XMLHttpRequest

Wakanda proposes a server-side XMLHttpRequest API that allows the Wakanda server to send requests to other HTTP servers.

The Wakanda Server-side implementation of XMLHttpRequest is partially compliant with the one available on client-side. Its API follows the W3C XMLHttpRequest API specification and provides an additional support for proxy connections.

The Server-side XMLHttpRequest API can be broken in three parts:

- the **XMLHttpRequest( )** constructor, used to create *XMLHttpRequest* instances,
- the instance properties and methods to manage requests: **readyState**, **onreadystatechange**, **open( )**, **send( )**, **setClientCertificate( )**, **setRequestHeader( )**
- the instance properties and methods to manage responses: **response**, **responseText**, **responseType**, **status**, **statusText**, **getAllResponseHeaders( )**, **getResponseHeader( )**

XMLHttpRequest Constructor

XMLHttpRequest( )

void **XMLHttpRequest**([Object *proxy*])

Parameter	Type	Description
proxy	Object	Object containing a host and a port attributes

Description

The **XMLHttpRequest( )** method is the constructor of the class objects of the *XMLHttpRequest* type. It should be used with the **new** operator to create *XMLHttpRequest* instances on the server. Once created, an instance can be managed using methods and properties regarding the request itself as well as the response (see **XMLHttpRequest Instances**).

If the Wakanda Server needs to perform the request through a proxy server, by default the method automatically uses the system proxy settings.

***Note:** Proxy exceptions are supported through simple string comparisons.*

However, if you want to override your system settings, you can pass an object containing two attributes in the *proxy* parameter:

- host (string): address of the proxy server
- port (number): TCP port number of the proxy server

For example, this object is a valid *proxy* parameter:

```
{host: "http://proxy.myserver.com", port: 80}
```

If you do not want to use your proxy for the request, pass an empty object in *proxy*.

***Note: XMLHttpRequest( )** supports HTTPS connections but does not validate certificates.*

Keep-alive

Wakanda Server implements an automatic keep-alive mode when issuing a **XMLHttpRequest( )**. When several successive XHR requests are sent to the same host, Wakanda Server will reuse the same TCP connection. This feature provides better performance when using an authenticated connection or when sending a large number of XHR requests.

Example

In the following example, we send GET requests to a Wakanda server or to an HTTP server and format the responses, whatever their type (HTML or JSON). We can then see the results in the JavaScript Editor.

```
var xhr, headers, result, resultObj, URLText, URLJson;

 URLJson = "http://127.0.0.1:8081/rest/$catalog"; // REST query to a Wakanda Server
 URLText = "http://communityjs.org/"; // connect to an HTTP server
 var headersObj = {};

 xhr = new XMLHttpRequest(); // instanciate the xhr object
    // you could pass a proxy parameter if you do not want to use your default proxy settings

 xhr.onreadystatechange = function() { // event handler
     var state = this.readyState;
     if (state !== 4) { // while the status event is not Done we continue
         return;
     }
     var headers = this.getAllResponseHeaders(); //get the headers of the response
     var result = this.responseText;  //get the contents of the response
     var headersArray = headers.split('\n'); // split and format the headers string in an array
     headersArray.forEach(function(header, index, headersArray) {
         var name, indexSeparator, value;

        if (header.indexOf('HTTP/1.1') === 0) { // this is not a header but a status
             return; // filter it
         }

        indexSeparator = header.indexOf(':');
        name = header.substr(0,indexSeparator);
        if (name === "") {
            return;
        }
        value = header.substr(indexSeparator + 1).trim(); // clean up the header attribute
        headersObj[name] = value; // fills an object with the headers
     });
     if (headersObj['Content-Type'] && headersObj['Content-Type'].indexOf('json') !== -1) {
             // JSON response, parse it as objects
```

```
        resultObj = JSON.parse(result);
    } else { // not JSON, return text
        resultTxt = result;
    }
};

xhr.open('GET', URLText); // to connect to a Web site
  // or xhr.open('GET', URLJson) to send a REST query to a Wakanda Server

xhr.send(); // send the request
statusLine = xhr.status + ' ' + xhr.statusText; // get the status

// we build the following object to display the responses in the JavaScript Editor
({
    statusLine: statusLine,
    headers: headersObj,
    result: resultObj || resultTxt
});
```

The results can be displayed in the Results area of the JavaScript Editor.
Here is the result of a simple query to a Web server:

Here is the result of a REST query to a Wakanda Server:

statusLine: "200 OK"

headers:

Accept-Ranges: "none"

Connection: "keep-alive"

Content-Length: "350"

Content-Type: "application/json"

Date: "Fri, 06 Jan 2012 15:58:00 GMT"

Server: "Wakanda/1.0.0"

result:

dataClasses:

name: "City"	**uri:** "http://127.0.0.1:8081/rest/$catalog/City"	**dataURI:** "http://127.0.0.1:8081/rest/City"
name: "Comp"	**uri:** "http://127.0.0.1:8081/rest/$catalog/Comp"	**dataURI:** "http://127.0.0.1:8081/rest/Comp"
name: "Person"	**uri:** "http://127.0.0.1:8081/rest/$catalog/Person"	**dataURI:** "http://127.0.0.1:8081/rest/Person"

XMLHttpRequest Instances

status

Description

The **status** property returns the HTTP status code of the *XMLHttpRequest*.
status returns 0 if an error occured or if the request **readyState** value is 0 or 1.

statusText

Description

The **statusText** property returns the HTTP status text of the *XMLHttpRequest*.
statusText returns an empty string if an error occured or if the request **readyState** value is 0 or 1.

responseText

Description

The **responseText** property contains the text response entity body. The response entity body is the fragment of the entity body of the response received so far (**readyState** value 3) or the complete entity body of the response (**readyState** value 4)
The **responseText** property returns an empty string if the **readyState** value is not 3 or 4, or if the response entity body is null.

readyState

Description

The **readyState** property returns the current state of the *XMLHttpRequest*.
The returned value can be one of the following:

State value	State description
0 (UNSET)	The *XMLHttpRequest* object has been constructed.
1 (OPENED)	The **open( )** method has been successfully invoked. During this state, request headers can be set using **setRequestHeader( )** and the request can be made using the **send( )** method.
2 (HEADERS_RECEIVED)	All HTTP headers have been received. Several response members of the object are now available.
3 (LOADING)	The response entity body is being received.
4 (DONE)	The data transfer has been successfully completed or something went wrong during the transfer (e.g. infinite redirects).

Each time the **readyState** property changes, the event handler function set by **onreadystatechange** is called.

responseType

Description

The **responseType** property allows you to set the type of the response.
Two values are available:

- "text", which is the default value
- "blob", to set the response object as a BLOB.

Note that if the response entity body is of the BLOB type, you should handle it using the **response** property instead of **responseText**.
You can set **responseType** at any moment, whatever the xhr state.

Example

```
var proxy = { host: 'myproxy.public.4d.com', port: 80 };

xhr = new XMLHttpRequest(proxy);
xhr.open('GET', "http://www.perdu.com")
xhr.send();

    //response type defaults to "text"
var type1=xhr.responseType;
var resp1=xhr.response;

    //we can change responseType at will
```

```
xhr.responseType="blob";
var type2=xhr.responseType;
var resp2=xhr.response;

var type3=xhr.responseType;

    //we can't affect anything to response
xhr.response="this is the response";
var resp3=xhr.response;
```

response

Description

The **response** property contains the response entity body. The response entity body is the fragment of the entity body of the response received so far (**readyState** value 3) or the complete entity body of the response (**readyState** value 4).

You need to use this property if the **responseType** is other than text, otherwise you can use the **responseText** property.

The **response** property returns an empty string if the **readyState** value is not 3 or 4, or if the response entity body is null.

Example

The following *loadRemoteImage(url[, proxy])* function is an alternative to loadImage() to load an image from the Web using an HTTP URL.

```
* @method loadRemoteImage
 * @param {string} url A full HTTP url
 * @param {Object} [proxy] Proxy object expects 2 properties: "host" and "port"
 * @result Image|null
 **/
function loadRemoteImage(url, proxy) {

    'use strict';

    var
        xhr,
        format,
        tmpFile,
        image;

    // download remote image
    xhr = new XMLHttpRequest(proxy);
    xhr.open('GET', url, false); // false explicitely say request is synchronous
    xhr.setRequestHeader('Accept', 'image/*');
    xhr.responseType = 'blob';
    xhr.send();
    // handle redirections
    if ([301, 302, 303, 307, 308].indexOf(xhr.status) > -1) {
        url = xhr.getResponseHeader('Location');
        return loadRemoteImage(url, proxy);
    }
    if ((xhr.status !== 200) || !xhr.response ||  !xhr.response.size) {
        return null;
    }

    // check and transform mime type name into extension for supported format
    format = xhr.getResponseHeader('Content-Type').split('/'); // ex: ['image', 'png']
    if (format[0] !== 'image') {
        return null;
    }
    format = format[1];
    // remove potential "x-" prefix
    if (format[0] === 'x') {
        format = format.substr(2);
    }

    // save downloaded image to temporary file
    tmpFile = new File(ds.getTempFolder(), 'webImg' + Date.now() + '.' + format);
    xhr.response.copyTo(tmpFile);

    // create the image instance
    image = loadImage(tmpFile);

    // remove temporary file
    tmpFile.remove();
```

```
    return image;
}
```

onreadystatechange

Description

The **onreadystatechange** property defines the event listener function that will handle the various states of the *XMLHttpRequest*.

The **onreadystatechange** function will be called each time the **readyState** property value is updated and receives contextual information about the event. You can handle the request in response to the current **readyState**.

Example

See the example for the **XMLHttpRequest( )** constructor function.

getAllResponseHeaders( )

String **getAllResponseHeaders**( )

Returns	String	Header of the reponse with all its fields in plain text

Description

The **getAllResponseHeaders( )** method returns all HTTP headers from the response of the *XMLHttprequest*.

HTTP headers are returned as a single string with each header line separated by a CR/LF pair and with each header name and header value separated by a ": " pair.

Example

See example for the **XMLHttpRequest( )** constructor method.

getResponseHeader( )

String | Null **getResponseHeader**(String *header*)

Parameter	Type	Description
header	String	Header field name
Returns	String, Null	Value of the header

Description

The **getResponseHeader( )** method returns the value of a specific *header* field in the response of the *XMLHttpRequest*.

Pass in *header* the name of the header field name that you want to get the value.

The method returns **Null** if an error occurred or if no such field name was found in the response.

Example

You want to know the value of the 'Content-Type' field to process the result accordingly:

```
var xhr = new XMLHttpRequest();
xhr.open("GET", "http://www.myserver.com");
 xhr.send();
 xhr.onreadystatechange = function() {
     if(this.readyState== 4)  &&  (this.status == 200) {
        if( this.getResponseHeader("Content-Type") == "application/json") {
            resultObj = JSON.parse(this.responseText);
        }
    }
// process resultObj
 };
```

open( )

void **open**(String *method* , String *url* [, Boolean *async*])

Parameter	Type	Description
method	String	The method of the request (GET, POST, PUT, HEAD)
url	String	URL of the request
async	Boolean	False or omitted = Synchronous execution True = Asynchronous execution (not implemented)

Description

The **open( )** method declares the HTTP method and the URL of the *XMLHttpRequest*.

Pass in *method* the HTTP method to use.The following standard HTTP methods are currently supported: GET, POST, PUT and HEAD.

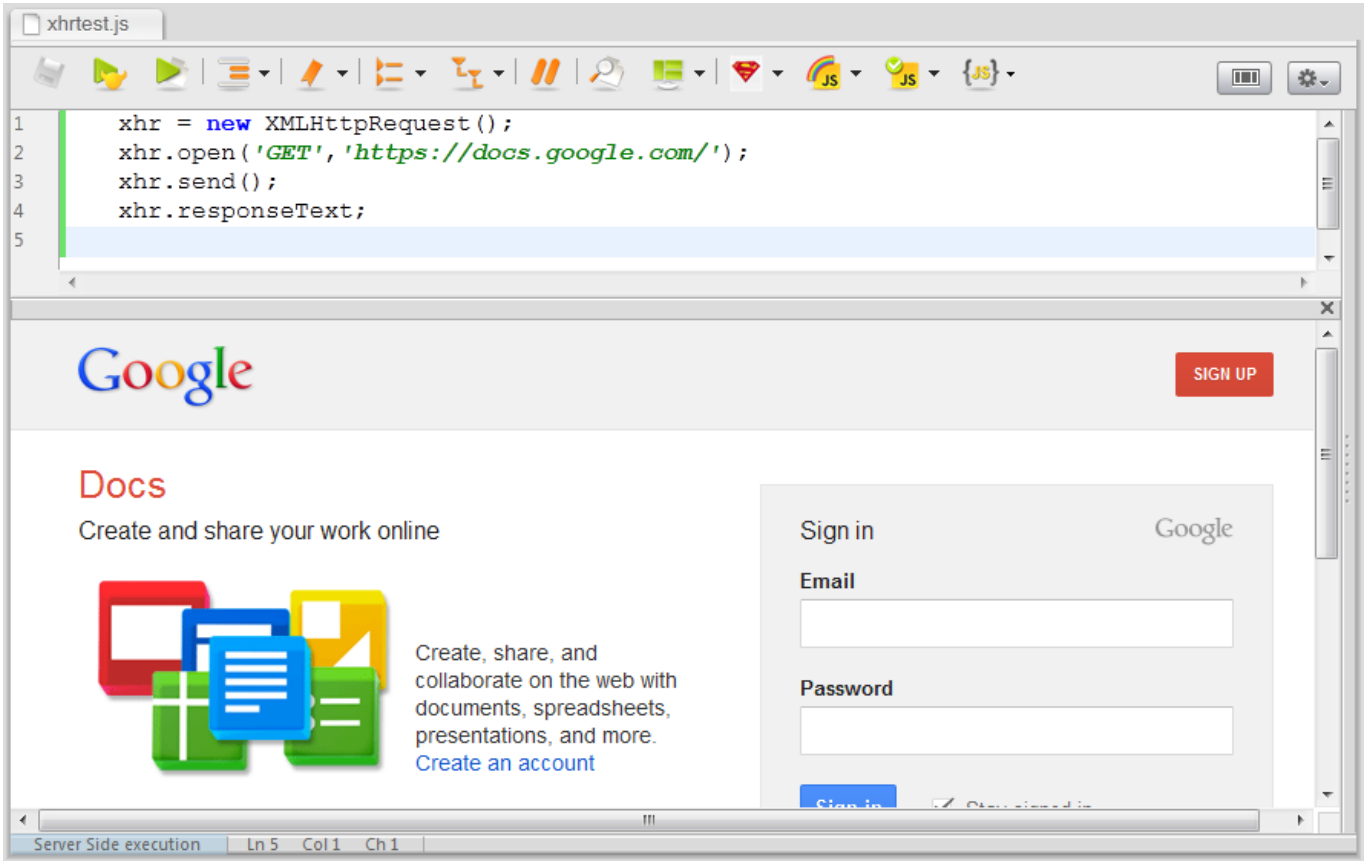
Pass in *url* a valid URL where the request will be adressed.

***Note:** The async parameter is available for compatibility reasons but has no effect since only synchronous execution is currently supported in Wakanda server-side XHR.*

Example

We just want the server to connect using HTTPS protocol and display the result in the code editor:

```
xhr = new XMLHttpRequest();
xhr.open('GET','https://docs.google.com/'); // connect using the https protocol
xhr.send();
xhr.responseText;// displays the response
```



send( )

void **send**([String | File *data*])

Parameter	Type	Description
data	String, File	The content of the request body for POST and PUT requests

Description

The **send( )** method sends the request defined in the *XMLHttpRequest*.

The optional *data* parameter allows you to provide the request entity body. You can pass either a *string* or a *File* object. If you pass a *File*, it must already exist on disk.

This parameter is ignored if request method is GET or HEAD. Developers are encouraged to ensure that they have specified the Content-Type header using **setRequestHeader( )** before invoking **send( )** with a non-null *data* argument.

Example

The following function allows you to upload an image using a XHR:

```
function uploadFile(file, fileName, containerName, authObject){
    var response = null;
    var client = new XMLHttpRequest();
    client.open('PUT', authObject.storageUrl + "/" + containerName + "/" + fileName);
    client.setRequestHeader('X-Auth-Token', authObj.authToken);
    client.setRequestHeader('Content-Type', "image/jpeg");
```

```
    client.send(file);
    var state = client.readyState;
    if(state == 4){
        response = client.status;
    }
    return response;
};
```

setClientCertificate( )

void **setClientCertificate**(String *keyPath*, String *certificatePath*)

Parameter	Type	Description
keyPath	String	Path to the PEM format private key
certificatePath	String	Path to the local PEM format certificate

Description

The **setClientCertificate( )** method allows the request to be authenticated on the remote server with a client certificate, when necessary.

Pass in *keyPath* the path to the local key in PEM format.

Pass in *certificatePath* the path to the local certificate, also in PEM format.

setRequestHeader( )

void **setRequestHeader**(String *header*, String *value*)

Parameter	Type	Description
header	String	The header field name. Ex: "Accept"
value	String	The header field value. Ex: "application/json"

Description

The **setRequestHeader( )** allows you to set the *value* of a specific *header* field of the *XMLHttpRequest*.

This method is useful to define custom headers or to set standard header values.

Example

The following script:

```
var client = new XMLHttpRequest();
client.open('GET', 'demo.cgi');
client.setRequestHeader('X-Test', 'one');
client.setRequestHeader('X-Test', 'two');
client.send();
```

would result in the following header being sent:

```
X-Test: one, two
...
```

Example

In this example, you set the User-Agent:

```
client.setRequestHeader('User-Agent',"wakandaDB sample application");
```