

ONESOURCE INDIRECT TAX DETERMINATION

INSTALLATION GUIDE

ORACLE DATABASE AND IBM WEBSPHERE

5.12.X.X

Document Version 4

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DOCUMENT HISTORY

VERSION NUMBER	VERSION DATE	SUMMARY
1	August 2019	Created first version of this guide for ONESOURCE Indirect Tax Determination 5.12.x.x.
		Same version: Changed Prerequisites section from Java to Amazon Corretto.
2	June 2020	<ul style="list-style-type: none">Added information on support for Amazon Coretto 11 and Oracle Database 19c.Minor edits changing 5.12.0.0 to 5.12.x.x to reflect the usage more accurately.
3	November 2020	Updated Java and Amazon Correto entry.
4	September 9, 2022	Time Eviction Cache support.

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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 to version 5.12.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](#). 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.

DETERMINATION RESOURCES	
Resource	Description
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 <i>Installation Guide</i> .
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	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. */
2  /* Be cautious if you copy lines from the code snippets-the l
   ine numbers are included! */
```

PREREQUISITES

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

[Review System Requirements \(page 5\)](#)

[Java \(page 5\)](#)

[Gathering Administrative Information \(page 6\)](#)

[Download the Software \(page 6\)](#)

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](#).

JAVA

Determination requires an application server to host its various components, and the application server must use Oracle Java (1.8 or 1.10) 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.

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	
Administration console URL of the IBM WebSphere Application Server	Application Server Administrator	
Administration credentials for the IBM WebSphere Application Server	Application Server Administrator	
Name of the server hosting IBM WebSphere and the Port for the Determination software	Application Server Administrator	

DOWNLOAD THE SOFTWARE

To download and install the software, get the *ONESOURCEIDTDetermination_512xx.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_512xx.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:

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.

5. 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.
6. Enter the path separator for your platform (" / " for Unix and Linux or " \ " for Microsoft Windows). The default should already be selected.
7. 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.
8. Messages appear as the tablespaces are created.
9. You are prompted to verify the locations of the tablespaces created earlier. If you accepted the defaults above, the prompts will appear as the following:

Tablespace for Sabrix tax data [SBXTAX]:

Tablespace for Sabrix audit data [SBXAUD]:

Temporary Tablespace for Sabrix users [TEMP]:
10. 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.
11. 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.
12. Enter a profilename for each user when prompted. If you are unsure which profile to use, enter **default**.
13. 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;  
  
1  GRANT SELECT ON sys.dba_pending_transactions TO SBXAUD;
2  GRANT SELECT ON sys.pending_trans$ TO SBXAUD;
3  GRANT SELECT ON sys.dba_2pc_pending TO SBXAUD;
4  GRANT EXECUTE ON sys.dbms_xa TO SBXAUD;
```


CONFIGURING IBM WEBSPHERE

Before you proceed to the following tasks, ensure that you have a supported version of WebSphere by reviewing platform support information listed in the [ONESOURCE Customer Center](#).

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

[Configuring Authentication \(page 14\)](#)

[Configuring the WebSphere Environment Variable \(page 17\)](#)

[Modifying the Log Level \(page 19\)](#)

[Modifying Transaction Timeouts \(page 21\)](#)

[Creating the Oracle JDBC Provider \(page 23\)](#)

[Creating the Tax Data Source \(page 26\)](#)

[Modifying the Tax Data Source \(page 31\)](#)

[Creating the Audit Data Source \(page 34\)](#)

[Modifying the Audit Data Source \(page 39\)](#)

[Configuring the Java Virtual Machine \(page 42\)](#)

[Enabling Automatic Tax Data Downloads \(Optional\) \(page 45\)](#)

[Exporting the Customer Center Certificate \(page 45\)](#)

[Configuring the Certificate in WebSphere \(page 45\)](#)

[Configuring CSRFGuard \(page 48\)](#)

[Deploying the Application \(page 49\)](#)

[Loading the Application \(page 49\)](#)

[Selecting Installation Options \(page 50\)](#)

[Configuring Class Loading \(page 59\)](#)

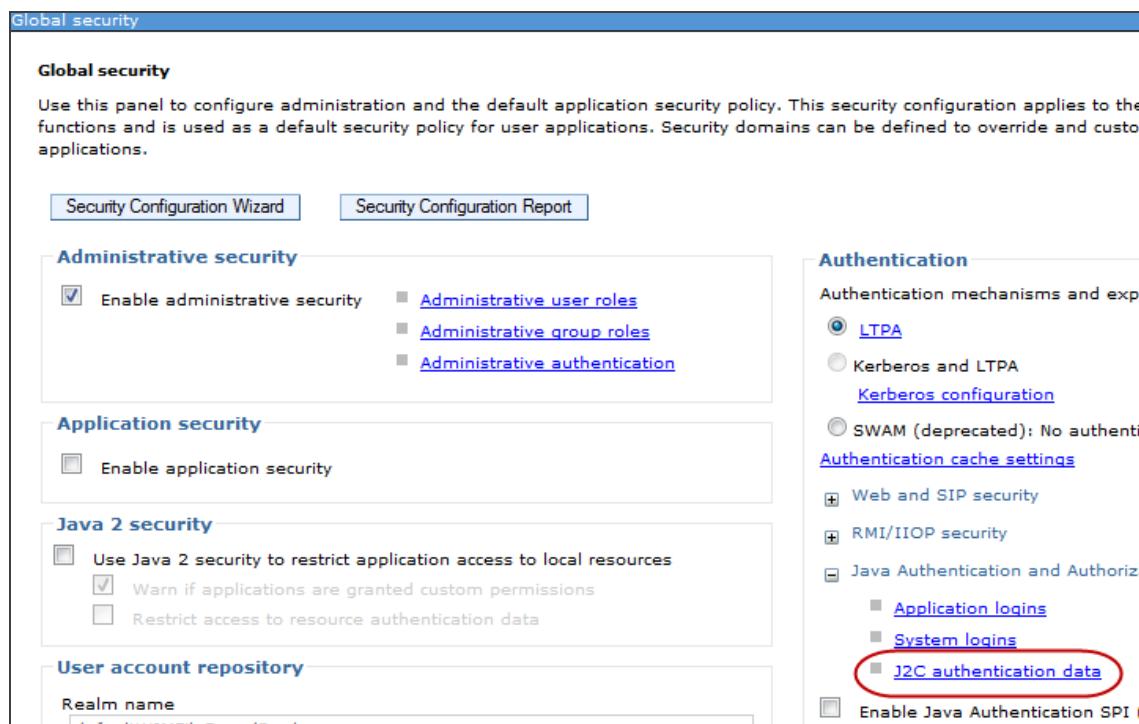
[Setting a Custom Property \(page 61\)](#)

CONFIGURING AUTHENTICATION

Configure user name and password combinations that will be referenced by the JDBC data sources you create. Configure both SBXTAX and SBXAUD, which are described in [Oracle Tablespaces and Users \(page 9\)](#).

To configure authentication:

1. Log on to the IBM WebSphere Integrated Solutions Console.
2. Using the list on the left side of the console, go to **Security > Global security**.
3. Expand the **Java Authentication and Authorization Service** in the **Authentication** section.
4. Click **J2C authentication data**.



The screenshot shows the 'Global security' configuration page. The 'Authentication' section is expanded, displaying various security mechanisms. The 'J2C authentication data' link is circled in red.

Global security
Use this panel to configure administration and the default application security policy. This security configuration applies to the functions and is used as a default security policy for user applications. Security domains can be defined to override and customize applications.

Administrative security
 Enable administrative security [Administrative user roles](#)
 [Administrative group roles](#)
 [Administrative authentication](#)

Application security
 Enable application security

Java 2 security
 Use Java 2 security to restrict application access to local resources
 Warn if applications are granted custom permissions
 Restrict access to resource authentication data

User account repository
Realm name

Authentication
Authentication mechanisms and expandable links:
 [LTPA](#)
 [Kerberos and LTPA](#)
[Kerberos configuration](#)
 [SWAM \(deprecated\): No authentication](#)
[Authentication cache settings](#)
 [Web and SIP security](#)
 [RMI/IOP security](#)
 [Java Authentication and Authorization](#)
 [Application logins](#)
 [System logins](#)
 [J2C authentication data](#)
 [Enable Java Authentication SPI](#)

5. Click **New**.
6. Enter data to create the Tax user as shown in the following table:

Global security

[Global security > JAAS - J2C authentication data](#)

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

Prefix new alias names with the node name of the cell (for compatibility with earlier releases)

Apply

Preferences

New... **Delete**

Select **Alias** **User ID** **Description**

None

Total 0

Global security

[Global security > JAAS - J2C authentication data > New...](#)

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

General Properties

* Alias: SBXTAX

* User ID: SBXTAX

* Password: *********

Description: User associated with the Tax Data Sou

Apply **OK** **Reset** **Cancel**

PROMPT	VALUE
Alias	SBXTAX
User ID	SBXTAX
Password	Enter the password for SBXTAX
Description	Enter this description: User associated with the Tax Data Source

7. Click OK, and then click **Save directly to the master configuration**.
8. Click **New** to create the Audit user.

9. Create the Audit user by entering the following data:

Global security

Global security > JAAS - J2C authentication data

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

Prefix new alias names with the node name of the cell (for compatibility with earlier releases)

Apply

Preferences

	New...	Delete	
	New...		
Select	Alias ▾	User ID ▾	
You can administer the following resources:			
<input type="checkbox"/>	U0126623-W7BNode01/SBXTAX	SBXTAX	User ass
Total 1			

Global security

Global security > JAAS - J2C authentication data > New...

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

General Properties

* Alias

* User ID

* Password

Description

Apply **OK** **Reset** **Cancel**

PROMPT	VALUE
Alias	SBXAUD
User ID	SBXAUD
Password	Enter the password for SBXAUD
Description	Enter this description: User associated with the Audit Data Source

10. Click OK, and then click **Save directly to the master configuration**.

CONFIGURING THE WEBSPHERE ENVIRONMENT VARIABLE

Configure an environment variable by completing the following:

1. In the console, go to **Environment > WebSphere variables**.
2. Select the variable scope that is appropriate for your environment.



Select the same scope throughout installation.

3. Click **ORACLE_JDBC_DRIVER_PATH** in the name column (it may be on the second page). If you do not see **ORACLE_JDBC_DRIVER_PATH** for your scope, click **New**.

Select	Name	Value	Scope
<input type="checkbox"/>	MQ_INSTALL_ROOT	`\${WAS_INSTALL_ROOT}/lib/WMQ	Node=U0126623-W7ANode01
<input type="checkbox"/>	ORACLE JDBC DRIVER PATH		Node=U0126623-W7ANode01

4. Add **ORACLE_JDBC_DRIVER_PATH** if it is not already in the **Name** field.

WebSphere Variables

WebSphere Variables > ORACLE_JDBC_DRIVER_PATH

Use this page to define substitution variables. Variables specify a level of indirection for some system-defined values, such as a scope level, which is either server, node, cluster, or cell. Values at one scope level can differ from values at other levels. Within the more granular scope value overrides values at greater scope levels. Therefore, server variables override node variables, which override cell variables.

Configuration

General Properties

* Name **ORACLE_JDBC_DRIVER_PATH**

Value

Description
The directory that contains the Oracle thin or oci8 JDBC Driver.

Apply OK Reset Cancel



5. Enter the path to your JDBC driver *jar* file in the **Value** field. The directory shown below is an example and would be different for your environment.

WebSphere Variables

WebSphere Variables > ORACLE_JDBC_DRIVER_PATH

Use this page to define substitution variables. Variables specify a level of indirection for some system-defined values, such as a scope level, which is either server, node, cluster, or cell. Values at one scope level can differ from values at other levels. Within the more granular scope value overrides values at greater scope levels. Therefore, server variables override node variables, which override cell variables.

Configuration

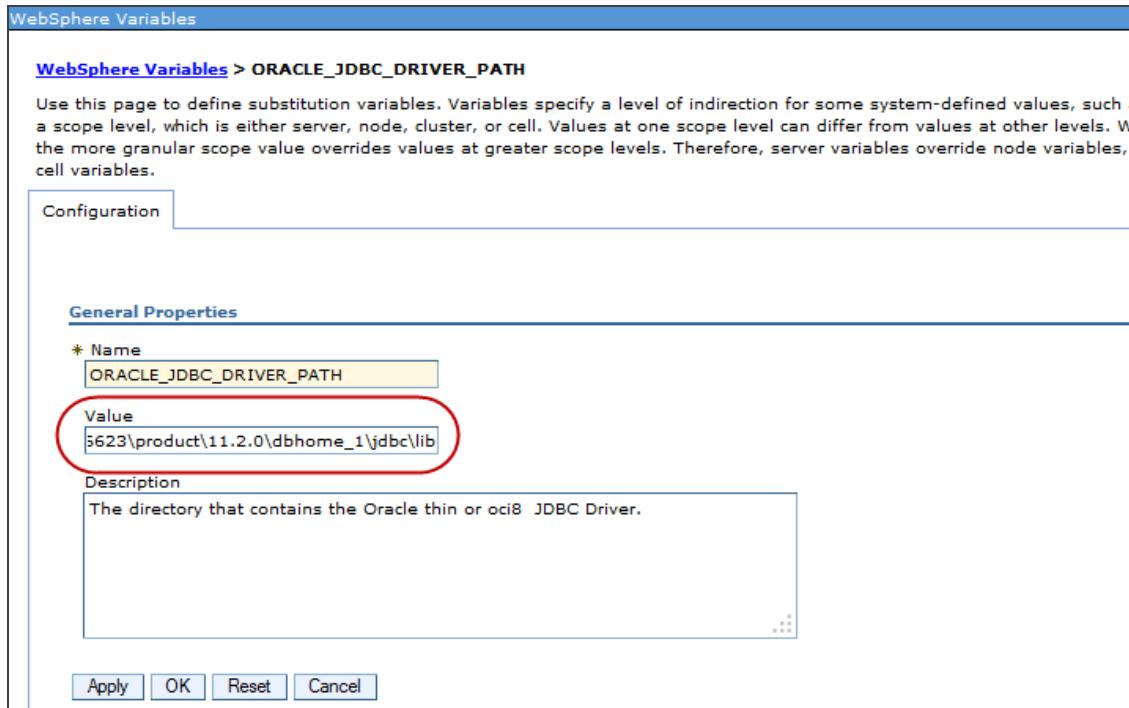
General Properties

* **Name** **ORACLE_JDBC_DRIVER_PATH**

Value **5623\product\11.2.0\dbhome_1\jdbc\lib**

Description
The directory that contains the Oracle thin or oci8 JDBC Driver.

Apply **OK** **Reset** **Cancel**

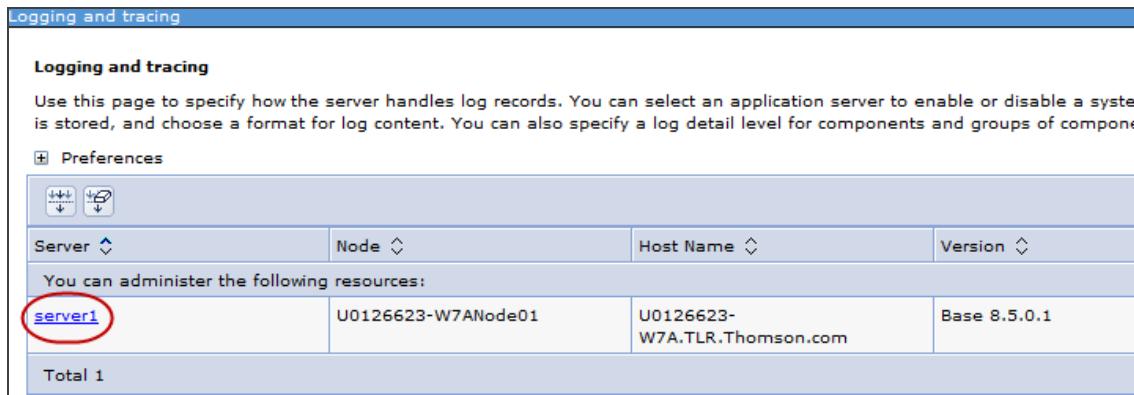


6. Click OK, and then click **Save directly to the master configuration**.

MODIFYING THE LOG LEVEL

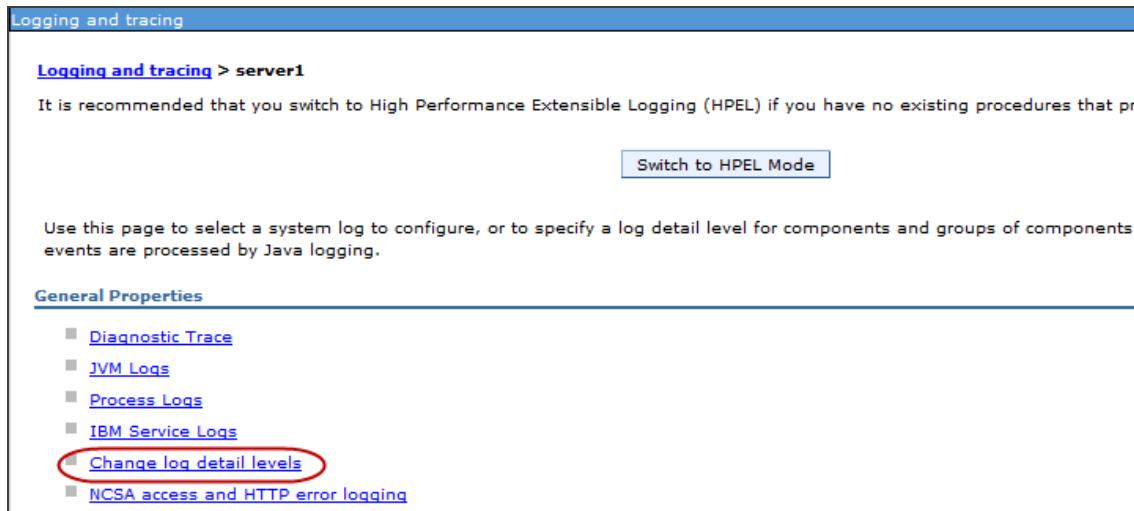
By default, the log level for JGroups is set at a level that fills Determination log files and the console with extraneous data. You can change the level to avoid this situation:

1. In the console, go to **Troubleshooting > Logs and Trace**.
2. Click on your server.



The screenshot shows the 'Logging and tracing' interface. At the top, there is a header with the title. Below the header, there is a section titled 'Logging and tracing' with a brief description. Underneath this, there is a 'Preferences' section with two small icons. The main content area has four dropdown menus: 'Server' (set to 'server1'), 'Node' (set to 'U0126623-W7ANode01'), 'Host Name' (set to 'U0126623-W7A.TLR.Thomson.com'), and 'Version' (set to 'Base 8.5.0.1'). Below these dropdowns, a message says 'You can administer the following resources:' followed by a table. The table has one row with a single entry: 'server1' (which is circled in red). At the bottom of the table, it says 'Total 1'.

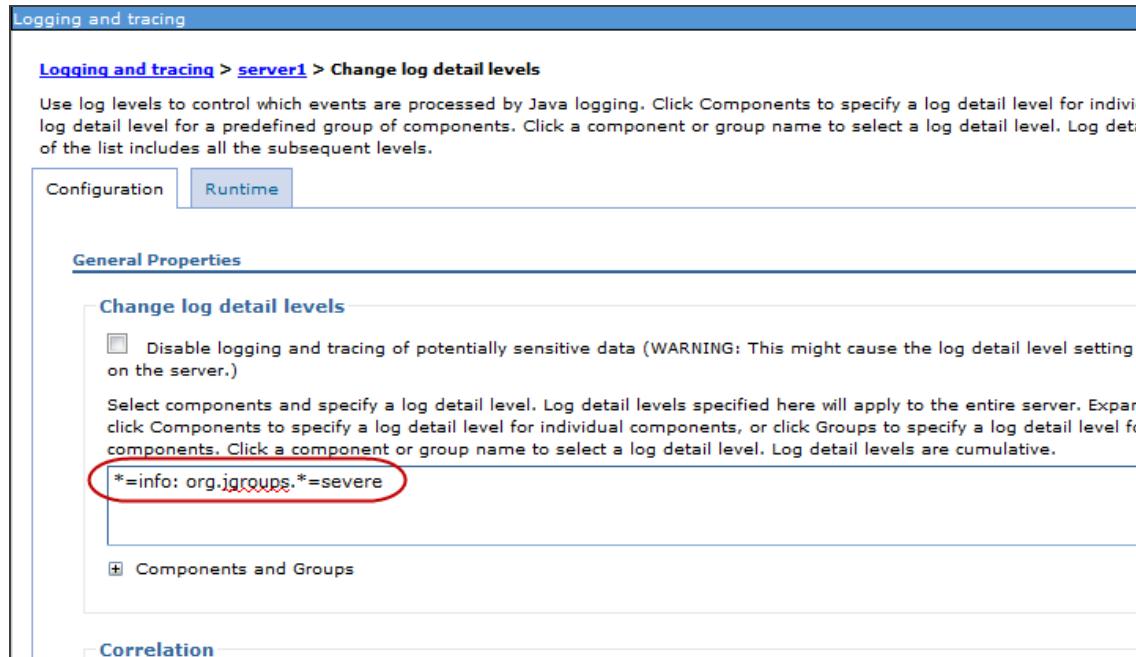
3. Click **Change Log Detail Levels**.



The screenshot shows the 'Logging and tracing' interface with the 'server1' resource selected. At the top, there is a header with the title and a 'Switch to HPEL Mode' button. Below the header, there is a message about switching to HPEL mode. The main content area has a 'General Properties' section with a list of options. One of the options, 'Change log detail levels', is circled in red.

4. In the **Configuration** tab, add the following line in the text entry field above the listed log contexts:

`*=info: org.jgroups.*=severe`



The screenshot shows the 'Logging and tracing' configuration for 'server1'. The 'Change log detail levels' section is selected. A red circle highlights the log detail level configuration entry: '*=info: org.jgroups, *=severe'.

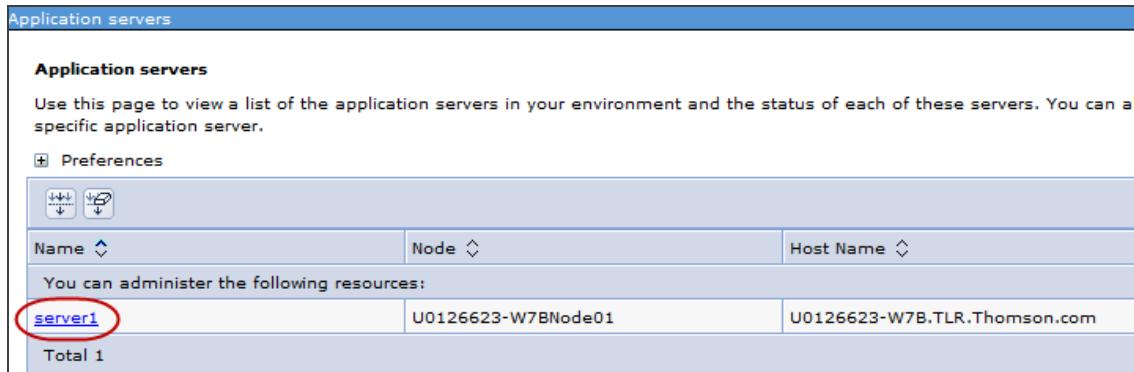
5. Click OK, and then click **Save directly to the master configuration**.

Repeat this procedure for each server in the cluster because the change will not be automatically propagated to other cluster nodes.

MODIFYING TRANSACTION TIMEOUTS

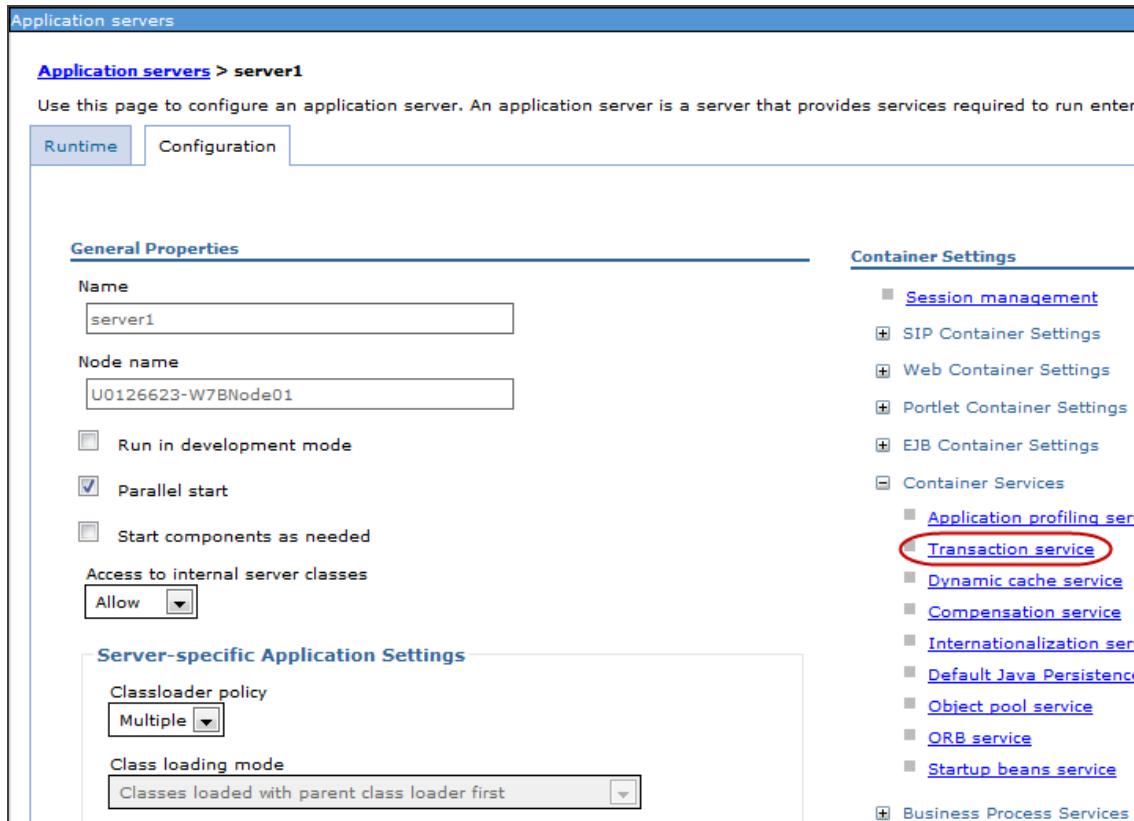
Increase the transaction timeouts by completing the following:

1. Go to **Servers > Server Types > WebSphere application servers**.
2. Click your server.



The screenshot shows the 'Application servers' page. At the top, there is a header bar with the title 'Application servers'. Below the header, there is a section titled 'Application servers' with a sub-instruction: 'Use this page to view a list of the application servers in your environment and the status of each of these servers. You can administer specific application server.' There is a 'Preferences' link with a gear icon. Below this, there is a table with three columns: 'Name', 'Node', and 'Host Name'. The table contains one row for 'server1', which is highlighted with a red circle. The 'Name' column shows 'server1', the 'Node' column shows 'U0126623-W7BNode01', and the 'Host Name' column shows 'U0126623-W7B.TLR.Thomson.com'. At the bottom of the table, it says 'Total 1'.

3. Under Container Settings > Container Services, click Transaction service.



The screenshot shows the 'Application servers > server1' page. At the top, there is a header bar with the title 'Application servers > server1'. Below the header, there are two tabs: 'Runtime' (which is selected) and 'Configuration'. The main content area is divided into two sections: 'General Properties' and 'Container Settings'. The 'General Properties' section contains fields for 'Name' (set to 'server1'), 'Node name' (set to 'U0126623-W7BNode01'), and several checkboxes: 'Run in development mode' (unchecked), 'Parallel start' (checked), and 'Start components as needed' (unchecked). It also has a dropdown for 'Access to internal server classes' set to 'Allow'. The 'Container Settings' section is a tree view with the following structure: Session management, SIP Container Settings, Web Container Settings, Portlet Container Settings, EJB Container Settings, Container Services, Application profiling service, Transaction service (which is highlighted with a red circle), Dynamic cache service, Compensation service, Internationalization service, Default Java Persistence, Object pool service, ORB service, Startup beans service, and Business Process Services.

4. Change the timeouts as shown in the following table:

Application servers

Application servers > [server1](#) > Transaction service

Use this page to specify settings for the transaction service. The transaction service is a server runtime component that can coordinate multiple database managers to ensure atomic updates of data. Transactions are started and ended by applications or the container in which the application runs.

[Runtime](#) [Configuration](#)

General Properties

Transaction log directory

* Total transaction lifetime timeout
600 seconds

* Async response timeout
30 seconds

* Client inactivity timeout
60 seconds

* Maximum transaction timeout
3600 seconds

Heuristic retry limit
0 retries

Heuristic retry wait
0 seconds

Enable logging for heuristic reporting

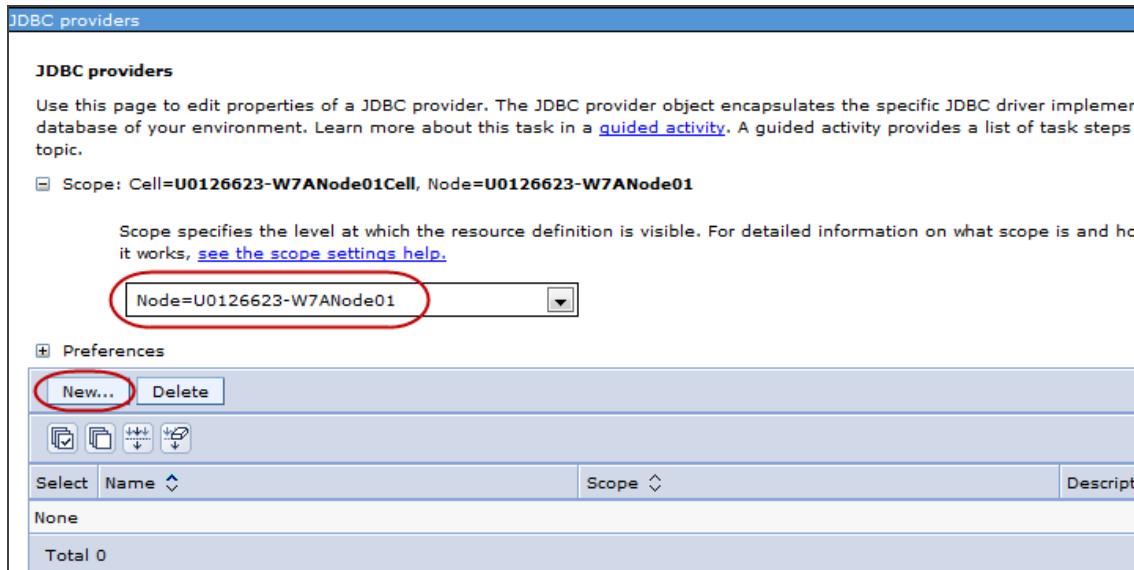
PROMPT	VALUE
Total transaction lifetime timeout	600
Maximum transaction timeout	3600

5. Click OK, and then click **Save directly to the master configuration**.

CREATING THE ORACLE JDBC PROVIDER

Create the Oracle JDBC Provider by completing the following.

1. From the console, go to **Resources > JDBC > JDBC Providers**.
2. Set the scope that is appropriate to your environment, and then click **New**.



JDBC providers

JDBC providers

Use this page to edit properties of a JDBC provider. The JDBC provider object encapsulates the specific JDBC driver implementation of your environment. Learn more about this task in a [guided activity](#). A guided activity provides a list of task steps and topics.

Scope: Cell=U0126623-W7ANode01Cell, Node=U0126623-W7ANode01

Scope specifies the level at which the resource definition is visible. For detailed information on what scope is and how it works, [see the scope settings help](#).

Node=U0126623-W7ANode01

Preferences

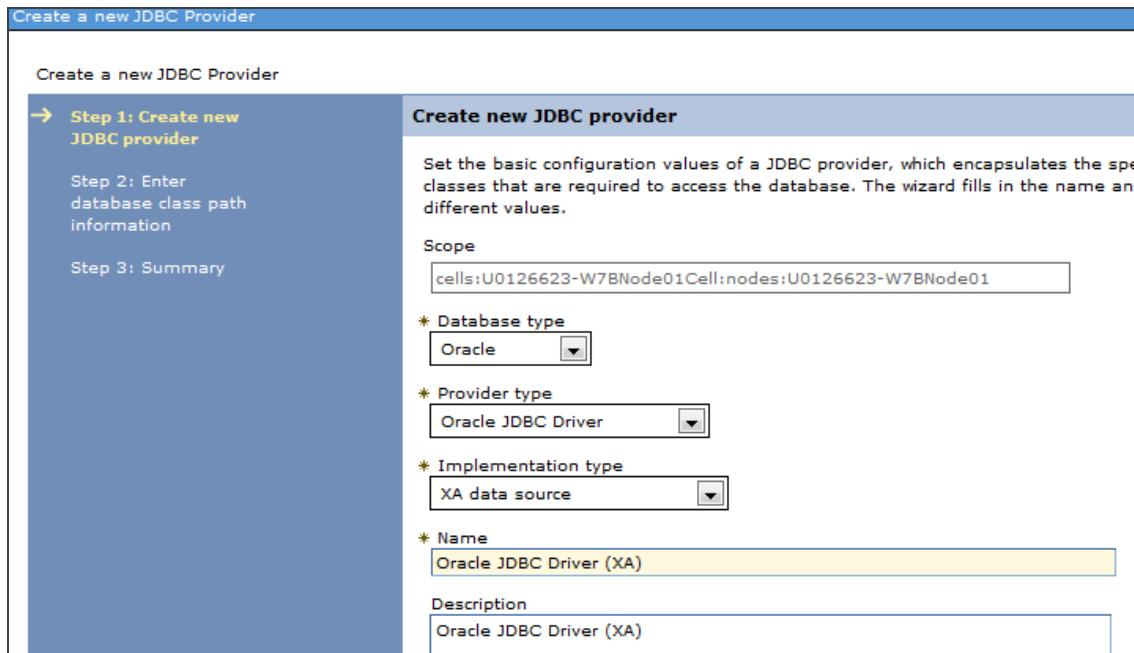
New... Delete

Select Name Scope Description

None

Total 0

3. Update the fields in the table below, and then click **Next**.



Create a new JDBC Provider

Create a new JDBC Provider

Step 1: Create new JDBC provider

Step 2: Enter database class path information

Step 3: Summary

Create new JDBC provider

Set the basic configuration values of a JDBC provider, which encapsulates the specific JDBC driver implementation of your environment. The wizard fills in the name and other values.

Scope: cells:U0126623-W7BNode01Cell:nodes:U0126623-W7BNode01

* Database type: Oracle

* Provider type: Oracle JDBC Driver

* Implementation type: XA data source

* Name: Oracle JDBC Driver (XA)

Description: Oracle JDBC Driver (XA)

FIELD	VALUE
Database type	Oracle
Provider type	Oracle JDBC Driver
Implementation type	XA data source
Name	Oracle JDBC Driver (XA)
Description	Oracle JDBC Driver (XA)

4. Specify the directory location of the JDBC driver. The directory shown below is an example and would be different in your environment.



Determination requires the latest JDBC driver version for your database. Locate *ojdbc8.jar*, the Oracle JDBC driver.

Create a new JDBC Provider

Create a new JDBC Provider

Step 1: Create new JDBC provider

→ **Step 2: Enter database class path information**

Step 3: Summary

Enter database class path information

Set the class path for the JDBC driver class files, which WebSphere(R) Application provider. This wizard page displays a default list of jars and allows you to set the directory locations of the files. Use complete directory paths when you type the JD C:\SQLLIB\java on Windows(R) or /home/db2inst1/sqllib/java on Linux(TM).

Entries are separated by using the ENTER key and must not contain path separator value is specified for you, you may click Next to accept the value.

Class path:

`${ORACLE_JDBC_DRIVER_PATH}/ojdbc6.jar`

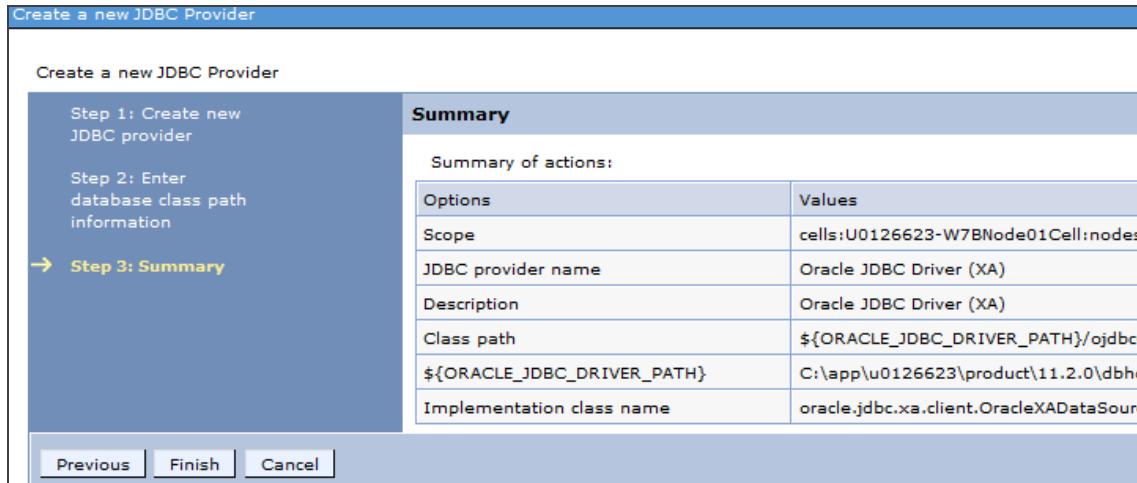
Directory location for "ojdbc6.jar" which is saved as WebSphere variable \${ORACLE_JDBC_DRIVER_PATH}

`C:\oracle\products\11.2.0\dbhome_1\jdbc\lib`

Previous | Next | Cancel

5. Click **Next**.

6. If the summary is correct, click **Finish**.

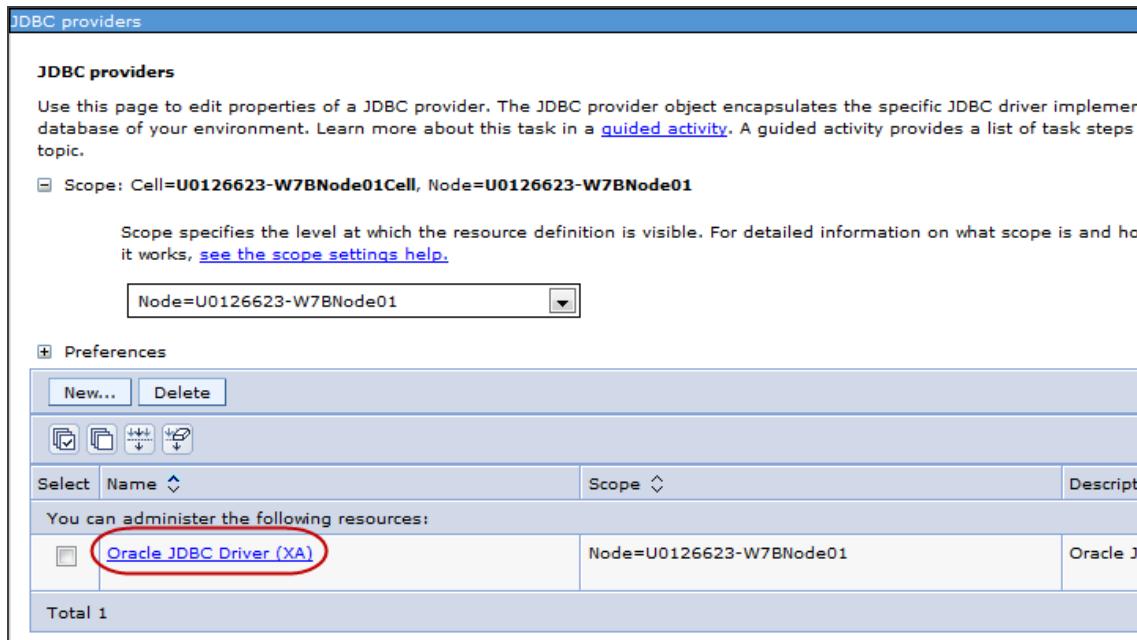


7. Click **Save** directly to the master configuration

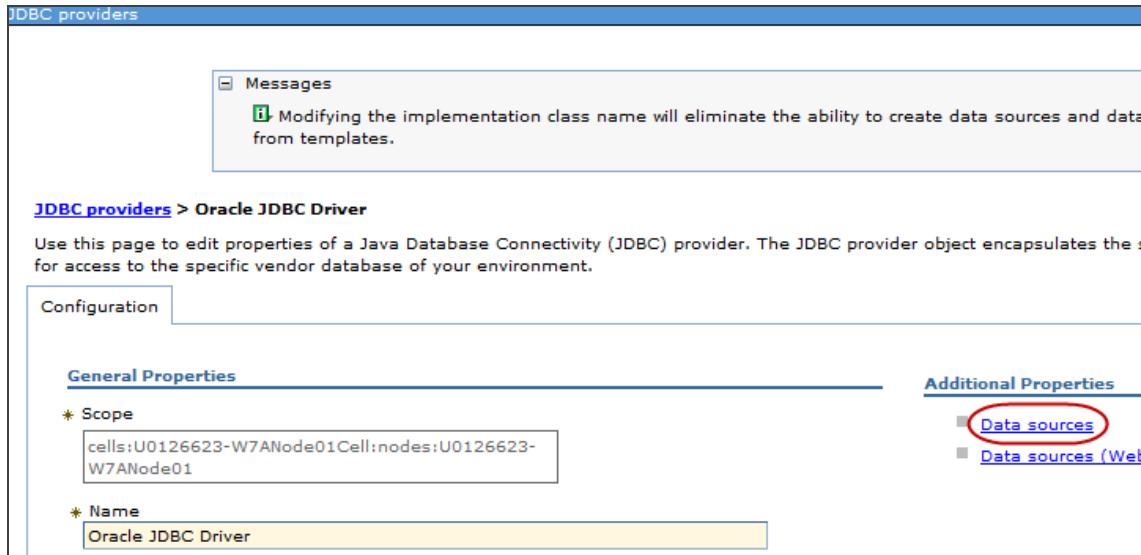
CREATING THE TAX DATA SOURCE

Create the Tax data source by completing the following.

1. Go to **Resources > JDBC > JDBC providers**, and click **Oracle JDBC Driver (XA)**.



2. Click **Data Sources** in the **Additional Properties** section.



JDBC providers

Messages

Modifying the implementation class name will eliminate the ability to create data sources and data from templates.

JDBC providers > Oracle JDBC Driver

Use this page to edit properties of a Java Database Connectivity (JDBC) provider. The JDBC provider object encapsulates the code required for access to the specific vendor database of your environment.

Configuration

General Properties

* Scope: cells:U0126623-W7ANode01Cell:nodes:U0126623-W7ANode01

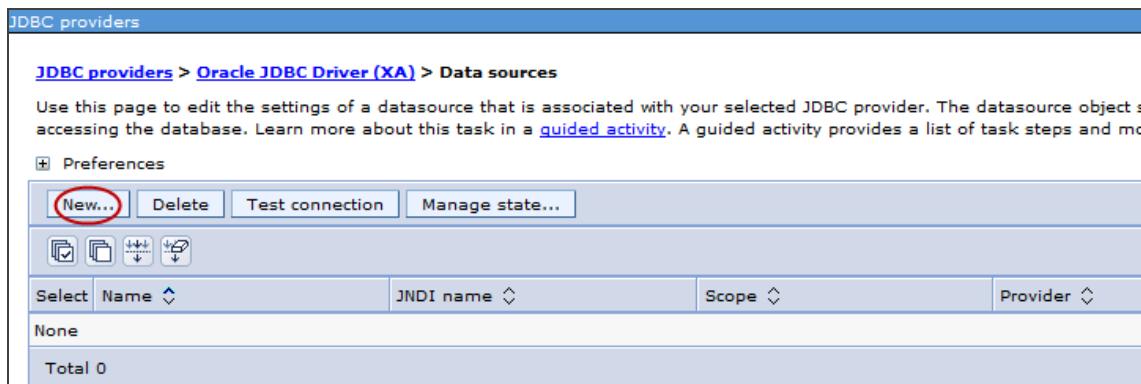
* Name: Oracle JDBC Driver

Additional Properties

Data sources (highlighted with a red circle)

[Data sources \(WebSphere Application Server\)](#)

3. Click **New**.



JDBC providers

JDBC providers > Oracle JDBC Driver (XA) > Data sources

Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. The datasource object is used for accessing the database. Learn more about this task in a [guided activity](#). A guided activity provides a list of task steps and more information.

Preferences

New... (highlighted with a red circle)

Delete **Test connection** **Manage state...**

Select **Name** **JNDI name** **Scope** **Provider**

None

Total 0

4. Enter the basic data source information, and then click **Next**.

Create a data source

Create a data source

→ Step 1: Enter basic data source information

Step 2: Enter database specific properties for the data source

Step 3: Setup security aliases

Step 4: Summary

Enter basic data source information

Set the basic configuration values of a datasource for association with your JDBC physical connections between the application server and the database.

Requirement: Use the Datasources (WebSphere(R) Application Server V4) console the Enterprise JavaBeans(TM) (EJB) 1.0 specification or the Java(TM) Servlet 2.2 specification.

Scope
cells:U0126623-W7ANode01Cell:nodes:U0126623-W7ANode01

JDBC provider name
Oracle JDBC Driver

*** Data source name**
Sabrix Tax Data Source

*** JNDI name**
sabrix.TaxDataSource

Next **Cancel**

FIELD	VALUE
Data source name	Sabrix Tax Data Source
JNDI name	sabrix.TaxDataSource

5. Add the database properties, and then click **Next**.

Create a data source

Create a data source

→ Step 1: Enter basic data source information

→ Step 2: Enter database specific properties for the data source

Step 3: Setup security aliases

Step 4: Summary

Enter database specific properties for the data source

Set these database-specific properties, which are required by the database vendor that are managed through the datasource.

Name	Value
* URL	jdbc:oracle:thin:@localhost:1521:orcl
* Data store helper class name	Oracle11g data store helper
<input type="checkbox"/> Use this data source in container managed persistence (CMP)	

Previous **Next** **Cancel**

FIELD	VALUE
URL	<p>Insert the following string into the Value field, and then change the bold items so they are appropriate for your environment:</p> <p>jdbc:oracle:thin:@host:port:service</p> <ul style="list-style-type: none">• Replace host with the name of the server running the Oracle database.• Replace port with the database port number (for example, 1521).• Replace service with the name of your database service. <p> For Oracle Database 19c (19.6) Enterprise Edition platforms - support starting as of Determination 5.12.1.0 and above - the URL should be:</p> <p>jdbc:oracle:thin:@host:port/service</p>
Data Store Helper Class Name	Oracle11g data store helper.
Container Managed Persistence	Clear this check box.

6. Set up your security aliases, and then click **Next**.

Create a data source

Create a data source

Step 1: Enter basic data source information

Step 2: Enter database specific properties for the data source

→ Step 3: Setup security aliases

Step 4: Summary

Setup security aliases

Select the authentication values for this resource.

Authentication alias for XA recovery
U0126623-W7BNode01/sbxtax

Component-managed authentication alias
U0126623-W7BNode01/sbxtax

Mapping-configuration alias
DefaultPrincipalMapping

Container-managed authentication alias
U0126623-W7BNode01/sbxtax

Note: You can create a new J2C authentication alias by accessing one of the following links in the wizard and your current wizard selections will be lost.

[Global J2C authentication alias](#)
[Security domains](#)

Previous | Next | Cancel

FIELD	VALUE
Authentication alias for XA recovery	Select the Tax user you created in Configuring Authentication (page 14) .
Component-managed authentication alias	Select the Tax user you created in Configuring Authentication (page 14) .
Mapping-configuration alias	Select DefaultPrincipalMapping .
Container-managed authentication alias	Select the Tax user you created in Configuring Authentication (page 14) .

7. If the summary is correct, click **Finish**. Otherwise, click **Previous** to correct your previous entries.

Create a data source

Create a data source

Step 1: Enter basic data source information

Step 2: Enter database specific properties for the data source

Step 3: Setup security aliases

→ Step 4: Summary

Summary

Summary of actions:

Options	Values
Scope	cells:U0126623-W7BNODE01
Data source name	Sabrix Tax Data Source
JNDI name	sabrix.TaxDataSource
Select an existing JDBC provider	Oracle JDBC Driver (X)
Implementation class name	oracle.jdbc.xa.client.OracleXADataSource
URL	jdbc:oracle:thin:@localhost:1521:XE
Data store helper class name	com.ibm.websphere.rjvm.JDBCXAHelper
Use this data source in container managed persistence (CMP)	false
Authentication alias for XA recovery	U0126623-W7BNODE01
Component-managed authentication alias	U0126623-W7BNODE01
Mapping-configuration alias	DefaultPrincipalMapping
Container-managed authentication alias	U0126623-W7BNODE01

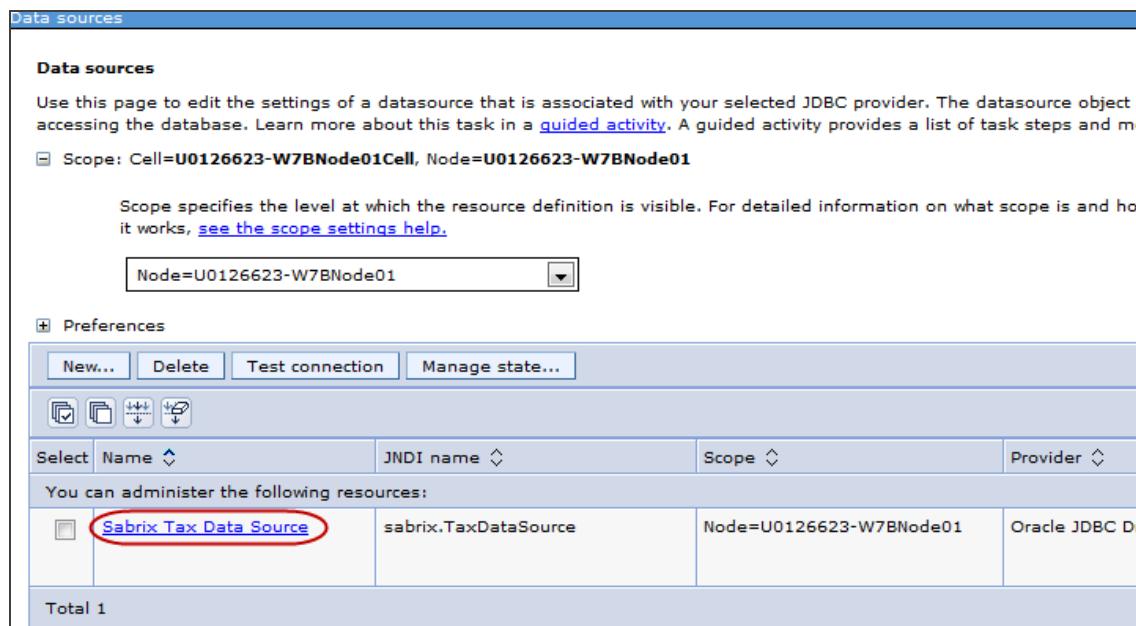
Previous | **Finish** | Cancel

8. Click **Save** directly to the master configuration.

MODIFYING THE TAX DATA SOURCE

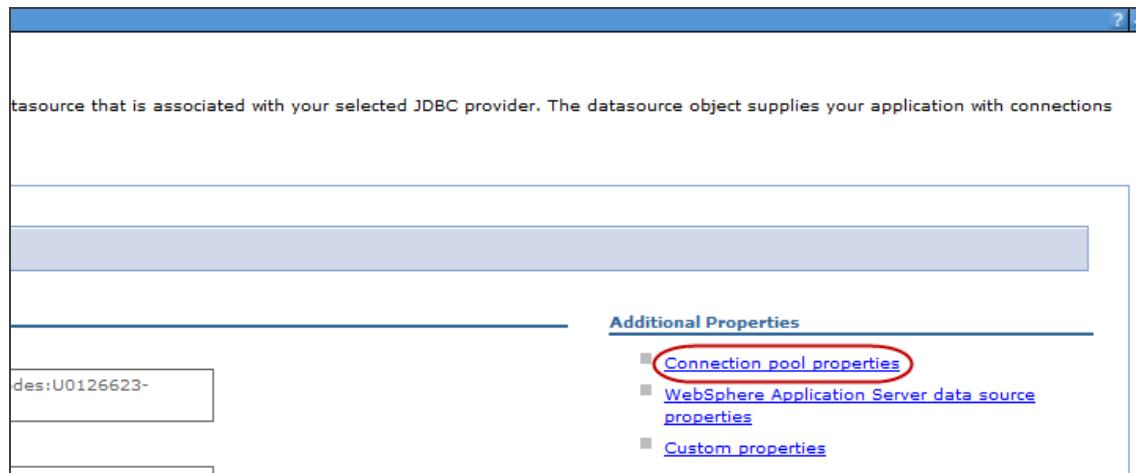
Modify the Tax data source by continuing in **Resources > JDBC > Data sources**.

1. Click **Sabrix Tax Data Source**.



The screenshot shows the 'Data sources' interface in IBM WebSphere. The 'Data sources' list is displayed, showing one entry: 'Sabrix Tax Data Source'. The 'Name' column shows 'sabrix.TaxDataSource', the 'Scope' column shows 'Node=U0126623-W7BNode01', and the 'Provider' column shows 'Oracle JDBC Dr'. The 'Name' column for the data source is circled in red.

2. Click **Connection pool properties** in the **Additional Properties** section.



The screenshot shows the 'Additional Properties' section of the data source configuration. It includes a list of properties: 'Connection pool properties' (which is circled in red), 'WebSphere Application Server data source properties', and 'Custom properties'.

3. Add the following general properties, and then click OK.

Data sources

Data sources > Sabrix Tax Data Source > Connection pools

Use this page to set properties that impact the timing of connection management tasks, which can affect the performance of carefully; your application requirements might warrant changing these values.

Configuration

General Properties

Scope
cells:U0126623-W7BNode01Cell:nodes:U0126623-W7BNode01

* Connection timeout
30 seconds

* Maximum connections
64 connections

* Minimum connections
16 connections

* Reap time
30 seconds

* Unused timeout
60 seconds

* Aged timeout
0 seconds

Purge policy
EntirePool

Additional Properties

- Advanced connection pool
- Connection pool

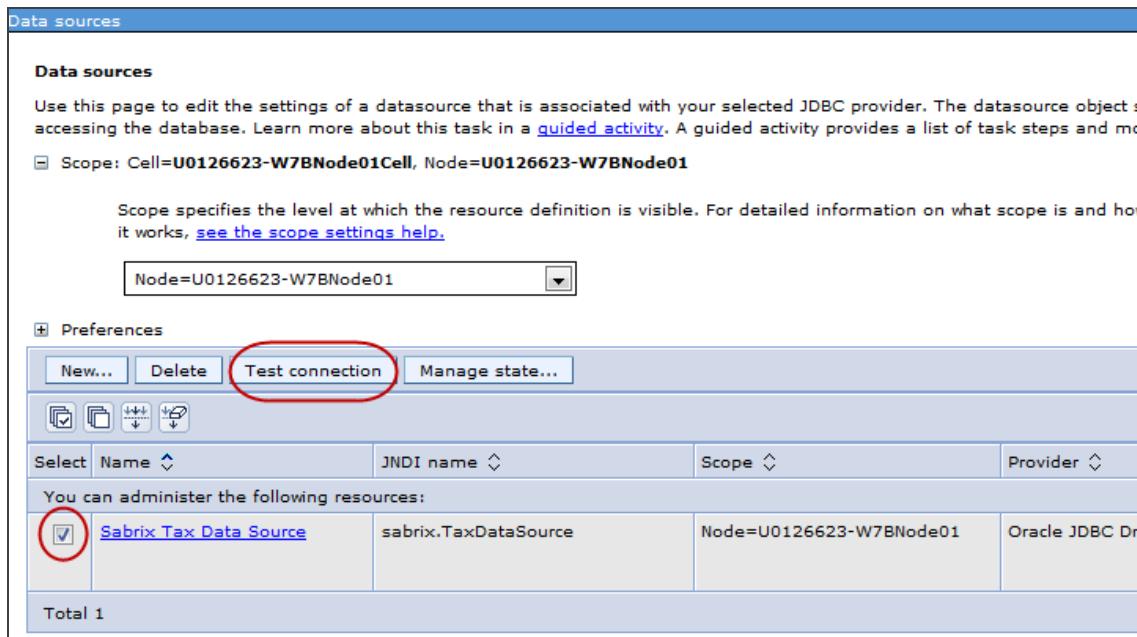
Buttons

Apply OK Reset Cancel

FIELD	VALUE
Connection timeout	30
Maximum connections	64
Minimum connections	16
Reap time	30
Unused timeout	60
Aged timeout	0
Purge policy	EntirePool

- Click **Save directly to the master configuration**.

5. Select **Sabrix Tax Data Source**, and then click **Test Connection**.



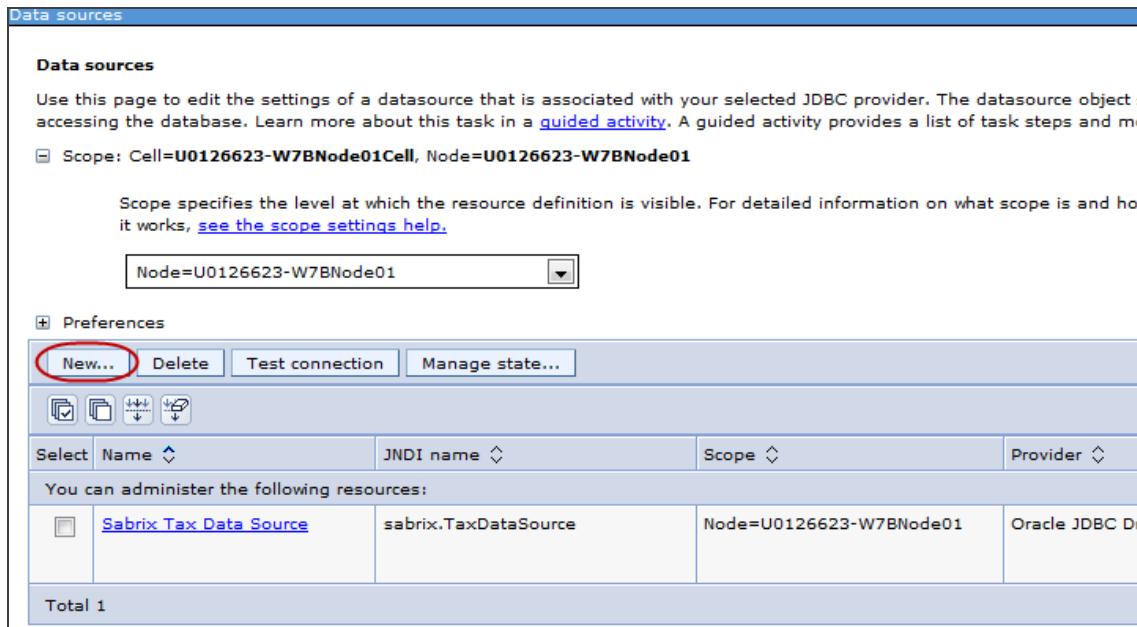
The screenshot shows the 'Data sources' configuration page. At the top, there is a note about scope and a dropdown menu set to 'Node=U0126623-W7BNode01'. Below this is a toolbar with 'New...', 'Delete', 'Test connection' (which is circled in red), and 'Manage state...'. There are also icons for creating, deleting, and managing resources. A table lists data sources, with 'Sabrix Tax Data Source' selected (indicated by a checked checkbox and a red circle). The table columns are 'Select', 'Name', 'JNDI name', 'Scope', and 'Provider'. The 'Name' column shows 'sabrix.TaxDataSource'. The 'Scope' column shows 'Node=U0126623-W7BNode01'. The 'Provider' column shows 'Oracle JDBC Dr'. At the bottom, it says 'Total 1'.

6. If your test is successful, continue to the next section; otherwise, revise your tax data source entries until you successfully complete the test.

CREATING THE AUDIT DATA SOURCE

Create the Audit data source by going to **Resources > JDBC > Data Sources**.

1. Select the appropriate scope, and then click **New**.



Data sources

Data sources

Use this page to edit the settings of a datasource that is associated with your selected JDBC provider. The datasource object is used for accessing the database. Learn more about this task in a [guided activity](#). A guided activity provides a list of task steps and more information.

Scope: Cell=U0126623-W7BNode01Cell, Node=U0126623-W7BNode01

Scope specifies the level at which the resource definition is visible. For detailed information on what scope is and how it works, [see the scope settings help](#).

Node=U0126623-W7BNode01

Preferences

New... Delete Test connection Manage state...

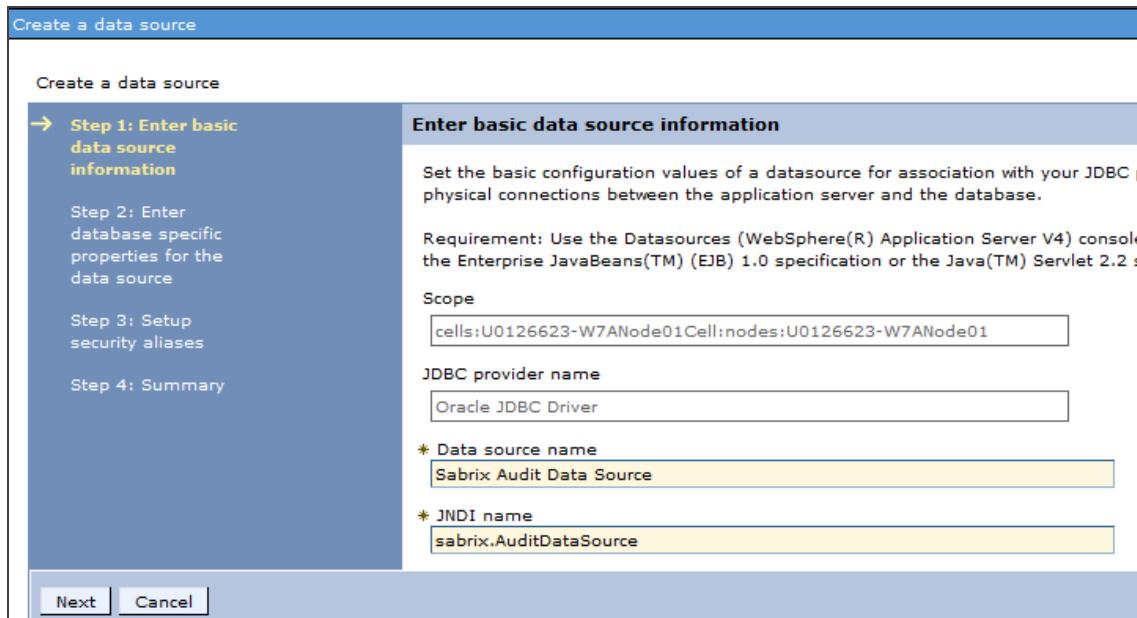
Select Name JNDI name Scope Provider

You can administer the following resources:

<input type="checkbox"/> Sabrix Tax Data Source	sabrix.TaxDataSource	Node=U0126623-W7BNode01	Oracle JDBC Dr
---	----------------------	-------------------------	----------------

Total 1

2. Enter the basic data source information, and then click **Next**.



Create a data source

Create a data source

→ **Step 1: Enter basic data source information**

Step 2: Enter database specific properties for the data source

Step 3: Setup security aliases

Step 4: Summary

Enter basic data source information

Set the basic configuration values of a datasource for association with your JDBC provider. This includes physical connections between the application server and the database.

Requirement: Use the Datasources (WebSphere(R) Application Server V4) console to create a datasource that matches the Enterprise JavaBeans(TM) (EJB) 1.0 specification or the Java(TM) Servlet 2.2 specification.

Scope

cells:U0126623-W7ANode01Cell:nodes:U0126623-W7ANode01

JDBC provider name

Oracle JDBC Driver

*** Data source name**

Sabrix Audit Data Source

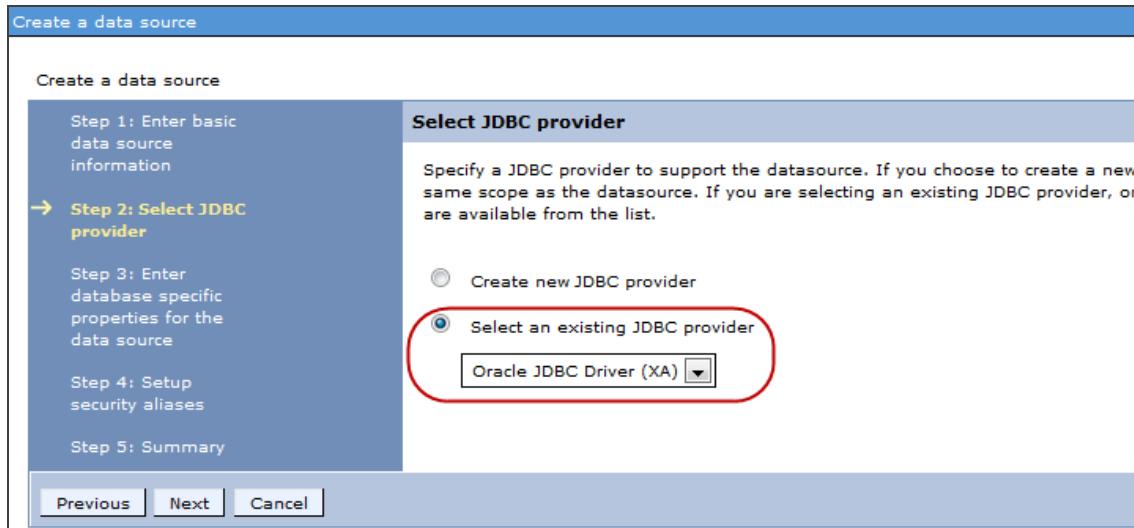
*** JNDI name**

sabrix.AuditDataSource

Next **Cancel**

FIELD	VALUE
Data source name	Sabrix Audit Data Source
JNDI name	sabrix.AuditDataSource

3. Select the option **Select an existing JDBC provider**, and then select **Oracle JDBC Driver (XA)**.



Create a data source

Create a data source

Step 1: Enter basic data source information

→ Step 2: Select JDBC provider

Step 3: Enter database specific properties for the data source

Step 4: Setup security aliases

Step 5: Summary

Select JDBC provider

Specify a JDBC provider to support the datasource. If you choose to create a new, same scope as the datasource. If you are selecting an existing JDBC provider, on are available from the list.

Create new JDBC provider

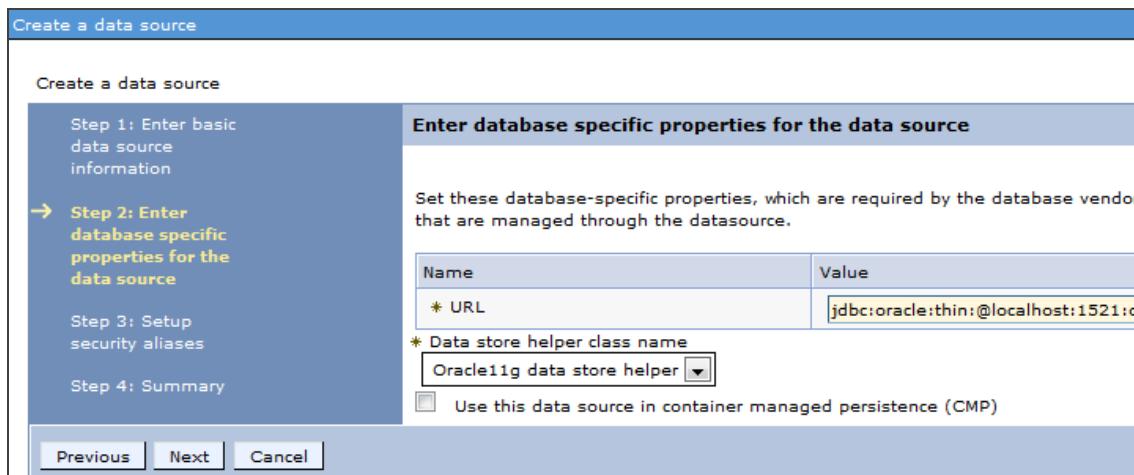
Select an existing JDBC provider

Oracle JDBC Driver (XA) ▾

Previous Next Cancel

4. Click **Next**.

5. Add the database properties, and then click **Next**.



Create a data source

Create a data source

Step 1: Enter basic data source information

→ Step 2: Enter database specific properties for the data source

Step 3: Setup security aliases

Step 4: Summary

Enter database specific properties for the data source

Set these database-specific properties, which are required by the database vendor that are managed through the datasource.

Name	Value
* URL	jdbc:oracle:thin:@localhost:1521:orcl
* Data store helper class name	Oracle11g data store helper ▾
<input type="checkbox"/> Use this data source in container managed persistence (CMP)	

Previous Next Cancel

FIELD	VALUE
URL	<p>Insert the following string into the Value field, and then change the bold items so they are appropriate for your environment:</p> <p>jdbc:oracle:thin:@host:port:service</p> <ul style="list-style-type: none">• Replace host with the name of the server running the Oracle database.• Replace port with the database port number (for example, 1521).• Replace service with the name of your database service. <p> For Oracle Database 19c (19.6) Enterprise Edition platforms - support starting as of Determination 5.12.1.0 and above - the URL should be:</p> <p>jdbc:oracle:thin:@host:port/service</p>
Data Store Helper Class Name	Oracle11g data store helper.
Container Managed Persistence	Clear this check box.

6. Set up your security aliases, and then click **Next**.

Create a data source

Create a data source

Step 1: Enter basic data source information

Step 2: Select JDBC provider

Step 3: Enter database specific properties for the data source

→ Step 4: Setup security aliases

Step 5: Summary

Setup security aliases

Select the authentication values for this resource.

Authentication alias for XA recovery
U0126623-W7BNode01/sbxaud

Component-managed authentication alias
U0126623-W7BNode01/sbxaud

Mapping-configuration alias
DefaultPrincipalMapping

Container-managed authentication alias
U0126623-W7BNode01/sbxaud

Note: You can create a new J2C authentication alias by accessing one of the following wizard and your current wizard selections will be lost.

[Global J2C authentication alias](#)
[Security domains](#)

Previous | Next | Cancel

FIELD	VALUE
Authentication alias for XA recovery	Select the Audit user you created in Configuring Authentication (page 14) .
Component-managed authentication alias	Select the Audit user you created in Configuring Authentication (page 14) .
Mapping-configuration alias	Select DefaultPrincipalMapping .
Container-managed authentication alias	Select the Audit user you created in Configuring Authentication (page 14) .

7. If the summary is correct, click **Finish**; otherwise, click **Previous** to correct your previous entries.

Create a data source

Create a data source

Step 1: Enter basic data source information

Step 2: Select JDBC provider

Step 3: Enter database specific properties for the data source

Step 4: Setup security aliases

→ Step 5: Summary

Summary

Summary of actions:

Options	Values
Scope	cells:U0126623-W7BN W7BNode01
Data source name	Sabrix Audit Data Sou
JNDI name	sabrix.AuditDataSource
Select an existing JDBC provider	Oracle JDBC Driver (X)
Implementation class name	oracle.jdbc.xa.client.O
URL	jdbc:oracle:thin:@loc
Data store helper class name	com.ibm.websphere.r
Use this data source in container managed persistence (CMP)	false
Authentication alias for XA recovery	U0126623-W7BNode0
Component-managed authentication alias	U0126623-W7BNode0
Mapping-configuration alias	DefaultPrincipalMappi
Container-managed authentication alias	U0126623-W7BNode0

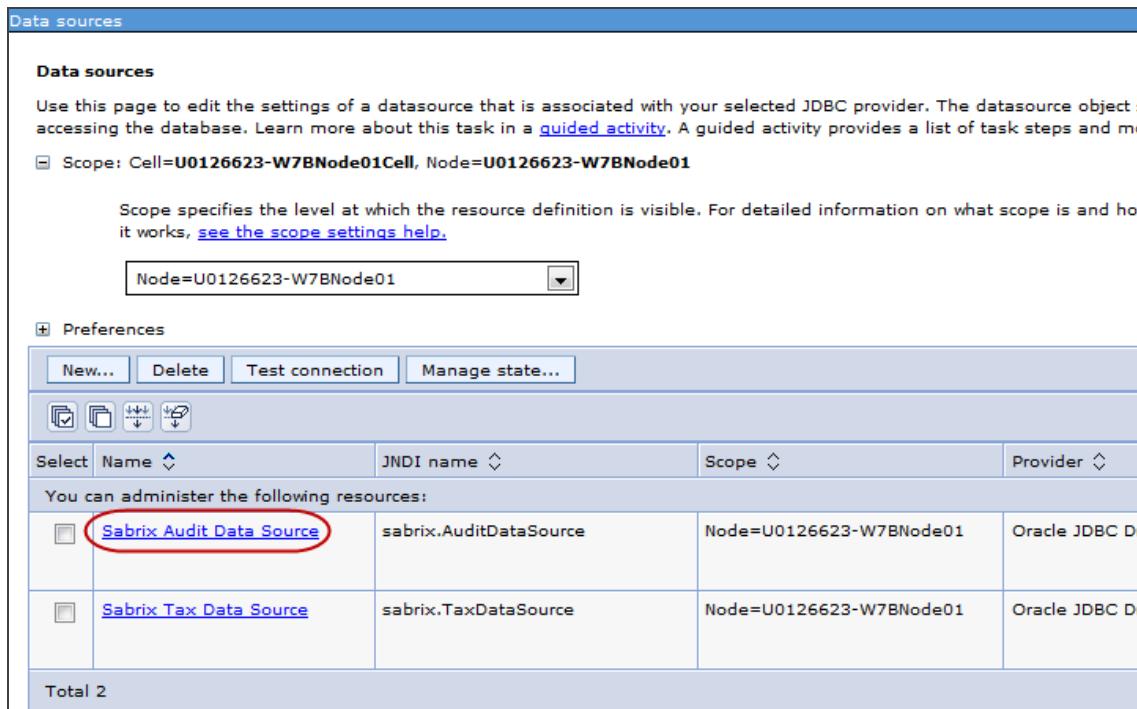
Previous | **Finish** | Cancel

8. Click **Save directly to the master configuration**.

MODIFYING THE AUDIT DATA SOURCE

Modify the Audit data source by continuing in **Resources > JDBC > Data sources**.

1. Click **Sabrix Audit Data Source**.

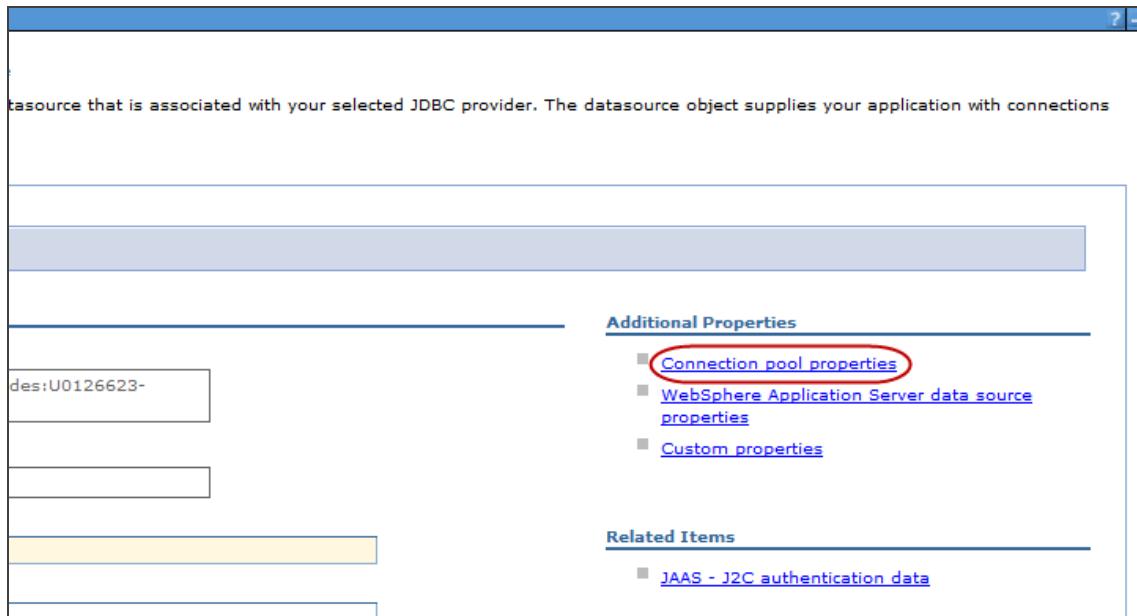


The screenshot shows the 'Data sources' interface in IBM WebSphere. The 'Scope' dropdown is set to 'Node=U0126623-W7BNode01'. The 'Preferences' section includes buttons for 'New...', 'Delete', 'Test connection', and 'Manage state...'. The main table lists two resources:

Select	Name	JNDI name	Scope	Provider
<input type="checkbox"/>	Sabrix Audit Data Source	sabrix.AuditDataSource	Node=U0126623-W7BNode01	Oracle JDBC Driver
<input type="checkbox"/>	Sabrix Tax Data Source	sabrix.TaxDataSource	Node=U0126623-W7BNode01	Oracle JDBC Driver

Total 2

2. Click **Connection pool properties** in the **Additional Properties** section.



The screenshot shows the properties for the 'Sabrix Audit Data Source'. The 'Additional Properties' section is expanded, showing the following options:

- [Connection pool properties](#) (highlighted with a red circle)
- [WebSphere Application Server data source properties](#)
- [Custom properties](#)

The 'Related Items' section includes a link to [JAAS - J2C authentication data](#).

3. Add the following general properties, and then click OK.

Data sources

Data sources > Sabrix Audit Data Source > Connection pools

Use this page to set properties that impact the timing of connection management tasks, which can affect the performance of carefully; your application requirements might warrant changing these values.

Configuration

General Properties

Scope
cells:U0126623-W7BNode01Cell:nodes:U0126623-W7BNode01

Additional Properties

- [Advanced connection pool properties](#)
- [Connection pool statistics](#)

* **Connection timeout**
30 seconds

* **Maximum connections**
64 connections

* **Minimum connections**
16 connections

* **Reap time**
30 seconds

* **Unused timeout**
60 seconds

* **Aged timeout**
0 seconds

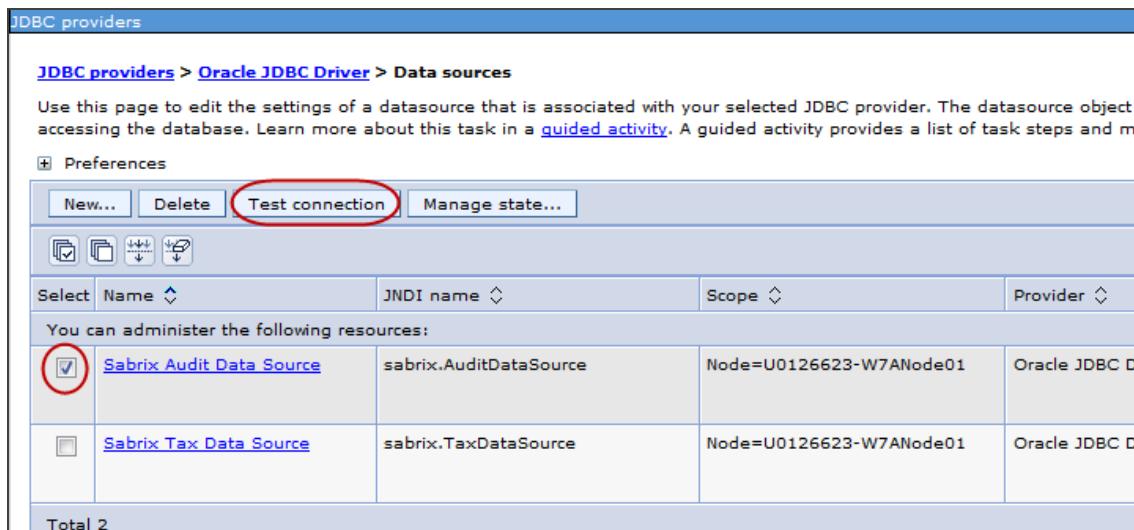
Purge policy
EntirePool

Buttons

Apply OK Reset Cancel

FIELD	VALUE
Connection timeout	30
Maximum connections	64
Minimum connections	16
Reap time	30
Unused timeout	60
Aged timeout	0
Purge policy	EntirePool

4. Click **Save** directly to the master configuration.
5. Select **Sabrix Audit Data Source**, and then click **Test Connection**.



The screenshot shows the 'JDBC providers' interface for the Oracle JDBC Driver. The 'Data sources' tab is selected. A red circle highlights the 'Test connection' button in the top navigation bar. The main table lists two data sources: 'Sabrix Audit Data Source' and 'Sabrix Tax Data Source'. The 'Sabrix Audit Data Source' row has a checked checkbox in the first column. The table includes columns for Select, Name, JNDI name, Scope, and Provider.

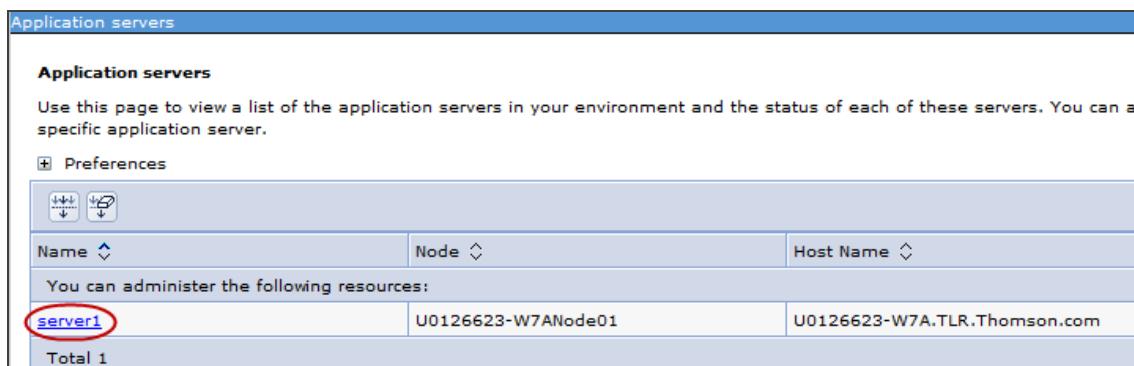
Select	Name	JNDI name	Scope	Provider
<input checked="" type="checkbox"/>	Sabrix Audit Data Source	sabrix.AuditDataSource	Node=U0126623-W7ANode01	Oracle JDBC D
<input type="checkbox"/>	Sabrix Tax Data Source	sabrix.TaxDataSource	Node=U0126623-W7ANode01	Oracle JDBC D

6. If your test is successful, continue to the next section; otherwise, revise your audit data source entries until you successfully complete the test.

CONFIGURING THE JAVA VIRTUAL MACHINE

The default heap sizes for the Java Virtual Machine are too low to deploy the Determination software successfully. Change the sizes by completing the following.

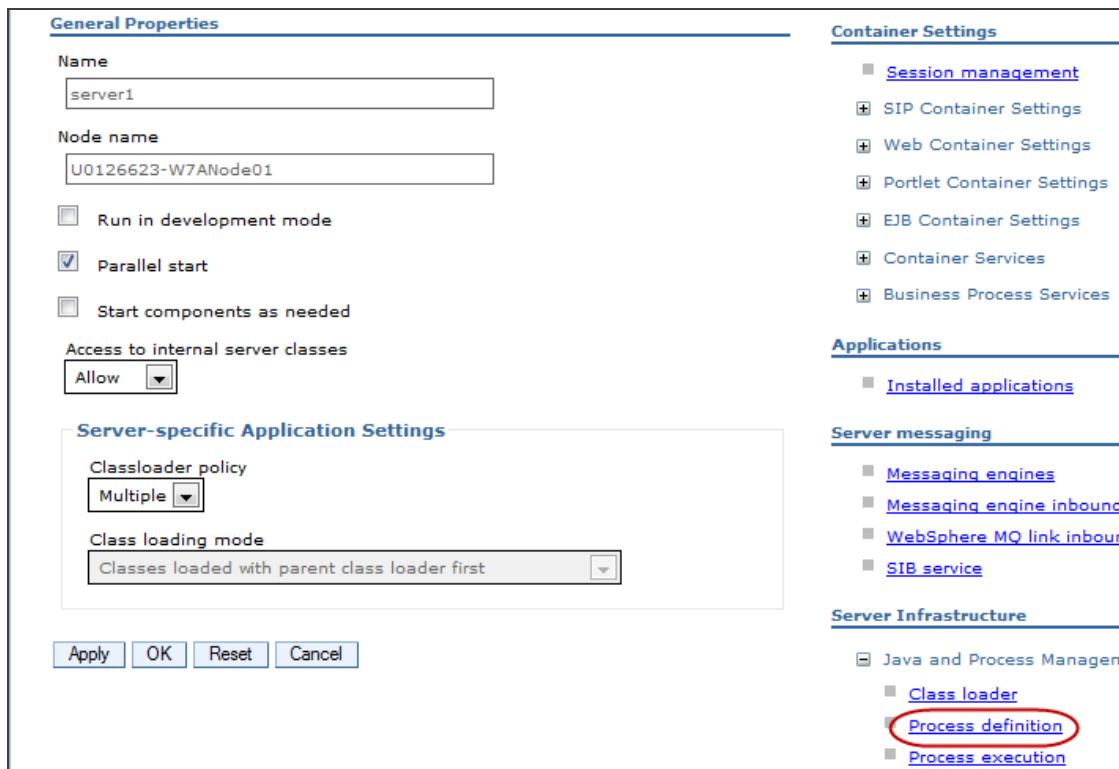
1. Go to **Servers > Server Types > WebSphere application servers**.
2. Click on your server.



The screenshot shows the 'Application servers' interface. A red circle highlights the 'server1' entry in the list. The table includes columns for Name, Node, and Host Name.

Name	Node	Host Name
server1	U0126623-W7ANode01	U0126623-W7A.TLR.Thomson.com

3. Expand **Java and Process Management** in the **Server Infrastructure** list, and then click **Process Definition**.



4. Click **Java Virtual Machine** in the **Additional Properties** list.



5. Complete the following fields using the table below as a guide.

Initial heap size
2048 MB

Maximum heap size
2048 MB

Run HProf

HProf Arguments

Debug Mode

Debug arguments
-agentlib:jdwp=transport=dt_socket,server=y,suspend=n,address=7777

Generic JVM arguments
-Djava.awt.headless=true -Djava.net.preferIPv4Stack=true

FIELD	VALUE
Initial Heap Size	2048 (minimum)  We recommend allocating at least 6144m.
Maximum Heap Size	2048 (minimum)  We recommend allocating at least 6144m.
Generic JVM arguments	-Djava.awt.headless=true -Djava.net.preferIPv4Stack=true
Generic JVM arguments	-DBASE_SABRIX_DIRECTORY=<logging_directory> 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. Replace <logging_directory> with your logging directory. If you are only running one instance of the application server, you can skip this step and set the parameter in Determination on the Configuration page. See the Help for further details.

6. Click OK, and then click **Save directly to the master configuration**.

ENABLING AUTOMATIC TAX DATA DOWNLOADS (OPTIONAL)

If you plan to use the tax data automatic download feature, you need to complete both a WebSphere configuration and a configuration inside Determination. The following explains the WebSphere configuration, and you should consult Help for details about Determination configuration. If you do not plan to use this feature, then skip to [Deploying the Application \(page 49\)](#).

There are two parts for the WebSphere configuration of this feature:

- Exporting the Customer Center certificate.
- Configuring the certificate in WebSphere.

Exporting the Customer Center Certificate

The following is an example using Internet Explorer:

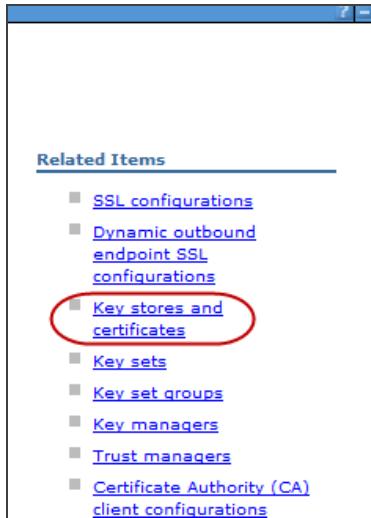
1. Go to the following: <https://customercenter.sabrix.com/sabrixcc/>
2. Click the lock icon, which brings up the **Website Identification** window.
3. Click **View certificates**.
4. Click the **Details** tab, and then click **Copy to File**.
5. Click **Next** in the **Certificate Export Wizard**.
6. Accept the default for the **Export File Format (DER encoded binary)**, and then click **Next**.
7. Specify a name and directory path, and then click **Next**.
8. Click **Finish**, and then **OK**.
9. Upload the certificate to the server hosting WebSphere.

You will use this certificate file in the following section.

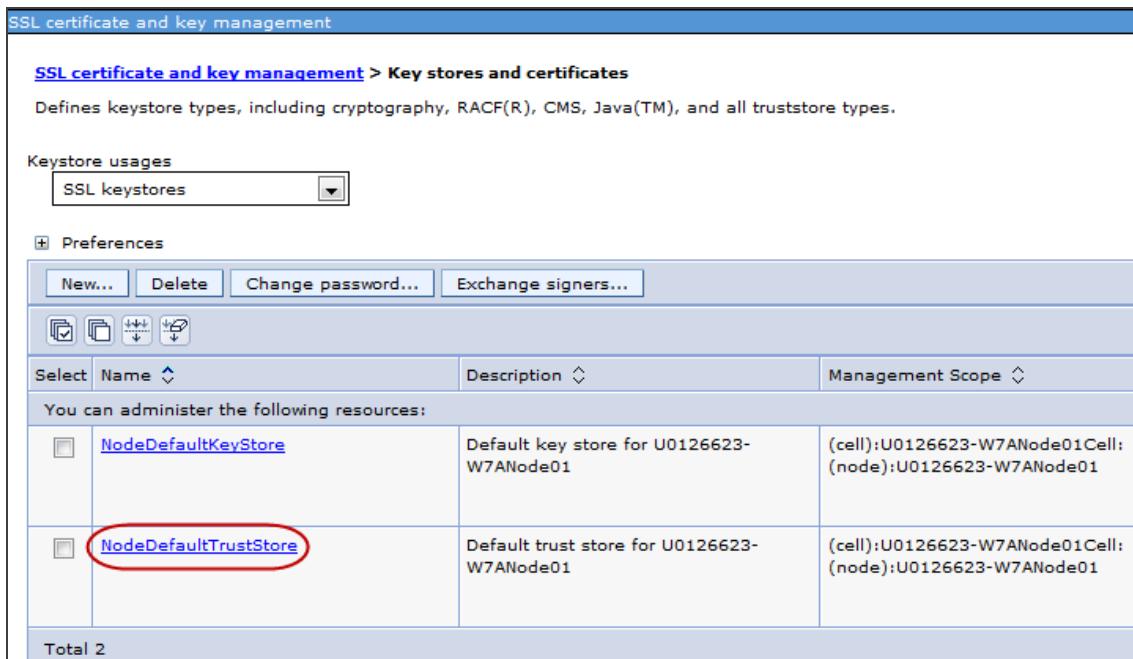
Configuring the Certificate in WebSphere

Using the Integrated Solution Console, complete the following:

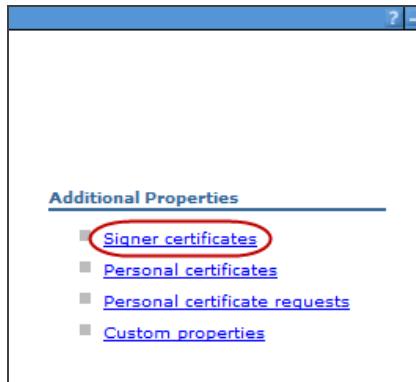
1. Under **Security** in the left pane, click **SSL certificate and key management**.
2. Under **Related Items**, click **Key stores and certificates**.



3. Click **NodeDefaultTrustStore**.



4. Under **Additional Properties**, click **Signer certificates**.



5. Click **Add**.

The screenshot shows the 'SSL certificate and key management' interface. Under 'Signer certificates', there is a table with one entry:

Select	Alias	Issued to	Fingerprint (SHA Digest)
<input type="checkbox"/>	root	CN=U0126623-W7A.TLR.Thomson.com, OU=Root Certificate, OU=U0126623-W7ANode01Cell, OU=U0126623-W7ANode01, O=IBM, C=US	60:99:5D:05:01:77:53:18:AF:F0:5E:49:E4:12:06:96

Total 1

6. Complete the following general properties.

The screenshot shows the 'Add signer certificate' dialog box. It has the following fields:

- * Alias: My_Cert
- * File name: C:\TEMP\My_Cert.cer (highlighted with a red circle)
- Data type: Binary DER data

Buttons at the bottom: Apply, OK, Reset, Cancel.

FIELD	VALUE
Alias	Enter a label of your choice.
File name	Insert the name and directory path where you stored your exported certificate.
Data type	Select Binary DER data .

7. Click OK, and then click **Save directly to the master configuration**.

After you finish your WebSphere configurations and you begin your Determination configurations, consult Help for directions about configuring the automatic download feature.

CONFIGURING CSRGUARD

When enabled, CSRFGuard provides security against cross-site request forgery security attacks. By default, CSRFGuard is disabled. To enable this feature, contact Customer Support or visit the Knowledge Base.

Complete the following:

1. Stop WebSphere.
2. Navigate to the following directory in WebSphere:
`<WebSphereBaseDirectory>/AppServer/lib/`
3. In the directory, create a file called *Owasp.CsrfGuard.overlay.properties*, and then insert the following lines:

```

1  org.owasp.csrfguard.configuration.provider.factory=org.
2    owasp.csrfguard.config.overlay.ConfigurationOverlayProviderFactor
3    y
4  org.owasp.csrfguard.Enabled=false
5  org.owasp.csrfguard.PRNG=IBMSecureRandom
6  org.owasp.csrfguard.PRNG.Provider=IBMJCE

```

4. Save and close *Owasp.CsrfGuard.overlay.properties*.
5. Restart WebSphere.

DEPLOYING THE APPLICATION

The Determination application is contained in the `sabrix.ear` file, which is in the root directory of the installation `.zip` file you downloaded and extracted earlier. Complete the following steps to deploy the application.

 These deployment steps are for a default installation. If your environment requires advanced settings for deployment, choose those as you complete the steps below.

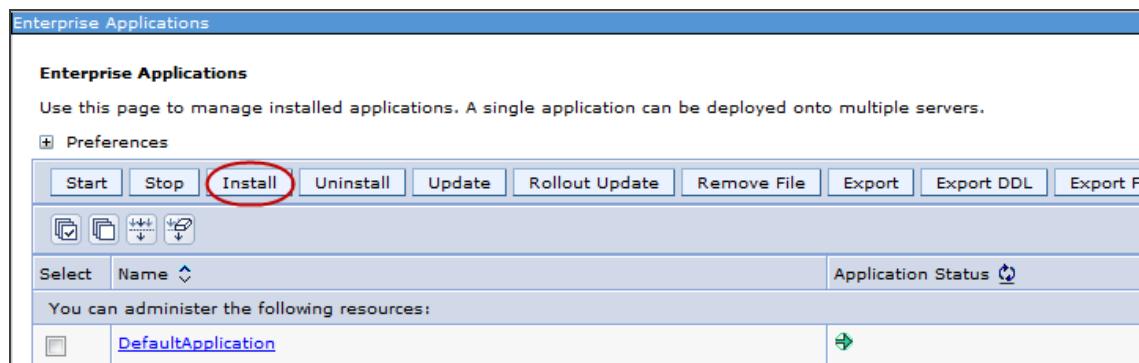
The deployment steps are grouped into four sections:

- Loading the Application
- Selecting Installation Options
- Configuring Class Loading
- Setting a Custom Property

Loading the Application

The following steps guide you through the process of loading the Determination application.

1. From the console, go to **Applications > Application Types > WebSphere enterprise applications**.
2. Click **Install**.



3. Enter or browse to the location of the `sabrix.ear` file, and then click **Next**.

Preparing for the application installation

Specify the EAR, WAR, JAR, or SAR module to upload and install.

Path to the new application

Local file system

Full path sabrix.ear

Remote file system

Full path

4. Select **Detailed - Show all installation options and parameters**, and then click **Next**.

Preparing for the application installation

How do you want to install the application?

Fast Path - Prompt only when additional information is required.

Detailed - Show all installation options and parameters.

Choose to generate default bindings and mappings

Remain on the screen, and continue with the steps in the following section.

Selecting Installation Options

Complete each step below to select the installation options.

1. On **Step 1: Select installation options**, choose the following installation options, and then click **Next**.

Install New Application

Specify options for installing enterprise applications and modules.

Step 1: Select installation options

Step 2 Map modules to servers
Step 3 Provide JSP reloading options for Web modules
Step 4 Map shared libraries
Step 5 Map shared library relationships
Step 6 Initialize parameters for servlets
Step 7 Map resource references to resources

Select installation options

Specify the various options that are available for your application.

Precompile JavaServer Pages files
 Distribute application
 Use Binary Configuration
 Deploy enterprise beans
 Application name: SabrixTaxEngine
 Create MBeans for resources
 Override class reloading settings for Web and EJB modules
 Reload interval in seconds: 0

FIELD	VALUE
Distribute application	Check the box
Create MBeans for resources	Check the box
Override class reloading settings for Web and EJB modules	Check the box
Reload interval in seconds	Enter zero: 0

2. On **Step 2: Map modules to servers**, if there is just one entry in **Clusters and servers**, accept the defaults, and then click **Next**. If there are multiple entries in **Clusters and servers**, highlight the container(s) you want to deploy to, select the three check boxes below, and click **Apply**. When you are done, click **Next**.

Deploying the Application

Install New Application

Specify options for installing enterprise applications and modules.

Step 1 Select installation options

→ **Step 2: Map modules to servers**

Step 3 Provide JSP reloading options for Web modules

Step 4 Map shared libraries

Step 5 Map shared library relationships

Step 6 Initialize parameters for servlets

Step 7 Map resource references to resources

★ **Step 8 Map virtual hosts for Web modules**

Map modules to servers

Specify targets such as application servers or clusters of application servers where you want to install your application. Modules can be installed on the same application server or dispersed among several Web servers as targets that serve as routers for requests to this application. The plug-in configuration file is generated, based on the applications that are routed through.

Clusters and servers:

WebSphere:cell=PDXSASDV062Node01Cell,node=PDXSASDV062Node01,server=server1

Select	Module	URI	Server
<input type="checkbox"/>	Sabrix System Web Application	sabrix.war,WEB-INF/web.xml	WebSphere:cell=PDXSASDV062Node01Cell,node=PDXSASDV062Node01,server=server1
<input type="checkbox"/>	Sabrix Registration Web Application	registration-validation.war,WEB-INF/web.xml	WebSphere:cell=PDXSASDV062Node01Cell,node=PDXSASDV062Node01,server=server1
<input type="checkbox"/>	determination-help.war	determination-help.war,WEB-INF/web.xml	WebSphere:cell=PDXSASDV062Node01Cell,node=PDXSASDV062Node01,server=server1

3. On **Step 3: Provide JSP reloading options for Web modules**, click **Next** to accept the defaults.

Specify options for installing enterprise applications and modules.

Step 1 Select installation options

Step 2 Map modules to servers

→ **Step 3: Provide JSP reloading options for Web modules**

Step 4 Map shared libraries

Step 5 Map shared library relationships

Step 6 Initialize parameters for servlets

Provide JSP reloading options for Web modules

JSP reloading options for Web modules

Configure Servlet and JSP reload attributes in web modules.

Web module	URI	JSP enable class reloading	JSP reload in seconds
Sabrix System Web Application	sabrix.war,WEB-INF/web.xml	<input checked="" type="checkbox"/>	10
Sabrix Registration Web Application	registration-validation.war,WEB-INF/web.xml	<input checked="" type="checkbox"/>	10
determination-help.war	determination-help.war,WEB-INF/web.xml	<input checked="" type="checkbox"/>	10

4. On **Step 4: Map shared libraries**, click **Next** to accept the defaults.

Install New Application

Specify options for installing enterprise applications and modules.

Step 1 Select installation options Step 2 Map modules to servers Step 3 Provide JSP reloading options for Web modules → Step 4: Map shared libraries Step 5 Map shared library relationships Step 6 Initialize parameters for servlets Step 7 Map resource references	Map shared libraries <p>Specify shared libraries that the application or individual modules reference. These configuration at the appropriate scope.</p> <table border="1"> <tr> <td colspan="3">Reference shared libraries</td> </tr> <tr> <th>Select</th> <th>Application</th> <th>URI</th> </tr> <tr> <td><input type="checkbox"/></td> <td>SabrixTaxEngine</td> <td>META-INF/application.xml</td> </tr> <tr> <th>Select</th> <th>Module</th> <th>URI</th> </tr> <tr> <td><input type="checkbox"/></td> <td>Sabrix System Web Application</td> <td>sabrix.war,WEB-INF/web.xml</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Sabrix Registration Web Application</td> <td>registration-validation.war,WEB-INF/web.xml</td> </tr> </table>	Reference shared libraries			Select	Application	URI	<input type="checkbox"/>	SabrixTaxEngine	META-INF/application.xml	Select	Module	URI	<input type="checkbox"/>	Sabrix System Web Application	sabrix.war,WEB-INF/web.xml	<input type="checkbox"/>	Sabrix Registration Web Application	registration-validation.war,WEB-INF/web.xml
Reference shared libraries																			
Select	Application	URI																	
<input type="checkbox"/>	SabrixTaxEngine	META-INF/application.xml																	
Select	Module	URI																	
<input type="checkbox"/>	Sabrix System Web Application	sabrix.war,WEB-INF/web.xml																	
<input type="checkbox"/>	Sabrix Registration Web Application	registration-validation.war,WEB-INF/web.xml																	

5. On **Step 5: Map shared library relationships**, click **Next** to accept the defaults.

Install New Application

Specify options for installing enterprise applications and modules.

Step 1 Select installation options Step 2 Map modules to servers Step 3 Provide JSP reloading options for Web modules Step 4 Map shared libraries → Step 5: Map shared library relationships Step 6 Initialize parameters for servlets Step 7 Map resource references	Map shared library relationships <p>Specify asset or composition unit IDs as shared libraries that the application or individual modules reference. If a composition unit ID is specified, it must be part of the business level application to which the application belongs. If an asset ID is specified, a composition unit is created from the asset. When asset or composition unit IDs are specified as shared libraries, the shared libraries can be specified as shared libraries.</p> <table border="1"> <tr> <td colspan="3">Reference shared libraries</td> </tr> <tr> <th>Select</th> <th>Application</th> <th>URI</th> </tr> <tr> <td><input type="checkbox"/></td> <td>SabrixTaxEngine</td> <td>META-INF/application.xml</td> </tr> <tr> <th>Select</th> <th>Module</th> <th>URI</th> </tr> <tr> <td><input type="checkbox"/></td> <td>Sabrix System Web Application</td> <td>sabrix.war,WEB-INF/web.xml</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Sabrix Registration Web Application</td> <td>registration-validation.war,WEB-INF/web.xml</td> </tr> </table>	Reference shared libraries			Select	Application	URI	<input type="checkbox"/>	SabrixTaxEngine	META-INF/application.xml	Select	Module	URI	<input type="checkbox"/>	Sabrix System Web Application	sabrix.war,WEB-INF/web.xml	<input type="checkbox"/>	Sabrix Registration Web Application	registration-validation.war,WEB-INF/web.xml
Reference shared libraries																			
Select	Application	URI																	
<input type="checkbox"/>	SabrixTaxEngine	META-INF/application.xml																	
Select	Module	URI																	
<input type="checkbox"/>	Sabrix System Web Application	sabrix.war,WEB-INF/web.xml																	
<input type="checkbox"/>	Sabrix Registration Web Application	registration-validation.war,WEB-INF/web.xml																	

6. On **Step 6: Initialize parameters for servlets**, click **Next** to accept the defaults.

Deploying the Application

Install New Application

Specify options for installing enterprise applications and modules.

Initialize parameters for servlets					
Configure values for servlet's initial parameters in web modules.					
Web module	URI	Servlet	Name	Description	
Sabrix System Web Application	sabrix.war,WEB-INF/web.xml	CXFServlet	service-list-title		
Sabrix System Web Application	sabrix.war,WEB-INF/web.xml	XMLInvoiceServlet	debug		
Sabrix System Web Application	sabrix.war,WEB-INF/web.xml	XMLInvoiceServlet	retries		
Sabrix System Web Application	sabrix.war,WEB-INF/web.xml	SOAPInvoiceServlet	debug		

Step 1 Select installation options
Step 2 Map modules to servers
Step 3 Provide JSP reloading options for Web modules
Step 4 Map shared libraries
Step 5 Map shared library relationships
→ Step 6: Initialize parameters for servlets

7. On Step 7: Map resource references to resources, click **Next** to accept the defaults.

Install New Application

Specify options for installing enterprise applications and modules.

Map resource references to resources					
Each resource reference that is defined in your application must be mapped to a resource.					
javax.sql.DataSource					
<input type="button" value="Set Multiple JNDI Names"/> <input type="button" value="Modify Resource Authentication Method..."/> <input type="button" value="Export"/> <input type="button" value="Import"/>					
<input type="checkbox"/> <input type="checkbox"/>					
Select	Module	Bean	URI	Resource Reference	Target Resource
<input type="checkbox"/>	Sabrix System Web Application		sabrix.war,WEB-INF/web.xml	jdbc/TaxDataSource	<input type="button" value="sabrix.TaxDataSource"/> <input type="button" value="Browse..."/>
<input type="checkbox"/>	Sabrix System Web Application		sabrix.war,WEB-INF/web.xml	jdbc/AuditDataSource	<input type="button" value="sabrix.AuditDataSource"/> <input type="button" value="Browse..."/>

Step 1 Select installation options
Step 2 Map modules to servers
Step 3 Provide JSP reloading options for Web modules
Step 4 Map shared libraries
Step 5 Map shared library relationships
Step 6 Initialize parameters for servlets
→ Step 7: Map resource references to resources
★ Step 8: Map virtual hosts for Web modules

8. On Step 8: Map virtual hosts for Web modules, click **Next**, unless you want to specify the virtual host.

Specify options for installing enterprise applications and modules.

Step 1 Select installation options

Step 2 Map modules to servers

Step 3 Provide JSP reloading options for Web modules

Step 4 Map shared libraries

Step 5 Map shared library relationships

Step 6 Initialize parameters for servlets

Step 7 Map resource references to resources

→ **Step 8: Map virtual hosts for Web modules**

Map virtual hosts for Web modules

Specify the virtual host for the Web modules that are contained in your application. You can map modules on the same virtual host or disperse them among several hosts.

Apply Multiple Mappings

Select	Web module	Virtual host
<input type="checkbox"/>	Sabrix System Web Application	<input type="button" value="default_host ▾"/>
<input type="checkbox"/>	Sabrix Registration Web Application	<input type="button" value="default_host ▾"/>
<input type="checkbox"/>	determination-help.war	<input type="button" value="default_host ▾"/>

9. On **Step 9: Map context roots for Web modules**, click **Next** to accept the defaults.

Install New Application

Specify options for installing enterprise applications and modules.

Step 1 Select installation options

Step 2 Map modules to servers

Step 3 Provide JSP reloading options for Web modules

Step 4 Map shared libraries

Step 5 Map shared library relationships

Step 6 Initialize parameters for servlets

Step 7 Map resource references to resources

Step 8 Map virtual hosts for Web modules

→ **Step 9: Map context roots for Web modules**

Map context roots for Web modules

Configure values for context roots in web modules.

Web module	URI	Context Root
Sabrix System Web Application	sabrix.war,WEB-INF/web.xml	/sabrix
Sabrix Registration Web Application	registration-validation.war,WEB-INF/web.xml	/sabrix-extensio
determination-help.war	determination-help.war,WEB-INF/web.xml	/determination-H

10. On Step 10: Map JASPI provider, click **Next** to accept the defaults.

Install New Application

Specify options for installing enterprise applications and modules.

Step 1 Select installation options

Step 2 Map modules to servers

Step 3 Provide JSP reloading options for Web modules

Step 4 Map shared libraries

Step 5 Map shared library relationships

Step 6 Initialize parameters for servlets

Step 7 Map resource references to resources

Step 8 Map virtual hosts for Web modules

Step 9 Map context roots for Web modules

→ **Step 10: Map JASPI provider**

Map JASPI provider

JASPI providers offer an alternative to JAAS pluggable authentication for web modules. The application inherits the JASPI settings defined in the WebSphere Application Server global security configuration and web modules inherit the application setting. However, you can defaults by using wsadmin or the administrative console.

Select JASPI provider ▾

Select	Application	URI	JASPI name
<input type="checkbox"/>	SabrixTaxEngine	META-INF/application.xml	
Select	Module	URI	JASPI name
<input type="checkbox"/>	Sabrix System Web Application	sabrix.war,WEB-INF/web.xml	
<input type="checkbox"/>	Sabrix Registration Web Application	registration-validation.war,WEB-INF/web.xml	
<input type="checkbox"/>	determination-help.war	WEB-INF/web.xml	

11. On Step 11: Display module build Ids, click **Next**.

Install New Application

Specify options for installing enterprise applications and modules.

Step 1 Select installation options	Display module build IDs								
Step 2 Map modules to servers	Display module build IDs.								
Step 3 Provide JSP reloading options for Web modules	<table border="1"><thead><tr><th>Module</th><th>URI</th></tr></thead><tbody><tr><td>Sabrix System Web Application</td><td>sabrix.war,WEB-INF/web.xml</td></tr><tr><td>Sabrix Registration Web Application</td><td>registration-validation.war,WEB-INF/web.xml</td></tr><tr><td>determination-help.war</td><td>determination-help.war,WEB-INF/web.xml</td></tr></tbody></table>	Module	URI	Sabrix System Web Application	sabrix.war,WEB-INF/web.xml	Sabrix Registration Web Application	registration-validation.war,WEB-INF/web.xml	determination-help.war	determination-help.war,WEB-INF/web.xml
Module	URI								
Sabrix System Web Application	sabrix.war,WEB-INF/web.xml								
Sabrix Registration Web Application	registration-validation.war,WEB-INF/web.xml								
determination-help.war	determination-help.war,WEB-INF/web.xml								
Step 4 Map shared libraries									
Step 5 Map shared library relationships									
Step 6 Initialize parameters for servlets									
Step 7 Map resource references to resources									
Step 8 Map virtual hosts for Web modules									
Step 9 Map context roots for Web modules									
Step 10 Map JASPI provider									
→ Step 11: Display module build IDs									

12. Review the summary, and if the values are not correct, return to the previous steps to make corrections; otherwise, click **Finish**.

Install New Application

Specify options for installing enterprise applications and modules.

Step 1 Select installation options	Summary
Summary of installation options	
Step 2 Map modules to servers	Options
Step 3 Provide JSP reloading options for Web modules	Precompile JavaServer Pages files
Step 4 Map shared libraries	Directory to install application
Step 5 Map shared library relationships	Distribute application
Step 6 Initialize parameters for servlets	Use Binary Configuration
Step 7 Map resource references to resources	Deploy enterprise beans
Step 8 Map virtual hosts for Web modules	Application name
Step 9 Map context roots for Web modules	Create MBeans for resources
Step 10 Map JASPI provider	Override class reloading settings for Web and EJB modules
Step 11 Display module build Ids	Reload interval in seconds
→ Step 12: Summary	Deploy Web services
	Validate Input off/warn/fail
	Process embedded configuration
	File Permission
	Application Build ID
	Allow dispatching includes to remote resources
	Allow servicing includes from remote resources
	Business level application name
	Asynchronous Request Dispatch Type
	Allow EJB reference targets to resolve automatically
	Deploy client modules
	Client deployment mode
	Validate schema
	Cell/Node/Server

Click here

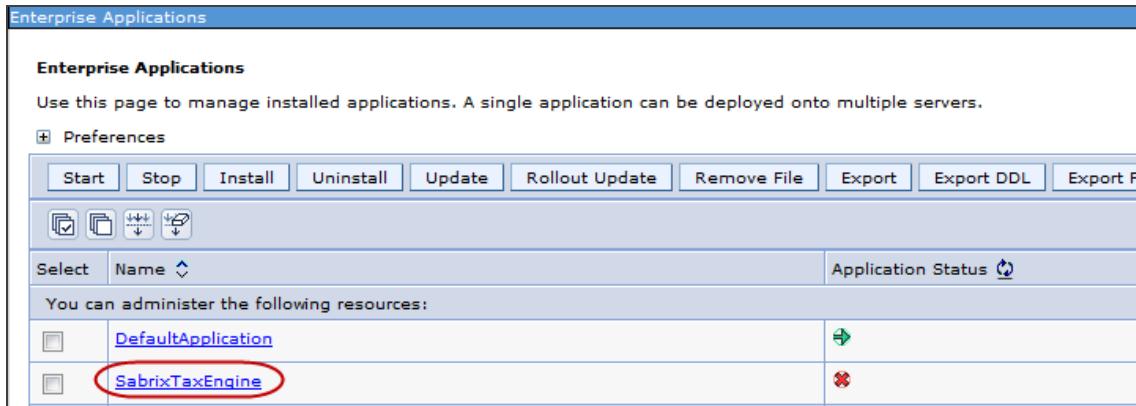
Previous | **Finish** | Cancel

13. Once the deployment is finished, click **Save directly to the master configuration**.

Configuring Class Loading

After the deployment, complete the following steps to set class loading.

1. Go to **Applications > Application Types > WebSphere enterprise applications**.
2. Click **SabrixTaxEngine**.



Enterprise Applications

Enterprise Applications

Use this page to manage installed applications. A single application can be deployed onto multiple servers.

Preferences

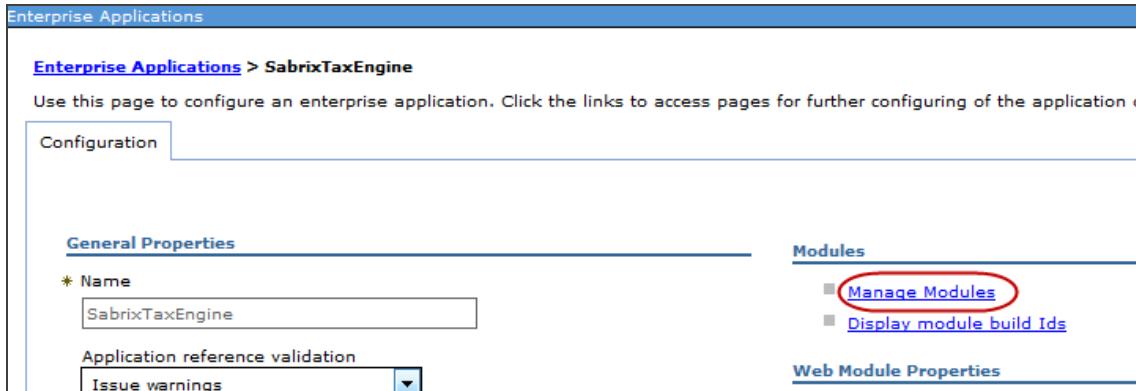
Start Stop Install Uninstall Update Rollout Update Remove File Export Export DDL Export F...

Select Name Application Status

You can administer the following resources:

<input type="checkbox"/> DefaultApplication	
<input type="checkbox"/> SabrixTaxEngine	

3. Click on **Manage Modules**.



Enterprise Applications

Enterprise Applications > SabrixTaxEngine

Use this page to configure an enterprise application. Click the links to access pages for further configuring of the application or its modules.

Configuration

General Properties

* Name: SabrixTaxEngine

Application reference validation: Issue warnings

Modules

[Manage Modules](#) (circled in red)

[Display module build Ids](#)

Web Module Properties

4. Click **Sabrix System Web Application**.

Select	Module	URI	Module Type	Server
<input type="checkbox"/>	Sabrix System Web Application	sabrix.war,WEB-INF/web.xml	Web Module	WebSphere:cell=U0126623-W7BNode01,server=server1
<input type="checkbox"/>	Sabrix Registration Web Application	registration-validation.war,WEB-INF/web.xml	Web Module	WebSphere:cell=U0126623-W7BNode01,server=server1

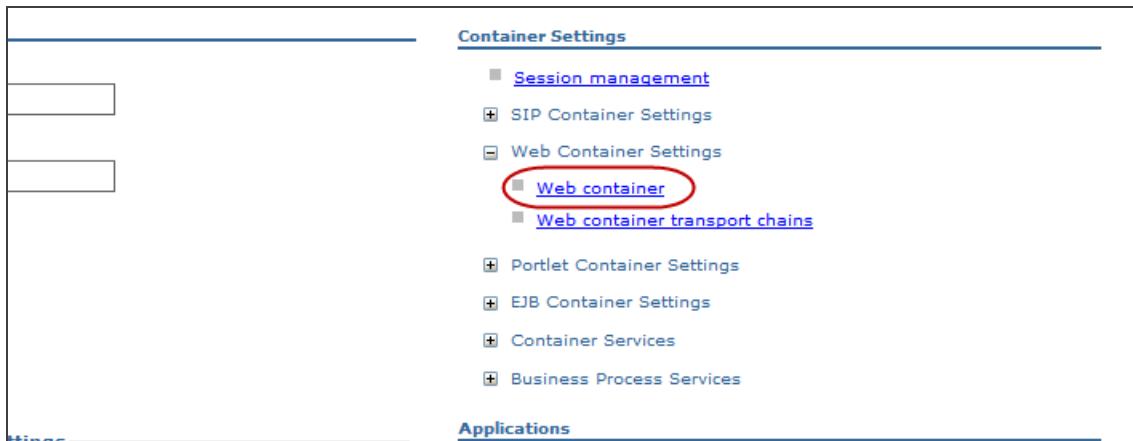
5. Select the **Class loader order** value **Class loaded with local class loader first (parent last)**.

6. Click OK, and then click **Save directly to master configuration**.

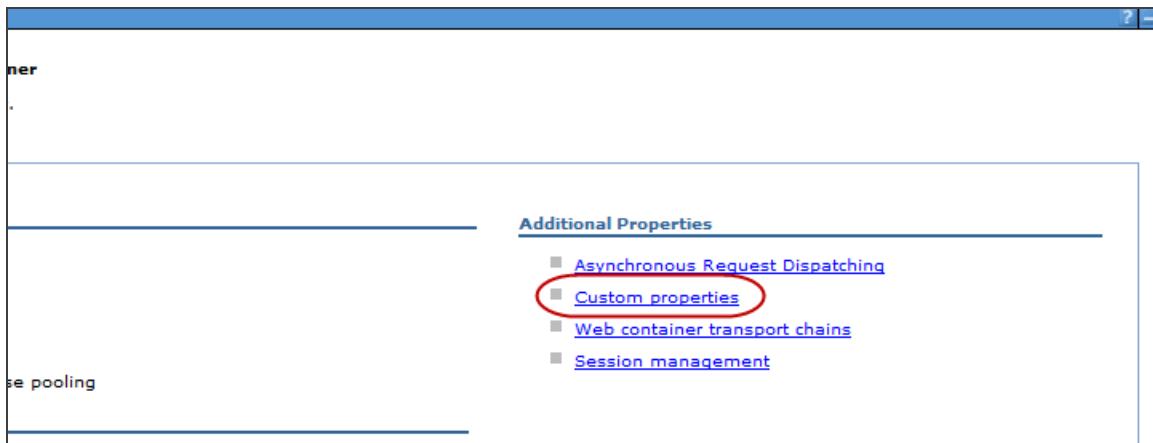
Setting a Custom Property

Complete the following to ensure the trailing forward slash is removed from your URL:

1. Go to **Servers > Server Types > WebSphere Application Servers**, and then click on the server (for example, **server1**).
2. Under **Container Settings**, expand **Web Container Settings** and then click **Web container**.



3. Select **Custom properties** under **Additional Properties**.



4. Click **New**.

Application servers

Application servers > server1 > Web container > Custom properties

Use this page to specify an arbitrary name and value pair. The value that is specified for the name and value pair is a string properties.

Preferences

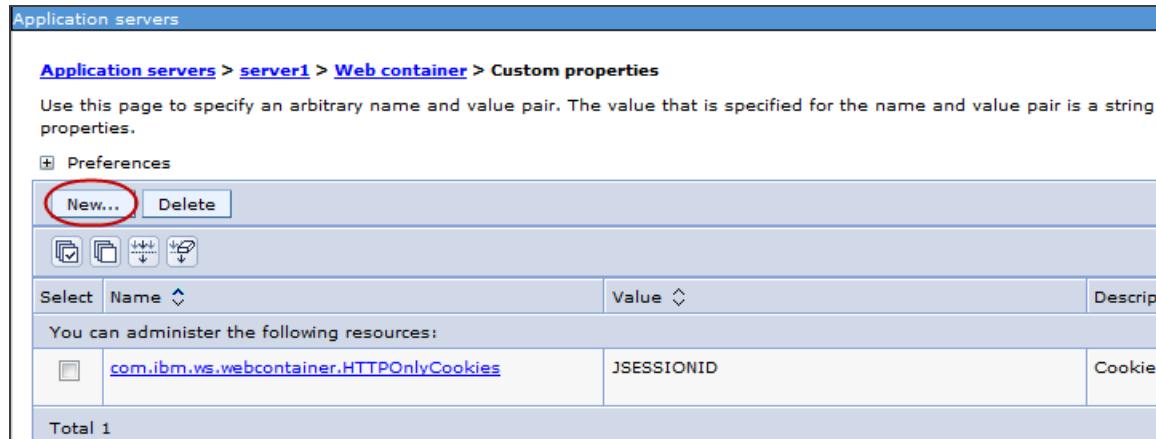
New... **Delete**

Select **Name** **Value** **Description**

You can administer the following resources:

<input type="checkbox"/>	com.ibm.ws.webcontainer.HTTPOnlyCookies	JSESSIONID	Cookie
--------------------------	---	------------	--------

Total 1



5. Enter the values listed in the table below:

NAME	VALUE
com.ibm.ws.webcontainer.removetailingServletpathslash	true

Application servers

Application servers > server1 > Web container > Custom properties > New...

Use this page to specify an arbitrary name and value pair. The value that is specified for the name and value pair is a string properties.

Configuration

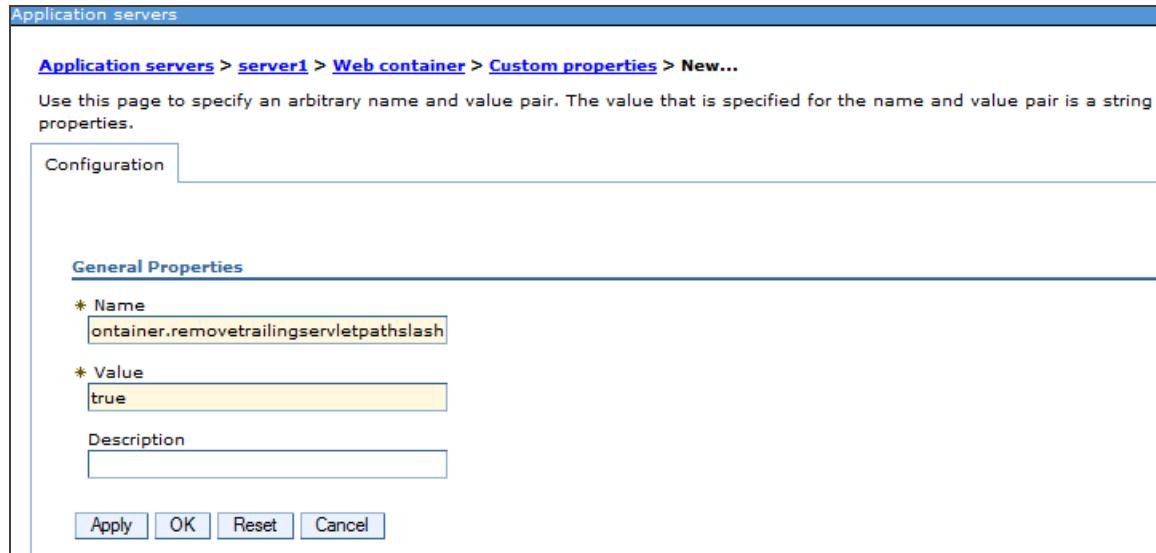
General Properties

* Name: [ontainer.removetailingServletpathslash](#)

* Value: true

Description:

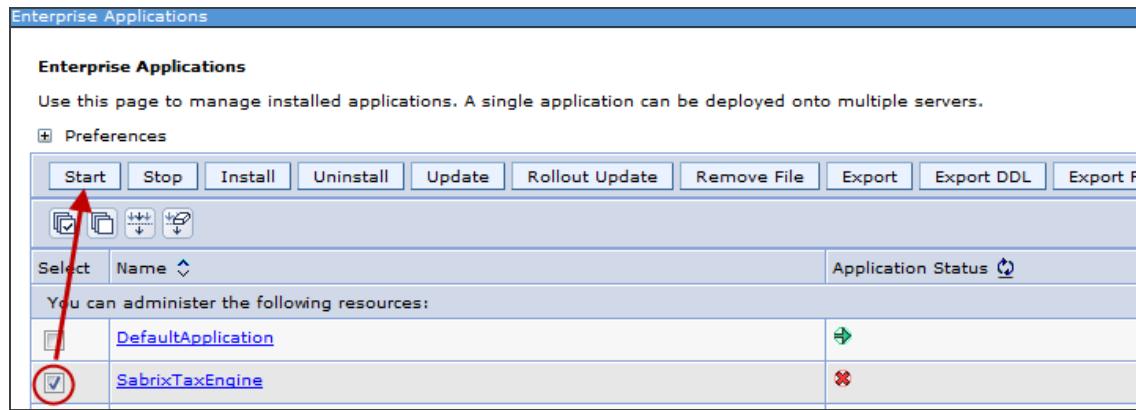
Apply **OK** **Reset** **Cancel**



6. Click OK, and then click **Save directly to master configuration**.

7. Return to **Applications > Application Types > WebSphere enterprise applications**, select **SabrixTaxEngine**, and then click **Start**.

Deploying the Application



Enterprise Applications

Enterprise Applications

Use this page to manage installed applications. A single application can be deployed onto multiple servers.

Start Stop Install Uninstall Update Rollout Update Remove File Export Export DDL Export F

Select	Name	Application Status
<input type="checkbox"/>	DefaultApplication	
<input checked="" type="checkbox"/>	SabrixTaxEngine	

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 "_DET5100x_[Sequential Number]" to those entries. For example, two entries for SMITH become SMITH_DET5100x_1 and SMITH_DET5100x_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_DET5100x_1 | | BobSmith | BobSmith_  
DET5100x_2 | | BobSmith | BobSmith_DET5100x_3 | | MaryClark | MaryClark_DET5100x_4  
| | MaryClark | MaryClark_DET5100x_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 DET5100x 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.

Determination Implementer		
Database Vendor:	Tax Data	Audit Data
Driver Version:	Oracle - Oracle Database 12c Enterprise Edition Release 12...	Oracle - Oracle Database 12c Enterprise Edition Release 12...
Database Connection:	12.1.0.1.0	12.1.0.1.0
Database User:	jdbc:oracle:thin:@pdxsasqa145.corp.ositax.com:152...	jdbc:oracle:thin:@pdxsasqa145.corp.ositax.com:152...
Sabrix Version Installed	TE9628	TE9628A
Sabrix Version To Be Installed		5.11.0.0.33.33
Click to start the installation:		Run

4. 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.

3. Go to **Menu > System > Import/Export**.
4. Click the **Import** tab.
5. Browse to the directory containing the first downloaded file.
6. Enter the path and file name, or browse to it, and then click **OK**.
7. Click **Import**.
8. The **Import/Export Wizard** displays information about the file to be imported. Click **Next**.
9. Click **Next** on each page until the import starts.
10. 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.

11. 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 5.12.3.8, we recommend using Time Eviction Caching (Section below) instead of Clustering.

Due to upgrade of libraries in version 5.12.3.8, 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 \(page 73\)](#)

[Determination Parameters \(page 74\)](#)

[Properties File \(page 75\)](#)

[Cluster XML File \(page 79\)](#)

[Cluster Test \(page 80\)](#)

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.
5. Click **Submit**.

PARAMETER	VALUE	DESCRIPTION
ENABLE_SERVER_COMMUNICATION	Y	This parameter is required to enable all types of clustering.

PARAMETER	VALUE	DESCRIPTION
CLUSTER_CHANNEL◀ PROPERTIES_FILE	udp-cluster.xml or tcp-tcppling-◀ 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-tcppling-cluster.xml . This parameter must match the parameter <i>determination.infinispan.jgroups.◀ configuration_file</i> in the <i>determination_application-◀ overrides.properties</i> file. See Properties File (page 75) .
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.

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,

[UDP](#)

Complete the following:

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

<WebSphereBaseDirectory>/AppServer/lib/ext

3. In the new directory, create a new file called *determination_application_overrides.properties* in the new directory, 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.

5. Save and close the file *determination_application_overrides.properties*.

6. Restart WebSphere.

7. Repeat these steps on each WebSphere node.



To simplify the process, you can copy the file *determination_application_overrides.properties* to each node.

8. Skip to [Cluster Test \(page 80\)](#)

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 \(page 74\)](#).

Complete the following:

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

<WebSphereBaseDirectory>/AppServer/lib/ext

3. In the new directory, create a file called *determination_application_overrides.properties* in the new directory, 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-cluster.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.

5. 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).
6. Save and close the file *determination_application_overrides.properties*.
7. Repeat these steps on each WebSphere node.



To simplify the process, you can copy the file *determination_application_overrides.properties* to each node.

8. Skip to [Cluster XML File \(page 79\)](#).

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 \(page 74\)](#).

Complete the following:

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

<WebSphereBaseDirectory>/AppServer/lib/ext

3. In the new directory, create a file called *determination_application_overrides.properties* in the new directory, 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-tcpping-cluster.xml
4  determination.infinispan.jgroups.tcp.address=10.198.221.48
5  determination.infinispan.jgroups.tcpping.initial_hosts=10.198
6  .221.50[7800],10.198.221.48[7800]
  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.

5. Set **tcp.address** to match the node's IP address.

6. 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 \(page 79\)](#)). Change the two values of 7800 specified in the file to some other valid and available port to complete this change.

7. 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.

8. Save and close the file *determination_application_overrides.properties*.

9. 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 the *ONESOURCEIDTDetermination512xx.zip* (see [Download the Software \(page 6\)](#)).
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

3. Copy the appropriate XML file to the same directory as *determination_application_overrides.properties*.

<WebSphereBaseDirectory>/AppServer/lib/ext

4. Restart WebSphere.
5. Repeat these steps on each WebSphere 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 5.12.3.8.

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 WebSphere.
2. Create a new directory in WebSphere:

<WebSphereBaseDirectory>/AppServer/lib/ext

3. Go to the clustering directory where you unzipped 512xx (see [Download the Software \(page 6\)](#)).
4. Copy the *infinispan-timed-cache.xml* file to the directory - <WebSphereBaseDirectory>/AppServer/lib/ext



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.

5. In the new directory, create a file called *determination_application_overrides.properties*, and then insert the following lines:

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

6. Save and close the file *determination_application_overrides.properties*.
7. Restart WebSphere.
8. Repeat these steps on each WebSphere 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."