

General Technical Documentation

How it works

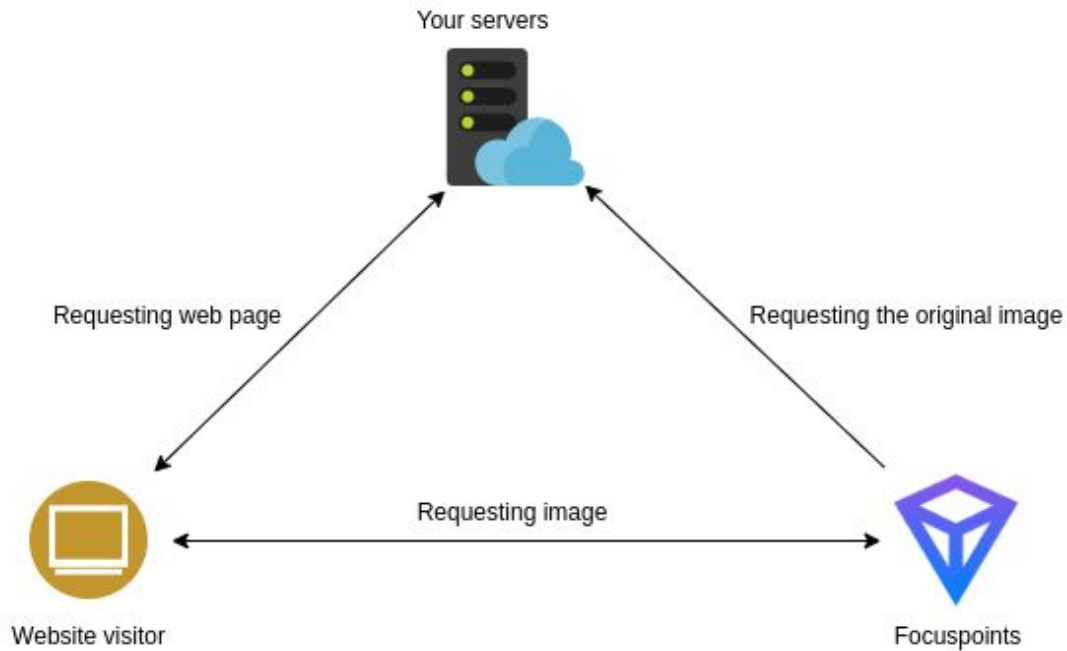
FocusPoints is an image processing service combined with CDN Functionality. In this document we will describe how FocusPoints works and how you can use it with your own programming language. But first let me explain how FocusPoints works on a high level.

You'll build your website like you normally would but instead of serving the images directly from your servers you are going to serve the images through FocusPoints. Those new image urls contain information about your original image and how it needs it to be transformed. When your website visitor visits your website they will see the image that has been served from FocusPoints correctly modified according to your instructions.

FocusPoints optimizes images in dimensions, format, quality and size to give your visitor an optimal experience of your website. And best of all; your Webmaster does not have to upload thousands of images in different formats anymore, thus saving time and money.

After we have served your images once FocusPoints will cache the result and serve it directly from the closest edge location that is available to your website visitor. If the image is not known at FocusPoints we will request the original image from your web server and transform it accordingly and serve it to your visitor.

This means you don't have to upload images at all. Our servers will take care of retrieving and processing the default image you've indicated in your code.



Advantages of FocusPoints

- Saves time, no more uploads of different variants of the original image to your CMS
- Transforms images based on your input
- Caches all images at edge locations world wide for fast delivery to your visitors
- Optimizes images for the best quality
- Optimizes images to be as small as possible without losing quality
- Transforms images to different format based on your website visitors browser capabilities
- Offloads your web servers by not serving images anymore.
- Saving bandwidth costs of your platform
- Very fast download speeds
- Fully HTTP2.0 compatible

Caching

FocusPoints respects all caching headers that it gets from your original image and uses those cache headers while serving the transformed version. We do have a few exceptions here. If you cache headers indicate that the image should be cached for less than 24 hours we will modify the headers so your image is cached for at least 24 hours. If cache headers explicitly state that an image should not be cached we will ignore that and the image will be also cached for 24 hours. If you want us to make an exception for this please contact us and we will work something out.

A frequently asked question from customers is "My image has changed but FocusPoints is still caching it. Could you fix this please". The answer to that question is you should build a new unique request to FocusPoints because there is no guarantee that everyone will see your new version of the same image. The HTTP specification states that a unique identified resource on the internet can be cached for as long as the cache duration is configured. If you have changed your image while these cache headers state it has not expired, every browser / proxy or other internet component is allowed to cache it. The best way around this issue is to create a new unique resource on the internet.

Build an image request

You can get images from FocusPoints by building a specific url that contains information about your image and what you want to do with it. The request url looks like this

```
https://image.focuspoints.io/<name_of_your_image>?_jwt=<your_signed_jwt_to_ken>.
```

Parameters

- `name_of_your_image`: This is optional, you can replace this with the name of your image name and must be url encoded. This is optional and has no functional value and is only there for SEO reasons.
- `your_signed_jwt_token`: A signed jwt token. Containing information about which image to modify and how to modify it.

Example:

```
https://image.focuspoints.io/my-beautiful-image.png?_jwt=eyJhbGwiOiJVCj9.eyJm...gWMH0.4DXUZ...X0sg
```

JWT Tokens

JSON Web Token (JWT) is an open standard (RFC 7519) that defines a compact and self-contained way for securely transmitting information between parties as a JSON object. In the payload section of the token you can give FocusPoints instructions on how to transform your images. A JWT Token contains a header and a payload and this is secured with your token secret.

JWT Is a open standard and has libraries for languages like .NET, Java, PHP, Python, GO, Node.js, JavaScript, Perl, Ruby, and others can be found here at the official [JWT website](#). More technical information about how JWT works can also be found [here](#)

A JWT Token consists out of a header, a payload and a signature section. Below you can find details about what needs to be in the header and the payload. After that we explain how to sign it.

Header

The headers needs to contain these two fields:

- alg: The algorithm used to encode. This must be HS512 at all times.
- typ: Token type. Set this always to JWT

Example:

```
{  
  "alg": "HS512",  
  "typ": "JWT"  
}
```

Payload options

Required parameters:

- tokenId: The token id given to you by FocusPoints.
- url: The url of the original image that you want to transform
- action: Allowed values are transform or resize. resize will only resize your image and not handle any kind of focus point. tranform will not only resize your image but will also crop it to the width x height dimensions and applies the focus point x and y coordinates.
- width: The width of the image
- height: The height of the image

Optional parameters:

- focusPointX: The x coordinate of the focus point measured from the center of the image where -1 is the most left, 0 is the center and 1 is the most righter edge of the images. If not provided the default value is 0.
- focusPointY: The y coordinate of the focus point measured from the center of the image where -1 is the most top edge of the image 0 is the center and 1 is the bottom edge of the image. If not provided the default value is 0.

Example:

```
{  
  "focusPointY": 0.24,  
}
```

```
"focusPointX": -0.12,  
"width": 800,  
"tokenId": "<your_token_id>",  
"action": "transform",  
"url": "https://www.domain.com/images/some-image.png",  
"height": 800  
}
```

Signing the token

Signing your jwt token must be done by the token secret that corresponds to your token id given to you once you have registered an account with FocusPoints. You can create an account on the www.focuspoints.io website.

Plugins

We have already created a few plugins for certain languages / content management systems that you can use that do all the heavy lifting for you. If your favorite integration is not available, you can always make your own integration with the information on this page.

Your website

Now that you know how to create a FocusPoints request generating the correct image, it is time to implement this in your website. In order to build a responsive website, you will want to use the [picture](#) element, along with source sets that define which image variant should be shown to your visitor. The picture element is a standard browser element that is supported by all modern browsers. There is a very good article that explains exactly how this works on the [mozilla website](#). We will But in short we will give you a brief example. Create an element like the example below and fill out your media attributes that contain the cutoff points for your images and configure the srcset that it points to FocusPoints with the correct JWT token.

```
<picture>  
  <source  
srcset="https://image.focuspoints.io/my-beautiful-image.png?_jwt=your_token_here" media="(max-width: 799px)">  
  <source  
srcset="https://image.focuspoints.io/my-beautiful-image.png?_jwt=your_token_here" media="(min-width: 800px)">  
  <source srcset="..." sizes="..." media="...">  
  <source srcset="..." sizes="..." media="...">  
    
</picture>
```

Custom integration

The use of our FocusPoints services is not limited to using it for your website. You can use it to automate image processing or integrate it in your backend solutions. If you need any help with a custom integration please don't hesitate to give us a call.