

# Oracle® Fusion Middleware

## Understanding Interoperability and Compatibility



12c (12.2.1.3.0)

E95621-05

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

ORACLE®

Oracle Fusion Middleware Understanding Interoperability and Compatibility, 12c (12.2.1.3.0)

E95621-05

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# Preface

This guide describes interoperability and compatibility considerations you should review when installing, upgrading, or patching Oracle Fusion Middleware.

This preface contains these topics.

- [Audience](#)
- [Documentation Accessibility](#)
- [Related Documents](#)
- [Conventions](#)

## Audience

This document is intended for system administrators responsible for installations, upgrade planning, and patch set application.

## Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

### Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

## Related Documents

For more information on Fusion Middleware, see the following related documentation:

- *Planning an Upgrade of Oracle Fusion Middleware*
- *Planning an Installation of Oracle Fusion Middleware*
- *Patching with OPatch*

## Conventions

The following text conventions are used in this document:

<b>Convention</b>	<b>Meaning</b>
<b>boldface</b>	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	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

## Understanding Interoperability and Compatibility

This chapter provides an introduction to interoperability and compatibility. It also describes how to identify areas where compatibility and interoperability considerations may arise when you upgrade Oracle Fusion Middleware components, apply patch sets, or install new Oracle Fusion Middleware components.

This chapter contains the following sections.

- [What Is Compatibility?](#)  
For the purposes of this guide, *compatibility* is defined as the ability of two Oracle Fusion Middleware components of different versions (or releases) to work together (interoperate).
- [What Is Interoperability?](#)  
For the purposes of this guide, *interoperability* is the ability of two Oracle Fusion Middleware products or components of the same version or release to work together (interoperate) in a supported Oracle Fusion Middleware configuration.
- [About Interoperability and Compatibility with Supported Databases](#)  
It is important to understand the prerequisites and limitations before planning the upgrade.
- [Identifying Potential Compatibility and Interoperability Issues](#)  
It is important to understand common compatibility and interoperability issues.

### What Is Compatibility?

For the purposes of this guide, *compatibility* is defined as the ability of two Oracle Fusion Middleware components of different versions (or releases) to work together (interoperate).

You need to consider compatibility when upgrading Oracle Fusion Middleware or when applying Oracle Fusion Middleware patches.

When upgrading, for example, you should know which components must be updated so that your existing integration points continue to work. To apply a patch, you should know if the new products work with other products of the same release or if they still work with previous versions.

Compatibility also includes the following.

- [Compatibility Between Oracle Fusion Middleware Software Suites](#)
- [Compatibility Within Oracle Fusion Middleware Software Suites](#)

### Compatibility Between Oracle Fusion Middleware Software Suites

While upgrading your Oracle Fusion Middleware 11g environment to Oracle Fusion Middleware 12c, you are likely to update one area of your environment at a time.

For example, you can upgrade the middle tiers in one department to Oracle Fusion Middleware 12c in order to support new features. At the same time, you can leave your company-wide Oracle Identity Management components at Oracle Fusion Middleware 11g.

## Compatibility Within Oracle Fusion Middleware Software Suites

When you upgrade to Oracle Fusion Middleware 12c, consider potential compatibility issues within a specific software suite.

Usually, issues are temporary and occur only during the upgrade process. After you finish upgrading the software suite, the issues are typically resolved. However, be aware of these potential concerns, because they can influence your upgrade planning.

## What Is Interoperability?

For the purposes of this guide, *interoperability* is the ability of two Oracle Fusion Middleware products or components of the same version or release to work together (interoperate) in a supported Oracle Fusion Middleware configuration.

Interoperability applies when the first 4 digits of the release or version number are the same. For example, Oracle Fusion Middleware 12c (12.2.1.3.0) components are interoperable with other 12c (12.2.1.3.0) components.

Sometimes there may be interoperability issues between Oracle Fusion Middleware software suites. For example, you may experience issues with domains coexisting between Oracle Fusion Middleware 11g products such as SOA and WebCenter.

## About Interoperability and Compatibility with Supported Databases

It is important to understand the prerequisites and limitations before planning the upgrade.

Each release of Oracle Fusion Middleware is certified against specific database versions. You can use these certified databases to host the Oracle Fusion Middleware component schemas.

To upgrade your database to a supported version before upgrading to a particular release of Oracle Fusion Middleware, see *Planning an Upgrade of Oracle Fusion Middleware*.

For the latest information about the databases supported by each Oracle Fusion Middleware release, see *Oracle Fusion Middleware Supported System Configurations*.

On the Supported Configurations page, you can locate the Oracle Fusion Middleware release you are using, as well as the target Oracle Fusion Middleware release to which you want to upgrade. For each Oracle Fusion Middleware release, a corresponding spreadsheet lists the certified configurations, including the supported databases.

## Identifying Potential Compatibility and Interoperability Issues

It is important to understand common compatibility and interoperability issues.



The following sections describe how to identify and resolve common compatibility and interoperability issues using information from this guide, the Oracle Technology Network (OTN), and other Oracle documents.

- [Before You Begin](#)
- [Using the Oracle Certification Matrixes](#)
- [Understanding the Compatibility Matrixes in this Guide](#)
- [Collecting Your Component and Infrastructure Information](#)
- [Using Release Notes](#)
- [Using the Oracle Fusion Middleware Documentation Library](#)

## Before You Begin

Whether you are installing a new product or updating an existing one (either to a new major version or a patch set), interoperability and compatibility issues may arise.

When you install a new product component, new product integrate with other Oracle Fusion Middleware components of the same release.

Consider how a new product to integrates with earlier versions of Oracle Fusion Middleware products that are already installed. When you update a product, consider the other components that need to be updated so that existing integration points continue to work.

[Table 1-1](#) lists the tasks that help you collect the information necessary to plan your Oracle Fusion Middleware upgrade and installation strategy.

**Table 1-1 Tasks for Preparing to Identify and Solve Interoperability Considerations**

Task	Description	Documentation
<b>Task 1</b> - Gather release and version information for your installed components and supporting infrastructure.	Collect the release and version information for each component or suite of components you have installed or plan to install or upgrade.  In addition, collect version and release information for your operating system, database, JDKs, and third-party products.	See <a href="#">Collecting Your Component and Infrastructure Information</a>

**Table 1-1 (Cont.) Tasks for Preparing to Identify and Solve Interoperability Considerations**

Task	Description	Documentation
<b>Task 2</b> - If you are planning an upgrade, develop an upgrade strategy and understand the supported starting points for upgrading to Oracle Fusion Middleware 12c.	An upgrade starting point is a version of Oracle Fusion Middleware that you must be running in order to upgrade. If the current version is not a supported upgrade starting point, then you must first upgrade to a supported starting point by using documentation from a previous release.	<i>Planning an Upgrade of Oracle Fusion Middleware</i> provides detailed information for developing and implementing an Oracle Fusion Middleware upgrade plan.  Also, each of the Oracle Fusion Middleware products has an upgrade guide that details the upgrade process and identifies any post-upgrade configuration tasks that must be completed.  See <a href="#">Using the Oracle Fusion Middleware Documentation Library</a> for more information on locating the correct documentation for your upgrade.
<b>Task 3</b> - If you are applying a patch, understand the patching requirements for your components and supporting infrastructure.	Patching involves copying a small collection of files over an existing installation. A patch is normally associated with a particular version of an Oracle product and involves updating from one minor version of the product to a newer minor version of the same product (for example, from version 12c (12.1.2) to version 12c (12.1.3).	<i>Patching with OPatch</i> describes the tools available for you to patch your existing Oracle Fusion Middleware environment.  Information about the latest patches and patch sets is located in the <i>Oracle Fusion Middleware System Requirements and Specifications Document</i> .
<b>Task 4</b> - If you are installing new Oracle Fusion Middleware components, understand the installation requirements and the supported starting points.	Each Fusion Middleware product has an installation guide that describes prerequisites, supported starting points and post-installation configuration procedures. Read and follow the installation procedures to avoid potential interoperability and compatibility issues.	To view and download installation guides, release notes, white papers, and other documentation, go to the following URL:  <a href="http://docs.oracle.com/">http://docs.oracle.com/</a>

## Using the Oracle Certification Matrixes

The Oracle Fusion Middleware Certification matrixes provide important compatibility and interoperability information such as supported system configurations, database versions, and third party products. Refer to the matrixes to ensure that your current environment can support an upgrade or patch set.

 **Note:**

The information in this guide is meant to complement the information contained in the Oracle Fusion Middleware certification matrixes. If there is a conflict of information between this guide and the certification matrixes, then the information in the certification matrixes must be considered the correct version, as they are frequently updated.



**Table 1-2 Oracle Fusion Middleware Certification Matrixes**

Document Name	Description
<i>Oracle Fusion Middleware Supported System Configurations</i>	Each product area within Oracle Fusion Middleware maintains certification documentation that covers supported installation types, platforms, operating systems, databases, JDKs, and third-party products.  On the Oracle Fusion Middleware Supported System Configurations page, locate the product area to select and review the appropriate certification document.
<i>Oracle Fusion Middleware System Requirements and Specifications Document</i>	The Oracle Fusion Middleware System Requirements and Specifications document covers information such as hardware and software requirements, minimum disk space and memory requirements, and required system libraries, packages, or patches.
<a href="#">Oracle JDeveloper and Application Development Framework Certification Information</a>	Locate the Oracle JDeveloper and Oracle Application Development Framework (Oracle ADF) certification information to understand the various third party and Oracle products that are supported to work with the Oracle JDeveloper and Oracle ADF.  Oracle ADF may support or certify with a superset of products then required for Oracle Fusion Middleware and this document serves as a reference for those cases.

## Understanding the Compatibility Matrixes in this Guide

Interoperability and compatibility matrixes are used throughout this guide to identify potential issues and to provide links to additional information. When you use the interoperability and compatibility matrixes in this guide, the level of support can be defined in one of the following ways:

**Table 1-3 How To Use the Matrixes in This Guide**

Status	Description
Compatible or Interoperable 	Integration between the components involved is expected to work with appropriate configuration. However, that compatibility is not a statement of certification. Certification information is located in the certification matrixes described in <a href="#">Table 1-2</a> .
Not Compatible or Interoperable 	Integration between the components involved is not expected to work.

**Table 1-3 (Cont.) How To Use the Matrixes in This Guide**

Status	Description
A reference to a specific guide or section	A reference is provided when an individual guide provides more detailed information about the compatibility requirements and considerations that you must review when upgrading, patching, or installing Oracle Fusion Middleware 12c.
N/A	Not applicable.

## Collecting Your Component and Infrastructure Information

Oracle Fusion Middleware release and version information are available for every component on your system. This information is required before you can effectively identify and solve interoperability or compatibility issues. The certification matrixes described in [Using the Oracle Certification Matrixes](#) provide certification and system requirements information for Oracle Fusion Middleware components.

This section provides information for the following:

- [Locating Oracle Fusion Middleware Product Release Information](#)
- [Locating Your Oracle Database Release Information](#)
- [Locating your Microsoft SQL Server Version Information](#)
- [Locating your DB2 Version Information](#)
- [Locating JDK Version Information](#)

## Locating Oracle Fusion Middleware Product Release Information

To find release and version information for your Oracle Fusion Middleware components, see the installed product information using the Oracle Universal Installer (OUI). See [Viewing Release Numbers](#) in the *Administering Oracle Fusion Middleware*.



### Note:

You can also find version and release information in the installation log files located in the `oraInventory/logs` directory of your Oracle Home.

## Locating Your Oracle Database Release Information

To determine the release information of your Oracle database:

Start SQL\*Plus from the Oracle home directory:

```
sqlplus /nolog
SQL> CONNECT / AS SYSDBA
SQL> select * from v$version;
```

The command returns the release information, such as the following:

```
Oracle Database 11g Enterprise Edition Release 11.2.0.4.0 - 64bit Production
PL/SQL Release 11.2.0.4.0 - Production
CORE 11.2.0.4.0 Production
TNS for Linux: Version 11.2.0.4.0 - Production
NLSRTL Version 11.2.0.4.0 - Production
```

## Locating your Microsoft SQL Server Version Information

To determine the release information of your Microsoft SQL database:

From the command line, enter the following:

```
exec xp_msver ProductVersion
```

The command returns the product version information, such as the following:

```
ProductVersion 589824 9.00.1399.06
```

## Locating your DB2 Version Information

To determine the release information of DB2, do one of the following:

- On the **Windows** operating system command line, navigate to the following:

```
\Program Files\IBM\SQLLIB\BIN>db2level
```

The command returns the database version and applicable fix pack information such as the following:

```
DB21085I Instance "DB2?" uses "32?" bits and DB2 code release "SQL09011?" with
level identifier "01020107?".
Informational tokens are "DB2 v9.1.100.129?", "s061104?", "WR21374?", and Fix Pack
"1?".
Product is installed at "D:\PROGRA~1\IBM\SQLLIB" with DB2 Copy Name "DB2COPY1?".
```

- On the **UNIX** operating system command line, type the following:

```
db2ls
```

This command returns the installation path, version level, fix pack information and installation date of the installed DB2 product. Output from this command goes to the console by default.

```
Install Path          Level  Fix Pack  Install Number  Install Date
-----
/opt/ibm/db2/V9.1    9.1.0.0      0          1  Fri Sep 3 10:26:33 2010 EDT
```

## Locating JDK Version Information

Many Fusion Middleware components need a supported JDK installed and configured. The currently supported JDK version information is documented in the Oracle Fusion Middleware Supported System Configurations matrix, as described in [Using the Oracle Certification Matrixes](#).

To locate your current JDK version, use the `java -version` command to display the current version of Java you are using. For example:

```
> java -version
java version "1.8.0_91"
```

```
Java(TM) SE Runtime Environment (build 1.8.0_91-b14)  
Java HotSpot(TM) 64-Bit Server VM (build 25.91-b14, mixed mode)
```

 **Note:**

If you have more than one installation of Java on your system, then the `Java` command uses the installation identified in the `JAVA_HOME` system variable.

On UNIX systems, you can often identify the location of the default Java software by using the `which` command. For example:

```
> which java  
/usr/bin/java
```

## Using Release Notes

Refer to the Oracle Fusion Middleware release notes for information about required patch sets that address interoperability and compatibility issues that may surface during an upgrade or patching process. The release notes for each release are available on the Oracle Technology Network (OTN). To find the release notes for a specific release, go to the Oracle Fusion Middleware documentation page and choose the appropriate documentation library:

<http://www.oracle.com/technetwork/middleware/fusion-middleware/documentation/index.htm>

## Using the Oracle Fusion Middleware Documentation Library

The Oracle Fusion Middleware documentation library provides access to information that can help you upgrade and patch your Oracle environment. You can review component-specific administration, installation, and upgrade guides for Oracle Fusion Middleware 12c documentation at:

<http://www.oracle.com/technetwork/middleware/fusion-middleware/documentation/index.htm>

The following guides provide information on installing, patching, and upgrading your Oracle Fusion Middleware environment:

- *Patching with OPatch*
- *Planning an Upgrade of Oracle Fusion Middleware*
- *Planning an Installation of Oracle Fusion Middleware*

# 2

## Oracle Fusion Middleware 12c (12.2.1.3.0) Interoperability and Compatibility

This chapter summarizes the specific interoperability and compatibility considerations and issues for the Oracle Fusion Middleware 12c (12.2.1.3.0) release. This chapter contains the following sections.

- [Products and Features Available in Oracle Fusion Middleware 12c \(12.2.1.3.0\)](#)
- [Oracle Fusion Middleware Compatibility with Previous Releases](#)
- [Interoperability with Supported Databases](#)
- [Oracle HTTP Server Interoperability and Compatibility](#)
- [Interoperability with Oracle Identity Management Products](#)
- [Oracle Web Services Interoperability](#)  
Web services are Web-based applications that use open, XML-based standards and transport protocols to exchange data with clients.
- [Oracle Home and Domain Extension Interoperability](#)
- [Interoperability with Custom and Client Applications](#)
- [Oracle Data Integration 12c \(12.2.1.3.0\) Interoperability with Other Fusion Middleware Products](#)
- [Oracle Enterprise Data Quality 12c \(12.2.1.2.0\) Interoperability with Other Fusion Middleware Products](#)
- [Oracle GoldenGate Interoperability with Other Fusion Middleware Products](#)
- [Oracle WebCenter Interoperability with Other Fusion Middleware Products](#)

### Products and Features Available in Oracle Fusion Middleware 12c (12.2.1.3.0)

Oracle Fusion Middleware 12c (12.2.1.3.0) includes updates to the following products that were originally distributed in Oracle Fusion Middleware 12c (12.1.3):

- Oracle JDeveloper
- Oracle WebLogic Server and Coherence
- Oracle Fusion Middleware Infrastructure
- Oracle HTTP Server
- Oracle Data Integrator
- Oracle GoldenGate Studio
- Oracle SOA Suite
- Oracle Business Process Management

- Oracle Service Bus
- Oracle Managed File Transfer
- Oracle Event Processing (Oracle Stream Explorer)

Oracle Fusion Middleware12c (12.2.1.3.0) also includes the following Oracle Fusion Middleware products, which have been reintroduced and re-engineered for Oracle Fusion Middleware 12c:

- Oracle WebCenter Content
- Oracle WebCenter Portal
- Oracle WebCenter Sites
- Oracle Business Intelligence
- Oracle Traffic Director
- Oracle MapViewer

This is not a definitive list of products released with Oracle Fusion Middleware 12c (12.2.1.3.0). For information about all the Oracle Fusion Middleware12c (12.2.1.3.0) products, see *Understanding Oracle Fusion Middleware*.

## Oracle Fusion Middleware Compatibility with Previous Releases

Refer to the following sections for information on Oracle Fusion Middleware12c (12.2.1.3.0) compatibility with previous Oracle Fusion Middleware releases:

- [Compatibility with Oracle Fusion Middleware 11g](#)
- [Compatibility with Oracle Fusion Middleware 12c \(12.2.1.2.0\)](#)

### Compatibility with Oracle Fusion Middleware 11g

If you are currently running Oracle WebLogic Server 11g products, then be aware of the following:

- Do not install Oracle WebLogic Server12c (12.2.1.3.0) in the same Middleware home or Oracle home as any previous Oracle Fusion Middleware 11g or Oracle WebLogic Server 11g products. This includes Oracle WebLogic Server 10.3.
- Do not install any Oracle Fusion Middleware 11g products in the same Oracle home as Oracle Fusion Middleware 12c (12.2.1.3.0).

Similarly, you cannot extend an existing Oracle Fusion Middleware 11g or Oracle WebLogic Server 11g domain with Oracle WebLogic Server 12c (12.2.1.3.0).

### Compatibility with Oracle Fusion Middleware 12c (12.2.1.2.0)

If you are currently running Oracle WebLogic Server 12c (12.2.1.2.0) products, then be aware of the following:

- Do not install Oracle WebLogic Server 12c (12.2.1.2.0) in the same Oracle home used by Oracle Fusion Middleware 12c (12.1.3).



- Do not install any Oracle Fusion Middleware 12c (12.1.3) products in the same Oracle home as Oracle Fusion Middleware 12c (12.2.1.2.0).

Similarly, you cannot extend an existing Oracle Fusion Middleware 12c (12.1.3) domain with Oracle WebLogic Server 12c (12.2.1.2.0).

## Interoperability with Supported Databases

Oracle Fusion Middleware 12c (12.2.1.3.0) supports specific database versions for hosting the required Oracle Fusion Middleware product and component schemas and for other specific product features.

The certification information on the Oracle Technology Network provides information about the specific database versions supported by Oracle Fusion Middleware. For more information on using the certification information, see [Using the Oracle Certification Matrixes](#).

However, in some cases, an Oracle Fusion Middleware feature or component requires a more specific database version or a specific database feature that is available in a particular database release.

The following sections describe some of those specific features and database requirements:

- [Oracle Database Interoperability Considerations](#)
- [Java DB Interoperability Considerations](#)
- [Additional Database Interoperability Considerations](#)

## Oracle Database Interoperability Considerations

In addition to the information available in the certification information on the Oracle Technology Network, [Table 2-1](#) provides some additional considerations when using specific Oracle database features.

**Table 2-1 Database Version Requirements for Selected Products and Features**

Product or Feature	Database Requirement	Restrictions	More Information
Using SCAN addresses with GridLink data sources.	Oracle Database 11.2 or later, with Single Client Access Name (SCAN) enabled	None	SCAN Addresses in <i>Administering JDBC Data Sources for Oracle WebLogic Server</i>
JDBC Multi Data Sources	All Oracle Database versions supported by Oracle Fusion Middleware	None.	Configuring JDBC Multi Data Sources in <i>Administering JDBC Data Sources for Oracle WebLogic Server</i>

Table 2-1 (Cont.) Database Version Requirements for Selected Products and Features

Product or Feature	Database Requirement	Restrictions	More Information
Using Edition-Based Redefinition (EBR) when creating schemas in an Oracle database	Oracle Database 11.2 or later	EBR is supported by all Oracle Fusion Middleware schemas, except where noted.	<ul style="list-style-type: none"> <li>• "Component-Specific Requirements for Oracle Databases" in the <i>Oracle Fusion Middleware System Requirements and Specifications</i> document.</li> <li>• Specifying Connection Credentials for Oracle Databases and Oracle Databases with Edition-Based Redefinition in <i>Creating Schemas with the Repository Creation Utility</i></li> <li>• Managing Editions in <i>Oracle Database Administrator's Guide</i></li> </ul>
Support for pluggable databases (PDBs)	Oracle Database 12.1 or later	<p>PDBs are supported for Oracle Fusion Middleware schemas.</p> <p>Connecting to a multitenant container database (CDB) from the Repository Creation Utility is not supported.</p>	Managing Pluggable Databases in <i>Enterprise Manager Lifecycle Management Administrator's Guide</i> .

## Java DB Interoperability Considerations

Oracle supports the use of Java DB as a repository for the required Oracle Fusion Middleware schemas in a limited set of Oracle WebLogic Server domain configurations.

Specifically, for evaluation or development purposes only, you can use Java DB to host the required schemas for an Oracle Fusion Middleware Infrastructure domain.

For example, you can install the required Oracle Fusion Middleware schemas in a Java DB database and reference the Java DB data sources during the configuration of an Oracle Fusion Middleware Infrastructure domain.

Also, by default, the Oracle JDeveloper Integrated WebLogic Server, which is installed with the Oracle SOA Suite Quick Start and Oracle Business Process Management Quick Start installers, is configured to use a pre-configured instance of Java DB. For more information, see *Installing SOA Suite and Business Process Management Suite Quick Start for Developers*.

For more information about Java DB, see the following URL:

<http://docs.oracle.com/javadb>

For more information on certified databases, see [Using the Oracle Certification Matrixes](#).

## Additional Database Interoperability Considerations

The certification matrices and My Oracle Support Certifications define the following terms to differentiate between types of database support:

- [Application Data Access](#)
- [Database Dependent Features](#)

### Application Data Access

Application Data Access refers to those applications that use the database for data access only and do not take advantage of WebLogic Server features that are Database-dependent. WebLogic Server support of databases used for application data access only are less restrictive than for database-dependent features.

WebLogic Server supports application data access to databases using JDBC drivers that meet the following requirements:

- The driver must be thread safe.
- The driver must implement standard JDBC transactional calls, such as `setAutoCommit()` and `setTransactionIsolation()`, when used in transactional aware environments.

Note the following restrictions:

- JDBC drivers that do not implement serializable or remote interfaces cannot pass objects to an RMI client application.
- Simultaneous use of automatic database connection failover and load balancing and global transactions (XA) with a highly available (HA) DBMS architecture is supported with Oracle DB RAC only, and only for the Oracle DB RAC versions indicated on the **System** worksheet. These HA capabilities are supported by Active GridLink for RAC and Multi-Data Sources with RAC. These HA capabilities are not supported on other Oracle DB RAC versions or with other HA DBMS technologies on other non-Oracle DB products. Multi-Data Sources are supported on other Oracle DB versions, and with non-Oracle DB technologies, but not with simultaneous use of automatic failover and load balancing and global transactions.
- Application data access to databases meeting the restrictions is supported on other Oracle DB versions, in addition to ones documented in the certification matrix.
- WebLogic Type 4 JDBC drivers also support the following databases. For these databases, WebLogic Server supports application data access only, and does not support WebLogic Server database-dependent features:
  - DB2 V9.1 for z/OS, DB2 V10 for z/O
  - Informix 11.0, Informix 11.5, Informix 11.7

## Database Dependent Features

When WebLogic Server features use a database for internal data storage, database support is more restrictive than for application data access. The following WebLogic Server features require internal data storage:

- Container Managed Persistence (CMP)
- Rowsets
- JMS/JDBC Persistence and use of a WebLogic JDBC Store
- JDBC Session Persistence
- RDBMS Security Providers
- Database Leasing (for singleton services and server migration)
- JTA Logging Last Resource optimization
- JDBC TLog

## Oracle HTTP Server Interoperability and Compatibility

This section summarizes the most common interoperability scenarios for Oracle HTTP Server and other Oracle Fusion Middleware components. The information in this section was accurate as of the publishing of this document.

For complete information about the interoperability of Oracle HTTP Server, see the certification information available on the Oracle Technology Network. For more information, see [Using the Oracle Certification Matrixes](#).

Before you start, consider the following:

- Certification is based on the use of the WLS Proxy Plugin as documented in *Fusion Middleware Using Oracle WebLogic Server Proxy Plug-Ins*. Oracle HTTP Server may also be used as a proxy to another Oracle HTTP Server (same or different version) using `mod_proxy`, as documented in *Apache HTTP Server and Third-party Modules in Oracle HTTP Server in Fusion Middleware Administering Oracle HTTP Server*.
- Interoperability between versions (such as between Oracle HTTP Server 11g and Oracle Fusion Middleware 12c) are supported only when the products are installed in separate Oracle homes. In general, Oracle does not support the installation of products of different versions in the same Oracle home. For more information, see [Oracle Home and Domain Extension Interoperability](#).
- Support for any combination is limited by features and until the end of support of the lowest version. For best results, customers are encouraged to use the latest version where possible. For example, during a migration period, use Oracle HTTP Server 12.2.1.3.0 instead of separate WebLogic Server 10.3.6 and 12.2.1.3.0 environments.
- Oracle HTTP Server 12c includes WebGate 12c, which can be used to integrate Oracle WebLogic Server or Oracle Fusion Middleware Infrastructure with Oracle Access Manager. For more information, see [Interoperability with Oracle Access Management and Oracle Identity Governance](#). For more details on this combination, see [Interoperability with Oracle Identity Management Products](#).

## Interoperability with Oracle Identity Management Products

From 12c (12.2.1.3.0) onward, Oracle Identity Management (IDM) consists of the following four products:

- Oracle Access Management (OAM)
- Oracle Identity Governance (OIG)
- Oracle Internet Directory (OID)
- Oracle Unified Directory (OUD)

You can install OAM and OIG using the same product distribution (`fmw_12.2.1.3.0_idm_generic.jar`). To install OID and OUD, use the platform-specific OID and `fmw_12.2.1.3.0_oud_generic.jar` distributions respectively.

This section provides information about Oracle Identity Management Interoperability with Oracle Fusion Middleware 12c:

- [Interoperability with Oracle Access Management and Oracle Identity Governance](#)
- [Interoperability with Oracle Internet Directory and Oracle Unified Directory](#)

## Interoperability with Oracle Access Management and Oracle Identity Governance

[Table 2-2](#) shows the interoperability of Oracle Fusion Middleware 12c (12.2.1.3.0) with the available versions of Oracle Access Management and Oracle Identity Governance.

When reviewing the interoperability of Oracle Identity and Access Management and Oracle Fusion Middleware 12c, consider the following:

- Oracle Access Management and Oracle Identity Governance are installed in a separate Oracle home and configured in a separate Oracle WebLogic Server domain.  
For more information about Oracle home, see [Oracle Home and Domain Extension Interoperability](#).
- The information shown in [Table 2-2](#) was accurate at the time this document was published. Always check the certification information on the Oracle Technology Network for the latest certification information.
- Oracle HTTP Server 12c includes WebGate 12c, which can be used to integrate Oracle WebLogic Server or Oracle Fusion Middleware Infrastructure with Oracle Access Manager 11g (11.1.1.5) or later.

### Note:

From 12c (12.2.1.3.0) onwards, you can install Oracle Access Management (OAM) and Oracle Identity Governance (OIG) from the Oracle Identity and Access Management product distribution (`fmw_12.2.1.3.0_idm_generic.jar`). After you have installed the binaries, you can configure the domains for Oracle Access Management and Oracle Identity Governance individually.

**Table 2-2 Oracle Access Management and Oracle Identity Governance Interoperability with Oracle Fusion Middleware 12c**

Product / Version	Oracle Identity and Access Management 11.1.1.9 or later	Oracle Identity and Access Management 11g Release 2 (11.1.2.3)	Oracle Access Management and Oracle Identity Governance 12c (12.2.1.3.0)
Oracle WebLogic Server and Coherence 12c (12.2.1.3.0)	✓	✓	✓
Oracle Fusion Middleware Infrastructure 12c (12.2.1.3.0)	✓	✓	✓

## Interoperability with Oracle Internet Directory and Oracle Unified Directory

Table 2-2 shows the interoperability of Oracle Fusion Middleware 12c (12.2.1.3.0) with the available versions of Oracle Internet Directory (OID) and Oracle Unified Directory (OUD).

When reviewing the interoperability of OID and OUD with Oracle Fusion Middleware 12c, consider the following:

- Usually, you can use currently available versions of Oracle Internet Directory and Oracle Unified Directory with Oracle Fusion Middleware 12c because Oracle Internet Directory and Oracle Unified Directory are installed in a separate Oracle home and configured in a separate Oracle WebLogic Server domain.

For more information about Oracle home, see [Oracle Home and Domain Extension Interoperability](#).

- The information shown in Table 2-3 was accurate at the time this document was published. Always check the certification information on the Oracle Technology Network for the latest certification information.

**Table 2-3 Oracle Internet Directory (OID) and Oracle Unified Directory Interoperability with Oracle Fusion Middleware 12c**

Product / Versions	Oracle Internet Directory and Oracle Virtual Directory 11.1.1.5 or later	Oracle Unified Directory 11g (11.1.2.3)	Oracle Internet Directory and Oracle Unified Directory 12c (12.2.1.3.0)
Oracle WebLogic Server and Coherence 12c (12.2.1.3.0)	✓	✓	✓
Oracle Fusion Middleware Infrastructure 12c (12.2.1.3.0)	✓	✓	✓

## Oracle Web Services Interoperability

Web services are Web-based applications that use open, XML-based standards and transport protocols to exchange data with clients.

Web services are developed using Java Technology APIs and tools provided by an integrated Web services category.

Oracle supports several Web services categories, which are associated with specific Oracle Fusion Middleware products and components. For more information about Web Services, see *Understanding Web Services*.

These Oracle Web services categories support a variety of Web services message formats, capabilities, and security features. While this support varies from one category to another, all the Oracle Web services categories support the following standard features in the communication messages they send and receive:

- Plain SOAP
- WS-Security, With SSL
- WS-Security, No SSL

As a result, if you develop Web services applications that support these types of Web services messages, then the services you create can be used Interoperability with any of the Oracle Web services security categories.

For a more information about the supported WS-Security scenarios between the categories and information on how to configure Web services endpoints, see *Interoperability Solutions Guide for Oracle Web Services Manager*.

## Oracle Home and Domain Extension Interoperability

The following sections provide information about the interoperability of Oracle Fusion Middleware products when installing products in an Oracle home and when extending existing Oracle WebLogic Server domains:

- [Oracle Home Interoperability](#)
- [Domain Extension Interoperability](#)

### Oracle Home Interoperability

When installing Oracle Fusion Middleware products, be sure that each Oracle home you create contains only products that are at the same version or patch set. Each product has its own maintenance schedule, and it is possible that future interoperability issues could result.

For example, unless otherwise documented, you cannot install Oracle SOA Suite 11g Release 1 (11.1.1.9.0) into the same Oracle home with 12c.

This rule applies when installing new products, as well as when applying patches.

### Domain Extension Interoperability

You can extend an existing Oracle Fusion Middleware product domain to support another Oracle Fusion Middleware product, as long as they are the same version number or patch set.

For example, if you have an existing SOA Suite 11g Release 1 (11.1.1.7.0) domain, do not attempt to extend or patch that domain using Oracle Fusion Middleware 12c. To avoid potential interoperability issues, wait until both suites are available at equivalent versions.

#### Note:

Oracle does not support the configuration of Oracle Business Process Management 12c and Oracle SOA Suite for Healthcare Integration 12c in the same domain. If you plan to use both these Oracle Fusion Middleware products, be sure to configure them in separate domains.

## Interoperability with Custom and Client Applications

When you upgrade to Oracle Fusion Middleware 12c, or if you apply any patches on an existing Oracle Fusion Middleware, you should consider the impact on your custom applications, such as:

- Applications written using JDeveloper
- Applications using any other IDE, but also using any of the Oracle Fusion Middleware public Java APIs.

Specifically, the information in this section applies in the following situations:



- If you have created custom applications that you have deployed on Oracle Application Server 10g or Oracle Fusion Middleware 11g.
- If you have created or if you maintain client applications that interact with applications you deployed on Oracle Application Server 10g or Oracle Fusion Middleware 11g.

Oracle attempts to support binary and source-level compatibility between the current version of Fusion Middleware and patch set updates applied to it. Where incompatibilities arise with public interfaces, they are documented in the related API reference guides. For more information about APIs, see Reference and APIs in the Oracle Fusion Middleware 12c (12.2.1.2.0) documentation library.

Oracle recommends that you ensure the business applications adopting new versions or upgrades are tested through your normal release process to ensure there are no regressions.

In general, applying Oracle Fusion Middleware patch sets should require no additional changes to your custom or client applications. When upgrading, however, you should expect some changes.

For more information about compatibility with WebLogic Server, see WebLogic Server 12.2.1 Compatibility with Previous Releases in *Upgrading Oracle WebLogic Server*.

## Oracle Data Integration 12c (12.2.1.3.0) Interoperability with Other Fusion Middleware Products

Oracle Data Integrator is designed to be used with specific Oracle SOA Suite, Oracle Enterprise Data Quality (EDQ), and Oracle GoldenGate software releases. The following table shows which releases of these software products can be used with Oracle Data Integrator 12c (12.2.1.3.0).

The asterisk (\*) indicates that the software is interoperable with releases later than one shown.

Oracle Data Integrator 12c (12.2.1.3.0) Component	Can be used with...	Interoperability Details
Oracle Data Integrator (Agent, Console, Studio)	Oracle Enterprise Data Quality 11.1.1.7.*	You can configure, launch, and monitor EDQ jobs from Oracle Data Integrator.
Oracle Data Integrator (Agent, Studio)	Oracle Enterprise Data Quality 12.*	You can launch and monitor EDQ jobs from Oracle Data Integrator.
Oracle Data Integrator (Agent, Console, Studio)	Oracle GoldenGate 11.2.1.*	You can configure, launch, and monitor GoldenGate jobs from Oracle Data Integrator.
Oracle Data Integrator (Agent, Console, Studio)	Oracle GoldenGate 12.*	You can configure, launch, and monitor GoldenGate jobs from Oracle Data Integrator.
Oracle Data Integrator Agent	Oracle SOA Suite 11.1.1.9.0 Oracle SOA Suite 12.2.1.0.0	<ul style="list-style-type: none"> <li>• Oracle Data Integrator can invoke SOA Web services.</li> <li>• Oracle SOA Suite can launch ODI Web services.</li> </ul>

Oracle Data Integrator 12c (12.2.1.3.0) Component	Can be used with...	Interoperability Details
Oracle Data Integrator Agent	Oracle SOA Suite 12.2.1.0.0	<ul style="list-style-type: none"> <li>You can install Oracle Data Integrator in the same Oracle home as Oracle SOA Suite</li> <li>Oracle Data Integrator can invoke SOA Web services.</li> <li>Oracle SOA Suite can launch ODI Web services.</li> </ul>

## Oracle Enterprise Data Quality 12c (12.2.1.2.0) Interoperability with Other Fusion Middleware Products

Oracle Enterprise Data Quality (EDQ) is designed to be used with specific releases of the EDQ Address Verification Server and EDQ Customer Data Services Pack. The following table shows which releases of these software products can be used with EDQ 12c (12.2.1.2.0).

The asterisk (\*) indicates that the software is interoperable with releases later than one shown.

Oracle Enterprise Data Quality 12c (12.2.1.2.0) Component	Can be used with...
Oracle Enterprise Data Quality	Oracle Enterprise Data Quality Address Verification Server 14.* and 15.*
Oracle Enterprise Data Quality Seibel Connector	Oracle Enterprise Data Quality Customer Data Services Pack 11.* and 12.*

## Oracle GoldenGate Interoperability with Other Fusion Middleware Products

Oracle GoldenGate is designed to be used with specific releases of the GoldenGate software components. The following table shows which releases of these components can be used with GoldenGate 12c (12.2.1.3\*).

Oracle GoldenGate Studio 12c (12.2.1.3*) Component	Can be used with...
Oracle GoldenGate Studio 12.2.1.3*	Oracle GoldenGate 12.2.0.1* Oracle GoldenGate 12.3.0.1* Classic Oracle GoldenGate Big Data 12.3.0.1* Oracle GoldenGate Monitor Agent 12.2.1.2*

The following table shows which releases of these components can be used with Oracle Enterprise Manager and other Oracle GoldenGate components.

Oracle GoldenGate Plug-In for Oracle Enterprise Manager Component	Can be used with...
Oracle GoldenGate Plug-In for Oracle Enterprise Manager 13.2.1.0.*	Oracle GoldenGate 11.2.1.* Oracle GoldenGate 12.1.* Oracle GoldenGate 12.2.0.1* Oracle GoldenGate 12.3.0.1* Classic Oracle GoldenGate Big Data 12.3.0.1* Oracle GoldenGate Monitor Agent 12.2.1.2* Oracle Enterprise Manager 13.2.0.0.*
Oracle GoldenGate Plug-In for Oracle Enterprise Manager 13.2.2.0.*	Oracle GoldenGate 12.3.0.1* Classic & Microservices and earlier Oracle GoldenGate Big Data 12.3.0.1* and earlier Oracle GoldenGate Monitor Agent 12.2.1.2.171115* Oracle Enterprise Manager 13.2.0.0.0 Release 2
Oracle GoldenGate Plug-In for Oracle Enterprise Manager 13.2.3.0.*	Oracle GoldenGate 18.1* Classic & Microservices Oracle GoldenGate 19.1* Classic & Microservices Oracle GoldenGate Big Data 12.3.2.1* Oracle GoldenGate Monitor Agent 12.2.1.2.190530* Oracle Enterprise Manager 13.3.0.0.0 Release 3

## Oracle WebCenter Interoperability with Other Fusion Middleware Products

Oracle WebCenter includes the following products:

- Oracle WebCenter Content
- Oracle WebCenter Enterprise Capture
- Oracle WebCenter Imaging
- Oracle WebCenter Portal
- Oracle WebCenter Sites

The following table shows which releases of these components can be used with WebCenter 12c (12.2.1.3\*)

Product	Can be used with...	Interoperability Details
WebCenter Content	Siebel	Siebel 19.*
WebCenter Enterprise Capture	WebCenter Content	12cR2 (12.2.1.*)
WebCenter Enterprise Capture	WebCenter Imaging	11gR1 (11.1.1.9.0) 12cR2 (12.2.1.3.0)
WebCenter Enterprise Capture	WebCenter Forms Recognition (WFR)	11gR1 (11.1.1.9.*) 12cR2 (12.2.1.3.0)
WebCenter Imaging	WebCenter Content	12cR2 (12.2.1.3.0)

Product	Can be used with...	Interoperability Details
WebCenter Imaging	Oracle E-Business Suite	12.2.8 See <a href="#">Doc ID 1927793.1</a> on My Oracle Support.
WebCenter Imaging	PeopleSoft Enterprise	PeopleTools 8.56
WebCenter Imaging	Oracle SOA Suite	12cR2 (12.2.1.3.0)
WebCenter Imaging	Oracle Business Process Management	12cR2 (12.2.1.3.0)
WebCenter Portal	WebCenter Content	12cR2 (12.2.1.3.0) <b>Note:</b> This is required if WCP is using WCC as content repository.
WebCenter Portal	Oracle SOA Suite BPEL Server	WebCenter Portal and SOA installed in separate <i>ORACLE_HOMES</i> and domains: SOA can be on versions 12.2.1.1, 12.2.1.2, or 12.2.1.3 WebCenter Portal and SOA installed in same <i>ORACLE_HOME</i> and domain: SOA versions must be 12.2.1.3.
WebCenter Portal	Oracle Business Intelligence Enterprise Edition (OBIEE)	WebCenter Portal 12.2.1.2.0 works with OBIEE 12.2.1.2 and 12.2.1.3 WebCenter Portal 12.2.1.3.0 works with OBIEE 12.2.1.2 and 12.2.1.3

 **Note:**

If not full integration with OBIEE and only calling OBIEE reports from WebCenter Portal as links, then using any OBIEE 12.2.1.X version is supported.

<b>Product</b>	<b>Can be used with...</b>	<b>Interoperability Details</b>
WebCenter Sites	WebCenter Content	12cR2 (12.2.1.3.0)

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