

# Package ‘epivizrServer’

September 29, 2022

**Type** Package

**Title** WebSocket server infrastructure for epivizr apps and packages

**Version** 1.24.0

**URL** <https://epiviz.github.io>

**BugReports** <https://github.com/epiviz/epivizrServer>

**Description** This package provides objects to manage WebSocket connections to epiviz apps. Other epivizr package use this infrastructure.

**biocViews** Infrastructure, Visualization

**VignetteBuilder** knitr

**Depends** R (>= 3.2.3), methods

**Imports** httpuv (>= 1.3.0), R6 (>= 2.0.0), rjson, mime (>= 0.2)

**Suggests** testthat, knitr, rmarkdown, BiocStyle

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**LazyData** true

**Collate** 'IndexedArray-class.R' 'Queue-class.R' 'utils.R' 'zzz.R'  
'middleware-plus-supporting.R' 'dummyTestPage.R'  
'EpivizrServer-class.R' 'createServer.R'

**RoxygenNote** 7.1.0

**NeedsCompilation** no

**Author** Hector Corrada Bravo [aut, cre]

**Maintainer** Hector Corrada Bravo <hcorrada@gmail.com>

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createServer	<i>Create a new EpivizServer object</i>
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### Description

Create a new EpivizServer object

### Usage

```
createServer(
  port = 7123L,
  static_site_path = "",
  try_ports = FALSE,
  daemonized = NULL,
  verbose = FALSE,
  non_interactive = FALSE
)
```

### Arguments

port (int) port to which server will listen to.

static\_site\_path (character) path to serve static html files.

try\_ports (logical) try various ports until an open port is found.

daemonized (logical) run in background using httpuv's daemonized libuv server.

verbose (logical) print verbose output.

non\_interactive (logical) run in non-interactive mode. For development purposes only.

### Value

an [EpivizServer](#) object

### See Also

[EpivizServer](#) for the class of objects returned

**Examples**

```
server <- createServer(port=7123,
                      verbose=TRUE
                      )
```

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EpivizServer-class      *Class providing WebSocket connection server*

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**Description**

Class providing WebSocket connection server

**Details**

The most important aspect of the API of this server are methods `register_action` and `send_request`. These are used to interact with the epiviz JS app through the provided websocket connection. `register_action(action, callback)` registers a callback function to be executed upon request from the epiviz JS app. When the server receives a JSON message through the websocket, it checks for an action field in the received request message, and then evaluates the expression `callback(message_data)` where `message_data` is obtained from the data field in the received message. A response will be sent to the epiviz app with field data populated with the result of the callback. If an error occurs during evaluation of the callback function, the response will be sent with field success set to false.

To send requests to the JS app, method `send_request(request_data, callback)` should be used. This sends a request to the JS app with the data field populated with argument `request_data`. Once a response is received (with field success equal to true) the expression `callback(response_data)` is evaluated where `response_data` is obtained from the data field in the received response message.

**Value**

RC object with methods for communication with epiviz JS app

**Methods**

`has_action(action)` Check if a callback is registered for given action<character>, <logical>. (See Details)

`has_request_waiting()` Check if there is a sent request waiting for a response from JS app, <logical>

`is_closed()` Check if server is closed, <logical>

`is_daemonized()` Check if server is running in background, <logical>

`is_interactive()` Check if server is running in interactive mode, <logical>

`is_socket_connected()` Check if there is an open websocket connection to JS app, <logical>

`register_action(action, callback)` Register a callback<function> to evaluate when epiviz JS sends a request for given action<character>. (See Details)

`run_server(...)` Run server in blocking mode  
`send_request(request_data, callback)` Send request to epiviz JS app with given `request_data<list>`, and evaluate `callback<function>` when response arrives. (See Details)  
`service()` Listen to requests from server. Only has effect when non-daemonized  
`start_server()` Start the underlying httpuv server, daemonized if applicable  
`stop_server()` Stop the underlying httpuv server  
`stop_service()` Stop listening to requests from server. Only has effect when non-daemonized.  
`unregister_action(action)` Unregister a callback function for given `action<character>` (if registered). (See Details)  
`wait_to_clear_requests(timeout = 3L)` Wait for `timeout` seconds to clear all pending requests.

### Examples

```

server <- createServer()
server$register_action("getData", function(request_data) {
  list(x=1,y=3)
})

server$start_server()

server$send_request(list(x=2,y=5), function(response_data) {
  cat(response_data$x)
})

server$stop_server()
  
```

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IndexedArray-class      *Class providing an indexed array (hashtable)*

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### Description

Class providing an indexed array (hashtable)

### Methods

`append(item)` Append item to tail of array, returns id of item `<int>`  
`empty()` Remove all items from array  
`get(id)` Get item with given `id<int>`, returns `<ANY>`, returns NULL if no item with given `id`  
`length()` Return number of items on array `<int>`

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json_parser	<i>JSON parser used by this package</i>
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**Description**

Currently this just renames [fromJSON](#) in the rjson package.

**Usage**

```
json_parser(  
  json_str,  
  file,  
  method = "C",  
  unexpected.escape = "error",  
  simplify = TRUE  
)
```

**Arguments**

json_str	json string to parse
file	file to read json_Str from
method	method used to parse json
unexpected.escape	handling escape characters, one of error, skip, keep
simplify	if TRUE, convert json-encoded lists to vectors

**Value**

a JSON object

**See Also**

[fromJSON](#)

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json_writer	<i>JSON writer used by this package</i>
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**Description**

Currently this just renames [toJSON](#) in the rjson package.

**Usage**

```
json_writer(x, indent = 0, method = "C")
```

**Arguments**

x	object to write to json
indent	integer specifying how much indentation to use when formatting the JSON object; if 0, no pretty-formatting is used
method	method used to write json

**Value**

a string with JSON encoding of object

**See Also**

[toJson](#)

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Queue-class

*Class providing a queue data structure*

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**Description**

Class providing a queue data structure

**Methods**

- `empty()` Remove all items from queue
- `has_more()` Return TRUE if there are more items in queue <logical>
- `length()` Return the number of items in queue <int>
- `pop()` Pop next item from queue (returns NULL if queue is empty)
- `push(item)` Push <item> onto queue

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