

# Oracle® Banking Corporate Lending Process Management SSL Configuration Setup Guide



Release 14.7.1.0.0

F79718-01

May 2023

The Oracle logo, consisting of a solid red square with the word "ORACLE" in white, uppercase, sans-serif font centered within it.

ORACLE®

F79718-01

Copyright © 2018, 2023, Oracle and/or its affiliates.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software, software documentation, data (as defined in the Federal Acquisition Regulation), or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs) and Oracle computer documentation or other Oracle data delivered to or accessed by U.S. Government end users are "commercial computer software," "commercial computer software documentation," or "limited rights data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, reproduction, duplication, release, display, disclosure, modification, preparation of derivative works, and/or adaptation of i) Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs), ii) Oracle computer documentation and/or iii) other Oracle data, is subject to the rights and limitations specified in the license contained in the applicable contract. The terms governing the U.S. Government's use of Oracle cloud services are defined by the applicable contract for such services. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle®, Java, and MySQL are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Inside are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Epyc, and the AMD logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

# Contents

## Preface

---

Introduction	iv
Audience	iv
List Of Topics	iv
Related Documents	v

## 1 Configuring SSL on Oracle Weblogic

---

## 2 Choosing the Identity and Trust Stores

---

## 3 Obtaining the Identity Store

---

## 4 Configuring Identity and Trust Stores for Weblogic

---

## 5 Configuring Weblogic Console (12.2.1.4)

---

## 6 Configuring SSL Mode in Node Manager for Clustered Environment

---

## 7 Setting SSL Attributes for Managed Servers

---

## 8 Testing Configuration

---

## Index

---

# Preface

This topic contains following sub-topics:

- [Introduction](#)
- [Audience](#)
- [List Of Topics](#)
- [Related Documents](#)

## Introduction

This document details out the configurations for Secure Sockets Layer (SSL) on Oracle Weblogic application server.

## Audience

This document is intended for admin or ops-web team who are responsible for installing the Oracle Financial Services Software Limited banking products.

## List Of Topics

This manual is organized into the following topics.

**Table 1 List of Topics**

Topics	Description and Cross References
<a href="#">Configuring SSL on Oracle Weblogic</a>	This topic details out the configurations for SSL on Oracle Weblogic application server.
<a href="#">Choosing the Identity and Trust Stores</a>	This topic details out about choosing the Identity and Trust Stores
<a href="#">Obtaining the Identity Store</a>	This topic details out about creating identity store with self-signed certificates
<a href="#">Configuring Identity and Trust Stores for Weblogic</a>	This topic details out about various steps for configuring identity and trust stores for Weblogic
<a href="#">Configuring Weblogic Console (12.2.1.4)</a>	This topic details out about various steps to enable SSL in Weblogic Admin server
<a href="#">Configuring SSL Mode in Node Manager for Clustered Environment</a>	This topic details out about configuring SSL Mode in Node Manager for Clustered Environment
<a href="#">Setting SSL attributes for Managed Servers</a>	This topic details out about setting SSL attributes for Private Key alias and password

**Table 1 (Cont.) List of Topics**

Topics	Description and Cross References
<a href="#">Testing Configuration</a>	This topic details out about testing the application in SSL mode

## Related Documents

For further information on SSL configuration for Oracle Banking Corporate Lending Process Management application, refer to the following manuals.

- *Configuration and Deployment Guide*
- *Oracle Banking Corporate Lending Process Management Pre-Installation Guide*
- *Oracle Banking Corporate Lending Process Management Services Installation Guide*

# 1

## Configuring SSL on Oracle Weblogic

Use this topic to configure SSL on Oracle Weblogic application server.

### Setting up SSL on Oracle Weblogic

To setup SSL on Oracle Weblogic application server:

1. Obtain an identity (private key and digital certificates) and trust (certificates of trusted certificate authorities) for Oracle Weblogic application server.
2. Store the identity and trust. Private keys and trust CA certificates are stored in keystores.
3. Configure the identity and trust the keystores for Oracle Weblogic application server in the administration console.
4. Set SSL attributes for the private key alias and password in Oracle Weblogic administration console.

### Certificates and Keypairs

Certificates are used for validating the authenticity of the server. Certificates contains the name of the owner, certificate usage, duration of validity, resource location or distinguished name (DN), which includes the common name (CN - web site address or e-mail address depending of the usage) and the certificate ID of the person who certified (signs) these information. It also contains the public key and a hash to ensure that the certificate has not been tampered with. A certificate is insecure until it is signed. Signed certificates cannot be modified.

A certificate can be self-signed or obtained from a reputable certificate authority such as Verisign, Inc., Entrust.net, Thawte, GeoTrust or InstantSSL.

SSL uses a pair of cryptographic keys - a public key and a private key. These keys are similar in nature and can be used alternatively. What one key encrypts can be decrypted by the other key of the pair. The private key is kept secret, while the public key is distributed using the certificate.

A keytool stores the keys and certificates in a keystore. The default keystore implementation implements it as a file. It protects private keys with a password. The different entities (key pairs and the certificates) are distinguished by a unique 'alias'. Through its keystore, Oracle Weblogic server can authenticate itself to other parties.

In Java, a keystore is a 'java.security.KeyStore' instance that you can create and manipulate using the keytool utility provided with the Java Runtime.

There are two keystores to be managed by Oracle Weblogic server to configure SSL:

1. Identity Keystore: Contains the key pairs and the Digital certificate. This can also contain certificates of intermediate CAs.
2. Trust Keystore: Contains the trusted CA certificates.

# 2

## Choosing the Identity and Trust Stores

Use this topic to choose the identity and trust stores.

Oracle Financial Services Software recommends that the choice of Identity and Trust stores be made up front. Oracle Weblogic server supports the following combinations of Identity and Trust stores:

- Custom Identity and Command Line Trust
- Custom Identity and Custom Trust
- Custom Identity and Java Standard Trust
- Demo Identity and Demo Trust

Oracle Financial Services does not recommend choosing Demo Identity and Demo Trust for production environments.

It is recommended to separate the identity and trust stores, since each Weblogic server tends to have its own identity, but might have the same set of trust CA certificates. Trust stores are usually copied across Oracle Weblogic servers, to standardize trust rules; it is acceptable to copy trust stores since they contain public keys and certificates of CAs. Unlike trust stores, identity stores contain private keys of the Oracle Weblogic server, and hence should be protected against unauthorized access.

Command Line Trust, if chosen requires the trust store to be specified as a command line argument in the Weblogic Server startup script. No additional configuration of the trust store is required in the Weblogic Server Administration Console.

Java Standard Trust would rely on the cacerts files provided by the Java Runtime. This file contains the list of trust CA certificates that ship with the Java Runtime, and is located in the

'`JAVA_HOME/jre/lib/security`' directory. It is highly recommended to change the default Java standard trust store password and the default access permission of the file. Certificates of most commercial CAs are already present in the Java Standard Trust store. Therefore, it is recommended to use the Java Standard Trust store whenever possible. The rest of the document will assume the use of Java Standard Trust, since most CA certificates are already present in it.

One can also create custom trust stores containing the list of certificates of trusted CAs. For further details on identity and trust stores, please refer the Oracle Weblogic Server documentation on Securing Oracle Weblogic Server.

# 3

## Obtaining the Identity Store

Use this topic to obtain identity store.

### Creating Identity Store with Self-Signed Certificates

Self-signed certificates are acceptable for use in a testing or development environment. Oracle Financial Services does not recommend the use of self-signed certificates in a production environment.

In order to create a self-signed certificate, the `genkeypair` option provided by the `keytool` utility of Sun Java 8 needs to be utilized

### Creation of Self-Signed Certificate

Browse to the `bin` folder of JRE from the command prompt and type the following command:

```
keytool -genkeypair -alias alias -keyalg RSA -keysize 1024 -sigalg SHA1withRSA -  
validity 365 -keystore keystore
```

In the above command:

1. **alias** is used to identify the public and private key pair created. This alias is required later when configuring the SSL attributes for the managed servers in Oracle Weblogic Server.
2. **keystore** is used to specify the location of the JKS file. If no JKS file is present in the path provided, one will be created.

The command will prompt for the following attributes of the certificate and keystore:

1. **Keystore Password:** Specify a password that will be used to access the keystore. This password needs to be specified later, when configuring the identity store in Oracle Weblogic Server.
2. **Key Password:** Specify a password that will be used to access the private key stored in the keystore. This password needs to be specified later, when configuring the SSL attributes of the managed server(s) in Oracle Weblogic Server.
3. **First and Last Name (CN):** Enter the domain name of the machine used to access OBCLPM, for instance, `www.example.com`.
4. **Name of your Organizational Unit:** The name of the department or unit making the request, for example, BPD. Use this field to further identify the SSL Certificate you are creating, for example, by department or by physical server.
5. **Name of your Organization:** The name of the organization making the certificate request, for example, Oracle Financial Services. It is recommended to use the company or organization's formal name, and this name entered here must match the name found in official records.
6. **Name of your City or Locality:** The city in which your organization is physically located, for example Mumbai.
7. **Name of your State or Province:** The state/province in which your organization is physically located, for example Maharashtra.
8. **Two-Letter Country Code for this Unit:** The country in which your organization is physically located, for example US, UK, IN, and so on.



 **Note:**

The key generation algorithm has been specified as RSA, the key size as 1024 bits, the signature algorithm as SHA1withRSA, and the validity days as 365. These can be changed to suitable values if the need arises. For further details, please refer to the documentation of the keytool utility in the JDK utilized by Oracle Weblogic Server

**Example**

Listed below is the result of a sample execution of the command:

```
D:\Oracle\weblogic11g\jrocket_160_05_R27.6.2-20\bin>keytool -
genkeypair -alias selfcert -keyalg RSA -keysize 1024 -sigalg
SHA1withRSA -validity 365 -keystore
D:\keystores\AdminOBCLPMKeyStore.jks

Enter keystore password: <Enter a password to protect the keystore>

Re-enter new password: <Confirm the password keyed above>

What is your first and last name?
[Unknown]: cvrhp0729.oracle.com

What is the name of your organizational unit?
[Unknown]: BPD

What is the name of your organization?
[Unknown]: Oracle Financial Services

What is the name of your City or Locality?
[Unknown]: Mumbai

What is the name of your State or Province?
[Unknown]: Maharashtra

What is the two-letter country code for this unit?
[Unknown]: IN

Is CN=cvrhp0729.i-flex.com, OU=BPD, O=Oracle Financial Services,
L=Mumbai, ST=Maharashtra, C=IN correct? [no]: yes

Enter key password for <selfcert>

RETURN if same as keystore password): <Enter a password to protect the
key>

Re-enter new password: <Confirm the password keyed above>
```

## Keystore Creation

```
keytool -genkeypair -keystore <keystore_name.jks> -alias <alias_name> -dname
"CN=<hostname>, OU=<Organization Unit>, O=<Organization>, L=<Location>,
ST=<State>, C=<Country_Code>" -keyalg <Key Algorithm> -sigalg <Signature
Algorithm> -keysize <key size> -validity <Number of Days> -keypass <Private key
Password> -storepass <Store Password>
```

**For example:** keytool -genkeypair -keystore AdminOBCLPMKeyStore.jks -alias OBCLPMCert -dname "CN=ofss00001.oracle.com, OU=OFSS, O=OFSS, L=Chennai, ST=TN, C=IN" -keyalg "RSA" -sigalg "SHA1withRSA" -keysize 2048 -validity 3650 -keypass Password@123 -storepass Password@123



### Note:

CN=ofss00001.oracle.com is the Host Name of the weblogic server

## Creating Identity Store with Trusted Certificates Issued by CA

### Creation of Public and Private Key Pair

Browse to the bin folder of JRE from the command prompt and type the following command:

```
keytool -genkeypair -alias alias -keyalg keyalg -keysize keysize - sigalg sigalg
-validity valDays -keystore keystore
```

In the above command,

1. The **alias** is used to identify the public and private key pair created. This alias is required later when configuring the SSL attributes for the managed servers in Oracle Weblogic Server.
2. The **keyalg** is the key algorithm used to generate the public and private key pair. The RSA key algorithm is recommended.
3. The **keysize** is the size of the public and private key pairs generated. A key size of 1024 or more is recommended. Please consult with your CA on the key size support for different types of certificates.
4. The **sigalg** is the algorithm used to generate the signature. This algorithm should be compatible with the key algorithm and should be one of the values specified in the Java Cryptography API Specification and Reference.
5. The **keystore** is used to specify the location of the JKS file. If no JKS file is present in the path provided, one will be created.

The command will prompt for the following attributes of the certificate and keystore:

1. **Keystore Password:** Specify a password that will be used to access the keystore. This password needs to be specified later, when configuring the identity store in Oracle Weblogic Server.
2. **Key Password:** Specify a password that will be used to access the private key stored in the keystore. This password needs to be specified later, when configuring the SSL attributes of the managed server(s) in Oracle Weblogic Server
3. **First and Last Name (CN):** Enter the domain name of the machine used to access OBCLPM, for instance, www.example.com

4. **Name of your Organizational Unit:** The name of the department or unit making the request, for example, BPD. Use this field to further identify the SSL Certificate you are creating, for example, by department or by physical server.
5. **Name of your Organization:** The name of the organization making the certificate request, for example, Oracle Financial Services. It is recommended to use the company or organization's formal name, and this name entered here must match the name found in official records.
6. **Name of your City or Locality:** The city in which your organization is physically located, for example Mumbai.
7. **Name of your State or Province:** The state/province in which your organization is physically located, for example Maharashtra.
8. **Two-letter Country Code for this Unit:** The country in which your organization is physically located, for example US, UK, IN, and so on.  
Example: Listed below is the result of a sample execution of the command:

```
D:\Oracle\weblogic11g\jrocket_160_05_R27.6.2-20\bin>keytool -
genkeypair -alias cvrhp0729 -keyalg RSA -keysize 1024 -sigalg
SHA1withRSA -validity 365 -keystore
D:\keystores\AdminOBCLPMKeyStore.jks
```

Enter keystore password: <Enter a password to protect the keystore>

Re-enter new password: <Confirm the password keyed above>

What is your first and last name?

[Unknown]: cvrhp0729.i-flex.com

What is the name of your organizational unit?

[Unknown]: BPD

What is the name of your organization?

[Unknown]: Oracle Financial Services

What is the name of your City or Locality?

[Unknown]: Mumbai

What is the name of your State or Province?

[Unknown]: Maharashtra

What is the two-letter country code for this unit?

[Unknown]: IN

Is CN=cvrhp0729.i-flex.com, OU=BPD, O=Oracle Financial Services,  
L=Mumbai, ST=Maharashtra, C=IN correct? [no]: yes Enter key  
password for <cvrhp0729>

RETURN if same as keystore password): <Enter a password to protect  
the key>

Re-enter new password: <Confirm the password keyed above>

## Generating CSR

To purchase an SSL certificate, you must generate a Certificate Signing Request (CSR) for the server where the certificate will be installed.

A CSR is generated from the server and is the server's unique "fingerprint". The CSR includes the server's public key, which enables server authentication and secure communication.



### Note:

If the keystore file or the password is lost and a new one is generated, the SSL certificate and the private key will no longer match. A new SSL Certificate will have to be requested.

The CSR is created by running the following command in the bin directory of the JRE:

```
keytool -certreq -alias alias -file certreq_file -keystore keystore
```

In the above command:

1. The **alias** is used to identify the public and private key pair. The private key associated with the alias will be utilized to create the CSR. Specify the alias of the key pair created in the previous step.
2. The **certreq\_file** is the file in which the CSR will be stored.
3. The **keystore** is the location of the keystore containing the public and private key pair. Example: Listed below is the result of a sample execution of the command:

```
D:\Oracle\Weblogic11g\jrockit_160_05_R27.6.2-20\bin>keytool -certreq -alias cvrhp0729
-file D:\keystores\certreq.csr -keystore
D:\keystores\AdminOBCLPMKeyStore.jks
Enter keystore password: [Enter the password used to access the keystore]
Enter key password for <cvrhp0729> [Enter the password used to access the key in the
keystore]
```

## Export Private Key as Certificate

```
keytool -export -v -alias <alias_name> -file
<export_certificate_file_name_with_location.cer> - keystore <keystore_name.jks>
> -keypass <Private key Password> -storepass <Store Password>
```

**For example:**keytool -export -v -alias OBCLPMCert -file AdminOBCLPMCert.cer - keystore AdminOBCLPMKeyStore.jks -keypass Oracle123 -storepass Oracle123If successful, the following message will be displayed: Certificate stored in file < AdminOBCLPMCert.cer>

## Obtaining Trusted Certificate from CA

The processes of obtaining a trusted certificate vary from one CA to another. The CA might perform additional offline verification. Consult the CA issuing the certificate for details on the process to be followed for submission of the CSR and for obtaining the certificate

## Importing Certificate into Identity Store

Store the certificate obtained from the CA in the previous step, in a file, preferably in PEM format. Other formats like the p7b file format would require conversion to the PEM format. Details on performing the conversion are not listed here. Please refer to the Oracle Weblogic

Server documentation on Securing Oracle Weblogic Server, for details on converting a Microsoft p7b file to the PEM format.

The command to be executed for importing a certificate into the identity store depend on whether the trust store chosen (in the earlier step; see section 2 of this document). It is highly recommended to verify the trust path when importing a certificate into the identity store. The commands provided below assume the use of the Java Standard Trust store.

### Importing the Intermediate CA Certificate

Most Certificate Authorities do not use the root CA certificates to issue identity certificates for use by customers. Instead, Intermediate CAs issue identity certificates in response to the submitted CSRs.

If the Intermediate CA certificate is absent in the Java Standard Trust store, the trust path for the certificate will be incomplete for the certificate, resulting in warnings issued by Weblogic Server during runtime. To avoid this, the intermediate CA certificate should be imported into the identity keystore. Although the intermediate CA certificate can be imported into the Java Standard Trust store, this is not recommended unless the intermediate CA can be trusted.

The following command must be executed to import the intermediate CA certificate into the keystore

```
keytool -importcert -alias alias -file cert_file -trustcacerts -keystore
keystore
```

In the above command,

1. The **alias** is used to identify the public and private key pair. Specify the alias of the key pair used to create the CSR in the earlier step.
2. The **cert\_file** is the location of the file containing the intermediate CA certificate in a PKCS#7 format (PEM or DER file).
3. The keystore is the location of the keystore containing the public and private key pair.

#### Note:

The trustcacerts flag is used to consider other certificates (higher intermediaries and the root CA) in the chain of trust. If no chain of trust is established during verification, the certificate will be displayed and one would be prompted to verify it. It is recommended that due diligence be observed, when the prompt is displayed to verify a certificate when a chain of trust is absent.

Listed below is a sample execution of the command:

```
D:\Oracle\weblogic11g\jrockit_160_05_R27.6.2-20\bin>keytool -
importcert -alias verisigntrialintermediateca -file
D:\keystores\VerisignIntermediateCA.cer -trustcacerts -keystore
D:\keystoreworkarea\AdminOBCLPMKeyStore.jks
```

```
Enter keystore password: <Enter the password used to access the
keystore>
```

Certificate was added to keystore

### Importing the Identity Certificate

The following command should be executed to import the identity certificate into the keystore

```
keytool -importcert -alias alias -file cert_file - trustcacerts -keystore
keystore
```

In the above command:

1. The **alias** is used to identify the public and private key pair. Specify the alias of the key pair used to create the CSR in the earlier step.
2. The **cert\_file** is the location of the file containing the PKCS#7 formatted reply from the CA, containing the signed certificate.
3. The **keystore** is the location of the keystore containing the public and private key pair.

The trustcacerts flag is used to consider other certificates (intermediate CAs and the root CA) in the chain of trust. If no chain of trust is established during verification, the certificate will be displayed and one would be prompted to verify it. It is recommended that due diligence be observed, when the prompt is displayed to verify a certificate when a chain of trust is absent.

Listed below is a sample execution of the command

```
D:\Oracle\weblogic11g\jrockit_160_05_R27.6.2-20\bin>keytool - importcert -
alias cvrhp0729 -file D:\keystores\cvrhp0729.cer - trustcacerts -keystore
```

```
D:\keystoreworkarea\AdminOBCLPMKeyStore.jks
```

```
Enter keystore password: <Enter the password used to access the keystore>
```

```
Enter key password for <cvrhp0729>: <Enter the password used to access the
private key>
```

Certificate reply was installed in keystore



#### Note:

The previous set of commands assumed the presence of the appropriate root CA certificate (in the chain of trust) in the Java Standard Trust store, i.e. in the cacerts file. If the CA issuing the identity certificate (for the Weblogic Server) does not have the root CA certificate in the Java Standard Trust store, one can opt to import the root CA certificate into cacerts, or into the identity store, depending on factors including trustworthiness of the CA, necessity of transporting the trust store across machine, among others.

### Import as Trusted Certificate

```
keytool -import -v -trustcacerts -alias rootcacert -file
<export_certificate_file_name_with_location.cer> -keystore <keystore_name.jks> >
-keypass <Private key Password> -storepass <Store Password>
```

**For example:**keytool -import -v -trustcacerts -alias rootcacert -file  
AdminOBCLPMCert.cer -keystore AdminOBCLPMKeyStore.jks -keypass Oracle123 -  
storepass Oracle123

# 4

## Configuring Identity and Trust Stores for Weblogic

Use this topic to configure identity and trust stores for Weblogic.

### Enabling SSL on Oracle Weblogic Server

To configure SSL on Oracle Weblogic server, login in to the Admin Console:

1. Under **Change Center**, click **Lock & Edit**.
2. Expand **Servers** node.
3. Select the name of the server for which you want to enable SSL. Example: `exampleserver`
4. Go to **Configuration** and select **General** tab.
5. Select the option **SSL Listen Port Enabled** and specify the SSL listen port.
6. Against **Listen Address**, specify the hostname of the machine in which the application server is installed.

### Configuring Identity and Trust Stores

To configure the Identity and Trust stores in Oracle Weblogic Server, log in to the Admin Console of Weblogic Server

1. Under **Change Center**, click **Lock & Edit**.
2. Expand **Servers** node.
3. Select the name of the server for which you want to configure the keystores (example - `exampleserver`).
4. Go to **Configuration** and select **Keystores** tab.
5. In the filed **Keystores**, select the method for storing and managing private keys/digital certificate pairs and trusted CA certificates. This choice should match the one made in Section 2 of this document (Choosing the Identity and Trust Stores).
6. In the **Identity** section, provide the following details:
  - **Custom Identity Keystore File Name:** Fully qualified path to the Identity keystore.
  - **Custom Identity Keystore Type:** Set this attribute to JKS, the type of the keystore. If left blank, it is defaulted to JKS (Java KeyStore).
  - **Custom Identity Keystore PassPhrase:** The password you enter when reading or writing to the keystore. This attribute is optional or required depending on the type of keystore. All keystores require the passphrase in order to write to the keystore. However, some keystores do not require the passphrase to read from the keystore. Oracle Weblogic server only reads from the keystore. So whether or not you define this property depends on the requirements of the keystore.
7. In the **Trust** section, provide the following details:
  - If you choose **Java Standard Trust**, specify the password used to access the trust store.

If you choose **Custom Trust**, the following attributes have to be provided:

- Custom Trust Keystore: The fully qualified path to the trust keystore.
- Custom Trust Keystore Type: Set this attribute to JKS, the type of the keystore. If left blank, it defaults to JKS (Java KeyStore).
- Custom Trust Keystore Passphrase: The password you enter when reading or writing to the keystore. This attribute is optional or required depending on the type of keystore. All keystores require the passphrase in order to write to the keystore. However, some keystores do not require the passphrase to read from the keystore. Oracle Weblogic

Server only reads from the keystore. So, whether or not you define this property depends on the requirements of the keystore.



**Note:**

When identity and trust stores are of the JKS format, the passphrases are not required.



# 5

## Configuring Weblogic Console (12.2.1.4)

Use this topic to configure Weblogic Console.

After domain creation, follow the below steps to enable SSL in weblogic Admin server:

1. Select **Admin** Server to Enable SSL Options.

**Figure 5-1 Configuration tab**

The screenshot shows the 'Configuration' tab in the Weblogic console. On the left is a 'Domain Structure' tree with 'Servers' highlighted. The main area displays a table of servers. The table has columns for Name, Type, Cluster, Machine, State, Health, and Listen Port. The 'AdminServer(admin)' server is highlighted in yellow and is in a 'RUNNING' state with 'OK' health. Other servers like 'WLS\_CONFIG', 'WLS\_DISCOVERY', 'WLS\_GATEWAY', and 'WLS\_ZIPKINUI' are in a 'SHUTDOWN' state with 'Not reachable' health.

Name	Type	Cluster	Machine	State	Health	Listen Port
AdminServer(admin)	Configured	config_cluster	platoinfra_Machine	RUNNING	OK	7001
WLS_CONFIG	Configured	discovery_cluster	platoinfra_Machine	SHUTDOWN	Not reachable	7004
WLS_DISCOVERY	Configured	gateway_cluster	platoinfra_Machine	SHUTDOWN	Not reachable	7006
WLS_GATEWAY	Configured	zipkinui_cluster	platoinfra_Machine	SHUTDOWN	Not reachable	7005

2. Click **General** tab.
3. Select SSL Listen Port Enabled, Client Cert Proxy Enabled, Weblogic Plug-In Enabled.
4. Click **Save**.

Figure 5-2 Listen Port Enabled


<input checked="" type="checkbox"/> Listen Port Enabled	
Listen Port:	<input type="text" value="7001"/>
<input checked="" type="checkbox"/> SSL Listen Port Enabled	
SSL Listen Port:	<input type="text" value="7101"/>
<input checked="" type="checkbox"/>  Client Cert Proxy Enabled	
Java Compiler:	<input type="text" value="javac"/>
Diagnostic Volume:	<input type="text" value="Low"/>
Default Datasource:	<input type="text"/>
<hr/> <input checked="" type="checkbox"/> Advanced	
Virtual Machine Name:	<input type="text" value="platoinfra_domain_AdminSe"/>
WebLogic Plug-In Enabled:	<input type="text" value="yes"/>

Figure 5-3 Keystores

✔ Settings updated successfully.

Settings for AdminServer

Configuration Protocols Logging Debug Monitoring Control Deployments Services Se

General Cluster Services Keystores SSL Federation Services Deployment Migration T

Save

Keystores ensure the secure storage and management of private keys and trusted certificate authorities (CAs). This page lets you manage the security of message transmissions.

Keystores: Custom Identity and Custom Trust [Change](#)

— Identity —

Custom Identity Keystore: C:\AdminOBLMKeyStore.jks

Custom Identity Keystore Type: jks

Custom Identity Keystore Passphrase: .....

Confirm Custom Identity Keystore Passphrase: .....

— Trust —

Custom Trust Keystore: C:\AdminOBLMKeyStore.jks

Custom Trust Keystore Type: jks

Custom Trust Keystore Passphrase: .....

Confirm Custom Trust Keystore Passphrase: .....

5. Click **Keystores** tab.
6. Enter Custom Identity Keystore and Custom Trust Keystore same as the Keystore Name created in above steps with full path.
7. Enter Custom Identity Keystore Type and Custom Trust Keystore Type as jks.
8. Enter Custom Identity Keystore Passphrase, Confirm Custom Identity Keystore Passphrase, Custom Trust Keystore Passphrase and Confirm Custom Trust Keystore Passphrase same as the Store Password entered in above steps.
9. Click **Save**.
10. Click **SSL** tab.
11. Enter Private Key Alias as same as the alias name entered in above steps.
12. Enter Private Key Passphrase and Confirm Private Key Passphrase as same as the Private Key Password entered in above steps.
13. Change the **Hostname Verification** to **None**.

14. Click **Save**.

**Figure 5-4 SSL Tab**

General Cluster Services Keystores **SSL** Federation Services Deployment Migration Tuning

Save

This page lets you view and define various Secure Sockets Layer (SSL) settings for this server instance. These se

**Identity and Trust Locations:** Keystores

**Identity**

**Private Key Location:** from Custom Identity Keystore

**Private Key Alias:**

**Private Key Passphrase:**

**Confirm Private Key Passphrase:**

**Certificate Location:** from Custom Identity Keystore

**Trust**

**Trusted Certificate Authorities:** from Custom Trust Keystore

**Advanced**

**Note:**

Repeat the same steps for all the managed servers as well. The admin server and managed servers are SSL enabled. Restart all the servers.

# 6

## Configuring SSL Mode in Node Manager for Clustered Environment

Use this topic to configure SSL mode in node manager for cluster environment

1. Edit the nodemanager.properties with SSL configurations and restart the node manager.

**Figure 6-1 Node Manager Properties**

```
log4j.rootLogger=INFO
PropertiesVersion=12.2.1.3.0
AuthenticationEnabled=true
NodeManagerHome=D:\Oracle\Middleware\i2cFs3\Oracle_home_new\user_projects\domains\platoinfra_domain\nodemanager
JavaHome=C:\PROGRAMS\Java\jdk1.8.0_101
LogLevel=INFO
DomainsFileEnabled=true
ListenAddress=localhost
NativeVersionEnabled=true
ListenPort=5556
LogToStderr=true
weblogic.StartScriptName=startWebLogic.cmd

SecureListener=true
ListenPort=5557
KeyStores=CustomIdentityAndCustomTrust
CustomIdentityKeystoreType=jks
CustomIdentityKeystoreFileName=C:\AdminOBLMKeyStore.jks
CustomIdentityKeystorePassPhrase=Oracle123
CustomIdentityPrivateKeystorePassPhrase=Oracle123
CustomIdentityAlias=OBLMCert
CustomTrustKeystoreType=jks
CustomTrustKeystoreFileName=C:\AdminOBLMKeyStore.jks
CustomTrustKeystorePassPhrase=Oracle123

LogCount=1
QuitEnabled=false
LogAppend=true
weblogic.StopScriptEnabled=false
StateCheckInterval=500
CrashRecoveryEnabled=false
weblogic.StartScriptEnabled=true
LogFile=D:\Oracle\Middleware\i2cFs3\Oracle_home_new\user_projects\domains\platoinfra_domain\nodemanager\nodemanager.log
LogFormatter=weblogic.nodemanager.server.LogFormatter
ListenBacklog=50
```

2. Ensure the SSL configuration is performed in other artifacts, such as startNodeManager.cmd/.sh, startup.properties, config.xml(enable jsse).

# 7

## Setting SSL Attributes for Managed Servers

Use this topic to set SSL Attributes for private key alias and password.

### Setting SSL Attributes for Private Key Alias and Password

To configure the private key alias and password, log in to the Oracle Weblogic Server Admin Console:

1. Under **Change Center**, click **Lock & Edit**.
2. Expand **Servers** node.
3. Select the name of the server for which you want to configure keystores. Example: exampleserver
4. Go to **Configuration** and select **SSL** tab.
5. Select Keystores from **Identity and Trust Locations**.
6. Under Identity section, specify the following details:
  - **Private Key Alias**: set this attribute to the alias name defined for the key pair when creating the key pair in the Identity keystore.
  - **Private Key Passphrase**: The password defined for the key pair (alias\_password), at the time of its creation. . Confirm the password.
7. Click **Save**.
8. Under **Change Center**, click **Activate changes**.
9. Go to **Controls** tab, check the appropriate server and click **Restart SSL**. Confirm when it prompts.

Figure 7-1 Node Manager tab

No pending changes exist. Click the Release Configuration button to allow others to edit the domain.

**Lock & Edit**

**Release Configuration**

**Domain Structure**

- platoinfra\_domain
  - Domain Partitions
  - Environment**
    - Servers
    - Clusters
      - Coherence Clusters
      - Resource Groups
      - Resource Group Templates
    - Machines**
    - Virtual Hosts
    - Virtual Targets
    - Work Managers
    - Concurrent Templates
    - Resource Management

**How do I...**

- Create and configure machines
- Monitor Node Manager status
- Monitor Node Manager logs

**Settings for platoinfra\_Machine**

**Configuration** | Monitoring | Notes

General | **Node Manager** | Servers

**Save**

This page allows you to define the Node Manager configuration for this machine. To control a Managed Server from th Managed Servers are installed.

The settings defined on this page are used to configure communication between the current domain and Node Manag the Node Manager instances.

**Type:**

**Listen Address:**

**Listen Port:**

**Node Manager Home:**

**Shell Command:**

Figure 7-2 Activate Changes and Restart SSL

Take effect.

**Activate Changes**

Undo All Changes

main Structure

- infra\_domain
  - Domain Partitions
  - Environment
    - Servers
    - Clusters
      - Coherence Clusters
      - Resource Groups
      - Resource Group Templates
    - Machines

Configuration Monitoring Notes

General **Node Manager** Servers

Save

This page allows you to define the Node Manager configuration for this machine. Managed Servers are installed.

The settings defined on this page are used to configure communication between the Node Manager instances.

Type: **SSL**

---

Click the **Lock & Edit** button to modify, add or delete items in the domain.

Lock & Edit

Release Configuration

main Structure

- infra\_domain
  - Domain Partitions
  - Environment
    - Servers
    - Clusters
      - Coherence Clusters
      - Resource Groups
      - Resource Group Templates
    - Machines
    - Virtual Hosts
    - Virtual Targets
    - Work Managers
    - Concurrent Templates
    - Resource Management

do I... Start and stop servers Start Managed Servers from the Administration Console Restart SSL

Summary of Servers

Configuration Control

Use this page to change the state of the servers in this WebLogic Server domain. Control operations on Managed Servers require starting the Node Manager. Starting Managed Servers in Standby mode requires the domain-wide administration port.

Customize this table

Servers (Filtered - More Columns Exist)

Start	Resume	Suspend	Shutdown	Restart SSL				
<input checked="" type="checkbox"/>					Server	Machine	State	Status of Last Action
<input checked="" type="checkbox"/>					AdminServer(admin)		RUNNING	None
<input checked="" type="checkbox"/>					WLS_CONFIG	platinfra_Machine	SHUTDOWN	None
<input checked="" type="checkbox"/>					WLS_DISCOVERY	platinfra_Machine	SHUTDOWN	None
<input checked="" type="checkbox"/>					WLS_GATEWAY	platinfra_Machine	SHUTDOWN	None
<input checked="" type="checkbox"/>					WLS_ZIPKINUI	platinfra_Machine	SHUTDOWN	None

Showing 1 to 5 of 5 Previous | Next

# 8

## Testing Configuration

Use this topic to test the application in SSL mode.

Once the Oracle Weblogic has been configured for SSL, deploy the application in the usual manner. After deployment, you can test the application in SSL mode. To launch the application in SSL mode you need to enter the URL in the following format:

**`https://(Machine Name):(SSL_Listener_port_no)/(Context_root)`**



### Note:

It is recommended that the Oracle Banking Corporate Lending Process Management web application be accessed through the HTTPS channel, instead of the HTTP channel.



# Index

## C

---

Choosing the Identity and Trust Stores, [2-1](#)  
Configuring Identity and Trust Stores, [4-1](#)  
Configuring SSL Mode in Node Manager, [6-1](#)  
Configuring SSL on Oracle Weblogic, [1-1](#)  
Configuring Weblogic Console, [5-1](#)

## O

---

Obtaining the Identity Store, [3-1](#)

## S

---

Setting SSL Attributes for Managed Servers, [7-1](#)

## T

---

Testing Configuration, [8-1](#)