Socket.IO V2 Client Asset Documentation

Thank you for buying our asset.

Unfortunately, sometimes customers leave negative ratings and complain about things not working without contacting us so we can not help or fix the issue. We want to provide good support and have our customers having a great time developing their content, so:

If you happen to have any issues, please write an email to assets@firesplash.de and we will be happy to help!

Further, you would do us a big favor, if you'd leave a rating on the asset store once you got some experience with it.

This asset is used to connect a unity project to a server (or multiple servers) using Socket.IO middleware. The library provides the most important methods for this. It was not and will never be a try to implement every single aspect but the library is extendable as we provide the full source code.

What we sell and deliver is everything you need for most applications.

Socket.IO Protocol version compatibility

For general version compatibility please referrer to this link: https://socket.io/docs/v4/client-installation/index.html

Compatibility matrix from our side:

Server Version -> v Asset Version v	v1.x	v2.x	v3.0.x	v3.1.x	v4.x
Asset V2					
Asset V3/V4					

Green = Full compatibility (within the general limitations of this asset according to this documentation)

Yellow = Compatible via 'allowEIO3' flag and **NOT officially supported** – Might break at any time.

Red = incompatible

If your Socket.IO asset v2 is compatible to Socket.IO Server v4, why would the v3/v4 asset still be a good investment? Why the higher price?

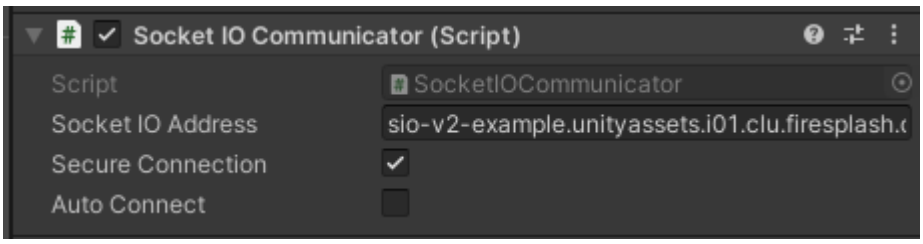
This Socket.IO v2 asset only covers the very basic portions of the protocol in native mode. For example reconnects are not automated, most of the status events are not emitted to your application and after all the compatibility layer is not a future-safe investment.
This V2 Asset version implements some of the technical events (connect, disconnect, reconnect, connect_error, reconnect_error) as well as auto reconnecting, but V3/V4 have a more reliable implementation of connecting/disconnecting on protocol level. Socket.IO v3/v4 further has a way better timeout/ping handling and is considered more stable. This is only the case when both sides are v3/v4

The higher price is applied as v3/v4 support needed huge changes in the code base and lots of research. The undelaying protocol has significantly changed since v2 which is also the reason why v2 and v3/v4 are not compatible (without the compatibility flag which actually degrades v3/v4 servers to v2)

After all we provide our customers a discounted upgrade/downgrade path, so at any time customers will only pay the extra work, and do not have to buy a complete second asset.

Set Up

Our asset works quite straight-forward. Just create a GameObject and add the “Socket IO Communicator” component to it. Enter all detail used for connecting into the fields. The Address has to be provided without protocol prefix or any folders.
S.IO-Namespaces are not supported by this library.



This dialog does now look more straight forward an contains more settings.

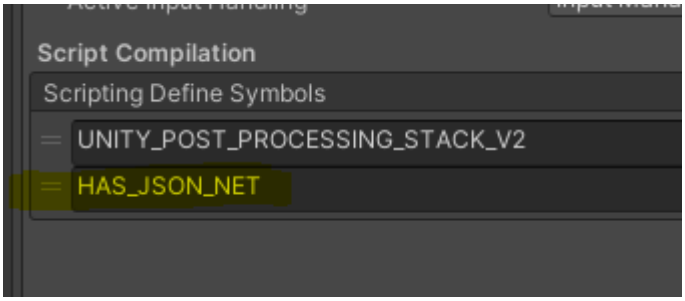
Whenever possible you should not use the “Auto Connect” feature as most likely you will want to setup the listeners (“On”) before connecting. See the example for a best practice setup.

If you want to connect to more than one Socket.IO server, you have to use on GameObject per connection and you need to name them different. If you use two GameObjects identically named with SocketIOCommunicator Component in WebGL builds, it will result in unexpected behavior because the Socket.IO system depends on unique names from javascript (JSLib) side.
This is a Unity limitation.

Why JSON.NET and how do I integrate it?

Unfortunately Unity’s own JSON “Skills” (JsonUtility) are very limited and everything except reliable when it comes to complex objects – but that’s fine as that is not the scope of those methods. There is a very great alternative out there: Newtonsoft Json / JSON.NET – The latter is a fork which has been customized to support Unity’s IL2CPP builds (e.g. WebGL).
To utilize that and keep the ease of use of “Emit(eventName, data)“ without the third parameter, install the JSON-NET package as described here: https://github.com/jilleJr/Newtonsoft.Json-for-Unity#installation

Afterwards head to your project’s player settings and set the “Scripting Define Symbol” HAS_JSON_NET:



Do not set the flag, if you did not install JSON.NET into the project. This would cause compiler errors.

Usage

We provide a well-documented example in our asset. Please review the code to get a closer understanding.

The SocketIOCommunicator Component provides access to a singleton “Instance” which contains the actual Socket.IO implementation specific to the platform. You use this to interact with the library.
Further in runtime it will create an object called “SIODispatcher” which is a helper for running everything thread safe. This component is used to enqueue actions to be run on the main thread.

The following methods and fields are available:

`string Instance.SocketID` (readonly)

Contains the SocketID of the current connection. Is null if never connected, still contains the old SocketID after a connection loss until a (re)connect succeeded.

`void Instance.On(string eventName, Callback(string payloadData));`

Used to subscribe to a specific event. The callback will be executed everytime when the specific event is received. The callback contains a string. This is the data sent from the server, eighter a stringified JSON object (if the data was a json object) or a plain text string.
If the server sent no payload, the string will be null.

Example:

```
sioCom.Instance.On("WhosThere", (string payload) =>
  {
    Debug.Log("Data received: " + payload);
  }
);
```

`void Instance.Off(string eventName, Callback);`

Used to remove the subscription to an event.

Example:

```
sioCom.Instance.Off("WhosThere", WhosthereHandlerMethod);
```

```
void Instance.Emit(string eventName [[, string payloadData], bool DataIsPlainText]);
```

Used to send an event to the server containaing am optional payload.
With third parameter: If `DataIsPlainText` is set true, the data will be delivered as a string. Else it will be delivered as a JSON object. If JSON object is sent (DataIsPlainText=false) and the string is not a valid stringified object, unexpected errors might occur. The third parameter is a hard override.
Without third parameter: If the payload is a valid JSON stringified object, the server will receive it as a JSON object. The automatic detection (JSON or PlainText) only works reliably in conjunction with JSON.NET as described above. If you don't use JSON.NET (or if you forgot to set the flag), omitting the third parameter will cause a deprecation warning.

Examples:

```
sioCom.Instance.Emit("ItsMe", "Hello World", true);
sioCom.Instance.Emit("ItsMe", "{"msg": "Hello World"}", false);
sioCom.Instance.Emit("ItsMe", "Hello World");
```

```
void Instance.Connect()
```

When Auto-Connect is disabled (best practice), this call connects to the server.

Example:

```
sioCom.Instance.Connect();
```

```
void Instance.Close()
```

Closes the connection to the server. Registered callbacks are **NOT** purged.

Example:

```
sioCom.Instance.Close();
```

```
bool Instance.IsConnected()
```

Returns a Boolean which is true if the library is currently connected to the server.

Example:

```
while (sioCom.Instance.IsConnected()) {
  sioCom.Instance.Emit("KnockKnock");
  //Please don't do this. That's evil 😉
}
```

Common Issues and Frequently Asked Questions

The game is not connecting to my server, not even locally (but the example works with the Firesplash Entertainment hosted demo server)

In most cases this is caused by one of the following reasons:

1. **You enabled the "Secure Connection" option in the component but did not correctly configure SSL on your server side – or vice versa!**
   Try to access the Socket.IO server using a Webbrowser: http(s)://your.server-address.here/socket.io/
   Don't forget the trailing "/" It **should** say `{"code":0,"message":"Transport unknown"}`
   If any browser errors appear, this is your issue. Be sure to use the exact same address as in the unity component at the red position, and set **http** for *unchecked* secure connect and **https** for *checked*.
2. **You are using the wrong port**
   Socket.IO assumes port 80 (insecure) or 443 (secure). Make sure to enter the correct port if you are using some other. Test access like in solution1 to make sure everything is right

Okay. Now I was able to run a server locally and connect the game with it but after uploading to the server it is no longer working again… duh!

Well…

1. **Again: SSL might not be configured correctly (you won't communicate unencrypted in production, right?)**
   Check SSL as done in the last question, possible solution 1. But this time using the actual server address.
2. **Your server does not accept the transport "websocket" or some layer in between drops the requests**
   This is a whip of rocket science for most developers: Socket.IO for Unity depends on the "websocket" transport and is NOT able to fallback to long-polling. This is why a standard socket.io application might work while the unity asset is not working.
   Load Balancers, Reverse Proxies, Firewalls and any device/solution between the client and the server could potentially cause issues here. Usually, the issue sits on the server side. Most likely – if using one – your load balancer or reverse proxy (like nginx/apache proxying requests through your servers port 80/443 down to a nodejs based server on a different port) is not configured correctly.
   Here are some hints for reverse proxy configuration: https://socket.io/docs/v4/reverse-proxy/ (this is the v4 documentation but the configs also apply to v2 but there is no RP sample – There is however a load-balancing example for v2: https://socket.io/docs/v2/using-multiple-nodes/)
   This Rocket-Science can easily be tested by writing a webbased test application. Have a look at our example ServerCode zip archive. It contains such a test html file. The important thing about it is to only try the websocket transport using the options: https://socket.io/docs/v2/client-initialization/#transports

How do I Serialize/Deserialize complex objects?

Unity's builtin "JsonUtility" does not support complex objects. This means it only supports objects and only a single layer of complexity.

Job	Builtin JsonUtility variant / workaround	Better variant (requires Json.Net)
Employee data	{ "firstname": "John", "surname": "Baker", "job": "Dentist" }	{ name: { "first": "John", "last": "Baker" }, "job": "Dentist" }
A list of numbers	{ "a": 12, "b": 15, "c": 20 }	[12, 15, 20]
A dynamic list of employees	*Not possible at all*	[{ name: { "first": "John", "last": "Baker" }, "job": "Dentist" }, { name: { "first": "Martina", "last": "Carrey" }, "job": "Student" }, …]

The good news: All those "bad" situations can be solved using Json.Net (we talked about this on page two)