Oracle® Fusion Middleware

Understanding Interoperability and Compatibility

12*c* (12.2.1.1)

E74228-01

June 2016

Documentation for System Administrators that describes interoperability and compatibility considerations when installing, upgrading, or patching Oracle Fusion Middleware.

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Oracle Fusion Middleware Understanding Interoperability and Compatibility, 12c (12.2.1.1)

E74228-01

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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

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, see the following related documentation available in the Oracle Fusion Middleware 11g documentation library:

- *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:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.

Convention	Meaning
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

Understanding Interoperability and Compatibility

This chapter provides an introduction to interoperability and compatibility, and it describes how to identify areas where compatibility and interoperability considerations may arise when you are upgrading Oracle Fusion Middleware components, applying patch sets, or installing new Oracle Fusion Middleware components.

This chapter contains the following sections.

1.1 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). It is possible that you will have compatibility considerations when upgrading Oracle Fusion Middleware or when applying Oracle Fusion Middleware patches.

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

Compatibility can be further broken down into the following.

1.1.1 Compatibility Between Oracle Fusion Middleware Software Suites

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

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

1.1.2 Compatibility Within Oracle Fusion Middleware Software Suites

When you are upgrading to 12*c*, you should also consider potential compatibility issues within a specific software suite.

In most cases, issues are temporary and occur only during the upgrade process. After you finish the complete procedure for upgrading the software suite, the issues are typically resolved. However, you should still be aware of these potential concerns, because they can influence your upgrade planning.

1.2 What Is Interoperability?

For the purposes of this guide, *interoperability* is defined as 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. Specifically, interoperability applies when the first 4 digits of the release or version number are the same. For example, Oracle Fusion Middleware 12*c* (12.2.1.1) components are generally interoperable with other 12*c* (12.2.1.1) components.

In some cases there may be interoperability issues between Oracle Fusion Middleware software suites. For example, you may experience issues with the co-existence of domains between Oracle Fusion Middleware 11*g* products such as SOA and WebCenter.

1.3 About Interoperability and Compatibility with Supported Databases

Each release of Oracle Fusion Middleware is certified against specific database versions. Specifically, you can use these certified databases to host the Oracle Fusion Middleware components' schemas.

In some cases, you might have to upgrade your database to a supported version before upgrading to a particular release of Oracle Fusion Middleware. For more information on upgrading your Oracle Fusion Middleware components, see *Planning an Upgrade of Oracle Fusion Middleware*.

For the latest information about the databases supported by each Oracle Fusion Middleware release, refer to *Oracle Fusion Middleware Supported System Configurations* on the Oracle Technology Network.

From the Supported Configurations page, you can locate the specific 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, there is a corresponding spreadsheet that lists the certified configurations, including the supported databases.

1.4 Identifying Potential Compatibility and Interoperability Issues

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

1.4.1 Before You Begin

If 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.

During a new product component installation, interoperability considerations relate to the capability of the new product to integrate with other Oracle Fusion Middleware components of the same release.

Compatibility considerations relate to the capability of the new product to integrate with previous versions of Oracle Fusion Middleware products which may have already been installed. During product updates, the question is mainly one of compatibility and you may need to consider the other components that need to be updated so that existing integration points continue to work.

Table 1-1 provides a list of tasks that will 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
Task 1 - Gather release and version information for your installed components and supporting infrastructure.	In order for you to identify potential interoperability and compatibility issues with your Oracle Fusion Middleware components, you must first collect the release and version information for each component or suite of components you have installed or plan to install or upgrade. In addition, you should also have version and release information for your operating system, database, JDKs, and third-party products.	See Collecting Your Component and Infrastructure Information
Task 2 - If you are planning an upgrade, you should develop an upgrade strategy and understand the supported starting points for upgrading to Oracle Fusion Middleware 12*c*.	An upgrade starting point is a specific version of Oracle Fusion Middleware that you must be running in order to upgrade. If you are not running a version that is a supported upgrade starting point, then you must first upgrade to a supported starting point, by using documentation from a previous release.	*Planning an Upgrade of Oracle Fusion Middleware* provides detailed information for developing and implementing an Oracle Fusion Middleware upgrade plan. In addition, 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 Using the Oracle Fusion Middleware Documentation Library for more information on locating the correct documentation for your upgrade.
Task 3 - If you are applying a patch, you should 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 12*c* (12.1.2) to version 12*c* (12.1.3).	*Patching with OPatch* 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 *Oracle Fusion Middleware System Requirements and Specifications Document*.
Task 4 - If you are Installing new Oracle Fusion Middleware components, you should 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. It is important to read and follow the installation procedures to avoid potential interoperability and compatibility issues.	To view and download installation documentation, release notes, white papers, or other collateral, go to the following URL: http://docs.oracle.com/

1.4.2 Using Oracle Certification Matrices

The Oracle Fusion Middleware Certification matrices provide important compatibility and interoperability information such as supported system configurations, database versions, and third-party products. Refer to these documents 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 matrices. If there is a conflict of information between this guide and the certification matrices, then the information in the certification matrices should be considered the correct version as they are frequently updated.

Table 1-2 Oracle Fusion Middleware Certification Matrices

Document Name	Description
Oracle Fusion Middleware Supported System Configurations	Each product area within Oracle Fusion Middleware maintains certification documentation that covers supported installation types, platforms, operating systems, databases, JDKs, and third-party products. From the Oracle Fusion Middleware Supported System Configurations page, locate the product area to review and select the appropriate certification document.
Oracle Fusion Middleware System Requirements and Specifications Document	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.
Oracle JDeveloper and Application Development Framework Certification Information	Locate the Oracle JDeveloper and Oracle Application Development Framework (Oracle ADF) certification information to identify 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 than required for Oracle Fusion Middleware and this document serves as a reference for those cases.

1.4.3 Understanding the Compatibility Matrices in this Guide

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

Table 1-3 How To Use the Matrices in This Guide

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

Status	Description
Compatible or Interoperable 	Integration between the components involved is expected to work with appropriate configuration. It is important to note, however, that compatibility is not a statement of certification. Certification information is located in the certification matrices described in Table 1-2.
Not Compatible or Interoperable 	Integration between the components involved is not expected to work.
A reference to a specific guide or section	This reference is provided when an individual guide provides more detailed information about the compatibility requirements and considerations that you should review when upgrading, patching, or installing Oracle Fusion Middleware 12*c*.
N/A	Not Applicable.

1.4.4 Collecting Your Component and Infrastructure Information

Oracle Fusion Middleware release and version information is available for each installed component on your system. This information is required before you can effectively identify and solve interoperability or compatibility issues. The certification matrices described in Using Oracle Certification Matrices provide certification and system requirements information for Oracle Fusion Middleware components.

This section provides information for the following:

1.4.4.1 Locating Oracle Fusion Middleware Product Release Information

To find specific release and version information for your Oracle Fusion Middleware components, see the installed product information using the Oracle Universal Installer (OUI). For more information, 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.

1.4.4.2 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
```

1.4.4.3 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
```

1.4.4.4 Locating your DB2 Version Information

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

- From 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?.
  ```

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

  ```
  db2ls
  ```

  This command shows 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
  ```

1.4.4.5 Locating JDK Version Information

Many Fusion Middleware Components are dependent on having 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 Oracle Certification Matrices.

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 that 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
```

1.4.5 Using Release Notes

Refer to the Oracle Fusion Middleware Release Notes for specific information about required patch sets that address specific interoperability and compatibility issues which may surface during 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

1.4.6 Using the Oracle Fusion Middleware Documentation Library

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

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

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 12*c* (12.2.1.1) Interoperability and Compatibility

This chapter summarizes the specific interoperability and compatibility considerations and issues for the Oracle Fusion Middleware 12*c* (12.2.1.1) release.

This chapter contains the following sections.

2.1 Products and Features Available in Oracle Fusion Middleware 12*c* (12.2.1.1)

Oracle Fusion Middleware 12*c* (12.2.1.1) includes updates to the following products that were originally distributed in Oracle Fusion Middleware 12*c* (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 Middleware 12*c* (12.2.1.1) also includes the following Oracle Fusion Middleware products, which have been re-introduced and re-engineered for Oracle Fusion Middleware 12*c*:

- 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 12*c* (12.2.1.1). For information about all the Oracle Fusion Middleware 12*c* (12.2.1.1) products, refer to *Understanding Oracle Fusion Middleware*.

2.2 Oracle Fusion Middleware Compatibility with Previous Releases

Refer to the following sections for information on Oracle Fusion Middleware 12*c* (12.2.1.1) compatibility with previous Oracle Fusion Middleware releases:

2.2.1 Compatibility with Oracle Fusion Middleware 11*g*

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

- Do not install Oracle WebLogic Server 12*c* (12.2.1.1) in the same Middleware home or Oracle home as any previous Oracle Fusion Middleware 11*g* or Oracle WebLogic Server 11*g* products. This includes Oracle WebLogic Server 10.3.
- Do not install any Oracle Fusion Middleware 11*g* products in the same Oracle home as Oracle Fusion Middleware 12*c* (12.2.1.1).

Similarly, you cannot extend an existing Oracle Fusion Middleware 11*g* or Oracle WebLogic Server 11*g* domain with Oracle WebLogic Server 12*c* (12.2.1.1).

2.2.2 Compatibility with Oracle Fusion Middleware 12*c* (12.2.1.1)

If you are currently running Oracle WebLogic Server 12*c* (12.2.1.1) products, then be aware of the following:

- Do not install Oracle WebLogic Server 12*c* (12.2.1.1) in the same Oracle home used by Oracle Fusion Middleware 12*c* (12.1.3).
- Do not install any Oracle Fusion Middleware 12*c* (12.1.3) products in the same Oracle home as Oracle Fusion Middleware 12*c* (12.2.1.1).

Similarly, you cannot extend an existing Oracle Fusion Middleware 12*c* (12.1.3) domain with Oracle WebLogic Server 12*c* (12.2.1.1).

2.3 Interoperability with Supported Databases

Oracle Fusion Middleware 12*c* (12.2.1.1) 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 Oracle Certification Matrices.

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 describes some of those specific features and database requirements:

2.3.1 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 *Administering JDBC Data Sources for Oracle WebLogic Server*
JDBC Multi Data Sources	All Oracle Database versions supported by Oracle Fusion Middleware	None.	Configuring JDBC Multi Data Sources in *Administering JDBC Data Sources for Oracle WebLogic Server*
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.	• "Component-Specific Requirements for Oracle Databases" in the *Oracle Fusion Middleware System Requirements and Specifications* document. • Specifying Connection Credentials for Oracle Databases and Oracle Databases with Edition-Based Redefinition in *Creating Schemas with the Repository Creation Utility* • Managing Editions in *Oracle Database Administrator's Guide*
Support for pluggable databases (PDBs)	Oracle Database 12.1 or later	PDBs are supported for Oracle Fusion Middleware schemas. Connecting to a multitenant container database (CDB) from the Repository Creation Utility is not supported.	Managing Pluggable Databases in *Oracle Database Administrator's Guide*

2.3.2 Java DB Interoperability Considerations

As described in the certification information, 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.

In addition, 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, refer to the Java DB documentation at the following URL:

http://docs.oracle.com/javadb

For more information on certified databases, see Using Oracle Certification Matrices.

2.3.3 Additional Database Interoperability Considerations

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

2.3.3.1 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 provides support for 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 only 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 articulated above is supported on other Oracle DB versions, in addition to those 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

2.3.3.2 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

2.4 Interoperability with Oracle Identity Management Products

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

2.4.1 Interoperability with Oracle Identity and Access Management

Table 2-2 shows the interoperability of Oracle Fusion Middleware 12*c* (12.2.1.1) with the available versions of Oracle Identity and Access Management.

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

- In most cases, you can use currently available versions of Oracle Identity and Access Management with Oracle Fusion Middleware 12*c* because the Oracle Identity and Access Management products are installed in a separate Oracle home and configured in a separate Oracle WebLogic Server domain.

  For more information, 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 12*c* includes WebGate 12*c*, which can be used to integrate Oracle WebLogic Server or Oracle Fusion Middleware Infrastructure with Oracle Access Manager 11*g* (11.1.1.5) or later.

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

	Oracle Identity and Access Management Versions Before 11.1.1.5	Oracle Identity and Access Management 11.1.1.5 or later	Oracle Identity and Access Management 11*g* Release 2 (11.1.2)
Oracle WebLogic Server and Coherence 12*c* (12.2.1.1)	✘	✔	✔
Oracle Fusion Middleware Infrastructure 12*c* (12.2.1.1)	✘	✔	✔

2.4.2 Interoperability with Oracle Identity Management Directory Services

Table 2-2 shows the interoperability of Oracle Fusion Middleware 12*c* (12.2.1.1) with the available versions of Oracle Identity Management Directory Services.

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

- In most cases, you can use currently available versions of Oracle Identity and Access Management with Oracle Fusion Middleware 12*c* because the Oracle Identity and Access Management products are installed in a separate Oracle home and configured in a separate Oracle WebLogic Server domain.

  For more information, 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 Identity Management Directory Services Interoperability with Oracle Fusion Middleware 12c

	Oracle Internet Directory and Oracle Virtual Directory Versions Before 11.1.1.5.0	Oracle Internet Directory and Oracle Virtual Directory 11.1.1.5 or later	Oracle Unified Directory 11*g* (11.1.2)
Oracle WebLogic Server and Coherence 12*c* (12.2.1.1)	✘	✔	✔
Oracle Fusion Middleware Infrastructure 12*c* (12.2.1.1)	✘	✔	✔

2.5 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, 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, refer to *Interoperability Solutions Guide for Oracle Web Services Manager*.

2.6 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:

2.6.1 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 11*g* Release 1 (11.1.1.9.0) into the same Oracle home with 12*c*.

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

2.6.2 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 11*g* Release 1 (11.1.1.7.0) domain, do not attempt to extend or patch that domain using Oracle Fusion Middleware 12*c*. 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 12*c* and Oracle SOA Suite for Healthcare Integration 12*c* in the same domain. If you plan to use both these Oracle Fusion Middleware products, be sure to configure them in separate domains.

2.7 Interoperability with Custom and Client Applications

When you upgrade to Oracle Fusion Middleware 12*c*, 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 10*g* or Oracle Fusion Middleware 11*g*.
- If you have created or if you maintain client applications that interact with applications you deployed on Oracle Application Server 10*g* or Oracle Fusion Middleware 11*g*.

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, see Reference and APIs in the Oracle Fusion Middleware 12*c* (12.2.1.1) 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 on WebLogic Server compatibility, see WebLogic Server 12.2.1 Compatibility with Previous Releases in *Upgrading Oracle WebLogic Server*.

2.8 Oracle Data Integration 12*c* (12.2.1.1) 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 12*c* (12.2.1.1).

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

Oracle Data Integrator 12*c* (12.2.1.1) 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 12*c* (12.2.1.1) Component	Can be used with...	Interoperability Details
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	• Oracle Data Integrator can invoke SOA Web services. • Oracle SOA Suite can launch ODI Web services.
Oracle Data Integrator Agent	Oracle SOA Suite 12.2.1.0.0	• You can install Oracle Data Integrator in the same Oracle home as Oracle SOA Suite • Oracle Data Integrator can invoke SOA Web services. • Oracle SOA Suite can launch ODI Web services.

2.9 Oracle Enterprise Data Quality 12*c* (12.2.1.1) 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 12*c* (12.2.1.1).

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

Oracle Enterprise Data Quality 12*c* (12.2.1.1) 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.*

2.10 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 12*c* (12.2.1.1).

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

Oracle GoldenGate Studio 12*c* (12.2.1.1.*) Component Component	**Can be used with...**
Oracle GoldenGate Studio 12.2.1.1.*	Oracle GoldenGate 12.2.0.1.*
Oracle GoldenGate Studio 12.2.1.1.*	Oracle GoldenGate Monitoring Agent 12.2.1.1.*

The following table shows the certified combinations of Oracle GoldenGate Monitor 12c (12.2.1.*) and other Oracle GoldenGate components.

Oracle GoldenGate Monitor 12*c* (12.2.1.*) Component	**Can be used with...**
Oracle GoldenGate Monitor 12.2.1.*	Oracle GoldenGate Monitor Agent 12.2.1.*
Oracle GoldenGate Monitor 12.2.1.*	Oracle GoldenGate 11.2.1.0.20 and above (recommended) Oracle GoldenGate 12.1.2.0.* Oracle GoldenGate 12.1.2.1.* Oracle GoldenGate 12.2.0.1.*

The following table shows which releases of these components can be used with Oracle Enterprise Manager 13c (13.1.1.0.*) and other Oracle GoldenGate components.

Oracle GoldenGate Plug-In for Oracle Enterprise Manager 13c (13.1.1.0) Component	**Can be used with...**
Oracle GoldenGate Plug-In for Oracle Enterprise Manager 13.1.1.0.*	Oracle Enterprise Manager 13.1.0.0.*
Oracle GoldenGate Plug-In for Oracle Enterprise Manager 13.1.1.0.*	Oracle GoldenGate Monitor Agent 12.2.1.*
Oracle GoldenGate Plug-In for Oracle Enterprise Manager 13.1.1.0.*	Oracle GoldenGate 11.2.1.0.20 and above (recommended) Oracle GoldenGate 12.1.2.0.* Oracle GoldenGate 12.1.2.1.* Oracle GoldenGate 12.2.0.1.*

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