OBIEE 11g Analytics Using EMC Greenplum Database
- An Integration guide for OBIEE 11g Windows Users

Abstract
This white paper explains how OBIEE Analytics Business Intelligence Tool can be configured and used with Greenplum Database in windows environment. This allows a quick verification and validation of connectivity and interoperability of OBIEE (windows) with Greenplum.

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Executive summary

Oracle Business Intelligence Enterprise Edition is one the most sophisticated business intelligence analytics and reporting product available for working with analytical databases such as the EMC Greenplum Database. The EMC Greenplum Database is capable of managing, storing and analyzing Terabytes to Petabytes of data in data warehouses.

Audience

This white paper is intended for EMC field facing employees such as sales, technical consultants, support, as well as customers who will be using OBIEE for deploying business intelligence and analytic applications. This is neither an installation guide nor an introductory material on OBIEE. It documents the OBIEE connectivity and operation capabilities, and shows the readers how it can be used in conjunction with Greenplum Database to retrieve, transform and present data to users. Though the reader is not expected to have any prior OBIEE knowledge, basic understanding of business intelligence concepts and reporting tools would help them understand better.

Organization of this paper

This paper covers the following topics:

- Overview of Oracle Business Intelligence Enterprise Edition (OBIEE)
- What is new in the OBIEE 11g version
- Overview of Greenplum Database
- Using ODBC drivers in OBIEE for Greenplum Database connections
- Future expansion and interoperability
Overview of Oracle Business Intelligence Enterprise Edition

Oracle Business Intelligence Enterprise Edition (OBIEE) delivers comprehensive Business Intelligence capabilities for analysts and business professions. The set of complete BI capabilities includes:

- Ad-hoc Analysis (Ad-hoc Query and Reporting)
- Interactive Dashboards
- Enterprise Reporting
- Scorecards
- Multi-dimensional OLAP

In terms of OBIEE architecture, there are two types of OBIEE 11g components: Systems Components and Java Components.

There are five major Oracle BI system components in OBIEE:

- Oracle BI Server
- Oracle BI Java Host
- Oracle BI Presentation Server
- Oracle BI Cluster Controller
- Oracle BI Scheduler

The OBIEE 11g Java Components are written in Java 2 Platform, Enterprise Edition (J2EE). They can be run directly in the J2EE Application Server (Oracle WebLogic). The WebLogic Server has both admin server and managed server(s) for all the 11g BI applications.

Since OBIEE is physical data source independent, it means any ODBC or JDBC drivers or tools enabled web service are able to use Oracle BI Server as it is completely insulated from the changes in the source tables in the data sources. In that case, OBIEE can connect to Greenplum Database to take full advantage of the cloud and massively parallel processing environment.
What is new in the OBIEE 11g version?

The new Oracle Business Intelligence Enterprise Edition (OBIEE) 11g has several enhancements as compared to 10g. Here are some of the new features and enhancements:

- Original Oracle (AS) Application Server and Oracle Containers for Java (OC4J), which are used in OBIEE 10g, are replaced by Oracle WebLogic Server
- New feature supporting Parent-Child hierarchy, Ragged Level-based hierarchy, Skip-level level-based hierarchy
- The new Unified Framework provides a unified user interface for OBIEE Answers and Dashboards
- A new component called "Repository Creation Utility" (RCU) must be installed prior to OBIEE installation for database repository

The above diagram shows the new OBIEE 11g architecture and how Greenplum Analytic Database is able to fit into the picture as data marts and data warehouses.
Overview of Greenplum Database

Greenplum Database is designed based on a share-nothing MPP (Massively Parallel Processing) architecture which facilitates Business Intelligence and analytical processing built on top of it using commodity hardware. Data is distributed across multiple segment servers in the Greenplum Database to achieve no disk-level sharing. The segment servers are able to process queries in a parallel manner in order to promote the high degree of parallelism and scalability.

Highlights of the Greenplum Database:

- Dynamic Query Prioritization
  - Provides continuous real-time balancing of the resources across queries.
- Self-Healing Fault Tolerance
  - Provides intelligent fault detection and fast online differential recovery.
- Polymorphic Data Storage-MultiStorage/SSD Support
  - Includes tunable compression and support for both row-and column-oriented storage.
- Analytics and Language Support
  - Supports analytical functions for advanced in-database analytics.
- Health Monitoring and Alerting
  - Provides integrated email and SNMP notification for advanced support capabilities.
Install the Greenplum Database Connectivity Tools

Greenplum provides database drivers and a C API for connecting to Greenplum Database. A psqlODBC driver is included in this connectivity tools package which will be used to connect to OBIEE 11g. psqlODBC is the official PostgreSQL ODBC driver. This driver is currently maintained in PostgreSQL project.

Here are the steps to install the Greenplum Database Connectivity Tools:

1) Download the greenplum-connectivity-4.x.x.x-WinXP-x86-32.msi package from Powerlink or Subscribenet: https://emc.subscribenet.com/
2) Double click the package to launch the installer
3) Click Next on the following welcome screen:

![Welcome to the Greenplum Connectivity Setup Wizard](image)

4) Click I Agree on the License Agreement Screen:
5) Select the components that you want to install. By default, all components will be installed. Click **Next** after you made the selection.

6) Click **Install**

7) Click **Finish** to complete the installation and exit installer
8) After the installation, the Greenplum Connectivity Program will show up in the Add/Remove program:
Setup and Configure System DSN in ODBC Data Source Administrator

The ODBC driver that you would like to used to connect the Greenplum Database must be configured by defining the data sources. You can find the ODBC Data Source Administrator through Control Panel -> Administrative Tools -> Data Sources (ODBC) in the classic windows environment.

Detailed steps for the configuration are self explanatory with screenshot images showing how to define the Greenplum Connectivity Package you just installed in the ODBC Data Source Administrator:

1) Open the ODBC Data Source Administrator and choose the System DSN tab. Click Add.

2) Choose PostgreSQL Unicode to setup a data source. Click on Finish.
3) Input all the Greenplum Database details in the PostgreSQL Unicode ODBC Driver Setup screen. Click **Test** to test the connection.

4) Select the Datasource Option at the bottom of the configuration page. Set the following options: Use **Declare/Fetch**, **Cache Size**, **Max LongVarChar**, which are not default settings.

5) Click **OK** on the Advanced Option screen. Then, Click **Save** to complete.
Special attention may be required to setup the host files and configuration files in Greenplum Database as well as the hosts in which OBIEE is installed. For instance, in Greenplum Database, the user may need to configure pg_hba.conf with the IP address of the OBIEE host. In addition, users may need to add the hostnames and the corresponding IP address in both systems (i.e. OBIEE server as well as the Greenplum Database) in order to ensure both machines are able to communicate.

**Using Greenplum DSN in OBIEE Administration Tool**

Now, it is time to define the Connection Pool in OBIEE Administration Tool. Open the Oracle BI Administration Tool with the rpd (repository file) that you have already implemented your jobs and models for reporting and analysis. All you need is the database elements such as connection pool, tables and columns.

The following screenshots will give you an idea of how to create a Greenplum Database object manually:

1) In the Administration Tool – Physical Layer, right-click and select **New Database**.
2) Or Select on the project and Right Click. Choose **New Object** -> **Connection Pool**

3) Or Select on the project and Right Click. Choose **New Object** -> **Connection Pool**. Then, Input all the connection details (using the Data Source that you defined in the DSN). Click **OK** to complete.

4) Now you should be able to see the newly defined Greenplum Connection in OBIEE physical layer and you can use that within the administration tool.
Conclusion

In this white paper, the process of how to create and apply ODBC driver to connect Oracle Business Intelligence Enterprise Edition (OBIEE) with Greenplum Database is briefly discussed using ODBC driver in particular. It only covers the preliminary interoperability between both OBIEE and Greenplum Database for basic business intelligence projects.
References

1) Greenplum Database Connectivity Tools for windows readme file
2) Oracle® Fusion Middleware Metadata Repository Builder’s Guide for Oracle Business Intelligence Enterprise Edition 11g Release 1 (11.1.1)