



CXBanking

OptiVLM Carrier Web 10.0

Installation Guide

Build 4027
March 2023

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Preface

Document conventions

Typographical conventions

The following typographical conventions are used:

Table 1: Typographical conventions

Style	Indicating
Bold	An option that you can select, for example, Insert > Bookmark
<i>Bolditalic</i>	The emphasis, for example, "This partition <i>must not</i> be modified." A physical key, for example, <i>Shift+F9</i>
Code	Text displayed on-screen Commands or data entered by the user Code text and examples
Hyperlink	Links to Internet sites Internal cross-references
<i>Italic</i>	The first reference to a keyword The title of a publication, for example, <i>Product Overview</i> A file or folder name, for example, <i>C:\Program Files\NCR</i>

Admonition conventions

Notes and cautions alert you to critical information. Each is displayed differently:

Note: Notes contain information that has special importance, to which the reader should pay close attention or tips with useful advice for the user on tasks or procedures.


 **Caution:** Cautions alert you to procedures or conditions that could damage equipment or data.

Table 2: Admonition conventions

Notes and cautions in tables	
Note: Notes contain information that has special importance.	Caution: Cautions alert you to procedures or conditions that could damage equipment or data.

1 Introduction

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

Although the installation media provides components for both Windows and UNIX, this document will provide samples and syntax based on the Windows operating system. The main modification for UNIX will be the file path name syntax.

Carrier Web requires an active installation of OptiCash and OptiVault, it is assumed that the database setup steps have already been performed for these applications. All that will be needed is to provide the Carrier Web with login credentials to these databases.

Carrier Web requires version 8 of Java Development Kit (JDK). Most Application Servers already come with the required JDK (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 Cash Management 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., Carrier Web WAR file) on one machine, and a different machine will house the Oracle components.

The following are the required components for the installation:

- **Oracle 12.2 or 19c and the latest patches relevant to the applicable O/S:** It is the responsibility of the client to ensure the Oracle database is running correctly and readily accessible PRIOR to the on-site installation.
- Running versions of OptiCash and OptiVault applications
- **Java Application servers, such as WebSphere or GlassFish:** It is the responsibility of the client to ensure the Application Server is running correctly and readily accessible PRIOR to the on-site installation.

Note: Version 8 JDK is required.

- **VLM Carrier Web WAR File:** NCR Cash Management will provide the WAR file for deployment.
- **License File:** NCR Cash Management will provide a license SQL file. Certain technical information regarding the installation is required to create the license file, so a common scenario is to install without a license and then attempt to log in. The license failure message will provide the information to be sent to NCR Cash Management for license creation.

3 Oracle Setup

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

Additionally, it is the client's responsibility to understand and agree with NCR Cash Management on the information contained within the Technical Overview (a separate document). That 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 OptiVLM Carrier Web (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 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 Carrier Web defines the following default tablespace name for data and index respectively, it is recommended to use these names exactly:

Data tablespace: OPTIVLM_CW_DAT

Index tablespace: OPTIVLM_CW_IDX

The following section details how to create the above tablespace:

1. From 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_CW_DAT" DATAFILE
'C:\ORACLE\APP\MYCOMPUTER\ORADATA\ORCL\OPTIVLM_CW_DAT01.DBF' SIZE 100M
REUSE AUTOEXTEND ON NEXT 100M MAXSIZE 5060M LOGGING EXTENT MANAGEMENT
LOCAL SEGMENT SPACE MANAGEMENT AUTO;
CREATE BIGFILE TABLESPACE "OPTIVLM_CW_IDX" DATAFILE
'C:\ORACLE\APP\MYCOMPUTER\ORADATA\ORCL\OPTIVLM_CW_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_CW_DAT01.DBF' is your directory and filename.
- "OPTIVLM_CW_DAT" and "OPTIVLM_CW_IDX" are your tablespace names.

Note: The VLM Carrier Web 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_CW_DAT).
2. Primary Keys and Indexes are defined in the OPTIVLM_CW_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 "OPTIVLMCW" PROFILE "DEFAULT" IDENTIFIED BY "OPTIVLMCW"
DEFAULT TABLESPACE "OPTIVLM_CW_DAT" TEMPORARY TABLESPACE "TEMP"
ACCOUNT UNLOCK;
GRANT UNLIMITED TABLESPACE TO "OPTIVLMCW";
GRANT "CONNECT" TO "OPTIVLMCW";
GRANT "RESOURCE" TO "OPTIVLMCW";
GRANT CREATE ANY VIEW TO "OPTIVLMCW";
```

3.3.1 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
- A DDL script to define tables, indexes, and default data records.
 - e.g.: OptiVLM-CW-<build_number>.sql

Create the data schema in one of the following ways, respective to the item 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 i.e. 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 also take 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., CarrierWeb, 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 that particular user. Select **Grant permission** to connect to the database engine and login enabled in the Status tab.

4.2.1 Schema Definition

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

- Minimum of 2 DDL scripts to define tables, indexes, and default data records.
 - e.g.: CW_SQLServer_Schema/data.sql

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

Users will have two options to create the data schema:

1. Run the provided DDL SQL files.
 - 1.1. Users will first need to create the schema objects, per the **CW_SQLServer_Schema.sql** script. This script can be modified as needed to reflect the desired tables, etc.
 - 1.2. 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 **CW_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 CarrierWeb application – including authentication – and attempting to log in one time (the system generates the script at that point).

5 JDK

Most Application Servers (e.g., IBM WebSphere or Apache Tomcat) already come with the JDK required for running the application server. The VLM Carrier Web 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 provides a brief overview of specific scenarios that might be used:

5.1 Deployment Scenarios

5.1.1.1 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.

Split Application / Database Servers Scenario

In many client installations, the Application Server (e.g., WebSphere or Tomcat) and Database Server reside on different machines. In this example, WebSphere will house the Web Component (e.g., OptiVLM Carrier Web WAR file) on one machine and another machine would house the database.

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, **for example:** 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 Carrier Web Deployment (Application Server)

7.1.1 WAR File Deployment

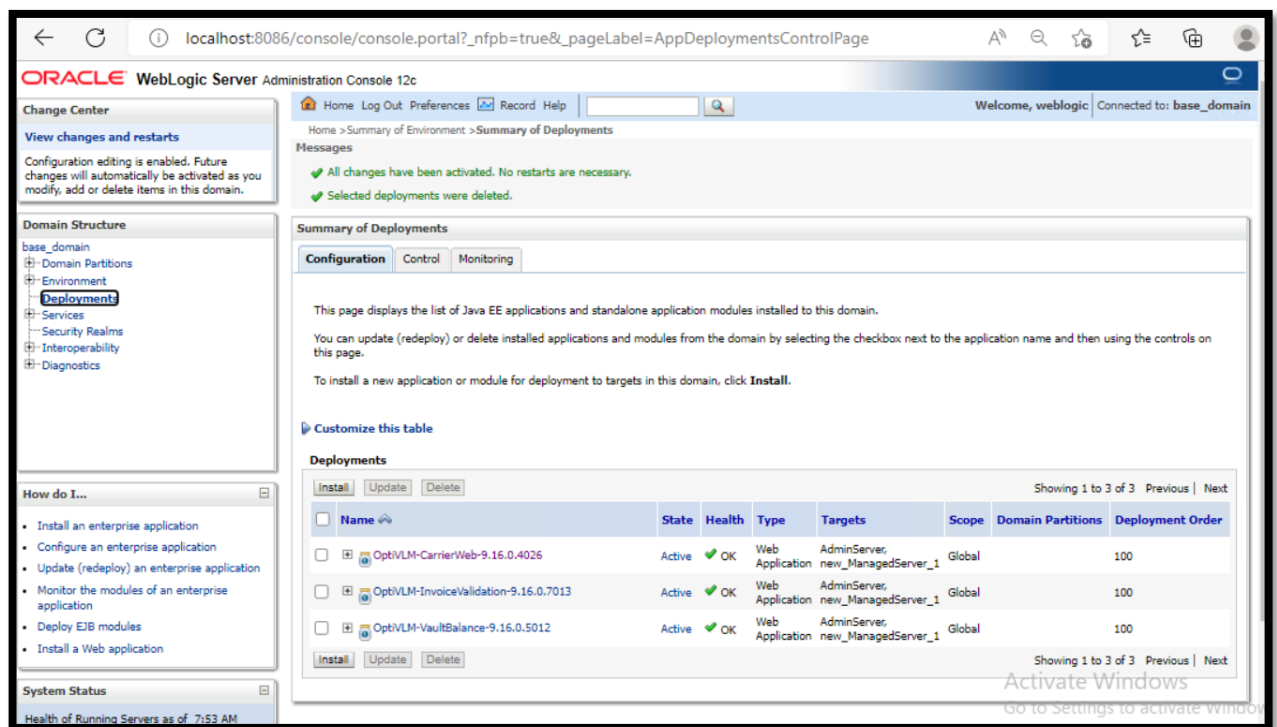
1. WAR files are readily deployable web-application containers, complete with supporting jars.
2. The default deployment of OptiVLM Carrier Web will be to a web application and URL called “**OptiVLM-CarrierWeb**”. Many Application Servers (WebSphere, etc.) provide an application assembly tool to allow you to change the default context 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.
 - 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 deployment script specific to your institution.
 - 3.2. If you are deploying on WebSphere, the global security option “**Enable Application Security**” is required to be turned on. If turning this on for the first time, a WebSphere restart is required.
4. OptiVLM Carrier Web contains security roles within the WAR file (the web.xml file), which permit you to match authenticated users to application access.
 - 4.1. ROLE_USER (the typical user who logs into VLM Carrier Web)
 - 4.2. ROLE_ADMIN (the user with full control of the VLM Carrier Web application)
5. You may choose to give any user access to these URLs of the application, and if so, simply enable the applicable options in accordance with your application server.
 - 5.1. **Example:** In the case of WebSphere, this is handled in the “**Map security roles to users or groups**” step of WAR deployment, where you can Look Up Users or Groups based on your applicable access directory plug-in. You can also grant these two roles to “**Everyone**”.
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 Carrier Web 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 the Install Application Assistant click on next
- 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 complete 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 Carrier Web 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 Carrier Web 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 multiple files under the OptiVLM Carrier Web deployment folder:

- 1.1.1. OptiVLM Carrier Web uses a CarrierWeb.properties file located at <application-path>\WEB-INF\classes to specify the connection to the database. You will need to update the "**URL**", "**username**", "**schema**" and "**password**" of each to match your environment.

Here is an example for Oracle:

```
database.driverClassName=oracle.jdbc.driver.OracleDriver
database.CW.url=jdbc\:oracle\:thin\:@server\:1521\:sid
database.CW.username=(username)
database.CW.password=(password)
database.OC.url=jdbc\:oracle\:thin\:@server\:1521\:sid
database.OC.username=(username)
database.OC.password=(password)
database.OV.url=jdbc\:oracle\:thin\:@server\:1521\:sid
database.OV.username=(username)
database.OV.password=(password)
database.CW.schema=(schemaname)
database.OC.schema=(schemaname)
database.OV.schema=(schemaname)
```

Here is an example of an SQL server:

```
database.driverClassName= com.microsoft.sqlserver.jdbc.SQLServerDriver
database.CW.url=jdbc:sqlserver://@server;databaseName=@schemaName
database.CW.username=(username)
database.CW.password=(password)
database.OC.url= jdbc:sqlserver://@server;databaseName=@schemaName
database.OC.username=(username)
database.OC.password=(password)
database.OV.url= jdbc:sqlserver://@server;databaseName=@schemaName
database.OV.username=(username)
database.OV.password=(password)
database.CW.schema=(schemaname)
database.OC.schema=(schemaname)
database.OV.schema=(schemaname)
```

The file contains three sets of login credentials, where the first corresponds to the *OptiVLM Carrier Web schema*, the second corresponds to the *OptiCash schema*, and the third corresponds to the *OptiVault schema*. Only one set of database properties can be defined in the properties file either Oracle or SQL server. When Oracle is being used SQL server properties must be commented and vice versa.

- 1.2. **Note** Each time changes are made to any of the properties files you need to restart Carrier Web within the Application Server so that the changes are applied. (Reconfigure the plug-in, as well, between your App Server and Web Server, if necessary.)

- 1.2.1. **Note:** If the current application server has been configured to use JNDI data sources (for other applications, or prior use with OptiVLM Carrier Web), 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" element's "jndi-name" does NOT match your JNDI data source names.

- 1.3. To run OptiVLM Carrier Web 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:

- 1.3.1. 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.

Alias: The name for current JAAS connection appears as reference on Application Server scope(recommend use any string that may suggest the schema name, i.e. "profile_OC")
Username: The username of the database schema
Password: The password of the database schema

Then click "**OK**" to save, and repeat the above process to each database schema accesses (Carrier Web, OptiCash and OptiVault).

- 1.3.2. 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, and proper implementation class name ("oracle.jdbc.pool.OracleConnectionPoolDataSource" is recommended but not absolute, depends on production environment configuration). Click "**OK**" to save this JDBC provider.
- 1.3.3. Still, on the "**JDBC Provider**" page, click the "**Data sources**" link and click "**New..**" to create a data source for each schema:
 - 1.3.3.1. 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. See 1.2.5 below.

1.3.3.2. Fill in the **"URL"** field with the current database schema, i.e.,

jdbc:oracle:thin:@server:1521:serverdb

or

dbc:sqlserver://@server;databaseName=@schemaName

1.3.3.3. 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"**

1.3.3.4. Repeat 1.2.3.1 to 1.2.3.3 to create JNDI data source for VLM Carrier Web, OptiCash, and OptiVault respectively. 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.

1.3.4. On the WebSphere Application Console home page, go to **"Applications"**-> **"WebSphere enterprise applications"** and click the application link for VLM Carrier Web, go to **"Resource references"**, select module for OptiVLM Carrier Web, OptiCash, OptiVault respectively and click **"Modify Resource Authentication Method.."**, click **"Use default method"** and choose proper JAAS authentication, then click **"Apply"**. Repeat the same action to every resource reference and click **"OK"**.

1.3.5. Open web.xml (located at <application-path>/WEB-INF/) and make sure the section of "<resource-ref>" is NOT commented out (remove "<!--" before the section and "-->" after the section). The result will look like this:

```
<resource-ref>
  <description>JNDI Oracle Datasource for Carrier
Web</description>
  <res-ref-name>jdbc/CarrierWeb</res-ref-name>
  <res-type>javax.sql.DataSource</res-type>
  <res-auth>Container</res-auth>
</resource-ref>
<resource-ref>
  <description>JNDI Oracle Datasource for
OptiCash</description>
  <res-ref-name>jdbc/OptiCash</res-ref-name>
  <res-type>javax.sql.DataSource</res-type>
  <res-auth>Container</res-auth>
</resource-ref>
<resource-ref>
  <description>JNDI Oracle Datasource for
OptiVault</description>
  <res-ref-name>jdbc/OptiVault</res-ref-name>
  <res-type>javax.sql.DataSource</res-type>
  <res-auth>Container</res-auth>
```

</resource-ref>

2. Configure mail send using the following properties.

Setting	Description
mail.enabled	True/False. This enables or disables outgoing mail from OptiVLM-CarrierWeb entirely.
mail.host	Mail server accessible by OptiVLM-CarrierWeb which will be used to send outgoing mail.
mail.port	The port number on which the Mail Host is running.
mail.provider	"smtp" or "smtps". SMTPS refers to sending mail with SSL security, and SMTP without.
mail.tlsEnabled	True/False. Indicates whether or not Transport Layer Security (TLS) will be used. If yes, should be 'smtp' in the prior field.
mail.authEnabled	True/False. Indicates whether or not the mail sent will require authentication (username/password)
mail.username	If Authentication is Enabled, supply the username for sending mail.
mail.password	If Authentication is Enabled, supply the password for sending mail.
mail.fromAddress	An email address which recipients will see in the "From" field.
mail.contentType	PLAIN_TEXT or HTML. The content type of the outgoing mail.

3. Update CarrierWeb.properties for additional settings. The file is located in the directory <application-path>/WEB-INF/classes.
 - 3.1. 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.
 - 3.1.1. There are two provided methods for logging:
 - 3.1.1.1. logging to the standard out file known as the Console Appender or stdout, and
 - 3.1.1.2. logging to a separate log file known as a Rolling File Appender or ROL.
 - 3.1.2. 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 log4j.properties file 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 to 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.

- 3.1.3. 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.

- 3.2. Parameter 'batch.multiOrderManifestJob.outputPath' should indicate the desired directory on your local environment. When the user chooses to generate multiple order manifests in a single job, the output will appear in this location.

- 3.3. (Optional) Update Liquibase settings for your environment if required. Liquibase will be used to generate database upgrade scripts either into a file or output on the web page once the application starts. If 'database.upgrade.outputFile' is commented out with a leading '#' it indicates the update query is not output to a file but only output to the CarrierWeb web page. Parameter 'database.upgrade.outputFile' should indicate the desired directory on your local environment to hold the generated script. **Example:** database.upgrade.outputFile=D:\\OptiSuite\\OptiVLM-CarrierWeb-DB-Upgrade. If the directory exists (create it if necessary) before starting OptiVLM Carrier Web from Application Server, then any database upgrades query output to a file db-upgrade.sql in that directory. If this property is commented out with a leading '#' sign then the query will show up on the page once open CarrierWeb front page after the server starts.

- 3.4. (Optional) Two properties to define the tablespace of the current schema:

#database.CW.tablespace.index=

#database.CW.tablespace.data=

These define the data tablespace name and index tablespace name respectively. Both are used by Liquibase upgrade to generate upgrade query scripts. If both are commented out, Liquibase just uses the schema name to create a query without the tablespace name.

- 3.5. If OptiCash or OptiVault workflows involve customized order states for your institution, you will need to list those states in the parameter "orderStates". **Example:** orderStates=ORDERED,APPROVED,CONFIRMED This will be a comma-separated list of all the states that may appear. **Note:** This is the reference name of those states (appears in the database and language translation files of OptiCash and OptiVault) and not the display name is shown through the user interface.

- 3.6. If you are using the OptiTransport optional feature, then need to set the connection information for outside mapping service. This includes the elements "optitrans.servicesKey", "optitrans.servicesId", and "optitrans.servicesUrl". The values to place here should be known from communications with NCR Cash Management.

4. You may need to update the licensing function to reflect your institution name. The institution name must match the name listed in the license.

Note: Not necessary if already included in a provided seed database.

- 4.1. The institution name is saved in the CarrierWeb system setting table. Use the following SQL query to update the institution name:

update systemsettings set setting = '{INSTITUTION_NAME}' where name='licensing_institution_name';

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

5. Authentication can be configured in one of 2 possible methods: Server-based authentication, and OptiCore authentication.
 - 5.1. Server-based authentication leaves the authentication process to the application server. This authentication mode is recommended by NCR because the application server provides efficient and powerful security support.
 - 5.2. OptiCore authentication is an in-house Single Sign On (SSO) solution from OptiSuite so, that all applications authenticate the user via the OptiCore authentication library.
 - 5.2.1. **Customized authentication code:** This mode is used when installing an institution that has specific requirements and/or an existing system to integrate. User credentials are provided by that outside system/source.
 - 5.2.2. **DBAuthorizer variant:** This sample method is provided with OptiSuite applications and allows to manage users stored in a database, for example, OptiCash or OptiVault database.

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

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 Carrier Web respectively. 3. In <application-path>/WEB-INF/classes/CarrierWeb.properties file, set authentication.type=server 4. In <application-path>/WEB-INF/web.xml file, uncomment the section under "<!-- security -->"
OptiCore authentication	<ol style="list-style-type: none"> 1. Configure external user profile and access defined by OptiCore. 2. In <application-path>/WEB-INF/classes/CarrierWeb.properties file, set authentication.type=opticore 3. In <application-path>/WEB-INF/web.xml file, comment out the section under "<!-- security -->"

	<p>4. In <application-path>/WEB-INF/classes/CarrierWeb.properties, define the mapping between the external role name and CarrierWeb internal role name(ROLE_USER, ROLE_ADMIN), also assign the correct value for the external role and CarrierWeb user group name mapping. See the explanation of parameters under <application-path>/WEB-INF/classes/CarrierWeb.properties below.</p>
DBAuthorizer variant to OptiCore authentication	<p>1. Apply the above steps for OptiCore authentication.</p> <p>2. Ensure that “transoft.samples.DBAuthorizer” is the value used in CarrierWeb.properties for optcore.auth.authorizer.class</p> <p>3. Verify that the values entered for “externalRoles” in CarrierWeb.properties are matched by roles in the external database. If OptiCash or OptiVault database, then there would be Business Units.</p> <p>4. Set optcore.auth.init.params in CarrierWeb.properties to point to DBAuthorizer’s additional properties file. By default, this is ../WEB-INF/classes/DBAuthorizer-OC.properties. This default file may be a useful example, even if you choose to use another file elsewhere.</p> <p>5. Inside the DBAuthorizer properties file, set the following as appropriate for your environment.</p> <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 the database connection. If desiring to use 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 the 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</p>

digest "length", "algorithm", and "seed" settings above must be the same between all OptiSuite applications.

6. The following list is the explanation of major parameters under <application-path>/WEB-INF/classes/CarrierWeb.properties:

Property name	Comments
orderWorkflow orderWorkflowMasks workflowTasks	These parameters define all workflows, and tasks that can be processed in CarrierWeb. Workflow mask is a string that composes cashpoint type with four zeros as a mask for action type and schedule type.
routePlan.serviceableStates	The order states that are supported by CarrierWeb for all kinds of orders (OptiCash/OptiVault/Commercial)
manifest.types (not intend to change)	Defines the types of manifest that are supported in CarrierWeb
batch.multiOrderManifestJob.outputPath	Defines the classpath that holds manifest that is generated by batch process
manifest.notification.interval	Interval, in seconds, regarding how often CarrierWeb will check for Manifest notification pop-ups.
systemDate	Define the current system date, if left null then CarrierWeb will use the current date
pageSizes defaultPageSize	Defines the options of pagination on every listing page in CarrierWeb. i.e. pageSizes=5,10,25,100 defaultPageSize=10
authentication.type	Define what authentication method and API is used to run CarrierWeb "server": Currently CarrierWeb is set with application server base authentication. "opticore": Currently CarrierWeb is set with opticore authentication
externalRole.{EXTERNAL_ROLENAME}	Only for OptiCore authentication. {EXTERNAL_ROLENAME} is a placeholder for a role name from an external system (Microsoft Active Directory, DBAuthorizer,

	<p>etc). The value of these properties should be one or more CarrierWeb internal ROLES, For Example:</p> <p>externalRole.SystemAdmin=ROLE_USER,ROLE_ADMIN</p> <p>externalRole.User=ROLE_USER</p> <p>externalRole.UserAdmin=ROLE_ADMIN</p>
<p>externalRoles=A,B,C</p> <p>carrierweb.usergroup.name=A's_group,B's_group,C's_group</p> <p>carrierweb.admin.role=role_name_for_admin</p>	<p>Only for OptiCore authentication.</p> <p>These first two values define the mapping between the user role in Carrierweb and the name of the Carrierweb User group. So that user with the role 'A' will be verified against CarrierWeb user group 'A's_group'.</p> <p>carrierweb.admin.role defines external (not ROLE_USER or ROLE_ADMIN but external role defined in externalRole.{EXTERNAL_ROLENAME}) role is the CarrierWeb admin</p>
<p>opticore.auth.authorizer.class=transoft.samples.FileAuthorizer</p> <p>opticore.auth.app.name=CW</p> <p>opticore.auth.init.params=param1,param2,param3,param4</p> <p>opticore.auth.bundle.file.name=CarrierWeb</p>	<p>Only for OptiCore authentication.</p> <p>opticore.auth.authorizer.class: defines OptiCore authentication authorizer class name.</p> <p>Examples: transoft.samples.DBAuthorizer, transoft.samples.FileAuthorizer</p> <p>opticore.auth.app.name: defines the current application name which may be used by the authorizer in case there is a specific logic process regarding the current application.</p> <p>opticore.auth.init.params: defines initial parameters for the authentication process. It is a list of items in String format.</p> <p>Note: For the DBAuthorizer variant, this includes a filename where additional parameters are stored (not including the file extension). Example: DBAuthorizer-OC</p> <p>opticore.auth.bundle.file.name: defines the name of the properties file that is holding external information. i.e., CarrierWeb.properties</p>

routePlan.renderPersonnel routePlan.renderAmount	<p>Defines show/hide staff information or order amounts for route plan module (both HTML web page and PDF)</p>
masterOrder.totalInMainCurrency	<p>On the route plan listing page, there is a column to establish the total amount of each route plan. This setting applies to both HTML web pages and PDF reports.</p> <p>When masterOrder.totalInMainCurrency=true, then the total amount of all orders is calculated with the main currency with the most recent exchange rate(if there is multi-currency order</p> <p>When masterOrder.totalInMainCurrency=false, then that column will show the total amount of each currency, sorted by currency id alphabetically.</p>
login.username.prefix login.username.suffix login.username.uppercase	<p>Only for Server-based authentication.</p> <p>These can add prefix, suffix, and capitalize the username, if necessary when matching the user's External Username to OptiSuite internal user name.</p> <p>i.e.</p> <pre>login.username.prefix=\\BASIC\ login.username.suffix=\login login.username.uppercase=true</pre> <p>This example says that if user uses 'admin123' to login to CarrierWeb then the user's External Username should be "\\BASIC\\ADMIN123\\login"</p> <p>Note: The uppercase=true setting effectively allows the username to be case-insensitive.</p>
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 CarrierWeb starts</p> <p>i.e., <i>available.locales=es,en,th_TH</i> (there are three available locales in current settings)</p>

	<i>default.locale=en</i> (English is the default locale)
sync.user	Only for OptiCore authentication, not the DBAuthorizer variant. Defines whether CarrierWeb should synchronize user profiles (cashpoints, username etc) after optiCore authentication is complete.
defaultroute.calcptype	Whether to refresh the cashpoint type for every cashpoint under a default route. Default "false".
reportcenter.availableReports	String determining which Reports will be shown. The default value is suitable for most users. NCR Cash Management may provide different values if appropriate.
reportcenter.font.east.asia	To include an additional font library for characters not supported in base font, place "true" here and place the library (.jar file) in <application-path>/WEB-INF/lib directory.
routeplan.showCashpointName	"true" or "false". Toggles the Route Plan functions between referring to cashpoints by ID ("false") or by Name ("true").

10 OptiVLM Carrier Web Licensing

After the initial installation, the application will show an **'exception'** screen if the license is not installed.

Copy the exception message and provide it to NCR Cash Management for license generation. In response, NCR Cash Management will send back an SQL query containing the license for the application. This query needs to be run on the OptiVLM Carrier Web database.

Here's a sample of what you might see:

```
License not available: Today=2011-09-30 iName=demo  
dbURL=jdbc:oracle:thin:@jdnb37-pc:1521:orcl?user=vlm  
appPath=c:\java\sts-2.6.0.release
```

▲ **Warning:** License application 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.

11 OptiVLM Carrier Web Database Upgrade

If OptiVLM Carrier Web requires 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/CarrierWeb.properties file). This will be in the form of SQL queries. Run all queries in the file using SQLplus or an SQL tool of your choice. Remember to commit changes.

For the first time to install CarrierWeb with the SQL script generated by Liquibase, 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.

12 OptiVLM Carrier Web Customization

12.1 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-CarrierWeb 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. **Save** the file.
3. Restart the Application Server that the WAR file was deployed under.
4. For other languages, do the same as the above steps, but use files named appropriately. Spanish would be 'application_es.properties' and 'messages_es.properties' for example.

Note: For institutions intending to customize their Route Plan workflow, the states in that flow will need to be defined in the "messages_*.properties" file. These are in lines like the following:

```
routeplan_status_EDITABLE_STATUS01=your_state  
routeplan_status_NONEDITABLE_STATUS01=your_state
```

These states are, in effect, all the possible stopping points in the workflow. The transitions between these states will be defined inside the application. Ten of each type are available.

 It is important to note that "EDITABLE" or "NONEDITABLE" status refers to certain fields in the Route Plan: Drivers and security personnel assigned, vehicle assigned, etc. When the Route Plan is in an Editable status, those fields can be changed by the users. When in a Noneditable status, those fields cannot be changed.



Customized language files are the client's responsibility to maintain. Before editing, save the original file (i.e., messages.orig.properties). In the future, with each VLM Carrier Web 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-CarrierWeb – these are often incomplete and are not checked for the correctness of the translation. The translation should be based on the provided English version.

12.2 Making Changes to the Styles and Logos

Virtually all images are stored in the <application-path>/images directory.

- The main VLM Carrier Web style sheet is found at <application-path>/styles/standard.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 VLM Carrier Web 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.

13 Redeploying the Oracle Schema

It is recommended to have nightly backups of the VLM Carrier Web Oracle schema.

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

You would re-load that data following the schema user create and import methods outlined earlier in the installation guide.

IMPORTANT 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).
 - 1.1. This step is taken care by the application if 9.16 war with oracle properties is deployed into the webserver.
 - 1.2. After deployment, the user is prompted to upgrade DB Schema. This is also specific to OC and OV. For VLM, products the upgrade is taken care by Liquibase.
2. Create Database and schema in SQLServer as mentioned in installation.
3. Migrate data from Oracle to SQLServer (taken care by NCR Team).
4. Update Oracle DB properties with SQLServer Details in 9.16 war and deploy.

EPSS Integration

- After 10.x, this 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.

CXBanking, OptiVLM CarrierWeb 10.0, Installation Guide
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