

Post-Installation Instructions for SAS/ACCESS[®] 9.4 Interface to R/3



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Chapter 1 — Introduction

About This Document

This document covers the configuration of SAS/ACCESS Interface to R/3 for SAS 9.4, following the initial installation of your SAS software. It has been updated for the seventh maintenance release of SAS Foundation 9.4 (SAS 9.4M7).

How to Use This Book

In this chapter, an overview of the architecture of SAS/ACCESS Interface to R/3 software is provided.

In “[Chapter 2 – Pre-Installation](#),” system requirements and prerequisites are listed. You will find tips about how to set up prerequisites before you proceed with the installation. Read this chapter if you are setting up SAS/ACCESS to R/3 for the SAS Data Surveyor for SAP.

In “[Chapter 3 – Installing SAS/ACCESS Interface to R/3 Software](#),” the installation of SAS/ACCESS Interface to R/3 is explained, step-by-step. You should also follow these steps if you are setting up SAS/ACCESS to R/3 for the SAS Data Surveyor for SAP.

In “[Chapter 4 – Installing SAS/ACCESS Interface to R/3 Software on z/OS](#),” post-installation steps for SAS/ACCESS Interface to R/3 on IBM z/OS are described. The required configuration differs from that of other hosts because the RFC server is used to access the SAP system. Take these steps if you are setting up SAS/ACCESS to R/3 on z/OS for the SAS Data Surveyor for SAP.

Chapters 5 and 6 only apply to the SAS/ACCESS Interface to R/3 Application. The SAS Data Surveyor for SAP uses plug-ins for the SAS Management Console for the Metadata Extract. It also uses plug-ins for SAS Data Integration Studio for the metadata navigation and definition of tables and jobs. This information is beyond the scope of this document. Refer to the *Data Administration Guide* for information about how to configure the server definitions and the metadata extract.

“[Chapter 5 – Data Dictionary Extract](#)” explains how to extract the metadata information from SAP.

“[Chapter 6 – Start SAS/ACCESS Interface to R/3 Software](#)” explains how to start the software and how to verify the installation.

“[Appendix A – Selected SAP Transaction Codes](#)” provides a list of SAP transaction codes that are useful during installation and verification.

“[Appendix B – Error Messages](#)” discusses potential problems and their symptoms during installation.

To simplify the installation, two checklists are provided to help you install SAS/ACCESS Interface to R/3 software:

- “[Appendix C – Pre-Installation Checklist](#)” – Complete the items in this checklist before the installation. Do not proceed with installation until all the items have been completed.
- “[Appendix D – Installation Checklist](#)” – Complete this checklist during the installation. This information about the installation also facilitates upgrades.

“[Appendix E – Installing the ABAP Add-On](#)” describes the installation of the add-on for the installation of the ABAP objects in the SAP System.

Configurations of SAS/ACCESS Interface to R/3 Software

SAS/ACCESS Interface to R/3 software has client and server components. The server components of the SAS/ACCESS Interface to R/3 are also used by the SAS Data Surveyor for SAP Software.

Components of SAS/ACCESS Interface to R/3 Software

SAS/ACCESS Interface to R/3 includes the following components:

- SAS/ACCESS Interface to R/3 Software Client Application
- Data Dictionary Extract
- SAS Server - LIBNAME engine and CALLRFC procedure
- SAS RFC Server (only for SAS/ACCESS Interface to R/3 for z/OS)

SAP RFC is an acronym for the proprietary Remote Function Call protocol that is typically deployed for communications among SAP systems.

SAS Data Surveyor for SAP

The SAS Data Surveyor for SAP uses functionality from the SAS/ACCESS Interface to R/3 software to support data access and remote function calls. Configure SAS/ACCESS to R/3 before using the SAS Data Surveyor for SAP. Follow the steps in Chapter 2, and in Chapter 3 or Chapter 4. Refer to additional configuration information for the SAS Data Surveyor for SAP in the *SAS 9.4 Intelligence Platform: Data Administration Guide*.

SAS/ACCESS Interface to R/3 Software – Client Application

The Application is a user interface for navigating the metadata, storing selections, and generating the SAS views to access the SAP data. However, the user interface is only supported for maintenance. SAS recommends using SAS Data Surveyor for SAP as the interface instead.

Data Dictionary Extract

The Data Dictionary Extract is a copy of metadata from the SAP Data Dictionary. The metadata is stored in SAS data sets that provide information about tables, fields, data models, and entity types in SAS/ACCESS Interface to R/3 software. For example, one table lists all of the tables defined to SAS/ACCESS Interface to R/3 software (typically 20,000 - 50,000 logical tables); another table lists all of the fields for each table (typically 400,000 to 800,000 fields).

The Data Dictionary Extract is usually installed on the same machine as the SAS/ACCESS Interface to R/3 software user interface or on a fileserver.

The Data Dictionary Extract can be on a separate machine; however, that machine requires:

- SAS 9.4
- SAS/SHARE software or SAS/CONNECT software

SAS Server - LIBNAME Engine and CALLRFC Procedure

The SAS views are generated by SAS/ACCESS Interface to R/3 software. The views use the SAS libname engine for SAP.

To use the SAS views on a particular machine, SAS/ACCESS Interface to R/3 software must be installed.

SAS RFC Server (only for SAS/ACCESS Interface to R/3 for z/OS)

A SAS RFC Server was required in previous releases to enable communication between the SAS/ACCESS Interface to R/3 and the SAP system. *SAP RFC* refers to the SAP protocol that enables communications among SAP systems.

Starting with SAS 9.2, SAS/ACCESS Interface to R/3 began communicating directly with the SAP system, removing the requirement for a SAS RFC Server.

However, a SAS RFC Server is needed for the libname engine on z/OS. The RFC Server does not necessarily need to run on z/OS; SAS/ACCESS Interface to R/3 for z/OS includes RFC Servers for z/OS, AIX, and Windows.

Typically, the SAS RFC Server is installed on a machine with one of the following installed:

- SAS Server
- SAP System Application Server

The SAS RFC Server can be installed on a machine that lacks SAS 9.4. The list of Windows operating systems that support the SAS Unicode RFC Server is extensive; see the various system requirements documents for Windows for x64 on Install Center (<http://support.sas.com/documentation/installcenter/>) for information on the supported versions of Windows. The SAS RFC Server and SAS Unicode RFC Server are available for AIX, and UNIX System Services (USS) – Open Edition. The SAS Unicode RFC Server is used for accessing SAP Unicode systems.

SAP System Application Server

The SAS Server communicates with the SAP System Application Server. The installation of SAS/ACCESS Interface to R/3 software includes a number of ABAP objects. The ABAP objects are installed by importing the delivery transports to the SAP system.

Considerations when Migrating from an Earlier Version of SAS/ACCESS Interface to R/3 Software

The new transport files also support the RFC Server of SAS/ACCESS 4.2 Interface to R/3. You can therefore still use the 4.2 and 4.3 versions of SAS/ACCESS Interface to R/3 to access the SAP system where the new transports are installed.

When migrating to a new version of SAS/ACCESS Interface to R/3 Software for Windows, or for UNIX:

- Install the new transport files.
- Set up multiple destinations and maintain table /SAS/DESTS for destination groups, as explained in Chapter 3.
- The variants are no longer used.
- If you used the RFC Server parameters (host and port) to assign librefs, you must remove those parameters. Users of the Data Surveyor for SAP should remove them during metadata migration.

When migrating SAS/ACCESS Interface to R/3 Software for z/OS:

- Install the new transport files.
- Set up new destinations or use the same destinations as in previous release.
- Set up new variants or use the same variants as in previous release.

Considerations when Upgrading to New SAP Releases

If the SAP system is upgraded, the delivery transports must be re-imported.

Related Publications

SAS/ACCESS 9.4 Interface to R/3: User's Guide

SAS 9.4 Intelligence Platform: Data Administration Guide.

Chapter 2 — Pre-Installation

Overview

This chapter outlines the prerequisites to install and run SAS/ACCESS Interface to R/3 software. Some of these prerequisites require the involvement of other staff, such as the SAP system administrator.

System Requirements

The installer requires operating system user IDs and passwords and SAP user IDs and passwords. For a multi-machine installation, appropriate access to the network and all machines must be included.

Operating System

SAS/ACCESS Interface to R/3 Software - SAS RFC Server

The SAS RFC Server is only used for the SAS/ACCESS Interface to R/3 for z/OS.

The list of Windows operating systems that support the SAS Unicode RFC Server is extensive; see the various system requirements documents for Windows, Windows for x64, and Windows for Itanium-based systems on Install Center

(<http://support.sas.com/documentation/installcenter/>) for information about the supported versions of Windows. The SAS Unicode RFC Server is also supported on AIX and UNIX System Services (USS) – Open Edition.

SAS/ACCESS Interface to R/3 Software - Application

For a list of operating system requirements for the SAS/ACCESS Interface to R/3 software user interface, see the system requirements for SAS 9.4.

SAS/ACCESS Interface to R/3 Software - RFC Libraries

After March 31, 2016, SAP no longer supports the classic RFC SDK or the classic RFC library and recommends making a transition to the SAP NetWeaver RFC Library.

During the transition phase, SAS/ACCESS to R/3 will continue to work with both Classic and Netweaver Libraries. If neither of the libname options, CLASSIC or NETWEAVER, is specified in the libname statement, the ACCESS engine checks to determine whether the libsapnwrfc (for UNIX) or sapnwrfc (for Windows) shared library is available.

If the shared library can be loaded, the engine defaults to the new implementation using the SAP NetWeaver RFC libraries.

If the shared library cannot be loaded, the engine defaults to the classic RFC libraries.

If the libname/PROC CALLRFC option NETWEAVER is specified, the engine uses the NetWeaver RFC libraries.

If the `libname/PROC CALLRFC` option `CLASSIC` is specified, the engine uses the classic RFC libraries.

SAS 9.4

SAS/ACCESS Interface to R/3 Software - SAS RFC Server

The SAS RFC Server is required for the SAS/ACCESS Interface to R/3 for z/OS and can run on a machine where SAS 9.4 is not installed.

The SAS RFC Server is no longer supported for SAS/ACCESS Interface to R/3 for Windows or for SAS/ACCESS Interface to R/3 for UNIX.

SAS/ACCESS Interface to R/3 Software - Application

SAS 9.4 is required.

Required SAS Products

Base SAS and SAS/ACCESS Interface to R/3 software are required. To use the SAS client/server support, SAS/CONNECT software or SAS/SHARE software is required.

SAP System

Release

- SAP NetWeaver 7.0 (Application Server ABAP) or later
- SAP NetWeaver RFC library, Release 7.20 or later

The SAS/ACCESS Interface to R/3 software for Windows and UNIX requires the 64-bit SAP NetWeaver RFC library, Release 7.20 or higher, which is provided by SAP AG.

As of the end of maintenance for SAP Release 7.10 (March 31, 2016), SAP no longer supports the classic RFC SDK or the classic RFC library. This end of maintenance also applies to SAP Releases 7.11 and 7.20. A transition to the SAP NetWeaver RFC Library should start immediately.

The SAP NetWeaver RFC Library supports all SAP NetWeaver and R/3 systems and supports Unicode and non-Unicode. Refer to SAP note **1025361** for installation instructions, support information, and details about the availability of the SAP NetWeaver Library.

For SAS/ACCESS Interface to R/3 for z/OS, the RFC Server can be installed on Windows, AIX or UNIX System Services on z/OS. It requires *one* of the following:

- The 32-bit RFC library, Release 6.40, for z/OS
- The 64 bit RFC and/or Unicode RFC libraries, Release 7.10, for AIX
- The RFC and/or Unicode RFC libraries, Release 7.10, for the appropriate Windows Server

SAPGUI

During the installation of SAS/ACCESS Interface to R/3 software, a SAPGUI is required.

User IDs

SAP user IDs and passwords are required. The user IDs must have appropriate authorizations to access data and use communication methods. See “Authorization Profiles” below for more information about customizing the authorization.

To install and run SAS/ACCESS Interface to R/3 software, the following SAP user IDs are required:

- **RFC user** — An SAP user ID that is used for the communication link between the SAS RFC Server and the SAP System Application Server. Typically, there are several RFC user IDs (one per person).
- **SAP System Administrator** — An SAP System Administrator ID is required for the installation of ABAP programs and function modules, for the configuration of destinations and variant for batch operations, and for setting up authorizations for user IDs to use the SAS/ACCESS Interface to R/3 software. This user ID is only used for the installation.

Connectivity

The SAS RFC Server and the SAP System Application Server usually use TCP/IP for communication. Refer to the RFC documentation from SAP AG. The host of the SAP System Application Server must be known by the host of the SAS RFC Server. Alternatively, you can use the IP address to identify the SAP System Application Server. The TCP/IP services file must contain entries for the services, ports, and protocols used for the communication.

The following is an example for entries in the services file:

```
sapdp00 3200/tcp
sapdp01 3201/tcp
...
sapdp99 3299/tcp
sapgw00 3300/tcp
sapgw01 3301/tcp
...
sapgw99 3399/tcp
sapsp00 3400/tcp
sapsp01 3401/tcp
...
sapsp99 3499/tcp
```

Note: If the SAPGUI is installed on the machine, the TCP/IP services file already contains these entries.

Authorization Profiles

To install and use SAS/ACCESS Interface to R/3 software, a user ID with certain authorizations is required. An authorization has an authorization object. Several authorizations can be bundled together into an authorization profile.

If the batch functionality of the SAS RFC Server is used, the RFC user ID needs to have authorization to submit batch jobs already released.

The RFC user IDs require authorizations for the following authorization objects:

Object	Minimum Requirement for Values	Example for Predefined Authorization	Notes
S_RFC (Authorization check for RFC access)	ACTVT: * RFC_NAME: * RFC_TYPE: *	S_RFC_ALL	
S_RS_ADMWB (Administrator Workbench – Objects)	ACTVT: 3, 16 RSADMWBOBJ: INFOBJECT	S_WB__IOB_SHOW	
S_TABU_DIS (Table maintenance via standard tools such as SM31)	ACTVT: 03 DICBERCLS: *	S_TABU_SHOW	
S_BTCH_JOB (Background processing: Operations on Background Jobs)	JOBACTION: RELE JOBGROUP: *		Only required if batch functionality of the RFC server is used

The existing authorizations, for example S_TABU_SHOW, can be used. The S_RFC and the S_TABU_DIS authorizations are in authorization profile A_ANZEIGE.

Chapter 3 — Installing SAS/ACCESS Interface to R/3 Software

Overview

During the installation of SAS 9.4 Foundation, you should select the option to install SAS/ACCESS Interface to R/3 software, along with other software you want to install. Refer to the installation instructions for SAS 9.4 Foundation for your operating system for additional information.

Post-Installation Setup

Overview

This section describes post-installation configuration steps for SAS/ACCESS Interface to R/3 after the software has been installed.

Note: The setup for the SAS/ACCESS Interface to R/3 for z/OS is different because it still uses the RFC server for SAP data access. Refer to Chapter 4 for more information about setup for z/OS.

The following steps are required:

On the SAS Server:

1. Install the NetWeaver RFC libraries from SAP.
2. Set the environment variables.

On the SAP System:

1. Import the SAP transports into your SAP system.
2. Maintain RFC destinations.
3. Maintain table /SAS/DESTS for destination groups.
4. Activate BAdI implementation for SAP BW/BI authorization checks.

SAS Server

Step 1 - Install the NetWeaver RFC Libraries from SAP

SAS/ACCESS Interface to R/3 requires the 64-bit version of the SAP NetWeaver RFC Library. This library must be installed on the SAS Server.

SAP no longer supports the classic RFC SDK or the classic RFC library after the maintenance end of SAP Release 7.10 (March 31, 2016). This end of maintenance also applies to SAP Releases 7.11 and 7.20. Users of SAS/ACCESS Interface to R/3 should immediately start to transition to the SAP NetWeaver RFC Library.

The SAP NetWeaver RFC Library supports all SAP NetWeaver and R/3 systems and supports Unicode and non-Unicode. Refer to SAP note **1025361** for information about installation, support, and availability of the SAP NetWeaver Library. If necessary, refer to SAP Note **413708** for information about the classic version of the RFC Library.

Step 2 - Set the Environment Variables

The SAS/ACCESS Interface to R/3 executable uses SAP's shared libraries. You must add the location of the SAP RFC shared libraries to the shared library path environment variable specific to your operating system. For Windows, verify that the shared libraries are installed in the system path, or add the directory of the installed SAP NetWeaver RFC libraries to the Path environment variable. For UNIX, replace `rfclib_directory` in the table below with the directory where the RFC shared libraries are installed.

AIX	
Bourne Shell	<code>\$ LIBPATH=rfclib_directory:\$LIBPATH</code> <code>\$ export LIBPATH</code>
C Shell	<code>\$ setenv LIBPATH rfclib_directory:\$LIBPATH</code>
HP-UX	
Bourne Shell	<code>\$ LD_LIBRARY_PATH=rfclib_directory:\$LD_LIBRARY_PATH</code> <code>\$ export LD_LIBRARY_PATH</code>
C Shell	<code>\$ setenv LD_LIBRARY_PATH=rfclib_directory:\$LD_LIBRARY_PATH</code>
HP-UX for the Itanium Processor Family Architecture	
Bourne Shell	<code>\$ LD_LIBRARY_PATH=rfclib_directory:\$LD_LIBRARY_PATH</code> <code>\$ export LD_LIBRARY_PATH</code>
C Shell	<code>\$ setenv LD_LIBRARY_PATH=rfclib_directory:\$LD_LIBRARY_PATH</code>
Linux for Intel Architecture, Linux for x64, Solaris, and Solaris for x64	
Bourne Shell	<code>\$ LD_LIBRARY_PATH=rfclib_directory:\$LD_LIBRARY_PATH</code> <code>\$ export LD_LIBRARY_PATH</code>
C Shell	<code>\$ setenv LD_LIBRARY_PATH=rfclib_directory:\$LD_LIBRARY_PATH</code>

Installing SAS/ACCESS Interface to R/3 Software Components

Prerequisites

SAPGUI

The installation of the components in SAS/ACCESS Interface to R/3 software requires SAPGUI software to be installed on your PC or workstation.

Note: *Although you are not required to install the SAPGUI on the machine where you are installing SAS/ACCESS Interface to R/3, access to the SAPGUI is required during the installation. Because the usage of the SAPGUI complements SAP functionality, SAS recommends installing the SAPGUI on the same machine.*

SAP Administrator ID

A valid SAP user ID and password are required. The user must have permission to transport files and perform RFC destination maintenance. SAS *strongly recommends* seeking assistance from your SAP System Administrator to perform these tasks.

Step 1 - Install ABAP Programs and Function Modules

Delivery transport files are included in SAS/ACCESS Interface to R/3. These transport files include all the components, ABAP programs, and function modules that are required to run SAS/ACCESS Interface to R/3 software.

The delivery transports must be imported on each SAP application server that will be accessed by SAS. If an SAP system is upgraded, the delivery transports must be re-imported.

SAP NetWeaver 7.0 based systems and later		
Transport	Purpose	To be applied to
SAPKA95035INSAS <i>Note: This transport must be installed first.</i>	Supports SAS SAP libname engine	All SAP systems to be accessed by SAS
SAPKA93031INSAS	Supports set/hierarchy extraction from SAP ECC systems	Only SAP ECC systems
SAPKW95030INSAS	Supports metadata extraction for the Data Surveyor for SAP (BW source designer) BW software	Only SAP BI systems
SAPKA95033INSAS	Supports BI 7.0 analysis authorization concept	Optional; SAP BI 7.0 systems and higher; apply only if you are using the analysis authorization concept
SAPKA93032INSAS	Utility routines for the CALLRFC procedure	All SAP systems
SAPKH93030INSAS	Supports HR cluster table extraction	SAP R/3 and SAP ECC systems; not for SAP BI systems

To import the transport files to your SAP systems, follow the instructions below. These instructions are based on the usage of the tp program (a utility for transport between SAP systems) on the operating system level.

1. Log in as SAP System Administrator to the SAP application server.
2. Obtain the transport files and copy them into the appropriate directories on your SAP systems. You must download the files (in an installation package) from the SAS Download site: <https://support.sas.com/downloads/package.htm?pid=2457>.
3. Save the files on the same machine as the SAP application server. Follow the path to the installation package that you downloaded.

For SAP application servers on Windows:

Extract the contents of the r3trans.zip file that you downloaded onto your SAP application server. Copy the files into the transport directory (for example, <drive>:\usr\sap\trans). The files for all transports are added to the cofiles and data subdirectory.

For SAP application servers on UNIX:

Extract the contents of the `r3trans.tgz` file that you downloaded onto your SAP application server and copy the files into the transport directory (for example, `/usr/sap/trans`).

Assuming that the TAR file was downloaded to the user's HOME directory, follow these procedures to extract the files into the cofiles and data subdirectory in `/usr/sap/trans`.

```
$ cd /usr/sap/trans
$ tar -xzvf $HOME/r3trans.tgz
```

4. Change to the transport program directory using the following command:

For Windows:

```
<drive>:
cd \usr\sap\trans\bin
```

For UNIX:

```
$ cd /usr/sap/trans/bin
```

5. Load the transport into the transport buffer and import the transport into your SAP system with the following commands. Replace `<sid>` with the system ID for your SAP system.

```
tp addtobuffer SAPKA95032INSAS <sid>
tp import SAPKA95032INSAS <sid> U2
```

Note: Be sure to use the correct profile for the transport control program `tp`. In some cases it might be necessary to use the parameter `pf=` to specify the `TPPARAM` file.

Note: Because the transport file uses a long name, the `nbuffer=true` TP option must be set. The option can either be maintained in the SAP system using transaction `STMS`, or it can be specified as a parameter to the `tp` command. In addition, the TP option `tp_version=` must be set to at least 264 to allow the long names.

Note: The `U2` option allows the originals to be overwritten if the user has previously installed these ABAP objects.

Note: The transports contain only client-independent ABAP objects. The `tp import` can therefore use any existing client that is correctly set up for imports. Verify that the ABAP program `RDDIMPDP` is correctly scheduled in the client you use for the import.

Note: If the transport files are imported into a Unicode SAP system, use the transport profile parameter `"setunicodeflag=true"` to force setting the Unicode flags in the imported programs. Refer to SAP Note 330267 for details. The `"setunicodeflag=true"` is not necessary if you are using the transports for SAP NetWeaver 7.0-based systems and higher. Those transports have been created with the Unicode flag.

Considering these notes, the `tp` commands might require additional parameters. Replace `<sid>` with the system ID for the SAP system.

Important: The `tp` commands listed on several lines in the following examples should be entered on a **single** command line. Be sure to include a space before adding the text from each of the following lines.

For SAP NetWeaver 7.0 based systems and higher, Unicode SAP Server, on Windows
<pre>tp addtobuffer SAPKA95032INSAS <sid> pf=\usr\sap\trans\bin\TP_DOMAIN_<sid>.PFL -D"nbuffer=true" tp import SAPKA93130INSAS <sid> pf=\usr\sap\trans\bin\TP_DOMAIN_<sid>.PFL</pre>
For SAP NetWeaver 7.0 based systems and higher, Unicode SAP Server, on UNIX
<pre>\$ tp addtobuffer SAPKA95032INSAS <sid> pf=/usr/sap/trans/bin/TP_DOMAIN_<sid>.PFL -D"nbuffer=true" \$ tp import SAPKA93130INSAS <sid> pf=/usr/sap/trans/bin/TP_DOMAIN_<sid>.PFL -D"nbuffer=true"</pre>

Check the exit code. If you receive an error of 8 or higher, the import failed. You must resolve the problem and re-import the transport. Check the transport logs for more information.

- Repeat Step 4 for each of the transports that are applicable to your SAP installation.

Step 2 - Maintain RFC Destinations

Note: If the SAS Server will execute requests using the SAP batch processing facility (**recommended**), you must complete this step.

The SAS System uses multiple RFC destinations (TCP/IP connection type) for accessing an SAP System in batch. The number of destinations set up for SAS limits the number of concurrent SAS requests to the SAP application server.

Example:

Create 6 destinations with connection type *T* and activation type *Registered Server Program* that can be used by the SAS server. The program ID for the registered server program must be unique on the SAP gateway.

RFC Destination Name	Program ID
SAS1	RFC.SAS1
SAS2	RFC.SAS2
SAS3	RFC.SAS3
SAS4	RFC.SAS4
SAS5	RFC.SAS5
SAS6	RFC.SAS6

Take the following steps:

- Call transaction SM59 in SAP. Enter transaction code `/nsm59` in the command field.
- Select **Create**.
- Enter *SAS1* as the RFC destination.
- Enter *T* as the **Connection type**.
- Enter a description for the destination, and click **Enter**.

6. Select **Registration** for the Activation Type or **Registered Server Program** on the *Technical Settings* tab.
7. Enter *RFC.SAS1* as the program ID.
8. If required, enter the gateway host and gateway service in the **Gateway Options** panel. The gateway host is the hostname of the local gateway, and the gateway service is usually *sapgw<sysnr>*, where *<sysnr>* is replaced by the system number of the SAP system.
9. For Unicode SAP systems, select the **Unicode** on the **MDMP & Unicode** tab. Ignore the message about performing the Unicode test. The Unicode test cannot be performed with the destinations created for SAS.
10. Save the destination.
11. Repeat the steps for each of the new RFC destinations.

Step 3 – Maintain Table /SAS/DESTS for Destination Groups

The RFC destinations defined in the previous step must be grouped into destination groups. The groups are defined in table /SAS/DESTS, which is used for controlling access to the destinations from all SAS servers that access the SAP system.

The destination group is a parameter of the SAS libname engine for SAP. The default is 'SAS1'.

Take the following steps:

1. Call transaction SM30 in SAP. Enter transaction code */nsm30* in the command field.
2. Enter the table name */SAS/DESTS* in the **Table** field.
3. Select 'No Restrictions' in the **Restrict Data Range** field.
4. Click **Maintain**.
5. Acknowledge the information message that the table is cross-client.
6. Click **New Entries**.
7. For each of the RFC destinations that you defined in Step 2, enter the destination group ID as the SAS ID and the RFC destination name. For example, to define the destinations for destination group SAS1:

SAS ID	RFC Destination	Used
SAS1	SAS1	
SAS1	SAS2	
SAS1	SAS3	
SAS1	SAS4	
SAS1	SAS5	
SAS1	SAS6	

8. Save the table.

Step 4 – Activate BAdI Implementation for SAP BW/BI Authorization Checks

SAS/ACCESS to R/3 has three basic implementations for table access authorization checks. The default implementation uses the SAP authorization object `S_TABU_DIS` to check the authorization. If you want to use any of the other two implementations, you must activate the appropriate BAdI implementation.

BAdI Implementation	
<Default>	Authorization object S_TABU_DIS
Classic BAdI /SAS/AUTHBW01	For BW and BI: User authorization checks at the InfoCube, InfoObject and ODS level using the reporting authorization (SAP standard authorization concept).
New BAdI enhancement /SAS/IM_AUTHBI01	For BI 7.0+ only: User authorization checks using the analysis authorization. This not only provides a authorization check for the infoProvider (infoCube, infoObject, DSO) but also column level restrictions on master data attributes and key figures, and row level restrictions on attributes.

In releases prior to SAP NW BI 7.0, SAP uses a reporting authorization mechanism that relies on the SAP standard authorization concept. If you want to activate the SAS implementation for those authorization checks, take these steps:

1. Call Transaction SE19 in SAP. Enter transaction code `/nse19` in the command field.
2. Enter `/SAS/AUTHBW01` as the implementation.
3. Click **Activate**, or select **Implementation**→**Activate** from the menu.

To use the SAS implementation for BI analysis authorization checks, import the appropriate transport (SAPKA95031INSAS). The implementation is activated by default.

If you want to deactivate the implementation, take these steps:

1. Call transaction SE19 in SAP. Enter transaction code `/nse19` in the command field.
2. Select the **New BAdI** check box in the **Edit Implementation** field.
3. Enter `/SAS/IM_AUTHBI01` as the enhancement implementation.
4. Click **Change**.
5. Double-click on the BAdI Implementation to deactivate (such as `/SAS/BADI_CHECK_FILTER`) and clear the **Implementation is active** check box in the **Runtime Behavior** field. Repeat for each of the implementations listed on the left side of the **Enh. Implementation Elements** tab.
6. Save and activate the changes.

Chapter 4 — Installing SAS/ACCESS Interface to R/3 Software on z/OS

Overview

During the installation of SAS 9.4 Foundation, select to install SAS/ACCESS Interface to R/3 along with the other software that you want to install. Refer to the installation instructions for SAS 9.4 Foundation for your operating system for more information.

SAS/ACCESS Interface to R/3 for z/OS uses the SAS RFC server for communications between the SAS system and the SAP server. Some steps to configure the RFC server and the RFC destinations and variants used for the RFC server are different from the setup that is described in Chapter 3. These steps are required to enable communication between the SAS Server and the SAP system. Some steps are the same for both. This document refers to Chapter 3 for those steps.

SAS/ACCESS Interface to R/3 for z/OS includes the SAS RFC server for Windows, AIX, and z/OS. The RFC server can run on the SAS server, or on the SAP server, or on another server in your system. Decide where to install the SAS RFC server and follow the instructions for the selected configuration.

Post-Installation Setup

Overview

This section describes the post-installation setup for the SAS/ACCESS Interface to R/3 on z/OS after the software has been installed.

The following steps are required:

On the RFC Server:

1. Install the RFC libraries from SAP.
2. Install the RFC server.
3. Set the environment variables.

On the SAP Server:

1. Import the SAP transports into your SAP system.
2. Maintain RFC destinations.
3. Create variants.
4. Activate BAdI implementation for SAP BW/BI authorization checks.

The RFC Server on UNIX System Services

Install the RFC Libraries from SAP

On z/OS, SAS/ACCESS Interface to R/3 requires the 32-bit version of the SAP RFC libraries, Release 6.40. The libraries must be installed where the SAS RFC Server is installed. These shared libraries are provided by SAP AG. Download and install the 32-bit RFC library for the z/OS platform per the instructions in SAP Note 413708.

Install the RFC Server

The SAS RFC Server runs on UNIX System Services (USS).

1. The USSUNTAR process outlined in the *Configuration Guide for SAS 9.4 Foundation for z/OS* transfers the R3 files to HFS. If you have not run this process, refer to the section titled “Installing UNIX File System Components” in Chapter 1 of the *Configuration Guide* to complete this process first before continuing.
2. Use the following command to extract the files for the SAS RFC Server.

```
$ cd /usr/lpp/SAS/SAS_9.4/USER.PRE.FIX/dbi
$ tar -xvof osrfc.tar
```

Run this command in the target installation directory for the SAS RFC Server, for example /usr/lpp/SAS/SAS_9.4/USER.PRE.FIX/dbi.

Set the Environment Variables

The SAS RFC Server uses the shared library for RFC and other shared libraries. You must add the location of the shared libraries to the LIBPATH environment variable. Add the location of the SAS RFC Server to the PATH environment variable.

The following are examples. Replace rfcplib_directory with the directory where the RFC shared libraries are installed.

UNIX System Services (USS) – Open Edition	
Bourne Shell	<pre>\$ LIBPATH=/usr/lpp/SAS/SAS_9.4/USER.PRE.FIX/dbi:rfcplib_directory:\$LIBPATH \$ export LIBPATH \$ PATH=/usr/lpp/SAS/SAS_9.4/USER.PRE.FIX/dbi:\$PATH \$ export PATH</pre>

The RFC Server on Windows

Install the RFC Libraries from SAP

The RFC Server requires the SAP RFC library, Release 7.10.

The Unicode RFC Server requires the SAP Unicode RFC libraries, Release 7.20.

The libraries must be installed on the server where the SAS RFC Server is installed.

These shared libraries are provided by SAP AG. Download and install the libraries for your platform per instructions in SAP Note 413708.

The recommended way to install the RFC library is to install the SAP GUI or the RFC Software Development Kit (RFC SDK) from SAP AG.

Install the RFC Server

Take the following steps to install the RFC Server.

1. Create a directory for the SAS RFC Server, such as `c:\SAS\SASRFC`.
2. Download the file `ntsasrfc.exe` from the machine where SAS/ACCESS Interface to R/3 software is installed. Save it in the installation directory on the Windows machine. The file is installed as a UNIX file system component and is located at `/usr/lpp/SAS/SAS_9.4/USER.PRE.FIX/dbi`.
3. Double-click the self-extracting `ntsasrfc.exe` file to extract the files into the installation directory.

The SAS RFC Server can be installed as a service in a post-installation step after SAS/ACCESS Interface to R/3 software has been loaded. For a complete description of the SAS RFC Server command, see "Using the SAS RFC Server" in *SAS/ACCESS 9.4 Interface to R/3: User's Guide*.

4. You have several options for starting the SAS RFC Server. You can start the SAS RFC Server manually, or you can install the SAS RFC Server as a service to start it automatically when the PC is rebooted or on demand.

To start the SAS RFC Server manually:

- a. Open the Services dialog box (**Start** menu, **Settings**, **Control Panel**, **Services**).
- b. Click **SAS RFC Service V9**.
- c. Click **Start**.

The optional parameter for the TCP/IP port may be used. If you include the TCP/IP port parameter on the install command, the service will always start with that port.

To install as a service and start the SAS RFC Server whenever the machine is rebooted, enter the following at a command prompt:

```
cd \sas\sasrfc
sasrfc_server -i2
```

To install as a service and start the SAS RFC Service on demand, enter the following at a command prompt:

```
cd \sas\sasrfc
sasrfc_server -i3
```

Note: To install the Unicode RFC server as a service, use the above-mentioned command, replacing `sasrfc_server` with `sasrfc_serveru`.

The RFC Server on IBM AIX

Install the RFC Libraries from SAP

For the RFC server on AIX, the 64-bit version of the SAP RFC library, Release 7.10, must be installed. For the Unicode RFC server on AIX, the 64-bit version of the SAP Unicode RFC libraries, Release 7.20, must be installed. These shared libraries are provided by SAP AG. Download the shared libraries for AIX per instructions in SAP Note 413708.

Install the RFC Server

Take the following steps to install the RFC Server.

1. Create a directory for the SAS RFC Server, for example `/usr/local/sas/sasrfc`.
2. Download the `aixrrfc.tar` file from the machine where SAS/ACCESS Interface to R/3 software is installed into the installation directory on the UNIX machine. On z/OS, the file is installed as a UNIX file system component and is located at `/usr/lpp/SAS/SAS_9.4/USER.PRE.FIX/dbi`.
3. Change to the target installation directory. For example:

```
$ cd /usr/local/sas/sasrfc
```

4. Restore the `aixrrfc.tar` file:

```
$ tar -xvof aixrrfc.tar
```

Set the Environment Variables

The SAS RFC Server uses the shared library for RFC and other shared libraries. You must add the location of the shared libraries to the shared library path environment variable. The location of the SAS RFC Server must be added to the `PATH` environment variable.

The following are examples for setting the environment variables. Replace `rfclib_directory` with the directory where the RFC shared library is installed.

AIX	
Bourne Shell	<pre>\$ LIBPATH=rfclib_directory:\$LIBPATH \$ export LIBPATH \$ PATH=/usr/local/sas/sasrfc:\$PATH \$ export PATH</pre>
C Shell	<pre>\$ setenv LIBPATH rfclib_directory:\$LIBPATH \$ setenv PATH /usr/local/sas/sasrfc:\$PATH</pre>

Installing SAS/ACCESS Interface to R/3 Software Components

Prerequisites

Refer to Chapter 3 — Installing SAS/ACCESS Interface to R/3 Software for more information about prerequisites.

Step 1 - Install ABAP Programs and Function Modules

Refer to Chapter 3 — Installing SAS/ACCESS Interface to R/3 Software for more information about installing ABAP programs and function modules.

Step 2 - Maintain RFC Destinations

Note: If the SAS RFC Server will execute requests using the SAP batch processing facility (recommended), you must complete this step.

The SAS RFC Server uses an RFC destination (TCP/IP connection type) for accessing an SAP System in batch. A destination must be configured on each SAP system for each SAS RFC Server that is accessing the SAP application server.

For example, if two SAS RFC Servers will access data from an SAP system, two destinations must be configured. Create two destinations with connection type *T* and activation type *Registered Server Program*.

Destination Name	Program ID
SASDEST1	RFC.SASDEST1
SASDEST2	RFC.SASDEST1

The program ID must be globally unique.

*Note: On Unicode SAP Systems, the destination must be defined as a Unicode destination. Check the Unicode flag on the **Special Options** tab of the RFC Destination definition screen.*

Take the following steps:

1. Call transaction SM59 in SAP. Enter transaction code `/nsm59` in the command field.
2. Select **Create**.
3. Enter *SASDEST1* as the RFC destination.
4. Enter *T* as the *Connection type*.
5. Enter a description for the destination.
6. Click **Enter**.
7. Select **Registration** for the Activation Type or **Registered Server Program** in the **Technical Settings** tab.
8. Enter `RFC.SASDEST1` as the program ID.
9. If required, enter the gateway host and gateway service in the Gateway Options panel. The gateway host is the hostname of the local gateway. The gateway service is usually `sapgw<sysnr>`, where `<sysnr>` is replaced by the system number of the SAP system.

10. For Unicode SAP systems, select the **Unicode** on the **MDMP & Unicode** tab or the **Special Options** tab. Ignore the message about performing the Unicode test. The Unicode test cannot be performed with the destinations created for SAS.
11. Save the destination.
12. Repeat the steps for each of the new RFC destinations.

Step 3 - Create Variants

Note: If the SAS RFC Server will execute requests using the SAP batch processing facility (**recommended**), you must complete this step.

For each defined RFC destination, a variant must be created that references the destination. Note that variants are client-dependent.

A variant is an SAP convention of allowing parameters to be passed to an ABAP program at run time. It offers a flexible method of setting ABAP parameters without making a change to the ABAP program. A variant contains the values that are expected by the ABAP program at run time. By locating transaction SE38 and selecting the **Variants** radio button for a given program, you can set the runtime values. The ABAP variant is written using Select-Options statements where the input variables are defined.

Using the example for creating destinations, two variants would be created for Program /SAS/Z_SAS_READ. The default value for G_BUFMAX is 10.000. Performance gains can be made in fast network configurations by specifying larger values for G_BUFMAX (for example, 100.000).

Variant Name	G_BUFMAX	G_DEST
ZVARIANT1	100.000	SASDEST1
ZVARIANT2	100.000	SASDEST2

Take the following steps:

1. Call transaction SE38 in SAP. Enter transaction code /nse38 in the command field.
2. Enter /SAS/Z_SAS_READ as the program name.
3. Click **Variants**, and then click **Change**.
4. Enter ZVARIANT1 as the variant name.
5. Click **Create**.
6. Enter the values for G_BUFMAX and G_DEST.
7. Click **Attributes**.
8. Type a description of the variant.
9. Save the variant.
10. Repeat the steps for each of the new variants.

With this example, two batch RFC servers could be started on two different hosts.

Server1:

```
sasrfc_server -p 6999 -V ZVARIANT1 -d 1
```

Server2:

```
sasrfc_server -p 6999 -V ZVARIANT2 -d 1
```

For a complete description of the SAS RFC Server command, see "Using the SAS RFC Server" in *SAS/ACCESS 9.4 Interface to R/3: User's Guide*.

Step 4 – Activate BAdI Implementation for SAP BW/BI Authorization Checks

Refer to Chapter 3 – Installing SAS/ACCESS Interface to R/3 Software for more information about activating authorization checks.

Chapter 5 – Data Dictionary Extract

The Data Dictionary Extract

Note: If you are using the SAS Data Surveyor for SAP as the front end to manage the SAP data access, use the SAS Management Console for the data dictionary extract.

SAS/ACCESS Interface to R/3 software uses a copy of metadata from the SAP system for navigation and to generate the program to read SAP data. Extracting the necessary metadata from the SAP data dictionary is part of the installation process.

Before you start the dictionary extract process, the SAS RFC Server must be installed and the SAP system must be configured for SAS/ACCESS Interface to R/3 software.

If the SAP systems, such as Development and Production, are at the same level/version/release, extract only the data dictionary from the SAP Development system. However, if the level/version/release of other systems are different from that of the Development system, extract the data dictionary for each different system. This step is necessary because metadata is different for each level/version/release of the SAP system.

If new SAP system structures are added or existing ones are changed, extract the metadata again to reflect those changes.

Step 1 - Start the SAS RFC Server

This step is only required for the SAS/ACCESS Interface to R/3 for z/OS.

Make sure the environment is set up as described in “Post-Installation Setup” in Chapter 4. For a complete description of the SAS RFC Server command, see “Using the SAS RFC Server” in *SAS/ACCESS 9.4 Interface to R/3: User’s Guide*.

To start the SAS RFC Server on UNIX, the following example command could be issued:

```
sasrfc_server -d 1 -p 6999
```

To start the SAS RFC Server on Windows, start the RFC service.

Step 2 - Log in to the SAP System

Use the graphical user interface—the Application—of SAS/ACCESS Interface to R/3 software to connect to the SAP system. To start the graphical user interface, enter %r3access on the command line of the SAS session. Double-click the **Logon** icon. In the **Logon to R/3** window and in the **Advanced Parameters** window, enter the connection parameters. The table below lists the connection parameters and corresponding comments.

Note: Some of the login parameters previously used in Version 8 of the SAS System are obsolete in Version 9.

Parameter	Comment
Connection ID	SAS internal connection identifier (7 characters, SAS name); default: CONN1
TCP/IP host	Name of the SAS RFC Server host; default: localhost

Parameter	Comment
TCP/IP port	Port number for SAS RFC Server; Default: 6999
User ID (RFC)	Mandatory SAP user ID
Password (RFC)	Mandatory SAP password
Client (RFC)	Mandatory SAP client. Client is always three characters and includes leading zeros, for example 040.
Language (RFC)	Mandatory SAP logon language
Destination (RFC)	Name of the RFC destination as defined in a sideinfo file. If a sideinfo file is used, specify the RFC destination and leave the RFC host field blank. Either the RFC destination or the RFC host must be specified, but not both.
Host (RFC)	Hostname of the SAP target system. Specify the host name in this field only if no sideinfo file is used. Either the RFC destination or the RFC host must be specified, but not both.
System number	System number of the SAP target system; Default: 00
Gateway service	The gateway service of the intermediate gateway of the form <code>sapgwnn</code> , where <code>nn</code> is the system number; default: <code>sapgw00</code>
Gateway host	Hostname of the intermediate gateway

Note: Two SAP systems, such as Development and Production, can run on one machine. If no sideinfo file is available, set the system number (SYS) and gateway service (GWSERV) fields in the connection parameters to access the correct SAP system.

Note: The sideinfo file contains side information for the SAS RFC Server to communicate with the SAP System Application Server (ABAP function module). For example:

```
DEST=mydest
LU=host1
TP=sapdp00
GWHOST=host1
GWSERV=sapgw00
PROTOCOL=I
```

Using a sideinfo File with the SAS RFC Server on UNIX

1. Edit/create the sideinfo file (named `sideinfo`).
2. Copy the sideinfo file into the desired location.
3. Replace `side_info_directory` with the correct location, for example:

for `csh`:

```
setenv SIDE_INFO side_info_directory/sideinfo
```

for `ksh`:

```
export SIDE_INFO=side_info_directory/sideinfo
```

Using a sideinfo File with the SAS RFC Server on Windows

1. Edit/create the sideinfo file (named `sideinfo`).
2. Copy the sideinfo file into the desired location.
3. Set the environment variable `SIDE_INFO` to the fully qualified path name (for example `SET SIDE_INFO=c:\sas\sr3\sideinfo`).

Step 3 - Start the Extraction Program

A wizard interface guides you through loading the metadata into SAS. To start the wizard, double-click the **Wizard to Load Metadata** icon.

In the **Select Import type** window, select either **Data Dictionary** or **R/3 Hierarchy** and click **Next**.

In the **Connection** window, enter the connection ID, the language for the metadata extraction, and the SAP release. Select whether to merge the new metadata into the existing extract. Click **Next**.

In the **Metadata Destination** window, select the SAS library for the metadata extraction. The library `R3LIB` is the default value used in SAS/ACCESS Interface to R/3 software. Click **Next**.

In the **Metadata Selection** window, select the metadata to be extracted from the SAP system. You can subset the metadata extract by selecting or clearing components of the metadata. To subset the table and field extraction, select **Range** and enter a range of tables in the **Table Subset** window. In the **Metadata Selection** window, click **Next**.

In the **Select File** window, you can enter a filename for the SAS extraction program to be saved. You can use the file to repeat the metadata extract or set up SAS batch jobs for the extract. Click **Next**.

In the **Begin Metadata Extract** window, review your settings and click **Finish** to start the metadata extraction.

Step 4 - Log off from the SAP System

Use the graphical user interface—the application—to log off.

Installation of the basic configuration is now complete. To verify that it has been successful, follow the directions in “Chapter 6 – Start SAS/ACCESS Interface to R/3 Software” to start and test the installation.

Data Dictionary Extract in Batch

The SAS sample program `sr3bprof.sas` contains an example of how to create a profile entry with the connection parameters and how to log on to SAP using the profile.

Modify the sample program `sr3bprof.sas` to log on to SAP in batch. For example:

```
/* Use sr3bprof.sas to create the profile. */
/* Logon to R/3. See program sr3bprof.sas */
%r3connb(profile=&profile, libref=&library, function=OPEN);
/* Assign the libref for the Data Dictionary Extract(s). */
libname r3lib 'the-location-of-the-Extracts';
/* Extract the Data Dictionary Information. */
%extrr3dd(conn=&cconn, language=E, merge=N, outlib=R3LIB);
/* Logoff. */
%r3connb(conn=&cconn, function=CLOSE);
```


Chapter 6 — Start SAS/ACCESS Interface to R/3 Software

To start SAS/ACCESS Interface to R/3 software from SAS 9.4, enter the following on the SAS command line:

```
%r3access
```

Test the Installation

1. Using the graphical user interface—the application—click the **List of tables** icon.
2. Enter the table name **T000**.
3. Click **Properties**.
4. Click **Show Data**.

If table T000 is displayed correctly, the installation is working correctly.

Functionality

If no connection to the SAP system is available, most of the functionality of SAS/ACCESS Interface to R/3 software, such as navigating the data model, creating SAS Views to SAP tables, and exporting metadata, is unaffected.

However, data extraction requires the SAS RFC Server to be running. If the SAS RFC Server is not running, a return code is generated. For more information, see “[Step 1 - Start the SAS RFC Server](#).”

For a complete description of the SAS RFC Server command, see “Using the SAS RFC Server” in *SAS/ACCESS 9.4 Interface to R/3: User’s Guide*.

Appendix A — Selected SAP Transaction Codes

Below is a list of transaction codes that might be useful during installation.

Enter the transaction code in the SAPGUI command line preceded by /n (a slash followed by the letter n). For example, to call the ABAP editor, enter /nse38.

Note: Commands are not case-sensitive.

Authorizations, Profiles, and Users	
SU01	Maintain Users
SU02	Maintain Profiles
SU03	Maintain Authorizations

ABAP Functions and Programs	
SE37	Function Library Alternatively, from the SAP system main menu, select Tools , then ABAP Workbench . Click the Function Library button to view the ABAP Function Library: Initial Screen window.
SE38	ABAP Editor Alternatively, from the SAP system main menu, select Tools , then ABAP Workbench . Click the ABAP Editor button to view the ABAP Editor: Initial Screen window. Transaction SE38 is also used to define variant for an ABAP program.
SE80	Repository Browser Alternatively, from the SAP system main menu, select Tools , then ABAP Workbench . Click the Repository Browser button to view the Repository Browser: Initial Screen window.

View Tables and Table Maintenance	
SE16	Display a table
SM30	Table maintenance
SM31	

Job Maintenance	
SM37	Can be used to display the job status.

System Log	
ST22	ABAP dump analysis
SM21	System log

RFC Destinations	
SM59	Display and maintain RFC destinations

Appendix B — Error Messages

All Operating Systems

Gateway Service not found

ERROR: Gateway service sapgwmm not found

Check that the TCP/IP services file contains the required entries. Also see the section titled “Connectivity” in Chapter 2.

Hostname not found

ERROR: Host hostname not found

Check that the TCP/IP hosts file contains an entry for the specified host or use the IP address. Also see the section titled “Connectivity” in Chapter 2.

Appendix C — Pre-Installation Checklist

Before installing SAS/ACCESS Interface to R/3 software, the following information must be available. Documenting the information identified in Appendix C and Appendix D significantly simplifies installation and on-going maintenance.

The checklist is broken down into sections A, B, and C. Section A is general information and can be provided by the SAS Account Representative. Section B should be completed by the person maintaining the SAS environment. Section C should be completed by the person maintaining the SAP environment.

Section B clarifies where SAS/ACCESS Interface to R/3 software is to be installed and where the extracted SAP metadata is to reside. Section C clarifies which SAP systems you want to access.

Section A - General Information

Date:
Company Name:
Address:
Name of SAS Account Representative: Phone Number: E-mail:
Name of SAS Contact (responsible for the installation): Phone Number: E-mail:
Name of Customer Contact: Phone Number: E-mail:

Section B - SAS Environment

SAS/ACCESS Interface to R/3 Software – Application

Name of SAS Contact: Phone Number: E-mail:
Name of Network Contact: Phone Number: E-mail:
Host Name:
IP Address:
Operating System Version:
Operating System User ID and Password: If Windows, does the User ID has administrator rights? <input type="checkbox"/> Yes
Windows Screen-saver Password:
Path where SAS 9.4 is installed, for example c:\Program Files\SAS\SAS 9.4 or /usr/local/sas:
Does SAS Installation Data (SETINIT) include SAS/ACCESS to R/3 software (provided by SAS)? <input type="checkbox"/> Yes
If UNIX, does it have X Windows? <input type="checkbox"/> Yes
UNIX Root Password:

Data Dictionary Extract(s)

If you have multiple versions of SAP (for example, SAP R/3 4.6C and ECC 6.0), then SAP metadata has to be extracted from each version of the system. Complete one of these tables for each metadata extract.

Host Name: IP Address (typically from the machine that has SAS/ACCESS Interface to R/3 software):
Drive/Path where Data Dictionary is to be installed:
For SAP, Release 4.x or higher, 500 MB of disk space is required. Is the disk space available? <input type="checkbox"/> Yes

SAS Views on Separate Machine

Host Name:
IP Address:
Operating System Version:
Operating System User ID and Password: If Windows, does the User ID has administrator rights? <input type="checkbox"/> Yes
Windows Screen-saver Password:
UNIX Root Password:
Path where SAS 9.4 is installed, for example c:\Program Files\SAS\SAS 9.4 or /usr/local/sas:
Does SAS Installation Data (SETINIT) include SAS/ACCESS to R/3 software (provided by SAS)? <input type="checkbox"/> Yes

Section C - SAP System Environment

General Information

Name of SAP Administrator (available to help with installation): Phone Number: E-mail:
Name of SAP System Developer (available to help with installation): Phone Number: E-mail:
SAPUser ID: Client: User ID: Password:

SAS RFC Server

Complete one of these tables for each SAS RFC Server.

Host Name:
IP Address:
Windows Location of RFC libraries (for example c:\sapppc\sapgui\rfcSdk\bin):
UNIX location of the thread safe shared library for RFC (download the shared library for your platform per instructions in SAP Note 413708):
TCP/IP Port Number (default 6999):
TCP/IP hosts File Entry for SAP System Application Server (for example, 1.2.3.4 r3server):
TCP/IP services File Entries (for example, sapdp00 3200/tcp):

SAP System

This is information about the SAP system from which you want to pull data. Complete one of these tables for each SAP system you want to access.

SAP System Application Server Host Name:
IP Address:
SAP System Release (for example, 4.6c):
System ID (for example, A01):
Is the sideinfo file used for communication parameters? <input type="checkbox"/> Yes If yes, full path and name of sideinfo file:
RFC Dialog User ID: Client: User ID: Password:
System Number (SYS) (for example, 00):
Language (for example, EN for English):
Gateway Host (if different):
Gateway Service (for example, sapgw00):
Transaction Program (for example, sapdp00):

SAPGUI

Host Name where SAPGUI is installed:
If UNIX, does it have X Windows? <input type="checkbox"/> Yes?

Appendix D — Installation Checklist

During installation, make a note of the following information.

Location of Data Dictionary Extract(s) (for example, c:\Program Files\SAS\SAS 9.4):

Transport Request Number (for example, A01K902092):

Appendix E —Installing the ABAP Add-On

SAS provides an add-on for the installation of the ABAP objects in the SAP System for SAP Basis Release 740, SAP ERP 6.0, and SAP BW 7.4.

Technical Prerequisites:

- The system is based on SAP NetWeaver Release 7.4 or above.
- You have installed at least SPAM/SAINT Version 0053.
- You use a kernel with at least Release 740.

The following table describes the contents of the Add-On:

SAS940 .SAR	installation package for SAS/ACCESS Interface to R/3
SAS940S1 .SAR	support package for SAS/ACCESS Interface to R/3 for SAP ERP
SAS940S2 .SAR	support package for SAS/ACCESS Interface to R/3 for SAP BW
SAS940S4 .SAR	support package for SAS/ACCESS Interface to R/3 for SAP BW (Supports BI 7.0 analysis authorization concept. Optional for SAP BI 7.0 systems and later; apply only if you are using the analysis authorization concept.)

Note: *The add-on is available for SAP BASIS 7.4, SAP ERP 6.0, and SAP BW 7.4. Installing the add-on is an alternative to installing the ABAP objects by using the transport files as described in “[Chapter 3 — Installing SAS/ACCESS Interface to R/3 Software](#).” You should either install the add-on or you should apply the SAS-provided transport files, but not both.*

Use the SAP Add-On Installation Tool (transaction SAINT) to import the objects for the SAS/ACCESS Interface to R/3 into the SAP System.

1. Download the files from the SAS Download site:
<https://support.sas.com/downloads/package.htm?pid=2457>. Save the files on the same machine as the Add-On Installation Tool.
2. Log in to client 000 of the SAP system with an administrator account.
3. Call the Add-On Installation Tool with transaction SAINT.
4. Select **Installation Package**→**Load packages**→**From front end** from the menu. The system displays a dialog box for selecting the archive. Follow the path to the installation package that you downloaded and select it.
5. To copy the archive to the application server and decompress it, select **Decompress**. Then select **Start**. The SAS/ACCESS to R/3 add-on is now listed in the Add-On Installation Tool as an installable add-on.
6. To prepare the installation queue for the add-on, select the SAS add-on, and click **Continue**.
 - A. If all import requirements are met, the installation queue is displayed.
 - B. If all of the import requirements are not met, you cannot install the add-on in this SAP system. The import requirements are listed in a dialog box. As an alternative, you can

install the transport files as described in “[Chapter 3 – Installing SAS/ACCESS Interface to R/3 Software.](#)”

6. To start the installation, click **Continue**.
7. Click **Finish** to complete the installation.

After you have installed the add-on, use the following steps to install the SAS940S1.SAR, the SAS940S2.SAR, or the SAS940S4.SAR support packages:

1. Download the files from the SAS Download site:
<https://support.sas.com/downloads/package.htm?pid=2457>. Save the files on the same machine as the Add-On Installation Tool.
2. Log in to client 000 of the SAP system with an administrator account.
3. Call the Support Package Manager tool with transaction SPAM.
4. Select **Support Package**→**Load packages**→**From front end** from the menu. The system displays a dialog box for selecting the archive. Follow the path to the installation package that you downloaded and select it.
5. To copy the archive to the application server and decompress it, select **Decompress**. Then select **Display/define** and click **SAS**.
6. Highlight the Support Package and press **Enter**.
7. To start the installation, click the **Import Queue** icon.
8. When the installation has completed, select the menu item **Support Package | Confirm**.

Uninstalling the ABAP Add-On

Use the SAP Add-On Installation Tool (transaction SAINT) to uninstall the objects for the SAS/ACCESS Interface to R/3 from the SAP System.

1. Log in to client 000 of the SAP system with an administrator account.
2. Call the Add-On Installation Tool with transaction SAINT.
3. Under **Extras** -> **Setting** select the scenario **Standard** on the **Import Queue** tab and select **Confirm**.
4. Select **Uninstallable components** tab.
5. Highlight SAS Add-On SAS/ACCESS Interface to R/3.
6. Click **Start** button.
7. Read SAP Note 1883223 before continuing to the next step.
8. Select **Start in dialog** and click **Continue** button.
9. Click **Finish** to complete the uninstallation.

Glossary

ABAP Development User

An ABAP Development User is an SAP user ID with ABAP developer permission. It is used to create the ABAP function group, the function module, and the report that are part of SAS/ACCESS Interface to R/3 software. For SAP, Release 3.0 and higher, a developer user also requires an OSS Access Key. A development user ID is only required while installing SAS/ACCESS Interface to R/3 software.

Authorization

The SAP system has a powerful tool to restrict or grant permission to access certain objects in the SAP system or to perform certain actions. SAS/ACCESS Interface to R/3 software requires the permission to read tables and the permission for communication.

Client

In commercial, organizational, and technical terms, a client is a self-contained unit in an SAP system (for example, a company group, a business unit, or a corporation) with separate master records and its own set of tables.

Data Dictionary Extract

SAS/ACCESS Interface to R/3 software provides a navigation tool based on metadata from the SAP Data Dictionary. The tool operates on a copy of the metadata - the Data Dictionary Extract.

OSS Access Key

An OSS Access Key is a string of characters that ABAP developers must enter the first time they create or modify ABAP objects like programs, function modules, and function groups. You can obtain an OSS Access Key from SAP AG's Online Service System (OSS).

RFC

The Remote Function Call (RFC) interface is SAP AG's implementation of a remote procedure call. It is provided for the integration of R/2 and R/3 systems and external programs. SAS/ACCESS Interface to R/3 software uses the RFC interface for communication and data transfer between the SAP system and the SAS RFC Server.

RFC Destination

RFC destinations are used to define the location of a remote system to SAP.

RFC SDK

The RFC Software Development Kit (RFC SDK) contains a library and source files to implement the communication between an external program and a function module in the SAP system.

RFC User

References to an RFC user indicate an SAP user ID that is used by SAS/ACCESS Interface to R/3 software for the communication between the SAS RFC Server and the function module in the SAP System Application Server.

SAP System Application Server

The components of the three-tier client/server architecture of the SAP system are database, application, and presentation layer. SAS/ACCESS Interface to R/3 software communicates with the SAP System Application Server.

SAPGUI

The SAPGUI is the front-end for the SAP system. During the installation of SAS/ACCESS Interface to R/3 software, a SAPGUI is required to install parts of the interface in the SAP system.

SAS/ACCESS Interface to R/3 Software, Application

This is the graphical user interface of SAS/ACCESS Interface to R/3 software. The graphical user interface is used to navigate the metadata extracted from SAP. It generates SAS source code to read data from an SAP system.

SAS RFC Server

The SAS RFC Server is a program provided with SAS/ACCESS Interface to R/3 software. It is the component for the communication between SAS 9.1.3 and the SAP system. Several configurations are possible: the SAS RFC Server can be installed on the machine where SAS 9.1.3 is installed; the SAS RFC Server can be installed on the machine where the SAP System Application Server is installed; or the SAS RFC Server can be installed on any machine in the network. It is recommended to use one of the first two options.

sideinfo File

The sideinfo file contains connection parameters. The environment variable SIDE_INFO defines the path for the sideinfo file. If the environment variable SIDE_INFO is not set, the sideinfo file must be located in the working directory. For SAS/ACCESS Interface to R/3 software, the sideinfo file can be used to define the parameters for the communication between the SAS RFC Server and an SAP system.

Variants

Variants are used to save sets of input values for ABAP programs.



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