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# SAS<sup>®</sup> Life Science Analytics Framework

SAS Macro API 1.5  
User's Guide

## **SAS® Life Science Analytics Framework 4.7: SAS® Macro API 1.5 User's Guide**

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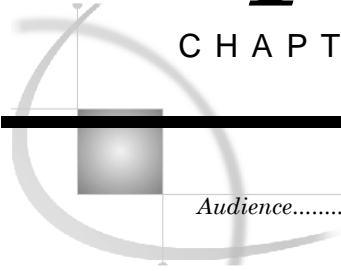
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# 1

## CHAPTER Introduction



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*Audience*..... 1

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### **Audience**

This guide is intended for users who want to develop applications with the SAS Life Science Analytics Framework macros.

You must be familiar with SAS Life Science Analytics Framework functionality, such as type definitions, containers, files and access permissions. For reference information on SAS Life Science Analytics Framework functionality, see the SAS Life Science Analytics Framework online help and User's Guide.



# CHAPTER 2 Installing the Macros

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## Overview

This document describes how to install the SAS Life Science Analytics Framework Macro API, which are distributed in the lsaf-sas-macro-1.5.zip.

## Requirements

The SAS Life Science Analytics Framework Macros requires the SAS Life Science Analytics Framework Java API client version 1.8.1.

## Installation Instructions for Microsoft Windows

- 1 Follow the instructions in the *Getting Started with the SAS Life Science Analytics Framework Java API* document to install the Java API client. Be sure to note the location of the lib directory. Typically this would be:

```
C:\lsaf-java-api-client-1.8.1\lib
```

- 2 Unzip the contents of lsaf-sas-macro-1.5.zip to C:\. This creates the following files and folders in C:\:
  - lsaf-sas-macro-1.5\conf  
This folder contains example configuration files.
  - lsaf-sas-macro-1.5\docs  
This folder contains the documentation for the SAS Life Science Analytics Framework Macro API including the detailed documentation describing all of the macros delivered with this distribution.
  - lsaf-sas-macro-1.5\lib  
This folder contains the sas.hls.drug.api.macro.jar.
  - lsaf-sas-macro-1.5\sasmacros  
This folder contains the SAS Life Science Analytics Framework macros as .sas files.
- 3 Determine where you have SAS installed and where the config file is. In a typical Windows Unicode Support installation, **!sasroot** would point to:

```
C:\Program Files\SAS\SASFoundation\9.4\nls\u8
```

You need to edit the file `!sasroot\sasv9.cfg` and add the following lines near the top, right before the comment box with the “WARNING:” label in it:

**Caution:** Back up this file before you edit it. Use extreme care when editing this file and modify only these options. Ensure that you do not insert any carriage returns in the `sas.app.class.dirs` option. If you have any questions, concerns, or problems, please contact SAS Technical Support.

```
/* define the location of the SAS Life Science Analytics Framework Macro API
*/
-insert sasautos "C:\lsaf-sas-macro-1.5\sasmacros"

/* put both the macro and java api client jars on the classpath */
-JREOPTIONS (-Dsas.app.class.dirs=C:\lsaf-sas-macro-1.5\lib;C:\lsaf-java-api-
client-1.8.1\lib)
```

- 4 Once you have made these changes to the `sasv9.cfg` file, save the file and start a new SAS session.



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## Verifying the Installation

The following SAS code displays the settings for the JREOPTIONS and verifies that the JRE is configured properly. It also verifies that the SAS Life Science Analytics Framework macros are installed and functioning as expected. Replace *lsaf-instance*, *lsaf-user-ID*, and *lsaf-password* with values that reflect your instance of the SAS Life Science Analytics Framework.

```

/* verify the JRE settings */

options mprint;
proc javainfo;
run;

/* initiate a connection to SAS Life Science Analytics Framework */
%lsaf_login(lsaf_url=%str(https://lsaf-instance), lsaf_userid=%str(lsaf-user-ID),
lsaf_password=%str(lsaf-password));

/* print configuration information including version information */
%lsaf_getconfiguration();

/* List the contents of the root folder in the SAS Life Science Analytics Framework
repository */
%lsaf_getchildren(lsaf_path=%str(/SAS/Files));

proc print;
  title "List of Objects in /SAS/Files";
run;

/* terminate the connection to the SAS Life Science Analytics Framework */
%lsaf_logout();

```

The code should generate a list of the contents of the root folder in the SAS Life Science Analytics Framework repository.

**Note:** By default, the root folder in the SAS Life Science Analytics Framework repository is */SAS*. If the root of your SAS Life Science Analytics Framework repository is different, change */SAS* in the code above.

The SAS log will contain information that might be useful for debugging the installation of the SAS Life Science Analytics Framework macros.



# SAS® Life Science Analytics Framework Macros

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## Introduction

The SAS Life Science Analytics Framework SAS Macro API enables you to use familiar SAS macro syntax to perform operations against the SAS Life Science Analytics Framework repository and workspace.

## Macro Return Codes

After you execute a macro, the global macro variable `_LSAFRC_` will contain a return code reflecting the success or failure of the operation; the global macro variable `_LSAFMSG_` will contain text information regarding the success or the cause of the failure.

Here are the specific values that can be returned by a macro:

Value	Explanation
0	The macro executed without error.
-1	The macro executed with error, see return message for details.
-100	SAS Life Science Analytics Framework Java API did not initialize correctly.
-101	SAS Life Science Analytics Framework server URL is malformed.
-102	SAS Life Science Analytics Framework server returned an HTTP error code.
-103	SAS Life Science Analytics Framework server URL is not known.
-104	An invalid port has been specified.
-200	The session does not exist.
-201	The session already exists.
-202	The session does not support the macro being executed. Examples of this are running the login, logout, create file or download file macros during an active SAS Life Science Analytics Framework session.
-300	The user account could not be authenticated.
-301	The user account does not have appropriate authorization.
-400	Macro parameter is required.
-401	Macro parameter is invalid.
-500	The object was not found.
-501	The object already exists.

Value	Explanation
-502	The object type is invalid for the operation.
-503	The source path equals the target path.
-504	The target path is within the source path.
-505	Current object owner is the same as the intended new owner.
-600	Principal is not a member.
-601	Role is not assigned at parent.
-602	Roles defined at context cannot be unassigned.
-603	Repository context is closed.
-604	Versioning could not be enabled or disabled on the object.
-605	The job parameter is invalid.
-606	The numeric value specified is invalid.
-607	The boolean value specified is invalid.
-608	An invalid job name has been specified.
-609	A process flow task/event setup <code>_has</code> cannot be completed.
-700	A failure occurred while attempting to check in a file.
-701	A failure occurred while attempting to check out a file.
-800	The maximum number of checked out files that can be returned from a SAS Life Science Analytics Framework query has been reached.
-801	A failure occurred while attempting to retrieve items from the recycle bin.
-900	An unexpected error occurred.
-999	There is no return code.

*Note:* A macro always returns a code, but any single macro will not return all of these codes.

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## Using the Macros

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### Using the Ampersand Character (&) in URLs

For a macro with a parameter that specifies a URL, such as a macro that sets properties, you cannot embed the ampersand character (&) in the URL. The ampersand character is a special character in SAS. If you embed an ampersand character, SAS will attempt to resolve the subsequent text as a macro variable.

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### The Proper Case for Parameter Values

Although SAS is case insensitive, the parameter values passed to the SAS Life Science Analytics Framework may be case sensitive.

## Quoting Parameter Values

In order to ensure consistent results, it is recommended that the parameters of type String be wrapped using one of the string functions, e.g. %str(), %nrbrquote(). Using double quotes will result in a SAS system syntax error.