at a later point in time.

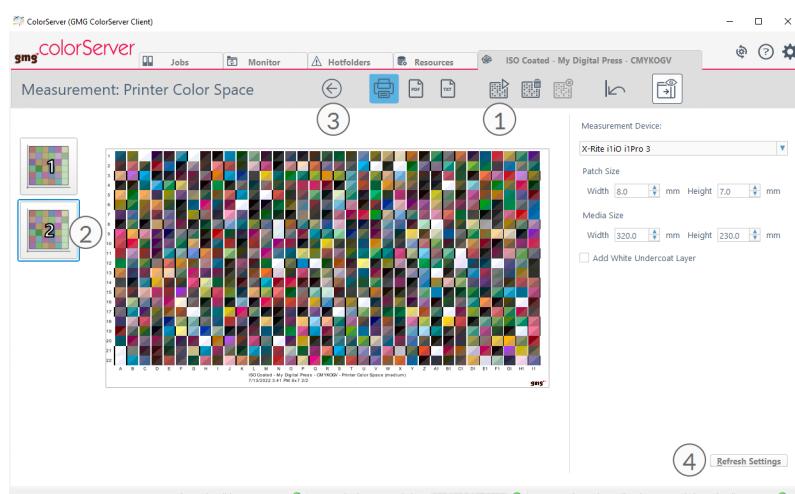


Fig. 22 Print & Measure dialog box, before measuring.

How to measure multiple copies of test charts

This feature is available **only** for **new** measurements. GMG SmartProfiler does **not** support **importing** and averaging multiple measurement files.

1. You can print and measure **multiple** test chart copies to achieve a more reliable fingerprint of your system.
 2. If you want to measure the **same** test chart multiple times to obtain averaged measuring values, repeat the measuring procedure by clicking on the **Measure** button (1).
 3. On the left side of the **Measurement** view, you can expand the test chart page button (2) to select a specific measurement.
- The test chart view will be updated accordingly.
4. You can delete the currently displayed measurement by clicking the **Remove** button on the toolbar.
 5. Click the back button (4) when you are finished.

The application will automatically **average** all measured values.

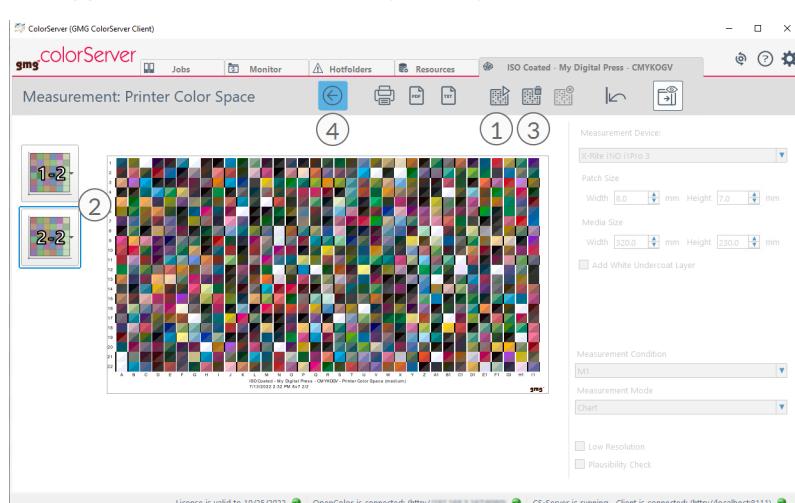


Fig. 23 Print & Measure dialog box, after measuring two test chart copies.

The test chart page button (2) shows the number "2" to indicate that the test chart has been measured twice.

Have measurement data optimized automatically

Consistent measurement data is the key to successful and high-quality profiling. Thus GMG SmartProfiler optimizes your measurement data automatically before delivering it to GMG OpenColor: outliers are removed, single color wedges are corrected, and the data is smoothed. GMG SmartProfiler itself does not permanently store the optimized data, but keeps your original data. Please remember that if you want to manually export measurement data to a CGATS file; this manual export will only include your unsmoothed original data.

If you want to know how much your data has been improved, you can check the smoothing impact in the overview under **Resources > SmartProfiler > Smoothing Impact**. There are three optimization levels: **Soft**, **Medium**, and **Strong**. They only indicate how much GMG SmartProfiler had to adjust your data, the final quality is equally good at all three levels. However, if the level **Strong** is regularly applied to your data, we recommend that you check your printing process for possible weak points. For old GMG SmartProfiler projects without smoothing and for projects that have not yet been published, the status **Not Available** will be shown instead of an optimization level.

7.2.4 Color Management

In this step, you will define the color management settings, used for normalizing the input color spaces, spot color conversion, and color conversion from the normalizing color space into the printer color space.

7. SmartProfiler

Available options	Description
CMYK Input Color Space	<p>All document color spaces will be normalized into the selected CMYK color space and then converted into the printer color space. Generally, it is advisable to choose a color space that is wide enough to minimize out-of-gamut areas, but is also still within the technical capabilities of the printer-media combination.</p> <p>You have the following options:</p> <ul style="list-style-type: none"> → Select a print standard from the list. → Select Custom and load a custom color space file to use a house standard or any other color space. For example, you can use the full gamut file from a printer to define this printer as the print reference. <p>When loading a custom MX4 file, only MX4 files with the file name extension "mx4x" will be supported.</p>
Use Embedded ICC Profiles	If this option is deselected, embedded ICC profiles will be ignored and the application will handle documents as if they already were in the selected CMYK Input Color Space , i. e. convert them directly to the printer color space, without normalization. RGB, Gray, and Lab elements are still normalized using embedded ICC profiles or rendering intents.
Convert Spot Colors to Printer Color Space	Per default, spot colors will be converted directly into the printer color space, without converting them to CMYK first. This allows you to use the extended printer color space to print bright spot colors. If this option is deselected, spots will be converted to the CMYK Input Color Space first. Thus, you will get a less accurate representation of out-of-gamut colors. On the other hand, print results might be more reproducible and comparable, especially if you are using digital printers in parallel with conventional printing methods.

Advanced Profile Settings—Separation Settings

The following table lists all separation settings and delivers a short description.

Option	Short description
TAC	(Total Area Coverage) Maximum amount of ink applied to a medium for reproducing the target color (in the darkest shadow area). The four primary colors CMYK (in percent) are summed up to compute this value. The TAC depends on the printing process and medium used. For example, a total ink application of 350% can be achieved on glossy paper. For comparison, the total ink application on newspaper is only 270%. If the TAC is exceeded, the ink spreads, resulting in dot gain and unsharpness. Please refer to the technical specification of the manufacturer of the print medium for further information.
Black Start	Percentage at which the K channel should start to print. For example, if this value had been set to 2% and the original color value in the document was C100, M50, Y50, K1, the 1% K would not be printed.
UCR Light / Midtone / Shadow	Under color removal (UCR) is a technique to reduce the amount of CMY in neutral areas while increasing the amount of Black. Thus the image areas with reduced CMY can dry faster between each printing unit on a printing press. For profiling, you can determine the Black amount in the highlights, the midtones and the shadows.

Advanced Profile Settings—Rendering Intents

The following table lists all rendering intents and delivers a short description.

Rendering Intent	Short description
Automatic	This rendering intent is preselected when you select Default , EcoSave or Pure Colors as a profile variant. Keeps colors as far as possible relative and uses perceptual algorithms where necessary. Based on the data fed in to the system so far, this rendering intent is suitable for most requirements and should only be changed if necessary.
Best Visual Impression – Perceptual	This rendering intent aims at preserving the visual impression of the original image, including saturation and detail, in the limited output color space. The color space is scaled to fit into the output color space, that is, all color values including in-gamut colors will be redistributed. Central colors are remapped more precisely, that is, changed less than colors at the edges of the gamut.
Best Color Accuracy – Relative Colorimetric	This rendering intent aims at achieving the highest color accuracy . In-gamut colors are reproduced in a color-accurate manner in the output color space. Higher saturated (out-of-gamut) colors are clipped . Relative colorimetric aligns the white point of the input color space to the output color space, leading to a color compensation when printing on tinted paper. As a result, all in-gamut colors are modified with respect to the new white point. Apart from that, changes to in-gamut colors are kept to a minimum, so that a maximum color accuracy is achieved.

Rendering Intent	Short description
No Gamut Mapping (Absolute Colorimetric)	In-gamut colors are color-accurately reproduced and out-of-gamut colors are clipped. Without gamut mapping, it might not be possible to reproduce the reference color space.

Purify color options

It is highly recommended to use the option **Auto Purify for CMY** as it provides a good balance between preserving pure colors and preserving the color impression as intended by the designer or creator of the document.

Option	Description
Auto Purify for CMY	Automatically purifies all colors that are only slightly contaminated by other colors.
Pure Black	Keeps the black axis pure. 100% Black is kept at 100% Black and will not be supplemented with or replaced by CMY.

7.2.5 Finalize & Publish

The final **MX** printer profile, spot color databases, calibration file (optional), normalization resource, and ready-to-use hotfolder will be published to the server. You can view and edit the resources in the same way as other GMG ColorServer **resources**.

After publishing, you can start printing by dropping documents into the input folder of the hotfolder.

See also:

- "Resources" on page 54

7.2.6 Republish

After you have published a printer-medium combination in GMG SmartProfiler, you can edit the document and make required changes. The changes will be applied after you have republished the document.

GMG SmartProfiler will notify you with a cancel option before the calculation proceeds and data will be replaced in GMG OpenColor. You can click the **Cancel** button if you did not intend to change the document and accidentally changed something. The **Calculate & Publish** step will then be canceled.

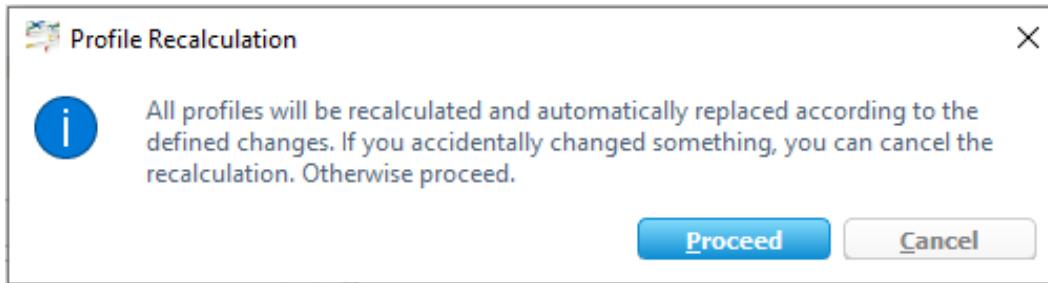


Fig. 24 Screenshot of the message box.

There are some special cases to consider where adding new data makes more sense than overwriting existing data. This is automatically handled by GMG SmartProfiler as described in the following.

You are using the characterization data created from this GMG SmartProfiler document in other GMG OpenColor projects:

The characterization data will be duplicated instead of updated. This avoids unintended changes in depending projects.

You have changed the Input Color Space:

A new separation rule, describing the separation from the input color space to the printer color space, will be added to the existing GMG OpenColor project. New CMYK-to-CMYK profiles (with new file names and IDs) will be calculated. Existing separation rules, CMYK-to-CMYK profiles, RGB-to-ECG profiles, and calibration files will not be changed.

7. SmartProfiler

You renamed the GMG SmartProfiler document:

The renamed document is handled as if it was a new document. New project data will be created in GMG OpenColor and the original data will not be changed.

7.2.7 Optimize the Profile Quality

You can **print** and **measure** a test chart in an iteration cycle to optimize the profile quality. In most cases, the quality of the calculated profile is already optimal and this step can be skipped without impairing the quality.

The aim is to match the target values defined by the **CMYK Input Color Space** as closely as possible, within the tolerances defined in the **Quality Criteria**. Following each iteration cycle, the program computes new CMYK output values based on the deviation (**Delta E**) between the target values and the measured current values. The new output values are used in the next printing step. Thus, the current values will become closer to the tolerances with each cycle.

How to optimize the profile quality

1. On the **Resources** tabbed page, select the **SmartProfiler** resource type.
2. Select a the **printer–media combination** you want to optimize.
3. Click the right mouse button to show the context menu.
4. Click **Iterate Profile**.
5. Click the **Optimize** button to start the iteration cycle.
The application will switch from the **form** view to the **Measurement** view.
6. Proceed with printing and measuring (see "Printing and Measuring Test Charts" on page 100) and evaluate your results.
7. If you are not satisfied with the results, click the **Optimize** button to start the next cycle.
8. If you are satisfied with the results, click the **Publish** button to accept the results.
The profile under **Resources > MX profiles** will be replaced. Thus the hotfolder using this profile is also automatically updated.

7.3 Recalibrating a Printer

If you have selected the **Create Printer Calibration** option, you can recalibrate the printer-medium combination on a regular basis. Recalibrating a printer means printing and measuring test charts, and then evaluating the results and adjusting the printer calibration file. This cycle is repeated until the results are satisfying. The aim is to match the target values as closely as possible, within the tolerances defined in the **Quality Criteria**.

You can repeat the cycle until the values are either within the defined tolerances or until you decide to end the cycle by accepting the results.

7.3.1 Quality criteria

The defined **Quality Criteria** need to be reached for a successful printer calibration. Use higher values if you want to speed up the calibration process (less steps) on the cost of color accuracy.

Delta E is the distance between output and target color. The higher Delta E, the stronger is the deviation from the target color.

Delta L refers to the luminescence, that is, to the Black (K) channel. The higher Delta L, the stronger is the deviation of the luminescence from the target color.

7.3.2 Calibration results

You can find the results of your last optimization cycle in the **Last Results** overview. The results of the ongoing recalibration are listed under **Current Calibration**.

You can import or export the calibration data by clicking the corresponding button. To gain more detailed information about your calibration you can view the calibration data in GMG GamutViewer.

Clicking the **Show details** button next to a cycle brings up a table with all measured and target values for all patches. This can give you a hint on where to look for the problem if the printer cannot be calibrated. For example, if there are prominent color deviations in a specific color channel, you might need to replace the ink or clean the print heads. If the paper tint values (0, 0, 0, 0) are out of tolerances, you might have loaded the wrong media type into the printer.

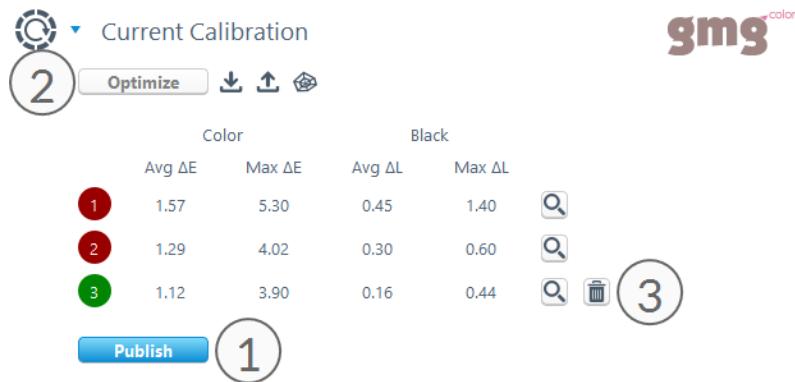


Fig. 25 Results of the current calibration.

Each calibration cycle of printing and measuring is shown as a row in a table. A status lamp shows whether or not the **Quality Criteria** have been fulfilled—in the screen shot, they are fulfilled after running 3 cycles.

7.3.3 Accepting the results

When you are satisfied with the calibration results, you can click the **Publish** button (1) to accept the results. The status lamp will show green if the **Quality Criteria** have been fulfilled.

The calibration file under **Resources > MX profiles** will be replaced. Thus the hotfolder using this calibration file is also automatically updated.

7.3.4 Optimizing the results

If the quality criteria have not been reached, this will be indicated by a red status lamp. You can click the **Optimize** button (2) to further optimize the print results: The test chart will be printed again with adjusted output values and measured.

You can click the **Remove last optimization cycle** button (3) to delete the last optimization cycle, for example, if you have accidentally inserted the wrong test chart.

7.4 Customizing Default Settings

To simplify the profiling procedure, GMG SmartProfiler uses default settings to create the hotfolder and all linked resources. You can "overwrite" some of the settings such as the **Use Embedded ICC Profiles** for CMYK of the **Normalization** resource when you fill in the GMG SmartProfiler form. More advanced settings are not shown in GMG SmartProfiler and thus you cannot edit them in the form. However, you can still edit the published resources after publishing. Edit the printer-medium combination and republish it later will keep your manual changes.

If you generally want to use specific default settings such as a specific input folder or advanced settings, you can customize the defaults used by GMG SmartProfiler. To do so, go to **Resources > SmartProfiler**, expand the **SmartProfiler Defaults** menu and edit the default resources used by GMG SmartProfiler.

7. SmartProfiler

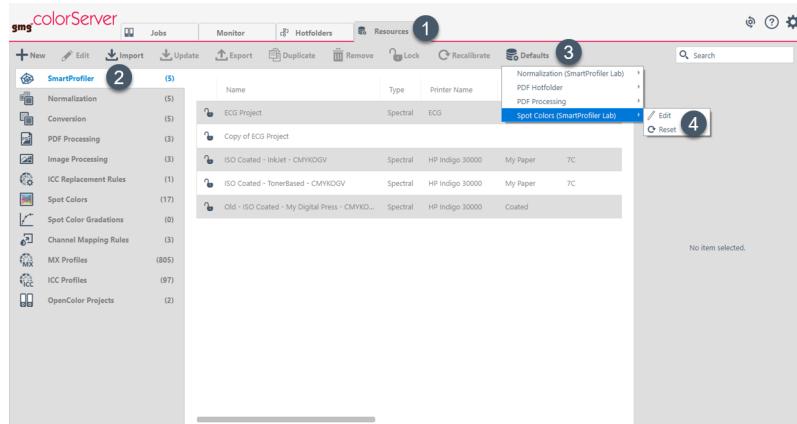
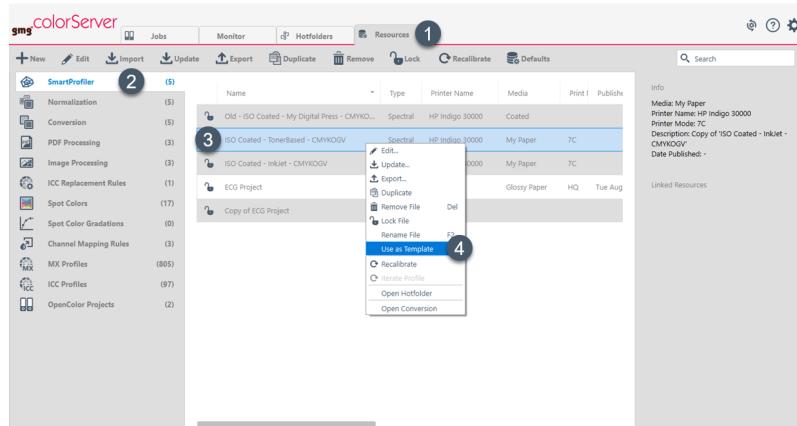


Fig. 26 Customizing the default settings for GMG SmartProfiler

If you then create a **new** printer-medium combination, GMG SmartProfiler will use the customized defaults, both for the visible and for the hidden settings.

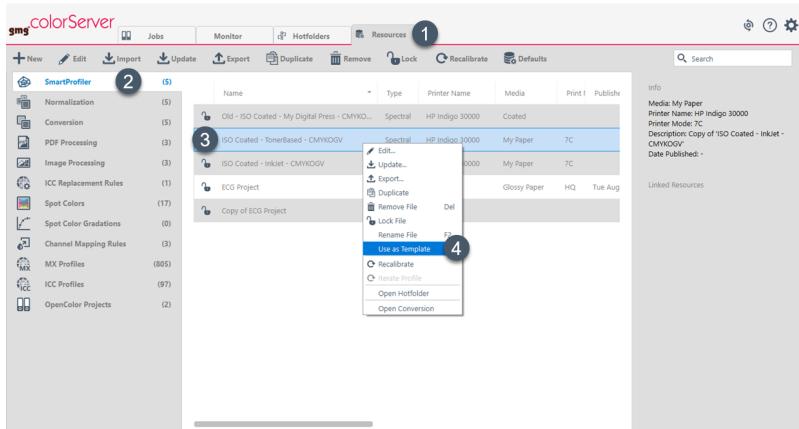
7.5 Template Creation From Existing Documents



Instead of using your default templates for new GMG SmartProfiler documents, you can also use any existing GMG SmartProfiler documents as templates for new characterizations. All settings from the original document will be kept, only the name and measurement data will be removed for your new document. This saves a lot of time, especially when characterizing different media for the same press.

How to use a GMG SmartProfiler document as template...

1. Open the **Resources** tab.
2. From the menu, select the **SmartProfiler** resources.
3. From the list of GMG SmartProfiler documents, choose the document that you want to use as a template.
4. Right-click on the document and select **Use as Template** from the right-click menu.



8. Paper Adaptation Tool

8.1 Paper Adaptation Tool

Thanks to the standalone **Paper Adaptation Tool**, you can easily shape a print standard or custom profile to your specific print media, bridging the gap between printing according to a print standard and printing visually consistent colors. The conversion keeps all colors as close as possible to the selected color space, only adapting the media white point. For example, you can calculate a profile for ISO Coated v2 (39L) to ISO Coated v2 (39L) doing a perceptual conversion with regard to the media white point difference between the theoretical standardized world and the real world of the printer.

The **Paper Adaptation Tool** is designed as a wizard and will take you through the process step by step, taking care of the correct settings to create the profile. The resulting conversion profile can be used in a GMG ColorServer hotfolder.

Steps for creating a white point optimized profile

1. Start the Paper Adaptation Tool from the Windows Start Menu.
2. Select the color space you want to print, for example ISO Coated v2 (39L).
3. Optionally define a maximum TAC.
4. Measure or define the white point to personalize the profile.
(Supported measuring device: **X-Rite i1.**)
5. Evaluate the media white point.
6. Select a location for the profile.
7. Start the calculation.

Evaluating the white point

The Lab white point values are displayed in a table and a graphic view. In the table, you can see the target Lab values (1) compared to the measured or entered values (2). The **Difference** column shows the difference (Delta E) between target and actual values. This difference is also visually depicted using the two a^* and b^* color space coordinates and the lightness scale L^* . The green circle / green range (3) shows the **tolerance range** defined by the selected print standard whereas the black cross shows the measured white point. The color of the white point is displayed in a **preview** (4) on the right side of the value table. To **change** the values, you can click the **Back** button and modify the values in the spin boxes.

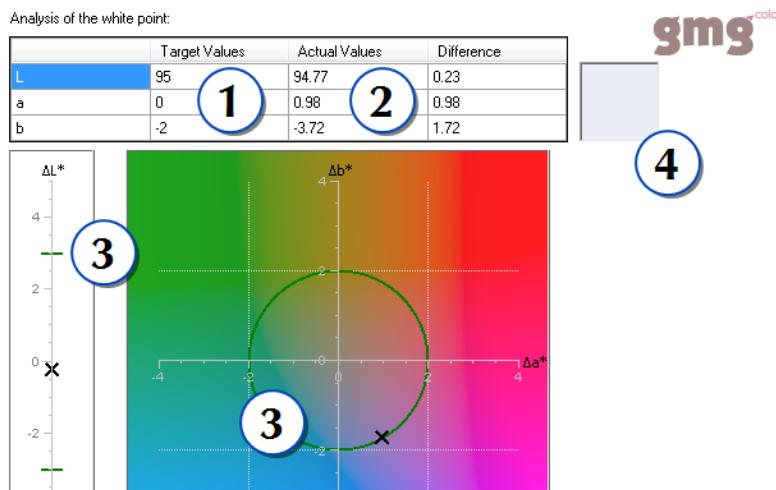


Fig. 27 Evaluating the media white point in the Paper Adaptation Tool.

9. Troubleshooting

9.1 Troubleshooting

GMG ColorServer is a well-tested high-quality product. Nevertheless, there are potential sources of trouble in every software. The Troubleshooting section provides you with descriptions and troubleshooting steps to solve your issue.

If the cause of trouble remains unclear or if a problem occurs that is not mentioned in this document, contact your local dealer. Please understand that information on your hardware and software configuration is necessary to analyze and fix the problem you encountered.

To speed up the process of finding a solution, please keep the following information at hand:

- ◀ **Description** of the error (the error message text or any other useful information) and of the context in which the error occurred. Try to remember all steps taken before the error occurred. The more information on the actual situation you can provide, the easier and faster it will be for us to track the problem.
- ◀ The **serial number** of GMG ColorServer and the **version numbers** of its modules.
- ◀ The **operating system** you use.
- ◀ The hardware configuration (microprocessor, frequency, main memory, hard disk) of the **computer**.
- ◀ Any **additional programs** that might interfere with the software such as a firewall or a virus scanner. Programs you generally run in the background when using GMG ColorServer.
- ◀ Printers and other devices **connected** to the computer.

