Oracle® Retail Point-of-Service

Installation Guide

Release 13.0.4

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Oracle Retail Point-of-Service Installation Guide, Release 13.0.4

Primary Author: Bernadette Goodman

Value-Added Reseller (VAR) Language

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If you find any errors or have any other suggestions for improvement, then please tell us your name, the name of the company who has licensed our products, the title and part number of the documentation and the chapter, section, and page number (if available).

> **Note:** Before sending us your comments, you might like to check that you have the latest version of the document and if any concerns are already addressed. To do this, access the new Applications Release Online Documentation CD available on My Oracle Support and www.oracle.com. It contains the most current Documentation Library plus all documents revised or released recently.

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Preface

This Installation Guide describes the requirements and procedures to install this Oracle Retail Point-of-Service release.

Audience

This Installation Guide is written for the following audiences:

- Database Administrators (DBA)
- System analysts and designers
- Integrators and implementation staff

Related Documents

For more information, see the following document in the Oracle Retail Point-of-Service 13.0.4 documentation set or Oracle Retail Strategic Store Solutions 13.0.4 documentation set:

- *Oracle Retail Point-of-Service Release Notes*
- *Oracle Retail Strategic Store Solutions Licensing Information*

Customer Support

To contact Oracle Customer Support, access My Oracle Support at the following URL:

`https://support.oracle.com`

When contacting Customer Support, please provide the following:

- Product version and program/module name
- Functional and technical description of the problem (include business impact)
- Detailed step-by-step instructions to re-create
- Exact error message received
- Screen shots of each step you take

Review Patch Documentation

When you install the application for the first time, you install either a base release (for example, 13.0) or a later patch release (for example, 13.0.4). If you are installing the base release, additional patch, and bundled hot fix releases, read the documentation for all releases that have occurred since the base release before you begin installation. Documentation for patch and bundled hot fix releases can contain critical information related to the base release, as well as information about code changes since the base release.

Oracle Retail Documentation on the Oracle Technology Network

Documentation is packaged with each Oracle Retail product release. Oracle Retail product documentation is also available on the following Web site:

http://www.oracle.com/technology/documentation/oracle_retail.html

(Data Model documents are not available through Oracle Technology Network. These documents are packaged with released code, or you can obtain them through My Oracle Support.)

Documentation should be available on this Web site within a month after a product release.

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Pre-Installation Tasks

This chapter defines supported products for client and server systems in the Oracle Retail Point-of-Service system.

> **Note:** The Oracle stack and IBM stack are the configurations that were tested for this release. The components required for each stack are listed in this chapter. For each component, the product and the version that were used for testing are included. While Point-of-Service may work in other configurations, these are the configurations that are supported for this release.

Patch Contents

Patch releases include all defect fixes that have been released through bundled hot fix releases since the last patch release. Patch releases may also include new defect fixes and enhancements that have not previously been included in any bundled hot fix release. This patch release contains all fixes from the following bundled hot fix releases:

- Oracle Retail Point-of-Service 13.0.3.1
- Oracle Retail Point-of-Service 13.0.3.2
- Oracle Retail Point-of-Service 13.0.3.3

Check Oracle Retail Merchandise Operations Management Version

The integration with Oracle Retail Merchandise Operations Management requires version 13.0.4 of the following products:

- Oracle Retail Merchandising System
- Oracle Retail Price Management
- Oracle Retail Sales Audit

Check Supported Software

This section lists the software which has been tested for this release.

Supported Software for Clients (Registers)

Table 1–1 lists the general software components required for a client and the versions tested for this release.

Table 1–1 Client Software Component Versions Tested for this Release

Component	Oracle Stack	IBM Stack
Operating System	Windows Embedded for Point of Service (WEPOS), Version 1.1	IBM IRES version 2.1.5 (register)
JDK/JRE	IBM JRE 1.5	IBM JRE 1.5
JavaPOS	JPOS 1.9.6	JPOS 1.9.6
Persistent Storage	Apache Derby 10.2.2	Apache Derby 10.2.2

Supported Software for Store Servers

Table 1–2 lists the general software components required for the store server and the versions tested for this release.

Table 1–2 Store Server Software Component Versions Tested for this Release

Component	Oracle Stack	IBM Stack
Operating System	Windows 2003 Server	IBM IRES version 2.1.5
Database	Oracle Database 11g Enterprise Edition version 11.1.0.7 (64-bit)	IBM DB2 version 9.1.0.5
JDK/JRE	Sun JDK version 1.5.0	IBM JRE 1.5

Check Supported Hardware

This section lists the hardware which has been tested for this release.

Hardware Requirements

The hardware requirements for the store server and client depend on different variables.

You need to determine your hardware requirements, based on the variables mentioned here, as well as any additional variables specific to your environment. For more information, contact Customer Support.

Store Server

Specific hardware requirements for the machines running the Oracle Retail Point-of-Service store server depend on variables including the number of users and other applications running on the same machine.

Please note the following about the hardware requirements:

- The CPU requirement depends on variables including the number of Point-of-Service clients and the operating system and middleware selected.
- Memory requirements and performance depend on variables including the number of active promotions and best deal calculations.
- Disk size can vary based on the operating system and middleware requirements as well as the amount of data storage needed. Data storage depends on variables including the number of items and promotions defined, data retention period, and so on.

Client

Specific hardware requirements for the machines running the Oracle Retail Point-of-Service client include the point-of-sale system/register manufacturer and other applications and utilities running on the client.

Peripheral Devices for Clients

JavaPOS is the industry standard for Java compatibility for retail-oriented devices. A committee of prominent retail vendors and end users maintains the standard. Some of the more common devices used with point-of-sale applications include bar code scanners, cash drawers, printers, keyboards, magnetic stripe readers (MSR), wedge keyboards, hard totals, and magnetic ink check readers (MICR). Any JavaPOS-compliant peripheral devices should work with Oracle Retail Point-of-Service, however, some may require software modifications to work properly.

Supported Hardware for Clients

Table 1–3 lists the general hardware components required for a client and the versions tested for this release. Mice are not supported for Point-of-Service. A touch screen may be used, but a keyboard is required for some functions. The tested configuration included touch screens.

Table 1–3 Client Hardware Component Versions Tested for this Release

Component	Oracle Stack	IBM Stack
Register	SurePOS 300/700	SurePOS 300/700
Cash drawer	IBM cashdrawer	IBM cashdrawer
Pole Display	IBM pole display	IBM pole display
Keyboard	IBM keyboard	IBM keyboard
Scanner	Symbol Scanner	Symbol Scanner
PIN Pad	Ingenico eNTouch 1000	Ingenico eNTouch 1000 and i6770
Credit Card Reader	Ingenico Device Number 3380	Ingenico Device Number 3380
Receipt Printer	IBM printer	IBM printer

Check Java KeyStore Requirement

Oracle Retail Point-of-Service requires that a Java KeyStore is created prior to installation. Up to five jar files can be provided by the retailer to enable the connection between Oracle Retail Point-of-Service and the KeyStore. Specific information for accessing the KeyStore is entered on the Security Setup: KeyStore installer screens.

WARNING: A simulated key management package is bundled with Oracle Retail Point-of-Service. It is not compliant with either the Visa Payment Applications Best Practices (PABP) or Payment Card Industry Data Security Standard (PCI-DSS). It is made available as a convenience for retailers and integrators. If you use the simulated key manager, you will not be PCI-DSS compliant. Therefore, the simulated key manager should be replaced with a compliant key manager.

If you use the simulated key management package bundled with Oracle Retail Point-of-Service, the `simkeystore.jar` file must be saved after it is extracted from the Point-of-Service distribution. Information on saving the file is included in Chapter 2 and Chapter 3.

ISD Authorization Transaction Testing

ISD authorization transaction testing was done with ISD Standard Interface version 259. The capture method used was terminal capture. The following applications were tested:

- ISD Host Switch version 6.3.1.004
- ISD Store and Forward module version 6.2.1.010

Note: Host capture is not supported.

Table 1–4 shows the transaction types and messages that were tested.

Table 1–4 ISD Authorization Transaction Set Tested

Transaction Type	Transaction Type Message Sent from ISD to Point-of-Service
Check Tender	■ Check Sale Approval ■ Check Sale Authorization Offline ■ Check Sale Decline ■ Check Sale Referral
Credit Card Tender	■ Credit Card Sale Approval ■ Credit Card Sale Authorization Offline ■ Credit Card Sale Decline ■ Credit Card Sale Referral
Debit Card Tender	■ Debit Sale Approval ■ Debit Sale Authorization Offline ■ Debit Sale Decline

Table 1–4 (Cont.) ISD Authorization Transaction Set Tested

Transaction Type	Transaction Type Message Sent from ISD to Point-of-Service
Gift Card Issue	■ Gift Card Issue Approval ■ Gift Card Issue Authorization Offline ■ Gift Card Issue Decline ■ Gift Card Issue Post-void ■ Gift Card Issue Referral
Gift Card Redeem	■ Gift Card Redeem Approval ■ Gift Card Redeem Authorization Offline ■ Gift Card Redeem Decline
Gift Card Reload	■ Gift Card Reload Approval ■ Gift Card Reload Authorization Offline ■ Gift Card Reload Decline
Gift Card Tender	■ Gift Card Sale Approval ■ Gift Card Sale Authorization Offline ■ Gift Card Sale Decline ■ Gift Card Sale Post-void ■ Gift Card Sale Referral ■ Gift Card Sale Refund
House Account Enrollment	■ Credit Application Approval ■ Credit Application Decline **Note:** This functionality has had limited testing with ISD for this release due to the limitations of the available test environments.
House Account Payment	■ Credit Application Approval ■ Credit Application Decline **Note:** This functionality has had limited testing with ISD for this release due to the limitations of the available test environments.

Visa Payment Application Best Practices

This release of Oracle Retail Point-of-Service complies with the Visa Payment Application Best Practices (PABP). Where there is a specific PABP requirement to be met during the installation process, a caution is included in this guide advising you how to comply with the requirement.

The following document is available through My Oracle Support. Access My Oracle Support at the following URL:

https://support.oracle.com

Oracle Retail Strategic Store Solutions Security Implementation Guide **(Doc ID: 567438.1)**

This guide provides information on the PABP requirements.

2

Installation on the Oracle Stack using Windows

This chapter provides information about the installation procedures for Oracle Retail Point-of-Service on the Oracle Stack using Windows.

Oracle Retail provides an installer for Point-of-Service, but customer installations typically develop custom procedures. Note that the installer is not appropriate for all installations. Oracle Retail expects implementation teams to develop custom procedures for actual register installations, which may or may not be based on the installer described here. For guidelines, see "Creating a Custom Installation".

Create the Database Schema Owner and Data Source Connection Users

A user to own the database schema and a data source connection user used by Point-of-Service to access the database must be defined. Specific roles must be defined for each user. The installer asks you to enter the user name and password for both these users.

> **Caution:** To meet the requirements of the Visa Payment Application Best Practices (PABP), separate schema owner and data source connection users must be created. The data source connection user cannot have any create privileges.
>
> If other Oracle Retail products are installed, the database schema owner and data source connection users defined for each product must not be the same as any other product. However, for example, if Oracle Retail Back Office and Point-of-Service are sharing a database, the database schema owner would be the same for those products.

For information on the best practices for passwords, see Appendix H.

Whether the database schema owner user and the data source connection user need to be created is dependent on whether Point-of-Service shares the database with Back Office:

- If Point-of-Service is sharing the database with Back Office, the same database schema owner is used for both products. Only the data source connection user for Point-of-Service needs to be created.
- If Point-of-Service is not sharing the database with Back Office, both the database schema owner and data source connection user need to be created.

To create the database schema owner:

1. Log in using the database administrator user ID.
2. Create a role in the database to be used for the schema owner.

```
create role <schema_owner_role>;
```

3. Grant the privileges, shown in the following example, to the role.

```
grant CREATE TABLE, CREATE VIEW, CREATE SEQUENCE, CREATE PROCEDURE, ALTER
SESSION, CONNECT, SELECT_CATALOG_ROLE to <schema_owner_role>;
```

4. Create the schema owner user in the database.

```
CREATE USER <schema_name>
IDENTIFIED BY <schema_owner_user>
DEFAULT TABLESPACE users
TEMPORARY TABLESPACE TEMP
QUOTA UNLIMITED ON users;
```

5. Grant the schema owner role to the user.

```
grant <schema_owner_role> to <schema_owner_user>;
```

To create the data source connection user:

1. If not already logged in, log in using the database administrator user ID.
2. Create a role in the database to be used for the data source connection user.

```
create role <data_source_connection_role>;
```

3. Grant the privileges, shown in the following example, to the role.

```
grant CONNECT, CREATE SYNONYM, SELECT_CATALOG_ROLE to
<data_source_connection_role>;
```

4. Create the data source connection user.

```
CREATE USER <data_source_schema_name>
IDENTIFIED BY <data_source_user>
DEFAULT TABLESPACE users
TEMPORARY TABLESPACE TEMP
QUOTA UNLIMITED ON users;
```

5. Grant the data source connection role to the user.

```
grant <data_source_connection_role> to <data_source_user>;
```

The installer grants the data source connection user access to the application database objects.

Note: If the data source connection user, *<data_source_user>*, created for Point-of-Service is not the same user ID created for the Back Office data source connection user, the Point-of-Service user must be granted access to the database schema after the Point-of-Service server is installed. After running the installer, see "Enabling Access for the Data Source Connection User".

Installing Point-of-Service

To establish an initial Oracle Retail Point-of-Service installation or to create a demonstration system, use the Point-of-Service installer as described in this section.

Determining Tier Type

Machines and logical components of the Oracle Retail Point-of-Service application are defined in Table 2–1:

Table 2–1 Server Tier Logical Components

Machine	Description
Store Server	The machine that runs the server component of Oracle Retail Point-of-Service. There is at least one store server for each store. This component runs as a service. This machine may also house the Back Office Server and other Oracle Retail Strategic Store Solutions components such as the OracleRetailStore database and Mobile Point-of-Service.
Point-of-Service Clients	The machines that execute the Point-of-Service transactions; they are typically cash registers.
Database Server	The machine that houses the OracleRetailStore databases. This machine may or may not be the same as the store server.
JMS Server	The machine that houses the JMS server software.

When you run the installer, it asks you to specify a Tier Type. The following types are available:

- N-Tier Client—Choose this when installing the client component.
- N-Tier Store Server—Choose this when installing the store server component.

Installing the Database

Oracle Retail products such as Point-of-Service and Back Office use the OracleRetailStore database. One OracleRetailStore database is typically installed in each store. Data stored in the OracleRetailStore database includes employee names, logon information, and transaction data. The database can be located on the store server or on a separate machine acting as the database server. The database must be installed before Point-of-Service can be installed.

If you are using Centralized Transaction Retrieval, an additional database called the Scratchpad database is used. This database holds retrieved transactions. For more information on Centralized Transaction Retrieval, see the *Oracle Retail Point-of-Service Operations Guide*.

Table 2–2 shows the database configuration information that is needed during installation.

Table 2–2 Database Configuration Settings

Installer Screen	Required Data
Transaction Retrieval Location	Choose the location for retrieving transactions. When using Centralized Transaction Retrieval, choose either the **Central** or **Central, Local Failover** option. **Note:** You must choose the same location for both the store server and client installations.

Table 2–2 (Cont.) Database Configuration Settings

Installer Screen	Required Data
Database Configuration	Enter the following information for the database: ■ JDBC driver path ■ Driver class name ■ Database URL ■ Jar name ■ Database schema owner user ID and password ■ Data source connection user ID and password
Scratchpad Database Configuration	Enter the following information for the Scratchpad database: ■ JDBC driver path ■ Driver class name ■ Database URL ■ Jar name ■ Scratchpad database owner user ID and password
Logging Options	Choose how the log is exported. When using Centralized Transaction Retrieval, choose the **Data Replication Export** option.
Central Office/Back Office Server Information	Enter the host names and port numbers of the machines where the Central Office instance and the Back Office instance for this store server are located.

To complete the installation, you must know the database location:

- If you install Point-of-Service on the same machine as the database, the installer asks for the database directory location.
- If you install Point-of-Service on a different machine from the database, the installer asks for the hostname or IP address and RMI port number of the machine running the database.

The Point-of-Service installation process installs scripts to build the tables and insert a minimal data set. Steps for running these scripts are included later in this chapter.

Required Settings for the Database

The following settings must be made during database creation:

- The database must be set to UTF8.
- When using the Oracle 11g database server, make the following changes to the system settings:

```
ALTER SYSTEM SET NLS_NUMERIC_CHARACTERS = '.,-' SCOPE=SPFILE;
ALTER SYSTEM SET NLS_DATE_FORMAT ='YYYY-MM-DD' SCOPE=SPFILE;
ALTER SYSTEM SET NLS_TIMESTAMP_FORMAT = 'YYYY-MM-DD HH24:MI:SS.FF'
    SCOPE=SPFILE;
```

Installing Point-of-Service on Machines

If a previous version of Point-of-Service is installed on a machine, uninstall it by deleting the installation directory (the default directory is `c:\OracleRetailStore`) or choose a different installation directory from the default.

Run the installer one time for each machine in the Server Tier and once for each register.

The installer performs the following steps. Not all steps apply to client and server installations.

- Installs Foundation, Retail Domain, and Oracle Retail Point-of-Service jar files.
- Installs database build scripts and start-up files.
- Defines Server Tier in the conduit script that starts Point-of-Service for the given machine.
- Defines hostnames or IP addresses and port numbers for the Store Server and database server.
- Defines device availability.
- Defines application properties for Store ID and Register Number.

Updating Device Configuration

Update the `jpos.xml` file to reflect the devices used on the machine. The typical location for this file is `C:\POS\IBMJPOS\jpos.xml`.

1. To configure the default scanner, replace the existing entry or add the following entry to the `jpos.xml` file:

```
JposEntry logicalName="defaultScanner">

        <creation
factoryClass="com.extendyourstore.jpos.CrsJposServiceInstanceFactory"
serviceClass="com.extendyourstore.jpos.Scanner.Simple3"/>
        <vendor name="360Commerce" url="http://www.360commerce.com"/>
        <jpos category="Scanner" version="1.5"/>
        <product description="360Commerce Serial Scanner"/>

        <!--Other non JavaPOS required property (mostly vendor properties and
bus specific properties i.e. RS232 )-->

        <prop name="parity" type="String" value="0"/>
        <prop name="dataBits" type="String" value="7"/>
        <prop name="baudRate" type="String" value="9600"/>
        <prop name="stopBits" type="String" value="1"/>
        <prop name="suffix" type="String" value="13"/>
        <prop name="debug" type="String" value="false"/>
        <prop name="port" type="String" value="COM2"/>

</JposEntry>
```

2. To configure the Ingenico device for signature capture, replace the existing entry or add the following entry to the `jpos.xml` file. Change `<pos_install_directory>`, shown in bold in the following example, to your installation directory for Point-of-Service:

```
<JposEntry logicalName="defaultSignatureCapture">
            <creation factoryClass="services.IngenicoServiceInstanceFactory"
                serviceClass="services.et1k.sigcap.SignatureCaptureService"/>
            <vendor name="Ingenico" url="http://www.ingenico-us.com"/>
            <jpos category="SignatureCapture" version="1.5.2"/>
            <product description="ET1K POS Signature Capture JavaPOS Service
from Ingenico, Inc."
                name="Ingenico ET1K Signature Capture Service for JavaPOS(TM)
```

```
Standard"
                url="http://www.ingenico-us.com"/>
            <!--Other non JavaPOS required property (mostly vendor properties
and bus specific properties i.e. RS232 )-->
            <prop name="stopBits" value="1"/>
            <prop name="portName" value="COM1"/>
            <prop name="dataBits" value="8"/>
            <prop name="timeOut" value="5000"/>
            <prop name="baudRate" value="9600"/>
            <prop name="parity" value="0"/>
            <prop name="TestForm" value="sigtest.icf"/>
            <prop name="SigCompression" value="2byte"/>
            <prop name="ConfigPath" value=
"<pos_install_directory>/pos/config/device/ingenico/"/>
            <prop name="debug" value="ON"/>
        </JposEntry>
```

3. To configure the Ingenico device for the screens used within the Point-of-Service application, replace the existing entry or add the following entry to the `jpos.xml` file. Change `<pos_install_directory>`, shown in bold in the following example, to your installation directory for Point-of-Service:

```
<JposEntry logicalName="defaultForm">
            <creation factoryClass="services.IngenicoServiceInstanceFactory"
                serviceClass="services.et1k.form.FormService"/>
            <vendor name="Ingenico" url="http://www.ingenico-us.com"/>
            <jpos category="Form" version="1.5.2"/>
            <product description="ET1K POS Form JavaPOS Service from Ingenico,
Inc."
                name="Ingenico ET1K Form Service for JavaPOS(TM) Standard"
                url="http://www.ingenico-us.com"/>
            <!--Other non JavaPOS required property (mostly vendor properties
and bus specific properties i.e. RS232 )-->
            <prop name="stopBits" value="1"/>
            <prop name="portName" value="COM1"/>
            <prop name="dataBits" value="8"/>
            <prop name="baudRate" value="9600"/>
            <prop name="parity" value="0"/>
            <prop name="timeOut" value="5000"/>
            <prop name="clear" value="clear.icf"/>
            <prop name="ItemsForm" value="scrollingtext.icf"/>
            <prop name="SigCapForm" value="sigtest.icf"/>
            <prop name="ScrollingText" value="scrollingtext.icf"/>
            <prop name="Graphic" value="scan.icf"/>
            <prop name="Survey" value="type.icf"/>
            <prop name="Scripts" value="sigtest.icf"/>
            <prop name="Logo" value="360logo.icf"/>
            <prop name="SigCompression" value="2byte"/>
            <prop name="TwoButtons" value="2buttons.icf"/>
            <prop name="ThreeButtons" value="3buttons.icf"/>
            <prop name="FourButtons" value="4buttons.icf"/>
            <prop name="ConfigPath" value=
"<pos_install_directory>/pos/config/device/ingenico/"/>
        </JposEntry>
```

4. To configure the Ingenico PIN pad, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="defaultPINPad">

        <creation factoryClass="services.IngenicoServiceInstanceFactory"
```

```
serviceClass="services.et1k.pinpad.PINPadService"/>
        <vendor name="Ingenico" url="http://www.ingenico-us.com"/>
        <jpos category="SignatureCapture" version="1.5.2"/>

        <product description="ET1K POS PINPad JavaPOS Service from Ingenico,
Inc." name="Ingenico ET1K PINPad Service for JavaPOS(TM) Standard"
url="http://www.ingenico-us.com"/>

        <!--Other non JavaPOS required property (mostly vendor properties and
bus specific properties i.e. RS232 )-->

        <prop name="stopBits" value="1"/>
        <prop name="portName" value="COM1"/>
        <prop name="dataBits" value="8"/>
        <prop name="baudRate" value="9600"/>
        <prop name="parity" value="0"/>
        <prop name="timeOut" value="5000"/>
        <prop name="debug" value="ON"/>

</JposEntry>
```

5. To configure the Ingenico MSR device, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="ingenicoMSR">

        <creation factoryClass="services.IngenicoServiceInstanceFactory"
serviceClass="services.et1k.msr.MSRService"/>

        <vendor name="Ingenico" url="http://www.ingenico-us.com"/>
        <jpos category="MSR" version="1.5.2"/>
       <product description="ET1K POS MSR JavaPOS Service from Ingenico, Inc."
name="Ingenico ET1K MSR Service for JavaPOS(TM) Standard"
url="http://www.ingenico-us.com"/>

        <!--Other non JavaPOS required property (mostly vendor properties and
bus specific properties i.e. RS232 )-->

        <prop name="stopBits" value="1"/>
        <prop name="portName" value="COM1"/>
        <prop name="timeOut" value="5000"/>
        <prop name="dataBits" value="8"/>
        <prop name="baudRate" value="9600"/>
        <prop name="parity" value="0"/>
        <prop name="debug" value="ON"/>

</JposEntry>
```

6. To configure the default printer, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="defaultPrinter">
        <creation
factoryClass="com.ibm.jpos.services.IBMJposServiceInstanceFactory"/>
serviceClass="com.ibm.jpos.services.SdiIBM4610EPOSPrinter"/>
        <vendor name="IBM" url="http://www.ibm.com"/>
        <jpos category="POSPrinter" version="1.9.3"/>
        <product description="IBM JavaPOS(TM) POSPrinter RS485 Service for IBM
4610 TI2/3/4/5/8/9 TM/F 6/7 Printer" name="IBM JavaPOS for Linux/Windows
Version 1.9.3" url="http://www.pc.ibm.com/store/"/>
```

```
        <prop name="deviceBus" type="String" value="RS485"/>
        <prop name="com.ibm.posj.bus.rs485.sioDeviceNumber" type="String"
value="0x35"/>
        <prop name="com.ibm.posj.bus.rs485.sioPortNumber" type="String"
value="0x11"/>
        <prop name="com.ibm.posj.bus.rs485.sioSlotNumber" type="String"
value="0x01"/>
        <prop name="abstractionClass" type="String"
value="com.ibm.jpos.services.SdiIBM4610EPOSPrinter"/>
        <prop name="impClass" type="String"
value="com.ibm.jpos.services.sdi.IBM4610PrinterServiceImp"/>
        <prop name="com.ibm.posj.bus.deviceNumber" type="String" value="0"/>
</JposEntry>
```

7. To configure the default MICR device, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="defaultMICR">
        <creation
factoryClass="com.ibm.jpos.services.IBMJposServiceInstanceFactory"
serviceClass="com.ibm.jpos.services.IBM4610MICR"/>
        <vendor name="IBM" url="http://www.ibm.com"/>
        <jpos category="MICR" version="1.9.3"/>
        <product description="IBM JavaPOS(TM) MICR RS485 Service for IBM 4610
TI2/4/8/9 Printer" name="IBM JavaPOS for Linux/Windows Version 1.9.3"
url="http://www.pc.ibm.com/store/"/>

        <prop name="deviceBus" type="String" value="RS485"/>
        <prop name="abstractionClass" type="String"
value="com.ibm.jpos.services.IBM4610MICR"/>
        <prop name="impClass" type="String"
value="com.ibm.jpos.services.sdi.MICRServiceImp"/>
        <prop name="com.ibm.posj.bus.deviceNumber" type="String" value="0"/>
        <prop name="com.ibm.posj.bus.rs485.sioSlotNumber" type="String"
value="0x01"/>
        <prop name="com.ibm.posj.bus.rs485.sioPortNumber" type="String"
value="0x11"/>
        <prop name="com.ibm.posj.bus.rs485.sioDeviceNumber" type="String"
value="0x35"/>
        <prop name="com.ibm.jpos.sdi.config.MICR.exceptionTableFile"
type="String" value="[file-path-goes-here]"/>
       <prop name="com.ibm.jpos.sdi.config.MICR.exceptionTable4" type="String"
value="B778899001D154R"/>
       <prop name="com.ibm.jpos.sdi.config.MICR.exceptionTable3" type="String"
value="B667788990D153R"/>
       <prop name="com.ibm.jpos.sdi.config.MICR.exceptionTable2" type="String"
value="P123456780AAAAAXXSSS"/>
       <prop name="com.ibm.jpos.sdi.config.MICR.exceptionTable1" type="String"
value="B445566778D151R"/>
       <prop name="com.ibm.jpos.sdi.config.MICR.exceptionTable0" type="String"
value="B334455667D150R"/>
        <prop name="com.ibm.jpos.sdi.config.MICR.stripAccountDashes"
type="String" value="false"/>
        <prop name="com.ibm.jpos.sdi.config.MICR.stripTransitDashes"
type="String" value="false"/>
        <prop name="com.ibm.jpos.sdi.config.MICR.switchTransitDashToSpace"
type="String" value="false"/>
</JposEntry>
```

8. To configure the default keyboard, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="defaultPOSKeyboard">
        <creation
factoryClass="com.ibm.jpos.services.IBMJposServiceInstanceFactory"
serviceClass="com.ibm.jpos.services.IBMPOSKeyboard"/>
        <vendor name="IBM" url="http://www.ibm.com"/>
        <jpos category="POSKeyboard" version="1.9.3"/>
        <product description="IBM JavaPOS(TM) POSKeyboard PS2 Service for IBM
4820/ANKPOS/CANPOS/NANPOS/SureONE Keyboards" name="IBM JavaPOS for
Linux/Windows Version 1.9.3" url="http://www.pc.ibm.com/store/"/>

        <prop name="com.ibm.jpos.sdi.config.POSKeyboard.Click" type="Byte"
value="0"/>
        <prop name="com.ibm.posj.bus.poskbd.functionNumber" type="String"
value="0"/>
        <prop name="com.ibm.jpos.sdi.config.POSKeyboard.Typematic"
type="Boolean" value="true"/>
        <prop name="com.ibm.jpos.sdi.config.POSKeyboard.ExtendedKeyMapping"
type="Boolean" value="true"/>
        <prop name="abstractionClass" type="String"
value="com.ibm.jpos.services.IBMPOSKeyboard"/>
        <prop name="impClass" type="String"
value="com.ibm.jpos.services.sdi.POSKeyboardServiceImp"/>
        <prop name="com.ibm.posj.bus.poskbd.keyboardNumber" type="String"
value="0"/>
        <prop name="deviceBus" type="String" value="Proprietary"/>
        <prop name="com.ibm.posj.bus.ProprietaryBusSubType" type="String"
value="PosKbd"/>
        <prop name="com.ibm.jpos.sdi.config.POSKeyboard.KbdScanning"
type="Boolean" value="true"/>
</JposEntry>
```

9. To configure the default MSR, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="defaultMSR">
        <creation
factoryClass="com.ibm.jpos.services.IBMJposServiceInstanceFactory"name="Ingenic
o ET1K Form Service for JavaPOS(TM) Standard"
                url="http://www.ingenico-us
serviceClass="com.ibm.jpos.services.IBMMSR"/>
        <vendor name="IBM" url="http://www.ibm.com"/>
        <jpos category="MSR" version="1.9.3"/>
        <product description="IBM JavaPOS(TM) MSR PS2 Service for IBM
ANKPOS/NANPOS/CANPOS/SureONE Keyboards" name="IBM JavaPOS for Linux/Windows
Version 1.9.3" url="http://www.pc.ibm.com/store/"/>

        <prop name="deviceBus" type="String" value="Proprietary"/>
        <prop name="com.ibm.posj.bus.ProprietaryBusSubType" type="String"
value="PosKbd"/>
        <prop name="com.ibm.posj.bus.poskbd.functionNumber" type="String"
value="0"/>
        <prop name="com.ibm.posj.bus.poskbd.keyboardNumber" type="String"
value="0"/>
        <prop name="abstractionClass" type="String"
value="com.ibm.jpos.services.IBMMSR"/>
        <prop name="impClass" type="String"
value="com.ibm.jpos.services.sdi.MSRServiceImp"/>
</JposEntry>
```

10. To configure the default cash drawer, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="defaultCashDrawer">
        <creation
factoryClass="com.ibm.jpos.services.IBMJposServiceInstanceFactory"
serviceClass="com.ibm.jpos.services.IBMCashDrawer"/>
        <vendor name="IBM" url="http://www.ibm.com"/>
        <jpos category="CashDrawer" version="1.9.3"/>
        <product description="IBM JavaPOS(TM) CashDrawer Service for IBM
SurePOS 300/72x/74x/78x-A" name="IBM JavaPOS for Linux/Windows Version 1.9.3"
url="http://www.pc.ibm.com/store/"/>

        <prop name="deviceBus" type="String" value="Proprietary"/>
        <prop name="com.ibm.posj.bus.ProprietaryBusSubType" type="String"
value="Embedded"/>
        <prop name="abstractionClass" type="String"
value="com.ibm.jpos.services.IBMCashDrawer"/>
        <prop name="impClass" type="String"
value="com.ibm.jpos.services.sdi.CashDrawerServiceImp"/>
        <prop name="com.ibm.posj.bus.deviceNumber" type="String" value="0"/>
</JposEntry>
```

11. To configure the default line display, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="defaultLineDisplay">
        <creation
factoryClass="com.ibm.jpos.services.IBMJposServiceInstanceFactory"
serviceClass="com.ibm.jpos.services.LineDisplayLCVFD"/>
        <vendor name="IBM" url="http://www.ibm.com"/>
        <jpos category="LineDisplay" version="1.9.3"/>
        <product description="IBM JavaPOS(TM) LineDisplay USB Service for IBM
Vaccum Fluorescent Display (VFD)-A" name="IBM JavaPOS for Linux/Windows Version
1.9.3" url="http://www.pc.ibm.com/store/"/>

        <prop name="com.ibm.posj.bus.hid.usageId" type="String"
value="0x2400"/>
        <prop name="deviceBus" type="String" value="HID"/>
        <prop name="abstractionClass" type="String"
value="com.ibm.jpos.services.LineDisplayLCVFD"/>
        <prop name="impClass" type="String"
value="com.ibm.jpos.services.sdi.LineDisplayServiceImp"/>
        <prop name="com.ibm.posj.bus.hid.usagePage" type="String"
value="0xFF45"/>
        <prop name="com.ibm.posj.bus.deviceNumber" type="String" value="0"/>
</JposEntry>
```

Expand the Point-of-Service Distribution

To extract the Point-of-Service files:

1. Extract the ORPOS-13.0.4.0.zip file from the Point-of-Service distribution.
2. Create a new staging directory for the Point-of-Service application distribution ORPOS-13.0.4.0.zip file, for example, c:\tmp\orpos\orpos-staging.

> **Note:** The staging area (*<staging_directory>*) can exist anywhere on the system. It does not need to be under ORACLE_HOME.

3. Copy or upload ORPOS-13.0.4.0.zip to *<staging_directory>* and extract its contents. The following files and directories should be created under *<staging_directory>*\ORPOS-13.0.4.0:

```
ant\
ant-ext\
antinstall\
design\
installer-resources\
installer-templates\
product\
antinstall-config.xml
build.xml
build-antinstall.xml
build-common.xml
build-common-oas.xml
build-common-was.xml
build-conditions.xml
build-filesets.xml
build-filters.xml
build-properties.xml
checkdeps.cmd
checkdeps.sh
install.cmd
install.sh
prepare.xml
```

For the remainder of this chapter, *<staging_directory>*\ORPOS-13.0.4.0 is referred to as *<INSTALL_DIR>* .

> **Note:** If you are using the simulated key management package bundled with Point-of-Service, save the following jar file in a directory outside of the staging area.
>
> *<INSTALL_DIR>*\product\360common\lib\simkeystore.jar
>
> If the staging area is then deleted after the installation is complete, the jar file will still be available.

Obtaining Third-Party Library Files Required by Point-of-Service

The Point-of-Service application uses specific files from Apache. Get the required files for the Derby database. You can get the download at the website:

http://db.apache.org/derby/releases/release-10.2.2.0.cgi

Extract the following files:

- derby.jar
- derbytools.jar

Obtaining the IBM JRE Required for Client Install

This release requires IBM JRE 1.5 for client installs. The download is available at the following website:

http://www-307.ibm.com/pc/support/site.wss/document.do?sitestyle=lenovo&lndocid=MIGR-56888

To install IBM JRE 1.5, select the following file link:

ibm-java2-ibmpc-jre-50-win-i386.exe

Securing Communication

Communication with the database and communication between the store server and registers must be secured in order to be compliant with PABP requirements.

- On the Enable Secure JDBC screen, you select whether secure JDBC will be used for communication with the database. If **Yes** is selected, the installer sets up the secure JDBC.

  If **No** is selected and you want to manually set up the secure JDBC after the installer completes, see Appendix J. If secure JDBC is not used, Point-of-Service will not be compliant with PABP requirements.

- On the Enable Secure RMI screen, you select whether secure RMI will be used for communication between the store server and registers. If **Yes** is selected, the installer sets up the secure RMI.

  If **No** is selected and you want to manually set up the secure RMI after the installer completes, see Appendix L. If secure RMI is not used, Point-of-Service will not be compliant with PABP requirements.

Running the Point-of-Service Application Installer

This installer will configure and deploy the Point-of-Service application.

Note: To see details on every screen and field for a server installation, see Appendix A. To see details for a client installation, see Appendix B.

---

1. Change to the *<INSTALL_DIR>* directory.

2. Set the JAVA_HOME environment variable to the location of your jdk, for example, C:\j2sdk1.5. The variable must be set to the location of the jdk and not the jre.

   Note: The installer is not compatible with versions of Java earlier than 1.5.

3. Run the install.cmd script. This will launch the installer. After installation is complete, a detailed installation log file is created at *<POS_install_directory>*\pos\logs\installer_log.txt

   Note: The usage details for install.cmd are shown below. The typical usage for GUI mode does not use arguments.

   ```
   install.cmd [text | silent oracle]
   ```

Resolving Errors Encountered During Application Installation

If the application installer encounters any errors, you can read them in the above mentioned log file.

For a list of common installation errors, see Appendix E.

Creating the Point-of-Service Database Schema

The scripts that create the Point-of-Service database schema can be run from the installed pos/bin directory. The database server can be on the same system as the application server or on a different system.

Creating with Oracle Retail Back Office

When Point-of-Service will be used with Back Office, create the database schema during the Back Office installation. See the *Oracle Retail Back Office Installation Guide* for information.

Then, as part of this installation, if **Central** or **Central, Local Failover** was selected for the Transaction Retrieval Location, run scratchpad.bat to create the Scratchpad database.

Creating without Oracle Retail Back Office

When Point-of-Service is being installed without Back Office, perform the following steps to create the Point-of-Service database schema:

1. Change to the *<POS_install_directory>*\pos\bin directory.
2. Set the JAVA_HOME and ANT_HOME environment variables.
3. Add $JAVA_HOME\bin and $ANT_HOME\bin to the front of the PATH environment variable.

   ```
   PATH=$JAVA_HOME/bin:$ANT_HOME/bin:$PATH; export PATH
   ```

4. Run one of the available `dbbuild.bat` targets to create the database schema, load data, and load the procedures for purging aged data in the database. For information on the purge procedures, see the *Oracle Retail Point-of-Service Operations Guide*.
   - seed_data: loads seed data
   - load_purge_procedures: loads database purge procedures

   For example, `dbbuild seed_data`
5. If **Central** or **Central, Local Failover** was selected for the Transaction Retrieval Location, run `scratchpad.bat` to create the Scratchpad database.

Enabling Access for the Data Source Connection User

If the data source connection user, <*data_source_user*>, created for Point-of-Service is not the same user ID created for the Back Office data source connection user, the Point-of-Service user must be granted access to the database schema after the Point-of-Service server is installed.

To grant access to the database:

1. Change to the <*POS_install_directory*>`\server\pos\bin` directory.
2. Set the `JAVA_HOME` and `ANT_HOME` environment variables.
3. Add `$JAVA_HOME\bin` and `$ANT_HOME\bin` to the front of the PATH environment variable.

   ```
   PATH=$JAVA_HOME/bin:$ANT_HOME/bin:$PATH; export PATH
   ```

4. Run the following ant target.

   ```
   ant -f db.xml -Dschema.user=<data_source_user>
   -Dschema.password=<data_source_user_password> grant_schema
   ```

Configuring for Offline Data Updates

Point-of-Service provides the capability to automatically update offline data to clients. The scheduling of the updates can be configured. This configuration involves updating parameters and the `ServiceContent.xml` file. For more information on offline data updates and how to configure the updates, see the *Oracle Retail Point-of-Service Operations Guide*.

Setting up the Server to use ISD for Tender Authorization

If **ISD** was selected on the Tender Authorization screen, you must update the security for your JRE. You need to obtain version 5.0 of the Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files.

1. Download version 5.0 of the JCE.
   a. Go to the following website:

      http://java.sun.com/javase/downloads/index_jdk5.jsp

   b. Under Other Downloads, find **Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files 5.0**.
   c. Click **Download**.
   d. Follow the instructions to download the JCE.

2. Copy the jar files into the JRE security directory. The files are bundled as `jce_policy-1_5_0.zip`.

   a. Make a backup copy of `local_policy.jar` and `US_export_policy.jar`.

   ```
   cd %JRE_HOME%\lib\security
   copy local_policy.jar local_policy.jar.bak
   copy US_export_policy.jar US_export_policy.jar.bak
   ```

   b. Copy in the new policy jar files.

   ```
   cd C:\<temp>
   copy local_policy.jar %JRE_HOME%\lib\security
   copy US_export_policty.jar %JRE_HOME%\lib\security
   ```

3. The store server can now be started.

Results of a Point-of-Service Installation

The default root directory for OracleRetailStore applications on Windows for the store server is `c:\OracleRetailStore\Server`. For the client, the default directory is `c:\OracleRetailStore\Client`. In this guide, these directories are referred to as *<POS_install_directory>*. The subdirectories listed in Table 2–3 are created:

Table 2–3 <POS_install_directory> Subdirectories

Name	Contents
360common	Files shared by multiple Oracle Retail Strategic Store Solutions applications including Foundation or 360Platform, Domain, and third-party jar files
databases	Resources for various database types
jre	Contains the Java runtime environment
pos	Point-of-Service files
mpos	Mobile Point-of-Service files (if the Oracle Retail Mobile Point-of-Service product is installed)

Important subdirectories of the `\pos directory` is shown in Table 2–4:

Table 2–4 <POS_install_directory>\pos Subdirectories

Name	Contents
bin	Startup batch files and shell scripts
lib	Point-of-Service application and resource jar files
lib\locales	Text bundles for localization **Note:** The only language currently supported is United States English.
3rdparty	Third-party source files used by Point-of-Service only
config	XML configuration files, `.properties` files, and `.dat` files
logs	Log files (additional log files are in the `bin` directory)

Running Point-of-Service

You run the Oracle Retail Point-of-Service system by executing batch files or shell scripts, found in your installation's `bin` directory, to launch various components.

> **Note:** For each command, a Windows batch file (such as `dbstart.bat`) exists.

To run Point-of-Service:

1. Start the store server:

   `StoreServerConduit.bat`

   When the message TierManager Started appears, the server has started. The server component does not have a user interface.

2. Start the registers.

   For each of the Point-of-Service registers, execute the conduit script that starts the Point-of-Service client component. Use the following command:

   `ClientConduit.bat`

3. Verify the installation on each register by logging in to Point-of-Service.

   If the login is successful and the status bar indicates the database is online, the installation is complete.

Creating a Custom Installation

A custom installation of Point-of-Service can use one of several approaches:

- Install Point-of-Service using the installer on a reference machine, and copy the resulting installation to other machines.
  - With this method, you can change the configuration settings of the installation as described in the *Oracle Retail Point-of-Service Operations Guide* until the installation works as desired, then propagate those configurations to other machines.
  - You can copy just the installation directory to a new machine, or if the hardware is sufficiently similar, you can copy the entire hard drive image to the machine. Copying the entire hard drive retains the JavaPOS installation as well as any other customizations.
  - You must change the WorkstationID value for the target machines to a unique number. This value can be found in `<POS_install_directory>\pos\config\application.properties`.
- Create a custom installer which allows for various hardware options but specifies the software choices your company has chosen.

  > **Note:** By default, installation of a register requires certain IBM Install Set parameters to have specific values:
  >
  > - Hard Total must be Off.
  > - Ingenico must be On.

3

Installation on the IBM Stack using Linux

This chapter provides information about the installation procedures for Oracle Retail Point-of-Service on the IBM stack using Linux.

Oracle Retail provides an installer for Point-of-Service, but customer installations typically develop custom procedures. Note that the installer is not appropriate for all installations. Oracle Retail expects implementation teams to develop custom procedures for actual register installations, which may or may not be based on the installer described here. For guidelines, see "Creating a Custom Installation".

Create the Database Schema Owner and Data Source Connection Users

A user to own the database schema and a data source connection user used by Point-of-Service to access the database must be defined. Specific roles must be defined for each user. The installer asks you to enter the user name and password for both these users.

> **Caution:** To meet the requirements of the Visa Payment Application Best Practices (PABP), separate schema owner and data source connection users must be created. The data source connection user cannot have any create privileges.
>
> If other Oracle Retail products are installed, the database schema owner and data source connection users defined for each product must not be the same as any other product. However, for example, if Oracle Retail Back Office and Point-of-Service are sharing a database, the database schema owner would be the same for those products.

For information on the best practices for passwords, see Appendix H.

Whether the database schema owner and the data source connection users need to be created is dependent on whether Point-of-Service shares the database with Back Office:

- If Point-of-Service is sharing the database with Back Office, the same database schema owner is used for both products. Only the data source connection user for Point-of-Service needs to be created.
- If Point-of-Service is not sharing the database with Back Office, both the database schema owner and data source connection user need to be created.

To create the database schema owner:

1. Log in using the database administrator user ID.
2. Create the schema owner user.

```
create schema <schema_name> authorization <schema_owner_user>
```

3. Grant the privileges, shown in the following example, to the user.

```
grant CREATETAB, BINDADD, CONNECT, IMPLICIT_SCHEMA ON DATABASE to user
<schema_owner_user>
```

4. Grant the following object level privileges to the schema owner user.

```
grant CREATEIN, DROPIN, ALTERIN ON SCHEMA <schema_name> to user
<schema_owner_user> with GRANT OPTION
```

To create the data source connection user:

1. If not already logged in, log in using the database administrator user ID.
2. Create the data source connection user.

```
create schema <data_source_schema_name> authorization <data_source_user>
```

3. Grant the privileges, shown in the following example, to the data source connection user.

```
grant CONNECT, IMPLICIT_SCHEMA ON DATABASE to <data_source_user>
```

4. Grant the following object level privileges to the data source connection user.

```
grant CREATEIN ON SCHEMA <data_source_schema_name> to user <data_source_user>
with GRANT OPTION
```

The installer grants the data source connection user access to the application database objects.

Note: If the data source connection user, *<data_source_user>*, created for Point-of-Service is not the same user ID created for the Back Office data source connection user, the Point-of-Service user must be granted access to the database schema after the Point-of-Service server is installed. After running the installer, see "Enabling Access for the Data Source Connection User".

Installing Point-of-Service

To establish an initial Oracle Retail Point-of-Service installation or to create a demonstration system, use the Point-of-Service installer as described in this section.

Determining Tier Type

Machines and logical components of the Oracle Retail Point-of-Service application are defined in Table 3–1:

Table 3–1 Server Tier Logical Components

Machine	Description
Store Server	The machine that runs the server component of Oracle Retail Point-of-Service. There is at least one store server for each store. This component runs as a service. This machine may also house the Back Office Server and other Oracle Retail Strategic Store Solutions components such as the OracleRetailStore database and Mobile Point-of-Service.
Point-of-Service Clients	The machines that execute the Point-of-Service transactions; they are typically cash registers.
Database Server	The machine that houses the OracleRetailStore databases. This machine may or may not be the same as the store server.
JMS Server	The machine that houses the JMS server software.

When you run the installer, it asks you to specify a Tier Type. The following types are available:

- N-Tier Client—Choose this when installing the client component.
- N-Tier Store Server—Choose this when installing the store server component.

Installing the Database

Oracle Retail products such as Point-of-Service and Back Office use the OracleRetailStore database. One OracleRetailStore database is typically installed in each store. Data stored in the OracleRetailStore database includes employee names, logon information, and transaction data. The database can be located on the store server or on a separate machine acting as the database server. The database must be installed before Point-of-Service can be installed.

If you are using Centralized Transaction Retrieval, an additional database called the Scratchpad database is used. This database holds retrieved transactions. For more information on Centralized Transaction Retrieval, see the *Oracle Retail Point-of-Service Operations Guide*.

Table 3–2 shows the database configuration information that is needed during installation.

Table 3–2 Database Configuration Settings

Installer Screen	Required Data
Transaction Retrieval Location	Choose the location for retrieving transactions. When using Centralized Transaction Retrieval, choose either the **Central** or **Central, Local Failover** option. Note: You must choose the same location for both the store server and client installations.

Table 3–2 (Cont.) Database Configuration Settings

Installer Screen	Required Data
Database Configuration	Enter the following information for the database: ■ JDBC driver path ■ Driver class name ■ Database URL ■ Jar name ■ Database schema owner user ID and password ■ Database user ID and password
Scratchpad Database Configuration	Enter the following information for the Scratchpad database: ■ JDBC driver path ■ Driver class name ■ Database URL ■ Jar name ■ Database user ID and password
Logging Options	Choose how the log is exported. When using Centralized Transaction Retrieval, choose the **Data Replication Export** option.
Central Office/Back Office Server Information	Enter the host names of the machines where the Central Office and Back Office instances for this store server are located.

To complete the installation, you must know the database location:

- If you install Point-of-Service on the same machine as the database, the installer asks for the database directory location.
- If you install Point-of-Service on a different machine from the database, the installer asks for the host name or IP address and RMI port number of the machine running the database.

The Point-of-Service installation process installs scripts to build the tables and insert a minimal data set. Steps for running these scripts are included later in this chapter.

Required Settings for the Database

The following settings must be made during database creation:

- The database must be set to UTF8.
- When using the Oracle 11g database server, make the following changes to the system settings:

```
ALTER SYSTEM SET NLS_NUMERIC_CHARACTERS = '.,-' SCOPE=SPFILE;
ALTER SYSTEM SET NLS_DATE_FORMAT ='YYYY-MM-DD' SCOPE=SPFILE;
ALTER SYSTEM SET NLS_TIMESTAMP_FORMAT = 'YYYY-MM-DD HH24:MI:SS.FF'
    SCOPE=SPFILE;
```

Installing Point-of-Service on Machines

If a previous version of Point-of-Service is installed on a machine, uninstall it by deleting the installation directory (the default directory is `/opt/OracleRetailStore`) or choose a different installation directory from the default.

Run the installer one time for each machine in the Server Tier and once for each register.

The installer performs the following steps. Not all steps apply to client and server installations.

- Installs Foundation, Retail Domain, and Oracle Retail Point-of-Service jar files.
- Installs database build scripts and start-up files.
- Defines Server Tier in the conduit script that starts Point-of-Service for the given machine.
- Defines hostnames or IP addresses and port numbers for the Store Server and database server.
- Defines device availability.
- Defines application properties for Store ID and Register Number.

Updating Device Configuration

The devices used on the machine are defined in the `jpos.xml` file.

> **Note:** IBM devices can be configured using the auto-config option. If problems are encountered using auto-config, turn off the auto-config option and configure the devices manually.

To turn off auto-config, update the `jpos.properties` file. The typical location for this file is `/opt/ibm/javapos/etc/jpos/jpos.properties`. Replace the existing entries with the following:

```
#jpos.config.regPopulatorClass=com.ibm.jpos.tools.autoconfig.SDIPopulator

jpos.config.populator.class.0=jpos.config.simple.xml.SimpleXmlRegPopulator
jpos.config.populator.class.1=jpos.config.simple.SimpleRegPopulator
```

Update the `jpos.xml` file to reflect the devices used on the machine. The typical location for this file is `/opt/ibm/javapos/etc/jpos.xml`.

1. To configure the default scanner, replace the existing entry or add the following entry to the `jpos.xml` file:

```
JposEntry logicalName="defaultScanner">

        <creation
factoryClass="com.extendyourstore.jpos.CrsJposServiceInstanceFactory"
serviceClass="com.extendyourstore.jpos.Scanner.Simple3"/>
        <vendor name="360Commerce" url="http://www.360commerce.com"/>
        <jpos category="Scanner" version="1.5"/>
        <product description="360Commerce Serial Scanner"/>

        <!--Other non JavaPOS required property (mostly vendor properties and
bus specific properties i.e. RS232 )-->

        <prop name="parity" type="String" value="0"/>
        <prop name="dataBits" type="String" value="7"/>
        <prop name="baudRate" type="String" value="9600"/>
        <prop name="stopBits" type="String" value="1"/>
        <prop name="suffix" type="String" value="13"/>
        <prop name="debug" type="String" value="false"/>
```

```
        <prop name="port" type="String" value="COM2"/>

</JposEntry>
```

2. To configure the Ingenico device for signature capture, replace the existing entry or add the following entry to the `jpos.xml` file. Change `<pos_install_directory>`, shown in bold in the following example, to your installation directory for Point-of-Service:

```
<JposEntry logicalName="defaultSignatureCapture">
            <creation factoryClass="services.IngenicoServiceInstanceFactory"
                serviceClass="services.et1k.sigcap.SignatureCaptureService"/>
            <vendor name="Ingenico" url="http://www.ingenico-us.com"/>
            <jpos category="SignatureCapture" version="1.5.2"/>
            <product description="ET1K POS Signature Capture JavaPOS Service
from Ingenico, Inc."
                name="Ingenico ET1K Signature Capture Service for JavaPOS(TM)
Standard"
                url="http://www.ingenico-us.com"/>
            <!--Other non JavaPOS required property (mostly vendor properties
and bus specific properties i.e. RS232 )-->
            <prop name="stopBits" value="1"/>
            <prop name="portName" value="COM1"/>
            <prop name="dataBits" value="8"/>
            <prop name="timeOut" value="5000"/>
            <prop name="baudRate" value="9600"/>
            <prop name="parity" value="0"/>
            <prop name="TestForm" value="sigtest.icf"/>
            <prop name="SigCompression" value="2byte"/>
            <prop name="ConfigPath" value=
"<pos_install_directory>/pos/config/device/ingenico/"/>
            <prop name="debug" value="ON"/>
        </JposEntry>
```

3. To configure the Ingenico device for the screens used within the Point-of-Service application, replace the existing entry or add the following entry to the `jpos.xml` file. Change `<pos_install_directory>`, shown in bold in the following example, to your installation directory for Point-of-Service:

```
<JposEntry logicalName="defaultForm">
            <creation factoryClass="services.IngenicoServiceInstanceFactory"
                serviceClass="services.et1k.form.FormService"/>
            <vendor name="Ingenico" url="http://www.ingenico-us.com"/>
            <jpos category="Form" version="1.5.2"/>
            <product description="ET1K POS Form JavaPOS Service from Ingenico,
Inc."
                name="Ingenico ET1K Form Service for JavaPOS(TM) Standard"
                url="http://www.ingenico-us.com"/>
            <!--Other non JavaPOS required property (mostly vendor properties
and bus specific properties i.e. RS232 )-->
            <prop name="stopBits" value="1"/>
            <prop name="portName" value="COM1"/>
            <prop name="dataBits" value="8"/>
            <prop name="baudRate" value="9600"/>
            <prop name="parity" value="0"/>
            <prop name="timeOut" value="5000"/>
            <prop name="clear" value="clear.icf"/>
            <prop name="ItemsForm" value="scrollingtext.icf"/>
            <prop name="SigCapForm" value="sigtest.icf"/>
            <prop name="ScrollingText" value="scrollingtext.icf"/>
```

```
            <prop name="Graphic" value="scan.icf"/>
            <prop name="Survey" value="type.icf"/>
            <prop name="Scripts" value="sigtest.icf"/>
            <prop name="Logo" value="360logo.icf"/>
            <prop name="SigCompression" value="2byte"/>
            <prop name="TwoButtons" value="2buttons.icf"/>
            <prop name="ThreeButtons" value="3buttons.icf"/>
            <prop name="FourButtons" value="4buttons.icf"/>
            <prop name="ConfigPath" value=
"<pos_install_directory>/pos/config/device/ingenico/"/>
        </JposEntry>
```

4. To configure the Ingenico PIN pad, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="defaultPINPad">

        <creation factoryClass="services.IngenicoServiceInstanceFactory"
serviceClass="services.et1k.pinpad.PINPadService"/>
        <vendor name="Ingenico" url="http://www.ingenico-us.com"/>
        <jpos category="SignatureCapture" version="1.5.2"/>

        <product description="ET1K POS PINPad JavaPOS Service from Ingenico,
Inc." name="Ingenico ET1K PINPad Service for JavaPOS(TM) Standard"
url="http://www.ingenico-us.com"/>

        <!--Other non JavaPOS required property (mostly vendor properties and
bus specific properties i.e. RS232 )-->

        <prop name="stopBits" value="1"/>
        <prop name="portName" value="COM1"/>
        <prop name="dataBits" value="8"/>
        <prop name="baudRate" value="9600"/>
        <prop name="parity" value="0"/>
        <prop name="timeOut" value="5000"/>
        <prop name="debug" value="ON"/>

</JposEntry>
```

5. To configure the Ingenico MSR device, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="ingenicoMSR">

        <creation factoryClass="services.IngenicoServiceInstanceFactory"
serviceClass="services.et1k.msr.MSRService"/>

        <vendor name="Ingenico" url="http://www.ingenico-us.com"/>
        <jpos category="MSR" version="1.5.2"/>
       <product description="ET1K POS MSR JavaPOS Service from Ingenico, Inc."
name="Ingenico ET1K MSR Service for JavaPOS(TM) Standard"
url="http://www.ingenico-us.com"/>

        <!--Other non JavaPOS required property (mostly vendor properties and
bus specific properties i.e. RS232 )-->

        <prop name="stopBits" value="1"/>
        <prop name="portName" value="COM1"/>
        <prop name="timeOut" value="5000"/>
        <prop name="dataBits" value="8"/>
        <prop name="baudRate" value="9600"/>
```

```
        <prop name="parity" value="0"/>
        <prop name="debug" value="ON"/>

</JposEntry>
```

6. To configure the default printer, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="defaultPrinter">
        <creation
factoryClass="com.ibm.jpos.services.IBMJposServiceInstanceFactory"/>
serviceClass="com.ibm.jpos.services.SdiIBM4610EPOSPrinter"/>
        <vendor name="IBM" url="http://www.ibm.com"/>
        <jpos category="POSPrinter" version="1.9.3"/>
        <product description="IBM JavaPOS(TM) POSPrinter RS485 Service for IBM
4610 TI2/3/4/5/8/9 TM/F 6/7 Printer" name="IBM JavaPOS for Linux/Windows
Version 1.9.3" url="http://www.pc.ibm.com/store/"/>

        <prop name="deviceBus" type="String" value="RS485"/>
        <prop name="com.ibm.posj.bus.rs485.sioDeviceNumber" type="String"
value="0x35"/>
        <prop name="com.ibm.posj.bus.rs485.sioPortNumber" type="String"
value="0x11"/>
        <prop name="com.ibm.posj.bus.rs485.sioSlotNumber" type="String"
value="0x01"/>
        <prop name="abstractionClass" type="String"
value="com.ibm.jpos.services.SdiIBM4610EPOSPrinter"/>
        <prop name="impClass" type="String"
value="com.ibm.jpos.services.sdi.IBM4610PrinterServiceImp"/>
        <prop name="com.ibm.posj.bus.deviceNumber" type="String" value="0"/>
</JposEntry>
```

7. To configure the default MICR device, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="defaultMICR">
        <creation
factoryClass="com.ibm.jpos.services.IBMJposServiceInstanceFactory"
serviceClass="com.ibm.jpos.services.IBM4610MICR"/>
        <vendor name="IBM" url="http://www.ibm.com"/>
        <jpos category="MICR" version="1.9.3"/>
        <product description="IBM JavaPOS(TM) MICR RS485 Service for IBM 4610
TI2/4/8/9 Printer" name="IBM JavaPOS for Linux/Windows Version 1.9.3"
url="http://www.pc.ibm.com/store/"/>

        <prop name="deviceBus" type="String" value="RS485"/>
        <prop name="abstractionClass" type="String"
value="com.ibm.jpos.services.IBM4610MICR"/>
        <prop name="impClass" type="String"
value="com.ibm.jpos.services.sdi.MICRServiceImp"/>
        <prop name="com.ibm.posj.bus.deviceNumber" type="String" value="0"/>
        <prop name="com.ibm.posj.bus.rs485.sioSlotNumber" type="String"
value="0x01"/>
        <prop name="com.ibm.posj.bus.rs485.sioPortNumber" type="String"
value="0x11"/>
        <prop name="com.ibm.posj.bus.rs485.sioDeviceNumber" type="String"
value="0x35"/>
        <prop name="com.ibm.jpos.sdi.config.MICR.exceptionTableFile"
type="String" value="[file-path-goes-here]"/>
       <prop name="com.ibm.jpos.sdi.config.MICR.exceptionTable4" type="String"
value="B778899001D154R"/>
```

```
       <prop name="com.ibm.jpos.sdi.config.MICR.exceptionTable3" type="String"
value="B667788990D153R"/>
       <prop name="com.ibm.jpos.sdi.config.MICR.exceptionTable2" type="String"
value="P123456780AAAAAXSSS"/>
       <prop name="com.ibm.jpos.sdi.config.MICR.exceptionTable1" type="String"
value="B445566778D151R"/>
       <prop name="com.ibm.jpos.sdi.config.MICR.exceptionTable0" type="String"
value="B334455667D150R"/>
        <prop name="com.ibm.jpos.sdi.config.MICR.stripAccountDashes"
type="String" value="false"/>
        <prop name="com.ibm.jpos.sdi.config.MICR.stripTransitDashes"
type="String" value="false"/>
        <prop name="com.ibm.jpos.sdi.config.MICR.switchTransitDashToSpace"
type="String" value="false"/>
</JposEntry>
```

8. To configure the default keyboard, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="defaultPOSKeyboard">
        <creation
factoryClass="com.ibm.jpos.services.IBMJposServiceInstanceFactory"
serviceClass="com.ibm.jpos.services.IBMPOSKeyboard"/>
        <vendor name="IBM" url="http://www.ibm.com"/>
        <jpos category="POSKeyboard" version="1.9.3"/>
        <product description="IBM JavaPOS(TM) POSKeyboard PS2 Service for IBM
4820/ANKPOS/CANPOS/NANPOS/SureONE Keyboards" name="IBM JavaPOS for
Linux/Windows Version 1.9.3" url="http://www.pc.ibm.com/store/"/>

        <prop name="com.ibm.jpos.sdi.config.POSKeyboard.Click" type="Byte"
value="0"/>
        <prop name="com.ibm.posj.bus.poskbd.functionNumber" type="String"
value="0"/>
        <prop name="com.ibm.jpos.sdi.config.POSKeyboard.Typematic"
type="Boolean" value="true"/>
        <prop name="com.ibm.jpos.sdi.config.POSKeyboard.ExtendedKeyMapping"
type="Boolean" value="true"/>
        <prop name="abstractionClass" type="String"
value="com.ibm.jpos.services.IBMPOSKeyboard"/>
        <prop name="impClass" type="String"
value="com.ibm.jpos.services.sdi.POSKeyboardServiceImp"/>
        <prop name="com.ibm.posj.bus.poskbd.keyboardNumber" type="String"
value="0"/>
        <prop name="deviceBus" type="String" value="Proprietary"/>
        <prop name="com.ibm.posj.bus.ProprietaryBusSubType" type="String"
value="PosKbd"/>
        <prop name="com.ibm.jpos.sdi.config.POSKeyboard.KbdScanning"
type="Boolean" value="true"/>
</JposEntry>
```

9. To configure the default MSR, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="defaultMSR">
        <creation
factoryClass="com.ibm.jpos.services.IBMJposServiceInstanceFactory"name="Ingenic
o ET1K Form Service for JavaPOS(TM) Standard"
                url="http://www.ingenico-us
serviceClass="com.ibm.jpos.services.IBMMSR"/>
        <vendor name="IBM" url="http://www.ibm.com"/>
        <jpos category="MSR" version="1.9.3"/>
```

```
        <product description="IBM JavaPOS(TM) MSR PS2 Service for IBM
ANKPOS/NANPOS/CANPOS/SureONE Keyboards" name="IBM JavaPOS for Linux/Windows
Version 1.9.3" url="http://www.pc.ibm.com/store/"/>

        <prop name="deviceBus" type="String" value="Proprietary"/>
        <prop name="com.ibm.posj.bus.ProprietaryBusSubType" type="String"
value="PosKbd"/>
        <prop name="com.ibm.posj.bus.poskbd.functionNumber" type="String"
value="0"/>
        <prop name="com.ibm.posj.bus.poskbd.keyboardNumber" type="String"
value="0"/>
        <prop name="abstractionClass" type="String"
value="com.ibm.jpos.services.IBMMSR"/>
        <prop name="impClass" type="String"
value="com.ibm.jpos.services.sdi.MSRServiceImp"/>
</JposEntry>
```

10. To configure the default cash drawer, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="defaultCashDrawer">
        <creation
factoryClass="com.ibm.jpos.services.IBMJposServiceInstanceFactory"
serviceClass="com.ibm.jpos.services.IBMCashDrawer"/>
        <vendor name="IBM" url="http://www.ibm.com"/>
        <jpos category="CashDrawer" version="1.9.3"/>
        <product description="IBM JavaPOS(TM) CashDrawer Service for IBM
SurePOS 300/72x/74x/78x-A" name="IBM JavaPOS for Linux/Windows Version 1.9.3"
url="http://www.pc.ibm.com/store/"/>

        <prop name="deviceBus" type="String" value="Proprietary"/>
        <prop name="com.ibm.posj.bus.ProprietaryBusSubType" type="String"
value="Embedded"/>
        <prop name="abstractionClass" type="String"
value="com.ibm.jpos.services.IBMCashDrawer"/>
        <prop name="impClass" type="String"
value="com.ibm.jpos.services.sdi.CashDrawerServiceImp"/>
        <prop name="com.ibm.posj.bus.deviceNumber" type="String" value="0"/>
</JposEntry>
```

11. To configure the default line display, replace the existing entry or add the following entry to the `jpos.xml` file:

```
<JposEntry logicalName="defaultLineDisplay">
        <creation
factoryClass="com.ibm.jpos.services.IBMJposServiceInstanceFactory"
serviceClass="com.ibm.jpos.services.LineDisplayLCVFD"/>
        <vendor name="IBM" url="http://www.ibm.com"/>
        <jpos category="LineDisplay" version="1.9.3"/>
        <product description="IBM JavaPOS(TM) LineDisplay USB Service for IBM
Vaccum Fluorescent Display (VFD)-A" name="IBM JavaPOS for Linux/Windows Version
1.9.3" url="http://www.pc.ibm.com/store/"/>

        <prop name="com.ibm.posj.bus.hid.usageId" type="String"
value="0x2400"/>
        <prop name="deviceBus" type="String" value="HID"/>
        <prop name="abstractionClass" type="String"
value="com.ibm.jpos.services.LineDisplayLCVFD"/>
        <prop name="impClass" type="String"
value="com.ibm.jpos.services.sdi.LineDisplayServiceImp"/>
        <prop name="com.ibm.posj.bus.hid.usagePage" type="String"
```

```
value="0xFF45"/>
        <prop name="com.ibm.posj.bus.deviceNumber" type="String" value="0"/>
</JposEntry>
```

Expand the Point-of-Service Distribution

To extract the Point-of-Service files:

1. Extract the `ORPOS-13.0.4.0.zip` file from the Point-of-Service distribution.
2. Create a new staging directory for the Point-of-Service application distribution `ORPOS-13.0.4.0.zip` file, for example, `/tmp/orpos/orpos-staging`.

   Note: The staging area (*<staging_directory>*) can exist anywhere on the system. It does not need to be under `ORACLE_HOME`.

3. Copy or upload `ORPOS-13.0.4.0.zip` to *<staging_directory>* and extract its contents. The following files and directories should be created under *<staging_directory>*`/ORPOS-13.0.4.0`:

```
ant/
ant-ext/
antinstall/
design/
installer-resources/
installer-templates/
product/
antinstall-config.xml
build.xml
build-antinstall.xml
build-common.xml
build-common-oas.xml
build-common-was.xml
build-conditions.xml
build-filesets.xml
build-filters.xml
build-properties.xml
checkdeps.cmd
checkdeps.sh
install.cmd
install.sh
prepare.xml
```

For the remainder of this chapter, *<staging_directory>*`/ORPOS-13.0.4.0` is referred to as *<INSTALL_DIR>*.

Note: If you are using the simulated key management package bundled with Point-of-Service, save the following jar file in a directory outside of the staging area.

<INSTALL_DIR>`/product/360common/lib/simkeystore.jar`

If the staging area is then deleted after the installation is complete, the jar file will still be available.

Obtaining Third-Party Library Files Required by Point-of-Service

The Point-of-Service application uses specific files from JBoss, WebSphere, and Apache. To obtain the necessary files:

1. Some WebSphere specific files are needed to make use of JMS. Extract the required files from the following locations:
   - *<WAS_INSTALL_DIR>*/WebSphere/AppServer/plugins/com.ibm.ws.runtime_6.1.0.13.jar
   - *<WAS_INSTALL_DIR>*/WebSphere/AppServer/runtimes/com.ibm.ws.admin.client_6.1.0.13.jar
   - *<MQ_INSTALL_DIR>*/java/lib/jms.jar
   - *<WAS_INSTALL_DIR>*/lib/WMQ/java/lib/com.ibm.mqjms.jar
   - *<WAS_INSTALL_DIR>*/lib/WMQ/java/lib/com.ibm.mq.jar
   - *<WAS_INSTALL_DIR>*/lib/WMQ/java/lib/dhbcore.jar
2. Get the required files for the Derby database. You can get the download at the website:

   http://db.apache.org/derby/releases/release-10.2.2.0.cgi

   Extract the following files:
   - derby.jar
   - derbytools.jar

Securing Communication

Communication with the database and communication between the store server and registers must be secured in order to be compliant with PABP requirements.

- On the Enable Secure JDBC screen, you select whether secure JDBC will be used for communication with the database. If **Yes** is selected, the installer sets up the secure JDBC.

  If **No** is selected and you want to manually set up the secure JDBC after the installer completes, see Appendix K. If secure JDBC is not used, Point-of-Service will not be compliant with PABP requirements.
- On the Enable Secure RMI screen, you select whether secure RMI will be used for communication between the store server and registers. If **Yes** is selected, the installer sets up the secure RMI.

  If **No** is selected and you want to manually set up the secure RMI after the installer completes, see Appendix L. If secure RMI is not used, Point-of-Service will not be compliant with PABP requirements.

Obtaining the Required IBM JRE

This release requires IBM JRE 1.5 for server and client installs. The downloads are available at the following website. You need an IBM ID, which you can request from the Sign in screen, in order to log in to this website.

https://www14.software.ibm.com/webapp/iwm/web/reg/download.do?source=sdk5&S_PKG=intel5sr6&S_TACT=105AGX05&S_CMP=JDK&lang=en_US&cp=UTF-8

Once logged in, download both the JRE and Java Communication API:

1. To download the JRE, select the following tgz format file.

   `ibm-java2-jre-5.0-6.0-linux-i386.tgz`

2. To download the Java Communication API, select the following tgz format file.

   `ibm-java2-javacomm-5.0-6.0-linux-i386.tgz`

Running the Point-of-Service Application Installer

This installer will configure and deploy the Point-of-Service application.

> **Note:** To see details on every screen and field for a server installation, see Appendix A. To see details for a client installation, see Appendix B.

1. Change to the *<INSTALL_DIR>* directory.
2. Set the `JAVA_HOME` environment variable to the location of your jdk, for example, `/opt/j2sdk1.5`. The variable must be set to the location of the jdk and not the jre.

> **Note:** The installer is not compatible with versions of Java earlier than 1.5.

3. Change the mode of `install.sh` to executable.
4. Run `install.sh`. After installation is complete, a detailed installation log file is created at *<POS_install_directory>*`/pos/logs/installer_log.txt`.

> **Note:** The usage details for install.sh are shown below. The typical usage for GUI mode does not use arguments.
>
> `install.sh [text | silent oracle]`

Resolving Errors Encountered During Application Installation

If the application installer encounters any errors, you can read them in the above mentioned log file.

For a list of common installation errors, see Appendix E.

Creating the Point-of-Service Database Schema

The scripts that create the Point-of-Service database schema can be run from the installed `pos/bin` directory. The database server can be on the same system as the application server or on a different system.

Creating with Oracle Retail Back Office

When Point-of-Service will be used with Back Office, create the database schema during the Back Office installation. See the *Oracle Retail Back Office Installation Guide* for information.

Then, as part of this installation, if **Central** or **Central, Local Failover** was selected for the Transaction Retrieval Location, run `scratchpad.bat` to create the Scratchpad database.

Creating without Oracle Retail Back Office

When Point-of-Service is being installed without Back Office, perform the following steps to create the Point-of-Service database schema.

1. Change to the `<POS_install_directory>/pos/bin directory`.
2. Set the `JAVA_HOME` and `ANT_HOME` environment variables.
3. Add `$JAVA_HOME/bin` and `$ANT_HOME/bin` to the front of the PATH environment variable.

   ```
   PATH=$JAVA_HOME/bin:$ANT_HOME/bin:$PATH; export PATH
   ```

4. Run one of the available `dbbuild.bat` targets to create the database schema, load data, and load the procedures for purging aged data in the database. For information on the purge procedures, see the *Oracle Retail Point-of-Service Operations Guide*.
   - seed_data: loads seed data
   - test_data: loads test data
   - load_purge_procedures: loads database purge procedures

   For example, `dbbuild seed_data`
5. If **Central** or **Central, Local Failover** was selected for the Transaction Retrieval Location, run `scratchpad.bat` to create the Scratchpad database.

Enabling Access for the Data Source Connection User

If the data source connection user, <*data_source_user*>, created for Point-of-Service is not the same user ID created for the Back Office data source connection user, the Point-of-Service user must be granted access to the database schema after the Point-of-Service server is installed.

To grant access to the database:

1. Change to the `<POS_install_directory>/server/pos/bin` directory.
2. Set the `JAVA_HOME` and `ANT_HOME` environment variables.
3. Add `$JAVA_HOME/bin` and `$ANT_HOME/bin` to the front of the PATH environment variable.

   ```
   PATH=$JAVA_HOME/bin:$ANT_HOME/bin:$PATH; export PATH
   ```

4. Run the following ant target.

   ```
   ant -f db.xml -Dschema.user=<data_source_user>
   -Dschema.password=<data_source_user_password> grant_schema
   ```

Configuring for Offline Data Updates

Point-of-Service provides the capability to automatically update offline data to clients. The scheduling of the updates can be configured. This configuration involves updating parameters and the `ServiceContent.xml` file. For more information on offline data updates and how to configure the updates, see the *Oracle Retail Point-of-Service Operations Guide*.

Setting up the Server to use ISD for Tender Authorization

If **ISD** was selected on the Tender Authorization screen, you must update the security for your JRE. You need to obtain version 1.4.2 of the Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files. The 1.4.2 version for the JCE Unlimited Strength Encryption is compatible with the IBM Java5 JRE.

1. Download version 1.4.2 of JCE.
   a. Go to the following website:

      `http://www.ibm.com/developerworks/java/jdk/security/50/`

   b. Click **IBM SDK Policy Files**. You are prompted to log in.
   c. After you log in, follow the instructions to download the JCE.
2. Copy the jar files into the JRE security directory. The files are bundled as `unrestrict142.zip`.
   a. Make a backup copy of `local_policy.jar` and `US_export_policy.jar`.

      ```
      cd $JRE_HOME/lib/security
      mv local_policy.jar local_policy.jar.bak
      mv US_export_policy.jar US_export_policy.jar.bak
      ```

   b. Copy the new policy jar files into the JRE security directory.

      ```
      cd /<tmp>
      cp local_policy.jar $JRE_HOME/lib/security
      cp US_export_policicy.jar $JRE_HOME/lib/security
      ```

3. The store server can now be started.

Results of a Point-of-Service Installation

The default root directory for OracleRetailStore applications on Linux is `opt/OracleRetailStore`. In this guide, this directory is referred to as *<POS_install_directory>*. The subdirectories listed in Table 3–3 are created:

Table 3–3 <POS_install_directory> Subdirectories

Name	Contents
360common	Files shared by multiple Oracle Retail Strategic Store Solutions applications including Foundation or 360Platform, Domain, and third-party jar files
databases	Resources for various database types
jre	Contains the Java runtime environment
pos	Point-of-Service files
mpos	Mobile Point-of-Service files (if the Oracle Retail Mobile Point-of-Service product is installed)

Important subdirectories of the `/pos directory` is shown in Table 3–4:

Table 3–4 <POS_install_directory>/pos Subdirectories

Name	Contents
bin	Startup batch files and shell scripts
lib	Point-of-Service application and resource jar files
lib/locales	Text bundles for localization **Note:** The only language currently supported is United States English.
3rdparty	Third-party source files used by Point-of-Service only
config	XML configuration files, `.properties` files, and `.dat` files
logs	Log files (additional log files are in the bin directory)

Running Point-of-Service

You run the Oracle Retail Point-of-Service system by executing the shell scripts, found in your installation's `bin` directory, to launch various components.

To run Point-of-Service:

1. Start the store server:

   ```
   StoreServerConduit.sh
   ```

   When the message TierManager Started appears, the server has started. The server component does not have a user interface.

2. Start the registers.

   For each of the Point-of-Service registers, execute the conduit script that starts the Point-of-Service client component. Use the following command:

   ```
   ClientConduit.sh
   ```

3. Verify the installation on each register by logging in to Point-of-Service.

   If the login is successful and the status bar indicates the database is online, the installation is complete.

Creating a Custom Installation

A custom installation of Point-of-Service can use one of several approaches:

- Install Point-of-Service using the installer on a reference machine, and copy the resulting installation to other machines.
  - With this method, you can change the configuration settings of the installation as described in the *Oracle Retail Point-of-Service Operations Guide* until the installation works as desired, then propagate those configurations to other machines.
  - You can copy just the installation directory to a new machine, or if the hardware is sufficiently similar, you can copy the entire hard drive image to the machine. Copying the entire hard drive retains the JavaPOS installation as well as any other customizations.

  - You must change the WorkstationID value for the target machines to a unique number. This value can be found in *<POS_install_directory>*/pos/config/application.properties.

- Create a custom installer which allows for various hardware options but specifies the software choices your company has chosen.

Note: By default, installation of a register requires certain IBM Install Set parameters to have specific values:

- Hard Total must be Off.
- Ingenico must be On.

A

Appendix: Installer Screens for Point-of-Service Server Installation

You need specific details about your environment for the installer to successfully install the Point-of-Service application. This appendix shows the screens that are displayed during the installation of the Point-of-Service server. Depending on the options you select, you may not see some screens or fields.

For each field on a screen, a table is included in this appendix that describes the field. If you want to document any specific information about your environment for any field, a Notes row is provided in each table for saving that information.

For the installer screens for a client installation, see Appendix B.

Figure A–1 Introduction

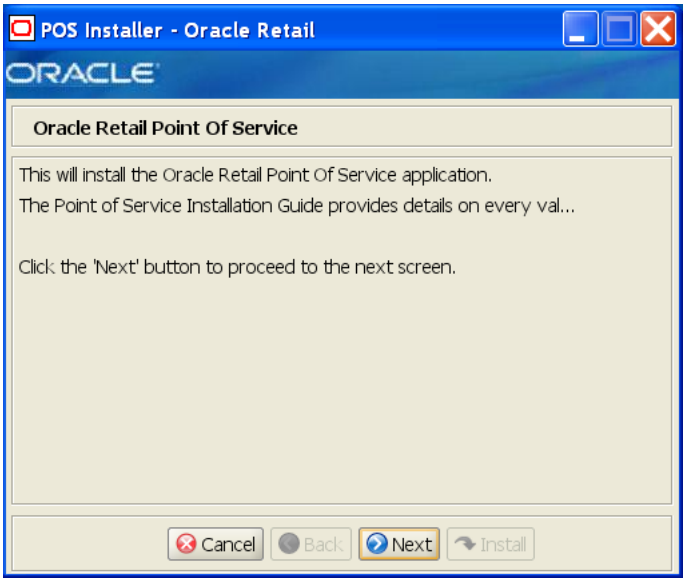


Figure A–2 Previous POS Install

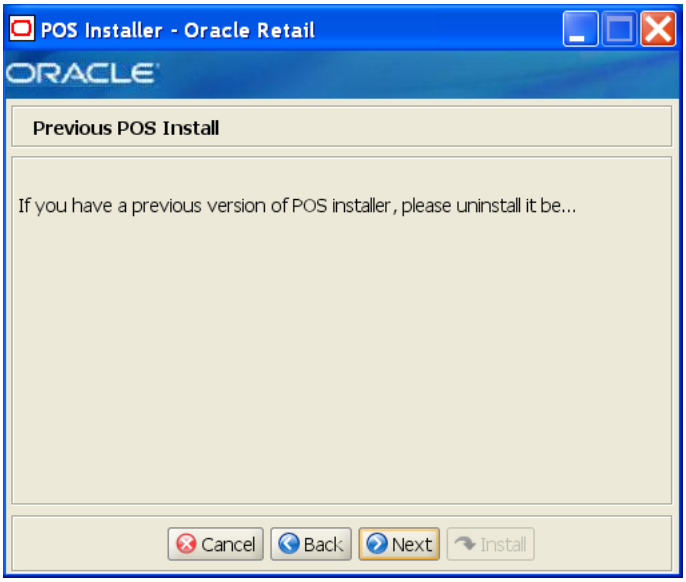
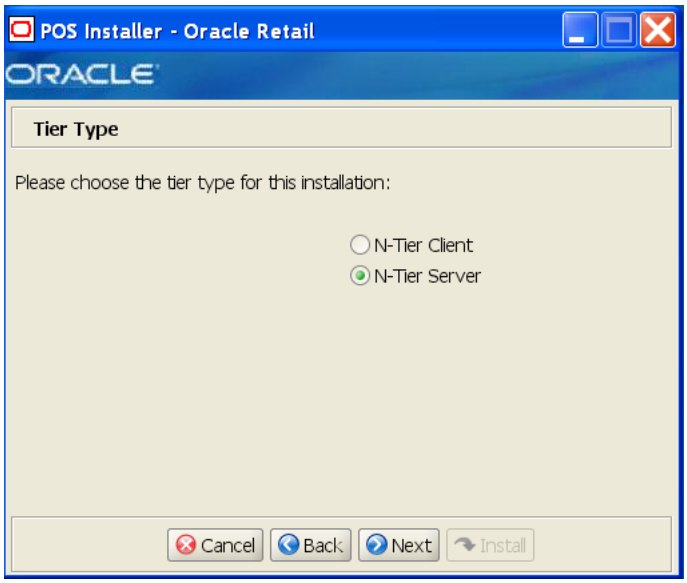


Figure A–3 License Agreement

Note: You must choose to accept the terms of the license agreement in order for the installation to continue.

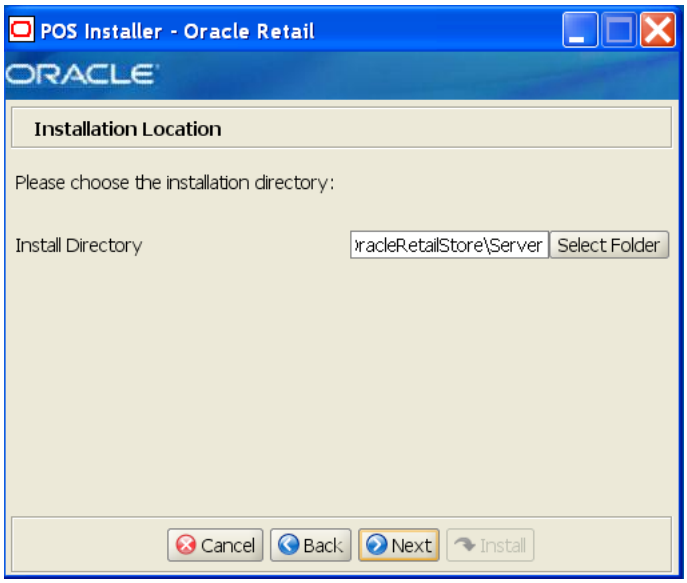
Figure A–4 Tier Type



The field on this screen is described in the following table.

Field Title	Tier Type
Field Description	Choose the server tier type for this installation. For more information, see "Determining Tier Type" in Chapter 2. To install the N-Tier version of the server, choose **N-Tier Server**.
Example	N-Tier Server
Notes	

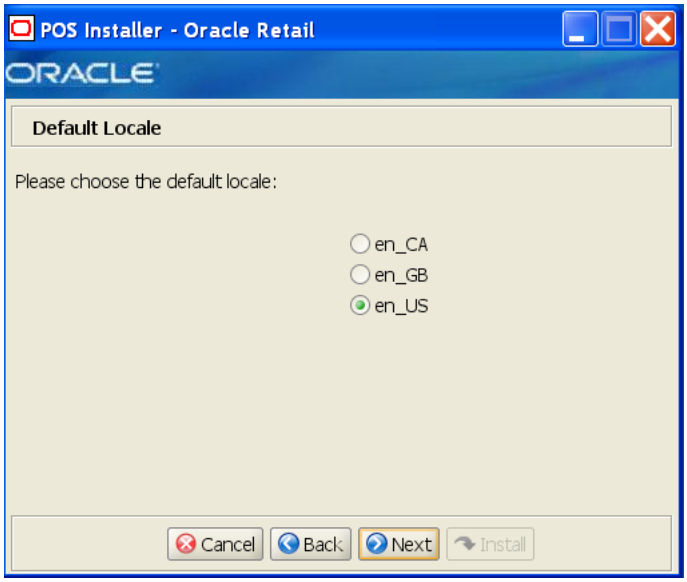
Figure A–5 Installation Location



The field on this screen is described in the following table.

Field Title	Install Directory
Field Description	Choose the directory into which the Point-of-Service files are copied. The default for the first directory in the path is `OracleRetailStore`. This directory should be the same for all Oracle Retail Strategic Store Solutions products. When installing for Windows and **N-Tier Server** is selected for the Tier Type, the default installation directory is `OracleRetailStore\Server`. **Note:** The server and the client must not be installed into the same directory. When installing for Linux, the default directory is `OracleRetailStore`. In this guide, *<POS_install_directory>* refers to the selected installation directory for the server or client. Files specific to Point-of-Service are copied to the `\pos` subdirectory of `<POS_install_directory>`.
Example	`C:\OracleRetailStore\Server`
Notes	

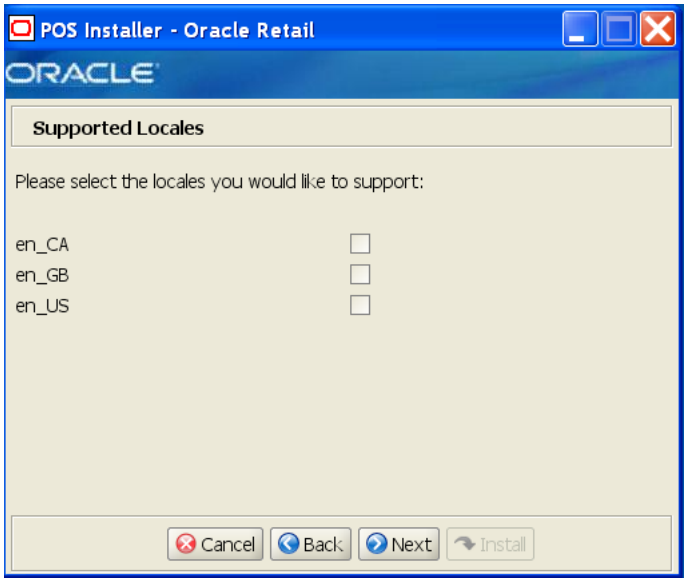
Figure A–6 Default Locale



The field on this screen is described in the following table.

Field Title	Please choose the default locale:
Field Description	Limited locale support in Point-of-Service enables the date, time, currency, and calendar to be displayed in the format for the selected default locale. ■ To select the locale for Canada, choose en_CA. ■ To select the locale for Great Britain, choose en_GB. ■ To select the local for the United States, choose en_US. **Note:** The only language currently supported is United States English.
Example	en_US
Notes	

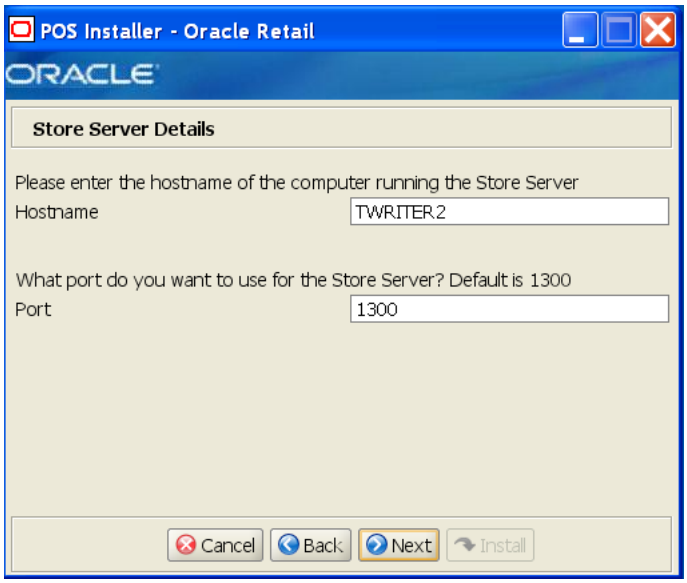
Figure A–7 Supported Locales



The field on this screen is described in the following table.

Field Title	Please select the locales you would like to support:
Field Description	In addition to the default locale, additional locales can be supported. Limited locale support in Point-of-Service enables the date, time, currency, and calendar to be displayed in the format for the selected locale. ■ To select the locale for Canada, choose en_CA. ■ To select the locale for Great Britain, choose en_GB. ■ To select the local for the United States, choose en_US. **Note:** The only language currently supported is United States English.
Example	en_US
Notes	

Figure A–8 Store Server Details

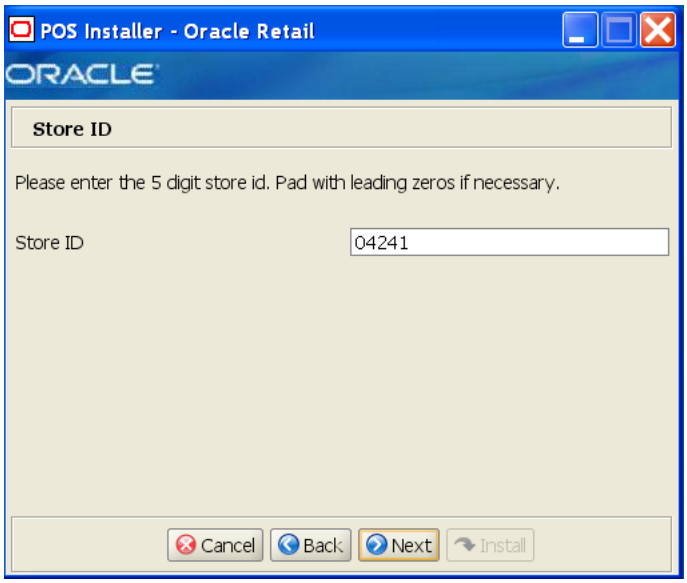


The fields on this screen are described in the following tables.

Field Title	Hostname
Field Description	Enter the host name of the store server.
Example	TWRITER2
Notes	

Field Title	Port
Field Description	Enter the port number of the store server used for the communication between the store server and the host computer.
Example	1300
Notes	

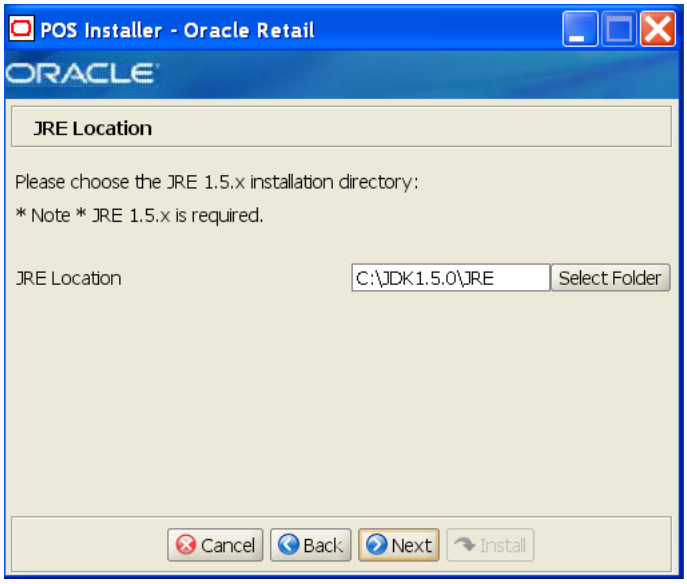
Figure A–9 Store ID



The field on this screen is described in the following table.

Field Title	Store ID
Field Description	Enter the store ID.
Example	04241
Notes	

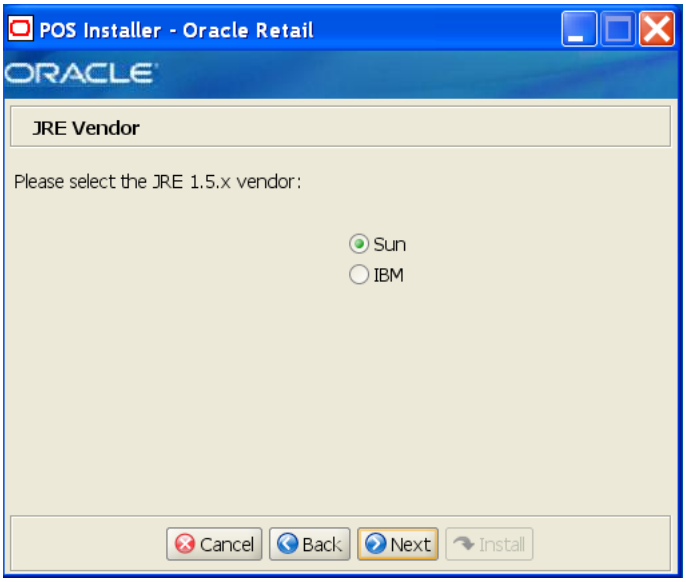
Figure A–10 JRE Location



The field on this screen is described in the following table.

Field Title	Folder
Field Description	Enter the location where the JRE is installed.
Example	`C:\JDK1.5.0\JRE`
Notes	

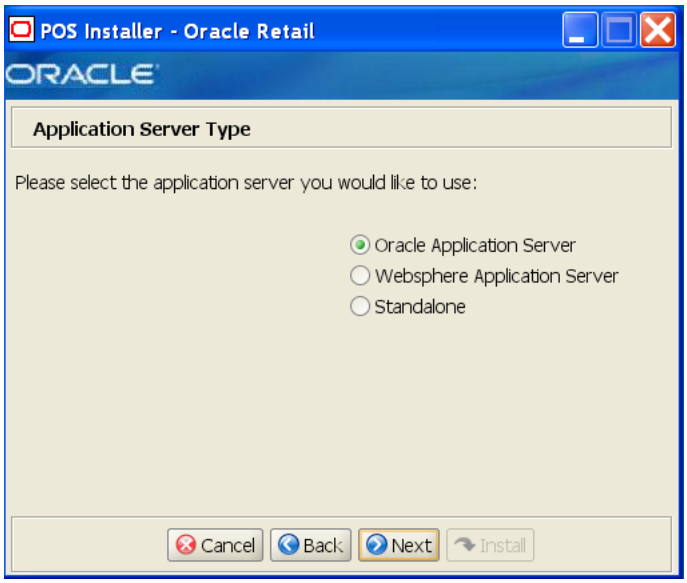
Figure A–11 JRE Vendor



The field on this screen is described in the following table.

Field Title	JRE Vendor
Field Description	Select the vendor for the JRE entered on the JRE Location screen: ▪ Sun ▪ IBM If Oracle Application Server is the application server being used, choose **Sun**. If Websphere Application Server is the application server being used, choose **IBM**.
Example	Sun
Notes	

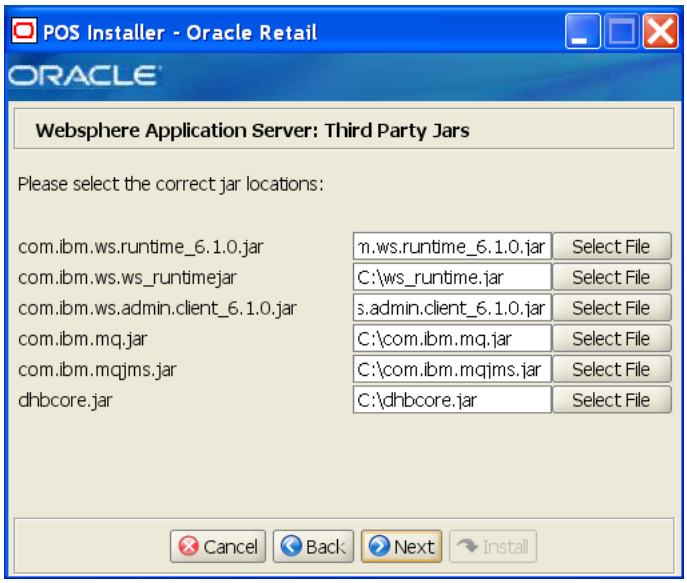
Figure A–12 Application Server Type



The field on this screen is described in the following table.

Field Title	Application Server Type
Field Description	Select the application server to be used for the store server. ▪ Oracle Application Server ▪ Websphere Application Server ▪ Standalone **Note:** Standalone is intended only for demonstration or development purposes. Do not select Standalone if you are running Point-of-Service on the IBM stack.
Example	Oracle Application Server
Notes	

Figure A–13 Websphere Application Server: Third Party Jars



This screen is only displayed if **WebSphere Application Server** is selected for the Application Server Type. The fields on this screen are described in the following tables.

Field Title	**com.ibm.ws.runtime_6.1.0.jar**
Field Description	Choose the location of the `com.ibm.ws.runtime_6.1.0.jar` file.
Example	`WAS_install/WebSphere/AppServer/plugins/com.ibm.ws.runtime_6.1.0.jar`
Notes	

Field Title	**com.ibm.ws.runtime.jar**
Field Description	Choose the location of the `com.ibm.ws.runtime.jar` file.
Example	`WAS_install/WebSphere/AppServer/plugins/com.ibm.ws.runtime.jar`
Notes	

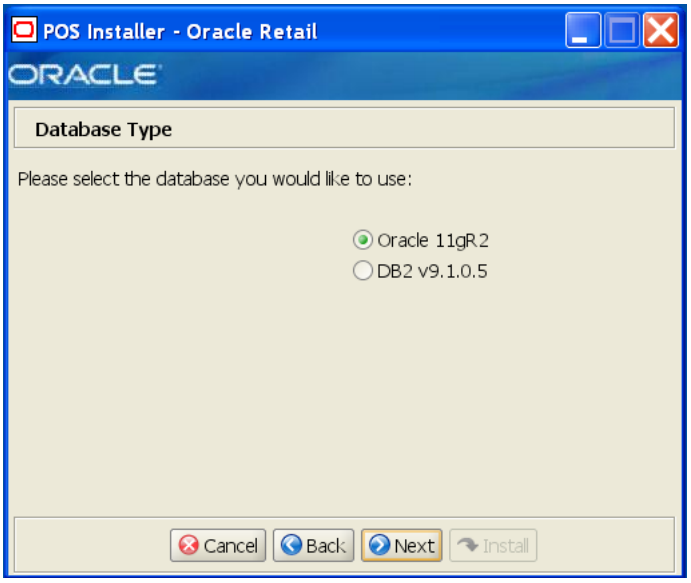
Field Title	**com.ibm.ws.admin.client_6.1.0.jar**
Field Description	Choose the location of the `com.ibm.ws.admin.client_6.1.0.jar` file.
Example	`WAS_install/WebSphere/AppServer/runtime/com.ibm.ws.admin.client_6.1.0.jar`
Notes	

Field Title	**com.ibm.mq.jar**
Field Description	Choose the location of the `com.ibm.mq.jar` file.
Example	`WAS_install/lib/WMQ/java/lib/com.ibm.mq.jar`
Notes	

Field Title	com.ibm.mqjms.jar
Field Description	Choose the location of the `com.ibm.mqjms.jar` file.
Example	`MQ_install/java/lib/com.ibm.mqjms.jar`
Notes	

Field Title	dhbcore.jar
Field Description	Choose the location of the `dhbcore.jar` file.
Example	`WAS_install/lib/WMQ/java/lib/dhbcore.jar`
Notes	

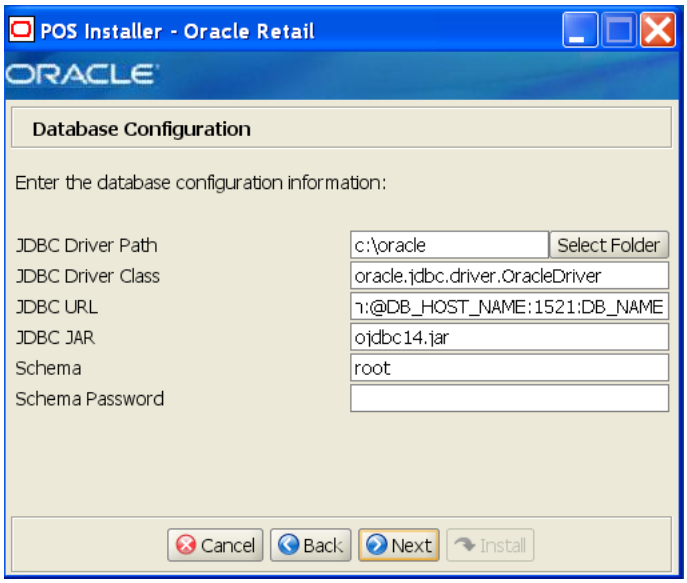
Figure A–14 Database Type



The field on this screen is described in the following table.

Field Title	Database Type
Field Description	Select the database provider that is used for the OracleRetailStore database.
Example	Oracle 11gR2
Notes	

Figure A–15 Database Configuration for Oracle 11gR2



This screen is only displayed if **Oracle 11gR2** is selected for the Database Type. The fields on this screen are described in the following tables.

Field Title	JDBC Driver Path
Field Description	Choose the path to the jar containing the database driver. This is the jar entered in the JDBC JAR field.
Example	`C:/oracle`
Notes	

Field Title	JDBC Driver
Field Description	Enter the database driver class name.
Example	`oracle.jdbc.driver.OracleDriver`
Notes	

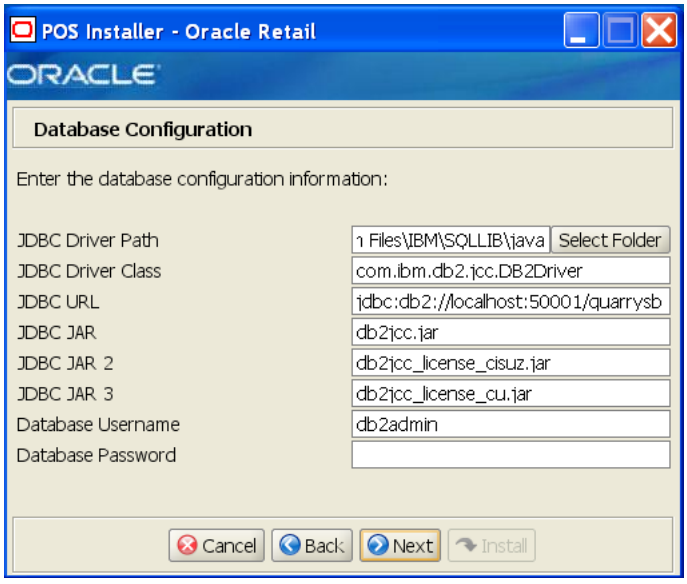
Field Title	JDBC URL
Field Description	Enter the URL used by the Point-of-Service application to access the database schema. For the expected syntax, see Appendix D.
Example	`jdbc:oracle:thin:@myhost:1521:mydatabase`
Notes	

Field Title	JDBC JAR
Field Description	Enter the name of the jar containing the database driver.
Example	`ojdbc14.jar`
Notes	

Field Title	Schema
Field Description	Enter the data source connection user name used by the Point-of-Service application to access the database. This user name is created prior to running the installer. For information on creating the user for the Oracle stack, see "Create the Database Schema Owner and Data Source Connection Users" in Chapter 2.
Example	DBUSER
Notes	

Field Title	Schema Password
Field Description	Enter the password for the data source connection user.
Notes	

Figure A–16 Database Configuration for DB2



This screen is only displayed if **DB2** is selected for the Database Type. The fields on this screen are described in the following tables.

Field Title	JDBC Driver Path
Field Description	Choose the path to the jar containing the database driver. This is the jar entered in the JDBC JAR field.
Example	`C:\Program Files\IBM\SQLLIB\java\`
Notes	

Field Title	JDBC Driver Class
Field Description	Enter the database driver class name.
Example	`com.ibm.db2.jcc.DB2Driver`
Notes	

Field Title	JDBC URL
Field Description	Enter the URL used by the Point-of-Service application to access the database schema. For the expected syntax, see Appendix D.
Example	`jdbc:db2://localhost:500001/quarrysb`
Notes	

Field Title	JDBC JAR
Field Description	Enter the name of the jar containing the database driver.
Example	`db2jcc.jar`
Notes	

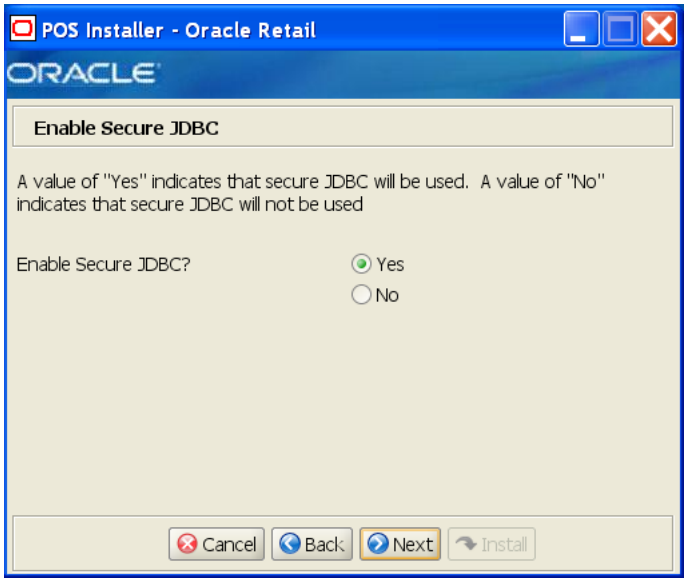
Field Title	JDBC JAR 2
Field Description	Enter the name of the jar containing license information.
Example	`db2jcc_license_cisuz.jar`
Notes	

Field Title	JDBC JAR 3
Field Description	Enter the name of the jar containing license information.
Example	`db2jcc_license_cu.jar`
Notes	

Field Title	Database Username
Field Description	Enter the data source connection user name used by the Point-of-Service application to access the database. This user name is created prior to running the installer. For information on creating the user for the IBM stack, see "Create the Database Schema Owner and Data Source Connection Users" in Chapter 3.
Example	db2admin
Notes	

Field Title	Database Password
Field Description	Enter the password for the data source connection user used by the Point-of-Service application.
Notes	

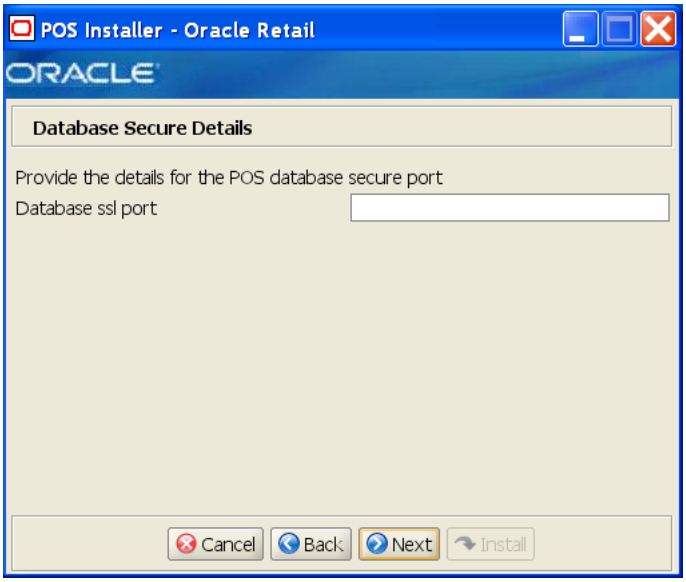
Figure A–17 Enable Secure JDBC



The field on this screen is described in the following table.

Field Title	Enable Secure JDBC?
Field Description	Select whether secure JDBC is to be used for communication with the database.
Example	Yes
Notes	

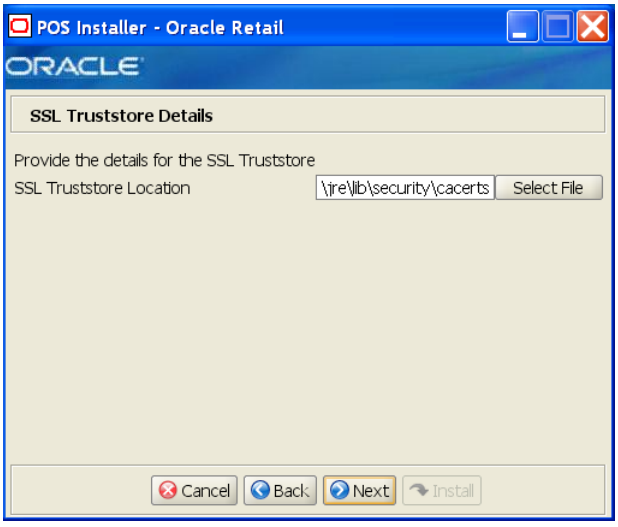
Figure A–18 Data Source Details



This screen is only displayed if **Yes** is selected on the Enable Secure JDBC screen. The field on this screen is described in the following table.

Field Title	Data source ssl port
Field Description	SSL port used to access the database.
Example	1521
Notes	

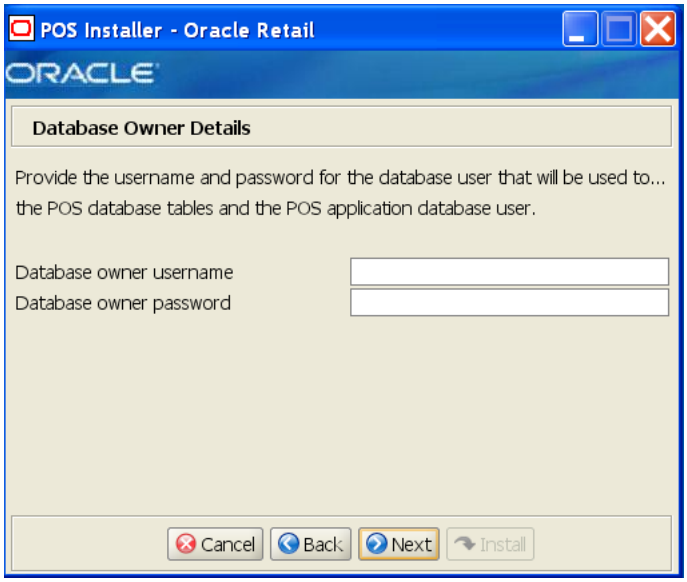
Figure A–19 SSL Truststore Details



This screen is only displayed if **Yes** is selected on the Enable Secure JDBC screen and **WebSphere Application Server** is selected for the Application Server Type. The field on this screen is described in the following table.

Field Title	SSL Truststore Location
Field Description	Choose the path to the SSL truststore.
Example	`OracleRetailStore\Client\Certificate`
Notes	

Figure A–20 Database Owner Details

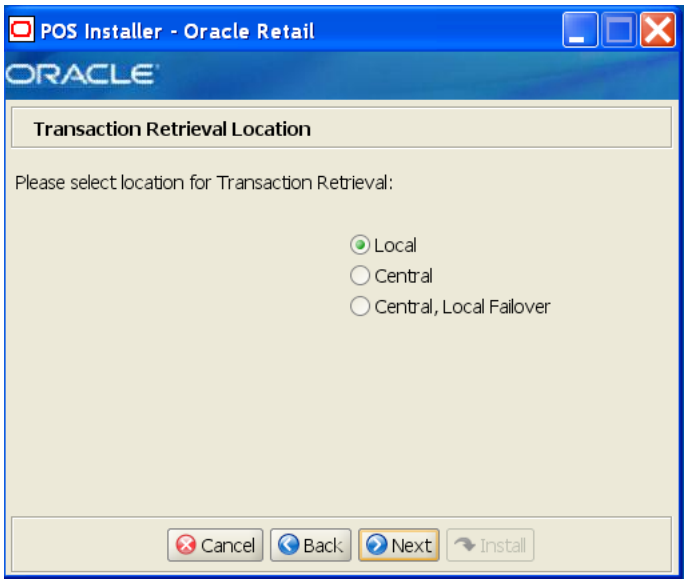


The fields on this screen are described in the following tables.

Field Title	Database owner username
Field Description	Enter the database user name that owns the database schema. This user name is created prior to running the installer. For information on creating the user for the Oracle stack, see "Create the Database Schema Owner and Data Source Connection Users" in Chapter 2. For information on creating the user for the IBM stack, see "Create the Database Schema Owner and Data Source Connection Users" in Chapter 3.
Example	DBOWNER
Notes	

Field Title	Database owner password
Field Description	Enter the password for the database schema owner.
Notes	

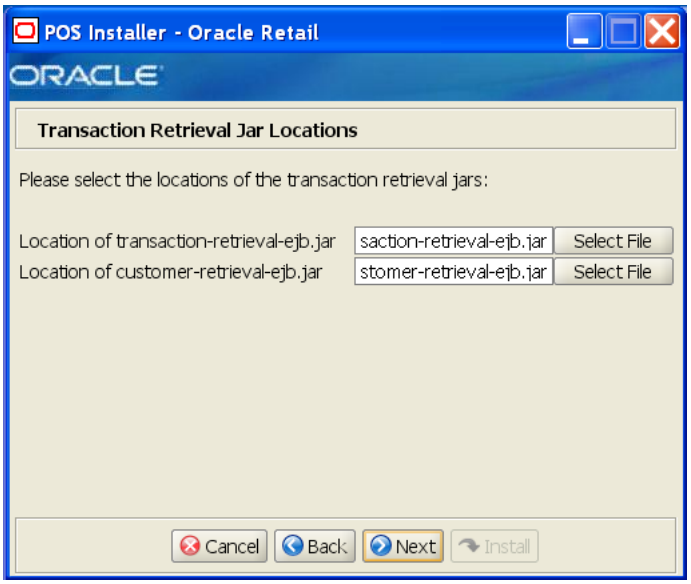
Figure A–21 Transaction Retrieval Location



The field on this screen is described in the following table.

Field Title	Transaction retrieval location
Field Description	Choose the location for retrieving transactions. ▪ If transactions should only be retrieved from the store database, choose **Local**. ▪ If transactions should only be retrieved from the corporate database, choose **Central**. ▪ If transactions should be retrieved from the corporate database, and if not found, then retrieved from the store database, choose **Central, Local Failover**. **Note:** You must choose the same location for both the store server and client installations.
Example	Local
Notes	

Figure A–22 Transaction Retrieval Jar Locations



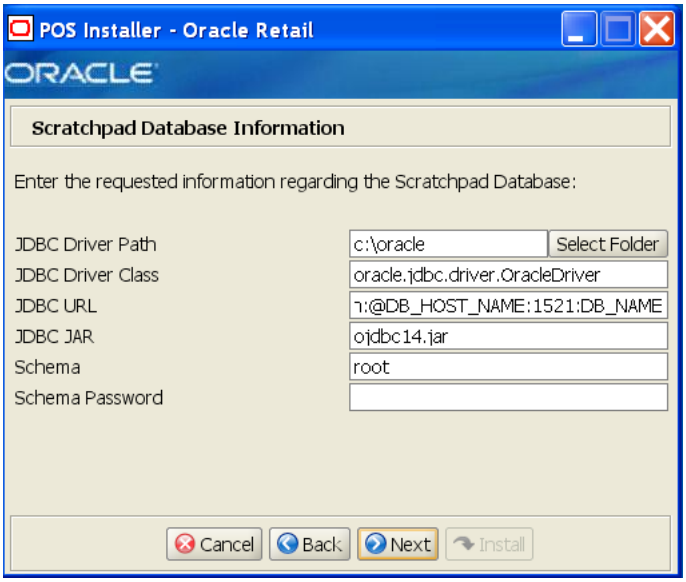
This screen is only displayed if **Websphere Application Server** is selected for the Application Server Type, and **Central** or **Local, Central Failover** is selected for the Transaction Retrieval Location. The fields on this screen are described in the following tables.

> **Note:** These jar files are created during the deployment of Oracle Retail Central Office on WebSphere. These files must be available for the Point-of-Service installation. For additional information, see "Store Server Configuration" in Appendix G.

Field Title	transaction-retrieval-ejb.jar
Field Description	Choose the location of the `transaction-retrieval-ejb.jar` file.
Example	`c:\tmp\orpos-1301\transaction-retrieval-ejb.jar`
Notes	

Field Title	customer-retrieval-ejb.jar
Field Description	Choose the location of the `customer-retrieval-ejb.jar` file.
Example	`c:\tmp\orpos-1301\customer-retrieval-ejb.jar`
Notes	

Figure A–23 Scratchpad Database Information



This screen is only displayed if **Oracle 11gR2**is selected for the Database Type and **Central** or **Central, Local Failover** is selected for the Transaction Retrieval Location. The fields on this screen are described in the following tables.

Field Title	JDBC Driver Path
Field Description	Choose the path to the jar containing the database driver. This is the jar entered in the JDBC JAR field.
Example	`C:\oracle`
Notes	

Field Title	JDBC Driver Class
Field Description	Enter the database driver class name.
Example	`oracle.jdbc.driver.OracleDriver`
Notes	

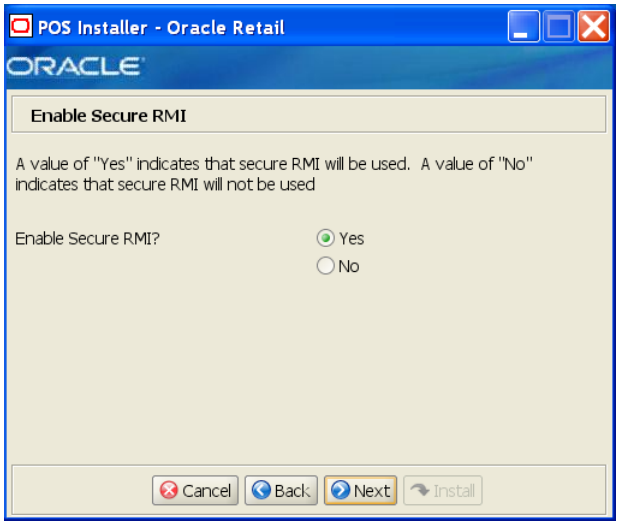
Field Title	JDBC URL
Field Description	Enter the URL used by the Point-of-Service application to access the database schema. For the expected syntax, see Appendix D.
Example	`jdbc:oracle:thin:@myhost:1521:mydatabase`
Notes	

Field Title	JDBC JAR
Field Description	Enter the name of the jar containing the database driver.
Example	`ojdbc14.jar`
Notes	

Field Title	Schema
Field Description	Enter the database user that owns the scratchpad database.
Example	DBUSER
Notes	

Field Title	Schema Password
Field Description	Enter the password for the database user that owns the scratchpad database.
Notes	

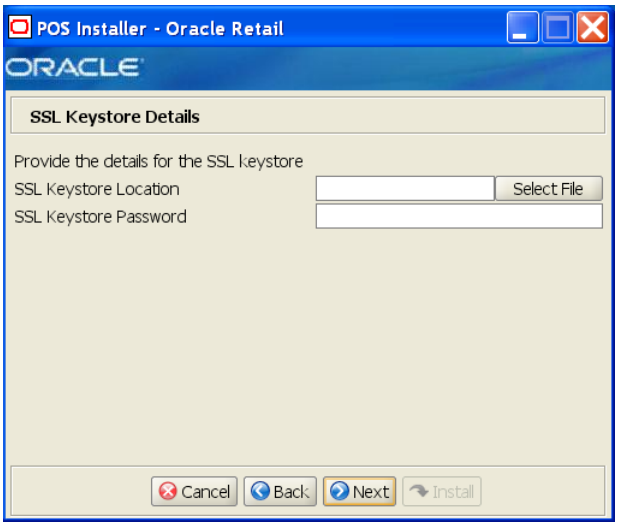
Figure A–24 Enable Secure RMI



The field on this screen is described in the following table.

Field Title	Enable SecureRMI?
Field Description	Select whether secure RMI is to be used for communication between the store server and registers.
Example	Yes
Notes	

Figure A–25 SSL Keystore Details

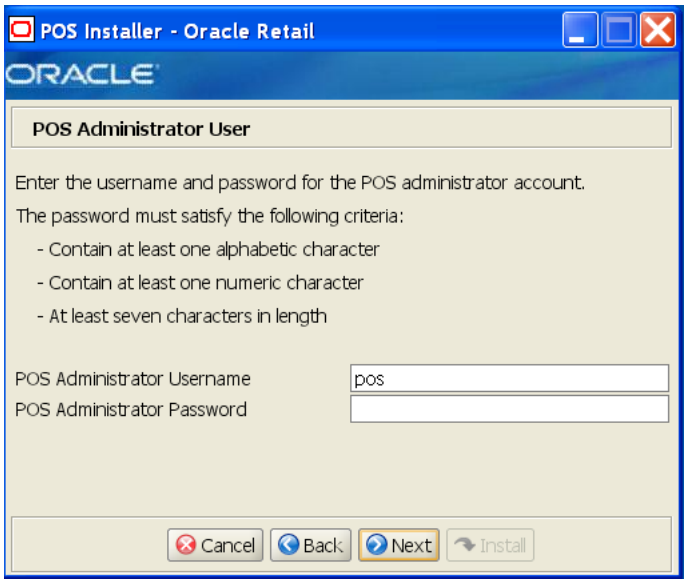


This screen is only displayed if **Yes** is selected on the Enable Secure JDBC screen. The fields on this screen are described in the following tables.

Field Title	SSL Keystore Location
Field Description	Choose the path to the SSL keystore.
Example	`OracleRetailStore\Server\Certificate`
Notes	

Field Title	SSL Keystore Password
Field Description	Enter the password used to access the keystore.
Notes	

Figure A–26 POS Administrator User

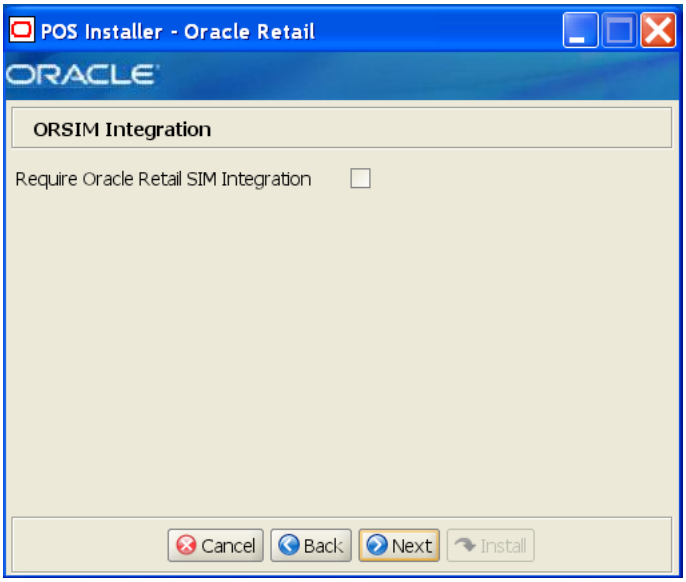


The fields on this screen are described in the following tables.

Field Title	POS Administrator Username
Field Description	Enter the user name used for performing Point-of-Service administrative functions.
Example	pos
Notes	

Field Title	POS Administrator Password
Field Description	Enter the password for the administrator user.
Notes	

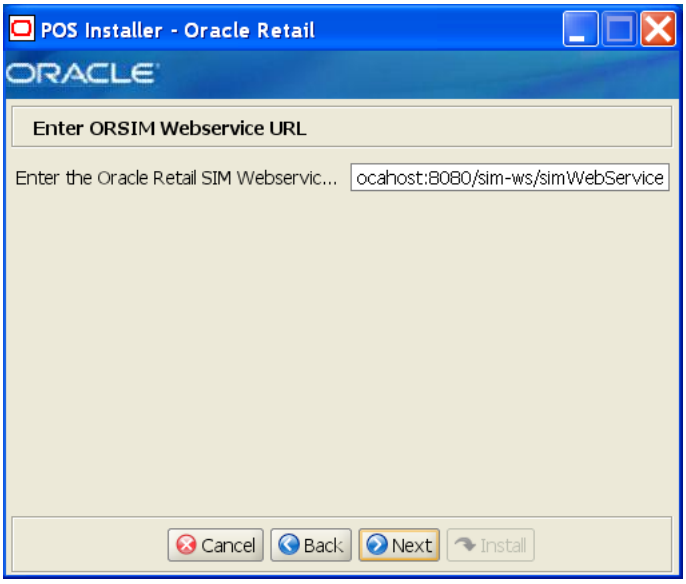
Figure A–27 ORSIM Integration



The field on this screen is described in the following table.

Field Title	Require Oracle Retail SIM Integration
Field Description	Check the box if integration with Oracle Retail Store Inventory Management is required. This box must be checked if the Item Inquiry feature of Point-of-Service is to be used.
Notes	

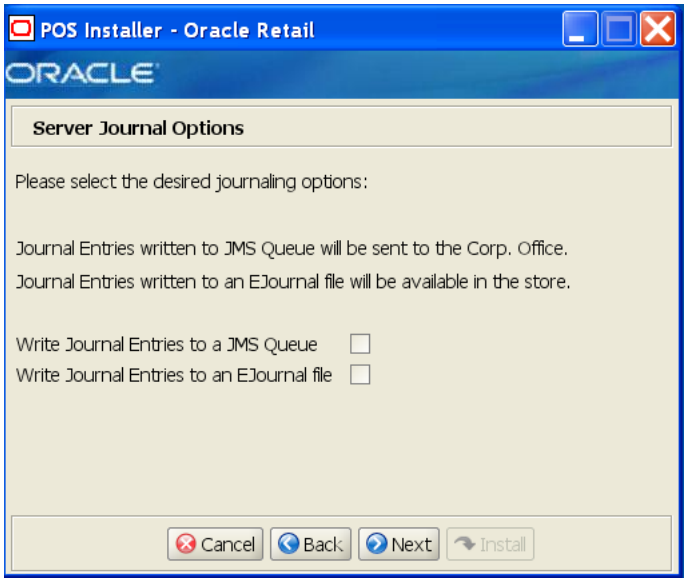
Figure A–28 Enter ORSIM Webservice URL



This screen is only displayed if **Require Oracle SIM Integration** is selected. The field on this screen is described in the following table.

Field Title	Enter the Oracle Retail Webservice URL
Field Description	Enter the URL used by the Point-of-Service application to access Oracle Retail Store Inventory Management.
Notes	

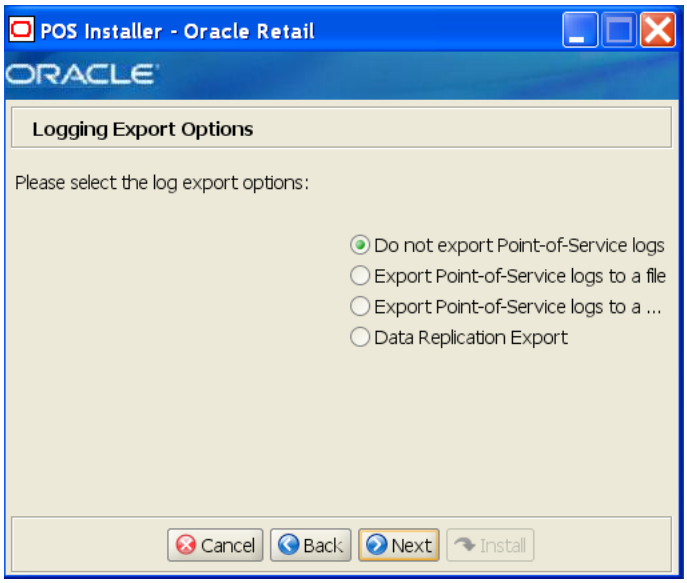
Figure A–29 Server Journal Options



The field on this screen is described in the following table.

Field Title	Server Journal Options
Field Description	Choose where journal entries will be sent. ▪ If you want the journal entries sent to a the JMS queue, choose **Write Journal Entries to a JMS Queue**. ▪ If you want the journal entries written to the EJournal file, choose **Write Journal Entries to an EJournal File**.
Example	Write Journal Entries to a JMS Queue
Notes	

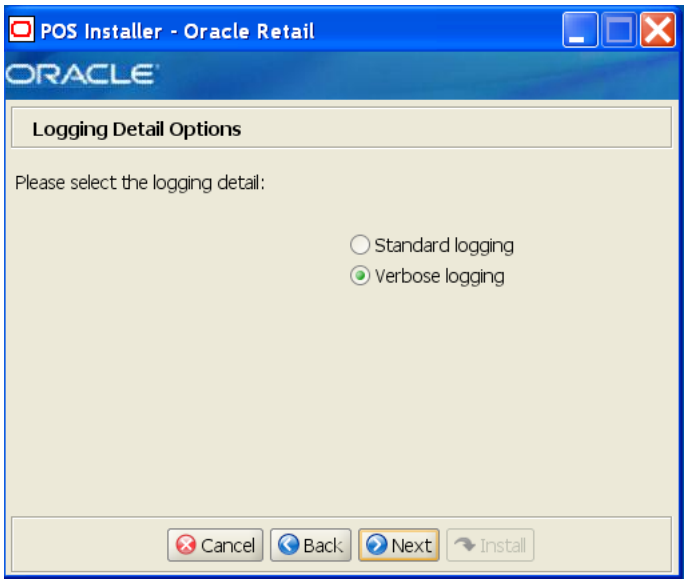
Figure A–30 Logging Export Options



The field on this screen is described in the following table.

Field Title	Logging Export Options
Field Description	Choose how the log is to be exported. ▪ To not generate any logs, choose **Do not export Point-of-Service logs**. ▪ To export the logs to a file, choose **Periodically export Point-of-Service logs to a file**. ▪ To export the logs to a JMS queue, choose **Periodically export Point-of-Service logs to a JMS queue**. ▪ To have the data pushed from the store to the corporate database using replication, choose **Data Replication Export**. **Note:** If you are using Centralized Transaction Retrieval, you must select **Data Replication Export**.
Example	Do not export Point-of-Service logs
Notes	

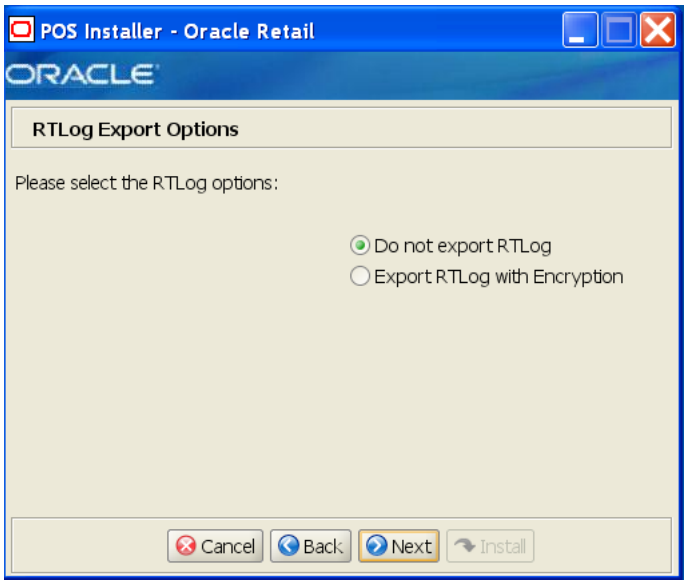
Figure A–31 Logging Detail Options



The field on this screen is described in the following table.

Field Title	Logging Detail Options
Field Description	Choose the level of client logging. ▪ To only log some of the messages, choose **Standard Logging**. ▪ To log all of the messages, choose **Verbose Logging**.
Example	Verbose logging
Notes	

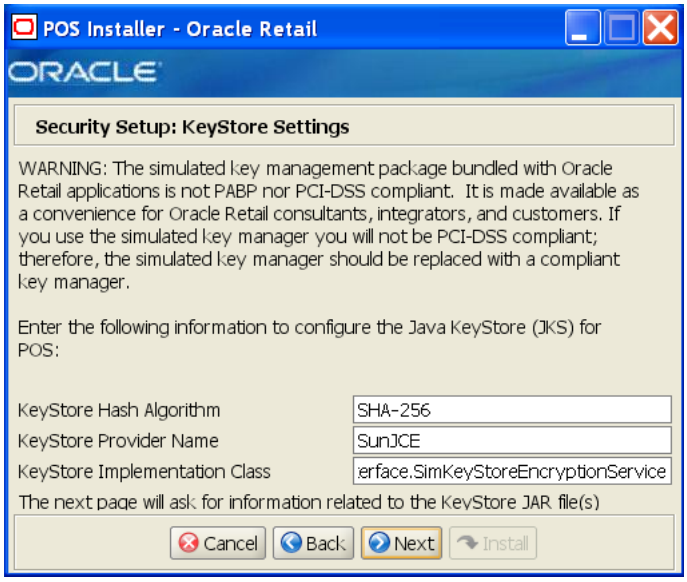
Figure A–32 RTLog Export Options



The field on this screen is described in the following table.

Field Title	RTLog Export Options
Field Description	Choose how the RTLog is to be exported. ▪ To not export the log, choose **Do not export RTLog**. ▪ To export the log, choose **Export RTLog with Encryption**.
Example	Do not export RTLog
Notes	

Figure A–33 Security Setup: KeyStore Settings



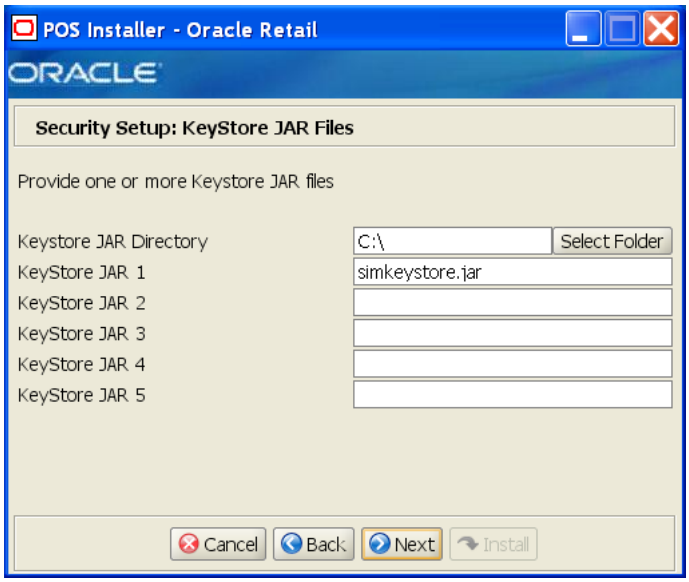
The fields on this screen are described in the following tables.

Field Title	KeyStore Hash Algorithm
Field Description	Enter the name of the algorithm used by the KeyStore to hash sensitive data.
Example	SHA-256
Notes	

Field Title	KeyStore Provider Name
Field Description	Enter the provider for the KeyStore.
Example	SunJCE
Notes	

Field Title	KeyStore Implementation Class
Field Description	Enter the class that enables Point-of-Service to access the KeyStore.
Example	oracle.retail.stores.simkeystore.siminterface.SimKeyStoreEncryptionService
Notes	

Figure A–34 Security Setup: KeyStore JAR Files



The fields on this screen are described in the following tables. Up to five KeyStore jar files may be entered.

Field Title	KeyStore JAR Directory
Field Description	Choose the directory where the KeyStore jar files are located. **Note:** If you are using the simulated key management package bundled with Point-of-Service, enter the directory where you saved the `simkeystore.jar` file.
Example	c:\simkeystore
Notes	

Field Title	KeyStore JAR 1
Field Description	Enter the name of a KeyStore jar file.
Example	simkeystore.jar
Notes	

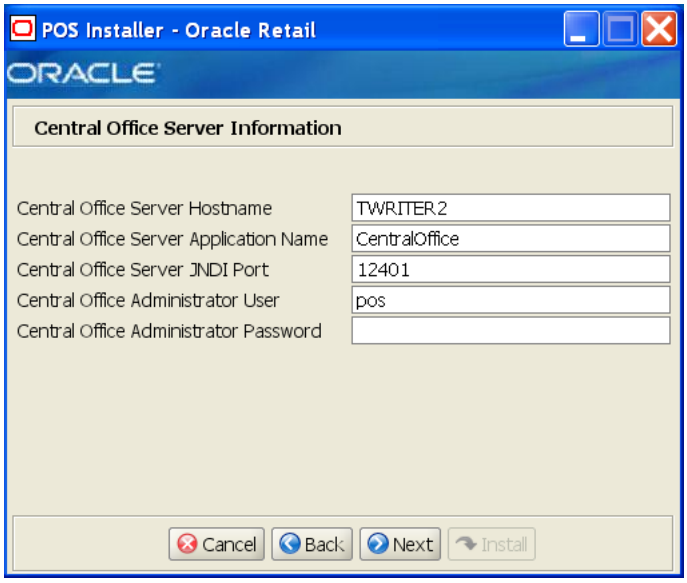
Field Title	KeyStore JAR 2
Field Description	Enter the name of a KeyStore jar file.
Example	keystoreconnector.jar
Notes	

Field Title	KeyStore JAR 3
Field Description	Enter the name of a KeyStore jar file.
Example	encryptionclient.jar
Notes	

Field Title	KeyStore JAR 4
Field Description	Enter the name of a KeyStore jar file.
Example	simkeystore4.jar
Notes	

Field Title	KeyStore JAR 5
Field Description	Enter the name of a KeyStore jar file.
Example	simkeystore5.jar
Notes	

Figure A–35 Central Office Server Information



To find the JNDI port number:

- If **Oracle Application Server** was selected for the Application Server Type, the information is available in *<Oracle Application Server install>*/opmn/conf/opmn.xml. Locate the Central Office instance. The port number is defined in the port id="rmi" entry. You can also check the port number by using the following command:

  <Oracle Application Server install>/opmn/conf/opmn.xml status -l *<instance name>*

- If **Websphere Application Server** was selected for the Application Server Type, the information is available in *<WebSphere Application Server install>*/profiles/*<profile name>*/logs/About this profile.txt. BOOTSTRAP_ADDRESS is the port number.

The fields on this screen are described in the following tables.

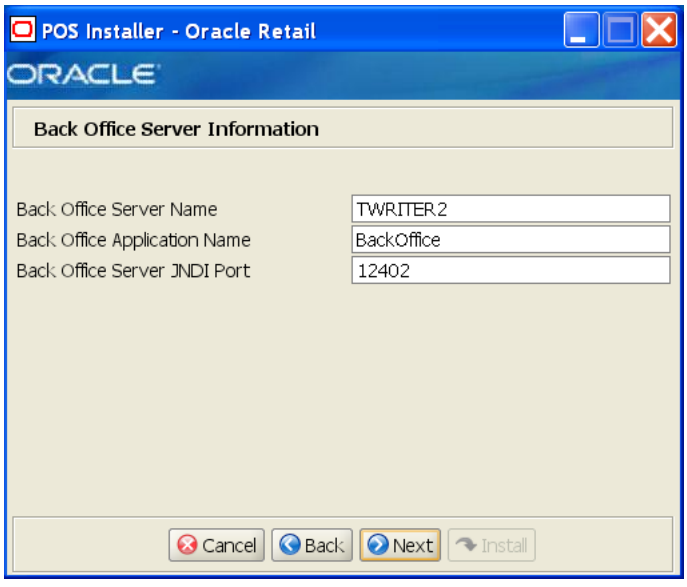
Field Title	Central Office Hostname
Field Description	Enter the host name for the Central Office application.
Example	TWRITER2
Notes	

Field Title	Central Office Server JNDI Port
Field Description	Enter the port number for the Central Office application.
Example	12401
Notes	

Field Title	Central Office Administrator User
Field Description	Enter the user name used for performing Central Office administrative functions.
Example	coadmin
Notes	

Field Title	Central Office Administrator Password
Field Description	Enter the password for the Central Office administrator user.
Notes	

Figure A–36 Back Office Server Information



To find the JNDI port number:

- If **Oracle Application Server** was selected for the Application Server Type, the information is available in *<Oracle Application Server install>*/opmn/conf/opmn.xml. Locate the Back Office instance. The port number is defined in the port id="rmi" entry. You can also check the port number by using the following command:

  <Oracle Application Server install>/opmn/conf/opmn.xml status -l *<instance name>*

- If **Websphere Application Server** was selected for the Application Server Type, the information is available in *<WebSphere Application Server install>*/profiles/*<profile name>*/logs/About this profile.txt. BOOTSTRAP_ADDRESS is the port number.

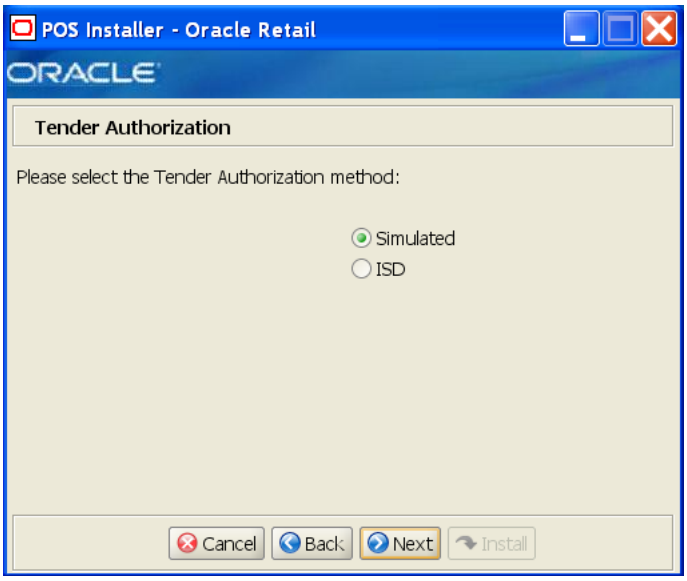
The fields on this screen are described in the following tables.

Field Title	Back Office Server Name
Field Description	Enter the host name for the Back Office application.
Example	TWRITER2
Notes	

Field Title	Back Office Application Name
Field Description	Enter the name for the Back Office application.
Example	BackOffice
Notes	

Field Title	Back Office Server JNDI Port
Field Description	Enter the port number for the Back Office application.
Example	12402
Notes	

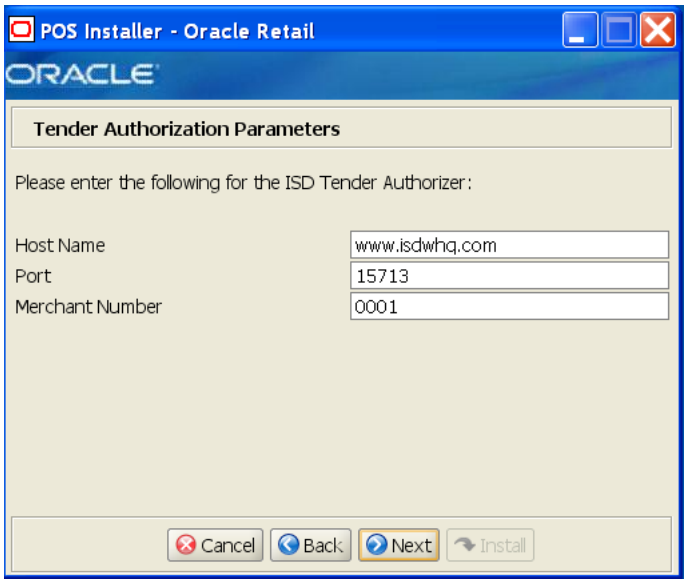
Figure A–37 Tender Authorization



The field on this screen is described in the following table.

Field Title	Select Tender Authorizer
Field Description	Choose where tender authorizations are sent. ▪ If approvals do not leave the store server and are based on values and certain numbers, choose **Simulated**. ▪ If approvals are sent to a third party system to approve the authorizations, choose **ISD**. **Note:** Demo installations should use the Simulated option.
Example	Simulated
Notes	

Figure A–38 Tender Authorization Parameters



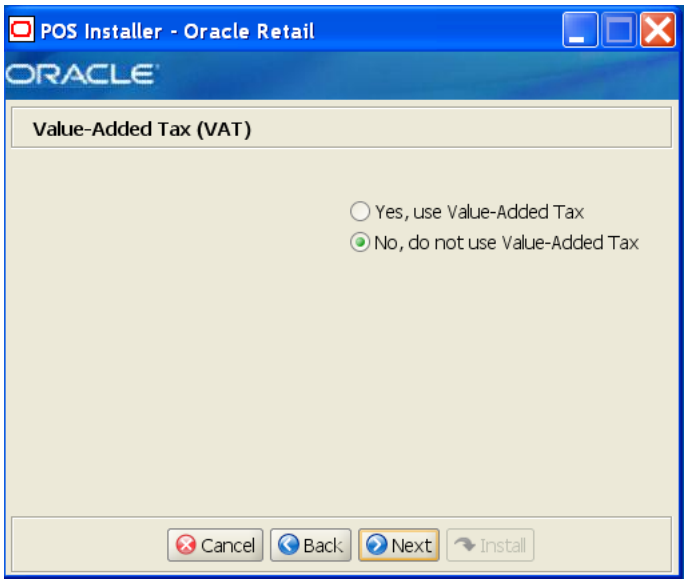
This screen is only displayed if **ISD** is selected for the Tender Authorization. The fields on this screen are described in the following tables.

Field Title	Host Name
Field Description	Enter the host name of the tender authorizer.
Example	www.isdwhq.com
Notes	

Field Title	Host Port
Field Description	Enter the port number used for the communication between the store server and the tender authorizer.
Example	15713
Notes	

Field Title	Merchant Number
Field Description	Enter the number used by the tender authorizer to identify the merchant that requested the authorization.
Example	0001
Notes	

Figure A–39 Value-Added Tax (VAT)



The field on this screen is described in the following table.

Field Title	Value-Added Tax
Field Description	Choose whether Value-Added Tax is used.
Example	No, do not use Value-Added Tax
Notes	

Figure A–40 Installation Progress

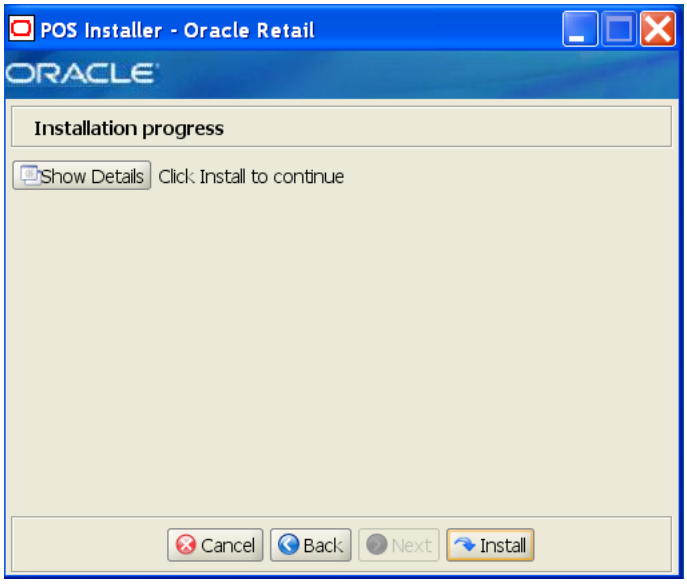
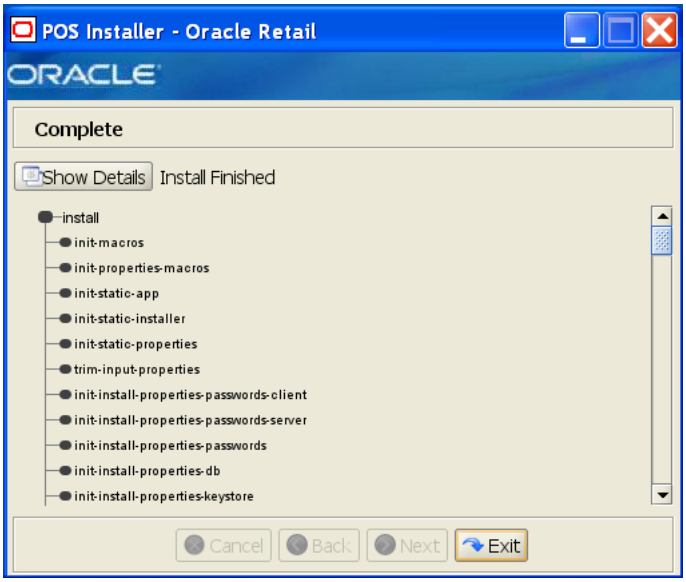


Figure A–41 Install Complete



B

Appendix: Installer Screens for Point-of-Service Client Installation

You need the following details about your environment for the installer to successfully install the Point-of-Service application. This appendix shows the screens that are displayed during the installation of the Point-of-Service client. Depending on the options you select, you may not see some screens or fields.

For each field on a screen, a table is included in this appendix that describes the field. If you want to document any specific information about your environment for any field, a Notes row is provided in each table for saving that information.

For the installer screens for a client installation, see Appendix A.

Figure B–1 Introduction

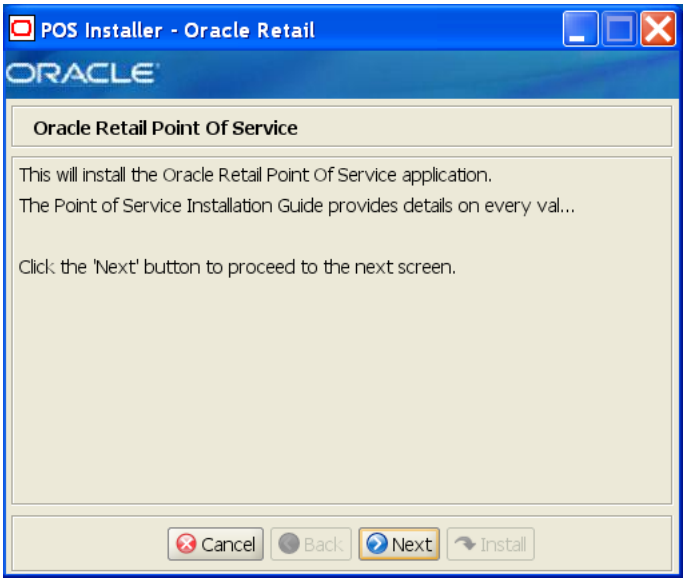


Figure B–2 Previous POS Install

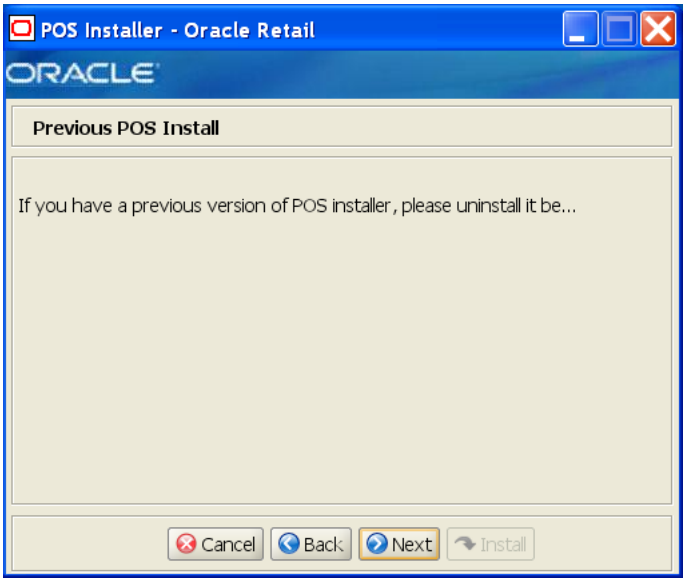
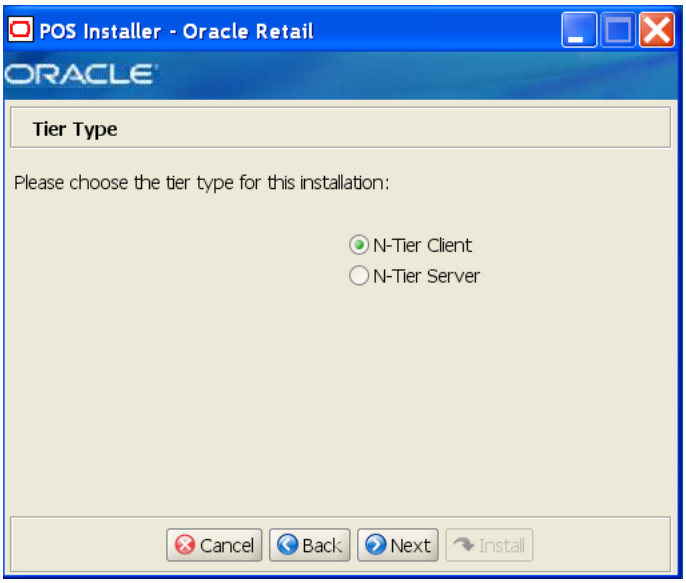


Figure B–3 License Agreement

Note: You must choose to accept the terms of the license agreement in order for the installation to continue.

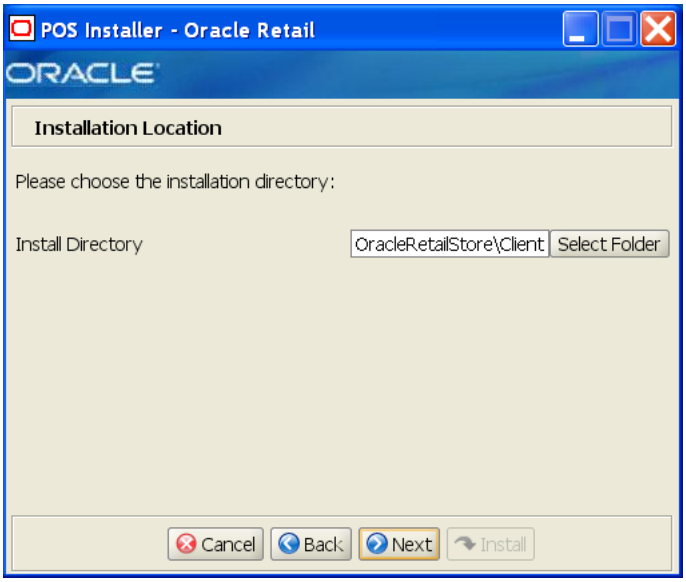
Figure B–4 Tier Type



The field on this screen is described in the following table.

Field Title	Tier Type
Field Description	Choose the server tier type for this installation. For more information, see "Determining Tier Type" in Chapter 2. To install the N-Tier version of the client, choose **N-Tier Client**.
Example	N-Tier Client
Notes	

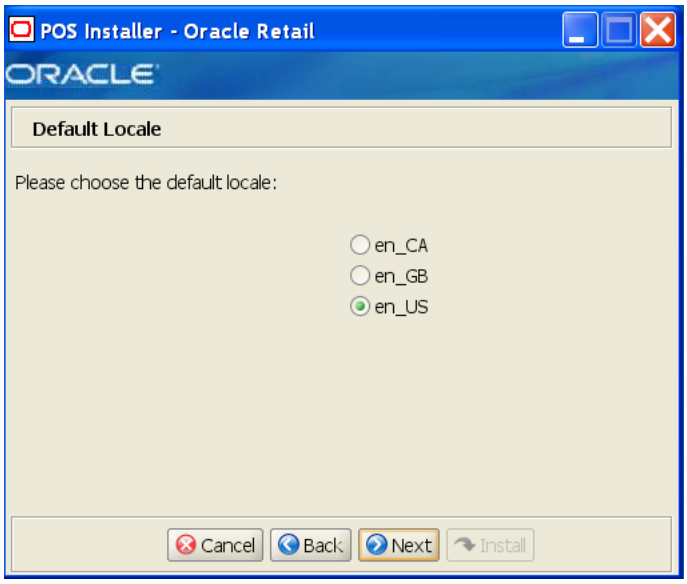
Figure B–5 Installation Location



The field on this screen is described in the following table.

Field Title	Install Directory
Field Description	Choose the directory into which the Point-of-Service files are copied. The default for the first directory in the path is `OracleRetailStore`. This directory should be the same for all Oracle Retail Strategic Store Solutions products. When **N-Tier Client** is selected for the Tier Type, the default installation directory is `OracleRetailStore\Client`. **Note:** The server and the client must not be installed into the same directory. When installing for Linux, the default directory is `OracleRetailStore`. In this guide, *<POS_install_directory>* refers to the selected installation directory for the server or client. Files specific to Point-of-Service are copied to the `\pos` subdirectory of `<POS_install_directory>`.
Example	`C:\OracleRetailStore\Client`
Notes	

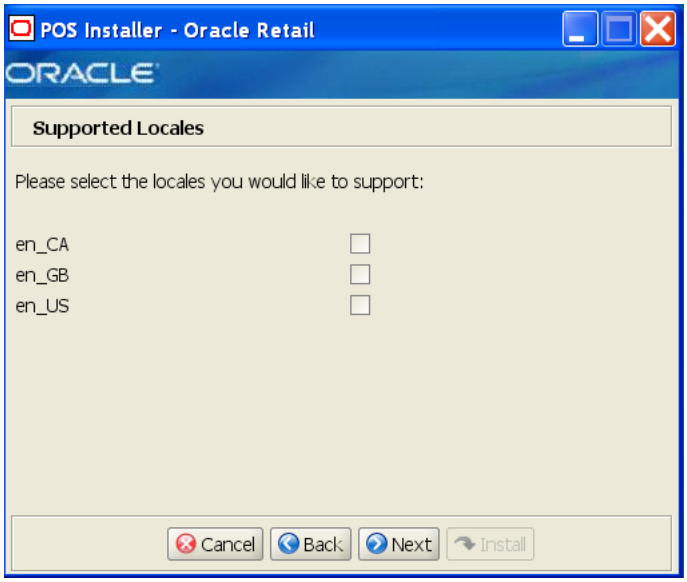
Figure B–6 Default Locale



The field on this screen is described in the following table.

Field Title	Please choose the default locale:
Field Description	Limited locale support in Point-of-Service enables the date, time, currency, and calendar to be displayed in the format for the selected default locale. ■ To select the locale for Canada, choose en_CA. ■ To select the locale for Great Britain, choose en_GB. ■ To select the local for the United States, choose en_US. **Note:** The only language currently supported is United States English.
Example	en_US
Notes	

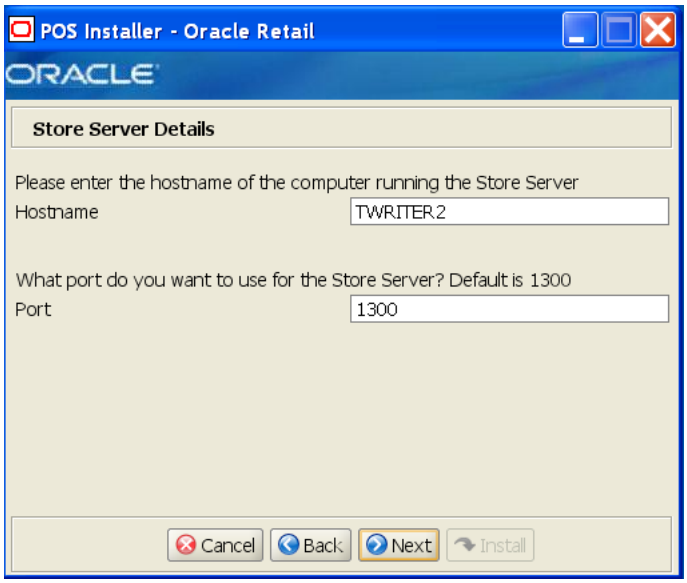
Figure B–7 Supported Locales



The field on this screen is described in the following table.

Field Title	Please select the locales you would like to support:
Field Description	In addition to the default locale, additional locales can be supported. Limited locale support in Point-of-Service enables the date, time, currency, and calendar to be displayed in the format for the selected locale. ■ To select the locale for Canada, choose en_CA. ■ To select the locale for Great Britain, choose en_GB. ■ To select the local for the United States, choose en_US. **Note:** The only language currently supported is United States English.
Example	en_US
Notes	

Figure B–8 Store Server Details

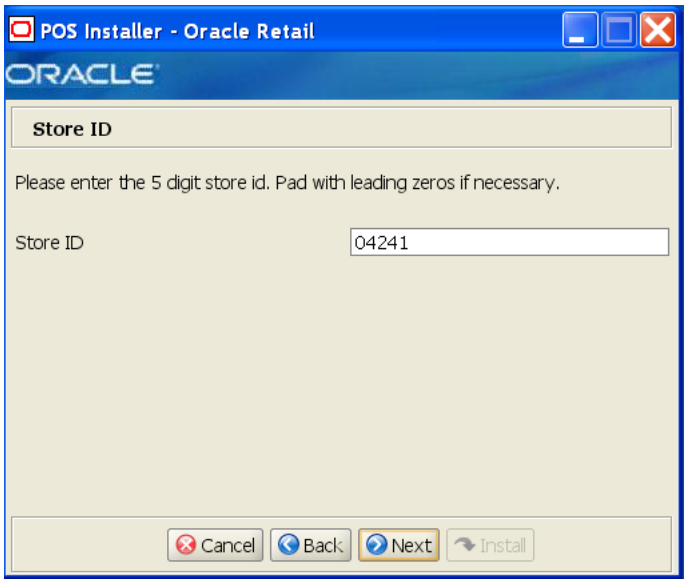


The fields on this screen are described in the following tables.

Field Title	Hostname
Field Description	Enter the host name of the store server.
Example	TWRITER2
Notes	

Field Title	Port
Field Description	Enter the port number of the store server used for the communication between the store server and the host computer.
Example	1300
Notes	

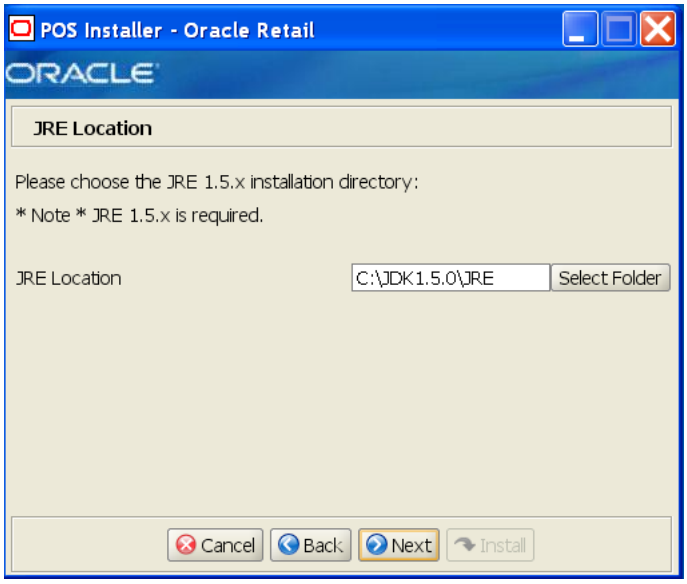
Figure B–9 Store ID



The field on this screen is described in the following table.

Field Title	Store ID
Field Description	Enter the store ID.
Example	04241
Notes	

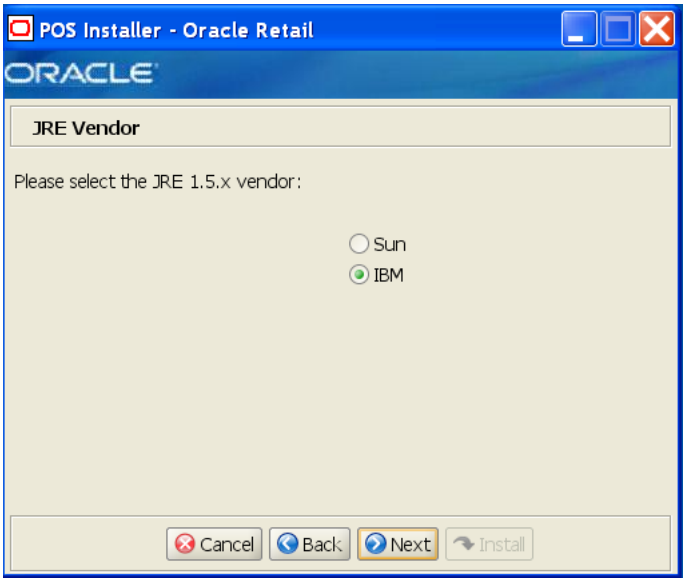
Figure B–10 JRE Location



The field on this screen is described in the following table.

Field Title	Folder
Field Description	Choose the location where the JRE is installed.
Example	`C:\JDK1.5.0\JRE`
Notes	

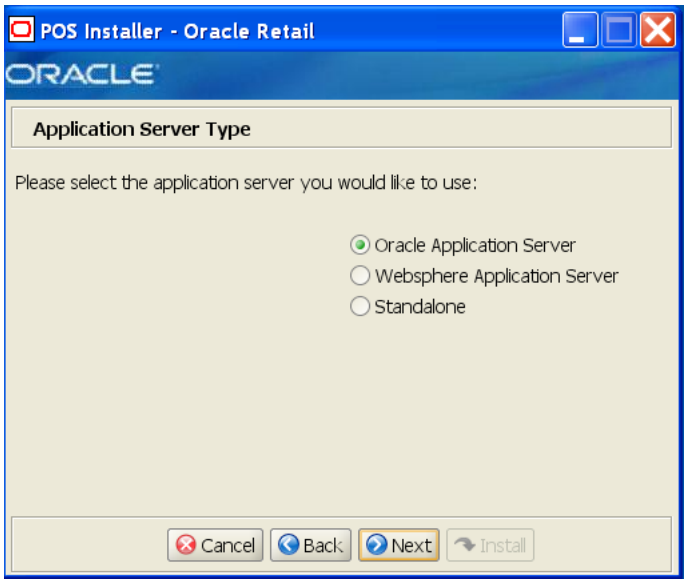
Figure B–11 JRE Vendor



The field on this screen is described in the following table.

Field Title	JRE Vendor
Field Description	Select the vendor for the JRE entered on the previous screen: ▪ Sun ▪ IBM Whether Oracle Application Server or Websphere Application Server is the application server being used, choose **IBM**.
Example	IBM
Notes	

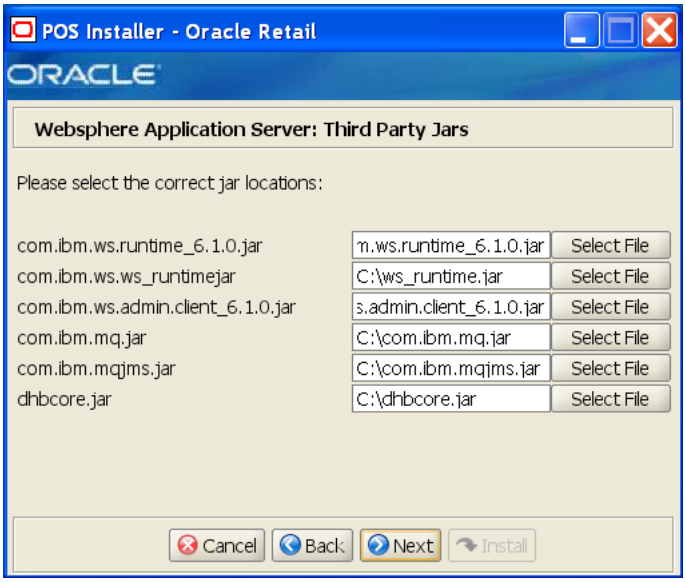
Figure B–12 Application Server Type



The field on this screen is described in the following table.

Field Title	Application Server Type
Field Description	Select the application server to be used for the store server. ▪ Oracle Application Server ▪ Websphere Application Server ▪ Standalone **Note:** Standalone is intended only for demonstration or development purposes. Do not select Standalone if you are running Point-of-Service on the IBM stack.
Example	Oracle Application Server
Notes	

Figure B–13 Websphere Application Server: Third Party Jars



This screen is only displayed if **WebSphere Application Server** is selected for the Application Server Type. The fields on this screen are described in the following tables.

Field Title	**com.ibm.ws.runtime_6.1.0.jar**
Field Description	Choose the location of the `com.ibm.ws.runtime_6.1.0.jar` file.
Example	`WAS_install/WebSphere/AppServer/plugins/com.ibm.ws.runtime_6.1.0.jar`
Notes	

Field Title	**com.ibm.ws.runtime.jar**
Field Description	Choose the location of the `com.ibm.ws.runtime.jar` file.
Example	`WAS_install/WebSphere/AppServer/plugins/com.ibm.ws.runtime.jar`
Notes	

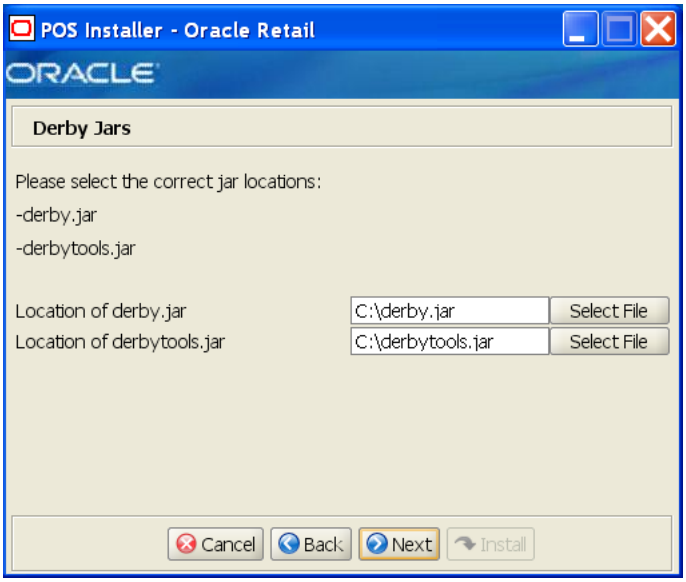
Field Title	**com.ibm.ws.admin.client_6.1.0.jar**
Field Description	Choose the location of the `com.ibm.ws.admin.client_6.1.0.jar` file.
Example	`WAS_install/WebSphere/AppServer/runtime/com.ibm.ws.admin.client_6.1.0.jar`
Notes	

Field Title	**com.ibm.mq.jar**
Field Description	Choose the location of the `com.ibm.mq.jar` file.
Example	`WAS_install/lib/WMQ/java/lib/com.ibm.mq.jar`
Notes	

Field Title	com.ibm.mqjms.jar
Field Description	Choose the location of the `com.ibm.mqjms.jar` file.
Example	`MQ_install/java/lib/com.ibm.mqjms.jar`
Notes	

Field Title	dhbcore.jar
Field Description	Choose the location of the `dhbcore.jar` file.
Example	`WAS_install/lib/WMQ/java/lib/dhbcore.jar`
Notes	

Figure B–14 Derby Jars

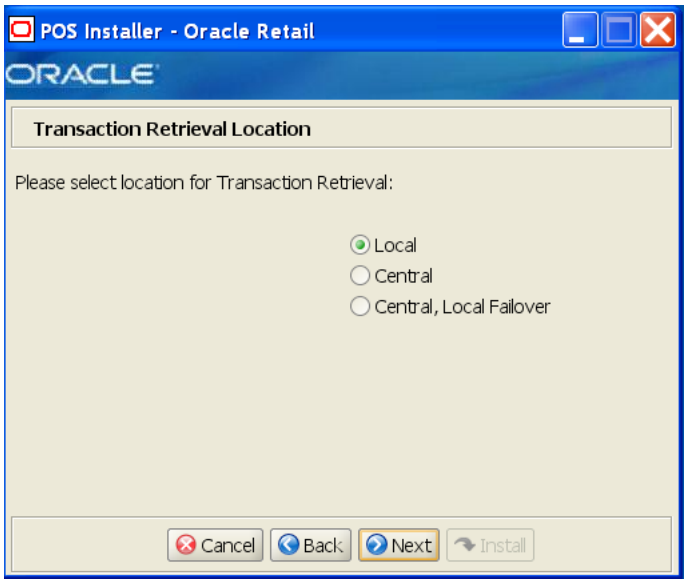


The fields on this screen are described in the following tables.

Field Title	Location of derby.jar
Field Description	Choose the location of the `derby.jar` file.
Example	`C:\thirdparty\apache-derby-10.2.2\lib\derby.jar`
Notes	

Field Title	Location of derbytools.jar
Field Description	Choose the location of the `derbytools.jar` file.
Example	`C:\thirdparty\apache-derby-10.2.2\lib\derbytools.jar`
Notes	

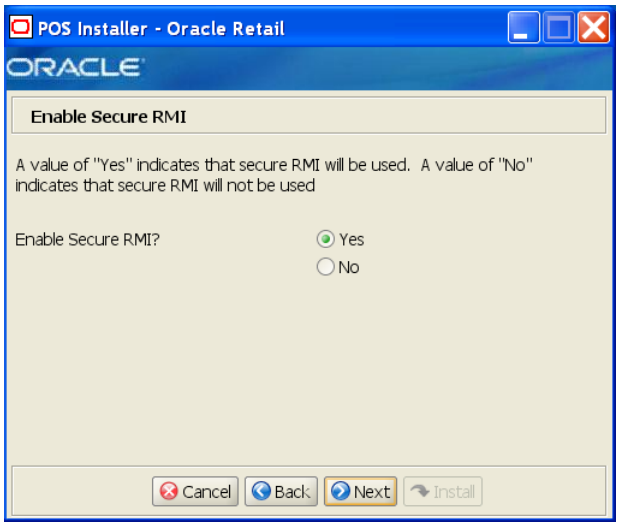
Figure B–15 Transaction Retrieval Location



The field on this screen is described in the following table.

Field Title	Transaction retrieval location
Field Description	Choose the location for retrieving transactions. ▪ If transactions should only be retrieved from the store database, choose **Local**. ▪ If transactions should only be retrieved from the corporate database, choose **Central**. ▪ If transactions should be retrieved from the corporate database, and if not found, then retrieved from the store database, choose **Central, Local Failover**. **Note:** You must choose the same location for both the store server and client installations.
Example	Local
Notes	

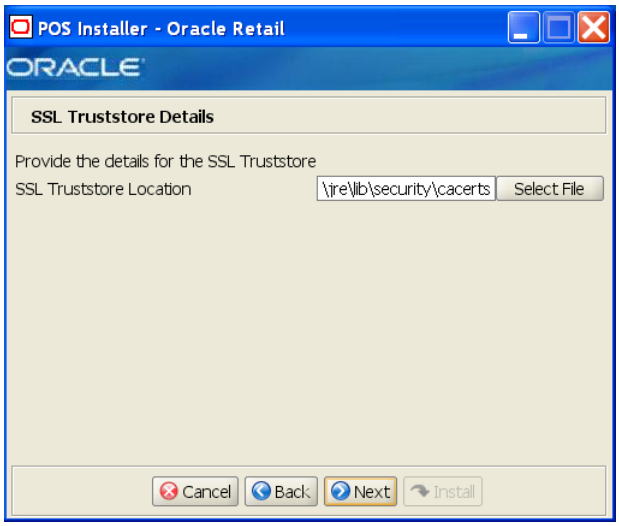
Figure B–16 Enable Secure RMI



The field on this screen is described in the following table.

Field Title	Enable SecureRMI?
Field Description	Select whether secure RMI is to be used for communication between the store server and registers.
Example	Yes
Notes	

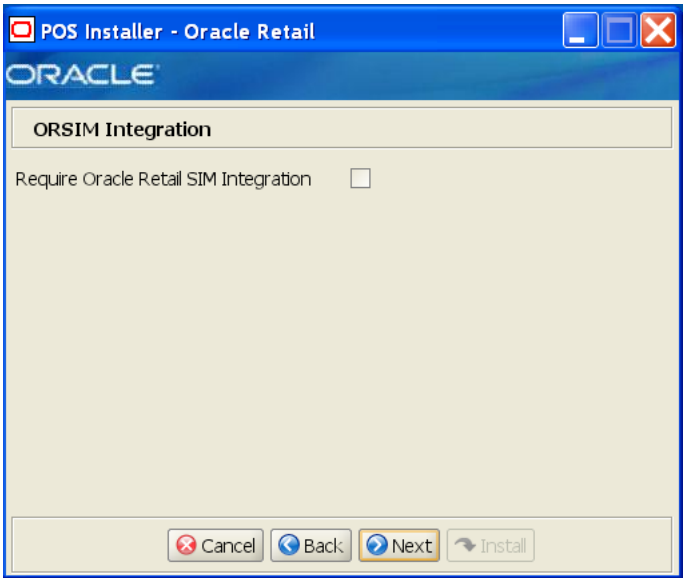
Figure B–17 SSL Truststore Details



This screen is only displayed if **Yes** is selected on the Enable Secure RMI screen and **WebSphere Application Server** is selected for the Application Server Type. The field on this screen is described in the following table.

Field Title	SSL Truststore Location
Field Description	Choose the path to the SSL truststore.
Example	`OracleRetailStore\Client\Certificate`
Notes	

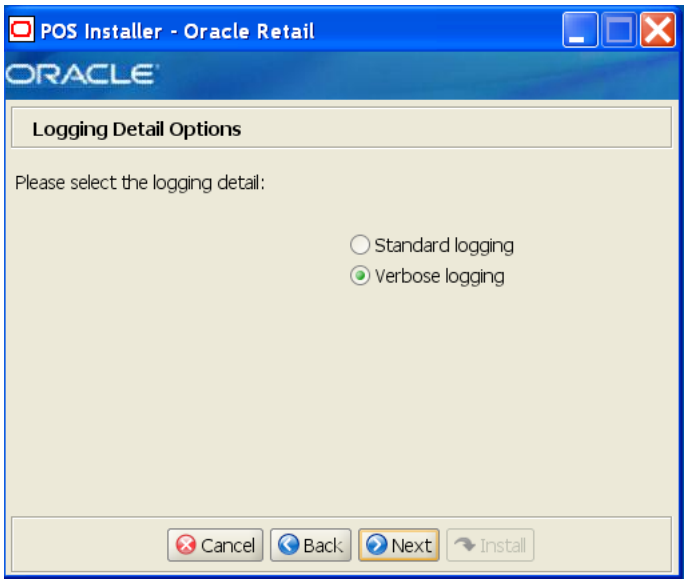
Figure B–18 ORSIM Integration



The field on this screen is described in the following table.

Field Title	Require Oracle Retail SIM Integration
Field Description	Check the box if integration with Oracle Retail Store Inventory Management is required. This box must be checked if the Item Inquiry feature of Point-of-Service is to be used.
Notes	

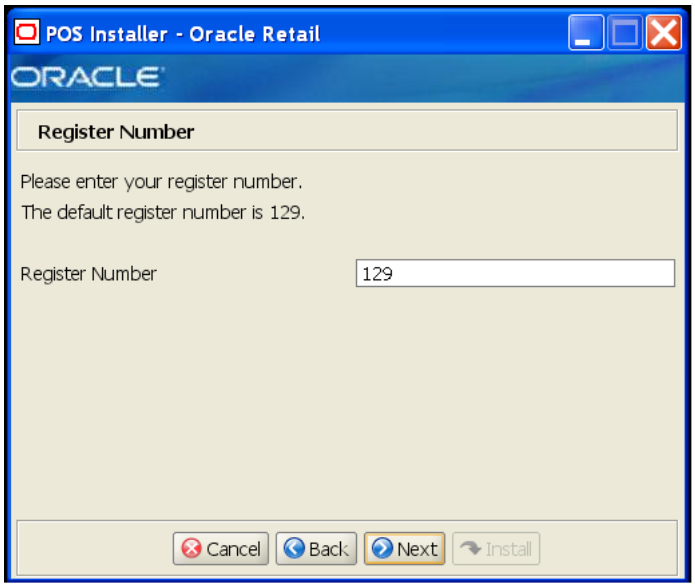
Figure B–19 Logging Detail Options



The field on this screen is described in the following table.

Field Title	Logging Detail Options
Field Description	Choose the level of client logging. ▪ To only log some of the messages, choose **Standard Logging**. ▪ To log all of the messages, choose **Verbose Logging**.
Example	Verbose logging
Notes	

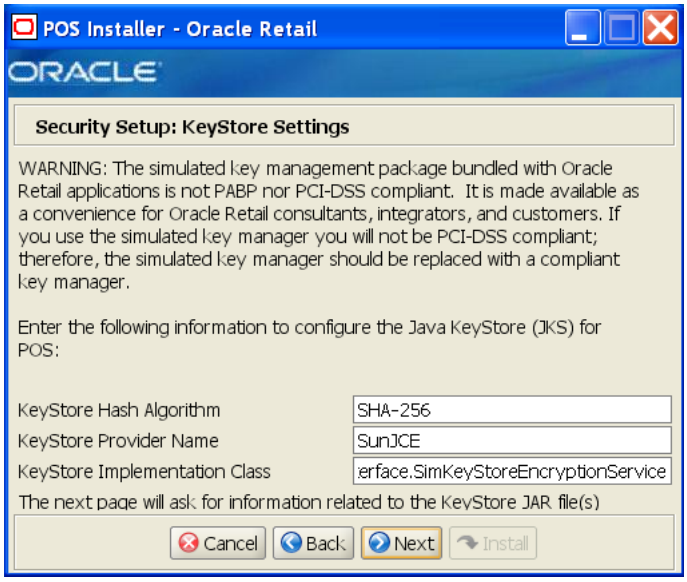
Figure B–20 Register Number



The field on this screen is described in the following table.

Field Title	Register Number
Field Description	Enter the register number for the this installation.
Example	129 **Note:** Only 1 to 245 is supported for the register number.
Notes	

Figure B–21 Security Setup: KeyStore Settings



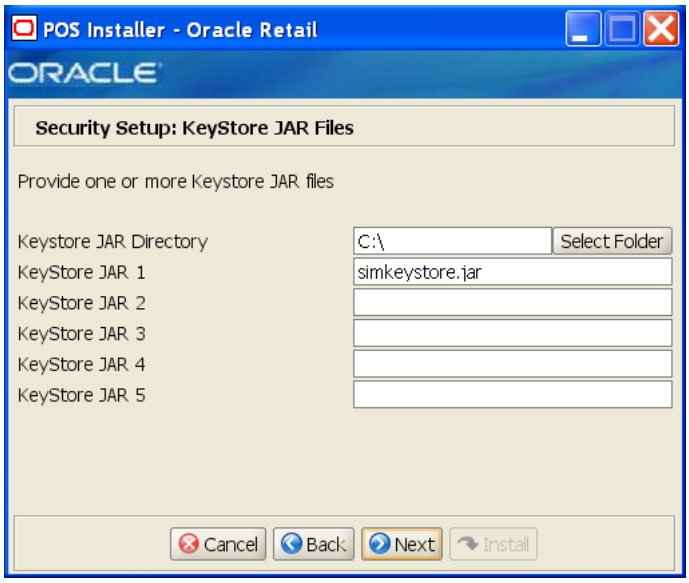
The fields on this screen are described in the following tables.

Field Title	KeyStore Hash Algorithm
Field Description	Enter the name of the algorithm used by the KeyStore to hash sensitive data.
Example	SHA-256
Notes	

Field Title	KeyStore Provider Name
Field Description	Enter the provider for the KeyStore.
Example	SunJCE
Notes	

Field Title	KeyStore Implementation Class
Field Description	Enter the class that enables Point-of-Service to access the KeyStore.
Example	oracle.retail.stores.simkeystore.siminterface.SimKeyStoreEncryptionService
Notes	

Figure B–22 Security Setup: KeyStore JAR Files



The fields on this screen are described in the following tables. Up to five KeyStore jar files may be entered.

Field Title	KeyStore JAR Directory
Field Description	Choose the directory where the KeyStore jar files are located. **Note:** If you are using the simulated key management package bundled with Point-of-Service, enter the directory where you saved the `simkeystore.jar` file.
Example	c:\simkeystore
Notes	

Field Title	KeyStore JAR 1
Field Description	Enter the name of a KeyStore jar file.
Example	simkeystore.jar
Notes	

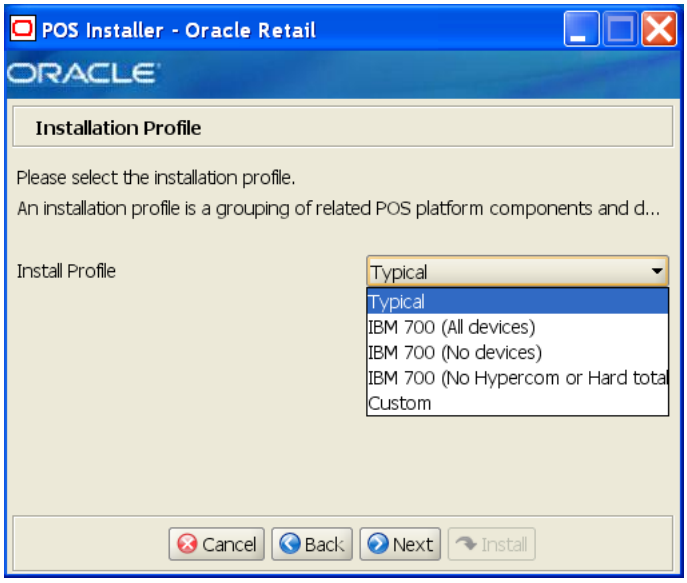
Field Title	KeyStore JAR 2
Field Description	Enter the name of a KeyStore jar file.
Example	keystoreconnector.jar
Notes	

Field Title	KeyStore JAR 3
Field Description	Enter the name of a KeyStore jar file.
Example	encrpyptionclient.jar
Notes	

Field Title	KeyStore JAR 4
Field Description	Enter the name of a KeyStore jar file.
Example	simkeystore4.jar
Notes	

Field Title	KeyStore JAR 5
Field Description	Enter the name of a KeyStore jar file.
Example	simkeystore5.jar
Notes	

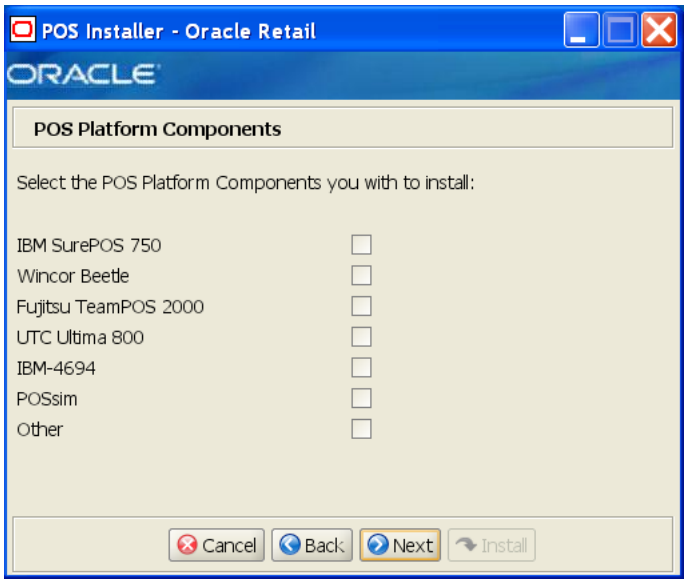
Figure B–23 Installation Profile



The field on this screen is described in the following table.

Field Title	Installation Profile
Field Description	A profile is a grouping of platform components and devices for the installation. From the menu, select a profile or Custom. If Custom is selected, additional screens enable you to select the platform components and devices.
Example	Typical
Notes	

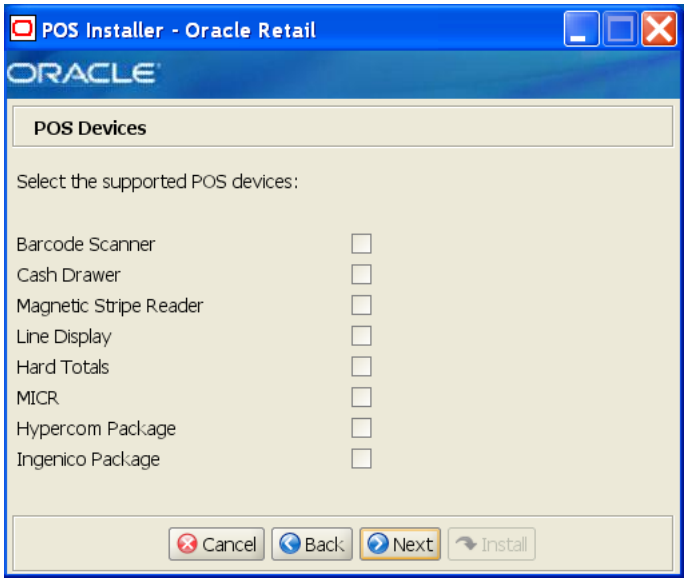
Figure B–24 POS Platform Components



This screen is only displayed if **Custom** is selected for the Install Profile. The field on this screen is described in the following table.

Field Title	POS Platform Components
Field Description	Choose the type of registers or machines from the platform components.
Example	IBM SurePOS 750
Notes	

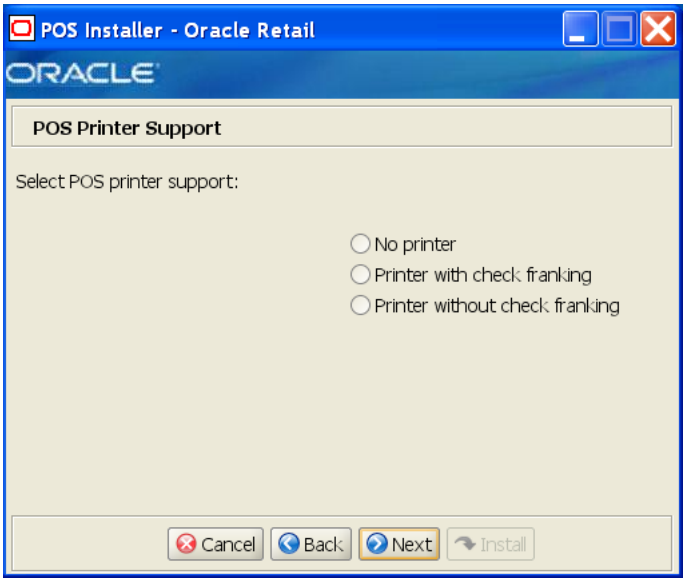
Figure B–25 POS Devices



This screen is only displayed if **Custom** is selected for the Install Profile. The field on this screen is described in the following table.

Field Title	POS Devices
Field Description	Choose the devices to be attached to the client register.
Example	Cash Drawer
Notes	

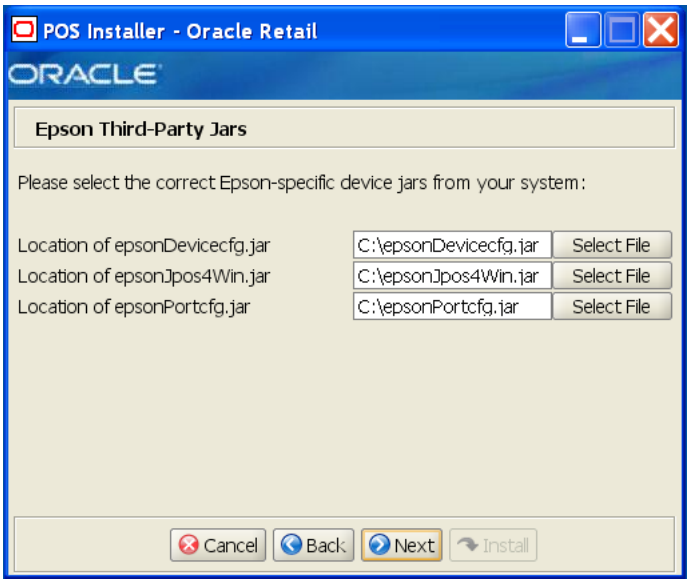
Figure B–26 POS Printer Support



This screen is only displayed if **Custom** is selected for the Install Profile. The field on this screen is described in the following table.

Field Title	POS Printer Support
Field Description	Choose what is supported for a printer attached to the register.
Example	Printer with check franking
Notes	

Figure B–27 Epson Third-Party Jars



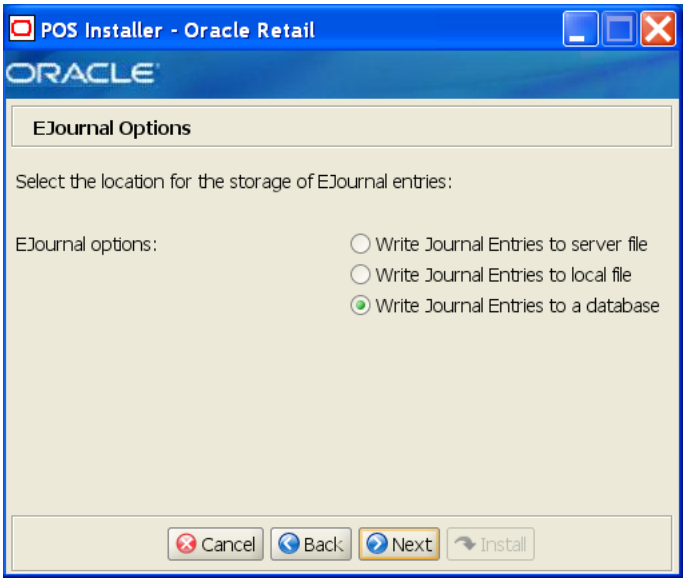
This screen is only displayed if **Custom** is selected for the Install Profile and **UTC Ultima 800** is selected as a POS Platform Component. The fields on this screen are described in the following tables.

Field Title	**Location of epsonDevicecfg.jar**
Field Description	Choose the location of the `epsonDevicecfg.jar` file.
Example	`C:\thirdparty\epsonDevicecfg.jar`
Notes	

Field Title	**Location of epsonJpos4Win.jar**
Field Description	Choose the location of the `epsonJpos4Win.jar` file.
Example	`C:\thirdparty\epsonJpos4Win.jar`
Notes	

Field Title	**Location of epsonPortcfg.jar**
Field Description	Choose the location of the `epsonPortcfg.jar` file.
Example	`C:\thirdparty\epsonPortcfg.jar`
Notes	

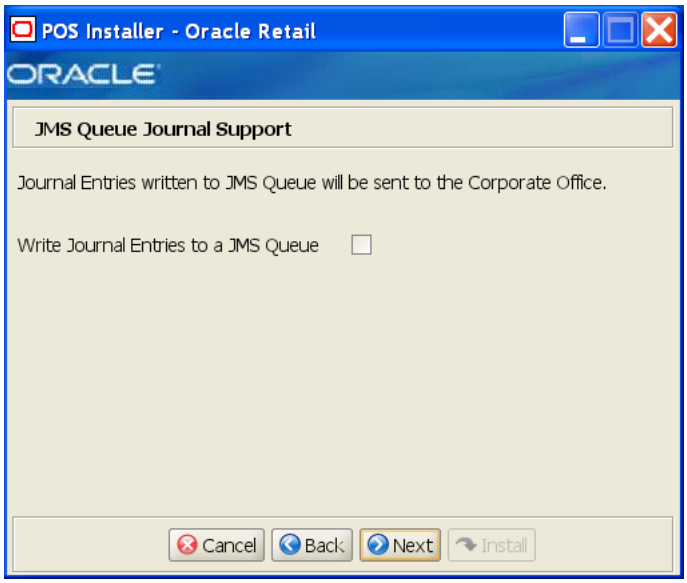
Figure B–28 EJournal Options



The field on this screen is described in the following table.

Field Title	EJournal Options
Field Description	Choose where the journal entries are to be written. ▪ To write journal entries to a server file, choose **Write Journal Entries to server file**. ▪ To write journal entries to a local file, choose **Write Journal Entries to local file**. ▪ To write journal entries to a database, choose **Write Journal Entries to a database**.
Example	Write Journal Entries to a database
Notes	

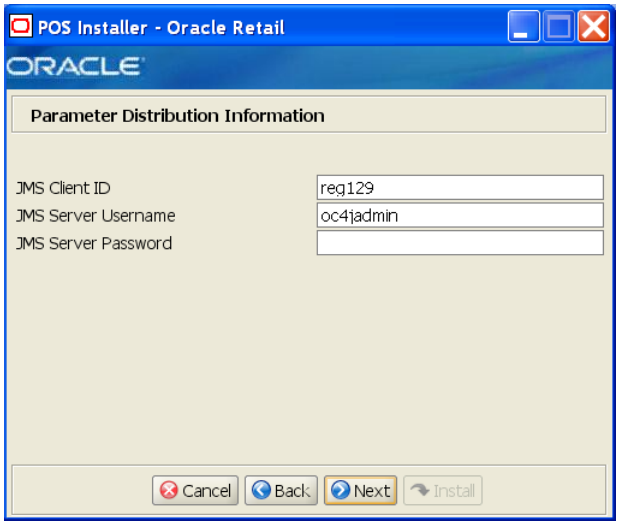
Figure B–29 JMS Queue Journal Support



The field on this screen is described in the following table.

Field Title	JMS Queue Journal Support
Field Description	Select if journal entries are to be written to a JMS queue and then sent to the corporate office.
Example	Write Journal Entries to a JMS queue
Notes	

Figure B–30 Parameter Distribution Information



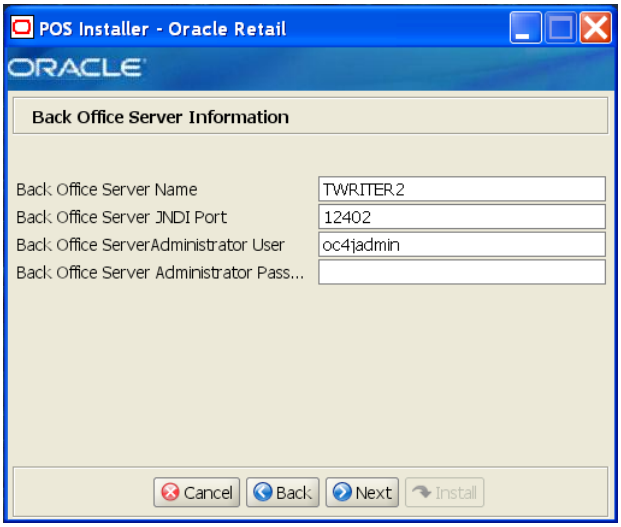
The fields on this screen are described in the following tables.

Field Title	JMS Client ID
Field Description	Identifier of the JMS client used for receiving parameter updates.
Example	`reg129` **Note:** When **Websphere Application Server** is selected for the Application Server Type, the value of `clientID` must match the `WorkstationID` specified in the `application.properties` file.
Notes	

Field Title	JMS Username
Field Description	Identifier of the JMS user for receiving parameter updates.
Example	`oc4jadmin` (default for the Oracle stack) `reg129` (default for the IBM stack) **Note:** When **Websphere Application Server** is selected for the Application Server Type, you must create a UNIX user on the host where Back Office is installed and add that user to the `mqm` group. On the register, you must also create the `mqm` group, the UNIX user, and add that user to the `mqm` group. Copy the encrypted password for this user from the `/etc/shadow` file on the Back Office host into the corresponding `shadow` file on the register. The values for `jmsID` and `jmsPassword` specified in the Password Technician definition must match the values for the UNIX user and password.
Notes	

Field Title	JMS Password
Field Description	Password of the JMS user receiving parameter updates.
Notes	

Figure B–31 Back Office Server Information



To find the JNDI port number:

- If **Oracle Application Server** was selected for the Application Server Type, the information is available in `<Oracle Application Server install>/opmn/conf/opmn.xml`. Locate the Back Office instance. The port number is defined in the `port id="rmi"` entry. You can also check the port number by using the following command:

  ```
  <Oracle Application Server install>/opmn/conf/opmn.xml status -l <instance name>
  ```

- If **Websphere Application Server** was selected for the Application Server Type, the information is available in `<WebSphere Application Server install>/profiles/<profile name>/logs/About this profile.txt`. `BOOTSTRAP_ADDRESS` is the port number.

The fields on this screen are described in the following tables.

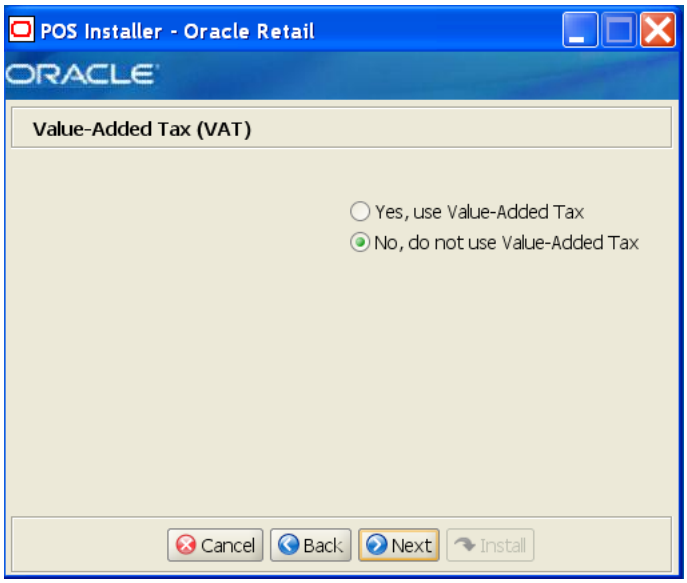
Field Title	Back Office Server Name
Field Description	Enter the host name for the Back Office application.
Example	TWRITER2
Notes	

Field Title	Back Office Server JNDI Port
Field Description	Enter the port number for the Back Office application.
Example	12402
Notes	

Field Title	Back Office Administrator User
Field Description	Enter the user name used for performing Back Office administrative functions. **Note:** This field is only displayed if **Oracle Application Server** was selected for the Application Server Type.
Example	oc4jdmin
Notes	

Field Title	Back Office Administrator Password
Field Description	Enter the password for the Back Office administrator user. **Note:** This field is only displayed if **Oracle Application Server** was selected for the Application Server Type.
Notes	

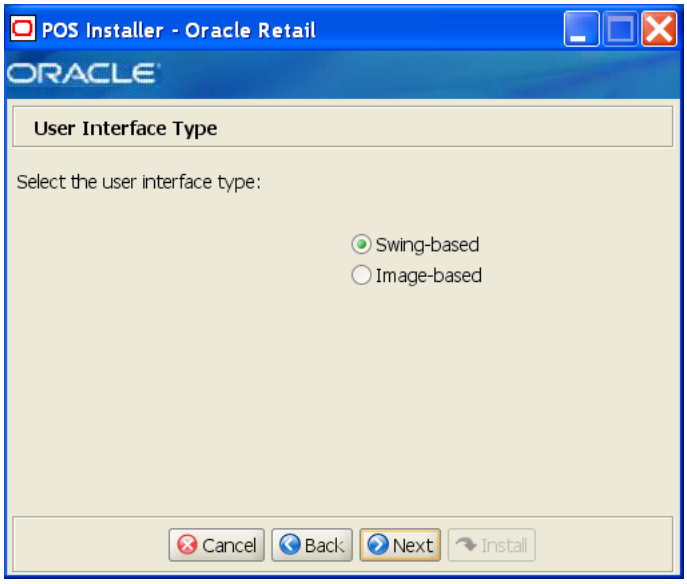
Figure B–32 Value-Added Tax (VAT)



The field on this screen is described in the following table.

Field Title	Value-Added Tax
Field Description	Choose whether Value-Added Tax is used.
Example	No, do not use Value-Added Tax
Notes	

Figure B–33 User Interface Type



The field on this screen is described in the following table.

Field Title	User Interface Type
Field Description	Choose the user interface look and feel. ▪ To use a standard swing interface, choose **Swing-based**. ▪ To use custom images for buttons and other graphics, choose **Image-based**.
Example	Swing-based
Notes	

Figure B–34 Installation Progress

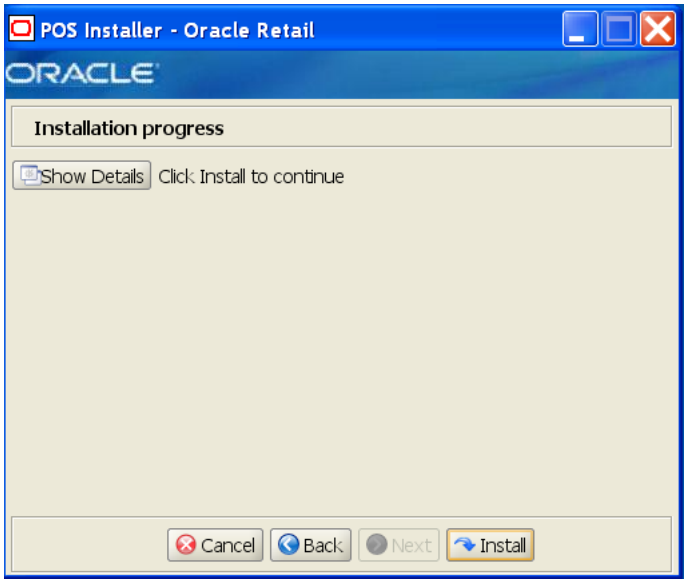
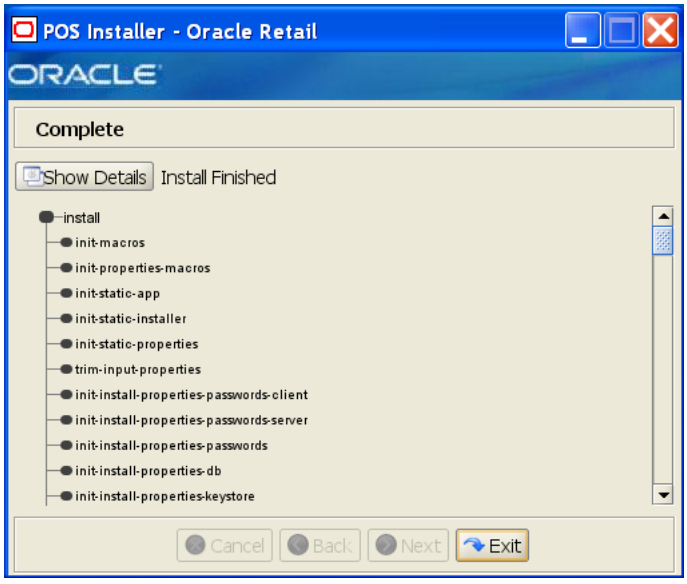


Figure B–35 Install Complete



C

Appendix: Installer Silent Mode

In addition to the GUI and text interfaces of the Point-of-Service installer, there is a silent mode that can be run. This mode is useful if you wish to run a new installation and use the settings you provided in a previous installation. It is also useful if you encounter errors in the middle of an installation and wish to continue after resolving them.

The installer runs in two distinct phases. The first phase involves gathering settings from the user. At the end of the first phase, a properties file named `ant.install.properties` is created with the settings that were provided. In the second phase, this properties file is used to provide your settings for the installation.

To skip the first phase and re-use the `ant.install.properties` file from a previous run, follow these instructions:

1. Edit the `ant.install.properties` file and correct any invalid settings that may have caused the installer to fail in its previous run.
2. Run the installer again with the silent argument.

```
install.sh silent [oracle | websphere]
```

D

Appendix: URL Reference

Both the database schema and application installers for the Point-of-Service product will ask for several different URLs. These include the following.

JDBC URL for a Database

Used by the Java application and by the installer to connect to the database.

Syntax: `jdbc:oracle:thin:@<host>:<port>:<sid>`

- *<host>*: host name of the database server
- *<port>*: database listener port
- *<sid>*: system identifier for the database

For example, `jdbc:oracle:thin:@myhost:1521:mysid`

E

Appendix: Common Installation Errors

This appendix describes some common errors encountered during installation of Point-of-Service.

"Pos installer finished with errors"

If you see this error message, there could be some settings incorrectly set or problems with the installer itself. For more information, check the *<POS_install_directory>*/pos/logs/installer_log.txt file.

"Dispatcher.main, Exception: java.security.AccessControlException: access denied (java.util.PropertyPermission * read,write)"

Symptom:

The application dies when starting up:

```
 [java] Dispatcher.main, Exception: java.security.AccessControlException: access
denied (java.util.PropertyPermission * read,write)
     [java] java.security.AccessControlException: access denied
(java.util.PropertyPermission * read,write)
     [java]     at java.security.AccessControlContext.checkPermission(Unknown
Source)
     [java]     at java.security.AccessController.checkPermission(Unknown Source)
     [java]     at java.lang.SecurityManager.checkPermission(Unknown Source)
     [java]     at java.lang.SecurityManager.checkPropertiesAccess(Unknown Source)
     [java]     at java.lang.System.getProperties(Unknown Source)
     [java]     at
com.extendyourstore.foundation.tour.conduit.Dispatcher.<init>(Dispatcher.java:461)
     [java]     at
com.extendyourstore.foundation.tour.conduit.Dispatcher.getDispatcher(Dispatcher.ja
va:1301)
     [java]     at
com.extendyourstore.foundation.tour.conduit.Dispatcher.main(Dispatcher.java:2439)
     [java]     at
com.extendyourstore.foundation.config.TierLoader.main(TierLoader.java:359)
```

Solution:

This error usually occurs because the JRE that you are pointing to does not contain the `updated java.security` and `java.policy` files.

"java.lang.NullPointerException"

Symptom:

The application dies when starting up. Check the *<POS_install_directory>*/pos/logs/installer_log.txt file. In the log file, search for **Database 'offlinedb' not found**.

```
ERROR 2007-07-29 15:54:49,608 4938
(main:com.extendyourstore.foundation.manager.data.JdbcDataConnection):

[com.extendyourstore.foundation.manager.data.JdbcDataConnection.logSQLException
(JdbcDataConnection.java:1355)] Get Connection failed :Database 'offlinedb' not
found.
```

Solution:

This error occurs the first time the client is started after it is installed. The server was unable to establish a connection to the database. This prevented the offlinedb database from being created.

This error usually occurs because incorrect information was entered on the Database Configuration screen during the install. Reinstall the server with the correct database configuration information. Check that the IDDI folder was created for the server in *<POS_install_directory>*/pos/bin.

F

Appendix: Troubleshooting Problems on the Oracle Stack

This appendix contains information that may be useful if you encounter errors running Point-of-Service for the first time after an install.

The configuration steps enable Point-of-Service to communicate with Back Office and Central Office in order to receive parameter updates and to send EJournal and POSLogs up to Central Office. If you have problems, you may want to ensure the steps were successfully completed by the installer.

jndi.properties File Name

On the Central Office/Back Office Server Information screen, you enter the host name for the Central Office server. In the *<POS_install_directory>*/pos/config directory, there is a jndi.properties file for Central Office. When this file is created during installation, the name of the file includes the host name you entered for the Central Office server.

For example, if you enter centraloffice for the host name, the name of the created file is centraloffice.jndi.properties.

Performing a Manual Integration

The following steps need to be completed for Point-of-Service to communicate with Back Office and Central Office. These steps enable Point-of-Service to receive parameter updates and to send EJournal and POSLogs up to Central Office.

Client Configuration

To configure the client:

1. Verify the following class path entries in the *<POS_install_directory>*\pos\bin\posenv.bat file.

```
SET CLASSPATH=%CLASSPATH%;%_360COMMON_PATH%\common\build\oc4j-internal.jar
SET CLASSPATH=%CLASSPATH%;%_360COMMON_PATH%\common\build\javax77.jar
SET CLASSPATH=%CLASSPATH%;%_360COMMON_PATH%\common\build\jta.jar
SET CLASSPATH=%CLASSPATH%;%_360COMMON_PATH%\common\build\jms.jar
SET CLASSPATH=%CLASSPATH%;%_360COMMON_PATH%\common\build\optic.jar
```

2. Change the *<POS_install_directory>*\pos\bin\jndi.properties file to point to Back Office.

```
java.naming.provider.url=
ormi://<Back Office Server Name>:<Back Office Port Number>
java.naming.factory.initial=com.evermind.server.rmi.RMIInitialContextFactory
java.naming.security.principal=oc4jadmin
java.naming.security.credentials=oc4jadmin
```

3. Add the Back Office queue and topic connection factory entries to the *<POS_install_directory>*\pos\bin\comm.properties file.

```
comm.jms.topicConnectionFactory.name=jms/ApplicationTCF
comm.jms.queueConnectionFactory.name=jms/ApplicationQCF
```

4. Edit ParameterTechnician in the *<POS_install_directory>* \pos\config\conduit\ClientConduit.xml file.

```
<TECHNICIAN name="ParameterTechnician" class = "ParameterTechnician"
               package = "com.extendyourstore.foundation.manager.parameter"
               export = "Y" >
           <PROPERTY propname="paramScript"

propvalue="classpath://config/manager/PosParameterTechnician.xml"/>
           <PROPERTY propname="JmsProviderTopicName"
propvalue="jms/parameters"/>
   <PROPERTY propname="listenForUpdates" propvalue="Y"/>
           <PROPERTY propname="clientID" propvalue="reg129"/>
           <PROPERTY propname="jmsID" propvalue="oc4jadmin"/>
           <PROPERTY propname="jmsPassword" propvalue="!<password>"/>
   </TECHNICIAN>
```

Store Server Configuration

To configure the store server:

1. Verify the following class path entries in the *<POS_install_directory>*\pos\bin\posenv.bat file.

```
SET CLASSPATH=%CLASSPATH%;%_360COMMON_PATH%\common\build\oc4j-internal.jar
SET CLASSPATH=%CLASSPATH%;%_360COMMON_PATH%\common\build\javax77.jar
SET CLASSPATH=%CLASSPATH%;%_360COMMON_PATH%\common\build\jta.jar
SET CLASSPATH=%CLASSPATH%;%_360COMMON_PATH%\common\build\jms.jar
SET CLASSPATH=%CLASSPATH%;%_360COMMON_PATH%\common\build\optic.jar
```

2. Change the *<POS_install_directory>*\pos\config\backoffice.jndi.properties and *<POS_install_directory>*\pos\bin\jndi.properties files to point to Back Office.

```
java.naming.provider.url=
ormi://<Back Office Server Name>:<Back Office Port Number>
java.naming.factory.initial=com.evermind.server.rmi.RMIInitialContextFactory
java.naming.security.principal=oc4jadmin
java.naming.security.credentials=oc4jadmin
```

3. Change the *<POS_install_directory>*\pos\config\ *<Central Office Server Name>*.jndi.properties file to point to Central Office.

   - This creates access to the POSLog and EJournalImport queues only:

     ```
     java.naming.provider.url=
         ormi://<Central Office Server Name>:<Central Office Port Number>
     java.naming.factory.initial=
         com.evermind.server.rmi.RMIInitialContextFactory
     java.naming.security.principal=oc4jadmin
     java.naming.security.credentials=oc4jadmin
     ```

   - To enable Centralized Transaction Retrieval to access the EJBs and POSLog and EJournalImport queues:

     ```
     java.naming.provider.url=ormi:
       //<Central Office host name>:<Central Office Port Number>/CentralOffice
     java.naming.factory.initial=
       com.evermind.server.rmi.RMIInitialContextFactory
     java.naming.security.principal=pos
     java.naming.security.credentials=pos
     ```

4. Add the Back Office and Central Office queue and topic connection factory entries to the *<POS_install_directory>*\pos\bin\comm.properties file.

   ```
   comm.jms.topicConnectionFactory.name=jms/ApplicationTCF
   comm.jms.queueConnectionFactory.name=jms/ApplicationQCF
   comm.jms.topicConnectionFactory.name.<Central Office Server Name>=
   jms/ApplicationTCF
   comm.jms.queueConnectionFactory.name.<Central Office Server Name>=
   jms/ApplicationQCF
   ```

5. Delete the comm.properties file from *<POS_install_directory>*\pos\config.

6. Edit the log export configuration in the *<POS_install_directory>* \pos\config\conduit\StoreServerConduit.xml file by changing only one of the following sections.

   - To use data replication, edit the DataReplicationDaemonTechnician section.

     ```
     <TECHNICIAN name="DataReplicationDaemonTechnician"
                   class="DataReplicationDaemonTechnician"
                   package="com.extendyourstore.domain.manager.datareplication"
                   export="Y">
            <PROPERTY propname="daemonClassName"

     propvalue="com.extendyourstore.domain.manager.datareplication.DataReplicati
     onExportDaemonThread"/>
            <PROPERTY propname="sleepInterval"
                      propvalue="15"/>
            <PROPERTY propname="logWriterClass"

     propvalue="com.extendyourstore.domain.manager.datareplication.JMSDataReplic
     ationWriter"/>

            <PROPERTY propname="extractorConfigurationFileName"
                      propvalue="config/ReplicationExportConfig.xml"/>
            <PROPERTY propname="queueHostName"
     ```

```
                    propvalue="<Central Office Server Name>"/>
            <PROPERTY propname="maximumTransactionsToExport"
                    propvalue="2"/>
            <PROPERTY propname="queueName"
                    propvalue="jms/POSLog"/>
        </TECHNICIAN>
```

- To use the POSLog, edit the `PosLogDaemonTechnician` section. Edit the version that exports to a JMS queue.

```
TECHNICIAN name="POSLogDaemonTechnician"
              class="POSLogDaemonTechnician"
              package="com.extendyourstore.domain.manager.export"
              export="Y">
        <PROPERTY propname="daemonClassName"

propvalue="com.extendyourstore.domain.manager.export.POSLogExportDaemonThre
ad"/>
        <PROPERTY propname="sleepInterval"
                  propvalue="5"/>
        <PROPERTY propname="logWriterClass"

propvalue="com.extendyourstore.domain.ixretail.log.POSLogWriter"/>
        <PROPERTY propname="queueHostName"
                  propvalue="<Central Office Server Name>"/>
        <PROPERTY propname="queueName"
                  propvalue="jms/POSLog"/>
        <PROPERTY propname="logWriterClass"

propvalue="com.extendyourstore.domain.ixretail.log.JMSPOSLogWriter"/>
    </TECHNICIAN>
```

  The `queueHostName` must be changed to *<Central Office Server Name>* as shown in this example. This will allow the POSLog Export Daemon to use the *<POS_install_directory>*`\pos\config\`*<Central Office Server Name>*`.jndi.properties` file. Delete the *<POS_install_directory>*`\pos\config\`*<Central Office Server Name>*`.jndi.properties` file.

7. Edit `JMSJournalTechnician` in the *<POS_install_directory>* `\pos\config\conduit\StoreServerConduit.xml` file.

```
 <TECHNICIAN name="JMSJournalTechnician"
               class="JMSJournalTechnician"
               package="com.extendyourstore.foundation.manager.journal"
               export="Y">
               <PROPERTY propname="journalFormatterClass"

propvalue="com.extendyourstore.pos.manager.journal.POSJournalFormatter"/>
               <PROPERTY propname="journalHandlerClass"

propvalue="com.extendyourstore.pos.manager.journal.POSJMSJournalHandler"/>
               <PROPERTY propname="queueName" propvalue="jms/EJournal"/>
               <PROPERTY propname="consolePrintable" propvalue="N"/>
    </TECHNICIAN>
```

8. Edit `MessageCenterDaemonTechnician` in the *<POS_install_directory>* `\pos\config\conduit\StoreServerConduit.xml` file.

```
 <TECHNICIAN name="MessageCenterDaemonTechnician"
              class="MessageCenterDaemonTechnician"
              package="com.extendyourstore.domain.manager.messagecenter"
              export="Y">
        <PROPERTY propname="daemonClassName"

propvalue="com.extendyourstore.domain.manager.messagecenter.MessageCenterDaemon
Thread"/>
        <PROPERTY propname="senderQueueName"
                  propvalue="jms/EJournalImport"/>
        <PROPERTY propname="senderBrokerName"
                  propvalue="<Central Office Server Name>"/>
        <PROPERTY propname="receiverQueueName"
                  propvalue="jms/EJournal"/>
        <PROPERTY propname="receiverBrokerName"
                  propvalue=""/>
    </TECHNICIAN>
```

Note: The value set for the `queueName` property for the `JMSJournalTechnician` and the value set for the `receiverQueueName` property for the `MessageCenterDaemonTechnician` must be the same.

G

Appendix: Troubleshooting Problems on the IBM Stack

This appendix contains information that may be useful if you encounter errors running Point-of-Service for the first time after an install.

The configuration steps enable Point-of-Service to communicate with Back Office and Central Office in order to receive parameter updates and to send EJournal and POSLogs up to Central Office. If you have problems, you may want to ensure the steps were successfully completed by the installer.

jndi.properties File Name

On the Central Office/Back Office Server Information screen, you enter the host name for the Central Office server. In the *<POS_install_directory>*/pos/config directory, there is a jndi.properties file for Central Office. When this file is created during installation, the name of the file includes the host name you entered for the Central Office server.

For example, if you enter centraloffice for the host name, the name of the created file is centraloffice.jndi.properties.

Performing a Manual Integration

The following steps need to be completed for Point-of-Service to communicate with Back Office and Central Office. These steps enable Point-of-Service to receive parameter updates and to send EJournal and POSLogs up to Central Office.

Client Configuration

To configure the client:

1. If the host names of the Back Office and Central Office servers are not available on a DNS server, update the /etc/hosts file with the IP address and host name where Point-of-Service is installed. This step is required for JMS messaging to work properly.
2. Remove the following class path entries from the *<POS_install_directory>*/pos/bin/posenv.sh file.

```
SET CLASSPATH=$CLASSPATH:$_360COMMON_PATH/common/build/oc4j-internal.jar
SET CLASSPATH=$CLASSPATH:$_360COMMON_PATH/common/build/javax77.jar
SET CLASSPATH=$CLASSPATH:$_360COMMON_PATH/common/build/jms.jar
SET CLASSPATH=$CLASSPATH:$_360COMMON_PATH/common/build/optic.jar
SET CLASSPATH=$CLASSPATH:jboss-4.0.2/lib/jboss-common.jar
```

```
SET CLASSPATH=$CLASSPATH:jboss-4.0.2/client/jboss-j2ee.jar
SET CLASSPATH=$CLASSPATH:jboss-4.0.2/client/jbossmq-client.jar
SET CLASSPATH=$CLASSPATH:jboss-4.0.2/client/jnp-client.jar
```

3. Add the following class path entries to the *<POS_install_directory>*/pos/bin/posenv.sh file.

```
CP=$CP:<WAS_INSTALL_DIR>/WebSphere/AppServer/plugins/
com.ibm.ws.runtime_6.1.0.jar
CP=$CP:<WAS_INSTALL_DIR>/WebSphere/AppServer/runtimes/
com.ibm.ws.admin.client_6.1.0.jar
CP=$CP:<MQ_INSTALL_DIR>/java/lib/jms.jar
CP=$CP:<WAS_INSTALL_DIR>/lib/WMQ/java/lib/com.ibm.mqjms.jar
CP=$CP:<WAS_INSTALL_DIR>/lib/WMQ/java/lib/com.ibm.mq.jar
CP=$CP:<WAS_INSTALL_DIR>/lib/WMQ/java/lib/dhbcore.jar
```

4. Change the *<POS_install_directory>*/pos/bin/jndi.properties file to point to Back Office.

```
java.naming.provider.url=
corbaloc:iiop:<Back Office Server Name>:<Back Office Port Number>
```

5. Add the Back Office queue and topic connection factory entries to the *<POS_install_directory>*/pos/bin/comm.properties file.

```
comm.jms.topicConnectionFactory.name=jms/ApplicationTCF
comm.jms.queueConnectionFactory.name=jms/ApplicationQCF
```

6. Delete the comm.properties file from *<POS_install_directory>*/pos/config.

7. Edit ParameterTechnician in the *<POS_install_directory>* /pos/config/conduit/ClientConduit.xml file.

```
<TECHNICIAN name="ParameterTechnician" class = "ParameterTechnician"
               package = "com.extendyourstore.foundation.manager.parameter"
               export = "Y" >
          <PROPERTY propname="paramScript"
propvalue="classpath://config/manager/PosParameterTechnician.xml"/>
          <PROPERTY propname="JmsProviderTopicName"
propvalue="jms/parameters"/>
   <PROPERTY propname="listenForUpdates" propvalue="Y"/>
          <PROPERTY propname="clientID" propvalue="reg129"/>
          <PROPERTY propname="jmsID" propvalue="<UNIX user>"/>
          <PROPERTY propname="jmsPassword" propvalue="!<password>"/>
   </TECHNICIAN>
```

Note: The value of clientID must match the WorkstationID specified in the application.properties file.

Note: You must create a UNIX user on the host where Back Office is installed and add that user to the mqm group. The values for jmsID and jmsPassword specified in the Password Technician definition must match the values for the UNIX user and password.

Store Server Configuration

To configure the store server:

1. Update the `/etc/hosts` file with the IP address and host name where Point-of-Service is installed. This step is required for JMS messaging to work properly.
2. Update the `/etc/group` file with the user ID that will be used to run the store server. Add that user ID to the `mqm` group. The user ID must be part of the `mqm` group in order to use JMS.
3. Remove the following class path entries from the *<POS_install_directory>*`/pos/bin/posenv.sh` file.

```
SET CLASSPATH=$CLASSPATH:$_360COMMON_PATH\common\build\oc4j-internal.jar
SET CLASSPATH=$CLASSPATH:$_360COMMON_PATH\common\build\javax77.jar
SET CLASSPATH=$CLASSPATH:$_360COMMON_PATH\common\build\jms.jar
SET CLASSPATH=$CLASSPATH:$_360COMMON_PATH\common\build\optic.jar
SET CLASSPATH=$CLASSPATH:jboss-4.0.2/lib/jboss-common.jar
SET CLASSPATH=$CLASSPATH:jboss-4.0.2/client/jboss-j2ee.jar
SET CLASSPATH=$CLASSPATH:jboss-4.0.2/client/jbossmq-client.jar
SET CLASSPATH=$CLASSPATH:jboss-4.0.2/client/jnp-client.jar
```

4. Add the following class path entries to the *<POS_install_directory>*`/pos/bin/posenv.sh` file.

```
CP=$CP:<WAS_INSTALL_DIR>/AppServer/plugins/com.ibm.ws.runtime_6.1.0.jar
CP=$CP:<WAS_INSTALL_DIR>/AppServer/runtimes/com.ibm.ws.admin.client_6.1.0.jar
CP=$CP:<MQ_INSTALL_DIR>/java/lib/jms.jar
CP=$CP:<WAS_INSTALL_DIR>/lib/WMQ/java/lib/com.ibm.mqjms.jar
CP=$CP:<WAS_INSTALL_DIR>/lib/WMQ/java/lib/com.ibm.mq.jar
CP=$CP:<WAS_INSTALL_DIR>/lib/WMQ/java/lib/dhbcore.jar
```

5. Change the *<POS_install_directory>*`/pos/config/backoffice.jndi.properties` and *<POS_install_directory>*`/pos/bin/jndi.properties` files to point to Back Office.

```
java.naming.provider.url=
corbaloc:iiop:<Back Office Server Name>:<Back Office Port Number>
```

6. To use Centralized Transaction Retrieval, there are jar files that must be copied into the Point-of-Service directory.

> **Note:** Oracle Retail Central Office must be installed and deployed on WebSphere before these jar files can be copied into the Point-of-Service directory. These files are created during the deployment.

Copy the following jar files to *<POS_install_directory>*`/360common/lib`:

- *<WAS_INSTALL_DIR>*`/profiles/`*<AppSrvNN>*`/installedApps/`*<hostnameNodeNNCell>*`/CentralOffice.ear/transaction-retrieval-ejb.jar`
- *<WAS_INSTALL_DIR>*`/profiles/`*<AppSrvNN>*`/installedApps/`*<hostnameNodeNNCell>*`/CentralOffice.ear/customer-retrieval-ejb.jar`

7. Change the *<POS_install_directory>* /pos/config/centraloffice.jndi.properties file to point to Central Office. This creates access to the POSLog and EJournalImport queues and enables Centralized Transaction Retrieval to access the EJBs and POSLog and EJournalImport queues.

   ```
   java.naming.provider.url=
   corbaloc:iiop:<Central Office Server Name>:<Central Office Port Number>
   ```

8. Add the Back Office and Central Office queue and topic connection factory entries to the *<POS_install_directory>*/pos/bin/comm.properties file.

   ```
   comm.jms.topicConnectionFactory.name=jms/ApplicationTCF
   comm.jms.queueConnectionFactory.name=jms/ApplicationQCF
   comm.jms.topicConnectionFactory.name.<Central Office Server Name>=
   jms/ApplicationTCF
   comm.jms.queueConnectionFactory.name.<Central Office Server Name>=
   jms/ApplicationQCF
   ```

9. Delete the comm.properties file from *<POS_install_directory>*/pos/config.

10. Edit the log export configuration in the *<POS_install_directory>* /pos/config/conduit/StoreServerConduit.xml file by changing only one of the following sections.

    - To use data replication, edit the DataReplicationDaemonTechnician section.

      ```
      <TECHNICIAN name="DataReplicationDaemonTechnician"
                    class="DataReplicationDaemonTechnician"
                    package="com.extendyourstore.domain.manager.datareplication"
                    export="Y">
            <PROPERTY propname="daemonClassName"
      propvalue="com.extendyourstore.domain.manager.datareplication.DataReplicati
      onExportDaemonThread"/>
            <PROPERTY propname="sleepInterval"
                      propvalue="50"/>
            <PROPERTY propname="logWriterClass"
      propvalue="com.extendyourstore.domain.manager.datareplication.JMSDataReplic
      ationWriter"/>
            <PROPERTY propname="extractorConfigurationFileName"
                      propvalue="config/ReplicationExportConfig.xml"/>
            <PROPERTY propname="queueHostName"
                      propvalue="<Central Office Server Name>"/>
            <PROPERTY propname="maximumTransactionsToExport"
                      propvalue="2"/>
            <PROPERTY propname="queueName"
                      propvalue="jms/POSLog"/>
        </TECHNICIAN>
      ```

    - To use the POSLog, edit the PosLogDaemonTechnician section. Edit the version that exports to a JMS queue.

      ```
      TECHNICIAN name="POSLogDaemonTechnician"
                    class="POSLogDaemonTechnician"
                    package="com.extendyourstore.domain.manager.export"
                    export="Y">
            <PROPERTY propname="daemonClassName"
      propvalue="com.extendyourstore.domain.manager.export.POSLogExportDaemonThre
      ad"/>
            <PROPERTY propname="sleepInterval"
      ```

```
                    propvalue="60"/>
            <PROPERTY propname="logWriterClass"
    propvalue="com.extendyourstore.domain.ixretail.log.POSLogWriter"/>
            <PROPERTY propname="queueHostName"
                      propvalue="<Central Office Server Name>"/>
            <PROPERTY propname="queueName"
                      propvalue="jms/POSLog"/>
            <PROPERTY propname="logWriterClass"
    propvalue="com.extendyourstore.domain.ixretail.log.JMSPOSLogWriter"/>
        </TECHNICIAN>
```

11. Edit `JMSJournalTechnician` in the *<POS_install_directory>* `/pos/config/conduit/StoreServerConduit.xml` file.

```
 <TECHNICIAN name="JMSJournalTechnician"
                class="JMSJournalTechnician"
                package="com.extendyourstore.foundation.manager.journal"
                export="Y">
              <PROPERTY propname="journalFormatterClass"
propvalue="com.extendyourstore.pos.manager.journal.POSJournalFormatter"/>
               <PROPERTY propname="journalHandlerClass"
propvalue="com.extendyourstore.pos.manager.journal.POSJMSJournalHandler"/>
                <PROPERTY propname="queueName" propvalue="jms/EJournal"/>
                <PROPERTY propname="consolePrintable" propvalue="N"/>
    </TECHNICIAN>
```

12. Edit `MessageCenterDaemonTechnician` in the *<POS_install_directory>* `/pos/config/conduit/StoreServerConduit.xml` file.

```
 <TECHNICIAN name="MessageCenterDaemonTechnician"
               class="MessageCenterDaemonTechnician"
               package="com.extendyourstore.domain.manager.messagecenter"
               export="Y">
        <PROPERTY propname="daemonClassName"
propvalue="com.extendyourstore.domain.manager.messagecenter.MessageCenterDaemon
Thread"/>
        <PROPERTY propname="senderQueueName"
                  propvalue="jms/EJournalImport"/>
        <PROPERTY propname="senderBrokerName"
                  propvalue="<Central Office Server Name>"/>
        <PROPERTY propname="receiverQueueName"
                  propvalue="jms/EJournal"/>
        <PROPERTY propname="receiverBrokerName"
                  propvalue=""/>
    </TECHNICIAN>
```

Note: The value set for the `queueName` property for the `JMSJournalTechnician` and the value set for the `receiverQueueName` property for the `MessageCenterDaemonTechnician` must be the same.

H

Appendix: Best Practices for Passwords

This appendix covers information about defining passwords for compliance with PABP. It also has specific information for defining passwords for database users. The following topics are covered:

- "Password Guidelines"
- "Special Security Options for Oracle Databases"
- "Special Security Options for IBM DB2 Databases"

Password Guidelines

To make sure users and their passwords are properly protected, follow these guidelines. The guidelines are based on the Payment Card Industry Data Security Standard (PCI-DSS):

- Verify the identity of the user before resetting any passwords.
- Set first-time passwords to a unique value for each user and require the password to be changed immediately after the first use.
- Immediately revoke access for any terminated users.
- Remove inactive user accounts at least every 90 days.
- Enable accounts used by vendors for remote maintenance only during the time period when access is needed.
- Communicate password procedures and policies to all users who have access to cardholder data.
- Do not use group, shared, or generic accounts and passwords.
- Require user passwords to be changed at least every 90 days.
- Require a minimum password length of at least seven characters.
- Require that passwords contain both numeric and alphabetic characters.
- Do not accept a new password that is the same as any of the last four passwords used by a user.
- Limit the number of repeated access attempts by locking out the user ID after not more than six attempts.
- Set the lockout duration to thirty minutes or until an administrator enables the user ID.

Special Security Options for Oracle Databases

The following information is based on Oracle Database version 11.1.0.7 and is found in the *Oracle Database Security Guide*.

Enforcing Password Policies Using Database Profiles

Password policies can be enforced using database profiles. The options can be changed using a SQL statement, for example:

```
alter profile appsample limit
```

Option	Setting	Description
FAILED_LOGIN_ATTEMPTS	4	Maximum number of login attempts before the account is locked.
PASSWORD_GRACE_TIME	3	Number of days a user has to change an expired password before the account is locked.
PASSWORD_LIFE_TIME	90	Number of days that the current password can be used.
PASSWORD_LOCK_TIME	30	Amount of time in minutes that the account is locked.
PASSWORD_REUSE_MAX	10	Number of unique passwords the user must supply before the first password can be reused.
PASSWORD_VERIFY_FUNCTION	<*routine_name*>	Name of the verification script that is used to ensure that the password meets the requirements of the password policy. See "Enforcing Password Policies Using a Verification Script".

Enforcing Password Policies Using a Verification Script

Password policies can be enforced via a password complexity verification script, for example:

```
UTLPWDMG.SQL
```

The password complexity verification routine ensures that the password meets the following requirements:

- Is at least four characters long
- Differs from the user name
- Has at least one alpha, one numeric, and one punctuation mark character
- Is not simple or obvious, such as welcome, account, database, or user
- Differs from the previous password by at least three characters

For example, to set the password to expire as soon as the user logs in for the first time:

```
CREATE USER jbrown
IDENTIFIED BY zX83yT
...
PASSWORD EXPIRE;
```

Special Security Options for IBM DB2 Databases

The security for DB2 is done at the operating system level. Consult your IBM DB2 documentation for information on creating a security profile that follows the password guidelines.

Appendix: Keytool Utility

The keytool utility is included with the JRE. It is used to create new keys, import digital certificates, export existing keys, and interact with the key management system.

Creating a Self-Signed Certificate

To create a self-signed certificate, use the following command. It creates a private key and a self-signed certificate that contains the corresponding public key:

```
keytool -genkey -keystore <keystore_location>
-alias <your_alias> -keyalg RSA
```

> **Caution:** The *<keystore_location>* must match the one provided in the `posfoundation.properties` file.

Creating a Certificate Signing Request

To obtain a certificate signed by a real Certificate Authority, create a Certificate Signing Request.

1. Use the following command to generate the request:

   ```
   keytool -certreq -keystore <keystore_location> -alias <your_alias>
   -file <your_file.cer>
   ```

2. Once the Certificate Signing Request is saved in a file, send it to the Certificate Authority of your choice. To get a trial certificate, see the following website:

   https://www.thawte.com

3. When the response from the Certificate Authority is received, save the certificate in a file from which it can be imported. In order to import the certificate, the root certificate must be in your list of trusted certificate authorities, or you must accept the root certificate selected by the keytool utility.

4. To import the certificate, use the following command:

   ```
   keytool -import -keystore <your_keystore_name>
   -file <your_certificate_file.cer> -alias <your_alias> -trustcacerts
   ```

For development or testing purposes, it should not be necessary to get a trial certificate or have your certificate signed.

Exporting and Importing Certificates

The server in an SSL conversation must have a private key and a certificate that verifies its identity.

- The private key is used by the server as a part of the key exchange algorithm.
- The certificate is sent to the client to identify the server. This information is obtained from the keystore.
- The truststore is used by the client to verify the certificate that is sent by the server.

To populate the truststore with the public certificate of a server:

1. Export the RSA certificate (without the private key) from the server keystore. For information on creating the certificate, see Creating a Certificate Signing Request.

   ```
   keytool -export -keystore <your_keystore> -alias <your_alias>
   -file <your_file.cer>
   ```

2. Import the RSA certificate into the truststore.

   ```
   keytool -import -alias <your_alias> -keystore <your_truststore>
   -file <your_file.cer>
   ```

   For the SSL RMI, the `javax.net.ssl.trustStore` can be defined in the `posfoundation.properties` file or using either `jssecacerts` or `cacerts`.

Caution: It is recommended that the certificate is added to the default `cacerts` truststore or into the `jssecacerts` file located in the same directory as the `cacerts` file.

The password for the default truststore is **changeit**. If you add it to a custom trust store, you need to communicate this to the JVM. Set the location and password for the truststore using the `javax.net.ssl.trustStore` and `javax.net.ssl.trustStorePassword` system properties.

J

Appendix: Secure JDBC with Oracle 11g Database

This appendix has information on setting up and communicating with a secured Oracle 11g R2 database server based on the following assumptions:

- Client authentication is not needed.
- The Oracle wallet is used as a trust store on the database server.

SSL encryption for Oracle JDBC has been supported in the JDBC-OCI driver since Oracle JDBC 9.2.x, and is supported in the THIN driver starting in 10.2. SSL authentication has been supported in the JDBC-OCI driver since Oracle JDBC 9.2.x. The THIN driver supports Oracle Advanced Security SSL implementation in Oracle Database 11g Release 1 (11.1).

For more information, see the following websites:

- http://www.oracle.com/technology/tech/java/sqlj_jdbc/pdf/wp-oracle-jdbc_thin_ssl.pdf
- http://download.oracle.com/docs/cd/B28359_01/network.111/b28530/toc.htm
- http://download.oracle.com/docs/cd/B28359_01/java.111/b31224/toc.htm

Creating the Oracle Wallet and Certificate for the Server

Note the following information:

- The Advanced Security options must be installed with the database server.
- If you want have a user interface, run `owm` from `$ORACLE_HOME/bin` as `oracle/oracle`.
- The wallet you create must support Auto Login. It must be enabled on the new wallet.
- The following is the wallet directory default:
  - `ORACLE_HOME/admin/ORACLE_SID`
  - Test server wallet information:
    * Wallet password: securedb11g
    * Wallet directory: `/u01/oracle/admin/SECURDB11G`

- When generating a self-signed certificate, note the following:
  - Do not use keytool to create a certificate for using Oracle wallets. They are incompatible.
  - Two wallets are needed to generate a self-signed certificate. One wallet is needed to sign the certificate and another wallet is needed to use the certificate.
  - For command line wallet access, use `orapki`.
  - For instructions on generating a self-signed certificate, see *APPENDIX B CREATING TRUSTSTORES AND KEYSTORES* in the following document:

    http://www.oracle.com/technology/tech/java/sqlj_jdbc/pdf/wp-oracle-jdbc_thin_ssl.pdf
  - The following are examples of `orapki` commands:
    * To create the wallet:

      ```
      orapki wallet create -wallet <wallet directory>
      ```

    * To add the self-signed certificate:

      ```
      orapki wallet add -wallet <wallet directory> -dn
      CN=<certificate name>,C-US -keysize 2048 -self_signed -validity 3650
      ```

    * To view the wallet:

      ```
      orapki wallet display -wallet <wallet directory>
      ```

- The Wallet Manager UI can also be used to import certificates.

Securing the Listener on the Server

The `listener.ora`, `tnsnames.ora`, and `sqlnet.ora` files are found in the `$ORACLE_HOME/network/admin` directory. If the `sqlnet.ora` file does not exist, you need to create it.

To secure the listener on the server:

1. Add TCPS protocol to the `listener.ora` file.
2. Add TCPS protocol to the `tnsnames.ora` file.
3. Add the Oracle Wallet location to the `sqlnet.ora` and `listener.ora` files.
4. Add disabling of client authentication to the `sqlnet.ora` and `listener.ora` files.
5. Add encryption-only cipher suites to the `sqlnet.ora` file.
6. Bounce the listener once the file is updated.

Examples of Network Configuration Files

Examples of the following network configuration files are shown in this section:

- listener.ora
- sqlnet.ora
- tnsnames.ora

listener.ora

```
SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (SID_NAME = PLSExtProc)
      (ORACLE_HOME = /u01/oracle/11g)
      (PROGRAM = extproc)
    )
  )

LISTENER =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS = (PROTOCOL = TCP)(HOST = 10.143.44.108)(PORT = 1521))
      (ADDRESS = (PROTOCOL = TCPS)(HOST = 10.143.44.108)(PORT = 2484))
      (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROCO))
    )
  )

WALLET_LOCATION=(SOURCE=(METHOD=FILE)
  (METHOD_DATA=(DIRECTORY=/u01/oracle/admin/SECURDB11G)))

SSL_CLIENT_AUTHENTICATION=FALSE
```

Caution: To generate a trace log, add the following entries to the `listener.ora` file:

```
TRACE_LEVEL_LISTENER = ADMIN
TRACE_DIRECTORY_LISTENER = /u01/oracle/11g/network/trace
TRACE_FILE_LISTENER = listener.trc
```

sqlnet.ora

```
SSL_CLIENT_AUTHENTICATION=FALSE

SSL_CIPHER_SUITES=(SSL_DH_anon_WITH_3DES_EDE_CBC_SHA, SSL_DH_anon_WITH_RC4_128_
MD5, SSL_DH_anon_WITH_DES_CBC_SHA)

WALLET_LOCATION=(SOURCE=(METHOD=FILE)
  (METHOD_DATA=(DIRECTORY=/u01/oracle/admin/SECURDB11G)))
```

tnsnames.ora

```
SECURDB11g =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = 10.143.44.108)(PORT = 1521))
      (ADDRESS = (PROTOCOL = TCPS)(HOST = 10.143.44.108)(PORT = 2484))
    )
    (CONNECT_DATA =
```

```
    (SERVER = DEDICATED)
    (SERVICE_NAME = SECURDB11G)
  )
)
```

Securing Client Access

> **Caution:** Ensure you are using `ojdbc.jar` version 10.2.x or later. Version 10.1.x or earlier will not connect over TCPS.

To secure client access:

1. Export the self-signed certificate from the server Oracle Wallet and import it into a local trust store.
2. Use the following URL format for the JDBC connection:

   ```
   jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=tcps) (HOST=10.143.44.108)
   (PORT=2484) ) (CONNECT_DATA= (SERVICE_NAME=SECURDB11G)))
   ```

3. The database connection call requires the following properties to be set, either as system properties or JDBC connection properties:

Property	Value
oracle.net.ssl_cipher_suites	(SSL_DH_anon_WITH_3DES_EDE_CBC_SHA, SSL_DH_anon_WITH_RC4_128_MD5, SSL_DH_anon_WITH_DES_CBC_SHA)
javax.net.ssl.trustStore	Path and file name of trust store For example: `/DevTools/Testing/Secure11g/truststore/truststore`
javax.net.ssl.trustStoreType	JKS
javax.net.ssl.trustStorePassword	Password for trust store

Specific Instructions for Point-of-Service

To configure Oracle Retail Point-of-Service:

1. Configure the database server as shown above.
2. Copy the `ojdbc14.jar` file from the database server and replace in the `pos` library.

   > **Note:** The `ojdbc14.jar` file that comes with 10.2.0.3 version of database supports TCPS protocol.

3. The following changes have to be made for the connection pool that is defined in the following files:
   - `server/pos/config/DefaultDataTechnician.xml`
   - `server/pos/config/EnterpriseDataTechnician.xml`

   The following example shows the `DefaultDataTechnician.xml` file.

```
<POOL class="DataConnectionPool" name="jdbcpool"
package="com.extendyourstore.foundation.manager.data">
        <POOLPROPERTY propname="numConnections" proptype="INTEGER"
propvalue="8"/>
        <CONNECTION class="JdbcDataConnection"
package="com.extendyourstore.foundation.manager.data">
            <CONNECTIONPROPERTY propname="driver" proptype="STRING"
propvalue="oracle.jdbc.driver.OracleDriver"/>
            <CONNECTIONPROPERTY propname="databaseUrl" proptype="STRING"
propvalue="jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)(HOST=10.143.
44.108)(PORT=2484))(CONNECT_DATA=(SERVICE_NAME=SECURDB11G)))"/>
            <CONNECTIONPROPERTY propname="userid" proptype="STRING"
propvalue="anilorabo"/>
   <CONNECTIONPROPERTY propname="oracleCipherSuites" proptype="STRING"
propvalue="(SSL_DH_anon_WITH_3DES_EDE_CBC_SHA, SSL_DH_anon_WITH_RC4_128_
MD5,SSL_DH_anon_WITH_DES_CBC_SHA)"/>
            <CONNECTIONPROPERTY propname="password" proptype="STRING"
propvalue="!anilorabo"/>
            <CONNECTIONPROPERTY propname="exceptionMappingClass"
proptype="STRING"
propvalue="com.extendyourstore.foundation.manager.data.JdbcSQLState"/>
            <CONNECTIONPROPERTY propname="exceptionMapping" proptype="STRING"
propvalue="classpath://com/extendyourstore/domain/arts/oracleexceptionmap.xml"/
>
        </CONNECTION>
</POOL>
```

In the above example, look at the `databaseUrl` and `oracleCipherSuites` connection properties.

4. To set up a secure JDBC connection, that is, to set up a connection to the database using TCPS protocol, these two connection properties have to be defined. By default there is no connection property named `oracleCipherSuites` defined in the xml files.
5. To set up secure JDBC, add this connection property and update the `databaseUrl` as shown in the above example.

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Appendix: Secure JDBC with IBM DB2

IBM DB2 has supported SSL encryption since version 9.1 Fix Pack 3. Information on how to configure SSL on the server and client can be found at the following websites:

- http://publib.boulder.ibm.com/infocenter/db2luw/v9/index.jsp?topic=/com.ibm.db2.udb.uprun.doc/doc/t0025241.htm
- http://www-1.ibm.com/support/docview.wss?uid=swg21249656

This appendix has information on how to enable SSL for IBM DB2. Information from the DB2 V9 Information Center, *Global Security Kit Secure Sockets Layer Introduction*, and *iKeyman User's Guide* is included in this appendix.

Summary

To secure JDBC on IBM DB2 requires the following:

- An SSL provider must be established on the DB2 server.
- The provider requires a digital certificate and corresponding private key to provide the secure communications.
- The client either needs to have a copy of the digital certificate or trust the signer of the server certificate.
- The client needs to be configured to use the secure service, and optionally use a FIPS-compliant SSL provider.

Prerequisites

The information in this section is from the DB2 V9 Information Center.

1. Make sure you have the required fix pack version of DB2.

   To determine the fix pack level you have, run the `db2level` command at the command line. If you have a fix pack version earlier than Fix Pack 3, you need to obtain Fix Pack 3 or a later version.

2. Make sure the GSKit is installed.

   On linux, it is located in `/usr/local/ibm/gsk7`.

3. Make sure the GSKit libraries are in the path.

   Make sure the `/usr/local/ibm/gsk7/lib` directory is included in LD_LIBRARY_PATH.

4. For information on how to check if the connection concentrator is in use, see the IBM documentation.

Setting up the KeyStore

The information in this section is from *Global Security Kit Secure Sockets Layer Introduction* and *iKeyman User's Guide*.

1. If you are not already logged in to the server, log in as the instance owner.
2. Start iKeyman GUI gsk7ikm.

   If the Java Cryptographic Extension(JCE) files were not found, make sure the JAVA_HOME environment variable points to a JDK that contains the JCE.
3. Click **Key Database File** and then **New**.
4. Select a key database type, filename, and location.

   It is suggested that a CMS key database is created. This is consistent with the DB2 Infocenter example. For example:

   ```
   /home/db2inst1/GSKit/Keystore/key.kdb
   ```
5. Click **OK**. The Password Prompt window is displayed.
6. Enter a password for the key database.
7. Click **OK**. A confirmation window is displayed. Click **OK**.

Creating a Self-signed Digital Certificate for Testing

The information in this section is from *Global Security Kit Secure Sockets Layer Introduction* and *iKeyman User's Guide*.

1. If you are not already logged in to the server, log in as the instance owner.
2. Start iKeyman GUI gsk7ikm.

   If the Java Cryptographic Extension(JCE) files were not found, make sure the JAVA_HOME environment variable points to a JDK that contains the JCE.
3. Click **Key Database File** and then **Open**.
4. Select the key database file where you want to add the self-signed digital certificate.
5. Click **Open**. The Password Prompt window is displayed.
6. Select **Personal Certificates** from the menu.
7. Click **New Self-Signed**. The Create New Self-Signed Certificate Window is displayed.
8. Type a Key Label, such as `keytest`, for the self-signed digital certificate.
9. Type a **Common Name and Organization**, and select a **Country**. For the remaining fields, accept the default values or enter new values.
10. Click **OK**. The IBM Key Management Window is displayed. The Personal Certificates field shows the name of the self-signed digital certificate you created.

Configuring the IBM DB2 Server

The information in this section is from the DB2 V9 Information Center.

1. If you are not already logged in to the server, log in as the instance owner.
2. Create an SSL configuration file:
   - For Linux and UNIX:

     `<INSTHOME>/cfg/SSLconfig.ini`

     For example:

     `/home/db2inst1/sqllib/cfg/SSLconfig.ini`

   - For Windows:

     `<INSTHOME>\SSLconfig.ini`

     For example:

     `F:\IBM\SQLLIB\DB2\SSLconfig.ini`

   <INSTHOME> is the home directory of the instance.

   Caution: It is recommended that you set the file permission to limit access to the `SSLconfig.ini`, as the file might contain sensitive data. For example, limit read and write authority on the file to members of the SYSADM group if the file contains the password for KeyStore.

3. Add SSL parameters to the SSL configuration file. The `SSLconfig.ini` file contains the SSL parameters that are used to load and start SSL. The list of SSL parameters are shown in the following table:

SSL parameter name	Description
DB2_SSL_KEYSTORE_FILE	Fully qualified file name of the KeyStore that stores the Server Certificate.
DB2_SSL_KEYSTORE_PW	Password of the KeyStore that stores the Server Certificate.
DB2_SSL_KEYSTORE_LABEL	Label for the Server Certificate. If it is omitted, the default certificate for the KeyStore is used.
DB2_SSL_LISTENER	Service name or port number for the SSL listener.

The following is an example of an `SSLconfig.ini` file:

```
DB2_SSL_KEYSTORE_FILE=/home/db2inst1/GSKit/Keystore/key.kdb
DB2_SSL_LISTENER=20397
DB2_SSL_KEYSTORE_PW=abcd1234
```

4. Add the value SSL to the DB2COMM registry variable. For example, use the following command:

   ```
   db2set -i <db2inst1> DB2COMM=SSL
   ```

   where *<db2inst1>* is the IBM DB2 instance name.

   The database manager can support multiple protocols at the same time. For example, to enable both TCP/IP and SSL communication protocols:

   ```
   db2set -i <db2inst1> DB2COMM=SSL,TCPIP
   ```

5. Restart the IBM DB2 instance. For example, use the following commands:

   ```
   db2stop
   ```

   ```
   db2start
   ```

   At this point, the server should be ready to start serving SSL connections. You can check the `db2diag.log` file for errors. There should be no errors pertaining to SSL after the restart.

Exporting a Certificate from iKeyman

The information in this section is from *Global Security Kit Secure Sockets Layer Introduction* and *iKeyman User's Guide*.

In order to be able to talk to the server, the clients need to have a copy of the self-signed certificate from the server.

1. Start iKeyman. The IBM Key Management window is displayed.
2. Click **Key Database File** and then **Open**. The Open window is displayed.
3. Select the source key database. This is the database that contains the certificate you want to add to another database as a signer certificate.
4. Click **Open**. The Password Prompt window is displayed.
5. Enter the key database password and click **OK**. The IBM Key Management window is displayed. The title bar shows the name of the selected key database file, indicating that the file is open and ready.
6. Select the type of certificate you want to export: Personal or Signer.
7. Select the certificate that you want to add to another database.
   - If you selected Personal, click **Extract Certificate**.
   - If you selected Signer, click **Extract**.

   The Extract a Certificate to a File window is displayed.
8. Click **Data type** and select a data type, such as Base64-encoded ASCII data. The data type needs to match the data type of the certificate stored in the certificate file. The iKeyman tool supports Base64-encoded ASCII files and binary DER-encoded certificates.
9. Enter the certificate file name and location where you want to store the certificate, or click **Browse** to select the name and location.
10. Click **OK**. The certificate is written to the specified file, and the IBM Key Management window is displayed.

Importing the Server Certificate on the Client

The information in this section is from the DB2 V9 Information Center.

1. Copy the certificate to the client.
2. Add the certificate to the trust store used by the JVM using [keytool|Secure Protocols^keytool].

```
keytool -import -file <certificateFile> -keystore <truststoreFile>
```

> **Caution:** It is recommended that the certificate is added to the default `cacerts` truststore or into the `jssecacerts` file located in the same directory as the `cacerts` file.
>
> The password for the default truststore is **changeit**. If you add it to a custom trust store, you need to communicate this to the JVM. Set the location and password for the truststore using the `javax.net.ssl.trustStore` and `javax.net.ssl.trustStorePassword` system properties.

Configuring the Client

The information in this section is from the DB2 V9 Information Center.

1. Configure the SSL port.

   This should be a simple change to the JDBC URL. There is no established default SSL port for DB2. You should use what was configured for the server in the server `SSLconfig.ini` file.

2. Configure the `sslConnection` property.

   The property can be configured using either of the following methods:

   - As a property on the datasource/connection:

     ```
     props.setProperty("sslConnection", "true");
     ```

   - As a property in the URL:

     ```
     jdbc:db2://<server>:<port>/<database>:sslConnection=true;
     ```

> **Note:** The IBM documentation references this property as `DB2BaseDataSource.sslConnection`. A review of the driver properties shows the correct value to use is `sslConnection`. A URL reference shows that properties can be set on the URL itself. This should eliminate any need to change code.

Configuring the IBM FIPS-compliant Provider for SSL (optional)

The information in this section is from the DB2 V9 Information Center.

The Sun JSSE SSL provider works with the IBM DB2 driver by following the above instructions. If you want to use the IBM FIPS-compliant provider, you have to use the IBM JDK and make the following configuration changes.

Note: If you are following the IBM documentation, note the following issues:

- Prior to the numbered steps, it says to add several lines to `java.security`. Do not add the lines.
- Step two incorrectly shows setting `ssl.SocketFactory.provider` twice. It only needs to be done once.

---

1. Set the `IBMJSSE2 FIPS` system property to enable FIPS mode:

   ```
   com.ibm.jsse2.JSSEFIPS=true
   ```

2. Set security properties to ensure that all JSSE code uses the IBMJSSE2 provider. The following example shows the entries in `java.security`.

   ```
   ssl.SocketFactory.provider=com.ibm.jsse2.SSLSocketFactoryImpl
   ssl.ServerSocketFactory.provider=com.ibm.jsse2.SSLServerSocketFactoryImpl
   ```

3. Add the IBMJCEFIPS cryptographic provider.

   Add com.ibm.crypto.fips.provider.IBMJCEFIPS to the provider list before the IBMJCE provider. Do not remove the IBMJCE provider. The IBMJCE provider is required for KeyStore support.

   The following example shows the entries in `java.security`.

   ```
   # List of providers and their preference orders (see above):
   #
   security.provider.1=com.ibm.jsse2.IBMJSSEProvider2
   # inserted provider 2 for FIPS
   security.provider.2=com.ibm.crypto.fips.provider.IBMJCEFIPS
   security.provider.3=com.ibm.crypto.provider.IBMJCE
   security.provider.4=com.ibm.security.jgss.IBMJGSSProvider
   security.provider.5=com.ibm.security.cert.IBMCertPath
   security.provider.6=com.ibm.security.sasl.IBMSASL
   ```

Specific Instructions for Point-of-Service

To configure Oracle Retail Point-of-Service on WebSphere:

1. Add the database server certificate to the default truststore of the JRE used by Oracle Retail Point-of-Service.
2. Update the JDBC URL in the following files:
   - *<POS_install_directory>*/server/pos/config/DefaultDataTechnician.xml
   - *<POS_install_directory>*/server/pos/config/EnterpriseDataTechnician.xml
   - *<POS_install_directory>*/server/pos/config/manager/PosLDBDataTechnician.xml
   - *<POS_install_directory>*/server/pos/config/manager/TaxImportDataTechnician.xml

Useful Links

For more information, see the following websites:

- http://publib.boulder.ibm.com/infocenter/db2luw/v9/topic/com.ibm.db2.udb.apdv.java.doc/doc/rjvdsprp.htm

  This website has documentation of all the properties available in the DB2 Driver for JDBC.

- http://publib.boulder.ibm.com/infocenter/db2luw/v9/topic/com.ibm.db2.udb.apdv.java.doc/doc/tjvjcccn.htm

  This website contains documentation of the URL syntax for connecting to DB2 using JDBC.

- http://retailweb.us.oracle.com:8080/download/attachments/12780085/sg247555.pdf?version=1

  An IBM Redbook on security related issues with DB2 including auditing and data encryption. It is dated January 18, 2008 and has a product number SG24-7555-00.

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Appendix: Secure RMI

To enable secure RMI for register to store server communication:

1. Prepare the keystore and truststores using the keytool utility described in Appendix I.
2. For the store server, add the following properties to the `<pos_install_directory>\server\pos\config\posfoundation.properties` file:

   - `EnabledCipherSuites=<cipher_suites_to_use>`

     For example:

     ```
     EnabledCipherSuites=SSL_DHE_RSA_WITH_3DES_EDE_CBC_SHA
     ```

     If the EnabledCipherSuites property is not defined, the defaults are used.

     Note: It is recommended that the default cipher suites provided by Java are used.

   - `EncryptValets=true`

     This causes the RMI communication between Manager/Technician pairs to be secured.

   - `javax.net.ssl.keyStore=$KEYSTORE_FILE$`

     This points to the keystore that contains the private keys and public certificates for the server. For example:

     ```
     javax.net.ssl.keyStore=$JAVA_HOME\\jre\\lib\\security\\<keystore_name>
     ```

   - `javax.net.ssl.keyStorePassword=!$KEYSTORE_PASSWORD$`

     This is the encrypted password for the keystore. For example:

     ```
     javax.net.ssl.keyStorePassword=!changeit
     ```

     Note: The keystore password follows the same convention for encryption as the other passwords.

- For DB2 SLL JDBC, a trust store needs to be defined where the public certificate from the DB2 server is imported. For more information, see Appendix K.

  `javax.net.ssl.truststore=$TRUSTSTORE_FILE$`

3. For the register, add the following properties to the `<pos_install_directory>client\pos\config\posfoundation.properties` file:

   - `EnabledCipherSuites=<cipher_suites_to_use>`

     Note: The cipher suites selected for the register have to match the ones selected for the store server.

   - `EncryptValets=true`

     This causes the RMI communication between Manager/Technician pairs to be secured.

   - `javax.net.ssl.trustStore=$TRUSTSTORE_FILE$`

     This points to the truststore that contains the public certificates for the client. For example:

     `javax.net.ssl.trustStore=$JAVA_HOME\jre\lib\security\<truststore_name>`

     Note: A trust store does not need to be defined in the `posfoundation.properties` file if certificates are imported into `cacerts` or `jssecacerts`. It is recommended that `cacerts` or `jssecacerts` is used.