REST API Specification

for

NASA Maestro Format Test Tool

**Version 5.0**

**Prepared by:**

**NASA TEAM 1**

**University of Maryland Global Campus**

**04 April 2020**

**Authors**

* Alberto Bonfiglio
* Beatrice Oluwabuyi
* Jacquetta Reid
* Kenya Foster
* Rick Stuart
* Tiezheng Yuan

**Revision History**

|  |  |  |
| --- | --- | --- |
| Date | Reason for Update | Version |
| 03/08/2020 | Initial Document | 1.0 |
| 03/15/2020 | Added Image Comparison | 2.0 |
| 03/22/2020 | Update API to Node | 3.0 |
| 04/04/2020 | Update for Suggestions | 4.0 |
| 0425/2020 | Provided additional guidance on inputs and outputs. | 5.0 |

**Table of Contents**

[24. Introduction 4](#_Toc36994491)

[1.1 Purpose 4](#_Toc36994492)

[1.1.1 Docker Container 4](#_Toc36994493)

[1.1.2 GUI Interface 4](#_Toc36994494)

[1.2 Scope 4](#_Toc36994495)

[1.3 Assumptions and Constraints 4](#_Toc36994496)

[25. GET 6](#_Toc36994497)

[25.1 Get Comparison Image 6](#_Toc36994498)

[25.1.1 Request 6](#_Toc36994499)

[25.1.2 Response 6](#_Toc36994500)

[25.2 Get Posted Image 6](#_Toc36994501)

[25.2.1 Request 7](#_Toc36994502)

[25.2.2 Response 7](#_Toc36994503)

[25.3 Get Comparison Image as a Byte Stream 8](#_Toc36994504)

[25.3.1 Request 8](#_Toc36994505)

[25.3.2 Response 8](#_Toc36994506)

[25.4 Get API Main Page 9](#_Toc36994507)

[25.4.1 Request 9](#_Toc36994508)

[25.4.2 Response 9](#_Toc36994509)

[25.5 Get the Help Page of API (To Be Developed) 10](#_Toc36994510)

[25.5.1 Request 10](#_Toc36994511)

[25.5.2 Response 10](#_Toc36994512)

[26. POST 11](#_Toc36994513)

[26.1 Validate one or more a .docx File 11](#_Toc36994514)

[26.1.1 Request 11](#_Toc36994515)

[26.1.2 Response 11](#_Toc36994516)

[26.2 Compare two DOCX files 12](#_Toc36994517)

[26.2.1 Request 12](#_Toc36994518)

[26.2.2 Response 12](#_Toc36994519)

[26.2.3 Request 13](#_Toc36994520)

[26.2.4 Response 13](#_Toc36994521)

[References 13](#_Toc36994522)

# Introduction

## Purpose

The Application Programming Interface (API) links a docker container that handles most file operations with the rest of the software managing the GUI.

### Docker Container

The docker container is a Linux based image and integrates the NodeJS API, Open Office[[1]](#footnote-1) , and ImageMagick[[2]](#footnote-2). Calls to the headless Open Office runtime control DOCX validation, and conversion to Portable Document Format documents (pdf). ImageMagick handles image comparison. The API is developed as a RESTful service in NodeJS using Express.js as the REST framework. The Docker container runs as a server to receive and service requests on a user-configurable TCP port. The processed data can also be persisted by mapping a volume to the “./app.uploads” internal folder.

### GUI Interface

The interface is covered in the User Interface Design (GUI) document. The GUI manages user interaction with the Docker container using GET and POST HyperText Transfer Protocol (HTTP) requests.

## Scope

This document covers the API used by the Docker container to pass files to and from and complete tasks within the Docker.

## Assumptions and Constraints

* This API is utilized by the Maestro Format Test Tool only
* The Docker Container is run locally (Hosting the container on a server is possible with a software update)

# GET

GET requests are used to request resources from the server. The GET requests in this API allow the user to get the compared image, get the converted images, and get images as a byte stream.

## Get Comparison Image

This method returns a PNG that highlights the differences between the two previously provided images. Images are generated from the two provided DOCX files and then compared.

### Request

|  |  |
| --- | --- |
| **Method** | **URL** |
| **GET** | http://localhost:8080/api/docx/getDiffImage |

|  |  |
| --- | --- |
| **Parameters** | **Values** |
| string | SessionID |

### Response

|  |  |
| --- | --- |
| **Status** | **Response** |
| 200 | The response will be an object containing the PNG file that highlights the differences between the two provided images. |
| 404 | Session not found successfully. |
| 500 | Internal server error |

An example output would be:



## Get Posted Image

Returns one of the converted files provided when the users' session is started. The file has been converted to an image.

### Request

|  |  |
| --- | --- |
| **Method** | **URL** |
| **GET** | http://localhost:8080/api/docx/getImage |

|  |  |
| --- | --- |
| **Parameters** | **Values** |
| string | SessionID |
| Integer | Index |

### Response

|  |  |
| --- | --- |
| **Status** | **Response** |
| 200 | The response will be an object containing the PNG of the item at the provided index. |
| 404 | File not found. |
| 500 | Internal server error. |

An example output would be:



## Get Comparison Image as a Byte Stream

Returns a PNG that highlights the differences between the two previously provided images as a byte stream.

### Request

|  |  |
| --- | --- |
| **Method** | **URL** |
| **GET** | <hostname><port>/api/docx/getDiffImageStream |

|  |  |
| --- | --- |
| **Parameters** | **Values** |
| String | SessionID |

### Response

|  |  |
| --- | --- |
| **Status** | **Response** |
| 200 | The response will be a byte stream containing the PNG file that highlights the differences between the two provided images as a byte stream. |
| 404 | File or session not found |
| 500 | Internal server error |

An example out is not available for this GET request.

## Get API Main Page

Returns the main HTML page of the API with a basic description of the API functionality, configuration, and dependencies.

### Request

|  |  |
| --- | --- |
| **Method** | **URL** |
| **GET** | http://localhost:8080 |

|  |  |
| --- | --- |
| **Parameters** | **Values** |
| <None> | N/A |

### Response

|  |  |
| --- | --- |
| **Status** | **Response** |
| 200 | Main HTML Page of the API |
| 404 | Page not found. |

This request returns the main page of the application.

# POST

## Validate one or more a .docx File

Returns an array of JSON objects with the file(s) name and a Boolean value indicating if the uploaded .docx file is valid.

### Request

|  |  |
| --- | --- |
| **Method** | **URL** |
| **POST** | http://localhost:8080/api/docx/validate |

|  |  |
| --- | --- |
| **Parameters** | **Values** |
| docs | an array of DOCX files to validate |

### Response

|  |  |
| --- | --- |
| **Status** | **Response** |
| 200 | Returns an array of JSON objects with the file(s) name and a Boolean value indicating if the uploaded .docx file is valid. |
| 400 | Bad request if less or more than 2 files are uploaded |
| 500 | Internal server error |

This request returns true or false depending if the docx is valid or invalid.

## Compare two DOCX files

Compares two DOCX files and returns the success status and as a JSON object containing matching statistics, converted image sizes, pixel differences, and links to the produced images.

### Request

|  |  |
| --- | --- |
| **Method** | **URL** |
| **POST** | http://localhost:8080/api/docx/checkDifference |

|  |  |
| --- | --- |
| **Parameters** | **Values** |
| docs | an array of files to compare |

### Response

|  |  |
| --- | --- |
| **Status** | **Response** |
| 200 | Returns a JSON object with success status, identical status, converted Image sizes, pixel difference, percent difference, and links to produced image links |
| 400 | Either less than one or more than 2 files uploaded |
| 500 | Internal server error |

The input for this request is two docx files. The ouput would look like the image below with red highlighting the difference.



**Convert Docx file to image**

Converts an array of Docx files to image (PNG) and returns a JSON object containing the name and link to retrieve the base image for later use.

### Request

|  |  |
| --- | --- |
| **Method** | **URL** |
| **POST** | <hostname><port> http://localhost:8080/api/docx/convertDocX |

|  |  |
| --- | --- |
| **Parameters** | **Values** |
| docs | an array of files to compare |

### Response

|  |  |
| --- | --- |
| **Status** | **Response** |
| 200 | Returns a JSON object with success status, and links to produced images |
| 400 | No files uploaded |
| 500 | Internal server error |

The input is a docx file. The output would look like this:



# References

(2020). Retrieved from Image Magic: https://imagemagick.org/

(2020). Retrieved from Apache Open Office: https://www.openoffice.org/

1. (Apache Open Office, 2020) [↑](#footnote-ref-1)
2. (Image Magic, 2020) [↑](#footnote-ref-2)