



# White Paper

## Fabasoft Integration for JSON

Fabasoft Folio 2024 Update Rollup 1

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## 1 Introduction

JSON, or JavaScript Object Notation, is a lightweight text-based open standard designed for human-readable data interchange. It is derived from the JavaScript scripting language for representing simple data structures and associative arrays, called objects.

Fabasoft Folio allows to parse a JSON string and use the data as values represented in Fabasoft Folio data types. Values can also be converted into a JSON string and therefore used in a JavaScript environment or as transfer format when consuming a JSON aware web service.

For detailed information about JSON, please consult the introduction at <http://www.json.org>.

## 2 Software Requirements

**System environment:** All information contained in this document implicitly assumes a Microsoft Windows environment or a Linux environment.

**Supported platforms:** For detailed information on supported operating systems and software see the software product information on the Fabasoft distribution media.

## 3 Convert JSON to Value

The use case *Convert JSON to value* (FSCEXPEXT@1.1001:JSON2Value) is used to convert a JSON string to Fabasoft Folio values.

### Example

app.ducx Use Case Language

```
import FSCEXPEXT@1.1001;
usecase SampleConvertValueToJSON() {
  variant Object {
    impl = expression {
      string json = "{\"key\":\"value\"}";
      jsonval = coouser.JSON2Value(json);
      coort.Trace("value", jsonval);K
    }
  }
}

// trace result
value[0/1]: DICTIONARY = 1 entries
-- key[0/1]: STRING = value
```

The use case defines the following parameters:

- json  
Input parameter that takes the JSON string as `STRING` type.
- value  
Output parameter (return value) that returns the converted value. The type depends on the JSON string (complex JSON strings are returned as `DICTIONARY`, whereas a simple JSON integer array is returned as `INTEGERLIST`)

## 4 Convert Value to JSON

The use case *Convert value to JSON* (FSCEXPEXT@1.1001:Value2JSON) is used to convert Fabasoft Folio values into a JSON string.

## Example

app.ducx Use Case Language

```
import FSCEXPEXT@1.1001;
usecase SampleConvertJSONToValue() {
  variant Object {
    impl = expression {
      string json = coouser.Value2JSON(coouser);
    }
  }
}

// resulting JSON string
{
  " ": "User",
  "objaddress": "COO.1.1065.1.15",
  "objname": "Administrator, System"
}
```

## 5 JSON Web Services

### 5.1 Building JSON Web Services Using Fabasoft app.ducx

To create web services that use JSON, the specific use cases have to be encapsulated within a *Web Service Definition* object (FSCOWS@1.1001:WebServiceDefinition).

In the following example, a web service `contactaddress` is used to fetch address data from a contact person who is identified via first name and surname.

## Example

app.ducx Object Model Language

```
instance WebServiceDefinition JSONWebSvc {
  webserviceactions<webserviceoperation, webserviceaction> = {
    {
      "contactaddress",
      GetContactAddress
    }
  }
}
```

app.ducx Use Case Language

```
usecase GetContactAddress(string firstname, string surname, out Address address) {
  variant Object {
    impl = expression {
      if (firstname && surname) {
        string query = "LIMIT 1 SELECT objname FROM FSCFOLIO@1.1001:ContactPerson
          where .userfirstname = '" + firstname +
            "' and .usersurname = '" + surname + "'";
        ContactPerson contact = coort.SearchObjects3(coortx, query);
        address = contact.address[0];
      }
    }
  }
}
```

### 5.2 Accessing JSON Web Services

JSON web services can be accessed via a HTTP GET or HTTP POST method call via the “wsjson” Friendly URL.

### 5.2.1 HTTP GET Request

```
http://localhost/fsc/wsjson/JSONSAMPLE_1_1065_JSONWebSvc/contactaddress?firstname=Leo&surname=Mayr
```

The „wsjson“ Friendly URL takes two parameters:

- The reference of the *Web Service Definition* object containing the web service action.
- The operation name of the web service action.

In case of HTTP GET the parameters are transmitted as URL parameters.

### 5.2.2 HTTP POST Request

```
http://localhost/fsc/wsjson/JSONSAMPLE_1_1065_JSONWebSvc/contactaddress
```

In case of HTTP POST, the parameters are transmitted in the http request body as JSON string.

```
{
  "firstname": "Cadence",
  "surname": "Jones"
}
```

### 5.2.3 HTTP Response

In both cases the result is sent in the HTTP response body.

**Note:** The key “address” within the JSON string corresponds to the outgoing parameter `address` of the `GetContactAddress` use case.

```
{
  "address": {
    "_": "Address",
    "addrstreet": "Pfarrgasse 5",
    "addrzipcode": "5409",
    "addrcity": "Hallein",
    "addrcountry": "Österreich",
    "addrtopic": {
      "_": "TermComponentObject",
      "objaddress": "COO.1.1001.1.182477",
      "objname": "Business"
    },
    "addrsource": {
      "_": "ContactPerson",
      "objaddress": "COO.1.1065.3.402",
      "objname": "Jones Cadence"
    }
  }
}
```

## 6 JSON Parser Boundary Conditions

The following boundary conditions exist in the current JSON parser implementation:

### 6.1 Complex Arrays

Fabasoft Folio does not support multi-typed arrays, for instance integers and strings within one array.

**Example:**

```
[
  1,
  2,
  3,
  4,
  "a",
  "b",
  "c",
  {
    "foo": "bar",
    "core": "dump"
  },
  true,
  false,
  true,
  true,
  null,
  false
]
```

**Result:**

Error: Type mismatch.

## 6.2 Null Values

A JSON string containing `null` values or empty arrays is always represented as an invalid Fabasoft Folio value.

**Example:**

- `[null]` or `[""]`  
**Result:** `[]`
- `[{}]`  
**Result:** `{}`

## 6.3 Invalid UTF-8 Characters

A JSON string containing invalid UTF-8 characters is not parsed.

**Example:**

- `["â, -Ã¼Ã±Ã"É"ÃŸÃ° some utf-8 Ä, Ê' Ã-Ã< ÂµÃŸÃ±Ã¶?,,ž"]`  
Syntax error: invalid utf-8 character
- `["\uD834\uDD1E surrogate, four-byte UTF-8"]`  
Syntax error: invalid utf-8 character