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GENESYS™

Interaction Designer REST API Tools

Developer's Guide

Abstract

This document gives examples of using CIC's REST Tools to build handlers that communicate with external RESTful APIs.

For the latest version of this document, see the PureConnect Documentation Library at: http://help.genesys.com/pureconnect.

Table of Contents

Introduction to Interaction Designer REST API Tools

The *Interaction Designer REST API Tools Developer's Guide* is for developers who want to use Customer Interaction Center's REST capabilities to build handlers that can communicate with external RESTful APIs. For example, these tools allow CIC to communicate directly with the Salesforce API.

RESTful APIs are an alternative to SOAP-based APIs. RESTful APIs use standard HTTP methods, such as GET, PUT, POST, and DELETE to communicate, and provide endpoints, such as `http://api.example.com/user/120` for accessing and updating data. They typically use JSON as the data format, but can use other formats.

Customer Interaction Center's REST functionality removes the need to develop middleware for communicating with RESTful APIs.

CIC REST Implementation

The CIC REST tools:

- Support GET, POST, PUT, and DELETE. The tools do not support other methods.
- Support Oauth2. The tools do not support OAuth1.
- Provide JSON and array-parsing tools. The tools do not support other formats.

CIC provides six tools for building handlers that make requests to and consume data from RESTful APIs:

- REST HTTP Request
- Bearer Token Request
- JSON Parser
- JSON Builder
- Array Parser
- Array Builder

The *Interaction Designer REST API Tools Developer's Guide* provides examples of using these tools in handlers. For more information about the inputs, outputs, and exit paths of each tool, see the *Interaction Designer Help* at https://help.genesys.com/cic/mergedProjects/wh_id/desktop/hid_introduction.htm.

REST Handler best practices

- Familiarize yourself with the API you want to communicate with. For example, some APIs receive parameters in the URL itself, while others take parameters in the header. This behavior has an impact on tool inputs.
- Be aware of any incompatibilities between an API and the CIC REST tools. For example, these tools do not support OAuth1.

Proxy awareness

REST HTTP Request and Bearer Token Request include an optional Proxy Uri parameter where you can enter a forward proxy address for retrieving content from the API server. The parameter must include the protocol used. For example, `http://proxy.example.com` or `http://192.168.1.10`.

REST HTTP Request

Use the REST HTTP Request tool to send a request to an external REST service. You can optionally use client certificates with this tool. The REST HTTP Request tool:

- Expects the certificate file to exist in a specific directory: `I3\IC\Certificates\REST`. Create the `I3\IC\Certificates\REST` directory if it does not exist. The `I3\IC\Certificates\REST` directory is not created by default.

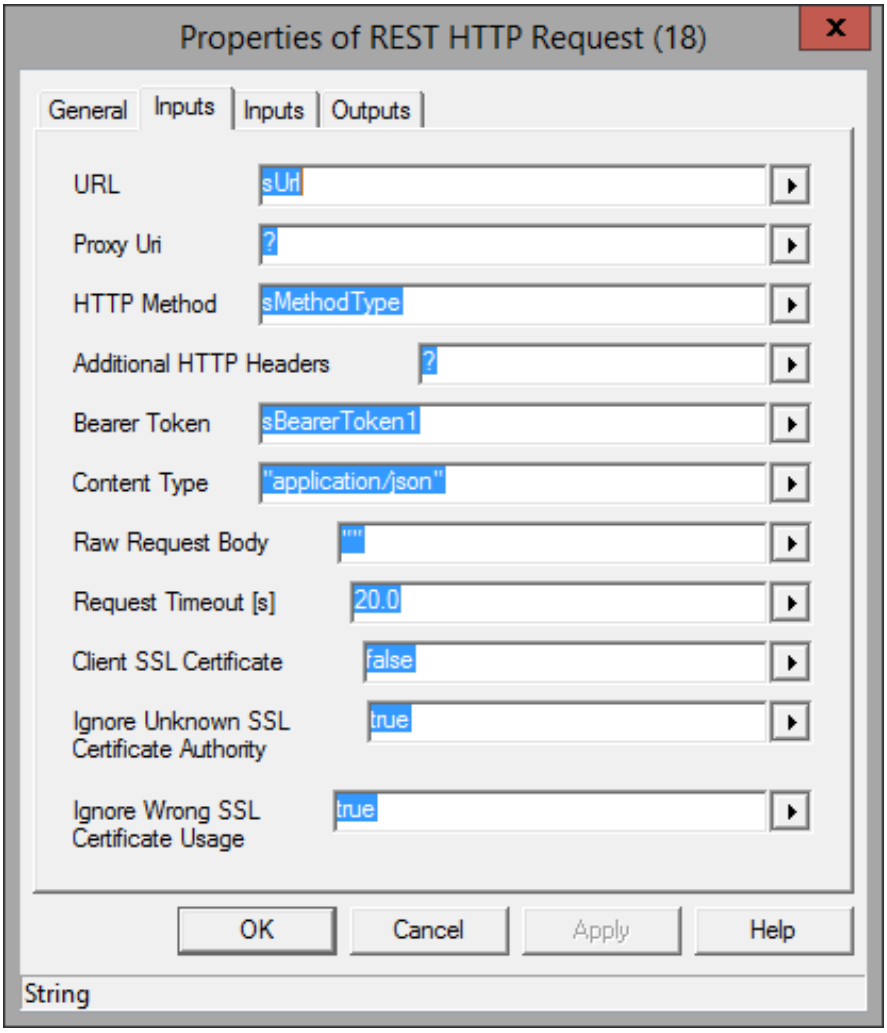
  Use the `CertTrustU.exe` to install a client certificate. The certificate must be in PEM format. For more information, see *PureConnect Security Features Technical Reference* in the PureConnect Documentation Library.
- Supports many concurrent requests.
- Does not use the Windows Certificate store to check for validity of the certificate.
- Uses openssl to do the verification.

REST HTTP request example

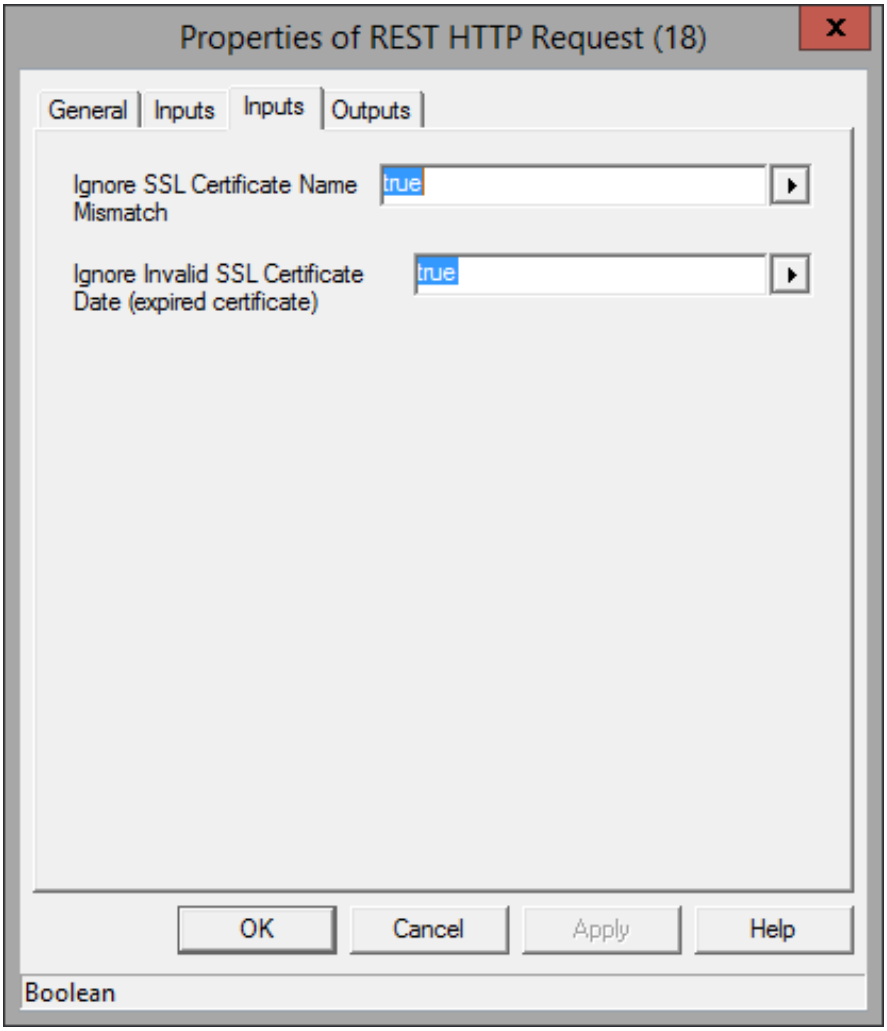
This example makes a request to the Twitter API. It uses the following variables:

Variables

Variable Name	Type	Initial Value
BearerToken1	String	
c_sDELETEHeader	String	header1: val1|header2: val2|header3: val3
c_sGETHeaderList	String	
c_sPOSTHeaders	String	
c_sPUTHeader	String	
CustomDataList	List of S...	
CustomEventId	String	
CustomObjectId	String	
HTTPRawResponseBody1	String	
InitiatorEventName	String	
InitiatorObjectName	String	
InitiatorObjectTypeName	String	
lsHeaderList	List of S...	
sBearerToken1	String	
sBody	String	
sHTTPRawResponseBod...	String	
sMethodType	String	
sUrl	String	https://api.twitter.com/1.1/statuses/user_timeline.json?count=10&screen_name=twitterapi
Twit_Key	String	qarW57P7LV1zfmSeECLpoKsjy
Twit_Secret	String	kXtRcry31ys7gq0LEi4zouTxx3048mC28L2hwkCoisZeZpfaFl
URL_Twit_GetToken	String	https://api.twitter.com/oauth2/token
URL_Twit_Timeline	String	https://api.twitter.com/1.1/statuses/user_timeline.json?count=10&screen_name=twitterapi



REST HTTP Request inputs



REST HTTP Request inputs continued

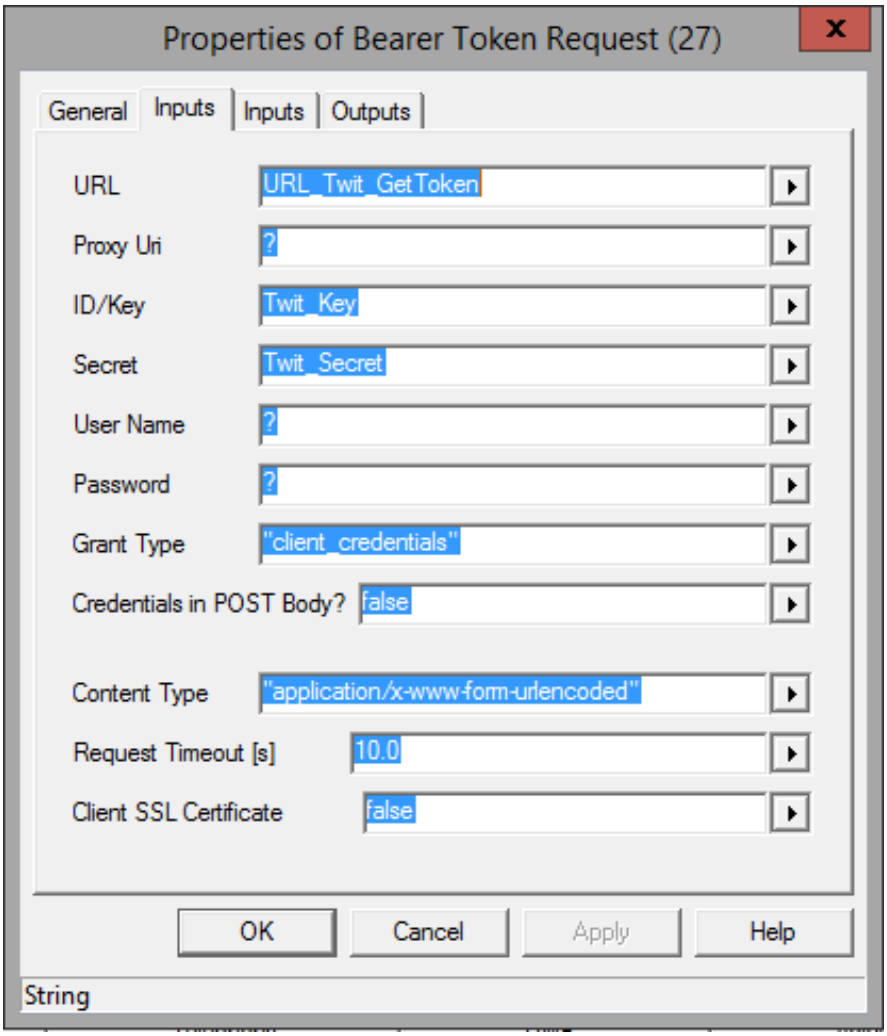
Bearer Token Request

Use this tool to request an OAuth 2.0 access bearer token for a client credentials grant or a password grant. This tool returns a parsed token that you can use in the Bearer Token parameter in the REST HTTP Request tool. Like the REST HTTP Request tool, this tool:

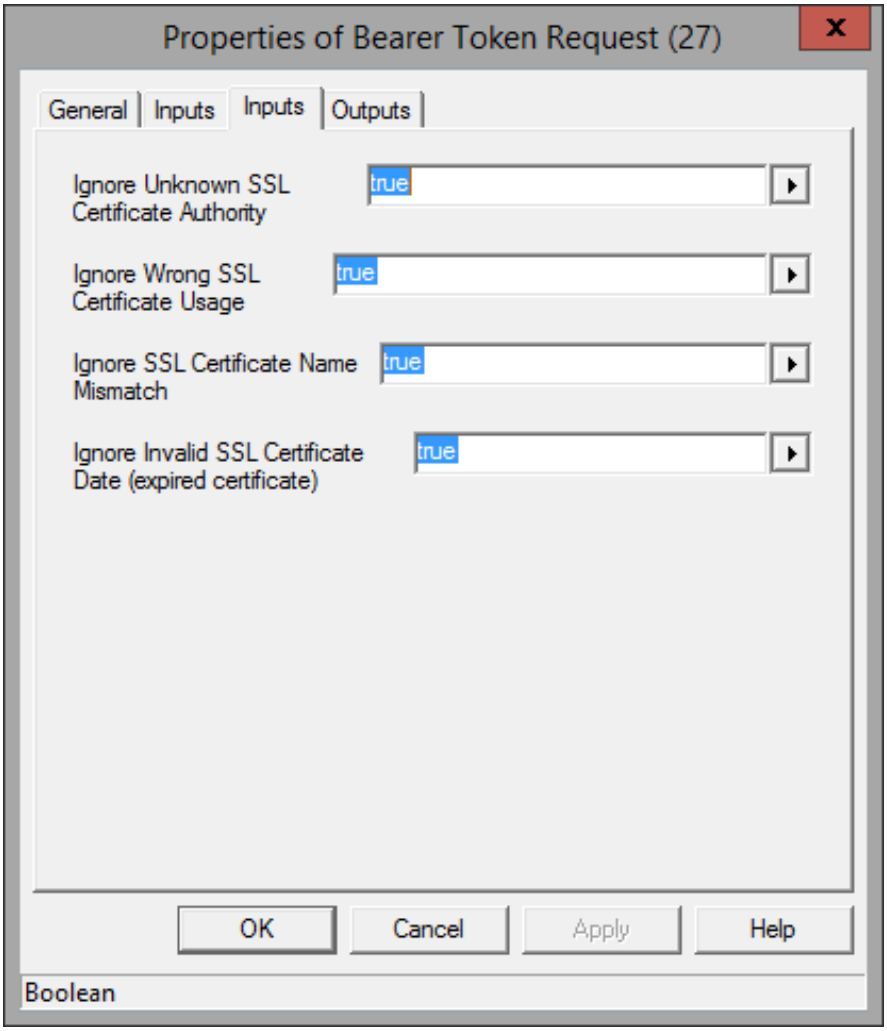
- Expects the certificate file to exist in a specific directory: `I3\IC\Certificates\REST`. Create the `I3\IC\Certificates\REST` directory if it does not exist. The `I3\IC\Certificates\REST` directory is not created by default.

  Use the `CertTrustU.exe` to install a client certificate. The certificate must be in PEM format. For more information, see *PureConnect Security Features Technical Reference* in the PureConnect Documentation Library.
- Supports many concurrent requests.
- Does not use the Windows Certificate store to check for validity of the certificate
- Uses openssl to do the verification.

In the following example, the handler makes a request to Twitter for a client credentials grant.



Bearer Token Request Inputs



Bearer Token Request Inputs continued

Variables

Variable Name	Type	Initial Value
BearerToken1	String	
c_sDELETEHeader	String	header1: val1|header2: val2|header3: val3
c_sGETHeaderList	String	
c_sPOSTHeaders	String	
c_sPUTHeader	String	
CustomDataList	List of S...	
CustomEventId	String	
CustomObjectId	String	
HTTPRawResponseBody1	String	
InitiatorEventName	String	
InitiatorObjectName	String	
InitiatorObjectTypeName	String	
lsHeaderList	List of S...	
sBearerToken1	String	
sBody	String	
sHTTPRawResponseBod...	String	
sMethodType	String	
sUrl	String	https://api.twitter.com/1.1/statuses/user_timeline.json?count=10&screen_name=twitterapi
Twit_Key	String	qarW57P7LV1zfmSeECLpoKsjy
Twit_Secret	String	kXtRcry31ys7gq0LEi4zouTxx3048mC28L2hwkCoisZeZpfaFI
URL_Twit_GetToken	String	https://api.twitter.com/oauth2/token
URL_Twit_Timeline	String	https://api.twitter.com/1.1/statuses/user_timeline.json?count=10&screen_name=twitterapi

Variables for Bearer Token Request example

JSON Parser

This REST tool outputs a list of names and a list of values from a JSON object. If you have nested objects, the parser places the entire nested object in the values list as a string. To parse nested JSON objects fully, use multiple JSON Parser steps.

Important!

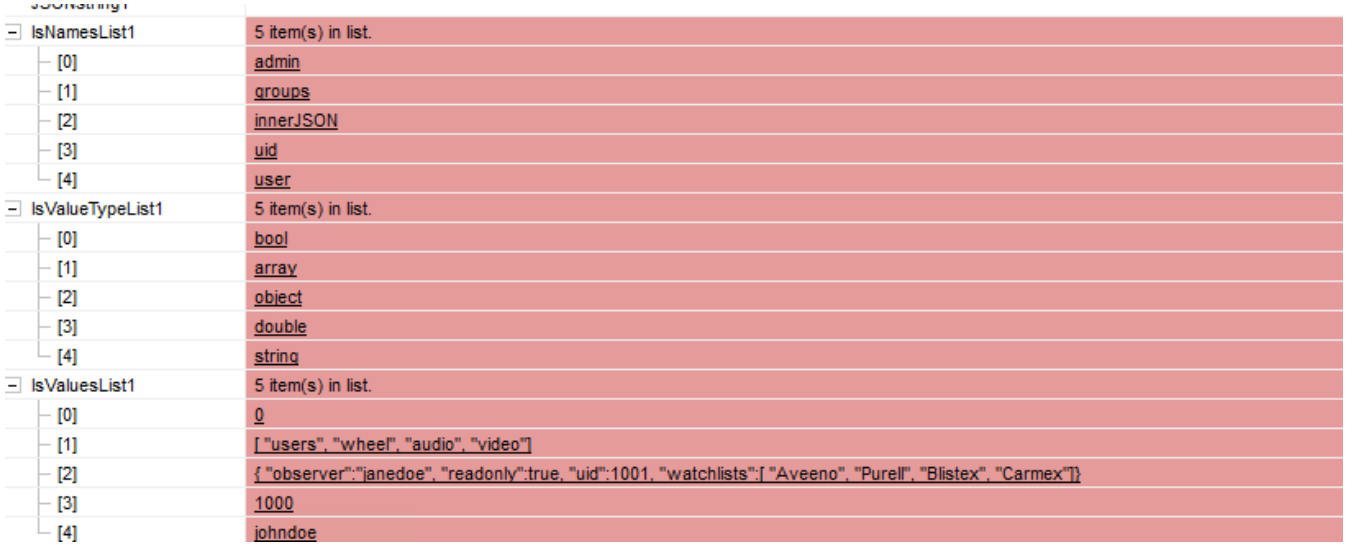
- Names must be unique. If names aren't unique, JSON Parser does not throw an error, but the JSON is not correctly parsed. For example, `{"user": "johndoe", "user": "janedoe"}` does not cause an error, but is not parsed correctly.
- Starting with Interaction Designer 2017 R3, JSON Parser can parse a JSON object that includes these keywords: break, case, catch, class, const, continue, debugger, default, delete, do, else, enum, export, extends, finally, for, function, if, implements, import, in, instanceof, interface, let, new, package, private, protected, public, return, static, super, switch, this, throw, try, var, void, while, with, yield. Previously, a JSON object that contained a keyword would cause the JSON Parser to exit with the failure path.

JSON Parser example

Given the following JSON object, JSON Parser returns three list of string variables: one for the names, one for the values, and one for the data types of each item.

```
{
"user": "johndoe",
"admin": false,
"uid": 1000,
"groups": ["users", "wheel", "audio",

 "video"], "innerJSON": {
"observer": "janedoe",
"readonly": true,
"uid": 1001,
"watchlists": ["Aveeno", "Purell",
 "Blistex", "Carmex"]
}
}
```



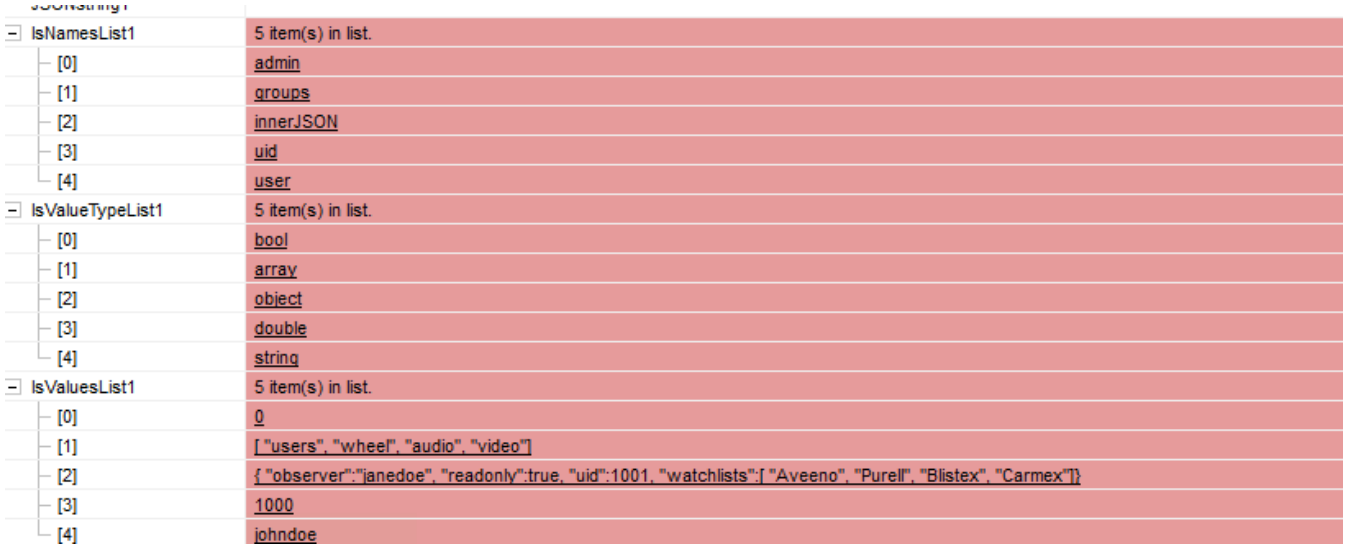
lsNamesList1	5 item(s) in list.
[0]	admin
[1]	groups
[2]	innerJSON
[3]	uid
[4]	user
lsValueTypeList1	5 item(s) in list.
[0]	bool
[1]	array
[2]	object
[3]	double
[4]	string
lsValuesList1	5 item(s) in list.
[0]	0
[1]	["users", "wheel", "audio", "video"]
[2]	{ "observer":"janedoe", "readonly":true, "uid":1001, "watchlists":["Aveeno", "Purell", "Blistex", "Carmex"]}
[3]	1000
[4]	johndoe

JSON Builder

This REST tool accepts a list of names and a list of values (and the value data types) to build a JSON object of name/value pairs.

JSON Builder example

Given the input variables in the JSON Parser example, JSON Builder produces a JSON object:



− lsNamesList1	5 item(s) in list.
[0]	admin
[1]	groups
[2]	innerJSON
[3]	uid
[4]	user
− lsValueTypeList1	5 item(s) in list.
[0]	bool
[1]	array
[2]	object
[3]	double
[4]	string
− lsValuesList1	5 item(s) in list.
[0]	0
[1]	["users", "wheel", "audio", "video"]
[2]	{ "observer":"janedoe", "readonly":true, "uid":1001, "watchlists":["Aveeno", "Purell", "Blistex", "Carmex"]}
[3]	1000
[4]	johndoe

Resulting object:

```
{
"user": "johndoe",
"admin": false,
"uid": 1000,
"groups": ["users", "wheel",

"audio", "video"], "innerJSON": {
"observer": "janedoe",
"readonly": true,
"uid": 1001,
"watchlists": ["Aveeno",

"Purell", "Blistex", "Carmex"]
}
}
```

Array Parser

This REST tool outputs a list of values from an array. This tool parses the name/value pairs and inner JSON alphabetically by name.

Array Parser example

The handler used in the array examples has the following variables:

Variable N...	Type	Initial Value
CustomDataList	List of String	
CustomEventId	String	
CustomObjectId	String	
InitiatorEventNa...	String	
InitiatorObjectN...	String	
InitiatorObjectT...	String	
JSONstring1	String	
lsNamesList1	List of String	
lsValuesList1	List of String	
lsValueTypeList1	List of String	
s_DelimitedNam...	String	sean|steve|seth|finn
s_DelimitedValu...	String	blue|red|yellow|green
s_DelimitedValu...	String	string|string|string|int
sArray	String	["green", 10, false, ["Aveeno", "Purell", "Blistex", "Carmex"]]
sArrayString1	String	

Variables for array examples

Given the following array, Array Parser returns list of string variables for the names, values, and data types of the array items.

```
  ["green", 10, false, {"user":
"johndoe", "admin": false, "uid":
  1000,"groups": ["users", "wheel",
"audio", "video"]}, ["Aveeno", "Purell",
  "Blistex", "Carmex"]]
```

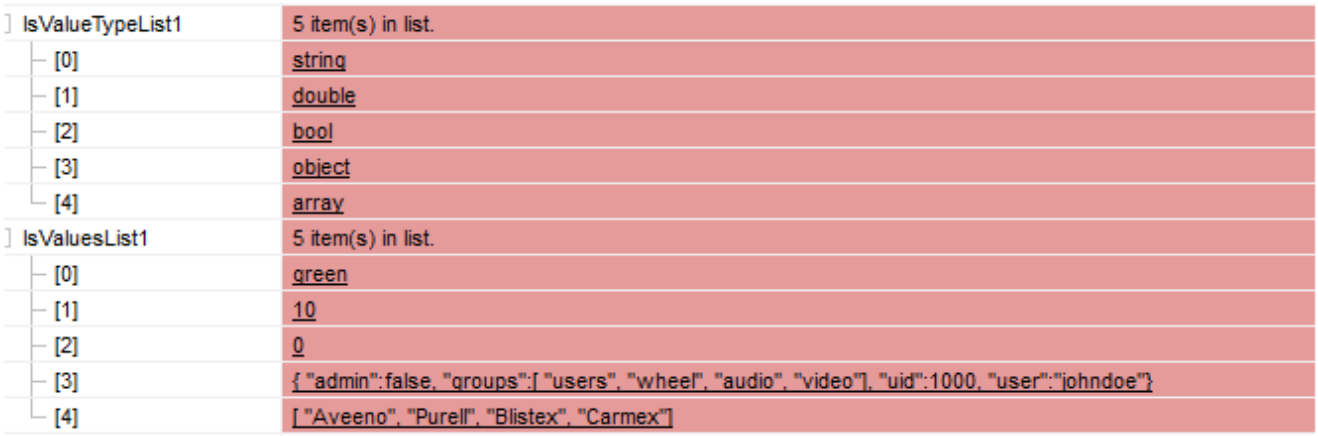
lsValueTypeList1	5 item(s) in list.
[0]	string
[1]	double
[2]	bool
[3]	object
[4]	array
lsValuesList1	5 item(s) in list.
[0]	green
[1]	10
[2]	0
[3]	{ "admin":false, "groups":["users", "wheel", "audio", "video"], "uid":1000, "user":"johndoe"}
[4]	["Aveeno", "Purell", "Blistex", "Carmex"]

Array Builder

This REST tool accepts a list of values to build an array object of values. This tool builds the name/value pairs and inner JSON alphabetically by name.

Array Builder example

Given the variables in the Array Parser example, Array Builder outputs an array:



Resulting array:

```
  ["green", 10, false, {"user":
"johndoe", "admin": false, "uid":
  1000,"groups": ["users", "wheel",
"audio", "video"]}, ["Aveeno", "Purell",
  "Blistex", "Carmex"]]
```

Change Log

The following table lists the changes to the *Interaction Designer REST API Tools Developer's Guide* since its initial release.

Date	Change
01-June-2016	Initial release of this document.
21-December-2016	Updated JSON Parser to list keywords.
01-August-2017	Updated cover page, copyright and trademark information. Rebranded this document to apply Genesys terminology.
28-March-2019	Updated REST HTTP Request and Bearer Token Request topics to correct directory I3\IC\Certificates\REST.
20-June-2019	Reorganized the content only, which included combining some topics and deleting others that just had an introductory sentence such as, "In this section...".