Oracle® Fusion Middleware

Upgrading Oracle Data Integrator

14c (14.1.2.0.0)
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Oracle Fusion Middleware Upgrading Oracle Data Integrator, 14c (14.1.2.0.0)

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Preface

This document describes how to upgrade an existing Oracle Data Integrator environment to 14c (14.1.2.0.0).

Audience

This document is intended for system administrators who are responsible for installing, maintaining, and upgrading Oracle Data Integrator.

It is assumed that readers have knowledge of the following:

- Oracle Fusion Middleware system administration and configuration.
- Configuration parameters and expected behavior of the system being upgraded.

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Related Documents

For more information, see the following documents, which are available on the home page of *Fusion Middleware Documentation*:

- For Oracle Data Integrator related information, see *Oracle Data Integrator Documentation*.
- For Oracle Fusion Middleware getting started related information, see *Fusion Middleware Getting Started*.

- For Oracle Fusion Middleware installation related information, see *Fusion Middleware Installation Documentation*.
- For Oracle Fusion Middleware upgrade related information, see *Fusion Middleware Upgrade Documentation*.
- For Oracle Fusion Middleware administration-related information, see *Fusion Middleware Administration Documentation*.
- For Oracle Fusion Middleware release-related information, see *Fusion Middleware Release Notes Documentation*.

Conventions

The following text conventions are used in this document:

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

Part I
Getting Started

This part of *Upgrading Oracle Data Integrator* introduces Oracle Data Integrator and provides steps you must perform to prepare for upgrading to 14c (14.1.2.0.0).

1

Introduction to Upgrading Oracle Data Integrator to 14c (14.1.2.0.0)

Before you begin, review all introductory information to understand the standard upgrade topologies and upgrade paths for Oracle Data Integrator 14c (14.1.2.0.0).

> **Note:**
>
> For general information about Fusion Middleware upgrade planning and other upgrade concepts and resources, see the following sections in *Planning an Upgrade of Oracle Fusion Middleware*:

The following topics describe the concepts related to upgrading Oracle Data Integrator:

About the Valid Starting Points for the Oracle Data Integrator Upgrade

You can upgrade Oracle Data Integrator from 12*c* (12.2.1.4) release.

The upgrade procedures in this guide explain how to upgrade an existing Oracle Data Integrator 12*c* (12.2.1.4) domain to Oracle Fusion Middleware 14c (14.1.2.0.0). If your domain contains other components that also need to be upgraded, links to supporting documentation are provided.

About the Oracle Data Integrator Standard Topologies

The steps to upgrade Oracle Data Integrator to 14c (14.1.2.0.0) depend on your existing production topology.

As a result, it is difficult to provide exact upgrade instructions for every possible Oracle Data Integrator installation. Therefore, this guide provides instructions for upgrading several typical Oracle Data Integrator topologies. These typical topologies are referred to as *standard upgrade topologies*.

Your actual topology may vary, but the topologies described here provide examples that can be used as a guide to upgrade other similar Oracle Data Integrator topologies.

> **Note:**
>
> For additional information about the upgrade process and planning resources to ensure your upgrade is successful, see Planning an Upgrade to Oracle Fusion Middleware 14c (14.1.2.0.0) in *Planning an Upgrade of Oracle Fusion Middleware*.

2
Pre-Upgrade Requirements

Before you begin to upgrade Oracle Data Integrator 14c (14.1.2.0.0), you must perform pre-upgrade tasks such as backing up, creating a replica of your current environment, and verifying that your system meets certified requirements.

Pre-Upgrade Checklist

The Pre-Upgrade Checklist identifies tasks that can be performed before you begin your upgrade to ensure that you have a successful upgrade and limited downtime.

Upgrades are performed while the servers are down. This checklist is meant to identify important — and often time-consuming — pre-upgrade tasks that you can perform before the upgrade to limit your downtime. The more preparation you can do before you begin the upgrade process, the less time you spend offline.

> **Note:**
>
> The pre-upgrade procedures you perform depend on the configuration of your existing system, the components you are upgrading, and the environment that you want to create at the end of the upgrade and configuration process. **Complete only those tasks that apply to your configurations or use cases.**

This table describes the Pre-Upgrade Checklist. It lists all the required components and describes them in detail.

Table 2-1 Tasks to Perform Before You Upgrade Oracle Fusion Middleware

Task	Description
Required Create a complete backup of your existing environment.	Back up all system-critical files and databases that contain any schemas that are to be upgraded. If the upgrade fails, you must restore your pre-upgrade environment and begin the upgrade again. See Creating a Complete Backup. • Make sure that your backup includes the schema version registry table. See Backing Up the Schema Version Registry Table. • If you have modified or customized any of the startup scripts or any of the configuration files in your existing domain (for example, setting a value for the cookie-path property), you need to copy them to the temporary directory location (outside of the existing domain) during the upgrade, and redeploy them after the upgrade.
Optional Clone your production environment to use as an upgrade testing platform.	In addition to creating a complete backup of your system files, Oracle strongly recommends that you clone your production environment. This environment can be used to test the upgrade.

Table 2-1 (Cont.) Tasks to Perform Before You Upgrade Oracle Fusion Middleware

Task	Description
Required Verify that you install and upgrade your product on a supported hardware and software configuration. **CAUTION**: Do not attempt an upgrade if you are unable to use the latest supported operating system. As with all supported configurations, failure to comply with these requirements may cause your upgrade to fail.	Verify that your hardware and software configurations (including operating systems) are supported by the latest certifications and requirements documents. Also make sure to use a supported JDK version before you install the product distributions. Oracle recommends that you verify this information right before you start the upgrade as the certification requirements are frequently updated. **Make sure that you have applied the latest patches to your components before you upgrade.** See Verifying Certification and System Requirements.
Optional Create a Non-SYSDBA user to run the Upgrade Assistant with necessary privileges.	Oracle recommends that you create the FMW user to run the Upgrade Assistant. The FMW user can run the Upgrade Assistant without any system administration privileges. See Creating a Non-SYSDBA User to Run the Upgrade Assistant.
Required If you are using auto_login wallet, you must update wallet files.	Auto_login_only wallets are the only supported wallets in 14c (14.1.2.0.0). Before upgrading to 14c (14.1.2.0.0), you must update all existing 12c (12.2.1.4.0) auto_login wallets to auto_login_only using convert_to_auto_login_only.pl. See Convert Auto_login Wallets to Auto_login_only .
Required Linux and UNIX Operating System users must set their `DISPLAY` environment variables before starting the Fusion Middleware tools.	Setting the DISPLAY Environment Variable If the `DISPLAY` environment variable is not set up properly to allow for GUI mode, you may encounter an error.

Creating a Complete Backup

Before you start an upgrade, back up all system-critical files, including the databases that host your Oracle Fusion Middleware schemas.

The backup must include the `SYSTEM.SCHEMA_VERSION_REGISTRY$` table so that you can restore the contents back to its pre-upgrade state if the upgrade fails.

The Upgrade Assistant Prerequisites screen prompts you to acknowledge that backups have been performed before you proceed with the actual upgrade. However, note that the Upgrade Assistant does not verify that a backup has been created.

See:

- Backing Up Your Environment in *Administering Oracle Fusion Middleware*
- Upgrading and Preparing Your Oracle Databases for 14c (14.1.2.0.0) in *Planning an Upgrade of Oracle Fusion Middleware*

Backing Up the Schema Version Registry Table

Your system backup must include the `SYSTEM.SCHEMA_VERSION_REGISTRY$` table or the `FMWREGISTRY.SCHEMA_VERSION_REGISTRY$` table.

Each Fusion Middleware schema has a row in the `SYSTEM.SCHEMA_VERSION_REGISTRY$` table. If you run the Upgrade Assistant to update an existing schema and it does not succeed, you

must restore the original schema before you can try again. Before you run the Upgrade Assistant, make sure you back up your existing database schemas and the schema version registry.

> **Note:**
>
> Before you upgrade a schema using the Upgrade Assistant, you must perform a complete database backup. During the upgrade, you are required to acknowledge that backups have been performed.

Maintaining Customized Domain and Environment Settings

If you have modified any domain-generated, server startup scripts, or configuration files in your pre-upgrade environment, it is important to note that these changes are overwritten during the installation, domain upgrade, and reconfiguration operations. Save your customized files to a shared library location so that you can continue to use them after the upgrade.

Every domain installation includes dynamically-generated domain and server startup scripts, such as `setDomainEnv`. These files are replaced by newer versions during the installation and upgrade process. To maintain your custom domain-level environment settings, Oracle recommends that you create a separate file to store the custom domain information before you upgrade, instead of modifying the scripts directly.

For example, if you want to customize server startup parameters that apply to all servers in a domain, you can create a file called `setUserOverrides.cmd` (Windows) or `setUserOverrides.sh` (UNIX) and configure it to add custom libraries to the WebLogic Server classpath, specify additional command-line options for running the servers, or specify additional environment variables. When using the `pack` and `unpack` commands, any custom settings that you add to this file are preserved during the domain upgrade operation and are carried over to the remote servers.

The following example illustrates startup customizations in a `setUserOverrides` file:

```
# add custom libraries to the WebLogic Server system claspath
  if [ "${POST_CLASSPATH}" != "" ] ; then
    POST_CLASSPATH="${POST_CLASSPATH}${CLASSPATHSEP}${HOME}/foo/fooBar.jar"
    export POST_CLASSPATH
  else
    POST_CLASSPATH="${HOME}/foo/fooBar.jar"
    export POST_CLASSPATH
  fi

# specify additional java command-line options for servers
JAVA_OPTIONS="${JAVA_OPTIONS}  -Dcustom.property.key=custom.value"
```

If the `setUserOverrides` file exists during a server startup, the file is included in the startup sequence and any overrides contained within this file take effect. You must store the `setUserOverrides` file in the *`EXISTING_DOMAIN_HOME`*`/bin` directory.

> **Note:**
>
> If you are unable to create the `setUserOverrides` script before an upgrade, you need to reapply your settings as described in Re-apply Customizations to Startup Scripts in *Upgrading Oracle WebLogic Server*.

Cloning Your Source Environment for Testing

Create a copy of your source environment, upgrade the cloned environment, verify that the upgraded components work as expected, and then (and only then) upgrade your environment.

Cloning your source environment for testing is recommended, but not required.

Upgrades cannot be reversed. In most cases, if an error occurs, you must stop the upgrade and restore the entire environment from backup and begin the upgrade process from the beginning. Identifying potential upgrade issues in a cloned environment can eliminate unnecessary downtime.

> **Note:**
>
> It is beyond the scope of this document to describe the cloning procedures for all components and operating systems. Cloning procedures are component and operating system-specific. At a high level, you install the pre-upgrade version of your component domain on a test machine, create the required schemas using the Repository Creation Utility (RCU), and perform the upgrade.

Additional benefits of running an upgrade in a cloned environment include the following:

- Uncover and correct any upgrade issues.
- Practice completing an end-to-end upgrade.
- Understand the upgrade performance and how purge scripts can help.
- Understand the time required to complete the upgrade.
- Understand the database resource usage (such as temporary tablespace; PGA, and so on).

> **Note:**
>
> You can run the pre-upgrade Readiness Check on the cloned environment to help identify potential upgrade issues with your data, but you must perform a complete test upgrade on a cloned environment to ensure a successful upgrade.

Verifying Certification and System Requirements

Review the certification matrix and system requirements documents to verify that your environment meets the necessary requirements for installation.

> **Note:**
>
> When checking the certification, system requirements, and interoperability information, be sure to check specifically for any 32-bit or 64-bit system requirements. It is important for you to download software specifically designed for the 32-bit or 64-bit environment, explicitly.

> **WARNING:**
>
> Make sure that your current environment has been patched to the latest patch set *before* you begin the upgrade. Certifications are based on fully patched environments, unless stated otherwise.

Verify Your Environment Meets Certification Requirements

Oracle has tested and verified the performance of your product on all certified systems and environments. Make sure that you are installing your product on a supported hardware or software configuration.

Whenever new certifications occur, they are added to the appropriate certification document right away. New certifications can occur at any time, and for this reason the certification documents are kept outside of the documentation libraries and are available on Oracle Technology Network. See the Certification Matrix for 14c (14.1.2.0.0).

Verify System Requirements and Specifications

It is important to use both the System Requirements and Specifications document and the Oracle Fusion Middleware Certification Matrix to verify that the system requirements such as disk space, available memory, specific platform packages and patches, and other operating system-specific items are met.

Use the Oracle Fusion Middleware System Requirements and Specifications document to verify that the requirements of the Oracle Fusion Middleware Certification matrix are met. For example, if the Certification Matrix indicates that your product is certified for installation on 64-Bit Oracle Linux 8, the System Requirements and Specifications document should be used to verify that your Oracle Linux 8 system has met the required minimum specifications such as disk space, available memory, specific platform packages and patches, and other operating system-specific items. This document is updated as needed and resides outside of the documentation libraries on the Oracle Technology Network (OTN).

> **Note:**
>
> Do not attempt an upgrade if you are unable to meet the minimum system requirements.

Specifically, you can use the Oracle Fusion Middleware System Requirements and Specifications document to verify the following:

- Processor Requirements
- Java Development Kit (JDK) Requirements
- General Memory and Disk Space Requirements
- Product-Specific Memory and Disk Space Requirements
- Network Requirements
- UNIX Operating System Requirements
- Windows Operating Systems Requirements
- Virtualization Requirements
- Database Requirements

What if my operating system is not supported?

If you are running your environment on an unsupported operating system, you will need to create a supported environment before you begin your upgrade. Do not attempt an upgrade on an unsupported operating system.

Use the migration steps for your environment.

Verify That the Database Hosting Oracle Fusion Middleware is Supported

You must have a supported Oracle database configured with the required schemas before you run Oracle Fusion Middleware 14c (14.1.2.0.0).

Review the Fusion Middleware database requirements before starting the upgrade to ensure that the database hosting Oracle Fusion Middleware is supported and has sufficient space to perform an upgrade. See the Certification Matrix for 14c (14.1.2.0.0).

> **Note:**
>
> If your database version is no longer supported, you must upgrade to a supported version before starting an upgrade.

Verify That the JDK Is Certified for This Release of Oracle Fusion Middleware

If your JDK is not supported, or you do not have a JDK installed, you must download the required Java SE JDK before you begin.

Refer to the Oracle Fusion Middleware Supported System Configurations information on the Oracle Technology Network (OTN) to verify that the JDK you are using is supported.

If your JDK is not supported, or you do not have a JDK installed, you must download the required Java SE JDK, from the following website:

http://www.oracle.com/technetwork/java/javase/downloads/index.html

Make sure that the JDK is installed outside of the Oracle home. The Oracle Universal Installer validates that the designated Oracle home directory is empty, and the install does not progress until an empty directory is specified. If you install JDK under Oracle home, you may experience issues in future operations. Therefore, Oracle recommends that you use install the JDK in the following directory: `/home/oracle/products/jdk`.

Verify the Database User for the WLSSchemaDataSource Data Source

This step is required if your existing domain has a `WLSSchemaDataSource` data source.

If your domain has the `WLSSchemaDataSource` data source, then you will need to verify which database user is assigned to it. If `<PREFIX>_WLS_RUNTIME` is assigned to it, then you need to change that to `<PREFIX>_WLS` .

This change is necessary due to the following changes:

- The 14c (14.1.2.0.0) Upgrade Assistant uses the information in the `WLSSchemaDataSource` data source,when a domain-based schema upgrade is performed. That upgrade will fail if the `<PREFIX>_WLS` database user is not assigned to the `WLSSchemaDataSource`, or if `<PREFIX>_WLS` is not entered as the "Schema User Name" on the "WLS Schema" page of the Upgrade Assistant.
- Oracle recommends that you use the 12c Oracle WebLogic Administration Console to change the database user to `<PREFIX>_WLS` in the `WLSSchemaDataSource` data source. Doing this will avoid the Upgrade Assistant failure, and also allow the Reconfiguration Wizard to pre-populate fields with the correct values.
- The `<PREFIX>_WLS_RUNTIME` database user is reserved for use with a new `WLSRuntimeSchemaDataSource`, which was introduced in 14c (14.1.2.0.0). This new `WLSRuntimeSchemaDataSource` will be created when the 14c (14.1.2.0.0) Reconfiguration Wizard (reconfig.sh) is used to upgrade the domain.

You can use your Oracle WebLogic 12*c* Administration Console to change the user in the WLSSchemaDataSource from `<PREFIX>_WLS_RUNTIME` to `<PREFIX>_WLS`.

1. Log in the 12*c* (12.2.1.4.0) Administration Console.
2. In the administration console under Domain Structure, expand **Services** (by clicking the **+** next to it). Then click **Data Sources**.
3. If the user in Properties field contains `<PREFIX>_WLS_RUNTIME` , change it to`<PREFIX>_WLS`.
4. Save the change.
5. Use the Change Center to commit the change, if your domain is running in production mode.

Updating Policy Files when Using Enhanced Encryption (AES 256)

If you plan to use enhanced encryption, such as Advanced Encryption Standard (AES) 256, in your upgraded environment, Oracle recommends that you apply the latest required policy files to the JDK before you upgrade.

The Java platform defines a set of APIs spanning major security areas, including cryptography, public key infrastructure, authentication, secure communication, and access control. These APIs allow developers to easily integrate security mechanisms into their application code.

Some of the security algorithms used in Fusion Middleware 14c (14.1.2.0.0) require additional policy files for the JDK. See Java Cryptography Architecture Oracle Providers Documentation.

> **Note:**
>
> If you attempt to use enhanced encryption without applying these policy files to the JDK before you begin the upgrade, the upgrade can fail and you must restore the entire pre-upgrade environment and start the upgrade from the beginning.

Creating a Non-SYSDBA User to Run the Upgrade Assistant

Oracle recommends that you create a non-SYSDBA user called `FMW` to run the Upgrade Assistant. This user has the privileges required to modify schemas, but does not have full administrator privileges.

SYSDBA is an administrative privilege that is required to perform high-level administrative operations such as creating, starting up, shutting down, backing up, or recovering the database. The SYSDBA system privilege is for a fully empowered database administrator. When you connect with the SYSDBA privilege, you connect with a default schema and not with the schema that is generally associated with your user name. For SYSDBA, this schema is SYS. Access to a default schema can be a very powerful privilege. For example, when you connect as user SYS, you have unlimited privileges on data dictionary tables. Therefore, Oracle recommends that you create a non-SYSDBA user to upgrade the schemas. The privileges listed below must be granted to user FMW before starting the Upgrade Assistant.

> **Notes:**
>
> The non-SYSDBA user FMW is created solely for the purpose of running the Upgrade Assistant. After this step is complete, drop the FMW user. Note that privileges required for running the Upgrade Assistant may change from release to release.

> **Note:**
>
> In this example we are using the name `FMW` for our non-SYSDBA administrator. Substitute `FMW` with your admin name.

When granting privileges, make sure that you specify your actual user names and password for the schemas in your domain.

```
CREATE USER FMW IDENTIFIED BY "<FMW password>";
GRANT pdb_dba TO FMW;
GRANT MANAGE SCHEDULER TO FMW;
GRANT USE ON EDITION ORA$BASE TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_LOB TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_OUTPUT TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_STATS TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.dbms_aq TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.dbms_aqadm TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.dbms_aqin TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.dbms_aqjms TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON utl_file TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON dbms_lock TO FMW WITH GRANT OPTION;
GRANT SELECT ON sys.V_$INSTANCE TO FMW WITH GRANT OPTION;
GRANT SELECT ON sys.GV_$INSTANCE TO FMW WITH GRANT OPTION;
GRANT SELECT ON sys.V_$SESSION TO FMW WITH GRANT OPTION;
GRANT SELECT ON sys.GV_$SESSION TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_scheduler_jobs TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_scheduler_job_run_details TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_scheduler_running_jobs TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_aq_agents TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON sys.DBMS_SHARED_POOL TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_2pc_pending TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_pending_transactions TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_FLASHBACK TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON dbms_crypto TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON dbms_job TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_scheduler_job_classes TO FMW WITH GRANT OPTION;
GRANT SELECT ON SYS.DBA_DATA_FILES TO FMW WITH GRANT OPTION;
GRANT SELECT ON SYS.V_$ASM_DISKGROUP TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON SYS.DBMS_ASSERT TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_SCHEDULER TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_data_files TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON UTL_RAW TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_XMLDOM TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_APPLICATION_INFO TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_UTILITY TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_SESSION TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_METADATA TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_XMLGEN TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_DATAPUMP TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_MVIEW TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_objects TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_queue_subscribers TO FMW WITH GRANT OPTION;
GRANT SELECT ON dba_subscr_registrations TO FMW WITH GRANT OPTION;
GRANT EXECUTE ON DBMS_RLS TO FMW WITH GRANT OPTION;
GRANT READ ON CTXSYS.CTX_PENDING TO FMW WITH GRANT OPTION;
GRANT SELECT ON SYS.V_$PARAMETER TO FMW WITH GRANT OPTION;
GRANT CREATE PROCEDURE TO FMW;
GRANT SELECT ON dba_users TO FMW WITH GRANT OPTION;
GRANT ALL ON sys.v_$parameter TO FMW WITH GRANT OPTION;
```

Identifying Existing Schemas Available for Upgrade

This optional step can be used before an upgrade to query the schema version registry table. This table contains schema information such as the schema owner, version number, component name and ID, date of creation and modification, and custom prefixes.

You can let the Upgrade Assistant upgrade all of the schemas in the domain, or you can select individual schemas to upgrade. To help decide, follow these steps to view a list of all the schemas that are available for an upgrade:

1. If you are using an Oracle database, connect to the database by using an account that has Oracle DBA privileges, and run the following from SQL*Plus:

```
SET LINE 120
COLUMN MRC_NAME FORMAT A14
COLUMN COMP_ID FORMAT A20
COLUMN VERSION FORMAT A12
COLUMN STATUS FORMAT A9
COLUMN UPGRADED FORMAT A8
SELECT MRC_NAME, COMP_ID, OWNER, VERSION, STATUS, UPGRADED FROM
SCHEMA_VERSION_REGISTRY WHERE OWNER LIKE UPPER('<PREFIX>_%');
```

2. Examine the report that is generated.

Notes:

- After the upgrade you can generate the report again to see the updated versions of your schemas. If an upgrade was not needed for a schema, the `schema_version_registry` table retains the schema at its pre-upgrade version.
- If your existing schemas are not from a supported version, then you must upgrade them to a supported version before using the 14c (14.1.2.0.0) upgrade procedures. Refer to your pre-upgrade version documentation for more information.
- If you used an OID-based policy store in the earlier versions, make sure to create a new OPSS schema before you perform the upgrade. After the upgrade, the OPSS schema remains an LDAP-based store.
- You can only upgrade schemas for products that are available for upgrade in Oracle Fusion Middleware release 14c (14.1.2.0.0). Do not attempt to upgrade a domain that includes components that are not yet available for upgrade to 14c (14.1.2.0.0).

Convert Auto_login Wallets to Auto_login_only

Before upgrading the Oracle HTTP Server (OHS) instance to 14c (14.1.2.0.0), all existing OHS `auto_login wallets` must be converted to `auto_login_only` using `convert_to_auto_login_only.pl`.

As of Oracle HTTP Server (OHS) 14c (14.1.2.0.0), `Auto_login_only` wallets are the only supported wallets. You will need to identify and convert any `auto_login` wallets to `auto_login_only` before starting the server.

1. Identify all `auto_login` wallets. The `auto_login` wallets will have 2 additional files:

   ```
   cwallet.sso
   ewallet.p12
   ```

2. Use the `convert_to_auto_login_only.pl` script to convert each `auto_login` wallet to `auto_login_only`.

   ```
   Usage:
   perl <path_to_convert_to_auto_login_only.pl> <auto_login_wallet directory>
   <auto_login_only_wallet directory>
   <Password of auto_login_wallet>
   auto_login_wallet directory - Directory path to the existing auto_login
   wallet directory
   auto_login_only_wallet directory - Directory path to the new
   auto_login_only wallet directory, directory will be created
   by the tool
   Password of auto_login_wallet - Optional: Password of the existing
   auto_login wallet
   ```

   The following commands use the default wallet as an example. You must adjust the directory path for your specific environment –`DOMAIN_HOME` and `ORACLE_HOME` environment variables must be set prior to running following commands:

   ```
   Linux/Unix:
   cd $DOMAIN_HOME/config/fmwconfig/components/OHS/ohs1/keystores/
   $ORACLE_HOME/perl/bin/perl $ORACLE_HOME/ohs/common/bin/
   convert_to_auto_login_only.pl default default/auto_login_only
   Windows:
   cd %DOMAIN_HOME%\config\fmwconfig\components\OHS\ohs1\keystores
   %ORACLE_HOME%\perl\bin\perl %ORACLE_HOME%
   \ohs\common\bin\convert_to_auto_login_only.pl default
   default\auto_login_only
   ```

3. Update all wallet directives to use the new `auto_login_only_wallet` directory. Sample entries (you must adjust the directory path for your specific environment):

   ```
   #SSLWallet "${ORACLE_INSTANCE}/config/fmwconfig/components/$
   {COMPONENT_TYPE}/instances/${COMPONENT_NAME}/keystores
   /default"
   SSLWallet "${ORACLE_INSTANCE}/config/fmwconfig/components/$
   {COMPONENT_TYPE}/instances/${COMPONENT_NAME}/keystores/default
   /auto_login_only"
   #WLSSLWallet "${ORACLE_INSTANCE}/config/fmwconfig/components/$
   {COMPONENT_TYPE}/instances/${COMPONENT_NAME}/keystores
   /default"
   WLSSLWallet "${ORACLE_INSTANCE}/config/fmwconfig/components/$
   {COMPONENT_TYPE}/instances/${COMPONENT_NAME}/keystores
   /default/auto_login_only"
   ```

> **Note:**
>
> The `convert_to_auto_login_only.pl` script does not import requested certificates (CSRs). If a certificate signing request (CSR) is required, then a new `auto_login_only` wallet will need to be created.
>
> After the upgrade you will need to run another script to remove version information from the files located in the `htdocs` directory. See #unique_39.

Setting the DISPLAY Environment Variable

If the `DISPLAY` environment variable is not set up properly to allow for GUI mode, you may encounter an error.

Linux and UNIX Operating System Users:

If the `DISPLAY` environment variable is not set up properly to allow for GUI mode, you may encounter the following error:

```
Xlib: connection to ":1.0" refused by server
Xlib: No protocol specified
```

To resolve this issue, set the `DISPLAY` environment variable to the system name or IP address of your local workstation, and rerun Upgrade Assistant.

If you continue to receive these errors after setting `DISPLAY`, try launching another GUI tool, such as `vncconfig`. If you see the same errors, your `DISPLAY` environment variable may still not be set correctly.

Configuring External Authentication for ODI

Switch external authentication mode to internal authentication before you start the Upgrade Assistant.

If ODI is configured with external authentication mode, then you must switch the authentication mechanism to internal authentication before the upgrade so that the Upgrade Assistant can authenticate the given ODI credentials. This external authentication should be switched back again in the upgraded environment once the upgrade process is complete.

> **Note:**
>
> This only applies if you are using external authentication. If you are not using external authentication, skip this step.

Refer to the following topics in *Administering Oracle Data Integrator*:

- Configuring External Authentication
- Switching an Existing Master Repository to External Authentication Mode

Part II
Upgrading Oracle Data Integrator

This part of *Upgrading Oracle Data Integrator* provides information about upgrading Oracle Data Integrator from the 12*c* (12.2.1.4) release.

3

Upgrading an Oracle Data Integrator Standalone Agent Environment

You can upgrade an Oracle Data Integrator standalone agent environment that is not configured in a WebLogic domain to 14c (14.1.2.0.0).

Follow these steps to upgrade an Oracle Data Integrator standalone agent environment when it is not part of a WebLogic domain.

Table 3-1 Tasks for Upgrading Oracle Data Integrator

Task	Description
If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks.	See: • Introduction to Upgrading Oracle Data Integrator to 14c (14.1.2.0.0) • Pre-Upgrade Requirements
Upgrade the Oracle Data Integrator standalone agent environment: • Install Oracle Data Integrator 14c (14.1.2.0.0). • Start the Upgrade Assistant to upgrade the database schemas if needed. • Start the Upgrade Assistant (again) to upgrade standalone system component configurations. • Complete and verify the upgrade.	You do not need to run the Repository Creation Utility (RCU) to create the required schemas if they already exist.

About Oracle Data Integrator Standalone Agent Upgrade Process

Review the flowchart and roadmap for an overview of the upgrade process for an Oracle Data Integrator standalone agent that is not configured in a WebLogic domain.

Figure 3-1 Oracle Data Integrator Standalone Agent Upgrade Process Flowchart

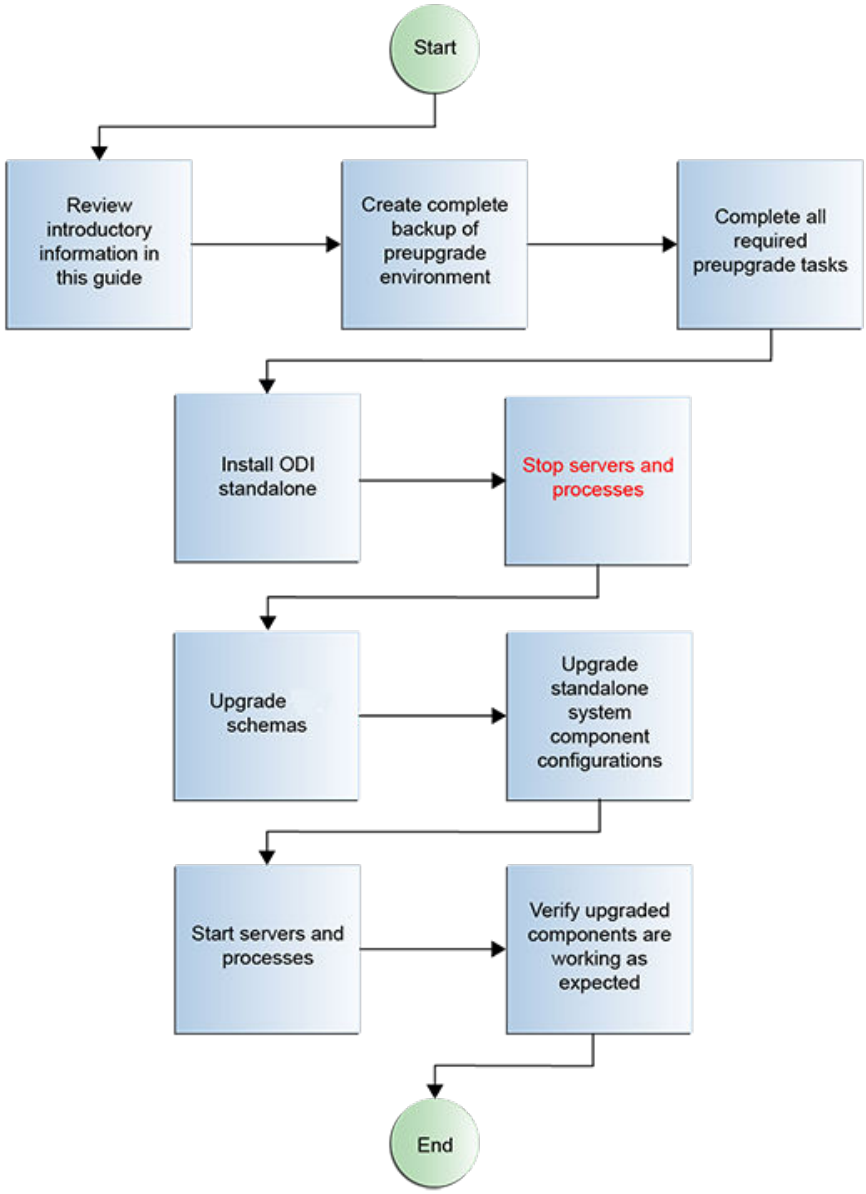

Table 3-2 Tasks for Upgrading Oracle Data Integrator Standalone Agent from a Previous 12*c* Release

Task	Description
Required If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks.	See: • Introduction to Upgrading Oracle Data Integrator to 14c (14.1.2.0.0) • Pre-Upgrade Requirements
Required Install Oracle Data Integrator Standalone 14c (14.1.2.0.0) in a new Oracle home.	Install the product software in a *new* Oracle home. See Installing Oracle Data Integrator Standalone Agent Environment.

Table 3-2 (Cont.) Tasks for Upgrading Oracle Data Integrator Standalone Agent from a Previous 12*c* Release

Task	Description
Required Shut down the 12*c* environment (stop all Administration and Managed Servers).	**WARNING:** Failure to shut down your servers during an upgrade may lead to data corruption. See Stopping Servers and Processes.
Required Start the Upgrade Assistant to upgrade the database schemas and to migrate all active (in flight) instance data.	See Upgrading Product Schemas. **Note:** The upgrade of active instance data is started automatically when running the Upgrade Assistant. Once the data is successfully upgraded to the new 14c (14.1.2.0.0) environment, you can close the Upgrade Assistant. The closed instances will continue to upgrade through a background process.
Required Start the Upgrade Assistant (again) to upgrade standalone system component configurations.	Run the Upgrade Assistant to upgrade the standalone agent's component configurations. See Upgrading Standalone System Component Configurations.
Required Restart the servers and the 14c (14.1.2.0.0) instance.	When the upgrade process is complete, restart the 14c (14.1.2.0.0) instance. See Starting Servers and Processes.
Required Verify the upgrade.	Ensure all of the upgraded components are working as expected before deleting your backups.

Installing the Oracle Data Integrator Standalone Agent Environment

Before beginning your upgrade, download the Oracle Data Integrator 14c (14.1.2.0.0) distribution on the target system and install it using Oracle Universal Installer.

To install the 14c (14.1.2.0.0) distribution:

1. Sign in to the target system.

2. Download the following 14c (14.1.2.0.0) product distribution from Oracle Technology Network or Oracle Software Delivery Cloud to your target system:
   - Oracle Data Integrator (`fmw_14.1.2.0.0_odi_Disk1_1of1.zip`)
3. Change to the directory where you downloaded the 14c (14.1.2.0.0) product distribution.
4. Unzip the installer `fmw_14.1.2.0.0_odi_Disk1_1of1.zip` file.
5. Enter the following command to start the installer for your product distribution and repeat the steps above to navigate through the installer screens:

   (UNIX) *JDK_HOME*`/bin/java -jar fmw_14.1.2.0.0_odi_generic.jar`

   (Windows) *JDK_HOME*`\bin\java -jar fmw_14.1.2.0.0_odi_generic.jar`
6. On UNIX operating systems, the Installation Inventory Setup screen appears if this is the first time you are installing an Oracle product on this host.

   Specify the location where you want to create your central inventory. Make sure that the operating system group name selected on this screen has write permissions to the central inventory location, and click **Next**.

   > **Note:**
   >
   > The Installation Inventory Setup screen does not appear on Windows operating systems.
7. On the Welcome screen, review the information to make sure that you have met all the prerequisites. Click **Next**.
8. On the Auto Updates screen, select an option:
   - **Skip Auto Updates**: If you do not want your system to check for software updates at this time.
   - **Select patches from directory**: To navigate to a local directory if you downloaded patch files.
   - **Search My Oracle Support for Updates**: To automatically download software updates if you have a My Oracle Support account. You must enter Oracle Support credentials then click **Search**. To configure a proxy server for the installer to access My Oracle Support, click **Proxy Settings**. Click **Test Connection** to test the connection.

   Click **Next**.
9. On the Installation Location screen, specify the location for the Oracle home directory and click **Next**.

   For more information about Oracle Fusion Middleware directory structure, see Understanding Directories for Installation and Configuration in *Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware*.
10. On the Installation Type screen, select **Standalone Installation**.

    Click **Next**.
11. The Prerequisite Checks screen analyzes the host computer to ensure that the specific operating system prerequisites have been met.

    To view the list of tasks that are verified, select **View Successful Tasks**. To view log details, select **View Log**. If any prerequisite check fails, then an error message appears at the bottom of the screen. Fix the error and click **Rerun** to try again. To ignore the error or the warning message and continue with the installation, click **Skip** (not recommended).

12. On the Installation Summary screen, verify the installation options that you selected.

    If you want to save these options to a response file, click **Save Response File** and enter the response file location and name. The response file collects and stores all the information that you have entered, and enables you to perform a silent installation (from the command line) at a later time.
    Click **Install** to begin the installation.

13. On the Installation Progress screen, when the progress bar displays 100%, click **Finish** to dismiss the installer, or click **Next** to see a summary.

14. The Installation Complete screen displays the Installation Location and the Feature Sets that are installed. Review this information and click **Finish** to close the installer.

Stopping Standalone System Components

Before you run the Upgrade Assistant to upgrade your schemas and configurations, you must shut down the pre-upgrade environment.

To stop your pre-upgrade Fusion Middleware environment, navigate to the pre-upgrade domain and follow the steps below:

> **Note:**
>
> It is important that you stop the following servers in the correct order.

Step 1: Stop System Components

To stop system components, such as Oracle HTTP Server, use the `stopComponent` script:

- (UNIX) *`EXISTING_DOMAIN_HOME`*`/bin/stopComponent.sh` *`component_name`*
- (Windows) *`EXISTING_DOMAIN_HOME`*`\bin\stopComponent.cmd` *`component_name`*

You can stop system components in any order.

Step 2: Stop Node Manager

To stop Node Manager, close the command shell in which it is running.

Alternatively, after setting the `nodemanager.properties` attribute `QuitEnabled` to `true` (the default is `false`), you can use WLST to connect to Node Manager and shut it down. See stopNodeManager in *WLST Command Reference for Oracle WebLogic Server*.

Upgrading Product Schemas

After stopping servers and processes, use the Upgrade Assistant to upgrade your 12.2.1.4.0 schemas to the 14c (14.1.2.0.0) release of Oracle Fusion Middleware.

> **Note:**
>
> If your domain has the `WLSSchemaDataSource` data source, then you will need to verify which database user is assigned to it. If `<PREFIX>_WLS_RUNTIME` is assigned to it, then you need to change that to `<PREFIX>_WLS` . For more information, see Verify the Database User for the WLSSchemaDataSource Data Source.

> **Note:**
>
> As of 14c (14.1.2.0.0) the following schema changes have been made to help you prepare for an optional zero downtime upgrade to a future release:
>
> - Schemas created prior to 14c (14.1.2.0.0) with editions disabled and then upgraded to 14c (14.1.2.0.0) will become editions enabled.
> - Schemas created in 14c (14.1.2.0.0) will be created with editions enabled.

The Upgrade Assistant allows you to upgrade individually selected schemas or all schemas associated with a domain. The option you select determines which Upgrade Assistant screens you will use.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 14c (14.1.2.0.0).

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail. To set the character encoding, run the following:
>
> UNIX operating systems:
>
> ```
> export UA_PROPERTIES="-Dfile.encoding=UTF-8 ${UA_PROPERTIES}"
> ```
>
> Windows operating systems:
>
> ```
> set UA_PROPERTIES=-Dfile.encoding=UTF-8 %UA_PROPERTIES%
> ```

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 3-3 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.

Table 3-3 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/logs` *ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *ORACLE_HOME*`\oracle_common\upgrade\logs` *ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Product Schemas Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.

To upgrade product schemas with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

   > **Note:**
   >
   > For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the Selected Schemas screen, select **Individually Selected Schemas**.

   > **Caution:**
   >
   > Upgrade only those schemas that are used to support your 14c (14.1.2.0.0) components. Do not upgrade schemas that are currently being used to support components that are not included in Oracle Fusion Middleware 14c (14.1.2.0.0).

   Click **Next**.

3. On the Available Components screen, select **Oracle Data Integrator** to upgrade the Master and Work Repository schema.
4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

   > **Note:**
   >
   > The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the ODI Schema screen, specify the database connection details for each schema you are upgrading:
   - Select the database type from the **Database Type** drop-down menu.
   - Enter the database connection details, and click **Connect**.
   - Select the schema you want to upgrade from the **Schema User Name** drop-down menu, and then enter the password for the schema. Be sure to use the correct schema prefix for the schemas you are upgrading.
6. On the ODI Options screen, select all of the options.

Table 3-4 ODI Options

Option	Description
Replace Knowledge Modules with mandatory updates	This selection replaces standard Knowledge Modules with the newest version. Customizations to Oracle installed Knowledge Modules will be overwritten. But if you copy an installed Knowledge Module and customize the Knowledge Module, the customizations are not lost.
Upgrade topology and security metadata	This selection replaces topology and security artifacts such as Technologies, Datatypes, Security Profiles and others with the newest version. Customizations of installed objects will be overwritten. If the object is copied and customized, then the customizations are not lost.

See Advanced Upgrade Options.

7. On the ODI Supervisor screen, enter the Supervisor account credentials for the ODI repository to be upgraded.

   The installed Supervisor account is `SUPERVISOR`. Check with your ODI administrator for proper Supervisor account name and password, supplied when prompted by the Repository Creation Utility (RCU) when creating the Master and Work repositories for ODI.

   > **Note:**
   >
   > When **All Schemas Used by a Domain** is selected, the Supervisor credentials for ODI are not pre-populated in the first instance as the domain does not contain them. If there are multiple ODI schemas, the Upgrade Assistant populates the user entry using the first set of credentials.

8. On the Examine screen, review the status of the Upgrade Assistant as it examines each schema, verifying that the schema is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

   > **Note:**
   >
   > - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
   > - Canceling the examination process has no effect on the schemas or configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

9. On the Upgrade Summary screen, review the summary of the schemas that will be upgraded and/or created.

   Verify that the correct Source and Target Versions are listed for each schema you intend to upgrade.

If you want to save these options to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

Click **Next** .

10. On the Upgrade Progress screen, monitor the status of the upgrade.

> **Caution:**
>
> Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

If any schemas are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

Click **Next**.

11. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard.

    If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails, you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Verifying the Schema Upgrade

After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

If you are using an Oracle database, connect to the database as a user having Oracle DBA privileges, and run the following from SQL*Plus to get the current version numbers. Be sure to replace <*PREFIX*> with your schema prefix.

```
SET LINE 120
COLUMN MRC_NAME FORMAT A14
COLUMN COMP_ID FORMAT A20
COLUMN VERSION FORMAT A12
COLUMN STATUS FORMAT A9
COLUMN UPGRADED FORMAT A8
```

```
SELECT MRC_NAME, COMP_ID, OWNER, EDITION NAME, VERSION, STATUS, UPGRADED FROM
SCHEMA_VERSION_REGISTRY where owner like '<PREFIX>_%';
```

In the query result:

- Verify that the `EDITION NAME` column appears as `ORA$BASE`.
- Check that the number in the `VERSION` column matches the latest version number for that schema. For example, verify that the schema version number is 14.1.2.0.0.

> **Note:**
>
> Not all schema versions will be updated. Some schemas do not require an upgrade to this release and will retain their pre-upgrade version number.

- The `STATUS` field will be either `UPGRADING` or `UPGRADED` during the schema patching operation, and will become `VALID` when the operation is completed.
- If the status appears as `INVALID`, the schema update failed. You should examine the logs files to determine the reason for the failure.
- Synonym objects owned by `IAU_APPEND` and `IAU_VIEWER` will appear as `INVALID`, but that does not indicate a failure.

  They become invalid because the target object changes after the creation of the synonym. The synonyms objects will become valid when they are accessed. You can safely ignore these `INVALID` objects.

Upgrading Standalone System Component Configurations

Use the Upgrade Assistant to upgrade the standalone system component configurations.

About Reconfiguring the Domain

Run the Reconfiguration Wizard to reconfigure your domain component configurations to 14c (14.1.2.0.0).

When you reconfigure a WebLogic Server domain, the following items are automatically updated, depending on the applications in the domain:

- WebLogic Server core infrastructure
- Domain version

> **Note:**
>
> Before you begin the domain reconfiguration, note the following limitations:
>
> - The Reconfiguration Wizard does not update any of your own applications that are included in the domain.
> - Transforming a non-dynamic cluster domain to a dynamic cluster domain during the upgrade process is not supported.
>
> The dynamic cluster feature is available when running the Reconfiguration Wizard, but Oracle only supports upgrading a non-dynamic cluster upgrade and then adding dynamic clusters. You cannot add dynamic cluster during the upgrade process.

Specifically, when you reconfigure a domain, the following occurs:

- The domain version number in the `config.xml` file for the domain is updated to the Administration Server's installed WebLogic Server version.
- Reconfiguration templates for all installed Oracle products are automatically selected and applied to the domain. These templates define any reconfiguration tasks that are required to make the WebLogic domain compatible with the current WebLogic Server version.
- Start scripts are updated.

  If you want to preserve your modified start scripts, be sure to back them up before starting the Reconfiguration Wizard.

> **Note:**
>
> When the domain reconfiguration process starts, you can't undo the changes that it makes. Before running the Reconfiguration Wizard, ensure that you have backed up the domain as covered in the pre-upgrade checklist. If an error or other interruption occurs while running the Reconfiguration Wizard, you must restore the domain by copying the files and directories from the backup location to the original domain directory. This is the only way to ensure that the domain has been returned to its original state before reconfiguration.

Backing Up the Domain

Before running the Reconfiguration Wizard, create a backup copy of the domain directory.

To create a backup of the domain directory:

1. Copy the source domain to a separate location to preserve the contents.

   (Windows) `copy C:\domains\mydomain to C:\domains\mydomain_backup.`

   (UNIX) `cp -rf mydomain mydomain_backup`
2. Before updating the domain on each remote Managed Server, create a backup copy of the domain directory on each remote machine.
3. Verify that the backed up versions of the domain are complete.

If domain reconfiguration fails for any reason, you must copy all files and directories from the backup directory into the original domain directory to ensure that the domain is returned entirely to its original state before reconfiguration.

Starting the Reconfiguration Wizard

> **Note:**
>
> Shut down the administration server and all collocated managed servers before starting the reconfiguration process. See Stopping Servers and Processes .

To start the Reconfiguration Wizard in graphical mode:

1. Sign in to the system on which the domain resides.
2. Open the command shell (on UNIX operating systems) or open a command prompt window (on Windows operating systems).
3. Go to the `oracle_common/common/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/common/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\commom\bin`
4. Start the Reconfiguration Wizard with the following logging options:
   - (UNIX) `./reconfig.sh -log=`*`log_file`*` -log_priority=ALL`
   - (Windows) `reconfig.cmd -log=`*`log_file`*` -log_priority=ALL`

   where *`log_file`* is the absolute path of the log file you'd like to create for the domain reconfiguration session. This can be helpful if you need to troubleshoot the reconfiguration process.

   The parameter `-log_priority=ALL` ensures that logs are logged in fine mode.

   > **Note:**
   >
   > When you run this command, the following error message might appear to indicate that the default cache directory is not valid:
   >
   > ```
   > *sys-package-mgr*: can't create package cache dir
   > ```
   >
   > You can change the cache directory by setting the environment variable `CONFIG_JVM_ARGS`. For example:
   >
   > `CONFIG_JVM_ARGS=-Dpython.cachedir=`*`valid_directory`*

Reconfiguring the Domain with the Reconfiguration Wizard

Navigate through the screens in the Reconfiguration Wizard to reconfigure your existing domain before running the Upgrade Assistant

> **Note:**
>
> If the source is a clustered environment, run the Reconfiguration Wizard on the primary node only. Use the `pack` and `unpack` utilities to apply the changes to other cluster members in the domain.

To reconfigure the domain with the Reconfiguration Wizard:

1. On the Select Domain screen, specify the location of the domain you want to upgrade or click **Browse** to navigate and select the domain directory. Click **Next**.
2. On the Reconfiguration Setup Progress screen, view the progress of the setup process. When complete, click **Next**.

   During this process:

   - The reconfiguration templates for your installed products, including Fusion Middleware products, are automatically applied. This updates various domain configuration files such as `config.xml`, `config-groups.xml`, and `security.xml` (among others).
   - Scripts and other files that support your Fusion Middleware products are updated.
   - The domain upgrade is validated.
3. On the Domain Mode and JDK screen, select the JDK to use in the domain or click **Browse** to navigate to the JDK you want to use. The supported JDK version for 14c (14.1.2.0.0) is 17.0.12 and later. Click **Next**.

   > **Note:**
   >
   > You cannot change the **Domain Mode** at this stage. Your domain will retain its pre-upgrade domain mode. If you want to change the domain to secure mode, then after the upgrade see Changing Domain Mode Post Upgrade.

   For a list of JDKs that are supported for a specific platform, see Oracle Fusion Middleware Supported System Configurations.
4. On the Database Configuration Type screen, select **RCU Data** to connect to the Server Table (<*PREFIX*>_STB) schema.

   Note: <*PREFIX*> is the RCU schema prefix of the 12.2.1.4 domain that is being upgraded.

   Enter the database connection details using the RCU service table (<*PREFIX*>_STB) schema credentials and click **Get RCU Configuration**.

   The Reconfiguration Wizard uses this connection to automatically update the data sources required for components in your domain.

   > **Note:**
   >
   > By default **Oracle's Driver (Thin) for Service connections; Versions: Any** is the selected driver. If you specified an instance name in your connection details — instead of the service name — you must select **Oracle's Driver (Thin) for pooled instance connections; Versions: Any** If you do not change the driver type, then the connection will fail.

If the check is successful, click **Next**. If the check fails, reenter the connection details correctly and try again.

5. On the JDBC Component Schema screen, verify that the DBMS/Service and the Host name is correct for each component schema and click **Next**.
6. On the JDBC Component Schema Test screen, select all the component schemas and click **Test Selected Connections** to test the connection for each schema. The result of the test is indicated in the Status column.

   When the check is complete, click **Next**.
7. On the Advanced Configuration screen, you can select all categories for which you want to perform advanced configuration. For each category you select, the appropriate configuration screen is displayed to allow you to perform advanced configuration.

   > **Note:**
   >
   > The categories that are listed on the Advanced Configuration screen depend on the resources defined in the templates you selected for the domain.

   For this upgrade, select none of the options and click **Next**.
8. On the Configuration Summary screen, review the detailed configuration settings of the domain before continuing.

   You can limit the items that are displayed in the right-most panel by selecting a filter option from the **View** drop-down list.

   To change the configuration, click **Back** to return to the appropriate screen. To reconfigure the domain, click **Reconfig**.

   > **Note:**
   >
   > The location of the domain does not change when you reconfigure it.
9. The Reconfiguration Progress screen displays the progress of the reconfiguration process.

   During this process:

   - Domain information is extracted, saved, and updated.
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.

   When the progress bar shows 100%, click **Next**.
10. The End of Configuration screen indicates whether the reconfiguration process completed successfully or failed. It also displays the location of the domain that was reconfigured as well as the Administration Server URL (including the listen port). If the reconfiguration is successful, it displays **Oracle WebLogic Server Reconfiguration Succeeded**.

    If the reconfiguration process did not complete successfully, an error message is displayed indicates the reason. Take appropriate action to resolve the issue. If you cannot resolve the issue, contact My Oracle Support.

    Note the Domain Location and the Admin Server URL for further operations.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 14c (14.1.2.0.0).

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail. To set the character encoding, run the following:
>
> UNIX operating systems:
>
> ```
> export UA_PROPERTIES="-Dfile.encoding=UTF-8 ${UA_PROPERTIES}"
> ```
>
> Windows operating systems:
>
> ```
> set UA_PROPERTIES=-Dfile.encoding=UTF-8 %UA_PROPERTIES%
> ```

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 3-5 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.

Table 3-5 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.

Table 3-5 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/logs` *ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *ORACLE_HOME*`\oracle_common\upgrade\logs` *ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Standalone System Component Configurations Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade standalone system component configurations.

To upgrade standalone system component configurations with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

   > **Note:**
   >
   > For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the next screen:
   - Select **Standalone System Component Configurations**, then select **Update an Existing Domain**.
   - In the **Domain Location** field, select the location of the existing standalone domain that you want to update.
   - Click **Next**.
3. On the Component List screen, verify that the list includes all the components for which you want to upgrade configurations and click **Next**.

If you do not see the components you want to upgrade, click **Back** to go to the previous screen and specify a different domain.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

> **Note:**
>
> The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the Instance Directories screen, specify the location of one or more Oracle instance directories to be upgraded.
6. On the Node Manager screen, specify the credentials of the Node Manager that will be used to create a domain during the upgrade of standalone system components.
7. On the Examine screen, review the status of the Upgrade Assistant as it examines each standalone component, verifying that the standalone component configuration is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant*for information on resolving common upgrade errors.

> **Note:**
>
> - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
> - Canceling the examination process has no effect on the configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

8. On the Upgrade Summary screen, review the summary of the options you have selected for component configuration upgrade.

   The response file collects and stores all the information that you have entered, and enables you to perform a silent upgrade at a later time. The silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again. If you want to save these options to a response file, click **Save Response File** and provide the location and name of the response file.
   Click **Upgrade** to start the upgrade process.
9. On the Upgrade Progress screen, monitor the status of the upgrade.

> **Caution:**
>
> Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

If any components are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

Click **Next**.

10. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard. The Post-Upgrade Actions window describes the manual tasks you must perform to make components functional in the new installation. This window appears only if a component has post-upgrade steps.

    If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *ORACLE_HOME*`/oracle_common/upgrade/logs`. Note If the upgrade fails you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Starting Servers and Processes

After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

The components may be dependent on each other so they must be started in the correct order.

> **Note:**
>
> The procedures in this section describe how to start servers and processes using the WLST command-line utility or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Remote Console. See Starting and Stopping Administration and Managed Servers and Node Manager.
>
> As of release 14c (14.1.2.0.0), the WebLogic Server Administration Console has been removed. For comparable functionality, you should use the WebLogic Remote Console. For more information, see Oracle WebLogic Remote Console.

To start your Fusion Middleware environment, follow the steps below:

> **Note:**
>
> Depending on your existing security settings, you may need to perform additional configuration before you can manage a domain with secured production mode enabled. For more information, see Connecting to the Administration Server using WebLogic Remote Console
>
> .

Step 1: Start the Administration Server

To start the Administration Server, use the `startWebLogic` script:

- (UNIX) *NEW_DOMAIN_HOME*`/bin/startWebLogic.sh`
- (Windows) *NEW_DOMAIN_HOME*`\bin\startWebLogic.cmd`

> **Note:**
>
> When using secured production mode, you must provide additional parameters to start the Administration Server. See Connecting to the Administration Server using WLST in *Administering Security for Oracle WebLogic Server*.

When prompted, enter your user name, password, and the URL of the Administration Server.

Step 2: Start Node Manager

To start Node Manager, use the `startNodeManager` script:

- (UNIX) *NEW_DOMAIN_HOME*`/bin/startNodeManager.sh`
- (Windows) *NEW_DOMAIN_HOME*`\bin\startNodeManager.cmd`

Step 3: Start Any Managed Servers

To start a WebLogic Server Managed Server, use the `startManagedWebLogic` script:

- (UNIX) *NEW_DOMAIN_HOME*`/bin/startManagedWebLogic.sh` *managed_server_name admin_url*
- (Windows) *NEW_DOMAIN_HOME*`\bin\startManagedWebLogic.cmd` *managed_server_name admin_url*

> **Note:**
>
> When using secured production mode, you must provide additional parameters to start the Managed Servers. See Starting Managed Servers using a Start Script in *Administering Security for Oracle WebLogic Server*.

> **Note:**
>
> The startup of a Managed Server will typically start the applications that are deployed to it. Therefore, it should not be necessary to manually start applications after the Managed Server startup.

Step 4: Start System Components

To start system components, such as Oracle HTTP Server, use the `startComponent` script:

- (UNIX) *NEW_DOMAIN_HOME*`/bin/startComponent.sh` *component_name*

- (Windows) *NEW_DOMAIN_HOME*\bin\startComponent.cmd *component_name*

You can start system components in any order.

Step 6: Change to External Authentication

If you changed to internal authentication before upgrading product schemas, change back to external authentication after starting servers and processes.

4

Upgrading an Oracle Data Integrator Standalone Collocated Agent Environment

You can upgrade an Oracle Data Integrator standalone agent environment that is configured in a WebLogic domain from the Oracle Fusion Middleware 12*c* (12.2.1.4.0) release to 14c (14.1.2.0.0).

About Oracle Data Integrator Standalone Collocated Agent Upgrade Process

Review the process flowchart for an overview of the upgrade process for an Oracle Data Integrator standalone agent that is configured in a WebLogic domain.

Figure 4-1 Oracle Data Integrator Standalone Collocated Agent Upgrade Process Flowchart

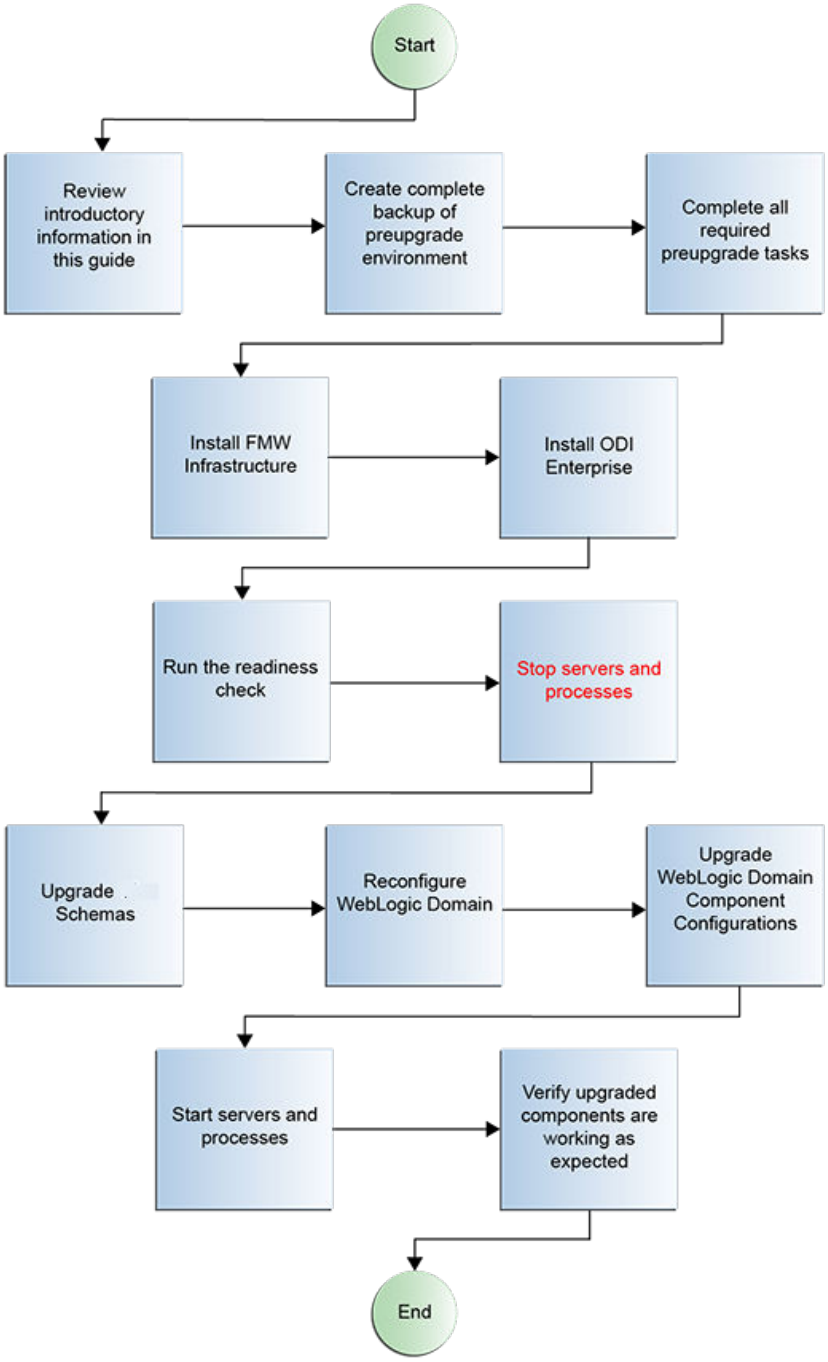

Table 4-1 Tasks for Upgrading Oracle Data Integrator Standalone Collocated Agent from a Previous 12*c* Release

Task	Description
Required If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks.	See: • Introduction to Upgrading Oracle Data Integrator to 14c (14.1.2.0.0) • Pre-Upgrade Requirements
Required Install Oracle Data Integrator 14c (14.1.2.0.0) in a new Oracle home.	See Installing Oracle Data Integrator Standalone Collocated Agent Environment.
Optional Run a pre-upgrade readiness check.	See Running a Pre-Upgrade Readiness Check.
Required Shut down the 12*c* environment (stop all Administration and Managed Servers).	**WARNING:** Failure to shut down your servers during an upgrade may lead to data corruption. See Stopping Servers and Processes.
Required Start the Upgrade Assistant to upgrade the database schemas and to migrate all active (in flight) instance data.	See Upgrading Product Schemas. **Note:** The upgrade of active instance data is started automatically when running the Upgrade Assistant. Once the data is successfully upgraded to the new 14c (14.1.2.0.0) environment, you can close the Upgrade Assistant. The closed instances will continue to upgrade through a background process.
Required Start the Reconfiguration Wizard to reconfigure the domain and node manager.	Run the Configuration Wizard to update the existing domain to use the newly installed software. See Reconfiguring the Domain.
Required Start the Upgrade Assistant (again) to upgrade domain configurations.	Run the Upgrade Assistant to update the reconfigured domain's component configurations. See Upgrading Domain Component Configurations.
Required Restart the servers and the 14c (14.1.2.0.0) instance.	When the upgrade process is complete, restart the 14c (14.1.2.0.0) instance. See Starting Servers and Processes.
Required Verify the upgrade.	Ensure all of the upgraded components are working as expected before deleting your backups.

Installing Oracle Data Integrator Standalone Collocated Agent Environment

Before beginning your upgrade, download Oracle Data Integrator 14c (14.1.2.0.0) distribution on the target system and install it using Oracle Universal Installer.

> **Note:**
>
> The ODI Enterprise installation process will automatically install Oracle Fusion Middleware Infrastructure if it is not already installed.

To install Oracle Data Integrator standalone collocated agent environment:

1. Sign in to the target system.
2. Download the following from Oracle Technology Network or Oracle Software Delivery Cloud to your target system:
   - Oracle Data Integrator (`fmw_14.1.2.0.0_odi_Disk1_1of1.zip`)
3. Change to the directory where you downloaded the 14c (14.1.2.0.0) product distribution.
4. Unzip the installer `fmw_14.1.2.0.0_odi_Disk1_1of1.zip` file.
5. Start the ODI installation:

   (UNIX) *JDK_HOME*`/bin/java -jar fmw_14.1.2.0.0_odi.jar`

   (Windows) *JDK_HOME*`\bin\java -jar fmw_14.1.2.0.0_odi.jar`
6. On UNIX operating systems, the Installation Inventory Setup screen appears if this is the first time you are installing an Oracle product on this host.

   Specify the location where you want to create your central inventory. Make sure that the operating system group name selected on this screen has write permissions to the central inventory location, and click **Next**.

   > **Note:**
   >
   > The Installation Inventory Setup screen does not appear on Windows operating systems.
7. On the Welcome screen, review the information to make sure that you have met all the prerequisites. Click **Next**.
8. On the Auto Updates screen, select an option:
   - **Skip Auto Updates**: If you do not want your system to check for software updates at this time.
   - **Select patches from directory**: To navigate to a local directory if you downloaded patch files.
   - **Search My Oracle Support for Updates**: To automatically download software updates if you have a My Oracle Support account. You must enter Oracle Support credentials then click **Search**. To configure a proxy server for the installer to access My Oracle Support, click **Proxy Settings**. Click **Test Connection** to test the connection.

Click **Next**.

9. On the Installation Location screen, specify the location for the Oracle home directory and click **Next**.

   For more information about Oracle Fusion Middleware directory structure, see Understanding Directories for Installation and Configuration in *Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware*.

10. On the Installation Type screen, select **Enterprise Installation**.

    Click **Next**.

11. The Prerequisite Checks screen analyzes the host computer to ensure that the specific operating system prerequisites have been met.

    To view the list of tasks that are verified, select **View Successful Tasks**. To view log details, select **View Log**. If any prerequisite check fails, then an error message appears at the bottom of the screen. Fix the error and click **Rerun** to try again. To ignore the error or the warning message and continue with the installation, click **Skip** (not recommended).

12. On the Installation Summary screen, verify the installation options that you selected.

    If you want to save these options to a response file, click **Save Response File** and enter the response file location and name. The response file collects and stores all the information that you have entered, and enables you to perform a silent installation (from the command line) at a later time.
    Click **Install** to begin the installation.

13. On the Installation Progress screen, when the progress bar displays 100%, click **Finish** to dismiss the installer, or click **Next** to see a summary.

14. The Installation Complete screen displays the Installation Location and the Feature Sets that are installed. Review this information and click **Finish** to close the installer.

Stopping Standalone System Components

Before you run the Upgrade Assistant to upgrade your schemas and configurations, you must shut down the pre-upgrade environment.

To stop your pre-upgrade Fusion Middleware environment, navigate to the pre-upgrade domain and follow the steps below:

> **Note:**
>
> It is important that you stop the following servers in the correct order.

Step 1: Stop System Components

To stop system components, such as Oracle HTTP Server, use the `stopComponent` script:

- (UNIX) *`EXISTING_DOMAIN_HOME`*`/bin/stopComponent.sh` *`component_name`*
- (Windows) *`EXISTING_DOMAIN_HOME`*`\bin\stopComponent.cmd` *`component_name`*

You can stop system components in any order.

Step 2: Stop Node Manager

To stop Node Manager, close the command shell in which it is running.

Alternatively, after setting the `nodemanager.properties` attribute `QuitEnabled` to `true` (the default is `false`), you can use WLST to connect to Node Manager and shut it down. See stopNodeManager in *WLST Command Reference for Oracle WebLogic Server*.

Running a Pre-Upgrade Readiness Check

To identify potential issues with the upgrade, Oracle recommends that you run a readiness check before you start the upgrade process. Be aware that the readiness check may not be able to discover all potential issues with your upgrade. An upgrade may still fail, even if the readiness check reports success.

About Running a Pre-Upgrade Readiness Check

You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform the actual upgrade. You can run the readiness check in GUI mode using the Upgrade Assistant or in silent mode using a response file.

The Upgrade Assistant readiness check performs a read-only, pre-upgrade review of your Fusion Middleware schemas and WebLogic domain configurations that are at a supported starting point. The review is a read-only operation.

The readiness check generates a formatted, time-stamped readiness report so you can address potential issues before you attempt the actual upgrade. If no issues are detected, you can begin the upgrade process. Oracle recommends that you read this report thoroughly before performing an upgrade.

You can run the readiness check while your existing Oracle Fusion Middleware domain is online (while other users are actively using it) or offline.

You can run the readiness check any number of times before performing any actual upgrade. However, do not run the readiness check after an upgrade has been performed, as the report results may differ from the result of pre-upgrade readiness checks.

> **Note:**
>
> To prevent performance from being affected, Oracle recommends that you run the readiness check during off-peak hours.

Starting the Upgrade Assistant in Readiness Mode

Use the `-readiness` parameter to start the Upgrade Assistant in readiness mode.

To perform a readiness check on your pre-upgrade environment with the Upgrade Assistant:

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant.
   - (UNIX) `./ua -readiness`
   - (Windows) `ua.bat -readiness`

> **Note:**
>
> If the `DISPLAY` environment variable is not set up properly to allow for GUI mode, you may encounter the following error:
>
> ```
> Xlib: connection to ":1.0" refused by server
> Xlib: No protocol specified
> ```
>
> To resolve this issue, set the `DISPLAY` environment variable to the system name or IP address of your local workstation, and rerun Upgrade Assistant.
>
> If you continue to receive these errors after setting `DISPLAY`, try launching another GUI tool, such as `vncconfig`. If you see the same errors, your `DISPLAY` environment variable may still not be set correctly.

For information about other parameters that you can specify on the command line, see:

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 4-2 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.

Table 4-2 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/logs` *ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *ORACLE_HOME*`\oracle_common\upgrade\logs` *ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Performing a Readiness Check with the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to complete the pre-upgrade readiness check.

Readiness checks are performed only on schemas or component configurations that are at a supported upgrade starting point.

To complete the readiness check:

1. On the Welcome screen, review information about the readiness check. Click **Next**.
2. On the Readiness Check Type screen, select the readiness check that you want to perform:

- **Individually Selected Schemas** allows you to select individual schemas for review before upgrade. The readiness check reports whether a schema is supported for an upgrade or where an upgrade is needed.
  When you select this option, the screen name changes to Selected Schemas.
- **Domain Based** allows the Upgrade Assistant to discover and select all upgrade-eligible schemas or component configurations in the domain specified in the **Domain Directory** field.
  When you select this option, the screen name changes to Schemas and Configuration.

  Leave the default selection if you want the Upgrade Assistant to check all schemas and component configurations at the same time, or select a specific option:

  – **Include checks for all schemas** to discover and review all components that have a schema available to upgrade.

  – **Include checks for all configurations** to review component configurations for a managed WebLogic Server domain.

Click **Next**.

3. If you selected **Individually Selected Schemas**: On the Available Components screen, select the components that have a schema available to upgrade for which you want to perform a readiness check.

   If you selected **Domain Based**: On the Component List screen, review the list of components that are present in your domain for which you want to perform a readiness check.

   If you select a component that has dependent components, those components are automatically selected. For example, if you select Oracle Platform Security Services, Oracle Audit Services is automatically selected.

   Depending on the components you select, additional screens may display. For example, you may need to:

   - Specify the domain directory.
   - Specify schema credentials to connect to the selected schema: **Database Type**, **DBA User Name**, and **DBA Password**. Then click **Connect**.

     > **Note:**
     >
     > Oracle database is the default database type. Make sure that you select the correct database type before you continue. If you discover that you selected the wrong database type, do not go back to this screen to change it to the correct type. Instead, close the Upgrade Assistant and restart the readiness check with the correct database type selected to ensure that the correct database type is applied to all schemas.

   - Select the **Schema User Name** option and specify the **Schema Password**.

   Click **Next** to start the readiness check.

4. On the Readiness Summary screen, review the summary of the readiness checks that will be performed based on your selections.

   If you want to save your selections to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

For a detailed report, click **View Log**.

Click **Next**.

5. On the Readiness Check screen, review the status of the readiness check. The process can take several minutes.

   If you are checking multiple components, the progress of each component displays in its own progress bar in parallel.

   When the readiness check is complete, click **Continue**.

6. On the End of Readiness screen, review the results of the readiness check (**Readiness Success** or **Readiness Failure**):

   - If the readiness check is successful, click **View Readiness Report** to review the complete report. Oracle recommends that you review the Readiness Report before you perform the actual upgrade even when the readiness check is successful. Use the **Find** option to search for a particular word or phrase within the report. The report also indicates where the completed Readiness Check Report file is located.
   - If the readiness check encounters an issue or error, click **View Log** to review the log file, identify and correct the issues, and then restart the readiness check. The log file is managed by the command-line options you set.

Understanding the Readiness Report

After performing a readiness check for your domain, review the report to determine whether you need to take any action for a successful upgrade.

The format of the readiness report file is:

`readiness<timestamp>.txt`

Where, *timestamp* indicates the date and time of when the readiness check was run.

A readiness report contains the following information:

Table 4-3 Readiness Report Elements

Report Information	Description	Required Action
Overall Readiness Status: SUCCESS or FAILURE	The top of the report indicates whether the readiness check passed or completed with one or more errors.	If the report completed with one or more errors, search for FAIL and correct the failing issues before attempting to upgrade. You can re-run the readiness check as many times as necessary before an upgrade.
Timestamp	The date and time that the report was generated.	No action required.
Log file location `/oracle_common/upgrade/logs`	The directory location of the generated log file.	No action required.
Domain Directory	Displays the domain location	No action required.
Readiness report location `/oracle_common/upgrade/logs`	The directory location of the generated readiness report.	No action required.

Table 4-3 (Cont.) Readiness Report Elements

Report Information	Description	Required Action
Names of components that were checked	The names and versions of the components included in the check and status.	If your domain includes components that cannot be upgraded to this release, such as SOA Core Extension, do not attempt an upgrade.
Names of schemas that were checked	The names and current versions of the schemas included in the check and status.	Review the version numbers of your schemas. If your domain includes schemas that cannot be upgraded to this release, do not attempt an upgrade.
Individual Object Test Status: FAIL	The readiness check test detected an issue with a specific object.	Do not upgrade until all failed issues have been resolved.
Individual Object Test Status: PASS	The readiness check test detected no issues for the specific object.	If your readiness check report shows only the PASS status, you can upgrade your environment. Note, however, that the Readiness Check cannot detect issues with externals such as hardware or connectivity during an upgrade. You should always monitor the progress of your upgrade.
Completed Readiness Check of <Object> Status: FAILURE	The readiness check detected one or more errors that must be resolved for a particular object such as a schema, an index, or datatype.	Do not upgrade until all failed issues have been resolved.
Completed Readiness Check of <Object> Status: SUCCESS	The readiness check test detected no issues.	No action required.

Upgrading Product Schemas

After stopping servers and processes, use the Upgrade Assistant to upgrade your 12.2.1.4.0 schemas to the 14c (14.1.2.0.0) release of Oracle Fusion Middleware.

> **Note:**
>
> If your domain has the `WLSSchemaDataSource` data source, then you will need to verify which database user is assigned to it. If `<PREFIX>_WLS_RUNTIME` is assigned to it, then you need to change that to `<PREFIX>_WLS` . For more information, see Verify the Database User for the WLSSchemaDataSource Data Source.

> **Note:**
>
> As of 14c (14.1.2.0.0) the following schema changes have been made to help you prepare for an optional zero downtime upgrade to a future release:
>
> - Schemas created prior to 14c (14.1.2.0.0) with editions disabled and then upgraded to 14c (14.1.2.0.0) will become editions enabled.
> - Schemas created in 14c (14.1.2.0.0) will be created with editions enabled.

The Upgrade Assistant allows you to upgrade individually selected schemas or all schemas associated with a domain. The option you select determines which Upgrade Assistant screens you will use.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 14c (14.1.2.0.0).

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail. To set the character encoding, run the following:
>
> UNIX operating systems:
>
> ```
> export UA_PROPERTIES="-Dfile.encoding=UTF-8 ${UA_PROPERTIES}"
> ```
>
> Windows operating systems:
>
> ```
> set UA_PROPERTIES=-Dfile.encoding=UTF-8 %UA_PROPERTIES%
> ```

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 4-4 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.

Table 4-4 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/logs` *ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *ORACLE_HOME*`\oracle_common\upgrade\logs` *ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Product Schemas Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.

To upgrade product schemas with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

> **Note:**
>
> For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the Selected Schemas screen, select **Individually Selected Schemas**.

> **Caution:**
>
> Upgrade only those schemas that are used to support your 14c (14.1.2.0.0) components. Do not upgrade schemas that are currently being used to support components that are not included in Oracle Fusion Middleware 14c (14.1.2.0.0).

Click **Next**.

3. On the Available Components screen, select **Oracle Data Integrator** to upgrade the Master and Work Repository schema.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

> **Note:**
>
> The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the ODI Schema screen, specify the database connection details for each schema you are upgrading:
   - Select the database type from the **Database Type** drop-down menu.
   - Enter the database connection details, and click **Connect**.
   - Select the schema you want to upgrade from the **Schema User Name** drop-down menu, and then enter the password for the schema. Be sure to use the correct schema prefix for the schemas you are upgrading.
6. On the ODI Options screen, select all of the options.

Table 4-5 ODI Options

Option	Description
Replace Knowledge Modules with mandatory updates	This selection replaces standard Knowledge Modules with the newest version. Customizations to Oracle installed Knowledge Modules will be overwritten. But if you copy an installed Knowledge Module and customize the Knowledge Module, the customizations are not lost.
Upgrade topology and security metadata	This selection replaces topology and security artifacts such as Technologies, Datatypes, Security Profiles and others with the newest version. Customizations of installed objects will be overwritten. If the object is copied and customized, then the customizations are not lost.

See Advanced Upgrade Options.

7. On the ODI Supervisor screen, enter the Supervisor account credentials for the ODI repository to be upgraded.

   The installed Supervisor account is `SUPERVISOR`. Check with your ODI administrator for proper Supervisor account name and password, supplied when prompted by the Repository Creation Utility (RCU) when creating the Master and Work repositories for ODI.

> **Note:**
>
> When **All Schemas Used by a Domain** is selected, the Supervisor credentials for ODI are not pre-populated in the first instance as the domain does not contain them. If there are multiple ODI schemas, the Upgrade Assistant populates the user entry using the first set of credentials.

8. On the Examine screen, review the status of the Upgrade Assistant as it examines each schema, verifying that the schema is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

> **Note:**
>
> - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
> - Canceling the examination process has no effect on the schemas or configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

9. On the Upgrade Summary screen, review the summary of the schemas that will be upgraded and/or created.

   Verify that the correct Source and Target Versions are listed for each schema you intend to upgrade.

   If you want to save these options to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

   Click **Next** .

10. On the Upgrade Progress screen, monitor the status of the upgrade.

> **Caution:**
>
> Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

   If any schemas are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

   Click **Next**.

11. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard.

    If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails, you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Verifying the Schema Upgrade

After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

If you are using an Oracle database, connect to the database as a user having Oracle DBA privileges, and run the following from SQL*Plus to get the current version numbers. Be sure to replace <*PREFIX*> with your schema prefix.

```
SET LINE 120
COLUMN MRC_NAME FORMAT A14
COLUMN COMP_ID FORMAT A20
COLUMN VERSION FORMAT A12
COLUMN STATUS FORMAT A9
COLUMN UPGRADED FORMAT A8
SELECT MRC_NAME, COMP_ID, OWNER, EDITION NAME, VERSION, STATUS, UPGRADED FROM
SCHEMA_VERSION_REGISTRY where owner like '<PREFIX>_%';
```

In the query result:

- Verify that the `EDITION NAME` column appears as `ORA$BASE`.
- Check that the number in the `VERSION` column matches the latest version number for that schema. For example, verify that the schema version number is 14.1.2.0.0.

> **Note:**
>
> Not all schema versions will be updated. Some schemas do not require an upgrade to this release and will retain their pre-upgrade version number.

- The `STATUS` field will be either `UPGRADING` or `UPGRADED` during the schema patching operation, and will become `VALID` when the operation is completed.
- If the status appears as `INVALID`, the schema update failed. You should examine the logs files to determine the reason for the failure.
- Synonym objects owned by `IAU_APPEND` and `IAU_VIEWER` will appear as `INVALID`, but that does not indicate a failure.

  They become invalid because the target object changes after the creation of the synonym. The synonyms objects will become valid when they are accessed. You can safely ignore these `INVALID` objects.

About Reconfiguring the Domain

Run the Reconfiguration Wizard to reconfigure your domain component configurations to 14c (14.1.2.0.0).

When you reconfigure a WebLogic Server domain, the following items are automatically updated, depending on the applications in the domain:

- WebLogic Server core infrastructure
- Domain version

> **Note:**
>
> Before you begin the domain reconfiguration, note the following limitations:
>
> - The Reconfiguration Wizard does not update any of your own applications that are included in the domain.
> - Transforming a non-dynamic cluster domain to a dynamic cluster domain during the upgrade process is not supported.
>
> The dynamic cluster feature is available when running the Reconfiguration Wizard, but Oracle only supports upgrading a non-dynamic cluster upgrade and then adding dynamic clusters. You cannot add dynamic cluster during the upgrade process.

Specifically, when you reconfigure a domain, the following occurs:

- The domain version number in the `config.xml` file for the domain is updated to the Administration Server's installed WebLogic Server version.
- Reconfiguration templates for all installed Oracle products are automatically selected and applied to the domain. These templates define any reconfiguration tasks that are required to make the WebLogic domain compatible with the current WebLogic Server version.
- Start scripts are updated.

  If you want to preserve your modified start scripts, be sure to back them up before starting the Reconfiguration Wizard.

> **Note:**
>
> When the domain reconfiguration process starts, you can't undo the changes that it makes. Before running the Reconfiguration Wizard, ensure that you have backed up the domain as covered in the pre-upgrade checklist. If an error or other interruption occurs while running the Reconfiguration Wizard, you must restore the domain by copying the files and directories from the backup location to the original domain directory. This is the only way to ensure that the domain has been returned to its original state before reconfiguration.

Backing Up the Domain

Before running the Reconfiguration Wizard, create a backup copy of the domain directory.

To create a backup of the domain directory:

1. Copy the source domain to a separate location to preserve the contents.

   (Windows) `copy C:\domains\mydomain to C:\domains\mydomain_backup.`

   (UNIX) `cp -rf mydomain mydomain_backup`

2. Before updating the domain on each remote Managed Server, create a backup copy of the domain directory on each remote machine.
3. Verify that the backed up versions of the domain are complete.

If domain reconfiguration fails for any reason, you must copy all files and directories from the backup directory into the original domain directory to ensure that the domain is returned entirely to its original state before reconfiguration.

Starting the Reconfiguration Wizard

> **Note:**
>
> Shut down the administration server and all collocated managed servers before starting the reconfiguration process. See Stopping Servers and Processes .

To start the Reconfiguration Wizard in graphical mode:

1. Sign in to the system on which the domain resides.
2. Open the command shell (on UNIX operating systems) or open a command prompt window (on Windows operating systems).
3. Go to the `oracle_common/common/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/common/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\commom\bin`
4. Start the Reconfiguration Wizard with the following logging options:
   - (UNIX) `./reconfig.sh -log=`*`log_file`*` -log_priority=ALL`
   - (Windows) `reconfig.cmd -log=`*`log_file`*` -log_priority=ALL`

   where *`log_file`* is the absolute path of the log file you'd like to create for the domain reconfiguration session. This can be helpful if you need to troubleshoot the reconfiguration process.

   The parameter `-log_priority=ALL` ensures that logs are logged in fine mode.

   > **Note:**
   >
   > When you run this command, the following error message might appear to indicate that the default cache directory is not valid:
   >
   > ```
   > *sys-package-mgr*: can't create package cache dir
   > ```
   >
   > You can change the cache directory by setting the environment variable `CONFIG_JVM_ARGS`. For example:
   >
   > ```
   > CONFIG_JVM_ARGS=-Dpython.cachedir=valid_directory
   > ```

Reconfiguring the Domain with the Reconfiguration Wizard

Navigate through the screens in the Reconfiguration Wizard to reconfigure your existing domain before running the Upgrade Assistant

> **Note:**
>
> If the source is a clustered environment, run the Reconfiguration Wizard on the primary node only. Use the `pack` and `unpack` utilities to apply the changes to other cluster members in the domain.

To reconfigure the domain with the Reconfiguration Wizard:

1. On the Select Domain screen, specify the location of the domain you want to upgrade or click **Browse** to navigate and select the domain directory. Click **Next**.
2. On the Reconfiguration Setup Progress screen, view the progress of the setup process. When complete, click **Next**.

   During this process:

   - The reconfiguration templates for your installed products, including Fusion Middleware products, are automatically applied. This updates various domain configuration files such as `config.xml`, `config-groups.xml`, and `security.xml` (among others).
   - Scripts and other files that support your Fusion Middleware products are updated.
   - The domain upgrade is validated.
3. On the Domain Mode and JDK screen, select the JDK to use in the domain or click **Browse** to navigate to the JDK you want to use. The supported JDK version for 14c (14.1.2.0.0) is 17.0.12 and later. Click **Next**.

   > **Note:**
   >
   > You cannot change the **Domain Mode** at this stage. Your domain will retain its pre-upgrade domain mode. If you want to change the domain to secure mode, then after the upgrade see Changing Domain Mode Post Upgrade.

   For a list of JDKs that are supported for a specific platform, see Oracle Fusion Middleware Supported System Configurations.
4. On the Database Configuration Type screen, select **RCU Data** to connect to the Server Table (<*PREFIX*>_STB) schema.

   Note: <*PREFIX*> is the RCU schema prefix of the 12.2.1.4 domain that is being upgraded.

   Enter the database connection details using the RCU service table (<*PREFIX*>_STB) schema credentials and click **Get RCU Configuration**.

   The Reconfiguration Wizard uses this connection to automatically update the data sources required for components in your domain.

   > **Note:**
   >
   > By default **Oracle's Driver (Thin) for Service connections; Versions: Any** is the selected driver. If you specified an instance name in your connection details — instead of the service name — you must select **Oracle's Driver (Thin) for pooled instance connections; Versions: Any** If you do not change the driver type, then the connection will fail.

If the check is successful, click **Next**. If the check fails, reenter the connection details correctly and try again.

5. On the JDBC Component Schema screen, verify that the DBMS/Service and the Host name is correct for each component schema and click **Next**.
6. On the JDBC Component Schema Test screen, select all the component schemas and click **Test Selected Connections** to test the connection for each schema. The result of the test is indicated in the Status column.

   When the check is complete, click **Next**.
7. On the Advanced Configuration screen, you can select all categories for which you want to perform advanced configuration. For each category you select, the appropriate configuration screen is displayed to allow you to perform advanced configuration.

   > **Note:**
   >
   > The categories that are listed on the Advanced Configuration screen depend on the resources defined in the templates you selected for the domain.

   For this upgrade, select none of the options and click **Next**.
8. On the Configuration Summary screen, review the detailed configuration settings of the domain before continuing.

   You can limit the items that are displayed in the right-most panel by selecting a filter option from the **View** drop-down list.

   To change the configuration, click **Back** to return to the appropriate screen. To reconfigure the domain, click **Reconfig**.

   > **Note:**
   >
   > The location of the domain does not change when you reconfigure it.
9. The Reconfiguration Progress screen displays the progress of the reconfiguration process.

   During this process:

   - Domain information is extracted, saved, and updated.
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.

   When the progress bar shows 100%, click **Next**.
10. The End of Configuration screen indicates whether the reconfiguration process completed successfully or failed. It also displays the location of the domain that was reconfigured as well as the Administration Server URL (including the listen port). If the reconfiguration is successful, it displays **Oracle WebLogic Server Reconfiguration Succeeded**.

    If the reconfiguration process did not complete successfully, an error message is displayed indicates the reason. Take appropriate action to resolve the issue. If you cannot resolve the issue, contact My Oracle Support.

    Note the Domain Location and the Admin Server URL for further operations.

Upgrading Domain Component Configurations

After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain *component* configurations inside the domain to match the updated domain configuration.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 14c (14.1.2.0.0).

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail. To set the character encoding, run the following:
>
> UNIX operating systems:
>
> ```
> export UA_PROPERTIES="-Dfile.encoding=UTF-8 ${UA_PROPERTIES}"
> ```
>
> Windows operating systems:
>
> ```
> set UA_PROPERTIES=-Dfile.encoding=UTF-8 %UA_PROPERTIES%
> ```

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 4-6 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.

Table 4-6 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/logs` *ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *ORACLE_HOME*`\oracle_common\upgrade\logs` *ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Domain Component Configurations Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

After running the Reconfiguration Wizard to reconfigure the WebLogic domain to 14c (14.1.2.0.0), you must run the Upgrade Assistant to upgrade the domain *component* configurations to match the updated domain configuration.

To upgrade domain component configurations with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

   > **Note:**
   >
   > For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the next screen:
   - Select **All Configurations Used By a Domain**. The screen name changes to WebLogic Components.
   - In the **Domain Directory** field, enter the WebLogic domain directory path.

   Click **Next**.
3. On the Component List screen, verify that the list includes all the components for which you want to upgrade configurations and click **Next**.

If you do not see the components you want to upgrade, click **Back** to go to the previous screen and specify a different domain.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

> **Note:**
>
> The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the Examine screen, review the status of the Upgrade Assistant as it examines each component, verifying that the component configuration is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

> **Note:**
>
> - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
> - Canceling the examination process has no effect on the configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

6. On the Upgrade Summary screen, review the summary of the options you have selected for component configuration upgrade.

   The response file collects and stores all the information that you have entered, and enables you to perform a silent upgrade at a later time. The silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again. If you want to save these options to a response file, click **Save Response File** and provide the location and name of the response file.

   Click **Upgrade** to start the upgrade process.

7. On the Upgrade Progress screen, monitor the status of the upgrade.

> **Caution:**
>
> Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

If any components are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

Click **Next**.

8. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard. The Post-Upgrade Actions window describes the manual tasks you must perform to make components functional in the new installation. This window appears only if a component has post-upgrade steps.

   If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Starting Servers and Processes

After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

The components may be dependent on each other so they must be started in the correct order.

> **Note:**
>
> The procedures in this section describe how to start servers and processes using the WLST command-line utility or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Remote Console. See Starting and Stopping Administration and Managed Servers and Node Manager.
>
> As of release 14c (14.1.2.0.0), the WebLogic Server Administration Console has been removed. For comparable functionality, you should use the WebLogic Remote Console. For more information, see Oracle WebLogic Remote Console.

To start your Fusion Middleware environment, follow the steps below:

> **Note:**
>
> Depending on your existing security settings, you may need to perform additional configuration before you can manage a domain with secured production mode enabled. For more information, see Connecting to the Administration Server using WebLogic Remote Console
>
> .

Step 1: Start the Administration Server

To start the Administration Server, use the `startWebLogic` script:

- (UNIX) *NEW_DOMAIN_HOME*`/bin/startWebLogic.sh`
- (Windows) *NEW_DOMAIN_HOME*`\bin\startWebLogic.cmd`

> **Note:**
>
> When using secured production mode, you must provide additional parameters to start the Administration Server. See Connecting to the Administration Server using WLST in *Administering Security for Oracle WebLogic Server*.

When prompted, enter your user name, password, and the URL of the Administration Server.

Step 2: Start Node Manager

To start Node Manager, use the `startNodeManager` script:

- (UNIX) *NEW_DOMAIN_HOME*`/bin/startNodeManager.sh`
- (Windows) *NEW_DOMAIN_HOME*`\bin\startNodeManager.cmd`

Step 3: Start Any Managed Servers

To start a WebLogic Server Managed Server, use the `startManagedWebLogic` script:

- (UNIX) *NEW_DOMAIN_HOME*`/bin/startManagedWebLogic.sh` *managed_server_name admin_url*
- (Windows) *NEW_DOMAIN_HOME*`\bin\startManagedWebLogic.cmd` *managed_server_name admin_url*

> **Note:**
>
> When using secured production mode, you must provide additional parameters to start the Managed Servers. See Starting Managed Servers using a Start Script in *Administering Security for Oracle WebLogic Server*.

> **Note:**
>
> The startup of a Managed Server will typically start the applications that are deployed to it. Therefore, it should not be necessary to manually start applications after the Managed Server startup.

Step 4: Start System Components

To start system components, such as Oracle HTTP Server, use the `startComponent` script:

- (UNIX) *NEW_DOMAIN_HOME*`/bin/startComponent.sh` *component_name*

- (Windows) *NEW_DOMAIN_HOME*\bin\startComponent.cmd *component_name*

You can start system components in any order.

Step 6: Change to External Authentication

If you changed to internal authentication before upgrading product schemas, change back to external authentication after starting servers and processes.

5

Upgrading an Oracle Data Integrator Java EE Agent Environment

You can upgrade an Oracle Data Integrator Java EE agent environment from the Oracle Fusion Middleware 12*c* (12.2.1.4.0) release to 14c (14.1.2.0.0).

About Oracle Data Integrator Java EE Agent Upgrade Process

Review the process flowchart for an overview of the upgrade process for an Oracle Data Integrator Java EE agent.

Figure 5-1 Oracle Data Integrator Java EE Agent Upgrade Process Flowchart

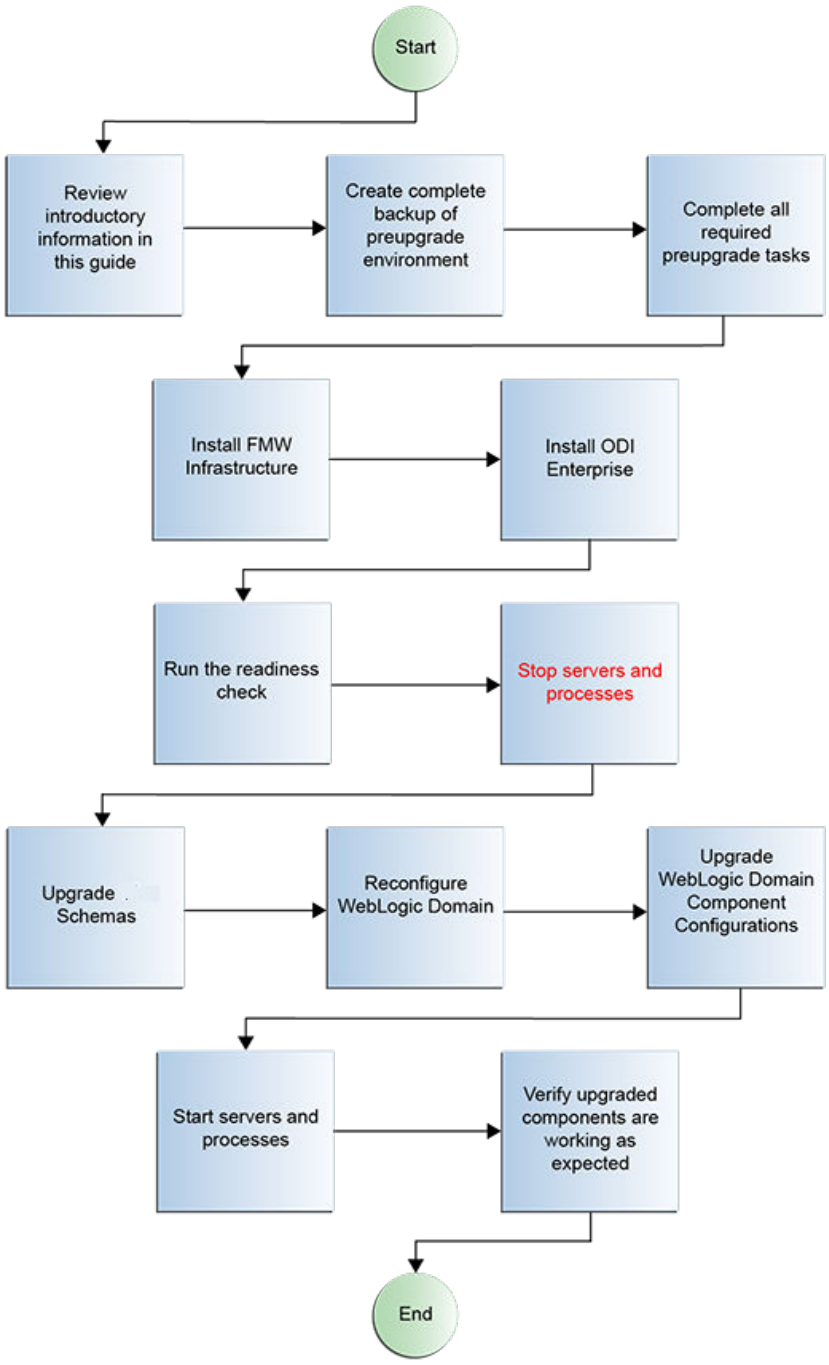

Table 5-1 Tasks for Upgrading Oracle Data Integrator Java EE Agent from a Previous 12*c* Release

Task	Description
Required If you have not done so already, review the introductory topics in this guide and complete the required pre-upgrade tasks.	See: • Introduction to Upgrading Oracle Data Integrator to 14c (14.1.2.0.0) • Pre-Upgrade Requirements
Required Install Oracle Fusion Middleware Infrastructure and Oracle Data Integrator 14c (14.1.2.0.0) in the new Oracle home.	See Installing Oracle Data Integrator Java EE Environment.
Optional Run a pre-upgrade readiness check.	See Running a Pre-Upgrade Readiness Check.
Required Shut down the 12*c* environment (stop all Administration and Managed Servers).	**WARNING:** Failure to shut down your servers during an upgrade may lead to data corruption. See Stopping Servers and Processes.
Required Start the Upgrade Assistant to upgrade the database schemas and to migrate all active (in flight) instance data.	See Upgrading Product Schemas. **Note:** The upgrade of active instance data is started automatically when running the Upgrade Assistant. Once the data is successfully upgraded to the new 14c (14.1.2.0.0) environment, you can close the Upgrade Assistant. The closed instances will continue to upgrade through a background process.
Required Start the Reconfiguration Wizard to reconfigure the domain.	Run the Configuration Wizard to update the existing domain to use the newly installed software. See Reconfiguring the Domain.
Required if JRF component upgrade needed Start the Upgrade Assistant (again) to upgrade domain component configurations.	Run the Upgrade Assistant to update the reconfigured domain's component configurations. See Upgrading Domain Component Configurations.
Required Restart the servers and the 14c (14.1.2.0.0) instance.	When the upgrade process is complete, restart the 14c (14.1.2.0.0) instance. See Starting Servers and Processes.
Required Verify the upgrade.	Ensure all of the upgraded components are working as expected before deleting your backups.

Installing Oracle Data Integrator Java EE Environment

Before beginning your upgrade, download Oracle Data Integrator 14c (14.1.2.0.0) distribution on the target system and install it using Oracle Universal Installer.

> **Note:**
>
> The ODI Enterprise installation process will automatically install Oracle Fusion Middleware Infrastructure if it is not already installed.

To install Oracle Data Integrator Java EE environment:

1. Sign in to the target system.
2. Download the following from Oracle Technology Network or Oracle Software Delivery Cloud to your target system:
   - Oracle Data Integrator (`fmw_14.1.2.0.0_odi_Disk1_1of1.zip`)
3. Change to the directory where you downloaded the 14c (14.1.2.0.0) product distribution.
4. Unzip the installer `fmw_14.1.2.0.0_odi_Disk1_1of1.zip` file.
5. Start the ODI installation:

   (UNIX) *`JDK_HOME`*`/bin/java -jar fmw_14.1.2.0.0_odi.jar`

   (Windows) *`JDK_HOME`*`\bin\java -jar fmw_14.1.2.0.0_odi.jar`
6. On UNIX operating systems, the Installation Inventory Setup screen appears if this is the first time you are installing an Oracle product on this host.

   Specify the location where you want to create your central inventory. Make sure that the operating system group name selected on this screen has write permissions to the central inventory location, and click **Next**.

   > **Note:**
   >
   > The Installation Inventory Setup screen does not appear on Windows operating systems.
7. On the Welcome screen, review the information to make sure that you have met all the prerequisites. Click **Next**.
8. On the Auto Updates screen, select an option:
   - **Skip Auto Updates**: If you do not want your system to check for software updates at this time.
   - **Select patches from directory**: To navigate to a local directory if you downloaded patch files.
   - **Search My Oracle Support for Updates**: To automatically download software updates if you have a My Oracle Support account. You must enter Oracle Support credentials then click **Search**. To configure a proxy server for the installer to access My Oracle Support, click **Proxy Settings**. Click **Test Connection** to test the connection.

   Click **Next**.

9. On the Installation Location screen, specify the location for the Oracle home directory and click **Next**.

   For more information about Oracle Fusion Middleware directory structure, see Understanding Directories for Installation and Configuration in *Oracle Fusion Middleware Planning an Installation of Oracle Fusion Middleware*.

10. On the Installation Type screen, select **Enterprise Installation**.

    Click **Next**.

11. The Prerequisite Checks screen analyzes the host computer to ensure that the specific operating system prerequisites have been met.

    To view the list of tasks that are verified, select **View Successful Tasks**. To view log details, select **View Log**. If any prerequisite check fails, then an error message appears at the bottom of the screen. Fix the error and click **Rerun** to try again. To ignore the error or the warning message and continue with the installation, click **Skip** (not recommended).

12. On the Installation Summary screen, verify the installation options that you selected.

    If you want to save these options to a response file, click **Save Response File** and enter the response file location and name. The response file collects and stores all the information that you have entered, and enables you to perform a silent installation (from the command line) at a later time.
    Click **Install** to begin the installation.

13. On the Installation Progress screen, when the progress bar displays 100%, click **Finish** to dismiss the installer, or click **Next** to see a summary.

14. The Installation Complete screen displays the Installation Location and the Feature Sets that are installed. Review this information and click **Finish** to close the installer.

Stopping Servers and Processes

Before you run the Upgrade Assistant to upgrade your schemas and configurations, you must shut down all of the pre-upgrade processes and servers, including the Administration Server and any managed servers.

An Oracle Fusion Middleware environment can consist of an Oracle WebLogic Server domain, an Administration Server, multiple managed servers, Java components, system components, and a database used as a repository for metadata. The components may be dependent on each other, so they must be stopped in the correct order.

> **Note:**
>
> The procedures in this section describe how to stop the existing, pre-upgrade servers and processes using the WLST command-line utility or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Remote Console. See Starting and Stopping Administration and Managed Servers and Node Manager.
>
> As of release 14c (14.1.2.0.0), the WebLogic Server Administration Console has been removed. For comparable functionality, you should use the WebLogic Remote Console. For more information, see Oracle WebLogic Remote Console.

To stop your pre-upgrade Fusion Middleware environment, navigate to the pre-upgrade domain and follow the steps below:

> **Note:**
>
> It is important that you stop the following servers in the correct order.

Step 1: Stop System Components

To stop system components, such as Oracle HTTP Server, use the `stopComponent` script:

- (UNIX) *EXISTING_DOMAIN_HOME*`/bin/stopComponent.sh` *component_name*
- (Windows) *EXISTING_DOMAIN_HOME*`\bin\stopComponent.cmd` *component_name*

You can stop system components in any order.

Step 2: Stop Any Managed Servers

To stop a WebLogic Server Managed Server, use the `stopManagedWebLogic` script:

- (UNIX) *EXISTING_DOMAIN_HOME*`/bin/stopManagedWebLogic.sh` *managed_server_name admin_url*
- (Windows) *EXISTING_DOMAIN_HOME*`\bin\stopManagedWebLogic.cmd` *managed_server_name admin_url*

When prompted, enter your user name and password.

Step 3: Stop the Administration Server

To stop the Administration Server, use the `stopWebLogic` script:

- (UNIX) *EXISTING_DOMAIN_HOME*`/bin/stopWebLogic.sh`
- (Windows) *EXISTING_DOMAIN_HOME*`\bin\stopWebLogic.cmd`

When prompted, enter your user name, password, and the URL of the Administration Server.

> **Note:**
>
> If external password storage is set up for the repository, then the server hosting the credential store should be up and running so that the work repository password can be retrieved during upgrade. See Setting Up External Password Storage in *Administering Oracle Data Integrator*.

Step 4: Stop Node Manager

To stop Node Manager, close the command shell in which it is running.

Alternatively, after setting the `nodemanager.properties` attribute `QuitEnabled` to `true` (the default is `false`), you can use WLST to connect to Node Manager and shut it down. See stopNodeManager in *WLST Command Reference for Oracle WebLogic Server*.

Running a Pre-Upgrade Readiness Check

To identify potential issues with the upgrade, Oracle recommends that you run a readiness check before you start the upgrade process. Be aware that the readiness check may not be

able to discover all potential issues with your upgrade. An upgrade may still fail, even if the readiness check reports success.

About Running a Pre-Upgrade Readiness Check

You can run the Upgrade Assistant in `-readiness` mode to detect issues before you perform the actual upgrade. You can run the readiness check in GUI mode using the Upgrade Assistant or in silent mode using a response file.

The Upgrade Assistant readiness check performs a read-only, pre-upgrade review of your Fusion Middleware schemas and WebLogic domain configurations that are at a supported starting point. The review is a read-only operation.

The readiness check generates a formatted, time-stamped readiness report so you can address potential issues before you attempt the actual upgrade. If no issues are detected, you can begin the upgrade process. Oracle recommends that you read this report thoroughly before performing an upgrade.

You can run the readiness check while your existing Oracle Fusion Middleware domain is online (while other users are actively using it) or offline.

You can run the readiness check any number of times before performing any actual upgrade. However, do not run the readiness check after an upgrade has been performed, as the report results may differ from the result of pre-upgrade readiness checks.

> **Note:**
>
> To prevent performance from being affected, Oracle recommends that you run the readiness check during off-peak hours.

Starting the Upgrade Assistant in Readiness Mode

Use the `-readiness` parameter to start the Upgrade Assistant in readiness mode.

To perform a readiness check on your pre-upgrade environment with the Upgrade Assistant:

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant.
   - (UNIX) `./ua -readiness`
   - (Windows) `ua.bat -readiness`

> **Note:**
>
> If the `DISPLAY` environment variable is not set up properly to allow for GUI mode, you may encounter the following error:
>
> ```
> Xlib: connection to ":1.0" refused by server
> Xlib: No protocol specified
> ```
>
> To resolve this issue, set the `DISPLAY` environment variable to the system name or IP address of your local workstation, and rerun Upgrade Assistant.
>
> If you continue to receive these errors after setting `DISPLAY`, try launching another GUI tool, such as `vncconfig`. If you see the same errors, your `DISPLAY` environment variable may still not be set correctly.

For information about other parameters that you can specify on the command line, see:

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 5-2 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.

Table 5-2 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/logs` *ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *ORACLE_HOME*`\oracle_common\upgrade\logs` *ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Performing a Readiness Check with the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to complete the pre-upgrade readiness check.

Readiness checks are performed only on schemas or component configurations that are at a supported upgrade starting point.

To complete the readiness check:

1. On the Welcome screen, review information about the readiness check. Click **Next**.
2. On the Readiness Check Type screen, select the readiness check that you want to perform:

- **Individually Selected Schemas** allows you to select individual schemas for review before upgrade. The readiness check reports whether a schema is supported for an upgrade or where an upgrade is needed.
  When you select this option, the screen name changes to Selected Schemas.
- **Domain Based** allows the Upgrade Assistant to discover and select all upgrade-eligible schemas or component configurations in the domain specified in the **Domain Directory** field.
  When you select this option, the screen name changes to Schemas and Configuration.

  Leave the default selection if you want the Upgrade Assistant to check all schemas and component configurations at the same time, or select a specific option:

  – **Include checks for all schemas** to discover and review all components that have a schema available to upgrade.

  – **Include checks for all configurations** to review component configurations for a managed WebLogic Server domain.

Click **Next**.

3. If you selected **Individually Selected Schemas**: On the Available Components screen, select the components that have a schema available to upgrade for which you want to perform a readiness check.

   If you selected **Domain Based**: On the Component List screen, review the list of components that are present in your domain for which you want to perform a readiness check.

   If you select a component that has dependent components, those components are automatically selected. For example, if you select Oracle Platform Security Services, Oracle Audit Services is automatically selected.

   Depending on the components you select, additional screens may display. For example, you may need to:

   - Specify the domain directory.
   - Specify schema credentials to connect to the selected schema: **Database Type**, **DBA User Name**, and **DBA Password**. Then click **Connect**.

     > **Note:**
     >
     > Oracle database is the default database type. Make sure that you select the correct database type before you continue. If you discover that you selected the wrong database type, do not go back to this screen to change it to the correct type. Instead, close the Upgrade Assistant and restart the readiness check with the correct database type selected to ensure that the correct database type is applied to all schemas.

   - Select the **Schema User Name** option and specify the **Schema Password**.

   Click **Next** to start the readiness check.

4. On the Readiness Summary screen, review the summary of the readiness checks that will be performed based on your selections.

   If you want to save your selections to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

For a detailed report, click **View Log**.

Click **Next**.

5. On the Readiness Check screen, review the status of the readiness check. The process can take several minutes.

   If you are checking multiple components, the progress of each component displays in its own progress bar in parallel.

   When the readiness check is complete, click **Continue**.

6. On the End of Readiness screen, review the results of the readiness check (**Readiness Success** or **Readiness Failure**):

   - If the readiness check is successful, click **View Readiness Report** to review the complete report. Oracle recommends that you review the Readiness Report before you perform the actual upgrade even when the readiness check is successful. Use the **Find** option to search for a particular word or phrase within the report. The report also indicates where the completed Readiness Check Report file is located.
   - If the readiness check encounters an issue or error, click **View Log** to review the log file, identify and correct the issues, and then restart the readiness check. The log file is managed by the command-line options you set.

Understanding the Readiness Report

After performing a readiness check for your domain, review the report to determine whether you need to take any action for a successful upgrade.

The format of the readiness report file is:

`readiness<timestamp>.txt`

Where, *timestamp* indicates the date and time of when the readiness check was run.

A readiness report contains the following information:

Table 5-3 Readiness Report Elements

Report Information	Description	Required Action
Overall Readiness Status: SUCCESS or FAILURE	The top of the report indicates whether the readiness check passed or completed with one or more errors.	If the report completed with one or more errors, search for FAIL and correct the failing issues before attempting to upgrade. You can re-run the readiness check as many times as necessary before an upgrade.
Timestamp	The date and time that the report was generated.	No action required.
Log file location `/oracle_common/upgrade/logs`	The directory location of the generated log file.	No action required.
Domain Directory	Displays the domain location	No action required.
Readiness report location `/oracle_common/upgrade/logs`	The directory location of the generated readiness report.	No action required.

Table 5-3 (Cont.) Readiness Report Elements

Report Information	Description	Required Action
Names of components that were checked	The names and versions of the components included in the check and status.	If your domain includes components that cannot be upgraded to this release, such as SOA Core Extension, do not attempt an upgrade.
Names of schemas that were checked	The names and current versions of the schemas included in the check and status.	Review the version numbers of your schemas. If your domain includes schemas that cannot be upgraded to this release, do not attempt an upgrade.
Individual Object Test Status: FAIL	The readiness check test detected an issue with a specific object.	Do not upgrade until all failed issues have been resolved.
Individual Object Test Status: PASS	The readiness check test detected no issues for the specific object.	If your readiness check report shows only the PASS status, you can upgrade your environment. Note, however, that the Readiness Check cannot detect issues with externals such as hardware or connectivity during an upgrade. You should always monitor the progress of your upgrade.
Completed Readiness Check of <Object> Status: FAILURE	The readiness check detected one or more errors that must be resolved for a particular object such as a schema, an index, or datatype.	Do not upgrade until all failed issues have been resolved.
Completed Readiness Check of <Object> Status: SUCCESS	The readiness check test detected no issues.	No action required.

Upgrading Product Schemas

After stopping servers and processes, use the Upgrade Assistant to upgrade your 12.2.1.4.0 schemas to the 14c (14.1.2.0.0) release of Oracle Fusion Middleware.

> **Note:**
>
> If your domain has the `WLSSchemaDataSource` data source, then you will need to verify which database user is assigned to it. If `<PREFIX>_WLS_RUNTIME` is assigned to it, then you need to change that to `<PREFIX>_WLS` . For more information, see Verify the Database User for the WLSSchemaDataSource Data Source.

> **Note:**
>
> As of 14c (14.1.2.0.0) the following schema changes have been made to help you prepare for an optional zero downtime upgrade to a future release:
>
> - Schemas created prior to 14c (14.1.2.0.0) with editions disabled and then upgraded to 14c (14.1.2.0.0) will become editions enabled.
> - Schemas created in 14c (14.1.2.0.0) will be created with editions enabled.

The Upgrade Assistant allows you to upgrade individually selected schemas or all schemas associated with a domain. The option you select determines which Upgrade Assistant screens you will use.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 14c (14.1.2.0.0).

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail. To set the character encoding, run the following:
>
> UNIX operating systems:
>
> ```
> export UA_PROPERTIES="-Dfile.encoding=UTF-8 ${UA_PROPERTIES}"
> ```
>
> Windows operating systems:
>
> ```
> set UA_PROPERTIES=-Dfile.encoding=UTF-8 %UA_PROPERTIES%
> ```

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *NEW_ORACLE_HOME*`/oracle_common/upgrade/bin`
   - (Windows) *NEW_ORACLE_HOME*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 5-4 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.

Table 5-4 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/logs` *ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *ORACLE_HOME*`\oracle_common\upgrade\logs` *ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Product Schemas Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade the product schemas.

To upgrade product schemas with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

> **Note:**
>
> For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the Selected Schemas screen, select **Individually Selected Schemas**.

> **Caution:**
>
> Upgrade only those schemas that are used to support your 14c (14.1.2.0.0) components. Do not upgrade schemas that are currently being used to support components that are not included in Oracle Fusion Middleware 14c (14.1.2.0.0).

Click **Next**.

3. On the Available Components screen, select **Oracle Data Integrator** to upgrade the Master and Work Repository schema.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

> **Note:**
>
> The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the ODI Schema screen, specify the database connection details for each schema you are upgrading:
   - Select the database type from the **Database Type** drop-down menu.
   - Enter the database connection details, and click **Connect**.
   - Select the schema you want to upgrade from the **Schema User Name** drop-down menu, and then enter the password for the schema. Be sure to use the correct schema prefix for the schemas you are upgrading.
6. On the ODI Options screen, select all of the options.

Table 5-5 ODI Options

Option	Description
Replace Knowledge Modules with mandatory updates	This selection replaces standard Knowledge Modules with the newest version. Customizations to Oracle installed Knowledge Modules will be overwritten. But if you copy an installed Knowledge Module and customize the Knowledge Module, the customizations are not lost.
Upgrade topology and security metadata	This selection replaces topology and security artifacts such as Technologies, Datatypes, Security Profiles and others with the newest version. Customizations of installed objects will be overwritten. If the object is copied and customized, then the customizations are not lost.

See Advanced Upgrade Options.

7. On the ODI Supervisor screen, enter the Supervisor account credentials for the ODI repository to be upgraded.

   The installed Supervisor account is `SUPERVISOR`. Check with your ODI administrator for proper Supervisor account name and password, supplied when prompted by the Repository Creation Utility (RCU) when creating the Master and Work repositories for ODI.

> **Note:**
>
> When **All Schemas Used by a Domain** is selected, the Supervisor credentials for ODI are not pre-populated in the first instance as the domain does not contain them. If there are multiple ODI schemas, the Upgrade Assistant populates the user entry using the first set of credentials.

8. On the Examine screen, review the status of the Upgrade Assistant as it examines each schema, verifying that the schema is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

> **Note:**
>
> - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
> - Canceling the examination process has no effect on the schemas or configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

9. On the Upgrade Summary screen, review the summary of the schemas that will be upgraded and/or created.

   Verify that the correct Source and Target Versions are listed for each schema you intend to upgrade.

   If you want to save these options to a response file to run the Upgrade Assistant again later in response (or silent) mode, click **Save Response File** and provide the location and name of the response file. A silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again.

   Click **Next** .

10. On the Upgrade Progress screen, monitor the status of the upgrade.

> **Caution:**
>
> Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

   If any schemas are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

   Click **Next**.

11. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard.

    If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails, you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Verifying the Schema Upgrade

After completing all the upgrade steps, verify that the upgrade was successful by checking that the schema version in `schema_version_registry` has been properly updated.

If you are using an Oracle database, connect to the database as a user having Oracle DBA privileges, and run the following from SQL*Plus to get the current version numbers. Be sure to replace <*PREFIX*> with your schema prefix.

```
SET LINE 120
COLUMN MRC_NAME FORMAT A14
COLUMN COMP_ID FORMAT A20
COLUMN VERSION FORMAT A12
COLUMN STATUS FORMAT A9
COLUMN UPGRADED FORMAT A8
SELECT MRC_NAME, COMP_ID, OWNER, EDITION NAME, VERSION, STATUS, UPGRADED FROM
SCHEMA_VERSION_REGISTRY where owner like '<PREFIX>_%';
```

In the query result:

- Verify that the `EDITION NAME` column appears as `ORA$BASE`.
- Check that the number in the `VERSION` column matches the latest version number for that schema. For example, verify that the schema version number is 14.1.2.0.0.

> **Note:**
>
> Not all schema versions will be updated. Some schemas do not require an upgrade to this release and will retain their pre-upgrade version number.

- The `STATUS` field will be either `UPGRADING` or `UPGRADED` during the schema patching operation, and will become `VALID` when the operation is completed.
- If the status appears as `INVALID`, the schema update failed. You should examine the logs files to determine the reason for the failure.
- Synonym objects owned by `IAU_APPEND` and `IAU_VIEWER` will appear as `INVALID`, but that does not indicate a failure.

  They become invalid because the target object changes after the creation of the synonym. The synonyms objects will become valid when they are accessed. You can safely ignore these `INVALID` objects.

About Reconfiguring the Domain

Run the Reconfiguration Wizard to reconfigure your domain component configurations to 14c (14.1.2.0.0).

When you reconfigure a WebLogic Server domain, the following items are automatically updated, depending on the applications in the domain:

- WebLogic Server core infrastructure
- Domain version

> **Note:**
>
> Before you begin the domain reconfiguration, note the following limitations:
>
> - The Reconfiguration Wizard does not update any of your own applications that are included in the domain.
> - Transforming a non-dynamic cluster domain to a dynamic cluster domain during the upgrade process is not supported.
>
> The dynamic cluster feature is available when running the Reconfiguration Wizard, but Oracle only supports upgrading a non-dynamic cluster upgrade and then adding dynamic clusters. You cannot add dynamic cluster during the upgrade process.

Specifically, when you reconfigure a domain, the following occurs:

- The domain version number in the `config.xml` file for the domain is updated to the Administration Server's installed WebLogic Server version.
- Reconfiguration templates for all installed Oracle products are automatically selected and applied to the domain. These templates define any reconfiguration tasks that are required to make the WebLogic domain compatible with the current WebLogic Server version.
- Start scripts are updated.

  If you want to preserve your modified start scripts, be sure to back them up before starting the Reconfiguration Wizard.

> **Note:**
>
> When the domain reconfiguration process starts, you can't undo the changes that it makes. Before running the Reconfiguration Wizard, ensure that you have backed up the domain as covered in the pre-upgrade checklist. If an error or other interruption occurs while running the Reconfiguration Wizard, you must restore the domain by copying the files and directories from the backup location to the original domain directory. This is the only way to ensure that the domain has been returned to its original state before reconfiguration.

Backing Up the Domain

Before running the Reconfiguration Wizard, create a backup copy of the domain directory.

To create a backup of the domain directory:

1. Copy the source domain to a separate location to preserve the contents.

   (Windows) `copy C:\domains\mydomain to C:\domains\mydomain_backup.`

   (UNIX) `cp -rf mydomain mydomain_backup`

2. Before updating the domain on each remote Managed Server, create a backup copy of the domain directory on each remote machine.
3. Verify that the backed up versions of the domain are complete.

If domain reconfiguration fails for any reason, you must copy all files and directories from the backup directory into the original domain directory to ensure that the domain is returned entirely to its original state before reconfiguration.

Starting the Reconfiguration Wizard

> **Note:**
>
> Shut down the administration server and all collocated managed servers before starting the reconfiguration process. See Stopping Servers and Processes .

To start the Reconfiguration Wizard in graphical mode:

1. Sign in to the system on which the domain resides.
2. Open the command shell (on UNIX operating systems) or open a command prompt window (on Windows operating systems).
3. Go to the `oracle_common/common/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/common/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\commom\bin`
4. Start the Reconfiguration Wizard with the following logging options:
   - (UNIX) `./reconfig.sh -log=`*`log_file`*` -log_priority=ALL`
   - (Windows) `reconfig.cmd -log=`*`log_file`*` -log_priority=ALL`

   where *`log_file`* is the absolute path of the log file you'd like to create for the domain reconfiguration session. This can be helpful if you need to troubleshoot the reconfiguration process.

   The parameter `-log_priority=ALL` ensures that logs are logged in fine mode.

   > **Note:**
   >
   > When you run this command, the following error message might appear to indicate that the default cache directory is not valid:
   >
   > ```
   > *sys-package-mgr*: can't create package cache dir
   > ```
   >
   > You can change the cache directory by setting the environment variable `CONFIG_JVM_ARGS`. For example:
   >
   > `CONFIG_JVM_ARGS=-Dpython.cachedir=`*`valid_directory`*

Reconfiguring the Domain with the Reconfiguration Wizard

Navigate through the screens in the Reconfiguration Wizard to reconfigure your existing domain before running the Upgrade Assistant

> **Note:**
>
> If the source is a clustered environment, run the Reconfiguration Wizard on the primary node only. Use the `pack` and `unpack` utilities to apply the changes to other cluster members in the domain.

To reconfigure the domain with the Reconfiguration Wizard:

1. On the Select Domain screen, specify the location of the domain you want to upgrade or click **Browse** to navigate and select the domain directory. Click **Next**.
2. On the Reconfiguration Setup Progress screen, view the progress of the setup process. When complete, click **Next**.

   During this process:

   - The reconfiguration templates for your installed products, including Fusion Middleware products, are automatically applied. This updates various domain configuration files such as `config.xml`, `config-groups.xml`, and `security.xml` (among others).
   - Scripts and other files that support your Fusion Middleware products are updated.
   - The domain upgrade is validated.
3. On the Domain Mode and JDK screen, select the JDK to use in the domain or click **Browse** to navigate to the JDK you want to use. The supported JDK version for 14c (14.1.2.0.0) is 17.0.12 and later. Click **Next**.

   > **Note:**
   >
   > You cannot change the **Domain Mode** at this stage. Your domain will retain its pre-upgrade domain mode. If you want to change the domain to secure mode, then after the upgrade see Changing Domain Mode Post Upgrade.

   For a list of JDKs that are supported for a specific platform, see Oracle Fusion Middleware Supported System Configurations.
4. On the Database Configuration Type screen, select **RCU Data** to connect to the Server Table (<*PREFIX*>_STB) schema.

   Note: <*PREFIX*> is the RCU schema prefix of the 12.2.1.4 domain that is being upgraded.

   Enter the database connection details using the RCU service table (<*PREFIX*>_STB) schema credentials and click **Get RCU Configuration**.

   The Reconfiguration Wizard uses this connection to automatically update the data sources required for components in your domain.

   > **Note:**
   >
   > By default **Oracle's Driver (Thin) for Service connections; Versions: Any** is the selected driver. If you specified an instance name in your connection details — instead of the service name — you must select **Oracle's Driver (Thin) for pooled instance connections; Versions: Any** If you do not change the driver type, then the connection will fail.

If the check is successful, click **Next**. If the check fails, reenter the connection details correctly and try again.

5. On the JDBC Component Schema screen, verify that the DBMS/Service and the Host name is correct for each component schema and click **Next**.
6. On the JDBC Component Schema Test screen, select all the component schemas and click **Test Selected Connections** to test the connection for each schema. The result of the test is indicated in the Status column.

   When the check is complete, click **Next**.
7. On the Advanced Configuration screen, you can select all categories for which you want to perform advanced configuration. For each category you select, the appropriate configuration screen is displayed to allow you to perform advanced configuration.

   > **Note:**
   >
   > The categories that are listed on the Advanced Configuration screen depend on the resources defined in the templates you selected for the domain.

   For this upgrade, select none of the options and click **Next**.
8. On the Configuration Summary screen, review the detailed configuration settings of the domain before continuing.

   You can limit the items that are displayed in the right-most panel by selecting a filter option from the **View** drop-down list.

   To change the configuration, click **Back** to return to the appropriate screen. To reconfigure the domain, click **Reconfig**.

   > **Note:**
   >
   > The location of the domain does not change when you reconfigure it.
9. The Reconfiguration Progress screen displays the progress of the reconfiguration process.

   During this process:

   - Domain information is extracted, saved, and updated.
   - Schemas, scripts, and other such files that support your Fusion Middleware products are updated.

   When the progress bar shows 100%, click **Next**.
10. The End of Configuration screen indicates whether the reconfiguration process completed successfully or failed. It also displays the location of the domain that was reconfigured as well as the Administration Server URL (including the listen port). If the reconfiguration is successful, it displays **Oracle WebLogic Server Reconfiguration Succeeded**.

    If the reconfiguration process did not complete successfully, an error message is displayed indicates the reason. Take appropriate action to resolve the issue. If you cannot resolve the issue, contact My Oracle Support.

    Note the Domain Location and the Admin Server URL for further operations.

Upgrading Domain Component Configurations

After reconfiguring the domain, use the Upgrade Assistant to upgrade the domain *component* configurations inside the domain to match the updated domain configuration.

Starting the Upgrade Assistant

Run the Upgrade Assistant to upgrade product schemas, domain component configurations, or standalone system components to 14c (14.1.2.0.0).

To start the Upgrade Assistant:

> **Note:**
>
> Before you start the Upgrade Assistant, make sure that the JVM character encoding is set to UTF-8 for the platform on which the Upgrade Assistant is running. If the character encoding is not set to UTF-8, then you will not be able to download files containing Unicode characters in their names. This can cause the upgrade to fail. To set the character encoding, run the following:
>
> UNIX operating systems:
>
> ```
> export UA_PROPERTIES="-Dfile.encoding=UTF-8 ${UA_PROPERTIES}"
> ```
>
> Windows operating systems:
>
> ```
> set UA_PROPERTIES=-Dfile.encoding=UTF-8 %UA_PROPERTIES%
> ```

1. Go to the `oracle_common/upgrade/bin` directory:
   - (UNIX) *`NEW_ORACLE_HOME`*`/oracle_common/upgrade/bin`
   - (Windows) *`NEW_ORACLE_HOME`*`\oracle_common\upgrade\bin`
2. Start the Upgrade Assistant:
   - (UNIX) `./ua`
   - (Windows) `ua.bat`

For information about other parameters that you can specify on the command line, such as logging parameters, see:

Upgrade Assistant Parameters

When you start the Upgrade Assistant from the command line, you can specify additional parameters.

Table 5-6 Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-readiness`	Required for readiness checks **Note**: Readiness checks cannot be performed on standalone installations (those not managed by the WebLogic Server).	Performs the upgrade readiness check without performing an actual upgrade. Schemas and configurations are checked. Do not use this parameter if you have specified the `-examine` parameter.
`-threads`	Optional	Identifies the number of threads available for concurrent schema upgrades or readiness checks of the schemas. The value must be a positive integer in the range 1 to 8. The default is 4.
`-response`	Required for silent upgrades or silent readiness checks	Runs the Upgrade Assistant using inputs saved to a response file generated from the data that is entered when the Upgrade Assistant is run in GUI mode. Using this parameter runs the Upgrade Assistant in *silent mode* (without displaying Upgrade Assistant screens).
`-examine`	Optional	Performs the examine phase but does not perform an actual upgrade. Do not specify this parameter if you have specified the `-readiness` parameter.
`-logLevel` *attribute*	Optional	Sets the logging level, specifying one of the following attributes: • `TRACE` • `NOTIFICATION` • `WARNING` • `ERROR` • `INCIDENT_ERROR` The default logging level is `NOTIFICATION`. Consider setting the `-logLevel TRACE` attribute to so that more information is logged. This is useful when troubleshooting a failed upgrade. The Upgrade Assistant's log files can become very large if `-logLevel TRACE` is used.

Table 5-6 (Cont.) Upgrade Assistant Command-Line Parameters

Parameter	Required or Optional	Description
`-logDir` *location*	Optional	Sets the default location of upgrade log files and temporary files. You must specify an existing, writable directory where the Upgrade Assistant creates log files and temporary files. The default locations are: (UNIX) *ORACLE_HOME*`/oracle_common/upgrade/logs` *ORACLE_HOME*`/oracle_common/upgrade/temp` (Windows) *ORACLE_HOME*`\oracle_common\upgrade\logs` *ORACLE_HOME*`\oracle_common\upgrade\temp`
`-help`	Optional	Displays all of the command-line options.

Upgrading Domain Component Configurations Using the Upgrade Assistant

Navigate through the screens in the Upgrade Assistant to upgrade component configurations in the WebLogic domain.

After running the Reconfiguration Wizard to reconfigure the WebLogic domain to 14c (14.1.2.0.0), you must run the Upgrade Assistant to upgrade the domain *component* configurations to match the updated domain configuration.

To upgrade domain component configurations with the Upgrade Assistant:

1. On the Welcome screen, review an introduction to the Upgrade Assistant and information about important pre-upgrade tasks. Click **Next**.

   > **Note:**
   >
   > For more information about any Upgrade Assistant screen, click **Help** on the screen.

2. On the next screen:
   - Select **All Configurations Used By a Domain**. The screen name changes to WebLogic Components.
   - In the **Domain Directory** field, enter the WebLogic domain directory path.

   Click **Next**.
3. On the Component List screen, verify that the list includes all the components for which you want to upgrade configurations and click **Next**.

If you do not see the components you want to upgrade, click **Back** to go to the previous screen and specify a different domain.

4. On the Prerequisites screen, acknowledge that the prerequisites have been met by selecting all the check boxes. Click **Next**.

> **Note:**
>
> The Upgrade Assistant does not verify whether the prerequisites have been met.

5. On the Examine screen, review the status of the Upgrade Assistant as it examines each component, verifying that the component configuration is ready for upgrade. If the status is **Examine finished**, click **Next**.

   If the examine phase fails, Oracle recommends that you cancel the upgrade by clicking **No** in the Examination Failure dialog. Click **View Log** to see what caused the error and refer to Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant* for information on resolving common upgrade errors.

> **Note:**
>
> - If you resolve any issues detected during the examine phase without proceeding with the upgrade, you can start the Upgrade Assistant again without restoring from backup. However, if you proceed by clicking **Yes** in the Examination Failure dialog box, you need to restore your pre-upgrade environment from backup before starting the Upgrade Assistant again.
> - Canceling the examination process has no effect on the configuration data; the only consequence is that the information the Upgrade Assistant has collected must be collected again in a future upgrade session.

6. On the Upgrade Summary screen, review the summary of the options you have selected for component configuration upgrade.

   The response file collects and stores all the information that you have entered, and enables you to perform a silent upgrade at a later time. The silent upgrade performs exactly the same function that the Upgrade Assistant performs, but you do not have to manually enter the data again. If you want to save these options to a response file, click **Save Response File** and provide the location and name of the response file.

   Click **Upgrade** to start the upgrade process.

7. On the Upgrade Progress screen, monitor the status of the upgrade.

> **Caution:**
>
> Allow the Upgrade Assistant enough time to perform the upgrade. Do not cancel the upgrade operation unless absolutely necessary. Doing so may result in an unstable environment.

If any components are not upgraded successfully, refer to the Upgrade Assistant log files for more information.

> **Note:**
>
> The progress bar on this screen displays the progress of the current upgrade procedure. It does not indicate the time remaining for the upgrade.

Click **Next**.

8. If the upgrade is successful: On the Upgrade Success screen, click **Close** to complete the upgrade and close the wizard. The Post-Upgrade Actions window describes the manual tasks you must perform to make components functional in the new installation. This window appears only if a component has post-upgrade steps.

   If the upgrade fails: On the Upgrade Failure screen, click **View Log** to view and troubleshoot the errors. The logs are available at *NEW_ORACLE_HOME*`/oracle_common/upgrade/logs`.

> **Note:**
>
> If the upgrade fails you must restore your pre-upgrade environment from backup, fix the issues, then restart the Upgrade Assistant.

Starting Servers and Processes

After a successful upgrade, restart all processes and servers, including the Administration Server and any Managed Servers.

The components may be dependent on each other so they must be started in the correct order.

> **Note:**
>
> The procedures in this section describe how to start servers and processes using the WLST command-line utility or a script. You can also use the Oracle Fusion Middleware Control and the Oracle WebLogic Server Remote Console. See Starting and Stopping Administration and Managed Servers and Node Manager.
>
> As of release 14c (14.1.2.0.0), the WebLogic Server Administration Console has been removed. For comparable functionality, you should use the WebLogic Remote Console. For more information, see Oracle WebLogic Remote Console.

To start your Fusion Middleware environment, follow the steps below:

> **Note:**
>
> Depending on your existing security settings, you may need to perform additional configuration before you can manage a domain with secured production mode enabled. For more information, see Connecting to the Administration Server using WebLogic Remote Console
>
> .

Step 1: Start the Administration Server

To start the Administration Server, use the `startWebLogic` script:

- (UNIX) *NEW_DOMAIN_HOME*`/bin/startWebLogic.sh`
- (Windows) *NEW_DOMAIN_HOME*`\bin\startWebLogic.cmd`

> **Note:**
>
> When using secured production mode, you must provide additional parameters to start the Administration Server. See Connecting to the Administration Server using WLST in *Administering Security for Oracle WebLogic Server*.

When prompted, enter your user name, password, and the URL of the Administration Server.

Step 2: Start Node Manager

To start Node Manager, use the `startNodeManager` script:

- (UNIX) *NEW_DOMAIN_HOME*`/bin/startNodeManager.sh`
- (Windows) *NEW_DOMAIN_HOME*`\bin\startNodeManager.cmd`

Step 3: Start Any Managed Servers

To start a WebLogic Server Managed Server, use the `startManagedWebLogic` script:

- (UNIX) *NEW_DOMAIN_HOME*`/bin/startManagedWebLogic.sh` *managed_server_name admin_url*
- (Windows) *NEW_DOMAIN_HOME*`\bin\startManagedWebLogic.cmd` *managed_server_name admin_url*

> **Note:**
>
> When using secured production mode, you must provide additional parameters to start the Managed Servers. See Starting Managed Servers using a Start Script in *Administering Security for Oracle WebLogic Server*.

> **Note:**
>
> The startup of a Managed Server will typically start the applications that are deployed to it. Therefore, it should not be necessary to manually start applications after the Managed Server startup.

Step 4: Start System Components

To start system components, such as Oracle HTTP Server, use the `startComponent` script:

- (UNIX) *NEW_DOMAIN_HOME*`/bin/startComponent.sh` *component_name*

- (Windows) *NEW_DOMAIN_HOME*\bin\startComponent.cmd *component_name*

You can start system components in any order.

Step 6: Change to External Authentication

If you changed to internal authentication before upgrading product schemas, change back to external authentication after starting servers and processes.

Part III
Post Upgrade Tasks

This part of *Upgrading Oracle Data Integrator* provides information about advanced upgrade configurations and options for troubleshooting upgrade issues.

6

Advanced Post Upgrade Configurations and Troubleshooting

If the upgrade process fails, you must close the Upgrade Assistant, correct the issue, and then restart the Upgrade Assistant.

If the upgrade process fails *after* the upgrade process has started, you must drop the cloned repository and start from a freshly cloned repository in addition to correcting the underlying issue. There is no way to restart the failed upgrade process.

See Troubleshooting Your Upgrade in *Upgrading with the Upgrade Assistant*.

Troubleshooting Upgrade Performance Errors

The number of sessions present in a repository affects upgrade performance. Oracle recommends that you archive and purge your session logs to improve upgrade performance. See Purging the Logs in *Administering Oracle Data Integrator*.

Troubleshooting DB2 Database Transaction Log Errors

When using a DB2 database, the database transaction log may become full during ODI upgrade.

You can increase the database configuration parameter to allow for a larger log file. A larger log file requires more space, but it reduces the need for applications to retry the operation. You should set the log file size to at least 10000 and the number of primary log files to at least 50. Use the following commands:

```
db2 'update database config for database_alias using LOGFILSIZ 10000'
db2 'update database config for database_alias using LOGPRIMARY 50'
```

Changing Domain Mode Post Upgrade

After the upgrade, your domain retains its original pre-upgrade domain security mode settings. If you want to change the domain mode, to enable enhanced security, for example, you must explicitly change the settings using the WebLogic Remote Console or by modifying the `DomainMBean`.

If your domain is currently set to Production Mode, and you want to enable added security, then after the upgrade use the WebLogic Remote Console to change the domain mode and enable the Secured Production Mode. Change the Domain Mode in *Oracle WebLogic Remote Console Online Help*.

> **Caution:**
>
> Changes to the domain mode require a full domain restart - a rolling restart is not sufficient. You must stop all managed servers before you attempt to change the domain mode.

When upgrading a domain to 14c (14.1.2.0.0), if there is no explicit secure mode setting, then the Reconfiguration Wizard will explicitly set secure mode to *disabled* in the upgraded domain. This is to preserve the behavior that was present in the original domain. If there is an explicit secure mode setting, it will be preserved in the upgraded domain. For more information, see Understand How Domain Mode Affects the Default Security Configuration in *Securing a Production Environment for Oracle WebLogic Server*.

> **Note:**
>
> Secured Production Mode enforces more restrictive and stringent security settings to ensure less vulnerability to threats. To make sure that your domain is secure, after enabling Secured Production Mode, you will have to choose the security configuration options that are appropriate for the environment in which the domain runs, such as obtaining and storing certificates, protecting user accounts, and securing the network on which the domain runs. If these options are not properly configured, you will be blocked from using WebLogic Server.
>
> After you have created your WebLogic domain, several key steps remain to ensure its integrity such as selecting appropriate security configurations. For more information, see Securing the Domain After You Have Created It in *Administering Security for Oracle WebLogic Server*.

A
Substitution API

Upgrading to GUIDs impacts some Substitution API methods that use internal IDs as parameters.
Table A-1 lists the new Substitution API methods.

Table A-1 New Substitution API Methods

Impacted ODIRef Methods	Previous ODIRef Method	New ODIRef Method
getAK() method	getAK("ID")	getAK("GUID") /* Return the Alternate Key GUID */
getCK() method	getCK("ID")	getCK("GUID") /* Return the Check GUID */
getContext() method	getContext("ID")	getContext("GLOBAL_ID") /* Return the Context GUID*/
getFK() method	getFK("ID")	getFK("GUID") /* Return the Foreign Key GUID */
getFK() method	getFK("ID_TABLE_PK")	getFK("GUID_TABLE_PK") /* Return the Primary Table GUID */
getFK() method	getFK("PK_I_MOD")	getFK ("PK_MOD_GUID") /* Return the Model GUID of Primary Key table */
getInfo() method	getInfo("I_SRC_SET")	getInfo("GUID_SRC_SET") /* Return the SourceSet GUID */
getInfo() method	getInfo("CT_ERR_ID")	getInfo("CT_ERR_GUID") /* Return the Checked Source GUID (a datastore for Static Check or a Mapping for a Flow Check) */
getInfo() method	getInfo("DEST_I_CONNECT")	getInfo("DEST_ CONNECT_GUID") /* Return the Destination connection GUID */
getInfo() method	getInfo("SRC_I_CONNECT")	getInfo("SRC _CONNECT _GUID") /* Return the Source connection GUID */
getInfo() method	getInfo("DEST_I_PSCHEMA")	getInfo("DEST _PSCHEMA _GUID") /* Return the Destination Physical Schema GUID */
getInfo() method	getInfo("SRC_I_PSCHEMA")	getInfo("SRC _PSCHEMA _GUID") /* Return the Source Physical Schema GUID */
getInfo() method	getInfo("DEST_I_LSCHEMA")	getInfo("DEST _LSCHEMA _GUID") /* Return the Destination Logical Schema GUID */
getInfo() method	getInfo("SRC_I_LSCHEMA")	getInfo("SRC _LSCHEMA _GUID") /* Return the Source Logical Schema GUID */
getInfo() method	getInfo("DEST_I_TECHNO")	getInfo("DEST _TECHNO _GUID") /* Return the Destination Technology GUID */
getInfo() method	getInfo("SRC_I_ TECHNO")	getInfo("SRC _ TECHNO _GUID") /* Return the Source Technology GUID */
getLoadPlanInstance() method	getLoadPlanInstance("BATCH_ID")	getLoadPlanInstance("BATCH_GUID") /* Return the batch GUID*/
getNotNullCol() method	getNotNullCol("ID")	getNotNullCol("GLOBAL_ID") /* Return the Attribute GUID */

Table A-1 (Cont.) New Substitution API Methods

Impacted ODIRef Methods	Previous ODIRef Method	New ODIRef Method
getModel() method	getModel ("ID")	getModel ("GLOBAL_ID") /* Return the Model GUID */
getPackage() method	getPackage("I_PACKAGE")	getPackage("PACKAGE_ GUID ") /* Return the Package GUID */
getPK() method	getPK("ID")	getPK("GLOBAL_ID") /* Return the Primary Key GUID */
getPrevStepLog() method	getPrevStepLog("SESS_NO")	getPrevStepLog("SESS_GUID") /* Return the Session GUID */
getSession() method	getSession("SESS_NO")	getSession("SESS_GUID") /* Return the Session GUID */
getSrcTablesList() method	getSrcTablesList("I_TABLE")	getSrcTablesList("TABLE_ GUID") /* Return the Source Table GUID */
getStep() method	getStep("SESS_NO")	getStep("SESS_GUID") /* Return the Session GUID */
getTable() method	getTable("ID")	getTable("GLOBAL_ID") /* Return the target Table GUID */
getTargetTable() method	getTargetTable("I_TABLE")	getTargetTable("TABLE_GUID") /* Return the target table GUID */
getUser() method	getUser("I_USER")	getUser("USER_GUID") /* Return the User GUID */

B

Upgrading the JDK After Installing and Configuring an Oracle Fusion Middleware Product

This appendix describes some common procedures for upgrading the JDK after installing and configuring an Oracle Fusion Middleware product.

About Updating the JDK Location After Installing an Oracle Fusion Middleware Product

The binaries and other metadata and utility scripts in the Oracle home and Domain home, such as RCU or Configuration Wizard, use a JDK version that was used while installing the software and continue to refer to the same version of the JDK. The JDK path is stored in a variable called JAVA_HOME which is centrally located in .globalEnv.properties file inside the *ORACLE_HOME*/oui directory.

The utility scripts such as config.sh|cmd, launch.sh, or opatch reside in the *ORACLE_HOME*, and when you invoke them, they refer to the JAVA_HOME variable located in .globalEnv.properties file. To point these scripts and utilities to the newer version of JDK, you must update the value of the JAVA_HOME variable in the .globalEnv.properties file by following the directions listed in Updating the JDK Location in an Existing Oracle Home .

To make the scripts and files in your Domain home directory point to the newer version of the JDK, you can follow one of the following approaches:

- Specify the path to the newer JDK on the Domain Mode and JDK screen while running the Configuration Wizard.

  For example, consider that you installed Oracle Fusion Middleware Infrastructure with the JDK version 8u191. So, while configuring the WebLogic domain with the Configuration Assistant, you can select the path to the newer JDK on the Domain Mode and JDK screen of the Configuration Wizard. Example: `/scratch/jdk/jdk17.0.12`.

- Manually locate the files that have references to the JDK using `grep` (Linux) or `findstr` (WINDOWS) commands and update each reference.

  See Updating the JDK Location in an Existing Oracle Home .

> **Note:**
>
> If you install the newer version of the JDK in the same location as the existing JDK by overwriting the files, then you don't need to take any action.

Updating the JDK Location in an Existing Oracle Home

The `getProperty.sh|cmd` script displays the value of a variable, such as JAVA_HOME, from the .globalEnv.properties file. The `setProperty.sh|cmd` script is used to set the value of

variables, such as OLD_JAVA_HOME or JAVA_HOME that contain the locations of old and new JDKs in the .globalEnv.properties file.

The `getProperty.sh|cmd` and `setProperty.sh|cmd` scripts are located in the following location:

(Linux) *ORACLE_HOME*`/oui/bin`

(Windows) *ORACLE_HOME*`\oui\bin`

Where, *ORACLE_HOME* is the directory that contains the products using the current version of the JDK, such as jdk17.0.12.

To update the JDK location in the .globalEnv.properties file:

1. Use the `getProperty.sh|cmd` script to display the path of the current JDK from the JAVA_HOME variable. For example:

   (Linux) *ORACLE_HOME*`/oui/bin/getProperty.sh JAVA_HOME`

   (Windows) *ORACLE_HOME*`\oui\bin\getProperty.cmd JAVA_HOME`

   ```
   echo JAVA_HOME
   ```

   Where JAVA_HOME is the variable in the .globalEnv.properties file that contains the location of the JDK.

2. Back up the path of the current JDK to another variable such as OLD_JAVA_HOME in the .globalEnv.properties file by entering the following commands:

   (Linux) *ORACLE_HOME*`/oui/bin/setProperty.sh -name OLD_JAVA_HOME -value` *specify_the_path_of_current_JDK*

   (Windows) *ORACLE_HOME*`\oui\bin\setProperty.cmd -name OLD_JAVA_HOME -value` *specify_the_path_of_current_JDK*

   This command creates a new variable called OLD_JAVA_HOME in the .globalEnv.properties file, with a value that you have specified.

3. Set the new location of the JDK in the JAVA_HOME variable of the .globalEnv.properties file, by entering the following commands:

   (Linux) *ORACLE_HOME*`/oui/bin/setProperty.sh -name JAVA_HOME -value` *specify_the_location_of_new_JDK*

   (Windows) *ORACLE_HOME*`\oui\bin\setProperty.cmd -name JAVA_HOME -value` *specify_the_location_of_new_JDK*

   After you run this command, the JAVA_HOME variable in the .globalEnv.properties file now contains the path to the new JDK, such as jdk17.0.12.

Updating the JDK Location in an Existing Domain Home

You must search the references to the current JDK manually, and replace those instances with the location of the new JDK.

You can use the `grep` or `findstr` commands to search for the jdk-related references.

You'll likely be required to update the location of JDK in the following three files:

(Linux) *DOMAIN_HOME*`/bin/setNMJavaHome.sh`

(Windows) *DOMAIN_HOME*`\bin\setNMJavaHome.cmd`

(Linux) *DOMAIN_HOME*/nodemanager/nodemanager.properties

(Windows)*DOMAIN_HOME*\nodemanager\nodemanager.properties

(Linux) *DOMAIN_HOME*/bin/setDomainEnv.sh

(Windows)*DOMAIN_HOME*\bin\setDomainEnv.cmd