Platform, Services, and Utilities

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Converting Media with ImageMagick

Create, edit, compose, or convert almost all available bitmap image formats using media conversion and ImageMagick.

Using SAP Commerce media conversion functionality, you can convert medias manually or set conversion of a media as a repetitive process.

To convert media, you need to:

- Create media.
- Define your conversion media formats.
- Create a conversion group and assign to it your conversion media formats.
- Create a media container. When creating a media container, you must:
    - Assign a conversion group to it. This way, you specify which media formats you will obtain after conversion.
    - Assign to the container the media that you want to convert.
- Convert your media.

Working with Media Conversion in Backoffice

The items related to media conversions are available after clicking **Multimedia** in the Backoffice navigation tree.

After you click **Multimedia**, you have access to the following components:

- **Media**
- **Media Folders**
- **Media Containers**
- **Media Formats**
- **Media Contexts**
- **Conversion Group**

To use media conversion, make sure to use the `mediaconversion` and `mediaconversionbackoffice` extensions.

Related Information

mediaconversion Extension
Media
Media Folders

Integrating ImageMagick

SAP Commerce doesn't deliver a prebundled ImageMagick. Install ImageMagick yourself, if necessary.

Prerequisites

This is custom documentation. For more information, please visit the SAP Help Portal.

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To download and install ImageMagick, go to https://imagemagick.org/script/download.php ↗ where you can find all installation instructions.

Inside the `project.properties` file in the `mediaconversion` extension, find various ImageMagick specific configuration details, such as the installation directory. Adjust these properties to your requirements in your `local.properties`. Set at least these two properties:

- `imagemagick.bindir`
- `imagemagick.configuration.directory`

Procedure

1. Navigate to `hybris/config` and open the `local.properties` file for editing.
2. Add the `imagemagick.bindir` property with the ImageMagick binaries filepath.

   For Unix systems:

   ```
   imagemagick.bindir=/usr/local/bin/
   ```

   For Windows:

   ```
   imagemagick.bindir=<yourImageMagickFilepath>
   ```

3. Add the `imagemagick.configuration.directory` property to point to the ImageMagick location.

   For example:

   ```
   imagemagick.configuration.directory=<yourImageMagickFilepath>
   ```

Related Information

[mediaconversion Extension](#)
[Third-Party Compatibility](#)

ImageMagick Configuration

The `mediaconversion` extension enables you to convert bitmap image media with open source software.

> ⓘ **Note**
>
> When using ImageMagick, make sure you work on a proper operating system. SAP Commerce only supports operating systems that match both the SAP Commerce and ImageMagick requirements.

The `conversion` attribute of a ConversionMediaFormat using the imagemagickConversionStrategy is interpreted as the command line arguments for the [ImageMagick convert command](#) ↗.

There are a few extensions to the conversion string given:

- The **{input}** keyword is replaced by the absolute path of the conversion input file name. If the {input} marker is not found in the conversion string, the absolute path of the input file is prepended to the conversion command. For example, it is the first parameter passed to the [ImageMagick convert command](#) ↗.
- The **{output}** keyword is replaced by the absolute path of the output file just as the {input} marker. If no **{output}** marker is found in the conversion string, the absolute path of output file is appended to the conversion string, for example

as the last command line parameter.

- The **{addOn#*n*}** keyword is replaced the absolute path of the *n*th media in the list of additional medias associated to the ConversionMediaFormat. This feature makes it possible to include additional (static) input files in the conversion like adding a watermaker, applying color profiles, or putting an image onto a custom background.

For more information, refer to the ImageMagick documentation ↗ and the ImageMagick extensive library of recipes ↗ .

ImageMagick Configuration

Key	Value Range	Default	Description
`imagemagick.bindir`	String	embedded imagemagick binaries directory	The binary directory of your local ImageMagick installation.
`imagemagick.configuration.directory`	String	MAGICK_CONFIGURE_PATH	Path to the ImageMagick configuration directory ↗ to use. Changes to this property are not reflected on runtime.
`imagemagick.executable.convert`	String	convert	The executable name to be called to run the convert command (in the given `imagemagick.bindir`). This is an advanced configuration option.
`imagemagick.executable.identify`	String	identify	The executable name to be called to run the identify command (in the given `imagemagick.bindir`). This is an advanced configuration option.

ImageMagick Environment Variables

All documented ImageMagick environment variables ↗ are routed through when set in the **JVM** environment. With this you can configured a variety of ImageMagick options. The SAP Commerce system sets only two of these environment variables as follows:

- MAGICK_TEMPORARY_PATH

  The environment variable is sequenced accordingly:

  - If the environment variable is set in the JVM environment, it is used.
  - If the `tmpDir` property of the imagemagickConversionStrategy Spring bean is set, it is used.
  - If the property *HYBRIS_TEMP_DIR* system property is set, the ImageMagick temporary directory is set to *$HYBRIS_TEMP_DIR* /convert.
  - Otherwise the temporary directory is set to a /convert directory in the JVM default temporary directory ($java.io.tmpdir/convert).

- MAGICK_CONFIGURE_PATH

  To evaluate the correct ImageMagcik configuration folder to use, the following lookup sequence is applied:

  - If the configuration directory was set through Spring injection, it is used (the property value is disobeyed).
  - If the imagemagick.configuration.directory property is set, this path is used.

○ If the JVM **MAGICK_CONFIGURE_PATH** environment variable is set, it is used.

MimeMapping Configuration

ImageMagick relies on Mime Type detection on file extensions. This means to convert a media to a specific Mime Type, the file extension of the output file must be set accordingly. The imagemagickService uses the injected MimeMappingStrategy to resolve file extensions and Mime Types for a given file. TheDefaultMimeMappingStrategy is backed by the custom (file) extension properties set in the SAP Commerce project properties. This makes it easy to extend the Mime Type/file extension mapping even at runtime.

To introduce a new Mime Type/file extension pair, add the following properties to your`local.properties` file:

```
media.customextension.${mimetype category}.${mimetypename}=${extension}
mediatype.by.fileextension.${file.extension}=${mimetype}
```

For example:

```
media.customextension.application.excel=xls
mediatype.by.fileextension.xls=application/excel
```

Preventing Vulnerable Operations

Some operations that ImageMagick offers are vulnerable. To secure SAP Commerce, a comma-separated blocklist and a comma-separated allowlist are defined to prevent those vulnerable operations.

The blocklist definitions is:

```
imagemagick.executable.convert.commands.blacklist=write,clip-mask,mask,...
```

The allowlist definition is:

```
imagemagick.executable.convert.commands.whitelist=resize,crop,compose,...
```

You can't use both of those lists at the same time. To switch between them, use a switcher:

```
imagemagick.executable.convert.commands.validation.type=whitelist
```

Related Information

[Integrating ImageMagick](#)
[http://www.imagemagick.org](#) ↗

Conversion Media Formats - Sample Data

In the SAP `mediaconversion` extension you are enable to get the implemented sample data of ConversionMediaFormat. It gives you a set of examples what media formats you can get after making conversion of medias.

To get the sample data, when you initialize the Platform in the SAP Administration Console, select `true` from the **Create sample data** drop-down list in the **mediaconversion** setting.

The Default Conversion Media Formats

The following table presents the samples of the ConversionMediaFormat provided in the `mediaconversion` extension:

Format	Conversion Command	Input Format	Description	Example
Default-WorkingFormat	`-resize 1000x> -colorspace RGB`		Working format which resizes image to 1000 pixels width and converts to color space RGB.	
Default-Hitlist	`-resize 40x40`	Default-WorkingFormat	Conversion format resizes image to 40x40 pixels, for example searching hitlists.	
Default-Thumbnail	`-resize 80x80`	Default-WorkingFormat	Conversion format with resizing image to 80x80 pixels, for thumbnail views.	
Default-Detail	`-resize 800x>`	Default-WorkingFormat	Conversion format resizes image to 800 pixels width for detailed view, for example on rollover of an image.	
Default-Preview	`-resize 160x160`	Default-WorkingFormat	Conversion Format resizes image to 160x160 pixels, for example used as backend previews.	
Default-Print	`-colorspace CMYK`		Conversion format for Print Output converts to color space CMYK.	
Default-Watermark	`{addOn#1} -compose bumpmap -gravity center -composite`	Default-WorkingFormat	Conversion format that adds a watermark to the image:	

Format	Conversion Command	Input Format	Description	Example
Default-Crazy	`{addOn#1} {input} [150x150] -compose bumpmap -gravity center -composite`	Default-WorkingFormat	Conversion format that desaturates the image and merges with another image:	
Default-TextOverlay	`-font Arial - pointsize 25 -draw "gravity south fill black text 0,12 'Copyright by SAP' fill white text 1,11 'Copyright by SAP'"`	Default-WorkingFormat	Conversion format that adds rendered text to the image: Copyright by SAP	

Adding Watermarks on Images on in the Public Cloud

When it comes to adding watermarks on images in in the Public Cloud, keywords like {addOn#n} are not supported. Using the command in "Default-TextOverlay" can lead to errors and the system can't convert the images.

Instead of using the **-draw** command, use **-annotate** to add the textoverlay watermark. For example:

```
-font DejaVu-Sans-Bold -fill yellow -pointsize 24 -gravity Center -annotate 0 testmessage
```

However, because `imagemagick.executable.convert.commands.whitelist` does not include the `annotate` command, as defined in `/hybris/bin/modules/platform/mediaconversion/project.properties`), you need to redefine it in the `local.properties` file or `manifest.json` file.

The **imageprocessing** pod supports the following fonts. If you use other fonts, the foreign fonts can generate errors and the system can't convert the media.

- DejaVu-Sans
- DejaVu-Sans-Bold
- DejaVu-Sans-Mono
- DejaVu-Serif
- DejaVu-Serif-Bold
- Liberation-Mono

- Liberation-Mono-Bold

- Liberation-Mono-Bold-Italic

- Liberation-Mono-Italic

- Liberation-Sans

- Liberation-Sans-Italic

- Liberation-Sans-Bold

- Liberation-Sans-Bold-Italic

- Liberation-Serif

- Liberation-Serif-Bold

- Liberation-Serif-Bold-Italic

Process Execution Environment

As the `mediaconversion` extension spawns operation system processes to execute ImageMagick, special care is taken to have an efficient mechanism to do so. The `mediaconversion` extension provides a process execution environment for best performance and resource usage, specifically on Unix-based server applications.

Instead of forking a new process directly from the virtual machine server, which can cause high-memory consumption, it spawns an additional Java virtual machine and communicates over RMI with it.

API

The ProcessExecutor interface exposed in the Spring context is similar to the parts of java.lang.Runtime to fork processes. Instead of accessing the output stream (stdout, stderr) directly, they can be accessed on a (character) line by line basis by providing implemnentations of the Drain interface.

> ℹ **Note**
>
> There is neither support for binary output nor support for piping data to the forked process.

Configuration Options

The behavior of the process execution environment can be adjusted by the following properties, for example via `local.properties`:

Property	Default Value	Description
os.rmiregistry.port	2198	Port of the local RMI registry.
os.processexecutor.limit	10	The maximum amount of subprocesses to be spawned in parallel. If this value is zero or negative the amount of subprocesses is unlimited. Changes to this property is reflected in runtime.

Property	Default Value	Description
os.rmi.processexecutor.classpath	*${HYBRIS_BIN_DIR}* `/custom/os/bin/osserver.jar` *${HYBRIS_BIN_DIR}* `/custom/os/classes/`	Classpath used to launch the Process Executor RMI server.
os.rmi.processexecutor.java	*${java.home}* `/bin/java`	The Java Virtual Machine (executable) to use.
os.rmi.processexecutor.javaopts		Comma separated list of Java VM options to use when spawning the Process Executor RMI server.
os.processexecutor.windows.amd64 os.processexecutor.linux.amd64 os.processexecutor.mac_os_x.amd64	rmi	Mapping of process executor (embedded | rmi) by operating system. The `mediaconversion` extension uses string distance matching to find the best match to *${os.name}* and *${os.arch}*. If embedded is used, there is no separate Virtual Machine and RMI communication not recommended.
os.rmi.loopback.address	IPv4 environment: 127.0.0.1 IPv6 environment: ::1	Communication with the embedded RMI server is restricted to the local loopback device for security reasons. This is the loopback address to use.

Related Information

ImageMagick - Integration Guide
http://www.imagemagick.org ⤷

Creating a Media Item

Backoffice allows you to create a media item by uploading an existing media file into a SAP Commerce directory.

Context

To upload a media stored in your local system into a SAP Commerce directory, log in to Backoffice and follow these steps:

Procedure

1. In the Backoffice navigation tree, click ▌**Multimedia** ❯ **Media** ▌.

   A collection browser with a list of available media items opens up.

   Notice the ✚ icon. It opens up the **Create New Media** wizard.

2. Click ✚ to open up the **Create New Media** wizard.

   The wizard opens on the **Essentials** tab.

3. In the **Essentials** tab, provide an identifier for your media and choose the catalog version to which you want to assign the media. Click **Next** to move to the **Content** tab.

4. Upload your media by using one of the functionalities available in the **Content** tab.

5. Click Finish to close the wizard.

Results

You have uploaded your media file into the SAP Commerce system.

You can search for your media now and edit its attributes and properties.

Defining a Conversion Media Format

SAP Commerce enables you to define the required media format parameters, such as size, color space, and watermarks as conversion media formats that you can use to convert your media item.

Context

You need at least one conversion media format to convert your media item. After you define a conversion media format, you associate the media item that you want to convert to the conversion media format.

To define a new conversion media format, log in to Backoffice and follow these steps:

Procedure

1. In the Backoffice navigation tree, click ▶ Multimedia ❯ Media Formats ❯.

   A collection browser opens up with the Media Format drop-down menu from which you can open the Conversion Media Format wizard.

2. Navigate through the Media Format drop-down menu and click Conversion Media Format.

   The Conversion Media Format wizard opens.

3. Complete the Qualifier and Name fields in the Conversion Media Format wizard and click Done.

   The wizard closed. You created your conversion media format item.

4. Look up your conversion media format item in the Media Formats collection browser and click it.

   An editor area with information about your conversion media format opens.

   You can switch between the COMMONS, CONVERSION, and ADMINISTRATION tabs for more information.

5. Switch to the CONVERSION tab and complete the Conversion command field with a command of your choice. Click SAVE.

   Your conversion command should be one of the ImageMagick convert commands.

   We use the -flop command that flops image in the horizontal direction.

Results

You created a conversion media format. You can now assign your conversion media format to a conversion group.

Creating a Conversion Group

In the SAP Commerce media conversion, you can create and manage conversion groups that are containers for different conversion media formats, for example, different media asset types.

This is custom documentation. For more information, please visit the SAP Help Portal.

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Context

To convert media, you need to create a conversion group. Your conversion group may contain several conversion media formats. When you convert a media item, the conversion mechanism uses all the conversion media formats from your conversion group.

These instructions show how to create a conversion group and then associate your conversion media formats with it.

To create a conversion group, log in to Backoffice and follow these steps:

Procedure

1. In the Backoffice navigation tree, select ▌Multimedia ❯ Conversion Group ❮.

   The Conversion Group collection browser appears.

2. Select ➕ to open the Create New Conversion Group wizard.

3. Complete the Identifier field and select Finish.

   You have created your conversion group. Now you can associate it with your media conversion format.

4. Look up your conversion group in the Conversion Group collection browser and click it.

   A window with information about your conversion group displays.

   You can switch between the Commons and Administration tabs for more information.

   In the Commons tab, under Properties, there is the Supported Formats field through which you can associate your conversion group with chosen media conversion formats.

5. Select ● ● ● for the Supported Formats fields.

   A dialog box prompts you to look up your conversion media format.

6. Choose your conversion media format and click Select.

   The window closes and you are back in the Conversion Group collection browser.

7. Select Save to save the changes in your conversion group.

Results

You created a conversion group and assigned your media conversion format to it. When you look up your conversion group, your media conversion format appears in the list in the Supported Formats field.

Creating a Media Container

In SAP Commerce media conversion, a media container is used as a business representation of a digital asset containing all the required media derivatives and one source (master) media.

Context

Creating a media container is a necessary step in the process of converting media. When you create a media container, you also need to assign a media and a conversion group to it. When you assign a conversion group to a media container, you define specific conversion media formats that should be processed while converting a media.

To create a media container, log in to Backoffice and follow these steps:

This is custom documentation. For more information, please visit the SAP Help Portal.

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Procedure

1. In the Backoffice navigation tree, click ▌Multimedia ❯ Media Containers ◢.

   The Media Containers collection browser opens. Notice the "+" icon that opens the Create New Media Container wizard.

2. Select ➕ to open the Create New Media Container wizard.

3. Complete the Qualifier and Catalog version fields. Click Finish.

   You created a media container. You can now assign a conversion group and a media to the media container.

4. Assign your conversion group and your media to your media container.

   a. Look up your media container and click it to display information about it.

      You can notice that the Conversion Group and Medias fields don't contain anything. As a result, the Convert Missing Media function available under the Media filed is inactive.

   b. Select ••• in the Conversion Group field to search for your conversion group.

      A search window opens up.

   c. Select your conversion group and click Select.

      The search window closes.

   d. Perform similar steps to assign your media to the container.

   e. Select Save to save the changes you made to your container, and reload the view.

Results

You created a media container, and assigned your media and conversion group to it. Now the Convert Missing Media function is active and you can convert your media.

Converting Media

Convert your media in SAP Commerce.

Prerequisites

Before you start the procedure, you must have the following items ready:

- A media file uploaded into the SAP Commerce system

- A defined conversion media format

- A conversion group with the conversion media format assigned to it

- A media container with both the media and the assigned conversion group

Procedure

1. Log in to Backoffice.

2. In the Backoffice navigation tree, select ▌Multimedia ❯ Media Containers ◢.

   A list with available containers opens.

3. Look up your container and select it to open its editor.

You can see that the **Convert Missing Media** button is active:

4. Select the **Convert Missing Media** button.

You converted your media. You can see that there are now two media items available in the **Media** fields. One of them is the original and the other is your converted media:

5. **Optional:** Select the name of your converted media to see the result.

Results

You converted your media.

This is custom documentation. For more information, please visit the SAP Help Portal.

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