



# Using REST Services and Operations in Productions

Version 2024.1  
2024-07-02

*Using REST Services and Operations in Productions*

InterSystems IRIS Data Platform Version 2024.1 2024-07-02

Copyright © 2024 InterSystems Corporation

All rights reserved.

InterSystems®, HealthShare Care Community®, HealthShare Unified Care Record®, IntegratedML®, InterSystems Caché®, InterSystems Ensemble®, InterSystems HealthShare®, InterSystems IRIS®, and TrakCare are registered trademarks of InterSystems Corporation. HealthShare® CMS Solution Pack™ HealthShare® Health Connect Cloud™, InterSystems IRIS for Health™, InterSystems Supply Chain Orchestrator™, and InterSystems TotalView™ For Asset Management are trademarks of InterSystems Corporation. TrakCare is a registered trademark in Australia and the European Union.

All other brand or product names used herein are trademarks or registered trademarks of their respective companies or organizations.

This document contains trade secret and confidential information which is the property of InterSystems Corporation, One Memorial Drive, Cambridge, MA 02142, or its affiliates, and is furnished for the sole purpose of the operation and maintenance of the products of InterSystems Corporation. No part of this publication is to be used for any other purpose, and this publication is not to be reproduced, copied, disclosed, transmitted, stored in a retrieval system or translated into any human or computer language, in any form, by any means, in whole or in part, without the express prior written consent of InterSystems Corporation.

The copying, use and disposition of this document and the software programs described herein is prohibited except to the limited extent set forth in the standard software license agreement(s) of InterSystems Corporation covering such programs and related documentation. InterSystems Corporation makes no representations and warranties concerning such software programs other than those set forth in such standard software license agreement(s). In addition, the liability of InterSystems Corporation for any losses or damages relating to or arising out of the use of such software programs is limited in the manner set forth in such standard software license agreement(s).

THE FOREGOING IS A GENERAL SUMMARY OF THE RESTRICTIONS AND LIMITATIONS IMPOSED BY INTERSYSTEMS CORPORATION ON THE USE OF, AND LIABILITY ARISING FROM, ITS COMPUTER SOFTWARE. FOR COMPLETE INFORMATION REFERENCE SHOULD BE MADE TO THE STANDARD SOFTWARE LICENSE AGREEMENT(S) OF INTERSYSTEMS CORPORATION, COPIES OF WHICH WILL BE MADE AVAILABLE UPON REQUEST.

InterSystems Corporation disclaims responsibility for errors which may appear in this document, and it reserves the right, in its sole discretion and without notice, to make substitutions and modifications in the products and practices described in this document.

For Support questions about any InterSystems products, contact:

**InterSystems Worldwide Response Center (WRC)**

Tel: +1-617-621-0700

Tel: +44 (0) 844 854 2917

Email: [support@InterSystems.com](mailto:support@InterSystems.com)

# Table of Contents

<b>1 Creating REST Services in Productions .....</b>	<b>1</b>
<b>2 Creating REST Operations in Productions .....</b>	<b>3</b>
2.1 Basics .....	3
2.2 Example .....	4
2.3 Variation: Posting JSON Data .....	5



# 1

## Creating REST Services in Productions

This page describes briefly how to create a Business Service that is also a REST service. This REST service will be able to receive REST requests and pass them to a Business Process or Business Operation elsewhere in the production.

The approach varies by your needs. If you want to:

- Parse and process the request in the production—use a subclass of `%CSP.REST` and call the **Ens.Director.CreateBusinessService()** method to instantiate the class as a business service. This service uses the Web port. For details on implementing a subclass of `%CSP.REST`, see [Creating REST Services](#).
- Pass through a REST URL to an external server with minimal changes—use the pass-through REST service, `EnsLib.REST.GenericService`. For details on using the pass-through REST service, see the sections on pass-through business services in [Configuring ESB Services and Operations](#) and [Pass-through Service and Operation Walkthrough](#).

For details on implementing a subclass of `%CSP.REST`, see [Creating REST Services](#).

**Note:** InterSystems IRIS provides a built-in business service, `EnsLib.REST.Service`, that can be used instead of subclassing `%CSP.REST`. Because this business service works with the HTTP/REST inbound adapter, the dispatch methods receive additional arguments containing the input and output streams that the HTTP Adapter relies on. Classes receiving forwarded `<Map>` requests should extend `%CSP.REST` and not `EnsLib.REST.Service`.



# 2

## Creating REST Operations in Productions

This page describes briefly how to create a REST operation: a Business Operation that invokes an external REST service.

### 2.1 Basics

1. Define the REST operation class. Create a subclass of `EnsLib.REST.Operation`, which uses the InterSystems IRIS® outbound HTTP adapter, described in [Using the HTTP Outbound Adapter](#).
2. Within your class, define the behavior of the business operation, as described generally in [Defining Business Operations](#). Because you want this business operation to invoke an external REST service, invoke one or more of the methods of the HTTP adapter, depending on which HTTP operation you want to use:
  - **GetURL()**—uses the HTTP GET operation.
  - **PostURL()**—uses the HTTP POST operation.
  - **PutURL()**—uses the HTTP PUT operation.
  - **DeleteURL()**—uses the HTTP DELETE operation.
  - **SendFormDataArray()**—allows you to specify the HTTP operation as a parameter.

Note that these operations all operate relative to the base URL that's specified by the production configuration.

3. Add the business operation to the production and configure it following the normal practice. Now you can specify the location of the external REST service. For example, to define a REST operation that calls a weather service, you could configure the operation as follows:

▼ Basic Settings

Enabled ☒

HTTP Server  
api.openweathermap.org

HTTP Port

URL  
/data/2.5/weather

Credentials  
None

If you do not have a business process running, you can run and test this and other operations in **Interoperability > Configure > Production** page by selecting your operation and then selecting Test on the **Actions** tab.

## 2.2 Example

For example, the following extension of `EnsLib.REST.Operation` calls the weather REST service and provides a city name as a parameter:

### Class Definition

```
Class Test.REST.WeatherOperation Extends EnsLib.REST.Operation
{
    Parameter INVOCATION = "Queue";

    Method getWeather(
        pRequest As Test.REST.WeatherRequest,
        Output pResponse As Test.REST.WeatherResponse) As %Status
    {
        try {
            // Prepare and log the call
            // Append the city to the URL configured for adapter
            Set tURL=..Adapter.URL_"?q=" _pRequest.City_ "&units=imperial"

            // Execute the call
            Set tSC=..Adapter.GetURL(tURL, .tHttpResponse)

            // Return the response
            If $$$ISERR(tSC)&&$isObject(tHttpResponse)&&$isObject(tHttpResponse.Data)&&tHttpResponse.Data.Size
            {
                Set tSC=$$ERROR($$EnsErrGeneral,$$StatusDisplayString(tSC)_": "_tHttpResponse.Data.Read())
            }
            Quit:$$$ISERR(tSC)
            If $isObject(tHttpResponse) {
                // Instantiate the response object
                set pResponse = ##class(Test.REST.WeatherResponse).%New()
                // Convert JSON into a Proxy Object
                set tSC = ..JSONStreamToObject(tHttpResponse.Data, .tProxy)
                if (tSC){
                    // Set response properties from the Proxy Object
                    set pResponse.Temperature = tProxy.main.temp_"F"
                    set pResponse.Humidity = tProxy.main.humidity_"%"
                    set pResponse.MaxTemp = tProxy.main."temp_max_" "F"
                    set pResponse.MinTemp = tProxy.main."temp_min_" "F"
                    set pResponse.Pressure = tProxy.main.pressure_" mbar"
```



```

        set pResponse.WindSpeed = tProxy.wind.speed_" MPH"
        set pResponse.WindDirection = tProxy.wind.deg_" degrees"
        // Convert from POSIX time
        set pResponse.Sunrise = $ZT($PIECE($ZDTH(tProxy.sys.sunrise, -2),",",2),3)
        set pResponse.Sunset = $ZT($PIECE($ZDTH(tProxy.sys.sunset, -2),",",2),3)
    }
} catch {
    Set tSC=$$$SystemError
}
Quit tSC
}

XData MessageMap
{

<MapItems>
    <MapItem MessageType="Test.REST.WeatherRequest">
        <Method>getWeather</Method>
    </MapItem>
</MapItems>
}

}

```

The message sent to the operation specifies the city:

### Class Definition

```

Class Test.REST.WeatherRequest Extends (%Persistent, Ens.Util.MessageBodyMethods)
{
    Property City As %String;
}

```

This operation calls the `JSONStreamToObject()` method and returns an InterSystems IRIS object that makes the elements of the JSON accessible. The message returned by this sample returns the following properties taken from the JSON stream:

### Class Definition

```

Class Test.REST.WeatherResponse Extends (%Persistent, Ens.Util.MessageBodyMethods)
{
    Property Temperature As %String;
    Property MinTemp As %String;
    Property MaxTemp As %String;
    Property Pressure As %String;
    Property Humidity As %String;
    Property WindSpeed As %String;
    Property WindDirection As %String;
    Property Sunrise As %String;
    Property Sunset As %String;
}

```

## 2.3 Variation: Posting JSON Data

If you need the REST operation to post JSON data, some adaptations are needed.

1. The HTTP adapter needs to specify the HTTP `ContentType` header appropriately. This means that you will need to create your own HTTP adapter class as follows:

## Class Definition

```
Class My.REST.Client.HTTPOutboundAdapter Extends EnsLib.HTTP.OutboundAdapter
{
  /// Send a POST to the configured Server, Port and URL, sending form data to the named form variables.
  Method Post(Output pHttpResponse As %Net.HttpResponse, pFormVarNames As %String, pData...) As
  %Status {
    quit ..SendFormDataArray(.pHttpResponse, "POST", ..GetRequest(), .pFormVarNames, .pData)
  }

  ClassMethod GetRequest() As %Net.HttpRequest
  {
    set request = ##class(%Net.HttpRequest).%New()
    set request.ContentType = "application/json"
    quit request
  }
}
```

2. Create a custom business operation class that uses your new adapter class.
3. Create a JSON-formatted string:
  - a. Create an instance of %DynamicObject.
  - b. Set properties of that object.
  - c. Use the %ToJSON() method to serialize the object.

For example:

## ObjectScript

```
//Use a %Library.DynamicObject to prepare the REST POST request
Set tRequest = ##class(%DynamicObject).%New()
Set tRequest.transactionid=pRequest.transactionid
Set tRequest.participantid=pRequest.participantid
Set tRequest.authstatus=pRequest.authstatus
Set tRequest.reason=pRequest.reason
set tPayload = tRequest.%ToJSON()
```

4. Post that string to the REST service by calling the **Post** method of the adapter. The following shows an example:

## ObjectScript

```
Set tSC=..Adapter.Post(.tHttpResponse, , tPayload)
```

Note that the second parameter is blank in this case.