photoshop-connection Documentation

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Documentation

Python package to remotely execute ExtendScript in Adobe Photoshop.

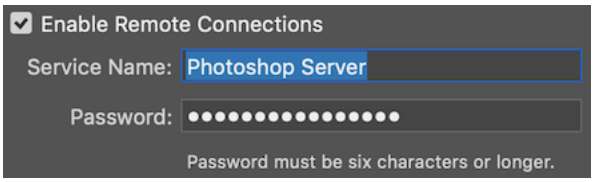
CHAPTER 1

Overview

1.1 Prerequisites

Photoshop must be configured to accept remote connection.

Open the plug-ins dialog from the *Preferences* > *Plug-ins...* menu in Photoshop, and check *Enable Remote Connections* option. Enter password to the given field, and click *OK* button and restart Photoshop.



Photoshop must be launched and running for the package to work.

1.2 Usage

Create a session with *photoshop.PhotoshopConnection*, and use one of the API method to work on a document.

Open a file, get the thumbnail image, then close the file:

```
from photoshop import PhotoshopConnection

with PhotoshopConnection(password='secret') as conn:
    conn.execute('open(File("/server/path/to/example.psd"))')
    jpeg_binary = conn.get_document_thumbnail()
    conn.execute('activeDocument.close()')
```

Upload a local PSD file to the server, edit, then download:

```
with PhotoshopConnection(PASSWORD) as conn:
    with open('input.psd', 'rb') as f:
        tmpfile = conn.upload(f.read(), suffix='.psd')
    conn.execute('''
    open(File("%s"));
    activeDocument.activeLayer.name = "edited";
    activeDocument.save();
    activeDocument.close();
    ''' % tmpfile)
    with open('output.psd', 'wb') as f:
        f.write(conn.download(tmpfile).get('data'))
    # Don't forget to remove the temp file.
    conn.execute('File("%s").remove()' % tmpfile)
```

CHAPTER 2

photoshop

Photoshop session.

2.1 PhotoshopConnection

class photoshop.**PhotoshopConnection**(*password=None*, *host='localhost'*, *port=49494*, *validator=None*)

Photoshop session.

Parameters

- **password** – Password for the connection, configured in Photoshop. If *None*, try to get password from *PHOTOSHOP_PASSWORD* environment variable.
- **host** – IP address of Photoshop host, default *localhost*.
- **port** – Connection port default to 49494.
- **validator** – Validate function for ECMAscript.

  Example:

```
from esprima import parseScript
with PhotoshopConnection(validator=parseScript) as c:
    c.execute('bad_script +')  # Raises an Error
```

Raises **ConnectionRefusedError** – if failed to connect to Photoshop.

Example:

```
from photoshop import PhotoshopConnection

with PhotoshopConnection(password='secret', host='192.168.0.1') as conn:
    conn.execute('alert("hi");')
```

close()
Close the session.

download(*path*, *file_type=None*, ***kwargs*)
Download the specified document. The file type must be in the format supported by Photoshop.

Parameters

- **path** – file path on the server.
- **file_type** – file type, see *open_document()*.

Returns *dict*. See return type of *get_document_stream()*

execute(*script*, *receive_output=False*, *timeout=None*)
Execute the given ExtendScript in Photoshop.

Parameters

- **script** – ExtendScript to execute in Photoshop.
- **receive_output** – Indicates extra return value is returned from Photoshop.
- **timeout** – Timeout in seconds to wait for response.

Returns *dict*. See *receive()*.

Raises **RuntimeError** – if error happens in remote.

get_document_info(*version=None*, *document=None*, *placed_ids=None*, *layer=None*, *expand_smart_objects=False*, *get_text_styles=False*, *get_full_text_styles=False*, *get_default_layer_effect=False*, *get_comp_layer_settings=False*, *get_path_data=False*, *image_info=None*, *comp_info=None*, *layer_info=True*, *include_ancestors=True*)
Return complete document info in JSON format.

Parameters

- **version** – optional requested version (you always get the current version back, but this does a sanity check, and errors on an incompatible version). Example: '1.4.0'.
- **document** – optional document id, uses active doc if not specified.
- **placed_ids** – Photoshop 16.1 and later, optional. reference smart object(s) within the document series of "ID" from layer:smartObject:{} or "placedID" from "image:placed:[{}]".
- **layer** – *None* for all layers in photoshop, or specify one of the following: - integer ID of a single layer, e.g. *0*. - (*first*, *last*) tuple of layer IDs, e.g., (1, 6). - *'selected'* for currently selected layers.
- **expand_smart_objects** – default is false, recursively get doc info for any smart objects. can be slow.
- **get_text_styles** – default is false, return more detailed text info. can be slow.
- **get_full_text_styles** – default is false, return all text information (getTextStyles must also be true).
- **get_default_layer_effect** – default is false, return all layer fx even if they are disabled.
- **get_comp_layer_settings** – default is false, enumerate layer settings in layer comps.
- **get_path_data** – default is false, return path control points for shapes.

- **image_info** – return image-wide info (size, resolution etc.), default is *layer* != 'selected'.
- **comp_info** – return comp info in "comps" array, default is true, default is *layer* != 'selected'.
- **layer_info** – return layer info in "layers" array, default is true.
- **include_ancestors** – 16.1 and later, include surrounding layer groups if doing selected layers/range/single layer id. default is true. should only be used with single layers (otherwise grouping may not be accurate).

Returns *dict*.

Raises **RuntimeError** – if error happens in remote.

get_document_stream(*document=None*, *placed_ids=None*, *placed_id=None*, *layer=None*, *position=None*, *size=None*, *path_only=None*)

Get the file info and file stream for a smart object.

Parameters

- **document** – optional document id, uses active doc if not specified.
- **placed_ids** – Photoshop 16.1 and later, optional. reference smart object(s) within the document series of "ID" from layer:smartObject:{} or "placedID" from "image:placed:[{}]".
- **placed_id** – return file for smart object with this placed id ("ID" from layer:smartObject:{} or "placedID" from "image:placed:[{}]").
- **layer** – when integer ID of a single layer is specified, e.g. *0*, return file for smart object with this layer id. When *placed_id* is *None* and layer is also *None*, return placed smart object stream the selected layers
- **position** – offset into file (defaults to 0).
- **size** – number of bytes to return (defaults to all bytes).
- **path_only** – instead of returning the file stream back over the wire, write it to a file local to the server, and return the path as a string argument in the JSON part of the FileStream Reply.

Returns

dict with the following fields:

- *mimeFormat*: mime string.
- *position* : position of file data returned.
- *size* : number of file bytes returned.
- *fullSize* : total number of bytes in file.
- *path* : string, server-local path to file if path was set to true in the request).
- *data*: actual data in bytes. if *path* is True, this is empty.

Raises **RuntimeError** – if error happens in remote.

Note: The maximum size returned by PS is 2 GB, if you have a smart object bigger than 2 GB, you need to use the position/size format. To return chunks, or the path format to write it to a temp file. Document stream/attributes are returned as a FileStream Reply.

---

get_document_thumbnail(*document=None*, *max_width=2048*, *max_height=2048*, *format=1*, *placed_ids=None*)

Send a thumbnail of a document's composite.

Parameters

- **document** – optional document id, uses active doc if not specified.
- **max_width** – maximum width of thumbnail.
- **max_height** – maximum height of thumbnail.
- **format** – 1 is JPEG, 2 is pixmap (uncompressed w/ transparency).
- **placed_ids** – Photoshop 16.1 and later, optional. reference smart object(s) within the document series of "ID" from layer:smartObject:{} or "placedID" from "image:placed:[{}]".

Returns JPEG bytes if *format* is 1, or `Pixmap` if *format* is 2.

Raises **RuntimeError** – if error happens in remote.

get_layer_shape(*document=None*, *layer=None*, *version='1.0.0'*, *placed_ids=None*)

Return path/fill/strokeStyle for a shape layer(s).

Parameters

- **document** – optional document id, uses active doc if not specified.
- **placed_ids** – Photoshop 16.1 and later, optional. reference smart object(s) within the document series of "ID" from layer:smartObject:{} or "placedID" from "image:placed:[{}]".
- **layer** – *None* for currently selected layers in photoshop, or specify one of the following: - integer ID of a single layer, e.g. *0*. - (*first*, *last*) tuple of layer IDs, e.g., (1, 6).
- **version** – format version. Valid versions are 1.0.0 in 14.1, and 1.0, 1.0.0, 1.1, or 1.1.0 in Photoshop 14.2

Returns *dict* of the following schema, or *None* if no valid layer is specified.

Schema:

```
{"path":
    {"pathComponents": // arrays of paths to be filled and boolean operators
        [{"shapeOperation": ("intersect"/"add"/"subtract"/"xor")
        "subpathListKey":[  //list of subpath objects that make up the␣
↪component
            {"closedSubpath":true, // (if subpath is closed)
             "points": [{" // array of knot objects (anchor and control␣
↪points)
                anchor:[x,y]        //point on path
                forward:[x1,y1]     //forward bezier control
                backward:[x2,y2]    //backward bezier control
                },  //next knot...
                ...]
        "origin":{"origin": ("ellipse"/"rect"/"roundedrect"/"line"/"unknown")
        "radii":  [r1,r2,r3,r4], //radii for rounded rect if any
    "bounds":["top":top,"left":left,"right":right,"bottom":bottom], //bounds␣
↪of entire path
    "defaultFill":true/false}, //whether path starts out filled or not
"fill":
    {"color":{"red":red,"green":green,"blue":blue},"class":"solidColorLayer"}
```

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```
    //or
    {"gradient":{(gradient object)},"class":"gradientLayer"}
    //or
    {"pattern":{(pattern object)},"class":"patternLayer"}
"strokeStyle":
    {(strokeStyle object)}
}
```

Example:

```
{"path":{"pathComponents":
        [{"shapeOperation":"add",
          "subpathListKey":[
            {"closedSubpath":true,
             "points": [{"anchor":[234.5,36],"forward":[307.125,36],"backward
↪":[161.875,36]},
                {"anchor":[366,167],"forward":[366,239.349],"backward":[366,
↪94.651]},
                {"anchor":[234.5,298],"forward":[161.875,298],"backward":[307.
↪125,298]},
                {"anchor":[103,167],"forward":[103,94.651],"backward":[103,
↪239.349]}]
            }],
           "origin":{"origin":"ellipse","bounds":[35,102,299,367]}
        }],
    "bounds":[35,102,299,367],
    "defaultFill":false},
"fill":{"color":{"red":0,"green":0,"blue":0},"class":"solidColorLayer"}
}
```

Raises **RuntimeError** – if error happens in remote.

get_layer_thumbnail(*document=None*, *max_width=2048*, *max_height=2048*, *convert_rgb_profile=True*, *icc_profile=None*, *interpolation=None*, *transform=None*, *layer=None*, *layer_settings=None*, *image_settings=None*, *include_layers=None*, *clip_bounds=None*, *bounds=False*, *bounds_only=False*, *thread=None*, *layer_comp_id=None*, *layer_comp_index=None*, *dither=True*, *color_dither=True*)

Send a thumbnail of layer composite, or a range of layers, with optional settings/transform applied.

Parameters

- **document** – optional document id, uses active doc if not specified.
- **max_width** – maximum width of thumbnail.
- **max_height** – maximum height of thumbnail.
- **placed_ids** – Photoshop 16.1 and later, optional. reference smart object(s) within the document series of "ID" from layer:smartObject:{} or "placedID" from "image:placed:[{}]".
- **convert_rgb_profile** – if True, the thumbnail is converted to the working RGB space in "Color Settings...".
- **icc_profile** – optional, Photoshop 16.1, and later. convert to profile with this name, e.g. srgb is "sRGB IEC61966-2.1"

- **interpolation** – interpolation method to use for any downscaling necessary to fit into requested "width"/"height". supported interpolation types (from image size dialog/action):
  - "nearestNeighbor"
  - "bilinear"
  - "bicubic"
  - "bicubicSmoother"
  - "bicubicSharper"
  - "bicubicAutomatic"
  - "preserveDetailsUpscale"
  - "automaticInterpolation"

  default is "bicubicSharper".
- **transform** – scale/transform layers by this before building thumbnails (scales original source data, such as smart obj/vectors). if this is specified, the thumbnail is built on a worker thread in Photoshop.

  Example:

```
transform = {
    'scale_x': 100.0,
    'scale_y': 100.0,
    'interpolation': 'bicubicSharper',
    'dumb_scaling': True
}
```

  - *scale_x*: percent, 100.0 == 1x
  - *scale_y*: percent, 100.0 == 1x
  - *interpolation*: Optional, similar to interpolation above, but this is just used for the transform step (not the thumbnail), it defaults to Photoshop's "Image Interpolation" preference.
  - *dumb_scaling*: For PS >= 14.2. Make smart shapes scale like non-smart shapes (round rect corners will scale), default is False.
- **layer** – *None* for currently selected layers in photoshop, or specify one of the following: - integer ID of a single layer, e.g. *0*. - (*first*, *last*) tuple of layer IDs, e.g., (1, 6).
- **document** – optional document id, uses active doc if not specified
- **layer_settings** – Action list to modify the layer before the thumbnail is retrieved. This option is available when *layer* param is specified by tuple range. The argument should be list of dict with the following keys:
  - *enabled*: make the layer visible/invisible.
  - *blendOptions*: blending settings to use.
  - *layerEffects*: fx settings to use.
  - *offset*: integer offset of layer in dict.
  - *vectorMask*: vector mask to apply in dict.
  - *FXRefPoint*: effect reference point.

Example:

```
[
    {
        'enabled': True,
        'blendOptions': [],
        'layerEffects': [],
        'offset': {
            'horizontal': 0,
            'vertical': 0
        },
        'vectorMask': {
            'enabled': False,
            'offset': {
            }
            'invert': False,
        },
        'FXRefPoint': {
            'horizontal': 0,
            'vertical': 0
        }
    }
]
```

- **image_settings** –
- **include_layers** – include additional layers to the requested layer. dict with one or more of the following keys.
  - *adjustors*: adjustors above the layer, default is *visible*.
  - *ancestors*: enclosing groups (includes group blending, fx, masks), default is *all*. *visible* and *all* incorporate any blending parameters/masks of the ancestor groups. *visible* returns an empty thumbnail for any layer inside an invisible group. *none* substitutes default groups for any groups around the layer.
  - *children*: if layer is a group (includes group blending, fx, masks), default is *visible*.
  - *clipbase*: clip base if layer is clipped. The clip base is a layer that a clipped layer is clipped to, default is *all*.
  - *clipped*: clipped layers if layer is clip base, default is *visible*.

  Values are one of *'all'*, *'none'*, or *'visible'*.
  - *all*: include all layers of this type (force them visible).
  - *none*: include no layers of this type.
  - *visible*: include visible layers of this type.

  Example:

```
{
    'adjustors': 'none',
    'children': 'all',
}
```

- **clip_bounds** – clip the layer thumbnail to the document canvas bounds if specified. Can specify *True* to bound to document size, or specify tuple of (*top*, *left*, *right*, *bottom*).
- **bounds** – return the thumbnail bounds as JSON on same transaction. (default is False).

- **bounds_only** – Just return the thumbnail bounds as JSON on same transaction. (no thumbnail data) (default is false).
- **thread** – build the thumbnail on a thread. By default, the thumbnail is threaded if there is a "transform", otherwise it is done on the main thread unless a user event occurs, then it is cancelled, and restarted on a thread *thread* can be used to override the default (either force the thumb to be started on the main thread or a background thread) it may help performance if you know that the thumbnail is either quick (best done on main thread) or slow (best done on background) there is a slight memory/performance penalty for threading in that the layer data must be copied before it is threaded.
- **layer_comp_id** – layer comp id to use (this comp is temporarily applied before getting thumbnail).
- **layer_comp_index** – layer comp index to use (this comp is temporarily applied before getting thumbnail).
- **dither** – 15.0 and later. If 1) *dither* is true 2) and either *color_dither* is false, or *dither* is checked in the global color settings (Color Settings... in Photoshop) 3) and any color/depth conversion would be "lossy" (16 to 8 bit, CMYK to RGB, etc), then dithering will occur, otherwise there will be no dithering.
- **color_dither** – see above.

Returns Pixmap or *None*.

Raises **RuntimeError** – if error happens in remote.

Note: "interpolation", "transform", "bounds", "boundsOnly", and "thread" are supported in background-only (layer-less) documents but only in version 15.0 and later. "layerID" should be 0 in that case. The other layer-related settings are ignored as there are no layers.

Warning: if *layer* tuple range includes a group layer, it must include the corresponding hidden "divider" layer at the bottom of the group (and vice-versa). The range can also just include layers inside a group with no group layers at all.

open_document(*path*, *file_type=None*, *smart_object=False*)

Open the specified document.

Parameters

- **path** – file path on the server.
- **file_type** – file type. default is *None*. This must be one of the following:
  - 'ALIASPIX'
  - 'BMP'
  - 'CAMERARAW'
  - 'COMPUSERVEGIF'
  - 'DICOM'
  - 'ELECTRICIMAGE'
  - 'EPS'
  - 'EPSPICTPREVIEW'

- 'EPSTIFFPREVIEW'
- 'FILMSTRIP'
- 'JPEG'
- 'PCX'
- 'PDF'
- 'PHOTOCD'
- 'PHOTOSHOP'
- 'PHOTOSHOPDCS_1'
- 'PHOTOSHOPDCS_2'
- 'PHOTOSHOPEPS'
- 'PHOTOSHOPPDF'
- 'PICTFILEFORMAT'
- 'PICTRESOURCEFORMAT'
- 'PIXAR'
- 'PNG'
- 'PORTABLEBITMAP'
- 'RAW'
- 'SCITEXCT'
- 'SGIRGB'
- 'SOFTIMAGE'
- 'TARGA'
- 'TIFF'
- 'WAVEFRONTRLA'
- 'WIRELESSBITMAP'

• **smart_object** – open as a smart object.

Returns *dict* of response.

ping(*timeout=10*)

Send keep alive signal to Photoshop.

Parameters **timeout** – Timeout in seconds to wait for response.

Raises **RuntimeError** – if error happens in remote.

subscribe(*event*, *callback*, *block=False*, ***kwargs*)

Subscribe to changes, sends any relevant change info back on subscribing socket.

Parameters

- **event** – Event name, one of *Event*.
- **callback** – Callable that takes two arguments:
  - *conn*: *PhotoshopConnection* instance.

– *data*: *bytes* data returned from Photoshop on this event. The actual data format varies by event type.

Return value of *callback* signals termination of the current subscription. If *callback* returns True, subscription stops.

- **block** – Block until subscription finishes. default *False*.

Example:

```
import json
import time

def handler(conn, data):
    print(json.loads(data.decode('utf-8')))
    return True  # This terminates subscription

with PhotoshopConnection() as conn:
    conn.subscribe('imageChanged', handler)
    conn.execute('documents.add()')
    time.sleep(5)
```

upload(*data*, *suffix=None*)

Upload arbitrary data to Photoshop, and returns the file path where the data is saved.

Parameters

- **data** – *bytes* to send.
- **suffix** – suffix to append to the temporary file name.

Returns Temporary server-side file path in *str*.

Raises **RuntimeError** – if error happens in remote.

Example:

```
with open('/path/to/example.psd', 'rb') as f:
    filepath = conn.upload(f.read(), suffix='.psd')
conn.open_document(filepath)
```

2.2 Event

class photoshop.**Event**

List of events in *subscribe()*.

See Kevlar API.

Asrt = 'Asrt'

activeViewChanged = 'activeViewChanged'

backgroundColorChanged = 'backgroundColorChanged'

closedDocument = 'closedDocument'

colorSettingsChanged = 'colorSettingsChanged'

currentDocumentChanged = 'currentDocumentChanged'

documentChanged = 'documentChanged'

```
foregroundColorChanged = 'foregroundColorChanged'
generatorDocActivated = 'generatorDocActivated'
generatorMenuChanged = 'generatorMenuChanged'
idle = 'idle'
imageChanged = 'imageChanged'
keyboardShortcutsChanged = 'keyboardShortcutsChanged'
newDocumentViewCreated = 'newDocumentViewCreated'
quickMaskStateChanged = 'quickMaskStateChanged'
toolChanged = 'toolChanged'
workspaceChanged = 'workspaceChanged'
```

CHAPTER 3

photoshop.protocol

class photoshop.protocol.**ContentType**

Message content type.

CANCEL_COMMAND = 8

DATA = 5

ERROR_STRING = 1

EVENT_STATUS = 9

FILE_STREAM = 7

ILLEGAL = 0

IMAGE = 3

KEEP_ALIVE = 6

PROFILE = 4

SCRIPT = 2

SCRIPT_SHARED = 10

class photoshop.protocol.**Pixmap**(*width*, *height*, *row_bytes*, *color_mode*, *channels*, *bits*, *data*)

Pixmap representing an uncompressed pixels, ARGB, row-major order.

Variables

- **width** – width of the image.
- **height** – height of the image.
- **row_bytes** – bytes per row.
- **color_mode** – color mode of the image.
- **channels** – number of channels.
- **bits** – bits per pixel.

- **data** – raw data bytes.

dump()
Dump Pixmap to bytes.

classmethod parse(*data*)
Parse Pixmap from data.

topil()
Convert to PIL Image.

class photoshop.protocol.**Protocol**(*password*)
Photoshop protocol.

VERSION = 1

receive(*socket*)
Receives data from Photoshop.

Parameters **socket** – socket to receive data.

Returns

dict of the following fields.

- *status*: execution status, 0 when success, otherwise error.
- *protocol*: protocol version, equal to 1.
- *transaction*: transaction id.
- *content_type*: data type. See *ContentType*.
- *body*: body of the response data, *dict* for IMAGE type, otherwise bytes.

Example:

```
{
    'status': 0,
    'protocol': 1,
    'transaction': 0,
    'content_type': ContentType.SCRIPT,
    'body': b'[ActionDescriptor]'
}
```

Raises **AssertionError** – if response format is invalid.

send(*socket*, *content_type*, *data*, *transaction=0*, *status=0*)
Sends data to Photoshop.

Parameters

- **content_type** – See *ContentType*.
- **data** – *bytes* to send.
- **transaction** – transaction id.
- **status** – execution status, should be 0.

CHAPTER 4

photoshop.crypto

class photoshop.crypto.**EncryptDecrypt**(*password*, *salt=b'Adobe Photoshop'*, *iterations=1000*, *length=24*)

decrypt(*token*)

encrypt(*message*)

CHAPTER 5

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