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| ONESOURCE Indirect Tax Determination |

Installation Guide

Microsoft SQL Server and JBoss

5.13.X.X

Document Version WIP - INTERNAL USE ONLY

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DOCUMENT HISTORY

| Version  Number | Version Date | Summary |
| --- | --- | --- |
| 1 | February 2021 | Created first version of this guide for ONESOURCE Indirect Tax Determination 5.13.x.x. |
| 2 | April 6, 2022 | * Updated the supported Java versions to include version 1.11. * Time Eviction Cache support. |
| 3 | September 9, 2022 | Updates to Clustering and Time Eviction Caching processes. |
| 4 | June 30, 2025 | Java17 Upgrade |

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Introduction

The ONESOURCE Indirect Tax Determination software is a highly scalable and reliable taxing service for all business applications needing consolidated tax determination, calculation, and recording. A three-tier application built on industry standard Java technology and state-of-the-art design principles, the Determination software is designed to optimize performance, reliability, interoperability, manageability, and security.

This guide explains how to install Determination version 5.13.x.x.

Who Should Read This Guide?

The installation requires the coordination of people in various roles. If you are responsible for overseeing the installation, make this guide available to the following contributors:

* Database administrator
* Application server administrator
* IT administrator
* Tax professional

Resources

Several resources help you become familiar with ONESOURCE Indirect Tax Determination and master its features. Help is installed with the application. All documents are posted on the [ONESOURCE Customer Center](https://tax.thomsonreuters.com/support/onesource/customer-center/). To locate documents specific to your application, enter the search term "Determination documentation."

| Determination Resources | |
| --- | --- |
| Resource | Description |
| Help | This Help system gives assistance within Determination. Use Help after Determination is installed and configured. |
| Installation Guide | This guide is intended for technical users and contains complete details about how to install and configure Determination. |
| Platform Support | This describes the combinations of operating systems, databases, and application servers on which Determination operates. |
| Product Support Lifecycle | This lists the end-of-life dates for products in the ONESOURCE Indirect Tax Suite. |
| Upgrade Guide | This guide describes the procedures for upgrading an instance of Determination and refers to configuration information in the Installation Guide. |
| Customization Guide | This guide is intended for technical users. It describes types of customization and shows examples. |
| Data Dictionary | This resource is intended for technical users. It contains a list of all the fields in the Determination database. |
| Sizing Guide | This guide is intended for technical users. It contains an architectural overview and discusses components, database, and server sizing. |

Still can't find what you're looking for? Try these additional resources:

| ONESOURCE Resources | |
| --- | --- |
| Resource | Description |
| ONESOURCE Customer Center  <https://tax.thomsonreuters.com/support/onesource/customer-center/> | Search for answers in the Knowledge Base, enter product support tickets, and track support ticket history for you and your organization. |
| Indirect Tax Customer Center  <https://customercenter.sabrix.com/> | Download ONESOURCE Indirect Tax software. |
| Other ONESOURCE Indirect Tax Products and Services  <https://tax.thomsonreuters.com/products/brands/onesource/indirect-tax/> | Browse descriptions of other ONESOURCE Indirect Tax products and services. |
| Documentation Feedback  [onesource.indirect.tax.fb@thomsonreuters.com](mailto:onesource.indirect.tax.fb@thomsonreuters.com) | Send feedback about ONESOURCE Indirect Tax documentation. |

Style Conventions

We use the following special formatting throughout this guide:

Bold text indicates most user interface elements, such as:

* Data you are expected to enter, such as in a text field
* Pages, buttons, tabs, and field names
* Dialog boxes, drop-down lists, selections within lists, and check box titles
* Windows
* Menu items

Italic text indicates the following:

* File and folder names
* Java classes, PL/SQL objects and executable files
* Document titles

CAPITAL text indicates keyboard commands, such as ENTER, or database components.

Courier text indicates command-line input/output.

<brackets> indicate user entry. For example, <host> indicates you should replace the text and angle brackets with your server name.

Book titles are shown in italics and sections within a book are in quotation marks, such as “Starting the Installation” in the ONESOURCE Indirect Tax Determination Installation Guide.

|  |
| --- |
| This pencil symbol indicates suggestions or additional information. |

|  |
| --- |
| This warning symbol indicates important text that you should review before proceeding. |

 This carriage return symbol indicates that a single line of code is divided into multiple lines so you can read it. If you copy and paste code with these symbols, be sure to keep the code before and after the carriage return on the same line.

1. /\* Code snippets have numbered lines with a gray background. \*/
   1. /\* Be cautious if you copy lines from the code snippets‑the line numbers are included! \*/

Prerequisites

Complete the following tasks before you attempt to install and configure ONESOURCE Indirect Tax Determination.

|  |
| --- |
| Review System Requirements (page 7)  Java (page 8)  Gathering Administrative Information (page 8)  Download the Software (page 8) |

Review System Requirements

ONESOURCE Determination has detailed requirements for the following:

* Computer hardware
* Operating system
* Database
* Application server/web container

To confirm you are using supported components, review platform support and product support lifecycle information listed in the [ONESOURCE Customer Center](https://tax.thomsonreuters.com/support/onesource/customer-center/).

Java

Determination requires an application server to host its various components, and the application server must use Oracle Java (1.8, 1.10 or 1.11) or Amazon Corretto (1.8.x or 11). Search the ONESOURCE Customer Center to find the platform support information specific to your product version. If your application server does not provide its own version of Java or Amazon Corretto, you must install it separately.

From Determination version 5.13.16.0 onwards we need to use Oracle Java 17 or Amazon Corretto Java 17

Gathering Administrative Information

To install the Determination software, you need to gather certain administrative information. Before you begin the installation, add your values to the table below:

| Resources | | |
| --- | --- | --- |
| Type | Where to Find | Your Values(s) |
| Customer Center credentials | Thomson Reuters  Customer Support |  |
| Name of Server hosting Microsoft SQL Server,  database port number, and instance name  (if applicable) | SQL Server DBA |  |
| Administration credentials for Microsoft SQL  Server (SA access) | SQL Server DBA |  |
| Name of server hosting JBoss and the port for the  Determination software (used to build the URL  for the Determination software) | Application Server  Administrator |  |

Download the Software

To download and install the software, get the ONESOURCEIDTDetermination\_513xx.zip file from the Indirect Tax Customer Center:

1. Open the Indirect Tax Customer Center at <https://customercenter.sabrix.com/>.
2. Log on using the username and password provided by Customer Support.
3. Find Determination in the Available Products list and verify that Installed Version is set to None.
4. Select Download for Determination.
5. Save the file.
6. Unzip the ONESOURCEIDTDetermination\_513xx.zip file.

Configuring Your Database

This guide covers the installation of Determination in Microsoft SQL Server. Once you have confirmed that you are using the correct database version, review the following:

Downloading the Microsoft JDBC Driver for SQL Server

The Microsoft JDBC Driver for SQL Server is used to enable communication with the Microsoft SQL Server database. The Determination software requires mssql-jdbc-7.0.0.jre10.jar from Microsoft SQL Server JDBC Driver 7.0.

The driver, along with supporting XA files, is available from Microsoft:

1. Open a browser and go to the [Microsoft](http://www.microsoft.com/) web site.
2. Enter in the search field Microsoft SQL Server JDBC Driver 7.0.
3. Select the article containing the JDBC download.
4. Click Download.
5. Save the driver to a temporary location on your hard drive.
6. Run the installation executable you downloaded to extract a copy of mssql-jdbc-7.0.0.jre10.jar.
7. Make a note of the location of mssql-jdbc-7.0.0.jre10.jar because you will use this later during the installation.

Preparing SQL Server for XA Transactions

Complete the following steps to ensure that your Determination installation handles XA transactions:

Distributed Transaction Coordinator

Follow the steps below to enable XA transactions in the Distributed Transaction Coordinator:

1. In Microsoft Windows, go to Control Panel > System and Security > Administrative Tools.
2. Double-click Component Services.
3. In the left pane, expand the nodes as follows: Component Services > Computers > My Computer > Distributed Transaction Coordinator.
4. Right-click Local DTC under Distributed Transaction Coordinator, and then select Properties.
5. Click the Security tab on the Local DTC Properties window.
6. Select the Enable XA Transactions check box, and then click OK.
7. Click Yes to restart the MSDTC service, and then click OK to confirm the restart.
8. Close Component Services.
9. Restart SQL Server to ensure that it synchronizes with the MSDTC changes.

Library File

The file sqljdbc\_xa.dll needs to be in your SQL Server directory structure. Before continuing to the following steps, ensure that you completed Downloading the Microsoft JDBC Driver for SQL Server (page 10).

1. Return to the extracted directory structure for the Microsoft JDBC Driver. Depending on your environment, go to one of the following:
   * 64-Bit: <extract\_directory>\Microsoft JDBC Driver 7.0 for SQL Server\mssql-jdbc-7.0.0.jre10.jar\enu\xa\x64
   * 32-Bit: <extract\_directory>\Microsoft JDBC Driver 7.0 for SQL Server\mssql-jdbc-7.0.0.jre10.jar\enu\xa\x86
2. Copy sqljdbc\_xa.dll into the SQL Server installation location: Microsoft SQL Server\<SQLServerInstanceBaseDirectory>\MSSQL\Binn.

SQL Server XA Script

Go to the following directory where you extracted the JDBC driver:<extract\_directory>\Microsoft JDBC Driver 7.0 for SQL Server\mssql-jdbc-7.0.0.jre10.jar\enu\xa.

Complete the following:

1. Execute the database script xa\_install.sql.
2. Restart SQL Server after the script finishes.

Database Creation

|  |
| --- |
| The database must be configured to use Mixed Mode Authentication. The scripts described in the following section will fail if you have not set up Mixed Mode Authentication. |

To create the required databases and database users as shown here:

1. Log on to the system hosting SQL Server.
2. Browse to and double-click on the createSQLServerDatabases.bat file you downloaded earlier.
3. Follow the prompts to enter the following information:

| Prompt | Description | Value |
| --- | --- | --- |
| Enter the name or IP address of the server hosting SQL Server: | The name of the system hosting SQL Server. |  |
| Enter the SQL Server instance name (leave blank for a default instance): | The instance name. |  |
| Use WINDOWS authentication during database creation [N]? | If you enter y, Windows authentication is used during database creation, and you skip the following two prompts. If you enter n (default), you will need to enter a username and password of a user with database creation permissions. |  |
| Enter the name of the user with System Administrator privileges that will create the databases [sa]: | A user with sufficient permissions to create databases (the sysadmin or dbcreate roles). The default is sa. |  |
| Enter the password for that user [sa]: | The password of the user specified above. |  |
| Enter the path to your preferred SQL Server datafile directory: | The full directory path to the datafile directory.   |  | | --- | | If the directory does not exist, an error message will appear. Either create the directory and try again, or enter a different path name and try again. | |  |
| Enter the name of the SQL Server tax database to be created [SBXTAX]: | A name for the Tax database. The default is SBXTAX. |  |
| Enter the name of the LOGIN user to associate with this database [sbxtax]: | A name for the login user associated with the database. |  |
| Enter the name of the user to associate with this database [sbxtax]: | The user that will be granted permissions on the Tax database. |  |
| Enter the database password for this user in the tax database [sbxtax]: | A password for the Tax database user. |  |
| Enter the name of the SQL Server audit database to be created [sbxaud]: | A name for the Audit database. The default is SBXAUD.   |  | | --- | | We do not recommend that you use the same name as your tax database; however, if you do, a single database to hold both Tax and Audit data is created. | |  |
| Enter the name of the LOGIN user to associate with this database [sbxaud]: | A name for the login user associated with the database. |  |
| Enter the name of the user to associate with this database [sbxaud]: | The user that will be granted permissions on the Audit database. |  |
| Enter the database password for this user in the audit database [sbxaud]: | A password for the Audit database user. |  |

1. Messages appear as the databases are created. Press ENTER when the scripts complete.

Configuring JBoss Enterprise Edition

**Note: From Determination version 5.13.16.0 onwards we need to use JBOSS 8.**

Before you proceed to the following tasks, ensure that you have a supported version of JBoss by reviewing platform support information listed in the [ONESOURCE Customer Center](https://tax.thomsonreuters.com/support/onesource/customer-center/).

|  |
| --- |
| Be sure you installed JBoss according to their instructions, and confirm that your JAVA\_HOME operating system environment variable is pointing to the Java installation directory. |

The following instructions are for a standalone installation of JBoss Enterprise. If you have a domain, please consult your JBoss documentation.

When JBoss is installed and ready for Determination configuration, complete the following:

|  |  |  |
| --- | --- | --- |
| Modifying the Start-Up Parameters (page 17)   |  | | --- | | Unix Example (page 18)  Microsoft Windows Example (page 18) |   Creating Data Sources (page 19)   |  | | --- | | Named Instance (page 19)  Default Instance (page 21) |   Controlling HTTP Parameters (page 24)  JDBC Driver (page 24)  Deploying the Application (page 25) |

Modifying the Start-Up Parameters

Locate standalone.conf (Unix) or standalone.conf.bat (Microsoft Windows) in the bin directory of your <JBossHomeDirectory>, and then open it in a text editor. The table below contains options and values in the file that you will change or add. See the examples for your operating system below.

| JAVA Option | Value | Description |
| --- | --- | --- |
| -Xms | 2048m | Increase this starting value to at least this amount.   |  | | --- | | We recommend allocating at least 6144m. | |
| -Xmx | 2048m | Increase this maximum value to at least this amount.   |  | | --- | | We recommend allocating at least 6144m. | |
| -DBASE\_SABRIX\_ DIRECTORY= | Directory path for logging | If you plan to run Determination in several instances of the application server on the same host, add this parameter to ensure that each instance logs to its own directory. If you are only running one instance of the application server, you can skip this and set the parameter on the Configuration page of Determination (see the Help for further details).  Insert this following the other options, and then replace <LoggingDirectory> with a directory path from your environment.  UNIX:  JAVA\_OPTS="$JAVA\_OPTS -DBASE\_SABRIX \_DIRECTORY=<LoggingDirectory>"  MICROSOFT WINDOWS:  set "JAVA\_OPTS=%JAVA\_OPTS% -DBASE\_SABRIX\_DIRECTORY=<LoggingDirectory>"   |  | | --- | | If you are using Microsoft Windows, use escape characters for the directory backslashes (for example, “c:\\temp\\”). | |

Unix Example

Locate the section in standalone.conf that begins with the following:

1. if [ "x$JAVA\_OPTS" = "x" ]; then

Change or add the values in bold text below. This example is for the Java HotSpot VM.

1. if [ "x$JAVA\_OPTS" = "x" ]; then
   1. JAVA\_OPTS="-Xms2048m -Xmx2048m -Djava.net  
      .preferIPv4Stack=true"
   2. JAVA\_OPTS="$JAVA\_OPTS -Djboss.modules.system.pkgs=$JBOSS\_MODUL  
      ES\_SYSTEM\_PKGS -Djava.awt.headless=true"
   3. JAVA\_OPTS="$JAVA\_OPTS -Djboss.modules.policy-permissions=true"
2. else

Microsoft Windows Example

Locate the section in standalone.conf.bat that begins with the following:

1. rem # JVM memory allocation pool parameters - modify as appropriate.

Using the table of Java options as a guide, insert your values into the section shown below. This example is for the Java HotSpot VM.

1. rem # JVM memory allocation pool parameters - modify as appropriate.
2. set "JAVA\_OPTS=-Xms2048m -Xmx2048m"

Creating Data Sources

Locate the file standalone.xml in the configuration directory under standalone, and then open it in a text editor. Follow the steps below for your type of Microsoft SQL Server instance:

* Named Instance (page 19)
* Default Instance (page 21)

Named Instance

You need to insert our data source snippet into standalone.xml. The snippet sections appear below, but you should open a text version that is available from the Knowledge Base:

1. Go to the following: [ONESOURCE Customer Center](https://tax.thomsonreuters.com/support/onesource/indirect-tax/?search=000023961).
2. Open the file jboss-sqlserver-named-xa-ds\_example.txt.
3. Insert the entire data source snippet between the <datasources> elements in standalone.xml. Follow the steps in the sections below for editing values in the snippet.
   * Tax Data Source: Change the values in the snippet that correspond to the elements in the table below. The sample snippet that follows the table has bold entries highlighting the values to change.

| Tax Data Source (jdbc/TaxDataSource) | |
| --- | --- |
| Element | Description |
| <driver>jdbc</driver> | Replace jdbc with the name of the JDBC driver (for example, mssql-jdbc-7.0.0.jre10.jar). |
| <xa-datasource-property name="InstanceName"> instance name</xa-datasource-property> | Replace instance name with the name of the SQL Server instance. |
| <xa-datasource-property name="User"> user name</xa-datasource-property> | Replace user name with the Tax database user name. |
| <xa-datasource-property name="Password"> password</xa-datasource-property> | Replace password with the password for the Tax database user. |

* + 1. <xa-datasource jndi-name="java:/jdbc/TaxDataSource" pool-name="Ta  
       xDataSourceDS" enabled="true" use-java-context="true">
       1. <driver>jdbc</driver>
       2. <xa-datasource-class>
          1. com.microsoft.sqlserver.jdbc.SQLServerXADataSource
       3. </xa-datasource-class>
       4. <xa-datasource-property name="InstanceName">
          1. instance name
       5. </xa-datasource-property>
       6. <xa-datasource-property name="User">
          1. user name
       7. </xa-datasource-property>
       8. <xa-datasource-property name="Password">
          1. password
       9. </xa-datasource-property>
       10. <xa-pool>
           1. <min-pool-size>16</min-pool-size>

<max-pool-size>64</max-pool-size>

<is-same-rm-override>false</is-same-rm-override>

<no-tx-separate-pools>true</no-tx-separate-pools>

* + - 1. </xa-pool>
      2. <validation>
         1. <valid-connection-checker class-name="org.jboss.jca.adapte  
            rs.jdbc.extensions.mssql.MSSQLValidConnectionChecker" />
      3. </validation>
    1. </xa-datasource>

**Note:**

1. From Determination 5.13.16.0 version we need to add ‘***encrypt=true***’ and ‘***trustServerCertificate=true***’ parameters as below:
2. ***<xa-datasource-property name="URL">***
3. ***jdbc:sqlserver://host:port;databaseName=name;encrypt=true;trustServerCertificate=true***
4. ***</xa-datasource-property>***
5. mssql-jdbc-11.2.0.jre17.jar and mssql-jdbc-12.8.1.jre11.jar are recommended for Determination 5.13.16.0 version

**Example: *<driver>mssql-jdbc-11.2.0.jre17.jar</driver>***

* + Audit Data Source: Change the values in the snippet that correspond to the elements in the table below. The sample snippet that follows the table has bold entries highlighting the values to change.

| Audit Data Source (jdbc/AuditDataSource) | |
| --- | --- |
| Element | Description |
| <driver>jdbc</driver> | Replace jdbc with the name of the JDBC driver (for example, mssql-jdbc-7.0.0.jre10.jar). |
| <xa-datasource-property name="InstanceName"> instance name</xa-datasource-property> | Replace instance name with the name of the SQL Server instance. |
| <xa-datasource-property name="User"> user name</xa-datasource-property> | Replace user name with the Audit database user name. |
| <xa-datasource-property name="Password"> password</xa-datasource-property> | Replace password with the password for the Audit database user. |

* + 1. <xa-datasource jndi-name="java:/jdbc/AuditDataSource" pool-name="  
       AuditSourceDS" enabled="true" use-java-context="true">
       1. <driver>jdbc</driver>
       2. <xa-datasource-class>
          1. com.microsoft.sqlserver.jdbc.SQLServerXADataSource
       3. </xa-datasource-class>
       4. <xa-datasource-property name="InstanceName">
          1. instance name
       5. </xa-datasource-property>
       6. <xa-datasource-property name="User">
          1. user name
       7. </xa-datasource-property>
       8. <xa-datasource-property name="Password">
          1. password
       9. </xa-datasource-property>
       10. <xa-pool>
           1. <min-pool-size>16</min-pool-size>

<max-pool-size>64</max-pool-size>

<is-same-rm-override>false</is-same-rm-override>

<no-tx-separate-pools>true</no-tx-separate-pools>

* + - 1. </xa-pool>
      2. <validation>
         1. <valid-connection-checker class-name="org.jboss.jca.adapte  
            rs.jdbc.extensions.mssql.MSSQLValidConnectionChecker" />
      3. </validation>

</xa-datasource>

**Note:**

1. From Determination 5.13.16.0 version we need to add ‘encrypt=true’ and ‘trustServerCertificate=true’ parameters as below:

*<xa-datasource-property name="URL">*

*jdbc:sqlserver://host:port;databaseName=name;encrypt=true;trustServerCertificate=true*

*</xa-datasource-property>*

1. mssql-jdbc-11.2.0.jre17.jar and mssql-jdbc-12.8.1.jre11.jar are recommended for Determination 5.13.16.0 version
   1. Example: *<driver>mssql-jdbc-11.2.0.jre17.jar</driver>*
2. “io.undertow.server.RequestTooBigException: UT000020: Connection terminated as request was larger than 10485760”

If you come across the above error when importing content, please add the below configuration in standalone.xml file:

Locate the http-listener under the undertow subsystem and add/modify the max-post-size attribute

*<subsystem xmlns="urn:jboss:domain:undertow:14.0">  
 <buffer-cache name="default"/>  
 <server name="default-server">  
 <http-listener name="default" socket-binding="http" redirect-socket="https" max-post-size="1073741824"/>*

*<http-listener name="ajp" socket-binding="ajp" max-post-size="1073741824"/>  
</server>  
</subsystem>*

Default Instance

You need to insert our data source snippet into standalone.xml. The snippet sections appear below, but you should open a text version that is available from the Knowledge Base:

1. Go to the following: [ONESOURCE Customer Center](https://tax.thomsonreuters.com/support/onesource/indirect-tax/?search=000023961).
2. Open the file jboss-sqlserver-default-xa-ds\_example.txt.
3. Insert the entire data source snippet between the <datasources> elements in standalone.xml. Follow the steps in the sections below for editing values in the snippet.
   * Tax Data Source: Change the values in the snippet that correspond to the elements in the table below. The sample snippet that follows the table has bold entries highlighting the values to change.

| Tax Data Source (jdbc/TaxDataSource) | |
| --- | --- |
| Element | Description |
| <driver>jdbc</driver> | Replace jdbc with the name of the JDBC driver (for example, mssql-jdbc-7.0.0.jre10.jar). |
| <xa-datasource-property name="ServerName"> host</xa-datasource-property> | Replace host with the name of the server hosting the database. |
| <xa-datasource-property name="PortNumber"> port </xa-datasource-property> | Replace port with the number of the database port. |
| <xa-datasource-property name="User"> user name</xa-datasource-property> | Replace user name with the Tax database user name. |
| <xa-datasource-property name="Password"> password</xa-datasource-property> | Replace password with the password for the Tax database user. |

* + 1. <xa-datasource jndi-name="java:/jdbc/TaxDataSource" pool-name="Ta  
       xDataSourceDS" enabled="true" use-java-context="true">
       1. <driver>jdbc</driver>
       2. <xa-datasource-class>
          1. com.microsoft.sqlserver.jdbc.SQLServerXADataSource
       3. </xa-datasource-class>
       4. <xa-datasource-property name="ServerName">
          1. host
       5. </xa-datasource-property>
       6. <xa-datasource-property name="PortNumber">
          1. port
       7. </xa-datasource-property>
       8. <xa-datasource-property name="User">
          1. user name
       9. </xa-datasource-property>
       10. <xa-datasource-property name="Password">
           1. password
       11. </xa-datasource-property>
       12. <xa-pool>
           1. <min-pool-size>16</min-pool-size>

<max-pool-size>64</max-pool-size>

<is-same-rm-override>false</is-same-rm-override>

<no-tx-separate-pools>true</no-tx-separate-pools>

* + - 1. </xa-pool>
      2. <validation>
         1. <valid-connection-checker class-name="org.jboss.jca.adapte  
            rs.jdbc.extensions.mssql.MSSQLValidConnectionChecker" />
      3. </validation>
    1. </xa-datasource>
  + Audit Data Source: Change the values in the snippet that correspond to the elements in the table below. The sample snippet that follows the table has bold entries highlighting the values to change.

| Audit Data Source (jdbc/AuditDataSource) | |
| --- | --- |
| Element | Description |
| <driver>jdbc</driver> | Replace jdbc with the name of the JDBC driver (for example, mssql-jdbc-7.0.0.jre10.jar). |
| <xa-datasource-property name="ServerName"> host</xa-datasource-property> | Replace host with the name of the server hosting the database. |
| <xa-datasource-property name="PortNumber"> port </xa-datasource-property> | Replace port with the number of the database port. |
| <xa-datasource-property name="User"> user name</xa-datasource-property> | Replace user name with the Audit database user name. |
| <xa-datasource-property name="Password"> password</xa-datasource-property> | Replace password with the password for the Audit database user. |

* + 1. <xa-datasource jndi-name="java:/jdbc/AuditDataSource" pool-name="  
       AuditSourceDS" enabled="true" use-java-context="true">
       1. <driver>jdbc</driver>
       2. <xa-datasource-class>
          1. com.microsoft.sqlserver.jdbc.SQLServerXADataSource
       3. </xa-datasource-class>
       4. <xa-datasource-property name="ServerName">
          1. host
       5. </xa-datasource-property>
       6. <xa-datasource-property name="PortNumber">
          1. port
       7. </xa-datasource-property>
       8. <xa-datasource-property name="User">
          1. user name
       9. </xa-datasource-property>
       10. <xa-datasource-property name="Password">
           1. password
       11. </xa-datasource-property>
       12. <xa-pool>
           1. <min-pool-size>16</min-pool-size>

<max-pool-size>64</max-pool-size>

<is-same-rm-override>false</is-same-rm-override>

<no-tx-separate-pools>true</no-tx-separate-pools>

* + - 1. </xa-pool>
      2. <validation>
         1. <valid-connection-checker class-name="org.jboss.jca.adapte  
            rs.jdbc.extensions.mssql.MSSQLValidConnectionChecker" />
      3. </validation>
    1. </xa-datasource>

When you finish creating the data sources, continue to the next section to make an additional change in standalone.xml.

Controlling HTTP Parameters

Continue editing standalone.xml by adding a configuration that controls the number of HTTP parameters:

1. Locate the </extensions> tag in standalone.xml.
2. Below the </extensions> tag, insert the following:
   1. <system-properties>
      1. <property name="org.apache.tomcat.util.http.Parameters.MAX\_COUNT" value="10000"/>
   2. </system-properties>
3. Save and close the file.

JDBC Driver

Determination requires the latest JDBC driver version for your database. Locate the SQL Server JDBC driver mssql-jdbc-7.0.0.jre10.jar (see Downloading the Microsoft JDBC Driver for SQL Server (page 10)), and copy it into the JBoss deployments directory under standalone.

**Note: mssql-jdbc-11.2.0.jre17.jar and mssql-jdbc-12.8.1.jre11.jar are recommended for Determination 5.13.16.0 version**

Deploying the Application

The Determination application is contained in the sabrix.ear file, which is in the root directory of the Determination software. Copy this file to the deployments directory under standalone.

Start JBoss to deploy the application.

Duplicate Users

Determination does not support duplicate user name entries in the database. During the installation process, the installer checks for duplicate user names. When duplicate users are found, the installer appends "\_DET513x\_[Sequential Number]" to those entries. For example, two entries for SMITH become SMITH\_DET513x\_1 and SMITH\_DET513x\_2.

If found, the installer displays a list of duplicate user names and the new replacement names.

5 duplicate user names found. Renamed the inactive duplicate data. | User Name | Renamed User Name | | BobSmith | BobSmith\_DET513x\_1 | | BobSmith | BobSmith\_DET513x\_2 | | BobSmith | BobSmith\_DET513x\_3 | | MaryClark | MaryClark\_DET513x\_4 | | MaryClark | MaryClark\_DET513x\_5|

If the installer cannot append a user name, the installation fails. Duplicate user names that cannot be resolved are left in the database and must be modified manually before completing the installation. A message similar to the following displays:

Aborting installation. 11 duplicate user names found with more than 60 characters after appending DET513x and maximum duplicate user count. Please remove or rename these inactive duplicate user manually. | User Name | | MarkHam | |MarkHam | |MarkHam | |MarkHam | |MarkHam | |MaryHart | |MaryHart | |MaryHart | |TomSmith123456 | |TomSmith123456 | |TomSmith123456 |

Running the Implementer

The Implementer is the installation program for Determination and is the process you run after configuring your application server.

Starting the Installation

Open a browser and complete the following steps:

1. Go to the Determination installation URL (http://<host>:<port>/sabrix/install).
2. Enter the following user name and password: dba/password.
3. The Implementer page displays a summary of your environment.



1. Click Run to start the installation.

Checking the Installation Results

When the process runs, it records the results in your browser window and in a log file:

* Browser Window: You should see the following message at the end of the screen output: "Implementation completed successfully!" If you receive this message, you can continue with the remaining sections in this guide. However, if you see the following message, you should contact Customer Support: "Problem(s) encountered during implementation! Check the installation messages for more information."
* Log File: If you want more detailed information about installation messages, review the sabrix.log file. See "Log Files" in the ONESOURCE Indirect Tax Determination User Guide for instructions about finding the log.

|  |
| --- |
| If you review the log immediately after installing Determination, you can ignore any errors that appear from the beginning of the log until the entry that ends with "CleanUpRolesForCoreUsers." Any errors that appear after this log entry may be significant, and you should contact Customer Support. |

Installing Tax Content

This is a two-step process that is composed of importing the content and associating that content with a Determination company.

Importing Content into Determination

You downloaded the Content file(s) at the beginning of this installation process. Now, you will import the files into Determination using the Import/Export feature.

|  |
| --- |
| Do not unzip your Content files. You will load these into Determination as zipped files. |

1. Go to the Determination URL (http://<host>:<port>/sabrix/).
2. Enter the following user name and password: dba/password.

|  |
| --- |
| To protect your system, be sure to change the password for the dba user once you have completed the initial installation. See Help for details about how to change the password. |

1. Go to Menu > System > Import/Export.
2. Click the Import tab.
3. Browse to the directory containing the first downloaded file.
4. Enter the path and file name, or browse to it, and then click OK.
5. Click Import.
6. The Import/Export Wizard displays information about the file to be imported. Click Next.
7. Click Next on each page until the import starts.
8. Once the import has started, close this status window - even though the import is not finished. The import will continue, and you can go to the History tab periodically to check the status. Click Refresh on the History tab to update the display.
9. Repeat steps 3 through 9 for the other Tax Data Provider(s), as appropriate.

|  |
| --- |
| Once you install master Content, you will need to perform monthly Content updates to keep your data current. You can automate all or part of the update process. For more information, see the "Import/Export" topic in Help. |

Creating and Configuring a Company

To use the new Content, you need to associate it with a company in the Determination software.

1. Log on to Determination as the dba user.
2. Go to Menu > System > Companies.
3. Select Add from the Actions menu to create a company.
4. On the Edit tab, enter basic company information, and then click Submit.
5. Click the Tax Preferences tab.
6. In the Data Providers section, select values for your Tax Data Provider, and then click Submit.

You now have a basic Determination company to use when you test the installation in the following section. Once you successfully complete the testing, you can make additional company configurations (see the Help topic "Working with Companies").

Testing Your Installation

After installing Determination and creating a basic company, test the installation by creating a test transaction.

1. Log on to Determination as the dba user.
2. Select the company you previously created from the Company selector in the upper right corner of the page.
3. Select Menu > Workbench.
4. Enter scenario information for a test transaction on the Main tab of the workbench. For example, enter the following:
   * Scenario: 1
   * Invoice Number: 1
   * Company Role: Seller
   * Currency: United States Dollar
   * Quantity: 1
   * Gross Amt: 1000
5. Click the Locations tab.
6. Click Ship From, and then enter the following:
   * Ship From Country: US
   * Ship From State: WA
   * Ship From County: KING
   * Ship From City: SEATTLE
   * Ship From Zip: 98101
7. Click Ship To, and then enter the following:
   * Ship To Country: US
   * Ship To State: CA
   * Ship To County: ALAMEDA
   * Ship To City: OAKLAND
   * Ship To Zip: 94601
8. Click Submit. You should see an effective rate and tax amount for your transaction. Click Results to review the processing of the invoice including tax breakdowns per jurisdiction.
9. Select Input XML or Output XML from the Actions menu to view the XML that was sent to and returned by the Determination software. These tools can be helpful if you need to debug the integration software that connects your financial system with Determination. See the Programmer Guide for more details.

Clustering

|  |
| --- |
| Skip this section if you are not installing in a clustered environment. |

Starting from Determination version 5.13.4.3, we recommend using Time Eviction Caching (Section below) instead of Clustering.

Due to upgrade of libraries in version 5.13.4.3, caching features are not supported.

* In the Running Implementer section above, when Run button is clicked installer will not complete. As a work around, remove the node from cluster and then run the installer. After installer is complete, move node back to cluster.
* In System > Diagnostics > Cache View, caching entities are not displayed, and cache cannot be reset using the Reset Cache button. In case of any cache corruption please do the rolling restart of all nodes.

Determination supports TCP and UDP cluster communication to establish initial cluster membership, as well as to keep membership information current.

Review the following sections to set up clustering:

|  |
| --- |
| Prerequisites (page 38)  Determination Parameters (page 41)  Module File (page 42)  Standalone File (page 42)  Properties File (page 43)  Cluster XML File (page 60)  Cluster Test (page 61) |

Prerequisites

Review the following before you begin configuring the cluster.

* Tax Content: Make sure your tax content is loaded into Determination before you set up the cluster.
* JDBC URLs: All cluster members must have identical JDBC URLs. For example, although the following two URLs point to the same host and database, clustering would not work because one JDBC URL uses the IP address and the other uses the fully qualified domain name for the host of the database:

|  |
| --- |
| jdbc:oracle:thin:@pdxsasdv062.corp.acme.com:1521/service  jdbc:oracle:thin:@10.198.221.48:1521/service |

* Internet Protocol Versions: Some application servers default to the IPv6 stack while others use the IPv4 stack. When you enter IP addresses during the cluster configuration, be sure to adhere to the format appropriate for the internet protocol version. If your cluster involves communication between an IPv4 and an IPv6 node, set the following property in the start-up file of the application server:
  1. -Djava.net.preferIPv4Stack=true
* Firewalls: Make sure firewalls are not blocking communications between Determination nodes.
* Multicast: If you are using multicast, confirm that the Determination nodes are on the same subnet, and that the network allows multicast packets to be transmitted.
* Multihomed Host: If there is a multihomed Ethernet configuration, force the use of a particular IP by setting the jgroups.bind\_address system property to the appropriate NIC IP address. For example, if the desired interface has an IP of 10.198.221.48, set the following Java system variable: -Djgroups.bind\_address=10.198.221.48.

|  |
| --- |
| You can set jgroups.bind\_address where the JVM parameters are set. Here is a configuration file example:   * 1. -Xms4096m –Xmx4096m -Djava.awt.headless=true -Djgroups.bind\_address=10.198.221.48 |

Determination Parameters

Clustering requires certain parameters in Determination.

1. Log on to Determination.
2. Go to Menu > System > Configuration.
3. Click Actions > Add.
4. Enter the parameters and values according to the table below.

| Parameter | Value | Description |
| --- | --- | --- |
| ENABLE\_SERVER\_  COMMUNICATION | Y | This parameter is required to enable all types of clustering. |
| CLUSTER\_CHANNEL\_  PROPERTIES\_FILE | udp-cluster.xml  or  tcp-tcpping-  cluster.xml | |  | | --- | | This parameter is not allowed if you are using UDP with default ports and IP addresses. |   If you are using UDP with non-default settings, insert the value udp-cluster.xml.  If you are using TCP, insert the value tcp-tcpping-cluster.xml. This parameter must match the parameter determination.infinispan.jgroups. configuration\_file in the determination\_application\_ overrides.properties file. See Properties File (page 43). |
| SABRIX\_MASTER\_NODE |  | |  | | --- | | If this parameter exists, remove it to set up clustering. | |
| MULTICAST\_ADDRESS |  | |  | | --- | | If this parameter exists, remove it to set up clustering. | |
| MULTICAST\_PORT |  | |  | | --- | | If this parameter exists, remove it to set up clustering. | |

1. Click Submit.

Module File

Complete the following:

1. Stop JBoss.
2. Create a new directory in JBoss:

|  |
| --- |
| <JBossHomeDirectory>/modules/com/thomsonreuters/config/main |

1. In this new directory, create a file called module.xml, and insert the following lines:
   1. <module xmlns="urn:jboss:module:1.1" name="com.thomsonreuters  
      .config">
      1. <resources>
         1. <resource-root path="."/>
      2. </resources>
      3. <dependencies>
         1. <module name="javaee.api" />
      4. </dependencies>
   2. </module>
2. Save and close module.xml.
3. Repeat these steps on each JBoss node.

Standalone File

Complete the following:

1. Go to the following directory:

|  |
| --- |
| <JBossHomeDirectory>/standalone/configuration |

1. Open standalone.xml in a text editor.
2. Locate the following section:

|  |
| --- |
| <subsystem xmlns="urn:jboss:domain:ee:1.2"> |

1. Insert the following snippet as a child of the subsystem element above:
   1. <global-modules>
      1. <module name="com.thomsonreuters.config" slot="main" />
   2. </global-modules>
2. Save and close standalone.xml.
3. Repeat these steps on each JBoss node.

Properties File

Determination requires a properties file for clustering, and the contents of the file depends on whether you are using UDP or TCP. Based on your network environment, follow the steps in one of the next three sections:

UDP Multicast with Default Settings

This section explains how to set up UDP multicast with the following defaults:

* Multicast Address = 224.0.0.1
* Multicast Port = 5665

|  |
| --- |
| If you have multiple clusters of Determination on the same subnet (for example, Production, Development, and QA), skip to the next section UDP Multicast with Non-Default IP and Port Number (page 47). That approach prevents the clusters from interfering with each other. |

Complete the following:

1. Go to the directory you created previously:

|  |
| --- |
| <JBossHomeDirectory>/modules/com/thomsonreuters/config/main |

1. Create a new file called determination\_application\_overrides.properties, and then insert the following lines:
   1. determination.infinispan.cache.configuration=infinispan.xml
   2. determination.infinispan.jgroups.cluster\_name=ClusterName
2. Replace ClusterName in the second line of the snippet with a unique name for your cache cluster.

|  |
| --- |
| Be sure to use the same cluster name in the determination\_application\_overrides.properties file on each node and do not include any spaces in your cluster name. |

1. Save and close the file determination\_application\_overrides.properties.
2. Restart JBoss.
3. Repeat these steps on each JBoss node.

|  |
| --- |
| To simplify the process, you can copy the file determination\_application\_overrides.properties to each node. |

1. Skip to Cluster Test (page 61).

UDP Multicast with Non-Default IP and Port Number

This configuration changes the default UDP multicast address and port in cases when default values are not appropriate.

|  |
| --- |
| Ensure that you created the Determination parameter CLUSTER\_CHANNEL\_PROPERTIES\_FILE before completing these steps. See Determination Parameters (page 41). |

Complete the following:

1. Go to the directory you created previously:

|  |
| --- |
| <JBossHomeDirectory>/modules/com/thomsonreuters/config/main |

1. Create a file called determination\_application\_overrides.properties, and then insert the following lines:
   1. determination.infinispan.cache.configuration=infinispan.xml
   2. determination.infinispan.jgroups.cluster\_name=ClusterName
   3. determination.infinispan.jgroups.configuration\_file= udp-clust  
      er.xml
   4. determination.infinispan.jgroups.udp.mcast\_addr=224.1.2.3
   5. determination.infinispan.jgroups.udp.mcast\_port=16655
2. Replace ClusterName in the second line of the snippet with a unique name for your cache cluster.

|  |
| --- |
| Be sure to use the same cluster name in the determination\_application\_overrides.properties file on each node, and do not include any spaces in your cluster name. |

1. Change the numbers for mcast\_addr and mcast\_port to match your multicast address and port. Be sure to use valid ranges (Addr: 224.0.1.0 to 238.255.255.255).
2. Save and close the file determination\_application\_overrides.properties.
3. Repeat these steps on each JBoss node.

|  |
| --- |
| To simplify the process, you can copy the file determination\_application\_overrides.properties to each node. |

1. Skip to Cluster XML File (page 60).

TCP Transport with Static List of Nodes (TCPPING)

In this configuration, a static list of cluster member addresses is set on each node so each member knows where the other cluster members are located.

|  |
| --- |
| Ensure that you created the Determination parameter CLUSTER\_CHANNEL\_PROPERTIES\_FILE before completing these steps. See Determination Parameters (page 41). |

Complete the following:

1. Go to the directory you created previously:

|  |
| --- |
| <JBossHomeDirectory>/modules/com/thomsonreuters/config/main |

1. Create a file called determination\_application\_overrides.properties, and then insert the following lines:
   1. determination.infinispan.cache.configuration=infinispan.xml
   2. determination.infinispan.jgroups.cluster\_name=ClusterName
   3. determination.infinispan.jgroups.configuration\_file=tcp-tcpp  
      ing-cluster.xml
   4. determination.infinispan.jgroups.tcp.address=10.198.221.48
   5. determination.infinispan.jgroups.tcpping.initial\_hosts=10.198  
      .221.50[7800],10.198.221.48[7800]
   6. determination.infinispan.jgroups.tcp.port=7800
2. Replace ClusterName in the second line of the snippet with a unique name for your cache cluster.

|  |
| --- |
| Be sure to use the same cluster name in the determination\_application\_overrides.properties file on each node, and do not include any spaces in your cluster name. |

1. Set tcp.address to match the node’s IP address.
2. Set tcpping.initial\_hosts to list the addresses of all nodes in the cluster. The value of tcpping.initial\_hosts is the same on each node, but tcp.address is unique for each node.

|  |
| --- |
| [7800] refers to the port on which each cluster instance will start the initial membership lookup. If necessary, you can change the port ranges by editing tcp-tcpping-cluster.xml (see Cluster XML File (page 60)). Change the two values of 7800 specified in the file to some other valid and available port to complete this change. |

1. To change the default port from 7800, set tcp.port to the new port value.

|  |
| --- |
| If you use the default port of 7800, do not include this entry in the properties file.  If you specify the tcp.port property, the port number used for this property should match the port number used in the tcpping.initial\_hosts property. |

1. Save and close the file determination\_application\_overrides.properties.
2. Repeat the process for all nodes in the cluster, making all specified values identical except tcp.address, which should be unique per node.

|  |
| --- |
| In this configuration, when a new cluster member is introduced or an existing one is removed, the list must be updated on each node. An update requires cluster nodes to be restarted so new changes are picked up. You add to the list or subtract from the list by adding or removing additional IP addresses in determination\_application\_overrides.properties at this line:   1. determination.infinispan.jgroups.tcpping.initial\_hosts= 10.198.221.50[7800],10.198.221.48[7800] |

Cluster XML File

|  |  |
| --- | --- |
| |  | | --- | | This step does not apply to UDP clusters that use default ports and IP addresses. | |

Complete the following to set up the cluster XML file:

1. Go to the clustering directory where you unzipped ONESOURCEIDTDetermination\_513xx.zip (see Download the Software (page 8)).
2. Use the table below to determine which XML file from the clustering directory is appropriate for your environment.

| File Name | Cluster Type |
| --- | --- |
| udp-cluster.xml | UDP   |  | | --- | | This is only for UDP clusters that use custom ports and IP addresses. | |
| tcp-tcpping-cluster.xml | TCP |

1. Copy the appropriate XML file to the same directory as determination\_application\_overrides.properties:

<JBossHomeDirectory>/modules/com/thomsonreuters/config/main

1. Restart JBoss.
2. Repeat these steps on each node.

Cluster Test

Complete the following tests to confirm that clustering is configured correctly.

|  |
| --- |
| If the tests fail, please double-check your settings before contacting Customer Support. |

Verify that cluster members can send and receive messages:

1. After all cluster nodes are started, log on to Determination on one node and go to Menu > System > Diagnostics > Cluster View. The page should list all nodes in the cluster.
2. Click Actions > Send Test Message.
3. Log on to each of the other cluster members and go to Menu > System > Diagnostics > Cluster View. Confirm that each node received the message (you may need to click Actions > Refresh).
4. Repeat these steps from each node to ensure each node can send and receive messages.

|  |
| --- |
| Skip this below section for versions starting from 5.13.4.3. |

Verify that resetting the cache on one node resets all caches in the cluster:

1. Populate the Determination cache by clicking Menu > System > Companies on each node.
2. On each of the cluster nodes, go to Menu > System > Diagnostics > Cache View.
3. Enter ALL in the Table Name or 'ALL' field then click Search. The cache content is displayed on each node.
4. On any cluster node, click Actions > Reset Cache, and then perform another search for ALL on the other nodes. If you have not accessed any other pages, the list should be empty (no entity has been cached).

Time Eviction Cache

Complete the following:

1. Stop JBoss.
2. Go to the clustering directory where you unzipped 513xx (see Download the Software (page 8)).
3. Copy the infinispan-timed-cache.xml file to the directory - <JBossHomeDirectory>/modules/com/thomsonreuters/config/main

|  |
| --- |
| The expiration lifespan="600000” value determines the cache retention time in milliseconds. Change this value as per appropriate time that caching needs to be retained. |

1. Go to the directory you created previously:

<JBossHomeDirectory>/modules/com/thomsonreuters/config/main

1. Create a new file called determination\_application\_overrides.properties, and then insert the following lines:

determination.infinispan.cache.configuration=infinispan-timed-cache.xml

1. Save and close the file determination\_application\_overrides.properties.
2. Restart JBoss.
3. Repeat these steps on each JBoss node.

Performing Additional Configurations

Once you verify that ONESOURCE Indirect Tax Determination is running, you may need to complete some post-installation tasks:

* Connecting your Determination instance to your business source system using integration software. Contact your implementation partner for assistance.
* Securing your Determination installation. See the Determination Help topic "Security Measures."
* Modifying Configuration parameters to reflect your hardware, network, and security environment. You can also modify those parameters that affect auditing, tax calculations, and reporting. See the Help topic "Configuration."
* Setting up users to access Determination. This might include tax professionals, tax clerks, and Determination administrators. See the Help topic "Edit Users."
* Completing the Company configuration you began in the section "Creating and Configuring a Determination Company." See the Help topic "Working With Companies."
* Installing and configuring ONESOURCE Indirect Tax Reporting. See the Help topic "Running Reports."