Oracle® Banking Enterprise Limits and Collateral Management

Installer Zero Downtime Database Setup and Operational Guide

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Oracle Banking Enterprise Limits and Collateral Management Installer Zero Downtime Database Setup and Operational Guide, Release 14.8.0.0.0

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Preface

1.1 Purpose

This guide is designed to help the user to quickly get acquainted with the Customer Standard Instructions maintenance process.

1.2 Audience

This guide is intended for the central administrator of the Bank who controls the system and application parameters and ensures smooth functionality and flexibility of the banking application.

1.3 Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at https://www.oracle.com/corporate/accessibility/.

Access to Oracle Support

Oracle customer access to and use of Oracle support services will be pursuant to the terms and conditions specified in their Oracle order for the applicable services.

1.4 Conventions

The following text conventions are used in this document:

Table 1-1 Conventions

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

Table 1-1 (Cont.) Conventions

Convention	Meaning
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1.5 Critical Patches

Oracle advises customers to get all their security vulnerability information from the Oracle Critical Patch Update Advisory, which is available at Critical Patches, Security Alerts and Bulletins. All critical patches should be applied in a timely manner to ensure effective security, as strongly recommended by Oracle Software Security Assurance.

1.6 Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

1.7 Basic Actions

Table 1-2 Basic Actions

Action	Description
Approve	Used to approve the initiated report. This button is displayed, once the user click **Authorize**.
Audit	Used to view the maker details, checker details, and report status.
Authorize	Used to authorize the report created. A maker of the screen is not allowed to authorize the report. Only a checker can authorize a report, created by a maker.
Close	Used to close a record. This action is available only when a record is created.
Confirm	Used to confirm the performed action.
Cancel	Used to cancel the performed action.
Compare	Used to view the comparison through the field values of old record and the current record. This button is displayed in the widget, once the user click **Authorize**.
Collapse All	Used to hide the details in the sections. This button is displayed, once the user click **Compare**.
Expand All	Used to expand and view all the details in the sections. This button is displayed, once the user click **Compare**.

Table 1-2 (Cont.) Basic Actions

Action	Description
New	Used to add a new record. When the user click **New**, the system displays a new record enabling to specify the required data.
OK	Used to confirm the details in the screen.
Save	Used to save the details entered or selected in the screen.
View	Used to view the report details in a particular modification stage. This button is displayed in the widget, once the user click **Authorize**.
View Difference only	Used to view a comparison through the field element values of old record and the current record, which has undergone changes. This button is displayed, once the user click **Compare**.
Unlock	Used to update the details of an existing record. System displays an existing record in editable mode.

1.8 Prerequisite

Specify the **User ID** and **Password**, and login to **Home** screen.

1.9 Screenshot Disclaimer

Personal information used in the interface or documents is dummy and does not exist in the real world. It is only for reference purposes.

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Installer Zero Downtime Database Setup

This topic explains the Zero Downtime Installer database setup.

Introduction

Patch set Installation with Zero downtime (ZDT) requires an installer to use Editions in a Database Schema. The installer is enhanced to use Database Schema Editions and apply the Patchset DB compilation in patch set edition and then Base edition in a staggered manner to achieve Zero Downtime. The installer supports establishing JDBC connections through Application, Gateway, ATM, etc., pointing to a specific edition.

2.1 Pre-Requisite

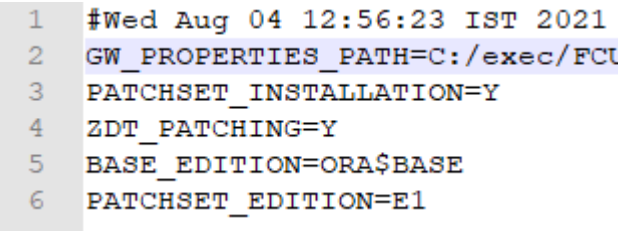
This topic explains the per-requisites for the zero downtime database installer.

From the SYS Database User the below privilege must be provided to the Database Schema.

1. ALTER USER <SCHEMA NAME> ENABLE EDITIONS [FORCE]
2. GRANT CREATE ANY EDITION TO <SCHEMA NAME>;
3. GRANT DROP ANY EDITION TO <SCHEMA NAME>;
4. GRANT ALTER SESSION TO <SCHEMA NAME>;
5. GRANT EXECUTE on DBMS_SESSION TO <SCHEMA NAME>;
6. For the Pre-Installation configuration refer to the sample entries in the **env.properties** file.

   env.properties file is displayed.

Figure 2-1 Sample Entries in env.properties



```
1  #Wed Aug 04 12:56:23 IST 2021
2  GW_PROPERTIES_PATH=C:/exec/FCU
3  PATCHSET_INSTALLATION=Y
4  ZDT_PATCHING=Y
5  BASE_EDITION=ORA$BASE
6  PATCHSET_EDITION=E1
```

7. On the env.properties, refer to the table for more information on sample entries in the **env.properties** file.

Table 2-1 Sample Entries in env.properties

Entries	Description
ZDT_PATCHING	Set this property to **Y** if ZDT patching is required and **N** if the application is taken offline when patching is done.
BASE_EDITION	Indicates the Base Edition. For example, ORA$BASE.
PATCHSET_EDITION	This property is used to specify the Edition that would be used as the alternate Edition during ZDT Patch-set Installation. For example, E1.
PATCHSET_INSTALLATION	Displays the value **Y** for patch set installation process.

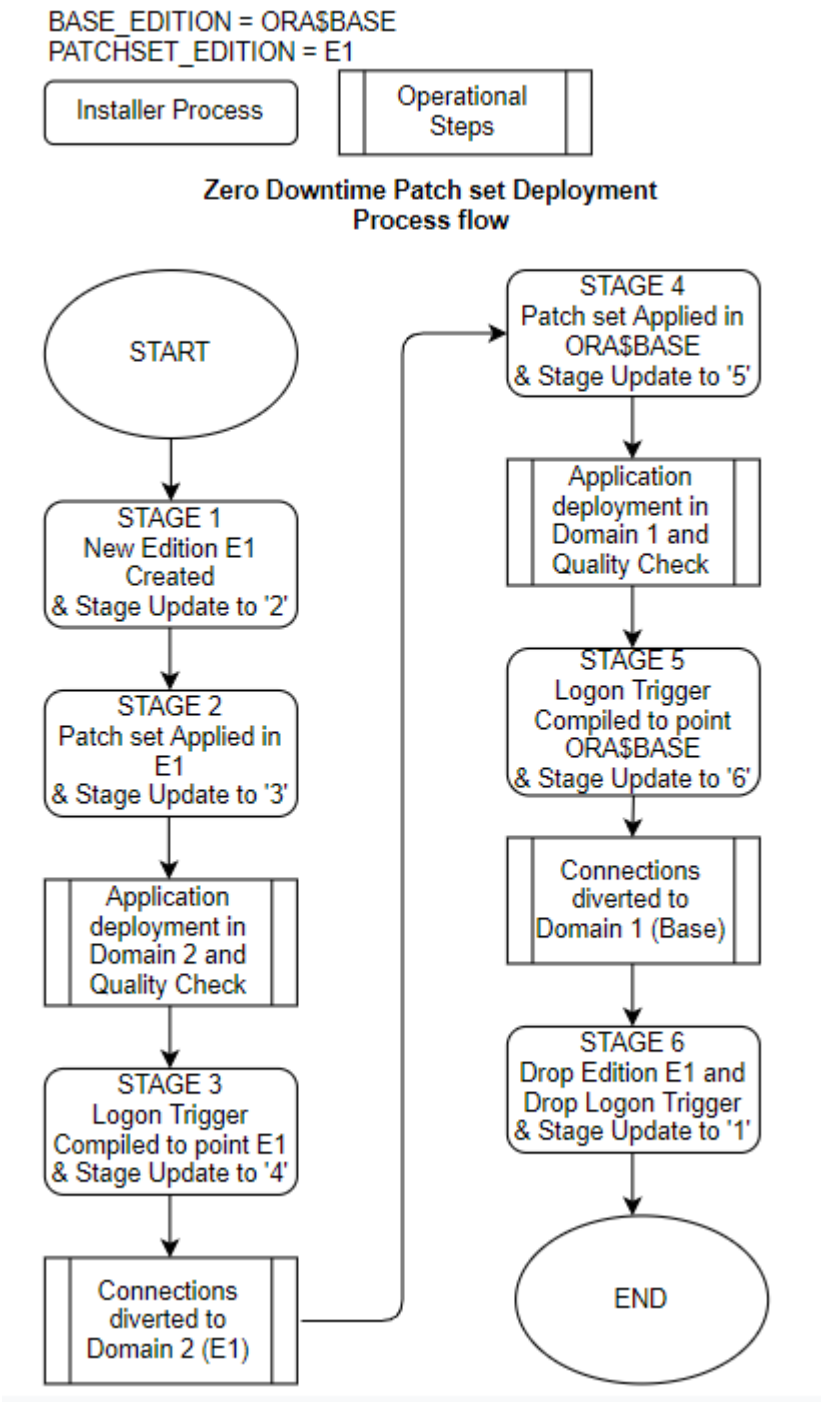
8. For the Application Domain, refer the below per-requisites:
   a. Two application domains – <Domain1>, <Domain2> are required. These Domains will be integrated and controlled with Oracle Traffic Director to support Zero downtime Patching.
   b. By default, <Domain2> will remain inactive (Standby mode), and all JDBC connections to Database (Schema) routed to <Domain1>.
   Any Bulk upload processing, Batch processing (including End of Day operations) to be planned either to complete before the start or after completion of the Patch Set Compilation / Deployment.

2.2 Zero Downtime Database Setup

This topic explains the Installer commands and Operational steps required to be done in the same order as specified to achieve Zero Downtime Patch Database Compilation and Application management.

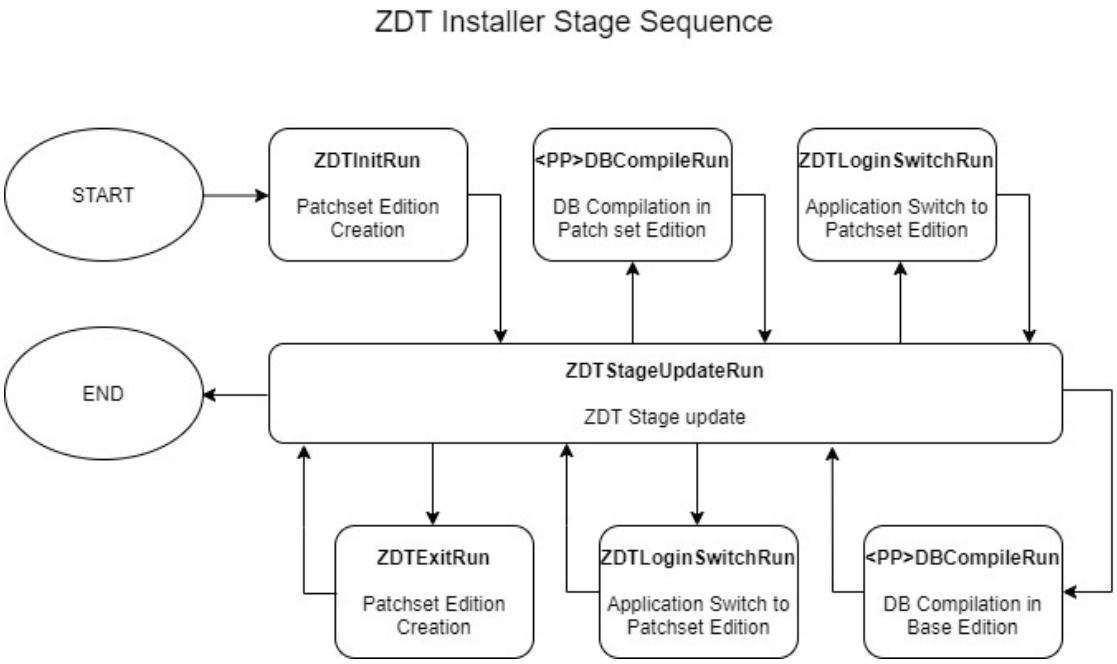
Patch set Database Compilation Process Flow

Figure 2-2 Patch set Database Compilation Process Flow



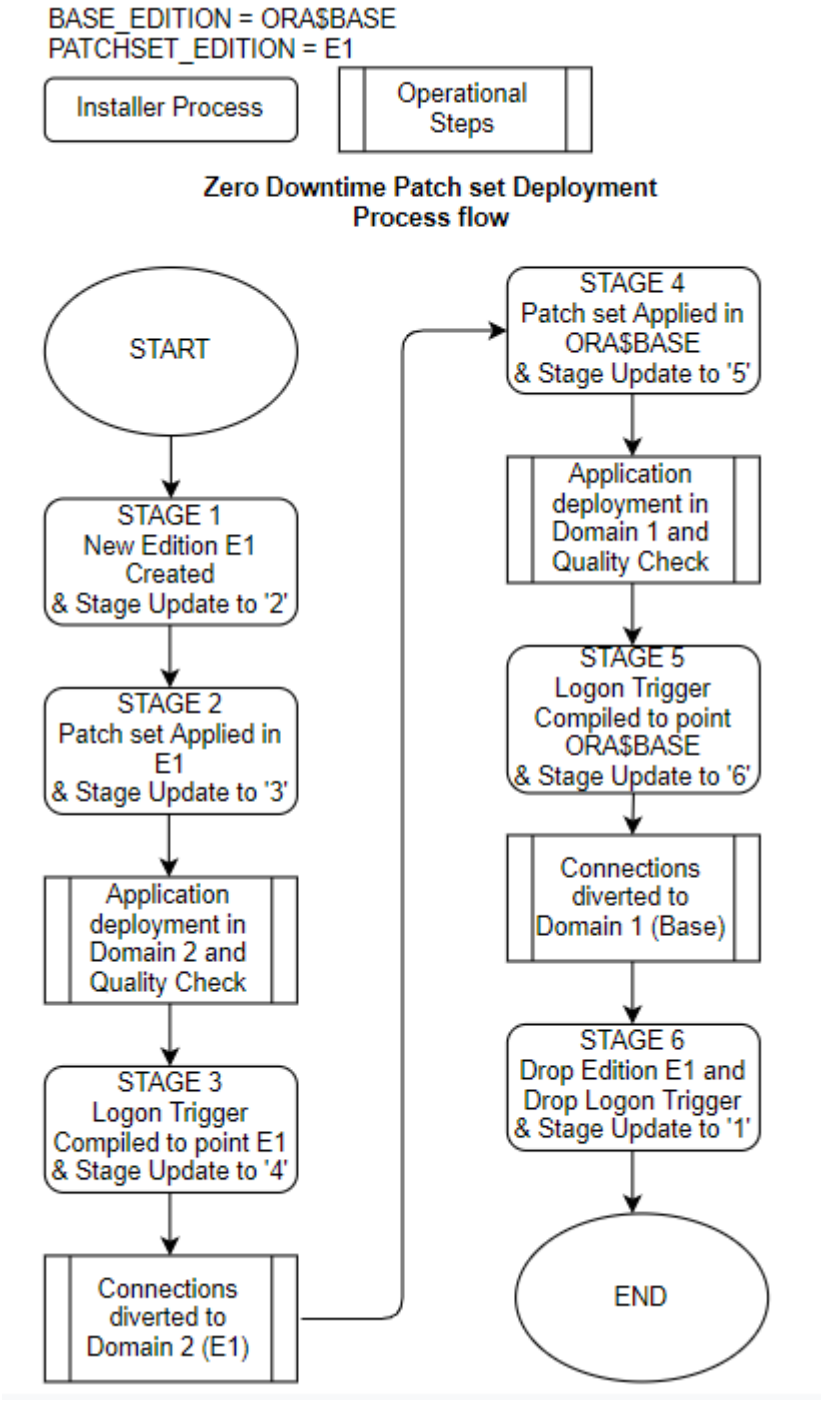
ZDT Installer Stage Sequence Flow

Figure 2-3 ZDT Installer Stage Sequence Flow

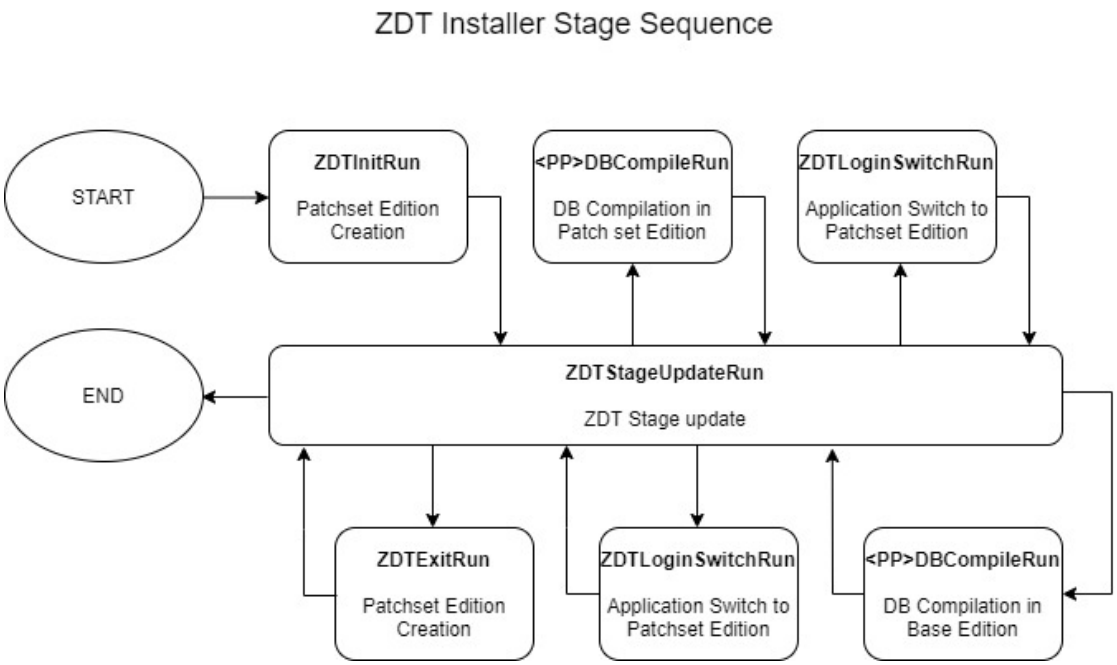


- Patch set Database Compilation Process Flow
- ZDT Installer Stage Sequence Flow
- Create Patch set Edition

2.2.1 Patch set Database Compilation Process Flow



2.2.2 ZDT Installer Stage Sequence Flow



2.2.3 Create Patch set Edition

The Patch set Edition is created using the silent installer.

1. At the start of the Zero downtime Database Setup process, Run **ZDTInitRun.bat** in Windows (**ZDTInitRun.sh** for Linux)

   A new Edition is created with the name configured in **env.properties** file for the property **PATCHSET_EDITION**.

2. Run **ZDTStageUpdateRun.bat** in Windows (**ZDTStageUpdateRun.sh** for Linux) to move the process to the next stage operation.

Database Setup in Patch set Edition

Backend Setup is done using Silent Installer. DDL Compilation, Object Compilation, and Static Data Loading are part of Backend Setup.

1. Run the **SMSDBCompileRun.bat** in windows (**SMSDBCompileRun.sh** in Linux) for SMS schema (DB) compilation.
2. Run the **<Product Processor>DBCompileRun.bat** to complete DDL Compilation, Object Compilation, and Static Data load.

   For Example: FCUBS INSTALLATION

   - Run **ROFCDBCompileRun.bat** in windows (**ROFCDBCompileRun.sh** in linux) and check for the Invalid Count and make sure that the Invalid count is zero.

     The Database Backend Setup is done in Patch set Edition of the Schema.
3. Run **ZDTStageUpdateRun.bat** in Windows (**ZDTStageUpdateRun.sh** for Linux) to move the process to the next stage operation.

Application Deployment in Patchset Edition

For the Application setup in<Domain 2>, refer the below steps.

1. Generate Application / Gateway Ears and deploy in <Domain2> Application.
2. <Domain 2> to be in inactive state (Standby mode).

   For more information on EAR building steps, refer to EAR building

Edition Switch in Patchset Edition

1. Run **ZDTLoginSwitchRun.bat** (**ZDTLoginSwitchRun.sh** for Linux Operating System).

   The BAT/SH file execution ensures all new JDBC connections from application points to the new Edition created (as maintained by the property PATCHSET_EDITION).
2. Run **ZDTStageUpdateRun.bat** in Windows (**ZDTStageUpdateRun.sh** for Linux) to move the process to the next stage operation.

Application Management in Patchset Edition

Refer to the below steps for the <Domain 2> application sanity and to activate for live transaction traffic.

1. Start the <Domain 2> Application.
2. Sanity Check of Patch set in <Domain 2> Application.
3. All incoming transactions traffic routed to using Oracle Traffic Director.
4. <Domain 1> to be made inactive status (Standby mode), once all the existing transactions in process in <Domain 1> completes its process.

Database Setup in Base Edition

Backend Setup is done using Silent Installer. DDL Compilation, Object Compilation, and Static Data Loading are part of Backend Setup.

1. Run the **SMSDBCompileRun.bat** in windows (**SMSDBCompileRun.sh** in Linux) for SMS schema (DB) compilation.
2. Run the **<Product Processor>DBCompileRun.bat** to complete Object Compilation.

   For Example: In case of FCUBS INSTALLATION

   - Run **ROFCDBCompileRun.bat** in windows (**ROFCDBCompileRun.sh** in linux) and check for the Invalid Count and make sure that the Invalid count is zero.

     The Database Backend Setup is done in Base Edition of the Schema.
3. Run **ZDTStageUpdateRun.bat** in Windows (**ZDTStageUpdateRun.sh** for Linux) to move the process to the next stage operation.

Application Deployment in Base Edition

For the Application setup in<Domain 1>, refer the below steps.

1. Generate Application / Gateway Ears and deploy in <Domain1> Application.
2. <Domain 1> to be in inactive state (Standby mode).

For more information on EAR building steps, refer to EAR building.

Edition Switch in Base Edition

1. Run **ZDTLoginSwitchRun.bat** (**ZDTLoginSwitchRun.sh** for Linux Operating System).

   The BAT/SH file execution ensures all new JDBC connections from application points to the Base Edition created (as maintained by the property BASE_EDITION).
2. Run **ZDTStageUpdateRun.bat** in Windows (**ZDTStageUpdateRun.sh** for Linux) to move the process to the next stage operation.

Application Management in Base Edition

Refer to the below steps for the <Domain 1> application sanity and to activate for live transaction traffic.

1. Start the <Domain 1> Application.
2. Sanity Check of Patch set in <Domain 1> Application.
3. All incoming transactions traffic routed to <Domain 1> using Oracle Traffic Director.
4. <Domain 2> to be made inactive status (Standby mode), once all the existing transactions in process in <Domain 2> completes its process.

   The Operational Recommendation is briefed in section 1.6 (xref-cross ref)

Drop Patch Set Edition

1. At the end of the Zero downtime Database Setup process, Run **ZDTExitRun.bat** in Windows (**ZDTExitRun.sh** for Linux).

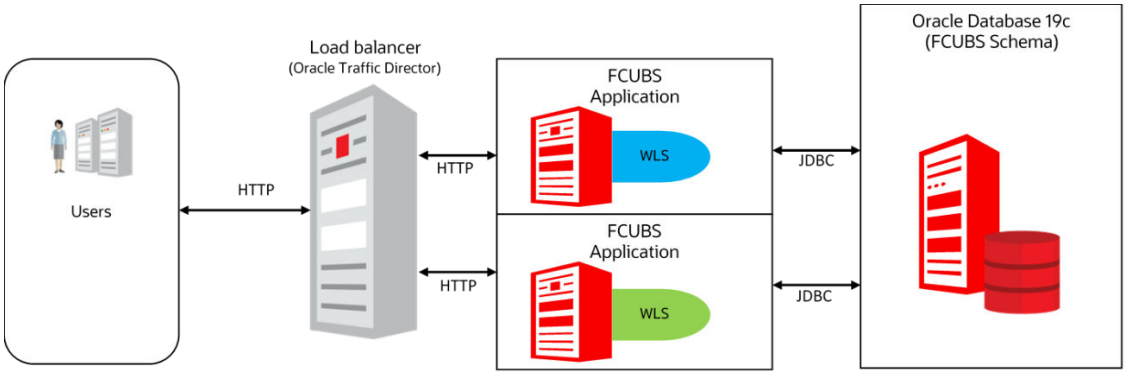
   The Patch Set Edition (as maintained by the property PATCHSET_EDITION) is dropped.
2. Run **ZDTStageUpdateRun.bat** in Windows (**ZDTStageUpdateRun.sh** for Linux) to move the process to the next stage of operation.

2.3 Connection routing to Domains using Oracle Traffic Director

This topic explains the routing connections to domains using the Oracle Traffic Director.

Domain 1 is denoted as Green and Domain 2 as Blue in the below representation.

Figure 2-4 Oracle Traffic Director



The Blue-Green deployment process uses two identical environments-Blue and Green. Only one environment is active, serving all the traffic with the load balancer, and the other is in standby mode.

Once the traffic is diverted to the Blue environment using the Load balancer, health checks are performed for all the currently active Blue environment components with traffic.

2.4 Operational Recommendations on Other Application Components

Use the following recommendations on other application components.

For Zero Downtime patch set deployment following operational steps/setup recommended.

- Remote **SOA/BPEL** setup is recommended.
- **Standalone Scheduler** Application is recommended.
- As part of Application Management sections, Application Management in Patchset Edition (xref) and Application Management in Base Edition (xref),
  - ATM instances are to be restarted one by one to point to the respective Application domain (or).
  - Scheduler jobs to be paused or stopped as a prerequisite before diverting the transactions traffic from one domain to another using Oracle Traffic Director.
  - Scheduler jobs must be started once the transaction traffic diverted to the specific domain.

2.5 Operational Issues and Troubleshooting

This section briefs on the common issues and the troubleshooting methods.

1. If there are objects with a version number other than one and while enabling editions for the user in section Pre-Requisite (xref) will result with the error `ERROR at line 1: ORA-38820: user has evolved object type`
   Solution:

   The below query will list the objects with a version number other than one.

   Select type_name,owner, version# from dba_type_versions where owner='&SCHEMA_NAME' and VERSION# !='1';
   The below query's result to be executed in SQL command prompt to reset the version to one.

   Select 'ALTER TYPE ' ||TYPE_NAME|| ' RESET;' FROM dba_type_versions where owner='&SCHEMA_NAME' AND VERSION# !='1';

2. Patchset edition will not be dropped in section Drop Patch Set Edition (xref) if active connections to the schema point to Patchset Edition.
   Exception in dropping edition java.sql.SQLException: `ORA-38805: edition is in use`.

   Clear such sessions and section Drop Patch Set Edition to process again to get the Patchset Edition dropped.

3. The below query would help to list all editions in the Schema. At the end of the process, Drop Patch Set Edition (xref), only Base Edition, should present.
   *Select * FROM all_editions*