

Compositor

API Reference

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History

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Date** | **Author** | **Description** |
| 0.1 | 10-07-2018 | Coen Custers | Initial version. |
| 0.2 | 24-09-2018 | Coen Custers | Update after refactoring. |
| 0.3 | 08-09-2018 | Coen Custers | Added Zorder and Below-methods + reordering methods |
| 0.4 | 09-09-2018 | Coen Custers | Reorder introduction and configuration |
| 0.5 | 12-10-2018 | Coen Custers | Move configuration to WPEFramework |

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## Acronyms, Abbreviations and Terms

The next list provides an overview of acronyms and abbreviations used in this document and their definitions.

|  |  |
| --- | --- |
| **Acronym** | **Definitions** |
| API | Application Programming Interface |
| JSON | JavaScript Object Notation |
| UTC | Coordinated Universal Time |

Below terms are listed with their definitions, as used in this document.

|  |  |
| --- | --- |
| **Term** | **Definitions** |
| Callsign | The *callsign* is the name given to an instance of a plugin. A single plugin can be instantiated multiple times, but each instance name, *callsign*, must be unique. |
| Proxy | An object in one process space representing the “real” object in another process space. The Proxy takes care of marshalling the parameters. |
| Stub | An object in the process space that contains the actual object. The stub takes care of un-marshalling of the request from the Proxy and executes the call, on behalf of the Proxy object, on the real object. |

## Standards

Date time formats between the systems shall be in UTC time and W3C (ISO 8601 profile) formatting [ISO 8601], e.g.: 2004-11-05T13:15:30Z. This way time discontinuities can be avoided due to daylight savings. Note that all interfacing systems must decode/encode the date time to the correct local time.

Languages used in the WPEFramework will be conform [ISO 639-1] using two letter language codes. If WPEFramework encounters a language code it does not recognize, it will use ‘xx’ instead. For a list of available two letter ISO language codes, please visit:  
<http://www.loc.gov/standards/iso639-2/php/code_list.php>

## References

This section lists the references made in this document:

|  |  |
| --- | --- |
| [WPEF] | WPEFramework API Reference  <https://github.com/WebPlatformForEmbedded/WPEFramework> |
| [HTTP] | Hypertext Transfer Protocol  <http://www.w3.org/Protocols> |
| [ISO 8601] | Date and time format  <https://www.iso.org/iso-8601-date-and-time-format.html> |
| [ISO-3166] | Country code specification  <http://www.iso.org/iso/country_codes.htm> |
| [ISO-639-1] | Language code specification (Alpha-2 code)  <http://www.loc.gov/standards/iso639-2/php/code_list.php> |
| [JSON] | JavaScript Object Notation  [http://www.json.org](http://www.json.org/) |
| [URLENC] | URL Encoding  <http://www.w3schools.com/tags/ref_urlencode.asp> |

## Open Issues

This is a list of open issues that needs to be resolved:

* This document is still a work in progress.

## Limitations

The information described in this document is preliminary and subject to change in the future.

Legend:



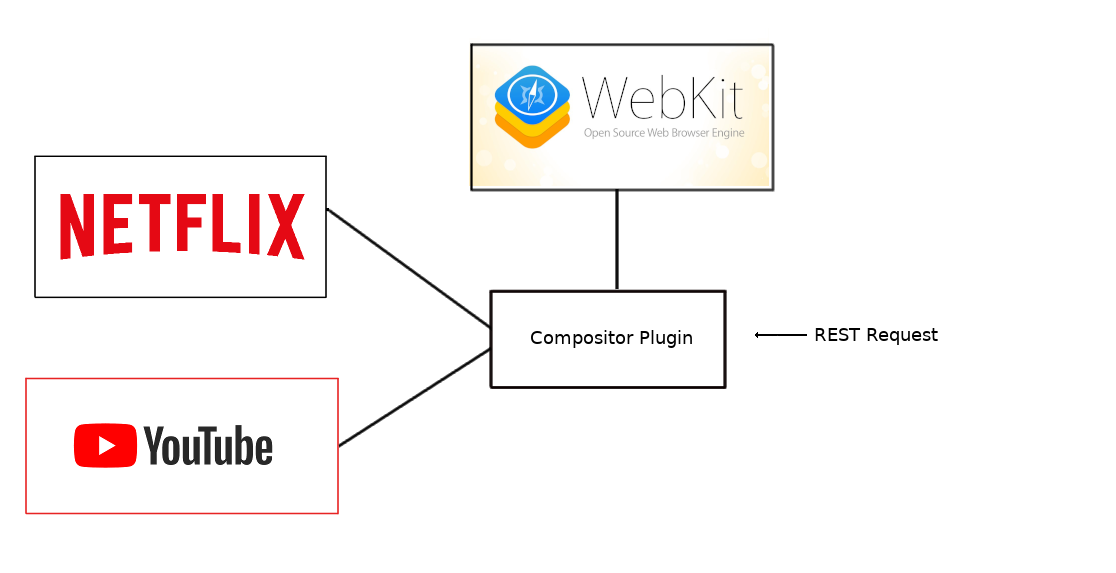
**Be aware of:** implementation choice is needed or side-effect needs to be handled.



**Implementation advice:** Guide line for implementation mostly related to performance.

# Plugin

## Introduction

In the illustration above one is able to see the overall working of the Compositor-plugin. One can distinguish the three clients: *WebKitBrowser*, *Netflix* and *Youtube* and the Compositor-plugin.

Whenever a REST- request is send to the plugin. The plugin will then handle the request for the compositor-server. So, basically the Compositor-plugin tasks can be subdivided into three main tasks:

1) It acts as REST-service that handles all requests it receives from its compositor-clients.

2) It contains a compositor-server that renders and handles the input (keyboard) events of all clients.

3) It will manage its clients and determines which client is active (on top of the screen).

As a compositor-server it will determine which client gets the focus (is on top) and becomes active. The Compositor-plugin is able to change the geometry, the input-source, the opacity, the visibility or to kill each client. Next to setting the overall screen resolution.

## Configuration of Controller

See section *Compositor Configuration* of [WPE Framework.docx](https://github.com/WebPlatformForEmbedded/WPEFramework/tree/master/doc).

## Application Programming Interface (API)

### General information

Using one of both methods will retrieve for you the information of actual running clients.

|  |  |
| --- | --- |
| Request: | GET /Service/Compositor/ or *Service/*Compositor/Clients |
| Success: | HTTP/1.1 200 OK List information of all clients  { information of all clients } |

### Get Clients in ZOrder

Using this method will retrieve for you the list of all clients in z-order (name: *client-list* in this document).

Each client has an z-order-value that determines its position with respect to the screen. The ordering is that the top position is closest to the screen, the next zorder-value first behind the top, and so on.

|  |  |
| --- | --- |
| Request: | GET /Service/Compositor/ZOrder |
| Success: | HTTP/1.1 200 OK List clients from top to bottom  { client\_list } |

### Get Client Geometry

Using this method to get the geometry of the client.

|  |  |
| --- | --- |
| Request: | GET /Service/Compositor/*Geometry*/<client> |
| Success: | HTTP/1.1 200 OK Get screen resolution  { geometry of client } |
| Failure: | HTTP/1.1 400 BAD REQUEST Could not retrieve Geometry, could not find client  HTTP/1.1 400 BAD REQUEST Could not retrieve Geometry, client not specified |

### Get Screen Resolution

Using this method to get the resolution of the screen.

|  |  |
| --- | --- |
| Request: | GET /Service/Compositor/Resolution |
| Success: | HTTP/1.1 200 OK Get screen resolution  { resolution } |

### Adjust Screen Resolution

Using this method to reset the screen resolution by passing index.

|  |  |
| --- | --- |
| **Resolution** | **[*index*]** |
| *480i* | *1* |
| *480p* | *2* |
| *720p* | *3* |
| *720p50Hz* | *4* |
| *108024Hz* | *5* |
| *1080i50Hz* | *6* |
| *1080p50Hz* | *7* |
| *1080p60Hz* | *8* |
| *2160p50Hz* | *9* |
| *2160p60Hz* | *10* |

|  |  |
| --- | --- |
| Request: | POST /Service/Compositor/*Resolution/[index*] |
| Success: | HTTP/1.1 200 OK Update screen resolution to [index] |
| Failure: | HTTP/1.1 400 BAD REQUEST invalid parameter for resolution: |

### Switch Client to Top.

Using this method to get a <client> to the top position (of the <client>-list).

Whenever a <client> is on top, it will shown on the screen and it will be in focus.

|  |  |
| --- | --- |
| Request: | POST /Service/Compositor/*<client>*/Top |
| Success: | HTTP/1.1 200 OK Set <client> to the top the client-list |
| Failure: | HTTP/1.1 400 BAD REQUEST Client name is not registered |

### Place ClientA Below another ClientB.

Using this method to place a <client-a> below another <client-b> (of the client-list).

Whenever one wants to reorder the client-list. One can slide a <client-a> just below a <client-b> in the client-list.

|  |  |
| --- | --- |
| Request: | POST /Service/Compositor/*<client-a>*/PutBelow/<client-b> |
| Success: | HTTP/1.1 200 OK Slide <client-a> just behind <client-b> |
| Failure: | HTTP/1.1 400 BAD REQUEST Client name is not registered  HTTP/1.1 400 BAD REQUEST Could not change z-order for Client. Client is not registered  HTTP/1.1 400 BAD REQUEST Could not change z-order for Client. Client relative to which operation should be executed is not registered  HTTP/1.1 400 BAD REQUEST Could not change z-order for Client.  Unspecified problem  HTTP/1.1 400 BAD REQUEST Could not change z-order for Client  <client-b>. Not specified relative to which client |

### Switch Input to <client>

Using this method to re-direct all the input-events to the <client>.

Each client has its own display, surface and keyboard (input-device). Analogous to setting the surface of a <client> to the top, one is able to direct the input-events to that specific <client>.

In the end the client is shown on the screen and all the input-events will act as if they are only send to the <client>.

|  |  |
| --- | --- |
| Request: | POST /Service/Compositor/*<client>*/Input |
| Success: | HTTP/1.1 200 OK Update the Input of the <client>HTTP/1.1 400 BAD REQUEST Client name is not registered |
| Failure: | HTTP/1.1 400 BAD REQUEST Client name is not registered |

### Adjust Opacity

Using this method to reset the opacity-value of a <client>:

The opacity of a <client> surface can range from 0 till 255, that will represent an opacity of the surface from 0% till 100%.

Thus, for example, whenever someone wants an 25% opacity, one replaces [index] with the value 64.

|  |  |
| --- | --- |
| Request: | POST /Service/Compositor/*<client>*/Opacity/[index] |
| Success: | HTTP/1.1 200 OK Update to opacity to [value] |
| Failure: | HTTP/1.1 400 BAD REQUEST Client name is not registered |

### Adjust Visibility

Using the method to make the surface of the <client> to hidden or visible:

|  |  |
| --- | --- |
| **Visibility** | **[value]** |
| hidden | Hide |
| visible | Show |

|  |  |
| --- | --- |
| Request: | POST /Service/Compositor/*<Client>*/Visible/[value] |
| Success: | HTTP/1.1 200 OK Update the visibility to [Hide] or [Show] |
| Failure: | HTTP/1.1 400 BAD REQUEST Client name is not registered |

### Adjust Geometry

Using the method to update the geometry of the client surface:

The geometry is denoted as coordinates of a rectangle, where:

- [X] = x-coordinate of surface

- [Y] = y-coordinate of surface

- [W] = width of surface

- [H] = height of surface

|  |  |
| --- | --- |
| Request: | POST /Service/Compositor/*<Client>*/Geometry/[X]/[Y]/[W]/[H] |
| Success: | HTTP/1.1 200 OK Update the geometry([X],[Y],[W],[H]) |
| Failure: | HTTP/1.1 400 BAD REQUEST Could not set rectangle for Client <client>. Not all information provided |

### Kill <client>

Using this method to kill the <client>:

Whenever a <client> is killed, the execution of the <client> is stopped and all its resources will be released.

|  |  |
| --- | --- |
| Request: | POST /Service/Compositor/*<client>*/Kill |
| Success: | HTTP/1.1 200 OK Kill the <client> |
| Failure: | HTTP/1.1 400 BAD REQUEST Client name is not registered |