ONESOURCE™ INDIRECT TAX INTEGRATION FOR SAP (BASIC US/CA)-5.2B

INSTALLATION AND RFC CONFIGURATION GUIDE

VERSION 5.2.3.2B

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ABOUT THIS GUIDE

INTEGRATING ONESOURCE INDIRECT TAX WITH SAP

Corporations using SAP as their Enterprise Resource Planning System can simplify their worldwide US sales and use tax, Canadian GST, HST, QST, and PST by implementing ONESOURCE Indirect Tax Application Suite of products. The suite includes Determination Module and Integration Module for SAP. The benefits provided by ONESOURCE Indirect Tax Application Suite are:

- Fast, accurate sales, use, and consumer's use tax results and Canadian taxes.
- Complete audit database from which you can generate both standard and custom reports, as well as returns.

ONESOURCE Indirect Tax Integration Module for SAP makes use of the SAP provided Standard Tax Interface and its underlying Remote Function Calls (RFC) and SAP's Java Connector (JCo) to communicate with ONESOURCE Indirect Tax Determination. As of release 5.2.2.0, this integration provides support for SAP Secure Network Communication (SNC) to secure your RFC connections. ONESOURCE Indirect Tax Integration for SAP is certified by SAP for the United States of America and Canada for use with the SAP ERP.

The standard installation and configuration of ONESOURCE Indirect Tax Integration for SAP enables instant integration of SAP business processes with ONESOURCE Indirect Tax Determination. Tax details are returned in real time to the calling SAP transaction. Tax determination is based on the data elements sent from SAP to ONESOURCE Indirect Tax Determination. Additional data elements, often necessary for the accurate determination of consumer's use tax on complex transactions, can be mapped to ONESOURCE Indirect Tax to allow for unique customer tax and reporting requirements.

HOW THIS GUIDE IS ORGANIZED

This guide leads you through procedures in the following chapters:

- ***INTEGRATION OVERVIEW*** shows the benefits of integrating Determination software with SAP and describes both an architectural and configuration overview of Integration process.
- ***CONFIGURE SAP TO ALLOW CALLS TO COMMUNICATE WITH DETERMINATION*** describes the steps you need to take to enable SAP RFCs to call Determination to perform tax calculations and return the tax results back to SAP RFCs.
- ***INSTALLING AND CONFIGURING INTEGRATION FOR SAP*** explains how to install and initially configure Integration for SAP.
- ***DEFINING A COMPANY IN DETERMINATION FOR RFC TESTING*** provides information on Determination configurations that enable the two systems to successfully transfer and process transaction data.
- ***ADVANCED CONFIGURATIONS IN INTEGRATION FOR SAP*** describes how to enable custom support of Custom Authority tax result mappings in SAP.
- ***ENABLING CUSTOM ATTRIBUTES*** provides and overview of the tax process and user exits, explains how to append the interface,
- ***APPENDIX 1: MAPPING*** *lists the input and output maps used to associate SAP data fields to Determination XML elements.*
- ***APPENDIX 2: TRANSPORTS*** provides additional needed information.

After you complete the procedures in this guide, follow the instructions in the *ONESOURCE Indirect Tax Integration for SAP US/CA Tax Configuration Guide.*

Once you finish these steps, your SAP implementation can leverage the full set of calculation, auditing, and reporting features of Determination for all US and Canada taxes.

SKILL AND ACCESS PREREQUISITES

This guide is intended for use by ONESOURCE Indirect Tax Professional Services and your SAP System Administrator, Configurator, or Superuser. The purpose of this guide is to walk you through the step-by-step process of installing and configuring both Integration and SAP so that SAP RFCs can communicate with Determination. The examples in this guide are taken from SAP ECC 6.0.

The following table lists the required knowledge, permissions, and other information that will help you proceed quickly through the installation and configuration.

Skill and Access Prerequisites	
Requirement	**Description**
Technical Skills	• UNIX or Windows System Administrative Privileges • Experienced User of UNIX or Windows • Using Determination • ABAP
SAP Authorizations	• Configurator (IMG) • Defining and Testing RFC Destinations • System Administrator • Ability to run SE37 transactions to execute Tax Interface RFCs

SITE-SPECIFIC SYSTEM CONFIGURATION

The scripts and procedures used in this guide reference the following information about your implementation which you should determine before running the installation. Refer back and use the table below to list these values as you complete the steps outlined throughout this install guide. They will become a handy reference.

Information About your SAP Implementation		
Item	**Description**	**Page Reference**
SAP CPIC Username and Password	Username and password to enable the JCo Client to connect to SAP.	Created on: ***SAP ECC CONFIGURATION***
SAP System Number	System number to connect to the host server.	Per your SAP install, used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***

Information About your SAP Implementation		
Item	**Description**	**Page Reference**
SAP Client	SAP Client.	Per your SAP install, used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
SAP Host	Host parameter for your SAPsystem.	Per your SAP install, used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
SAP Message Server	SAP Message Server.	Per your SAP install, used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
SAP System ID	SAP System ID.	Per your SAP install, used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
SAP Group Name	SAP logon group name.	Per your SAP install, used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
SAP Gateway Server	Gateway to connect to your SAPinstance.	Per your SAP install, used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
RFC Program ID	Case-sensitive, uniquely-definedID in your RFC destination. Mustmatch that found in your *SabrixConnection.properties* file.`SABRIX` is used in this document.	Created on:***DEFINING THE RFC DESTINATION, SM59***
JCO Client SNC QOP	Specifies the level of security in SNC, 1 to 9. Integration Default value is blank (disabled). Do not provide any value if SNC is disabled	Per your SAP install, used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
JCO Client SNC Name	Specifies the SNC name. Integration Default value is blank. Do not provide any value if SNC is disabled. Canonical name of Certificate generated in Integration Machine.	used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
JCO Client SNC Partner Name	Specifies the SNC name of the partner. Integration Default value is blank. Do not provide any value if SNC is disabled. Canonical name of the Certificate generated in SAP Application.	Per your SAP install, used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
JCO Client SNC Mode	Flag for activating SNC. SNC is disabled by default in integration. snc_mode takes values 0 (Enabled) or 1 (Disabled). Integration Default value is 0 (Disabled).	Per your SAP install, used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***

JCO Client SNC SSO	Flag for activating SNC SSO. SNC SSO is not supported in Integration and its value is always 0 (Disabled) in Integration. Integration Default value is 0 (Disabled).	used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
JCO Client SNC Library	Specifies the path and file name of the SAP Crypto library configured in Integration Servier as per the Operating System. Integration Default value is blank. Do not provide any value if SNC is disabled.	used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
JCO Server SNC QOP	Specifies the level of security in SNC, 1 to 9. Integration Default value is blank (disabled). Do not provide any value if SNC is disabled	Per your SAP install, used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
JCO Server SNC My Name	Specifies the SNC my name. Integration Default value is blank. Do not provide any value if SNC is disabled. Canonical name of Certificate generated in Integration Server.	used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
JCO Server SNC Mode	Flag for activating SNC. SNC is disabled by default in integration. snc_mode takes values 0 (Disabled) or 1 (Enabled). Integration Default value is 0 (Disabled).	used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
JCO Server SNC Library	Specifies the path and file name of the SAP Crypto library configured in Integration Server as per the Operating System. Integration Default value is blank. Do not provide any value if SNC is disabled. Install SAP Crypto Library in Integration Server. Provide full control user privileges to this SAP Crypto Library folder for Windows User "Local Service" if integration is installed in Windows. The default is the system-defined library as defined in the environment variable SNC_LIB.	used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***

SITE-SPECIFIC SYSTEM CONFIGURATION

Information About your SAP Implementation		
Item	**Description**	**Page Reference**
Calculation URL	The URL of the Calculationservlet. Example: *http://<server:port>/sabrix/xmlinvoice*	Used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
Address Validation URL	The URL of the Address Validation servlet. Example: *http://<server:port>/sabrix/addressvalidation*	Used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
Version URL	The URL of the Version servlet. Example: *http://<server:port>/sabrix/version.txt*	Used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
Debug Level	ALL, INFO, ERROR, DEBUG, or OFF	Used on: ***SETTINGTHE LOG LEVEL***
Integration Log File Location	Specifies the log directory and the log file name.	Used on: ***CONFIGURING THE APPENDER***
Number of RFC Servers to Start	To achieve multi-threading atleast two servers should be started. The default is 5.	Used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
Number of Address Records to Return	Limits the number of address records returned by the jurisdiction lookup. Default is set to 99 which ismax SAP can return.	Used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
Product Code to be Used for Freight	Default is FREIGHT.	Used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***
Fully Qualified Host Name	The SAP Host to connect to.	Used on: ***CONFIGURING INTEGRATION PROPERTIES FILE***

Information About your SAP Implementation		
Item	**Description**	**Page Reference**
Solution Manager URL	URL address to access the Solution Manager. See your Basis person for correct URL	Used on: ***REGISTERING INTEGRATION FOR SAP WITH SAP SOLUTION MANAGER***
Solution Manager Port	Default is 50000	Used on: ***REGISTERING INTEGRATION FOR SAP WITH SAP SOLUTION MANAGER***
Solution Manager Login	Default is j2ee_admin	Used on: ***REGISTERING INTEGRATION FOR SAP WITH SAP SOLUTION MANAGER***
Solution Manager Password	password tied to SolutionManager Login.	Used on: ***REGISTERING INTEGRATION FOR SAP WITH SAP SOLUTION MANAGER***

SYSTEM PREREQUISITES

The installation of Integration for SAP places no new software or hardware requirements on either the system hosting SAP or the one hosting Determination.

SAP System requirements are:

SAP Basic Version 5.2.x.x	
Dependencies	XML Schema Version G
ERP Version	SAP ERP 6.0 and S/4 HANA 1511 and above SAP Certified
	CRM 7.0 and higher SAP Certified
SAP-JCo, SAP Crypto, SRM/EBP	JVM 8 SAP-Jco 3.1.x SAP Crypto SRM/EBP Not Supported

When selecting the JCo, only select the 64-bit version if a 64-bit JVM is installed. The version of the JCo is not related to the bit version of the operating system installed on the server; the JCo version is only relevant to the bit version of the JVM (Java Virtual Machine).

For SAP Product Support Life Cycle, please review these documents:

https://renewals-thomsonreuters.force.com/TRCommunity/s/article/Integration-for-SAP-Product-Support-Lifecycle

REFERENCES TO RELATED DOCUMENTATION

ONESOURCE INDIRECT TAX-PROVIDED DOCUMENTATION (INTEGRATION FOR SAP)

ONESOURCE Indirect Tax Integration for SAP US/CA Tax Configuration Guide

Once you are done with the installation and basic configuration in SAP and have enabled RFCs from SAP to communicate with Determination, you will be using the configuration guide to enable US/CA transactions in SAP to communicate with Determination for tax calculation.

This guide provides details on setup, configuration, and coding necessary to enable US/CA tax calculations with SAP.

SAP Load Balancing and Failover Guide

This document outlines what you should take into account when building a scalable and redundant architecture using Determination and Integration for SAP. The document, *SAPLoadBalancing.pdf*, can be found in the release distribution file.

SAP-PROVIDED DOCUMENTATION (SAP TAX INTERFACE)

SAP R/3 Tax Interface Configuration Guide

ONESOURCE Indirect Tax Determination provides the essential steps for you to send SAP tax-relevant transactions in SD, MM and FI to Determination for tax calculation. These steps are contained in the basic manuals: *ONESOURCE Indirect Tax Integration for SAP Installation and RFC Configuration Guide* and ONESOURCE *Indirect Tax Integration for SAP US/CA Tax Configuration Guide*.

However, some users find that their business requires more complex configurations. If your situation requires you to seek additional information about preparing SAP ECC for the external tax engine, consult the *R/3 Tax Interface Configuration Guide Release 4.6x* released by SAP Labs. This document should be downloaded from the SAP web page according to instructions in OSS note 392696, or it can be obtained from ONESOURCE Indirect Tax upon request. Although this guide was first published for release 4.6 in 2003 it is still applicable for ECC 6.0. We strongly recommend you read this document prior to configuring SAP. It will give you a broader understanding of the process.

REVIEWING SAP SUPPORT NOTES

We recommend that you review all relevant notes to the SAP Tax Interface on the SAP Support Web. Our Professional Services team has compiled a list of important OSS notes that they have encountered in their support of new ONESOURCE Indirect Tax implementation projects.

Please review KBA

https://renewals-thomsonreuters.force.com/TRCommunity/s/article/ONESOURCE-Indirect-Tax-for-SAP-Basic-Enhanced-SAP-Support-Notes-To-Be-Considered-When-Implementing-the-Integration

It is a list of known possible notes relevant to integrating SAP and ONESOURCE with SAP. It is also recommended that you do a search in SAP at http://service.sap.com/notes for tax relevant notes in the core Application Areas XX-PART-TIF, CRM-BF-TAX, AP-TTE, but there are others relevant as well.

INTEGRATION OVERVIEW

This chapter describes:

- The benefits of integrating SAP with Determination
- An architectural overview and process flow
- The various user processes that can trigger Determination tax calculations
- Optional customizations that help you make the most of Determination

BENEFITS

Enabling Determination to generate tax results for your SAP transactions results in the following key benefits:

Seamless Integration.

Once integrated, your tax professionals can continue to use SAP functionality without needing to learn new technology or processes. Determination automatically obtains a complete set of data elements necessary to perform the appropriate sales and use tax calculations, then returns the results to SAP—all without the need for manual intervention.

Accurate Tax Calculation.

Determination is the premier solution for your Sales, Use Tax and VAT needs. Determination is the only system to provide all of these features:

- Integrates worldwide tax calculation.
- Enables global visibility and real-time transactions.
- Gives control of the data and decision-making to the tax professional.
- Eliminates or minimizes IT involvement as tax jurisdictions, rates, and rules change.
- Provides a scalable, maintainable enterprise solution.

Using Determination as your global transaction tax management solution reduces costs, increases accuracy, and provides the flexibility needed to adapt to an ever-changing business and taxation environment.

Auditing/Reporting.

Tax calculations that are processed using Determination are stored in Determination audit tables. From this audit data, you can generate standard or customized reports based on any user-defined criteria. For example, you can create tax-by-jurisdiction reports or any other desired reports needed to satisfy your company's needs.

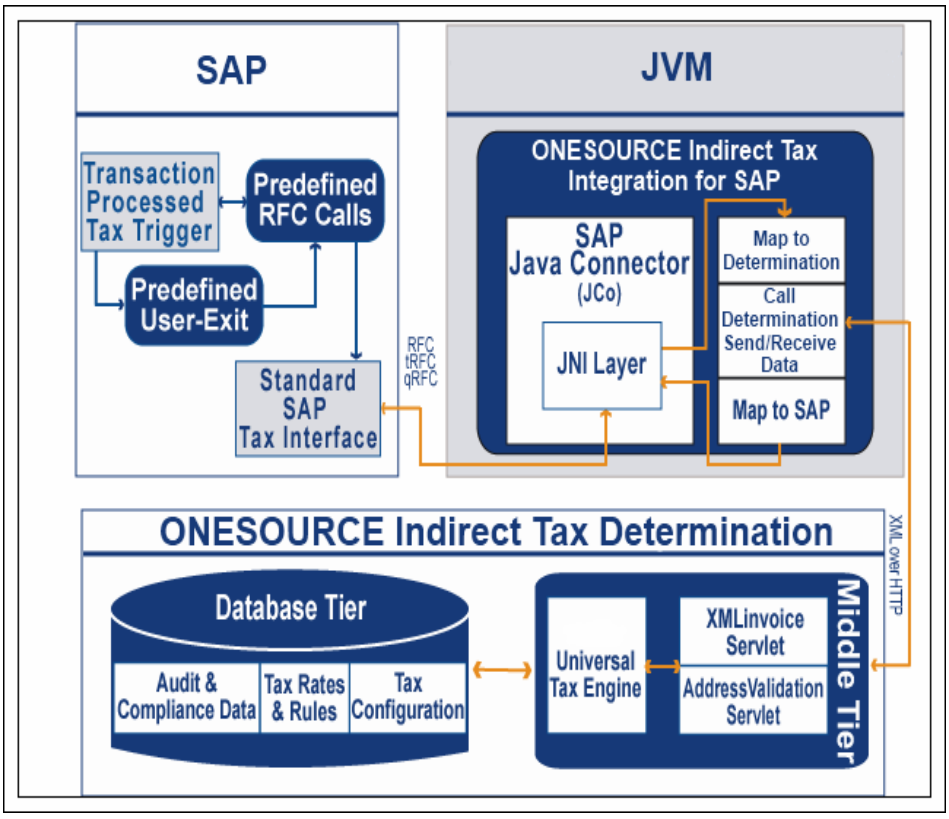
ARCHITECTURE

Integration for SAP consists of a set of Java classes. These classes use the SAP Java Connector (JCo) interface to communicate with SAP, and the Java Connection interface to communicate with Determination. Additionally, these classes map data between formats that can be recognized by SAP and by Determination.

Communication between SAP and ONSOURCE Indirect Tax during tax-relevant processes is managed by Integration for SAP. Using the JCo Server architecture, in which Integration subscribes to the SAP system with a predefined server pool, it makes these connections available to the RFC Destination at a tax call. In addition, a JCo Client to Integration was added; this is used when Integration starts up. This JCo Client connects to the SAP system using a special background account (CPIC). It then interrogates the Tax RFC Structures and provides them to Integration to use in the JCo Server. This JCo Client connection is only used once, at the startup of Integration, after which it automatically closes.

INTEGRATING SAP ECC WITH ONESOURCE INDIRECT TAX

This diagram shows the RFC method of interfacing between SAP ECC and ONESOURCE Indirect Tax:



RFC CALL FOR SAP ECC

The following describes the process of using the RFC call for SAP ECC:

1. SAP determines that it needs to call the SAP Tax Interface.
2. Integration is listening for remote function calls from the SAP Tax Interface.
3. SAP sends a Remote Function Call (RFC) to one of Integration's listeners.
4. Integration determines which RFC call in the SAP Tax Interface was requested.
5. Integration maps the data from SAP to ONESOURCE Indirect Tax.
6. Integration calls Determination, sending XML over HTTP.
7. Integration receives the results from Determination.
8. Integration maps the results to SAP RFC response structures.
9. SAP receives the response.

USER PROCESSES THAT TRIGGER DETERMINATION TAX CALCULATIONS

This *Installation and RFC Configuration Guide* provides procedures needed to install and configure Integration to enable RFC communication with Determination.

*ONESOURCE Indirect Tax Integration for SAP US/CA Tax Configuration Guide e*nables end-to-end tax calculation with configuration steps completed in SAP.

Once Determination is fully integrated with SAP ECC, you can automatically generate correct tax results during the following actions:

- Processing Purchase (Procure To Pay) or Sales (Order To Cash) Transactions.
- Logistic Invoice Verification (LIV) with posting to A/P.
- Processing Billing Document transactions with posting to A/R.
- Supporting address management to support jurisdictioncode.

CUSTOMIZING INTEGRATION

The standard out-of-the-box installation of Integration enables basic transaction data from RFCs to be passed to Determination, which calculates the appropriate tax and returns the correct result to SAP ECC RFCs.

However, there are additional customizations that you can make to both Determination and SAP that will enable you to pass additional data to Determination to trigger specialized calculations or enable additional auditing or reporting capabilities. These customizations can be straightforward or complex and require you to thoroughly analyze your business processes and requirements. You can engage ONESOURCE Indirect Tax Professional Services to assist you in this process.

For more information on customizing Integration, see *ONESOURCE Indirect Tax Integration for SAP US/CA Tax Configuration Guide.*

CONFIGURESAP TO ALLOW CALLSTO COMMUNICATEWITH DETERMINATION

Before installing Integration for SAP, you must configure SAP to use Determination to calculate and return tax to all tax applications. All necessary configuration steps for SAP are described in detail in several documents released by SAP Labs in ***REFERENCES TO RELATED DOCUMENTATION***

This chapter describes the minimum ONESOURCE Indirect Tax for SAP configuration you must complete before you install Integration. See:

- ***DEFINING A CPIC USER ACCOUNT***
- ***DEFINING THE RFC DESTINATION, SM59***

SAP ECC CONFIGURATION

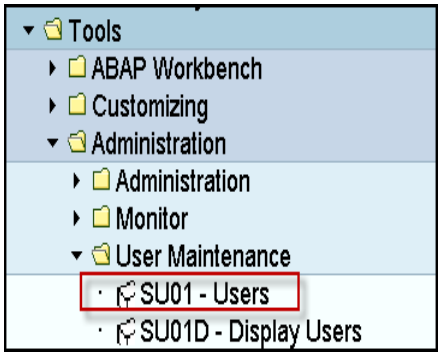
For a seamless integration between ONESOURCE Indirect Tax and your SAP ECC RFCs, you must configure the following:

- Defining a CPIC user account
- Defining the RFC destination SM59

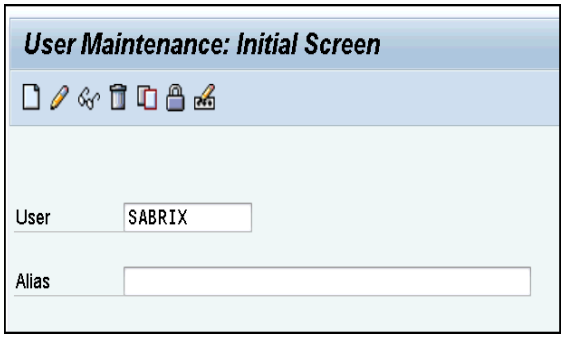
DEFINING A CPIC USER ACCOUNT

The JCo Client in Integration for SAP requires a background user account to log on to the SAP system and read necessary metadata from the system. This account is only used once at Integration startup; it will be disconnected after the JCo Client has read the information from SAP.

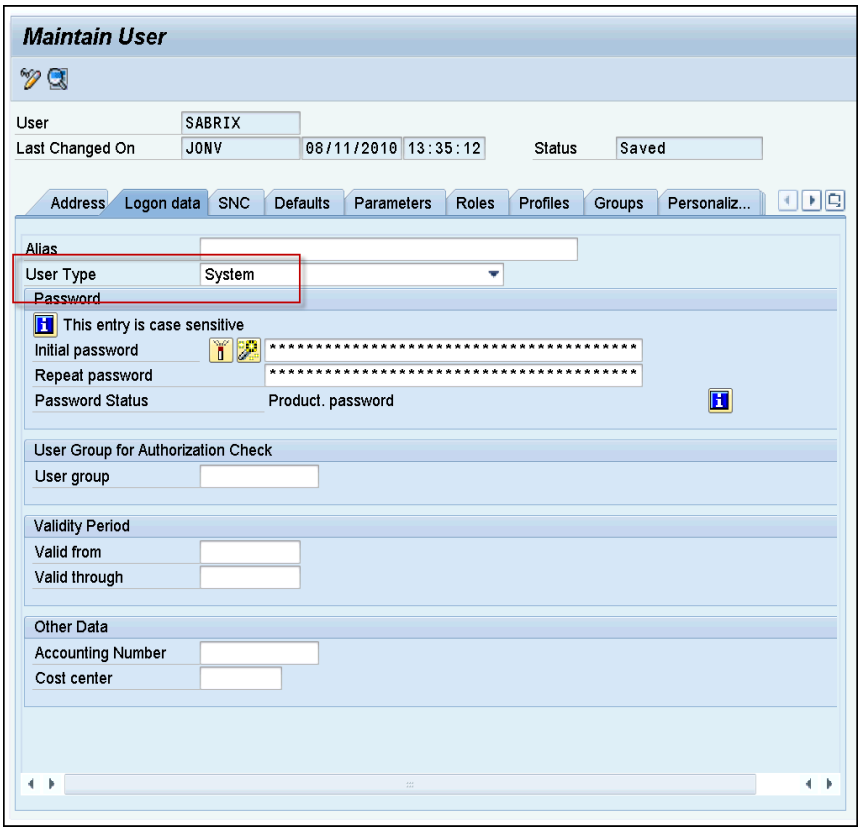
1. In the main menu, navigate to **Tools > Administration > User Maintenance > SU01 - Users; Transaction: SU01**.



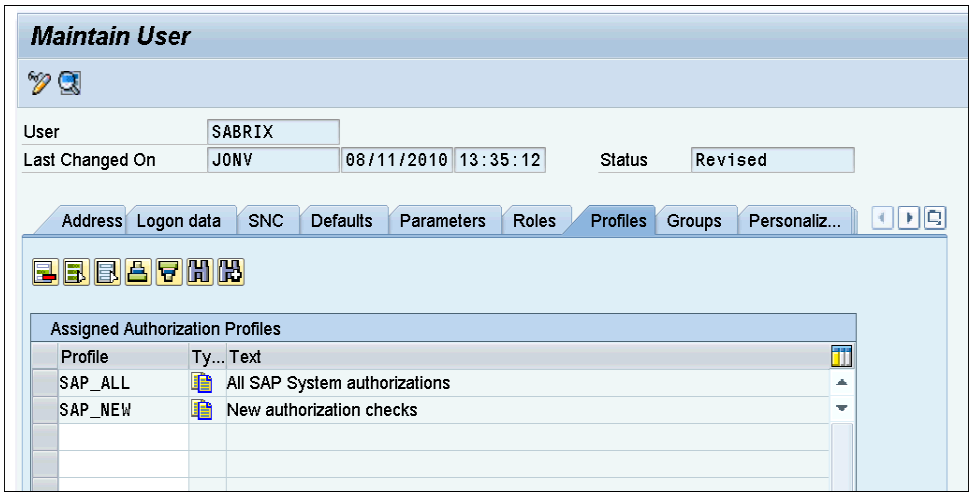
2. Create a new user or copy an existing one; this document uses the example SABRIX.



3. Navigate to the **Logon Data** tab. Enter a password, and make sure that the **User Type** is set to *Communication or System (this picture shows a System user type.)*.



4. Navigate to the **Profiles** tab, and add the appropriate profile. This example uses *SAP_ALL*, and SAP_NEW. Follow instructions in OSS note 460089 for more details on what authorization profile to use.

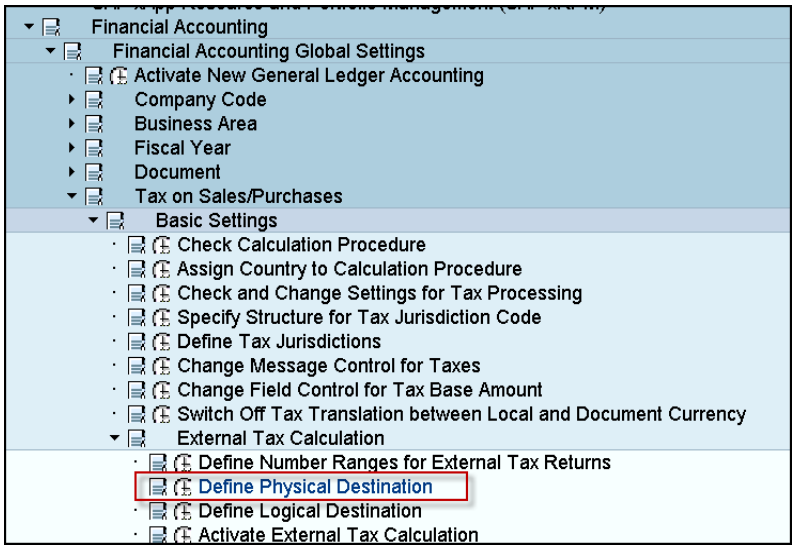


5. Save your entry.

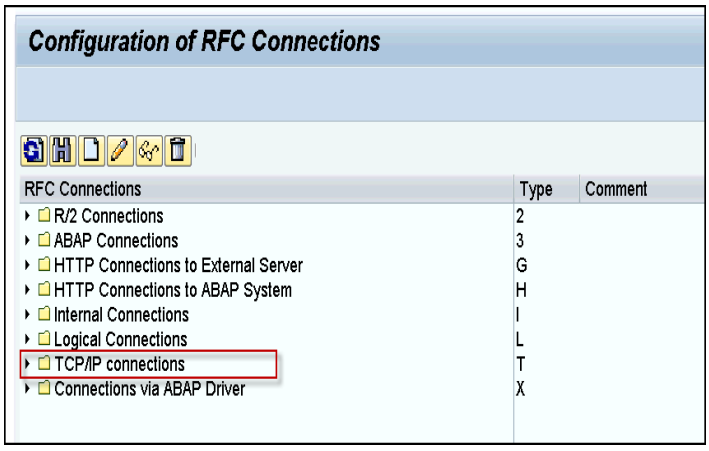
DEFINING THE RFC DESTINATION, SM59

What is an RFC Destination: Remote Function Call (RFC) is the standard SAP interface for communication between SAP systems and non-SAP systems. RFC calls a function to be executed in a remote system. In this step you are defining the RFC destination that will be used between Determination and SAP.

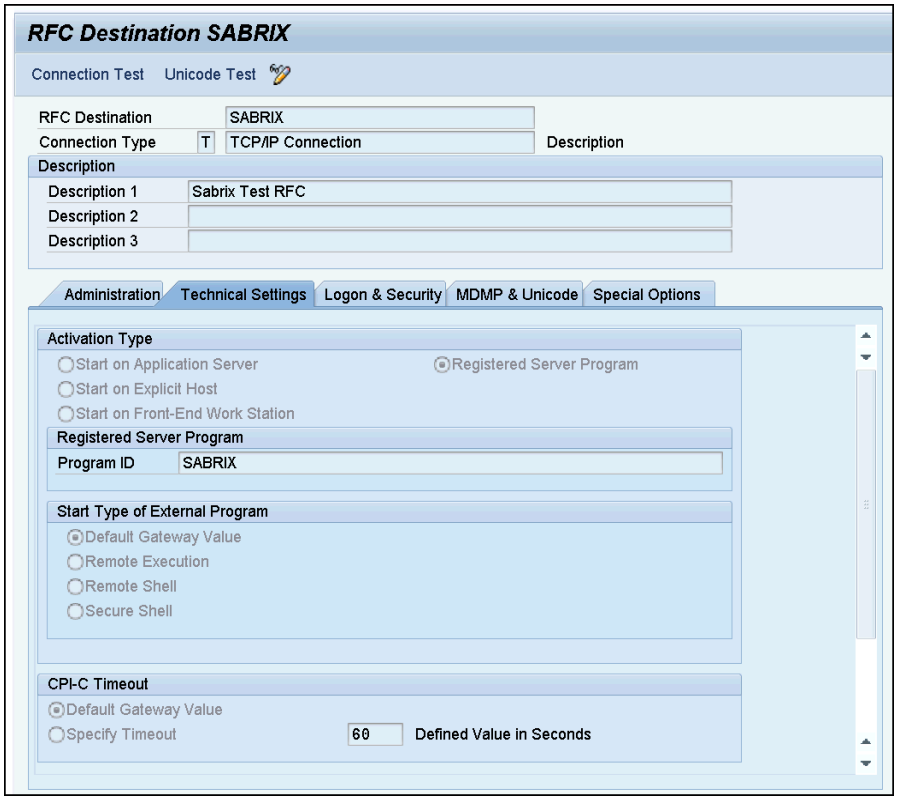
1. In the IMG navigate to **Financial Accounting > Financial Accounting Global Settings > Tax on Sales/Purchases > Basic Settings > External Tax Calculation > Define Physical Destination:**



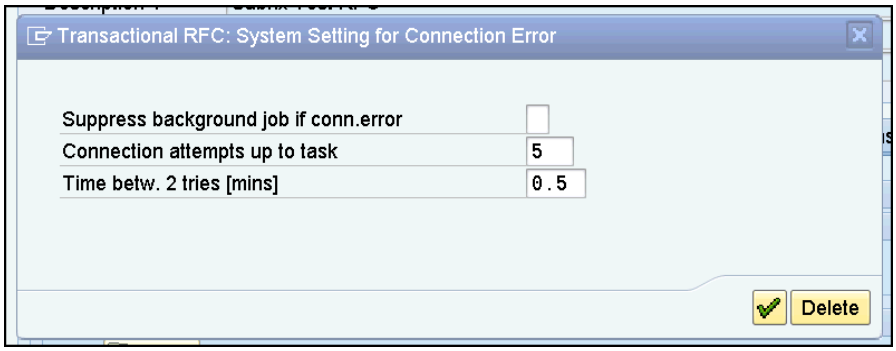
2. Open the file folder TCP/IP Connections. Once in this folder use the Create button to add a new entry.



3. Follow the instructions given in the *ECC Tax Interface Configuration Guide*. You must use the same **RFC Destination** name as given in the *SabrixConnection.properties* file. Inthis guide, we use *SABRIX as* an example. Complete the screen as shown below.



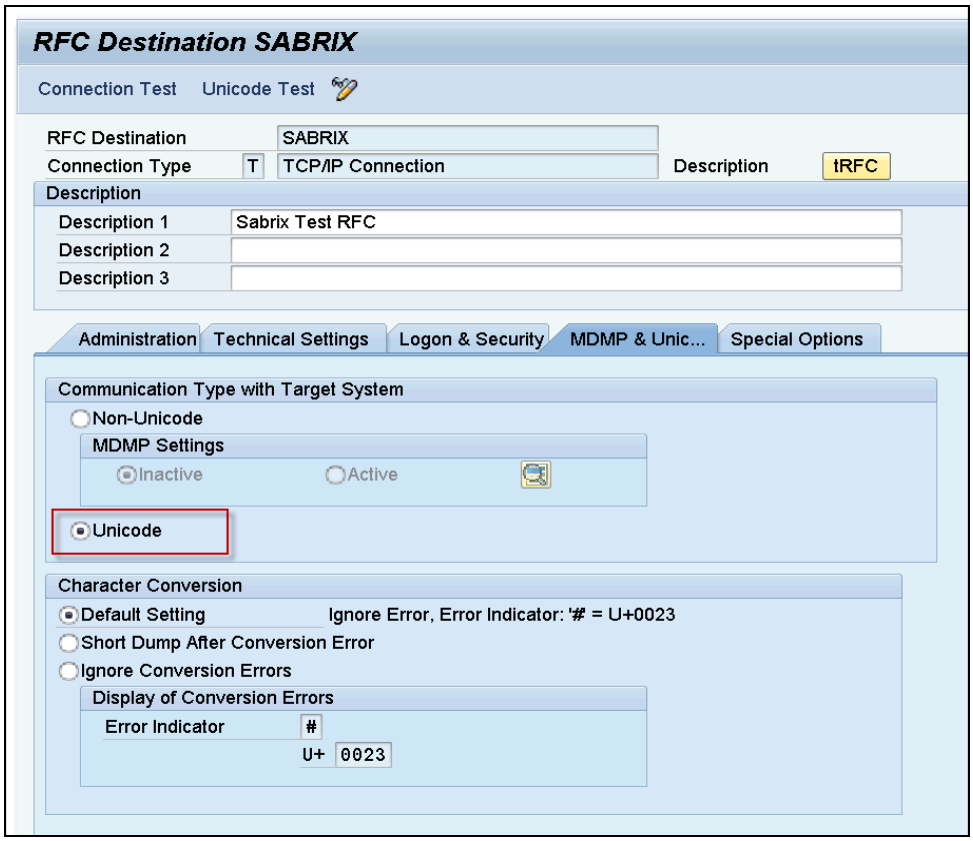
4. Optionally, maintain TRFC settings for your RFC destination as shown in the example below. Use top menu EDIT/ tRFC Options.



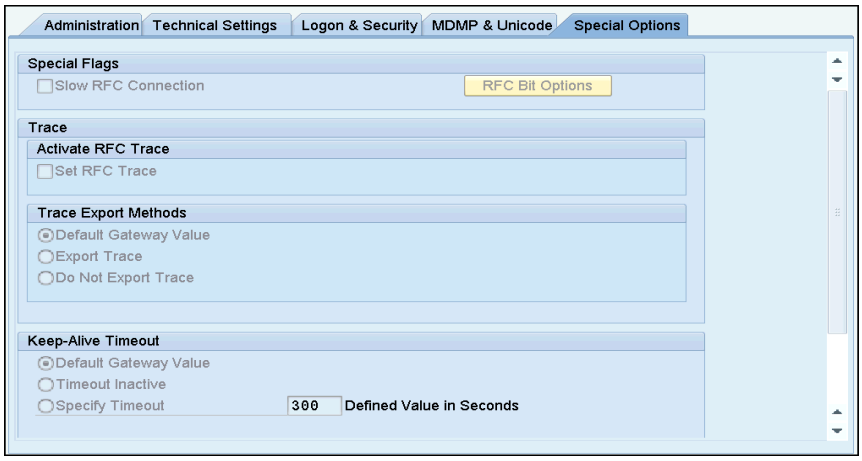
NOTE

If your system uses Unicode, you must ensure that the Unicode settings of the RFC Destination are maintained accordingly. To do so, navigate to the **MDMP & Unicode** tab and set the radio button to **Unicode**.

You must also ensure that the **rfc_unicode_enable** parameter is set to *TRUE* (default) in the *SabrixConnection.properties* file.

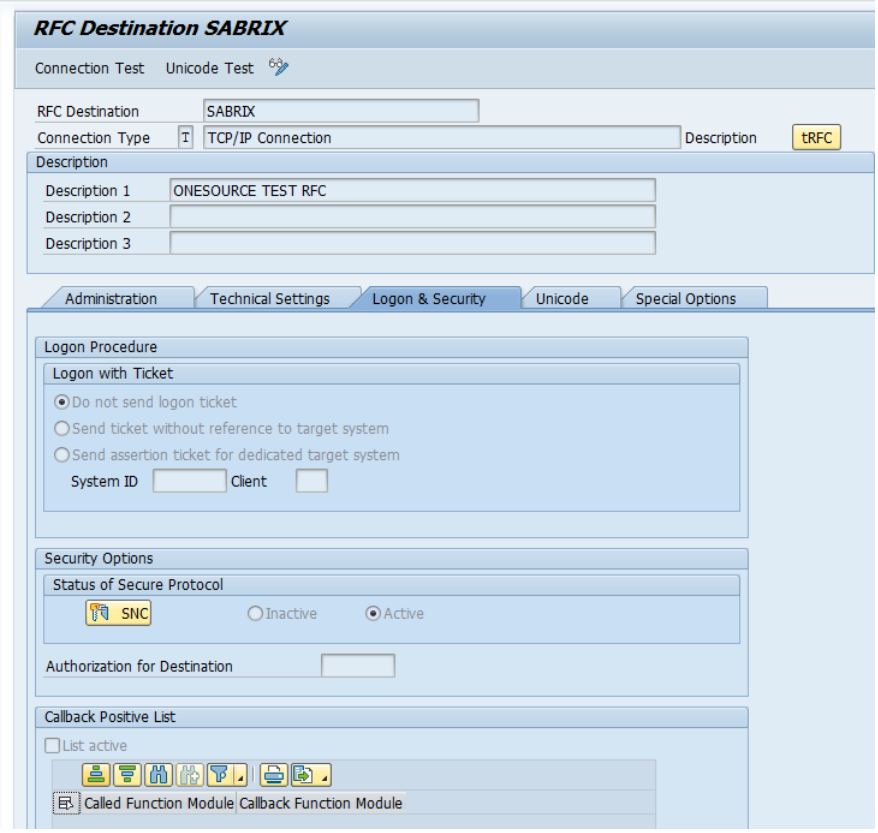


The **Special Options** tab should look like this:



Additionally, to configure SNC in the SAP system, refer to SAP documentation and setup guides at https://help.sap.com/

For activating SNC on the RFC level, the activation option is found under the **Logon & Security** tab.



INSTALLINGANDCONFIGURING INTEGRATION FOR SAP

In the previous chapter you performed the minimum configurations necessary to enable the Tax Interface to communicate with Integration for SAP.

This chapter describes the process for installing, then configuring Integration software on the runtime system. This includes:

- **Downloading JCO**
- **Downloading SAP Crypto Library**
- **Downloading Integration for SAP**
- **Configuring SabrixConnection.*properties* file**
- **Configuring JAVA and JCO start up parameters**
- **Configuring logging options and appender**
- **Running Integration for SAP in the JVM**
- **Troubleshooting**
- **Registering Integration for SAP with SAP Solution Manager**

INSTALLING ONESOURCE INDIRECT TAX INTEGRATION FOR SAP

DOWNLOADING JCO

The SAP Java Connector is used to communicate between the SAP system and other programs using remote function calls (RFCs). A copy of the JCo must be installed on each system where you want to run ONESOURCE Indirect Tax Integration for SAP.

SAP Customers can download JCo at *https://support.sap.com/en/product/connectors.html.* This is a password- protected area for SAP customers only. Click *SAP Java Connector (SAP JCo)*. The download files are in this area by release and platform.

Follow the instructions given for your release and platform. See the note below about which version of JCo to use.

When selecting the JCo, only select the 64-bit version if a 64-bit JVM is installed. The version of the JCo **is not related to the bit version of the operating system** installed on the server; the JCo version is only relevant to the bit version of the JVM (Java Virtual Machine).

You must follow each of the steps in this section to successfully install Integration for SAP.

DOWNLOADING SAP CRYPTO LIBRARY

To enable SAP Secure network communication (SNC) between SAP Application and SAP JCO Integration, set-up and configure SAP SNC in SAP Application and install SAP Crypto Library and configure SNC in the integration server.

Download SAP Crypto Library from SAP marketplace. Navigate to URL https://support.sap.com and click on Software Downloads. SAP Crypto Library is available in the SAP marketplace URL for different OS Windows 64 bit, Windows 32 bit, Linux, etc.

Configure SabrixConnection.properties file in integration to enable JCO SNC Mode properties (jco.client.snc_mode=1, jco.server.snc_mode=1) along other SNC properties as mentioned. Provide full control user access privileges to this SAP Crypto Library folder for Windows User "Local Service" if integration is installed on Windows.

DOWNLOADING INTEGRATION FOR SAP

1. Download the following file from the **Customer Center** web site (*https://customercenter.sabrix.com/sabrixcc*).

   Contact ONESOURCE Indirect Tax Technical Support if you have any questions about the download process.

File Description	File Name
ONESOURCE Indirect TaxIntegration for SAP (Basic US/Canada Version)	ONESOURCEIDTIntegrationSAP_52xxB.zip

2. Unzip the files into the desired directory (you may need to create it first).
3. Copy the necessary JCo files into a separate directory or the directory to which you extracted

Integration for SAP.

For more details on JCo install please consult the SAP help files at <*directory where JCo was extracted to*>/docs/jco/intro.htm. See the *Installation* section for detailed instructions on installation and the *Configuration* section on troubleshooting and the runtime environment.

When defining Java directories, avoid using spaces in the name because this can lead to errors in certain instances.

CONFIGURING INTEGRATION PROPERTIES FILE

Edit the Sabrix*Connection.properties* file found in the directory in which you unzipped the files. The table below lists all parameters in the properties file and their usage.

ONESOURCE Indirect Tax Integration Properties File Parameters	
Attribute	**Description**
jco.client.user	Username set up in *DEFINING A CPIC USER ACCOUNT*, (for example, *SABRIX*).
jco.client.passwd	Password set up in *DEFINING A CPIC USER ACCOUNT,* (for example, *SABRIX*).
jco.client.ashost	The SAP host to connect to. See note below.
jco.client.sysnr	The SAP system number to connect to.
jco.client.client	The SAP System Client number to connect to.
jco.client.lang	Language used to log on to SAP; set to *EN* for English.
jco.client.mshost	SAP Message Server. See note below.
jco.client.group	SAP Logon Group. See note below.
jco.client.r3name	SAP System ID. See note below.
gwhost	The SAP host server you like to connect to. Consult your SAP system administrator for help with this value.
gwserv	The SAP gateway server to connect to. Consult your SAP system administrator for help with this value.
progid	As defined in your RFC destination; *SABRIX* is used in this document.
jco.client.snc_qop	Specifies SNC level of security, 1 to 9.Integration Default value is blank. Do not provide any value if SNC is disabled. (Refer to value mentioned in SAP Application Server for snc/r3int_rfc_qop) Example: jco.client.snc_qop=3
jco.client.snc_myname	Specifies the SNC name. Integration Default value is blank. Do not provide any value if SNC is disabled. Canonical name of Certificate generated in Integration Server. Example: jco.client.snc_myname=p:CN=XYZ, O=MyCompany, C=US
jco.client.snc_partnername	Specifies the SNC name of the partner. Integration Default value is blank. Do not provide any value if SNC is disabled. Canonical name of the Certificate generated in SAP Application. Example: jco.client.snc_myname=p:CN=ABC, O=MyCompany, C=US
jco.client.snc_mode	Flag for activating SNC. SNC is disabled by default in integration. snc_mode takes values 0 (Disabled) or 1 (Enabled). Integration Default value is 0 (Disabled). Example: jco.client.snc_mode=0
jco.client.snc_sso	Flag for activating SNC SSO. SNC SSO is not supported in Integration and its value is always 0 (Disabled) in Integration. Integration Default value is 0 (Enabled). Example: jco.client.snc_sso=0

jco.client.snc_lib	Specifies the path and file name of the SAP Crypto library configured in Integration Server as per the Operating System. Integration Default value is blank. Do not provide any value if SNC is disabled. Install SAP Crypto Library in Integration Server. Provide full control user privileges to this SAP Crypto Library folder for Windows User "Local Service" if integration is installed in Windows. The default is the system-defined library as defined in the environment variable SNC_LIB. Example: jco.client.snc_lib=C:\SAPCryptolib\sapcrypto.dll
jco.server.snc_qop	Specifies SNC level of security, 1 to 9. Integration Default value is blank. Do not provide any value if SNC is disabled. Refer to value mentioned in SAP Application Server for snc/r3int_rfc_qop) Example: jco.server.snc_qop=3
jco.server.snc_myname	Specifies the SNC name. Integration Default value is blank. Do not provide any value if SNC is disabled. Canonical name of Certificate generated in Integration Machine. Example: jco.server.snc_myname=p:CN=XYZ, O=MyCompany, C=US
jco.server.snc_mode	Flag for activating SNC. SNC is disabled by default in integration. snc_mode takes values 0 (Disabled) or 1 (Enabled). Integration Default value is 0 (Disabled). Example: jco.server.snc_mode=0
jco.server.snc_lib	Specifies the path and file name of the SAP Crypto library configured in Integration Server as per the Operating System. Integration Default value is blank. Do not provide any value if SNC is disabled. Install SAP Crypto Library in Integration Server. Provide full control user privileges to this SAP Crypto Library folder for Windows User "Local Service" if integration is installed in Windows. The default is the system-defined library as defined in the environment variable SNC_LIB. Example: jco.server.snc_lib=C:\SAPCryptolib\sapcrypto.dll
SABRIX_version_url	Location of Determination version file. Provide empty value when Sabrix version url endpoint is not available.
SABRIX_calc_url	Location of Determination *xmlinvoice servlet*.
SABRIX_address_url	Location of Determination *addressvalidation servlet*.
SABRIX_user	If calc authentication has been enabled in Determination, a user name and password must be defined. By default, this field is not used. See Appendix for further details.
SABRIX_password	If calc authentication has been enabled in Determination, a user name and password must be defined. By default, this field is not used. See Appendix for further details.
encrypt_passwords	Default setting is *FALSE* (do not encrypt the password). Set to *TRUE* to encrypt the password. See Appendix for further details.
proxy_host	In cases where you need to route Integration through a firewall, defining your local proxy host is required. Your system or network administrator can help with this setting.
proxy_port	In cases where you need to route Integration through a firewall, defining your local proxy port is required. Your system or network administrator can help with this setting.

ONESOURCE Indirect Tax Integration Properties File Parameters	
Attribute	**Description**
num_servers	Determines how many instances of Integration will be started and registered with SAP. This is based on the speed of your machine and the expected processing load of SAP. To achieve multi-threading at least two servers should be started. The default is 5.
rfc_unicode_enabled	Specifies whether the SAP system uses Unicode (*TRUE*, default) or does not (*FALSE*). See *DEFINING THE RFC DESTINATION, SM59* for more information.
freight_prod_code	Default product code used in Determination to determine freight taxability; this entry must match the freight product code entry in ONESOURCE Indirect Tax.
max_jurisdiction_addresses	Limits the number of address records returned by the jurisdiction lookup. Default is set to *99* as this is the maximum SAP can return to the UI.
truncate_to_max_addresses	Setting to control if error message should be raised when *max_jurisdiction_addresses* is reached (*FALSE*), or if instead the max number of addresses specified should be returned (*TRUE*). The default is *FALSE*.
county_flag	Controls check of state address attribute returned by ONESOURCE Indirect Tax during jurisdiction determination against SAP submitted value. If set to *TRUE* only matching entries will be returned. The default is *FALSE*.
city_flag	Controls check of state address attribute returned by ONESOURCE Indirect Tax during jurisdiction determination against SAP submitted value. If set to *TRUE* only matching entries will be returned. The default is *FALSE*.

ONESOURCE Indirect Tax Integration Properties File Parameters	
Attribute	**Description**
override_supplied_county	If set to *TRUE* then value returned by ONESOURCE Indirect Tax address validation servlet will override the value supplied by the address master record. If set to *FALSE* then the value is not changed. The default is *TRUE*.
override_supplied_city	If set to *TRUE* then value returned by ONESOURCE Indirect Tax address validation servlet will override the value supplied by the address master record, unless the value is *UNINCORPORATED*. In that case, the SAP value will not be overwritten. If set to *FALSE* then the value is not changed.This parameter applies to the US only. The default is *FALSE*.
external_company_id_prepend	Prepend option for company code to uniquely define a company in ONESOURCE Indirect Tax (optional).
remove_leading_zeros	Enables removal of leading zeros. If set to *TRUE*, leading zeros will be removed in fields marked as such in ***LEADING ZEROS*** NOTE: This setting is for backward compatibility only and should not be changed from *FALSE* unless you are instructed to do so by ONESOURCE Indirect Tax Support.
gzip_disabled	The Determination Integration sends information to Determination via HTTP in a gzip format for performance improvement. For troubleshooting it might be desired to switch gzip off, to do so set gzip_disabled=true. Default is false.
is_rounded	If is_rounded set to *TRUE* (default), the value will be the document rounded amount from the output XML. If is_rounded set to *FALSE*, the value will be the document unrounded amount from the output XML. NOTE: If you removed the is_rounded property, the value will be set to is_rounded = false. This is used to calculate ONLY the effective tax rate that is returned to SAP. It does not affect the tax amount.

A template version of the Sabrix*Connection.properties* file is available in the top-level directory to which you extracted the distribution *.zip* file.

Determine if you want the connection to logon using an individual app server or if you want to use logon groups. In order to use logon groups, the **ashost** setting must be blank. Setting **ashost** will override any settings made in **mshost**, **group**, and **r3name**.

CONFIGURING JAVA AND JCO START UP PARAMETERS

MICROSOFT WINDOWS

Integration runs as a Windows Service.

To install a single instance, follow these steps:

1. Make sure you have configured the *SabrixConnection.properties* file with information specific to your environment.

2. From Integration 5.2.1.0B, we have removed the old windows service component files e.g. Start.exe, Start.lax, lax.jar; and introduced a new WindowsService Component Apache Commons Daemon Procrun with the SabrixBasicConnection.exe and SabrixBasicConnectionw.exe files

   Refer to the *Install Instructions New Windows Service Apache* document

UNIX AND LINUX

Startup Parameters

In the top level directory, find the file *IntegrationServerStartup.sh* and modify it according to the table below:

IntegrationServerStartup.sh Parameters	
Variable	**Description**
SAP_HOME	Directory for the JCo file location. The default is the same directory containing the *.sh* script. ONESOURCE Indirect Tax recommends that you separate the JCo files into a separate directory by JCo version number and reference that directory here.
PROPERTIES	Location for *SabrixConnection.properties* file. The default is the same directory containing the *.sh* script.
SBX_PATH	Directory of Integration library files. By default a */lib* directory is created when extracting the *.zip* file. Do not change this path.
MEMARGS	Memory setting for Integration JVM. **Xms** and **Xmx** are the lower and upper memory allocation limits (the default for both is 512 MB).
Other optional parameters: The variables below are optional and not used by ONESOURCE Indirect Tax, but you may opt to add them to the startup script.	

IntegrationServerStartup.sh Parameters	
Variable	**Description**
JAVA_HOME	The directory in which JAVA is installed.
JCO Library	LIBPATH for AIX and IBM, SHLIB_PATH for HP-UX, LD_LIBRARY_PATH for Sun and Linux, PATH for Windows. Consult your JCo install instructions for moredetail on how to set the JCo library path.
SNC_LIB	This is only required if SAP SNC is enabled. Configure SAP SNC environment variable. This specifies the file name of the SAP Crypto Library.
SECUDIR	This is only required if SAP SNC is enabled. Configure SAP SNC environment variable. This specifies the directory of the SAP Crypto Library sec folder.

CONFIGURING LOGGING OPTIONS

The Logger allows the information passed between SAP and Integration to be captured in log records to be later viewed for process debugging. The logs will show, depending on the log level selected, the data passed back to SAP, program information, and system error messages helpful in problem solving. The log level setting determines how much data is captured in the logs and the appender settings determine the number of log files stored and how they are updated, maintained and overwritten.

The recommended process would be to set these options differently between production, test, and development client instances of SAP on your system. Because of the size of the log files, normally you would set production instances to ERROR or FATAL errors only to limit log size and storage constraints on your production system. DEBUG or INFO level settings produce exponentially larger data logs and are more appropriate for test client instances where transaction levels are lower and more information is needed for debugging test cases and testing system enhancements. Ask your ONESOURCE Indirect Tax Product Services Representative for recommend settings for your system environment.

The *SABRIXIntegrationServerLoggingConfig.xml* file is used to configure Integration for SAP logging options. Integration upgraded log4j logging version and uses log4j2 library.

This configuration file has two main components (**logger** and **appender**), which can be customized to meet your logging requirements.

DEFINING LOG LEVEL AND APPENDER SETTINGS

Configuration XML tag has status attribute and monitorInterval attribute configured.

```
<Configuration status="ERROR" monitorInterval="600">
```

Configure Status attribute to log the level of internal Log4j events that should be logged to the console (SabrixOut.txt or startSabrixConnection.log file). Valid values for this attribute are "off", "debug", "info", "warn", "error", "fatal". Log4j will log details about initialization, rollover and other internal actions to the status logger. Setting status="debug" is one of the first tools available to you if you need to troubleshoot log4j. Recommend to provide status=”error” in production environment to avoid huge logs.

Log4j has ability to automatically detect changes to the configuration file and reconfigure itself. If the “monitorInterval” attribute is specified on the configuration element and is set to a non-zero value, then the file will be checked the next time a log event is evaluated and/or logged and the “monitorInterval” has elapsed since the last check. The example above shows that the configuration file

will be checked for changes only after at least 600 seconds have elapsed. The minimum interval is 5 seconds.

The logger component is found towards the end of the file. For example:

```
<Logger name="com.sabrix.integration" level="DEBUG" additivity="false">
      <AppenderRef ref="CompositeRollingFileAppender"/>
</Logger>
```

Within the logger component:

- The **level** attribute represents the logging level to be written to log file.
- The **AppenderRef component** refers to the active appender that being used for logging.

```
      <Loggers>
            <Logger name="com.sabrix.integration" level="ERROR" additivity="false">
                  <AppenderRef ref="CompositeRollingFileAppender"/>
            </Logger>

            <!-- Determination Integration Start Up Logging -->
            <Logger name="com.sabrix.integration.configuration.ConfiguredTypeImplementation" level="INFO">
                  <AppenderRef ref="ConsoleAppender"/>
            </Logger>

            <!-- Default Log4j2 Logger -->
            <Root level="ERROR">
                  <AppenderRef ref="CompositeRollingFileAppender"/>
            </Root>

      </Loggers>
</Configuration>
```

SETTING THE LOG LEVEL

Use the **level** component to set the log level to any of the following:

- *DEBUG*: Detail level programming messages
- *INFO*: Input/Output XML; Connection Info
- *ERROR*: Core errors/exceptions
- *FATAL*: VM ERRORS
- *OFF*: No logging enabled

For example, to set logging to the *INFO* level, modify the level in the **logger** component block as shown here:

```
<Logger name="com.sabrix.integration" level="INFO" additivity="false">

      <AppenderRef ref="CompositeRollingFileAppender"/
> </Logger>
```

The **AppenderRef component** refers to the active appender that is being used for logging. There are six appenders defined in this configuration file. For a given integration, only one appender outof the six can be active at a time, which is reflected by the value of **ref** in:

```
<AppenderRef ref="CompositeRollingFileAppender"/>
```

Uncomment to configure the CompositeRollingFileAppender <RollingFile> </RollingFile> XML tag and comment the ZipRollingFileAppender XML tag <RollingRandomAccessFile> </RollingRandomAccessFile>.

CONFIGURING THE APPENDER

Each appender is enclosed in an <RollingFile> </RollingFile> block or <RollingRandomAccessFile> </RollingRandomAccessFile> block.

NOTE: The ***ZippingFileAppender*** is the default used by Integration for SAP and comes pre-configured for the product. If you desire to use one of the other appender file formats then use one of the five types below. You will find additional information on how to change the configuration for the appender in the appendix under the section titled ***APPENDER FILE CONFIGURATION FOR THE 6 APPENDER FORMATS***

Suggestion: You can direct your logs to the location of the Sabrix.log in ONESOURCE UI. This can be much more helpful for development and QA troubleshooting so that users can access the log themselves without getting access to the server where the connection is located.

Contact your Professional Services Representative if you have multiple integration servers in the same environment and need assistance in redirecting the logs.

The six appenders are:

1. ***The SimpleFileAppender:*** Simple logging written to a file. This option has neither the ability to perform daily log rolling, nor does it let the user specify the maximum file size for the log file.

2. ***The DailyRollingFileAppender:*** Enables daily log rolling with a date and time stamp on the log file.

3. ***The CompositeRollingFileAppender***: Log rolling with a date and time stamp on the logfile. This appender also allows you to specify the maximum file size for the log file, as well as the maximum backup number of files to keep.

4. ***The ConsoleAppender:*** Provides startup information on the console.

5. ***The RollingFileAppender***: The rolling file appender does file size log rolling with numeric value incremented on the logfile.

6. ***The ZippingFileAppender:*** File size log rolling with zipped output in the log directory. This is the default appender used by Integration for SAP. This appender will roll every hour and on roll, will zip the contents of the file.

Use the parameter filename to set the log directory to your desired location. The default is

.log/SabrixIntegrationServer.log.

RUNNING INTEGRATION FOR SAP IN THE JVM

The following steps start and stop your Integration for a single server, but if you are setting up a system for heavy load and failover, you can also start this process on multiple computers. For more information on that topic, see the *SAPLoadBalancing.pdf* document distributed with this release.

Follow the instructions in one of these sections based on your operating system:

- Microsoft Windows
- UNIX and Linux

MICROSOFT WINDOWS

Now that you have installed the service, start the service by using standard Windows Service management tools.

Upon startup, the service should write startup messages to the log directory. It will create two log files: *SabrixError.txt* and *SabrixOut.txt*. If the service has any problems starting up, it will log it to one of these files.

Once the service has been successfully started, it is ready for use. To stop the service, you can use the standard Windows service management tools.

To uninstall the service, run the *UninstallSabrix-NT.bat* script provided.

To install more than one instance on the same computer running Microsoft Windows:

Refer to detailed instructions in the *Install Instructions New Windows Service Apache* document

UNIX AND LINUX

Starting Integration for SAP

After you modify *IntegrationServerStartup.sh* file, you can execute it from a command line. To confirm that it has started correctly, check for the message, “Successfully initialized and accepting transactions” in the console.

If you encounter an error message during start-up, please review the *SabrixConnection.properties* file to ensure you have entered the correct settings.

Stopping Integration for SAP

To stop Integration, execute the file *IntegrationServerShutdown.sh*. If you are launching multiple instances of Integration from the same directory, this script stops only the latest process.

If you wish to run multiple instances of Integration from the same UNIX or Linux server, ONESOURCE Indirect Tax recommends that you launch each from a separate directory. For more information, please contact ONESOURCE Indirect Tax Technical Support.

TROUBLESHOOTING INTEGRATION FOR SAP

This section describes how to test SAP to ONESOURCE Indirect Tax connectivity. It assumes that Integration has been installed correctly as shown in this chapter.

The objective of this test is to make sure that Integration installation, Integration configurations, and SAP configurations are all working together and that the SAP RFCs are communicating with Determination through Integration for SAP.

TESTING JCO INSTALLATION

To check if JCo is deployed correctly, SAP provides the following JAVA commands.

For **Windows**-based environments use:

```
java -jar {sapjco-install-path}/sapjco3.jar
```

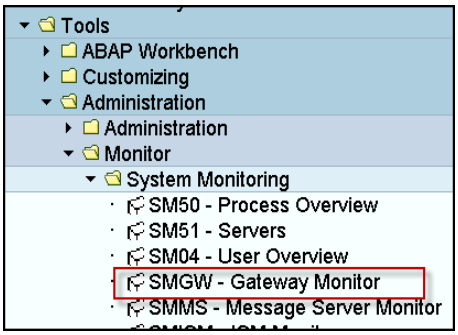
For **UNIX/Linux** environments use:

```
java -jar {sapjco-install-path}/sapjco3.jar -stdout
```

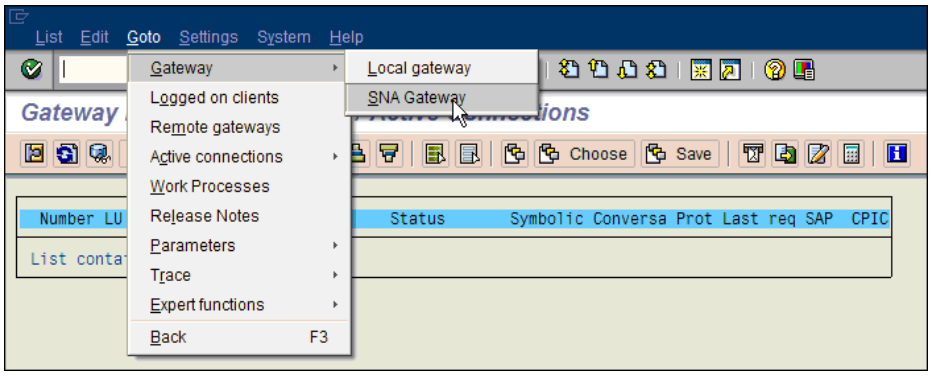
Both commands should generate a version dialog which indicates the proper JCo installation.

CHECKING THE GATEWAY FOR REGISTERED PROGRAMS

1. Log on to your SAP system and navigate to transaction **SMGW** for the **Gateway Monitor: Tools > Administration > Monitor > System Monitoring > SMGW - Gateway Monitor**.

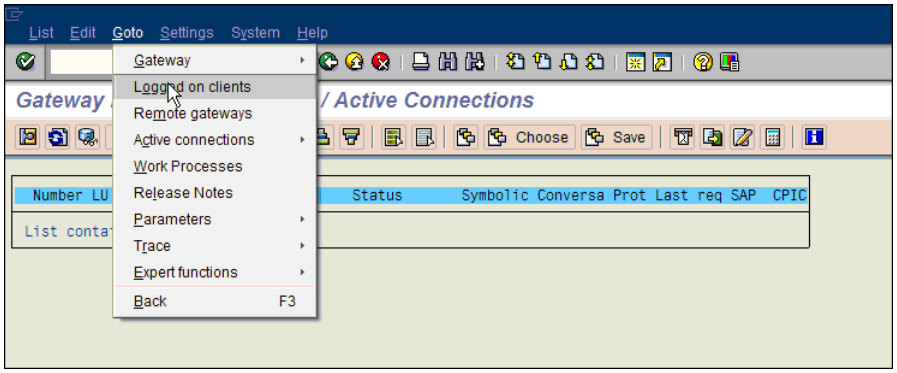


2. Navigate to **Goto > Gateway > SNAGateway.**

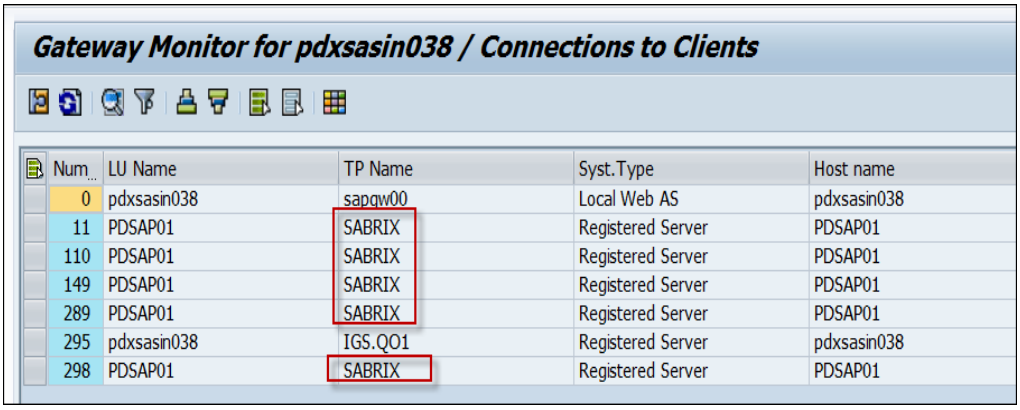


NOTE This step may not be necessary if there is only one gateway, but in configurations with multiple gateways, it switches the view to the central gateway.

3. Navigate to **Goto > Logged on clients**.



4. On the overview screen you should see several instances of ONESOURCE Indirect Tax (usually, there are five instances, based on the **num_servers** variable in your *SabrixConnection.properties* file).

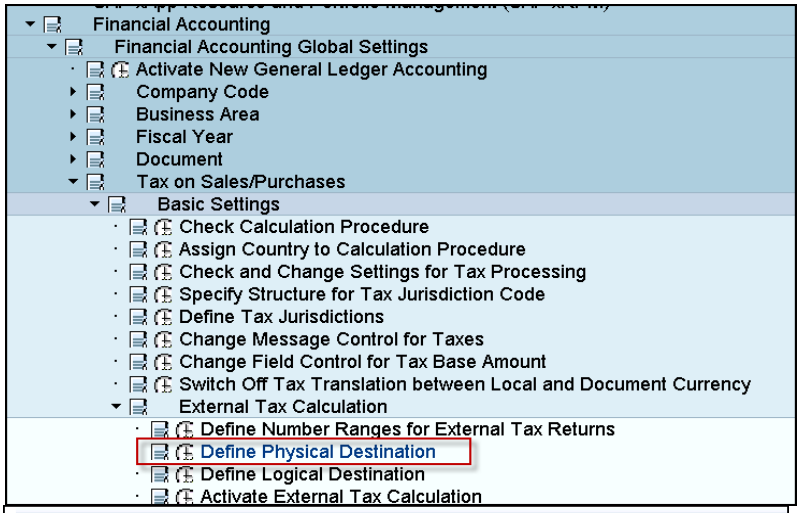


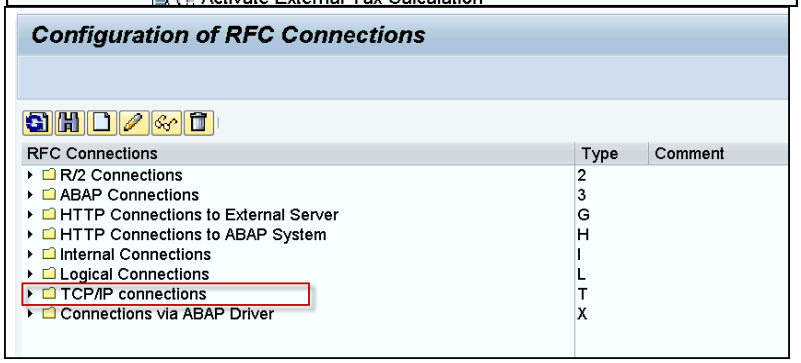
Num...	LU Name	TP Name	Syst.Type	Host name
0	pdxsasin038	sapgw00	Local Web AS	pdxsasin038
11	PDSAP01	SABRIX	Registered Server	PDSAP01
110	PDSAP01	SABRIX	Registered Server	PDSAP01
149	PDSAP01	SABRIX	Registered Server	PDSAP01
289	PDSAP01	SABRIX	Registered Server	PDSAP01
295	pdxsasin038	IGS.QO1	Registered Server	pdxsasin038
298	PDSAP01	SABRIX	Registered Server	PDSAP01

If you do not see a connection for SABRIX, Integration for SAP did not reach the SAP system you are currently logged on to and indicates that the *SabrixConnection.properties* file settings point to a different SAP instance. Please review with your system DBA.

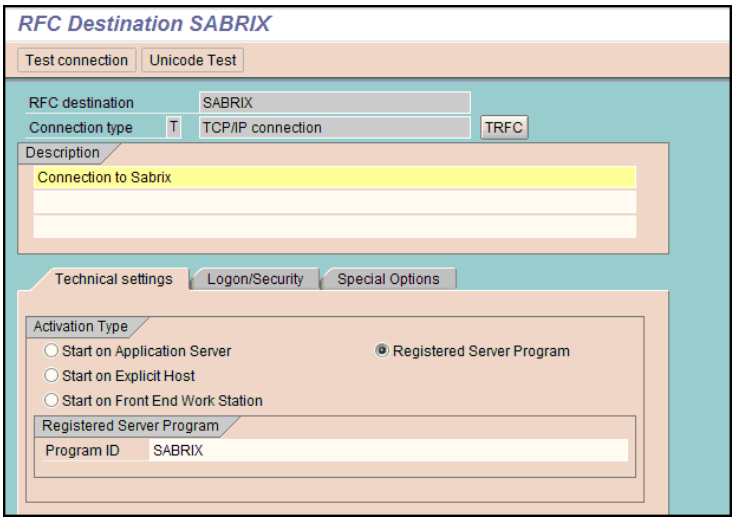
TESTING THE RFC DESTINATION

1.0In the IMG navigate to **Financial Accounting > Financial Accounting Global Settings > Tax on Sales/Purchases > Basic Settings > External Tax Calculation > Define Physical Destination.**

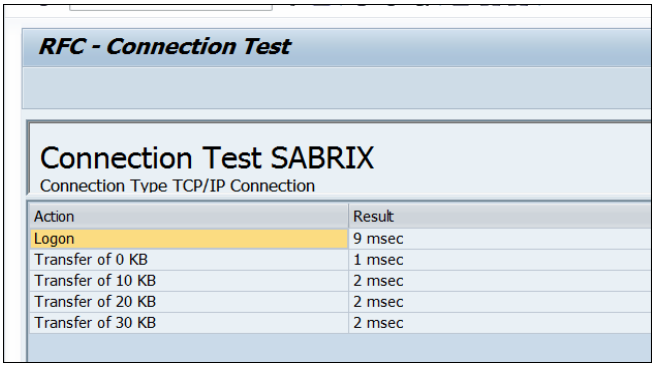




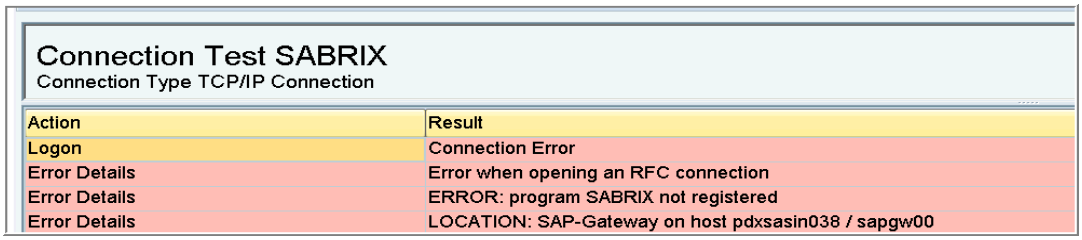
2. In the RFC destination, click **Test Connection**.



3. A results screen should display communication speeds (this example is over a slow VPN network).



An unsuccessful test would show the following error message.



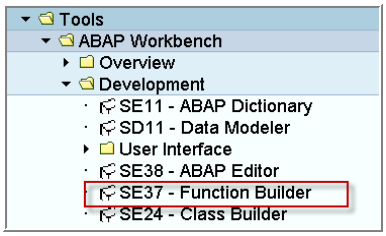
In this case, verify that all the settings in the *SabrixConnection.properties* file are correct and that you are connected to this SAP system.

TESTING TAX CALCULATIONS USING TRANSACTION SE37

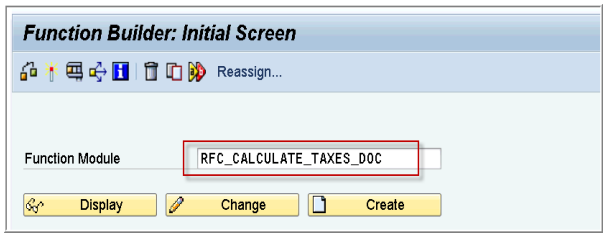
This procedure assumes that you have Determination installed and configured to include at least one ONESOURCE Indirect Tax Company. If you have not, follow the steps mentioned in the chapter ***DEFINING A COMPANY IN DETERMINATION FOR RFC TESTING*** and then complete this procedure.

1. Navigate to transaction **SE37** for a tax calculation test using the **SAP Workbench**.

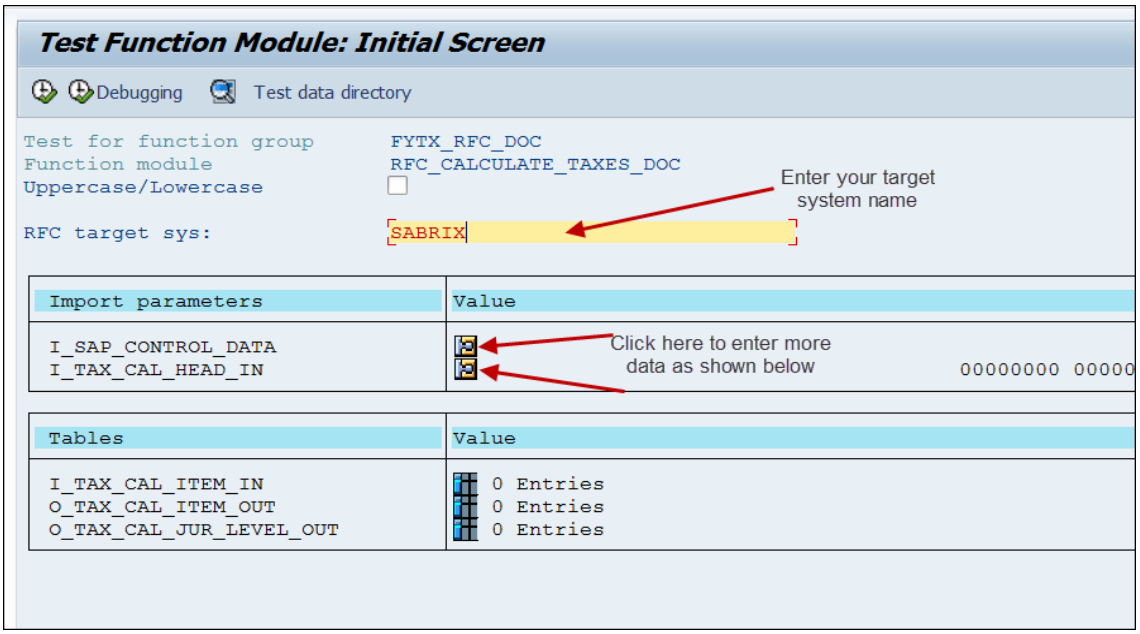
Tools > ABAP Workbench > Development > User Interface > Function Builder



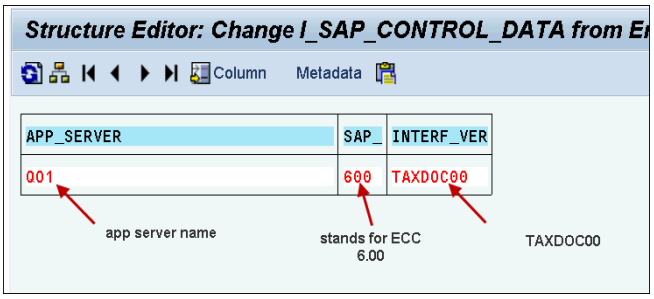
2. Use Function Module **RFC_CALCULATE_TAXES_DOC** and select **Test** or F8.



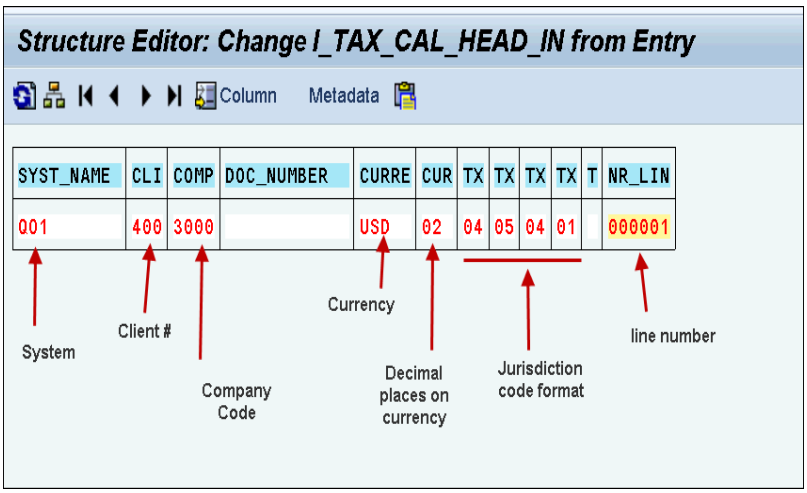
3. Enter the necessary information for control data, header, and item (the example below may not match your system setup) and then select **Execute** or F8.

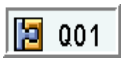


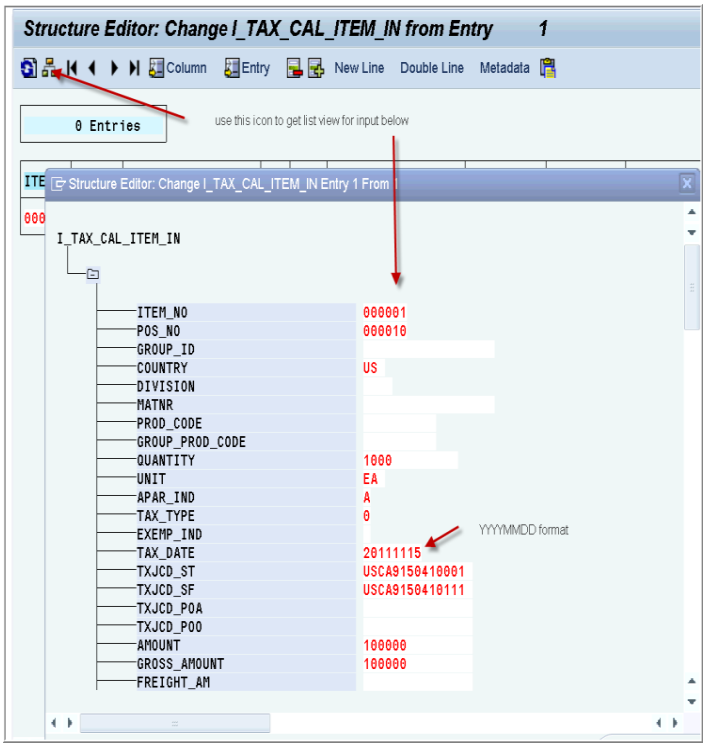
example of data to enter when clicking on control data icon is shown below:



Example of data to enter when clicking on tax calc header info icon is shown below:

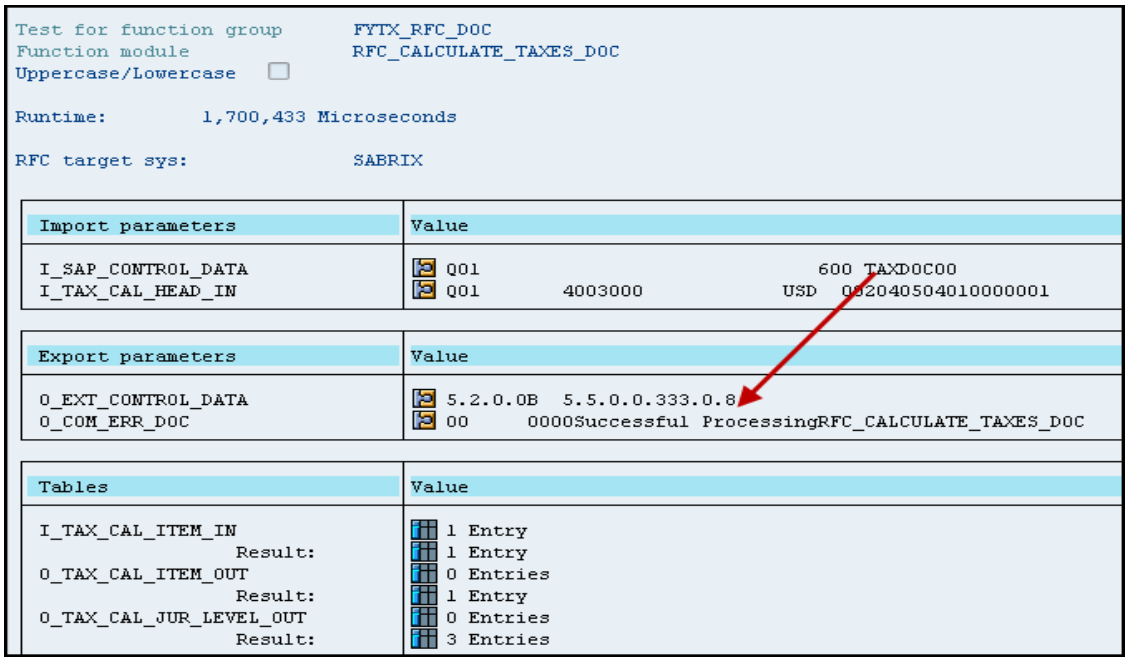


Example of data to enter on Tax_CAL_ITEM_IN icon 



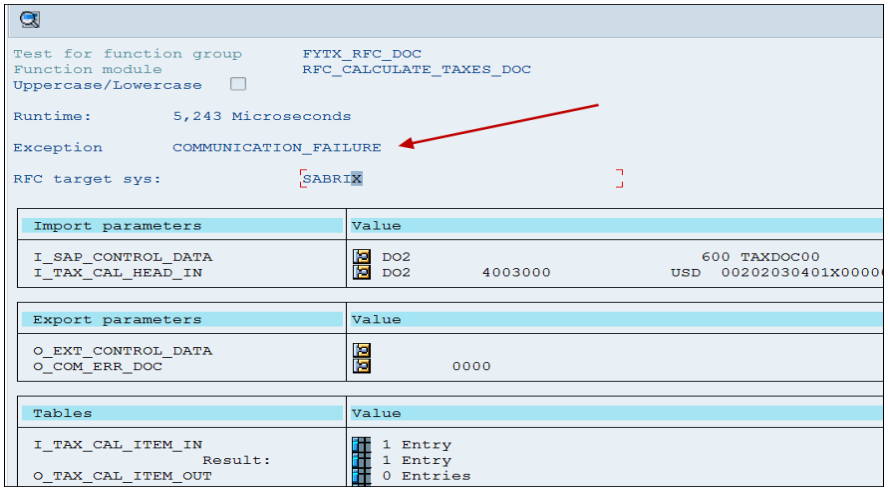
After input of the data above, hit the execute button (F8) to get the following output screen.

See screen view below: A tax call has been successfully made to Determination if the return structure contains a message similar to *Successful Processing RFC_CALCULATE_TAXES_DOC* in **O_COM_ERR_DOC**.



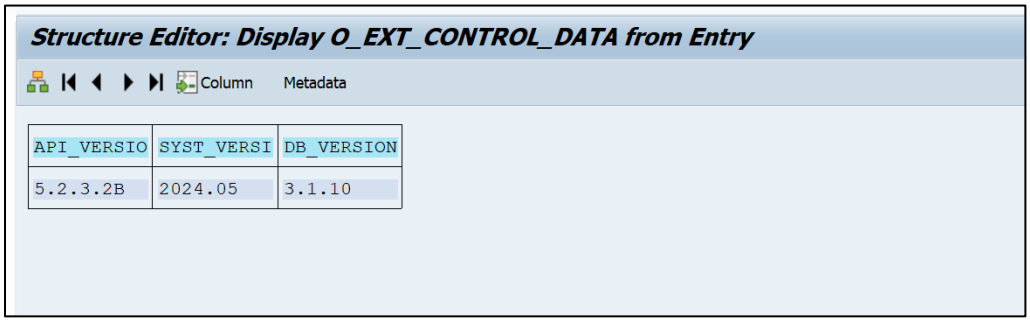
An error indicates that Determination could not be reached in the sample below, the URL for Determination is wrong.

Please make sure you can reach Determination using the Internet Explorer browser and the URL. If you cannot reach ONESOURCE Indirect Tax Determination using Internet Explorer, then either Determination is not running or the URL provided is wrong. Consult with your DBA.



CHECKING VERSION COMPATIBILITY

Structure **O_EXT_CONTROL_DATA** includes detailed information on versions of software that the SAP Integration uses.



Field	Description
API_VERSION	Release of Integration for SAP delivered by ONESOURCE Indirect Tax. (Example: 5.2.3.2B)
SYST_VERSI	Determination version. (Example: 2024.05)
DB_VERSION	Version of the SAP JCo (Java Connector) provided by SAP for Integration. (Example: 3.1.10)

NOTE In case of Sabrix version endpoint is not available or not configured then SYSTEM_VERSION will be blank.

RESOLVING INSTALLATION ERRORS

If you followed the above test sequence and all tests were successful, you have confirmed that communication between SAP and ONESOURCE Indirect Tax is established and works properly.

If there are any issues with connection results, please verify the settings in the document list outlined in the note below. If this situation persists, follow the note instructions below.

NOTE In case of a repeated unsuccessful start, please open a support ticket with ONESOURCE Indirect Tax and attach the following files or contact your Professional Services Representative.

- *SABRIXConnection.properties*
- *SABRIXIntegrationServerLoggingConfig.xml*
- *SABRIXError.txt (if running on Windows)*
- *SABRIXOut.txt (if running on Windows)*
- *SabrixBasicConnection.yyyy-mm-dd.log (if running on Windows)*
- *InstallSabrix-NT.bat (if running on Windows)*
- *UninstallSabrix-NT.bat (if running on Windows)*
- *IntegrationServerStartup.sh (if running on UNIX/Linux)*
- *Nohup.out (if running on UNIX/Linux)*
- *SabrixIntegrationServer.log*
- *startSabrixConnection.log ((if running on UNIX/Linux))*

REGISTERING INTEGRATION FOR SAP WITH SAP SOLUTION MANAGER

1. Log on to the server where Integration for SAP is installed.
2. Execute one of these batch files:
   - *SolutionManagerSubmit.bat* on Windows *or*
   - *SolutionManagerSubmit.sh* on UNIX/Linux.
3. Enter the URL for the Solution Manager.
4. Refer to the table in ***Solution Manager Port***
5. Enter your settings for the following fields (the last three rows of the table):
   - **Port** (normally *50000*).
   - **User ID**.
   - **Password**.

DEFININGACOMPANYINDETERMINATION FOR RFC TESTING

This chapter describes the required steps to configure Determination after installing Integration. See:

- ***CREATING A COMPANY***
- ***MAPPING A COMPANY TO A SAP COMPANY CODE***
- ***SELECTING TAX DATA PROVIDERS***

For information about additional configuration to further customize your integration, see ***CUSTOMIZING INTEGRATION***

ONESOURCE INDIRECT TAX DETERMINATION CONFIGURATION

On Determination side, you need to:

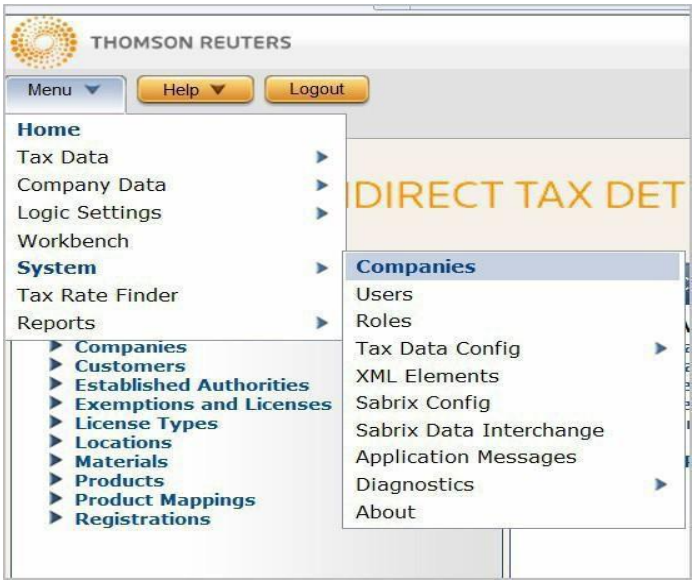
- Create the appropriate companies to map to SAP ***(this page)***. This might be a single company or multiple companies associated with each SAP Company Code for whichyou would like ONESOURCE Indirect Tax to calculate tax. You may want to create a single company for testing purposes only.
- Select the correct Tax Data Provider for each company.

CREATING A COMPANY

The following is a brief process for creating companies in Determination. For complete information, see Determination *Help*.

NOTE If you will be running transactions through a company that has already been created, skip to the next section.

1. Log into Determination as the *dba* for your implementation.
2. Navigate to **System > Companies**.



3. Click **Add**.
4. Enter identifying information for the company, including its name, short name, parent company, and home menu URL.
5. Click **Submit**.

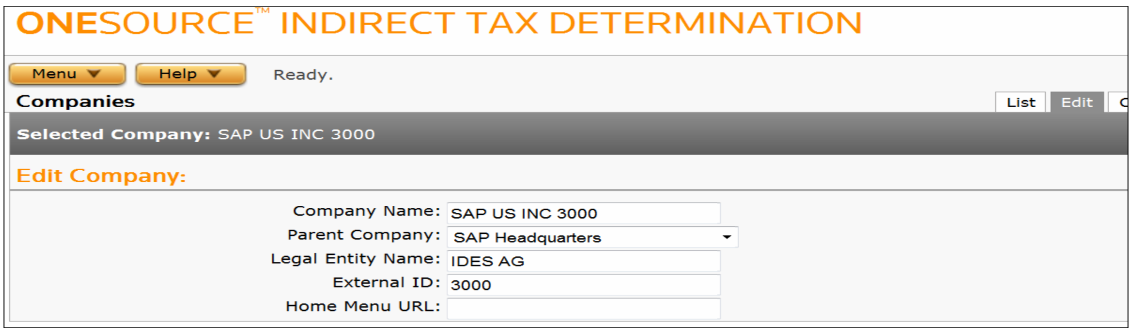
Next, configure the **External Company ID** as shown in the following section.

MAPPING A COMPANY TO A SAP COMPANY CODE

When transaction data (in the form of input XML) is passed into Determination an XML element tag determines which company's rules, rates, and other processing logic are applied. The <*External_Company_ID*> tag is set on the **Companies Edit** page for a selected company in Determination. The name you enter here corresponds to the SAP company code sending tax transactions.

Set the External Company ID

1. In Determination, select the desired company and navigate to the **Companies Edit** page.
2. Enter the **External Company ID** and click **Submit**.

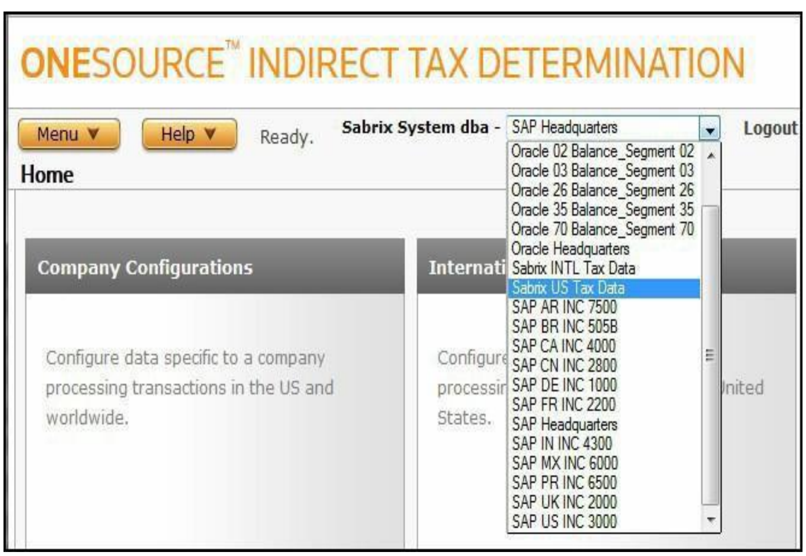


NOTE

If your implementation makes use of the optional *.properties* parameter *external_company_id_prepend*, then your external company ID will be a concatenation of the value of **external_company_id_prepend** plus the SAP **company code**.

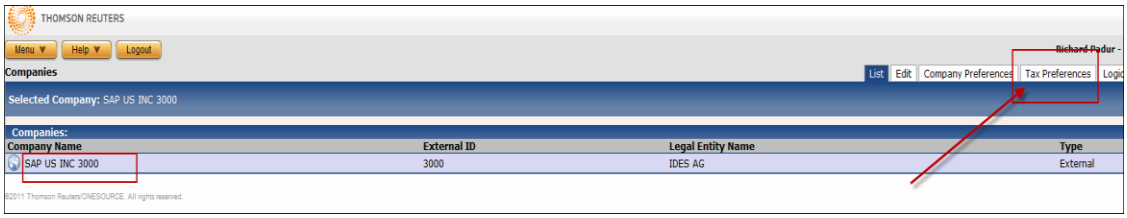
SELECTING TAX DATA PROVIDERS

Determination tax data providers maintain data such as rules, rates, and product exceptions. The Sabrix INTL Tax Data provider contains special tax codes that enable integration with SAP for Canadian & Global transactions while Sabrix US Tax Data provider contains rates and rules for US transactions.

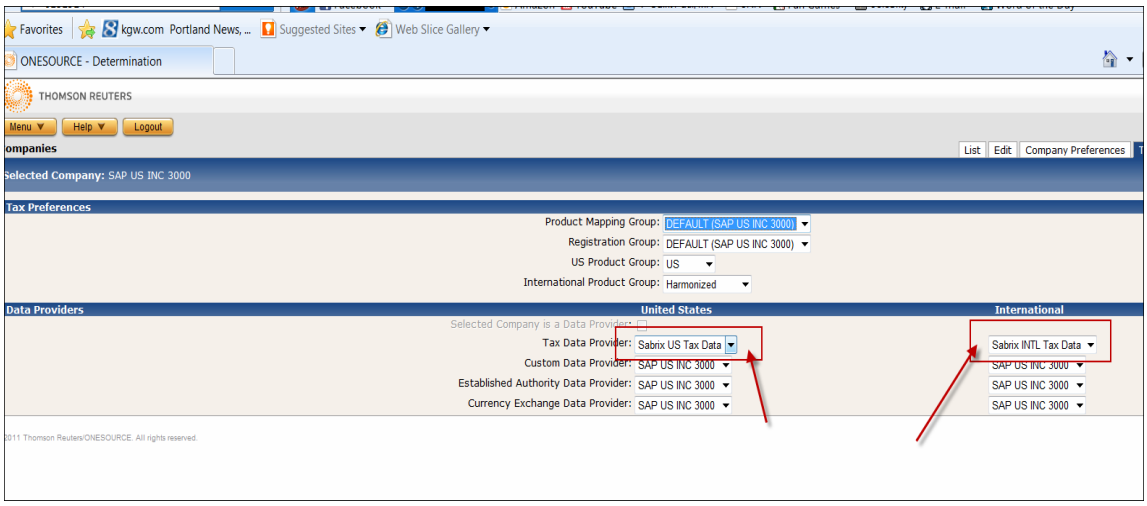


Select the correct tax data provider(s)

1. In Determination, select the desired company and navigate to the **Tax Preferences** page.



2. Select **SABRIX US Tax Data** as the US Tax Data Provider and **SABRIX INTL Tax Data** as the International Tax Data Provider.



3. Click **Submit** to save your settings.

ADVANCEDCONFIGURATIONSIN INTEGRATION FOR SAP

In order to meet new tax challenges, we have provided additional means to evaluate transactions and calculate tax. The improvements have lead to more complexity in both Determination and Integration software for SAP. To help you take advantage of the new capabilities, we have introduced *Advanced Configurations* within Integration software.

When you install Integration for SAP, ONESOURCE Indirect Tax provides preset *Basic Configuration* settings so you can calculate tax quickly. If you have a business requirement for one of the functions below, *Advanced Configuration* settings supports these needs.

Similar to Determination concept of *Tax Data Provider (TDP)* and *Custom Data Provider (CDP)* data, the advanced configuration settings you enable in Integration for SAP will append, augment, or override the standard settings built and shipped with Integration for SAP.

The following areas are supported in Advanced Configurations:

- Custom Authorities
- Jurisdiction Determination and Address Mapping

CUSTOM AUTHORITIES

You can create custom authorities to extend the functions of Determination by managing transaction tax scenarios that are industry or company specific. When using custom authorities, Integration for SAP receives tax results in addition to the regular Sales and Use Tax or VAT. These taxing authorities must be managed and mapped by Integration for SAP.

To do so, the *taxMappingsExtension.xml* configuration file is provided in Integration for SAP distribution. This file configures how tax results are returned to SAP. The purpose of this file is to manage authorities not already mapped by ONESOURCE Indirect Tax, but you may opt to override the standard mappings in this file as well.

Changes to any of the *Advanced Configuration* files require that you stop and restart Integration for SAP for the changes to take effect.

TAXMAPPINGSEXTENSION.XML

The *taxMappingsExtension.xml* file has several sections:

- **taxFilters:** defines which tax results from ONESOURCE Indirect Tax are **not** returned to SAP. (Not applicable for US/CA.)
- **taxVatAdjustments:** defines which tax results have to be returned as a negative value to SAP. This is to support Input/Output transactions. (Not applicable for US/CA.)
- **taxJurisdictionLevels:** defines what tax is returned to which SAP tax/pricing condition based on the SAP field **TXJLV** (Tax jurisdiction code level) in the RFC structure.
- **taxOverrides:** defines how taxes are sent to ONESOURCE Indirect Tax during a FORCE transaction.
- **buyerRoleSwitches:** describes the **buyerRoleSwitches** section of *taxMappingExtensions.xml*.

With the exception of the **taxOverrides**, the following Output XML fields from the <LINE>.<TAX> block can be used in the *taxMappingsExtension.xml* file:

- <AUTHORITY_NAME>
- <AUTHORITY_TYPE>
- <EFFECTIVE_ZONE_LEVEL>
- <TAX_DIRECTION>
- <TAX_RATE_CODE>
- <TAX_TYPE>
- <TAXABLE_COUNTRY>

ONESOURCE Indirect Tax includes a sample *taxMappingsExtension.xml* file in Integration for SAP distribution *.zip* file.

TAX JURISDICTION LEVELS

This section assigns taxes relevant for SAP to the appropriate tax jurisdiction code level (**TXJLV**) in the RFC structure, which then is returned to the calling application's pricing procedure (SD) or tax procedure (MM/FI). SAP ships with up to six condition types defined for six tax jurisdiction code levels, but can support up to 10 tax jurisdiction code levels. Integration for SAP takes advantage of these additional levels as needed.

Standard mapping relevant for the taxing country. This is the standard setup when Integration for SAP is installed. All tax results are mapped according to the standard mapping rules outlined below:

Geography		
Level	**United States**	**Canada**
1	State Sales & Use Tax	Country (GST)
2	County Sales & Use Tax	Province (PST)
3	City Sales & Use Tax	Country (HST)
4	Local Sales & Use Tax (County)	Province (QST)
5	Local Sales & Use Tax (Others)	Country (GST) Non-Recoverable
6	Not Used	Not used
All other levels	Not Used	Not used

The Canadian Authority Types are:

- **GST**: Goods and Service Tax
- **PST**: Provincial Sales Tax
- **HST**: Harmonized Sales Tax
- **QST**: Quebec Sales Tax

Custom configuration always takes precedence. Therefore, if you previously used these jurisdiction levels in *taxMappingsextension.xml* file for another purpose, these mappings will not be in effect. Modify the *taxMappingsextension.xml* file to assign these taxes to appropriate jurisdiction levels in SAP.

Custom Authority tax results can be returned to SAP tax jurisdiction code levels other than those shown in the standard mapping table.

For example, ONESOURCE Indirect Tax uses tax jurisdiction code levels **XR1** to **XR5** in the US. Conditions **XR6** to **XR0** could be used to map custom authorities. This allows up to five additional tax levels to be used for custom authorities. A sample mapping is outlined in the table below.

Override the standard ONESOURCE Indirect Tax mapping. If you want to override the standard mapping, you can do so in this file. Custom definitions always take precedence over defined mappings. Therefore, you could opt to return all US Sales and Use taxes into one tax jurisdiction code level (for example **XR1**) and use the remaining for custom authority mappings. A sample of such mapping is outlined in the table below.The examples shown are for the United States.

Custom Mapping				
Level	**Standard Mapping**	**Scenario 1 - Custom Authorities based on standard**	**Scenario 2 - Custom Authorities into additional levels**	**Scenario 3 - Custom Authorities Free-From mapping**
1	State Sales & Use Tax	State Sales & Use Tax	State Sales & Use Tax	All Sales & Use Tax
2	County Sales & Use Tax	County Sales & Use Tax	County Sales & Use Tax	Custom Authority
3	City Sales & Use Tax	City Sales & Use Tax	City Sales & Use Tax	Custom Authority
4	Local Sales & Use Tax Zone County	Local Sales & Use Tax Zone County	Local Sales & Use Tax Zone County	Custom Authority
5	Local Sales & Use Tax others Taxes	Local Sales & Use Tax others	Local Sales & Use Tax others	Custom Authority
6	not used	not used	Custom Authority	Custom Authority
7	not used	not used	Custom Authority	Custom Authority
8	not used	not used	Custom Authority	Custom Authority
9	not used	not used	Custom Authority	Custom Authority
0	not used	not used	Custom Authority	Custom Authority

Where multiple authorities exist at the same level and the taxable basis is the same, Integration returns the summed tax amount and the summed tax rate, where the tax amount is not equal to zero. The exempt amount is calculated using the gross amount less the taxable basis.

Where multiple authorities exist at the same level and the taxable basis is different, Integration returns the highest taxable basis where the tax amount is not equal to zero. The tax amount is summed and the tax rate is calculated using the summed tax amount divided by the highest taxable basis. The exempt amount is calculated using the gross amount less the highest taxable basis.

TAX OVERRIDES

When taxes are posted to SAP, several authorities are combined into one SAP tax jurisdiction code level, if they fall into the same authority type and zone level mappings. At the time of a FORCE transaction from SAP, Integration for SAP places these tax results back into the appropriate authorities. This section of the XML file enables this placement. The following indicators can be mapped and determine which SAP tax jurisdiction value is posted to ONESOURCE Indirect Tax Input XML <LINE>.<OVERRIDE_AMOUNT>:

- isCountry
- isProvince
- isState
- isCounty
- isCity
- isDistrict
- isPostcode
- isGeocode

The values listed above correspond to Determination effective tax level definitions without the prefix *is* on an authority.

There are three variables for the definition:

- **ShipTo_Country:** SAP country to determine rule for overrides.
- **jurisLevel:** SAP tax jurisdiction level the tax amount comes from.
- ***<variable from above list>*:** For example, **isCountry** would place the value from the corresponding SAP tax jurisdiction into the <LINE>.<OVERRIDE_AMOUNT>.<COUNTRY> XML tag.

Changes to the standard mapping provided by the *Advanced Configuration* setup are supported by ONESOURCE Indirect Tax at a technical level. However, as with all ONESOURCE Indirect Tax functionality, we cannot take responsibility for any business or taxing implications which might result from mapping on your system. Thoroughly test any configurations to confirm that they provide the desired results before going into production. Testing should include all types of RFC calls from SAP, including RFC_CALCULATE_TAXES_DOC, RFC_UPDATE_TAXES_DOC, and RFC_FORCE_TAXES_DOC.

To confirm that your accounting needs are satisfied, we recommend that you thoroughly test end-to-end your order-to-cash and procure-to-pay processes to make sure that tax results generated by custom configurations are posting correctly to your G/L accounts.

BUYER ROLE SWITCHES

This section describes the **buyerRoleSwitches** section of *taxMappingExtensions.xml*.

For some authorities in the US and US Territories, only a sales tax rate has been defined. Therefore, anytime a purchase-based transaction is run, use tax will not calculate. This means that for the AP side, we need Determination to run the transaction as a seller when doing a vendor validation. By running the transaction as a seller we will capture the correct taxes. Integration for SAP will switch the Buyer and Seller role for the combinations below.

- **ShipFrom_Country**: country of the ship-from jurisdiction code.
- **ShipTo_Country**: country of the ship-to jurisdiction code.
- **switch**: true or false value used to trigger switching of role

Ship From Country	Ship To Country
US (United States)	US (United States)
PR (Puerto Rico)	PR (Puerto Rico)
AS (American Samoa)	AS (American Samoa)
VI (Virgin Islands (U.S.))	VI (Virgin Islands (U.S.))
GU (Guam)	GU (Guam)

JURISDICTION DETERMINATION AND ADDRESS MAPPING

Jurisdiction Codes are retrieved from ONESOURCE Indirect Tax during the creation or change of any master record that has an address. A Remote Function Call from the SAP Tax Interface System is then made to the *addressvalidation* servlet which evaluates the Zone Tree. The results are sent back to SAP through the SAP Tax Interface System in the form of a Jurisdiction Code. The Jurisdiction Code is stored on the SAP master record.

The SAP Jurisdiction Determination function calls the servlet to find the most accurate jurisdiction, given the information in the transaction. The system behavior is based on the country in which the transaction takes place, and in some cases, is based on the information provided.

Basic behavior for all countries except United States of America:

All SAP address elements provided in the RFC_JURISDICTION_CODE are sent to ONESOURCE Indirect Tax for Zone Tree evaluation. ONESOURCE Indirect Tax will return all found zones andtheir appropriate Jurisdiction Codes to the SAP system. In the case where there is more than onezone returned, ONESOURCE Indirect Tax default zone is the top row entry.

Special behavior for United States of America:

ONESOURCE Indirect Tax does not store every ZIP Plus 4 (Geocode) in the United States. It only stores Plus 4 data that affects taxability. The return behavior of the addressvalidation servlet depends on whether 5-digit ZIP or 9-digit ZIP Plus 4 information is sent.

If only 5-digit ZIP information is sent to the servlet, all possible jurisdiction choices are returned to SAP so you can determine the appropriate address for the master data record. The default zone is always the first record returned.

If ZIP Plus 4 information is sent to the servlet, it always returns only one jurisdiction code to SAP:

- If ONESOURCE Indirect Tax stores the Plus 4 value, only one Jurisdiction Code is returned.
- If ONESOURCE Indirect Tax does not store the Plus 4 value, the Jurisdiction Code returned represents ONESOURCE Indirect Tax default zone for that area. This is always the correct zone.

ONESOURCE Indirect Tax strongly suggests sending ZIP Plus 4 address information for best tax accuracy.

CITY/COUNTY MATCHING LOGIC

Integration for SAP has four *.properties* parameters that support matching for United States of America transactions only. These parameters assist in data consistency and provide additional benefits when evaluating the Zone Tree. The parameters are:

- **city_flag**
- **override_supplied_city**
- **county_flag**
- **override_supplied_county**

city_flag: If the parameter is set to *TRUE*, an address returned by ONESOURCE Indirect Tax is discarded if the city name does not match the city name in the address provided by SAP. If ONESOURCE Indirect Tax returned one or more addresses, but they were discarded because of city name matching, an error is returned to SAP. A null value supplied by SAP always matches a value returned by ONESOURCE Indirect Tax, regardless of the string match setting.

The city UNINCORPORATED always matches, even if the city_flag is set to *TRUE*. If the flag is set to *FALSE*, no matching is performed between ONESOURCE Indirect Tax Determination cities and SAP provided cities.

override_supplied_city: IF set to *FALSE*, then the value supplied by SAP is returned; if set to *TRUE* the value returned by the address validation servlet is used, unless the value is UNINCORPORATED. In that case, the SAP value will not be overwritten. Default is *FALSE*.

county_flag: If the parameter is set to *TRUE*, an address returned by ONESOURCE Indirect Tax Determination is discarded if the county name does not match the county name in the address provided by SAP. If ONESOURCE Indirect Tax returned one or more addresses, but they were discarded because of county name matching, an error is returned to SAP. A null value supplied by SAP is not evaluated for a match. If the flag is set to *FALSE*, no matching is performed between counties and SAP provided counties.

override_supplied_county: If the parameter is set to *FALSE*, the county supplied by SAP is returned. A null value from SAP will not return a value to SAP. If the parameter is set to *TRUE*, the county found in ONESOURCE Indirect Tax Determination Zone Tree is returned to SAP and the address is supplemented with that information. If county_flag is set to *TRUE*, the value supplied by SAP is the value returned by Determination**.**

TAX JURISDICTION CODE BREAK-DOWN

United States Structure (for example, procedure TAXUSX)				
	TAXJCD_L1	**TAXJCD_L2**	**TAXJCD_L3**	**TAXJCD_L4**
USA	Country & State (4)	Zip Code (5)	Location (4)	Indicator (1)
Sample	USNY	14744	8703	0
Explanation	The two character country code and two character US state combined.	The five digit US zip code.	The four digit US plus four data. *If null, ONESOURCE Indirect Tax changes to XXXX as a placeholder.	The indicator on whether the address is located within or outside city limits. 0 = in city, 1 = out of city.

NOTE ONESOURCE Indirect Tax Determination uses *XXXX* as the placeholder for a null Plus 4 because 0000 and 9999 are valid Plus 4s in the United States. SAP requires data in those positions and does not allow *XXXX* as a valid Plus 4.

Canada Structure (for example, Procedure TAXCAX)				
	TAXJCD_L1	**TAXJCD_L2**	**TAXJCD_L3**	**TAXJCD_L4**
Canada	Country (2)	Province Code (2)	Not Used (0)	Not Used (0)
Sample	CA	BC		
Explanation	The two character country code for Canada.	The two character province abbreviation.		

ENABLING CUSTOM ATTRIBUTES

The SAP Standard Tax Interface provides predefined structures containing fields sent to the external tax system for tax calculation. These fields are usually enough to calculate standard tax scenarios. But when trying to solve the most complex tax requirements, the SAP Standard Tax Interface has considerable shortcomings.

To bridge that gap, ONESOURCE Indirect Tax allows 40 additional fields to be appended to the SAP system for tax calculation. The additional fields are mapped to Determination as Input XML Custom Attributes. Integration for SAP already includes the fields. You must maintain the Tax user exit to fill the new tax-relevant fields in the appended structures, and use TransEditors or Rule Qualifiers to either map the resulting Custom Attributes fields to relevant Input XML elements or trigger rule selection to ensure proper calculation.

This chapter provides an overview of the tax process and user exits, explains how to append the SAP Standard Tax Interface, and describes a use-case involving TransEditors and Rule Qualifiers.

- ***TECHNICAL OVERVIEW***
- ***PHYSICAL OVERVIEW***
- ***TAX PROCESS OVERVIEW***
- ***APPENDING THE SAP TAX INTERFACE***
- ***POPULATING DATA FIELDS WITH THE USER EXIT***
- ***TESTING RFCS WITH ADDED CUSTOM ATTRIBUTES***

TECHNICAL OVERVIEW

To better understand the magnitude and complexity of the proposed change to an SAP system, you must understand SAP's change management system. SAP separates changes to their system into the following categories:

System Configuration: Business-specific definitions to uniquely represent a company's structure, processes and entities using the IMG (Implementation Guide) within SAP as part of a system implementation. Fully supported by SAP.

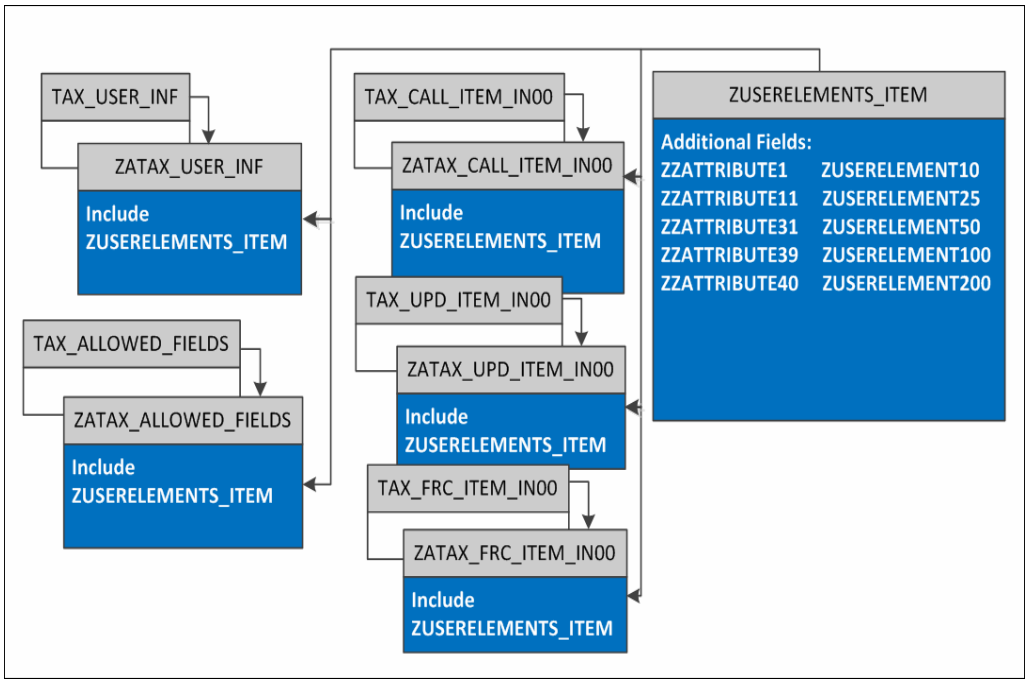
System Enhancements / Appends: Change made to an SAP system for a particular customer requirement using a predefined place within the SAP processing logic (user exit in ABAP code, APPEND in tables, structures, etc.). SAP guarantees upward compatibility and never overwrites the enhancements if performed according to SAP recommended guidelines.

System Modifications: Change to an SAP repository object altering core code or structures. Modifications have to be reviewed, and where necessary, adapted during an upgrade. Modifications are not supported by SAP.

Changes to support the 40 additional attributes described in this chapter are included in the “System Enhancements / Appends” category and are therefore fully supported by SAP. These enhancements strictly follow SAP guidelines.

PHYSICAL OVERVIEW

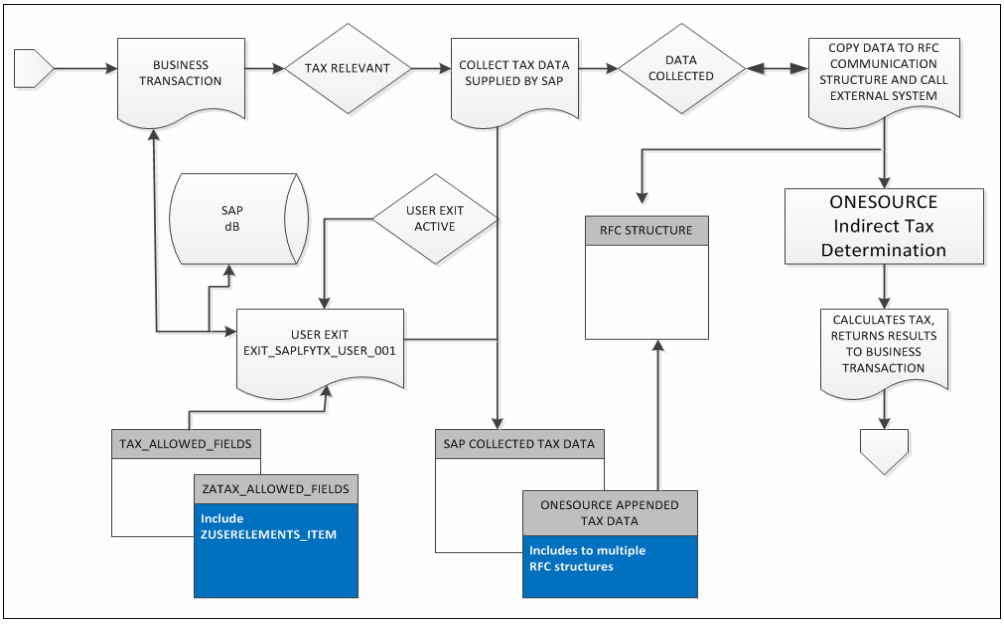
The implementation of the append consists of a newly created structure containing the 40 additional fields, their definitions, and their descriptions. This structure is then appended as an *include* structure to the three SAP Standard Tax Interface structures as well as to two additional tables used internally by the SAP system during the tax call.



TAX PROCESS OVERVIEW

Each business transaction is checked for tax relevancy. If tax needs to be calculated, SAP starts the collection process. At that point, the Tax user exit EXIT_SAPLFYTX_USER_001 is called and any custom code runs. Within the user exit, only fields listed in the TAX_ALLOWED_FIELDS structure can be used with the tax interface. Business transaction data as well as other stored data can be accessed and mapped in the user exit.

After successful collection, SAP copies the collected data, including customer specific data in the APPEND structure, into the RFC structure that communicates with the external tax software. The call to Integration for SAP is made and ONESOURCE Indirect Tax determines tax based on the SAP-supplied fields. ONESOURCE Indirect Tax returns tax results, using Integration for SAP, to the SAP business application.



APPENDING THE SAP TAX INTERFACE

This section describes the steps to append the SAP Tax Interface. Follow these instructions carefully to ensure a successful configuration.

We have provided a transport to aid in this process.

1. Import the package transport. The transport is stored in *K900186.DO2* and *R900186.DO2.*

ONESOURCE Indirect Tax Integration for SAP - 40 Input User Attributes

For upgrade customers transports may need to be imported with the "Overwrite Originals" check box selected when importing the transport. In cases where a customer already has prior existing objects setup in their development system and they import a transport into their development system which alters these objects an error is raised during the import if the “Overwrite Original” box is not checked.

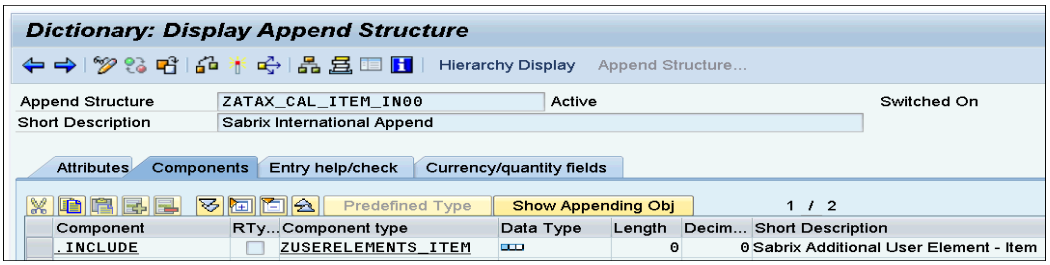
See appendix section at the end of this installation guide for information on locating transports, loading information, and verification data.

After applying this transport, you will have the following items added to your system:

- Package Z_Sabrix_Connector
- Newly created structure ZUSERELEMENTS_ITEM that includes 40 new customer attributes.
- Appended SAP Tax Tables. The following table lists the SAP tables that are now appended and within the appends, inclusion of the new ZUSERELEMENTS_Item Structure.

.

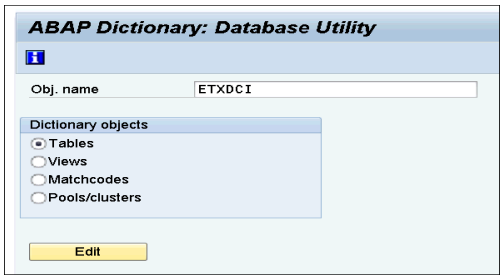
SAP Tables to Append		
Component	**Append**	**Append Name**
TAX_CAL_ITEM_IN00	ZATAX_CAL_ITEM_IN00	Sabrix Append
TAX_UPD_ITEM_IN00	ZATAX_UPD_ITEM_IN00	Sabrix Append
TAX_FRC_ITEM_IN00	ZATAX_FRC_ITEM_IN00	Sabrix Append
TAX_USER_INF	ZATAX_USER_INF	Sabrix Append
TAX_ALLOWED_FIELDS	ZATAX_ALLOWED_FIELDS	Sabrix Append



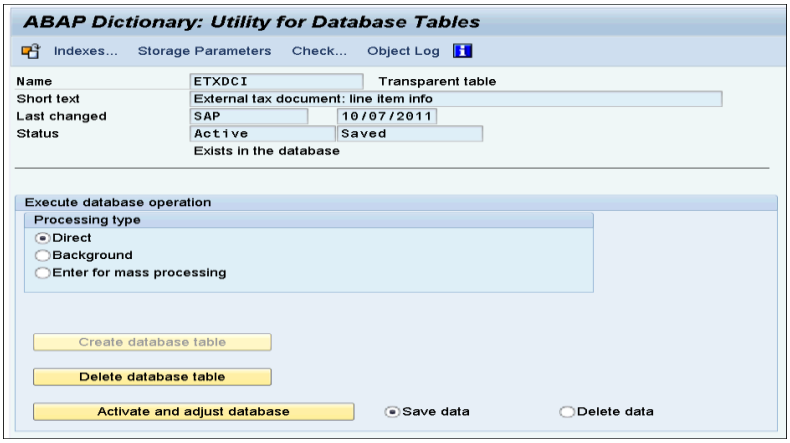
CONVERTION OF SAP DB TABLE ETXDCI.

During activation of append structure **ZATAX_USER_INF**, a warning message sometimes occurs. When investigating the warning you will notice issues with activation of table ETXDCI. Please work with your SAP Basis Team to resolve this issue. ONESOURCE Indirect Tax recommends that you manually regenerate table ETXDCI using the Database Utility in the ABAP Workbench.

In transaction **SE14 - Utility for Database Tables**, enter table the **Obj. name** of *ETXDCI*, select **Tables**, and click **Edit**.



2. Click the **Direct** (foreground) mode, click **Save data**, and then click the **Activate and adjust database** button to regenerate the table.



POPULATING DATA FIELDS WITH THE USER EXIT

Now that the additional fields have been defined in the SAP Standard Tax Interface, you can move content into the new fields. Determining what needs to be moved and mapped is based on your company's business process, tax requirements, and system configuration. Engage your SAP Functional Analyst or Consultant, your Tax Expert, and your ABAP Programmer.

USER EXIT USAGE: EXAMPLE

Assume that a material's net weight is required for accurate tax determination in a given business scenario. The material weight is not part of the SAP Standard Tax Interface, so you must add it to the appended fields so it will be retrieved from the SAP Material Master tables in the user exit.

Assume that the net weight was added as a new tax element to the SAP Standard Tax Interface. The value was assigned to ZZATTRIBUTE1 in SAP by the user exit. Now that the SAP user exithas moved the net weight value to ZZATTRIBUTE1, Integration for SAP will map that value to <USER_ELEMENT>.<ATTRIBUTE1>. Therefore, the value is now available to ONESOURCE Indirect Tax Determination in this element.

There are several ways you may use this element:

- You can simply pass the value through to audit for reporting purposes.
- You can use a TransEditor to map the value of this element to another element. For example, you might use the value of this custom attribute to populate the <MASS> input XML element.
- You can use a Rule Qualifier to test for the presence of a value in this custom attribute. For example, a qualifier may test that the net weight is over a certain amount or the rule will not apply.

Please consult Determination *Help* for information on how to configure both TransEditors and Rule Qualifiers.

TESTING RFCS WITH ADDED CUSTOM ATTRIBUTES

This procedure assumes that you have installed the Sabrix Solution and have configured at least one Sabrix Company. If not, you must first complete the instructions in the chapter ***DEFINING A COMPANY IN DETERMINATION FOR RFC TESTING*** and then continue with this procedure.

1. Follow the same steps as noted on ***TESTING THE RFC DESTINATION***

   Please make sure you can reach Determination using the Internet Explorer browser and the URL shown on the SAP screen. If you cannot reach Determination using Internet Explorer, then either Determination is not running or the URL provided is wrong. Consult with your DBA.

2. After you execute the RFC, check the connection log to make sure that your attributes are mapped to the Input XML fields.

```
<USER_ELEMENTS><USER_ELEMENT>
<NAME>ATTRIBUTE1</NAME>
<VALUE>ATT1</VALUE>
</USER_ELEMENT>
<USER_ELEMENT>
<NAME>ATTRIBUTE2</NAME>
<VALUE>ATT2</VALUE>
</USER_ELEMENT>
<USER_ELEMENT>
<NAME>ATTRIBUTE3</NAME>
<VALUE>ATT3</VALUE>
</USER_ELEMENT>
<USER_ELEMENT>
<NAME>ATTRIBUTE4</NAME>
<VALUE>ATT4</VALUE>
</USER_ELEMENT>
<USER_ELEMENT>
<NAME>ATTRIBUTE5</NAME>
<VALUE>ATT5</VALUE>
</USER_ELEMENT>
<USER_ELEMENT>
<NAME>ATTRIBUTE6</NAME>
<VALUE>ATT6</VALUE>
</USER_ELEMENT>
```

APPENDIX 1: MAPPING

This chapter describes the mapping between SAP fields and Determination Input and Output XML.

Determination XML is organized hierarchically. A single XML data file may contain multiple batches, invoices, and distribution lines. An element value set at the batch level is passed down to the invoice and distribution line levels, unless overridden at a lower level.

The tables in this chapter describe:

- How SAP fields are mapped to Address Validation XML.
- How SAP fields are mapped to Invoice level Input XML.
- How SAP fields are mapped to Line level Input XML. Each line has a unique line ID within the invoice, allowing each invoice to specify line specific values (such as different Ship-To locations) for each line. This also includes custom attributes you created in the previous chapter.
- How SAP fields are mapped to Invoice level Output XML.
- How SAP fields are mapped to Line level Output XML.

The following RFC modules are called for tax calculation and jurisdiction determination:

RFC Modules Called by Integration for SAP		
SAP Release	**Tax Calculation**	**Jurisdiction Determination**
R/3 4.6 and up	RFC_CALCULATE_TAXES_DOC RFC_UPDATE_TAXES_DOC RFC_FORCE_TAXES_DOC	RFC_DETERMINE_JURISDICTION

Each table is displayed beneath the associated RFC. See:

- ***MAPPING FOR RFC_DETERMINE_JURISDICTION***
- ***MAPPING FOR RFC_CALCULATE_TAXES_DOC***
- ***MAPPING FOR RFC_UPDATE_TAXES_DOC***
- ***MAPPING FOR RFC_FORCE_TAXES_DOC***

PREPARING FOR MAPPING

Before you begin the mapping process, please review:

- Leading Zeros
- Freight Lines and Product Lines
- Mapping of SAP Dates

LEADING ZEROS

ONESOURCE Indirect Tax Determination maps SAP data without removing leading zeros. Therefore, if you set up TransEditors, Customers, Exemptions, Products, or other master data in ONESOURCE Indirect Tax, you should set them up with the leading zeros.

Alternatively, you can set the *remove_leading_zeros* parameter in the SabrixConnection.properties file to *TRUE*, which will remove leading zeros for the following elements:

- **MAT_NR:** Material Number
- **PROD_CODE:** Product Code
- **GROUP_PROD_CODE:** Group Product Code
- **ACCNT_NO:** Customer Number or Vendor Number depending upon **APAR_IND**
- **ACCNT_CLS:** General ledger account
- **COST_OBJECT:** Cost center or other cost object (order, etc)
- **EXCERTIF:** Exempt Certificate Number (Not normally used)

FREIGHT LINES AND PRODUCT LINES

When freight is a condition in the pricing procedure for a line item in SAP, certain fields on the product line are copied onto the freight line created by Integration. This copying process makes the freight line identical to the product line with the exception of the following fields:

- **RELATED_LINE_NUMBER**: The value of this field is set to the value of the parent line number.
- **DESCRIPTION**: The value of this field is "Freight for line xx" where xx is the line number from the parent line.
- **GROSS_AMOUNT**: The value of this field is set based on RFC value *FREIGHT_AMT*.
- **LINE_NUMBER**: The value of this field is the line number of parent line filled to the sixth position with leading zeros and a one (1) added in front, for example, 10 will be *1000010*.
- **PRODUCT_CODE**: The value of this field is set from the *freight_prod_code* in the *SabrixConnection.properties* file.

MAPPING OF SAP DATES

For a detailed explanation and additional configuration options on dates please refer to the link below:

https://renewals-thomsonreuters.force.com/TRCommunity/s/article/Date-Determination-Documentation-1480568801911

MAPPING FOR RFC_DETERMINE_JURISDICTION

RFC_DETERMINE_JURISDICTION		
XML Field	**SAP Component**	**Comment**
INPUT XML		
COUNTRY	COUNTRY	
STATE	STATE	For the US only, SAP field STATE is mapped to input XML field STATE.
PROVINCE	STATE	For all countries other than US, SAP field STATE is mapped to input XML field PROVINCE.
COUNTY	COUNTY	
CITY	CITY	
POSTCODE	ZIPCODE	For US, the first 5 digits of ZIP code are mapped to POSTCODE; for all others countries everything from ZIPCODE is mapped to POSTCODE.
GEOCODE	ZIPCODE	For US, the last 4 digits of ZIPCODE are mapped to this field; for all others countries, this field is blank.
N/A	TXJCD_L1	
N/A	TXJCD_L2	
N/A	TXJCD_L3	
N/A	TXJCD_L4	
N/A	TXJCD	
N/A	OUTOF_CITY	
OUTPUT XML		
SEVERITY	RETCODE	A value of *0* indicates successful communication with Determination. A value of *1* indicates that an exception hasoccurred either in Integration itself or in its communication with Determination. A value of *2* indicates a severe errorwithin Determination.
SEVERITY	ERRCODE	A value of *1* indicates that an exception hasoccurred either in Integration itself or in its communication with Determination. A value of *2* indicates a severe errorwithin Determination.
MESSAGE_TEXT	ERRMSG	
COUNTRY	COUNTRY	
STATE	STATE	For the US only, SAP field STATE is mapped to input XML field STATE.

RFC_DETERMINE_JURISDICTION		
XML Field	**SAP Component**	**Comment**
PROVINCE	STATE	For all countries other than US, SAP field STATE is mapped to input XML field PROVINCE.
COUNTY	COUNTY	
CITY	CITY	
POSTCODE	ZIPCODE	
GEOCODE	ZIPCODE	
N/A	TXJCD_L1	Based on jurisdiction settings in TTXD.
N/A	TXJCD_L2	Based on jurisdiction settings in TTXD.
N/A	TXJCD_L3	Based on jurisdiction settings in TTXD.
N/A	TXJCD_L4	Based on jurisdiction settings in TTXD.
N/A	TXJCD	Build based on TTXD settings, see also below.
CITY	OUTOF_CITY	If CITY = UNINCORPORATED set OUTOF_CITY = X.

MAPPING FOR RFC_CALCULATE_TAXES_DOC

RFC_CALCULATE_TAXES_DOC INPUT XML		
Input XML Field	**SAP Component**	**Comment**
SAP FIELDS INVOICE LEVEL		
N/A	APP_SERVER	
N/A	SAP_VERSION	
N/A	INTERF_VERSION	
HOST_SYSTEM	SYST_NAME	
CALLING_SYSTEM_NUMBER	CLIENT	
EXTERNAL_COMPANY_ID	COMP_CODE	Company for which transaction is taking place.
INVOICE_NUMBER	DOC_NUMBER	SAP document number which is applicable to tax calculation, for example sales order, purchase order etc.
CURRENCY_CODE	CURRENCY	Currency Code from Company.
N/A	CURR_DEC	Used to support decimal points on values.
N/A	TXJCD_L1	Based on jurisdiction settings in TTXD.
N/A	TXJCD_L2	Based on jurisdiction settings in TTXD.
N/A	TXJCD_L3	Based on jurisdiction settings in TTXD.
N/A	TXJCD_L4	Based on jurisdiction settings in TTXD.
IS_AUDIT_UPDATE	TAX_PER_ITEM	This flag is blank in Order to Cash SD transactions, in Procure to Pay Process, this flag is X.
N/A	NR_LINE_ITEMS	Internally used.
SAP FIELDS LINE LEVEL		
COMPANY_ROLE	APAR_IND	• If SAP TXJCD_SF = US and TXJCD_ST = US and APAR_IND = A and TAX Type - 0 or Blank, or 1, the Company Role = S (Seller) • If SAP TXJCD_SF = US and TXJCD_ST = US and APAR_IND = V and Tax Type = 0 or Blank, the Company Role = S (Seller) • If SAP TXJCD_SF = US and TXJCD_ST = US and APAR_IND = V and Tax Type = 1, then Company Role = B (Buyer)
TRANSACTION_TYPE	N/A	GS (Goods) by default, overwritten at line level.

RFC_CALCULATE_TAXES_DOC INPUT XML		
Input XML Field	**SAP Component**	**Comment**
INVOICE_DATE	TAX_DATE	If Tax User Exit Provides the invoice date in the ZZINVDATE, then TAX_DATE will be ignored. See ONESOURCE Indirect Tax *Integration for SAP Global Tax Configuration Guide* for more details.
LINE.REGIME	ITEM_NO	Item number in the tax document.
LINE_NUMBER	POS_NO	Item number in the SAP document, for example, ITEM NUMBER in the Sales Order.
RELATED_LINE_ID	GROUP_ID	Prior to release 5.0, GROUP_ID was mapped to USER_ELEMENT.ATTRIBUTE49.
COUNTRY_OF_ORIGIN	COUNTRY	This is the country of goods departure. • In SD transactions, it is the country of the plant from which goods will be shipped. • In MM transactions it is the country of the company code in which AP transactions are created.
USER_ELEMENT.ATTRIBUTE50	DIVISION	
PART_NUMBER	MATNR	Material Number from line item on SAP document.
PRODUCT_CODE	PROD_CODE	Product Code can be mapped with material group in the TTXP table. There is user exit code provided to query this in the tax interface.
USER_ELEMENT.ATTRIBUTE41	GROUP_PROD_CODE	
QUANTITY	QUANTITY	
SUPPLEMENTARY_UNIT and UNIT_OF_MEASURE	UNIT	
TRANSACTION_TYPE	TAX_TYPE	• SAP TAX_TYPE 0 or 1 = TRANSACTION_TYPE = GS. • TAX_TYPE = 2 TRANSACTION_TYPE = DS. • TAX_TYPE = 3 TRANSACTION_TYPE = RR. • All other TAX_TYPES error. Tax Type is derived from the properties of TAX Code where it is maintained on the field called Tax Category Field.
IS_EXEMPT.ALL	EXEMP_IND	• If SAP EXEMP_IND is 'null' or0, IS_EXEMPT.ALL is not set. • If EXEMP_IND is 1, IS_EXEMPT.ALL is set to N, forcing no exemption. • If EXEMP_IND is 2, IS_EXEMPT.ALL is set to Y, forcing an exemption.

RFC_CALCULATE_TAXES_DOC INPUT XML		
Input XML Field	**SAP Component**	**Comment**
SHIP_FROM	TXJCD_SF	• In SD transaction, this jurisdiction code comes from Plant from which goods will be shipped. • In MM transaction, this jurisdiction codeis derived from Vendor location.
SHIP_TO	TXJCD_ST	• In SD transaction, this jurisdiction code comes from ship-to-customer location. • In MM transaction, this jurisdiction codeis derived from plant where goods will be received. • In SD/FI transactions, this is alwaysderived from the Customer number entered on the transaction. • In MM/FI transactions, this is a jurisdiction code from cost object (Cost Center, Asset, Plant, Tax) entered on the line item of the transaction.
ORDER_ACCEPTANCE	TXJCD_POA	• In SD transaction, this jurisdiction code is derived from Plant. We have provideduser exit code to derive this code from Sales Organization. • In MM transaction, this is derived from Vendor location. • In SD/FI transactions, this is alwaysderived from the Customer number entered on the transaction. • In MM/FI transactions, this is a jurisdiction code from cost object (Cost Center, Asset, Plant, Tax) entered on the line item of the transaction.
ORDER_ORIGIN	TXJCD_POO	• In SD Transaction, this jurisdiction codeis derived from Ship-to Customer. • In MM transaction, this is derived from Plant where goods will be received. • In SD/FI transactions, this is alwaysderived from the Customer number entered on the transaction. • In MM/FI transactions, this is a jurisdiction code from cost object (Cost Center, Asset, Plant, Tax) entered on the line item of the transaction.
GROSS_AMOUNT	AMOUNT	Net Value for Tax Calculation as determined by SAP. If FREIGHT_AM is > 0, then GROSS_AMOUNT = AMOUNT - FREIGHT_AM.
USER_ELEMENT.ATTRIBUTE48	GROSS_AMOUNT	GROSS_AMOUNT is always equal to original AMOUNT value.

RFC_CALCULATE_TAXES_DOC INPUT XML		
Input XML Field	**SAP Component**	**Comment**
GROSS_AMOUNT	FREIGHT_AM	If FRIEGHT_AM is not equal to 0, Integration creates two lines for tax calculation. In that case a special freight line will be created in Integration for tax calculation purposes.
EXEMPT_AMOUNT-STATE / COUNTRY	EXEMPT_AMT	For US = STATE, all others COUNTRY.
LINE.CUSTOMER_NUMBER or LINE.VENDOR_NUMBER	ACCNT_NO	Prior to release 5.0, USER_ELEMENT.ATTRIBUTE47 was mapped to ACCNT_NO if APAR_IND = A. As of release 5.0 release, this mapping is based on APAR_IND. If APAR_IND = A, this represents the line ship-to Customer Number from SAP. If APAR_IND = V, this represents the Vendor Number from SAP.
USER_ELEMENT.ATTRIBUTE42	ACCNT_CLS	
USER_ELEMENT.ATTRIBUTE43	COST_OBJECT	
POINT_OF_TITLE_TRANSFER	PTP_IND	Prior to the 5.0 release, there was user exit code to map PTP_IND based on INCO TERMS in SAP. We have still provided this code, but this code is optional with 5.0 release since Incoterms can be mapped with Point of Title Transfer. See Configuring User Exits for more information.
EXEMPT_CERTIFICATE-STATE / COUNTRY	EXCERTIF	For US = STATE, all others COUNTRY.
EXEMPT_REASON-STATE / COUNTRY	EXREASON	For US = STATE, all others COUNTRY
USER_ELEMENT.ATTRIBUTE44	USER_DATA	
40 ADDITIONAL FIELDS		
USER_ELEMENT.ATTRIBUTE1	ZZATTRIBUTE1	CHAR 10
USER_ELEMENT.ATTRIBUTE2	ZZATTRIBUTE2	CHAR 10
USER_ELEMENT.ATTRIBUTE3	ZZATTRIBUTE3	CHAR 10
USER_ELEMENT.ATTRIBUTE4	ZZATTRIBUTE4	CHAR 10
USER_ELEMENT.ATTRIBUTE5	ZZATTRIBUTE5	CHAR 10
USER_ELEMENT.ATTRIBUTE6	ZZATTRIBUTE6	CHAR 10
USER_ELEMENT.ATTRIBUTE7	ZZATTRIBUTE7	CHAR 10
USER_ELEMENT.ATTRIBUTE8	ZZATTRIBUTE8	CHAR 10
USER_ELEMENT.ATTRIBUTE9	ZZATTRIBUTE9	CHAR 10

RFC_CALCULATE_TAXES_DOC INPUT XML		
Input XML Field	**SAP Component**	**Comment**
USER_ELEMENT.ATTRIBUTE10	ZZATTRIBUTE10	CHAR 10
USER_ELEMENT.ATTRIBUTE11	ZZATTRIBUTE11	CHAR 25
USER_ELEMENT.ATTRIBUTE12	ZZATTRIBUTE12	CHAR 25
USER_ELEMENT.ATTRIBUTE13	ZZATTRIBUTE13	CHAR 25
USER_ELEMENT.ATTRIBUTE14	ZZATTRIBUTE14	CHAR 25
USER_ELEMENT.ATTRIBUTE15	ZZATTRIBUTE15	CHAR 25
USER_ELEMENT.ATTRIBUTE16	ZZATTRIBUTE16	CHAR 25
USER_ELEMENT.ATTRIBUTE17	ZZATTRIBUTE17	CHAR 25
USER_ELEMENT.ATTRIBUTE18	ZZATTRIBUTE18	CHAR 25
USER_ELEMENT.ATTRIBUTE19	ZZATTRIBUTE19	CHAR 25
USER_ELEMENT.ATTRIBUTE20	ZZATTRIBUTE20	CHAR 25
USER_ELEMENT.ATTRIBUTE21	ZZATTRIBUTE21	CHAR 25
USER_ELEMENT.ATTRIBUTE22	ZZATTRIBUTE22	CHAR 25
USER_ELEMENT.ATTRIBUTE23	ZZATTRIBUTE23	CHAR 25
USER_ELEMENT.ATTRIBUTE24	ZZATTRIBUTE24	CHAR 25
USER_ELEMENT.ATTRIBUTE25	ZZATTRIBUTE25	CHAR 25
USER_ELEMENT.ATTRIBUTE26	ZZATTRIBUTE26	CHAR 25
USER_ELEMENT.ATTRIBUTE27	ZZATTRIBUTE27	CHAR 25
USER_ELEMENT.ATTRIBUTE28	ZZATTRIBUTE28	CHAR 25
USER_ELEMENT.ATTRIBUTE29	ZZATTRIBUTE29	CHAR 25
USER_ELEMENT.ATTRIBUTE30	ZZATTRIBUTE30	CHAR 25
USER_ELEMENT.ATTRIBUTE31	ZZATTRIBUTE31	CHAR 50
USER_ELEMENT.ATTRIBUTE32	ZZATTRIBUTE32	CHAR 50
USER_ELEMENT.ATTRIBUTE33	ZZATTRIBUTE33	CHAR 50
USER_ELEMENT.ATTRIBUTE34	ZZATTRIBUTE34	CHAR 50
USER_ELEMENT.ATTRIBUTE35	ZZATTRIBUTE35	CHAR 50
USER_ELEMENT.ATTRIBUTE36	ZZATTRIBUTE36	CHAR 50
USER_ELEMENT.ATTRIBUTE37	ZZATTRIBUTE37	CHAR 50
USER_ELEMENT.ATTRIBUTE38	ZZATTRIBUTE38	CHAR 50
USER_ELEMENT.ATTRIBUTE39	ZZATTRIBUTE39	CHAR 200
USER_ELEMENT.ATTRIBUTE40	ZZATTRIBUTE40	CHAR 200

RFC_CALCULATE_TAXES_DOC OUTPUT XML		
Output XML Field	**SAP Component**	**Comment**
SAP FIELDS INVOICE LEVEL		
Read from integration library	API_VERSION	Integration Version.
Read from determination	SYST_VERSION	Determination Version.
Read from library	DB_VERSION	SAP JCo Version.
SEVERITY	RETCODE	A value of *0* indicates successful communication with Determination. A value of *1* indicates that an exception has occurred either in Integration itself or in its communication with Determination. A value of *2* indicates a severe error within Determination.
USER_ELEMENT_ATTRBUTE49	ERROR_LINE	First line found with an error.
SEVERITY	ERRCODE	A value of NULL indicates that a connection could not be made with Determination. A value of *1* indicates that an exception has occurred either in Integration itself or in its communication with Determination. A value of *2* indicates a severe error within Determination.
MESSAGE_TEXT	ERRMSG	Message up to 200 characters.
SAP FIELDS LINE LEVEL		
LINE_REGIME	ITEM_NO	
N/A	TXJCD_IND	
N/A	TAXPCOV	Calculated within Integration as an effective rate.
TOTAL_TAX_AMOUNT	TAXAMOV	
N/A	EXMATFLAG	
N/A	EXCUSFLG	
TAX_EXEMPT_CERTIFICATE	EXT_EXCERTIF	
TAX_EXEMPT_REASON	EXT_EXREASON	
N/A	NR_JUR_LEVELS	
SAP FIELDS JURIDSDICTION LEVEL		
LINE.REGIME	ITEM_NO	
TAX_AUTHORITY_TYPE	TXJLV	
TAX_RATE	TAXPCT	
TAX_AMOUNT	TAXAMT	
TAX_TAXABLE_BASIS	TAXBAS	

RFC_CALCULATE_TAXES_DOC OUTPUT XML		
Output XML Field	**SAP Component**	**Comment**
TAX_EXEMPT_AMOUNT	EXAMT	
TAX_EXEMPT_REASON	EXCODE	

MAPPING FOR RFC_UPDATE_TAXES_DOC

Mapping for RFC_UPDATE_TAXES_DOC requires the following types of mapping in addition to what is already displayed in the various sections of RFC_CALCULATE_TAXES_DOC. This is an incremental list.

For all other field mappings, see ***MAPPING FOR RFC_CALCULATE_TAXES_DOC***.

RFC_UPDATE_TAXES_DOC		
Input XML Field	**SAP Component**	**Comment**
INVOICE-LEVEL INPUT XML		
IS_AUDIT_UPDATE	TAX_PER_ITEM	For SD Transactions, this field is always blank; for MM transactions, this field is always X since SAP makes a call on the line level for tax calculation. If it is X, then IS_AUDIT_UPDATE = Y.
N/A	NR_LINE_ITEMS	Internally used.
IS_AUDITED	N/A	If RFC CALL is UPDATE or FORCE, then IS_AUDITED = Y.
FISCAL_DATE	REP_DATE	From first line item where REP_DATE represents the posting date.
CALCULATION_DIRECTION	N/A	For UPDATE set to F.
LINE-LEVEL INPUT XML		
N/A	REP_DATE	Mapped to Invoice Input level.
N/A	CREDIT_IND	If APAR_IND = V and COUNTRY does not equal US or CA. • If CREDIT_IND = 0, the sign is positiveand IS_CREDIT = N. • If CREDIT_IND = 1, the sign is negativeand IS_CREDIT = Y. • IS_CREDIT is a line level input XML field.
LINE-LEVEL OUTPUT XML		
Read from Integration library	API_VERSION	Integration Version.
Read from Determination	SYST_VERSION	Determination Version.
Read from library	DB_VERSION	SAP JCo Version.
SEVERITY	RETCODE	A value of *0* indicates successful communication with Determination. A value of *1* indicates that an exception has occurred either in Integration itself or in its communication with Determination. A value of *2* indicates a severe error within Determination.
USER_ELEMENT.ATTRBUTE49	ERROR_LINE	First line found with an error.

RFC_UPDATE_TAXES_DOC		
Input XML Field	**SAP Component**	**Comment**
SEVERITY	ERRCODE	A value of *0* indicates successful communication with Determination. A value of *1* indicates that an exception has occurred either in Integration itself or in its communication with Determination. A value of *2* indicates a severe error within Determination.
MESSAGE_TEXT	ERRMSG	Message up to 200 characters

MAPPING FOR RFC_FORCE_TAXES_DOC

Mapping for RFC_FORCE_TAXES_DOC requires the following types of mapping in addition to what is already displayed in the various sections of RFC_CALCULATE_TAXES_DOC. This is an incremental list.

For all other field mappings, see ***MAPPING FOR RFC_CALCULATE_TAXES_DOC***.

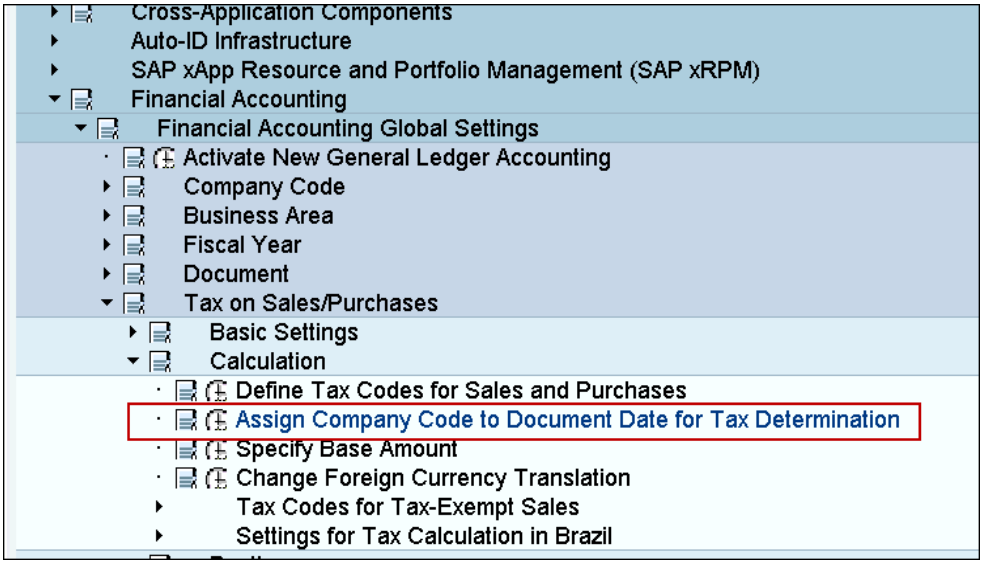
RFC_FORCE_TAXES_DOC		
Input XML Field	**SAP Component**	**Comment**
INVOICE-LEVEL INPUT XML		
IS_AUDIT_UPDATE	TAX_PER_ITEM	For SD Transactions, this field is always blank; for MM transactions, this field is always X since SAP makes a call on the line level for tax calculation. If it is X, then IS_AUDIT_UPDATE = Y.
N/A	NR_LINE_ITEMS	Internally used.
IS_AUDITED	N/A	If RFC CALL is UPDATE or FORCE, then IS_AUDITED = Y.
FISCAL_DATE	REP_DATE	From first line item where REP_DATE represents the posting date.
CALCULATION_DIRECTION	N/A	For FORCE set to R.
LINE-LEVEL INPUT XML		
N/A	REP_DATE	Mapped to Invoice Input level.
N/A	CREDIT_IND	If APAR_IND = V and COUNTRY does not equal US or CA. • If CREDIT_IND = 0, the sign is positiveand IS_CREDIT = N. • If CREDIT_IND = 1, the sign is negative and IS_CREDIT = Y. • IS_CREDIT is a line level input XML field.
USER_ELEMENT.ATTRIBUTE45	STORE_CODE	
USER_ELEMENT.ATTRIBUTE46	USER_REPT_DATA	
N/A	TXJCD_IND	
N/A	TAXPCOV	
TAX_AMOUNT	TAXAMOV	
N/A	EXMATFLAG	
N/A	EXCUSFLG	
N/A	EXT_EXCERTIF	
N/A	EXT_EXREASON	

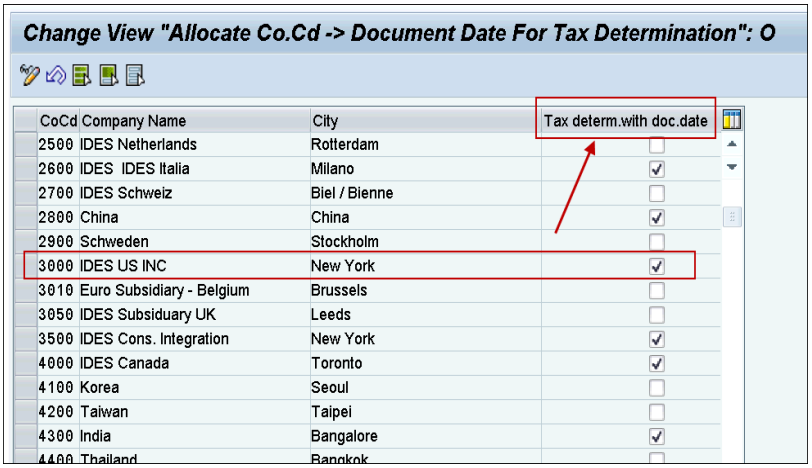
RFC_FORCE_TAXES_DOC		
Input XML Field	**SAP Component**	**Comment**
N/A	NR_JUR_LEVELS	
LINE.REGIME	ITEM_NO	
N/A	TXJLV	
N/A	TAXPCT	
OVERRIDE_AMOUNT.<level>	TAXAMT	<level> according to tax jurisdiction level.
N/A	TAXBAS	
EXEMPT_AMOUNT.<level>	EXAMT	<level> according to tax jurisdiction level.
EXEMPT_REASON.<level>	EXCODE	<level> according to tax jurisdiction level.
LINE-LEVEL OUTPUT XML		
Read from Integration library	API_VERSION	Integration Version.
Read from Determination	SYST_VERSION	Determination Version.
Read from library	DB_VERSION	SAP JCo Version.
SEVERITY	RETCODE	A value of *0* indicates successful communication with Determination. A value of *1* indicates that an exception has occurred either in Integration itself or in its communication with Determination. A value of *2* indicates a severe error within Determination.
USER_ELEMENT.ATTRBUTE49	ERROR_LINE	First line found with an error.
SEVERITY	ERRCODE	A value of *0* indicates successful communication with Determination. A value of *1* indicates that an exception has occurred either in Integration itself or in its communication with Determination. A value of *2* indicates a severe error within Determination.
MESSAGE_TEXT	ERRMSG	Message up to 200 characters.

Configure SAP to send the Invoice date instead of the posting date to Audit:

By default SAP sends the posting date to ONESOURCE Indirect Tax audit in transactions FB60, FB70, MIRO, FB01 and FB05. If instead you would like to pass the Document/Invoice Date then you will need to follow the below steps in the FI area of configuration.

Use SPRO transaction: **Financial Accounting / Financial Accounting Global Settings / Tax on Sales and Purchases / Calculation / Assign Company Code to Document Type for Tax Determination.**





APPENDIX 2: TRANSPORTS

ONESOURCE INDIRECT TAX TRANSPORTS

Transports for the basic installation guide are located on your computer as noted in this screenshot example below. You will find them in the Code folder which is in SBXIntegrationSAP5.2.3.2B folder.

Have your basis person locate and install this transport as shown in the table below.

Transport Number Files	Page Reference	Purpose
K900186.DO2 R900186.DO2	***ONESOURCE Indirect Tax Integration for SAP - 40 Input User Attributes***	SAP package for the transport, and append/addition of 40 attribute fields

NOTE For upgrade customers transports should be imported with the "Overwrite Originals" check box selected when importing the transport. In cases where a customer already has prior existing objects imported or setup in their system and they import a newer transport which alters these objects an error is raised during the import if the “Overwrite Original” box is not checked.

As your basis person adds this transport you can refer to the information below in order to confirm that the transports added all items as expected.

K900186.DO2/R900186.DO2

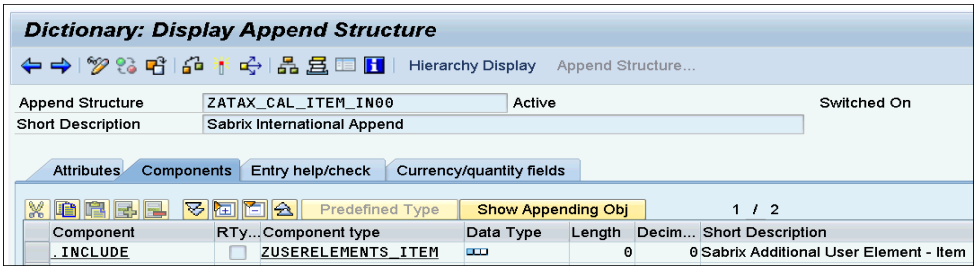
ONESOURCE Indirect Tax Integration for SAP - 40 Input User Attributes

After applying this transport, you will have the following items added to your system:

- Package Z_Sabrix_Connector
- Newly created structure ZUSERELEMENTS_ITEM that includes 40 new customer attributes.
- Appended SAP Tax Tables. The following table lists the SAP tables that are now appended and within the appends, inclusion of the new ZUSERELEMENTS_Item Structure.

.

SAP Tables to Append		
Component	**Append**	**Append Name**
TAX_CAL_ITEM_IN00	ZATAX_CAL_ITEM_IN00	Sabrix Append
TAX_UPD_ITEM_IN00	ZATAX_UPD_ITEM_IN00	Sabrix Append
TAX_FRC_ITEM_IN00	ZATAX_FRC_ITEM_IN00	Sabrix Append
TAX_USER_INF	ZATAX_USER_INF	Sabrix Append
TAX_ALLOWED_FIELDS	ZATAX_ALLOWED_FIELDS	Sabrix Append



APPENDIX 3: ADVANCED SECURITY AND LOGGING CONFIGURATIONS

PASSWORD ENCRYPTION AND USER AUTHENTICATION

ONESOURCE Indirect Tax provides integrated user authentication between Determination and Integration for SAP. When it starts, Integration authenticates with SAP and can optionally authenticate with Determination for each transaction. The username and password information for this authentication is contained in the *SabrixConnection.properties file*.

The following is a list of the usernames and passwords in the *SabrixConnection.properties* file:

- SABRIX_user
- SABRIX_password
- jco.client.user
- jco.client.passwd

Although you must supply the *jco.client.user* and *jco.client.passwd* values, you would only use *SABRIX_user* and *SABRIX_password* if you wanted to authenticate each transaction. To enable this, set the system configuration parameter CALC_AUTHENTICATION_REQUIRED. When this parameter is set to *Y* in Determination, it authenticates the user and password for every transaction.

To protect your username and password information, you can encrypt it in the *SabrixConnection.properties* file. Follow instructions below to encrypt these values, and after inserting these encrypted values into the *.properties* file, set the following:

```
encrypt_passwords=true
```

Once you have set this property to *true*, Integration for SAP assumes that you have encrypted all username and password information. If you mistakenly set this to *true* but do not actually encrypt the username and password values, then Integration will not authenticate with SAP.

Passwords are not shown in the *SABRIXIntegrationServer.log*; they are replaced with a value of "REMOVED FOR SECURITY".

To encrypt username and password information, follow the instructions for your operating system:

Microsoft Windows Systems

Use *IntegrationServerEncryptText.bat* file provided with Integration for SAP distribution. Run *IntegrationServerEncryptText.bat* from a command prompt, providing the text value that needs to be encrypted. For example, to encrypt the word *test* execute the following:

```
<Install Directory>IntegrationServerEncryptText test

**dAVzdG
```

The generated password is ***dAVzdG*. It can be copied into the *SabrixConnection.properties* file in place of the plain text.

UNIX Systems

Use *IntegrationServerEncryptText.sh* file provided with Integration for SAP distribution. Run *IntegrationServerEncryptText.sh* from a command prompt, providing the text value that needs to be encrypted. For example, to encrypt the word “test” execute the following:

```
./IntegrationServerEncryptText.sh test

**dAVzdG
```

The generated password is ***dAVzdG*. It can be copied into the *SabrixConnection.properties* file in place of the plain text.

APPENDER FILE CONFIGURATION FOR THE 6 APPENDER FORMATS

THE SIMPLEFILEAPPENDER

Uncomment the `SimpleFileAppender` <File> </File> XML tag and comment the ZipRollingFileAppender XML tag <RollingRandomAccessFile> </RollingRandomAccessFile> and other appenders <RollingFile> </RollingFile> XML tags if not already commented.
For a given integration, only one appender can be active at a time.

To comment XML tags use syntax <!-- comment XML tag -->

```
<File name="SimpleFileAppender" fileName="./log/SabrixIntegrationServer.log">
     <PatternLayout>
         <Pattern>%d [%-5level] [%t] %c - %m%n</Pattern>
     </PatternLayout>
 </File>
```

You can modify the following ATTRIBUTES to meet your needs:

SIMPLEFILEAPPENDER ATTRIBUTES	
Attribute	**Purpose**
`fileName`	Specifies the log directory and the log file name. The default value is: `./log/SabrixIntegrationServer.log`

To use this appender, set the value of **AppenderRef** in the **Logger** component and **Root** componentto `SimpleFileAppender`. For example:

```
<Logger name="com.sabrix.integration" level="ERROR" additivity="false">
      <AppenderRef ref="SimpleFileAppender"/>
</Logger>

<Root level="ERROR">
      <AppenderRef ref="SimpleFileAppender"/>
</Root>
```

THE DAILYROLLINGFILEAPPENDER

Uncomment the `DailyRollingFileAppender` <RollingFile> </RollingFile> XML tag and comment the ZipRollingFileAppender XML tag <RollingRandomAccessFile> </RollingRandomAccessFile> and other appenders <RollingFile> </RollingFile>, <File> </File> XML tags if not already commented.
For a given integration, only one appender can be active at a time.

```
<RollingFile name="DailyRollingFileAppender"
      fileName="./log/SabrixIntegrationServer.log"
      filePattern="./log/SabrixIntegrationServer-%d{yyyy-MM-dd}.log">
      <PatternLayout>
            <pattern>%d [%-5level] [%t] %c - %m%n</pattern>
      </PatternLayout>
      <Policies>
            <TimeBasedTriggeringPolicy interval="1" modulate="true" />
      </Policies>
      <DefaultRolloverStrategy max="10"/></RollingFile>
```

You can modify the following ATTRIBUTES to meet your needs:

DAILYROLLINGFILEAPPENDER ATTRIBUTES	
Attribute	**Purpose**
`filename`	Specifies the log directory and the log file name. The default value is: `./log/SabrixIntegrationServer.log`
`filePattern`	Specifies the date pattern to use in the time stamp. The default value is `yyyy-MM-dd`
`Max`	Specifies the number of backup files to keep. The default value is `10`.

To use this appender, set the value of **AppenderRef** in the **Logger** component and **Root** componentto `DailyRollingFileAppender`. For example:

```
<Logger name="com.sabrix.integration" level="ERROR" additivity="false">
   <AppenderRef ref="DailyRollingFileAppender"/>
</Logger>

<Root level="ERROR">
   <AppenderRef ref="DailyRollingFileAppender"/>
</Root>
```

THE COMPOSITEROLLINGFILEAPPENDER

Uncomment the CompositeRollingFileAppender <RollingFile> </RollingFile> XML tag and comment the ZipRollingFileAppender XML tag <RollingRandomAccessFile> </RollingRandomAccessFile> and other appenders <RollingFile> </RollingFile>, <File> </File> XML tags if not already commented.
For a given integration, only one appender can be active at a time.

```
<RollingFile name="CompositeRollingFileAppender"
          fileName="./log/SabrixIntegrationServer.log"
          filePattern="./log/SabrixIntegrationServer-%d{yyyy-MM-dd}.%i.log">
          <PatternLayout>
                <pattern>%d [%-5level] [%t] %c - %m%n</pattern>
          </PatternLayout>
          <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true" />
                <SizeBasedTriggeringPolicy size="10MB" />
          </Policies>
          <DefaultRolloverStrategy max="10"/>
</RollingFile>
```

You can modify the following ATTRIBUTES to meet your needs:

Control log file maximum size with the **size** attribute. Default value is 10MB; the value can be changed. Control the number of backup files to keep with **max** attribute. Keep ten backup files; the value can be changed.

COMPOSITEROLLINGFILEAPPENDER ATTRIBUTES	
Attribute	**Purpose**
`fileName`	Specifies the log directory and the log file name. The default value is: `./log/SabrixIntegrationServer.log`
`filePattern`	Specifies Rollover log file name along with the date pattern to use in the time stamp and numeric value (%i) The default date pattern value is `yyyy-MM-dd`
Size	Specifies the maximum file size; once this limit is met, log rolling occurs. The default value is `10MB`.
Max	Specifies the number of backup files to keep. The default value is `10`.

To use this appender, set the value of **AppenderRef** in the **Logger** component and **Root** component to `CompositeRollingFileAppender`. For example:

```
<Logger name="com.sabrix.integration" level="ERROR" additivity="false">
   <AppenderRef ref="CompositeRollingFileAppender"/>
</Logger>

<Root level="ERROR">
   <AppenderRef ref="CompositeRollingFileAppender"/>
</Root>
```

THE CONSOLEAPPENDER

```
<Console name="ConsoleAppender" target="SYSTEM_OUT">

      <PatternLayout pattern="%d [%-5level] [%t] %c - %msg%n"/
> </Console>
```

THE ROLLINGFILEAPPENDER

Uncommon the `RollingFileAppender` <RollingFile> </RollingFile> XML tag and comment the ZipRollingFileAppender XML tag <RollingRandomAccessFile> </RollingRandomAccessFile> and other appenders <RollingFile> </RollingFile>, <File> </File> XML tags if not already commented.
For a given integration, only one appender can be active at a time.

```
<RollingFile name="RollingFileAppender" fileName="./log/SabrixIntegrationServer.log"
                 filePattern="./log/SabrixIntegrationServer.%i.log">

          <PatternLayout>
                <pattern>%d [%-5level] [%t] %c - %m%n</
          pattern> </PatternLayout>
          <Policies>
                <SizeBasedTriggeringPolicy size="10MB" />
          </Policies>

          <DefaultRolloverStrategy max="10"/>
</RollingFile>
```

You can modify the following ATTRIBUTES to meet your needs:

Control the log file maximum size with the **size** attribute. Default value is 10MB; the value can be changed.
Control the number of backup files to keep with **max** attribute. Keep ten backup files; the value can be changed.

ROLLINGFILEAPPENDER ATTRIBUTES	
Attribute	**Purpose**
`fileName`	Specifies the log directory and the log file name. The default value is: `./log/SabrixIntegrationServer.log`
`filePattern`	Specifies rollover log file name along with the incremented numeric value (%i)
size	Specifies the maximum file size; once this limit is met, log rolling occurs. The default value is `10MB`.
max	Specifies the number of backup files to keep. The default value is `10`.

To use this appender, set the value of **AppenderRef** in the **Logger** component and **Root** component to `RollingFileAppender`. For example:

```
<Logger name="com.sabrix.integration" level="ERROR" additivity="false">
   <AppenderRef ref="RollingFileAppender"/>
</Logger>

<Root level="ERROR">
   <AppenderRef ref="RollingFileAppender"/>
</Root>
```

THE ZIPPINGFILEAPPENDER

```
<RollingRandomAccessFile name="ZipRollingFileAppender"
          fileName="./log/SabrixIntegrationServer.log"
          filePattern="./log/SabrixIntegrationServer-%d{yyyy-MM-dd_HH}.log.zip">
   <PatternLayout>
          <pattern>%d [%-5level] [%t] %c - %m%n</pattern>
   </PatternLayout>
   <Policies>
          <TimeBasedTriggeringPolicy interval="1" modulate="true" />
   </Policies>
</RollingRandomAccessFile>
```

You must use .gz or .zip at the end of the file location.

CONFIGURATION EXAMPLES

Configuration XML tag with status of DEBUG:

```
   <Configuration status="DEBUG">
```

Configure Status attribute to log the level of internal Log4j events that should be logged to the console (SabrixOut.txt or startSabrixConnection.log file). Valid values for this attribute are "off", "debug", "info", "warn", "error", "fatal". Log4j will log details about initialization, rollover and other internal actions to the status logger. Setting status="debug" is one of the first tools available to you if you need to troubleshoot log4j. Recommend to provide status=”error” in production environment to avoid huge logs over a period.

SimpleFileAppender with log level of ERROR:

```
   <Logger name="com.sabrix.integration" level="ERROR" additivity="false">
          <AppenderRef ref="SimpleFileAppender"/>
   </Logger>
```

DailyRollingFileAppender with a maximum backup index of 5 and a log level of INFO:

```
   <Logger name="com.sabrix.integration" level="INFO" additivity="false">
          <AppenderRef ref="DailyRollingFileAppender"/>
   </Logger>

   ...
```

```
    <RollingFile name="DailyRollingFileAppender"
          fileName="./log/SabrixIntegrationServer.log"
          filePattern="./log/SabrixIntegrationServer-%d{yyyy-MM-dd}.log">
          <PatternLayout>
                <pattern>%d [%-5level] [%t] %c - %m%n</pattern>
          </PatternLayout>
          <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true" />
          </Policies>
          <DefaultRolloverStrategy max="5"/>
    </RollingFile>
```

CompositeRollingFileAppender with a maximum file size 100 MB, maximum backup index of 10 and at log level of ERROR:

```
<Logger name="com.sabrix.integration" level="ERROR" additivity="false">
          <AppenderRef ref="CompositeRollingFileAppender"/>
</Logger>

<RollingFile name="CompositeRollingFileAppender"
          fileName="./log/SabrixIntegrationServer.log"
          filePattern="./log/SabrixIntegrationServer-%d{yyyy-MM-dd}.%i.log">
          <PatternLayout>
                <pattern>%d [%-5level] [%t] %c - %m%n</pattern>
          </PatternLayout>
          <Policies>
                <TimeBasedTriggeringPolicy interval="1" modulate="true" />
                <SizeBasedTriggeringPolicy size="100MB" />
          </Policies>
          <DefaultRolloverStrategy max="10"/>
</RollingFile>
```

To comment ZipRollingFileAppender enclose the <RollingRandomAccessFile> </RollingRandomAccessFile> XML tags within start comment symbol <!-- and end comment symbol --> :

```
<!--
    <RollingRandomAccessFile name="ZipRollingFileAppender"
          fileName="./log/SabrixIntegrationServer.log"
          filePattern="./log/SabrixIntegrationServer-%d{yyyy-MM-dd_HH}.log.zip">
      <PatternLayout>
          <pattern>%d [%-5level] [%t] %c - %m%n</pattern>
      </PatternLayout>
      <Policies>
          <TimeBasedTriggeringPolicy interval="1" modulate="true" />
      </Policies>
    </RollingRandomAccessFile>
-->
```

To uncomment CompositeRollingFileAppender remove the <RollingFile> </RollingFile> XML tags within start comment symbol <!-- and end comment symbol --> :

```
<RollingFile name="CompositeRollingFileAppender"
          fileName="./log/SabrixIntegrationServer.log"
          filePattern="./log/SabrixIntegrationServer-%d{yyyy-MM-dd}.%i.log">
          <PatternLayout>
                <pattern>%d [%-5level] [%t] %c - %m%n</pattern>
          </PatternLayout>
```

```
        <Policies>
               <TimeBasedTriggeringPolicy interval="1" modulate="true" />
               <SizeBasedTriggeringPolicy size="100MB" />
        </Policies>
        <DefaultRolloverStrategy max="10"/>
</RollingFile>
```