# Contents

1. Copyright Notice........................................................................................................................................ 4

2. What is Imaging Engine?............................................................................................................................ 6

3. What Does Imaging Engine Do?.................................................................................................................. 7
   3.1 Color Management.................................................................................................................................. 7
   3.2 Converting Vector Graphics to Bitmaps................................................................................................. 8
   3.3 Screening.................................................................................................................................................. 8
      3.3.1 What is Screening?.......................................................................................................................... 8
      3.3.2 Screen Angles and Moiré............................................................................................................... 10
      3.3.3 Rosettes.......................................................................................................................................... 11
      3.3.4 Types of Screens Supported.......................................................................................................... 12
   3.4 Dot Gain Compensation............................................................................................................................ 23
      3.4.1 What is Dot Gain?.......................................................................................................................... 23
      3.4.2 What is Dot Gain Compensation?................................................................................................... 24
      3.4.3 Dot Gain Compensation Curves.................................................................................................... 24
      3.4.4 DGC Curve Strategies...................................................................................................................... 25
      3.4.5 PressSync Curves.......................................................................................................................... 26
      3.4.6 PressSync Curve Sets...................................................................................................................... 28
   3.5 RIP'ed File Formats.................................................................................................................................. 28

4. Imaging Engine Installation and Configuration.......................................................................................... 29
   4.1 Licensing.................................................................................................................................................. 29
   4.2 Installation................................................................................................................................................ 29
      4.2.1 Before Installing Imaging Engine 14.............................................................................................. 29
      4.2.2 Installing Imaging Engine 14......................................................................................................... 30
   4.3 Configuration in the Automation Engine Pilot......................................................................................... 33

5. The Imaging Engine Tasks.......................................................................................................................... 35
   5.1 Image to Screened Separations............................................................................................................... 35
      5.1.1 General............................................................................................................................................. 36
      5.1.2 Transformations.............................................................................................................................. 37
      5.1.3 PDF Objects.................................................................................................................................... 38
      5.1.4 Document Inks.................................................................................................................................. 39
      5.1.5 Output.............................................................................................................................................. 43
      5.1.6 Separations..................................................................................................................................... 50
      5.1.7 Summary........................................................................................................................................ 58
   5.2 Image to Unscreened Separations............................................................................................................. 58
      5.2.1 General............................................................................................................................................ 59
      5.2.2 Transformations................................................................................................................................ 60
      5.2.3 PDF Objects.................................................................................................................................... 61
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Correspondence regarding this publication should be forwarded to:
Esko Software BVBA
Kortrijksesteenweg 1095
B – 9051 Gent
info.eur@esko.com
2. What is Imaging Engine?

An Adobe PDF Print Engine Based RIP
Imaging Engine is Esko’s *Raster Image Processor (RIP)*, based on the industry standard Adobe PDF Print Engine.

On top of Adobe PDF Print Engine, Imaging Engine includes Esko’s renowned *color management, screening, dot gain compensation* and *output formats* (PDF, TIFF and LEN).

A RIP Integrated Seamlessly into Automation Engine
Imaging Engine is completely integrated into Automation Engine. This means that the Automation Engine Pilot is your single point of contact for using Imaging Engine (you do not need to launch or use any separate software).

You can run the Imaging Engine tasks on any PDF or Normalized PDF.

A Powerful Multi-Job Processing RIP
Taking advantage of Adobe PDF Print Engine’s capabilities (64-bit, multi-threaded, multi-process architecture), Imaging Engine is powerful and highly scalable.

You can add more RAM and cores to your server hardware to process more jobs in parallel, and faster.

**Note:** The amount of parallel processing you can do also depends on your *license.*
3. What Does Imaging Engine Do?

What is a RIP (Raster Image Processor)?

Files coming from a graphic designer often need a lot of processing before being printed (for example, they contain objects in the wrong color space, vector graphics, etc.).

After any other necessary prepress work, the RIP is the last essential step to make those files print-ready. With Imaging Engine, you can:

- perform general file transformations to make sure the output is as expected (select the right page box, rotate/invert/mirror the file as needed, apply a distortion to pre-compensate for substrate distortion...),
- color manage objects in your file, or the whole file, so they look good on press,
- convert the vector graphics to continuous tone bitmaps,
- screen those bitmaps at the correct resolution for your output device and which the screening settings most applicable to your printing method,
- add dot gain compensation to compensate for plate and/or press dot gain,
- output your file to the file format needed for your device (TIFF, LEN, PDF).

3.1 Color Management

Color management is making sure that colors are reproduced accurately at different stages of the printing process.

A computer where graphics files are created in a pre-press editor, a proofer and a press all have a different a color gamut, which means that the extent of the colors they can reproduce is somewhat different.

With color management, your application performs a controlled conversion of the colors between these different devices, so that the colors are as consistent as possible. This consistency is especially important for specific “brand” colors, that have to look the same on different substrates (cardboard, paper, plastic...).

Colors in graphic files such as photographs are generally defined in the RGB color space (Red, Green, Blue).

Proofers and presses use CMYK (Cyan, Magenta, Yellow and Black -or "Key") for printing, and sometimes additional inks (for example Orange, Green and Blue, to be able to reproduce more colors, or one or two spot inks -generally Pantone colors- used in a particular job).

Files coming from a graphic designer may contain CMYK, spot colors and sometimes images in RGB.

You can use color management to convert your input file’s colors into your proofer’s color space in Imagine Engine’s Proof - Unscreened Proofing task.

Imagine Engine uses Color Strategies created in the Color Engine Pilot for this purpose (for more information about Color Strategies, see the Color Engine Pilot documentation).
3.2 Converting Vector Graphics to Bitmaps

Files coming from a graphic designer may contain vector graphics or "linework" (especially for fonts or logos).

Vector graphics are highly scalable without any loss of quality (as they are not based on pixels but on mathematical formulas), but they are not printable.

RIP'ing those files converts them to bitmap images, or "contones" (continuous tone images), which are based on pixels, and printable.

Low-resolution bitmaps can look pixellated, but Imaging Engine generates high-resolution bitmaps.

In Imaging Engine, you can choose to:

- output your files as contones (you can produce unscreened output with the Image to Unscreened Separations and the Proof - Unscreened Proofing tasks),
- screen them to get "halftones" (you can produce screened output with the Image to Screened Separations task).

3.3 Screening

You can get screened output from your input files using the Image to Screened Separations task.

3.3.1 What is Screening?

When printing an image on press, each ink (Cyan, Magenta, Yellow, Black and any additional ink) is laid out separately on the substrate, and the super-imposition gives the final colors.

At a high detail level, the press can either print ink or not print ink, so to create differences of color intensity within one ink, you use a small scale pattern of dots of varying size, called a screen.
When viewed from a regular distance, this pattern looks like a lighter or darker shade of that color, depending on how big the dots are (what percentage of the area they cover).

The screen can also be coarser or finer, so that you have to be more or less far away to see it as shades of a color. This depends on how many lines of dots can fit in a certain measurement. This is expressed in lines per inch (\text{lpi}), lines per centimeter (\text{lpcm}) or lines per millimeter (\text{lpmm}), and is called the \textit{screen ruling}. 
A low screen ruling as below left looks very coarse, and the quality improves as the screen ruling gets higher.

3.3.2 Screen Angles and Moiré

When placing the screens of different separations on top of each other, a visually disturbing effect called moiré can occur.

To avoid this effect, the screen of each separation is rotated at a specific angle, with a difference of 30° for the most “visible” inks (Cyan, Magenta and Black), and 15° for Yellow.
3.3.3 Rosettes

When overlaying the screens of the different separations at their respective screen angles, you get a rosette pattern. At a normal viewing distance, this is much less visible and distracting than moiré.

A rosette pattern can be clear centered or dot centered.

- Clear centered rosettes (also called hole centered rosettes) (below left) are built up around a hole, and generally considered to be more stable.
- Dot centered rosettes (below right) are built up around a dot, and can give a more saturated result.

Note:
The exact screen angles used depend on the printing process:

- Basic offset angles are: Y at 0 degrees, C, M, and K at 15, 45 or 75 degrees depending on the application.
- Basic flexo angles are: Y at 7.5 degrees, C, M and K at 22.5, 52.5 or 82.5 degrees depending on the application (or Y at 82.5 degrees, C, M and K at 7.5, 37.5 or 67.5 degrees depending on the application).

Flexo angles are different from offset angles due to the anilox roll used in flexo presses (a cylinder which is engraved with millions of small cells that carry a thin film of ink which is deposited on the plate).

Putting the flexo screens on angles based on a 7.5° offset is needed to prevent moiré between the screen and the pattern of the inking cells of the anilox roll.
3.3.4 Types of Screens Supported

Imaging Engine supports different types of screens:

- screens with standard dot shapes,
- screens with advanced dot shapes,
- stochastic (FM) screens,
- legacy screens (screens that you have from an old version of FlexRip or Nexus RIP),
- custom screens (screens you have created in Screen Manager or HD Flexo).

Depending on your particular license, some of these screens will be included in your Imaging Engine, and others can be purchased as an option.

Please check the sales material of your product to know what is included.

Screens have a short name and a long name. For example R -> Round Fogra (R being the short name and Round Fogra the long name). When selecting a screen, they are listed alphabetically by short name.

Note:

Imaging Engine’s halftone phase origin (the point where it starts screening the input file) is the top left corner.

This is the same origin point as FlexRip and Nexus RIP, so you should be able to re-run old jobs and get the same alignment (you may notice 1 pixel difference with old Nexus jobs).

Screens with Standard Dot Shapes

Depending on your license, your Imaging Engine product may include the following screens:

Circular (Euclidean) (short name: C)

This screen uses circular dots, that grow continuously circular until 100%.

The circular dot is typically used for flexography and letterpress.

This dot gives good results in many situations. However in some printing conditions the holes in the shadows can fill in, which can result in unstable or high dot gain, and cause a loss in tonal range. In this case consider using the Round Fogra dot instead.

Double Circular (short name: F)

This screen has circular dots in the highlights and mid-tones, and circular holes in the shadows.
Note that this screen can cause irregular ink bridging ("bridges" between dots) around the mid-tones, which can give unstable dot gain in that tonal range. In this case use the *Round Fogra* dot instead.

**Paragon Euclidean (short name: PAREUC)**

Paragon screens are designed for *offset* and *flexo* environments, to eliminate rosette drift and suppress red and green patterns.

This is a Paragon screen with a round dot in the highlights, a checkerboard pattern in the 50% region, and a negative round dot in the shadows.

**Round Fogra (short name: R)**

This screen uses the Round Fogra dot, that closely resembles the *elliptical* and *circular* dots, and can be used the same way. It is also a better alternative for square dots.

It goes from a round dot to a round hole, with a square/diamond shape in the mid-tones.

As with elliptical dots, the touching of the dots at the four corners at 50% (leading to a 50% intensity jump) is avoided by using a more elongated dot shape so that the dots first touch around 45% forming a chain and touching for the second time around 55%. This causes less artefacts and less dot gain when printing.

The Round Fogra dot can be used for virtually all printing processes. It is very popular for *offset* printing, but it can also be used for *flexography*, *letterpress*, *silk screen printing* and for making films for *offset-helio conversion*. Only chemical etching gravure cannot be done with this dot shape.

**Screens with Advanced Dot Shapes**

Depending on your license, your Imaging Engine product may include screens with advanced dot shapes.

**Rugby (short name: D)**
This screen has a special dot shape and is used for **screen printing**. Rugby dots are shaped like a rugby ball, or a diamond with round edges, which dramatically reduces the interference of the dots with the mesh structure of the silk screen.

The dots touch around 35% to form chains. At 65%, a negative dot with rugby shape appears. This dot shape is fully symmetrical.

**Elliptical (short name: E)**

This screen uses a more elliptical version of the *Round Fogra* dots.

For these dots, the first touching point is around 35%. Between 35% and 65%, a chain is formed with the same orientations as for the Round Fogra dots.

**Helio (short name: H)**

Helio dots continuously grow square, even above 50%, forming "helio walls".

This dot is needed for the **classic gravure etching** processes only. The dot shape is highly optimized for both contone reproduction and linework areas.

**Convex helio** dots are the standard helio dots. The dot is as square as possible.
However in some circumstances the etching process smoothes out the square shape of the dots, which can cause the helio walls to break during printing (especially at the highest dot percentages), resulting in bad print quality.

<table>
<thead>
<tr>
<th>On film</th>
<th>On plate</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Square Dots" /></td>
<td><img src="image2.png" alt="Concave Dots" /></td>
</tr>
</tbody>
</table>

In this case, you should use concave helio dots instead.

**Helio Concave (short name: G)**

**Concave helio** dots are designed to avoid the helio walls breaking that sometimes happen with *standard helio dots*.

In the concave helio screens, the square-shaped screen dots are replaced by more pillow-shaped dots.
When etching the cylinder, the sharp ends are rounded off and the final result is closer to a square than the result of the standard helio dot.

<table>
<thead>
<tr>
<th>On film</th>
<th>On plate</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Diamond Shape" /></td>
<td><img src="image2.png" alt="Square Shape" /></td>
</tr>
</tbody>
</table>

This dot shape will be useable up to slightly higher screen levels than the standard helio dot.

**Line (short name: L)**

This screen uses lines instead of dots.

The advantages of using line screens are:

- there is no tonal jump because the lines never touch,
- the rosette patterns disappear completely, which gives the illusion of a higher ruling.

**Paragon Diamond35 (short name: PARDIA35)**

Paragon screens are designed for offset and flexo environments, to eliminate rosette drift and suppress red and green patterns.

Paragon Diamond35 is a screen with diamond shaped dots.

**Paragon Elliptical35 (short name: PARELL35)**

This is a Paragon screen with elliptical dots.
Square (short name: S)

This screen uses square dots in the highlights, forms a checkerboard at 50% and has square holes in the shadows.

At 50%, the tonal jump can be very noticeable, especially when the printing process causes the holes to fill (for example in Flexo), which results in a large dot gain. If the tonal jump is too obvious, use Round Fogra or elliptical dots instead.

Eccentric 0 (short name: X0)

Eccentric dots are a series of more or less elongated dots, X0 being the most elongated (the furthest from a round shape). A screen with X0 dots is close to forming lines.

Because of the more or less elongated shape of the dots, different eccentric dots have different touching points. The dots form a chain between the two touching points.

Eccentric 0 has a first touching point at 5% and a second touching point at 95%.

Note:

Eccentric dots have specific advantages for the flexo printing process:

- The flexo process is characterized by a high dot gain. Eccentric dots tend to lower this dot gain, as well as the tonal jumps caused by dot gain.
- The more eccentric the dot is (X0 and X1 dots), the less noticeable rosette patterns it generates. The difference in rosette patterns between eccentric dots and conventional round or circular dots is more striking in flexo than in offset or gravure, due to the lower rulings used in flexo.

Eccentric 1 (short name: X1)

Eccentric 1 dots are slightly less elongated than X0 dots.
Eccentric 1 has a first touching point at 10% and a second touching point at 90%.

**Eccentric 2 (short name: X2)**

Eccentric 2 dots are less elongated again.

Eccentric 2 has a first touching point at 20% and a second touching point at 80%.

**Eccentric 3 (short name: X3)**

Eccentric 3 dots are only slightly elongated.

Eccentric 3 has a first touching point at 30% and a second touching point at 70%.

**Eccentric 4 (short name: X4)**

Eccentric 4 dots are the least elongated of the eccentric dots. They are close to *Round Fogra* dots.

Eccentric 4 has a first touching point at 40% and a second touching point at 60%. At 50% the dots form a checkerboard.

**Stochastic (FM) Screens**

In "stochastic" (or Frequency Modulated) screens, dots are not placed on a regular grid pattern like in conventional (Amplitude Modulated) screens.

In a conventional screen, the dot size grows with the intensity (you have bigger dots at 50% than at 25%). In a stochastic screen, the dot size stays the same, but you get more dots per area as the intensity increases.

The advantages of stochastic screens are:

- sharper images,
- the full elimination of disturbing rosette patterns,
- no color shift caused by small registration errors (those errors are less visible than the same errors with conventional screens, which can reduce press preparation time),
• the possibility to combine more than 4 separations without moiré.

**Monet (short name: M)**

The Monet screen has dot sizes exactly equal all over the density range, and is optimized for offset printing.

In many cases, it can also be used in combination with a Rugby dot for silk screen printing.

If you experience high dot gain when using a Monet screen, we recommend you switch to an Organic screen.

**Monet for Flexo (short name: MF)**

This screen is based on the Monet screen.

The Monet for Flexo screen has holes in the shadows that are bigger than the dots in the highlights, so they don't fill up as much with dot gain (not increasing the shadows’ darkness too much).

This is especially beneficial for printing processes with high dot gain such as flexo.

**Organic (short name: O)**

Unlike first generation stochastic screens like Monet or Monet for Flexo, where the single dots are left on their own, the organic dots are combined in clusters, forming organic-like random structures. This reduces the dot gain around the mid-tones.

However, Organic screens can generate noise in images, giving a grainy appearance. If you experience this problem, we recommend you switch to a Monet screen.

The Organic screen is optimized for offset printing.

**Legacy Screens**

If you have some screens that you got with an old version of FlexRip or Nexus RIP, they will still be available in Imaging Engine.
Note:
Those are pre-calculated screens that were created for specific printing environments or to solve specific problems. They can only perfectly match certain sets of conditions.

Today, you can get the same effects, fine-tuned for your particular printing conditions, by creating custom screens in HD Flexo and/or Screen Manager.

See the HD Flexo and/or Screen Manager documentation for more information.

Conventional (AM) Screens

Biangular Rosette (short name: B)
Rosette screens are used to screen files with a lot of fine lines. They are only used for black and white printing.
The Biangular Rosette screen is the combination of two normal circular dot screens into one screen.

TwinBeam (short name: CD0)
The TwinBeam screen was developed for the CDI. It uses round dots that are exposed by two laser beams.

CDI MultiBeam Optimized (short name: CD1)
The CDI MultiBeam Optimized screen was also developed for the CDI, as an improvement to the TwinBeam screen. It uses round dots that are exposed by several laser beams.

Endless (short name: CO)
This screen was used in combination with cylindrical sleeves on the CDI, to make several copies of a job print continuously on the substrate, without broken dots at the edges of each job.

For best results, we recommend you use Screen Manager to create a custom seamless screen instead of using the Endless dot here.
This screen uses the circular dot.

**Groovy (short names: GVY1 to GVY5)**

Groovy screens put a line pattern in the dark areas of the screen only. The lighter areas have a *Double Circular* dot pattern.

The transition between the normal screen pattern and the line pattern is smooth, leading to a smooth gradation on print between the lower density (non-groovy) and higher density areas (groovy).

They improve solid rendering in **flexo** printing (the lines help even out the ink distribution) and have their best performance on foils. Performance on other substrates (paper, metal) is heavily dependent on the printing circumstances.

You can choose between different groovy screens:

<table>
<thead>
<tr>
<th>Long name</th>
<th>Short name</th>
<th>Pattern angle</th>
<th>Pattern ruling</th>
<th>Transition start</th>
<th>Maximum pattern percentage</th>
<th>Pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groovy1</td>
<td>GVY1</td>
<td>Close to 45 degrees</td>
<td>3 times the original ruling</td>
<td>95%</td>
<td>45%</td>
<td>Lines</td>
</tr>
<tr>
<td>Groovy2</td>
<td>GVY2</td>
<td>Close to 45 degrees</td>
<td>3 times the original ruling</td>
<td>90%</td>
<td>45%</td>
<td>Lines</td>
</tr>
<tr>
<td>Groovy3</td>
<td>GVY3</td>
<td>Close to 45 degrees</td>
<td>4 times the original ruling</td>
<td>95%</td>
<td>45%</td>
<td>Lines</td>
</tr>
<tr>
<td>Groovy4</td>
<td>GVY4</td>
<td>Close to 45 degrees</td>
<td>4 times the original ruling</td>
<td>90%</td>
<td>45%</td>
<td>Lines</td>
</tr>
<tr>
<td>Groovy5</td>
<td>GVY5</td>
<td>Close to 45 degrees</td>
<td>3 times the original ruling</td>
<td>93%</td>
<td>45%</td>
<td>Eccentric1</td>
</tr>
</tbody>
</table>

**EskoCal (short name: K)**

This screen is only used when calibrating old Barco/Esko "PlateDriver" imagesetters.
**Triangular Rosette (short name: T)**
The Triangular Rosette screen is the combination of three normal circular dot screens into one screen.

**Transitional (AM/FM) Screens**

**Circular Samba (short name: CS)**
Samba screens are transitional screens, that were designed to solve problems in the highlights in flexo.
They have a stochastic part in highlights and shadows, a conventional part in the mid-tones and the transition between both contains a pattern that is gradually going from stochastic to conventional over a large number of intermediate patterns.

**SambaFlex (short names: CS4 to CS45)**
Like Samba screens (which they are based on), SambaFlex screens are transitional screens, going from stochastic to conventional and back.

SambaFlex screens support seven different minimum dot sizes, for every imagesetter resolution. These sizes cover a very broad range, from hardly visible dots until dots so big that they can only be used for artistic effects.

- Screens with a small minimum dot size (like CS4) have almost unnoticeable stochastic effects.
- Screens with a bigger minimum dot size (like CS45) have a coarser stochastic pattern, and less dots in the highlights. The transition point in the highlights shifts up to higher dot percentages.

**SambaFlex Highlight (short names: CS4H to CS45H)**
These screens are based on the SambaFlex screens, and only have a stochastic part in the highlights. In the shadows, they stop at the darkest point, whether it is 100% or not (for these screens it is usually 95%).
Custom Screens

In Imaging Engine, you can also use any custom screen you created in the **HD Flexo** and **Screen Manager** applications. You will recognize those custom screens because:

- Screens created in **HD Flexo** have a short name beginning with **HD** (HD01, HD02...).
- Screens created in **Screen Manager** have a short name beginning with **SCR** (SCR01, SCR02...).

Please see the HD Flexo and/or Screen Manager documentation for more information.

### 3.4 Dot Gain Compensation

#### 3.4.1 What is Dot Gain?

When printing a job, the dots tend to print larger on the press than on the plate, which makes the output darker than the original file.

<table>
<thead>
<tr>
<th>Original job</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>50</th>
<th>75</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital film</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Print</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This is due to different factors:

- the type of ink: the more fluid the ink is, the more it will spread under pressure of the press.
- the type of substrate: paper with a rougher and more porous surface (like uncoated paper) reflects less light, making the printed area look darker.
- the type of press:
  - offset presses typically print at a 67% density for a 50% dot,
  - flexo presses have an even higher dot gain as they put more pressure on the substrate,
  - gravure presses have a dot gain similar to offset presses for small dot sizes (up to about 30%) and a sharply increasing dot gain for higher percentages (70% prints as solid).

### 3.4.2 What is Dot Gain Compensation?

To compensate for dot gain and have the printed output look like the original file, you use **dot gain compensation (DGC)**. This consists in making the dots on the plate smaller, so that with dot gain they print to the correct density.

<table>
<thead>
<tr>
<th>Dot on plate</th>
<th>Dot on press</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without DGC</td>
<td><img src="image" alt="Without DGC" /></td>
</tr>
<tr>
<td>With DGC</td>
<td><img src="image" alt="With DGC" /></td>
</tr>
</tbody>
</table>

### 3.4.3 Dot Gain Compensation Curves

You apply dot gain compensation by using a dot gain compensation curve, which defines which percentage to use on plate for each desired percentage on press.

In the example below, you see how a press prints without any dot gain compensation in the **dot gain curve** at left: a 20% density on the plate prints to 57% on press. 57% on the plate would print to almost 90% on press.

At right, you see the **dot gain compensation curve** used to make the press print to the densities expected in the job: to print a 57% density on press, a 20% density will be used on the plate. To print a 20% density on press, you would need a density of about 5% on the plate.
Creating a Dot Gain Compensation Curve

You can create dot gain compensation curves in Curve Pilot (see the Curve Pilot documentation for more information).

Dot gain compensation curve files have the .dgc extension.

Using a Dot Gain Compensation Curve

You can apply a dot gain compensation curve on all or some separations of your job in the Image to Screened Separations and Image to Unscreened Separations tasks in Imaging Engine.

3.4.4 DGC Curve Strategies

Different Dot Gains within a Job

When using a single dot gain compensation curve, the same dot gain compensation is applied to the complete job, without making any compensation difference in the screening parameters, the inks or the type of content (continuous tone images or line work).

However, dot gain is influenced by those factors.

Screening parameters

The following parameters influence dot gain:

- The dot shape: for example, square, round and elliptic dots have slightly different dot gain characteristics.
  
  Stochastic screens produce more dot gain in the mid-tones than conventional screens.
  
  See Types of Screens Supported on page 12 for more information about dot shapes and screens.

- The screen ruling: dot gain only happens on the perimeter of the printing dots, which means that higher rulings always result in higher dot gain.

  For example, a double ruling means double dot gain.

Inks
Dot gain compensation on a Yellow separation is often less important and less needed than dot gain compensation on a Cyan separation.

The viscosity of the ink also has a big influence.

**Continuous tone images or line work**

Sometimes, images have been pre-compensated for dot gain in an image editing program, so they need less dot gain compensation than linework.

**Dot Gain Compensation Curve Strategies**

A **dot gain compensation curve strategy** contains several dot gain compensation curves and defines when to apply which curve.

**Creating a Dot Gain Compensation Curve Strategy**

You can create dot gain compensation curve strategies in Curve Pilot (see the Curve Pilot documentation for more information).

Dot gain compensation curve files have the `.icpro` extension.

**Using a Dot Gain Compensation Curve Strategy**

You can apply a dot gain compensation curve strategy in the *Image to Screened Separations* and *Image to Unscreened Separations* tasks in Imaging Engine.

Each job separation or object is automatically compensated with the appropriate dot gain compensation curve.

**Note:** You can also use legacy screen-based DGC files (.scrdgc) as dot gain compensation curve strategies in Imaging Engine.

### 3.4.5 PressSync Curves

PressSync curves are predefined compensation curves that can cover the dot gain compensation needs of most presses, while significantly reducing the complexity of dot gain compensation in workflows.

**Slope and Mid-tone Compensation**

Curves are defined by a letter and a number.

- The letter (A to H) describes how the press behaves in the highlights and shadows (the slope): an A curve makes the press print darker in the highlights and lighter in the shadows (for presses who have the opposite problem), while an H curve, on the contrary, makes the press print lighter in the highlights and darker in the shadows.
An E curve is halfway in between and has a straight slope: it corrects the output the same way throughout the range. Use it for presses whose output is consistent in the highlights, mid-tones and shadows.

- The number indicates how much the 50% dot (mid-tone) prints to: an E20 curve compensates the 50% dot to 20%, while an E70 curve compensates 50% to 70%.

**Creating a PressSync Curve**

You cannot create PressSync curves, they are predefined. There are 400 different PressSync curves, to match most dot gain compensation needs.

If you wish, you can see each PressSync curve on a graph in PressSync Pilot (see the PressSync Pilot documentation for more information).
Using a PressSync Curve

You can apply a PressSync curve as press curve on all or some separations of your job in the Image to Screened Separations and Image to Unscreened Separations tasks in Imaging Engine (you just need to enter the letter and number of the PressSync curve).

3.4.6 PressSync Curve Sets

A PressSync curve set contains several PressSync curves, each attached to an ink (a process ink or any spot color defined in Esko’s CMS database).

Creating a PressSync Curve Set

You can create PressSync curve sets in PressSync Pilot (see the PressSync Pilot documentation for more information).

PressSync curve sets files have the .prsync extension.

Using a PressSync Curve Set

You can apply a PressSync curve set as press curve in the Image to Screened Separations and Image to Unscreened Separations tasks in Imaging Engine.

Each job separation is automatically compensated with the appropriate PressSync curve.

3.5 RIP’ed File Formats

Imaging Engine can output to the following formats:

- **TIFF**, a bitmap file format widely supported by image-processing, publishing, DTP and other applications. You can output to screened or unscreened TIFF.

- **PDF**, a multifunctional file format, supported by most graphics-related applications. You can output to screened or unscreened PDF.

- **LEN**, a bitmap file format developed for Esko’s CDI (Cyrel Digital Imager). You can send LEN files to the Grapholas software, which will use them to expose flexo plates on the CDI drum. LEN files have high resolutions of 2100 ppi and more. They are always screened.
4. Imaging Engine Installation and Configuration

4.1 Licensing

To use the Imaging Engine functionality in Automation Engine, you need an Imaging Engine license (in the form of a product key file).

If you don’t have this license, you will not be able to configure Imaging Engine in the Automation Engine Pilot, or see the Imaging Engine tasks.

Depending on the license you have, you will be able to output to some or all of the supported output formats (TIFF, PDF and LEN), and you may be limited to a certain output file size or not (for LEN files).

For more information about the available licenses and which would fit your production best, please talk to your Esko sales representative.

4.2 Installation

4.2.1 Before Installing Imaging Engine 14

Before you install Imaging Engine 14 on your system, check the following:

- You have the Suite 14 Imaging Engine Software Installation DVD.

  Note: If you downloaded the software from MySoftware.esko.com, you will need to mount the corresponding .iso files as virtual DVDs, or unpack the .iso files first.

- You need to have Administrator privileges.
- You need Internet access.
- Your computer must meet the minimum requirements for the installation, as described on www.esko.com/en/SystemRequirements/.
- Data Execution Prevention (DEP) must not block the installation.
- The Password Policy must not block the installation.
- You must make sure your anti-virus software is not blocking the installation or configuration.
- You need a product key file for Imaging Engine 14. If you do not have a product key file yet, contact Esko Customer Support.

How to Change the Data Execution Prevention (DEP) Settings

Data Execution Prevention (DEP) is a security feature that helps prevent damage from viruses and other security threats by monitoring your programs to make sure they use the computer’s memory safely. Before installing Imaging Engine 14, make sure that DEP does not block the installation.
1. In Control Panel, click System > Advanced System Settings.
2. Click the Advanced tab.
3. Under Performance, click Settings.
4. Click the Data Execution Prevention tab.
5. Select Turn on DEP for essential Windows programs and services only.
6. Click OK.
7. Restart the computer.

How to Change the Password Policy

A password policy is a set of rules designed to enhance computer security by encouraging users to employ strong passwords and use them properly. Before installing Imaging Engine 14, make sure that the password policy on your system does not block the installation.

1. In Control Panel, click Administrative Tools.
2. In the Administrative Tools window, double-click Local Security Policy.
3. In the Local Security Policy window, double-click Account Policies > Password Policy.
4. In the right pane, double-click Password must meet complexity requirements.
5. Select Disabled.
6. Click OK.

Licensing and Activation Requirements

Imaging Engine 14 is protected with licenses. These licenses are distributed as a product key file (in .html). To import the licenses into the License Server, the product keys in the product key file must be activated using the Activate Server Licenses utility.

You need:

- A product key file for Imaging Engine 14. If you do not have a product key file yet, contact Esko Customer Support.
- Internet access to activate the licenses.
- An Esko ID in order to activate the licenses. Get one at http://www.esko.com/licensing/CreateAccount.

4.2.2 Installing Imaging Engine 14

You need the Suite 14 Imaging Engine Software Installation DVD for the installation. Use the following procedure to install Imaging Engine 14:

1. Open the Suite 14 Imaging Engine Software Installation window:
   - If you insert the Suite 14 Imaging Engine Software Installation DVD into the DVD drive, or mount the corresponding .iso file, the window appears automatically.
   - If you unpacked a downloaded .iso file, or if the window doesn’t open automatically, double-click setup.exe in the root folder.
2. Select the installation language.
3. Click Proceed to the installation.
4. Under Imaging Engine 14.0 installation, including related tools (Color Engine Pilot, Curve Pilot, HD Flexo Screens and ScreenManager), click Install.

5. On the Imaging Engine 14.0 Installer page:
   a) Install the License Server Components and activate the licenses. Read more in How to Install the License Server Components on page 31.
   b) Check and install the prerequisites. Read more in How to Install the Imaging Engine 14 Prerequisites on page 31.
   c) Proceed with the software installation. Read more in How to Install Imaging Engine 14 on page 32.
   d) Install the Bitmap Viewer. Read more in How to Install the Bitmap Viewer on page 33.

How to Install the License Server Components

1. On the Imaging Engine 14.0 Installer page, click on Install the System Controller 1.0.
2. Follow the instructions of the installation wizard.
3. When the installation is finished, click Activate the licenses on the Imaging Engine 14.0 Installer page.
4. In the Esko Network License Manager, do one of the following:
   • click in the Click to activate your Product Key File area,
   • drag your product key file in the area marked or drag your Product Key File here,
   • click the Activate button.
5. Follow the instructions of the Activate License Wizard.
6. When asked about the product keys, choose I have received an HTML file containing my Product Keys.
7. Click Browse to select the product key file.
8. When asked, fill in your Esko ID and Password.
9. Click Finish.
   The licensed products you can use are now visible in the License Manager.
10. Close the License Manager to go back to the Imaging Engine 14.0 Installer page.

How to Install the Imaging Engine 14 Prerequisites

Before you install Imaging Engine 14, you need to install the Imaging Engine 14 prerequisites.

1. On the Imaging Engine 14.0 Installer page, click on Check and install the Imaging Engine System prerequisites.
   This checks whether the operating system is suited for installing and running Imaging Engine 14, and starts the Imaging Engine 14 prerequisites installation.
2. If:
   • you see an error message about the Windows version, your operating system is not suited for running Imaging Engine 14. Read the System Requirements again and install Imaging Engine 14 on a suitable operating system.
   • you see the message Ready to install the prerequisite components for the Imaging Engine software. Do you want to start the installation?, click Yes.
3. The installation wizard for the prerequisite components will check the licenses, list the prerequisite components to install on the system, request confirmation for installation and then install the required components.

Follow the instructions of the installation wizard.

The installation wizard will install the following components:

- Microsoft Visual Studio Redistributables
- Message Passing Interface service

If you are prompted to reboot your computer, do so and restart this installation procedure.

4. If the installer doesn't find a running Automation Engine 14 server on the local machine, you will see the **Enter Server name** window, prompting you to enter the name of the server running your Automation Engine.

**Note:**

- You should be able to access this server from your Imaging Engine 14 machine.
- You can still use the local machine as Automation Engine server (if Automation Engine 14 is installed on it): start up Automation Engine, and leave the field in the **Enter Server name** window blank.

The installer then checks if the server you entered has a running Automation Engine 14 server.

<table>
<thead>
<tr>
<th>If you get the following error:</th>
<th>then:</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERROR - Imaging Engine requires Automation Engine 14.0.0</td>
<td>Automation Engine 14 is not running on the server you entered.</td>
</tr>
<tr>
<td>The provided master server does not have Automation Engine 14.0.0 running</td>
<td>1. Check that you entered the server name correctly.</td>
</tr>
<tr>
<td>Checked server: [yourservername]</td>
<td>2. Make sure Automation Engine 14 is running on it.</td>
</tr>
<tr>
<td></td>
<td>3. Restart the Imaging Engine 14 prerequisites installation.</td>
</tr>
<tr>
<td>ERROR - Imaging Engine requires Automation Engine 14.0.0</td>
<td>Automation Engine 14 is not installed on the server you entered.</td>
</tr>
<tr>
<td>The provided master server does not have Automation Engine 14.0.0 installed</td>
<td>1. Check that you entered the server name correctly.</td>
</tr>
<tr>
<td>Checked server: [yourservername]</td>
<td>2. Install Automation Engine 14 on it.</td>
</tr>
<tr>
<td>(version [yourserverversion])</td>
<td>3. Restart the Imaging Engine 14 prerequisites installation.</td>
</tr>
</tbody>
</table>

5. Click **Exit**.

**How to Install Imaging Engine 14**

1. On the **Imaging Engine 14.0 Installer** page, click **Install the Imaging Engine 14.0 products**.
2. Follow the instructions of the installation wizard.
3. Read the End user license agreement carefully and select Yes, I accept the license agreement.
4. When asked to select the products to install on this system, select Imaging Engine and the desired related products (Screen Manager, Curve Pilot, Color Engine Pilot...).
   The System Components group cannot be deselected and will be installed on all systems.
5. Select a Destination Folder for the chosen products or accept the defaults.
6. At the end of the installation, click Finish.

How to Install the Bitmap Viewer
1. On the installation page, click Install the Bitmap Viewer 14.0 software.
2. Follow the instructions of the installation wizard.
3. Select the Destination Directory or accept the default.
4. Select the file types which you want to associate with the Bitmap Viewer or accept the defaults.
5. Select the language to use or leave Automatic selected to use the computer’s language.
6. Click Install.
7. When all components have been installed, close the installation window and eject the DVD.

4.3 Configuration in the Automation Engine Pilot

Note:
- You need to perform this configuration before you can use Imaging Engine.
- If you have already configured Imaging Engine, you can only edit the configuration while it is not processing jobs (if it is processing jobs while you try to change the configuration, you will see a warning, and will have to wait until the processing is done).

To connect your Automation Engine server to your Imaging Device:
1. In the Automation Engine Pilot, go to Tools > Configure .
2. Select Imaging Engine Devices in the left pane.
3. Go to File > New or press the Insert key (on PC).
   This creates an Imaging1 entry under Imaging Engine Devices and shows settings in the right pane.
4. In the right pane’s General tab:
   a) In Host Name, enter the name of the server running your Imaging Engine and press Enter or Tab (or click the Connect button next to Imaging Engine).
   b) Check that you see a green dot with the message Imaging Engine is up and running.

<table>
<thead>
<tr>
<th>If you see...</th>
<th>it means that...</th>
</tr>
</thead>
<tbody>
<tr>
<td>a grey dot with the message Imaging Engine is starting up on host</td>
<td>you need to wait a few minutes before you can use Imaging Engine.</td>
</tr>
</tbody>
</table>
### If you see...  |  it means that...
---|---
A red dot 🔄 with the message **No license for Imaging Engine on host** | Your Imaging Engine license is missing. Please check your licenses.
A red dot 🔄 with the message **No Imaging Engine available on host** | The server you have entered doesn’t have Imaging Engine or even Automation Engine installed. Please check if you have entered the server name wrong.

You may see other error messages in some cases, but you will always get some advice as to what you need to do (for example with the 🔄 **Missing resource for Imaging Engine on host** message, you will get advised to Please reinstall the Imaging Engine).

**Note:** You can **Stop** and **Start** Imaging Engine from here for troubleshooting purposes, but this is generally not necessary, as Imaging Engine starts automatically, and will restart automatically in case of a crash or after being force quit.

c) Set the **Number of Workers**. This is the number of parallel processes used to work on multiple pages of a job, or multiple jobs at the same time.

By default, the number of workers is set to 1.

**Note:**
- The maximum number of workers you can set depends on your license and on the number of cores on your server.
- If your license allows it, we recommend you set the number of workers to the number of cores of your server minus 1, for optimal processing.

5. In the **Settings** tab, select some settings to use in the Imaging Engine tasks when working with the device you are configuring here:
   
a) Select the **Rotation Direction** to use for all angle values (for example for transformation and screening angles): either **Clockwise 🔄** or **Counterclockwise 🔄**.
   
b) Select what kind of **Rosettes** you want to use in the **Image to Screened Separations task**:
      - **Clear Centered** rosettes are generally considered to be more stable. This is the default.
      - **Dot Centered** rosettes can give a more saturated result.

You can see which imaging device and which kind of rosettes have been used for each job in that job’s log.

6. In the **Queue** tab, enter a name for your Imaging Engine **Queue**.

7. In the left pane, select the **Imaging1** entry, go to **File > Rename** and give it a meaningful name.

You can also select it and press **F2** (on PC).

8. Go to **File > Save** or use **Ctrl+S** (on PC) to save your configuration.
5. The Imaging Engine Tasks

Use the Imaging Engine tasks as you would use other Automation Engine tasks. For most of the settings, you can also use public parameters (so an operator can define them through Shuttle) and/or SmartNames.

You can use SmartNames everywhere you see the SmartName icon [], and you can use SmartNames in public parameters even for settings without that icon (for example if the setting is a button).

**Important:** SmartNames values must resolve to a value that is valid for that setting at the moment the task runs. Any invalid SmartName value will make the task end in error.

**Tip:**
- SmartNames are case insensitive (for example it doesn’t matter whether your SmartName resolves to AngleAndRuling or angleandruling).
- To know what value a SmartName must resolve to for a specific setting:
  1. select the setting value you want (for example Scale : Fit to page size),
  2. right-click that value (Fit to page size) and select Copy Parameter Value,
  3. paste the value in a text editor (in this example it is FitSize).

For more information about SmartNames and public parameters, see the SmartNames and Using Public Parameters sections of the Automation Engine manual.

5.1 Image to Screened Separations

Use this task if you need screened output to send to a platesetter or filmsetter (for offset or flexo for example).

It generates one file per separation, in either PDF, TIFF or LEN format.

For example, you can send screened LEN separations to the CDI.

In the example below, processing a file with the lime green Esko star generates screened files for the Cyan, Yellow and Black separations.

In the **Device** field, select the imaging device that you configured.
Then use the selector pane at left to show more settings to fill in. See:

- General on page 36,
- Transformations on page 37,
- PDF Objects on page 38,
- Document Inks on page 39,
- Output on page 43,
- Separations on page 50,
- Summary on page 58.

### 5.1.1 General

1. Define what Page Box of the input PDF you want to RIP.

   You can either select Media Box, Trim Box, or insert a SmartName [] that must resolve to either media or trim.

   After selecting your file's page box you will see its dimensions under the Page Box option.

   **Note:** This is a public parameter, that you can fill in when submitting files through Shuttle.

2. If your input file is a multi-page PDF, select which Pages you want to RIP:

   a) First select All pages, Odd pages only or Even pages only in the Pages option.

      You can also insert a SmartName resolving to either All, Even or Odd.

   b) Then you can refine your selection by entering page numbers or a Page Range.

      You can separate page numbers by a comma, or use a dash to indicate a page range (for example 3,6-9). You can also use a SmartName resolving to page numbers and/or page ranges using this same format.

   **Note:**
   
   - Page numbers are always physical pages. If your document starts with page 5, you should not use 5 but 1 to get the first page.
   - If you enter page numbers that are not part of your document, they will be excluded from the output (all the other valid pages will be RIPped).
   - If you enter the same page(s) more than once (for example 1,1-2), it/they will only be output once.
   - Pages are RIPped in the order of the document (entering 5-1 will be automatically changed to 1-5).

3. If you want to invert your output so it is compatible with the output device or software system that will process it, click √.

   You can also click [ ] or Edit... to insert a SmartName that must resolve to 1 or true (to invert the output), or to 0 or false (to leave the output as it is).

4. If you want to mirror your output so it is compatible with the output device or software system that will process it, click [ ].
You can also click ⬋ or Edit... to insert a SmartName that must resolve to 1 or true (to mirror the output), or to 0 or false (to leave the output as it is).

5. If you want to add a Smart Mark to your output file(s), select it in the Smart Mark list, or use a SmartName that will resolve to the Smart Mark name.

A Smart Mark is a mark whose content is variable, so you can make it display information about that specific job. For example, you can include some of the parameters used during RIPping in your output file(s) by using a Smart Mark.

You need to:

a) First create the Smart Mark you want to use in PackEdge (see the SmartMarks section in the PackEdge manual for details).

You can create either:

- a Smart Mark with RIP-specific parameters,

<table>
<thead>
<tr>
<th>Use this Smart Mark parameter in PackEdge:</th>
<th>to display this value from the Imaging Engine parameters:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>the Resolution of your output file(s)</td>
</tr>
<tr>
<td>Screen based DGC</td>
<td>the Curve Strategy you applied to your separation(s)</td>
</tr>
<tr>
<td>DGC</td>
<td>the Single Curve you applied to your separation(s)</td>
</tr>
<tr>
<td>Dot shape</td>
<td>the screen or dot shape you used on your separation(s)</td>
</tr>
<tr>
<td>V Distortion</td>
<td>the vertical distortion you applied to your output file(s)</td>
</tr>
<tr>
<td>H Distortion</td>
<td>the horizontal distortion you applied to your output file(s)</td>
</tr>
<tr>
<td>Device</td>
<td>the imaging device you used</td>
</tr>
<tr>
<td>Negative Printing</td>
<td>whether you inverted your output</td>
</tr>
<tr>
<td>Mirror Printing</td>
<td>whether you mirrored your output</td>
</tr>
</tbody>
</table>

- another type of Smart Mark (for example a corner mark).

b) Then select that Smart Mark in your Imaging Engine task.

5.1.2 Transformations

Use the Transformations settings to rotate or distort your output relative to your input file.
1. If you want to **Rotate** your job, select the rotation you want to apply here. This can be 0, 90, 180 or 270 degrees. Any other value will give an error.

**Note:**
- The rotation direction is the one you selected *when configuring your Imaging Engine* (in the **Settings** tab). You will see 🔄 if you selected a clockwise or 🔄️ if you selected a counterclockwise rotation.
- You can use a SmartName that resolves to 0, 90, 180 or 270 (if you use a SmartName, the task’s default rotation direction, counterclockwise, will be used, regardless of what you have configured for your device).
- You need to use a numerical value (*ninety* will not work).
- This is a public parameter, that you can fill in when submitting files through Shuttle.

2. If you want to apply **Distortion** to your job:
   a) Select the type of distortion to apply: **No distortion**, **Flexo distortion** or **Values from file**.
      You can also use a SmartName that resolves to **Not**, **Flexo** or **File**.

      **Note:** If you selected **Values from file** and the input file contains distortion values, you will see these in the fields below (greyed out).

   b) If you want to apply **Flexo distortion**, enter the vertical and horizontal distortion percentages to use.
      You can enter numerical values, or insert SmartNames that resolve to numerical values (without the % sign).

      **Note:**
      - The values should be within the 90%-110% range. If you enter a percentage outside of this range it will be automatically adjusted to the nearest value in the range (for example 85 will be adjusted to 90%).
      - However, if you use a SmartName that resolves to a percentage outside the range, the task will end in error.
      - You can enter a simple formula and it will be calculated automatically (for example you can enter 100+2 and this will be changed to 102%). This only works with numerical values and not with SmartNames.

### 5.1.3 PDF Objects

Use the **PDF Objects** settings to define:
- how to color manage RGB objects in your input file,
- what dot gain compensation to apply to your input file’s images.
All parameters in this tab are public parameters, that you can fill in when submitting files through Shuttle.

1. In Default RGB Profile, specify the profile to use if no profile is specified for a certain RGB object in the input file. The default is srgb.icc.

   You can use a SmartName that resolves to the full profile name.

2. Select what output profile you want to use when converting RGB objects to CMYK:
   - If you want to use the output profile from the input file (if there is one available), leave Use output intent from file selected (it is selected by default).
   - If you don’t want to use the output profile from the input file, deselect Use output intent from file and specify the output profile to use in Output Color Profile.

   This output profile will also be used if there is none available in the input file.

   The default is ISOcoated_v2_300_eci.icc.

3. Select Use PDF transfer curves if you want to use the dot gain compensation curves attached to the images in your input PDF.

   These curves compensate for the unwanted characteristics of the device that created the images (scanner, digital camera...).

   Aside from these curves applied on individual images, you can still apply:
   - a plate curve (to compensate for the dot growth or reduction -for example in Digital Flexo-happening when making the plate)
   - and/or a press curve (to compensate for the dot gain on press)

   ... to the full file(s) before output.

   You can use a SmartName that resolves to true (to use the input file’s curves) or false (to not use them).

5.1.4 Document Inks

Use the Document Inks settings to select which separations of the input file(s) you want to RIP.

For example, you can use these settings to exclude technical and/or varnish inks from your output.

In the Select Inks list, define how you want to select the inks to use. Select either:

- All if you want to RIP all separations,
- by using selection criteria if you want to define rules that will select inks automatically (see Selecting Inks Using Selection Criteria on page 40),
- Manually if you want to select inks manually (see Selecting Inks Manually on page 42).

Note: You can only select inks manually when running the task on a single input file.
Note:
If your job contains PantoneLIVE inks and you don't have a PantoneLIVE license, the **Ink Book** column will show *unregistered*, followed by an ID number (for example `<unregistered "b0c3126e-4f74-4402-8e47-e5e9fe50195a">`) instead of the PantoneLIVE ink book name for those inks.

Selecting Inks Using Selection Criteria

If you don't want to **select inks manually** every time, you can define some rules to automatically select certain inks in your input file(s).

You can do this:

- either when running the task on one or more files, or when creating a task ticket to use later,
- by choosing to **Select Inks by using selection criteria** in the **Document Inks** settings.

This is how it works:

- Each rule you create will check something about the inks in your file.

  This check can be about the **Ink name**, **Ink book**, **Ink Index**, **Ink type** or **Printing method**. For example, you can check if the **Ink book** is *designer*.

**Tip:**

The **Ink index** is the order in which the ink will be printed (the ink with ink index 1 is at the bottom of the document and will be printed first).

To find the index of a file's inks:

1. select the file in the Automation Engine Pilot's **Files** view,
2. click ![info](image)
3. in the **Info** dialog that opens, select **Inks** in the left panel.

The order of the inks at right is the ink index (the topmost ink has an index of 1, the second of 2, etc.).

Note that if you reorder the inks by one of the columns (for example by **Ink name**), they won't be ordered by ink index anymore. You will need to close that dialog and reopen it to see the ink index order again.

- You can create as many rules as you want.
- You can decide if you want to select the inks that match **All** of your rules, **Any** of your rules (at least one) or **None** of your rules (if you want to exclude the inks that match the rules).

Build your rules the following way:

1. Choose how to apply your rules:
   - **Select All of the following are true** if you want to only select the inks that match **all** of the rules you define.
   - **Select Any of the following are true** if you want to select all the inks that match **at least one** of the rules you define.
   - **Select None of the following are true** if you want to only select the inks that match **none** of the rules you define.
2. Define your first selection rule.

You can select an ink based on its:

- **Ink name**: you can define if it contains/begins with/ends with/is a piece of text (alphanumerical characters), or if it is empty.

- **Ink book**: you can define if it contains/begins with/ends with/is a piece of text (alphanumerical characters), or if it is empty.

- **Ink index**: you can define if it equals/is less than/is greater than the number you enter, or is is between the two numbers you enter (in this case the ink indexes you enter as boundaries are also selected).

- **Ink type**: you can define if it is a piece of text (alphanumerical characters).

- **Printing method**: you can define if it is a piece of text (alphanumerical characters).

See the *Printing methods section* of the Automation Engine documentation for more information about printing methods.

For example, you could define the following rules to exclude a technical ink called "crease":

**None of the following are true**

- Ink name is crease
- Ink book is Visualizer Standard Finishes
- Ink type is Technical
- Printing method is Unknown

**Tip:**
- You can enter several values to check for: just use a semicolon (;) between them.

  For example, to check for both inks called Cyan and inks called Magenta, choose Ink name is and enter Cyan;Magenta.

- When launching the task on a file, you can also click to select one or more of the Ink names/Ink books/Ink types/Printing methods used in your input file(s).

  A rule will automatically be created based on your selection.

3. Click + to add more rules and define them.

To remove a rule, click - next to it.

**Tip:** If you are launching the task on a single input file, you will see a table listing the **Selected document inks**, and another table with the **Document inks that are not selected** under the rules you defined.

**Attention:** If no ink is selected, you cannot launch the task.

---

**Switching from Selecting Inks Manually to Selecting Inks Using Selection Criteria**

You can switch between the two methods of selecting inks, and this will keep the same inks selected.
When switching from **selecting inks manually** to selecting inks using selection criteria, the task will translate your manual ink selection into rules, so that the same inks are selected (you can see them in the **Selected document inks** table).

The rules you get are based on the characteristics of the inks you selected.

For example, if you selected all the process colors but no spot color in your file (for an offset job), you will get the following rules:

**All of the following are true**

- **Ink name** is Cyan; Magenta; Yellow; Black
- **Ink book** is process
- **Ink type** is Normal
- **Printing method** is Offset

**Note:**

If you:

- first selected inks using selection criteria,
- then switched to manual selection without changing the selection,
- then switched back to selection criteria,

... then your rules will be kept. If you did change the selection in manual mode, the task will automatically generate new rules.

**Selecting Inks Manually**

**Note:** You can only select inks manually when you are launching the task on a (single) file, not when you are defining a generic ticket without an input file.

When choosing to **Select Inks Manually**, you will see a table containing all of your document's inks, showing each ink's:

- **Ink Name**,
- **Ink Book**,
- **Ink Index** (the order of that ink in the document),
- **Ink Type**,
- **Printing Method**.

Select the ink(s) you want to RIP, or select the toggle in the table header to select/deselect all inks.

You will see a table listing the **Selected document inks**, and another table with the **Document inks that are not selected**.

**Attention:** If no ink is selected, you cannot launch the task.

**Switching from Selecting Inks Using Selection Criteria to Selecting Inks Manually**

You can switch between the two methods of selecting inks, and this will keep the same inks selected.

When switching from **selecting inks using selection criteria** to selecting inks manually, all the inks selected by the rules you defined (the inks in the **Selected document inks** table) become selected manually.
5.1.5 Output

Use the Output settings to define what type of output you want and where to output it. You can set these through public parameters or using SmartNames.

1. Enter your output **File Name** and output **Folder**.

   **Note:**
   - You can use Imaging-specific SmartNames for the **File Name**.
   - By default, it is set to:
     - `[File]_[ShortInk]` for single page input files (which gives output file names like `Myfile_C.tif`),
   - The **File Name** and **Folder** can contain special characters (except / : * ? < > " |).
   - The whole path to the output file (including the container, **Folder** and **File Name**) can be up to 255 characters.
   - You can set a local or remote URL for the output **Folder**, but it must be an absolute path.
   - If your output folder doesn't exist yet, the task will create it if the location you request is valid (you should place this folder on an Automation Engine container accessible by your Automation Engine user).
     - If the output folder creation fails, please check the task log for the full list of conditions and adapt your output folder path accordingly.

2. Define what to do if a file of the same name already exists in your output folder:
   a) Click **Set Overwrite Policy**...
   b) Choose what to do **If files exist already**. You can either:
      - **Extend the file name** if you want to keep the existing output file and give the new output file a different name. In this case, your new output file name consists of:
        - the **Output File Name** (the **File Name** you set earlier) - which is what the file would be called if no file with the same name existed,
        - a custom suffix that you can define using plain text and/or SmartNames (by default, this is `_c`, for "copy"),
        - an automatic suffix made of the three last digits of the task **ID**,
Tip:
To see the task ID of your tasks:
1. Go to the Pilot’s Tasks pane (in the Files or Tasks view).
2. Go to View > Select Columns in ‘Tasks’...
3. In the Columns dialog, select Task ID in the Available columns list and click to move it to the Show these columns: list.
4. Click OK.
5. You now have a Task ID column in the Tasks pane, listing the task ID of all the tasks.

• the file extension.

For example, you are working with a CMYK input file called file.pdf and you have left the tasks’ output File Name to its default value (the SmartName [File]).

The first TIFF files you generate will be called:
• file_C.tif,
• file_M.tif,
• file_Y.tif,
• file_Y.tif,

If you generate output from this input file again, with the task 3669, and you have set the overwrite policy to Extend the file name with the default Output File Name + _c + ID name, the new output files will be called:
• file_C_c669.tif,
• file_M_c669.tif,
• file_Y_c669.tif,
• file_Y_c669.tif,

Tip:
• If you are working with the Bitmap Viewer, we recommend you keep the default overwrite policy (Output File Name + _c + ID), which is compatible with the Bitmap Viewer.

• If you are not, you can define the custom suffix as you wish. For example, you could use date and time SmartNames.

• Overwrite the existing file(s).

• End the task in error.
Note: If you use a SmartName to set this, it must resolve to extend or 0 (for Extend the file name), overwrite or 1 (for Overwrite), or error or 2 (for End the task in error).

c) Click Set.

3. Select the output File Type you want. This can be a TIFF File, a PDF File or a LEN File (see RIP'ed File Formats on page 28 for more information).

The task generates Separated output for both file types. This means you get one output file per page of the input file, and per output separation.

In the example below, the input file has 2 pages, each containing a Magenta and a Yellow vignette. After RIP'ing, you get 4 files (one for the 1st separation of the 1st page, one for the 2nd separation of the 1st page, etc.), each containing a single channel bitmap.

The File Assembly is automatically set to 1 File Per Separation, and the Output Type set to Separate (for both file types).
### Note:

- Every output file that Imaging Engine generates contains XMP information (metadata about file creation, separations, calibration curves, etc.).
  
  You can view this XMP information by selecting your output file in the Automation Engine Pilot’s **Files** view and clicking ![i](https://via.placeholder.com/15).
  
  For more information about XMP metadata, see the **XMP Metadata white paper on help.esko.com**.

- TIFF files produced by Imaging Engine are fully compatible with Esko’s Bitmap Viewer and DotSpy.

- LEN files produced by Imaging Engine are fully compatible with Esko’s CDI (Cyrel Digital Imager), just as LEN files produced by FlexRip.

### 4. Choose the **Compression** to use for your output files.

**Note:**

For screened output, all available compression methods are lossless (so you don’t lose any of the high-resolution detail).

You should choose a compression method based on the compression speed and the compressed file size. Typically, faster compression methods compress the file less, so the output file is bigger.

Note that TIFF files can be a maximum of 4GB, PDF files 12GB, and LEN files are unlimited. Files using stochastic screening are generally larger.

- For **TIFF** output, choose either:
  
  - **PackBits**, a fast lossless compression method for graphic files.
    
    **Tip:** Use this if you want fast output and file size is not too much of an issue (if you have a fast network for example).
  
  - **LZW**, a lossless compression method for graphic files and other files.
    
    **Tip:** This compression method works best for files with large images.
  
  - **CCITT Group 4**, a lossless compression method only used for files containing black and white.
    
    **Tip:**
    
    - This compression method works best for files with a lot of text.
    - Use this if having a small output file is more important than processing speed (for example, if you want to store your screened files on a server to rerun jobs later, or if you are working with really large input files that may give screened TIFFs of over 4GB).

- For **PDF** output, choose either:
• **PackBits** (see above).

• **Flate**, a lossless compression method similar to zipping, based on the LZW compression.

  **Tip:** This compression method works best for images with large single color areas or repeating patterns.

• **CCITT Group 4** (see above).

• For LEN output, choose either:

  • **Flate** (see above).

  • no compression (**None**).

  **Tip:** The **Compression** method offered by default for the output **File Type** you select (**LZW** for TIFF, PackBits for PDF and Flate for LEN) is generally the best for this file type.

**Attention:**

• When using a SmartName to set the output file’s **Compression**, it must resolve to one of the following (case insensitive):

  • **PackBits**, **LZW** or CCITT-G4 for TIFF output,

  • **PackBits**, Flate or CCITT-G4 for PDF output,

  • Flate or None for LEN output.

Setting any other value, or an unsupported compression for the file type you chose, will make the task error (with the message **Unsupported combination of output type and compression in the log**).

• If you have already set the **Compression** but decide to change the output **File Type**, by default the task will either:

  • keep the same **Compression** (if it is supported for the new output **File Type**),

  • or (if it isn’t), set it to the first **Compression** available for this **File Type**.

You can still change it as desired.

5. Set the **Resolution** of your output files.
Note:

- The Resolution unit is taken from the general Automation Engine Preferences.
- You can enter values from 1 to 25400 ppi (or equivalent in your unit). SmartNames must also resolve to a value in that range.
- Values in another unit than the one from the general Preferences will be recalculated, and values like 300ppi + 500ppm will be calculated correctly.
- Depending on the Resolution you set here, you will have different screen Rulings available in the Separations tab.

6. If your input file contains images, the images’ pixels may not map exactly to output pixels because:
   - the images' resolution is different from the output resolution you chose,
   - scaling and rotation effects change the size and placement of the images' pixels.

You then need to resample these images to be able to output them at the same resolution as the rest of the file.

In the Resample Images option, choose the resampling method you want to use (you will have to make a trade-off between processing time and image quality).

- Choose From File to use the resampling method defined in the input PDF (this is the default option). This method can be either:
  - the “nearest neighbor” algorithm, which keeps the image very sharp but can make it look jagged (pixellated but sharp). This is mostly recommended if you have small images with sharp lines/sudden differences in intensity, and/or you do not want your images to be fuzzy at all.

  This resampling method is very fast but may cause broken dots if the original image has sharp jumps in intensity, small and sharp detail, hairlines...

  Broken dots can be more susceptible to dot gain than regular dots, they can be washed away while making the plate or can become unstable during printing (for example on flexo plates they can flap around and smear ink on the substrate).
They can have an especially noticeable effect when using advanced screening technologies such as Concentric.

- the "PDF interpolation" algorithm, that smoothes the image while resampling (see below).

**Note:** Most PDF files don’t specify a preferred resampling method, so the default ("nearest neighbor" algorithm) is used. If you want to make sure that the "PDF interpolation" algorithm is used, choose **PDF Interpolation** instead of **From File** in the **Resample Images** option.

You can also use a SmartName resolving to **FromPDF**.

- Choose **PDF Interpolation** to smooth the image while resampling.

With this method, you get images that are pixellated and fuzzy, so it is only recommended if you have small images with gradual differences in intensity, like photographs of nature.

This is slightly less fast but reduces the chance of having broken dots.

![Image showing PDF interpolation effect](image1)

You can also use a SmartName resolving to **PDFInterpolate**.

- Choose **Auto Resampling** to upsample the images to an automatically calculated resolution (generally half or a third of the output resolution) before smoothing it.

When using this, images are a lot less pixellated and fuzzy.

This method is quite slow but gives images of a good quality and reduces the risk of broken dots a lot, so it is recommended in most cases (unless you want an extra sharp image and have no broken dots problem, in which case you should choose **From File**).

![Image showing Auto Resampling effect](image2)
You can also use a SmartName resolving to ResampleAuto.

- Choose Full Resampling to upsample the images to the full output resolution.
  This is the slowest method but gives the highest quality images (not pixellated and only very slightly fuzzy), with no risk of broken dots.

Use this if Auto Resampling doesn’t give you the results you want.

**Attention:**

Resampling to full resolution can require significant amounts of memory when the output resolution is high (especially from 4000 dpi).

If you want to do this, we recommend that you have at least 8GB of RAM available for each worker (see Installation).

You can also use a SmartName resolving to ResampleFull.

**Note:**

If your image is not...

- an 8 bit image,
- an image with 1, 3 or 4 components (for example grey, RGB or CMYK),

then the From File option is always used.

### 5.1.6 Separations

Use the Separations settings to define the screening and dot gain compensation to apply to the separations you selected in the Document Inks settings.

You can define default screening and dot gain compensation settings for most or all of these separations, and exceptions to these settings if you want to RIP some of these separations differently.
Defining Default Settings

Define the default screening and dot gain compensation (DGC) settings you want to use on the separations to RIP. You will still be able to define exceptions to these settings for certain inks.

Under Default Separation Settings:

1. If your input file contains screening settings, you can have the task use (some of) those if desired.
   In Use from file, select which setting(s) to use:
   • select None if you want to ignore any screening settings present in the input file and only use settings you define here,
   • select All if you want to use all the screening settings from the file,
   • select Angle only if you want to use the screen angles defined in the file, but use the dot shape and ruling defined here,
   • select Ruling only if you want to use the ruling defined in the file, but use the dot shape defined here (the task then calculates the appropriate angles automatically),
   • select Angle and ruling if you want to use the angles and ruling defined in the file, but use the dot shape defined here.

   Note:
   • If you choose to use a certain screening setting from the file but that setting is not present in the file, the task will use the settings defined here as a back-up.
   • You can use SmartNames resolving to none, all, angle, ruling or angleandruling.

2. In Dot, select the screen/dot shape to use (or to use as a back-up if you are using the screening settings from the input file).
   You can choose from a list of screens installed on your Automation Engine server (on the screens server).
   Screens have a short name and a long name. For example R -> Round Fogra (R being the short name and Round Fogra the long name).
   • Screens with a short name beginning with HD are custom screens created in HD Flexo. Please see the HD Flexo documentation for more information.
   • Screens with a short name beginning with SCR are custom screens created in Screen Manager. Please see the Screen Manager documentation for more information.
   • Screens with a short name beginning with another prefix are predefined screens:
     • screens with standard dot shapes,
     • screens with advanced dot shapes,
     • stochastic (FM) screens,
• legacy screens you have from an old version of FlexRip or Nexus RIP (any legacy screen for which you have a license will have been copied to your Automation Engine server during installation).

Tip:
• When selecting a screen, they are listed alphabetically by short name.
• When using a SmartName to set the screen, it should resolve to either the screen’s short name or its long name (not both).

3. Select the **Ruling** to use (or to use as a back-up if you are using the ruling from the input file).

Note:
• The ruling values offered depend on the **Dot** you selected, and on the **Resolution** you entered in the **Output settings**.

• If you have used SmartNames for the **Dot** and/or the **Resolution**, you will not see **Ruling** values to choose from, and will need to enter a ruling manually (which must be a valid ruling for the dot shape and output resolution your SmartNames resolve to).

• When using a SmartName for the **Ruling**, make sure it resolves to the ruling value in lpi but without the unit (for example it should resolve to 150 for 150 lpi).

• This ruling is applied to all separations, but you can change the yellow ruling to minimize yellow moiré (see below).

The task will automatically calculate the correct angles to use based on the **Resolution**, **Dot** shape and **Ruling** you set.

If you are using SmartNames, make sure they resolve to a correct **Resolution**, **Dot** shape and **Ruling** combination. If your combination is incorrect and no valid set of angles can be found, the task will end in error.

4. Click **Advanced Screening Settings** to set options to minimize yellow moiré.

   a) In **Change Y Ruling**, select **Yes (conventional)** if you want to minimize yellow moiré by changing the ruling (when working with AM Screening).

   When using a SmartName to set this, it must resolve to **no** if you don’t want to use yellow moiré reduction, or **conventional** if you do.

   b) If you are changing the ruling, choose **by** how much: -15, -7, +7 or +15.

   When using a SmartName to set this, it must resolve to -15, -7, +7 or +15.

   c) Click **Set**.

Note:
• If your job doesn’t contain a yellow separation, yellow moiré reduction won’t be applied. The task will run as normal but you will get a warning in the log.
• You cannot set yellow moiré reduction options when using a Paragon dot, as Paragon dots already have built-in yellow moiré reduction.
After the screening settings, you now need to define dot gain compensation settings.

5. Define the **Plate Curve** you want to use on the separations to RIP.

This curve is used to compensate for the dot growth or dot reduction (for example in Digital Flexo) happening when making the plate. Choose either:

- **None** if you don’t want to apply any plate curve.
- **Single Curve** if you want to apply one curve for all separations (you can still define exceptions for some of the separations later).

In this case, select the .dgc curve to apply at right.

You can choose from a list of curves available in the resource server defined for your Automation Engine server.

- **Curve Strategy** if you want to apply a curve strategy (a file created in Curve Pilot that contains several curves to apply in different cases: it can have different curves per separation, per dot shape, per ruling...).

In this case, select the .icpro curve strategy or legacy .scrdgc screen-based DGC file to apply at right.

You can choose from a list of curve strategies available in the resource server defined for your Automation Engine server.

**Note:**

- You can use SmartNames resolving to the exact name of the Single Curve or Curve Strategy (including the extension).
- This will set the Plate Curve type to Unknown in the ticket, but will resolve to the correct curve type if the SmartNames are correct.

6. Define the **Press Curve** you want to use on the separations to RIP.

This curve is used to compensate for the dot gain on press. Choose either:

- **None** if you don’t want to apply any press curve,
- **Single Curve** if you want to apply one curve for all separations (you can still define exceptions for some of the separations later).

In this case, select the .dgc curve to apply at right.

You can choose from a list of curves available in the resource server defined for your Automation Engine server.

- **Curve Strategy** if you want to apply a curve strategy (a file created in Curve Pilot that contains several curves to apply in different cases: it can have different curves per separation, per dot shape, per ruling...).

In this case, select the curve strategy to apply at right (you can select a .icpro curve strategy, a .prsync PressSync curve set or a legacy .scrdgc screen-based DGC file).

You can choose from a list of curve strategies available in the resource server defined for your Automation Engine server.

- **PressSync Curve** if you want to apply a PressSync curve (a predefined curve applicable to your printing environment).
In this case, select the letter and number of the PressSync curve.

**Note:**

- You can use SmartNames resolving to the exact name of the **Single Curve, Curve Strategy** (including the extension) or **PressSync Curve**.
- This will set the **Press Curve** type to **Unknown** in the ticket, but will resolve to the correct curve type if the SmartNames are correct.

### Defining Exception Settings

If you don't want to use the *default settings* you defined for certain inks, you can define specific screening and dot gain compensation settings for those here.

1. Click **Define Exceptions**...
2. In the **Define Exceptions** dialog, select to **Define Exceptions** either:
   - by using exception criteria (see *Defining Exceptions Using Exception Criteria* on page 54),
   - **Manually** (see *Defining Exceptions Manually* on page 56).

**Note:** You can only define exceptions manually when you are launching the task on a (single) file, not when you are defining a generic ticket without an input file.

### Defining Exceptions Using Exception Criteria

If you want to define exceptions to the default screening and/or dot gain compensation settings for certain inks, you can do it using exception criteria.

This works as follows:

- You create a rule per separation or set of separations that need specific screening and/or dot gain compensation settings.
- Within each rule:
  - You define criteria to select the separation(s) you want to apply specific settings to.
    - Each criterion will check something about the inks in your file.
    - This check can be about the **Ink name, Ink book, Ink Index, Ink type** or **Printing method**.
      - For example, you can check if the **Ink book** is **designer**.
Tip:
The **Ink index** is the order in which the ink will be printed (the ink with ink index 1 is at the bottom of the document and will be printed first).

To find the index of a file’s inks:

1. select the file in the Automation Engine Pilot’s **Files** view,
2. click ![image](image.png),
3. in the **Info** dialog that opens, select **Inks** in the left panel.

The order of the inks at right is the ink index (the topmost ink has an index of 1, the second of 2, etc.).

Note that if you reorder the inks by one of the columns (for example by **ink name**), they won’t be ordered by ink index anymore. You will need to close that dialog and reopen it to see the ink index order again.

- You select these settings.
- If you have several rules, you can reorder them in order of priority (the top one is applied first).

**Note:** You can do this either when running the task on one or more files, or when creating a task ticket to use later.

If you have chosen to **Define Exceptions by using exception criteria**, do the following:

1. Click **Add**.
2. In the **Exception Properties** dialog, enter a **Rule Name**.
3. Under **If separation matches**, define one or more criteria to select your desired separation(s).
   a) Define your criteria the following way:

   - **Ink name**: you can define if it **contains/begins with/ends with/is** a piece of text (alphanumerical characters), or if it **is empty**.

   - **Ink book**: you can define if it **contains/begins with/ends with/is** a piece of text (alphanumerical characters), or if it **is empty**.

   - **Ink index**: you can define if it **equals/is less than/is greater than** the number you enter, or is **is between** the two numbers you enter (in this case the ink indexes you enter as boundaries are also selected).

   - **Ink type**: you can define if it **is** a piece of text (alphanumerical characters).

   - **Printing method**: you can define if it **is** a piece of text (alphanumerical characters).

   See the **Printing methods section** of the Automation Engine documentation for more information about printing methods.
Tip:
- You can enter several values to check for; just use a semicolon (;) between them.
  For example, to check for both inks called Cyan and inks called Magenta, choose Ink name is and enter Cyan;Magenta.
- When launching the task on a file, you can also click + to select one or more of the Ink names/Ink books/Ink types/Printing methods used in your input file(s).
  A criterion will automatically be created based on your selection.

b) Click + to define more criteria.

Note: You can create as many criteria as you want, they will be applied from top to bottom (the top one will be applied first).

4. Define the settings (Dot, Ruling, Angle and/or Press Curve) you want to use for the selected separation(s).
5. Click Add.

You can see your rule and the settings you selected for the exception separation(s) in the Define Exceptions dialog.

Tip: You can double-click your rule if you still want to edit it.

6. Repeat steps 1 to 5 to define more exception rules if desired.

   If you want to remove an exception, select it and click Remove.

   Tip: Leave the Preview option at the bottom of the dialog so you’ll be able to see your exception separation(s) with its/their settings in the main task panel.

7. Click OK to save your exceptions and close the Define Exceptions dialog.

Defining Exceptions Manually

Note: You can only define exceptions manually when you are launching the task on a (single) file, not when you are defining a generic ticket without an input file.

If you have chosen to define exceptions manually, do the following:

1. Click Add.
2. In the Exception Properties dialog, select the Separation you want to make an exception for.
3. Define the settings you want to use for this separation (Dot, Ruling, Angle and/or Press Curve).
4. Click Add.

   You can see your exception separation with its settings in the Define Exceptions dialog.

   Tip: You can double-click your exception if you still want to edit it.

5. Repeat steps 1 to 4 to define more exceptions if desired.

   If you want to remove an exception, select it and click Remove.
Tip: Leave the Preview option at the bottom of the dialog selected so you'll be able to see the settings for that separation in the main task panel.

6. Click OK to save your exceptions and close the Define Exceptions dialog.

Switching How You Define Exceptions
You can switch between the two methods of defining exceptions, and this will give the same results.

Switching from Defining Exceptions Manually to Defining Exceptions Using Exception Criteria
If you defined exceptions manually but then choose to Define Exceptions by using exception criteria, the task will translate your manual exceptions into rules, so that the same inks are selected, and they have the same exception settings.

For example, if you manually selected Cyan, Magenta and Black and assigned to each of these separations the Press Curve CMK.dgc, you will get the following rules:

- **Rule Name:** Cyan (process)
  - Ink name is Cyan
  - Press Curve: CMK.dgc

- **Rule Name:** Magenta (process)
  - Ink name is Magenta
  - Press Curve: CMK.dgc

- **Rule Name:** Black (process)
  - Ink name is Black
  - Press Curve: CMK.dgc

Tip: The rule names are created automatically from the contents of the exceptions, but you can still double-click each rule to edit them.

Note:
If you...
- first defined rules with exception criteria,
- then switched to defining manual exceptions but didn’t make any changes,
- then switched back to exception criteria,
... then your rules will be kept.

If you did change the exceptions in manual mode, the task will automatically generate new rules.

Switching from Defining Exceptions Using Exception Criteria to Defining Exceptions Manually
If you defined rules with exception criteria but then choose to Define Exceptions Manually, each separation selected by a rule will be selected individually, and have the settings you defined in the rule.

For example if you had as criteria:

- **Ink name is** Cyan; Magenta; Black
Ink book is process
and you selected as Press Curve CMK.dgc, you will get the following manual exceptions:

<table>
<thead>
<tr>
<th>Ink Name</th>
<th>Ink Book</th>
<th>Press Curve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyan</td>
<td>process</td>
<td>CMK.dgc</td>
</tr>
<tr>
<td>Magenta</td>
<td>process</td>
<td>CMK.dgc</td>
</tr>
<tr>
<td>Black</td>
<td>process</td>
<td>CMK.dgc</td>
</tr>
</tbody>
</table>

Note: You can only switch to selecting inks manually when you are launching the task on a (single) file.

5.1.7 Summary

This shows a summary of all the settings you defined in the ticket.

- To show the settings from a tab, click + beside the tab name in the right pane. Click Expand All to show the settings from all tabs.
- To hide the settings from a tab, click - beside the tab name in the right pane. Click Collapse All to hide the settings from all tabs.

5.2 Image to Unscreened Separations

Use this task if you need unscreened output to send to a device that will take care of the screening, or a device that doesn’t need screened input (for gravure for example).

It generates one file per separation, in either PDF or TIFF format.

In the example below, processing a file with the lime green Esko star generates unscreened files for the Cyan, Yellow and Black separations.

In the Device field, select the imaging device that you configured. Then use the selector pane at left to show more settings to fill in. See:

- General on page 59,
- Transformations on page 37,
5.2.1 General

1. Define what **Page Box** of the input PDF you want to RIP.

   You can either select **Media Box**, **Trim Box**, or insert a SmartName that must resolve to either media or trim.

   After selecting your file's page box you will see its dimensions under the **Page Box** option.

   **Note:** This is a public parameter, that you can fill in when submitting files through Shuttle.

2. If your input file is a multi-page PDF, select which **Pages** you want to RIP:
   a) First select **All pages**, **Odd pages only** or **Even pages only** in the **Pages** option.

      You can also insert a SmartName resolving to either All, Even or Odd.

   b) Then you can refine your selection by entering page numbers or a **Page Range**.

      You can separate page numbers by a comma, or use a dash to indicate a page range (for example 3,6-9). You can also use a SmartName resolving to page numbers and/or page ranges using this same format.

   **Note:**
   - Page numbers are always physical pages. If your document starts with page 5, you should not use 5 but 1 to get the first page.
   - If you enter page numbers that are not part of your document, they will be excluded from the output (all the other valid pages will be RIPped).
   - If you enter the same page(s) more than once (for example 1,1-2), it/they will only be output once.
   - Pages are RIPped in the order of the document (entering 5-1 will be automatically changed to 1-5).

3. If you want to invert your output so it is compatible with the output device or software system that will process it, click **A**.

   You can also click **1** or **Edit...** to insert a SmartName that must resolve to 1 or true (to invert the output), or to 0 or false (to leave the output as it is).

4. If you want to mirror your output so it is compatible with the output device or software system that will process it, click **3**.

   You can also click **1** or **Edit...** to insert a SmartName that must resolve to 1 or true (to mirror the output), or to 0 or false (to leave the output as it is).
5. If you want to add a Smart Mark to your output file(s), select it in the Smart Mark list, or use a SmartName that will resolve to the Smart Mark name.

A Smart Mark is a mark whose content is variable, so you can make it display information about that specific job. For example, you can include some of the parameters used during RIPping in your output file(s) by using a Smart Mark.

You need to:

a) First create the Smart Mark you want to use in PackEdge (see the SmartMarks section in the PackEdge manual for details).

You can create either:

- a Smart Mark with RIP-specific parameters,

<table>
<thead>
<tr>
<th>Use this Smart Mark parameter in PackEdge:</th>
<th>to display this value from the Imaging Engine parameters:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>the Resolution of your output file(s)</td>
</tr>
<tr>
<td>Screen based DGC</td>
<td>the Curve Strategy you applied to your separation(s)</td>
</tr>
<tr>
<td>DGC</td>
<td>the Single Curve you applied to your separation(s)</td>
</tr>
<tr>
<td>V Distortion</td>
<td>the vertical distortion you applied to your output file(s)</td>
</tr>
<tr>
<td>H Distortion</td>
<td>the horizontal distortion you applied to your output file(s)</td>
</tr>
<tr>
<td>Device</td>
<td>the imaging device you used</td>
</tr>
<tr>
<td>Negative Printing</td>
<td>whether you inverted your output</td>
</tr>
<tr>
<td>Mirror Printing</td>
<td>whether you mirrored your output</td>
</tr>
</tbody>
</table>

- another type of Smart Mark (for example a corner mark).

b) Then select that Smart Mark in your Imaging Engine task.

5.2.2 Transformations

Use the Transformations settings to rotate or distort your output relative to your input file.

1. If you want to Rotate your job, select the rotation you want to apply here. This can be 0, 90, 180 or 270 degrees. Any other value will give an error.
Note:

- The rotation direction is the one you selected when configuring your Imaging Engine (in the Settings tab). You will see ☑ if you selected a clockwise or ☐ if you selected a counterclockwise rotation.

- You can use a SmartName that resolves to 0, 90, 180 or 270 (if you use a SmartName, the task’s default rotation direction, counterclockwise, will be used, regardless of what you have configured for your device).

- You need to use a numerical value (ninety will not work).

- This is a public parameter, that you can fill in when submitting files through Shuttle.

2. If you want to apply Distortion to your job:
   a) Select the type of distortion to apply: No distortion, Flexo distortion or Values from file.
      You can also use a SmartName that resolves to Not, Flexo or File.

      Note: If you selected Values from file and the input file contains distortion values, you will see these in the fields below (greyed out).

   b) If you want to apply Flexo distortion, enter the vertical and horizontal distortion percentages to use.
      You can enter numerical values, or insert SmartNames that resolve to numerical values (without the % sign).

      Note:
      - The values should be within the 90%-110% range. If you enter a percentage outside of this range it will be automatically adjusted to the nearest value in the range (for example 85 will be adjusted to 90%).
      - However, if you use a SmartName that resolves to a percentage outside the range, the task will end in error.
      - You can enter a simple formula and it will be calculated automatically (for example you can enter 100+2 and this will be changed to 102%). This only works with numerical values and not with SmartNames.

5.2.3 PDF Objects

Use the PDF Objects settings to define:

- how to color manage RGB objects in your input file,
- what dot gain compensation to apply to your input file’s images.

All parameters in this tab are public parameters, that you can fill in when submitting files through Shuttle.
1. In Default RGB Profile, specify the profile to use if no profile is specified for a certain RGB object in the input file. The default is srgb.icc.

   You can use a SmartName that resolves to the full profile name.

2. Select what output profile you want to use when converting RGB objects to CMYK:
   - If you want to use the output profile from the input file (if there is one available), leave Use output intent from file selected (it is selected by default).
   - If you don’t want to use the output profile from the input file, deselect Use output intent from file and specify the output profile to use in Output Color Profile.

   This output profile will also be used if there is none available in the input file.

   The default is ISOcoated_v2_300_eci.icc.

   For the Use output intent from file option, you can use a SmartName that resolves to true (to use the file’s profile) or false (to not use it).

   For Output Color Profile, you can use a SmartName that resolves to the full profile name.

3. Select Use PDF transfer curves if you want to use the dot gain compensation curves attached to the images in your input PDF.

   These curves compensate for the unwanted characteristics of the device that created the images (scanner, digital camera...).

   Aside from these curves applied on individual images, you can still apply:
   - a plate curve (to compensate for the dot growth or reduction -for example in Digital Flexo-happening when making the plate)
   - and/or a press curve (to compensate for the dot gain on press)

   ... to the full file(s) before output.

   You can use a SmartName that resolves to true (to use the input file's curves) or false (to not use them).

5.2.4 Document Inks

   Use the Document Inks settings to select which separations of the input file(s) you want to RIP.

   For example, you can use these settings to exclude technical and/or varnish inks from your output.

   In the Select Inks list, define how you want to select the inks to use. Select either:
   - All if you want to RIP all separations,
   - by using selection criteria if you want to define rules that will select inks automatically (see Selecting Inks Using Selection Criteria on page 40),
   - Manually if you want to select inks manually (see Selecting Inks Manually on page 42).

   Note: You can only select inks manually when running the task on a single input file.
Note:
If your job contains PantoneLIVE inks and you don’t have a PantoneLIVE license, the Ink Book column will show unregistered, followed by an ID number (for example <unregistered "b0c3126e-4f74-4402-8e47-e5e9fe50195a">) instead of the PantoneLIVE ink book name for those inks.

Selecting Inks Using Selection Criteria

If you don’t want to select inks manually every time, you can define some rules to automatically select certain inks in your input file(s).

You can do this:

- either when running the task on one or more files, or when creating a task ticket to use later,
- by choosing to Select Inks by using selection criteria in the Document Inks settings.

This is how it works:

- Each rule you create will check something about the inks in your file.

  This check can be about the Ink name, Ink book, Ink Index, Ink type or Printing method. For example, you can check if the Ink book is designer.

Tip:

The Ink index is the order in which the ink will be printed (the ink with ink index 1 is at the bottom of the document and will be printed first).

To find the index of a file’s inks:

1. select the file in the Automation Engine Pilot’s Files view,
2. click 🔄,
3. in the Info dialog that opens, select Inks in the left panel.

The order of the inks at right is the ink index (the topmost ink has an index of 1, the second of 2, etc.).

Note that if you reorder the inks by one of the columns (for example by Ink name), they won’t be ordered by ink index anymore. You will need to close that dialog and reopen it to see the ink index order again.

- You can create as many rules as you want.
- You can decide if you want to select the inks that match All of your rules, Any of your rules (at least one) or None of your rules (if you want to exclude the inks that match the rules).

Build your rules the following way:

1. Choose how to apply your rules:
   - Select All of the following are true if you want to only select the inks that match all of the rules you define.
   - Select Any of the following are true if you want to select all the inks that match at least one of the rules you define.
   - Select None of the following are true if you want to only select the inks that match none of the rules you define.
2. Define your first selection rule.

You can select an ink based on its:

- **Ink name**: you can define if it contains/begins with/ends with/is a piece of text (alphanumerical characters), or if it is empty.

- **Ink book**: you can define if it contains/begins with/ends with/is a piece of text (alphanumerical characters), or if it is empty.

- **Ink index**: you can define if it equals/is less than/is greater than the number you enter, or is is between the two numbers you enter (in this case the ink indexes you enter as boundaries are also selected).

- **Ink type**: you can define if it is a piece of text (alphanumerical characters).

- **Printing method**: you can define if it is a piece of text (alphanumerical characters).

  See the Printing methods section of the Automation Engine documentation for more information about printing methods.

For example, you could define the following rules to exclude a technical ink called "crease":

**None of the following are true**

- Ink name is crease
- Ink book is Visualizer Standard Finishes
- Ink type is Technical
- Printing method is Unknown

**Tip:**

- You can enter several values to check for: just use a semicolon (;) between them.

  For example, to check for both inks called Cyan and inks called Magenta, choose Ink name is and enter Cyan;Magenta.

- When launching the task on a file, you can also click to select one or more of the Ink names/Ink books/Ink types/Printing methods used in your input file(s).

  A rule will automatically be created based on your selection.

3. Click + to add more rules and define them.

To remove a rule, click - next to it.

**Tip:** If you are launching the task on a single input file, you will see a table listing the Selected document inks, and another table with the Document inks that are not selected under the rules you defined.

**Attention:** If no ink is selected, you cannot launch the task.

Switching from Selecting Inks Manually to Selecting Inks Using Selection Criteria

You can switch between the two methods of selecting inks, and this will keep the same inks selected.
When switching from *selecting inks manually* to selecting inks using selection criteria, the task will translate your manual ink selection into rules, so that the same inks are selected (you can see them in the *Selected document inks* table).

The rules you get are based on the characteristics of the inks you selected.

For example, if you selected all the process colors but no spot color in your file (for an offset job), you will get the following rules:

**All of the following are true**

- **Ink name** is Cyan; Magenta; Yellow; Black
- **Ink book** is process
- **Ink type** is Normal
- **Printing method** is Offset

---

**Note:**

If you...

* first selected inks using selection criteria,
* then switched to manual selection without changing the selection,
* then switched back to selection criteria,

... then your rules will be kept.

If you did change the selection in manual mode, the task will automatically generate new rules.

---

### Selecting Inks Manually

**Note:** You can only select inks manually when you are launching the task on a (single) file, not when you are defining a generic ticket without an input file.

When choosing to *Select Inks Manually*, you will see a table containing all of your document's inks, showing each ink's:

- **Ink Name**,
- **Ink Book**,
- **Ink Index** (the order of that ink in the document),
- **Ink Type**,
- **Printing Method**.

Select the ink(s) you want to RIP, or select the toggle in the table header to select/deselect all inks.

You will see a table listing the *Selected document inks*, and another table with the *Document inks that are not selected*.

**Attention:** If no ink is selected, you cannot launch the task.

---

### Switching from Selecting Inks Using Selection Criteria to Selecting Inks Manually

You can switch between the two methods of selecting inks, and this will keep the same inks selected.

When switching from *selecting inks using selection criteria* to selecting inks manually, all the inks selected by the rules you defined (the inks in the *Selected document inks* table) become selected manually.
5.2.5 Output

Use the Output settings to define what type of output you want and where to output it.
You can set these through public parameters or using SmartNames.

1. Enter your output **File Name** and output **Folder**.

   **Note:**
   - You can use Imaging-specific SmartNames for the **File Name**.
   - By default, it is set to:
     - `[File]_[ShortInk]` for single page input files (which gives output file names like `Myfile_C.tif`),
   - The **File Name** and **Folder** can contain special characters (except `\ / : * ? < > " |`).
   - The whole path to the output file (including the container, **Folder** and **File Name**) can be up to 255 characters.
   - You can set a local or remote URL for the output **Folder**, but it must be an absolute path.
   - If your output folder doesn't exist yet, the task will create it if the location you request is valid (you should place this folder on an Automation Engine container accessible by your Automation Engine user).
     - If the output folder creation fails, please check the task log for the full list of conditions and adapt your output folder path accordingly.

2. Define what to do if a file of the same name already exists in your output folder:
   a) Click **Set Overwrite Policy**...
   b) Choose what to do **If files exist already**. You can either:
      - **Extend the file name** if you want to keep the existing output file and give the new output file a different name. In this case, your new output file name consists of:
        - the **Output File Name** (the **File Name** you set earlier) - which is what the file would be called if no file with the same name existed,
        - a custom suffix that you can define using plain text and/or SmartNames (by default, this is `_c`, for "copy"),
        - an automatic suffix made of the three last digits of the task **ID**,
Tip:
To see the task ID of your tasks:
1. Go to the Pilot's Tasks pane (in the Files or Tasks view).
2. Go to View > Select Columns in 'Tasks'...
3. In the Columns dialog, select Task ID in the Available columns list and click to move it to the Show these columns: list.
4. Click OK.
5. You now have a Task ID column in the Tasks pane, listing the task ID of all the tasks.

- the file extension.

For example, you are working with a CMYK input file called file.pdf and you have left the tasks' output File Name to its default value (the SmartName [File]).

The first TIFF files you generate will be called:
- file_C.tif,
- file_M.tif,
- file_Y.tif,
- file_Y.tif,

If you generate output from this input file again, with the task 3669, and you have set the overwrite policy to Extend the file name with the default Output File Name + _c + ID name, the new output files will be called:
- file_C_c669.tif,
- file_M_c669.tif,
- file_Y_c669.tif,
- file_Y_c669.tif,

Tip:
- If you are working with the Bitmap Viewer, we recommend you keep the default overwrite policy (Output File Name + _c + ID), which is compatible with the Bitmap Viewer.
- If you are not, you can define the custom suffix as you wish. For example, you could use date and time SmartNames.

- Overwrite the existing file(s).
- End the task in error.
Note: If you use a SmartName to set this, it must resolve to `extend` or `0` (for Extend the file name), `overwrite` or `1` (for Overwrite), or `error` or `2` (for End the task in error).

c) Click Set.

3. Select the output File Type you want. This can be a TIFF File or a PDF File (see RIP'ed File Formats on page 28 for more information).

The task generates Separated output for both file types. This means you get one output file per page of the input file, and per output separation.

In the example below, the input file has 2 pages, each containing a Magenta and a Yellow vignette. After RIP'ing, you get 4 files (one for the 1st separation of the 1st page, one for the 2nd separation of the 1st page, etc.), each containing a single channel bitmap.

The File Assembly is automatically set to 1 File Per Separation, and the Output Type set to Separate (for both file types).

Note:

- Every output file that Imaging Engine generates contains XMP information (metadata about file creation, separations, calibration curves, etc.).

You can view this XMP information by selecting your output file in the Automation Engine Pilot’s Files view and clicking 📚.

For more information about XMP metadata, see the XMP Metadata white paper on help.esko.com.

- TIFF files produced by Imaging Engine are fully compatible with Esko’s Bitmap Viewer and DotSpy.

4. Choose the Compression to use for your output files.
• For **TIFF** output, you can choose between lossless and lossy compression. Lossless compression preserves all the detail in the file, while lossy compression removes some detail.

We recommend you use lossless compression for the final output (for files you will send to a third party RIP for example), and lossy compression only for previews and thumbnails.

For both compression types (lossless and lossy), you should then choose a compression method, based on the compression speed and the compressed file size. Typically, faster compression methods compress the file less, so the output file is bigger (note that TIFF files can be a maximum of 4GB).

<table>
<thead>
<tr>
<th>If you want lossless compression...</th>
<th>choose either:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• <strong>PackBits</strong>, a fast lossless compression method for graphic files.</td>
</tr>
<tr>
<td></td>
<td><strong>Tip:</strong> Use this if you want fast output and file size is not too much of an issue.</td>
</tr>
<tr>
<td></td>
<td>• <strong>LZW</strong>, a lossless compression method for graphic files and other files.</td>
</tr>
<tr>
<td></td>
<td><strong>Tip:</strong> This compression method works best for files with large images.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>If you want lossy compression...</th>
<th>choose one of the <strong>JPEG</strong> compression methods (those are more suitable for images like photographs and natural artwork than sharp edged or flat color images like line art or lettering, as JPEG compression tends to introduce noise into solid color areas).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>They are sorted from very low compression (<strong>JPEG Limited</strong>), which doesn’t lose much detail but doesn’t reduce the file size much, to very high compression (<strong>JPEG Extreme</strong>), which reduces the file size a lot but loses a lot of detail.</td>
</tr>
</tbody>
</table>

• For **PDF** output, all available compression methods are lossless.

You should choose a compression method based on the compression speed and the compressed file size. Typically, faster compression methods compress the file less, so the output file is bigger (note that PDF files can be a maximum of 12GB).

Choose either:

• **PackBits** (see above).

• **Flate**, a lossless compression method similar to zipping, based on the LZW compression.  
  
  **Tip:** This compression method works best for images with large single color areas or repeating patterns.

• **JPEG 2000**, a compression method based on **JPEG** and suitable for large images (the version of **JPEG 2000** used by Imaging Engine is lossless).
Tip: The Compression method offered by default for the output File Type you select (LZW for TIFF and PackBits for PDF) is generally the best for this file type.

Attention:
- When using a SmartName to set the output file’s Compression, it must resolve to one of the following (case insensitive):
  - PackBits, LZW, JPEGLimited, JPEGLow, JPEGStandardLow, JPEGStandard, JPEGStandardHigh, JPEGHigh, or JPEGExtreme for TIFF output,
  - PackBits, Flate or JPEG2000 for PDF output.

Setting any other value, or an unsupported compression for the file type you chose, will make the task error (with the message Unsupported combination of output type and compression in the log).

- If you have already set the Compression but decide to change the output File Type, by default the task will either:
  - keep the same Compression (if it is supported for the new output File Type),
  - or (if it isn’t), set it to the first Compression available for this File Type.

You can still change it as desired.

5. Set the Resolution of your output files.

Note:
- The Resolution unit is taken from the general Automation Engine Preferences.
- You can enter values from 1 to 25400 ppi (or equivalent in your unit). SmartNames must also resolve to a value in that range.
- Values in another unit than the one from the general Preferences will be recalculated, and values like 300ppi + 500ppm will be calculated correctly.

6. If your input file contains images, the images' pixels may not map exactly to output pixels because:
- the images' resolution is different from the output resolution you chose,
- scaling and rotation effects change the size and placement of the images' pixels.

You then need to resample these images to be able to output them at the same resolution as the rest of the file.

In the Resample Images option, choose the resampling method you want to use (you will have to make a trade-off between processing time and image quality).
- Choose From File to use the resampling method defined in the input PDF (this is the default option). This method can be either:
  - the "nearest neighbor" algorithm, which keeps the image very sharp but can make it look jagged (pixellated but sharp). This is mostly recommended if you have small images with
sharp lines/sudden differences in intensity, and/or you do not want your images to be fuzzy at all.

This resampling method is very fast.

- the "PDF interpolation" algorithm, that smooths the image while resampling (see below).

**Note:** Most PDF files don't specify a preferred resampling method, so the default ("nearest neighbor" algorithm) is used. If you want to make sure that the "PDF interpolation" algorithm is used, choose **PDF Interpolation** instead of **From File** in the **Resample Images** option.

You can also use a SmartName resolving to **FromPDF**.

- Choose **PDF Interpolation** to smooth the image while resampling.

With this method, you get images that are pixellated and fuzzy, so it is only recommended if you have small images with gradual differences in intensity, like photographs of nature.
This is slightly less fast.

You can also use a SmartName resolving to **PDFInterpolate**.

- **Choose Auto Resampling** to upsample the images to an automatically calculated resolution (generally half or a third of the output resolution) before smoothing it.

  When using this, images are a lot less pixellated and fuzzy.
This method is quite slow but gives images of a good quality, so it is recommended in most cases (unless you want an extra sharp image, in which case you should choose From File).

You can also use a SmartName resolving to ResampleAuto.

- Choose Full Resampling to upsample the images to the full output resolution.

This is the slowest method but gives the highest quality images (not pixellated and only slightly fuzzy).
5.2.6 Separations

Use the **Separations** settings to select the *dot gain compensation* to apply to the separations you selected in the *Document inks settings*.

You can define **default** dot gain compensation settings for most or all of these separations, and **exceptions** to these settings if you want to RIP some of these separations differently.
Defining Default Settings

Define the default dot gain compensation (DGC) settings you want to use on the separations to RIP. You will still be able to define exceptions to these settings for certain inks.

Under Default Separation Settings:

1. Define the Plate Curve you want to use on the separations to RIP.

   This curve is used to compensate for the dot growth or dot reduction (for example in Digital Flexo) happening when making the plate. Choose either:
   
   - **None** if you don't want to apply any plate curve.
   - **Single Curve** if you want to apply one curve for all separations (you can still define exceptions for some of the separations later).

   In this case, select the .dgc curve to apply at right.

   You can choose from a list of curves available in the resource server defined for your Automation Engine server.

   - **Curve Strategy** if you want to apply a curve strategy (a file created in Curve Pilot that contains several curves to apply in different cases: it can have different curves per separation, per dot shape, per ruling...).

   In this case, select the .icpro curve strategy or legacy .scrdgc screen-based DGC file to apply at right.

   You can choose from a list of curve strategies available in the resource server defined for your Automation Engine server.

   **Note:**

   - You can use SmartNames resolving to the exact name of the Single Curve or Curve Strategy (including the extension).
   - This will set the Plate Curve type to Unknown in the ticket, but will resolve to the correct curve type if the SmartNames are correct.

2. Define the Press Curve you want to use on the separations to RIP.

   This curve is used to compensate for the dot gain on press. Choose either:

   - **None** if you don’t want to apply any press curve,
   - **Single Curve** if you want to apply one curve for all separations (you can still define exceptions for some of the separations later).

   In this case, select the .dgc curve to apply at right.

   You can choose from a list of curves available in the resource server defined for your Automation Engine server.

   - **Curve Strategy** if you want to apply a curve strategy (a file created in Curve Pilot that contains several curves to apply in different cases: it can have different curves per separation, per dot shape, per ruling...).

   In this case, select the curve strategy to apply at right (you can select a .icpro curve strategy, a .prsync PressSync curve set or a legacy .scrdgc screen-based DGC file).
You can choose from a list of curve strategies available in the resource server defined for your Automation Engine server.

- **PressSync Curve** if you want to apply a PressSync curve (a predefined curve applicable to your printing environment).

  In this case, select the letter and number of the PressSync curve.

**Note:**
- You can use SmartNames resolving to the exact name of the Single Curve, Curve Strategy (including the extension) or PressSync Curve.
- This will set the Press Curve type to Unknown in the ticket, but will resolve to the correct curve type if the SmartNames are correct.

### Defining Exception Settings

If you don't want to use the default settings you defined for certain inks, you can define specific dot gain compensation settings for those here.

1. Click **Define Exceptions...**
2. In the **Define Exceptions** dialog, select to **Define Exceptions** either:
   - by using exception criteria (see **Defining Exceptions Using Exception Criteria** on page 76),
   - Manually (see **Defining Exceptions Manually** on page 78).

**Note:** You can only define exceptions manually when you are launching the task on a (single) file, not when you are defining a generic ticket without an input file.

### Defining Exceptions Using Exception Criteria

If you want to define exceptions to the default dot gain compensation settings for certain inks, you can do it using exception criteria.

This works as follows:
- You create a rule per separation or set of separations that need a specific dot gain curve.
- Within each rule:
  - You define criteria to select the separation(s) you want to apply a specific curve to.

  Each criterion will check something about the inks in your file.

  This check can be about the **Ink name**, **Ink book**, **Ink Index**, **Ink type** or **Printing method**. For example, you can check if the **Ink book** is **designer**.
Tip:
The **Ink index** is the order in which the ink will be printed (the ink with ink index 1 is at the bottom of the document and will be printed first).

To find the index of a file’s inks:
1. select the file in the Automation Engine Pilot’s **Files** view,
2. click 𝘛𝘪𝘱 𝘪𝘤さまざま
3. in the **Info** dialog that opens, select **Inks** in the left panel.

The order of the inks at right is the ink index (the topmost ink has an index of 1, the second of 2, etc.).

Note that if you reorder the inks by one of the columns (for example by **ink name**), they won’t be ordered by ink index anymore. You will need to close that dialog and reopen it to see the ink index order again.

- You select that curve.
- If you have several rules, you can reorder them in order of priority (the top one is applied first).

**Note:** You can do this either when running the task on one or more files, or when creating a task ticket to use later.

If you **have chosen** to Define Exceptions by using exception criteria, do the following:

1. Click **Add**.
2. In the **Exception Properties** dialog, enter a **Rule Name**.
3. Under **If separation matches**, define one or more criteria to select your desired separation(s).
   a) Define your criteria the following way:
      - **Ink name**: you can define if it **contains/begins with/ends with/is** a piece of text (alphanumerical characters), or if it is **empty**.
      - **Ink book**: you can define if it **contains/begins with/ends with/is** a piece of text (alphanumerical characters), or if it is **empty**.
      - **Ink index**: you can define if it **equals/is less than/is greater than** the number you enter, or is **is between** the two numbers you enter (in this case the ink indexes you enter as boundaries are also selected).
      - **Ink type**: you can define if it is **a piece of text** (alphanumerical characters).
      - **Printing method**: you can define if it is **a piece of text** (alphanumerical characters).

See the **Printing methods section** of the Automation Engine documentation for more information about printing methods.
Tip:

- You can enter several values to check for; just use a semicolon (;) between them.
  
  For example, to check for both inks called Cyan and inks called Magenta, choose Ink name is and enter Cyan;Magenta.

- When launching the task on a file, you can also click to select one or more of the Ink names/Ink books/Ink types/Printing methods used in your input file(s).

  A criterion will automatically be created based on your selection.

b) Click + to define more criteria.

Note: You can create as many criteria as you want, they will be applied from top to bottom (the top one will be applied first).

4. Select Press Curve and choose the press curve to use for the selected separation(s).
5. Click Add.

You can see your rule and the Press Curve you selected for the exception separation(s) in the Define Exceptions dialog.

Tip: You can double-click your rule if you still want to edit it.

6. Repeat steps 1 to 5 to define more exception rules if desired.

   If you want to remove an exception, select it and click Remove.

   Tip: Leave the Preview option at the bottom of the dialog so you’ll be able to see your exception separation(s) with its/their Press Curve in the main task panel.

7. If desired, you can reorder your exception rules (they are applied from top to bottom). To do this, select a rule and click Move Up or Move Down.
8. Click OK to save your exceptions and close the Define Exceptions dialog.

Defining Exceptions Manually

Note: You can only define exceptions manually when you are launching the task on a (single) file, not when you are defining a generic ticket without an input file.

If you have chosen to Define Exceptions Manually, do the following:

1. Click Add.
2. In the Exception Properties dialog, select the Separation you want to make an exception for.
3. Select Press Curve and choose the press curve you want to use for this separation.
4. Click Add.

   You can see your exception separation with its Press Curve in the Define Exceptions dialog.

   Tip: You can double-click your exception if you still want to edit it.

5. Repeat steps 1 to 4 to define more exceptions if desired.
If you want to remove an exception, select it and click **Remove**.

**Tip:** Leave the **Preview** option at the bottom of the dialog selected so you'll be able to see the settings for that separation in the main task panel.

6. Click **OK** to save your exceptions and close the **Define Exceptions** dialog.

### Switching How You Define Exceptions

You can switch between the two methods of defining exceptions, and this will give the same results.

#### Switching from Defining Exceptions Manually to Defining Exceptions Using Exception Criteria

If you defined exceptions manually but then choose to **Define Exceptions by using exception criteria**, the task will translate your manual exceptions into rules, so that the same inks are selected, and they have the same exception settings.

For example, if you manually selected **Cyan**, **Magenta** and **Black** and assigned to each of these separations the **Press Curve** `CMK.dgc`, you will get the following rules:

- **Rule Name:** Cyan (process)  
  **Ink name is** Cyan  
  **Press Curve:** CMK.dgc

- **Rule Name:** Magenta (process)  
  **Ink name is** Magenta  
  **Press Curve:** CMK.dgc

- **Rule Name:** Black (process)  
  **Ink name is** Black  
  **Press Curve:** CMK.dgc

**Tip:** The rule names are created automatically from the contents of the exceptions, but you can still double-click each rule to edit them.

**Note:**

If you...

- first defined rules with exception criteria,
- then switched to defining manual exceptions but didn't make any changes,
- then switched back to exception criteria,

... then your rules will be kept.

If you did change the exceptions in manual mode, the task will automatically generate new rules.

#### Switching from Defining Exceptions Using Exception Criteria to Defining Exceptions Manually

If you defined rules with exception criteria but then choose to **Define Exceptions Manually**, each separation selected by a rule will be selected individually, and have the settings you defined in the rule.

For example if you had as criteria:
Ink name is Cyan; Magenta; Black
Ink book is process

and you selected as Press Curve CMK.dgc, you will get the following manual exceptions:

<table>
<thead>
<tr>
<th>Ink Name</th>
<th>Ink Book</th>
<th>Press Curve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyan</td>
<td>process</td>
<td>CMK.dgc</td>
</tr>
<tr>
<td>Magenta</td>
<td>process</td>
<td>CMK.dgc</td>
</tr>
<tr>
<td>Black</td>
<td>process</td>
<td>CMK.dgc</td>
</tr>
</tbody>
</table>

Note: You can only switch to selecting inks manually when you are launching the task on a (single) file.

5.2.7 Summary

This shows a summary of all the settings you defined in the ticket.

- To show the settings from a tab, click + beside the tab name in the right pane.
  
  Click Expand All to show the settings from all tabs.
- To hide the settings from a tab, click - beside the tab name in the right pane.
  
  Click Collapse All to hide the settings from all tabs.

5.3 Proof - Unscreened Proofing

Use this task if you need unscreened but color managed output to send to a proofer.

It can generate composite PDF or TIFF files (one file with all the separations).

In the example below, processing a file with the lime green Esko star generates one multi-channel unscreened file containing the Cyan, Yellow, Magenta and Black channels, where the Magenta channel is empty.

In the Device field, select the imaging device that you configured.

Then use the selector pane at left to show more settings to fill in. See:

- General on page 81,
5.3.1 General

1. Define what Page Box of the input PDF you want to RIP.

   You can either select Media Box, Trim Box, or insert a SmartName that must resolve to either media or trim.

   After selecting your file's page box you will see its dimensions under the Page Box option.

   **Note:** This is a public parameter, that you can fill in when submitting files through Shuttle.

2. If your input file is a multi-page PDF, select which Pages you want to RIP:

   a) First select All pages, Odd pages only or Even pages only in the Pages option.

      You can also insert a SmartName resolving to either All, Even or Odd.

   b) Then you can refine your selection by entering page numbers or a Page Range.

      You can separate page numbers by a comma, or use a dash to indicate a page range (for example 3, 6-9). You can also use a SmartName resolving to page numbers and/or page ranges using this same format.

   **Note:**
   - Page numbers are always physical pages. If your document starts with page 5, you should not use 5 but 1 to get the first page.
   - If you enter page numbers that are not part of your document, they will be excluded from the output (all the other valid pages will be RIPped).
   - If you enter the same page(s) more than once (for example 1, 1-2), it/they will only be output once.
   - Pages are RIPped in the order of the document (entering 5-1 will be automatically changed to 1-5).

3. If you want to invert your output so it is compatible with the output device or software system that will process it, click 

   You can also click or Edit... to insert a SmartName that must resolve to 1 or true (to invert the output), or to 0 or false (to leave the output as it is).

4. If you want to mirror your output so it is compatible with the output device or software system that will process it, click 

   You can also click or Edit... to insert a SmartName that must resolve to 1 or true (to mirror the output), or to 0 or false (to leave the output as it is).
5. If you want to add a **Smart Mark** to your output file(s), select it in the **Smart Mark** list, or use a SmartName that will resolve to the Smart Mark name.

A **Smart Mark** is a mark whose content is variable, so you can make it display information about that specific job. For example, you can include some of the parameters used during RIPping in your output file(s) by using a Smart Mark.

You need to:

a) First create the Smart Mark you want to use in **PackEdge** (see the **SmartMarks** section in the PackEdge manual for details).

You can create either:

- a Smart Mark with RIP-specific parameters,

<table>
<thead>
<tr>
<th>Use this Smart Mark parameter in PackEdge:</th>
<th>to display this value from the Imaging Engine parameters:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>the <em>Resolution</em> of your output file(s)</td>
</tr>
<tr>
<td>V Scale</td>
<td>the <em>vertical scaling</em> you applied to your output file(s)</td>
</tr>
<tr>
<td>H Scale</td>
<td>the <em>horizontal scaling</em> you applied to your output file(s)</td>
</tr>
<tr>
<td>Color Strategy</td>
<td>the <em>Color Strategy</em> you applied to your output file(s)</td>
</tr>
<tr>
<td>Source Profile</td>
<td>the Source Profile contained in the <em>Color Strategy</em> you applied to your output file(s)</td>
</tr>
<tr>
<td>Destination Profile</td>
<td>the Destination Profile contained in the <em>Color Strategy</em> you applied to your output file(s)</td>
</tr>
<tr>
<td>Rendering Intent</td>
<td>the Rendering Intent contained in the <em>Color Strategy</em> you applied to your output file(s)</td>
</tr>
<tr>
<td>Device</td>
<td>the <em>imaging device</em> you used</td>
</tr>
<tr>
<td>Negative Printing</td>
<td>whether you <em>inverted</em> your output</td>
</tr>
<tr>
<td>Mirror Printing</td>
<td>whether you <em>mirrored</em> your output</td>
</tr>
</tbody>
</table>

- another type of Smart Mark (for example a corner mark).
b) Then select that Smart Mark in your Imaging Engine task.

5.3.2 Proofer

When outputting your (unscreened RIP’ed) files to a proofer:

- Select the **Substrate Size** from a list of predefined sizes, or enter the substrate **Width** and **Height** yourself to define a **Custom** substrate.

**Note:**

- By default, the **Substrate Size** is set to **Custom**, with the **Width** and **Height** values of an A3 page.
- The **Width** and **Height** unit is taken from the general Automation Engine Preferences.

**Note:**

You can set those values using public parameters and/or SmartNames. If you use SmartNames, make sure that:

- the SmartName for **Substrate Size** resolves to one of the substrate sizes offered in the list (when using a SmartName here, the **Width** and **Height** options will show 0, but the task will use the correct dimensions when it runs).

- the SmartNames for **Width** and **Height** resolve to a numerical value, without any unit (the default task unit, mm, will then be used, regardless of the unit set in the general Automation Engine Preferences). When using a SmartName in one or both of these options, the **Substrate Size** will show **Custom**.

If one or more of the SmartNames resolves to an invalid value, the task will fail.

**Tip:**

The **Substrate Size** you select here can be used to scale the job to the substrate automatically (to do this, select **Fit to page size** or **Fit to page width** in the Transformations tab).

5.3.3 Transformations

Use the **Transformations** settings to scale or rotate your output relative to your input file.

1. If you want to **Scale** your job, select either:
   - **Scale by percent** and enter the vertical [1] and horizontal [2] scaling percentages to use.
5.3.4 PDF Objects

1. In Default RGB Profile, specify the profile to use if no profile is specified for a certain RGB object in the input file. The default is srgb.icc.

   You can use a SmartName that resolves to the full profile name.

2. Select Use PDF transfer curves if you want to use the dot gain compensation curves attached to the images in your input PDF.
These curves compensate for the unwanted characteristics of the device that created the images (scanner, digital camera...).

Aside from these curves applied on individual images, you can still apply:

- a **plate curve** (to compensate for the dot growth or reduction -for example in Digital Flexo-happening when making the plate)

- and/or a **press curve** (to compensate for the dot gain on press)

... to the full file(s) before output.

You can use a SmartName that resolves to `true` (to use the input file's curves) or `false` (to not use them).

### 5.3.5 Document Inks

Use the **Document Inks** settings to select which separations of the input file(s) you want to RIP.

For example, you can use these settings to exclude technical and/or varnish inks from your output.

In the **Select Inks** list, define how you want to select the inks to use. Select either:

- **All** if you want to RIP all separations,

- **by using selection criteria** if you want to define rules that will select inks automatically (see *Selecting Inks Using Selection Criteria* on page 40),

- **Manually** if you want to select inks manually (see *Selecting Inks Manually* on page 42).

**Note:** You can only select inks manually when running the task on a single input file.

**Note:**

If your job contains PantoneLIVE inks and you don’t have a PantoneLIVE license, the **Ink Book** column will show `unregistered`, followed by an ID number (for example `<unregistered "b0c3126e-4f74-4402-8e47-e5e9fe50195a">`) instead of the PantoneLIVE ink book name for those inks.

In this case, you must exclude these inks from the output, or the task will end in error (with the following message in the log file: *This job contains PantoneLIVE inks, and the necessary license for proofing these is not available.*).

**Selecting Inks Using Selection Criteria**

If you don’t want to **select inks manually** every time, you can define some rules to automatically select certain inks in your input file(s).

You can do this:

- either when running the task on one or more files, or when creating a task ticket to use later,

- by choosing to **Select Inks by using selection criteria** in the **Document Inks** settings.

This is how it works:

- Each rule you create will check something about the inks in your file.
This check can be about the **Ink name**, **Ink book**, **Ink Index**, **Ink type** or **Printing method**. For example, you can check if the **Ink book** is **designer**.

**Tip:**

The **Ink index** is the order in which the ink will be printed (the ink with ink index 1 is at the bottom of the document and will be printed first).

To find the index of a file's inks:

1. select the file in the Automation Engine Pilot's **Files** view,
2. click $i$,
3. in the **Info** dialog that opens, select **Inks** in the left panel.

The order of the inks at right is the ink index (the topmost ink has an index of 1, the second of 2, etc.).

Note that if you reorder the inks by one of the columns (for example by **Ink name**), they won't be ordered by ink index anymore. You will need to close that dialog and reopen it to see the ink index order again.

- You can create as many rules as you want.
- You can decide if you want to select the inks that match **All** of your rules, **Any** of your rules (at least one) or **None** of your rules (if you want to exclude the inks that match the rules).

**Build your rules the following way:**

1. **Choose how to apply your rules:**
   - Select **All of the following are true** if you want to only select the inks that match **all** of the rules you define.
   - Select **Any of the following are true** if you want to select all the inks that match **at least one** of the rules you define.
   - Select **None of the following are true** if you want to only select the inks that match **none** of the rules you define.

2. **Define your first selection rule.**

You can select an ink based on its:

- **Ink name**: you can define if it **contains/begins with/ends with/is** a piece of text (alphanumerical characters), or if it is **empty**.
- **Ink book**: you can define if it **contains/begins with/ends with/is** a piece of text (alphanumerical characters), or if it is **empty**.
- **Ink index**: you can define if it **equals/is less than/is greater than** the number you enter, or is **is between** the two numbers you enter (in this case the ink indexes you enter as boundaries are also selected).
- **Ink type**: you can define if it **is** a piece of text (alphanumerical characters).
- **Printing method**: you can define if it **is** a piece of text (alphanumerical characters).

See the **Printing methods section** of the Automation Engine documentation for more information about printing methods.

For example, you could define the following rules to exclude a technical ink called "crease":

---

5

---
None of the following are true

- **Ink name** is crease
- **Ink book** is Visualizer Standard Finishes
- **Ink type** is Technical
- **Printing method** is Unknown

**Tip:**

- You can enter several values to check for: just use a semicolon (;) between them.
  
  For example, to check for both inks called **Cyan** and inks called **Magenta**, choose **Ink name is** and enter Cyan;Magenta.
  
- When launching the task on a file, you can also click ![check] to select one or more of the **Ink names/Ink books/Ink types/Printing methods** used in your input file(s).
  
  A rule will automatically be created based on your selection.

3. Click + to add more rules and define them.

To remove a rule, click - next to it.

**Tip:** If you are launching the task on a single input file, you will see a table listing the **Selected document inks**, and another table with the **Document inks that are not selected** under the rules you defined.

**Attention:** If no ink is selected, you cannot launch the task.

---

**Switching from Selecting Inks Manually to Selecting Inks Using Selection Criteria**

You can switch between the two methods of selecting inks, and this will keep the same inks selected.

When switching from **selecting inks manually** to selecting inks using selection criteria, the task will translate your manual ink selection into rules, so that the same inks are selected (you can see them in the **Selected document inks** table).

The rules you get are based on the characteristics of the inks you selected.

For example, if you selected all the process colors but no spot color in your file (for an offset job), you will get the following rules:

**All of the following are true**

- **Ink name** is Cyan;Magenta;Yellow;Black
- **Ink book** is process
- **Ink type** is Normal
- **Printing method** is Offset
**Note:**
If you...
- first selected inks using selection criteria,
- then switched to manual selection without changing the selection,
- then switched back to selection criteria,
... then your rules will be kept.
If you did change the selection in manual mode, the task will automatically generate new rules.

### Selecting Inks Manually

**Note:** You can only select inks manually when you are launching the task on a (single) file, not when you are defining a generic ticket without an input file.

When choosing to **Select Inks Manually**, you will see a table containing all of your document’s inks, showing each ink’s:

- **Ink Name**,
- **Ink Book**,
- **Ink Index** (the order of that ink in the document),
- **Ink Type**,
- **Printing Method**.

Select the ink(s) you want to RIP, or select the toggle in the table header to select/deselect all inks.

You will see a table listing the **Selected document inks**, and another table with the **Document inks that are not selected**.

⚠️ **Attention:** If no ink is selected, you cannot launch the task.

### Switching from Selecting Inks Using Selection Criteria to Selecting Inks Manually

You can switch between the two methods of selecting inks, and this will keep the same inks selected.

When switching from **selecting inks using selection criteria** to selecting inks manually, all the inks selected by the rules you defined (the inks in the **Selected document inks** table) become selected manually.

**Note:** You can only switch to selecting inks manually when you are launching the task on a (single) file.

### 5.3.6 Color Management

- Select a **Color Strategy** to apply color management to the output file(s).

You can choose from a list of color strategies available in the resource server defined for your Automation Engine server.
Note:

• The default color strategy is **linear**.

• You can only select a CMYK color strategy.

• You can select it through a public parameter, or using a SmartName. The SmartName for the color strategy must resolve to one of the available color strategies.

Once you have selected the desired color strategy, you can see the **Source** and **Destination** profiles used in the strategy.

### 5.3.7 Output

Use the **Output** settings to define what type of output you want and where to output it. You can set these through public parameters or using SmartNames.

1. Enter your output **File Name** and output **Folder**.
Note:

- You can use Imaging-specific SmartNames for the File Name.
  
  By default, it is set to:
  
  - [File] for single page input files (which gives output file names like Myfile.tif),
  
  
  This is a good default for composite output.
  
  For separated output, we recommend you use:
  
  - [File]_[ShortInk] for single page input files (which gives output file names like Myfile_C.tif),
  
  
- The File Name and Folder can contain special characters (except \ / : * ? < > " |).
  
- The whole path to the output file (including the container, Folder and File Name) can be up to 255 characters.

- You can set a local or remote URL for the output Folder, but it must be an absolute path.

- If your output folder doesn’t exist yet, the task will create it if the location you request is valid (you should place this folder on an Automation Engine container accessible by your Automation Engine user).

  If the output folder creation fails, please check the task log for the full list of conditions and adapt your output folder path accordingly.

2. Define what to do if a file of the same name already exists in your output folder:
   
   a) Click Set Overwrite Policy...
   
   b) Choose what to do If files exist already. You can either:
      
      - Extend the file name if you want to keep the existing output file and give the new output file a different name. In this case, your new output file name consists of:
        
        - the Output File Name (the File Name you set earlier) - which is what the file would be called if no file with the same name existed,
        
        - a custom suffix that you can define using plain text and/or SmartNames (by default, this is _c, for "copy"),
        
        - an automatic suffix made of the three last digits of the task ID,
Tip:
To see the task ID of your tasks:
1. Go to the Pilot’s Tasks pane (in the Files or Tasks view).
2. Go to View > Select Columns in 'Tasks'...
3. In the Columns dialog, select Task ID in the Available columns list and click to move it to the Show these columns: list.
4. Click OK.
5. You now have a Task ID column in the Tasks pane, listing the task ID of all the tasks.

- the file extension.

For example, your input file is called file.pdf and you have left the tasks’ output File Name to its default value (the SmartName [File]).

The first TIFF you generate will be called file.tif.

If you generate output from this input file again, with the task 3668, and you have set the overwrite policy to Extend the file name with the default Output File Name + _c + ID name, the new output file will be called file_c3668.tif

Tip:
- If you are working with the Bitmap Viewer, we recommend you keep the default overwrite policy (Output File Name + _c + ID), which is compatible with the Bitmap Viewer.
- If you are not, you can define the custom suffix as you wish. For example, you could use date and time SmartNames.

- Overwrite the existing file(s).
- End the task in error.

Note: If you use a SmartName to set this, it must resolve to extend or 0 (for Extend the file name), overwrite or 1 (for Overwrite), or error or 2 (for End the task in error).

c) Click Set.

3. Select the output File Type you want. This can be a TIFF File or a PDF File (see RIP’ed File Formats on page 28 for more information).

- For TIFF files, you can choose to output either Composite or Separated files.
- Composite output means one output file per page of the input file, containing all of the output separations.

In the example below, the input file has 2 pages, each containing a Magenta and a Yellow vignette. When outputting to composite files, you get 2 one-page files, each containing all separations of the corresponding page in the input file.
To output Composite files, select 1 File Per Page in File Assembly (or use a SmartName that resolves to FilePerPage). The Output Type is then automatically set to Composite.

- Separated output means one output file per page of the input file and per output separation.

In the example below, outputting the same two-pages input file to separated files gives 4 files (one for the 1st separation of the 1st page, one for the 2nd separation of the 1st page, etc.), each containing a single channel bitmap.

Those separated files are shown in the correct separation in the Bitmap Viewer (as it can read the separation information in the XMP data) and in grayscale in other viewers. When proofing them, they are also in the correct separation (for example the proofer proofs the Magenta file using the Magenta cartridge).
To output **Separated** files, select **1 File Per Separation** in **File Assembly** (or use a SmartName that resolves to `FilePerSeparation`). The **Output Type** is then automatically set to **Separate**.

- For PDF files, the task always generates **Composite** files. The **File Assembly** is automatically set to **1 File Per Page**, and the **Output Type** set to **Composite**.

**Note:**

With separated output, you can easily see how **color management** affects your output separations relative to the input separations.

- If you are using a **linear Color Strategy** (that doesn't color manage process colors), the process separated output files will contain the same objects as the corresponding separations in the input file.

  In the CMYK example below, each solid object in an input separation is the same in the output separation (for example the Cyan bar is still only 100% Cyan).

![CMYK example](image)

- If you selected something other than **linear** in the **Color Strategy** (you are color managing all separations of your file), the process output separations will be different from the corresponding input separations.

  In the CMYK example below, each solid object in an input separation is now made up of several output separations (for example the Cyan bar is now 60% Cyan, 36% Magenta and 22% Black, and appears in these three separated output files).

![CMYK example](image)
Note:

- Every output file that Imaging Engine generates contains XMP information (metadata about file creation, separations, calibration curves, etc.). You can view this XMP information by selecting your output file in the Automation Engine Pilot's Files view and clicking.

For more information about XMP metadata, see the XMP Metadata white paper on help.esko.com.

- TIFF files produced by Imaging Engine are fully compatible with Esko’s Bitmap Viewer and DotSpy.

4. Choose the Compression to use for your output file(s).

- For TIFF output, you can choose between lossless and lossy compression. Lossless compression preserves all the detail in the file, while lossy compression removes some detail. We recommend you use lossless compression for the final output (for files you will send to a third party RIP for example), and lossy compression only for previews and thumbnails. For both compression types (lossless and lossy), you should then choose a compression method, based on the compression speed and the compressed file size. Typically, faster compression methods compress the file less, so the output file is bigger (note that TIFF files can be a maximum of 4GB).

<table>
<thead>
<tr>
<th>If you want lossless compression...</th>
<th>choose either:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• PackBits, a fast lossless compression method for graphic files.</td>
</tr>
<tr>
<td></td>
<td><strong>Tip</strong>: Use this if you want fast output and file size is not too much of an issue.</td>
</tr>
<tr>
<td></td>
<td>• LZW, a lossless compression method for graphic files and other files.</td>
</tr>
<tr>
<td></td>
<td><strong>Tip</strong>: This compression method works best for files with large images.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>If you want lossy compression...</th>
<th>choose one of the JPEG compression methods (those are more suitable for images like photographs and natural artwork than sharp edged or flat color images like line art or lettering, as JPEG compression tends to introduce noise into solid color areas). They are sorted from very low compression (JPEG Limited), which doesn't lose much detail but doesn't reduce the file size much, to very high compression (JPEG Extreme), which reduces the file size a lot but loses a lot of detail.</th>
</tr>
</thead>
</table>
• For PDF output, all available compression methods are lossless.

You should choose a compression method based on the compression speed and the compressed file size. Typically, faster compression methods compress the file less, so the output file is bigger (note that PDF files can be a maximum of 12GB).

Choose either:

• **PackBits** (see above).

• **Flate**, a lossless compression method similar to zipping, based on the LZW compression.

  **Tip:** This compression method works best for images with large single color areas or repeating patterns.

• **JPEG 2000**, a compression method based on JPEG and suitable for large images (the version of JPEG 2000 used by Imaging Engine is lossless).

  **Tip:** The Compression method offered by default for the output File Type you select (LZW for TIFF and PackBits for PDF) is generally the best for this file type.

### Attention:

• When using a SmartName to set the output file’s Compression, it must resolve to one of the following (case insensitive):

  • PackBits, LZW, JPEGLimited, JPEGLow, JPEGStandardLow, JPEGStandard, JPEGStandardHigh, JPEGHight, or JPEGExtreme for TIFF output,

  • PackBits, Flate or JPEG2000 for PDF output.

Setting any other value, or an unsupported compression for the file type you chose, will make the task error (with the message `Unsupported combination of output type and compression in the log`).

• If you have already set the Compression but decide to change the output File Type, by default the task will either:

  • keep the same Compression (if it is supported for the new output File Type),

  • or (if it isn’t), set it to the first Compression available for this File Type.

You can still change it as desired.

5. Set the Resolution of your output files.
Note:

- The Resolution unit is taken from the general Automation Engine Preferences.
- You can enter values from 1 to 25400 ppi (or equivalent in your unit). SmartNames must also resolve to a value in that range.
- Values in another unit than the one from the general Preferences will be recalculated, and values like 300ppi + 500ppm will be calculated correctly.

6. If your input file contains images, the images’ pixels may not map exactly to output pixels because:

- the images’ resolution is different from the output resolution you chose,
- scaling and rotation effects change the size and placement of the images’ pixels.

You then need to resample these images to be able to output them at the same resolution as the rest of the file.

In the Resample Images option, choose the resampling method you want to use (you will have to make a trade-off between processing time and image quality).

- Choose From File to use the resampling method defined in the input PDF (this is the default option). This method can be either:
  - the “nearest neighbor” algorithm, which keeps the image very sharp but can make it look jagged (pixelated but sharp). This is mostly recommended if you have small images with sharp lines/sudden differences in intensity, and/or you do not want your images to be fuzzy at all.
This resampling method is very fast.

- the "PDF interpolation" algorithm, that smoothes the image while resampling (see below).

**Note:** Most PDF files don't specify a preferred resampling method, so the default ("nearest neighbor" algorithm) is used. If you want to make sure that the "PDF interpolation" algorithm is used, choose **PDF Interpolation** instead of From File in the **Resample Images** option.

You can also use a SmartName resolving to FromPDF.

- Choose **PDF Interpolation** to smooth the image while resampling.

With this method, you get images that are pixellated and fuzzy, so it is only recommended if you have small images with gradual differences in intensity, like photographs of nature.

This is slightly less fast.

You can also use a SmartName resolving to PDFInterpolate.

- Choose **Auto Resampling** to upsample the images to an automatically calculated resolution (generally half or a third of the output resolution) before smoothing it.

When using this, images are a lot less pixellated and fuzzy.
This method is quite slow but gives images of a good quality, so it is recommended in most cases (unless you want an extra sharp image, in which case you should choose From File).

You can also use a SmartName resolving to ResampleAuto.

- Choose Full Resampling to upsample the images to the full output resolution.

This is the slowest method but gives the highest quality images (not pixellated and only slightly fuzzy).
Use this if **Auto Resampling** doesn’t give you the results you want.

⚠️ **Attention:**

Resampling to full resolution can require significant amounts of memory when the output resolution is high (especially from 4000 dpi).

If you want to do this, we recommend that you have at least 8GB of RAM available for each worker (see *Installation*).

You can also use a SmartName resolving to **ResampleFull**.

**Note:**

If your image is not...

- an 8 bit image,
- an image with 1, 3 or 4 components (for example grey, RGB or CMYK),

then the **From File** option is always used.

### 5.3.8 Summary

This shows a summary of all the settings you defined in the ticket.

- To show the settings from a tab, click + beside the tab name in the right pane.
  
  Click **Expand All** to show the settings from all tabs.

- To hide the settings from a tab, click - beside the tab name in the right pane.
Click **Collapse All** to hide the settings from all tabs.