Guidance for Integrating Custom and Third-Party Products With Oracle E-Business Suite Release 12.2 (Doc ID 1916149.1)

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Oracle E-Business Suite (EBS) Release 12.2 includes significant database and file system architecture changes designed to support the new Online Patching feature.

Consequently, integrations with EBS may need to be modified to comply with new deployment and development standards in order to work correctly with Oracle E-Business Suite Release 12.2. Examples include custom and third-party integrations, as well as integrations with other Oracle products such as Oracle Application Express.

Note: This document supplements the main Online Patching documentation, which is covered in books including *Oracle E-Business Suite Concepts* and *Oracle E-Business Suite Developer's Guide*. See References section at the end of this document.

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Section 1: Integration Types and Compliance Requirements

The Oracle E-Business Suite Release 12.2 database architecture introduces a new *Logical Schema* layer that maps to the base product tables, which are now considered a private *Physical Schema*.

Key points about the Logical Schema include:

- The Logical Schema is the public interface of the Oracle E-Business Suite database schema, and is the layer through which applications (including integrations) may access Oracle E-Business Suite tables.
- The Logical Schema is implemented via APPS table synonyms and Editioning Views, and accessed from the Oracle E-Business Suite APPS schema.
- The table and column definitions of the Logical Schema are mapped to physical table columns in the product schemas.
- The logical-to-physical mapping may change without warning during online patching cycles, so it is no longer safe to reference the physical tables and columns in the product schemas directly.

The Oracle E-Business Suite Release 12.2 file system architecture contains two complete copies of the application tier code, called the *dual file system*. One of the file systems in the dual file system is used by the running application, and the other is used for patching. The run and patch file system designations switch with each patching cycle. Data files are stored on a third file system, called the *non-editioned file system* (*fs_ne*).

Modifications may need to be made to an integration for it to comply with Oracle E-Business Suite Release 12.2 development and deployment standards.

There are two types of compliance, *minimal* compliance and *full* compliance.

- Minimal compliance is required for an application to function correctly at runtime.
- Full compliance is required for your integration be patched online.

The table below lists the type of compliance, the rules that your integration must adhere to to achieve that compliance, and the tools that you can use to test that adherence.

Type of Compliance	Rule	Tools
Minimal	Non-editioned objects cannot depend on editioned objects.	Run ADZDPSUM.sql, ADZDPAUT.sql, and ADZDPMAN.sql and fix any violations
Minimal	References to the data model must go through a synonym in the apps schema.	Run gscc.pl and fix all violations. Run ADZDDBCC.sql and fix all violatons tagged as minimal.
Full	Follows rules for minimal compliance plus additonal development standards laid out in the Developer's Guide.	Run ADZDPSUM.sql, ADZDPAUT.sql, and ADZDPMAN.sql and fix any violations. Run gscc.pl and fix all violations. Run ADZDDBCC.sql and fix all violations, including those tagged as minimal and those tagged as full.

Note: For instructions on using the scripts referred to in this document – such as ADZDDBCC.sql – you should refer to My Oracle Support Knowledge Document 1531121.1, *Using the Online Patching Readiness Report in Oracle E-Business Suite Release 12.2*.

The rest of this section describes the five principal integration categories, and how to determine whether any modifications are required for them to be compliant with the Oracle E-Business Suite Release 12.2 architecture.

1.1 Integration via application tier web services or other interfaces

Integration characteristics

This category of integration:

- Works with Oracle E-Business Suite exclusively through web services, or other application tier interfaces such as file import or application tier APIs.
- Does not have a database schema that must be installed on the Oracle E-Business Suite database.
- Only interacts with Oracle E-Business Suite via application tier web services or other application tier public interfaces (that is, it does not make a direct connection to the Oracle E-Business Suite database).

Release 12.2 compliance requirements

For minimal compliance:

- No changes are required for products in this category to achieve minimal Oracle E-Business Suite online patching compliance.

For full compliance:

- Because the code for this integration category does not reside within the Oracle E-Business Suite file system, it cannot be patched using Oracle E-Business Suite Release 12.2 online patching.

Note: When your code interacts with Oracle E-Business Suite Release 12.2 data files, remember that they will be located on the non-editioned file system.

1.2 Integration via database connection or independent database schema

Integration characteristics

This category of integration:

- Makes a direct connection to the Oracle E-Business Suite database.
- May install custom database objects that do not have direct dependencies on Oracle E-Business Suite objects.
- May reference Oracle E-Business Suite objects such as APPS synonyms, views and PL/SQL packages from outside the Oracle E-Business Sute database.
- Does not make any changes to the Oracle E-Business Suite schema (via DDL) during installation or runtime operation.

Release 12.2 compliance requirements

For minimal compliance:

- Direct references to Oracle E-Business Suite objects must be through the APPS (logical) Schema.
  - Direct references to objects in the Oracle E-Business Suite APPS (logical) schema (synonyms, views, or PL/SQL packages) are permitted.
  - Direct references to objects in the Oracle E-Business Suite product (physical) schemas are prohibited.
- You must run the Global Standards Compliance Checker (gscc.pl) against code that has references to Oracle E-Business Suite code and fix any violations.

For full compliance:

- Because the code for this integration category does not reside within the Oracle E-Business Suite file system, it cannot be patched using Oracle E-Business Suite Release 12.2 online patching.

1.3 Integration via custom schema with dependent database objects

Integration characteristics

This category of integration:

- Installs a custom schema into the Oracle E-Business Suite database, which includes objects that depend on Oracle E-Business Suite objects.
- Does not make any changes to the Oracle E-Business Suite schema (DDL) during installation or runtime operation.

Release 12.2 compliance requirements

For minimal compliance:

- The custom schema may only directly reference objects in the Oracle E-Business Suite APPS (Logical) schema.
- The custom schema must be enabled for editioning.
  - If the custom schema exists during the Oracle E-Business Suite Release 12.2 upgrade, it must be registered with Oracle E-Business Suite and will be upgraded for editioning automatically.
  - If the custom schema is installed after the Oracle E-Business Suite Release 12.2 upgrade, the custom schema must be registered with Oracle E-Business Suite and enabled for editioning.
- You must run the Global Standards Compliance Checker (gscc.pl) and fix any violations.
- You must run the Online Patching Readiness Reports:
  - Run ADZDPSUM.sql, ADZDPAUT.sql, and ADZDPMAN.sql and fix any violations.
  - Run ADZDDBCC.sql and fix any violations tagged as "[minimal]".

For full compliance:

- If you want to be able to patch your application online, you must:
  - Meet the above requirements for minimal compliance.
  - Fix any violations listed in the output of ADZDDBCC.sql (this includes sections marked both [full] and [minimal]).

1.4 Integration via extension or customization of Oracle E-Business Suite schema

Integration characteristics

This category of integration:

- Extends or customizes the Oracle E-Business Suite Logical or physical schema via any of the following methods:
  - Installing a custom Oracle E-Business Suite product schema and registering a custom Oracle E-Business Suite product.
  - Installing objects into an existing Oracle E-Business Suite APPS or product schema.
  - Installing triggers on existing Oracle E-Business Suite tables.
  - Installing any other code that will be invoked by Oracle E-Business Suite runtime operations such as alerts, workflow activities, and business event subscriptions.

Release 12.2 compliance requirements

Integrations in this category are essentially additional Oracle E-Business Suite product functionality, and must conform to the full requirements of the Oracle E-Business Suite Release 12.2 Development Standards.

Be aware that:

- Release 12.2 Object definition standards and usage standards and Dynamic DDL standards apply to all code running as part of Oracle E-Business Suite.
- Release 12.2 Object patching standards apply to all objects that will be patched using online patching.

For minimal compliance:

- You must run the Global Standards Compliance Checker (gscc.pl) and fix any violations.
- You must run the Online Patching Readiness Reports:
  - Run ADZDPSUM.sql, ADZDPAUT.sql, and ADZDPMAN.sql and fix any violations.
  - Run ADZDDBCC.sql and fix violations tagged as "[minimal]".

> **Note**: You should only run ADZDPSUM.sql, ADZDPAUT.sql, and ADZDPMAN.sql in environments at an EBS version earlier than Release 12.2 in preparation for an upgrade.
>
> In EBS Release 12.2 environments, in addition to running ADZDDBCC.sql and fixing violations tagged as "[minimal]", you must follow the guidelines listed in Document 1577661.1, *Developing and Deploying Customizations in Oracle E-Business Suite Release 12.2*.

For full compliance:

To achieve full Release 12.2 compliance, so you can patch your application online:

- Meet the above requirements for minimal compliance.
- Fix any violations listed in the output of ADZDDBCC.sql (this includes sections marked both [full] and [minimal]).

1.5 Integration via table replication

Integration characteristics

This category of integration:

- Replicates data from Oracle E-Business Suite product tables using either:
  - ETL Replication via Oracle Data Integrator or similar mechanism.
  - Stream Replication via Oracle Streams or Oracle Golden Gate.

Release 12.2 compliance requirements

For minimal compliance:

- ETL Replication must access Oracle E-Business Suite tables via the APPS (Logical) Schema.
  - To achieve minimal online patching compliance, you must run the Global Standards Compliance Checker (gscc.pl) against the metadata definition that drives the ETL replication, and fix any violations reported.
- Stream Replication of tables from Oracle E-Business Suite Release 12.2 is not currently supported.

For full compliance:

- The code for this integration category cannot be patched using Oracle E-Business Suite Release 12.2 online patching.

Section 2: Additional Guidance for Meeting Integration Compliance Requirements

This section provides additional information on how to implement Oracle E-Business Suite Release 12.2 integration compliance requirements.

2.1 Access Oracle E-Business Suite tables via the APPS (Logical) Schema

Oracle E-Business Suite Release 12.2 implements a Logical Schema in the APPS user. The APPS table synonyms point to editioning views instead of the original product tables. The APPS synonyms and editioning views serve to map logical table and column names to the physical tables and columns that provide the actual data storage.

The Oracle E-Business Suite Logical Schema can differ from the Oracle E-Business Suite Physical schema in the following ways:

- The Logical Table Name is the name of the APPS table synonym. The Physical Table Name is normally identical to the Logical Table Name, but can be different if the storage table is replaced with a revised table in an online patch.
- The APPS table synonym normally points to the Editioning View of the storage table, rather than the table itself. The Editioning View name is automatically generated from the storage table name by appending a '#' character, thus:

```
editioning_view_name := substr(storage_table_name, 1, 29)||'#';
```

- The Logical Column Names for a table are defined by the editioning view. The editioning view maps the Logical Column Names to the Physical Columns Names of the storage table. Logical column names start off identical to physical column names, but over time the original physical columns may be replaced with revised columns that have different names: for example, 'AMOUNT', 'AMOUNT#1', 'AMOUNT#2'...
- The physical table may provide storage for multiple editions (copies) of data. In this case, rows stored in the physical table are filtered by a VPD policy so that only the appropriate edition of data is visible in the logical schema. When accessing the table through the logical schema, this filtering policy is applied automatically: however, access to the physical table would see all copies of the data and lead to incorrect results.

The details of the Oracle E-Business Suite Logical-to-Physical schema mapping are normally hidden from application code by the simple practice of accessing Oracle E-Business Suite tables via the APPS table synonyms. However, some products may attempt to introspect the Oracle E-Business Suite schema definition by querying the Oracle Data Dictionary views. Any such products will need to be enhanced to understand the difference between the Oracle E-Business Suite Logical and Physical schema, and how to query the applicable information from the data dictionary views.

The Oracle E-Business Suite Online Patching Development Standards contains supplemental information about how data dictionary view queries used in Oracle E-Business Suite Release 12.1 can be modified to produce the corresponding query of either logical or physical structure in Oracle E-Business Suite Release 12.2. If your integration contains a repository of metadata about Oracle E-Business Suite table and column structure, you will also need to consider whether the repository information is meant to represent logical or physical schema information, and be ready to modify the repository data accordingly.

2.2 Enable editions for integrated schemas referencing Oracle E-Business Suite objects

If your integration uses a database schema that has hard-coded dependencies on Oracle E-Business Suite objects, that schema must enable editions in the Oracle database. Although the act of enabling editions is a simple DDL command, there are requirements that must be satisfied before the enablement will succeed. When a schema is enabled for editions in Oracle Database 11g or later, all code objects owned by that schema become editioned: this means that the objects can have different definitions in each database edition.

The key requirement is that there can be no non-editioned objects in any schema that a hard dependency on an editioned object in the integrated schema.

Examples of problematic dependencies include:

- Table columns that depend on a TYPE (user-defined type) in the integrated schema.
- PUBLIC synonyms or synonyms in non-editioned users that reference code objects in the integrated schema.
- In Oracle Database 11g and later, materialized view queries that reference code objects in the integrated schema.
  - In Oracle Database 12c and later, the "evaluate using current edition clause" can be employed to create a materialized view that depends on editioned code objects.
- XML SCHEMA objects owned by the integrated schema.

Oracle E-Business Suite Release 12.2 includes a schema upgrade procedure that can automatically fix the above issues and enable editions on a specified user. However, your custom product will also need to be able to install correctly into an Oracle E-Business Suite Release 12.2 database where editioning is already enabled. To accomplish this, your install process will need to enable editions on a schema immediately after creating the schema, and before creating any objects in that schema.

References

The following links provide additional information on the Oracle E-Business Suite Release 12.2 architecture, development standards, and the Online Patching feature.

- *Oracle E-Business Suite Concepts*, Release 12.2 (Part No. E22949)
  - Architecture
  - Patching and Management Tools
- *Oracle E-Business Suite Developer's Guide*, Release 12.2 (Part No. E22961)
  - Preparing for Online Patching
  - Database Object Development Standards for Online Patching
- My Oracle Support Knowledge Document 1531121.1, *Using the Online Patching Readiness Report in Oracle E-Business Suite Release 12.2*
- My Oracle Support Knowledge Document 1577661.1, *Developing and Deploying Customizations in Oracle E-Business Suite Release 12.2*

7. Change Log

Date	Description
2025-01-17	• Updated Section 2.2 with latest database nomenclature and applicable versions.
2021-07-28	• Added notebox with supplementary guidance at end of "For minimal compliance" part of Section 1.4. • Updated title of Doc 1577661.1 in References.
2016-07-14	• Under Section 1 compliance table, added notebox with reference to Doc 1531121.1.
2016-07-11	• In Sections 1.1 to 1.5, created and populated subsections for minimal compliance and full compliance.
2016-03-31	• Made various updates throughout document.
2014-08-15	• Initial publication.

My Oracle Support Knowledge Document 1916149.1 by Oracle E-Business Suite Development.

REFERENCES

NOTE:2794745.1 - EBS Release Management (RLM) Schedule Analyzer

Related

Products

- Oracle E-Business Suite > Applications Technology > Lifecycle Management > Oracle Applications DBA
- Oracle E-Business Suite > Applications Technology > Technology Components > Oracle E-Business Suite Technology Stack > Database for Application Technology > Database for Application Technology

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