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| ONESOURCE Indirect Tax Determination |

Installation Guide

Oracle Database and Tomcat

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 | January 26, 2022 | Updated the supported Java versions to include version 1.11. |
| 3 | March 24, 2022 | Time Eviction Cache support. |
| 4 | April 6, 2022 | Added steps for encrypting Tomcat data source credentials using the AES-256 standard. |
| 5 | September 9, 2022 | Updates to Clustering and Time Eviction Caching process. |
| 6 | January 17, 2022 | Added JPA and JTA information.  Updated ONESOURCE Customer Center links to Indirect Tax Help and Support. This includes direct links to knowledge articles. |
| 7 | August 3, 2023 | Added the JPA property definitions and SQL server reference.  Added the reporting instructions for upgrading to 5.13. |
| 8 | June 30, 2025 | Java17 Upgrade  JTA doesn’t support 5.13.16.0  JPA is default for 5.13.16.0 |

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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 in [Indirect Tax Help and Support](https://www.thomsonreuters.com/en-us/help/onesource-indirect-tax.html). 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 |
| Indirect Tax Help and Support <https://www.thomsonreuters.com/en-us/help/onesource-indirect-tax.html> | 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/en/corporation-solutions/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 14)  Java (page 15)  Gathering Administrative Information (page 15)  Download the Software (page 15) |

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 [Indirect Tax Help and Support](https://www.thomsonreuters.com/en-us/help/onesource-indirect-tax.html).

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 [Indirect Tax Help and Support](https://www.thomsonreuters.com/en-us/help/onesource-indirect-tax.html) 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 |  |
| Oracle RDBMS server name and  service name | Oracle DBA |  |
| Administration credentials for  Oracle database | Oracle DBA |  |
| Name of server hosting Tomcat and the  port 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 the Oracle RDBMS. Once you have confirmed that you are using the correct database version for this release of Determination, review the following:

NOTE: From Determination version 5.13.16.0 onwards we need to use Oracle 19C.

Database Initialization Parameters

Set the appropriate database initialization parameters for Determination. Contact Oracle if you need assistance setting these in your environment.

|  |
| --- |
| Set the Oracle parameter OPEN\_CURSORS to 3000 to ensure the Determination installation completes successfully. |

Database Character Set

Configure the database to use a UTF8-compatible database character set. If you use the AL16UTF16 character set (default), multi-byte character handling performance will be optimized. You need to either install or upgrade the database to meet this requirement.

Oracle Tablespaces and Users

Oracle tablespaces and users must be created before you install Determination. You can use the .sql scripts provided in the downloaded .zip file to perform this task.

For production environments, you should create separate tablespaces to contain tax and audit data (SBXTAX and SBXAUD). If you accept the setup script defaults, these tablespaces are created automatically. The setup script also creates the users SBXTAX and SBXAUD. These user names are referred to throughout this document.

|  |
| --- |
| The tablespace creation script also enables you to create a single tablespace to hold all data. While this configuration may be desirable for a test environment, we do not recommend this for a production environment. |

To create the required tablespace(s) and users:

1. On the system hosting the Oracle database, open a command prompt or terminal window.
2. Go to the directory containing the downloaded .sql scripts.
3. Log into SQL\*Plus as SYS or SYSDBA.
4. Execute the following setup script:

|  |
| --- |
| @OracleDBSetup.sql |

|  |
| --- |
| This script executes both the tablespace and user creation scripts. You can also execute these scripts separately, if desired. |

1. Enter the path to the Determination datafile directory (without a trailing separator). The default shown is the directory containing default Oracle tablespaces on your system. Press ENTER to accept the default or enter a new path name.
2. Enter the path separator for your platform (" / " for Unix and Linux or " \ " for Microsoft Windows). The default should already be selected.
3. Enter values for the Tax and, optionally, the Audit schemas.
   * To accept the defaults (SBXTAX and SBXAUD are shown in this guide), press ENTER at each prompt.
   * To create a new schema, enter its name at each prompt.
   * To skip the schema creation, enter the value of none at each prompt.
4. Messages appear as the tablespaces are created.
5. You are prompted to verify the locations of the tablespaces created earlier. If you accepted the defaults above, the prompts would appear as the following:

|  |
| --- |
| Tablespace for Sabrix tax data [SBXTAX]:  Tablespace for Sabrix audit data [SBXAUD]:  Temporary Tablespace for Sabrix users [TEMP]: |

1. You are prompted to create the user for the Tax schema. Press ENTER to specify the default (SBXTAX is used in this guide) or enter another desired name.
2. If you chose to create a separate Audit schema, press ENTER to specify the default user name (SBXAUD is used in this guide) or enter another desired name.
3. Enter a profilename for each user when prompted. If you are unsure which profile to use, enter default.
4. Messages appear as the user(s) are created.

Preparing Oracle for XA Transactions

To ensure that your Determination installation handles XA transactions, execute the following database grants for both the Tax (SBXTAX) and Audit (SBXAUD) users. Replace SBXTAX and SBXAUD with the Tax and Audit schemas from your environment:

1. GRANT SELECT ON sys.dba\_pending\_transactions TO SBXTAX;
2. GRANT SELECT ON sys.pending\_trans$ TO SBXTAX;
3. GRANT SELECT ON sys.dba\_2pc\_pending TO SBXTAX;
4. GRANT EXECUTE ON sys.dbms\_xa TO SBXTAX;
5. GRANT SELECT ON sys.dba\_pending\_transactions TO SBXAUD;
6. GRANT SELECT ON sys.pending\_trans$ TO SBXAUD;
7. GRANT SELECT ON sys.dba\_2pc\_pending TO SBXAUD;
8. GRANT EXECUTE ON sys.dbms\_xa TO SBXAUD;

Configuring Determination in Tomcat

Before you proceed to the following tasks, ensure that you have a supported version of Tomcat by reviewing platform support information listed in [Indirect Tax Help and Support](https://www.thomsonreuters.com/en-us/help/onesource-indirect-tax.html).

Be sure you installed Tomcat according to its instructions, and confirm that your JAVA\_HOME operating system environment variable points to the Java installation directory.

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

|  |  |  |
| --- | --- | --- |
| Modifying the Startup Parameters (page 24)   |  | | --- | | Unix (page 26)  Microsoft Windows (page 26) |   JDBC Driver (page 27)  Adding Cookie Security (page 27)  Creating Determination Data Sources for JTA (page 28)   |  | | --- | | Tax Data Source (page 30)  Audit Data Source (page 31) |   Deploying the Application (page 42) |

Modifying the Startup Parameters

Locate catalina.bat (Windows) or catalina.sh (Unix) in the bin directory below <TomcatBaseDirectory>, and then open it in a text editor. Find the line that contains the following:

Get standard Java environment variables

Below this line, insert the snippet appropriate for your operating system.

|  |
| --- |
| The starting (-Xms) and maximum ( -Xmx) memory settings shown below are the minimum values for Determination. We recommend allocating at least 6144m for the starting and maximum memory values. |

Unix

For JTA

1. JAVA\_OPTS="-Xms2048m -Xmx2048m -Djava.awt.headless= true"

For Enabling JPA

1. JAVA\_OPTS="-Xms2048m -Xmx2048m -Djava.awt.headless= true -Dspring.profiles.active=jpaTxManagerEnabled"

For Java17

JAVA\_OPTS="-Xms4g -Xmx4g -Djava.awt.headless= true”

**NOTE:** **While JPA is fully functional with Java 17 by default, JTA is not supported in 5.13.16.0 version.**

Microsoft Windows

For JTA

1. set "JAVA\_OPTS= -Xms2048m -Xmx2048m -Djava.awt.headless=true"

For Enabling JPA

1. set "JAVA\_OPTS= -Xms2048m -Xmx2048m -Djava.awt.headless=true -Dspring.profiles.active=jpaTxManagerEnabled"

For Java17

* + 1. set “JAVA\_OPTS=-Xms4g -Xmx4g -Djava.awt.headless= true”

**NOTE:** **While JPA is fully functional with Java 17 by default, JTA is not supported in 5.13.16.0 version.**

The table below contains optional parameters you may add to the line:

| Java Option | Value | Description |
| --- | --- | --- |
| -DBASE\_SABRIX\_DIRECTORY= | Insert the directory path for logging. | If you plan to run Determination in several instances of Tomcat 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).   |  | | --- | | In Microsoft Windows, use escape characters for the directory backslashes (for example, “c:\\temp\\”). | |

JDBC Driver

Determination requires the latest JDBC driver version for your database. Locate the Oracle JDBC driver ojdbc8.jar, and insert the driver into the lib directory below <TomcatBaseDirectory>.

|  |
| --- |
| JDBC drivers are usually packaged with the database or database client software.  Note: ojdbc11.jar is recommended for Determination 5.13.16.0 version. |

Adding Cookie Security

As a security measure, we recommend you complete the following steps to ensure cookies will only be used when transmitting HTTP (or HTTPS) requests.

1. Locate context.xml in the conf directory under <TomcatBaseDirectory>.
2. Open the file in a text editor.
3. Locate the <Context> element, and then modify it so it looks like this:
   1. <Context useHttpOnly="true">
4. Save and close the file.

Creating Determination Data Sources for JTA

Complete the following preliminary steps, and then continue to the sections below:

1. Locate the file tomcat-oracle-xa-ds\_example.xml in the scripts directory where you unzipped Determination.
2. Copy the file to the lib directory under <TomcatBaseDirectory>.
3. Rename the file to determination-xa-ds.xml.

|  |
| --- |
| Determination offers an option to encrypt the Tomcat data source username and password. In addition to the sections below, see Encrypting Tomcat Data Source Credentials (page ) to encrypt the Tomcat data source credentials. |

1. Open the file in a text editor.
2. Keep the file open and go to the next section.

Tax Data Source

The file determination-xa-ds.xml contains generic data source information that you need to modify according to your environment.

1. Locate the section in determination-xa-ds.xml that starts with "jdbc/TaxDataSource."
   1. <xa-datasource jndi-name="jdbc/TaxDataSource" pool-name="TaxD  
      ataSourceDS" enabled="true" use-java-context="true">
2. Change the TaxDataSource values in determination-xa-ds.xml 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 |
| <xa-datasource-property name="URL">  jdbc:oracle:thin:@host:port/server </xa-datasource-property> | Replace the following with values for your implementation:   * host: The name of the system hosting the database. * port: The database port; the default is 1521. * server: The name of your Oracle service. |
| <xa-datasource-property name="User">user name </xa-datasource-property> | Replace user name with the Tax schema user name (for example, SBXTAX). |
| <xa-datasource-property name="Password">password </xa-datasource-property> | Replace password with the Tax schema password (for example, SBXTAX). |

* 1. <xa-datasource-property name="URL">
     1. jdbc:oracle:thin:@host:port/service
  2. </xa-datasource-property>
  3. <xa-datasource-property name="User">
     1. user name
  4. </xa-datasource-property>
  5. <xa-datasource-property name="Password">
     1. password
  6. </xa-datasource-property>

1. Locate the TaxDataSource <xa-pool> section that looks like this:
   1. <xa-pool>
      1. <is-same-rm-override>false</is-same-rm-override>
      2. <no-tx-separate-pools>false</no-tx-separate-pools>
   2. </xa-pool>
2. Copy and paste the following bold lines into <xa-pool>:

|  |
| --- |
| Remove the line numbers after you copy and paste. |

* 1. <xa-pool>
     1. <is-same-rm-override>false</is-same-rm-override>
     2. <no-tx-separate-pools>false</no-tx-separate-pools>
     3. <min-pool-size>16</min-pool-size>
     4. <max-pool-size>64</max-pool-size>
     5. <prefill/>
  2. </xa-pool>

1. When you finish editing the tax data source values, remain in the file and go to Audit Data Source (page 31).

Audit Data Source

Complete the following steps to edit the audit data source values in determination-xa-ds.xml.

1. Locate the section in determination-xa-ds.xml that starts with "jdbc/AuditDataSource."
   1. <xa-datasource jndi-name="jdbc/AuditDataSource" pool-name="Au  
      ditSourceDS" enabled="true" use-java-context="true">
2. Change the AuditDataSource values in determination-xa-ds.xml 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 |
| <xa-datasource-property name="URL">  jdbc:oracle:thin:@host:port/server </xa-datasource-property> | Replace the following with values for your implementation:   * host: The name of the system hosting the database. * port: The database port; the default is 1521. * server: The name of your Oracle service. |
| <xa-datasource-property name="User">user name </xa-datasource-property> | Replace user name with the Audit schema user name (for example, SBXAUD). |
| <xa-datasource-property name="Password">password </xa-datasource-property> | Replace password with the Audit schema password (for example, SBXAUD). |

* 1. <xa-datasource-property name="URL">
     1. jdbc:oracle:thin:@host:port/service
  2. </xa-datasource-property>
  3. <xa-datasource-property name="User">
     1. user name
  4. </xa-datasource-property>
  5. <xa-datasource-property name="Password">
     1. password
  6. </xa-datasource-property>

1. Locate the AuditDataSource <xa-pool> section that looks like this:
   1. <xa-pool>
      1. <is-same-rm-override>false</is-same-rm-override>
      2. <no-tx-separate-pools>false</no-tx-separate-pools>
   2. </xa-pool>
2. Copy and paste the following bold lines into <xa-pool>:

|  |
| --- |
| Remove the line numbers after you copy and paste. |

* 1. <xa-pool>
     1. <is-same-rm-override>false</is-same-rm-override>
     2. <no-tx-separate-pools>false</no-tx-separate-pools>
     3. <min-pool-size>16</min-pool-size>
     4. <max-pool-size>64</max-pool-size>
     5. <prefill/>
  2. </xa-pool>

1. When you finish editing the audit data source values, save and close the file.

Creating Determination Data Sources for JPA

1. Locate context.xml in the conf directory under <TomcatBaseDirectory>.
2. Open the file in a text editor.
3. Locate the <Context> element. Add the Data Source References.

|  |
| --- |
| <ResourceLink name="jdbc/TaxDataSource" auth="Container" type="javax.sql.DataSource" global="jdbc/TaxDataSource"/>  <ResourceLink name="jdbc/AuditDataSource" auth="Container" type="javax.sql.DataSource" global="jdbc/AuditDataSource"/> |

1. Save and close the file.
2. Stay on the same folder and locate Server.xml in conf directory itself.
3. Locate the <GlobalNamingResources> element, and then add Data Sources in <Resource> element.

| Tax Data Source (jdbc/TaxDataSource) | |
| --- | --- |
| Element | Description |
| jdbc:oracle:thin:@host:port:service | Replace the following with values for your implementation:   * host: The name of the system hosting the database. * port: The database port; the default is 1521. * server: The name of your Oracle service. |
| username="username" | Replace user name with the Tax schema user name (for example, SBXTAX). |
| password="password" | Replace user name with the Tax schema user name (for example, SBXTAX). |
| testWhileIdle | (boolean) The indication of whether objects will be validated by the idle object evictor (if any). If an object fails to validate, it will be dropped from the pool. The default value is false and this property has to be set in order for the pool cleaner/test thread to run (see also timeBetweenEvictionRunsMillis). |
| timeBetweenEvictionRunsMillis | (int) The number of milliseconds to sleep between runs of the idle connection validation/cleaner thread. This value should not be set under 1 second. It dictates how often we check for idle, abandoned connections, and how often we validate idle connections. The default value is 5000 (5 seconds). |
| maxActive | (int) The maximum number of active connections that can be allocated from this pool at the same time. The default value is 100. |
| maxIdle | (int) The maximum number of connections that should be kept in the pool at all times. Default value is maxActive:100. Idle connections are checked periodically (if enabled) and connections that been idle for longer than minEvictableIdleTimeMillis will be released. (Also see testWhileIdle). |
| initialSize | (int)The initial number of connections that are created when the pool is started. Default value is 10. |
| suspectTimeout | (int) Timeout value in seconds. Default value is 0. Similar to to the removeAbandonedTimeout value, but instead of treating the connection as abandoned, and potentially closing the connection, this simply logs the warning if logAbandoned is set to true. If this value is equal or less than 0, no suspect checking will be performed. Suspect checking only takes place if the timeout value is larger than 0 and the connection was not abandoned or if abandon check is disabled. If a connection is suspect a WARN message gets logged and a JMX notification gets sent once. |
| removeAbandonedTimeout | (int) Timeout in seconds before an abandoned(in use) connection can be removed. The default value is 60 (60 seconds). The value should be set to the longest running query your applications might have. |
| removeAbandoned | (boolean) Flag to remove abandoned connections if they exceed the removeAbandonedTimeout. If set to true a connection is considered abandoned and is eligible for removal if it has been in use longer than the removeAbandonedTimeout. Setting this to true can recover db connections from applications that fail to close a connection. See also logAbandoned. The default value is false. |
| logAbandoned | (boolean) Flag to log stack traces for application code which abandoned a Connection. Logging of abandoned Connections adds overhead for every Connection borrow because a stack trace has to be generated. The default value is false. |
| minEvictableIdleTimeMillis | (int) The minimum amount of time an object may sit idle in the pool before it is eligible for eviction. The default value is 60000 (60 seconds). |
| jmxEnabled | (boolean) Register the pool with JMX or not. The default value is true. |
| |  | | --- | | <Resource name="jdbc/TaxDataSource" auth="Container" type="javax.sql.DataSource" factory="org.apache.tomcat.jdbc.pool.DataSourceFactory" driverClassName="oracle.jdbc.driver.OracleDriver" url="jdbc:oracle:thin:@host:port:service" username="username" password="password" testWhileIdle="true" timeBetweenEvictionRunsMillis="240000" maxActive="64" maxIdle="16" initialSize="16" suspectTimeout="1800" removeAbandonedTimeout="100" removeAbandoned="true" logAbandoned="true" minEvictableIdleTimeMillis="60000" jmxEnabled="false"/> | | |

| Audit Data Source (JDBC/AUDITDataSource) | |
| --- | --- |
| Element | Description |
| jdbc:oracle:thin:@host:port:service | Replace the following with values for your implementation:   * host: The name of the system hosting the database. * port: The database port; the default is 1521. * server: The name of your Oracle service. |
| username="username" | Replace user name with the Tax schema user name (for example, SBXAUD). |
| password="password" | Replace user name with the Tax schema user name (for example, SBXAUD). |
| testWhileIdle | (boolean) The indication of whether objects will be validated by the idle object evictor (if any). If an object fails to validate, it will be dropped from the pool. The default value is false and this property has to be set in order for the pool cleaner/test thread to run (also see timeBetweenEvictionRunsMillis). |
| timeBetweenEvictionRunsMillis | (int) The number of milliseconds to sleep between runs of the idle connection validation/cleaner thread. This value should not be set under 1 second. It dictates how often we check for idle, abandoned connections, and how often we validate idle connections. The default value is 5000 (5 seconds). |
| maxActive | (int) The maximum number of active connections that can be allocated from this pool at the same time. The default value is 100. |
| maxIdle | (int) The maximum number of connections that should be kept in the pool at all times. Default value is maxActive:100. Idle connections are checked periodically (if enabled) and connections that been idle for longer than minEvictableIdleTimeMillis will be released (see also testWhileIdle). |
| initialSize | (int)The initial number of connections that are created when the pool is started. Default value is 10. |
| suspectTimeout | (int) Timeout value in seconds. Default value is 0. Similar to the removeAbandonedTimeout value but instead of treating the connection as abandoned, and potentially closing the connection, this simply logs the warning if logAbandoned is set to true. If this value is equal or less than 0, no suspect checking will be performed. Suspect checking only takes place if the timeout value is larger than 0 and the connection was not abandoned or if abandon check is disabled. If a connection is suspect a WARN message gets logged and a JMX notification gets sent once. |
| removeAbandonedTimeout | (int) Timeout in seconds before an abandoned(in use) connection can be removed. The default value is 60 (60 seconds). The value should be set to the longest running query your applications might have. |
| removeAbandoned | (boolean) Flag to remove abandoned connections if they exceed the removeAbandonedTimeout. If set to true a connection is considered abandoned and eligible for removal if it has been in use longer than the removeAbandonedTimeout. Setting this to true can recover db connections from applications that fail to close a connection. See also logAbandoned. The default value is false. |
| logAbandoned | (boolean) Flag to log stack traces for application code which abandoned a Connection. Logging of abandoned Connections adds overhead for every Connection borrow because a stack trace has to be generated. The default value is false. |
| minEvictableIdleTimeMillis | (int) The minimum amount of time an object may sit idle in the pool before it is eligible for eviction. The default value is 60000 (60 seconds). |
| jmxEnabled | (boolean) Register the pool with JMX or not. The default value is true. |
| <Resource name="jdbc/AuditDataSource" auth="Container" type="javax.sql.DataSource" factory="org.apache.tomcat.jdbc.pool.DataSourceFactory" driverClassName="oracle.jdbc.driver.OracleDriver" url="jdbc:oracle:thin:@host:port:service" username="username" password="password" testWhileIdle="true" timeBetweenEvictionRunsMillis="240000" maxActive="64" maxIdle="16" initialSize="16" suspectTimeout="1800" removeAbandonedTimeout="100" removeAbandoned="true" logAbandoned="true" minEvictableIdleTimeMillis="60000" jmxEnabled="false"/> | |

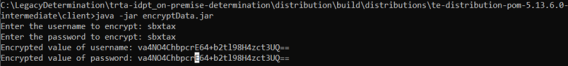
1. Save and close the file.

Encrypting Tomcat Data Source Credentials

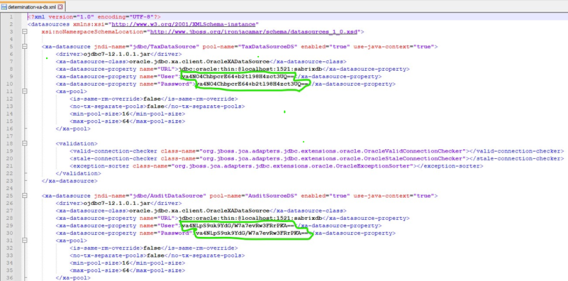
The steps below take you through the process of encrypting Tomcat data source credentials for both tax data source and audit data source using the AES-256 standard. Encrypting Tomcat data source credentials is optional.

To encrypt Tomcat data source credentials:

1. Locate the encryptData.jar file under the client directory where you unzipped the ONESOURCEIDTDetermination\_513xx.zip file. The encryptData.jar file generates the encrypted value for the username and password text and uses AES-256 as the encoding mechanism.
2. Open the Command Prompt window.
3. Enter the following command, which will generate the encrypted values: java -jar encryptData.jar. The following graphic shows an example:



1. Update the determination-xa-ds.xml file in <TomcatBaseDirectory>\lib by replacing the existing username and password in the <xa-datasource-property> tag with the encrypted username and password. The following graphic shows the <xa-datasource-property> tag:



**For Java 17**

To encrypt Tomcat data source credentials for Java17:

1. Locate the encrypt\_aes-256\_data.jar file under the documentation directory where you unzipped the ONESOURCEIDTDetermination\_513160.zip file. The encrypt\_aes-256\_data.jar file generates the encrypted value for the username and password text and uses AES-256 as the encoding mechanism.
2. Open the Command Prompt window.
3. Enter the following command, which will generate the encrypted values: java -jar encrypt\_aes-256\_data.jar.

The following screenshot shows an example:



Deploying the Application

Complete the following steps to deploy the Determination software:

1. Ensure that Tomcat is stopped.
2. Locate the following files in the Tomcat directory where you unzipped Determination. Insert them in the webapps directory under <TomcatBaseDirectory>:
   * sabrix.war
   * sabrix-extensions.war
   * determination-help.war

|  |
| --- |
| Use only the .war files from the Tomcat directory where you unzipped Determination. Do not extract the .war files from the sabrix.ear file. |

1. In the bin directory under <TomcatBaseDirectory>, execute startup.bat (Windows) or startup.sh (Unix). Once the server displays the message that it is started, go to Running the Implementer (page 45).

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.

|  |
| --- |
| Set the Oracle parameter OPEN\_CURSORS to 3000 to ensure the Determination installation completes successfully. |

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 end 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 58)  Determination Parameters (page 61)  Properties File (page 62)  Cluster XML File (page 80)  Cluster Testing (page 81) |

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 62). |
| 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.

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 = 224.1.1.1
* 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 67). That approach prevents the clusters from interfering with each other. |

Complete the following:

1. Stop Tomcat.
2. Go to the lib directory under <TomcatHomeDirectory>.
3. 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
4. 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 Tomcat.
3. Repeat these steps on each Tomcat node.

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

1. Skip to Cluster Testing (page 81).

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 61). |

Complete the following:

1. Stop Tomcat.
2. Go to the lib directory under <TomcatHomeDirectory>.
3. 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-clus  
      ter.xml
   4. determination.infinispan.jgroups.udp.mcast\_addr=224.1.2.3
   5. determination.infinispan.jgroups.udp.mcast\_port=16655
4. 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: 224.1.1.1 to 238.255.255.255).
2. Save and close the file determination\_application\_overrides.properties.
3. Repeat these steps on each Tomcat node.

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

1. Skip to Cluster XML File (page 80).

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 61). |

Complete the following:

1. Stop Tomcat.
2. Go to the lib directory under <TomcatHomeDirectory>.
3. Create a file called determination\_application\_overrides.properties 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
4. 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 80)). 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 filedetermination\_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:  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 the ONESOURCEIDTDetermination\_513xx.zip file (see Download the Software (page 15)).
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 lib directory under <TomcatHomeDirectory> (the same directory as determination\_application\_overrides.properties).
2. Restart Tomcat.
3. Repeat these steps on each Tomcat node.

Cluster Testing

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).

Reporting Application Upgrade Dependency

Skip this section if you are not using the Reporting Application.

1. If the environment is upgraded to 5.13 from a lower version (for example, 5.12 or 5.11).
2. ONESOURCE Determination upgrade has data conflict ID in table RS\_LOOKUPS of Reporting Application schema which in turn fails the SBX Stage Load Job.
3. Run the query select\* from RS\_Lookups in SBXRPTAUD Schema and take a backup.
4. Run the below query in SBXRPTAUD Schema of Reporting Application:

delete from RS\_LOOKUPS

1. Run the ETL “SBX STAGE LOAD” again to make sure it was successful. In case the previous jobs failed, run a job clean up.

Time Eviction Cache

Complete the following:

1. Stop Tomcat.
2. Go to the clustering directory where you unzipped 513xx (see Download the Software (page 15)).
3. Copy the infinispan-timed-cache.xml file to the lib directory under <TomcatHomeDirectory>.

|  |
| --- |
| 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 lib directory under <TomcatHomeDirectory>.
2. 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 Tomcat.
3. Repeat these steps on each Tomcat 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."