



CXBanking

OptiVLM Vault Balance 10.1

Installation Guide

Build 5014
Version 10.1
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Date	Page No.	Description of Change
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1 Introduction

The purpose of this document is to provide basic installation instructions for the OptiVLM Vault Balance application. The particular architecture and environment of the installation may require additional configuration.

Although the installation media may be compatible with multiple platforms, this document will provide samples and syntax based on the Windows operating system.

The recommended process for installation:

1. **Oracle Database Configuration** (It is the responsibility of the client to ensure Oracle is installed and running correctly PRIOR to the on-site product installation.)
2. **Application and Web Server Configuration** (It is the responsibility of the client to ensure the application & web servers are running correctly and readily accessible PRIOR to the on-site product installation).
3. Create **New User** in Oracle
4. Create **New Schema** in Oracle
5. Deploy and configure **OptiVLM Vault Balance WAR** file
6. Deploy and configure the **Vault Balance Agent** application
7. Send license information to NCR Cash Management for **License Generation**

OptiSuite requires a base of version 8 Java Development Kit (JDK). Application Servers often come with the required JDK included (e.g. IBM WebSphere or Apache Tomcat).

A clear understanding of Oracle and Application Server technology is required on the part of the user performing the installation.

2 Application Distribution

2.1 Application Component Checklist

Depending upon the client environment, the **Application Server** and **Oracle Database Server** could reside on the same physical machine or different machines. The exact nature of this configuration should be agreed upon between NCR and the client prior to installation. It is required that JDBC access is available between the Application Server and Oracle Database Server (as defined by the JDBC URL, which typically runs through port **1521**).

In a split-server example, the Application Server (e.g. IBM WebSphere or Apache Tomcat) would house the Web Components (e.g. OptiVLM Vault Balance WAR file) on one machine, and a different machine will house the Oracle components.

The following are the required components for installation:

- **Oracle 12.2 or 19c and the latest patches relevant to the applicable operating system:** It is the responsibility of the client to ensure the Oracle database is running correctly and readily accessible PRIOR to the on-site installation.
- **OptiVLM Vault Balance Schema or Schema DDL:** NCR Cash Management will provide either the Oracle schema data-pump file or the database structure command SQL file for all required tables, views, constraints, etc.
- **Java Application servers, such as WebSphere or Tomcat:** It is the responsibility of the client to ensure the Application Server is running correctly and is readily accessible PRIOR to the on-site installation.

Note: Version 8 JDK is required.

- **OptiVLM Vault Balance WAR File:** NCR Cash Management will provide the WAR file for deployment.
- **OptiVLM Vault Balance Agent WAR File:** NCR Cash Management will provide the WAR file for deployment.
- **License File:** NCR Cash Management will provide a license SQL file based on the client's environment info.

3 Oracle Setup

Note: It is the client's responsibility to have Oracle installed and make sure it is running correctly and readily accessible PRIOR to the on-site installation performed by NCR Cash Management.

Additionally, it is the client's responsibility to prepare and agree with NCR Cash Management on the information contained within the NCR Hardware/Software Environment readiness (separate documentation) prior to the on-site installation. This document, along with the *Technical Overview document*, shall serve as a basis for architectural consideration.

3.1 Configuration

Verify the Oracle memory settings are correctly defined and do not fall below the minimum memory requirements necessary for running OptiSuite (refer to the Oracle Installation document for more information on minimum memory requirements). kindly, coordinate with Oracle System Administrator to ensure that memory settings also take into consideration other databases used by your institution in the Oracle environment.

3.2 Tablespaces

The following assumes steps are being performed using the '**sqlplus**' command line interface. Similar actions may of course be performed with the tool and interface per DBA choice.

OptiVLM Vault Balance defines the following default tablespace name for data and index respectively, it is recommended to use these names exactly:

Data tablespace: OPTIVLM_VB_DAT

Index tablespace: OPTIVLM_VB_IDX

The following section details how to create the above tablespace:

1. On the Windows command prompt, type '**sqlplus**' and enter username/password as prompted.
2. Modify the following example to fit your needs:

```
CREATE BIGFILE TABLESPACE "OPTIVLM_VB_DAT" DATAFILE
'C:\ORACLE\APP\MYCOMPUTER\ORADATA\ORCL\OPTIVLM_VB_DAT01.DBF' SIZE
100M REUSE AUTOEXTEND ON NEXT 100M MAXSIZE 5060M LOGGING EXTENT
MANAGEMENT LOCAL SEGMENT SPACE MANAGEMENT AUTO;
CREATE BIGFILE TABLESPACE "OPTIVLM_VB_IDX" DATAFILE
'C:\ORACLE\APP\MYCOMPUTER\ORADATA\ORCL\OPTIVLM_VB_IDX01.DBF' SIZE
```



```
100M REUSE AUTOEXTEND ON NEXT 100M MAXSIZE 5060M LOGGING EXTENT
MANAGEMENT LOCAL SEGMENT SPACE MANAGEMENT AUTO;
```

Where

'C:\ORACLE\APP\MYCOMPUTER\ORADATA\ORCL\OPTIVLM_VB_DAT01.DBF' is your directory and filename.

"OPTIVLM_VB_DAT" and "OPTIVLM_VB_IDX" are tablespace names.

Note The OptiVLM Vault Balance Schema Definition Script (DDL) will have tables and constraints defined such that:

1. Tables, Foreign Keys, and Views are defined in the Schema User's default tablespace. (e.g. OPTIVLM_VB_DAT).
2. Primary Keys and Indexes are defined in the OPTIVLM_VB_IDX tablespace.

You may modify the DDL prior to execution as needed.

3.3 Schema User

Create a schema user using commands similar to the example below:

```
CREATE USER "OPTIVLMVB" PROFILE "DEFAULT" IDENTIFIED BY "OPTIVLMVB"
DEFAULT TABLESPACE "OPTIVLM_VB_DAT" TEMPORARY TABLESPACE "TEMP"
ACCOUNT UNLOCK;
GRANT UNLIMITED TABLESPACE TO "OPTIVLMVB";
GRANT "CONNECT" TO "OPTIVLMVB";
GRANT "RESOURCE" TO "OPTIVLMVB";
GRANT CREATE ANY VIEW TO "OPTIVLMVB";
```

3.4 Schema Definition

Oracle schema will need to be created using the schema user created in the prior section. This can happen using one of two sources:

- Oracle Schema Data Dump as provided by NCR Cash Management.
 - e.g. <client name>.dmp
- DDL scripts to define tables, indexes, and default data records.
 - e.g.: OptiVLM-VB_newdb_build<build_number>.sql

Create the data schema in one of the following ways, respective to the items from above:

Run a data pump import, which will load the contents of the provided data pump file into the target tablespaces and schema name.

It is strongly recommended to analyze the tables and indexes for the newly imported data immediately after import.

4 SQL Server Setup

4.1 Configuration

Verify the *SQL Server memory settings* are correctly defined and do not fall below the minimum memory requirements necessary for running OptiSuite (refer to *SQL Server Installation document* for more information on minimum memory requirements). kindly, coordinate with System Administrator to ensure that memory settings are taken into consideration other databases used by the bank in the SQL Server environment.

4.2 Schema User

1. Choose a **name** similar to the schema you want to create, e.g. VaultBalance, client name, etc. and password accordingly in the General tab
2. Select “**public**” and “**dbcreator**” from the **Role list** for the user. The user will need these roles to connect to the database and access database functions.
3. Select the respective database in the user mapping tab for a particular user. Select **Grant permission** to connect to the database engine and login enabled in the Status tab.

4.3 Schema Definition

The following files may be used to create a new schema based on the new user created in the previous step:

Minimum of 2 DDL scripts to define tables, indexes, and default data records.

e.g.: sqlserver-schema/data.sql

NCR Cash Management will provide these files to the client. Make sure to **Save** these files in the same directory.

You have two options to create the data schema:

1. Run the provided DDL SQL files.
 - a. You will first need to create the schema objects, per the sqlserver-schema.sql script. This script can be modified as needed to reflect the desired tables, etc.
 - b. Once completed, verify that there were no errors in the process, and the appropriate objects are created within the user schema. followed by running the sqlserver-data.sql script to add default data records to the created tables.

It is strongly recommended to analyze the tables and indexes for the newly imported data immediately after import.

or:

DDL SQL script comes from the Database Upgrade process as described later in this document. Skip past this step for now and run the DDL scripts after hooking up the OptiVLM VaultBalance application – including authentication – and attempting to log in one time (the system generates the script at that point).

5 JDK

Application Servers (e.g. IBM WebSphere or Apache Tomcat) often come with the JDK included. The OptiVLM Vault Balance application requires version 8 JDK.

Note: The Runtime equivalent (JRE) is not sufficient since runtime compiling is required by the web application.

This document does not detail the installation of the JDK for a batch server, or database server nor the installation of the Application Server (e.g. WebSphere or Tomcat), since these are identified as a client's direct responsibility.

The following sections provide a brief overview of specific scenarios that might be used:

5.1 Deployment Scenarios

5.1.1 Single Application / Database Server Scenario

The critical thing in this scenario is simply to ensure an appropriate Application Server & Oracle/SQL Server have been installed on the machine and are ready for use.

5.1.2 Single Application, Single Database Servers Scenario

In some client installations, the Application Server (e.g. WebSphere or Tomcat) also runs Vault Balance Agent. But the Database Server resides on a different machine. In this example, WebSphere or Tomcat will house the Web Component (e.g. OptiVLM Vault Balance WAR file) and VB Agent on one machine while another machine would house the database(s).

5.1.3 Multiple Application, Multiple Database Servers Scenario

There are at least 5 separate entities to consider:

OptiVLM Vault Balance application

Vault Balance Agent application

Vault Balance database

OptiCash database

OptiVault database

The two **Applications (Vault Balance & Vault Balance Agent)** require an application server to install. **Databases** install under Oracle. For the most part, these can be split between physical machines in any configuration, however, consult your NCR Cash Management implementation specialist about specific plans.

6 Application Server

6.1 General

Note: It is the responsibility of the client to ensure the Application Server is running correctly and readily accessible PRIOR to the on-site installation to be performed by NCR Cash Management.

Additionally, the Application Server should be installed in a directory structure without spaces, e.g. C:\IBM\WebSphere.

It is also strongly recommended that the application server be deployed in the root directory (or close to the root directory).

7 OptiVLM Vault Balance Deployment (Application Server)

7.1 WAR File Deployment

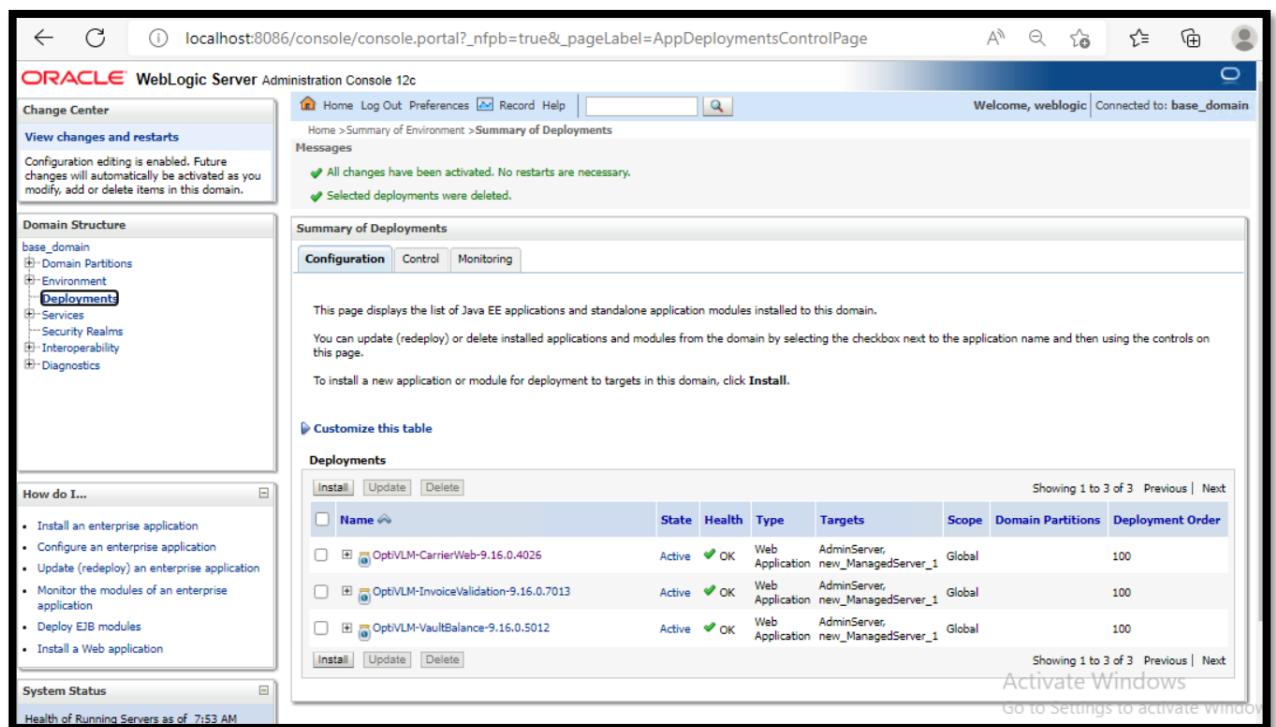
1. WAR files are readily deployable web application containers, complete with supporting jars.
2. The default deployment of OptiVLM Vault Balance will be to a web application and URL called according to the WAR file name. Many Application Servers (WebSphere, etc.) provide an application assembly tool to allow users to change the name prior to deployment. Refer to the specifics of your Application Server.
3. The precise deployment technique for the **installation WAR file** depends on the Application Server chosen, e.g. IBM WebSphere or Apache Tomcat.
 - a. If you are deploying on WebSphere, it is strongly recommended to enable the option **"Show me all installation options and parameters"** for deployment, unless you are already comfortable using a custom deployment script specific to your institution.
 - b. Installation in WebSphere is fairly straightforward beyond the above choice: most users can simply accept defaults, except for supplying the application name. Refer to your server documentation for an explanation of the various options.
4. If you are deploying on WebSphere 7.0 prior to fix pack 15, you will need to upgrade WebSphere to **support OSGI Applications** and **Java Persistence API (JPA) 2.0**.
5. If your application server is not doing it already by default, the user will need to set the ClassLoader options to **'Classes Loaded with Local Class First'** and **'Single Class Loader for Application'**. If using WebSphere, these are found under the **"Class loading and update detection"** section.
6. If applicable, make sure to **Save** the configuration post-deployment.
7. If applicable, make sure you regenerate the plug-in configuration for proper communication between the Web Server and the Application Server.

8 OptiVLM Vault Balance Deployment (Using WebLogic Server)

8.1 WAR File Deployment

- After logging in to the WebLogic console using valid credentials which were set at the time of installation in the left side pane under **Domain structure** click on **Deployments**
- Click on the **Install** button under the **Configuration** tab an **Install Application Assistant** will be displayed using this the required .war file can be imported into WebLogic
- Select the installation type as an **application** on the next page of **Install Application Assistant**
- Select the available target types like admin server and managed servers if any depending on the requirement i.e. in how many servers the application should be deployed
- Click on the **Finish** button to finish the setup, WebLogic will automatically display the deployed application in the dashboard with the status of the deployment like **active** for successful and **errors** if the deployment failed

Below is the dashboard view of WebLogic



9 OptiVLM Vault Balance System Configuration

After the WAR file is deployed following the instructions in the previous steps, the following will indicate additional configurations that need to be defined.

1. **Data source installation:** OptiVLM Vault Balance supports two types of data source connection: **JDBC data source connection** and **JNDI connection**. JDBC is the default and is used for a simple connection. JNDI is the more secure and recommended method. The following section will cover each separately ([section 1.1](#) for JDBC data source connection configuration and [section 1.2](#) for JNDI data source connection configuration):

- 1.1 JDBC connection is the default data source connection method. It requires configuration updates to certain files under the OptiVLM Vault Balance deployment folder:

- 1.1.1 OptiVLM Vault Balance uses the VaultBalance.properties file located at <application-path>\WEB-INF\classes\ to specify a connection to the database, later section gives instructions about changes to the file.

Here is an Oracle example:

```
database.driverClassName=oracle.jdbc.driver.OracleDriver
database.url_VB=jdbc\:oracle\:thin\:@server1\:1521\:orcl
database.username=OPTIVLMVB
database.password=OPTIVLMVB
database.schema=OPTIVLMVB
```

Here is an example of an SQL Server:

```
database.driverClassName=com.microsoft.sqlserver.jdbc.SQLServerDriver
database.url=jdbc:sqlserver://@server;databaseName=@schemaName
database.username=OPTIVLMVB
database.password=OPTIVLMVB
```

- 1.1.2 OptiVLM Vault Balance will need access to the ojdbc.jar driver file for the Oracle database connection and mssql-jdbc for the SQL Server connection. Multiple versions of this file are included with the Oracle/SQL Server database. You will need to choose the version which is compatible with your JDK. Inside the application server settings, you will need to either point to the ojdbc.jar/ mssql-jdbc.jar with something like “**Shared Library**” (WebSphere) or else copy the ojdbc.jar/ mssql-jdbc.jar into a location known to the JVM. (**Note:** if copying a file, then it needs to be at the whole JVM scope to avoid possible conflicts with other applications)

- 1.1.3 **Note:** If the current application server has been configured to use JNDI data sources (for other applications, including other OptiSuite applications), then it is possible to conflict with JDBC. Check applicationContext.xml (under <application-

path>\WEB-INF\classes\META-INF\spring) and be sure that the “jee:jndi-lookup” elements “jndi-name” do NOT match your JNDI data source names.

1.2 To run OptiVLM Vault Balance with a JNDI connection the configuration could vary depending on what kind of application server will run the application and also relying on the application server environment setup. The following section gives an example of JNDI data source configuration on Websphere 7 or 8, but the actual configuration may vary:

1.2.1 Log on to Websphere Application Server Console as administrator, go to ->*Security->Global Security* on the left panel and expand “**Java Authentication and Authorization Service**” (JAAS) on the right panel, click “**J2C authentication data**”. Click “**new**” and type in the value to each required field explained as follows to create a new JAAS object.

<i>Alias:</i>	The name for current JAAS connection appears as reference on Application Server scope(recommend use any string may suggest the schema name, i.e. “profile_VB”)
<i>Username:</i>	The username of the database schema
<i>Password:</i>	The password of the database schema

Then click “**OK**” to save the JAAS object

1.2.2 On the Websphere Application Console home page, go to *Resource->JDBC->JDBC* provider on the left panel, click “**New..**” and create a new Oracle JDBC provider, please specify the proper scope, classpath of the ojdbc driver file (driver files like ojdbc7.jar are included with oracle distribution, make sure to use the one compatible with your JDK) and proper implementation class name (“**oracle.jdbc.pool.OracleConnectionPoolDataSource**” is recommended but not absolute, depends on production environment configuration).

Click “**OK**” to save the JDBC provider. Still, on the “**JDBC Provider**” page, click the “**Data sources**” link and click “**New..**” to create a data source for each schema:

1.2.2.1 On the next page, specify the JNDI name. **Note:** The JNDI name defined here MUST MATCH the exact name specified as element <res-ref-name> value within <resource-ref> element from <application-path>\WEB-INF\web.xml.

1.2.2.2 Fill in the “**URL**” field with the current database schema, i.e.
 jdbc:oracle:thin:@server:1521:serverdb or
 jdbc:sqlserver://@server;databaseName=@schemaName

1.2.2.3 On the next page, select the proper JAAS alias which has been setup on 1.2.1 for “**Component-managed authentication alias**” and choose “**WSLogin**” for “**Mapping-configuration alias**”, then click “**Next**” and “**Finish**”

1.2.2.4 Go back to the “**Data Sources**” page, click every data source created

and click the **"Test Connection"** button, if everything is properly configured, there should be a test successful message.

- 1.2.3 On the Websphere Application Console home page, go to **"Applications"**-> **"WebSphere enterprise applications"** and click the application link for OptiVLM Vault Balance, go to **"Resource references"**, select the module for OptiVLM Vault Balance and click **"Modify Resource Authentication Method.."**, click **"Use default method"** and choose proper JAAS authentication, then click **"Apply"**. Repeat the same action for every resource reference and click **"OK"**.
2. Update VaultBalance.properties for various settings. The file is located in the directory <application-path>/WEB-INF/classes.
 - 2.1 Update to point the system log file to the desired location. This uses Log4j which is a Java logging utility that logs the usage activity in the application.
 - 2.1.1 There are two provided methods for logging in to the log4j.properties file:
 - 2.1.1.1 logging to the standard out file known as the **Console Appender** or **stdout**.
and
 - 2.1.1.2 logging to a separate log file known as a **Rolling File Appender** or **ROL**.
 - 2.1.2 Typically, most installations will use the second option (VLM logging to a separate log file as opposed to the application server default out log). The first option is the default, which results in a standard configuration that can be run **"out-of-the-box"** by logging into the standard out. The default is for WARN (warning-level) logging to the standard out of the JVM. Typically, this would be the default application server (e.g. WebSphere) log file. The second option is for logging into a separate log file.

Note: This directory must exist and be accessible for writing from the application. You can use either or both options, although it is recommended to use the second option (ROL) to have a separate log file for OptiVLM (not mixed with other Application Server messages).
 - 2.1.3 Merely comment out the appropriate fields as desired with a preceding hash (#) symbol to comment out a line.

Note: The file name and full path to the log file should be used, assuming a ROL log file.
3. OptiVLM Vault Balance will need to know the list of Order States used in your institution's Order Workflow. This is set in the <application-path>/WEB-INF/classes/VaultBalance.properties file.

Note: These names are the Order States as they appear in the database – language

translations may cause a difference between displayed state names in OptiCash and OptiVault and those same States when stored in a database. Consult your OptiCash and OptiVault language files for exact values.

For Example:

```
OptiSuite.states=APPROVED,ACCEPTED,CANCELED,CONFIRMED,DELIVERED,DOES
NOTEXIST,INTRANSIT,ORDERED,PACKAGING,REJECTED,REVERTED
```

4. Authentication can be configured in one of two possible methods: **Server-based authentication**, and **OptiCore authentication**.

4.1 In server-based authentication mode, authentication is primarily handled by the application server and after successful authentication, OptiVLM Vault Balance checks the associated role for that user. This authentication mode is recommended by NCR Cash Management.

4.2 OptiCore authentication is an internal Single Sign On(SSO) solution for OptiSuite and OptiVLM wherein all applications authenticate the user via the OptiCore authentication library. This mode includes DBAuthorizer (described below) or could be customized code for a specific institution.

Note: It may be advantageous to initially use Server-based Authentication to set up users. Then switch to other authentication methods if necessary.

* To comment XML configuration file, use "<!--" and "-->" to include the section desired, uncomment is to remove the "<!--" and "-->"

* There is specific configuration to each mode in <application-path>/WEB-INF/classes/META-INF/spring/ applicationContext-security.xml and in <application-path>/WEB-INF/classes/META-INF/spring/ applicationContext-acl.xml.

Note: Only the section for the current authentication mode should be uncommented, and all other sections should be commented out.

Authentication Method	Process to install
Server-based authentication	<ol style="list-style-type: none"> 1. Configure J2EE container security in your application server. 2. Map roles "ROLE_USER" and "ROLE_ADMIN" in the app server to the users who will log into Vault Balance respectively. 3. In <application-path>/WEB-INF/web.xml file, uncomment the section under "<!-- Security -->" 4. In <application-path>/WEB-INF/classes/VaultBalance.properties set "authentication.type=server"
OptiCore authentication	<ol style="list-style-type: none"> 1. Configure external user profile and access defined by OptiCore. 2. In <application-path>/WEB-INF/web.xml file, comment out the section under "<!-- Security -->"

	<ol style="list-style-type: none"> 3. In <application-path>/WEB-INF/classes/VaultBalance.properties set "authentication.type=opticore" 4. In <application-path>/WEB-INF/classes/VaultBalance.properties, define the mapping between the external role name and VaultBalance internal role name (ROLE_USER, ROLE_ADMIN), see following item "Explanation of parameters under <application-path>/WEB-INF/classes/VaultBalance.properties"
DBAuthorizer variant to OptiCore authentication	<ol style="list-style-type: none"> 1. Apply the above steps for OptiCore authentication. 2. Ensure that "transoft.samples.DBAuthorizer" is the value used in VaultBalance.properties for opticore.auth.authorizer.class 3. Set opticore.auth.init.params in VaultBalance.properties to point to DBAuthorizer's additional properties file. By default, this is ..\WEB-INF\classes\DBAuthorizer-VB.properties. This default file may be a useful example, even if you choose to use another file elsewhere. 4. Inside the DBAuthorizer properties file, set the following as appropriate for your environment. <p>Note: You may see some lines in the file which are not listed here (query definitions, etc) – these should be kept as provided by default.</p> <p>dbAuthorizer.database.dsn: JNDI database connection name. Similar to section 1.2 above, this is a connection to the database. If desiring to use a JDBC connection instead, then this field should be empty.</p> <p>dbAuthorizer.database.url: URL to authorization database, example: jdbc:oracle:thin:@server:1521:serverdb</p> <p>dbAuthorizer.database.username, dbAuthorizer.database.password: Schema username and password if using a JDBC connection. Can be blank if using a JNDI connection.</p> <p>dbAuthorizer.digest.length: Length of password after encryption. Longer is more secure but cannot exceed the maximum size of your target database's password field.</p> <p>dbAuthorizer.digest.algorithm: Algorithm to be used when encrypting a password.</p> <p>dbAuthorizer.digest.seed: Character string used to seed the encryption algorithm. It is recommended to change this away from the default.</p> <p>dbAuthorizer.option.quiet: "true" or "false". Quiet mode allows a password that was unencrypted to be encrypted without the user having to change that password. If false, then users are forced to change the password in that situation. This can be relevant when migrating from another auth method or in a case where the administrator previously reset a user's password.</p> <p>Note: If you plan to use DBAuthorizer from multiple OptiSuite applications and point to the same single database for user management, then the digest "length", "algorithm", and "seed" settings above must be the same between all OptiSuite applications.</p>

Note: If switching from one form of password encryption to another, then you will need to manually set at least one administrator user's password temporarily. All users' passwords will need to be reset however, doing only one initially allows that user to change for others inside OptiVLM Vault Balance application. Update as follows using SQL where THE_PASSWORD and THE_USER are replaced with your values:

```
update users set password='THE_PASSWORD' where
username='THE_USER';
```

5. If you are using WebSphere Application Server, you may need to specifically allow PNG-type images to be displayed. The steps are as follows:
 - Log in to the WebSphere Console.
 - Expand Environment > Virtual Hosts.
 - Click default_host.
 - Click Additional Properties > MIME Types.
 - Click New.
 - Enter `image/png` as the value for the MIME Type field.
 - Enter `png` as the value for the Extension field.
 - **Save** and **Close**.
6. Following list is explanation of parameters under <application-path>/WEB-INF/classes/VaultBalance.properties:

Property name	Comments
database.upgrade.outputFile	Filename where generated database upgrade script will appear. Example: C:\Users\OptiSuite\VaultBalance\db-upgrade.sql
OptiSuite.states	List of order states used by VaultBalance to handle order updates
externalRole.{EXTERNAL_ROLENAME}	Only for OptiCore authentication. {EXTERNAL_ROLENAME} is a placeholder of a role name from an external system(usually a customer authentication system, i.e. Microsoft Active Directory). The value of these properties should be one or more VaultBalance internal ROLES, i.e. <code>externalRole.SystemAdmin=ROLE_USER,ROLE_ADMIN</code> <code>externalRole.User=ROLE_USER</code>

	<code>externalRole.UserAdmin=ROLE_ADMIN</code>
sync.user	<p>Only for OptiCore authentication, not the DBAuthorizer variant.</p> <p>Defines whether CarrierWeb should synchronize user profiles (cashpoints, usernames etc) after opticore authentication is complete.</p>
login.username.prefix login.username.suffix login.username.uppercase	<p>Only for Server-based authentication. All these configurations can add prefix, suffix and capitalize username which is used to match the user's External Username</p> <p>i.e.</p> <pre>login.username.prefix=\\BASIC\ login.username.suffix=\login login.username.uppercase=true</pre> <p>if the user uses 'admin123' to login VaultBalance then the user's External Username should be</p> <p>"\\BASIC\\ADMIN123\\login"</p> <p>Note: The uppercase=true setting effectively allows the username to be case-insensitive.</p>
defaultCofferName	<p>For every quality definition, VaultBalance automatically generates an associated default coffer. This value is for the heading title of the coffer name. i.e. if</p> <pre>defaultCofferName=DeFaUlt</pre> <p>Then the default coffer name for quality 'Fit' is <i>DeFaUlt(Fit)</i></p>
showNotAvailableInReport	<p>Define whether to show unavailable balance amounts in all balance PDF reports.</p> <p>"true": shows unavailable balance amount</p> <p>"false": do not show unavailable balance amount</p>
pdfBalanceColumnSequence	<p>Define the order of the summary balance PDF report and vault balance PDF report</p> <p>i.e.</p> <pre>pdfBalanceColumnSequence=1,3,2,4,5,6,7,8,9</pre>
pdfCofferColumnSequence	<p>Define the order of coffer balance PDF report</p> <p>i.e.</p> <pre>pdfCofferColumnSequence=1,6,3,4,5,2</pre>

pdfReportFontSizeOption	Defines available font size options that can be used on VaultBalance UI: System Settings -> Report font setting
cofferBalanceViewOptions (Not intend to change)	Defines the drop-down options on VaultBalance UI System Settings -> Enable Coffer Balance View
systemEventLoggingLevel	Comma-separated list with one or more of "DEBUG" , "INFO" , "WARNING" , and "ERROR" . This decides which types of messages will appear within the System Event Log within the OptiVLM Vault Balance application.
user_settings.allow_internal_adjustments.defaultValue user_settings.allow_internal_adjustments.displayType user_settings.allow_internal_adjustments.hidden user_settings.allow_internal_adjustments.valueType user_settings.allow_quick_adjustments.defaultValue user_settings.allow_quick_adjustments.displayType user_settings.allow_quick_adjustments.hidden user_settings.allow_quick_adjustments.valueType	Defines the HTML DOM type and values for System Settings -> Users -> Select user-> internal adjust settings / quick adjustment settings. These settings are not intended to change.
maxEventsPerSession	Internal parameter controlling how many items should be processed in a batch from VaultBalanceAgent's output queue.
available.locales default.locale	<p>For language settings. available.locales define the list of locales that are available on the UI for the user to choose, default.locale is the default language once VaultBalance starts i.e.</p> <pre>available.locales=es,en,th_TH (there are three available locales in current settings) default.locale=en (English is the default locale)</pre>

alert.for.editing	"true" or "false". If true, then users will be presented with alerts in case where order edits and status updates from users occur too fast for proper processing. This may indicate a balance discrepancy and the alert is for a user to check that.
logs.path	Location on the server where log files are expected to be found. (Note: maybe same as log4j.appender.ROL.File.directory in section 2.4 above.) This will be used by the user interface page which provides links for the user to read log files.

10 OptiVLM Vault Balance Agent Deployment (Application Server)

10.1 WAR File Deployment

1. WAR files are readily deployable web application containers, complete with supporting jars. The OptiVLM Vault Balance Agent is a secondary application and its purpose is to monitor other OptiSuite applications and provide relevant updates to the OptiVLM Vault Balance application.
2. The default deployment of OptiVLM Vault Balance Agent will be to a web application and URL called according to the WAR file name. Many Application Servers (WebSphere, etc.) provide an application assembly tool to allow users to change the name prior to deployment. Refer to the specifics of your Application Server.
3. The precise deployment technique for installing the WAR file depends on the Application Server chosen, e.g. IBM WebSphere or Apache Tomcat
 - 3.1. If you are deploying on WebSphere, it is strongly recommended to enable the option **"Show me all installation options and parameters"** for deployment, unless you are already comfortable using a custom OptiVLM VaultBalance deployment script specific to your institution.
 - 3.2. Installation in WebSphere is fairly simple beyond the above choice: most users can simply accept defaults, except for supplying the application name. Refer to the server documentation for an explanation of the various options.
4. If the application server is not doing it already by default, the user will need to set the ClassLoader options to **'Classes Loaded with Local Class First'** and **'Single Class Loader for Application'**. If using WebSphere 8, these are found under the **"Class loading and update detection"** section.
5. If applicable, make sure to **Save** the configuration post-deployment.
6. If applicable, make sure to regenerate the plug-in configuration for proper communication between the **Web Server** and the **Application Server**.

11 OptiVLM Vault Balance Agent System Configuration

After the WAR file is deployed following the instructions in the earlier steps, the following will indicate additional configurations that need to be defined.

1. Same as OptiVLM Vault Balance, OptiVLM Vault Balance Agent supports JDBC data source and JNDI data source connection method. The following section illustrates how to configure OptiVLM Vault Balance Agent with JDBC connection, the procedure to configure JNDI for OptiVLM Vault Balance Agent is very similar to which for OptiVLM Vault Balance. kindly check [section 1.2](#) about how to configure the JNDI connection for OptiVLM Vault Balance. OptiVLM Vault Balance Agent uses <application-path>\WEB-INF\classes\VaultBalanceAgent.properties file to define how to connect to an OptiVLM Vault Balance data source and OptiCash/OptiVault data source.

For each data source, there is a driver class definition(database_VB.driver) for the JDBC connection and another driver class definition(database_VB.xadriver) for the JNDI connection

Here is an example of the configuration for each data source:

For VaultBalance data source

```
database_VB.xadriver=oracle.jdbc.xa.client.OracleXADataSource
database_VB.driver=oracle.jdbc.driver.OracleDriver
database_VB.url=jdbc\:oracle\:thin\:@server1\:1521\:orcl
database_VB.username=OPTIVLMVB
database_VB.password=OPTIVLMVB
```

For OptiCash data source

```
database_OC.xadriver=oracle.jdbc.xa.client.OracleXADataSource
database_OC.driver=oracle.jdbc.driver.OracleDriver
database_OC.url=jdbc\:oracle\:thin\:@server1\:1521\:orcl
database_OC.username=OPTICASH
database_OC.password=OPTICASH
```

For OptiVault data source

```
database_OV.xadriver=oracle.jdbc.xa.client.OracleXADataSource
database_OV.driver=oracle.jdbc.driver.OracleDriver
database_OV.url=jdbc\:oracle\:thin\:@server1\:1521\:orcl
database_OV.username=OPTIVAULT
database_OV.password=OPTIVAULT
```

2. Here is a listing of the rest of the parameters in VaultBalanceAgent.properties which is related to the configuration

Property name	Comments
handlerType (not intend to change)	Defines which method to handle the communication between VaultBalanceAgent to VaultBalance, currently 'db' is the only allowed value
pauseAfterSending	Defines how many seconds VaultBalance should pause between sending messages. pauseAfterSending=1 means there is a one-second delay between every order update transmission from VaultBalanceAgent to VaultBalance. The default is "0" (no pause).
enable_UI	Define whether to enable/disable the front-end UI which will display status 'true': enable UI 'false': disable UI
maxLogEntries	VaultBalanceAgent can record logs in the VaultBalance database, maxLogEntries defines how many log records VaultBalance should keep at the same time
maxEventsPerSession_OC maxEventsPerSession_OC_Commercial maxEventsPerSession_OV maxEventsPerSession_ATM_Residual	Max number of order updates that VaultBalanceAgent should import for processing each session. Sessions repeat in a loop spaced each 'repeat.interval' time (parameter below).
repeat.interval	Time in milliseconds between order update fetching sessions.
startDate_OC startDate_OC_Commercial startDate_OV startDate_ATM_Residual	Only process order updates which occurred on or after the assigned date, by the data source. Hint: This allows starting Vault Balance without processing old transactions recorded in OptiCash, OptiVault, etc. i.e: startDate_OC=2013-08-25 startDate_OC_Commercial=2013-08-26 startDate_OV=2013-08-27 startDate_ATM_Residual=2013-08-28
excludeStates_OC excludeStates_OC_Commercial excludeStates_OV	Here you may list order states, from OptiCash or OptiVault respectively, which order updates into this state are known to never cause a balance change in OptiVLM Vault Balance. Order updates to states listed here will be immediately excluded from processing (faster performance than other business

	<p>rules, but limited application). By default, no states are excluded.</p> <p>i.e:</p> <pre>excludeStates_OC=ORDERED, PACKAGING excludeStates_OC_Commercial=ORDERED, PACKAGING excludeStates_OV=ORDERED, PACKAGING</pre>
--	---

12 OptiVLM Vault Balance Licensing

1. To create your license, NCR Cash Management will need a few pieces of information about your environment. These can be found by attempting to log into OptiVLM Vault Balance. Send this to your NCR Cash Management representative.

The following is an example of what the message might look like:

```
License not available:  
Today=2012-03-01  
iName=demo  
dbURL=jdbc:oracle:thin:@server1:1521:orcl?user=optivlmvb  
appPath=c:\ibm\websphere\appserver\profiles\appsrv01
```

2. NCR Cash Management will create a license SQL script and send it back to the user.
3. To apply the SQL script, go to your SQL editor and copy/paste the provided commands.
4. You should now be able to login to OptiVLM Vault Balance successfully.

▲ Warning: This should only be carried out by a system administrator or database administrator as incorrect use of the SQL editor could cause corruption of data.

Regarding institution(iName):

The institution name is part of the licensing check, it is saved in the VaultBalance application setting table. You may use the following query to update the institution name:

```
UPDATE APPLICATIONSETTING set value='{INSTITUTION_NAME}' where  
name='licensing_institution_name';
```

Here {INSTITUTION_NAME} is the placeholder for desired institution name.

13 OptiVLM Vault Balance Database Upgrade

If OptiVLM Carrier Web needs a database schema change, there will be an SQL upgrade script produced in the Liquibase output directory (defined earlier in <application-path>/WEB-INF/classes/VaultBalance.properties file). This will be in the form of SQL queries. kindly run all queries in that file using SQLplus or an SQL tool of your choice. Remember to commit changes.

To install Carrier Web using SQL script generated by Liquibase for the first time, kindly add the following query and run it before executing any of the queries from the script:

```
SET define off;
```

▲ **Warning:** This should only be carried out by a system administrator or database administrator as incorrect use of the SQL application could cause corruption of the data.

14 OptiVLM Vault Balance Customization

14.1 Making Changes to the Language File

Language files are primarily used for translating from one language to another. They can also be used for customizing the text that appears inside the OptiVLM-Vault Balance user interface.

1. For instance, if you want to change the word "recommendation" to the word "suggestion", open the following files with a text editor (assuming English):

<application-path>\WEB-INF\i18n\application.properties

<application-path>\WEB-INF\i18n\messages.properties

2. **Search** for the string 'recommendation'. **Edit** to 'suggestion'. Make sure to search for all occurrences of this word or string and change only those appearing to the right of the '=' sign. **Save** the file.

Restart the OptiVLM Vault Balance application.



Customized language files are the client's responsibility to maintain. Before editing, save the original file. In the future, with each OptiVLM Vault Balance upgrade, the edited version will need to be saved PRIOR to installing a new WAR file. Once the WAR file has been deployed, then restore the edited version.

It is the client's responsibility to maintain non-English language files. Some non-English sample language files are included with OptiVLM-Vault Balance – these are often incomplete and are not checked for the correctness of the translation. The translation should be based on the provided English version.

14.2 Making Changes to the Styles and Logos

All **images** are stored in the <application-path>/images directory.

The **style sheets** are found in the <application-path>/styles directory: 'standard.css' and 'alt.css'.

Customized styles and logos are the client's responsibility to maintain. Before editing, save the original style sheet and image files. In the future, with each OptiVLM VaultBalance upgrade, the edited version will need to be saved PRIOR to installing a new WAR file. Once the WAR file has been deployed, then restore the edited version.

15 Redeploying the Oracle Schema

It is recommended to have nightly backups of the OptiVLM Vault Balance Oracle schema.

You may back up the data using replication, a simple Oracle EXP or EXPDP command, or other tools of choice for the DBA.

You would re-load the data following the schema **user create** and **import** methods outlined earlier in this document.

16IMPORTANT NOTE

To upgrade the application version to 9.16 with SQL Server, below are the steps.

1. Customers having older versions (<9.16) must be upgraded to 9.16 without changing the DB server (Oracle).
 - a. This step is taken care by the application if 9.16 war with Oracle properties is deployed into the webserver.
 - b. After deployment, the user is prompted to upgrade DB Schema. This is also specific to OC and OV. For VLM, products the upgrade is handled by Liquibase.
2. Create Database and schema in SQL Server as mentioned in installation.
3. Migrate data from Oracle to SQL Server (Handled by NCR Team).
4. Update Oracle DB properties with SQL Server Details in 9.16 war and deploy.

17 EPSS Integration

After 10.x, the application must be integrated with EPSS for authentication and authorization.

User Groups must be created in EPSS.

Kindly refer to [CM Apps Installation and EPSS Integration guide10.0.pdf](#) for detailed steps.

For Access of Menus based on the User Role, menu items will be displayed depending on ROLE_ADMIN or ROLE_USER access which can be configured by giving the specific security groups in properties as external roles.

By default VB_ADMIN is configured as ROLE_ADMIN and VB_USER as ROLE_USER (for any Security Groups with VB_ADMIN role, give it VB_USER role as well).

NOTE: For above mentioned VB_ADMIN security Group, give VB_ADMIN, VB_USER both roles

For the mentioned VB_USER Security Group, give just the VB_USER role.

CXBanking, OptiVLM Vault Balance 10.1, Installation guide
April 2023

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